

07/19/01

10-5-01

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|-----------------------|------------------------------|----------------|---------------|
| 31017703 | OPGP04-ZE-0309 | Rev. 78 | Page of |
| Design Change Package | | | Z 3103 |
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DOC No. RC5037 SHT. _____ REV. 5

PRIORITY 1 DOC YES NO

DESCRIPTION OF CHANGE: AFFECTED UNIT 0 1 2 BOTH

Bechtel Calculation No **Rev**
RC5037-P-400 **1**

The existing feedwater line for loop D inside containment has been redesigned & reanalyzed in conjunction with the replacement of steam generator "D" for unit-2.

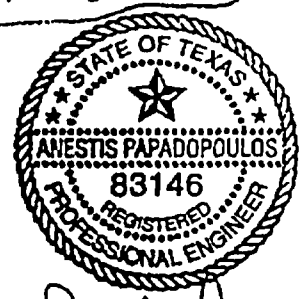
Supplement the existing calculation 2C159RC5037 Rev. 5 with the DCN 0000067, analyzed for the unit-2 system.

CB
5-17-00 Add pages 2 thru 108 of this DCN to the existing calculation.

There is only one outstanding amendment (DCN SC00165) against the design calculation RC5037. There is no impact due to this DCN which was issued only to incorporate the current revision of documents.

Additionally, DCN 9800858 directing the use of water hammer results of Calc. # CCO6436 Rev. 0 applies to the existing (Pre-SGR) configurations of units 1 & 2.

DO NOT INCORPORATE



Anestis Papadopoulos 7/19/01

| | | | |
|-----------------|-----------------|-----------------|-----------------|
| <i>Babarney</i> | <u>15-17-00</u> | <i>Srinivas</i> | <u>15/17/00</u> |
| DESIGN ENG. | DATE | REVIEWER | DATE |

Calculation No. 2C159RC5037 Rev. 5

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List of Effective Pages

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| 127 | 4 | | | | | | | | | | | | |
| 128 | 3 | | | | | | | | | | | | |
| 129 130 | 4 | | | | | | | | | | | | |
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| 168 | 4 | | | | | | | | | | | | |
| 169 | 3 | | | | | | | | | | | | |
| 170-171 | 4 | | | | | | | | | | | | |
| 172-185 | 3 | | | | | | | | | | | | |
| A1- A15 | 4 | | | | | | | | | | | | |
| A2 | 4 | | | | | | | | | | | | |
| A3 | 4 | | | | | | | | | | | | |
| B1- B41 | 5 | | | | | | | | | | | | |
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* affected by DCN 0000067 Total Number of Calculation Pages: 386



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438-300

SUBJECT EVALUATION OF MFW PIPING SYSTEM DUE TO SGR (UNIT 2 LOOP D)

ORIGINATOR C.BASAVARAJU

DATE _____

CALC NO RC5037
SHEET NO _____
SHEET REV 5

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JOB NO 23438-300

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1.0 OBJECTIVE/SCOPE

The purpose of this attachment is to review the latest design drawings, all open amendments, piping and support deviations - especially unit-2 support stiffnesses, and routing change due to the relocation of the steam generator main feedwater nozzle resulting from unit-2 RSG, against unit-1 RSG analysis and to reanalyze or reconcile the results for unit-2.

2.0 DESIGN INPUT

Most of the input data for unit-1 RSG is also applicable to unit-2 RSG and hence is not repeated here for simplicity. Only unit-2 specific pipe support stiffness data is listed here. Major design input data such as Input LOCA time history functions, response spectra & SAM movements, thermal movements of the RSG nozzle, and Water hammer input forcing functions for unit-2 are the same as for unit-1. (Refer to U1 DCN # 9704763)



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2.1 PIPE SUPPORT DATA SUMMARY

| Node | Tag# *** | Support Type | DIRECTION COSINES | | | Stiffness Kips/in | Sup Comp Wt. (LB) | |
|------|-------------|-----------------|-------------------|--------|--------|----------------------|----------------------|-----|
| | | | W/X | W/Y | W/Z | | | |
| 001 | SGR CL | Anchor | | | | * | --- | |
| 007 | HL5016 | Rigid | 0.848 | 0.000 | -0.530 | 721 | 274 | New |
| 07H | HL5015 | Rigid | -0.707 | 0.000 | -0.707 | 2363.2 | | New |
| 07H | HL5015 | Rigid | -0.707 | 0.000 | 0.707 | 1469.9 | | New |
| 009 | HL5014 | Spring | 0.000 | 1.000 | 0.000 | - | 450 | New |
| 015 | SS0001 | Snubber | 0.380 | 0.000 | 0.925 | 632.37 | 450 | |
| 030 | SH0001 | Spring | 0.000 | 1.000 | 0.000 | - | | |
| 035 | HL5009 | Snubber | 0.000 | 1.000 | 0.000 | 1141.7 | 25 | |
| 040 | HL5004 | Snubber | 0.380 | 0.000 | 0.925 | 737 | 850 | |
| 050 | HL5007 | Snubber | 0.000 | 0.000 | 1.000 | 1763 | 400 | |
| 055 | HL5008 | Snubber | 1.000 | 0.000 | 0.000 | 709 | 850 | |
| 065 | SS0006 | Snubber | 0.000 | 0.993 | 0.117 | 481 | | |
| 070 | SH0002 | Spring | 0.000 | 1.000 | 0.000 | - | | |
| 075 | HL5005 | Rigid | 0.000 | 1.000 | 0.000 | 876.84 | | |
| 085 | SS0007 | Snubber | -0.707 | 0.000 | -0.707 | 998 | 870 | |
| 094 | HL5002 | Rigid | 0.000 | 1.000 | 0.000 | 1097 | | |
| 092 | HL5003 | Snubber | -0.707 | 0.000 | 0.707 | 487 | 450 | |
| 097 | HL5006 | Snubber | 0.000 | 0.000 | 1.000 | 902 | 870 | |
| 099 | HL5001 | Rigid | 0.000 | 1.000 | 0.000 | 532.8 | | |
| 101 | HL5013 | Rigid | 0.875 | 0.485 | 0.000 | 3620 | | |
| 11A | HL5013 | Rigid | 0.809 | -0.588 | 0.000 | 1092 | | |
| 10A | HL5012 | Rigid | 0.000 | 0.000 | 1.000 | 1128.4 | 450 | |
| 110 | PEN M5 | Anchor | | | | ** | -- | |

Notes: * SGR CL modeled as rigid anchor (SG center line)

** Fluedhead Penetration M5 modeled as anchor with the following translational & rotational stiffnesses. (Ref. 5.1)

AA=6.4E6 lb/in; AB=6.4E6 lb/in; AC=6.4E6 lb/in

ARA=7.45E9 in-lb/rad; ARB=7.45E9 in-lb/rad; ARC=7.45E9 in-lb/rad

*** Prefix for Pipe Support tag# : FW-2018-



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3.0 METHOD OF ANALYSIS

The stress methodology used for unit-2 RSG is the same as that of unit-1. (Refer to U1 DCN # 9704763)

4.0 SUMMARY OF RESULTS

The rerouted main feedwater piping system due to steam generator replacement was stress analyzed and meets the ASME Code and other requirements and is acceptable.



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5.0 REFERENCES

- 5.1 STRESS ANALYSIS OF FEED WATER "FW" SYSTEM FROM STEAM GENERATOR 1D THRU FW-1018-GA2 TO PENETRATION M-5, CALC NO. 2C159RC5037 REV. 5
- 5.2 HYDRAULIC TRANSIENT ANALYSIS OF FEEDWATER LINE BREAK IN CONJUNCTION WITH CHECK VALVE SLAM, CALC.# 5S139MC5668 REV. 0 (DCN# 0000071)
- 5.3 ME101 Linear Elastic Analysis of Piping----- Version N5
- 5.4A ASME B&PV CODE , SECTION III, DIV. 1, 1974 INCLUDING W75 ADDENDA
- 5.4B ASME B&PV CODE ,SECTION III, DIV.1, 1980 INCLUDING W81 ADDENDA
- 5.4C ASME B&PV CODE ,SECTION XI, 1980 INCLUDING S83 ADDENDA.
- 5.5 RE-EVALUATION OF PENETRATIONS M5 THRU M8, CALC. NO. 2L469RC9962 REV. 2
- 5.6 RCB Digitized Response Spectrum, Bechtel Calc. # RC1425 Rev. 2
- 5.7 Seismic Analysis of RCB, Brown & Root Calc. # C040-9A
- 5.8 Westinghouse Input Information
 - a) Feedwater Nozzle Design Loads (MFW nozzle)
Westinghouse Design Specification #414A21 Rev. 0 p. 99 of 273
 - b) RCS LOOP Analysis -Displacements for D.W., Thermal, seismic, LOCA
Westinghouse letter #WP-BEC-SGR-97-051 from S.A.Palm to R. Beck,
Dt. June 27, 1997
 - c) TGX RCL LOCA Time History Displacements,
Westinghouse letter #WP-BEC-SGR-97-067 from S.A.Palm to R. Beck,
Dt. July 18, 1997
 - d) STP2 SGR- Confirmation of Stress Calculation Input; Westinghouse letter
(dated June 28,2000)#WP-BEC-STP2-SGR-00-011 from S.A.Palm to R.A.Beck.
 - e) Unit 2 RSG Subcompartment Pressurization Analysis, Letter #
ST-NOC-WN-000018, Dt. November 29, 1999 from M.E.Kanavos to S.Palm.
- 5.9 Bechtel Calc. No. CC06415 Rev. 0, DT. 07/25/97 -
Reconciliation of reactor Building Seismic Analysis Due to Steam
Generator Replacement.
- 5.10 Piping Isometrics (See Att # 4)
Design Iso (existing portion) 2C369PFW433 -01 -7
ABR Iso (existing portion)
Stress Iso (new piping) & DCN No. 0001945 (DCP No. 98-19444-2)
- 5.11 Piping Stress Analysis Criteria, 5L010RQ1002 Rev. 8
Guidelines for Pipe Stress Analysis and Support Design, PED-023 Rev. 4
- 5.12 Unit-1 SGR Stress calculation DCN #9704763



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6.0 ASSUMPTIONS / OPEN ITEMS

NONE



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7.0 CALCULATIONS

None



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8.0 CALCULATION RESULTS AND CONCLUSIONS

8.1 ME101 Input Listing:

Attachment #1 contains the input listings for the me101 analysis.

8.2 Piping Stresses:

All stresses are within the code allowables. (See Section 8.14).

8.3 Fluedhead Penetration loads:

The revised loadings on fluedhead penetration M-5 are summarized in section 8.15.

These loadings are not significantly different from unit-1 SGR results and hence are judged acceptable.

(also Refer to U1 DCN # 9704763)

8.4 Equipment Nozzle Loads

The loads imposed by the piping on the replacement steam generator feedwater nozzle are summarized and compared with the allowable nozzle loads. (see section 8.16).

These loadings are not significantly different from unit-1 SGR results and hence are judged acceptable.

8.5 Floor and Wall penetrations:

The displacements at floor and wall penetrations are summarized, These displacements are considered to be acceptable as the differences between Unit-1 SGR & unit-2 SGR results are not significant(See section 8.18). (Refer to U1 DCN # 9704762)

8.6 Branch connections:

The piping movements for the small pipe connections are summarized (See section 8.17).

8.7 Valve Acceleration and End Loads:

There are no valves within the boundaries of this stress problem.



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8.0 CALCULATION RESULTS AND CONCLUSIONS (cont'd.)

8.8 Support Information:

Pipe support loads and other information were provided to the pipe support group for design, evaluation, and any modification. (Attach.#2)

3 new supports were added on the new section of the pipe (2 rigids, & 1 spring hanger).

8.9 Welded Attachments:

The local stresses at welded attachments are judged acceptable. The general piping stresses and support loadings at the welded attachments are not significantly different from unit-1 SGR results and hence are judged acceptable without any further evaluation. (Refer to U1 DCN # 9704762)
Similarly, the impact of revised loads on the generic IWA calculation is judged to be not significant.

8.10 Flanges:

There are no flanges in this stress problem.

8.11 HELB Criteria:

The combined eq. 9-B and eq. 10 stresses meet the high energy piping criteria. No intermediate pipe break locations are identified. (See Attachment #3)

8.12 Functional Capability:

Per reference # 5.11, this system is not an essential system and therefore does not require functional capability evaluation.

8.13 Conclusion:

As shown by the stress analysis evaluation, the revised feedwater piping system due to the steam generator replacement is acceptable.



CALCULATION SHEET

PROJECT STP-SGR
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SUBJECT FW-PIPING FROM S.G. 2D TO PEN. M-8

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8.14 Pipe Stress Summary

STRESS SUMMARY

MFID : FO1253/RO4200/FP0119
ASME-SEC 111-74

| NODE POINT | STRESS EQUATION | CALCULATED STRESS (PSI) | ALLOWABLE STRESS (PSI) | STRESS RATIO | REMARKS |
|------------|------------------------------------|-------------------------|------------------------|--------------|---------|
| 110 | EQUATION 8 | 7126. | 15000. | .475 | O.K. |
| 110 | EQUATION 9B (UPSET) | 8093. | 18000. | .450 | O.K. |
| 110 | EQUATION 9D (FAULTED w/SSE) | 9085. | 36000. | .252 | O.K. |
| 050 | EQUATION 9D (FAULTED w/wat.hammer) | 30928 | 36000. | .859 | O.K. |
| N02 | EQUATION 9D (FAULTED LOCA): | 11387. | 42761. | .266 | O.K. |
| 102 E | EQUATION 10/11 | 16139. | 22500. | .725 | O.K. |



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8.15 Penetration Load Summary

SECTION 8.15 PENETRATION LOAD SUMMARY

NODE NUMBER : 110
EQUIPMENT ID: PEN M-5
COSAX, COSAY, COSAZ : 1.000 0.000 0.000
COSBX, COSBY, COSBZ : 0.000 1.000 0.000
COSCX, COSCY, COSCZ : 0.000 0.000 1.000

| LOAD CASE | NOZZLE FORCE (LBS) | | | NOZZLE MOMENT (FT-LBS) | | |
|-----------|--------------------|--------|---------|------------------------|---------|---------|
| | FA | FB | FC | MA | MB | MC |
| WT1 | -483. | -2700. | -68. | -8211. | -5. | -18783. |
| THRM1 | -26923. | 9133. | -20631. | -8833. | -13140. | 72845. |
| THRM2 | -20070. | 7703. | -14553. | -6751. | -13334. | 63583. |
| THRM3 | -10611. | 5729. | -6164. | -3878. | -13602. | 50797. |
| THRM4 | -4833. | 4523. | -1039. | -2124. | -13765. | 42984. |
| THRM5 | -27808. | 9318. | -21416. | -9102. | -13115. | 74040. |
| THRM6 | -18403. | 7355. | -13075. | -6244. | -13381. | 61330. |
| THRM7 | -1023. | 3728. | 2341. | -966. | -13873. | 37835. |
| DBA | 22113. | 15334. | 5209. | 34067. | 95332. | 119891. |
| THRMP | 0. | 9318. | 2341. | 0. | 0. | 74040. |
| THRMN | -27808. | 0. | -21416. | -9102. | -13873. | 0. |
| SAM1 | 4785. | 296. | 9167. | 777. | 46037. | 2779. |
| SAM2 | 8562. | 522. | 15735. | 1348. | 78965. | 4892. |
| SEISA1 | 964. | 367. | 132. | 6467. | 1306. | 9558. |
| SEISA2 | 2593. | 757. | 331. | 13338. | 3264. | 19734. |
| TIME1 | 267891. | 6522. | 16172. | 39767. | 56273. | 68033. |
| LOCA | 503. | 135. | 93. | 2033. | 850. | 3170. |



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SECTION 8.16 EQUIPMENT NOZZLE LOAD SUMMARY

NODE NUMBER : N02

EQUIPMENT ID. : FW NOZZLE

COSAX, COSAY, COSAZ : 0.875 0.000 0.485

COSBX, COSBY, COSBZ : 0.000 1.000 0.000

COSCX, COSCY, COSCZ : -0.485 0.000 0.875

| LOAD CASE | NOZZLE FORCE (LBS) | | | NOZZLE MOMENT (FT-LBS) | | |
|-----------|--------------------|--------|--------|------------------------|---------|---------|
| | FA | FB | FC | MA | MB | MC |
| WT1 | 25. | 850. | 11. | -62. | 32. | 1351. |
| THRMP | 7066. | 2104. | 8132. | 0. | 0. | 77954. |
| THRMN | -447. | -36. | 0. | -54314. | -44817. | 0. |
| C5 | 3779. | 4291. | 6379. | 22697. | 23087. | 16491. |
| C6 | 6369. | 8462. | 10422. | 37485. | 38324. | 31512. |
| TIME1 | 25131. | 89099. | 25215. | 135258. | 68546. | 294806. |
| LOCA | 24242. | 12016. | 19638. | 19762. | 45585. | 42562. |

| LOAD CASE | ALLOWABLE FORCE (LBS) | | | ALLOWABLE MOMENT (FT-LBS) | | |
|-----------|-----------------------|---------|---------|---------------------------|---------|---------|
| | FA | FB | FC | MA | MB | MC |
| WT1 | 6000. | 16800. | 16800. | 30000. | 57000. | 57000. |
| THRMP | 10000. | 50000. | 10000. | 125000. | 291667. | 159083. |
| THRMN | 10000. | 50000. | 10000. | 125000. | 291667. | 159083. |
| C5 | 48000. | 36000. | 36000. | 110000. | 144000. | 144000. |
| C6 | 92400. | 84000. | 84000. | 170000. | 200000. | 200000. |
| TIME1 | 506000. | 358000. | 358000. | 1094000. | 644900. | 644900. |
| RUPTURE | 35000. | 26000. | 26000. | 118750. | 298417. | 298417. |

| LOAD CASE | FORCE RATIOS | | | MOMENT RATIOS | | | REMARKS |
|-----------|--------------|-------|-------|---------------|-------|-------|---------|
| | FA | FB | FC | MA | MB | MC | |
| WT1 | 0.004 | 0.051 | 0.001 | 0.002 | 0.001 | 0.024 | OK |
| THRMP | 0.707 | 0.042 | 0.813 | 0.000 | 0.000 | 0.490 | OK |
| THRMN | 0.045 | 0.001 | 0.000 | 0.435 | 0.154 | 0.000 | OK |
| C5 | 0.079 | 0.119 | 0.177 | 0.206 | 0.160 | 0.115 | OK |
| C6 | 0.069 | 0.101 | 0.124 | 0.221 | 0.192 | 0.158 | OK |
| TIME1 | 0.050 | 0.249 | 0.070 | 0.124 | 0.106 | 0.457 | OK |
| RUPTURE | 0.693 | 0.462 | 0.755 | 0.166 | 0.153 | 0.143 | OK |

NOTES: C5 - SRSS OF OBEI & OBESAM; C6 - SRSS OF SSEI & SSESAM
TIME1 - WATER HAMMER ; RUPTURE - LOCA



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SECTION 8.17 MOVEMENTS FOR SMALL PIPE CONNECTIONS & PENETRATIONS

| ISO. NO. | NODE NO. | LOAD CASE | BRANCH NO./ PENET. NO. | DX (IN) | DY (IN) | DZ (IN) | RX (RAD) | RY (RAD) | RZ (RAD) |
|----------|----------|-----------|------------------------|---------|---------|---------|----------|----------|----------|
| | 086 | WT1 | | 0.011 | -0.002 | -0.018 | -0.00031 | 0.00000 | -0.00001 |
| | 086 | THRMP | | 0.000 | 0.001 | 4.153 | 0.00183 | 0.00177 | 0.00042 |
| | 086 | THRMN | | -0.174 | -0.102 | -0.169 | 0.00000 | 0.00000 | -0.00030 |
| | 086 | C5 | | 0.022 | 0.026 | 0.022 | 0.00090 | 0.00025 | 0.00016 |
| | 086 | C6 | | 0.050 | 0.054 | 0.050 | 0.00186 | 0.00061 | 0.00033 |
| | 087 | WT1 | SLEEVE#280 | 0.011 | 0.007 | -0.018 | -0.00034 | 0.00001 | -0.00006 |
| | 087 | THRMP | SLEEVE#280 | 0.000 | 0.000 | 4.283 | 0.00184 | 0.00094 | 0.00018 |
| | 087 | THRMN | SLEEVE#280 | -0.233 | -0.155 | -0.159 | 0.00000 | 0.00000 | -0.00014 |
| | 087 | C5 | SLEEVE#280 | 0.028 | 0.054 | 0.019 | 0.00093 | 0.00024 | 0.00016 |
| | 087 | C6 | SLEEVE#280 | 0.064 | 0.111 | 0.043 | 0.00192 | 0.00059 | 0.00032 |
| | 028 | WT1 | 1.5FW1075GA2 | -0.004 | -0.004 | 0.003 | 0.00001 | -0.00005 | 0.00007 |
| | 028 | THRMP | 1.5FW1075GA2 | 0.653 | 1.640 | 0.121 | 0.00538 | 0.01177 | 0.00412 |
| | 028 | THRMN | 1.5FW1075GA2 | 0.000 | -0.744 | -1.235 | 0.00000 | 0.00000 | 0.00000 |
| | 028 | C5 | 1.5FW1075GA2 | 0.050 | 0.021 | 0.021 | 0.00038 | 0.00010 | 0.00038 |
| | 028 | C6 | 1.5FW1075GA2 | 0.107 | 0.036 | 0.044 | 0.00069 | 0.00019 | 0.00066 |



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

CALC NO RC5037

ORIGINATOR C.BASAVARAJU

DATE _____

SHEET NO _____

SHEET REV 5

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DCN# 000067

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SECTION 8.17 MOVEMENTS FOR SMALL PIPE CONNECTIONS & PENETRATIONS

| ISO. NO. | NODE NO. | LOAD CASE | BRANCH NO./ PENET. NO. | DX (IN) | DY (IN) | DZ (IN) |
|----------|----------|-----------|------------------------|---------|---------|---------|
| | 086-087 | TIME1 | SLV#280 | 0.398 | 0.356 | 0.263 |
| | 086-087 | LOCA | SLV#280 | 0.026 | 0.008 | 0.022 |



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438-300

SUBJECT EVALUATION OF MFW PIPING SYSTEM DUE TO SGR (UNIT 2 LOOP D)

CALC NO RC5037.

ORIGINATOR C.BASAVARAJU

DATE

SHEET NO

SHEET REV 5

9.0 COMPUTER ANALYSIS

ME101 Computer program Version N5 / PC Version was utilized. The results of ME101 are fully verified against the results of bench mark problems. In addition, the results are also benchmarked with the existing analysis (ref 5.1) results. The ME101 PC Program software is fully controlled by an authorization code and security key for an assigned PC machine.

| Program | File Name | MFID | Run Date | UNIT/ LOOP |
|---------|-------------|--------|----------|---------------|
| ME101 | MFWDW.FOR | - | - | 2/D |
| | 7632BK4.MFL | - | - | |
| | 7632B15.MFL | - | - | |
| | 7632B12.MFL | - | - | |
| | MFWDSU2.INP | - | - | |
| | MPWDWU2.INP | - | - | |
| | MPWDLU2.INP | - | - | |
| | MFWDSU2.OUT | FO1253 | 11/15/99 | |
| | MPWDWU2.OUT | RO4200 | 04/27/00 | |
| | MPWDLU2.OUT | FP0119 | 11/15/99 | |

Note: Computer input and forcing function files are provided in the attached diskettes. The water hammer (MFWDW.FOR) and LOCA (7632BK4.MFL, 7632B15.MFL, 7632B12.MFL) time history input functions are the same as those used for unit-1 SGR work.
MFWDSU2: File for unit-2 feedwater w/ load cases weight, thermal, Sam, & seismic.
MPWDWU2: File for unit-2 feedwater w/ load cases weight, & water hammer.
MPWDLU2: File for unit-2 feedwater w/ load cases weight, & LOCA



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

ORIGINATOR C.BASAVARAJU

DATE _____

CALC NO RC5037
SHEET NO _____
SHEET REV 5

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ATTACHMENT 1.0 PIPE STRESS ME101 COMPUTER IMAGE

PAGES 22

WEIGHT/ THERMAL/SEISMIC/SAM

WATER HAMMER

LOCA

ME101

INPUT CARD IMAGES

```

INPUT CARD SKQ 1 11 21 31 41 51 61 71 80 LOAD CASE(S)
1 .
2 . DATA FILE FOR UNIT-2 MFWDSD2.INP
3 .
4 . CTL OUTPUT-SHORT.
5 . RED TITLE=STEADYSTATE "FM" SYSTEM -
6 . SO 2D TO MS,
7 . PROJNO=21418001,
8 . PROBNO=2C159RCS037,
9 . USER=PAWI,
10 . UNITS=2,
11 . MODES=100,
12 . COPY=CR4,PER=0.02,
13 . LDCASE=WT1(W),
14 . LDCASE=THRM1(A+W),
15 . LDCASE=THRM2(B+W),
16 . LDCASE=THRM3(C+W),
17 . LDCASE=THRM4(D+W),
18 . LDCASE=THRM5(E+W),
19 . LDCASE=THRM6(F+W),
20 . LDCASE=THRM7(G+W),
21 . LDCASE=THRM8(H+P+O),
22 . LDCASE=SAM1(X+E),
23 . LDCASE=SAM2(X+V),
24 . LDCASE=MRS1(Z+R),
25 . LDCASE=MRS2(T+R),
26 .
27 . WT1 --- NORMAL OPERATING WEIGHT ANALYSIS
28 . THRM1 --- THERMAL NORMAL OPERATING MODE (HEAT-UP,COLD DOWN) @ 567 DEGREE
29 . THRM2 --- THERMAL NORMAL OPERATING MODE (LOADING,UNLOADING) @ 440 DEGREE
30 . THRM3 --- THERMAL NORMAL OPERATING MODE (LOADING,UNLOADING) @ 250 DEGREE
31 . THRM4 --- THERMAL NORMAL OPERATING MODE @ 120 DEGREE
32 . THRM5 --- THERMAL EMERGENCY OPERATING MODE @ 563 DEGREE
33 . THRM6 --- THERMAL FAULTED OPERATING MODE @ 408 DEGREE
34 . THRM7 --- THERMAL MINIMUM TEMPERATURE @ 33 DEGREE
35 . THRM8 --- POST-LOCA THERMAL ANALYSIS (DESIGN BASE ACCIDENT ANALYSIS)
36 . SAM1 --- OBE SEISMIC ANCHOR MOVEMENT ANALYSIS
37 . SAM2 --- SSE SEISMIC ANCHOR MOVEMENT ANALYSIS
38 . MRS1 --- OBE SEISMIC INERTIA ANALYSIS
39 . MRS2 --- SSE SEISMIC INERTIA ANALYSIS
40 .
41 . CAD. ISO. 3C369FFW433 SNT.01 REV. 4
42 .
43 . MATL:SA-508 CL. 3A FOR SGR NOZZLE
44 . MATL:SA-508 GR.2 CL.2 FOR ( IF ANY) ST SPOOL WEAR NOZZLE
45 . MATL:SA-336 GR.F22 CL.3-PIPE 15" SCH.80 FROM SGR NOZ THRU TOP ELB OF RISER
46 . MATL:SA-333 GR.6 AFTER TOP ELBON OF RISER & REST; 16" SCH 80/ 18" SCH 80
47 .
48 .
49 . MODEL STEAM GENERATOR LOOP D
50 .
51 . SAP 002 82.719
52 . 001,002,NO2 ARE NODES ON SGR CL;SGR SURFACE; FW NOZ END RESPECTIVELY
53 .
54 . 002
55 . 001 -7-3.208 -4-0.340 OD=199.42,TKI=4.71,

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INPUT CARD IMAGES

RI101/NS GARG/ 45

(P01253) 11/18/99 P01253 PAGE

| | | | | | | | | | | | | | | | | | | | | | | | |
|-------|-------|-------------------------|--|-----------|----------------------------|--|--|--|--|----|-------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| 56 . | | | | | LBS/FT=1.00, | | | | | | | | | | | | | | | | | | |
| 57 . | | | | | E=27.886, | | | | | | | | | | | | | | | | | | |
| 58 . | *** | NOZZLE MATERIAL | | | CODE=SCSW75,CLASS=2, | | | | | | | | | | | | | | | | | | |
| 59 . | | | | | MAT=8A508-CL, 2A, | | | | | | | | | | | | | | | | | | |
| 60 . | | | | | SC=12500,SN=22500, | | | | | | | | | | | | | | | | | | |
| 61 . | | | | | DPRESS=1.0,PPRESS=1.0, | | | | | | | | | | | | | | | | | | |
| 62 . | | | | | TEMP=567,EXP=4.2766, | | | | | *A | | TERM1 | | | | | | | | | | | |
| 63 . | | | | | TEMP=440,EXP=3.068, | | | | | *B | | TERM2 | | | | | | | | | | | |
| 64 . | | | | | TEMP=250,EXP=1.48, | | | | | *C | | TERM3 | | | | | | | | | | | |
| 65 . | | | | | TEMP=120,EXP=0.382, | | | | | *D | | TERM4 | | | | | | | | | | | |
| 66 . | | | | | TEMP=583,EXP=4.433, | | | | | *E | | TERM5 | | | | | | | | | | | |
| 67 . | | | | | TEMP=408,EXP=2.774, | | | | | *F | | TERM6 | | | | | | | | | | | |
| 68 . | | | | | EXP=-0.2998,TEMP=32, | | | | | *G | | TERM7 | | | | | | | | | | | |
| 69 . | | | | | TEMP=70,EXP=0., | | | | | *H | | TERM8 | | | | | | | | | | | |
| 70 . | | | | | TEMP=70.,EXP=0., | | | | | *O | | TERM8 | | | | | | | | | | | |
| 71 . | *** | | | | | | | | | | | | | | | | | | | | | | |
| 72 . | *** | LINE NO. 18*PW-1016-GA2 | | | | | | | | | | | | | | | | | | | | | |
| 73 . | ANC | 001 0.833 | 1.980 | 1.893 | | | | | | *N | WT1 | TERM1 | TERM2 | TERM3 | TERM4 | | | | | | | | |
| 74 . | ANC | 001 | | | | | | | | *O | TERM5 | TERM6 | TERM7 | | | | | | | | | | |
| 75 . | ANC | 001 | | | | | | | | *R | SAM1 | SAM2 | MRS1 | MRS2 | | | | | | | | | |
| 76 . | | | | | | | | | | | | | | | | | | | | | | | |
| 77 . | | | | | COSAX=0.8746,COSAE=0.4848, | | | | | | | | | | | | | | | | | | |
| 78 . | | | | | COSCI=-.4848,COSCI=0.8746, | | | | | | | | | | | | | | | | | | |
| 79 . | | | | | RESAME=80ROSE, | | | | | *S | | MRS1 | | | | | | | | | | | |
| 80 . | | | | | RESAME=80ROSE, | | | | | *T | | MRS2 | | | | | | | | | | | |
| 81 . | | | | | DTITLE=CNTRER SQ, | | | | | | | | | | | | | | | | | | |
| 82 . | | | | | DI=.299,DY=.0150,DE=.333, | | | | | *Y | | SAM1 | | | | | | | | | | | |
| 83 . | | | | | DI=.488,DY=.031,DI=.517, | | | | | *Y | | SAM2 | | | | | | | | | | | |
| 84 . | | | | | PHASE=SQ, | | | | | | | | | | | | | | | | | | |
| 85 . | | | | | ROT=X=0.313E-3, | | | | | *N | WT1 | TERM1 | TERM2 | TERM3 | TERM4 | | | | | | | | |
| 86 . | | | | | ROT=Y=0.313E-3, | | | | | *N | TERM5 | TERM6 | TERM7 | | | | | | | | | | |
| 87 . | | | | | ROT=Z=0.165E-3, | | | | | *N | WT1 | TERM1 | TERM2 | TERM3 | TERM4 | | | | | | | | |
| 88 . | | | | | BTI=1R121NSQ101D, | | | | | | TERM5 | TERM6 | TERM7 | | | | | | | | | | |
| 89 . | ***** | | | | | | | | | | | | | | | | | | | | | | |
| 90 . | *** | BEGIN | PW LINE REROUTE DUE TO SQ REPLACEMENT/NEW PW NOZZLE LOCATION | | | | | | | | | | | | | | | | | | | | |
| 91 . | ***** | | | | | | | | | | | | | | | | | | | | | | |
| 92 . | | 002N02 | 1.3790 | 0.7644 | | | | | | | | | | | | | | | | | | | |
| 93 . | | | | | EXP=1.502, | | | | | | | | | | | | | | | | | | |
| 94 . | | | | | OD=16.0,TRICK=.843, | | | | | | | | | | | | | | | | | | |
| 95 . | | | | | LBS/FT=219.86, | | | | | | | | | | | | | | | | | | |
| 96 . | | | | | DTITLE=PW NOZZLE, | | | | | | | | | | | | | | | | | | |
| 97 . | DLD | N02 0.8746 | | 0.4848 | DPRESS=1350,PPRESS=1360, | | | | | | | | | | | | | | | | | | |
| 98 . | *** | 005 2-2.020 | | 1-2.423 | TFOR= 15,MULTI=1., | | | | | | | | | | | | | | | | | | |
| 99 . | | | | | JOINT=BTWELD, | | | | | | | | | | | | | | | | | | |
| 100 . | | | | | MAT=8A336-GR,F22, | | | | | | | | | | | | | | | | | | |
| 101 . | | | | | SC=18800,SN=17817, | | | | | | | | | | | | | | | | | | |
| 102 . | | | | | E=30.686, | | | | | | | | | | | | | | | | | | |
| 103 . | | | | | TEMP=567,EXP=4.1864, | | | | | *A | | TERM1 | | | | | | | | | | | |
| 104 . | | | | | TEMP=440,EXP=3.160, | | | | | *B | | TERM2 | | | | | | | | | | | |
| 105 . | | | | | TEMP=250,EXP=1.45, | | | | | *C | | TERM3 | | | | | | | | | | | |
| 106 . | | | | | TEMP=120,EXP=0.376, | | | | | *D | | TERM4 | | | | | | | | | | | |
| 107 . | | | | | TEMP=583,EXP=4.534, | | | | | *E | | TERM5 | | | | | | | | | | | |
| 108 . | | | | | TEMP=408,EXP=2.872, | | | | | *F | | TERM6 | | | | | | | | | | | |
| 109 . | | | | | EXP=-0.2992,TEMP=32, | | | | | *G | | TERM7 | | | | | | | | | | | |
| 110 . | | | | | TEMP=70,EXP=0., | | | | | *H | | TERM8 | | | | | | | | | | | |
| 111 . | *** | 006 1-0.519 | | -1-0.7655 | TEMP=70.,EXP=0., | | | | | *O | | TERM8 | | | | | | | | | | | |
| 112 . | DLD | 006 0.9613 | | -0.2756 | JOINT=BTWELD, | | | | | | | | | | | | | | | | | | |
| | | | | | TFOR= 14,MULTI=1., | | | | | | | | | | | | | | | | | | |

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| | | | | | | | | |
|-----|---|-----|-------------|------------|---|---|----|-------|
| 113 | . | 007 | -11-10-5/8 | | | SEG-2, | . | |
| 114 | . | | | | | SC-15000,SN-15000, | . | |
| 115 | . | | | | | R-27.986, | . | |
| 116 | . | | | | | TEMP-367,EXP-4.2766, | *A | THRM1 |
| 117 | . | | | | | TEMP-440,EXP-3.068, | *B | THRM2 |
| 118 | . | | | | | TEMP-250,EXP-1.40, | *C | THRM3 |
| 119 | . | | | | | TEMP-120,EXP-0.382, | *D | THRM4 |
| 120 | . | | | | | TEMP-583,EXP-4.433, | *E | THRM5 |
| 121 | . | | | | | TEMP-408,EXP-2.774, | *F | THRM6 |
| 122 | . | | | | | EXP--0.2988,TEMP-32, | *G | THRM7 |
| 123 | . | | | | | TEMP-78,EXP-0., | *H | THRM8 |
| 124 | . | | | | | OD=16.8,THICK=.843, | *O | THRM9 |
| 125 | . | | | | | LBS/FT-210.66, | . | |
| 126 | . | | | | | ADDNT=274, | . | |
| 127 | . | | | | | | . | |
| 128 | . | RAD | 007 .8480 | -.8299 | | AA-721E3,BTI-HL5016, | . | |
| 129 | . | | | | | RSNAME=IS810B, | *S | MRS1 |
| 130 | . | | | | | RSNAME=IS813S, | *T | MRS2 |
| 131 | . | DLD | 007 | -1.0 | | TFOR= 13,MULTI=1., | . | |
| 132 | . | | 070 | -4-3-3/8 | | JOINT=BTWELD, | . | |
| 133 | . | | 07H | -8-10-5/8 | | SEG=2, | . | |
| 134 | . | RAD | 07H -0.707 | 0.707 | | | . | |
| 135 | . | | | | | AA-1469.93E3,BTI-HL5016, | . | |
| 136 | . | | | | | RSNAME=IS810B, | *S | MRS1 |
| 137 | . | | | | | RSNAME=IS813S, | *T | MRS2 |
| 138 | . | RAD | 07H -0.707 | -0.707 | | | . | |
| 139 | . | | | | | AA-2363.24E3,BTI-HL5016, | . | |
| 140 | . | | | | | RSNAME=IS810B, | *S | MRS1 |
| 141 | . | | | | | RSNAME=IS813S, | *T | MRS2 |
| 142 | . | | | | | | . | |
| 143 | . | | 009 | -5-4 | | ADDNT=450, | . | |
| 144 | . | | | | | | . | |
| 145 | . | SFD | 009 | 1.0 | | BTI-HL5016, | . | |
| 146 | . | | | | | JOINT=BTWELD, | . | |
| 147 | . | | 09A | -2-6 | | JOINT=BTWELD, | . | |
| 148 | . | | 09B -5-9.31 | 0-5.212 | L | TFOR= 12,MULTI=1., | . | |
| 149 | . | DLD | 09B -0.9972 | 0.9750 | L | JOINT=BTWELD, | . | |
| 150 | . | | 09C | -5-0 | | | . | |
| 151 | . | | 010 | -0-9-13/16 | | DTI-CUT LOCK, | . | |
| 152 | . | | | | | | . | |
| 153 | . | *** | | | | END OF YW LINE REROUTE DUE TO SG REPLACEMENT/NEW FW NOZZLE LOCATION | . | |
| 154 | . |  |  |  |  | ..... | . |  |
| 155 | . | | 10X | -0-7-1/2 | | JOINT=END, | . | |
| 156 | . | | 011 | -0-7-1/2 | | JOINT=BTWELD, | . | |
| 157 | . | | | | | OD=18.6,THICK=0.937, | . | |
| 158 | . | | | | | LBS/FT-264.22, | . | |
| 159 | . | | | | | LBS/FT-272.95, | . | |
| 160 | . | DLD | 011 | 1.0 | | TFOR= 11,MULTI=-1, | . | |
| 161 | . | | 012 | -0-9 | | EXP=1.0, | . | |
| 162 | . | | | | | ADDNT=25, | . | |
| 163 | . | | 12A | -1-0 | | EXP=1.0, | . | |
| 164 | . | | | | | ADDNT=25, | . | |
| 165 | . | | 013 | -1-0 | | EXP=1.0, | . | |
| 166 | . | | | | | ADDNT=50, | . | |
| 167 | . | | 014 | -4-0 | L | | . | |
| 168 | . | | | | | JOINT=BTWELD, | . | |
| 169 | . | | 015 -2.732 | 1.1211 | | DTITLE=FW9018680001, | . | |
| 170 | . | | | | | ADDNT=450, | . | |
| 171 | . | SFB | 015 0.3796 | 0.9251 | | AA-632.37E3, | . | |
| 172 | . | | | | | RSNAME=INT08E, | *S | MRS1 |
| 173 | . | | | | | RSNAME=INT08E, | *T | MRS2 |

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| | | | | | | | | |
|-----|---|--------|----------|-----------|---------|----------------------|----|------|
| 174 | . | 030 | -1.1564 | | 0.4745 | DTITLE-FW9018SH0001, | . | |
| 175 | . | ***SPD | 030 | 1.0 | | | . | |
| 176 | . | SPR | 030 | 1.0 | | FORCE=0136.,AA-1., | . | |
| 177 | . | 020 | -1.007 | | 0.41325 | | . | |
| 178 | . | | | | | DTITLE=1.SFW10750A2, | . | |
| 179 | . | | | | | SIF=1.0,ADDNT=25, | . | |
| 180 | . | 029 | -0.9254 | | 0.3746 | SIF=1.0,ADDNT=25, | . | |
| 181 | . | 032 | -1.3877 | | 0.5695 | SIF=1.0, | . | |
| 182 | . | | | | | ADDNT=25, | . | |
| 183 | . | 035 | -0.8866 | | 0.3630 | | . | |
| 184 | . | | | | | DTITLE-FW9018HL5009, | . | |
| 185 | . | SNB | 035 | 1.0 | | AA=1141.7503, | . | |
| 186 | . | | | | | RSNAME=INTOBE, | *S | MRS1 |
| 187 | . | | | | | RSNAME=INTSSE, | *T | MRS2 |
| 188 | . | 040 | -0.62539 | | 0.2570 | | . | |
| 189 | . | | | | | DTITLE-FW9018HL5004, | . | |
| 190 | . | | | | | SEGNT=2, | . | |
| 191 | . | | | | | ADDNT=850, | . | |
| 192 | . | SNB | 040 | 0.3796 | 0.9251 | AA=737.00803, | . | |
| 193 | . | | | | | RSNAME=INTOBE, | *S | MRS1 |
| 194 | . | | | | | RSNAME=INTSSE, | *T | MRS2 |
| 195 | . | DLD | 040 | 0.9256 | -0.3799 | TFOR= 10,MULTI=-1, | . | |
| 196 | . | 045 | -4.96297 | | 2.03659 | | . | L |
| 197 | . | | | | | JOINT=BTWELD, | . | |
| 198 | . | 050 | | 6-1-13/16 | | | . | |
| 199 | . | | | | | DTITLE-FW9018HL5007, | . | |
| 200 | . | | | | | ADDNT=400, | . | |
| 201 | . | | | | | SIF=2.1, | . | |
| 202 | . | SNB | 050 | | 1.0 | AA=1763.00803, | . | |
| 203 | . | | | | | RSNAME=INTOBE, | *S | MRS1 |
| 204 | . | | | | | RSNAME=INTSSE, | *T | MRS2 |
| 205 | . | DLD | 050 | | -1.0 | TFOR= 9,MULTI=-1, | . | |
| 206 | . | 055 | | 2-0 | | | . | |
| 207 | . | | | | | DTITLE-FW9018HL5008, | . | |
| 208 | . | | | | | SEGNT=2, | . | |
| 209 | . | | | | | ADDNT=850, | . | |
| 210 | . | SNB | 055 | 1.0 | | AA=709803, | . | |
| 211 | . | | | | | RSNAME=INTOBE, | *S | MRS1 |
| 212 | . | | | | | RSNAME=INTSSE, | *T | MRS2 |
| 213 | . | 060 | | 3-2 | | | . | L |
| 214 | . | | | | | JOINT=BTWELD, | . | |
| 215 | . | 065 | -2-9 | | | DTITLE-FW9018SE0006, | . | |
| 216 | . | SNB | 065 | 0.9932 | 0.1167 | AA=481.00803, | . | |
| 217 | . | | | | | RSNAME=INTOBE, | *S | MRS1 |
| 218 | . | | | | | RSNAME=INTSSE, | *T | MRS2 |
| 219 | . | 067 | -1-1 | | | JOINT=BTWELD, | . | |
| 220 | . | 070 | -1-2-5/8 | | | | . | |
| 221 | . | | | | | DTITLE-FW9018SH0002, | . | |
| 222 | . | | | | | SEGNT=2, | . | |
| 223 | . | ***SPD | 070 | 1.0 | | | . | |
| 224 | . | SPR | 070 | 1.0 | | FORCE=8497.,AA-1., | . | |
| 225 | . | | | | | JOINT=BTWELD, | . | |
| 226 | . | DLD | 071 | -3-3-3/4 | | TFOR= 8,MULTI=-1, | . | |
| 227 | . | | | | | JOINT=BTWELD,SEG=3, | . | |
| 228 | . | 075 | -3-3-5/8 | | | | . | |
| 229 | . | | | | | DTITLE-FW9018HL5005, | . | |
| 230 | . | | | | | SEGNT=2, | . | |
| 231 | . | RAD | 075 | 1.0 | | AA=876.84803, | . | |
| 232 | . | | | | | RSNAME=INTOBE, | *S | MRS1 |
| 233 | . | | | | | RSNAME=INTSSE, | *T | MRS2 |
| 234 | . | 080 | -3-3-1/8 | | | | . | L |

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| | | | | | |
|-----|---|-----|-----------|------------|------------|
| 235 | . | | | | |
| 236 | . | 085 | -0.6776 | 0.6776 | |
| 237 | . | | | | |
| 238 | . | SNB | 085 | -0.7071 | -0.7071 |
| 239 | . | | | | |
| 240 | . | | | | |
| 241 | . | 086 | -1.0496 | 1.0496 | |
| 242 | . | DLD | 086 | 0.707 | -0.707 |
| 243 | . | | 087 | -2.1213 | 2.1213 |
| 244 | . | | | | |
| 245 | . | 090 | -1.76777 | 1.76777 | L |
| 246 | . | | | | |
| 247 | . | 094 | -7.4614 | -7.4614 | |
| 248 | . | | | | |
| 249 | . | RAD | 094 | | 1.0 |
| 250 | . | | | | |
| 251 | . | | | | |
| 252 | . | DLD | 094 | 0.707 | 0.707 |
| 253 | . | | 092 | -1.04593 | -1.04593 |
| 254 | . | | | | |
| 255 | . | | | | |
| 256 | . | SNB | 092 | -0.7071 | 0.7071 |
| 257 | . | | | | |
| 258 | . | | | | |
| 259 | . | 095 | -10.09837 | -10.09837 | L |
| 260 | . | | | | |
| 261 | . | 097 | -7-11-3/4 | | |
| 262 | . | | | | |
| 263 | . | | | | |
| 264 | . | SNB | 097 | | 1.0 |
| 265 | . | | | | |
| 266 | . | 099 | -3-2-1/16 | | |
| 267 | . | | | | |
| 268 | . | | | | |
| 269 | . | RAD | 099 | | 1.0 |
| 270 | . | | | | |
| 271 | . | | | | |
| 272 | . | DLD | 099 | 1.0 | |
| 273 | . | | 100 | -3-10-7/16 | L |
| 274 | . | | | | |
| 275 | . | | 101 | | -3-1-5/8 |
| 276 | . | RAD | 101 | .8750 | .4850 |
| 277 | . | | | | |
| 278 | . | | | | |
| 279 | . | DLD | 101 | | 1.0 |
| 280 | . | | 11A | | -0-10 |
| 281 | . | RAD | 11A | .8090 | -.5070 |
| 282 | . | | | | |
| 283 | . | | | | |
| 284 | . | | 102 | | -4-9-3/8 L |
| 285 | . | | | | |
| 286 | . | | 10A | -4-1-1/2 | |
| 287 | . | | | | |
| 288 | . | RAD | 10A | | 1.0 |
| 289 | . | | | | |
| 290 | . | | | | |
| 291 | . | DLD | 10A | 1.0 | |
| 292 | . | | 105 | -6-9 | |
| 293 | . | | 110 | -6-4-5/8 | |
| 294 | . | ANC | 110 | .037895 | -.06168 |
| 294 | . | | | | -.01080 |

| | | | | | |
|----------------------|----|-------|-------|-------|-------|
| JOINT-BTWELD, | . | | | | |
| DTITLE-FW9018880007, | . | | | | |
| ADDWT-870, | . | | | | |
| AA-998.00E03, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| TFOR= 7,MULTI--1, | . | | | | |
| DTITLE-SLEEVES280, | . | | | | |
| SEGMT-2, | . | | | | |
| JOINT-BTWELD, | . | | | | |
| SEGMT-2, | . | | | | |
| DTITLE-FW9018HLS002, | . | | | | |
| AA-1097E03, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| TFOR= 6,MULTI--1, | . | | | | |
| DTITLE-FW9018HLS003, | . | | | | |
| ADDWT-460, | . | | | | |
| SEGMT-2, | . | | | | |
| AA-487.00E3, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| SEGMT-2, | . | | | | |
| JOINT-BTWELD, | . | | | | |
| DTITLE-FW9018HLS004, | . | | | | |
| ADDWT-870, | . | | | | |
| SIF=2.1, | . | | | | |
| AA-902E03, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| DTITLE-FW1018HLS001, | . | | | | |
| AA-532.80E03, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| TFOR= 8,MULTI--1, | . | | | | |
| JOINT-BTWELD, | . | | | | |
| DTITLE-FW9018HLS013, | . | | | | |
| AA-3620.00E03, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| TFOR= 4,MULTI--1, | . | | | | |
| DTITLE-FW9018HLS013, | . | | | | |
| AA-1093.00E03, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| JOINT-BTWELD, | . | | | | |
| DTITLE-FW9018HLS012, | . | | | | |
| ADDWT-450, | . | | | | |
| AA-1128.4E3, | . | | | | |
| RNAME-INTOBE, | *S | MRS1 | | | |
| RNAME-INTSSE, | *T | MRS2 | | | |
| TFOR= 2,MULTI--1, | . | | | | |
| SIF=1.9, | . | | | | |
| DTITLE-PEN M-5, | *W | WT1 | THRM1 | THRM2 | THRM3 |
| | | THRM5 | THRM6 | THRM7 | THRM4 |

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295 . AWC 110 -.26115 .2352 .07226 *P . THRS
296 . AWC 110 *R . SAM1 SAM2 MR1 MR2
297 .
298 . COSAX=1,COSAZ=0,
299 . COSCX=0,COSCY=1,
300 . AA=6.486,AB=6.486,AC=6.486,
301 . AAA=7.45E9,ARB=7.45E9,
302 . ARC=7.45E9,
303 . DX=.0269,DY=.00337,DZ=.0361,*X SAM1
304 . DX=.0489,DZ=.00577,DY=.0602,*Y SAM2
305 . PHASE=COMT,
306 . RESNAME=CMT09E, *S MR1
307 . RESNAME=CMT09E, *T MR2
308 . *****
309 . ***ADD MPNDW.FOR
310 . *****
311 . *****
312 . ACE TITLE= DRZ 2ND CMT SHELL EL.
313 . ACE 37' TO 68'
314 . ACE RESNAME=CMT09E,
315 . ACE TYP=3,POI=24,
316 . ACE DIR-X
317 . .5000, .0750, .0000, .1500, .9000, .2000,
318 . 1.0000, .2300, 1.1000, .3000, 1.1800, .3300,
319 . 1.8700, .3300, 2.5000, .2000, 3.3000, .2000,
320 . 3.8000, .6700, 5.0000, .6700, 5.5000, .6000,
321 . 6.5000, .2550, 7.4000, .2550, 7.8000, .2432,
322 . 8.2000, .1742, 8.9000, .1630, 9.4000, .2321,
323 . 11.0000, .5400, 13.5000, .5400, 14.3000, .1600,
324 . 20.0000, .1050, 35.0000, .1050, 35.0010, .1050,
325 . ACE DIR-Y
326 . .8500, .1000, 1.0000, .1000, 2.6000, .2300,
327 . 4.4700, .2750, 5.4700, .2750, 10.0000, .2800,
328 . 11.0000, .5250, 13.3000, .5250, 14.0000, .3625,
329 . 15.0000, .2532, 15.5000, .2500, 15.0000, .1730,
330 . 18.4000, .1200, 22.0000, .1000, 35.0000, .1000,
331 . 35.0010, .1000, 35.0020, .1000, 35.0030, .1000,
332 . 35.0040, .1000, 35.0050, .1000, 35.0060, .1000,
333 . 35.0070, .1000, 35.0080, .1000, 35.0090, .1000,
334 . ACE DIR-X
335 . .5000, .0800, .6000, .0800, .7900, .1500,
336 . .9000, .2000, 1.0000, .2500, 1.3000, .3300,
337 . 1.8600, .3300, 2.0000, .2900, 3.0000, .1700,
338 . 3.5000, .2600, 4.6000, .2600, 4.7000, .3360,
339 . 5.0000, .1905, 5.2000, .1800, 7.5000, .1800,
340 . 8.0000, .1700, 8.4000, .1700, 8.8000, .2286,
341 . 10.1000, .4316, 10.1500, .0800, 14.0000, .6500,
342 . 17.0000, .1350, 25.0000, .0800, 35.0000, .0800,
343 . ROA
344 . ACE TITLE= DRZ 3RD CMT SHELL EL.
345 . ACE 37' TO 68'
346 . ACE RESNAME=CMT09E,
347 . ACE TYP=3,POI=23,
348 . ACE DIR-X
349 . .3000, .0700, .6000, .1850, .7700, .2965,
350 . 1.0000, .4500, 1.2000, .5900, 1.4500, .5000,
351 . 2.5000, .4000, 2.6000, .4280, 3.0000, .5000,
352 . 3.5000, .6800, 4.0000, 1.7000, 5.0000, 1.7000,
353 . 5.5000, .9890, 6.0000, .3500, 7.3000, .3500,
354 . 9.5000, .3952, 10.0000, .5467, 10.7000, .7600,
355 . 13.5000, .7600, 15.7000, .3079, 16.6000, .2470,

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| | | | | | | | | |
|-----|-----|----------|--------|----------|-------------------------------|----------|---------|--|
| 356 | . | 20.0000, | .1775, | 35.0000, | .1700, | | | |
| 357 | ACE | | | | DIR-Y | | | |
| 358 | . | 1.0000, | .1800, | 2.7000, | .4100, | 4.8000, | .4800, | |
| 359 | . | 8.0500, | .4850, | 10.8000, | .6000, | 13.5000, | .6000, | |
| 360 | . | 15.0000, | .2750, | 21.5000, | .1600, | 35.0000, | .1600, | |
| 361 | . | 25.0010, | .1800, | 35.0020, | .1600, | 35.0030, | .1600, | |
| 362 | . | 35.0040, | .1600, | 35.0050, | .1600, | 35.0060, | .1600, | |
| 363 | . | 35.0070, | .1600, | 35.0080, | .1600, | 35.0090, | .1600, | |
| 364 | . | 35.0100, | .1600, | 35.0110, | .1600, | 35.0120, | .1600, | |
| 365 | . | 35.0130, | .1600, | 35.0140, | .1600, | | | |
| 366 | ACE | | | | DIR-X | | | |
| 367 | . | .3000, | .0700, | .5000, | .1653, | .6000, | .2010, | |
| 368 | . | .7000, | .3200, | 1.0000, | .5000, | 1.2000, | .5500, | |
| 369 | . | 1.0000, | .5500, | 2.1000, | .4600, | 2.4000, | .3900, | |
| 370 | . | 3.0000, | .8000, | 3.9000, | .9400, | 6.3000, | .9400, | |
| 371 | . | 8.0000, | .4000, | 10.5000, | 1.1250, | 18.0000, | 1.1250, | |
| 372 | . | 22.0000, | .4800, | 27.0000, | .2700, | 35.0000, | .2500, | |
| 373 | . | 35.0010, | .2500, | 35.0020, | .2500, | 35.0030, | .2500, | |
| 374 | . | 35.0040, | .2500, | 35.0050, | .2500, | | | |
| 375 | IOA | | | | | | | |
| 376 | ACE | | | | TITLE- ONE 2ND INT STR EL 37' | | | |
| 377 | ACE | | | | TO S2' | | | |
| 378 | ACE | | | | RSHAME-INTSSE, | | | |
| 379 | ACE | | | | TYP-3,POI-26, | | | |
| 380 | ACE | | | | DIR-X | | | |
| 381 | . | .4000, | .0800, | .5000, | .0800, | .7000, | .1480, | |
| 382 | . | .9100, | .2200, | 1.0000, | .2400, | 1.1000, | .2700, | |
| 383 | . | 1.2000, | .2800, | 1.9000, | .2800, | 2.8000, | .2870, | |
| 384 | . | 3.0000, | .1975, | 3.8000, | .2448, | 4.0000, | .2600, | |
| 385 | . | 4.4000, | .2600, | 5.0000, | .3500, | 5.4000, | .1600, | |
| 386 | . | 6.1000, | .6400, | 7.8000, | .6400, | 7.9000, | .5400, | |
| 387 | . | 9.0000, | .5400, | 11.0000, | .3200, | 16.0000, | .1100, | |
| 388 | . | 24.0000, | .1100, | 25.0000, | .0974, | 26.5000, | .0900, | |
| 389 | . | 35.0000, | .0900, | 35.0010, | .0900, | | | |
| 390 | ACE | | | | DIR-Y | | | |
| 391 | . | 1.0000, | .0900, | 2.4000, | .2125, | 4.0000, | .2450, | |
| 392 | . | 4.4000, | .2500, | 5.3000, | .2500, | 5.8000, | .2450, | |
| 393 | . | 7.9000, | .1975, | 9.9000, | .1770, | 12.0000, | .1383, | |
| 394 | . | 11.0000, | .1300, | 16.0000, | .1300, | 16.5000, | .1600, | |
| 395 | . | 21.0000, | .1600, | 22.0000, | .1170, | 25.5000, | .1170, | |
| 396 | . | 27.0000, | .1100, | 33.0000, | .0750, | 35.0000, | .0750, | |
| 397 | . | 35.0010, | .0750, | 35.0020, | .0750, | 35.0030, | .0750, | |
| 398 | . | 35.0040, | .0750, | 35.0050, | .0750, | 35.0060, | .0750, | |
| 399 | . | 35.0070, | .0750, | 35.0080, | .0750, | | | |
| 400 | ACE | | | | DIR-X | | | |
| 401 | . | .4000, | .0800, | .5000, | .0800, | .6000, | .1010, | |
| 402 | . | .7000, | .1283, | .9100, | .2200, | 1.1000, | .2700, | |
| 403 | . | 1.2000, | .2800, | 1.9000, | .2800, | 2.4000, | .2235, | |
| 404 | . | 3.0500, | .1757, | 3.3800, | .1641, | 3.4000, | .1687, | |
| 405 | . | 4.2000, | .2300, | 4.4000, | .2587, | 4.9000, | .1875, | |
| 406 | . | 5.0000, | .3800, | 5.4000, | .4200, | 5.5000, | .5000, | |
| 407 | . | 7.0200, | .5080, | 7.7000, | .3500, | 8.1000, | .3750, | |
| 408 | . | 10.0000, | .1750, | 12.0000, | .1604, | 15.0000, | .1350, | |
| 409 | . | 20.0000, | .1100, | 35.0000, | .1100, | | | |
| 410 | IOA | | | | | | | |
| 411 | ACE | | | | TITLE- ONE 3RD INT STR EL 37' | | | |
| 412 | ACE | | | | TO S2' | | | |
| 413 | ACE | | | | RSHAME-INTSSE, | | | |
| 414 | ACE | | | | TYP-3,POI-20, | | | |
| 415 | ACE | | | | DIR-X | | | |
| 416 | . | .5000, | .1600, | 1.1000, | .3800, | 1.8500, | .5800, | |

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| | | | | | | | | |
|-----|---|----------|---------|----------|---|----------|---------|---|
| 417 | . | 1.9000, | .8473, | 3.0000, | .3987, | 4.0000, | .1979, | . |
| 418 | . | 4.0300, | .4000, | 4.0000, | .4200, | 5.0000, | 1.5000, | . |
| 419 | . | 5.0000, | 1.5000, | 5.2000, | 1.3900, | 7.1000, | 1.9200, | . |
| 420 | . | 5.3000, | 1.9200, | 5.0000, | 1.3600, | 10.0500, | .4700, | . |
| 421 | . | 11.0000, | .4700, | 15.0000, | .2281, | 17.0000, | .1900, | . |
| 422 | . | 24.0000, | .1900, | 40.0000, | .1800, | . | . | . |
| 423 | . | ACR | . | . | DIR-Y | . | . | . |
| 424 | . | 1.0000, | .1450, | 2.0000, | .3750, | 4.5000, | .4250, | . |
| 425 | . | 5.0000, | .4250, | 5.2000, | .3400, | 12.0000, | .2400, | . |
| 426 | . | 20.0000, | .2400, | 35.0000, | .1100, | 40.0000, | .1000, | . |
| 427 | . | 40.0000, | .1000, | 40.0000, | .1000, | 40.0000, | .1000, | . |
| 428 | . | 40.0000, | .1000, | 40.0000, | .1000, | 40.0000, | .1000, | . |
| 429 | . | 40.0000, | .1000, | 40.0000, | .1000, | 40.0000, | .1000, | . |
| 430 | . | 40.0100, | .1000, | 40.0110, | .1000, | . | . | . |
| 431 | . | ACR | . | . | DIR-Z | . | . | . |
| 432 | . | .5000, | .1600, | 1.2000, | .5000, | 1.0000, | .5000, | . |
| 433 | . | 4.0000, | .7700, | 5.1000, | 1.0500, | 6.9000, | 1.0500, | . |
| 434 | . | 0.0000, | 1.2300, | 14.0000, | 1.2300, | 20.0000, | .3500, | . |
| 435 | . | 30.0000, | .2600, | 40.0000, | .2600, | 40.0010, | .2600, | . |
| 436 | . | 40.0020, | .2600, | 40.0030, | .2600, | 40.0040, | .2600, | . |
| 437 | . | 40.0050, | .2600, | 40.0060, | .2600, | 40.0070, | .2600, | . |
| 438 | . | 40.0080, | .2600, | 40.0090, | .2600, | . | . | . |
| 439 | . | BOA | . | . | . | . | . | . |
| 440 | . | ACR | . | . | TITLE- ONE 2ND INT STRUCT BL. | . | . | . |
| 441 | . | ACR | . | . | 83' | . | . | . |
| 442 | . | ACR | . | . | RESNAME-180308, | . | . | . |
| 443 | . | ACR | . | . | TYP-3,POI-24, | . | . | . |
| 444 | . | ACR | . | . | DIR-X | . | . | . |
| 445 | . | .4100, | .1900, | .5000, | .1900, | 1.1000, | .4000, | . |
| 446 | . | 2.0000, | .4000, | 1.4000, | .2000, | 5.7000, | 1.1000, | . |
| 447 | . | 9.1000, | 1.1000, | 10.2000, | .9000, | 12.0000, | .9000, | . |
| 448 | . | 13.0000, | .8000, | 15.0000, | .3500, | 25.0000, | .3500, | . |
| 449 | . | 16.0000, | .1900, | 50.0000, | .1900, | . | . | . |
| 450 | . | ACR | . | . | DIR-Y | . | . | . |
| 451 | . | .9000, | .0800, | 2.0000, | .2200, | 1.4000, | .2000, | . |
| 452 | . | 1.0000, | .2000, | 1.0000, | .2000, | 10.4000, | .1650, | . |
| 453 | . | 11.0000, | .1900, | 14.0000, | .1900, | 15.0000, | .2300, | . |
| 454 | . | 20.5000, | .2300, | 22.0000, | .1900, | 20.0000, | .1900, | . |
| 455 | . | 35.0000, | .0850, | 60.0000, | .0850, | . | . | . |
| 456 | . | ACR | . | . | DIR-Z | . | . | . |
| 457 | . | .4100, | .1900, | .5000, | .1900, | 1.1000, | .4000, | . |
| 458 | . | 2.0000, | .4000, | 1.4000, | .2000, | 5.7000, | 1.1000, | . |
| 459 | . | 9.0000, | 1.1000, | 10.1000, | .9000, | 12.0000, | .9000, | . |
| 460 | . | 13.0000, | .8000, | 15.0000, | .3500, | 25.0000, | .3500, | . |
| 461 | . | 16.0000, | .1900, | 50.0000, | .1900, | . | . | . |
| 462 | . | BOA | . | . | TITLE- ONE 3RD INT STRUCT BL. | . | . | . |
| 463 | . | ACR | . | . | 83' | . | . | . |
| 464 | . | ACR | . | . | RESNAME-180308, | . | . | . |
| 465 | . | ACR | . | . | TYP-3,POI-15, | . | . | . |
| 466 | . | ACR | . | . | . | . | . | . |
| 467 | . | *** | . | . | ***** NO DIGITIZED DATA AVAILABLE - READ FROM GRAPH ***** | . | . | . |
| 468 | . | *** | . | . | ***** | . | . | . |
| 469 | . | *** | . | . | ***** | . | . | . |
| 470 | . | ACR | . | . | DIR-X | . | . | . |
| 471 | . | .4200, | .3000, | .8000, | .5000, | 1.0500, | .7000, | . |
| 472 | . | 2.0000, | .7000, | 1.0200, | .5000, | 4.1000, | 1.2000, | . |
| 473 | . | 7.0000, | 2.0500, | 10.0000, | 2.0500, | 12.0000, | 1.6000, | . |
| 474 | . | 14.0000, | 1.6000, | 18.0000, | .8000, | 21.0000, | .6600, | . |
| 475 | . | 24.0000, | .4200, | 31.0000, | .3300, | 40.0000, | .3300, | . |
| 476 | . | ACR | . | . | DIR-Y | . | . | . |
| 477 | . | 1.0000, | .1750, | 2.0000, | .4000, | 1.1000, | .4750, | . |

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INPUT CARD IMAGES

MS101/MS GARGO/ 45

(FOI253) 11/15/99 FOI253 PAGE

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| | | | | | | | | |
|-----|-----|----------|---------|----------|---------|----------|---------|------------------------------|
| 476 | . | 8.0000, | .4750, | 8.0000, | .3000, | 12.0000, | .3000, | . |
| 479 | . | 13.0000, | .3400, | 21.0000, | .3400, | 22.0000, | .2900, | . |
| 480 | . | 27.0000, | .2900, | 38.0000, | .1400, | 40.0000, | .1400, | . |
| 481 | . | 45.0000, | .1400, | 50.0000, | .1400, | 60.0000, | .1400, | . |
| 482 | . | | | | | | | DIR-X |
| 483 | ACE | | | | | | | |
| 484 | . | .4200, | .3000, | .8000, | .5000, | 1.0500, | .7000, | . |
| 485 | . | 2.0000, | .7000, | 3.0200, | .5000, | 4.1000, | 1.2000, | . |
| 486 | . | 7.0000, | 2.0500, | 10.0000, | 2.0500, | 12.0000, | 1.5000, | . |
| 487 | . | 14.0000, | 1.6000, | 18.0000, | .8000, | 21.0000, | .6000, | . |
| 488 | . | 26.0000, | .4200, | 31.0000, | .3300, | 40.0000, | .3300, | . |
| 489 | BOA | | | | | | | |
| 490 | ACE | | | | | | | TITLE- OBE 2ND FOR SPECT EL. |
| 491 | ACE | | | | | | | SI.38, |
| 492 | ACE | | | | | | | RSNAME-SGROEN, |
| 493 | ACE | | | | | | | TYP-3,FOI-15, |
| 494 | . | | | | | | | DIR-X |
| 495 | . | 1.0000, | .2500, | 2.0000, | .4000, | 3.0000, | .2500, | . |
| 496 | . | 4.0000, | .7500, | 5.0000, | 4.0500, | 7.0000, | 4.0500, | . |
| 497 | . | 8.0000, | .8000, | 10.0000, | .5100, | 20.0000, | .4000, | . |
| 498 | ACE | 30.0000, | .3500, | 40.0000, | .3500, | | | DIR-Y |
| 499 | . | | | | | | | |
| 500 | . | 0.7000, | .0600, | 1.0000, | .1000, | 2.0000, | .2000, | . |
| 501 | . | 3.5000, | .3100, | 5.0000, | .3100, | 7.0000, | .3600, | . |
| 502 | . | 8.5000, | .3000, | 10.0000, | .6800, | 17.0000, | .6800, | . |
| 503 | . | 16.0000, | .2000, | 20.0000, | .1000, | 30.0000, | .1200, | . |
| 504 | ACE | 40.0000, | .1000, | | | | | DIR-Z |
| 505 | . | | | | | | | |
| 506 | . | 1.0000, | .2000, | 2.0000, | .4000, | 3.5000, | .2500, | . |
| 507 | . | 4.0000, | .7500, | 5.0000, | 3.2000, | 7.0000, | 3.2000, | . |
| 508 | . | 8.0000, | 1.0000, | 10.0000, | .5000, | 11.0000, | .3000, | . |
| 509 | . | 20.0000, | .3000, | 30.0000, | .3500, | 40.0000, | .2500, | . |
| 510 | BOA | | | | | | | |
| 511 | ACE | | | | | | | TITLE- OBE 1ND FOR SPECT EL. |
| 512 | ACE | | | | | | | SI.38, |
| 513 | ACE | | | | | | | RSNAME-SGROEN, |
| 514 | ACE | | | | | | | TYP-3,FOI-12, |
| 515 | . | | | | | | | DIR-X |
| 516 | . | 1.0000, | .5000, | 2.0000, | .7000, | 3.0000, | .5000, | . |
| 517 | . | 4.0000, | 1.5000, | 5.0000, | 6.4000, | 7.0000, | 6.4000, | . |
| 518 | . | 8.0000, | 1.6000, | 10.0000, | 1.0200, | 20.0000, | .8000, | . |
| 519 | ACE | 30.0000, | .7000, | 40.0000, | .7000, | | | DIR-Y |
| 520 | . | | | | | | | |
| 521 | . | 0.7000, | .1200, | 1.0000, | .1000, | 2.0000, | .3600, | . |
| 522 | . | 3.5000, | .5000, | 5.0000, | .5000, | 8.0000, | .6400, | . |
| 523 | . | 9.0000, | 1.1000, | 17.0000, | 1.1000, | 18.0000, | .4000, | . |
| 524 | ACE | 20.0000, | .3600, | 30.0000, | .2400, | 40.0000, | .2000, | DIR-Z |
| 525 | . | | | | | | | |
| 526 | . | 1.0000, | .5000, | 2.0000, | .8000, | 3.5000, | .5000, | . |
| 527 | . | 4.0000, | 1.5000, | 5.0000, | 4.0000, | 7.0000, | 4.0000, | . |
| 528 | . | 8.0000, | 2.0000, | 10.0000, | .1000, | 11.0000, | .6000, | . |
| 529 | . | 20.0000, | .6000, | 30.0000, | .6000, | 40.0000, | .5000, | . |
| 530 | BOA | | | | | | | |
| 531 | CMB | | | | | | | CD=0*THRM1, |
| 532 | CMB | | | | | | | C1=THRM1&THRM2&THRM3&THRM4 |
| 533 | CMB | | | | | | | &CO, |
| 534 | CMB | | | | | | | C2=THRM1&THRM2&THRM3&THRM4 |
| 535 | CMB | | | | | | | &CO, |
| 536 | CMB | | | | | | | C3=WT1&C1, |
| 537 | CMB | | | | | | | C4=WT1&C2, |
| 538 | CMB | | | | | | | D1=C1&THRM7, |
| | | | | | | | | D2=C2&THRM7, |

INPUT CARD IMAGES

539 . CMB
 540 . CMB
 541 . CMB
 542 . CMB
 543 . CMB
 544 . CMB
 545 . CMB
 546 . CMB
 547 . CMB
 548 . CMB
 549 . CMB
 550 . CMB
 551 . CMB
 552 . CMB
 553 . CMB
 554 . CMB
 555 . CMB
 556 . CMB
 557 . CMB
 558 . CMB
 559 . CMB
 560 . CMB
 561 . CMB
 562 . RLS
 563 .
 564 .
 565 . RLS
 566 .
 567 . STD
 568 .
 569 . SLA
 570 . TEA
 571 .
 572 . OLA
 573 . OLA
 574 . PSA
 575 .
 576 .
 577 .
 578 . END

D3-WT1-D1,
 D4-WT1-D2,
 SEISA1-1.*MRS1,
 SEISA2-1.*MRS2,
 DSA-ABS(THRM1),
 THRMF-D1*THRM5&THRM6,
 THRMF-D2*THRM5&THRM6,
 D5-WT1*THRMF*CO,
 D6-WT1*THRMF*CO,
 NORMF-C3&C1&CO,
 NORMF-C4&C2&CO,
 C1-SEISA1&SAM1,
 A1-DJ&WT1&CO,
 A2-D4&WT1&CO,
 UPSETF-A1-C5,
 UPSETF-A2-C5,
 C6-SEISA2&SAM2,
 A3-D5*DBA,
 A4-D6*CG,
 FAULTF-A3&COLA4,
 A5-D4-DBA,
 A6-D4-C6,
 FAULTF-A5&COLA4,
 LIST-WT1*THRM1*THRM2*THRM3*
 THRM4*THRM5*THRM6*THRM7*DSA*
 SEISA1*SEISA2*SAM1*SAM2,
 LIST-NORMF*NORMN*UPSETF*
 UPSETF*FAULTF*FAULTN,
 LIST-THRMF*THRMN*FAULTF*
 FAULTF*D5*D6,
 INCLUDE-WT1,
 INCLUDE-WT1*THRM1*THRM2*THRM3*
 THRM4*THRM5*THRM6*THRM7*SAM1,
 INCLUDE-WT1*SEISA1,LEVEL-B,
 INCLUDE-WT1*SEISA2,LEVEL-D,
 INCLUDE-WT1*THRM1*THRM2*
 THRM3*THRM4*THRM5*THRM6*
 THRM7*SAM1*SEISA1,
 FFB-0.0,

ME101

INPUT CARD IMAGES

| INPUT CARD SEQ | 1 | 11 | 21 | 31 | 41 | 51 | 61 | 71 | 80 | LOAD CASE(S) |
|----------------|-------|----------------------|------------------|--|--|-------------------------------|-------|-----------------------------|-------|--------------|
| 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |  |
| 2 | *** | DATA FILE FOR UNIT-2 | | | | MPWDHU2.INP | | | | |
| 3 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |  |
| 4 | | CIL | | | | OUTPUT=SHORT, | | | | |
| 5 | | HSD | | | | TITLE=FEEDWATER *PW* SYSTEM - | | | | |
| 6 | | | | | | SG 2D TO M5, | | | | |
| 7 | | | | | | PROBNO=23435001, | | | | |
| 8 | | | | | | PROBNO=2C159RCS037, | | | | |
| 9 | | | | | | USER=PAWT, | | | | |
| 10 | | | | | | UNITS=2, | | | | |
| 11 | | | | | | MODE=200,PER=.005, | | | | |
| 12 | | | | | | INTG=MODAL,DAMP=0.03, | | | | |
| 13 | | | | | | TZERO=0.,TFIN=1., | | | | |
| 14 | RUN | | | | | LDCASE=WT1(N), | | | | |
| 15 | RUN | | | | | LDCASE=THRM2(B-M), | | | | |
| 16 | RUN | | | | | LDCASE=THRM3(C-M), | | | | |
| 17 | RUN | | | | | LDCASE=THRM6(F-M), | | | | |
| 18 | RUN | | | | | LDCASE=TIME1(N), | | | | |
| 19 | *** | | | | | | | | | |
| 20 | *** | WT1 | --- | NORMAL OPERATING WEIGHT ANALYSIS | | | | | | |
| 21 | *** | TIME1 | --- | WATER HAMMER | | | | | | |
| 22 | *** | THRM2 | --- | THERMAL NORMAL OPERATING MODE (LOADING,UNLOADING) @ 440 DEGREE | | | | | | |
| 23 | *** | THRM3 | --- | THERMAL NORMAL OPERATING MODE (LOADING,UNLOADING) @ 250 DEGREE | | | | | | |
| 24 | *** | THRM6 | --- | THERMAL FAULTED OPERATING MODE @ 408 DEGREE | | | | | | |
| 25 | *** | | | | | | | | | |
| 26 | *** | CAD, ISO. | | 3C3699FN433 SRT.01 REV. 4 | | | | | | |
| 27 | *** | | | | | | | | | |
| 28 | *** | MATL:SA-508 | CL. 3A | FOR SGR NOZZLE | | | | | | |
| 29 | *** | MATL:SA-508 | GR.2 CL.2 | FOR (IF ANY) ST SPOOL NEAR NOZZLE | | | | | | |
| 30 | *** | MATL:SA-336 | GR.F22 CL.3-PIPE | 16" SCH.80 FROM SGR NOZ THRU TOP ELB OF RISER | | | | | | |
| 31 | *** | MATL:SA-333 | GR.6 | AFTER TOP ELBOW OF RISER & REST; 16" SCH 80/ 16" SCH 80 | | | | | | |
| 32 | *** | | | | | | | | | |
| 33 | *** | | | | | | | | | |
| 34 | *** | MODEL | | STEAM GENERATOR LOOP D | | | | | | |
| 35 | *** | | | | | | | | | |
| 36 | SAP | 002 | | 62.719 | | | | | | |
| 37 | *** | | | 001,002,W02 | ARE NODES ON SGR CL,SGR SURFACE, FW NOZ END RESPECTIVELY | | | | | |
| 38 | *** | | | | | | | | | |
| 39 | *** | 002 | | | | | | | | |
| 40 | *** | 001 | -7-3.208 | -4-0.340 | | OD=199.42,THI=4.71, | | | | |
| 41 | *** | | | | | LBS/FT=1.00, | | | | |
| 42 | *** | | | | | Z=27.866, | | | | |
| 43 | *** | | | | | CODE=SC3W75,CLASS=2, | | | | |
| 44 | *** | NOZZLE MATERIAL | | | | MAT=SA508-CL. 3A, | | | | |
| 45 | *** | | | | | SC=22500,SH=22500, | | | | |
| 46 | *** | | | | | DPRESS=1.0,PPRESS=1.0, | | | | |
| 47 | *** | | | | | TEMP=567,EXP=4.2766, | *A | TAG NOT USED - CARD IGNORED | | |
| 48 | *** | | | | | TEMP=440,EXP=3.068, | *B | THRM2 | | |
| 49 | *** | | | | | TEMP=250,EXP=1.40, | *C | THRM3 | | |
| 50 | *** | | | | | TEMP=120,EXP=0.382, | *D | TAG NOT USED - CARD IGNORED | | |
| 51 | *** | | | | | TEMP=583,EXP=4.433, | *E | TAG NOT USED - CARD IGNORED | | |
| 52 | *** | | | | | TEMP=408,EXP=2.774, | *F | THRM6 | | |
| 53 | *** | | | | | EXP=-0.2908,TEMP=32, | *G | TAG NOT USED - CARD IGNORED | | |
| 54 | *** | | | | | TEMP=70,EXP=0., | *H | TAG NOT USED - CARD IGNORED | | |
| 55 | *** | | | | | TEMP=70.,EXP=0., | *O | TAG NOT USED - CARD IGNORED | | |

INPUT CARD IMAGES

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56 . ***
57 . *** LINE NO. 18*FM-1014-GA2
58 . ANC 001 0.812 1.980 1.893
59 . ANC 001
60 . ANC 001
61 .
62 . COSAX=0.8746,COSAL=0.4848,
63 . COSCX=-.4848,COSCL=0.8746,
64 . RSNAM=SGROBE,
65 . RSNAM=SGRSE,
66 . DTITLE=CENTER SG,
67 . DX=-.299,DY=-.0150,DZ=-.333,
68 . DX=-.488,DY=-.031,DZ=-.537,
69 . PRASE=SG,
70 . ROT-X=0.313E-3,
71 . ROT-Y=0.332E-3,
72 . ROT-Z=-0.165E-3,
73 . ETI=1R121NS0101D,
74 .
75 . *****
76 . *** BEGIN FM LINE REROUTS DUE TO SG REPLACEMENT/NEW FM NOZZLE LOCATION
77 . *****
78 . 002M02 1.3790 0.7644
79 . SIF-1.502,
80 . OD=16.0,THICK=.843,
81 . LBS/FT=210.66,
82 . DTITLE=FM NOZZLE,
83 . DPRESS=1350,PPRESS=1360,
84 . TFOR= 15,MULTI=1.,
85 . JOINT=BTWELD,
86 . MAT=SA136-GR.F22,
87 . SC=18800,SH=17817,
88 . E=30.6E6,
89 . TEMP=567,EXP=4.3864,
90 . TEMP=440,EXP=3.160,
91 . TEMP=250,EXP=1.45,
92 . TEMP=120,EXP=0.378,
93 . TEMP=583,EXP=4.534,
94 . TEMP=408,EXP=2.872,
95 . EXP=-0.2892,TEMP=32,
96 . TEMP=70,EXP=0.,
97 . TEMP=70,EXP=0.,
98 . JOINT=BTWELD,
99 .
100 . TFOR= 14,MULTI=1.,
101 . SEG=2,
102 . SC=15000,SH=15000,
103 . E=27.9E6,
104 . TEMP=567,EXP=4.2766,
105 . TEMP=440,EXP=3.068,
106 . TEMP=250,EXP=1.40,
107 . TEMP=120,EXP=0.382,
108 . TEMP=583,EXP=4.433,
109 . TEMP=408,EXP=2.774,
110 . EXP=-0.2908,TEMP=32,
111 . TEMP=70,EXP=0.,
112 . TEMP=70,EXP=0.,
113 . OD=16.0,THICK=.843,
114 . LBS/FT=210.66,
115 . ADDHT=274,
116 .
117 . AA=721E3,ETI=NL5016,
118 . RSNAM=IS8308,
119 . RSNAM=IS8388,

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| | | | | | | | | |
|-----|--------|-----|------------|---------|---|---|----|-----------------------------|
| 117 | DLD | 007 | -1.0 | | | TFOR= 13,MULTI=1.. | | |
| 118 | | 070 | -4-1-3/8 | | | JOINT-BTWELD, | | |
| 119 | | 07H | -8-10-8/8 | | | SEQ=2, | | |
| 120 | RAD | 07H | -0.707 | 0.707 | | | | |
| 121 | | | | | | AA-1469.93E3,RTI-ML5015, | | |
| 122 | | | | | | RSNAME=INT30B, | *S | TAG NOT USED - CARD IGNORED |
| 123 | | | | | | RSNAME=INT33S, | *T | TAG NOT USED - CARD IGNORED |
| 124 | RAD | 07H | -0.707 | -0.707 | | | | |
| 125 | | | | | | AA-2363.24E3,RTI-ML5015, | | |
| 126 | | | | | | RSNAME=INT30B, | *S | TAG NOT USED - CARD IGNORED |
| 127 | | | | | | RSNAME=INT33S, | *T | TAG NOT USED - CARD IGNORED |
| 128 | | 009 | -5-4 | | | ADDWT=450, | | |
| 129 | | | | | | | | |
| 130 | SPD | 009 | 1.0 | | | | | |
| 131 | | | | | | RTI-ML5014, | | |
| 132 | | 09A | -2-6 | | L | JOINT-BTWELD, | | |
| 133 | | 09B | -5-9.11 | 0-5.212 | L | JOINT-BTWELD, | | |
| 134 | DLD | 09B | -0.9972 | 0.0750 | | TFOR= 12,MULTI=1.. | | |
| 135 | | 09C | -5-0 | | | JOINT-BTWELD, | | |
| 136 | | 010 | -0-9-13/16 | | | | | |
| 137 | | | | | | DTI-CUT LOCH, | | |
| 138 | *** | | | | | END OF PW LINE ROUTE DUE TO SG REPLCMENT/NEW PW NOZZLE LOCATION | | |
| 139 | ***** | | | | | ***** | | |
| 140 | | 10X | -0-7-1/2 | | | JOINT-BTWELD, | | |
| 141 | | 011 | -0-7-1/2 | | | JOINT-BTWELD, | | |
| 142 | | | | | | OD=18.0,THICK=0.937, | | |
| 143 | | | | | | LBS/FT=264.22, | | |
| 144 | *** | | | | | LBS/FT=272.95, | | |
| 145 | DLD | 011 | 1.0 | | | TFOR= 11,MULTI=-1, | | |
| 146 | | 012 | -0-9 | | | SIF=1.0, | | |
| 147 | | | | | | ADDWT=25, | | |
| 148 | | 12A | -1-0 | | | SIF=1.0, | | |
| 149 | | | | | | ADDWT=25, | | |
| 150 | | 013 | -1-0 | | | SIF=1.0, | | |
| 151 | | | | | | ADDWT=50, | | |
| 152 | | 014 | -4-0 | | L | | | |
| 153 | | | | | | JOINT-BTWELD, | | |
| 154 | | 015 | -2.732 | 1.1211 | | DTITLE=FW9018SH0001, | | |
| 155 | | | | | | ADDWT=450, | | |
| 156 | SWB | 015 | 0.3796 | 0.9251 | | AA=632.37803, | | |
| 157 | | | | | | RSNAME=INT05E, | *S | TAG NOT USED - CARD IGNORED |
| 158 | | | | | | RSNAME=INT33S, | *T | TAG NOT USED - CARD IGNORED |
| 159 | | 030 | -1.1564 | 0.4745 | | DTITLE=FW9018SH0001, | | |
| 160 | ***SPD | 030 | | 1.0 | | | | |
| 161 | SPR | 030 | | 1.0 | | FORCE=8136,,AA=1., | | |
| 162 | | 028 | -1.007 | 0.41325 | | | | |
| 163 | | | | | | DTITLE=1.SPW1075GA2, | | |
| 164 | | | | | | SIF=1.0,ADDWT=25, | | |
| 165 | | 029 | -0.9254 | 0.3746 | | SIF=1.0,ADDWT=25, | | |
| 166 | | 032 | -1.3877 | 0.5695 | | SIF=1.0, | | |
| 167 | | | | | | ADDWT=25, | | |
| 168 | | 035 | -0.8866 | 0.3638 | | | | |
| 169 | | | | | | DTITLE=FW9018RL5009, | | |
| 170 | SWB | 035 | | 1.0 | | AA=1141.7E03, | | |
| 171 | | | | | | RSNAME=INT05E, | *S | TAG NOT USED - CARD IGNORED |
| 172 | | | | | | RSNAME=INT33S, | *T | TAG NOT USED - CARD IGNORED |
| 173 | | 040 | -0.62639 | 0.2570 | | | | |
| 174 | | | | | | DTITLE=FW9018RL5004, | | |
| 175 | | | | | | SEGMENT=2, | | |
| 176 | | | | | | ADDWT=850, | | |
| 177 | SWB | 040 | 0.3796 | 0.9251 | | AA=737.00E03, | | |

INPUT CARD IMAGES

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| | | | | | | | | |
|-------|--------|--------------|--|-----------|---|----------------------|----|-----------------------------|
| 178 . | | | | | | RENAME-INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 179 . | | | | | | RENAME-INTSSE, | *T | TAG NOT USED - CARD IGNORED |
| 180 . | DLD | 040 0.9256 | | -0.3799 | | TFOR= 10,MULTI=-1, | | |
| 181 . | | 045 -4.96297 | | 2.03659 | L | | | |
| 182 . | | | | | | JOINT-BTWELD, | | |
| 183 . | | 050 | | 6-1-13/16 | | | | |
| 184 . | | | | | | DTITLE-FW9018HL5007, | | |
| 185 . | | | | | | ADDWT=400, | | |
| 186 . | | | | | | SIF=2,1, | | |
| 187 . | SNB | 050 | | 1.0 | | AA=1763.00E03, | | |
| 188 . | | | | | | RENAME-INTOBE, | | |
| 189 . | | | | | | RENAME-INTSSE, | *S | TAG NOT USED - CARD IGNORED |
| 190 . | DLD | 050 | | -1.0 | | TFOR= 9,MULTI=-1, | *T | TAG NOT USED - CARD IGNORED |
| 191 . | | 056 | | 2-0 | | | | |
| 192 . | | | | | | DTITLE-FW9018HL5008, | | |
| 193 . | | | | | | SEGMT=2, | | |
| 194 . | | | | | | ADDWT=850, | | |
| 195 . | SNB | 055 1.0 | | | | AA=709E03, | | |
| 196 . | | | | | | RENAME-INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 197 . | | | | | | RENAME-INTSSE, | *T | TAG NOT USED - CARD IGNORED |
| 198 . | | 060 | | 3-2 | L | | | |
| 199 . | | | | | | JOINT-BTWELD, | | |
| 200 . | | 065 -2-9 | | | | DTITLE-FW9018SS0006, | | |
| 201 . | SNB | 065 | | 0.9932 | | AA=461.00E03, | | |
| 202 . | | | | 0.1167 | | RENAME-INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 203 . | | | | | | RENAME-INTSSE, | *T | TAG NOT USED - CARD IGNORED |
| 204 . | | 067 -1-3 | | | | JOINT-BTWELD, | | |
| 205 . | | 070 -1-2-5/8 | | | | | | |
| 206 . | | | | | | DTITLE-FW9018SH0002, | | |
| 207 . | | | | | | SEGMT=2, | | |
| 208 . | ***SPD | 070 | | 1.0 | | | | |
| 209 . | SFR | 070 | | 1.0 | | FORCE=8497,AA=1., | | |
| 210 . | | 071 -3-3-3/4 | | | | JOINT-BTWELD, | | |
| 211 . | DLD | 071 1.0 | | | | TFOR= 8,MULTI=-1, | | |
| 212 . | | 072 -12-11 | | | | JOINT-BTWELD,SEG=3, | | |
| 213 . | | 075 -3-3-5/8 | | | | | | |
| 214 . | | | | | | DTITLE-FW9018HL5005, | | |
| 215 . | | | | | | SEGMT=2, | | |
| 216 . | RAD | 075 | | 1.0 | | AA=876.84E03, | | |
| 217 . | | | | | | RENAME-INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 218 . | | | | | | RENAME-INTSSE, | *T | TAG NOT USED - CARD IGNORED |
| 219 . | | 080 -3-3-1/8 | | | L | | | |
| 220 . | | | | | | JOINT-BTWELD, | | |
| 221 . | | 085 -0.6776 | | 0.6776 | | DTITLE-FW9018SS0007, | | |
| 222 . | | | | | | ADDWT=870, | | |
| 223 . | SNB | 085 -0.7071 | | -0.7071 | | AA=998.00E03, | | |
| 224 . | | | | | | RENAME-INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 225 . | | | | | | RENAME-INTSSE, | *T | TAG NOT USED - CARD IGNORED |
| 226 . | | 086 -1.0496 | | 1.0496 | | | | |
| 227 . | DLD | 086 0.707 | | -0.707 | | TFOR= 7,MULTI=-1, | | |
| 228 . | | 087 -2.1213 | | 2.1213 | | DTITLE-SLEEVES280, | | |
| 229 . | | | | | | SEGMT=2, | | |
| 230 . | | 090 -1.76777 | | 1.76777 | L | | | |
| 231 . | | | | | | JOINT-BTWELD, | | |
| 232 . | | 094 -7.4614 | | -7.4614 | | SEGMT=2, | | |
| 233 . | | | | | | DTITLE-FW9018HL5002, | | |
| 234 . | RAD | 094 | | 1.0 | | AA=1097E03, | | |
| 235 . | | | | | | RENAME-INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 236 . | | | | | | RENAME-INTSSE, | *T | TAG NOT USED - CARD IGNORED |
| 237 . | DLD | 094 0.707 | | 0.707 | | TFOR= 6,MULTI=-1, | | |
| 238 . | | 092 -1.04593 | | -1.04593 | | DTITLE-FW9018HL5003, | | |

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| | | | | | | | | |
|-------|-------|-----|------------|--------------------------------|----|-----------------------------|--|--|
| 239 . | | | | ADDNT=450, | | | | |
| 240 . | | | | SEGMENT=2, | | | | |
| 241 . | SNB | 092 | -0.7071 | AA=487.00E3, | | | | |
| 242 . | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED | | |
| 243 . | | | | RSNAME=INTSSE, | *T | TAG NOT USED - CARD IGNORED | | |
| 244 . | | 091 | -10.09837 | SEGMENT=2, | | | | |
| 245 . | | | | JOINT=BTWELD, | | | | |
| 246 . | | 097 | -7-11-3/4 | DTITLE=FW9018HLS006, | | | | |
| 247 . | | | | ADDNT=670, | | | | |
| 248 . | | | | SIF=2.1, | | | | |
| 249 . | SNB | 097 | | AA=902E03, | | | | |
| 250 . | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED | | |
| 251 . | | | | RSNAME=INTSSE, | *T | TAG NOT USED - CARD IGNORED | | |
| 252 . | | 099 | -3-2-1/16 | | | | | |
| 253 . | | | | DTITLE=FW1018HLS001, | | | | |
| 254 . | RAD | 099 | 1.0 | AA=522.80E03, | | | | |
| 255 . | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED | | |
| 256 . | | | | RSNAME=INTSSE, | *T | TAG NOT USED - CARD IGNORED | | |
| 257 . | DLD | 099 | 1.0 | TFOR= 5,MULTI=-1, | | | | |
| 258 . | | 100 | -3-10-7/16 | | | | | |
| 259 . | | | | JOINT=BTWELD, | | | | |
| 260 . | | 101 | | DTITLE=FW9018HLS013, | | | | |
| 261 . | RAD | 101 | .8750 | AA=1420.00E03, | | | | |
| 262 . | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED | | |
| 263 . | | | | RSNAME=INTSSE, | *T | TAG NOT USED - CARD IGNORED | | |
| 264 . | DLD | 101 | | TFOR= 6,MULTI=-1, | | | | |
| 265 . | | 11A | | DTITLE=FW9018HLS013, | | | | |
| 266 . | RAD | 11A | .8090 | AA=1892.00E03, | | | | |
| 267 . | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED | | |
| 268 . | | | | RSNAME=INTSSE, | *T | TAG NOT USED - CARD IGNORED | | |
| 269 . | | 102 | | | | | | |
| 270 . | | | | JOINT=BTWELD, | | | | |
| 271 . | | 10A | -4-1-1/2 | DTITLE=FW9018HLS012, | | | | |
| 272 . | | | | ADDNT=450, | | | | |
| 273 . | RAD | 10A | | AA=1128.4E3, | | | | |
| 274 . | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED | | |
| 275 . | | | | RSNAME=INTSSE, | *T | TAG NOT USED - CARD IGNORED | | |
| 276 . | DLD | 10A | 1.0 | TFOR= 2,MULTI=-1, | | | | |
| 277 . | | 105 | -5-9 | SIF=1.9,DTITLE=PEN M-5, | | | | |
| 278 . | | 110 | -0-4-5/8 | | | | | |
| 279 . | ANC | 110 | .037895 | | *N | WT1 THRM2 THRM3 THRM6 TIME1 | | |
| 280 . | ANC | 110 | -.26115 | | *P | TAG NOT USED - CARD IGNORED | | |
| 281 . | ANC | 110 | .2352 | | *R | TAG NOT USED - CARD IGNORED | | |
| 282 . | | | | | | | | |
| 283 . | | | | COSAX=1,COSAZ=0, | | | | |
| 284 . | | | | COSCX=0,COSCY=1, | | | | |
| 285 . | | | | AA=6.486,AB=6.486,AC=6.486, | | | | |
| 286 . | | | | ARA=7.45E3,ARB=7.45E3, | | | | |
| 287 . | | | | ARC=7.45E3, | | | | |
| 288 . | | | | DX=.0268,DY=.00337,DE=.0351,*X | | TAG NOT USED - CARD IGNORED | | |
| 289 . | | | | DX=.0482,DY=.00577,DE=.0602,*Y | | TAG NOT USED - CARD IGNORED | | |
| 290 . | | | | PHASE=CONT, | | | | |
| 291 . | | | | RSNAME=CMTOBE, | *S | TAG NOT USED - CARD IGNORED | | |
| 292 . | | | | RSNAME=CMTSSE, | *T | TAG NOT USED - CARD IGNORED | | |
| 293 . | ***** | | | | | | | |
| 294 . | END | | | | | | | |

Current ME101 deck contains 1 ADD FILES
 FROM TO FILE NAME

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INPUT CARD IMAGES

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INPUT CARD SEQ 1 21 31 41 51 61 71 80 LOAD CASE(S)
1 .....
2 *** DATA FILE FOR UNIT-2 WFNLDL2.INF .....
3 .....
4 CTL OUTPUT=SHORT. ....
5 NED TITLE=FEEDWATER *PW* SYSTEM - .....
6 ..... SG 2D TO NS, .....
7 ..... PROJNO=23438001, .....
8 ..... PROSNO=2C159RC1037, .....
9 ..... USER=PWNI, .....
10 ..... UNITS=2, .....
11 ..... MODES=200,PER=.005, .....
12 ..... INTO=MODAL,DAMP=0.03, .....
13 ..... TFRQ=0.,TFIN=0.65, .....
14 . RUN LDCASE=WT1(W), .....
15 . RUN LDCASE=TINEL1(T), .....
16 . RUN LDCASE=TINEL3(U), .....
17 . RUN LDCASE=TINEL3(V), .....
18 .....
19 *** WT1 --- NORMAL OPERATING WEIGHT ANALYSIS .....
20 *** TIME1 --- WATER HAMMER .....
21 *** TFRM2 --- THERMAL NORMAL OPERATING MODE (LOADING,UNLOADING) @ 440 DEGREE .....
22 *** TFRM3 --- THERMAL NORMAL OPERATING MODE (LOADING,UNLOADING) @ 250 DEGREE .....
23 *** TFRM6 --- THERMAL FAULTED OPERATING MODE @ 400 DEGREE .....
24 .....
25 *** CAD. ISO. 3C369FFW433 SHT.01 REV. 4 .....
26 .....
27 *** MATL:SA-508 CL. 3A FOR SGR NOZZLE .....
28 *** MATL:SA-508 OR.2 CL.2 FOR ( IF ANY) ST SPOOL NEAR NOZZLE .....
29 *** MATL:SA-336 OR.722 CL.3-PIPE 16" SCH.80 FROM SGR NOZ THRU TOP ELB OF RISER .....
30 *** MATL:SA-333 OR.6 AFTER TOP ELBOW OF RISER & REST. 16" SCH 80/ 18" SCH 80 .....
31 .....
32 .....
33 *** MODEL STEAM GENERATOR LOOP D .....
34 .....
35 . SGP 002 82.719 .....
36 . *** 001,002,002 ARE NODES ON SGR CL,SGR SURFACE; PW NOZ END RESPECTIVELY .....
37 . *** .....
38 . 002 .....
39 . 001 -7-3.208 -4-0.340 OD=199.42,THI=4.71, .....
40 . LBS/FT=1.80, .....
41 . W=27.886, .....
42 . CODE=SCM75,CLASS=2, .....
43 . *** NOZZLE MATERIAL MAT=SA508-CL. 3A, .....
44 . SC=22500,SH=22500, .....
45 . DPRESS=1.0,VPRESS=1.0, .....
46 . *** .....
47 . *** LINK NO. 18*PW-1014-OA2 .....
48 . ANC 001 0.832 1.980 1.893 *M WT1 .....
49 . ANC 001 *O TAG NOT USED - CARD IGNORED .....
50 . ANC 001 *R TAG NOT USED - CARD IGNORED .....
51 . .....
52 . DTITLE=CENTER SG, .....
53 . STI=IR121NSG101D, .....
54 . *** BEGIN PW LINE REROUTE DUE TO SG REPLACEMENT/NEW PW NOZZLE LOCATION .....
55 . *****

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INPUT CARD IMAGES

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| Line | Code | Card | Value | Unit | Description | Tag | Time |
|------|------|----------------|-------|-----------|--------------------------|-----|-----------------------------|
| 56 | . | ***** | | | | | |
| 57 | . | RAD 001 1.0 | | | TDIS-243, | *T | TIMEL1 |
| 58 | . | RAD 001 | 1.0 | | TDIS-242, | *T | TIMEL1 |
| 59 | . | RAD 001 | | 1.0 | TDIS-241, | *T | TIMEL1 |
| 60 | . | RAR 001 1.0 | | | TROT-246, | *T | TIMEL1 |
| 61 | . | RAR 001 | 1.0 | | TROT-245, | *T | TIMEL1 |
| 62 | . | RAR 001 | | 1.0 | TROT-244, | *T | TIMEL1 |
| 63 | . | RAD 001 1.0 | | | TDIS-253, | *U | TIMEL2 |
| 64 | . | RAD 001 | 1.0 | | TDIS-252, | *U | TIMEL2 |
| 65 | . | RAD 001 | | 1.0 | TDIS-251, | *U | TIMEL2 |
| 66 | . | RAR 001 1.0 | | | TROT-256, | *U | TIMEL2 |
| 67 | . | RAR 001 | 1.0 | | TROT-255, | *U | TIMEL2 |
| 68 | . | RAR 001 | | 1.0 | TROT-254, | *U | TIMEL2 |
| 69 | . | RAD 001 1.0 | | | TDIS-223, | *V | TIMEL3 |
| 70 | . | RAD 001 | 1.0 | | TDIS-222, | *V | TIMEL3 |
| 71 | . | RAD 001 | | 1.0 | TDIS-221, | *V | TIMEL3 |
| 72 | . | RAR 001 1.0 | | | TROT-226, | *V | TIMEL3 |
| 73 | . | RAR 001 | 1.0 | | TROT-225, | *V | TIMEL3 |
| 74 | . | RAR 001 | | 1.0 | TROT-224, | *V | TIMEL3 |
| 75 | . | 002M02 1.3790 | | 0.7664 | SIP-1.502, | | |
| 76 | . | | | | OD-16.0,TWICK-.043, | | |
| 77 | . | | | | LWS/PT-210.66, | | |
| 78 | . | | | | DTITLE-FM NOZZLE, | | |
| 79 | . | | | | DPRESS-1350,FPRESS-1360, | | |
| 80 | . | 005 2-2.020 | | 1-2.423 | JOINT-BTWELD, | | |
| 81 | . | *** | | | MAT-SA336-GR.F22, | | |
| 82 | . | | | | SC-18800,SH-17817, | | |
| 83 | . | | | | E-30.626, | | |
| 84 | . | | | | TEMP-567,EXP-4.3864, | *A | TAG NOT USED - CARD IGNORED |
| 85 | . | | | | TEMP-440,EXP-3.160, | *B | TAG NOT USED - CARD IGNORED |
| 86 | . | | | | TEMP-250,EXP-1.45, | *C | TAG NOT USED - CARD IGNORED |
| 87 | . | | | | TEMP-120,EXP-0.378, | *D | TAG NOT USED - CARD IGNORED |
| 88 | . | | | | TEMP-583,EXP-4.534, | *E | TAG NOT USED - CARD IGNORED |
| 89 | . | | | | TEMP-408,EXP-2.872, | *F | TAG NOT USED - CARD IGNORED |
| 90 | . | | | | EXP--0.2892,TEMP-32, | *G | TAG NOT USED - CARD IGNORED |
| 91 | . | | | | TEMP-70,EXP-0., | *H | TAG NOT USED - CARD IGNORED |
| 92 | . | | | | TEMP-70.,EXP-0., | *O | TAG NOT USED - CARD IGNORED |
| 93 | . | 006 3-8.519 | | -1-0.7655 | JOINT-BTWELD, | | |
| 94 | . | *** SA333-GR.6 | | | SEG-2, | | |
| 95 | . | 007 -11-10-5/8 | | | SC-15000,SH-15000, | | |
| 96 | . | | | | E-27.926, | | |
| 97 | . | | | | TEMP-567,EXP-4.2766, | *A | TAG NOT USED - CARD IGNORED |
| 98 | . | | | | TEMP-440,EXP-3.068, | *B | TAG NOT USED - CARD IGNORED |
| 99 | . | | | | TEMP-250,EXP-1.40, | *C | TAG NOT USED - CARD IGNORED |
| 100 | . | | | | TEMP-120,EXP-0.382, | *D | TAG NOT USED - CARD IGNORED |
| 101 | . | | | | TEMP-583,EXP-4.433, | *E | TAG NOT USED - CARD IGNORED |
| 102 | . | | | | TEMP-408,EXP-2.774, | *F | TAG NOT USED - CARD IGNORED |
| 103 | . | | | | EXP--0.2908,TEMP-32, | *G | TAG NOT USED - CARD IGNORED |
| 104 | . | | | | TEMP-70,EXP-0., | *H | TAG NOT USED - CARD IGNORED |
| 105 | . | | | | TEMP-70.,EXP-0., | *O | TAG NOT USED - CARD IGNORED |
| 106 | . | | | | OD-16.0,TWICK-.043, | | |
| 107 | . | | | | LWS/PT-210.66, | | |
| 108 | . | | | | ADDWT-276, | | |
| 109 | . | | | | | | |
| 110 | . | RAD 007 .6480 | | -.5299 | | | |
| 111 | . | | | | AA-721E3,RTI-HLS016, | | |
| 112 | . | | | | RSNAME-I8810B, | *S | TAG NOT USED - CARD IGNORED |
| 113 | . | | | | RSNAME-I8818S, | *T | TIMEL1 |
| 114 | . | 07G -4-1-3/8 | | | JOINT-BTWELD, | | |
| 115 | . | 07H -8-20-5/8 | | | SEG-2, | | |
| 116 | . | RAD 07H -0.707 | | 0.707 | | | |

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| | | | | | | | | | |
|-------|--------|-----|----------|--|------------|---|----|-----------------------------|--|
| 117 . | | | | | | AA-1469.91E3, BTI-HLS015, | | | |
| 118 . | | | | | | RENAME-18830B, | *S | TAG NOT USED - CARD IGNORED | |
| 119 . | | | | | | RENAME-18838B, | *T | TIMEL1 | |
| 120 . | RAD | 07H | -0.707 | | -0.707 | | | | |
| 121 . | | | | | | AA-2363.24E3, BTI-HLS015, | | | |
| 122 . | | | | | | RENAME-18830B, | *S | TAG NOT USED - CARD IGNORED | |
| 123 . | | | | | | RENAME-18838B, | *T | TIMEL1 | |
| 124 . | | 009 | | | -5-4 | | | | |
| 125 . | | | | | | ADDWT-450, | | | |
| 126 . | SFD | 009 | | | 1.0 | | | | |
| 127 . | | | | | | BTI-HLS014, | | | |
| 128 . | | 09A | | | -2-6 | JOINT-STWELD, | | | |
| 129 . | | 09B | -5-9.31 | | 0-8.212 | JOINT-STWELD, | | | |
| 130 . | | 09C | | | -5-0 | JOINT-STWELD, | | | |
| 131 . | | 010 | | | -0-9-13/16 | | | | |
| 132 . | | | | | | DTI-CUT LOCH, | | | |
| 133 . | *** | | | | | END OF PW LINE REROUTE DUE TO SG REPLACEMENT/NEW PW MOBILE LOCATION | | | |
| 134 . | ..... |  |  |  |  | ..... |  |  |  |
| 135 . | | 10X | | | -0-7-1/2 | JOINT-RSD, | | | |
| 136 . | | 011 | | | -0-7-1/2 | JOINT-STWELD, | | | |
| 137 . | | | | | | OD-18.0, THICK-0.937, | | | |
| 138 . | | | | | | LSB/FT-264.23, | | | |
| 139 . | | | | | | LSB/FT-372.95, | | | |
| 140 . | *** | | | | | SIF-1.0, | | | |
| 141 . | | 012 | | | -0-9 | ADDWT-25, | | | |
| 142 . | | 12A | | | -1-0 | SIF-1.0, | | | |
| 143 . | | | | | | ADDWT-25, | | | |
| 144 . | | 013 | | | -1-0 | SIF-1.0, | | | |
| 145 . | | | | | | ADDWT-50, | | | |
| 146 . | | 014 | | | -4-0 | | | | |
| 147 . | | | | | | JOINT-STWELD, | | | |
| 148 . | | 015 | -2.732 | | 1.1211 | DTITLE-FW9018SR001, | | | |
| 149 . | | | | | | ADDWT-450, | | | |
| 150 . | SMB | 015 | 0.3796 | | 0.9251 | AA-632.37E03, | | | |
| 151 . | | | | | | RENAME-INTORR, | *S | TAG NOT USED - CARD IGNORED | |
| 152 . | | | | | | RENAME-INTSSE, | *T | TIMEL1 | |
| 153 . | | 030 | -1.1564 | | 0.4745 | DTITLE-FW9018SR001, | | | |
| 154 . | ***SPD | 030 | | | 1.0 | | | | |
| 155 . | SPR | 030 | | | 1.0 | FORCE-8134., AA-1., | | | |
| 156 . | | 028 | -1.007 | | 0.41325 | | | | |
| 157 . | | | | | | DTITLE-1.SFN1075GA2, | | | |
| 158 . | | | | | | SIF-1.0, ADDWT-25, | | | |
| 159 . | | 029 | -0.9254 | | 0.3746 | SIF-1.0, ADDWT-25, | | | |
| 160 . | | 032 | -1.3877 | | 0.5695 | SIF-1.0, | | | |
| 161 . | | | | | | ADDWT-25, | | | |
| 162 . | | 035 | -0.8866 | | 0.3638 | | | | |
| 163 . | | | | | | DTITLE-FW9018HLS005, | | | |
| 164 . | SN2 | 035 | | | 1.0 | AA-1141.7E03, | | | |
| 165 . | | | | | | RENAME-INTORR, | *S | TAG NOT USED - CARD IGNORED | |
| 166 . | | | | | | RENAME-INTSSE, | *T | TIMEL1 | |
| 167 . | | 040 | -0.62639 | | 0.2570 | | | | |
| 168 . | | | | | | DTITLE-FW9018HLS004, | | | |
| 169 . | | | | | | SEGMENT-2, | | | |
| 170 . | | | | | | ADDWT-850, | | | |
| 171 . | SMB | 040 | 0.3796 | | 0.9251 | AA-737.0E03, | | | |
| 172 . | | | | | | RENAME-INTORR, | *S | TAG NOT USED - CARD IGNORED | |
| 173 . | | | | | | RENAME-INTSSE, | *T | TIMEL1 | |
| 174 . | | 045 | -4.96297 | | 2.03659 | | | | |
| 175 . | | | | | | JOINT-STWELD, | | | |
| 176 . | | 050 | | | 6-1-13/16 | | | | |
| 177 . | | | | | | DTITLE-FW9018HLS007, | | | |

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| | | | | | | | | |
|-----|---|--------|-----|-----------|-----------|----------------------|----|-----------------------------|
| 178 | . | | | | | ADDWT=400, | . | |
| 179 | . | | | | | SIF=2.1, | . | |
| 180 | . | SMB | 050 | | 1.0 | AA=1763.00E03, | . | |
| 181 | . | | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 182 | . | | | | | RSNAME=INTSSE, | *T | TIMEL1 |
| 183 | . | | 055 | | 2-0 | | . | |
| 184 | . | | | | | DTITLE=FW9018HLS008, | . | |
| 185 | . | | | | | SEGMENT=2, | . | |
| 186 | . | | | | | ADDWT=850, | . | |
| 187 | . | SMB | 055 | 1.0 | | AA=708E03, | . | |
| 188 | . | | | | | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 189 | . | | | | | RSNAME=INTSSE, | *T | TIMEL1 |
| 190 | . | | 060 | | 3-2 | | . | |
| 191 | . | | | | | JOINT=BTWELD, | . | |
| 192 | . | | 065 | -2-9 | | DTITLE=FW9018SS0006, | . | |
| 193 | . | SMB | 065 | | 0.9932 | AA=481.00E03, | . | |
| 194 | . | | | | 0.1167 | RSNAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 195 | . | | | | | RSNAME=INTSSE, | *T | TIMEL1 |
| 196 | . | | 067 | -1-3 | | JOINT=BTWELD, | . | |
| 197 | . | | 070 | -1-2-5/8 | | | . | |
| 198 | . | | | | | DTITLE=FW9018SH0002, | . | |
| 199 | . | | | | | SEGMENT=2, | . | |
| 200 | . | ***SPD | 070 | | 1.0 | | . | |
| 201 | . | SFR | 070 | | 1.0 | FORCE=8497.,AA=1., | . | |
| 202 | . | | 071 | -3-3-3/4 | | JOINT=BTWELD, | . | |
| 203 | . | | 072 | -12-11 | | JOINT=BTWELD,SEG=3, | . | |
| 204 | . | | 075 | -3-3-5/8 | | | . | |
| 205 | . | | | | | DTITLE=FW9018HLS005, | . | |
| 206 | . | | | | | SEGMENT=2, | . | |
| 207 | . | RAD | 075 | | 1.0 | AA=876.84E03, | *S | TAG NOT USED - CARD IGNORED |
| 208 | . | | | | | RSNAME=INTOBE, | *T | TIMEL1 |
| 209 | . | | | | | RSNAME=INTSSE, | . | |
| 210 | . | | 080 | -3-3-1/8 | | | . | |
| 211 | . | | | | | JOINT=BTWELD, | . | |
| 212 | . | | 085 | -0.6776 | 0.6776 | DTITLE=FW9018SS0007, | . | |
| 213 | . | | | | | ADDWT=870, | . | |
| 214 | . | SMB | 085 | -0.7071 | -0.7071 | AA=998.00E03, | *S | TAG NOT USED - CARD IGNORED |
| 215 | . | | | | | RSNAME=INTOBE, | *T | TIMEL1 |
| 216 | . | | | | | RSNAME=INTSSE, | . | |
| 217 | . | | 086 | -1.0496 | 1.0496 | | . | |
| 218 | . | | 087 | -2.1213 | 2.1213 | DTITLE=SLREVE#280, | . | |
| 219 | . | | | | | SEGMENT=2, | . | |
| 220 | . | | 090 | -1.76777 | 1.76777 | | . | |
| 221 | . | | | | | JOINT=BTWELD, | . | |
| 222 | . | | 094 | -7.4614 | -7.4614 | SEGMENT=2, | . | |
| 223 | . | | | | | DTITLE=FW9018HLS002, | . | |
| 224 | . | RAD | 094 | | 1.0 | AA=1897E03, | *S | TAG NOT USED - CARD IGNORED |
| 225 | . | | | | | RSNAME=INTOBE, | *T | TIMEL1 |
| 226 | . | | | | | RSNAME=INTSSE, | . | |
| 227 | . | | 092 | -1.04593 | -1.04593 | DTITLE=FW9018HLS003, | . | |
| 228 | . | | | | | ADDWT=450, | . | |
| 229 | . | | | | | SEGMENT=2, | . | |
| 230 | . | SMB | 092 | -0.7071 | 0.7071 | AA=487.00E3, | *S | TAG NOT USED - CARD IGNORED |
| 231 | . | | | | | RSNAME=INTOBE, | *T | TIMEL1 |
| 232 | . | | | | | RSNAME=INTSSE, | . | |
| 233 | . | | 095 | -10.89837 | -10.89837 | SEGMENT=2, | . | |
| 234 | . | | | | | JOINT=BTWELD, | . | |
| 235 | . | | 097 | -7-11-3/4 | | DTITLE=FW9018HLS006, | . | |
| 236 | . | | | | | ADDWT=870, | . | |
| 237 | . | | | | | SIF=2.1, | . | |
| 238 | . | SMB | 097 | | 1.0 | AA=982E03, | . | |

INPUT CARD IMAGES

WE101/MS GARO/ 45 (FP0119) 11/18/99 FP0119 PAGE

| | | | | | | | | |
|-----|---|-------|-------------------------------------|----------|----------|-----------------------------|----|-----------------------------|
| 239 | . | | | | | RENAME=INTOBE, | *S | TAG NOT USED - CARD IGNORED |
| 240 | . | | | | | RENAME=INTSSE, | *T | TIMEL1 |
| 241 | . | 099 | -3-2-1/16 | | | | | |
| 242 | . | | | | | DTITLE=FW101SHLS001, | | |
| 243 | . | RAD | 099 | 1.0 | | AA-132.0883, | *S | TAG NOT USED - CARD IGNORED |
| 244 | . | | | | | RENAME=INTOBE, | *T | TIMEL1 |
| 245 | . | | | | | RENAME=INTSSE, | | |
| 246 | . | 100 | -3-10-7/16 | | L | | | |
| 247 | . | | | | | JOINT=BTWELD, | | |
| 248 | . | 101 | | | -3-1-5/8 | DTITLE=FW301SHLS013, | | |
| 249 | . | RAD | 101 | .0750 | .4850 | AA-1620.0883, | *S | TAG NOT USED - CARD IGNORED |
| 250 | . | | | | | RENAME=INTOBE, | *T | TIMEL1 |
| 251 | . | | | | | RENAME=INTSSE, | | |
| 252 | . | 11A | | | -0-10 | DTITLE=FW301SHLS013, | *S | TAG NOT USED - CARD IGNORED |
| 253 | . | RAD | 11A | .0090 | -.5876 | AA-1692.0883, | *T | TIMEL1 |
| 254 | . | | | | | RENAME=INTOBE, | | |
| 255 | . | | | | | RENAME=INTSSE, | *S | TAG NOT USED - CARD IGNORED |
| 256 | . | 102 | | | -4-9-3/8 | L | | |
| 257 | . | | | | | JOINT=BTWELD, | | |
| 258 | . | 10A | -4-1-1/2 | | | DTITLE=FW301SHLS012, | | |
| 259 | . | | | | | ADDWT=450, | | |
| 260 | . | RAD | 10A | | 1.0 | AA-1128.423, | *S | TAG NOT USED - CARD IGNORED |
| 261 | . | | | | | RENAME=INTOBE, | *T | TIMEL1 |
| 262 | . | | | | | RENAME=INTSSE, | | |
| 263 | . | 105 | -5-9 | | | SIF-1.9, | | |
| 264 | . | ANC | 110 | -0-4-5/8 | | SIF-1.9,DTITLE=PEN M-5, | *S | WT1 |
| 265 | . | ANC | 110 | | | | *T | TIMEL1 |
| 266 | . | ANC | 110 | | | | *U | TIMEL2 |
| 267 | . | ANC | 110 | | | | *V | TIMEL3 |
| 268 | . | | | | | | | |
| 269 | . | | | | | COSX1=1,COSX2=0, | | |
| 270 | . | | | | | COSX3=0,COSX4=1, | | |
| 271 | . | | | | | AA=6.486,AB=6.486,AC=6.486, | | |
| 272 | . | | | | | ARA=7.452,ARB=7.452, | | |
| 273 | . | | | | | ARC=7.452, | | |
| 274 | . | ***** | | | | | | |
| 275 | . | ***** | | | | | | |
| 276 | . | *** | | | | | | |
| 277 | . | ***** | | | | | | |
| 278 | . | ***** | | | | | | |
| 279 | . | ***** | | | | | | |
| 280 | . | ADD | C:\PANI\STPSCR\RRRBRK4\7632BK4.MFL | | | | *T | TIMEL1 |
| 281 | . | ADD | C:\PANI\STPSCR\RRRBRK15\7632B15.MFL | | | | *U | TIMEL2 |
| 282 | . | ADD | C:\PANI\STPSCR\RRRBRK12\7632B12.MFL | | | | *V | TIMEL3 |
| 283 | . | *** | | | | | | |
| 284 | . | CMS | | | | SEISL=TIMEL1\|TIMEL2\|TIMEL3, | | |
| 285 | . | CMS | | | | LOCA=AMAX{TIMEL1,TIMEL2, | | |
| 286 | . | | | | | TIMEL3}, | | |
| 287 | . | STD | | | | LIST=NONE, | | |
| 288 | . | RLS | | | | LIST=WT1+TIMEL1+TIMEL2+ | | |
| 289 | . | | | | | TIMEL3+LOCA, | | |
| 290 | . | OLA | | | | INCLUD=WT1+SEISL,LEVEL=D, | | |
| 291 | . | *** | | | | | | |
| 292 | . | END | | | | | | |
| 293 | . | ***** | | | | | | |
| 294 | . | ***** | | | | | | |



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

CALC NO RC5037
SHEET NO _____
SHEET REV 5

ORIGINATOR C.BASAVARAJU

DATE _____

DCP# 98-19444-2, SUPP. 0 page of

DCN# 000067

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ATTACHMENT 2.0 PIPE SUPPORT LOADS

PAGES 48

WEIGHT/ THERMAL/SEISMIC/SAM
WATER HAMMER
LOCA

Load Case Names:

- WTX - Dead weight analysis
- WTJx - Static Jet Impingement analysis
- THRMx - Thermal expansion/anchor movement analysis.
- TIMEx - Time history analysis
- SAMx - Seismic anchor movement analysis
- SEISAX - Seismic inertia analysis
- DBA - Design Basis Accident

- NORMP - Normal Positive
- NORMN - Normal Negative
- UPSETP - Upset Positive
- UPSETN - Upset Negative
- FAULTP - Faulted Positive
- FAULTN - Faulted Negative

THRM 1 & THRM 5 : EMERG. / FAULTED
 THRM 2, THRM 3, THRM 4 & THRM 6 : NORMAL / UPSET
 THRM 7 : UPSET / EMERG. / FAULTED.
 THRM 8 : DBA (POST-LOCA)

Support Types:

- RAD - Rigid translational restraint
- RAR - Rigid rotational restraint
- SPR/SPD - Spring hanger
- SNB - Snubber
- ANC - Anchor (may be specified as RAD and RAR in each of the three translational and rotational directions).

Co-ordinates: North = -X (Global)

Note: Spring settings are based on Normal operating (THRM2) case and verified for topping or bottoming out due to movements from all other load cases. Snubbers are set so that thermal movements are not restricted and reserve travel checked for max thermal movements.

_____ THERMAL CASES CONCURRENT WITH WATER HAMMER: THRM 2, OR THRM 3, OR THRM 6

DESIGN FAULTED LOAD (LB.) FOR MFW DU-2

| SUPPORT MK # | DATA PT. | DIR. | | WT. | THERMAL FAULTED | JET LOAD (N/A) | LOCA | WATER HAMMER | FAULTED LOAD | | | Design Load Exdat P.S. Calc |
|------------------------------------|--------------|-------|-----|-------|-----------------|----------------|--------|--------------|--------------|-----------|-------------|-----------------------------|
| | | | | | | | | | WT+TH+ LOCA | WT+TH+ WH | WT+TH+ SSE* | |
| FW-9018-SS-0001 (0.38,0,0.93) | 015 | LAT | POS | 0 | 0 | | 6476 | 2222 | 6476 | 2222 | 6088 | 24592 |
| | | SNB | NEG | | | | -6476 | -23374 | -6476 | -23374 | -5086 | |
| FW-9018-SH-0001 | 030 | Y | POS | | 0 | | | 0 | 0 | 0 | 0 | |
| | | SPD | NEG | -8136 | | | | | -8136 | -8136 | -8136 | -8136 |
| FW-9018-HL-5009 | 035 | Y | POS | 0 | 0 | | 11001 | 68445 | 11001 | 68445 | 9589 | 44614 |
| | | SNB | NEG | | | | -11001 | -68488 | -11001 | -68488 | -9589 | |
| FW-9018-HL-5004 (0.38,0,0.93) | 040 | LAT | POS | 0 | 0 | | 5075 | 54709 | 5075 | 54709 | 6886 | 40689 |
| | | SNB | NEG | | | | -5075 | -65996 | -5075 | -65996 | -6886 | |
| FW-9018-HL-5007 | 050 | Z | POS | 0 | 0 | | 3919 | 84530 | 3919 | 84530 | 8648 | 116000 |
| | | SNB | NEG | | | | -3919 | -85051 | -3919 | -85051 | -8648 | |
| FW-9018-HL-5008 | 055 | X | POS | 0 | 0 | | 8021 | 84797 | 8021 | 84797 | 14752 | 143360 |
| | | SNB | NEG | | | | -8021 | -88573 | -8021 | -88573 | -14752 | |
| FW-9018-SS-0006 | 065 | Y | POS | 0 | 0 | | 7778 | 51103 | 7778 | 51103 | 7833 | 34222 |
| | | SNB | NEG | | | | -7778 | -51469 | -7778 | -51469 | -7833 | |
| FW-9018-SH-0002 | 070 | Y | POS | | 0 | | | 0 | 0 | 0 | 0 | |
| | | SPD | NEG | -8497 | | | | | -8497 | -8497 | -8497 | -8497 |
| FW-9018-HL-5005 | 075 | Y | POS | -4700 | 6969 | | 1530 | 14738 | 3799 | 17007 | 4648 | 20525 |
| | | RIGID | NEG | -4700 | -1179 | | -1530 | -14781 | -7409 | -20640 | -8257 | |
| FW-9018-SS-0007 (-0.71,0,-0.71) | 085 | LAT | POS | 0 | 0 | | 3724 | 79623 | 3724 | 79623 | 9754 | 101510 |
| | | SNB | NEG | | | | -3724 | -84033 | -3724 | -84033 | -9754 | |
| FW-9018-HL-5002 | 094 | Y | POS | -8040 | 349 | | 988 | 20614 | -6703 | 12923 | 0 | 48026 |
| | | RIGID | NEG | -8040 | -6457 | | -988 | -20424 | -15485 | -34921 | -16215 | |
| FW-9018-HL-5003 (-0.71,0,0.71) | 092 | LAT | POS | 0 | 0 | | 1189 | 39782 | 1189 | 39782 | 4825 | 64660 |
| | | SNB | NEG | | | | -1189 | -49436 | -1189 | -49436 | -4825 | |
| FW-9018-HL-5006 | 097 | Z | POS | 0 | 0 | | 1814 | 58986 | 1814 | 58986 | 8213 | 104120 |
| | | SNB | NEG | | | | -1814 | -54660 | -1814 | -54660 | -8213 | |
| FW-9018-HL-5001 | 099 | Y | POS | -4883 | 10239 | | 1078 | 27416 | 6434 | 32772 | 16197 | 36179 |
| | | RIGID | NEG | -4883 | 0 | | -1078 | -28018 | -6961 | -32901 | -15724 | |
| FW-9018-HL-5013 (0.87,0.48,0) | 101 | X+Y | POS | -1662 | 0 | | 993 | 91780 | -669 | 90118 | 6555 | 178720 |
| | | RIGID | NEG | -1662 | -5378 | | -993 | -101375 | -8033 | -108415 | -15257 | |
| FW-9018-HL-5012 | 10A | Z | POS | 71 | 20361 | | 815 | 45063 | 21247 | 65495 | 36900 | 74733 |
| | | RIGID | NEG | 71 | -2339 | | -815 | -53518 | -3083 | -65787 | -18736 | |
| FW-9018-HL-5013 (0.81,-0.59,0) | 101 (11A) | X-Y | POS | 2482 | 28797 | | 463 | 65227 | 31742 | 98508 | 68758 | 118800 |
| | | RIGID | NEG | 2482 | 0 | | -463 | -68463 | 2019 | -65981 | -34999 | |
| FW-1018-HL-5016 (0.85,0,-0.53) | 007 | LAT | POS | -75 | 0 | | 11258 | 21567 | 11183 | 21492 | 19388 | N/A |
| | | RIGID | NEG | -75 | -13935 | | -11258 | -25307 | -25268 | -36317 | -33473 | N/A |
| FW-1018-HL-5015 (-0.71,0,0.71) | 07H | LAT | POS | -21 | 0 | | 8998 | 41214 | 8877 | 41193 | 9022 | N/A |
| | | RIGID | NEG | -21 | -6723 | | -8998 | -37270 | -15642 | -44014 | -15788 | N/A |
| FW-1018-HL-5015 (-0.71,0,-0.71) | 07H | LAT | POS | 8 | 0 | | 23173 | 32759 | 23181 | 32787 | 6301 | N/A |
| | | RIGID | NEG | 8 | -13139 | | -23173 | -32942 | -36304 | -46073 | -18424 | N/A |
| FW-1018-HL-5014 | 009 | Y | POS | -8959 | 0 | | | 0 | -8959 | -8959 | 0 | N/A |
| | | SPD | NEG | -8959 | | | | | -8959 | -8959 | -8959 | N/A |

2C159RCS037

RESTRAINT LOAD SUMMARY

ME101/MS GARO/ 45 (FO1253) 11/18/99 FO1253 PAGE 143

TITLE : FRESHWATER 'FN' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 33430001
PROBLEM NUMBER : 2C159RCS037
USER : PARI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) FX FY FZ, GLOBAL MOMENTS (FT-LB) MX MY MZ, DISPLACEMENT (IN) DX DY DZ. Rows include data for ANC, RAD, and RAD load cases with various node and element identifiers.

DCP# 98-19444-2, SUPP. 0 page of

DCNH 0000067, page 42 of 108

2C1E9RC5037

RESTRAINT LOAD SUMMARY

ME101/MS GARO/ 45 (F01253) 11/15/99 F01253 PAGE 144

TITLE : FRESHWATER *PW* SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C1E9RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) FX, FY, FZ, GLOBAL MOMENTS (FT-LB) MX, MY, MZ, DISPLACEMENT (IN) DX, DY, DZ. Rows include WT1, THERM1-7, DBA, SEISA1-2, SAM1-2 for three different load cases (RAD, SPD, SPR).

DCN# 98-1944-2, SUPP. 0 page of DCN# 000067, page 4-3 of 108

2C159RC5037

RESTRAINT LOAD SUMMARY

ME101/M5 GARO/ 45 (P01253) 11/15/99 P01253 PAGE 140

TITLE : FRESHWATER *FW* SYSTEM - 3D 2D TO MS
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PANI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | |
|-----------|------|--------------|--------------------|--------|----|------------------------|----|----|-------------------|--------|--------|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ |
| 070 | SPR | FW9018SH0002 | | | | | | | | | |
| | | WT1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.011 | 0.001 | -0.013 |
| | | TRM1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.031 | -0.228 | 2.368 |
| | | TRM2 | 0. | 0. | 0. | 0. | 0. | 0. | 0.570 | -0.035 | 1.638 |
| | | TRM3 | 0. | 0. | 0. | 0. | 0. | 0. | 0.209 | 0.129 | 0.616 |
| | | TRM4 | 0. | 1. | 0. | 0. | 0. | 0. | -0.011 | 0.552 | -0.003 |
| | | TRM5 | 0. | 0. | 0. | 0. | 0. | 0. | 0.864 | -0.332 | 2.468 |
| | | TRM6 | 0. | 0. | 0. | 0. | 0. | 0. | 0.506 | 0.029 | 1.451 |
| | | TRM7 | 0. | 1. | 0. | 0. | 0. | 0. | -0.156 | 0.698 | -0.412 |
| | | DBA | 0. | 0. | 0. | 0. | 0. | 0. | 0.180 | 0.062 | 0.245 |
| | | SEISA1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.017 | 0.011 | 0.028 |
| | | SEISA2 | 0. | 0. | 0. | 0. | 0. | 0. | 0.038 | 0.022 | 0.084 |
| | | SAM1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.001 | 0.004 | 0.009 |
| | | SAM2 | 0. | 0. | 0. | 0. | 0. | 0. | 0.002 | 0.007 | 0.014 |
| 075 | RAD | FW9018HL5005 | | | | | | | | | |
| | | WT1 | 0. | -4700. | 0. | 0. | 0. | 0. | 0.011 | -0.005 | -0.018 |
| | | TRM1 | 0. | -911. | 0. | 0. | 0. | 0. | -0.003 | -0.001 | 2.743 |
| | | TRM2 | 0. | 1173. | 0. | 0. | 0. | 0. | -0.029 | 0.001 | 2.628 |
| | | TRM3 | 0. | 4051. | 0. | 0. | 0. | 0. | -0.054 | 0.005 | 2.256 |
| | | TRM4 | 0. | 5812. | 0. | 0. | 0. | 0. | -0.085 | 0.007 | 0.375 |
| | | TRM5 | 0. | -1179. | 0. | 0. | 0. | 0. | 0.000 | -0.001 | 2.878 |
| | | TRM6 | 0. | 1679. | 0. | 0. | 0. | 0. | -0.035 | 0.002 | 2.444 |
| | | TRM7 | 0. | 6949. | 0. | 0. | 0. | 0. | -0.099 | 0.008 | -0.207 |
| | | DBA | 0. | 368. | 0. | 0. | 0. | 0. | 0.180 | 0.000 | 0.421 |
| | | SEISA1 | 0. | 1199. | 0. | 0. | 0. | 0. | 0.018 | 0.001 | 0.035 |
| | | SEISA2 | 0. | 2371. | 0. | 0. | 0. | 0. | 0.039 | 0.003 | 0.081 |
| | | SAM1 | 0. | 113. | 0. | 0. | 0. | 0. | 0.001 | 0.000 | 0.003 |
| | | SAM2 | 0. | 187. | 0. | 0. | 0. | 0. | 0.002 | 0.000 | 0.005 |
| 094 | RAD | FW9018HL5002 | | | | | | | | | |
| | | WT1 | 0. | -8040. | 0. | 0. | 0. | 0. | 0.008 | -0.007 | -0.013 |
| | | TRM1 | 0. | 125. | 0. | 0. | 0. | 0. | -0.207 | 0.000 | 2.445 |
| | | TRM2 | 0. | -1616. | 0. | 0. | 0. | 0. | -0.164 | -0.001 | 2.507 |
| | | TRM3 | 0. | -4020. | 0. | 0. | 0. | 0. | -0.164 | -0.004 | 1.213 |
| | | TRM4 | 0. | -5490. | 0. | 0. | 0. | 0. | -0.068 | -0.005 | 0.423 |
| | | TRM5 | 0. | 349. | 0. | 0. | 0. | 0. | -0.212 | 0.000 | 2.566 |
| | | TRM6 | 0. | -2038. | 0. | 0. | 0. | 0. | -0.153 | -0.002 | 2.279 |
| | | TRM7 | 0. | -6457. | 0. | 0. | 0. | 0. | -0.044 | -0.004 | -0.099 |
| | | DBA | 0. | 428. | 0. | 0. | 0. | 0. | 0.171 | 0.000 | 0.454 |
| | | SEISA1 | 0. | 863. | 0. | 0. | 0. | 0. | 0.013 | 0.001 | 0.010 |
| | | SEISA2 | 0. | 1713. | 0. | 0. | 0. | 0. | 0.032 | 0.002 | 0.032 |
| | | SAM1 | 0. | 64. | 0. | 0. | 0. | 0. | 0.005 | 0.000 | 0.006 |
| | | SAM2 | 0. | 108. | 0. | 0. | 0. | 0. | 0.009 | 0.000 | 0.010 |

2C159RC5037

RESTRAINT LOAD SUMMARY

NR101/M5 GARO/ 45 (P01253) 11/15/99 P01253 PAGE 14

TITLE : FRESHWATER "FW" SYSTEM - SG 2D TO M5
PROJECT NUMBER : 23638001
PROBLEM NUMBER : 2C159RC5037
USER : PAM1
LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | |
|-----------|------|--------------|--------------------|---------|----|------------------------|----|----|-------------------|--------|--------|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ |
| 099 | RAD | FW1018HLS001 | | | | | | | | | |
| | | WT1 | 0. | -4883. | 0. | 0. | 0. | 0. | 0.000 | -0.009 | -0.001 |
| | | THRM1 | 0. | 10051. | 0. | 0. | 0. | 0. | -0.166 | 0.019 | 0.324 |
| | | THRM2 | 0. | 8590. | 0. | 0. | 0. | 0. | -0.124 | 0.016 | 0.473 |
| | | THRM3 | 0. | 6574. | 0. | 0. | 0. | 0. | -0.067 | 0.012 | 0.327 |
| | | THRM4 | 0. | 5343. | 0. | 0. | 0. | 0. | -0.032 | 0.010 | 0.116 |
| | | THRM5 | 0. | 10239. | 0. | 0. | 0. | 0. | -0.171 | 0.019 | 0.956 |
| | | THRM6 | 0. | 8235. | 0. | 0. | 0. | 0. | -0.114 | 0.015 | 0.612 |
| | | THRM7 | 0. | 4531. | 0. | 0. | 0. | 0. | -0.009 | 0.009 | -0.023 |
| | | DBA | 0. | 10841. | 0. | 0. | 0. | 0. | 0.131 | 0.020 | 0.230 |
| | | SEISA1 | 0. | 2343. | 0. | 0. | 0. | 0. | 0.004 | 0.004 | 0.001 |
| | | SEISA2 | 0. | 4078. | 0. | 0. | 0. | 0. | 0.009 | 0.009 | 0.004 |
| | | SAM1 | 0. | 189. | 0. | 0. | 0. | 0. | 0.008 | 0.000 | 0.006 |
| | | SAM2 | 0. | 329. | 0. | 0. | 0. | 0. | 0.014 | 0.001 | 0.011 |
| 101 | RAD | FW9018HLS013 | | | | | | | | | |
| | | WT1 | -1454. | -806. | 0. | 0. | 0. | 0. | -0.001 | 0.000 | 0.000 |
| | | THRM1 | -3358. | -1861. | 0. | 0. | 0. | 0. | -0.022 | 0.037 | 0.416 |
| | | THRM2 | -2714. | -2059. | 0. | 0. | 0. | 0. | -0.015 | 0.025 | 0.303 |
| | | THRM3 | -4205. | -2331. | 0. | 0. | 0. | 0. | -0.006 | 0.003 | 0.144 |
| | | THRM4 | -4504. | -2497. | 0. | 0. | 0. | 0. | -0.001 | -0.001 | 0.051 |
| | | THRM5 | -3312. | -1836. | 0. | 0. | 0. | 0. | -0.023 | 0.029 | 0.430 |
| | | THRM6 | -3801. | -2107. | 0. | 0. | 0. | 0. | -0.014 | 0.022 | 0.272 |
| | | THRM7 | -4704. | -2607. | 0. | 0. | 0. | 0. | 0.003 | -0.008 | -0.015 |
| | | DBA | 7187. | 3983. | 0. | 0. | 0. | 0. | 0.003 | 0.001 | 0.111 |
| | | SEISA1 | 1874. | 1039. | 0. | 0. | 0. | 0. | 0.002 | 0.003 | 0.003 |
| | | SEISA2 | 4936. | 2736. | 0. | 0. | 0. | 0. | 0.004 | 0.007 | 0.007 |
| | | SAM1 | 2772. | 1536. | 0. | 0. | 0. | 0. | 0.001 | 0.001 | 0.008 |
| | | SAM2 | 4948. | 2743. | 0. | 0. | 0. | 0. | 0.001 | 0.002 | 0.013 |
| 11A | RAD | FW9018HLS013 | | | | | | | | | |
| | | WT1 | 2008. | -1459. | 0. | 0. | 0. | 0. | -0.001 | -0.005 | 0.000 |
| | | THRM1 | 22712. | -16502. | 0. | 0. | 0. | 0. | 0.060 | 0.039 | 0.180 |
| | | THRM2 | 16181. | -13210. | 0. | 0. | 0. | 0. | 0.045 | 0.027 | 0.277 |
| | | THRM3 | 11928. | -8667. | 0. | 0. | 0. | 0. | 0.024 | 0.010 | 0.138 |
| | | THRM4 | 8109. | -5092. | 0. | 0. | 0. | 0. | 0.011 | 0.000 | 0.048 |
| | | THRM5 | 23297. | -16927. | 0. | 0. | 0. | 0. | 0.062 | 0.040 | 0.393 |
| | | THRM6 | 17079. | -12409. | 0. | 0. | 0. | 0. | 0.041 | 0.024 | 0.259 |
| | | THRM7 | 8589. | -4061. | 0. | 0. | 0. | 0. | 0.003 | -0.007 | -0.010 |
| | | DBA | 30322. | 22031. | 0. | 0. | 0. | 0. | 0.035 | 0.010 | 0.111 |
| | | SEISA1 | 1119. | 813. | 0. | 0. | 0. | 0. | 0.001 | 0.001 | 0.003 |
| | | SEISA2 | 2988. | 2113. | 0. | 0. | 0. | 0. | 0.003 | 0.003 | 0.007 |
| | | SAM1 | 2457. | 1785. | 0. | 0. | 0. | 0. | 0.004 | 0.001 | 0.008 |
| | | SAM2 | 4402. | 3194. | 0. | 0. | 0. | 0. | 0.004 | 0.003 | 0.013 |

2C159RC5037

RESTRAINT LOAD SUMMARY

NE101/MS GARO/ 45 (FO1253) 11/15/99 FO1253 PAGE 14

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438901
 PROBLEM NUMBER : 2C159RC5037
 USER : PAMI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | | |
|-----------|------|--------------|--------------------|--------|---------|------------------------|---------|---------|-------------------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | |
| 10A | RAD | FW9018HL5012 | | | | | | | | | | |
| | | WT1 | 0. | 0. | 71. | 0. | 0. | 0. | 0.000 | -0.012 | 0.000 | |
| | | TRM1 | 0. | 0. | 19411. | 0. | 0. | 0. | 0.295 | -0.015 | 0.017 | |
| | | TRM2 | 0. | 0. | 13803. | 0. | 0. | 0. | 0.222 | -0.020 | 0.012 | |
| | | TRM3 | 0. | 0. | 5787. | 0. | 0. | 0. | 0.122 | -0.028 | 0.005 | |
| | | TRM4 | 0. | 0. | 891. | 0. | 0. | 0. | 0.060 | -0.033 | 0.001 | |
| | | TRM5 | 0. | 0. | 20361. | 0. | 0. | 0. | 0.204 | -0.014 | 0.010 | |
| | | TRM6 | 0. | 0. | 12390. | 0. | 0. | 0. | 0.204 | -0.022 | 0.011 | |
| | | TRM7 | 0. | 0. | -2339. | 0. | 0. | 0. | 0.020 | -0.036 | -0.002 | |
| | | DBA | 0. | 0. | 8505. | 0. | 0. | 0. | 0.257 | 0.158 | 0.005 | |
| | | SEISA1 | 0. | 0. | 1236. | 0. | 0. | 0. | 0.000 | 0.007 | 0.001 | |
| | | SEISA2 | 0. | 0. | 3092. | 0. | 0. | 0. | 0.001 | 0.014 | 0.003 | |
| | | SAM1 | 0. | 0. | 9429. | 0. | 0. | 0. | 0.026 | 0.003 | 0.000 | |
| | | SAM2 | 0. | 0. | 16175. | 0. | 0. | 0. | 0.047 | 0.005 | 0.010 | |
| 110 | ANC | PERM M-5 | | | | | | | | | | |
| | | WT1 | -483. | -2700. | -69. | -8211. | -5. | -18783. | 0.000 | 0.000 | 0.000 | |
| | | TRM1 | -26323. | 9133. | -20631. | -8833. | -13140. | 72045. | 0.034 | -0.050 | -0.014 | |
| | | TRM2 | -20070. | 7703. | -14883. | -6751. | -13334. | 63583. | 0.035 | -0.060 | -0.013 | |
| | | TRM3 | -10611. | 5729. | -6164. | -3878. | -13602. | 50797. | 0.036 | -0.061 | -0.011 | |
| | | TRM4 | -4833. | 4523. | -1039. | -2124. | -13765. | 42984. | 0.037 | -0.061 | -0.011 | |
| | | TRM5 | -27808. | 9318. | -21414. | -9102. | -13115. | 74040. | 0.034 | -0.060 | -0.014 | |
| | | TRM6 | -18403. | 7355. | -13875. | -6244. | -13381. | 61330. | 0.035 | -0.061 | -0.013 | |
| | | TRM7 | -10213. | 3728. | 3341. | -966. | -13873. | 37835. | 0.038 | -0.061 | -0.010 | |
| | | DBA | 22113. | 15334. | 5209. | 34067. | 96332. | 119891. | 0.258 | 0.233 | 0.071 | |
| | | SEISA1 | 964. | 367. | 132. | 6467. | 1306. | 9558. | 0.000 | 0.000 | 0.000 | |
| | | SEISA2 | 2593. | 757. | 331. | 13338. | 3264. | 19734. | 0.000 | 0.000 | 0.000 | |
| | | SAM1 | 4785. | 296. | 9167. | 777. | 46037. | 2779. | 0.026 | 0.003 | 0.034 | |
| | | SAM2 | 8562. | 522. | 15735. | 1348. | 78965. | 4892. | 0.047 | 0.006 | 0.058 | |
| 015 | SWJ | FW9018SS0001 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.004 | -0.003 | 0.005 | |
| | | TRM1 | | | | | | | 0.611 | -0.572 | -0.259 | |
| | | TRM2 | | | | | | | 0.517 | 0.557 | -0.529 | |
| | | TRM3 | | | | | | | 0.388 | 0.324 | -0.901 | |
| | | TRM4 | | | | | | | 0.310 | 1.455 | -1.128 | |
| | | TRM5 | | | | | | | 0.623 | -0.653 | -0.224 | |
| | | TRM6 | | | | | | | 0.494 | 0.209 | -0.595 | |
| | | TRM7 | | | | | | | 0.287 | 1.804 | -1.378 | |
| | | DBA | | | | | | | 0.160 | 0.066 | 0.120 | |
| | | SEISA1 | 835. | 0. | 2011. | 0. | 0. | 0. | 0.049 | 0.021 | 0.021 | |
| | | SEISA2 | 1659. | 0. | 4043. | 0. | 0. | 0. | 0.105 | 0.040 | 0.044 | |
| | | SAM1 | 608. | 0. | 1481. | 0. | 0. | 0. | 0.013 | 0.025 | 0.004 | |
| | | SAM2 | 988. | 0. | 2408. | 0. | 0. | 0. | 0.021 | 0.042 | 0.006 | |

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RESTRAINT LOAD SUMMARY

MR101/MS GARO/ 45 (P01253) 11/15/99 P01253 PAGE 14.

TITLE : FRESHWATER "FM" SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PANI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | | |
|-----------|------|--------------|--------------------|-------|-------|------------------------|----|----|-------------------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | |
| 035 | END | FM9018HLS009 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.005 | -0.008 | 0.002 | |
| | | TRM1 | | | | | | | 0.683 | -0.784 | 0.570 | |
| | | TRM2 | | | | | | | 0.587 | -0.209 | 0.109 | |
| | | TRM3 | | | | | | | 0.453 | 0.589 | -0.528 | |
| | | TRM4 | | | | | | | 0.372 | 1.076 | -0.916 | |
| | | TRM5 | | | | | | | 0.696 | -0.858 | 0.630 | |
| | | TRM6 | | | | | | | 0.563 | -0.068 | -0.004 | |
| | | TRM7 | | | | | | | 0.318 | 1.396 | -1.173 | |
| | | DBA | | | | | | | 0.144 | 0.083 | 0.159 | |
| | | SEISA1 | 0. | 3310. | 0. | 0. | 0. | 0. | 0.049 | 0.003 | 0.021 | |
| | | SEISA2 | 0. | 6548. | 0. | 0. | 0. | 0. | 0.104 | 0.006 | 0.044 | |
| | | SAM1 | 0. | 4222. | 0. | 0. | 0. | 0. | 0.011 | 0.004 | 0.006 | |
| | | SAM2 | 0. | 7004. | 0. | 0. | 0. | 0. | 0.019 | 0.006 | 0.010 | |
| 040 | END | FM9018HLS004 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.005 | -0.005 | 0.001 | |
| | | TRM1 | | | | | | | 0.692 | -0.805 | 0.666 | |
| | | TRM2 | | | | | | | 0.596 | -0.235 | 0.183 | |
| | | TRM3 | | | | | | | 0.461 | 0.551 | -0.485 | |
| | | TRM4 | | | | | | | 0.380 | 1.031 | -0.892 | |
| | | TRM5 | | | | | | | 0.704 | -0.478 | 0.729 | |
| | | TRM6 | | | | | | | 0.571 | -0.097 | 0.065 | |
| | | TRM7 | | | | | | | 0.326 | 1.348 | -1.161 | |
| | | DBA | | | | | | | 0.142 | 0.085 | 0.164 | |
| | | SEISA1 | 936. | 0. | 2282. | 0. | 0. | 0. | 0.049 | 0.002 | 0.021 | |
| | | SEISA2 | 2074. | 0. | 6955. | 0. | 0. | 0. | 0.104 | 0.005 | 0.045 | |
| | | SAM1 | 506. | 0. | 1233. | 0. | 0. | 0. | 0.011 | 0.002 | 0.006 | |
| | | SAM2 | 829. | 0. | 2021. | 0. | 0. | 0. | 0.019 | 0.003 | 0.011 | |
| 050 | END | FM9018HLS007 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.001 | -0.014 | -0.005 | |
| | | TRM1 | | | | | | | 0.895 | -0.648 | 1.667 | |
| | | TRM2 | | | | | | | 0.679 | -0.225 | 1.031 | |
| | | TRM3 | | | | | | | 0.385 | 0.369 | 0.155 | |
| | | TRM4 | | | | | | | 0.197 | 0.717 | -0.381 | |
| | | TRM5 | | | | | | | 0.923 | -0.702 | 1.749 | |
| | | TRM6 | | | | | | | 0.626 | -0.322 | 0.877 | |
| | | TRM7 | | | | | | | 0.077 | 0.952 | -0.734 | |
| | | DBA | | | | | | | 0.152 | 0.086 | 0.199 | |
| | | SEISA1 | 0. | 0. | 3474. | 0. | 0. | 0. | 0.016 | 0.010 | 0.002 | |
| | | SEISA2 | 0. | 0. | 8194. | 0. | 0. | 0. | 0.037 | 0.020 | 0.005 | |
| | | SAM1 | 0. | 0. | 560. | 0. | 0. | 0. | 0.003 | 0.008 | 0.000 | |
| | | SAM2 | 0. | 0. | 969. | 0. | 0. | 0. | 0.005 | 0.013 | 0.001 | |

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RESTRAINT LOAD SUMMARY

WE101/MS CARO/ 45 (701257) 11/15/99 701253 PAGE 14.

TITLE : FEEDWATER 'FW' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) (FX, FY, FZ), GLOBAL MOMENTS (FT-LB) (MX, MY, MZ), DISPLACEMENT (IN) (DX, DY, DZ). Rows include WT1, THERM1-7, DBA, SEISA1, SEISA2, SAM1, SAM2 for three different load cases (055, 065, 085).

2C159RC5037

RESTRAINT LOAD SUMMARY

WE101/M5 GARO/ 45 (P01253) 11/15/99 P01253 PAGE 15

TITLE : FRESHWATER "PW" SYSTEM - SG 2D TO MS
PROJECT NUMBER : 21438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

| DATA TYPE PT | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | |
|-----------------|------|--------------|--------------------|----|-------|------------------------|----|----|-------------------|--------|--------|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ |
| 032 | SMB | PW9018HLS003 | | | | | | | | | |
| | | WT1 | | | | | | | 0.007 | -0.015 | -0.013 |
| | | TRM1 | | | | | | | -0.169 | 0.005 | 3.318 |
| | | TRM2 | | | | | | | -0.136 | 0.007 | 2.415 |
| | | TRM3 | | | | | | | -0.098 | 0.011 | 1.170 |
| | | TRM4 | | | | | | | -0.063 | 0.013 | 0.410 |
| | | TRM5 | | | | | | | -0.173 | 0.005 | 2.434 |
| | | TRM6 | | | | | | | -0.128 | 0.008 | 2.196 |
| | | TRM7 | | | | | | | -0.044 | 0.014 | -0.092 |
| | | DBA | | | | | | | 0.171 | 0.002 | 0.495 |
| | | SEISA1 | 1120. | 0. | 1120. | 0. | 0. | 0. | 0.011 | 0.011 | 0.012 |
| | | SEISA2 | 3399. | 0. | 3399. | 0. | 0. | 0. | 0.027 | 0.023 | 0.038 |
| | | SAM1 | 171. | 0. | 171. | 0. | 0. | 0. | 0.005 | 0.001 | 0.005 |
| | | SAM2 | 294. | 0. | 294. | 0. | 0. | 0. | 0.009 | 0.001 | 0.010 |
| 037 | SMB | PW9018HLS006 | | | | | | | | | |
| | | WT1 | | | | | | | 0.000 | -0.037 | -0.002 |
| | | TRM1 | | | | | | | -0.010 | 0.019 | 1.234 |
| | | TRM2 | | | | | | | -0.027 | 0.034 | 0.893 |
| | | TRM3 | | | | | | | -0.023 | 0.030 | 0.437 |
| | | TRM4 | | | | | | | -0.020 | 0.034 | 0.158 |
| | | TRM5 | | | | | | | -0.031 | 0.018 | 1.257 |
| | | TRM6 | | | | | | | -0.024 | 0.025 | 0.813 |
| | | TRM7 | | | | | | | -0.018 | 0.036 | -0.026 |
| | | DBA | | | | | | | 0.131 | 0.006 | 0.307 |
| | | SEISA1 | 0. | 0. | 2667. | 0. | 0. | 0. | 0.004 | 0.029 | 0.003 |
| | | SEISA2 | 0. | 0. | 7183. | 0. | 0. | 0. | 0.009 | 0.060 | 0.008 |
| | | SAM1 | 0. | 0. | 2319. | 0. | 0. | 0. | 0.008 | 0.003 | 0.002 |
| | | SAM2 | 0. | 0. | 3981. | 0. | 0. | 0. | 0.014 | 0.003 | 0.004 |

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RESTRAINT LOAD SUMMARY

2101/MS GAKO/ 45

(FO1253) 11/15/99 FO1253 PAGE 18.

TITLE : FEEDWATER 'FM' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), and DIRECTION COSINES (CX, CY, CZ). Rows include 001 ANC, 007 RAD, and 07H RAD with various load types like WT1, THRM1-7, DBA, SRISA1-2, SAM1-2.

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2C189RCS017

RESTRAINT LOAD SUMMARY

MS101/MS GARO/ 45 (P01253) 11/18/99 P01253 PAGE 15.

TITLE : FEEDWATER "PW" SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438901
 PROBLEM NUMBER : 2C189RCS017
 USER : PAMI
 LOAD CASE :

| DATA TYPE PT | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | | |
|-----------------|------|--------------|-------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|---|---|
| | | | FA | FB | FC | MA | MB | MC | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ | | |
| 07K | RAD | MSL615 | | | | | | | | | | | | | | | | | |
| | | WT1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM1 | -12870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM2 | -10798 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM3 | -7939 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM4 | -6196 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM5 | -13139 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM6 | -10293 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM7 | -5042 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DRA | 872 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SRISA1 | 1971 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SRISA2 | 4398 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM1 | 1822 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM2 | 2945 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 009 | SPD | MSL614 | | | | | | | | | | | | | | | | | |
| | | WT1 | -8989 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM1 | | | | | | | | | | | | | | | | | |
| | | TRRM2 | | | | | | | | | | | | | | | | | |
| | | TRRM3 | | | | | | | | | | | | | | | | | |
| | | TRRM4 | | | | | | | | | | | | | | | | | |
| | | TRRM5 | | | | | | | | | | | | | | | | | |
| | | TRRM6 | | | | | | | | | | | | | | | | | |
| | | TRRM7 | | | | | | | | | | | | | | | | | |
| | | DRA | | | | | | | | | | | | | | | | | |
| | | SRISA1 | | | | | | | | | | | | | | | | | |
| | | SRISA2 | | | | | | | | | | | | | | | | | |
| | | SAM1 | | | | | | | | | | | | | | | | | |
| | | SAM2 | | | | | | | | | | | | | | | | | |
| 010 | SPR | FR90188H0001 | | | | | | | | | | | | | | | | | |
| | | WT1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM5 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TRRM7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DRA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SRISA1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SRISA2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

2C159RC5037

RESTRAINT LOAD SUMMARY

WB101/MS GARO/ 45

(F01253) 11/15/99 F01253 PAGE 19

TITLE : FEEDWATER 'PW' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 21418001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), and DIRECTION COSINES (COS AX, COS AY, COS AZ, COS BX, COS BY, COS BE, COS CX, COS CY, COS CZ). Rows are grouped by load type (070 SPR, 075 RAD, 094 RAD) and member ID (FW9018SH0002, FW9018HLS005, FW9018HLS002).

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RESTRAINT LOAD SUMMARY

ME101/MS GARO/ 45

{701253} 11/15/99 F01253 PAGE 13

TITLE : FEEDWATER 'FW' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RCS037
USER : PARI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (COS AX, COS AY, COS AZ, COS BX, COS BY, COS BZ, COS CX, COS CY, COS CZ). Rows are grouped by load case (099, 101, 11A) and member type (WT1, THERM1-7, DBA, SEISA1-2, SAM1-2).

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RESTRAINT LOAD SUMMARY

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(FO1253) 11/15/99 FO1253 PAGE 15

TITLE : FRESHWATER "FN" SYSTEM - SG 3D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C1E9RCS037
USER : PAMI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), and DIRECTION COSINES (COS AX, COS AY, COS AZ, COS BX, COS BY, COS BZ, COS CX, COS CY, COS CZ). Rows include 10A RAD, 110 ARC, and 015 SRB.

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2C159RCS037

RESTRAINT LOAD SUMMARY

WE101/M5 GARO/ 45 (V01253) 11/15/99 F01253 PAGE 15

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RCS037
 USER : FAWI
 LOAD CASE :

| DATA PT | TYPE | LOAD | TITLE | LOCAL FORCES(LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | |
|---------|------|------|--------------|------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | | FA | FB | FC | MA | MB | MC | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ | |
| 035 | SNB | | FW9018HL5009 | | | | | | | | | | | | | | | | |
| | | | WT1 | | | | | | | | | | | | | | | | |
| | | | TRM1 | | | | | | | | | | | | | | | | |
| | | | TRM2 | | | | | | | | | | | | | | | | |
| | | | TRM3 | | | | | | | | | | | | | | | | |
| | | | TRM4 | | | | | | | | | | | | | | | | |
| | | | TRM5 | | | | | | | | | | | | | | | | |
| | | | TRM6 | | | | | | | | | | | | | | | | |
| | | | TRM7 | | | | | | | | | | | | | | | | |
| | | | DBA | | | | | | | | | | | | | | | | |
| | | | SEISA1 | 3310 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | | SEISA2 | 5548 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | | SAM1 | 4222 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | | SAM2 | 7604 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| 040 | SNB | | FW9018HL3004 | | | | | | | | | | | | | | | | |
| | | | WT1 | | | | | | | | | | | | | | | | |
| | | | TRM1 | | | | | | | | | | | | | | | | |
| | | | TRM2 | | | | | | | | | | | | | | | | |
| | | | TRM3 | | | | | | | | | | | | | | | | |
| | | | TRM4 | | | | | | | | | | | | | | | | |
| | | | TRM5 | | | | | | | | | | | | | | | | |
| | | | TRM6 | | | | | | | | | | | | | | | | |
| | | | TRM7 | | | | | | | | | | | | | | | | |
| | | | DBA | | | | | | | | | | | | | | | | |
| | | | SEISA1 | 2467 | 0 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | |
| | | | SEISA2 | 5464 | 0 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | |
| | | | SAM1 | 1333 | 0 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | |
| | | | SAM2 | 2185 | 0 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | |
| 050 | SNB | | FW9018HL5007 | | | | | | | | | | | | | | | | |
| | | | WT1 | | | | | | | | | | | | | | | | |
| | | | TRM1 | | | | | | | | | | | | | | | | |
| | | | TRM2 | | | | | | | | | | | | | | | | |
| | | | TRM3 | | | | | | | | | | | | | | | | |
| | | | TRM4 | | | | | | | | | | | | | | | | |
| | | | TRM5 | | | | | | | | | | | | | | | | |
| | | | TRM6 | | | | | | | | | | | | | | | | |
| | | | TRM7 | | | | | | | | | | | | | | | | |
| | | | DBA | | | | | | | | | | | | | | | | |
| | | | SEISA1 | 3474 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | |
| | | | SEISA2 | 8594 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | |
| | | | SAM1 | 580 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | |
| | | | SAM2 | 969 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | |

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RESTRAINT LOAD SUMMARY

NR101/MS GARO/ 45 (FO1253) 11/15/99 FO1253 PAGE 15.

TITLE : FEEDWATER "FW" SYSTEM - 80 3D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RCS037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (COS AX to COS CZ).

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RESTRAINT LOAD SUMMARY

MN101/M5 GARD/ 45 (P01253) 11/15/99 F01253 PAGE 18.

TITLE : FEEDWATER "FW" SYSTEM - SO 2D TO M5
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

| DATA TYPE | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | | |
|-----------|------|--------------|-------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|---|---|
| | | | FA | FB | FC | MA | MB | MC | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ | | |
| 092 | SNB | FN9018HLS003 | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | |
| | | TRM1 | | | | | | | | | | | | | | | | | |
| | | TRM2 | | | | | | | | | | | | | | | | | |
| | | TRM3 | | | | | | | | | | | | | | | | | |
| | | TRM4 | | | | | | | | | | | | | | | | | |
| | | TRM5 | | | | | | | | | | | | | | | | | |
| | | TRM6 | | | | | | | | | | | | | | | | | |
| | | TRM7 | | | | | | | | | | | | | | | | | |
| | | DBA | | | | | | | | | | | | | | | | | |
| | | SEISA1 | 1584 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SEISA2 | 4807 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM1 | 242 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM2 | 415 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 097 | SNB | FN9018HLS006 | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | |
| | | TRM1 | | | | | | | | | | | | | | | | | |
| | | TRM2 | | | | | | | | | | | | | | | | | |
| | | TRM3 | | | | | | | | | | | | | | | | | |
| | | TRM4 | | | | | | | | | | | | | | | | | |
| | | TRM5 | | | | | | | | | | | | | | | | | |
| | | TRM6 | | | | | | | | | | | | | | | | | |
| | | TRM7 | | | | | | | | | | | | | | | | | |
| | | DBA | | | | | | | | | | | | | | | | | |
| | | SEISA1 | 2667 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SEISA2 | 7143 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM1 | 2219 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAM2 | 3981 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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RESTRAINT LOAD SUMMARY

WE101/MS GARO/ 48 (F01253) 11/15/99 F01253 PAGE 15

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23430001
PROBLEM NUMBER : 2C159RCS037
USER : PARI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) FX FY FZ, GLOBAL MOMENTS (FT-LB) MX MY MZ, DISPLACEMENT (IN) DX DY DZ. Rows include nodes 001, 007, 07H, 07H, 009, and 030 with various load types like ANC, RAD, SPD, and SPR.

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RESTRAINT LOAD SUMMARY

ME101/MS GARD/ 45 (FO1253) 11/15/99 FO1253 PAGE 160

TITLE : FEEDWATER "FM" SYSTEM - SG 2D TO MS
PROJECT NUMBER : 21438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) FX, FY, FZ, GLOBAL MOMENTS (FT-LB) MX, MY, MZ, DISPLACEMENT (IN) DX, DY, DZ. Rows include data for nodes 070, 075, 094, 099, 101, and 11A.

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RESTRAINT LOAD SUMMARY

ME101/MS GARO/ 45 (F01253) 11/15/99 F01253 PAGE 16

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23410001
 PROBLEM NUMBER : 2C159RC5037
 USER : PANI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | | |
|-----------|------|--------------|--------------------|---------|---------|------------------------|----------|----------|-------------------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | |
| 10A | RAD | FW9018HL5012 | | | | | | | | | | |
| | | NORMP | 0. | 0. | 19682. | 0. | 0. | 0. | 0.295 | 0.000 | 0.017 | |
| | | NORMM | 0. | 0. | 0. | 0. | 0. | 0. | 0.000 | -0.845 | 0.000 | |
| | | UPSETP | 0. | 0. | 23192. | 0. | 0. | 0. | 0.320 | 0.000 | 0.026 | |
| | | UPSETM | 0. | 0. | -11779. | 0. | 0. | 0. | -0.026 | -0.056 | -0.010 | |
| | | FAULTP | 0. | 0. | 36900. | 0. | 0. | 0. | 0.561 | 0.146 | 0.033 | |
| | | FAULTM | 0. | 0. | -18736. | 0. | 0. | 0. | -0.257 | -0.207 | -0.017 | |
| 110 | ANC | PEN M-5 | | | | | | | | | | |
| | | NORMP | 0. | 2133. | 0. | 0. | 0. | 72045. | 0.037 | 0.000 | 0.000 | |
| | | NORMM | -27406. | -2700. | -20699. | -17044. | -13770. | -18783. | 0.000 | -0.061 | -0.014 | |
| | | UPSETP | 4881. | 6905. | 11441. | 6513. | 46655. | 64016. | 0.064 | 0.003 | 0.034 | |
| | | UPSETM | -32287. | -3172. | -29667. | -23557. | -59933. | -28736. | -0.024 | -0.065 | -0.047 | |
| | | FAULTP | 21630. | 21951. | 18011. | 28856. | 95327. | 175148. | 0.295 | 0.232 | 0.071 | |
| | | FAULTM | -50403. | -18033. | -37222. | -51380. | -109209. | -138674. | -0.259 | -0.294 | -0.085 | |
| 015 | SMB | FW9018SS0001 | | | | | | | | | | |
| | | NORMP | | | | | | | 0.611 | 1.455 | 0.005 | |
| | | NORMM | | | | | | | -0.004 | -0.575 | -1.128 | |
| | | UPSETP | 1025. | 0. | 2498. | 0. | 0. | 0. | 0.658 | 1.834 | 0.926 | |
| | | UPSETM | -1025. | 0. | -2498. | 0. | 0. | 0. | -0.054 | -0.608 | -1.295 | |
| | | FAULTP | 1931. | 0. | 4706. | 0. | 0. | 0. | 0.779 | 1.866 | 0.135 | |
| | | FAULTM | -1931. | 0. | -4706. | 0. | 0. | 0. | -0.163 | -0.721 | -1.394 | |
| 035 | SMB | FW9018HL5005 | | | | | | | | | | |
| | | NORMP | | | | | | | 0.683 | 1.076 | 0.572 | |
| | | NORMM | | | | | | | -0.005 | -0.793 | -0.916 | |
| | | UPSETP | 0. | 5365. | 0. | 0. | 0. | 0. | 0.728 | 1.392 | 0.594 | |
| | | UPSETM | 0. | -5365. | 0. | 0. | 0. | 0. | -0.055 | -0.797 | -1.193 | |
| | | FAULTP | 0. | 9589. | 0. | 0. | 0. | 0. | 0.835 | 1.471 | 0.791 | |
| | | FAULTM | 0. | -9589. | 0. | 0. | 0. | 0. | -0.149 | -0.950 | -1.331 | |
| 040 | SMB | FW9018HL5004 | | | | | | | | | | |
| | | NORMP | | | | | | | 0.692 | 1.031 | 0.568 | |
| | | NORMM | | | | | | | -0.005 | -0.814 | -0.892 | |
| | | UPSETP | 1064. | 0. | 2594. | 0. | 0. | 0. | 0.736 | 1.341 | 0.690 | |
| | | UPSETM | -1064. | 0. | -2594. | 0. | 0. | 0. | -0.055 | -0.817 | -1.182 | |
| | | FAULTP | 2234. | 0. | 5444. | 0. | 0. | 0. | 0.841 | 1.423 | 0.894 | |
| | | FAULTM | -2234. | 0. | -5444. | 0. | 0. | 0. | -0.147 | -0.972 | -1.324 | |
| 050 | SMB | FW9018HL5007 | | | | | | | | | | |
| | | NORMP | | | | | | | 0.895 | 0.717 | 1.667 | |
| | | NORMM | | | | | | | -0.001 | -0.642 | -0.386 | |
| | | UPSETP | 0. | 0. | 3522. | 0. | 0. | 0. | 0.911 | 0.951 | 1.664 | |
| | | UPSETM | 0. | 0. | -3522. | 0. | 0. | 0. | -0.017 | -0.675 | -0.741 | |
| | | FAULTP | 0. | 0. | 8648. | 0. | 0. | 0. | 1.075 | 1.025 | 1.943 | |
| | | FAULTM | 0. | 0. | -8648. | 0. | 0. | 0. | -0.153 | -0.803 | -0.938 | |

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RESTRAINT LOAD SUMMARY

ME101/MS GARO/ 45 (F01253) 11/15/99 F01253 PAGE 16.

TITLE : FEEDWATER 'FW' SYSTEM - SO 3D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PAMI
LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | |
|-----------|------|--------------|--------------------|--------|--------|------------------------|----|----|-------------------|--------|--------|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ |
| 055 | SMB | FW9018HL5008 | | | | | | | | | |
| | | NORMP | | | | | | | 0.961 | -0.728 | 1.749 |
| | | NORMN | | | | | | | 0.000 | -0.576 | -0.288 |
| | | UPSETP | 5935. | 0. | 0. | 0. | 0. | 0. | 0.969 | 0.945 | 1.754 |
| | | UPSETN | -5935. | 0. | 0. | 0. | 0. | 0. | -0.025 | -0.689 | -0.680 |
| | | FAULTP | 14752. | 0. | 0. | 0. | 0. | 0. | 1.157 | 1.019 | 2.022 |
| | | FAULTN | -14752. | 0. | 0. | 0. | 0. | 0. | -0.180 | -0.716 | -0.837 |
| 065 | SMB | FW9018SS0006 | | | | | | | | | |
| | | NORMP | | | | | | | 0.947 | 0.639 | 2.143 |
| | | NORMN | | | | | | | -0.001 | -0.359 | -0.073 |
| | | UPSETP | 0. | 3979. | 469. | 0. | 0. | 0. | 0.964 | 0.815 | 2.165 |
| | | UPSETN | 0. | -3979. | -469. | 0. | 0. | 0. | -0.163 | -0.370 | -0.487 |
| | | FAULTP | 0. | 7581. | 891. | 0. | 0. | 0. | 1.164 | 0.877 | 2.442 |
| | | FAULTN | 0. | -7581. | -891. | 0. | 0. | 0. | -0.331 | -0.471 | -0.678 |
| 085 | SMB | FW9018CS0007 | | | | | | | | | |
| | | NORMP | | | | | | | 0.011 | 0.014 | 3.948 |
| | | NORMN | | | | | | | -0.159 | -0.066 | -0.018 |
| | | UPSETP | 2767. | 0. | 2767. | 0. | 0. | 0. | 0.031 | 0.021 | 3.946 |
| | | UPSETN | -2767. | 0. | -2767. | 0. | 0. | 0. | -0.189 | -0.091 | -0.216 |
| | | FAULTP | 6897. | 0. | 6897. | 0. | 0. | 0. | 0.187 | 0.037 | 4.812 |
| | | FAULTN | -6897. | 0. | -6897. | 0. | 0. | 0. | -0.316 | -0.105 | -0.641 |
| 092 | SMB | FW9018RL5003 | | | | | | | | | |
| | | NORMP | | | | | | | 0.007 | 0.013 | 3.318 |
| | | NORMN | | | | | | | -0.169 | -0.015 | -0.013 |
| | | UPSETP | 1133. | 0. | 1133. | 0. | 0. | 0. | 0.019 | 0.011 | 3.318 |
| | | UPSETN | -1133. | 0. | -1133. | 0. | 0. | 0. | -0.174 | -0.026 | -0.118 |
| | | FAULTP | 3412. | 0. | 3412. | 0. | 0. | 0. | 0.178 | 0.023 | 3.917 |
| | | FAULTN | -3412. | 0. | -3412. | 0. | 0. | 0. | -0.338 | -0.038 | -0.600 |
| 097 | SMB | FW9018HL5006 | | | | | | | | | |
| | | NORMP | | | | | | | 0.000 | 0.034 | 1.224 |
| | | NORMN | | | | | | | -0.038 | -0.037 | -0.002 |
| | | UPSETP | 0. | 0. | 3470. | 0. | 0. | 0. | 0.009 | 0.029 | 1.226 |
| | | UPSETN | 0. | 0. | -3470. | 0. | 0. | 0. | -0.039 | -0.046 | -0.012 |
| | | FAULTP | 0. | 0. | 8213. | 0. | 0. | 0. | 0.131 | 0.059 | 1.571 |
| | | FAULTN | 0. | 0. | -8213. | 0. | 0. | 0. | -0.161 | -0.097 | -0.334 |

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RESTRAINT LOAD SUMMARY

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(FO1253) 11/15/99 FO1253 PAGE 169

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (COS AX, COS AY, COS AX, COS BX, COS BY, COS BS, COS CX, COS CY, COS CS). Rows include data for nodes 001, 007, 07K, 07H, 009, and 030 across various load types like NORMP, NORMM, UPSETP, UPSETM, FAULTP, FAULTM.

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RESTRAINT LOAD SUMMARY

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TITLE : FEEDWATER "PW" SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PAWI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (COS AX, COS AY, COS AZ, COS BX, COS BY, COS BZ, COS CX, COS CY, COS CZ). Rows include data for nodes 070, 075, 094, 099, 101, and 11A.

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RESTRAINT LOAD SUMMARY

NE181/MS GARO/ 45 (P01253) 11/15/99 P01253 PAGE 16

TITLE : FENDWATER "FW" SYSTEM - EQ 2D TO MS
PROJECT NUMBER : 23430001
PROBLEM NUMBER : 2C139RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (CX, CY, CZ, etc.). Rows include nodes 10A, 110, 015, 035, 040, 050 with various load types like RAD, AMC, SMD.

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RESTRAINT LOAD SUMMARY

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PANI
 LOAD CASE :

DCP# 98-19444-2, SUPP. 0 page

| DATA TYPE | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | | | | | | | | | | | |
|-----------|------|--------------|-------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|--|--|--|--|--|--|--|--|
| | | | FX | FY | FZ | MX | MY | MZ | COX AX | COX AY | COX AZ | COY BX | COY BY | COY BZ | COZ CX | COZ CY | COZ CZ | | | | | | | | | | | |
| 055 | SND | FW9018HL5008 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMP | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | UPSETP | | | | 5935 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | | | | | | | | | |
| | | UPSETM | | | | -5935 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | | | | | | | | | |
| | | FAULTP | | | | 14752 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | | | | | | | | | |
| | | FAULTM | | | | -14752 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | | | | | | | | | |
| 065 | SND | FW9018850006 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMP | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | UPSETP | | | | 4007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | | | | | | | | | |
| | | UPSETM | | | | -4007 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | | | | | | | | | |
| | | FAULTP | | | | 7633 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | | | | | | | | | |
| | | FAULTM | | | | -7633 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | | | | | | | | | |
| 085 | SND | FW9018850007 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMP | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | UPSETP | | | | 3913 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | | | | | | | | | |
| | | UPSETM | | | | -3913 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | | | | | | | | | |
| | | FAULTP | | | | 3754 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | | | | | | | | | |
| | | FAULTM | | | | -3754 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | | | | | | | | | |
| 092 | SND | FW9018HL5003 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMP | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | UPSETP | | | | 1602 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | | | | | | | | | |
| | | UPSETM | | | | -1602 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | | | | | | | | | |
| | | FAULTP | | | | 4825 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | | | | | | | | | |
| | | FAULTM | | | | -4825 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | | | | | | | | | |
| 097 | SND | FW9018HL5006 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMP | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NORMM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | UPSETP | | | | 3470 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | | | | | | | |
| | | UPSETM | | | | -3470 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | | | | | | | |
| | | FAULTP | | | | 8213 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | | | | | | | |
| | | FAULTM | | | | -8213 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | | | | | | | |

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2C159RC5037 TIME1 ACTIONS ON SUPPORTS & ANCHORS

MS101/M5 FREU/054 (R04200) 04/27/00 R04200 PAGE

TITLE : FRESHWATER *FM* SYSTEM - SO 2D TO M5
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PAH1
 LOAD CASE : TIME1

| DATA PT | TYPE | LOCAL FORCES (LB) | | | | LOCAL MOMENTS (FT-LB) | | | | NC | TIME | | |
|---------|------|-------------------|----------------|-------------------|----------------|-----------------------|----------------|---------------------|----------------|---------------------|----------------|-----------------------|----------------|
| | | FA | FB | FC | MA | MB | | | | | | | |
| | | MAX/ MIN | TIME | MAX/ MIN | TIME | MAX/ MIN | TIME | MAX/ MIN | TIME | MAX/ MIN | TIME | | |
| 001 | ANA | 27764. -34445. | 0.361 0.261 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 127025. -135263. | 0.442 0.366 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 001 | ANB | 0. 0. | 0.000 0.000 | 82942. -89329. | 0.270 0.367 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 295880. -312419. | 0.101 0.262 | 0. 0. | 0.000 0.000 |
| 001 | ANC | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 38473. -23423. | 0.262 0.101 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 1105461. -1177705. | 0.270 0.367 |
| 007 | RAD | 21567. -25307. | 0.466 0.113 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 07W | RAD | 41214. -37270. | 0.353 0.400 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 07H | RAD | 32759. -32942. | 0.348 0.279 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 015 | SMB | 22222. -23374. | 0.297 0.334 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 030 | SFR | 0. 0. | 0.260 0.098 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 035 | SMB | 68445. -66488. | 0.264 0.100 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 040 | SMB | 54709. -65998. | 0.524 0.426 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 050 | SMB | 84530. -85051. | 0.430 0.398 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 055 | SMB | 84797. -88573. | 0.433 0.338 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |
| 065 | SMB | 51103. -51469. | 0.093 0.282 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 | 0. 0. | 0.000 0.000 |

| DATA PT | TYPE | LOCAL FORCES (LB) | | | | LOCAL MOMENTS (FT-LB) | | | | MC | TIME | | | | |
|---------|------|-------------------|-------|--------|-------|-----------------------|---------|---------|-------|---------|-------|---------|-------|----|-------|
| | | MAX/MIN | PA | TIME | FB | TIME | MAX/MIN | FC | TIME | | | MA | TIME | MB | TIME |
| 070 | SPR | 0. | 0.327 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | 0. | 0.288 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 075 | RAD | 14738. | 0.486 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -14761. | 0.542 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 085 | SNB | 79523. | 0.457 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -94033. | 0.426 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 094 | RAD | 20614. | 0.400 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -20424. | 0.368 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 092 | SNB | 39782. | 0.482 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -49436. | 0.459 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 097 | SNB | 58986. | 0.363 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -64660. | 0.459 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 099 | RAD | 27416. | 0.523 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -28018. | 0.497 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 101 | RAD | 91780. | 0.425 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -101375. | 0.521 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 11A | RAD | 65227. | 0.426 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -68463. | 0.521 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 10A | RAD | 45063. | 0.210 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -53519. | 0.116 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 110 | ANA | 267891. | 0.216 | 0. | 0.000 | 0. | 0.000 | 28535. | 0.539 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| | | -113522. | 0.246 | 0. | 0.000 | 0. | 0.000 | -39767. | 0.370 | 0. | 0.000 | 0. | 0.000 | 0. | 0.000 |
| 110 | ANB | 0. | 0.000 | 6522. | 0.322 | 0. | 0.000 | 0. | 0.000 | 56273. | 0.116 | 0. | 0.000 | 0. | 0.000 |
| | | 0. | 0.000 | -5170. | 0.499 | 0. | 0.000 | 0. | 0.000 | -48272. | 0.131 | 0. | 0.000 | 0. | 0.000 |
| 110 | ANC | 0. | 0.000 | 0. | 0.000 | 16172. | 0.226 | 0. | 0.000 | 0. | 0.000 | 56414. | 0.446 | 0. | 0.000 |
| | | 0. | 0.000 | 0. | 0.000 | -14951. | 0.217 | 0. | 0.000 | 0. | 0.000 | -68033. | 0.497 | 0. | 0.000 |

2C159RC5037

RESTRAINT LOAD SUMMARY

HE101/M5 FREU/054

(R04200) 04/27/00 R04200 PAGE

TITLE : FRESHWATER "FM" SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PAMI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) FX, FY, FZ, GLOBAL MOMENTS (FT-LB) MX, MY, MZ, DISPLACEMENT (IN) DX, DY, DZ. Rows include nodes 001 ANC, 007 RAD, 07H RAD, 07H RAD, and 005 SPD with various load types like WT1, THR, TIME, FAULTP, FAULTN.

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2C159RC5037

RESTRAINT LOAD SUMMARY

NE101/M5 FRBU/034 (R04200) 04/27/00 R04200 PAGE 10

TITLE : VERDWATER "FM" SYSTEM - SO 2D TO MS
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : FAMI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | | |
|-----------|------|--------------|--------------------|---------|----|------------------------|----|----|-------------------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | |
| 030 | SPR | FM9018SH0001 | | | | | | | | | | |
| | | WT1 | 0. | 0. | 0. | 0. | 0. | 0. | -0.004 | -0.003 | 0.004 | |
| | | TMRM2 | 0. | 0. | 0. | 0. | 0. | 0. | 0.533 | -0.004 | -0.331 | |
| | | TMRM3 | 0. | 1. | 0. | 0. | 0. | 0. | 0.492 | 0.880 | -0.820 | |
| | | TMRM6 | 0. | 0. | 0. | 0. | 0. | 0. | 0.510 | 0.146 | -0.457 | |
| | | TMRM1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.475 | 0.307 | 0.204 | |
| | | TMRM1 | 0. | 1. | 0. | 0. | 0. | 0. | 1.004 | 1.354 | 0.208 | |
| | | FAULTP | 0. | 0. | 0. | 0. | 0. | 0. | -0.480 | -0.314 | -1.021 | |
| | | FAULTM | 0. | 0. | 0. | 0. | 0. | 0. | | | | |
| 070 | SPR | FM9018SH0002 | | | | | | | | | | |
| | | WT1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.011 | 0.001 | -0.013 | |
| | | TMRM2 | 0. | 0. | 0. | 0. | 0. | 0. | 0.570 | -0.035 | 1.630 | |
| | | TMRM3 | 0. | 0. | 0. | 0. | 0. | 0. | 0.209 | 0.329 | 0.616 | |
| | | TMRM6 | 0. | 0. | 0. | 0. | 0. | 0. | 0.506 | 0.029 | 1.451 | |
| | | TMRM1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.267 | 0.138 | 0.725 | |
| | | TMRM1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.847 | 0.468 | 2.343 | |
| | | FAULTP | 0. | 0. | 0. | 0. | 0. | 0. | -0.255 | -0.172 | -0.738 | |
| | | FAULTM | 0. | 0. | 0. | 0. | 0. | 0. | | | | |
| 075 | RAD | FM9018HLS005 | | | | | | | | | | |
| | | WT1 | 0. | -4700. | 0. | 0. | 0. | 0. | 0.011 | -0.005 | -0.018 | |
| | | TMRM2 | 0. | 1173. | 0. | 0. | 0. | 0. | -0.029 | 0.001 | 2.698 | |
| | | TMRM3 | 0. | 4051. | 0. | 0. | 0. | 0. | -0.064 | 0.005 | 1.256 | |
| | | TMRM6 | 0. | 1679. | 0. | 0. | 0. | 0. | -0.035 | 0.002 | 1.444 | |
| | | TMRM1 | 0. | 14761. | 0. | 0. | 0. | 0. | 0.274 | 0.017 | 0.325 | |
| | | TMRM1 | 0. | 14113. | 0. | 0. | 0. | 0. | 0.285 | 0.016 | 3.005 | |
| | | FAULTP | 0. | -19461. | 0. | 0. | 0. | 0. | -0.327 | -0.022 | -0.342 | |
| | | FAULTM | 0. | | 0. | 0. | 0. | 0. | | | | |
| 094 | RAD | FM9018HLS002 | | | | | | | | | | |
| | | WT1 | 0. | -8040. | 0. | 0. | 0. | 0. | 0.008 | -0.007 | -0.013 | |
| | | TMRM2 | 0. | 1616. | 0. | 0. | 0. | 0. | -0.164 | -0.001 | 2.507 | |
| | | TMRM3 | 0. | -4020. | 0. | 0. | 0. | 0. | -0.104 | -0.004 | 1.213 | |
| | | TMRM6 | 0. | -2038. | 0. | 0. | 0. | 0. | -0.153 | -0.002 | 2.279 | |
| | | TMRM1 | 0. | 20614. | 0. | 0. | 0. | 0. | 0.254 | 0.019 | 0.226 | |
| | | TMRM1 | 0. | 12674. | 0. | 0. | 0. | 0. | 0.262 | 0.011 | 2.720 | |
| | | FAULTP | 0. | -32675. | 0. | 0. | 0. | 0. | -0.410 | -0.030 | -0.239 | |
| | | FAULTM | 0. | | 0. | 0. | 0. | 0. | | | | |
| 099 | RAD | FM1018HLS001 | | | | | | | | | | |
| | | WT1 | 0. | -4883. | 0. | 0. | 0. | 0. | 0.000 | -0.009 | -0.001 | |
| | | TMRM2 | 0. | 8590. | 0. | 0. | 0. | 0. | -0.124 | 0.016 | 0.673 | |
| | | TMRM3 | 0. | 6574. | 0. | 0. | 0. | 0. | -0.067 | 0.012 | 0.327 | |
| | | TMRM6 | 0. | 8235. | 0. | 0. | 0. | 0. | -0.114 | 0.015 | 0.612 | |
| | | TMRM1 | 0. | 28038. | 0. | 0. | 0. | 0. | 0.187 | 0.063 | 0.653 | |
| | | TMRM1 | 0. | 11725. | 0. | 0. | 0. | 0. | 0.187 | 0.060 | 0.726 | |
| | | FAULTP | 0. | -32902. | 0. | 0. | 0. | 0. | -0.312 | -0.062 | -0.054 | |
| | | FAULTM | 0. | | 0. | 0. | 0. | 0. | | | | |

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2C159RC5037

RESTRAINT LOAD SUMMARY

AS101/M5 WREU/054 (R04200) 04/27/00 R04200 PAGE 11

TITLE : FEEDWATER "PW" SYSTEM - SG 2D TO M5
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PARI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | | |
|-----------|------|--------------|--------------------|---------|---------|------------------------|---------|---------|-------------------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | |
| 101 | RAD | PM9018HLS013 | | | | | | | | | | |
| | | WT1 | -1454. | -806. | 0. | 0. | 0. | 0. | -0.001 | 0.000 | 0.000 | |
| | | THRM2 | -3714. | -2058. | 0. | 0. | 0. | 0. | -0.015 | 0.025 | 0.303 | |
| | | THRM3 | -4205. | -2331. | 0. | 0. | 0. | 0. | -0.006 | 0.009 | 0.146 | |
| | | THRM6 | -3801. | -2107. | 0. | 0. | 0. | 0. | -0.014 | 0.022 | 0.275 | |
| | | TIMB1 | 88666. | 49146. | 0. | 0. | 0. | 0. | 0.063 | 0.061 | 0.125 | |
| | | FAULTP | 87232. | 48340. | 0. | 0. | 0. | 0. | 0.062 | 0.086 | 0.428 | |
| | | FAULTN | -94325. | -52282. | 0. | 0. | 0. | 0. | -0.079 | -0.061 | -0.124 | |
| 11A | RAD | PM9018HLS013 | | | | | | | | | | |
| | | WT1 | 2008. | -1459. | 0. | 0. | 0. | 0. | -0.001 | -0.005 | 0.000 | |
| | | THRM2 | 18181. | -13210. | 0. | 0. | 0. | 0. | 0.045 | 0.027 | 0.277 | |
| | | THRM3 | 11928. | -8667. | 0. | 0. | 0. | 0. | 0.024 | 0.010 | 0.135 | |
| | | THRM6 | 17079. | -12409. | 0. | 0. | 0. | 0. | 0.041 | 0.024 | 0.252 | |
| | | TIMB1 | 55387. | 40243. | 0. | 0. | 0. | 0. | 0.033 | 0.055 | 0.124 | |
| | | FAULTP | 75876. | 38784. | 0. | 0. | 0. | 0. | 0.084 | 0.077 | 0.402 | |
| | | FAULTN | -53380. | -64912. | 0. | 0. | 0. | 0. | -0.040 | -0.060 | -0.124 | |
| 10A | RAD | PM9018HLS012 | | | | | | | | | | |
| | | WT1 | 0. | 0. | 71. | 0. | 0. | 0. | 0.000 | -0.012 | 0.000 | |
| | | THRM2 | 0. | 0. | 13803. | 0. | 0. | 0. | 0.222 | -0.020 | 0.012 | |
| | | THRM3 | 0. | 0. | 5787. | 0. | 0. | 0. | 0.122 | -0.028 | 0.005 | |
| | | THRM6 | 0. | 0. | 12390. | 0. | 0. | 0. | 0.204 | -0.022 | 0.011 | |
| | | TIMB1 | 0. | 0. | 33539. | 0. | 0. | 0. | 0.055 | 0.047 | 0.047 | |
| | | FAULTP | 0. | 0. | 47193. | 0. | 0. | 0. | 0.277 | 0.035 | 0.060 | |
| | | FAULTN | 0. | 0. | -53448. | 0. | 0. | 0. | -0.055 | -0.087 | -0.047 | |
| 110 | ANC | PEN M-S | | | | | | | | | | |
| | | WT1 | -483. | -2700. | -68. | -8211. | -5. | -18783. | 0.000 | 0.000 | 0.000 | |
| | | THRM2 | -20070. | 7703. | -14553. | -6751. | -13334. | 43583. | 0.035 | -0.060 | -0.013 | |
| | | THRM3 | -10611. | 5729. | -6164. | -3878. | -13402. | 50797. | 0.036 | -0.061 | -0.011 | |
| | | THRM6 | -18403. | 7255. | -13075. | -6244. | -13381. | 61330. | 0.035 | -0.061 | -0.013 | |
| | | TIMB1 | 267891. | 6522. | 16172. | 39767. | 6273. | 68033. | 0.042 | 0.001 | 0.003 | |
| | | FAULTP | 267409. | 11526. | 16104. | 31596. | 6269. | 112833. | 0.078 | 0.001 | 0.003 | |
| | | FAULTN | -288445. | -9222. | -10791. | -54729. | -69880. | -86816. | -0.042 | -0.062 | -0.015 | |
| 015 | SWB | PM9018SS0001 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.004 | -0.003 | 0.005 | |
| | | THRM2 | | | | | | | 0.517 | 0.057 | -0.529 | |
| | | THRM3 | | | | | | | 0.388 | 0.924 | -0.901 | |
| | | THRM6 | | | | | | | 0.494 | 0.209 | -0.595 | |
| | | TIMB1 | 8873. | 0. | 21624. | 0. | 0. | 0. | 0.478 | 0.381 | 0.203 | |
| | | FAULTP | 8873. | 0. | 21624. | 0. | 0. | 0. | 0.992 | 1.302 | 0.207 | |
| | | FAULTN | -8873. | 0. | -21624. | 0. | 0. | 0. | -0.482 | -0.384 | -1.099 | |

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RESTRAINT LOAD SUMMARY

HE101/M5 ZREU/054

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TITLE : FRESHWATER 'FW' SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PAMI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | |
|-----------|------|--------------|--------------------|---------|---------|------------------------|----|----|-------------------|--------|--------|
| | | | PX | PY | PZ | MX | MY | MZ | DX | DY | DZ |
| 035 | SND | FW9018HLS009 | | | | | | | | | |
| | | WT1 | | | | | | | -0.005 | -0.008 | 0.002 |
| | | TTRM2 | | | | | | | 0.587 | -0.208 | 0.103 |
| | | TTRM3 | | | | | | | 0.453 | 0.589 | -0.528 |
| | | TTRM6 | | | | | | | 0.563 | -0.068 | -0.004 |
| | | TTRM1 | 0. | 68445. | 0. | 0. | 0. | 0. | 0.461 | 0.060 | 0.237 |
| | | FAULTP | 0. | 68445. | 0. | 0. | 0. | 0. | 1.042 | 0.640 | 0.348 |
| | | FAULTN | 0. | -68445. | 0. | 0. | 0. | 0. | -0.466 | -0.276 | -0.764 |
| 040 | SND | FW9018HLS004 | | | | | | | | | |
| | | WT1 | | | | | | | -0.005 | -0.009 | 0.001 |
| | | TTRM2 | | | | | | | 0.595 | -0.235 | 0.103 |
| | | TTRM3 | | | | | | | 0.461 | 0.551 | -0.485 |
| | | TTRM6 | | | | | | | 0.571 | -0.097 | 0.065 |
| | | TTRM1 | 25054. | 0. | 61057. | 0. | 0. | 0. | 0.458 | 0.055 | 0.247 |
| | | FAULTP | 25054. | 0. | 61057. | 0. | 0. | 0. | 1.047 | 0.596 | 0.431 |
| | | FAULTN | -25054. | 0. | -61057. | 0. | 0. | 0. | -0.463 | -0.300 | -0.731 |
| 050 | SND | FW9018HLS007 | | | | | | | | | |
| | | WT1 | | | | | | | -0.001 | -0.014 | -0.005 |
| | | TTRM2 | | | | | | | 0.679 | -0.225 | 1.031 |
| | | TTRM3 | | | | | | | 0.380 | 0.360 | 0.155 |
| | | TTRM6 | | | | | | | 0.624 | -0.122 | 0.877 |
| | | TTRM1 | 0. | 0. | 85051. | 0. | 0. | 0. | 0.175 | 0.218 | 0.048 |
| | | FAULTP | 0. | 0. | 85051. | 0. | 0. | 0. | 0.854 | 0.564 | 1.075 |
| | | FAULTN | 0. | 0. | -85051. | 0. | 0. | 0. | -0.176 | -0.457 | -0.053 |
| 055 | SND | FW9018HLS004 | | | | | | | | | |
| | | WT1 | | | | | | | 0.001 | -0.014 | -0.007 |
| | | TTRM2 | | | | | | | 0.699 | -0.163 | 1.119 |
| | | TTRM3 | | | | | | | 0.342 | 0.388 | 0.250 |
| | | TTRM6 | | | | | | | 0.636 | -0.066 | 0.966 |
| | | TTRM1 | 88573. | 0. | 0. | 0. | 0. | 0. | 0.125 | 0.218 | 0.244 |
| | | FAULTP | 88573. | 0. | 0. | 0. | 0. | 0. | 0.827 | 0.392 | 1.356 |
| | | FAULTN | -88573. | 0. | 0. | 0. | 0. | 0. | -0.122 | -0.395 | -0.251 |
| 065 | SND | FW9018SS0006 | | | | | | | | | |
| | | WT1 | | | | | | | 0.011 | -0.006 | -0.012 |
| | | TTRM2 | | | | | | | 0.645 | -0.046 | 1.459 |
| | | TTRM3 | | | | | | | 0.244 | 0.379 | 0.315 |
| | | TTRM6 | | | | | | | 0.575 | 0.029 | 1.292 |
| | | TTRM1 | 0. | 51118. | 6006. | 0. | 0. | 0. | 0.268 | 0.138 | 0.669 |
| | | FAULTP | 0. | 51118. | 6006. | 0. | 0. | 0. | 0.922 | 0.511 | 2.116 |
| | | FAULTN | 0. | -51118. | -6006. | 0. | 0. | 0. | -0.254 | -0.190 | -0.680 |

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RESTRAINT LOAD SUMMARY

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TITLE : FEEDWATER 'FW' SYSTEM - SO 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PAMI
LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | | |
|-----------|------|--------------|--------------------|----|---------|------------------------|----|----|-------------------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | |
| 085 | SNB | FW9018820007 | | | | | | | | | | |
| | | WT1 | | | | | | | | | | |
| | | TRM2 | | | | | | | 0.011 | -0.006 | -0.018 | |
| | | TRM3 | | | | | | | -0.132 | -0.009 | 2.852 | |
| | | TRM4 | | | | | | | -0.107 | -0.040 | 1.349 | |
| -- | | TMR1 | 59420. | 0. | 59420. | 0. | 0. | 0. | -0.127 | -0.014 | 2.587 | |
| | | FAULTP | 59420. | 0. | 59420. | 0. | 0. | 0. | 0.279 | 0.088 | 0.280 | |
| | | FAULTN | -59420. | 0. | -59420. | 0. | 0. | 0. | 0.291 | 0.081 | 3.114 | |
| | | | | | | | | | -0.490 | -0.134 | -0.298 | |
| 092 | SNB | FW90188L5003 | | | | | | | | | | |
| | | WT1 | | | | | | | | | | |
| | | TRM2 | | | | | | | 0.007 | -0.015 | -0.013 | |
| | | TRM3 | | | | | | | -0.136 | 0.007 | 2.415 | |
| | | TRM4 | | | | | | | -0.090 | 0.011 | 1.170 | |
| | | TMR1 | 34957. | 0. | 34957. | 0. | 0. | 0. | -0.128 | 0.008 | 2.196 | |
| | | FAULTP | 34957. | 0. | 34957. | 0. | 0. | 0. | 0.246 | 0.070 | 0.241 | |
| | | FAULTN | -34957. | 0. | -34957. | 0. | 0. | 0. | 0.247 | 0.066 | 2.644 | |
| | | | | | | | | | -0.369 | -0.085 | -0.254 | |
| 097 | SNB | FW90188L5006 | | | | | | | | | | |
| | | WT1 | | | | | | | | | | |
| | | TRM2 | | | | | | | 0.000 | -0.037 | -0.002 | |
| | | TRM3 | | | | | | | -0.027 | 0.024 | 0.893 | |
| | | TRM4 | | | | | | | -0.023 | 0.030 | 0.437 | |
| | | TMR1 | 0. | 0. | 58986. | 0. | 0. | 0. | -0.026 | 0.025 | 0.813 | |
| | | FAULTP | 0. | 0. | 58986. | 0. | 0. | 0. | 0.190 | 0.161 | 0.066 | |
| | | FAULTN | 0. | 0. | -58986. | 0. | 0. | 0. | 0.190 | 0.174 | 0.957 | |
| | | | | | | | | | -0.217 | -0.218 | -0.067 | |

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RESTRAINT LOAD SUMMARY

ME101/W5 FREU/054

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TITLE : FERDINAND *FM* SYSTEM - 80 2D TO W5
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PANK
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | LOCAL FORCES (LR) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | | |
|-----------|------|--------------|-------------------|--------|--------|-----------------------|---------|----------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | | FA | FB | FC | MA | MB | MC | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BE | COS CX | COS CY | COS CZ | | |
| 001 | AWC | 1R121NS01010 | | | | | | | | | | | | | | | | | |
| | | WT1 | -25 | -1182 | -21 | 62 | 81 | -12774 | 0.87 | 0.00 | 0.48 | 0.00 | 1.00 | 0.00 | -0.48 | 0.00 | 0.87 | | |
| | | THRM2 | -4507 | -552 | -2431 | 38868 | 46854 | -76137 | 0.87 | 0.00 | 0.48 | 0.00 | 1.00 | 0.00 | -0.48 | 0.00 | 0.87 | | |
| | | THRM3 | -2250 | -1336 | -5261 | 46329 | 92434 | -74287 | 0.87 | 0.00 | 0.48 | 0.00 | 1.00 | 0.00 | -0.48 | 0.00 | 0.87 | | |
| | | THRM6 | -4446 | -735 | -2919 | 39824 | 71201 | -75937 | 0.87 | 0.00 | 0.48 | 0.00 | 1.00 | 0.00 | -0.48 | 0.00 | 0.87 | | |
| | | TIME1 | 14445 | 89329 | 25479 | 135263 | 312419 | 117705 | 0.87 | 0.00 | 0.48 | 0.00 | 1.00 | 0.00 | -0.48 | 0.00 | 0.87 | | |
| | | FAULTP | 14420 | 88147 | 25448 | 181654 | 404935 | 1164931 | 0.87 | 0.00 | 0.48 | 0.00 | 1.00 | 0.00 | -0.48 | 0.00 | 0.87 | | |
| | | FAULTN | -39377 | -91849 | -10752 | -135201 | -312338 | -1266616 | 0.87 | 0.00 | 0.48 | 0.00 | 1.00 | 0.00 | -0.48 | 0.00 | 0.87 | | |
| 007 | RAD | HL5016 | | | | | | | | | | | | | | | | | |
| | | WT1 | -75 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | | | |
| | | THRM2 | -4084 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | | | |
| | | THRM3 | -8971 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | | | |
| | | THRM6 | -4922 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | | | |
| | | TIME1 | 25307 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | | | |
| | | FAULTP | 25232 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | | | |
| | | FAULTN | -34353 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | | | |
| 07K | RAD | HL5015 | | | | | | | | | | | | | | | | | |
| | | WT1 | -21 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | | | |
| | | THRM2 | -6425 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | | | |
| | | THRM3 | -6089 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | | | |
| | | THRM6 | -6255 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | | | |
| | | TIME1 | 41214 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | | | |
| | | FAULTP | 41194 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | | | |
| | | FAULTN | -47660 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | | | |
| 07H | RAD | HL5013 | | | | | | | | | | | | | | | | | |
| | | WT1 | 8 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | | | |
| | | THRM2 | -10798 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | | | |
| | | THRM3 | -7939 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | | | |
| | | THRM6 | -10293 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | | | |
| | | TIME1 | 32942 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | | | |
| | | FAULTP | 32950 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | | | |
| | | FAULTN | -43732 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | | | |
| 009 | SPD | HL5014 | | | | | | | | | | | | | | | | | |
| | | WT1 | -8959 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | | |
| | | THRM2 | | | | | | | | | | | | | | | | | |
| | | THRM3 | | | | | | | | | | | | | | | | | |
| | | THRM6 | | | | | | | | | | | | | | | | | |
| | | TIME1 | | | | | | | | | | | | | | | | | |
| | | FAULTP | -8959 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | | |
| | | FAULTN | -8959 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | | |

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RESTRAINT LOAD SUMMARY

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TITLE : FRESHWATER "FW" SYSTEM - 80 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : FAMI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (COS AX, COS AY, COS AZ, COS BX, COS BY, COS BZ, COS CX, COS CY, COS CZ). Rows include data for nodes 030, 070, 075, 094, and 099.

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RESTRAINT LOAD SUMMARY

AS101/MS FRBU/054

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TITLE : FRESHWATER *FM* SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), and DIRECTION COSINES (COS AX-CZ). Rows include nodes 101, 11A, 10A, 110, and 015 with various load types (RAD, ANC, SWB) and member types (WT1, THRM1-4, TIME1, FAULTP, FAULTM).

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RESTRAINT LOAD SUMMARY

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TITLE : FRESHWATER "FW" SYSTEM - SQ 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PAWI
LOAD CASE :

| DATA TYPE | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | | | | | |
|-----------|------|--------------|-------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|--|--|
| | | | FX | FY | FZ | MX | MY | MZ | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ | | | | | |
| 035 | SNB | FW9018HLS003 | | | | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | | | | |
| | | THRM2 | | | | | | | | | | | | | | | | | | | | |
| | | THRM3 | | | | | | | | | | | | | | | | | | | | |
| | | THRM6 | | | | | | | | | | | | | | | | | | | | |
| | | TIME1 | 68445 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | | | | |
| | | FAULTP | 68445 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | | | | |
| | | FAULTN | -68445 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | | | | |
| 040 | SNB | FW9018HLS004 | | | | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | | | | |
| | | THRM2 | | | | | | | | | | | | | | | | | | | | |
| | | THRM3 | | | | | | | | | | | | | | | | | | | | |
| | | THRM6 | | | | | | | | | | | | | | | | | | | | |
| | | TIME1 | 65998 | 0 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | | | | |
| | | FAULTP | 65998 | 0 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | | | | |
| | | FAULTN | -65998 | 0 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | | | | |
| 050 | SNB | FW9018HLS007 | | | | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | | | | |
| | | THRM2 | | | | | | | | | | | | | | | | | | | | |
| | | THRM3 | | | | | | | | | | | | | | | | | | | | |
| | | THRM6 | | | | | | | | | | | | | | | | | | | | |
| | | TIME1 | 85051 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | | | | |
| | | FAULTP | 85051 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | | | | |
| | | FAULTN | -85051 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | | | | |
| 055 | SNB | FW9018HLS008 | | | | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | | | | |
| | | THRM2 | | | | | | | | | | | | | | | | | | | | |
| | | THRM3 | | | | | | | | | | | | | | | | | | | | |
| | | THRM6 | | | | | | | | | | | | | | | | | | | | |
| | | TIME1 | 88573 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | | | | | | |
| | | FAULTP | 88573 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | | | | | | |
| | | FAULTN | -88573 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | | | | | | |
| 065 | SNB | FW9018SS0004 | | | | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | | | | |
| | | THRM2 | | | | | | | | | | | | | | | | | | | | |
| | | THRM3 | | | | | | | | | | | | | | | | | | | | |
| | | THRM6 | | | | | | | | | | | | | | | | | | | | |
| | | TIME1 | 51469 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | | | | | | |
| | | FAULTP | 51469 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | | | | | | |
| | | FAULTN | -51469 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | | | | | | |

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RESTRAINT LOAD SUMMARY

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TITLE : FREDWATER "FW" SYSTEM - SG 2D TO M5
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PAMI
LOAD CASE :

| DATA TYPE | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | | |
|-----------|------|--------------|-------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|---|---|
| | | | FA | FB | FC | MA | MB | MC | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ | | |
| 085 | SNB | PM90182S0007 | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | |
| | | TMRM2 | | | | | | | | | | | | | | | | | |
| | | TMRM3 | | | | | | | | | | | | | | | | | |
| | | TMRM6 | | | | | | | | | | | | | | | | | |
| | | TIME1 | 84033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FAULTP | 84033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FAULTN | -84033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 092 | SNB | PM9018HL5003 | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | |
| | | TMRM2 | | | | | | | | | | | | | | | | | |
| | | TMRM3 | | | | | | | | | | | | | | | | | |
| | | TMRM6 | | | | | | | | | | | | | | | | | |
| | | TIME1 | 49436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FAULTP | 49436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FAULTN | -49436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 097 | SNB | PM9018HL5006 | | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | | |
| | | TMRM2 | | | | | | | | | | | | | | | | | |
| | | TMRM3 | | | | | | | | | | | | | | | | | |
| | | TMRM6 | | | | | | | | | | | | | | | | | |
| | | TIME1 | 58986 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FAULTP | 58986 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FAULTN | -58986 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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2C159RC5037

RESTRAINT LOAD SUMMARY

ME101/M5 GARD/ 45 (FP0119) 11/15/99 FP0119 PAGE 134

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO M5
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PARI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | |
|-----------|------|--------------|--------------------|--------|--------|------------------------|-----|---------|-------------------|--------|--------|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ |
| 001 | ANC | 1R121NSG101D | -16. | -1182. | -32. | 6247. | 81. | -11142. | 0.000 | 0.000 | 0.000 |
| | | WT1 | | | | | | | 0.028 | 0.028 | 0.027 |
| | | TIMEL1 | | | | | | | 0.032 | 0.031 | 0.028 |
| | | TIMEL2 | | | | | | | 0.031 | 0.030 | 0.027 |
| | | TIMEL3 | | | | | | | 0.032 | 0.031 | 0.028 |
| | | LOCA | | | | | | | 0.032 | 0.031 | 0.028 |
| 007 | RAD | HL5016 | -64. | 0. | 40. | 0. | 0. | 0. | -0.001 | -0.001 | -0.001 |
| | | WT1 | | | | | | | 0.054 | 0.078 | 0.092 |
| | | TIMEL1 | 3202. | 0. | 5750. | 0. | 0. | 0. | 0.054 | 0.085 | 0.094 |
| | | TIMEL2 | 3547. | 0. | 5366. | 0. | 0. | 0. | 0.044 | 0.070 | 0.075 |
| | | TIMEL3 | 3024. | 0. | 5639. | 0. | 0. | 0. | 0.054 | 0.085 | 0.094 |
| | | LOCA | 3547. | 0. | 5366. | 0. | 0. | 0. | | | |
| 07R | RAD | HL5015 | 13. | 0. | -13. | 0. | 0. | 0. | 0.000 | 0.000 | 0.000 |
| | | WT1 | | | | | | | 0.009 | 0.079 | 0.009 |
| | | TIMEL1 | 6039. | 0. | 6039. | 0. | 0. | 0. | 0.009 | 0.086 | 0.009 |
| | | TIMEL2 | 6292. | 0. | 6292. | 0. | 0. | 0. | 0.008 | 0.071 | 0.009 |
| | | TIMEL3 | 5995. | 0. | 5995. | 0. | 0. | 0. | 0.009 | 0.086 | 0.009 |
| | | LOCA | 6292. | 0. | 6292. | 0. | 0. | 0. | | | |
| 07H | RAD | HL5015 | -6. | 0. | -6. | 0. | 0. | 0. | 0.000 | 0.000 | 0.000 |
| | | WT1 | | | | | | | 0.009 | 0.079 | 0.009 |
| | | TIMEL1 | 16291. | 0. | 16291. | 0. | 0. | 0. | 0.009 | 0.086 | 0.009 |
| | | TIMEL2 | 16386. | 0. | 16386. | 0. | 0. | 0. | 0.008 | 0.071 | 0.009 |
| | | TIMEL3 | 16342. | 0. | 16342. | 0. | 0. | 0. | 0.009 | 0.086 | 0.009 |
| | | LOCA | 16386. | 0. | 16386. | 0. | 0. | 0. | | | |
| 009 | SPD | HL5014 | 0. | -8959. | 0. | 0. | 0. | 0. | 0.003 | 0.000 | 0.001 |
| | | WT1 | | | | | | | 0.044 | 0.079 | 0.060 |
| | | TIMEL1 | | | | | | | 0.040 | 0.086 | 0.067 |
| | | TIMEL2 | | | | | | | 0.034 | 0.071 | 0.048 |
| | | TIMEL3 | | | | | | | 0.044 | 0.086 | 0.067 |
| | | LOCA | | | | | | | | | |
| 030 | SPR | FW90188HG001 | 0. | 0. | 0. | 0. | 0. | 0. | -0.004 | -0.003 | 0.004 |
| | | WT1 | | | | | | | 0.039 | 0.051 | 0.016 |
| | | TIMEL1 | 0. | 0. | 0. | 0. | 0. | 0. | 0.045 | 0.059 | 0.017 |
| | | TIMEL2 | 0. | 0. | 0. | 0. | 0. | 0. | 0.033 | 0.046 | 0.014 |
| | | TIMEL3 | 0. | 0. | 0. | 0. | 0. | 0. | 0.045 | 0.059 | 0.017 |
| | | LOCA | 0. | 0. | 0. | 0. | 0. | 0. | | | |

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2C159RC503

RESTRAINT LOAD SUMMARY

2101/MS CARO/ 45 (770119) 11/15/99 770119 PAGE 13

TITLE : FEEDWATER 'FW' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) (FX, FY, FZ), GLOBAL MOMENTS (FT-LB) (MX, MY, MZ), DISPLACEMENT (IN) (DX, DY, DZ). Rows include load cases 070, 075, 094, 099, 101, and 11A with sub-rows for WT1, TIME1, TIME2, TIME3, and LOCA.

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2C159RC5037

RESTRAINT LOAD SUMMARY

MS101/MS QARO/ 45 (FP0119) 12/15/99 FP0119 PAGE 13.

TITLE : FEEDWATER "PW" SYSTEM - SQ 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : PAMI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, GLOBAL FORCES (LB) FX FY FZ, GLOBAL MOMENTS (FT-LB) MX MY MZ, DISPLACEMENT (IN) DX DY DZ. Rows include various load cases like 10A RAD, 110 ANC, 001 RAD, 001 RAD, 001 RAD, 001 RAD, 001 RAR.

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2C159RC5037

RESTRAINT LOAD SUMMARY

MS101/MS CARO/ 45 (FP0119) 11/18/99 FP0119 PAGE 13

TITLE : FEEDWATER 'FW' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RC5037
USER : FANI
LOAD CASE :

| DATA TYPE | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | | |
|-----------|------|--------------|--------------------|--------|-------|------------------------|---------|---------|-------------------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | |
| 001 | RAR | CENTER SG | | | | | | | | | | |
| | | WT1 | | | | | | | 0.000 | 0.000 | 0.000 | |
| | | TIMEL1 | 0. | 0. | 0. | 0. | 253936. | 0. | 0.028 | 0.020 | 0.027 | |
| | | TIMEL2 | 0. | 0. | 0. | 0. | 257981. | 0. | 0.032 | 0.031 | 0.028 | |
| | | TIMEL3 | 0. | 0. | 0. | 0. | 251297. | 0. | 0.031 | 0.030 | 0.027 | |
| | | LOCA | 0. | 0. | 0. | 0. | 257981. | 0. | 0.032 | 0.031 | 0.028 | |
| 001 | RAR | CENTER SG | | | | | | | | | | |
| | | WT1 | | | | | | | 0.000 | 0.000 | 0.000 | |
| | | TIMEL1 | 0. | 0. | 0. | 0. | 0. | 128603. | 0.028 | 0.020 | 0.027 | |
| | | TIMEL2 | 0. | 0. | 0. | 0. | 0. | 146865. | 0.032 | 0.031 | 0.028 | |
| | | TIMEL3 | 0. | 0. | 0. | 0. | 0. | 114521. | 0.031 | 0.030 | 0.027 | |
| | | LOCA | 0. | 0. | 0. | 0. | 0. | 146865. | 0.032 | 0.031 | 0.028 | |
| 015 | SMB | FW9018NS0001 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.004 | -0.003 | 0.005 | |
| | | TIMEL1 | 2056. | 0. | 5912. | 0. | 0. | 0. | 0.033 | 0.044 | 0.017 | |
| | | TIMEL2 | 2459. | 0. | 5992. | 0. | 0. | 0. | 0.046 | 0.074 | 0.017 | |
| | | TIMEL3 | 1835. | 0. | 4473. | 0. | 0. | 0. | 0.034 | 0.057 | 0.015 | |
| | | LOCA | 2459. | 0. | 5992. | 0. | 0. | 0. | 0.046 | 0.074 | 0.017 | |
| 035 | SMB | FW9018NLS009 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.005 | -0.008 | 0.002 | |
| | | TIMEL1 | 0. | 9940. | 0. | 0. | 0. | 0. | 0.038 | 0.009 | 0.018 | |
| | | TIMEL2 | 0. | 11001. | 0. | 0. | 0. | 0. | 0.042 | 0.010 | 0.021 | |
| | | TIMEL3 | 0. | 9925. | 0. | 0. | 0. | 0. | 0.032 | 0.009 | 0.016 | |
| | | LOCA | 0. | 11001. | 0. | 0. | 0. | 0. | 0.042 | 0.010 | 0.021 | |
| 040 | SMB | FW9018NLS004 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.005 | -0.009 | 0.001 | |
| | | TIMEL1 | 1823. | 0. | 4442. | 0. | 0. | 0. | 0.038 | 0.006 | 0.019 | |
| | | TIMEL2 | 1927. | 0. | 4695. | 0. | 0. | 0. | 0.042 | 0.006 | 0.022 | |
| | | TIMEL3 | 1683. | 0. | 4101. | 0. | 0. | 0. | 0.032 | 0.006 | 0.017 | |
| | | LOCA | 1927. | 0. | 4695. | 0. | 0. | 0. | 0.042 | 0.006 | 0.022 | |
| 050 | SMB | FW9018NLS007 | | | | | | | | | | |
| | | WT1 | | | | | | | -0.001 | -0.014 | -0.005 | |
| | | TIMEL1 | 0. | 0. | 3786. | 0. | 0. | 0. | 0.014 | 0.025 | 0.002 | |
| | | TIMEL2 | 0. | 0. | 3319. | 0. | 0. | 0. | 0.016 | 0.032 | 0.002 | |
| | | TIMEL3 | 0. | 0. | 3658. | 0. | 0. | 0. | 0.012 | 0.021 | 0.002 | |
| | | LOCA | 0. | 0. | 3319. | 0. | 0. | 0. | 0.016 | 0.032 | 0.002 | |

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RESTRAINT LOAD SUMMARY

W1101/M5 GARO/ 45 (FP0119) 11/15/99 FP0119 PAGE 136

TITLE : FEEDWATER *FW* SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PANI
 LOAD CASE :

| DATA TYPE PT | LOAD | TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | DISPLACEMENT (IN) | | |
|-----------------|------|--------------|--------------------|-------|-------|------------------------|----|----|-------------------|--------|--------|
| | | | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ |
| 055 | SNB | FW9018NLS008 | | | | | | | | | |
| | | WT1 | | | | | | | 0.003 | -0.014 | -0.007 |
| | | TIMEL1 | 6573. | 0. | 0. | 0. | 0. | 0. | 0.003 | 0.025 | 0.012 |
| | | TIMEL2 | 8021. | 0. | 0. | 0. | 0. | 0. | 0.011 | 0.032 | 0.014 |
| | | TIMEL3 | 5420. | 0. | 0. | 0. | 0. | 0. | 0.008 | 0.023 | 0.011 |
| | | LOCA | 8921. | 0. | 0. | 0. | 0. | 0. | 0.011 | 0.032 | 0.014 |
| 065 | SNB | FW9018NLS006 | | | | | | | | | |
| | | WT1 | | | | | | | 0.011 | -0.006 | -0.012 |
| | | TIMEL1 | 0. | 7218. | 848. | 0. | 0. | 0. | 0.018 | 0.018 | 0.024 |
| | | TIMEL2 | 0. | 7724. | 908. | 0. | 0. | 0. | 0.022 | 0.019 | 0.028 |
| | | TIMEL3 | 0. | 6129. | 720. | 0. | 0. | 0. | 0.016 | 0.015 | 0.022 |
| | | LOCA | 0. | 7724. | 908. | 0. | 0. | 0. | 0.022 | 0.019 | 0.028 |
| 085 | SNB | FW9018NLS007 | | | | | | | | | |
| | | WT1 | | | | | | | 0.011 | -0.006 | -0.018 |
| | | TIMEL1 | 2633. | 0. | 2633. | 0. | 0. | 0. | 0.018 | 0.002 | 0.020 |
| | | TIMEL2 | 2628. | 0. | 2628. | 0. | 0. | 0. | 0.023 | 0.003 | 0.024 |
| | | TIMEL3 | 2413. | 0. | 2413. | 0. | 0. | 0. | 0.016 | 0.002 | 0.016 |
| | | LOCA | 2633. | 0. | 2633. | 0. | 0. | 0. | 0.023 | 0.003 | 0.024 |
| 092 | SNB | FW9018NLS003 | | | | | | | | | |
| | | WT1 | | | | | | | 0.007 | -0.015 | -0.013 |
| | | TIMEL1 | 674. | 0. | 674. | 0. | 0. | 0. | 0.007 | 0.003 | 0.006 |
| | | TIMEL2 | 841. | 0. | 841. | 0. | 0. | 0. | 0.007 | 0.004 | 0.006 |
| | | TIMEL3 | 608. | 0. | 608. | 0. | 0. | 0. | 0.005 | 0.003 | 0.005 |
| | | LOCA | 841. | 0. | 841. | 0. | 0. | 0. | 0.007 | 0.004 | 0.006 |
| 097 | SNB | FW9018NLS006 | | | | | | | | | |
| | | WT1 | | | | | | | 0.000 | -0.037 | -0.002 |
| | | TIMEL1 | 0. | 0. | 1793. | 0. | 0. | 0. | 0.001 | 0.008 | 0.002 |
| | | TIMEL2 | 0. | 0. | 1614. | 0. | 0. | 0. | 0.001 | 0.010 | 0.002 |
| | | TIMEL3 | 0. | 0. | 1360. | 0. | 0. | 0. | 0.001 | 0.008 | 0.002 |
| | | LOCA | 0. | 0. | 1814. | 0. | 0. | 0. | 0.001 | 0.010 | 0.002 |

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RESTRAINT LOAD SUMMARY

ME101/M5 GARO/ 45 (FP0119) 11/15/99 FP0119 PAGE 137

TITLE : FEEDWATER "PW" SYSTEM - SO 2D TO M5
 PROJECT NUMBER : 23438091
 PROBLEM NUMBER : 2C159RC5037
 USER : FAWI
 LOAD CASE :

| DATA TYPE | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | |
|-----------|------|--------------|-------------------|-------|-----|-----------------------|----|--------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | FX | FY | FZ | MX | MY | MZ | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ |
| 001 | ANC | 1R121NSG101D | -16 | -1182 | -22 | 6247 | 81 | -11142 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| | | WT1 | | | | | | | | | | | | | | | |
| | | TIMEL1 | | | | | | | | | | | | | | | |
| | | TIMEL2 | | | | | | | | | | | | | | | |
| | | TIMEL3 | | | | | | | | | | | | | | | |
| | | LOCA | | | | | | | | | | | | | | | |
| 007 | RAD | RLS016 | -75 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | |
| | | WT1 | 10851 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | |
| | | TIMEL1 | 11258 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | |
| | | TIMEL2 | 10641 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | |
| | | TIMEL3 | 11258 | 0 | 0 | 0 | 0 | 0 | 0.85 | 0.00 | -0.53 | | | | | | |
| | | LOCA | | | | | | | | | | | | | | | |
| 078 | RAD | RLS015 | -21 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | |
| | | WT1 | 8626 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | |
| | | TIMEL1 | 8938 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | |
| | | TIMEL2 | 8478 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | |
| | | TIMEL3 | 8898 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | 0.71 | | | | | | |
| | | LOCA | | | | | | | | | | | | | | | |
| 078 | RAD | RLS015 | 8 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | |
| | | WT1 | 23040 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | |
| | | TIMEL1 | 23173 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | |
| | | TIMEL2 | 23110 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | |
| | | TIMEL3 | 23173 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 | -0.71 | | | | | | |
| | | LOCA | | | | | | | | | | | | | | | |
| 009 | SPD | RLS014 | -8959 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | |
| | | TIMEL1 | | | | | | | | | | | | | | | |
| | | TIMEL2 | | | | | | | | | | | | | | | |
| | | TIMEL3 | | | | | | | | | | | | | | | |
| | | LOCA | | | | | | | | | | | | | | | |
| 030 | SPR | FW90188H0001 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | WT1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | TIMEL1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | TIMEL2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | TIMEL3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |
| | | LOCA | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | |

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RESTRAINT LOAD SUMMARY

ME101/MS GARG/ 45 (FP0119) 11/15/99 FP0119 PAGE 134

TITLE : FEEDWATER 'FW' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438001
PROBLEM NUMBER : 2C159RCS037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (COS AX, COS AY, COS AZ, COS BX, COS BY, COS BZ, COS CX, COS CY, COS CZ). Rows include data for nodes 070, 075, 094, 099, 101, and 11A, each with WT1, TIME1-3, and LOCA load types.

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RESTRAINT LOAD SUMMARY

ME101/M5 GARO/ 45

(PP0119) 11/15/99 PP0119 PAGE 13

TITLE : FEEDWATER "FW" SYSTEM - SG 2D TO M5
PROJECT NUMBER : 23438801
PROBLEM NUMBER : 2C159RCS037
USER : PANI
LOAD CASE :

Table with columns: DATA TYPE, LOAD, TITLE, LOCAL FORCES (LB) (FA, FB, FC), LOCAL MOMENTS (FT-LB) (MA, MB, MC), DIRECTION COSINES (COS AX to COS CZ). Rows include 10A RAD, 110 ANC, 001 RAD, 001 RAD, 001 RAD, 001 RAR.

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RESTRAINT LOAD SUMMARY

MR101/MS GARG/ 45 (PP0119) 11/15/99 PP0119 PAGE 14

TITLE : FRESHWATER "FW" SYSTEM - SG 2D TO MS
 PROJECT NUMBER : 23438801
 PROBLEM NUMBER : 2C159RCS037
 USER : PAWI
 LOAD CASE :

| DATA TYPE PT | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | | |
|-----------------|------|--------------|-------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | FX | FY | FZ | MX | MY | MZ | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ | |
| 001 | BAR | CENTER SG | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | |
| | | TIMEL1 | 0 | 0 | 0 | 253936 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| | | TIMEL2 | 0 | 0 | 0 | 257981 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| | | TIMEL3 | 0 | 0 | 0 | 251297 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| | | LOCA | 0 | 0 | 0 | 257981 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| 001 | BAR | CENTER SG | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | |
| | | TIMEL1 | 0 | 0 | 0 | 128603 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |
| | | TIMEL2 | 0 | 0 | 0 | 146885 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |
| | | TIMEL3 | 0 | 0 | 0 | 114821 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |
| | | LOCA | 0 | 0 | 0 | 146885 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |
| 015 | SHB | FW9018SR0001 | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | |
| | | TIMEL1 | 6417 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| | | TIMEL2 | 6476 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| | | TIMEL3 | 4835 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| | | LOCA | 6476 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| 035 | SHB | FW9018NLS009 | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | |
| | | TIMEL1 | 9940 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| | | TIMEL2 | 11001 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| | | TIMEL3 | 9925 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| | | LOCA | 11001 | 0 | 0 | 0 | 0 | 0 | 0.00 | 1.00 | 0.00 | | | | | | | |
| 040 | SHB | FW9018NLS006 | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | |
| | | TIMEL1 | 4802 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| | | TIMEL2 | 5075 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| | | TIMEL3 | 4433 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| | | LOCA | 5075 | 0 | 0 | 0 | 0 | 0 | 0.38 | 0.00 | 0.93 | | | | | | | |
| 050 | SHB | FW9018NLS007 | | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | | |
| | | TIMEL1 | 3786 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |
| | | TIMEL2 | 3819 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |
| | | TIMEL3 | 3656 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |
| | | LOCA | 3919 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | | | |

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2C189RC037

RESTRAINT LOAD SUMMARY

ME101/MS GARG/ 48 (FP0119) 11/15/99 FP0119 PAGE 141

TITLE : FEEDWATER 'FW' SYSTEM - SG 2D TO MS
PROJECT NUMBER : 23438801
PROBLEM NUMBER : 2C189RC037
USER : FANI
LOAD CASE :

| DATA TYPE | LOAD | TITLE | LOCAL FORCES (LB) | | | LOCAL MOMENTS (FT-LB) | | | DIRECTION COSINES | | | | | | | | |
|-----------|------|--------------|-------------------|----|----|-----------------------|----|----|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | FA | PB | PC | MA | MB | MC | COS AX | COS AY | COS AZ | COS BX | COS BY | COS BZ | COS CX | COS CY | COS CZ |
| 055 | SNB | FW9018HL5008 | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | |
| | | TIMEL1 | 6573 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | |
| | | TIMEL2 | 8021 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | |
| | | TIMEL3 | 5420 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | |
| | | LOCA | 8021 | 0 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.00 | 0.00 | | | | | |
| 065 | SNB | FW9018SS0006 | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | |
| | | TIMEL1 | 7268 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | |
| | | TIMEL2 | 7778 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | |
| | | TIMEL3 | 6171 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | |
| | | LOCA | 7778 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.99 | 0.12 | | | | | |
| 085 | SNB | FW9018SS0007 | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | |
| | | TIMEL1 | 3724 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | |
| | | TIMEL2 | 3717 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | |
| | | TIMEL3 | 3412 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | |
| | | LOCA | 3724 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | -0.71 | | | | | |
| 092 | SNB | FW9018HL5003 | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | |
| | | TIMEL1 | 953 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | |
| | | TIMEL2 | 1189 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | |
| | | TIMEL3 | 860 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | |
| | | LOCA | 1189 | 0 | 0 | 0 | 0 | 0 | 0 | -0.71 | 0.00 | 0.71 | | | | | |
| 097 | SNB | FW9018HL5006 | | | | | | | | | | | | | | | |
| | | WT1 | | | | | | | | | | | | | | | |
| | | TIMEL1 | 1793 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | |
| | | TIMEL2 | 1814 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | |
| | | TIMEL3 | 1360 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | |
| | | LOCA | 1814 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 1.00 | | | | | |



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

ORIGINATOR C.BASAVARAJU

DATE _____

CALC NO RC5037
SHEET NO _____
SHEET REV 5

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DCN# 0000067

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ATTACHMENT 3.0 HELB STRESS SUMMARY

TOTAL NO OF SHEETS 7

2C159RC5037 ALL PIPE BREAK LOCATIONS

MR101/M5 GARO/ 45 (P01253) 11/15/99 P01253 PAGE 1

TITLE : FEEDWATER "FM" SYSTEM - SG 2D TO M5
 PROJECT NUMBER : 23438001
 PROBLEM NUMBER : 2C159RC5037
 USER : PAWI
 LOAD CASE : ALL

CODE SCJN75, CLASS 2

| ELEMENT | | CODE SCJN75, CLASS 2 | | | ALLOW |
|---------|-------|----------------------|--------|-------|-------|
| FROM | TO | EQN 9 | EQN 10 | SUM | PSI |
| | TITLE | PSI | PSI | 9+10 | |
| | | | | PSI | |
| 002 | THGT | 12 | 21 | 23 | 48600 |
| 001 | | 16 | 20 | 36 | |
| 002 | THGT | 7412 | 10194 | 17606 | 48600 |
| N02 | | 7017 | 14526 | 21543 | |
| N02 | THGT | 7017 | 14526 | 21543 | 39468 |
| 005 B | | 6339 | 9356 | 15695 | |
| 005 B | BRND | 6652 | 16882 | 23534 | 39468 |
| 005 M | | 6393 | 17216 | 23609 | |
| 005 M | BRND | 6393 | 17216 | 23609 | 39468 |
| 005 E | | 6151 | 16653 | 22804 | |
| 005 E | THGT | 5969 | 9329 | 15198 | 39468 |
| 006 B | | 5826 | 9092 | 14918 | |
| 006 B | BRND | 5957 | 16403 | 22361 | 39468 |
| 006 M | | 6123 | 15216 | 21339 | |
| 006 M | BRND | 6123 | 15216 | 21339 | 39468 |
| 006 E | | 6199 | 13012 | 19210 | |
| 006 E | THGT | 6004 | 7345 | 13349 | 32400 |
| 006A | | 5983 | 5217 | 11201 | |
| 006A | THGT | 5983 | 5217 | 11201 | 32400 |
| 007 | | 6183 | 11362 | 17545 | |
| 007 | THGT | 6178 | 9064 | 15241 | 32400 |
| 070 | | 6178 | 9064 | 15241 | |
| 070 | THGT | 6280 | 7389 | 13669 | 32400 |
| 07GA | | 6280 | 7389 | 13669 | |
| 07GA | THGT | 6280 | 7389 | 13669 | 32400 |
| 07H | | 6540 | 9117 | 15657 | |

** EXCEEDED ALLOWABLE

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CODE SCJN75, CLASS 2

| ELEMENT | | EQN 9 PSI | EQN 10 PSI | SUM 9+10 PSI | ALLOW PSI |
|----------------|---------------|--------------|---------------|--------------------|--------------|
| FROM TO | TYPE TITLE | | | | |
| 07K 009 | TWGT | 6540 5938 | 9117 5912 | 15657 11871 | 32400 |
| 009 09A B | TWGT | 5938 5969 | 5932 5653 | 11871 11622 | 32400 |
| 09A B 09A M | BEND | 6152 6206 | 10237 8665 | 16389 14891 | 32400 |
| 09A M 09A E | BEND | 6206 6224 | 8685 7730 | 14891 13954 | 32400 |
| 09A E 09B B | TWGT | 6022 6144 | 4284 4120 | 10306 10263 | 32400 |
| 09B B 09B M | BEND | 6388 6508 | 7433 6595 | 13821 13103 | 32400 |
| 09B M 09B E | BEND | 6508 6580 | 6595 5375 | 13103 11954 | 32400 |
| 09B E 09C | TWGT | 6264 6264 | 2978 2805 | 9261 9069 | 32400 |
| 09C 010 | TWGT | 6264 6250 | 2805 3146 | 9069 9396 | 32400 |
| 010 10X | TWGT | 6250 6630 | 3146 6872 | 9396 13502 | 32400 |
| 10X 011 | TWGT | 6366 6077 | 4879 2665 | 11245 8742 | 32400 |
| 011 012 | TWGT | 6077 6063 | 2665 2961 | 8742 9025 | 32400 |
| 012 12A | TWGT | 6063 6045 | 2961 3386 | 9025 9430 | 32400 |
| 12A 013 | TWGT | 6045 6030 | 3386 3829 | 9430 9859 | 32400 |
| 013 014 B | TWGT | 6030 6012 | 3829 4625 | 9859 10637 | 32400 |
| 014 B 014 M | BEND | 6188 6100 | 8413 9504 | 14600 15604 | 32400 |

** EXCEEDED ALLOWABLE

CODE SCJW75, CLASS 2

| ELEMENT | | EQN 9 PSI | EQN 10 PSI | SUM 9-10 PSI | ALLOW PSI |
|------------|---------------|--------------|---------------|--------------------|--------------|
| FROM TO | TYPE TITLE | | | | |
| 014 M | BEND | 6100 | 9504 | 15604 | 32400 |
| 014 E | | 6427 | 9396 | 15823 | |
| 014 E | TWGT | 6197 | 5161 | 11358 | 32400 |
| 015 | | 6317 | 5055 | 11372 | |
| 015 | TWGT | 6317 | 5055 | 11372 | 32400 |
| 030 | | 6627 | 4969 | 11596 | |
| 030 | TWGT | 6627 | 4969 | 11596 | 32400 |
| 028 | | 6465 | 4948 | 11413 | |
| 028 | TWGT | 6465 | 4948 | 11413 | 32400 |
| 029 | | 6363 | 4949 | 11312 | |
| 029 | TWGT | 6363 | 4949 | 11312 | 32400 |
| 032 | | 6264 | 4970 | 11234 | |
| 032 | TWGT | 6264 | 4970 | 11234 | 32400 |
| 035 | | 6229 | 4997 | 11227 | |
| 035 | TWGT | 6229 | 4997 | 11227 | 32400 |
| 035A | | 6213 | 4943 | 11156 | |
| 035A | TWGT | 6213 | 4943 | 11156 | 32400 |
| 040 | | 6259 | 4891 | 11150 | |
| 040 | TWGT | 6259 | 4891 | 11150 | 32400 |
| 045 B | | 6825 | 8157 | 14982 | |
| 045 B | BEND | 6825 | 8157 | 14982 | 32400 |
| 045 M | | 6947 | 7820 | 14767 | |
| 045 M | BEND | 6947 | 7820 | 14767 | 32400 |
| 045 E | | 6790 | 6927 | 13717 | |
| 045 E | BEND | 6790 | 6927 | 13717 | 32400 |
| 045 E | TWGT | 6451 | 3802 | 10253 | 32400 |
| 050 | | 7073 | 5866 | 12939 | |
| 050 | TWGT | 7073 | 5866 | 12939 | 32400 |
| 050A | | 6539 | 2643 | 9183 | |
| 050A | TWGT | 6539 | 2643 | 9183 | 32400 |
| 055 | | 6620 | 2548 | 9168 | |
| 055 | TWGT | 6620 | 2548 | 9168 | 32400 |
| 060 B | | 6528 | 2543 | 9072 | |
| 060 B | TWGT | 6528 | 2543 | 9072 | 32400 |

** EXCEEDED ALLOWABLE

CODE SC3W75, CLASS 2

| FROM TO | ELEMENT TYPE TITLE | EQU 9 PSI | EQU 10 PSI | SUM 9+10 PSI | ALLOW PSI |
|---------|--------------------|-----------|------------|--------------|-----------|
| 060 B | BEND | 6893 | 4630 | 11523 | 32400 |
| 060 M | BEND | 6547 | 5008 | 11555 | 32400 |
| 060 N | BEND | 6547 | 5008 | 11555 | 32400 |
| 060 E | BEND | 6589 | 5297 | 11887 | 32400 |
| 060 E | TNGT | 6306 | 2910 | 9216 | 32400 |
| 065 | TNGT | 6410 | 2985 | 9395 | 32400 |
| 067 | TNGT | 6739 | 3128 | 9867 | 32400 |
| 067A | TNGT | 6739 | 3128 | 9867 | 32400 |
| 067A | TNGT | 6917 | 3200 | 10117 | 32400 |
| 070 | TNGT | 7106 | 3272 | 10378 | 32400 |
| 071 | TNGT | 7106 | 3272 | 10378 | 32400 |
| 071A | TNGT | 6890 | 3671 | 10562 | 32400 |
| 071A | TNGT | 6375 | 4203 | 10578 | 32400 |
| 071B | TNGT | 6359 | 4742 | 11102 | 32400 |
| 071B | TNGT | 6359 | 4742 | 11102 | 32400 |
| 072 | TNGT | 6194 | 5288 | 11482 | 32400 |
| 072A | TNGT | 6194 | 5500 | 11694 | 32400 |
| 072A | TNGT | 6194 | 5500 | 11694 | 32400 |
| 075 | TNGT | 6282 | 5713 | 11995 | 32400 |
| 080 B | BEND | 6009 | 5263 | 11272 | 32400 |
| 080 B | BEND | 6184 | 5581 | 11765 | 32400 |
| 080 M | BEND | 6278 | 5423 | 11701 | 32400 |
| 080 M | BEND | 6278 | 5423 | 11701 | 32400 |
| 085 | TNGT | 6191 | 5235 | 11427 | 32400 |
| 086 | TNGT | 6170 | 5454 | 11624 | 32400 |

** EXCEEDED ALLOWABLE

CODE SC3M75, CLASS 2

| ELEMENT FROM TO | TYPE TITLE | EQM 9 PSI | EQM 10 PSI | SUM 9+10 PSI | ALLOW PSI |
|-----------------|------------|-----------|------------|--------------|-----------|
| 086 | TNGT | 6178 | 3454 | 11824 | 32400 |
| 086A | | 7082 | 5748 | 11881 | |
| 086A | TNGT | 6132 | 1748 | 13881 | 32400 |
| 087 | | 6095 | 6173 | 12268 | |
| 087 | TNGT | 6095 | 6173 | 12268 | 32400 |
| 090 B | | 6091 | 6252 | 12344 | |
| 090 B | BEND | 6297 | 11383 | 17679 | 32400 |
| 090 M | | 6249 | 12085 | 18334 | |
| 090 M | BEND | 6249 | 12085 | 18334 | 32400 |
| 090 E | | 6194 | 11715 | 17911 | |
| 090 E | TNGT | 6018 | 6435 | 12453 | 32400 |
| 090A | | 6267 | 5271 | 11538 | |
| 090A | TNGT | 6267 | 5271 | 11538 | 32400 |
| 094 | | 7082 | 4198 | 11279 | |
| 094A | TNGT | 6937 | 4004 | 10941 | 32400 |
| 094A | | 6808 | 3812 | 10620 | |
| 092 | TNGT | 6808 | 3812 | 10620 | 32400 |
| 092A | | 6473 | 2100 | 8573 | |
| 092A | TNGT | 6473 | 2100 | 8573 | 32400 |
| 095 B | | 6865 | 914 | 7779 | |
| 095 B | BEND | 7352 | 1664 | 9016 | 32400 |
| 095 M | | 7306 | 1652 | 8958 | |
| 095 M | BEND | 7306 | 1652 | 8958 | 32400 |
| 095 E | | 7224 | 1626 | 8840 | |
| 095 E | TNGT | 6771 | 887 | 7658 | 32400 |
| 097 | | 6851 | 1805 | 8657 | |
| 097 | TNGT | 6851 | 1805 | 8657 | 32400 |
| 099 | | 6727 | 1060 | 7787 | |
| 099 | TNGT | 6727 | 1060 | 7787 | 32400 |
| 100 B | | 6606 | 970 | 7577 | |

** EXCEEDED ALLOWABLE

CODE SC3W75, CLASS 2

| ELEMENT | | SQN 9 PSI | SQN 10 PSI | SUM 9+10 PSI | ALLOW PSI |
|------------|---------------|--------------|---------------|--------------------|--------------|
| FROM TO | TYPE TITLE | | | | |
| 100 B | BEND | 7000 | 1766 | 8766 | 32400 |
| 100 M | | 6883 | 2122 | 9205 | |
| 100 M | BEND | 6883 | 2122 | 9205 | 32400 |
| 100 E | | 6889 | 3523 | 10412 | |
| 100 E | TWGT | 6525 | 1935 | 8460 | 32400 |
| 101 | | 6554 | 2448 | 9002 | |
| --101 | TWGT | 6554 | 2448 | 9002 | 32400 |
| 11A | | 6575 | 2802 | 9377 | |
| 11A | TWGT | 6575 | 2802 | 9377 | 32400 |
| 102 B | | 6628 | 5453 | 12080 | |
| 102 B | BEND | 7029 | 9927 | 16956 | 32400 |
| 102 M | | 7048 | 14651 | 21699 | |
| 102 M | BEND | 7048 | 14651 | 21699 | 32400 |
| 102 E | | 7057 | 16319 | 23376 | |
| 102 E | TWGT | 6648 | 8964 | 15612 | 32400 |
| 10A | | 6706 | 8789 | 15495 | |
| 10A | TWGT | 6706 | 8789 | 15495 | 32400 |
| 105 | | 8010 | 10385 | 18395 | |
| 105 | TWGT | 8010 | 10385 | 18395 | 32400 |
| 110 | | 8093 | 10371 | 18464 | |

** EXCEEDED ALLOWABLE



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

ORIGINATOR C.BASAVARAJU

DATE _____

CALC NO RC5037
SHEET NO _____
SHEET REV 5

DCP# 98-19444-2, SUPP. 0 page of

DCN# 000067

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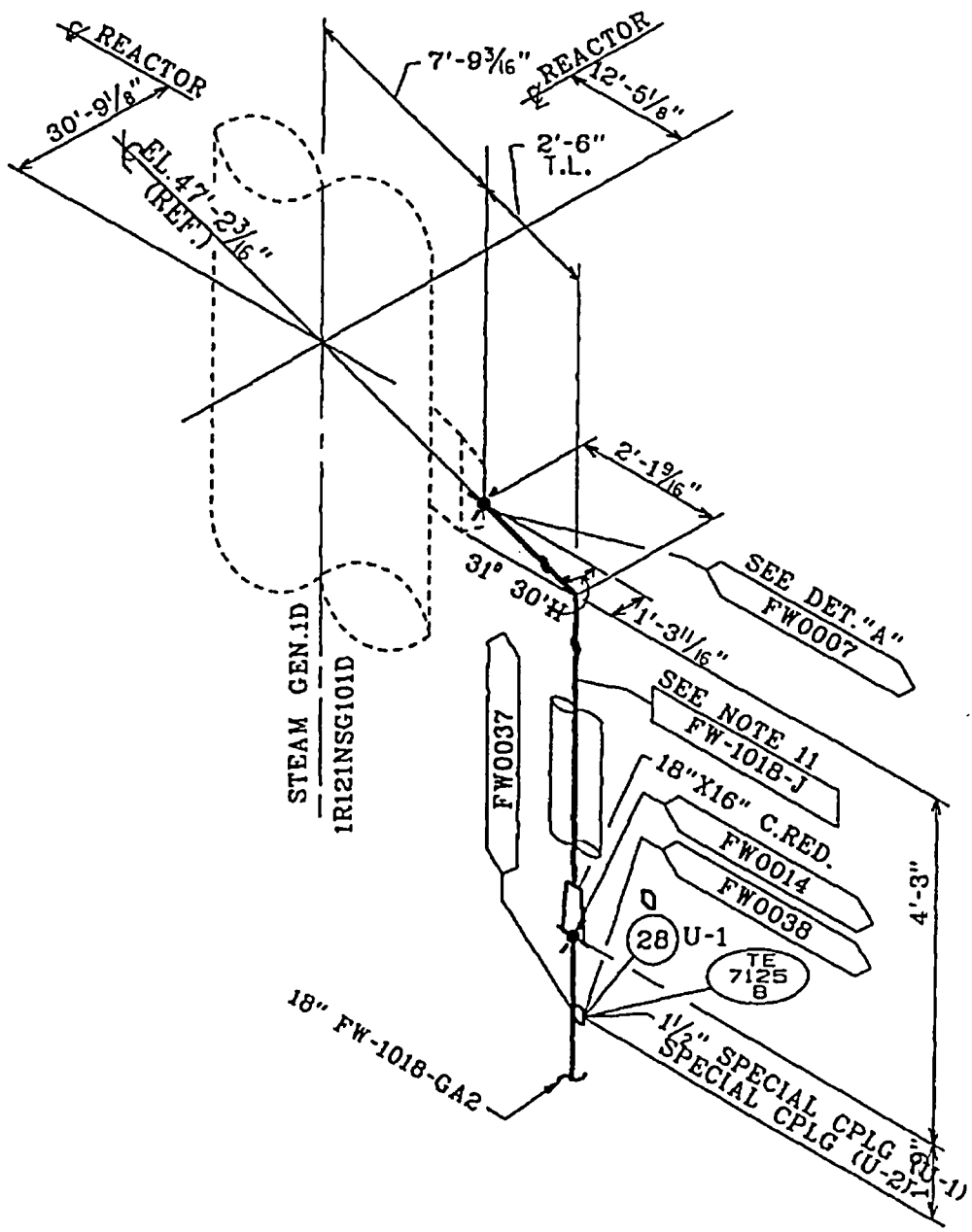
ATTACHMENT 4.0 STRESS ISOMETRICS

TOTAL NO OF SHEETS 6

| | |
|-----------------------|------------------------------|
| DESIGN CHANGE PACKAGE | |
| FORM 5 | DOCUMENT CHANGE NOTICE (DCN) |
| DCP NO. 98-19444-2 | SUPP. 0 PAGE OF |
| DCN NO. 0001945 | PAGE 4 OF 6 |



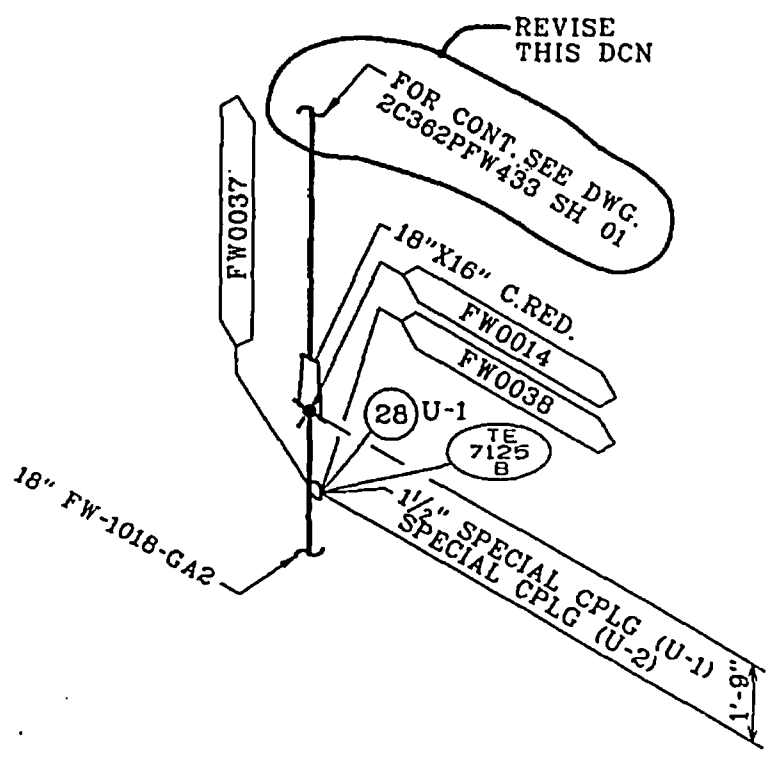
"BEFORE"
SG "D"



| | |
|-----------------------|------------------------------|
| DESIGN CHANGE PACKAGE | |
| FORM 5 | DOCUMENT CHANGE NOTICE (DCN) |
| DCP NO. 98-19444-2 | SUPP. 0 PAGE ___ OF ___ |
| DCN NO. 0001945 | PAGE 9 OF 9 |



"AFTER"
SG "D"





CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

CALC NO RC5037
SHEET NO _____
SHEET REV 5

ORIGINATOR C.BASAVARAJU DATE _____

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ATTACHMENT 5.0 LOCAL STRESS EVALUATIONS FOR IWAS

Based on unit-1, there are 3 welded attachments (nodes 050; 097, & 009). No separate evaluation is considered necessary for unit-2 as unit-1 local stress evaluations (see Ref.5.1b) showed margins while the stress and load changes for unit-2 are relatively small (nodes 050; & 009). For node 097 the faulted water hammer load for unit-2, though higher than for unit-1, is lower than the original design load. Also, there is a very substantial margin in local stress results (see p. 114 of DCN 9704763) Therefore, unit-2 welded attachments are acceptable in comparison with unit-1.



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

CALC NO RC5037
SHEET NO _____
SHEET REV 5

ORIGINATOR C.BASAVARAJU

DATE _____

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DCN# 000067

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ATTACHMENT 6.0 EVALUATION OF GENERIC IWA CALCULATION

Based on unit-1, there are 3 welded attachments (nodes 050; 097, & 009). No separate evaluation is considered necessary for unit-2 as unit-1 local stress evaluations (see Ref.5.1b) showed margins while the stress and load changes for unit-2 are relatively small (nodes 050; & 009). For node 097 the faulted water hammer load for unit-2, though higher than for unit-1, is lower than the original design load. Also, there is a very substantial margin in local stress results (see p. 114 of DCN 9704763) Therefore, unit-2 welded attachments are acceptable in comparison with unit-1.



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

ORIGINATOR C.BASAVARAJU

DATE _____

CALC NO RC5037
SHEET NO _____
SHEET REV 5

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DCN# 0000067

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ATTACHMENT 7.0 FLUEDHEAD PENETRATION LOADINGS AND EVALUATION

TOTAL NO OF SHEETS 4

PENETRATION LOAD SUMMARY
 PENETRATION NO. M-5

| LOADING | OUTSIDE CTMT LOADS | | | | | | | | |
|-----------------|----------------------|-------|--------|--------|--------|--------|---------|--------|--|
| | FA | FB | FC | MA | MB | MC | | | |
| | LB | LB | LB | FT LB | FT LB | FT LB | | | |
| DW | -29 | -1985 | 0 | 8453 | -5 | 10998 | | | |
| TE + | 3002 | 108 | 134 | 0 | 2757 | 0 | | | |
| TE- | -278 | 0 | 0 | 0 | 0 | -3292 | | | |
| OBEI | 13284 | 2834 | 1578 | 8470 | 10942 | 18349 | | | |
| SSEI | 26299 | 4314 | 3139 | 16052 | 21248 | 27963 | | | |
| OBE SAM | 50 | 445 | 1122 | 0 | 17128 | 7138 | | | |
| BLD SETL | 270 | 1784 | 798 | 0 | 24412 | 54120 | | | |
| WAT HAM | 38832 | 5307 | 2693 | 2210 | 11808 | 27848 | | | |
| DBA | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| LOCA | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| WIND | 904 | 2 | 4 | 0 | 76 | 35 | | | |
| JET | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| RUPTURE | 220200 | 43268 | 43268 | 151400 | 222917 | 222917 | | | |
| | | | | | | | | | |
| | INSIDE CTMT LOADS | | | | | | | | |
| | FA | FB | FC | MA | MB | MC | | | |
| | LB | LB | LB | FT LB | FT LB | FT LB | | | |
| DW | -483 | -2700 | -88 | -8211 | -5 | -18783 | | | |
| TE + | 0 | 8318 | 2341 | 0 | 0 | 74040 | | | |
| TE- | -27808 | 0 | -21416 | -9102 | -13873 | 0 | | | |
| OBEI | 964 | 367 | 132 | 6467 | 1306 | 9558 | | | |
| SSEI | 2593 | 757 | 331 | 13338 | 3264 | 19734 | | | |
| OBE SAM | 4785 | 296 | 9167 | 777 | 46037 | 2779 | | | |
| BLD SETL | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| WAT HAM | 267891 | 6522 | 16172 | 39767 | 58273 | 68033 | | | |
| DBA | 22113 | 15334 | 5209 | 34067 | 95332 | 119891 | | | |
| LOCA | 503 | 135 | 93 | 2033 | 850 | 3170 | | | |
| WIND | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| JET | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| RUPTURE | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | | | | | | | | | |
| | INSIDE+OUTSIDE LOADS | | | | | | | | |
| | FA | FB | FC | MA | MB | MC | V | MBR | |
| | LB | LB | LB | FT LB | FT LB | FT LB | LB | FT LB | |
| DW | -512 | -4685 | -68 | 242 | -10 | -7787 | 4685 | 7787 | |
| TE + | 3002 | 9426 | 2475 | 0 | 2757 | 74040 | 9746 | 74091 | |
| TE- | -28086 | 0 | -21416 | -9102 | -13873 | -3292 | 21416 | 14258 | |
| OBEI | 14228 | 3201 | 1708 | 14937 | 12248 | 27907 | 3628 | 30478 | |
| SSEI | 28892 | 5071 | 3470 | 29390 | 24512 | 47697 | 6145 | 53627 | |
| OBE SAM | 4835 | 741 | 10289 | 777 | 63165 | 9917 | 10316 | 63938 | |
| BLD SETL | 270 | 1784 | 798 | 0 | 24412 | 54120 | 1954 | 59371 | |
| WAT HAM | 307723 | 11829 | 18865 | 41977 | 67881 | 95981 | 22287 | 117559 | |
| DBA | 22113 | 15334 | 5209 | 34067 | 95332 | 119891 | 16195 | 153173 | |
| LOCA | 503 | 135 | 93 | 2033 | 850 | 3170 | 164 | 3282 | |
| WIND | 904 | 2 | 4 | 0 | 76 | 35 | 4 | 84 | |
| JET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| RUPTURE | 220200 | 43268 | 43268 | 151400 | 222917 | 222917 | 61190 | 315252 | |
| | | | | | | | | | |
| D | -512 | -4685 | -68 | 242 | -10 | -7787 | 4685 | 7787 | |
| D+TEP+BS | 2780 | 6525 | 3205 | 242 | 27159 | 120373 | 7270 | 123399 | |
| D+TEN+BS | -28328 | -2901 | -20686 | -8860 | 10529 | 43041 | * 20888 | 44310 | |
| D+OI+WWD | * 15844 | 7888 | 1780 | 15179 | 12334 | 35729 | 8086 | 37798 | |
| D+OI+WWD+TEP+BS | 17892 | 9728 | 4917 | 15179 | 39483 | 148315 | 10900 | 153480 | |
| D+OI+WWD+TEN+BS | 43460 | 6104 | 22398 | 23797 | 22853 | 70983 | 23215 | 74571 | |
| D+SI+WWD+WH+LO | 359623 | 27886 | 27573 | 107709 | 188641 | 258987 | 39074 | 320406 | |

* SEE JUSTIFICATION FOR EXCEEDANCES

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PENETRATION LOAD SUMMARY
PENETRATION NO. M-5

| D+SH+R | 249604 | 53024 | 46806 | 181032 | 247439 | 278401 | 70727 | 372469 |
|----------------------------|---------|-------|-------|--------|--------|--------|---------|---------|
| PENETRATION ALLOWABLES | | | | | | | | |
| | FAA | | | MAA | | | VA | MBA |
| | LB | | | FT-LB | | | LB | FT-LB |
| D | 600 | | | 6982 | | | 7447 | 42130 |
| D+TEP+BS | 41846 | | | 40976 | | | 18263 | 260448 |
| D+TEN+BS | 41846 | | | 40976 | | | 18263 | 260446 |
| D+OH+WND | 8517 | | | 28295 | | | 20458 | 178058 |
| D+OI+WND+TEP+BS | 64839 | | | 63829 | | | 34615 | 406829 |
| D+OI+WND+TEN+BS | 64839 | | | 63829 | | | 34615 | 406829 |
| D+SH+WND+WH+LO | 488016 | | | 786831 | | | 496685 | 946739 |
| D+SH+R | 488016 | | | 786831 | | | 496685 | 946739 |
| ACTUAL TO ALLOWABLES RATIO | | | | | | | | |
| | FA/FAA | | | MA/MAA | | | V/VA | MBR/MBA |
| D | 0.853 | | | 0.035 | | | 0.629 | 0.185 |
| D+TEP+BS | 0.066 | | | 0.006 | | | 0.398 | 0.474 |
| D+TEN+BS | 0.677 | | | 0.216 | | | * 1.144 | 0.170 |
| D+OI+WND | * 1.837 | | | 0.536 | | | 0.395 | 0.212 |
| D+OI+WND+TEP+BS | 0.276 | | | 0.238 | | | 0.315 | 0.377 |
| D+OI+WND+TEN+BS | 0.670 | | | 0.373 | | | 0.671 | 0.183 |
| D+SH+WND+WH+LO | 0.737 | | | 0.137 | | | 0.079 | 0.338 |
| D+SH+R | 0.511 | | | 0.230 | | | 0.142 | 0.393 |

* SEE JUSTIFICATION FOR EXCEEDANCES



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

ORIGINATOR C.BASAVARAJU

DATE _____

CALC NO RC5037
SHEET NO _____
SHEET REV _____

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ASSESSMENT OF IMPACT OF SGR MODIFICATION ON FLUED HEAD PENETRATION LOADS:
FLUED HEAD PENETRATION (M-5): (LOOP -D)
CASES WHERE ALLOWABLES ARE EXCEEDED ARE SUMMARIZED BELOW WITH JUSTIFICATION.

| | ACTUAL/ ALLOWABLE | PREVIOUSLY JUSTIFIED ENVELOPED LOADINGS ** | COMMENT |
|----------|----------------------|--|---------|
| | (NORM PRI+SEC) | | |
| FA LB | 28328/41846 | 31298 | OK |
| V LB | 20888/18263* | 23609 | |
| MA FT LB | 8860/40976 | 46230 | |
| MB FT LB | 44310/260446 | 185309 | |
| | (UPSET PRIM) | | |
| FA LB | 15644/8517* | 16660 | OK |
| V LB | 8086/20458 | 11768 | |
| MA FT LB | 15179/28295 | 30408 | |
| MB FT LB | 37798/178058 | 63763 | |

- * EXCEEDED COMPONENT
- ** RESULTS ACCEPTABILITY BASED ON ENVELOPED LOADINGS USED IN
CALC# 2L469RC9962 REV. 2



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

CALC NO RC5037
SHEET NO _____
SHEET REV 5

ORIGINATOR C.BASAVARAJU DATE _____

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ATTACHMENT 8.0 OTHER INFORMATION

TOTAL NO OF SHEETS /



CALCULATION SHEET

PROJECT STP-5GR
JOB NO 23438300

SUBJECT FW-PIPING FROM S.G. 2D

ORIGINATOR C.BASAVARAJU

DATE _____

CALC NO RC5037
SHEET NO _____
SHEET REV 5

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ATTACHMENT 9.0 MICROFICHE FILES LOG

- File # 1, Computer Output: FLEXIBILITY (MFWDSU2)
- File # 2, Computer Output: WATER HAMMER (MFWDWU2)
- File # 3, Computer Output: LOCA (MFWDLU2)

Z3103

9/11/01

10-5-01

3112 9670

OPGP04-ZE-0309

Rev. 7B

Page of

Design Change Package

Form 5

Document Change Notice (DCN)

Page 1 of 1

DCP No.: 98-19444-2 Supp.: 0 Page of

DCN No.: 0001956 Page 1 of 4

DOC NO. ^{*2L029*} 2L029RC9585 SHT. REV. 0

PRIORITY 1 DOC YES NO

DESCRIPTION OF CHANGE:

AFFECTED UNIT 0 1 2 BOTH

Bechtel Calculation No Rev
RC9585-P-906 1

The existing Main feedwater & auxilliary feedwater lines for loops A, B, C, & D inside containment have been reanalyzed due to reroute in conjunction with the replacement of steam generators for unit-2.

Supplement the existing calculation 2L029RC9585 Rev. 0 with the DCN 0001956, analyzed for the unit-2 system.

CB
10-24-00
Add pages ^{*2*} 1 thru 4 of this DCN to the existing calculation.

There is 1 outstanding DCN # 9800678 against the design calculation RC9585 prepared for unit-1 steam generator replacement.

DO NOT INCORPORATE

CB
Basawane
DESIGN ENG.

10-24-00
DATE

W. G. ...
REVIEWER

17/11/2001
DATE



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438-300

SUBJECT EVALUATION OF GENERIC IWA CALCULATION DUE TO SGR (UNIT-2)

CALC NO RC9585

ORIGINATOR C.BASAVARAJU DATE _____ SHEET NO A4

SHEET REV 1

DCP# 98-19444-2, SUPP. 0 page of DCN# 0001956 Page 3 of 4

1.0 OBJECTIVE / SCOPE

The objective of this calculation is to evaluate the impact of the changes in loads on supports with welded attachments associated with the replacement of the steam generator for unit 2.

2.0 SUMMARY OF RESULTS

The general piping stresses and support loadings at the welded attachments are not significantly different from unit-1 SGR results and hence are judged acceptable without any further evaluation. The impact on the generic IWA calculation is judged to be not significant. (MFW & APW).

3.0 METHOD OF APPROACH

The approach utilized here is a comparative assessment of the loads, stresses, and existing margins with unit-1 SGR loads.



CALCULATION SHEET

PROJECT STP-SGR
JOB NO 23438-300

SUBJECT EVALUATION OF GENERIC IWA CALCULATION DUE TO SGR

(UNIT-2)

CALC NO RC9585

ORIGINATOR C.BASAVARAJU

DATE _____

SHEET NO A5

SHEET REV 4

DCP# 98-19444-2, SUPP. 0 page of DCN# 0001956 Page 4 of 4

4.0 REFERENCES

- 4.1 Calculation 2L029RC-9585, Rev. 0; Fatigue Analysis for ASME 2/3 piping with Integral Attachments.
- 4.2 Stress Analysis of the Feedwater "FW" system from steam generator 1A thru FW-1012-GA2 to penetration M-6, Calculation No. RC5034 Rev.5
 - (a) DCN# 9704760 for unit-1 SGR
 - (b) DCN# 0000064 for unit-2 SGR
- 4.3 Stress Analysis of the Feedwater "FW" system from steam generator 1B thru FW-1014-GA2 to penetration M-7, Calculation No. RC5035 Rev.5
 - (a) DCN# 9704761 for unit-1 SGR
 - (b) DCN# 0000065 for unit-2 SGR
- 4.4 Stress Analysis of the Feedwater "FW" system from steam generator 1C thru FW-1016-GA2 to penetration M-8, Calculation No. RC5036 Rev.5
 - (a) DCN# 9704762 for unit-1 SGR
 - (b) DCN# 0000066 for unit-2 SGR
- 4.5 Stress Analysis of the Feedwater "FW" system from steam generator 1D thru FW-1018-GA2 to penetration M-5, Calculation No. RC5037 Rev.5
 - (a) DCN# 9704763 for unit-1 SGR
 - (b) DCN# 0000067 for unit-2 SGR
- 4.6 AFW Feedwater piping from PEN M-94 to Steam Generator 1A
Calc. No. RC5049 Rev. 6
 - (a) DCN# 9704764 for unit-1 SGR
 - (b) DCN# 0000068 for unit-2 SGR
- 4.7 AFW Feedwater piping from PEN M-95 to Steam Generator 1B
Calc. No. RC5050 Rev. 7
 - (a) DCN# 9704765 for unit-1 SGR
 - (b) DCN# 0000069 for unit-2 SGR
- 4.8 AFW Feedwater piping from PEN M-84 to Steam Generator 1C
Calc. No. RC5051 Rev. 5
 - (a) DCN# 9704766 for unit-1 SGR
 - (b) DCN# 0000070 for unit-2 SGR
- 4.9 AFW Feedwater piping from PEN M-83 to Steam Generator 1D
Calc. No. RC5020 Rev. 6
 - (a) DCN# 9704767 for unit-1 SGR
 - (b) DCN# 0000063 for unit-2 SGR