

50-305

RESPONSE TO NUREG-0737 ITEM II.D.1

Docket # *50-305*

Control # *8403280048*

Date *3/23/84* of Document:  
REGULATORY DOCKET FILE

|       |       |        |       |       |       |       |        |       |       |       |        |       |       |
|-------|-------|--------|-------|-------|-------|-------|--------|-------|-------|-------|--------|-------|-------|
| .2970 | 1270. | -1258. | 1501. | 1530. | 347.  | -616. | -.0050 | .0558 | .0114 | .0200 | -.0926 | .0729 | 6198. |
| .2980 | 1507. | -1401. | 1533. | 1664. | 296.  | -658. | -.0022 | .0596 | .0154 | .0187 | -.1033 | .0838 | 7568. |
| .2990 | 1669. | -1477. | 1488. | 1727. | 227.  | -674. | -.0090 | .0619 | .0192 | .0186 | -.1107 | .0915 | 7794. |
| .3000 | 1751. | -1507. | 1369. | 1724. | 136.  | -662. | -.0155 | .0625 | .0227 | .0190 | -.1146 | .0952 | 7728. |
| .3010 | 1756. | -1491. | 1180. | 1659. | 22.   | -625. | -.0215 | .0615 | .0260 | .0198 | -.1149 | .0950 | 7399. |
| .3020 | 1697. | -1406. | 925.  | 1573. | -112. | -570. | -.0268 | .0592 | .0288 | .0212 | -.1115 | .0917 | 6842. |
| .3030 | 1586. | -1252. | 610.  | 1349. | -257. | -502. | -.0313 | .0556 | .0311 | .0231 | -.1044 | .0859 | 6101. |
| .3040 | 1423. | -1063. | 250.  | 1116. | -407. | -417. | -.0351 | .0508 | .0329 | .0248 | -.0941 | .0773 | 5256. |
| .3050 | 1201. | -870.  | -134. | 849.  | -556. | -312. | -.0381 | .0451 | .0341 | .0259 | -.0811 | .0657 | 4429. |
| .3060 | 927.  | -673.  | -518. | 557.  | -691. | -190. | -.0405 | .0386 | .0347 | .0264 | -.0660 | .0520 | 3788. |
| .3070 | 641.  | -461.  | -891. | 251.  | -797. | -64.  | -.0420 | .0318 | .0347 | .0262 | -.0492 | .0373 | 3496. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.41.

S/RV PIPING KEWAUNEE GKWOBF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 1      | SEQUENCE | 370     | LOCATION | BEG    | TYPE   | TE     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .3080   | 367.   | -246.  | -1239. | -57.     | -864.   | 56.      | -.0426 | .0249  | .0341  | .0248  | -.0313 | .0223  | 3622.  |  |  |
| .3090   | 93.    | -61.   | -1538. | -345.    | -894.   | 171.     | -.0425 | -.0180 | .0330  | .0216  | -.0129 | .0068  | 4062.  |  |  |
| .3100   | -175.  | 81.    | -1765. | -594.    | -890.   | 282.     | -.0420 | .0112  | .0315  | .0165  | .0050  | -.0091 | 4618.  |  |  |
| .3110   | -420.  | 193.   | -1912. | -795.    | -851.   | 379.     | -.0409 | .0047  | .0296  | .0099  | .0218  | -.0242 | 5111.  |  |  |
| .3120   | -604.  | 285.   | -1990. | -945.    | -774.   | 451.     | -.0392 | -.0011 | .0273  | .0018  | .0372  | -.0376 | 5436.  |  |  |
| .3130   | -720.  | 347.   | -1995. | -1041.   | -661.   | 499.     | -.0371 | -.0063 | .0245  | -.0075 | .0508  | -.0489 | 5553.  |  |  |
| .3140   | -794.  | 366.   | -1917. | -1074.   | -522.   | 531.     | -.0349 | -.0107 | .0214  | -.0180 | .0616  | -.0586 | 5453.  |  |  |
| .3150   | -837.  | 338.   | -1754. | -1041.   | -362.   | 551.     | -.0326 | -.0146 | .0181  | -.0293 | .0692  | -.0668 | 5144.  |  |  |
| .3160   | -829.  | 278.   | -1521. | -949.    | -185.   | 554.     | -.0303 | -.0178 | .0147  | -.0409 | .0735  | -.0730 | 4652.  |  |  |
| .3170   | -751.  | 204.   | -1237. | -805.    | 8.      | 535.     | -.0279 | -.0203 | .0111  | -.0523 | .0745  | -.0764 | 4034.  |  |  |
| .3180   | -619.  | 128.   | -906.  | -613.    | 205.    | 494.     | -.0255 | -.0220 | .0074  | -.0631 | .0724  | -.0772 | 3395.  |  |  |
| .3190   | -458.  | 46.    | -535.  | -375.    | 393.    | 442.     | -.0233 | -.0233 | .0039  | -.0730 | .0671  | -.0762 | 2922.  |  |  |
| .3200   | -289.  | -51.   | -139.  | -100.    | 562.    | 381.     | -.0215 | -.0242 | .0006  | -.0820 | .0590  | -.0739 | 2866.  |  |  |
| .3210   | -81.   | -149.  | 257.   | 194.     | 708.    | 312.     | -.0198 | -.0248 | -.0026 | -.0896 | .0490  | -.0703 | 3331.  |  |  |
| .3220   | 140.   | -223.  | 632.   | 492.     | 828.    | 234.     | -.0183 | -.0249 | -.0055 | -.0953 | .0376  | -.0649 | 4138.  |  |  |
| .3230   | 364.   | -267.  | 973.   | 778.     | 919.    | 152.     | -.0170 | -.0248 | -.0083 | -.0987 | .0254  | -.0580 | 5063.  |  |  |
| .3240   | 571.   | -303.  | 1269.  | 1041.    | 976.    | 75.      | -.0160 | -.0244 | -.0109 | -.1001 | .0131  | -.0508 | 5963.  |  |  |
| .3250   | 745.   | -342.  | 1511.  | 1273.    | 998.    | 10.      | -.0153 | -.0239 | -.0131 | -.0997 | .0013  | -.0438 | 6750.  |  |  |
| .3260   | 885.   | -366.  | 1691.  | 1461.    | 989.    | -44.     | -.0148 | -.0233 | -.0151 | -.0972 | -.0093 | -.0367 | 7367.  |  |  |
| .3270   | 996.   | -358.  | 1802.  | 1596.    | 955.    | -93.     | -.0143 | -.0223 | -.0167 | -.0925 | -.0181 | -.0292 | 7772.  |  |  |
| .3280   | 1075.  | -328.  | 1838.  | 1673.    | 898.    | -134.    | -.0138 | -.0212 | -.0180 | -.0860 | -.0247 | -.0218 | 7942.  |  |  |
| .3290   | 1106.  | -298.  | 1806.  | 1692.    | 817.    | -160.    | -.0133 | -.0199 | -.0190 | -.0783 | -.0287 | -.0150 | 7871.  |  |  |
| .3300   | 1076.  | -274.  | 1713.  | 1655.    | 715.    | -170.    | -.0129 | -.0185 | -.0196 | -.0696 | -.0302 | -.0092 | 7559.  |  |  |
| .3310   | 992.   | -242.  | 1562.  | 1560.    | 599.    | -165.    | -.0125 | -.0169 | -.0198 | -.0598 | -.0290 | -.0039 | 7006.  |  |  |
| .3320   | 875.   | -200.  | 1252.  | 1404.    | 477.    | -153.    | -.0119 | -.0151 | -.0199 | -.0494 | -.0252 | .0012  | 6220.  |  |  |
| .3330   | 725.   | -161.  | 1094.  | 1195.    | 353.    | -131.    | -.0113 | -.0131 | -.0197 | -.0388 | -.0190 | .0058  | 5228.  |  |  |
| .3340   | 529.   | -140.  | 800.   | 946.     | 226.    | -97.     | -.0106 | -.0110 | -.0192 | -.0284 | -.0108 | .0095  | 4078.  |  |  |
| .3350   | 290.   | -135.  | 497.   | 669.     | 99.     | -51.     | -.0100 | -.0090 | -.0185 | -.0184 | -.0014 | .0124  | 2832.  |  |  |
| .3360   | 38.    | -135.  | 186.   | 374.     | -21.    | -4.      | -.0095 | -.0069 | -.0176 | -.0091 | .0090  | .0151  | 1563.  |  |  |
| .3370   | -200.  | -131.  | -127.  | 69.      | -128.   | 35.      | -.0088 | -.0049 | -.0165 | -.0006 | .0199  | .0180  | 625.   |  |  |
| .3380   | -425.  | -129.  | -425.  | -229.    | -222.   | 68.      | -.0081 | -.0031 | -.0153 | .0069  | .0306  | .0211  | 1362.  |  |  |
| .3390   | -645.  | -138.  | -687.  | -507.    | -304.   | 97.      | -.0076 | -.0015 | -.0139 | .0132  | .0403  | .0238  | 2499.  |  |  |
| .3400   | -846.  | -157.  | -909.  | -754.    | -371.   | 121.     | -.0073 | -.0005 | -.0124 | .0182  | .0486  | .0264  | 3545.  |  |  |
| .3410   | -1002. | -175.  | -1091. | -968.    | -420.   | 132.     | -.0072 | .0001  | -.0109 | .0220  | .0552  | .0293  | 4439.  |  |  |
| .3420   | -1103. | -183.  | -1232. | -1142.   | -449.   | 129.     | -.0073 | .0003  | -.0095 | .0247  | .0597  | .0330  | 5151.  |  |  |
| .3430   | -1157. | -179.  | -1320. | -1269.   | -463.   | 113.     | -.0076 | -.0002 | -.0082 | .0264  | .0618  | .0371  | 5655.  |  |  |
| .3440   | -1169. | -173.  | -1351. | -1340.   | -465.   | 87.      | -.0082 | -.0013 | -.0069 | .0270  | .0612  | .0414  | 5931.  |  |  |
| .3450   | -1133. | -165.  | -1328. | -1355.   | -457.   | 49.      | -.0091 | -.0032 | -.0058 | .0265  | .0582  | .0457  | 5971.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.41.

S/RV PIPING KEWAUNEE GKWOBF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |       |        |        |       |      |        |        |        |        |        |       |       |
|-------|--------|-------|--------|--------|-------|------|--------|--------|--------|--------|--------|-------|-------|
| .3350 | 290.   | -135. | 497.   | 669.   | 92.   | -51. | -100.  | -0.090 | -0.185 | -0.184 | -0.014 | .0124 | 2832. |
| .3360 | 38.    | -135. | 186.   | 374.   | -21.  | -4.  | -0.095 | -0.069 | -0.176 | -0.091 | .0090  | .0151 | 1563. |
| .3370 | -200.  | -131. | -127.  | 69.    | -128. | 35.  | -0.088 | -0.049 | -0.165 | -0.006 | .0199  | .0180 | 625.  |
| .3380 | -425.  | -129. | -425.  | -229.  | -221. | 68.  | -0.081 | -0.031 | -0.153 | .0069  | .0306  | .0211 | 1362. |
| .3390 | -645.  | -138. | -687.  | -507.  | -304. | 97.  | -0.076 | -0.015 | -0.139 | .0132  | .0403  | .0238 | 2499. |
| .3400 | -846.  | -157. | -909.  | -754.  | -371. | 121. | -0.073 | -0.005 | -0.124 | .0182  | .0486  | .0264 | 3545. |
| .3410 | -1002. | -175. | -1091. | -968.  | -420. | 132. | -0.072 | .0001  | -0.109 | .0220  | .0552  | .0293 | 4439. |
| .3420 | -1103. | -183. | -1232. | -1142. | -449. | 129. | -0.073 | .0003  | -0.095 | .0247  | .0597  | .0330 | 5151. |
| .3430 | -1157. | -179. | -1320. | -1269. | -463. | 113. | -0.076 | -0.002 | -0.082 | .0264  | .0618  | .0371 | 5655. |
| .3440 | -1160. | -173. | -1351. | -1340. | -465. | 87.  | -0.082 | -0.013 | -0.069 | .0270  | .0612  | .0414 | 5931. |
| .3450 | -1133. | -165. | -1328. | -1355. | -457. | 49.  | -0.091 | -0.032 | -0.058 | .0265  | .0582  | .0457 | 5971. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.41.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK

2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | CS     | MEMBER | 1      | SEQUENCE | 820     | LOCATION | BEG    | TYPE   | TE     | DZ     | PX     | RY    | RZ     | STRESS |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|-------|--------|--------|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | PX     | RY     | RZ    | STRESS | (PSI)  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG) | (DEG)  | (PSI)  |
| .3460   | -1043. | -144.  | -1254. | -1314.   | -440.   | -2.      | -0.101 | -0.057 | -0.049 | .0249  | .0529  | .0504 | 5785.  |        |
| .3470   | -903.  | -95.   | -1133. | -1222.   | -416.   | -67.     | -0.113 | -0.089 | -0.041 | .0228  | .0454  | .0556 | 5393.  |        |
| .3480   | -724.  | -28.   | -969.  | -1082.   | -385.   | -142.    | -0.125 | -0.126 | -0.036 | .0200  | .0361  | .0612 | 4829.  |        |
| .3490   | -520.  | 43.    | -767.  | -901.    | -350.   | -220.    | -0.138 | -0.169 | -0.032 | .0167  | .0254  | .0664 | 4138.  |        |
| .3500   | -302.  | 115.   | -538.  | -691.    | -309.   | -296.    | -0.151 | -0.216 | -0.031 | .0129  | .0137  | .0712 | 3393.  |        |
| .3510   | -77.   | 199.   | -290.  | -463.    | -263.   | -369.    | -0.163 | -0.265 | -0.033 | .0091  | .0015  | .0758 | 2704.  |        |
| .3520   | 152.   | 297.   | -37.   | -231.    | -209.   | -437.    | -0.173 | -0.315 | -0.038 | .0056  | -0.106 | .0803 | 2241.  |        |
| .3530   | 374.   | 396.   | 211.   | -4.      | -151.   | -497.    | -0.179 | -0.364 | -0.046 | .0023  | -0.220 | .0843 | 2170.  |        |
| .3540   | 572.   | 486.   | 448.   | 212.     | -93.    | -545.    | -0.182 | -0.412 | -0.056 | -0.007 | -0.322 | .0874 | 2472.  |        |
| .3550   | 735.   | 568.   | 668.   | 408.     | -38.    | -580.    | -0.182 | -0.457 | -0.067 | -0.033 | -0.410 | .0895 | 2964.  |        |
| .3560   | 864.   | 651.   | 861.   | 576.     | 14.     | -604.    | -0.176 | -0.497 | -0.081 | -0.053 | -0.477 | .0908 | 3485.  |        |
| .3570   | 966.   | 732.   | 1015.  | 707.     | 62.     | -620.    | -0.164 | -0.530 | -0.097 | -0.066 | -0.520 | .0916 | 3932.  |        |
| .3580   | 1028.  | 804.   | 1126.  | 794.     | 106.    | -625.    | -0.146 | -0.555 | -0.113 | -0.072 | -0.539 | .0914 | 4243.  |        |
| .3590   | 1036.  | 857.   | 1197.  | 837.     | 142.    | -615.    | -0.123 | -0.573 | -0.130 | -0.073 | -0.535 | .0900 | 4376.  |        |
| .3600   | 987.   | 889.   | 1226.  | 833.     | 170.    | -589.    | -0.096 | -0.583 | -0.146 | -0.065 | -0.508 | .0873 | 4315.  |        |
| .3610   | 896.   | 907.   | 1205.  | 777.     | 192.    | -551.    | -0.064 | -0.584 | -0.163 | -0.049 | -0.459 | .0839 | 4055.  |        |
| .3620   | 773.   | 914.   | 1134.  | 671.     | 208.    | -506.    | -0.026 | -0.574 | -0.180 | -0.025 | -0.392 | .0800 | 3612.  |        |
| .3630   | 612.   | 909.   | 1022.  | 523.     | 214.    | -452.    | .0014  | -0.556 | -0.195 | .0006  | -0.309 | .0756 | 3019.  |        |
| .3640   | 412.   | 893.   | 877.   | 343.     | 205.    | -390.    | .0057  | -0.530 | -0.208 | .0043  | -0.216 | .0705 | 2331.  |        |
| .3650   | 185.   | 839.   | 706.   | 140.     | 181.    | -324.    | .0101  | -0.497 | -0.220 | .0082  | -0.115 | .0648 | 1656.  |        |
| .3660   | -50.   | 785.   | 511.   | -80.     | 143.    | -261.    | .0146  | -0.457 | -0.229 | .0123  | -0.010 | .0591 | 1286.  |        |
| .3670   | -281.  | 729.   | 300.   | -306.    | 93.     | -203.    | .0190  | -0.412 | -0.235 | .0164  | .0095  | .0538 | 1582.  |        |
| .3680   | -506.  | 668.   | 85.    | -530.    | 33.     | -150.    | .0232  | -0.362 | -0.238 | .0205  | .0194  | .0487 | 2303.  |        |
| .3690   | -722.  | 591.   | -124.  | -743.    | -34.    | -99.     | .0270  | -0.310 | -0.239 | .0240  | .0285  | .0437 | 3130.  |        |
| .3700   | -919.  | 498.   | -320.  | -938.    | -101.   | -50.     | .0303  | -0.258 | -0.237 | .0269  | .0364  | .0389 | 3941.  |        |
| .3710   | -1084. | 398.   | -496.  | -1110.   | -162.   | -4.      | .0331  | -0.205 | -0.232 | .0291  | .0426  | .0347 | 4682.  |        |
| .3720   | -1209. | 300.   | -647.  | -1255.   | -211.   | 35.      | .0353  | -0.154 | -0.224 | .0307  | .0472  | .0312 | 5311.  |        |
| .3730   | -1291. | 200.   | -765.  | -1365.   | -246.   | 70.      | .0367  | -0.107 | -0.214 | .0312  | .0498  | .0284 | 5794.  |        |
| .3740   | -1332. | 90.    | -844.  | -1433.   | -270.   | 100.     | .0373  | -0.064 | -0.202 | .0304  | .0505  | .0259 | 6101.  |        |
| .3750   | -1331. | -23.   | -882.  | -1456.   | -285.   | 127.     | .0371  | -0.028 | -0.187 | .0283  | .0493  | .0238 | 6213.  |        |
| .3760   | -1282. | -128.  | -879.  | -1432.   | -291.   | 146.     | .0361  | .0001  | -0.169 | .0250  | .0462  | .0225 | 6128.  |        |
| .3770   | -1181. | -215.  | -842.  | -1364.   | -290.   | 154.     | .0344  | .0023  | -0.150 | .0206  | .0415  | .0219 | 5854.  |        |
| .3780   | -1034. | -289.  | -773.  | -1254.   | -285.   | 154.     | .0320  | .0038  | -0.129 | .0149  | .0354  | .0218 | 5404.  |        |
| .3790   | -856.  | -355.  | -672.  | -1105.   | -280.   | 151.     | .0289  | .0043  | -0.107 | .0082  | .0281  | .0218 | 4797.  |        |
| .3800   | -657.  | -414.  | -546.  | -923.    | -274.   | 146.     | .0251  | .0040  | -0.083 | .0004  | .0197  | .0217 | 4065.  |        |
| .3810   | -436.  | -456.  | -403.  | -720.    | -266.   | 139.     | .0209  | .0030  | -0.058 | -0.079 | .0106  | .0216 | 3255.  |        |
| .3820   | -192.  | -474.  | -253.  | -505.    | -251.   | 129.     | .0163  | .0012  | -0.033 | -0.167 | .0011  | .0217 | 2416.  |        |
| .3830   | 60.    | -474.  | -102.  | -287.    | -232.   | 118.     | .0115  | -0.011 | -0.008 | -0.257 | -0.085 | .0215 | 1617.  |        |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.41.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK

2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |       |       |        |       |      |       |        |        |        |        |       |       |
|-------|--------|-------|-------|--------|-------|------|-------|--------|--------|--------|--------|-------|-------|
| .3730 | -1291. | 200.  | -765. | -1365. | -246. | 70.  | .367  | -.0107 | -.0214 | .0312  | .0498  | .0284 | 5794. |
| .3740 | -1332. | 90.   | -844. | -1433. | -270. | 100. | .0373 | -.0064 | -.0202 | .0304  | .0505  | .0259 | 6101. |
| .3750 | -1231. | -23.  | -882. | -1456. | -285. | 127. | .0371 | -.0028 | -.0187 | .0283  | .0493  | .0238 | 6213. |
| .3760 | -1282. | -128. | -879. | -1432. | -291. | 146. | .0361 | .0001  | -.0169 | .0250  | .0462  | .0225 | 6128. |
| .3770 | -1181. | -215. | -842. | -1364. | -290. | 154. | .0344 | .0023  | -.0150 | .0206  | .0415  | .0219 | 5854. |
| .3780 | -1034. | -207. | -773. | -1254. | -285. | 154. | .0320 | .0038  | -.0129 | .0149  | .0354  | .0218 | 5404. |
| .3790 | -856.  | -315. | -672. | -1105. | -280. | 151. | .0289 | .0043  | -.0107 | .0082  | .0281  | .0218 | 4797. |
| .3800 | -657.  | -414. | -546. | -923.  | -274. | 146. | .0251 | .0040  | -.0083 | .0004  | .0197  | .0217 | 4065. |
| .3810 | -436.  | -456. | -403. | -720.  | -266. | 139. | .0209 | .0030  | -.0058 | -.0079 | .0106  | .0216 | 3255. |
| .3820 | -192.  | -474. | -253. | -505.  | -251. | 129. | .0163 | .0012  | -.0033 | -.0167 | .0011  | .0217 | 2416. |
| .3830 | 60.    | -474. | -102. | -287.  | -232. | 118. | .0115 | -.0011 | -.0008 | -.0257 | -.0085 | .0215 | 1617. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.41.

S/RV PIPING KEWAUNEE GKW02F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | MEMBER | SEQUENCE | LOCATION | REG   | TYPE  | TE   | TIME   | FX     | FY    | FZ     | MX      | MY      | MZ      | DX   | DY   | DZ   | RX    | RY    | RZ    | STRESS |
|---------|--------|----------|----------|-------|-------|------|--------|--------|-------|--------|---------|---------|---------|------|------|------|-------|-------|-------|--------|
| 65      | 1      | 830      |          |       |       |      | (SEC)  | (LB)   | (LB)  | (LB)   | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI)  |
| .3840   | 300.   | -467.    | 51.      | -71.  | -210. | 112. | .0066  | -.0041 | .0017 | -.0349 | -.0178  | .0205   | 1036.   |      |      |      |       |       |       |        |
| .3850   | 521.   | -453.    | 196.     | 134.  | -187. | 111. | .0016  | -.0075 | .0043 | -.0440 | -.0267  | .0188   | 1069.   |      |      |      |       |       |       |        |
| .3860   | 725.   | -424.    | 324.     | 321.  | -165. | 113. | -.0032 | -.0111 | .0069 | -.0527 | -.0346  | .0164   | 1578.   |      |      |      |       |       |       |        |
| .3870   | 911.   | -377.    | 426.     | 480.  | -143. | 115. | -.0076 | -.0148 | .0093 | -.0609 | -.0412  | .0138   | 2145.   |      |      |      |       |       |       |        |
| .3880   | 1066.  | -319.    | 498.     | 607.  | -125. | 120. | -.0116 | -.0185 | .0116 | -.0682 | -.0461  | .0106   | 2636.   |      |      |      |       |       |       |        |
| .3890   | 1177.  | -262.    | 542.     | 701.  | -114. | 132. | -.0153 | -.0219 | .0138 | -.0748 | -.0494  | .0066   | 3015.   |      |      |      |       |       |       |        |
| .3900   | 1240.  | -212.    | 557.     | 758.  | -108. | 154. | -.0183 | -.0251 | .0159 | -.0804 | -.0509  | .0018   | 3260.   |      |      |      |       |       |       |        |
| .3910   | 1261.  | -165.    | 539.     | 776.  | -104. | 181. | -.0208 | -.0278 | .0178 | -.0848 | -.0505  | -.0031  | 3352.   |      |      |      |       |       |       |        |
| .3920   | 1240.  | -113.    | 488.     | 751.  | -98.  | 212. | -.0225 | -.0298 | .0194 | -.0877 | -.0481  | -.0079  | 3283.   |      |      |      |       |       |       |        |
| .3930   | 1197.  | -61.     | 409.     | 688.  | -90.  | 248. | -.0235 | -.0311 | .0209 | -.0892 | -.0440  | -.0124  | 3074.   |      |      |      |       |       |       |        |
| .3940   | 1101.  | -28.     | 309.     | 591.  | -80.  | 292. | -.0238 | -.0317 | .0221 | -.0896 | -.0382  | -.0169  | 2772.   |      |      |      |       |       |       |        |
| .3950   | 962.   | -20.     | 194.     | 468.  | -70.  | 343. | -.0236 | -.0317 | .0231 | -.0889 | -.0310  | -.0216  | 2439.   |      |      |      |       |       |       |        |
| .3960   | 793.   | -23.     | 65.      | 321.  | -58.  | 398. | -.0228 | -.0308 | .0239 | -.0871 | -.0227  | -.0256  | 2147.   |      |      |      |       |       |       |        |
| .3970   | 612.   | -24.     | -75.     | 154.  | -42.  | 449. | -.0215 | -.0292 | .0244 | -.0840 | -.0133  | -.0287  | 1990.   |      |      |      |       |       |       |        |
| .3980   | 423.   | -34.     | -222.    | -24.  | -23.  | 497. | -.0197 | -.0270 | .0247 | -.0801 | -.0034  | -.0308  | 2081.   |      |      |      |       |       |       |        |
| .3990   | 221.   | -67.     | -363.    | -203. | -5.   | 545. | -.0177 | -.0242 | .0249 | -.0756 | .0068   | -.0324  | 2429.   |      |      |      |       |       |       |        |
| .4000   | 0.     | -118.    | -491.    | -375. | 13.   | 592. | -.0156 | -.0211 | .0248 | -.0706 | .0166   | -.0335  | 2925.   |      |      |      |       |       |       |        |

MAXIMUM VALUE OF STRESS OCCURS AT

| TIME  | FX    | FY    | FZ    | MX      | MY      | MZ      | DX    | DY    | DZ    | RX    | RY    | RZ     | STRESS |
|-------|-------|-------|-------|---------|---------|---------|-------|-------|-------|-------|-------|--------|--------|
| (SEC) | (LB)  | (LB)  | (LB)  | (FT-LB) | (FT-LB) | (FT-LB) | (IN)  | (IN)  | (IN)  | (DEG) | (DEG) | (DEG)  | (PSI)  |
| .2560 | 1037. | -658. | 2191. | 1944.   | 775.    | -931.   | .0325 | .0058 | .0016 | .0513 | .0782 | -.0687 | 9559.  |

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | TE  | TIME   | FX     | FY     | FZ     | MX      | MY      | MZ      | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |
|---------|--------|----------|----------|-----|------|-----|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| 65      | 1      | 95       |          |     |      |     | (SEC)  | (LB)   | (LB)   | (LB)   | (FT-LB) | (FT-LB) | (FT-LB) | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| 0.0000  | 0.     | 0.       | 0.       | 0.  | 0.   | 0.  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000  | 0.0000  | 0.0000  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.     |
| .0010   | 0.     | -0.      | -0.      | 0.  | -0.  | 0.  | -.0000 | .0000  | .0000  | -.0000 | .0000   | -.0000  | .0000   | -.0000 | .0000  | .0000  | -.0000 | .0000  | -.0000 | 0.     |
| .0020   | 0.     | 0.       | -0.      | 0.  | -0.  | 0.  | -.0000 | -.0000 | .0000  | -.0000 | .0000   | -.0000  | .0000   | -.0000 | .0000  | .0000  | -.0000 | .0000  | -.0000 | 0.     |
| .0030   | 0.     | 0.       | -0.      | 0.  | 0.   | 0.  | -.0000 | -.0000 | .0000  | -.0000 | .0000   | -.0000  | .0000   | -.0000 | .0000  | .0000  | -.0000 | .0000  | -.0000 | 0.     |
| .0040   | -0.    | -0.      | 0.       | 0.  | 0.   | 0.  | -.0000 | .0000  | .0000  | .0000  | -.0000  | -.0000  | .0000   | -.0000 | .0000  | .0000  | -.0000 | -.0000 | -.0000 | 0.     |
| .0050   | -1.    | -0.      | 0.       | 0.  | -0.  | -0. | -.0000 | -.0000 | .0000  | .0000  | -.0000  | -.0000  | .0000   | -.0000 | .0000  | .0000  | -.0000 | -.0000 | -.0000 | 1.     |
| .0060   | -1.    | -1.      | 0.       | 0.  | -1.  | -0. | -.0000 | -.0000 | .0000  | .0000  | -.0000  | -.0000  | .0000   | -.0000 | .0000  | .0000  | -.0000 | -.0000 | -.0000 | 4.     |
| .0070   | -0.    | -1.      | 0.       | 1.  | -3.  | -1. | -.0000 | -.0000 | .0000  | .0000  | -.0001  | -.0001  | .0000   | -.0001 | -.0001 | .0000  | -.0001 | -.0001 | -.0001 | 12.    |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKW02F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) |
|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| 0.0000     | 0.      | 0.      | 0.      | 0.         | 0.         | 0.         | 0.0000  | 0.0000  | 0.0000  | 0.0000   | 0.0000   | 0.0000   | 0.           |
| .0010      | 0.      | -0.     | -0.     | 0.         | -0.        | 0.         | -0.0000 | .0000   | .0000   | -0.0000  | .0000    | .0000    | 0.           |
| .0020      | 0.      | 0.      | -0.     | 0.         | -0.        | 0.         | -0.0000 | -0.0000 | .0000   | -0.0000  | .0000    | .0000    | 0.           |
| .0030      | 0.      | 0.      | -0.     | 0.         | 0.         | 0.         | -0.0000 | -0.0000 | .0000   | -0.0000  | .0000    | -0.0000  | 0.           |
| .0040      | -0.     | -0.     | 0.      | 0.         | 0.         | 0.         | -0.0000 | .0000   | .0000   | .0000    | -0.0000  | -0.0000  | 0.           |
| .0050      | -1.     | -0.     | 0.      | 0.         | -0.        | -0.        | -0.0000 | -0.0000 | .0000   | .0000    | -0.0000  | -0.0000  | 1.           |
| .0060      | -1.     | -1.     | 0.      | 0.         | -1.        | -0.        | -0.0000 | -0.0000 | .0000   | .0000    | -0.0000  | -0.0000  | 4.           |
| .0070      | -2.     | -1.     | 0.      | 1.         | -3.        | -1.        | -0.0000 | -0.0000 | .0000   | .0000    | -0.0001  | -0.0001  | 12.          |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.41.

S/RV PIPING KEWAUNEE GRWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION    | 65      | MEMBER  | 1       | SEQUENCE   | 95         | LOCATION   | END     | TYPE    | TE      | DX      | DY      | DZ      | RX    | RY    | RZ    | STRESS |
|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|---------|---------|---------|-------|-------|-------|--------|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | (IN)    | (IN)    | (IN)    | (DEG)   | (DEG)   | (DEG)   | (DEG) | (DEG) | (DEG) | (PSI)  |
| .0080      | -2.     | -1.     | -0.     | 3.         | -6.        | -1.        | -0.0000 | -0.0000 | .0000   | -0.0000 | -0.0002 | -0.0002 | 28.   |       |       |        |
| .0090      | -1.     | 0.      | -1.     | 5.         | -11.       | -3.        | -0.0001 | -0.0000 | .0000   | -0.0001 | -0.0003 | -0.0004 | 54.   |       |       |        |
| .0100      | 0.      | 1.      | -3.     | 9.         | -19.       | -5.        | -0.0002 | -0.0001 | .0001   | -0.0001 | -0.0005 | -0.0007 | 92.   |       |       |        |
| .0110      | 1.      | 1.      | -5.     | 15.        | -32.       | -8.        | -0.0003 | -0.0001 | .0001   | -0.0001 | -0.0008 | -0.0011 | 150.  |       |       |        |
| .0120      | 3.      | 1.      | -8.     | 24.        | -50.       | -12.       | -0.0004 | -0.0002 | .0001   | -0.0003 | -0.0010 | -0.0016 | 236.  |       |       |        |
| .0130      | 10.     | 6.      | -14.    | 36.        | -75.       | -18.       | -0.0007 | -0.0003 | .0002   | -0.0006 | -0.0013 | -0.0025 | 354.  |       |       |        |
| .0140      | 25.     | 18.     | -24.    | 52.        | -105.      | -26.       | -0.0011 | -0.0005 | .0003   | -0.0012 | -0.0017 | -0.0039 | 499.  |       |       |        |
| .0150      | 46.     | 34.     | -35.    | 69.        | -138.      | -37.       | -0.0016 | -0.0008 | .0004   | -0.0017 | -0.0020 | -0.0055 | 662.  |       |       |        |
| .0160      | 65.     | 48.     | -45.    | 89.        | -171.      | -50.       | -0.0022 | -0.0011 | .0005   | -0.0020 | -0.0024 | -0.0070 | 825.  |       |       |        |
| .0170      | 79.     | 53.     | -51.    | 98.        | -200.      | -64.       | -0.0028 | -0.0014 | .0006   | -0.0018 | -0.0028 | -0.0078 | 969.  |       |       |        |
| .0180      | 84.     | 51.     | -52.    | 105.       | -218.      | -77.       | -0.0034 | -0.0017 | .0006   | -0.0013 | -0.0030 | -0.0078 | 1070. |       |       |        |
| .0190      | 85.     | 44.     | -49.    | 102.       | -219.      | -87.       | -0.0039 | -0.0021 | .0005   | -0.0006 | -0.0028 | -0.0071 | 1070. |       |       |        |
| .0200      | 81.     | 30.     | -41.    | 86.        | -195.      | -91.       | -0.0044 | -0.0024 | .0005   | .0002   | -0.0021 | -0.0056 | 967.  |       |       |        |
| .0210      | 69.     | 7.      | -26.    | 56.        | -145.      | -87.       | -0.0048 | -0.0026 | .0004   | .0011   | -0.0007 | -0.0032 | 743.  |       |       |        |
| .0220      | 45.     | -21.    | -6.     | 12.        | -70.       | -74.       | -0.0051 | -0.0028 | .0002   | .0020   | .0014   | -0.0000 | 427.  |       |       |        |
| .0230      | 9.      | -55.    | 21.     | -38.       | 19.        | -51.       | -0.0053 | -0.0029 | .0001   | .0026   | .0040   | .0036   | 275.  |       |       |        |
| .0240      | -31.    | -94.    | 50.     | -84.       | 107.       | -23.       | -0.0054 | -0.0029 | -0.0000 | .0029   | .0067   | .0071   | 576.  |       |       |        |
| .0250      | -53.    | -105.   | 70.     | -123.      | 187.       | 4.         | -0.0056 | -0.0029 | -0.0001 | .0028   | .0087   | .0093   | 936.  |       |       |        |
| .0260      | -53.    | -70.    | 78.     | -157.      | 260.       | 26.        | -0.0058 | -0.0028 | -0.0002 | .0030   | .0093   | .0105   | 1271. |       |       |        |
| .0270      | -68.    | -53.    | 83.     | -189.      | 314.       | 41.        | -0.0055 | -0.0024 | -0.0005 | .0050   | .0083   | .0129   | 1539. |       |       |        |
| .0280      | -150.   | -130.   | 107.    | -203.      | 328.       | 59.        | -0.0045 | -0.0014 | -0.0011 | .0086   | .0064   | .0181   | 1630. |       |       |        |
| .0290      | -244.   | -201.   | 135.    | -187.      | 313.       | 86.        | -0.0032 | -0.0002 | -0.0016 | .0112   | .0040   | .0228   | 1565. |       |       |        |
| .0300      | -211.   | -86.    | 107.    | -178.      | 319.       | 109.       | -0.0025 | .0006   | -0.0018 | .0114   | .0010   | .0219   | 1593. |       |       |        |
| .0310      | -108.   | 32.     | 48.     | -194.      | 355.       | 122.       | -0.0018 | .0014   | -0.0019 | .0115   | -0.0020 | .0197   | 1763. |       |       |        |
| .0320      | -119.   | -15.    | 43.     | -199.      | 387.       | 156.       | .0001   | .0029   | -0.0023 | .0122   | -0.0032 | .0225   | 1929. |       |       |        |
| .0330      | -238.   | -90.    | 94.     | -180.      | 409.       | 227.       | .0028   | .0047   | -0.0030 | .0117   | -0.0022 | .0275   | 2091. |       |       |        |
| .0340      | -270.   | -67.    | 108.    | -170.      | 445.       | 291.       | .0049   | .0060   | -0.0033 | .0088   | -0.0005 | .0278   | 2327. |       |       |        |
| .0350      | -145.   | 17.     | 50.     | -175.      | 481.       | 310.       | .0060   | .0068   | -0.0032 | .0041   | .0004   | .0222   | 2499. |       |       |        |
| .0360      | -11.    | 134.    | -15.    | -151.      | 465.       | 314.       | .0071   | .0075   | -0.0030 | -0.0004 | .0003   | .0151   | 2423. |       |       |        |
| .0370      | 3.      | 219.    | -39.    | -79.       | 359.       | 319.       | .0091   | .0084   | -0.0034 | -0.0023 | -0.0010 | .0111   | 2032. |       |       |        |
| .0380      | -49.    | 163.    | -46.    | 18.        | 176.       | 296.       | .0117   | .0095   | -0.0042 | -0.0005 | -0.0037 | .0108   | 1441. |       |       |        |
| .0390      | -32.    | 93.     | -78.    | 128.       | -41.       | 235.       | .0136   | .0101   | -0.0048 | .0011   | -0.0070 | .0080   | 1130. |       |       |        |
| .0400      | 121.    | 267.    | -148.   | 242.       | -234.      | 166.       | .0141   | .0095   | -0.0050 | -0.0011 | -0.0098 | -0.0026 | 1568. |       |       |        |
| .0410      | 333.    | 521.    | -232.   | 317.       | -361.      | 95.        | .0141   | .0082   | -0.0050 | -0.0039 | -0.0109 | -0.0151 | 2045. |       |       |        |
| .0420      | 391.    | 440.    | -244.   | 343.       | -429.      | 31.        | .0149   | .0072   | -0.0054 | -0.0033 | -0.0087 | -0.0181 | 2296. |       |       |        |
| .0430      | 256.    | 140.    | -155.   | 353.       | -450.      | 12.        | .0166   | .0064   | -0.0061 | -0.0028 | -0.0019 | -0.0138 | 2389. |       |       |        |
| .0440      | 161.    | 60.     | -65.    | 343.       | -398.      | 30.        | .0171   | .0044   | -0.0062 | -0.0078 | .0077   | -0.0153 | 2198. |       |       |        |
| .0450      | 300.    | 146.    | -77.    | 271.       | -270.      | 6.         | .0153   | .0010   | -0.0053 | -0.0160 | .0168   | -0.0259 | 1597. |       |       |        |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GRWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |      |       |       |       |      |       |       |        |        |        |        |       |
|-------|-------|------|-------|-------|-------|------|-------|-------|--------|--------|--------|--------|-------|
| .0350 | -141. | 17.  | 50.   | -175. | 481.  | 310. | .0060 | .0068 | -.0032 | .0041  | .0004  | .0278  | 2327. |
| .0360 | -11.  | 134. | -15.  | -151. | 465.  | 314. | .0071 | .0075 | -.0030 | -.0004 | .0003  | .0151  | 2423. |
| .0370 | 3.    | 219. | -35.  | -79.  | 359.  | 319. | .0091 | .0084 | -.0034 | -.0023 | -.0010 | .0111  | 2032. |
| .0380 | -49.  | 163. | -46.  | 10.   | 176.  | 296. | .0117 | .0095 | -.0042 | -.0005 | -.0037 | .0108  | 1441. |
| .0390 | -30.  | 93.  | -38.  | 128.  | -41.  | 235. | .0176 | .0101 | -.0048 | .0011  | -.0070 | .0080  | 1130. |
| .0400 | 121.  | 267. | -140. | 242.  | -234. | 166. | .0141 | .0095 | -.0050 | -.0011 | -.0098 | -.0026 | 1568. |
| .0410 | 333.  | 521. | -232. | 317.  | -361. | 95.  | .0141 | .0082 | -.0050 | -.0039 | -.0109 | -.0151 | 2045. |
| .0420 | 391.  | 440. | -244. | 343.  | -429. | 31.  | .0149 | .0072 | -.0054 | -.0033 | -.0087 | -.0181 | 2296. |
| .0430 | 256.  | 140. | -155. | 353.  | -450. | 12.  | .0166 | .0064 | -.0061 | -.0028 | -.0019 | -.0138 | 2389. |
| .0440 | 161.  | 60.  | -65.  | 343.  | -398. | 30.  | .0171 | .0044 | -.0062 | -.0078 | .0077  | -.0153 | 2198. |
| .0450 | 300.  | 146. | -77.  | 271.  | -270. | 6.   | .0153 | .0010 | -.0053 | -.0160 | .0168  | -.0259 | 1597. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.41.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65    | MEMBER | 1     | SEQUENCE | 95      | LOCATION | END    | TYPE   | TE     |        |        |        |        |  |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX    | FY     | FZ    | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB)  | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| .0460   | 495.  | 113.   | -126. | 175.     | -155.   | -66.     | .0125  | -.0026 | -.0041 | -.0220 | .0235  | -.0360 | 1013.  |  |
| .0470   | 454.  | -17.   | -86.  | 150.     | -154.   | -110.    | .0111  | -.0055 | -.0037 | -.0240 | .0279  | -.0388 | 1009.  |  |
| .0480   | 246.  | -165.  | 10.   | 192.     | -260.   | -136.    | .0105  | -.0080 | -.0079 | -.0223 | .0291  | -.0368 | 1465.  |  |
| .0490   | 181.  | -332.  | 29.   | 216.     | -385.   | -226.    | .0084  | -.0106 | -.0037 | -.0187 | .0264  | -.0374 | 2070.  |  |
| .0500   | 316.  | -355.  | -38.  | 212.     | -476.   | -354.    | .0044  | -.0138 | -.0027 | -.0173 | .0216  | -.0450 | 2629.  |  |
| .0510   | 422.  | -189.  | -83.  | 215.     | -534.   | -431.    | .0001  | -.0171 | -.0015 | -.0191 | .0180  | -.0544 | 3000.  |  |
| .0520   | 349.  | -183.  | -53.  | 202.     | -547.   | -454.    | -.0031 | -.0193 | -.0007 | -.0198 | .0169  | -.0554 | 3084.  |  |
| .0530   | 175.  | -464.  | 12.   | 129.     | -484.   | -460.    | -.0057 | -.0203 | .0000  | -.0181 | .0177  | -.0476 | 2840.  |  |
| .0540   | 51.   | -618.  | 56.   | 11.      | -332.   | -437.    | -.0087 | -.0211 | .0012  | -.0194 | .0200  | -.0414 | 2293.  |  |
| .0550   | 27.   | -472.  | 54.   | -124.    | -129.   | -384.    | -.0126 | -.0220 | .0030  | -.0250 | .0224  | -.0411 | 1768.  |  |
| .0560   | 16.   | -393.  | 21.   | -260.    | 50.     | -341.    | -.0163 | -.0220 | .0049  | -.0292 | .0231  | -.0386 | 1804.  |  |
| .0570   | -89.  | -509.  | 1.    | -361.    | 139.    | -309.    | -.0190 | -.0205 | .0063  | -.0290 | .0216  | -.0292 | 2065.  |  |
| .0580   | -256. | -514.  | -2.   | -390.    | 129.    | -258.    | -.0208 | -.0182 | .0073  | -.0274 | .0177  | -.0187 | 2022.  |  |
| .0590   | -330. | -320.  | -41.  | -376.    | 68.     | -219.    | -.0230 | -.0155 | .0084  | -.0259 | .0114  | -.0124 | 1839.  |  |
| .0600   | -261. | -122.  | -133. | -367.    | 11.     | -226.    | -.0256 | -.0125 | .0096  | -.0230 | .0036  | -.0084 | 1801.  |  |
| .0610   | -209. | 40.    | -200. | -356.    | -24.    | -225.    | -.0275 | -.0088 | .0106  | -.0188 | -.0032 | -.0022 | 1761.  |  |
| .0620   | -311. | 188.   | -179. | -332.    | -26.    | -159.    | -.0278 | -.0044 | .0110  | -.0144 | -.0064 | -.0089 | 1539.  |  |
| .0630   | -478. | 229.   | -114. | -328.    | 33.     | -58.     | -.0270 | .0004  | .0112  | -.0107 | -.0059 | .0233  | 1397.  |  |
| .0640   | -541. | 233.   | -82.  | -368.    | 172.    | 37.      | -.0265 | .0048  | .0119  | -.0091 | -.0028 | .0351  | 1702.  |  |
| .0650   | -486. | 392.   | -84.  | -420.    | 358.    | 138.     | -.0265 | .0084  | .0131  | -.0111 | .0016  | .0404  | 2374.  |  |
| .0660   | -444. | 507.   | -66.  | -443.    | 514.    | 243.     | -.0258 | .0116  | .0142  | -.0133 | .0057  | .0437  | 3006.  |  |
| .0670   | -489. | 608.   | -5.   | -412.    | 573.    | 320.     | -.0238 | .0150  | .0145  | -.0110 | .0075  | .0509  | 3235.  |  |
| .0680   | -544. | 530.   | 64.   | -315.    | 520.    | 354.     | -.0211 | .0181  | .0142  | -.0045 | .0058  | .0583  | 2935.  |  |
| .0690   | -491. | 599.   | 100.  | -155.    | 381.    | 347.     | -.0188 | .0202  | .0137  | .0025  | .0007  | .0588  | 2245.  |  |
| .0700   | -313. | 763.   | 105.  | 41.      | 201.    | 297.     | -.0172 | .0210  | .0132  | .0087  | -.0061 | .0524  | 1506.  |  |
| .0710   | -107. | 855.   | 120.  | 238.     | 27.     | 225.     | -.0155 | .0209  | .0125  | .0149  | -.0126 | .0444  | 1372.  |  |
| .0720   | 27.   | 849.   | 181.  | 409.     | -92.    | 173.     | -.0129 | .0202  | .0113  | .0214  | -.0163 | .0390  | 1894.  |  |
| .0730   | 60.   | 734.   | 288.  | 527.     | -123.   | 156.     | -.0096 | .0189  | .0097  | .0269  | -.0163 | .0367  | 2350.  |  |
| .0740   | 76.   | 528.   | 402.  | 574.     | -54.    | 160.     | -.0061 | .0167  | .0082  | .0294  | -.0127 | .0348  | 2499.  |  |
| .0750   | 149.  | 367.   | 479.  | 562.     | 92.     | 175.     | -.0033 | .0133  | .0071  | .0277  | -.0063 | .0292  | 2486.  |  |
| .0760   | 262.  | 284.   | 514.  | 516.     | 261.    | 194.     | -.0009 | .0090  | .0059  | .0237  | .0004  | .0206  | 2544.  |  |
| .0770   | 315.  | 114.   | 541.  | 467.     | 380.    | 198.     | .0018  | .0046  | .0043  | .0216  | .0056  | .0144  | 2646.  |  |
| .0780   | 266.  | -167.  | 583.  | 451.     | 396.    | 183.     | .0052  | .0005  | .0019  | .0226  | .0084  | .0119  | 2621.  |  |
| .0790   | 213.  | -362.  | 600.  | 476.     | 314.    | 149.     | .0085  | -.0036 | -.0010 | .0246  | .0080  | .0079  | 2459.  |  |
| .0800   | 263.  | -416.  | 544.  | 516.     | 170.    | 82.      | .0107  | -.0081 | -.0039 | .0259  | .0047  | -.0009 | 2294.  |  |
| .0810   | 376.  | -453.  | 434.  | 547.     | 1.      | -7.      | .0121  | -.0124 | -.0068 | .0263  | .0004  | -.0116 | 2282.  |  |
| .0820   | 430.  | -500.  | 327.  | 560.     | -158.   | -73.     | .0137  | -.0164 | -.0098 | .0253  | -.0027 | -.0201 | 2447.  |  |
| .0830   | 393.  | -541.  | 236.  | 530.     | -262.   | -92.     | .0156  | -.0196 | -.0129 | .0228  | -.0034 | -.0250 | 2498.  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.41.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |      |       |      |      |       |      |        |        |        |       |        |        |       |
|-------|------|-------|------|------|-------|------|--------|--------|--------|-------|--------|--------|-------|
| .0730 | 66.  | 734.  | 289. | 527. | -123. | 156. | -.0096 | .0189  | .0097  | .0269 | -.0165 | .0367  | 2350. |
| .0740 | 76.  | 528.  | 402. | 574. | -54.  | 160. | -.0061 | .0167  | .0082  | .0294 | -.0127 | .0348  | 2499. |
| .0750 | 149. | 367.  | 479. | 562. | 92.   | 175. | -.0033 | .0133  | .0071  | .0277 | -.0063 | .0292  | 2486. |
| .0760 | 261. | 284.  | 514. | 516. | 261.  | 194. | -.0009 | .0090  | .0059  | .0237 | .0004  | .0206  | 2544. |
| .0770 | 315. | 114.  | 541. | 467. | 380.  | 198. | .0018  | .0046  | .0043  | .0216 | .0056  | .0144  | 2646. |
| .0780 | 266. | -167. | 587. | 451. | 396.  | 183. | .0052  | .0005  | .0019  | .0226 | .0084  | .0119  | 2621. |
| .0790 | 213. | -362. | 600. | 476. | 314.  | 149. | .0085  | -.0036 | -.0010 | .0246 | .0080  | .0079  | 2459. |
| .0800 | 263. | -416. | 544. | 516. | 170.  | 82.  | .0107  | -.0081 | -.0039 | .0259 | .0047  | -.0009 | 2294. |
| .0810 | 376. | -453. | 434. | 547. | 1.    | -7.  | .0121  | -.0124 | -.0068 | .0263 | .0004  | -.0116 | 2282. |
| .0820 | 430. | -500. | 327. | 560. | -158. | -73. | .0137  | -.0164 | -.0098 | .0253 | -.0027 | -.0201 | 2447. |
| .0830 | 393. | -541. | 236. | 530. | -262. | -92. | .0156  | -.0196 | -.0129 | .0228 | -.0034 | -.0250 | 2498. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.41.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION    | MEMBER  | SEQUENCE | LOCATION | END        | TYPE       | TE         |         |         |         |          |          |          | STRESS |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------|
| TIME (SEC) | FX (LB) | FY (LB)  | FZ (LB)  | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | (PSI)  |
| .0840      | 328.    | -646.    | 132.     | 425.       | -274.      | -87.       | .0177   | -.0222  | -.0157  | .0195    | -.0020   | -.0262   | 2144.  |
| .0850      | 273.    | -789.    | 4.       | 253.       | -205.      | -68.       | .0194   | -.0241  | -.0182  | .0147    | .0010    | -.0253   | 1388.  |
| .0860      | 221.    | -829.    | -134.    | 58.        | -93.       | -22.       | .0209   | -.0255  | -.0202  | .0079    | .0049    | -.0245   | 467.   |
| .0870      | 167.    | -799.    | -278.    | -133.      | 12.        | 34.        | .0222   | -.0260  | -.0221  | .0012    | .0082    | -.0230   | 575.   |
| .0880      | 111.    | -841.    | -427.    | -303.      | 74.        | 68.        | .0235   | -.0254  | -.0240  | -.0021   | .0094    | -.0185   | 1332.  |
| .0890      | 52.     | -884.    | -564.    | -426.      | 75.        | 85.        | .0246   | -.0239  | -.0258  | -.0027   | .0086    | -.0126   | 1841.  |
| .0900      | 16.     | -779.    | -685.    | -495.      | 33.        | 104.       | .0254   | -.0217  | -.0274  | -.0029   | .0065    | -.0087   | 2117.  |
| .0910      | 26.     | -612.    | -800.    | -540.      | -17.       | 112.       | .0255   | -.0190  | -.0285  | -.0022   | .0038    | -.0064   | 2303.  |
| .0920      | 39.     | -524.    | -893.    | -581.      | -52.       | 114.       | .0254   | -.0155  | -.0292  | -.0002   | .0018    | -.0027   | 2482.  |
| .0930      | -7.     | -460.    | -934.    | -611.      | -64.       | 143.       | .0253   | -.0115  | -.0293  | .0013    | .0019    | .0024    | 2634.  |
| .0940      | -87.    | -350.    | -930.    | -629.      | -51.       | 200.       | .0250   | -.0072  | -.0286  | .0012    | .0041    | .0068    | 2764.  |
| .0950      | -118.   | -243.    | -922.    | -647.      | -17.       | 246.       | .0239   | -.0029  | -.0271  | .0007    | .0067    | .0092    | 2888.  |
| .0960      | -85.    | -139.    | -916.    | -645.      | 6.         | 261.       | .0222   | .0013   | -.0249  | .0012    | .0081    | .0097    | 2905.  |
| .0970      | -55.    | 6.       | -876.    | -587.      | -23.       | 258.       | .0203   | .0056   | -.0225  | .0039    | .0075    | .0094    | 2680.  |
| .0980      | -58.    | 127.     | -786.    | -464.      | -120.      | 230.       | .0185   | .0099   | -.0200  | .0101    | .0046    | .0103    | 2217.  |
| .0990      | -46.    | 181.     | -667.    | -295.      | -260.      | 160.       | .0165   | .0142   | -.0175  | .0198    | -.0005   | .0117    | 1772.  |
| .1000      | 34.     | 272.     | -541.    | -105.      | -397.      | 59.        | .0136   | .0179   | -.0146  | .0301    | -.0068   | .0106    | 1730.  |
| .1010      | 160.    | 436.     | -402.    | 83.        | -488.      | -46.       | .0101   | .0208   | -.0115  | .0391    | -.0126   | .0067    | 2075.  |
| .1020      | 262.    | 530.     | -234.    | 240.       | -511.      | -142.      | .0064   | .0232   | -.0076  | .0472    | -.0167   | .0040    | 2430.  |
| .1030      | 294.    | 515.     | -34.     | 350.       | -459.      | -217.      | .0030   | .0251   | -.0038  | .0546    | -.0188   | .0048    | 2574.  |
| .1040      | 274.    | 461.     | 181.     | 416.       | -337.      | -261.      | -.0003  | .0266   | .0003   | .0605    | -.0195   | .0075    | 2486.  |
| .1050      | 247.    | 420.     | 380.     | 442.       | -166.      | -283.      | -.0038  | .0273   | .0046   | .0640    | -.0191   | .0101    | 2297.  |
| .1060      | 224.    | 365.     | 552.     | 442.       | 21.        | -295.      | -.0073  | .0274   | .0090   | .0660    | -.0192   | .0125    | 2220.  |
| .1070      | 177.    | 309.     | 706.     | 440.       | 189.       | -291.      | -.0107  | .0271   | .0132   | .0667    | -.0198   | .0150    | 2338.  |
| .1080      | 82.     | 273.     | 852.     | 453.       | 319.       | -262.      | -.0138  | .0265   | .0170   | .0660    | -.0209   | .0179    | 2558.  |
| .1090      | -34.    | 237.     | 982.     | 468.       | 425.       | -220.      | -.0166  | .0257   | .0204   | .0639    | -.0223   | .0203    | 2791.  |
| .1100      | -130.   | 198.     | 1067.    | 457.       | 526.       | -175.      | -.0193  | .0245   | .0235   | .0600    | -.0239   | .0214    | 2998.  |
| .1110      | -247.   | 196.     | 1125.    | 437.       | 615.       | -106.      | -.0217  | .0231   | .0263   | .0530    | -.0249   | .0209    | 3180.  |
| .1120      | -401.   | 214.     | 1160.    | 411.       | 683.       | -13.       | -.0234  | .0215   | .0287   | .0431    | -.0256   | .0196    | 3329.  |
| .1130      | -535.   | 203.     | 1137.    | 355.       | 734.       | 74.        | -.0245  | .0199   | .0308   | .0319    | -.0271   | .0177    | 3415.  |
| .1140      | -633.   | 204.     | 1050.    | 274.       | 755.       | 146.       | -.0248  | .0183   | .0325   | .0206    | -.0302   | .0149    | 3406.  |
| .1150      | -735.   | 245.     | 928.     | 204.       | 722.       | 216.       | -.0240  | .0168   | .0334   | .0095    | -.0347   | .0122    | 3260.  |
| .1160      | -834.   | 248.     | 753.     | 150.       | 636.       | 270.       | -.0220  | .0156   | .0335   | -.0000   | -.0400   | .0105    | 2952.  |
| .1170      | -869.   | 205.     | 611.     | 98.        | 529.       | 289.       | -.0194  | .0145   | .0329   | -.0084   | -.0454   | .0084    | 2547.  |
| .1180      | -804.   | 272.     | 413.     | 41.        | 439.       | 291.       | -.0164  | .0132   | .0317   | -.0171   | -.0495   | .0027    | 2204.  |
| .1190      | -710.   | 371.     | 230.     | -17.       | 385.       | 292.       | -.0127  | .0119   | .0297   | -.0255   | -.0505   | -.0036   | 2017.  |
| .1200      | -648.   | 329.     | 88.      | -97.       | 380.       | 290.       | -.0079  | .0110   | .0271   | -.0317   | -.0482   | -.0066   | 2035.  |
| .1210      | -615.   | 212.     | -19.     | -214.      | 432.       | 289.       | -.0020  | .0102   | .0239   | -.0365   | -.0422   | -.0076   | 2346.  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.41.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |      |       |       |      |       |        |       |       |        |        |        |       |
|-------|-------|------|-------|-------|------|-------|--------|-------|-------|--------|--------|--------|-------|
| .1110 | -247. | 196. | 1125. | 477.  | 615. | -106. | -.0217 | .0231 | .0263 | .0530  | -.0249 | .0209  | 3180. |
| .1120 | -401. | 214. | 1160. | 411.  | 683. | -13.  | -.0234 | .0215 | .0287 | .0431  | -.0256 | .0196  | 3329. |
| .1130 | -535. | 203. | 1137. | 355.  | 734. | 74.   | -.0245 | .0199 | .0308 | .0319  | -.0271 | .0177  | 3415. |
| .1140 | -630. | 204. | 1050. | 274.  | 755. | 146.  | -.0248 | .0183 | .0325 | .0206  | -.0302 | .0149  | 3406. |
| .1150 | -735. | 245. | 520.  | 204.  | 722. | 216.  | -.0240 | .0168 | .0334 | .0095  | -.0347 | .0122  | 3260. |
| .1160 | -834. | 248. | 783.  | 150.  | 636. | 270.  | -.0220 | .0156 | .0335 | -.0000 | -.0400 | .0105  | 2952. |
| .1170 | -869. | 205. | 611.  | 98.   | 520. | 289.  | -.0194 | .0145 | .0329 | -.0084 | -.0454 | .0084  | 2547. |
| .1180 | -804. | 272. | 413.  | 41.   | 439. | 291.  | -.0164 | .0132 | .0317 | -.0171 | -.0493 | .0027  | 2204. |
| .1190 | -710. | 371. | 230.  | -17.  | 385. | 292.  | -.0127 | .0119 | .0297 | -.0255 | -.0505 | -.0036 | 2017. |
| .1200 | -640. | 329. | 80.   | -97.  | 380. | 290.  | -.0079 | .0110 | .0271 | -.0317 | -.0482 | -.0066 | 2035. |
| .1210 | -615. | 212. | -19.  | -214. | 432. | 289.  | -.0020 | .0102 | .0239 | -.0365 | -.0422 | -.0076 | 2346. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.41.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65    | MEMBER | 1     | SEQUENCE | 95      | LOCATION | END    | TYPE  | TE     |        |        |        |        |  |  |
|---------|-------|--------|-------|----------|---------|----------|--------|-------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX    | FY     | FZ    | MX       | MY      | MZ       | DY     | DY    | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)  | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)  | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .1220   | -600. | 111.   | -100. | -343.    | 506.    | 297.     | .0044  | .0095 | .0204  | -.0414 | -.0334 | -.0094 | 2835.  |  |  |
| .1230   | -549. | 62.    | -195. | -456.    | 550.    | 299.     | .0109  | .0086 | .0170  | -.0462 | -.0237 | -.0140 | 3233.  |  |  |
| .1240   | -449. | -36.   | -313. | -533.    | 515.    | 264.     | .0172  | .0077 | .0137  | -.0489 | -.0149 | -.0203 | 3283.  |  |  |
| .1250   | -322. | -124.  | -426. | -545.    | 375.    | 195.     | .0234  | .0070 | .0102  | -.0489 | -.0082 | -.0288 | 2878.  |  |  |
| .1260   | -180. | -76.   | -511. | -481.    | 145.    | 108.     | .0296  | .0063 | .0064  | -.0463 | -.0036 | -.0401 | 2143.  |  |  |
| .1270   | -36.  | -56.   | -559. | -360.    | -135.   | -8.      | .0358  | .0060 | .0023  | -.0395 | -.0009 | -.0509 | 1606.  |  |  |
| .1280   | 115.  | -145.  | -570. | -228.    | -398.   | -148.    | .0416  | .0060 | -.0019 | -.0290 | .0014  | -.0595 | 2012.  |  |  |
| .1290   | 244.  | -255.  | -530. | -106.    | -593.   | -273.    | .0470  | .0063 | -.0058 | -.0189 | .0056  | -.0675 | 2762.  |  |  |
| .1300   | 363.  | -281.  | -450. | -7.      | -693.   | -355.    | .0517  | .0063 | -.0089 | -.0126 | .0125  | -.0770 | 3251.  |  |  |
| .1310   | 526.  | -280.  | -386. | 12.      | -692.   | -414.    | .0553  | .0063 | -.0110 | -.0091 | .0207  | -.0874 | 3371.  |  |  |
| .1320   | 701.  | -397.  | -342. | 48.      | -629.   | -470.    | .0580  | .0066 | -.0122 | -.0059 | .0282  | -.0951 | 3283.  |  |  |
| .1330   | 824.  | -510.  | -287. | 45.      | -555.   | -507.    | .0604  | .0074 | -.0130 | -.0027 | .0338  | -.1000 | 3145.  |  |  |
| .1340   | 885.  | -536.  | -216. | 64.      | -517.   | -527.    | .0624  | .0086 | -.0134 | .0011  | .0361  | -.1030 | 3094.  |  |  |
| .1350   | 954.  | -556.  | -172. | 106.     | -531.   | -566.    | .0634  | .0104 | -.0135 | .0072  | .0338  | -.1041 | 3268.  |  |  |
| .1360   | 1050. | -582.  | -160. | 167.     | -590.   | -627.    | .0631  | .0126 | -.0132 | .0152  | .0277  | -.1043 | 3661.  |  |  |
| .1370   | 1134. | -545.  | -153. | 255.     | -672.   | -675.    | .0616  | .0152 | -.0126 | .0219  | .0205  | -.1041 | 4116.  |  |  |
| .1380   | 1171. | -355.  | -116. | 338.     | -725.   | -683.    | .0592  | .0178 | -.0116 | .0256  | .0141  | -.1046 | 4390.  |  |  |
| .1390   | 1177. | -173.  | -82.  | 367.     | -698.   | -667.    | .0558  | .0207 | -.0102 | .0285  | .0085  | -.1023 | 4310.  |  |  |
| .1400   | 1099. | -133.  | -45.  | 321.     | -584.   | -625.    | .0521  | .0243 | -.0085 | .0322  | .0041  | -.0933 | 3812.  |  |  |
| .1410   | 878.  | -132.  | 20.   | 223.     | -417.   | -524.    | .0488  | .0283 | -.0066 | .0348  | .0015  | -.0786 | 2945.  |  |  |
| .1420   | 568.  | -91.   | 92.   | 105.     | -236.   | -372.    | .0454  | .0323 | -.0042 | .0342  | .0000  | -.0618 | 1891.  |  |  |
| .1430   | 336.  | 32.    | 91.   | -31.     | -58.    | -221.    | .0410  | .0361 | -.0012 | .0315  | -.0028 | -.0474 | 962.   |  |  |
| .1440   | 215.  | 174.   | 16.   | -168.    | 96.     | -102.    | .0356  | .0396 | .0021  | .0293  | -.0082 | -.0349 | 913.   |  |  |
| .1450   | 69.   | 307.   | -38.  | -267.    | 197.    | 3.       | .0305  | .0432 | .0050  | .0288  | -.0154 | -.0213 | 1385.  |  |  |
| .1460   | -167. | 447.   | -25.  | -311.    | 246.    | 114.     | .0263  | .0467 | .0073  | .0301  | -.0231 | -.0056 | 1720.  |  |  |
| .1470   | -380. | 534.   | 8.    | -323.    | 275.    | 202.     | .0224  | .0500 | .0091  | .0329  | -.0312 | .0103  | 1963.  |  |  |
| .1480   | -458. | 617.   | -5.   | -343.    | 333.    | 255.     | .0179  | .0526 | .0111  | .0354  | -.0389 | .0224  | 2262.  |  |  |
| .1490   | -456. | 736.   | -32.  | -371.    | 427.    | 304.     | .0132  | .0541 | .0133  | .0348  | -.0442 | .0303  | 2681.  |  |  |
| .1500   | -487. | 866.   | -27.  | -399.    | 539.    | 381.     | .0094  | .0548 | .0156  | .0307  | -.0459 | .0366  | 3221.  |  |  |
| .1510   | -543. | 922.   | -11.  | -438.    | 663.    | 468.     | .0064  | .0548 | .0177  | .0259  | -.0450 | .0432  | 3847.  |  |  |
| .1520   | -582. | 820.   | -7.   | -484.    | 775.    | 529.     | .0042  | .0542 | .0196  | .0222  | -.0427 | .0504  | 4406.  |  |  |
| .1530   | -586. | 718.   | -3.   | -503.    | 840.    | 571.     | .0023  | .0525 | .0213  | .0177  | -.0388 | .0541  | 4731.  |  |  |
| .1540   | -554. | 733.   | 19.   | -457.    | 826.    | 596.     | .0005  | .0496 | .0227  | .0111  | -.0337 | .0515  | 4660.  |  |  |
| .1550   | -450. | 788.   | 34.   | -350.    | 727.    | 578.     | -.0014 | .0455 | .0237  | .0049  | -.0283 | .0435  | 4145.  |  |  |
| .1560   | -292. | 759.   | 41.   | -203.    | 558.    | 502.     | -.0033 | .0406 | .0239  | .0017  | -.0230 | .0333  | 3245.  |  |  |
| .1570   | -182. | 631.   | 96.   | -12.     | 326.    | 401.     | -.0046 | .0350 | .0234  | -.0001 | -.0164 | .0229  | 2156.  |  |  |
| .1580   | -109. | 571.   | 193.  | 202.     | 72.     | 304.     | -.0057 | .0283 | .0224  | -.0036 | -.0076 | .0096  | 1552.  |  |  |
| .1590   | 27.   | 553.   | 261.  | 386.     | -155.   | 192.     | -.0071 | .0206 | .0215  | -.0088 | .0024  | -.0075 | 1914.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.41.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING



|       |       |      |      |       |       |      |        |       |       |        |        |        |       |
|-------|-------|------|------|-------|-------|------|--------|-------|-------|--------|--------|--------|-------|
| .1490 | -456. | 736. | -32. | -371. | 427.  | 304. | .0132  | .0541 | .0133 | .0348  | -.0442 | .0303  | 2262. |
| .1500 | -487. | 866. | -27. | -399. | 530.  | 381. | .0094  | .0548 | .0156 | .0307  | -.0459 | .0366  | 3221. |
| .1510 | -543. | 922. | -11. | -438. | 662.  | 468. | .0064  | .0548 | .0177 | .0259  | -.0450 | .0432  | 3847. |
| .1520 | -582. | 820. | -7.  | -484. | 775.  | 529. | .0042  | .0542 | .0196 | .0222  | -.0427 | .0504  | 4406. |
| .1530 | -586. | 718. | -3.  | -503. | 840.  | 571. | .0023  | .0525 | .0213 | .0177  | -.0388 | .0541  | 4731. |
| .1540 | -554. | 730. | 19.  | -457. | 826.  | 596. | .0005  | .0496 | .0227 | .0111  | -.0337 | .0515  | 4660. |
| .1550 | -450. | 788. | 34.  | -350. | 727.  | 578. | -.0014 | .0455 | .0237 | .0049  | -.0283 | .0435  | 4145. |
| .1560 | -292. | 759. | 41.  | -203. | 558.  | 502. | -.0033 | .0406 | .0239 | .0017  | -.0230 | .0333  | 3245. |
| .1570 | -182. | 631. | 96.  | -12.  | 326.  | 401. | -.0046 | .0350 | .0234 | -.0001 | -.0164 | .0229  | 2156. |
| .1580 | -109. | 571. | 193. | 202.  | 72.   | 304. | -.0057 | .0283 | .0224 | -.0036 | -.0076 | .0096  | 1552. |
| .1590 | 27.   | 553. | 261. | 366.  | -155. | 192. | -.0071 | .0206 | .0215 | -.0088 | .0024  | -.0075 | 1914. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.41.

S/RV PIPING KEWAUNEE CREEK 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 1      | SEQUENCE | 95      | LOCATION | END | TYPE   | TE     |        |        |        |        |        |  |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       |     | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| .1600   | 216.   | 402.   | 280.   | 515.     | -343.   | 53.      |     | -.0089 | .0120  | .0206  | -.0144 | .0133  | -.0249 | 2592.  |  |
| .1610   | 348.   | 180.   | 304.   | 610.     | -507.   | -71.     |     | -.0104 | .0031  | .0195  | -.0212 | .0254  | -.0407 | 3322.  |  |
| .1620   | 413.   | 26.    | 344.   | 682.     | -646.   | -163.    |     | -.0117 | -.0064 | .0182  | -.0299 | .0382  | -.0563 | 3981.  |  |
| .1630   | 499.   | -170.  | 360.   | 716.     | -749.   | -270.    |     | -.0133 | -.0160 | .0167  | -.0378 | .0497  | -.0711 | 4469.  |  |
| .1640   | 647.   | -422.  | 335.   | 706.     | -810.   | -411.    |     | -.0157 | -.0255 | .0149  | -.0433 | .0586  | -.0849 | 4800.  |  |
| .1650   | 760.   | -630.  | 324.   | 683.     | -846.   | -547.    |     | -.0183 | -.0346 | .0125  | -.0471 | .0655  | -.0971 | 5079.  |  |
| .1660   | 762.   | -828.  | 360.   | 660.     | -876.   | -655.    |     | -.0206 | -.0429 | .0096  | -.0497 | .0708  | -.1058 | 5352.  |  |
| .1670   | 732.   | -1039. | 382.   | 606.     | -882.   | -755.    |     | -.0233 | -.0502 | .0064  | -.0509 | .0736  | -.1117 | 5465.  |  |
| .1680   | 730.   | -1225. | 342.   | 503.     | -852.   | -850.    |     | -.0267 | -.0566 | .0035  | -.0513 | .0732  | -.1163 | 5443.  |  |
| .1690   | 711.   | -1336. | 261.   | 361.     | -798.   | -908.    |     | -.0304 | -.0617 | .0008  | -.0523 | .0703  | -.1195 | 5267.  |  |
| .1700   | 589.   | -1397. | 176.   | 195.     | -741.   | -915.    |     | -.0336 | -.0650 | -.0019 | -.0553 | .0653  | -.1184 | 4980.  |  |
| .1710   | 385.   | -1498. | 81.    | 9.       | -682.   | -885.    |     | -.0364 | -.0664 | -.0045 | -.0526 | .0578  | -.1114 | 4663.  |  |
| .1720   | 182.   | -1540. | -53.   | -199.    | -606.   | -831.    |     | -.0390 | -.0657 | -.0071 | -.0498 | .0476  | -.1011 | 4372.  |  |
| .1730   | -27.   | -1520. | -196.  | -403.    | -520.   | -751.    |     | -.0414 | -.0631 | -.0096 | -.0461 | .0361  | -.0884 | 4168.  |  |
| .1740   | -236.  | -1415. | -320.  | -584.    | -427.   | -639.    |     | -.0435 | -.0586 | -.0122 | -.0423 | .0244  | -.0738 | 4031.  |  |
| .1750   | -429.  | -1215. | -436.  | -744.    | -319.   | -502.    |     | -.0452 | -.0523 | -.0146 | -.0382 | .0129  | -.0581 | 3976.  |  |
| .1760   | -584.  | -1002. | -556.  | -889.    | -193.   | -355.    |     | -.0465 | -.0443 | -.0169 | -.0327 | .0017  | -.0402 | 4075.  |  |
| .1770   | -721.  | -774.  | -668.  | -1020.   | -51.    | -194.    |     | -.0470 | -.0346 | -.0191 | -.0262 | -.0085 | -.0200 | 4339.  |  |
| .1780   | -868.  | -515.  | -753.  | -1127.   | 90.     | -10.     |     | -.0465 | -.0237 | -.0209 | -.0200 | -.0171 | .0018  | 4718.  |  |
| .1790   | -983.  | -194.  | -834.  | -1209.   | 226.    | 186.     |     | -.0452 | -.0121 | -.0223 | -.0142 | -.0241 | .0233  | 5191.  |  |
| .1800   | -1026. | 120.   | -928.  | -1265.   | 346.    | 372.     |     | -.0435 | .0000  | -.0231 | -.0083 | -.0295 | .0438  | 5689.  |  |
| .1810   | -1025. | 385.   | -1005. | -1273.   | 430.    | 541.     |     | -.0412 | .0121  | -.0236 | -.0024 | -.0328 | .0632  | 6044.  |  |
| .1820   | -987.  | 721.   | -1038. | -1216.   | 474.    | 703.     |     | -.0386 | .0237  | -.0238 | .0024  | -.0331 | .0789  | 6187.  |  |
| .1830   | -899.  | 1082.  | -1024. | -1094.   | 484.    | 840.     |     | -.0357 | .0342  | -.0238 | .0070  | -.0306 | .0903  | 6102.  |  |
| .1840   | -751.  | 1367.  | -968.  | -922.    | 465.    | 930.     |     | -.0330 | .0434  | -.0238 | .0127  | -.0258 | .0984  | 5800.  |  |
| .1850   | -581.  | 1580.  | -860.  | -701.    | 416.    | 982.     |     | -.0303 | .0510  | -.0236 | .0190  | -.0183 | .1032  | 5328.  |  |
| .1860   | -425.  | 1764.  | -688.  | -436.    | 335.    | 1012.    |     | -.0276 | .0564  | -.0234 | .0241  | -.0083 | .1039  | 4808.  |  |
| .1870   | -246.  | 1923.  | -494.  | -155.    | 233.    | 1010.    |     | -.0253 | .0593  | -.0227 | .0276  | .0033  | .0994  | 4376.  |  |
| .1880   | -26.   | 1969.  | -307.  | 120.     | 116.    | 960.     |     | -.0238 | .0595  | -.0216 | .0305  | .0153  | .0908  | 4065.  |  |
| .1890   | 199.   | 1930.  | -119.  | 387.     | -18.    | 872.     |     | -.0228 | .0570  | -.0202 | .0324  | .0270  | .0789  | 3982.  |  |
| .1900   | 384.   | 1841.  | 90.    | 645.     | -165.   | 762.     |     | -.0222 | .0519  | -.0186 | .0332  | .0383  | .0643  | 4222.  |  |
| .1910   | 541.   | 1655.  | 313.   | 882.     | -308.   | 619.     |     | -.0223 | .0444  | -.0172 | .0336  | .0485  | .0482  | 4678.  |  |
| .1920   | 711.   | 1389.  | 523.   | 1077.    | -420.   | 439.     |     | -.0233 | .0345  | -.0157 | .0339  | .0570  | .0304  | 5161.  |  |
| .1930   | 869.   | 1072.  | 723.   | 1225.    | -489.   | 238.     |     | -.0251 | .0227  | -.0144 | .0333  | .0642  | .0116  | 5595.  |  |
| .1940   | 965.   | 709.   | 926.   | 1322.    | -514.   | 40.      |     | -.0276 | .0094  | -.0133 | .0309  | .0705  | -.0068 | 5924.  |  |
| .1950   | 1001.  | 305.   | 1107.  | 1353.    | -493.   | -146.    |     | -.0308 | -.0050 | -.0122 | .0261  | .0756  | -.0243 | 6041.  |  |
| .1960   | 1009.  | -107.  | 1226.  | 1303.    | -426.   | -322.    |     | -.0346 | -.0200 | -.0110 | .0190  | .0785  | -.0406 | 5878.  |  |
| .1970   | 974.   | -521.  | 1271.  | 1176.    | -336.   | -478.    |     | -.0390 | -.0350 | -.0097 | .0099  | .0785  | -.0549 | 5482.  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.41.

S/RV PIPING KEWAUNEE CREEK 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |       |       |       |       |        |        |        |       |       |        |       |
|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|--------|-------|
| .1070 | -246. | 1923. | 494.  | -155. | 233.  | 1010. | -.0253 | .0593  | -.0227 | .0276 | .0083 | .1039  | 4808. |
| .1080 | -26.  | 1969. | -307. | 120.  | 116.  | 960.  | -.0238 | .0595  | -.0216 | .0305 | .0153 | .0908  | 4065. |
| .1090 | 199.  | 1930. | -119. | 387.  | -10.  | 872.  | -.0228 | .0570  | -.0202 | .0324 | .0270 | .0789  | 3982. |
| .1000 | 384.  | 1841. | 90.   | 645.  | -165. | 762.  | -.0222 | .0519  | -.0186 | .0332 | .0383 | .0643  | 4222. |
| .1010 | 541.  | 1655. | 313.  | 822.  | -305. | 619.  | -.0223 | .0444  | -.0172 | .0336 | .0485 | .0482  | 4678. |
| .1020 | 711.  | 1389. | 523.  | 1077. | -420. | 439.  | -.0233 | .0345  | -.0157 | .0339 | .0570 | .0304  | 5161. |
| .1030 | 869.  | 1072. | 723.  | 1229. | -489. | 238.  | -.0251 | .0227  | -.0144 | .0333 | .0642 | .0116  | 5595. |
| .1040 | 965.  | 709.  | 926.  | 1322. | -514. | 40.   | -.0276 | .0094  | -.0133 | .0309 | .0705 | -.0068 | 5924. |
| .1050 | 1001. | 308.  | 1107. | 1353. | -493. | -146. | -.0308 | -.0050 | -.0122 | .0261 | .0756 | -.0243 | 6041. |
| .1060 | 1009. | -107. | 1226. | 1303. | -426. | -322. | -.0346 | -.0200 | -.0110 | .0190 | .0783 | -.0406 | 5878. |
| .1070 | 974.  | -521. | 1271. | 1176. | -336. | -478. | -.0390 | -.0350 | -.0097 | .0099 | .0783 | -.0549 | 5482. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.41.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 1      | SEQUENCE | 95      | LOCATION | END    | TYPE   | TE     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .1980   | 855.   | -916.  | 1256.  | 992.     | -255.   | -602.    | -.0434 | -.0493 | -.0084 | -.0010 | .0754  | -.0657 | 4959.  |  |  |
| .1990   | 657.   | -1266. | 1177.  | 768.     | -204.   | -693.    | -.0477 | -.0624 | -.0071 | -.0130 | .0688  | -.0728 | 4400.  |  |  |
| .2000   | 426.   | -1552. | 1021.  | 516.     | -186.   | -759.    | -.0520 | -.0738 | -.0059 | -.0254 | .0587  | -.0768 | 3909.  |  |  |
| .2010   | 189.   | -1754. | 797.   | 246.     | -194.   | -804.    | -.0562 | -.0832 | -.0049 | -.0379 | .0457  | -.0779 | 3600.  |  |  |
| .2020   | -72.   | -1849. | 538.   | -70.     | -213.   | -813.    | -.0602 | -.0902 | -.0040 | -.0506 | .0312  | -.0759 | 3510.  |  |  |
| .2030   | -369.  | -1852. | 268.   | -308.    | -225.   | -779.    | -.0635 | -.0946 | -.0034 | -.0630 | .0166  | -.0698 | 3620.  |  |  |
| .2040   | -687.  | -1808. | -12.   | -595.    | -212.   | -704.    | -.0659 | -.0960 | -.0028 | -.0748 | .0026  | -.0591 | 3946.  |  |  |
| .2050   | -999.  | -1721. | -302.  | -887.    | -168.   | -591.    | -.0675 | -.0947 | -.0021 | -.0859 | -.0101 | -.0446 | 4502.  |  |  |
| .2060   | -1285. | -1546. | -590.  | -1171.   | -99.    | -439.    | -.0681 | -.0909 | -.0010 | -.0970 | -.0211 | -.0280 | 5256.  |  |  |
| .2070   | -1532. | -1284. | -890.  | -1429.   | -23.    | -258.    | -.0679 | -.0847 | .0004  | -.1075 | -.0308 | -.0103 | 6061.  |  |  |
| .2080   | -1725. | -992.  | -1167. | -1641.   | 41.     | -69.     | -.0666 | -.0764 | .0020  | -.1155 | -.0396 | .0087  | 6857.  |  |  |
| .2090   | -1862. | -692.  | -1408. | -1784.   | 73.     | 113.     | -.0643 | -.0661 | .0038  | -.1195 | -.0476 | .0284  | 7465.  |  |  |
| .2100   | -1938. | -358.  | -1583. | -1836.   | 69.     | 279.     | -.0610 | -.0544 | .0056  | -.1194 | -.0544 | .0472  | 7755.  |  |  |
| .2110   | -1932. | 15.    | -1681. | -1790.   | 34.     | 421.     | -.0571 | -.0419 | .0073  | -.1153 | -.0595 | .0635  | 7676.  |  |  |
| .2120   | -1828. | 392.   | -1703. | -1656.   | -15.    | 528.     | -.0528 | -.0290 | .0091  | -.1072 | -.0624 | .0765  | 7253.  |  |  |
| .2130   | -1645. | 737.   | -1640. | -1446.   | -61.    | 604.     | -.0482 | -.0162 | .0109  | -.0953 | -.0623 | .0866  | 6546.  |  |  |
| .2140   | -1425. | 1033.  | -1481. | -1178.   | -93.    | 659.     | -.0470 | -.0039 | .0127  | -.0805 | -.0586 | .0943  | 5647.  |  |  |
| .2150   | -1186. | 1263.  | -1234. | -871.    | -100.   | 697.     | -.0374 | .0074  | .0146  | -.0635 | -.0512 | .0998  | 4676.  |  |  |
| .2160   | -914.  | 1415.  | -925.  | -547.    | -78.    | 711.     | -.0317 | .0174  | .0166  | -.0447 | -.0408 | .1026  | 3759.  |  |  |
| .2170   | -611.  | 1492.  | -574.  | -214.    | -37.    | 697.     | -.0260 | .0258  | .0187  | -.0246 | -.0283 | .1027  | 3046.  |  |  |
| .2180   | -304.  | 1479.  | -185.  | 132.     | 2.      | 656.     | -.0204 | .0324  | .0207  | -.0036 | -.0144 | .1001  | 2791.  |  |  |
| .2190   | -2.    | 1450.  | 234.   | 490.     | 26.     | 584.     | -.0150 | .0370  | .0224  | .0179  | -.0001 | .0950  | 3184.  |  |  |
| .2200   | 309.   | 1355.  | 660.   | 849.     | 34.     | 476.     | -.0102 | .0398  | .0238  | .0397  | .0135  | .0872  | 4063.  |  |  |
| .2210   | 626.   | 1223.  | 1072.  | 1191.    | 34.     | 332.     | -.0060 | .0406  | .0246  | .0613  | .0257  | .0772  | 5163.  |  |  |
| .2220   | 911.   | 1050.  | 1465.  | 1500.    | 34.     | 168.     | -.0023 | .0396  | .0249  | .0818  | .0364  | .0662  | 6302.  |  |  |
| .2230   | 1133.  | 837.   | 1824.  | 1755.    | 42.     | 2.       | .0011  | .0372  | .0247  | .0997  | .0455  | .0555  | 7328.  |  |  |
| .2240   | 1292.  | 589.   | 2118.  | 1931.    | 71.     | -154.    | .0040  | .0333  | .0241  | .1138  | .0527  | .0455  | 8091.  |  |  |
| .2250   | 1403.  | 327.   | 2315.  | 2011.    | 125.    | -293.    | .0064  | .0283  | .0234  | .1229  | .0577  | .0359  | 8496.  |  |  |
| .2260   | 1457.  | 76.    | 2405.  | 1991.    | 198.    | -403.    | .0082  | .0224  | .0226  | .1262  | .0600  | .0271  | 8520.  |  |  |
| .2270   | 1433.  | -156.  | 2393.  | 1885.    | 274.    | -480.    | .0098  | .0160  | .0216  | .1242  | .0592  | .0199  | 8197.  |  |  |
| .2280   | 1329.  | -375.  | 2284.  | 1706.    | 335.    | -526.    | .0111  | .0094  | .0202  | .1179  | .0548  | .0149  | 7581.  |  |  |
| .2290   | 1160.  | -573.  | 2083.  | 1472.    | 370.    | -546.    | .0123  | .0030  | .0184  | .1081  | .0467  | .0121  | 6734.  |  |  |
| .2300   | 947.   | -713.  | 1798.  | 1201.    | 375.    | -542.    | .0132  | -.0030 | .0162  | .0949  | .0350  | .0102  | 5717.  |  |  |
| .2310   | 701.   | -776.  | 1443.  | 903.     | 351.    | -511.    | .0138  | -.0086 | .0138  | .0783  | .0207  | .0088  | 4571.  |  |  |
| .2320   | 428.   | -783.  | 1029.  | 584.     | 306.    | -452.    | .0144  | -.0135 | .0112  | .0588  | .0046  | .0082  | 3337.  |  |  |
| .2330   | 130.   | -761.  | 571.   | 247.     | 252.    | -364.    | .0149  | -.0175 | .0086  | .0370  | -.0123 | .0088  | 2116.  |  |  |
| .2340   | -187.  | -712.  | 88.    | -104.    | 200.    | -245.    | .0158  | -.0207 | .0061  | .0135  | -.0288 | .0107  | 1389.  |  |  |
| .2350   | -508.  | -636.  | -402.  | -458.    | 156.    | -99.     | .0170  | -.0231 | .0038  | -.0113 | -.0440 | .0133  | 2061.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.41.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |       |       |      |       |       |        |       |        |        |       |       |
|-------|-------|-------|-------|-------|------|-------|-------|--------|-------|--------|--------|-------|-------|
| .2240 | 129.  | 389.  | 18.   | 1931. | 71.  | -154. | .0040 | .0333  | .0241 | .1158  | .0527  | .0455 | 8091. |
| .2250 | 1403. | 327.  | 2315. | 2011. | 125. | -293. | .0064 | .0283  | .0234 | .1229  | .0577  | .0359 | 8496. |
| .2260 | 1457. | 76.   | 2405. | 1991. | 190. | -403. | .0082 | .0224  | .0276 | .1262  | .0600  | .0271 | 8520. |
| .2270 | 1433. | -156. | 2393. | 1885. | 274. | -480. | .0098 | .0160  | .0216 | .1242  | .0592  | .0199 | 8197. |
| .2280 | 1329. | -375. | 2284. | 1706. | 331. | -526. | .0111 | .0094  | .0202 | .1179  | .0548  | .0149 | 7581. |
| .2290 | 1160. | -573. | 2083. | 1472. | 370. | -546. | .0123 | .0030  | .0184 | .1081  | .0467  | .0121 | 6734. |
| .2300 | 947.  | -713. | 1798. | 1201. | 375. | -542. | .0132 | -.0030 | .0162 | .0949  | .0350  | .0102 | 5717. |
| .2310 | 701.  | -776. | 1443. | 903.  | 351. | -511. | .0138 | -.0086 | .0138 | .0783  | .0207  | .0088 | 4571. |
| .2320 | 420.  | -783. | 1029. | 584.  | 306. | -452. | .0144 | -.0135 | .0112 | .0588  | .0046  | .0082 | 3337. |
| .2330 | 130.  | -761. | 571.  | 247.  | 252. | -364. | .0149 | -.0175 | .0086 | .0370  | -.0123 | .0088 | 2116. |
| .2340 | -187. | -712. | 88.   | -104. | 200. | -245. | .0158 | -.0207 | .0061 | .0135  | -.0288 | .0107 | 1389. |
| .2350 | -500. | -636. | -402. | -458. | 156. | -99.  | .0170 | -.0231 | .0038 | -.0113 | -.0440 | .0133 | 2061. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.41.

S/RV PIPING KEWAUNEE GKMODE 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 1      | SEQUENCE | 95      | LOCATION | END | TYPE  | TE     |        |        |        |        |        |
|---------|--------|--------|--------|----------|---------|----------|-----|-------|--------|--------|--------|--------|--------|--------|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       |     | DX    | DY     | DZ     | RX     | RY     | RZ     | STRESS |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)  | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| .2360   | -800.  | -542.  | -882.  | -801.    | 123.    | 61.      |     | .0184 | -.0246 | .0018  | -.0361 | -.0572 | .0162  | 3391.  |
| .2370   | -1060. | -443.  | -1320. | -1112.   | 100.    | 221.     |     | .0202 | -.0253 | .0001  | -.0596 | -.0678 | .0189  | 4750.  |
| .2380   | -1277. | -342.  | -1714. | -1368.   | 76.     | 369.     |     | .0222 | -.0253 | -.0014 | -.0804 | -.0755 | .0209  | 5922.  |
| .2390   | -1424. | -238.  | -2014. | -1548.   | 47.     | 493.     |     | .0246 | -.0247 | -.0028 | -.0976 | -.0798 | .0216  | 6784.  |
| .2400   | -1489. | -133.  | -2220. | -1643.   | 9.      | 579.     |     | .0270 | -.0237 | -.0040 | -.1103 | -.0807 | .0202  | 7270.  |
| .2410   | -1462. | -34.   | -2328. | -1651.   | -35.    | 619.     |     | .0294 | -.0223 | -.0051 | -.1180 | -.0781 | .0165  | 7361.  |
| .2420   | -1356. | 45.    | -2334. | -1576.   | -86.    | 615.     |     | .0319 | -.0206 | -.0059 | -.1206 | -.0720 | .0106  | 7068.  |
| .2430   | -1192. | 89.    | -2239. | -1424.   | -143.   | 571.     |     | .0346 | -.0189 | -.0064 | -.1183 | -.0626 | .0032  | 6430.  |
| .2440   | -972.  | 97.    | -2052. | -1208.   | -203.   | 490.     |     | .0371 | -.0170 | -.0065 | -.1115 | -.0501 | -.0057 | 5504.  |
| .2450   | -694.  | 74.    | -1791. | -929.    | -259.   | 375.     |     | .0395 | -.0153 | -.0062 | -.1008 | -.0350 | -.0163 | 4357.  |
| .2460   | -365.  | 30.    | -1464. | -628.    | -308.   | 229.     |     | .0415 | -.0136 | -.0055 | -.0867 | -.0179 | -.0285 | 3072.  |
| .2470   | -10.   | -31.   | -1074. | -282.    | -347.   | 60.      |     | .0432 | -.0121 | -.0045 | -.0697 | .0005  | -.0416 | 1883.  |
| .2480   | 350.   | -116.  | -631.  | 88.      | -376.   | -127.    |     | .0444 | -.0105 | -.0035 | -.0498 | .0193  | -.0545 | 1696.  |
| .2490   | 702.   | -223.  | -153.  | 467.     | -391.   | -325.    |     | .0451 | -.0089 | -.0024 | -.0276 | .0376  | -.0667 | 2882.  |
| .2500   | 1033.  | -336.  | 336.   | 838.     | -392.   | -524.    |     | .0452 | -.0073 | -.0013 | -.0045 | .0546  | -.0778 | 4439.  |
| .2510   | 1335.  | -430.  | 809.   | 1103.    | -376.   | -712.    |     | .0446 | -.0056 | -.0002 | .0182  | .0693  | -.0879 | 5972.  |
| .2520   | 1593.  | -503.  | 1236.  | 1479.    | -241.   | -877.    |     | .0434 | -.0037 | .0010  | .0394  | .0809  | -.0961 | 7315.  |
| .2530   | 1787.  | -566.  | 1599.  | 1707.    | -284.   | -1011.   |     | .0417 | -.0015 | .0023  | .0586  | .0887  | -.1014 | 8365.  |
| .2540   | 1897.  | -622.  | 1885.  | 1858.    | -209.   | -1103.   |     | .0396 | .0011  | .0036  | .0750  | .0923  | -.1026 | 9059.  |
| .2550   | 1904.  | -659.  | 2086.  | 1927.    | -118.   | -1146.   |     | .0373 | .0042  | .0048  | .0882  | .0915  | -.0997 | 9369.  |
| .2560   | 1037.  | -658.  | 2191.  | 1914.    | -10.    | -1141.   |     | .0347 | .0078  | .0059  | .0973  | .0863  | -.0935 | 9298.  |
| .2570   | 1710.  | -605.  | 2195.  | 1823.    | 113.    | -1090.   |     | .0317 | .0117  | .0068  | .1022  | .0769  | -.0847 | 8877.  |
| .2580   | 1523.  | -502.  | 2105.  | 1663.    | 243.    | -996.    |     | .0285 | .0161  | .0074  | .1030  | .0638  | -.0752 | 8151.  |
| .2590   | 1266.  | -364.  | 1934.  | 1443.    | 375.    | -859.    |     | .0254 | .0209  | .0077  | .1002  | .0474  | -.0590 | 7180.  |
| .2600   | 946.   | -202.  | 1691.  | 1173.    | 500.    | -683.    |     | .0226 | .0260  | .0076  | .0939  | .0284  | -.0423 | 6037.  |
| .2610   | 588.   | -14.   | 1378.  | 860.     | 616.    | -477.    |     | .0200 | .0312  | .0072  | .0845  | .0076  | -.0241 | 4843.  |
| .2620   | 217.   | 204.   | 998.   | 516.     | 716.    | -249.    |     | .0178 | .0364  | .0066  | .0719  | -.0143 | -.0057 | 3826.  |
| .2630   | -154.  | 438.   | 570.   | 154.     | 795.    | -6.      |     | .0162 | .0414  | .0059  | .0570  | -.0363 | .0123  | 3380.  |
| .2640   | -522.  | 665.   | 120.   | -206.    | 847.    | 240.     |     | .0153 | .0459  | .0049  | .0407  | -.0574 | .0296  | 3774.  |
| .2650   | -869.  | 868.   | -327.  | -547.    | 871.    | 478.     |     | .0151 | .0499  | .0037  | .0242  | -.0767 | .0456  | 4733.  |
| .2660   | -1160. | 1048.  | -750.  | -851.    | 871.    | 692.     |     | .0157 | .0531  | .0022  | .0083  | -.0933 | .0590  | 5846.  |
| .2670   | -1390. | 1206.  | -1125. | -1104.   | 851.    | 872.     |     | .0169 | .0553  | .0004  | -.0060 | -.1063 | .0689  | 6859.  |
| .2680   | -1553. | 1321.  | -1433. | -1293.   | 810.    | 1008.    |     | .0189 | .0564  | -.0017 | -.0178 | -.1153 | .0752  | 7632.  |
| .2690   | -1634. | 1375.  | -1659. | -1412.   | 750.    | 1096.    |     | .0216 | .0562  | -.0041 | -.0265 | -.1197 | .0777  | 8091.  |
| .2700   | -1636. | 1365.  | -1798. | -1459.   | 674.    | 1135.    |     | .0251 | .0548  | -.0066 | -.0320 | -.1194 | .0764  | 8209.  |
| .2710   | -1550. | 1300.  | -1854. | -1437.   | 586.    | 1122.    |     | .0290 | .0521  | -.0091 | -.0343 | -.1145 | .0707  | 7993.  |
| .2720   | -1376. | 1179.  | -1829. | -1354.   | 491.    | 1058.    |     | .0335 | .0481  | -.0116 | -.0332 | -.1055 | .0610  | 7460.  |
| .2730   | -1133. | 988.   | -1724. | -1213.   | 389.    | 947.     |     | .0384 | .0429  | -.0140 | -.0285 | -.0927 | .0481  | 6626.  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKMODE 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |       |        |        |      |       |       |       |        |        |        |       |       |
|-------|--------|-------|--------|--------|------|-------|-------|-------|--------|--------|--------|-------|-------|
| .2620 | -154.  | 438.  | 570.   | 154.   | 795. | -6.   | .0162 | .0414 | .0059  | .0570  | -.0363 | .0123 | 3826. |
| .2640 | -522.  | 665.  | 120.   | -206.  | 847. | 240.  | .0153 | .0459 | .0049  | .0407  | -.0574 | .0296 | 3774. |
| .2650 | -869.  | 868.  | -327.  | -547.  | 871. | 478.  | .0151 | .0499 | .0037  | .0242  | -.0767 | .0456 | 4733. |
| .2660 | -1167. | 1048. | -750.  | -851.  | 871. | 692.  | .0157 | .0531 | .0022  | .0083  | -.0933 | .0590 | 3846. |
| .2670 | -1390. | 1206. | -1125. | -1104. | 851. | 872.  | .0169 | .0553 | .0004  | -.0060 | -.1063 | .0689 | 6859. |
| .2680 | -1557. | 1321. | -1433. | -1293. | 810. | 1008. | .0189 | .0564 | -.0017 | -.0178 | -.1153 | .0752 | 7632. |
| .2690 | -1634. | 1375. | -1659. | -1412. | 750. | 1096. | .0216 | .0562 | -.0041 | -.0265 | -.1197 | .0777 | 8091. |
| .2700 | -1636. | 1365. | -1798. | -1459. | 674. | 1135. | .0251 | .0548 | -.0066 | -.0320 | -.1194 | .0764 | 8209. |
| .2710 | -1550. | 1300. | -1854. | -1437. | 586. | 1122. | .0290 | .0521 | -.0091 | -.0343 | -.1145 | .0707 | 7993. |
| .2720 | -1376. | 1179. | -1829. | -1254. | 491. | 1058. | .0335 | .0481 | -.0116 | -.0332 | -.1055 | .0610 | 7460. |
| .2730 | -1137. | 988.  | -1724. | -1213. | 380. | 947.  | .0384 | .0429 | -.0140 | -.0285 | -.0927 | .0481 | 6626. |

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DIS/ADLPIPE S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

ADLPIPE STRESS ANALYSIS

8/3/12/02. 18.29.42.

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | MEMBER | SEQUENCE | LOCATION | END     | TYPE    | TE      | FX     | FY     | FZ     | MX     | MY     | MZ     | DX    | DY    | DZ    | FX    | FY    | FZ    | STRESS |
|---------|--------|----------|----------|---------|---------|---------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|--------|
| TIME    | (LB)   | (LB)     | (LB)     | (FT-LB) | (FT-LB) | (FT-LB) | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (PSI)  |
| .2740   | -844.  | 728.     | -1537.   | -1016.  | 279.    | 797.    | .0436  | .0369  | -.0163 | -.0204 | -.0767 | .0328  | 5511. |       |       |       |       |       |        |
| .2750   | -510.  | 423.     | -1278.   | -768.   | 165.    | 611.    | .0489  | .0301  | -.0185 | -.0095 | -.0581 | .0153  | 4155. |       |       |       |       |       |        |
| .2760   | -124.  | 106.     | -968.    | -484.   | 55.     | 396.    | .0540  | .0227  | -.0206 | .0036  | -.0379 | -.0047 | 2622. |       |       |       |       |       |        |
| .2770   | 298.   | -213.    | -621.    | -177.   | -47.    | 160.    | .0587  | .0151  | -.0225 | .0185  | -.0168 | -.0261 | 1017. |       |       |       |       |       |        |
| .2780   | 712.   | -546.    | -249.    | 141.    | -143.   | -81.    | .0631  | .0077  | -.0242 | .0346  | .0042  | -.0470 | 902.  |       |       |       |       |       |        |
| .2790   | 1087.  | -889.    | 135.     | 453.    | -232.   | -311.   | .0671  | .0008  | -.0257 | .0511  | .0244  | -.0659 | 2489. |       |       |       |       |       |        |
| .2800   | 1423.  | -1203.   | 499.     | 739.    | -309.   | -519.   | .0705  | -.0055 | -.0269 | .0665  | .0428  | -.0829 | 3986. |       |       |       |       |       |        |
| .2810   | 1730.  | -1456.   | 809.     | 981.    | -367.   | -699.   | .0731  | -.0108 | -.0277 | .0797  | .0586  | -.0981 | 5256. |       |       |       |       |       |        |
| .2820   | 1985.  | -1653.   | 1051.    | 1167.   | -411.   | -841.   | .0747  | -.0150 | -.0279 | .0904  | .0711  | -.1102 | 6243. |       |       |       |       |       |        |
| .2830   | 2152.  | -1807.   | 1226.    | 1295.   | -446.   | -935.   | .0756  | -.0177 | -.0277 | .0983  | .0798  | -.1178 | 6923. |       |       |       |       |       |        |
| .2840   | 2227.  | -1900.   | 1332.    | 1365.   | -477.   | -979.   | .0756  | -.0188 | -.0272 | .1030  | .0845  | -.1206 | 7288. |       |       |       |       |       |        |
| .2850   | 2226.  | -1901.   | 1355.    | 1373.   | -500.   | -978.   | .0745  | -.0183 | -.0263 | .1043  | .0846  | -.1197 | 7337. |       |       |       |       |       |        |
| .2860   | 2177.  | -1808.   | 1287.    | 1318.   | -512.   | -937.   | .0722  | -.0164 | -.0250 | .1025  | .0801  | -.1153 | 7080. |       |       |       |       |       |        |
| .2870   | 2054.  | -1647.   | 1144.    | 1207.   | -518.   | -857.   | .0689  | -.0129 | -.0235 | .0980  | .0714  | -.1066 | 6544. |       |       |       |       |       |        |
| .2880   | 1840.  | -1433.   | 944.     | 1045.   | -520.   | -733.   | .0649  | -.0080 | -.0217 | .0909  | .0590  | -.0932 | 5755. |       |       |       |       |       |        |
| .2890   | 1556.  | -1165.   | 689.     | 835.    | -511.   | -573.   | .0600  | -.0020 | -.0196 | .0813  | .0436  | -.0762 | 4732. |       |       |       |       |       |        |
| .2900   | 1240.  | -847.    | 378.     | 574.    | -479.   | -387.   | .0543  | .0049  | -.0172 | .0695  | .0259  | -.0567 | 3512. |       |       |       |       |       |        |
| .2910   | 897.   | -501.    | 32.      | 273.    | -420.   | -182.   | .0478  | .0123  | -.0143 | .0560  | .0066  | -.0353 | 2225. |       |       |       |       |       |        |
| .2920   | 512.   | -152.    | -316.    | -51.    | -342.   | 40.     | .0408  | .0200  | -.0112 | .0418  | -.0131 | -.0121 | 1452. |       |       |       |       |       |        |
| .2930   | 96.    | 180.     | -644.    | -378.   | -248.   | 268.    | .0337  | .0276  | -.0079 | .0276  | -.0324 | .0122  | 2192. |       |       |       |       |       |        |
| .2940   | -312.  | 487.     | -941.    | -694.   | -140.   | 484.    | .0262  | .0350  | -.0045 | .0143  | -.0507 | .0360  | 3578. |       |       |       |       |       |        |
| .2950   | -678.  | 776.     | -1195.   | -981.   | -24.    | 675.    | .0183  | .0415  | -.0009 | .0024  | -.0677 | .0576  | 4971. |       |       |       |       |       |        |
| .2960   | -999.  | 1041.    | -1387.   | -1221.  | 90.     | 835.    | .0104  | .0472  | .0027  | -.0076 | -.0826 | .0762  | 6185. |       |       |       |       |       |        |
| .2970   | -1278. | 1258.    | -1501.   | -1401.  | 193.    | 960.    | .0026  | .0517  | .0063  | -.0149 | -.0949 | .0917  | 7132. |       |       |       |       |       |        |
| .2980   | -1507. | 1401.    | -1533.   | -1517.  | 283.    | 1042.   | -.0048 | .0550  | .0097  | -.0191 | -.1043 | .1041  | 7770. |       |       |       |       |       |        |
| .2990   | -1660. | 1477.    | -1488.   | -1508.  | 362.    | 1081.   | -.0118 | .0569  | .0132  | -.0205 | -.1104 | .1125  | 8092. |       |       |       |       |       |        |
| .3000   | -1751. | 1507.    | -1369.   | -1558.  | 435.    | 1079.   | -.0183 | .0574  | .0165  | -.0199 | -.1128 | .1160  | 8116. |       |       |       |       |       |        |
| .3010   | -1756. | 1491.    | -1180.   | -1491.  | 503.    | 1038.   | -.0243 | .0564  | .0198  | -.0175 | -.1114 | .1148  | 7866. |       |       |       |       |       |        |
| .3020   | -1697. | 1406.    | -929.    | -1369.  | 566.    | 961.    | -.0295 | .0541  | .0229  | -.0131 | -.1061 | .1099  | 7370. |       |       |       |       |       |        |
| .3030   | -1586. | 1252.    | -610.    | -1198.  | 619.    | 852.    | -.0338 | .0508  | .0257  | -.0070 | -.0971 | .1020  | 6654. |       |       |       |       |       |        |
| .3040   | -1423. | 1063.    | -250.    | -981.   | 659.    | 716.    | -.0372 | .0464  | .0281  | .0001  | -.0849 | .0907  | 5766. |       |       |       |       |       |        |
| .3050   | -1201. | 870.     | 134.     | -729.   | 683.    | 557.    | -.0399 | .0412  | .0300  | .0074  | -.0701 | .0759  | 4775. |       |       |       |       |       |        |
| .3060   | -929.  | 673.     | 510.     | -454.   | 687.    | 380.    | -.0419 | .0354  | .0315  | .0147  | -.0536 | .0585  | 3785. |       |       |       |       |       |        |
| .3070   | -641.  | 461.     | 891.     | -166.   | 663.    | 194.    | -.0429 | .0293  | .0325  | .0216  | -.0359 | .0401  | 2966. |       |       |       |       |       |        |
| .3080   | -363.  | 246.     | 1239.    | 123.    | 608.    | 14.     | -.0431 | .0231  | .0329  | .0272  | -.0177 | .0215  | 2588. |       |       |       |       |       |        |
| .3090   | -93.   | 61.      | 1538.    | 394.    | 528.    | -154.   | -.0426 | .0170  | .0328  | .0306  | .0004  | .0026  | 2822. |       |       |       |       |       |        |
| .3100   | 175.   | -81.     | 1765.    | 630.    | 432.    | -306.   | -.0416 | .0111  | .0322  | .0313  | .0175  | -.0164 | 3434. |       |       |       |       |       |        |
| .3110   | 420.   | -193.    | 1912.    | 819.    | 324.    | -437.   | -.0401 | .0056  | .0313  | .0293  | .0331  | -.0342 | 4105. |       |       |       |       |       |        |

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DIS/ADLPIPE S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

ADLPIPE STRESS ANALYSIS

8/3/12/02. 18.29.42.

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |       |        |        |      |       |        |       |       |        |        |        |       |
|-------|--------|-------|--------|--------|------|-------|--------|-------|-------|--------|--------|--------|-------|
| .3010 | -1756. | 1491. | -1180. | -1491. | 503. | 1038. | -.0243 | .0564 | .0198 | -.0175 | -.1114 | .1148  | 7866. |
| .3020 | -1697. | 1406. | -725.  | -1369. | 566. | 961.  | -.0295 | .0541 | .0229 | -.0131 | -.1061 | .1099  | 7370. |
| .3030 | -1586. | 1252. | -610.  | -1198. | 619. | 852.  | -.0338 | .0508 | .0257 | -.0070 | -.0971 | .1020  | 6654. |
| .3040 | -1427. | 1063. | -250.  | -981.  | 659. | 716.  | -.0372 | .0464 | .0281 | .0001  | -.0849 | .0907  | 5766. |
| .3050 | -1201. | 870.  | 134.   | -729.  | 683. | 557.  | -.0399 | .0412 | .0300 | .0074  | -.0701 | .0759  | 4775. |
| .3060 | -929.  | 673.  | 510.   | -454.  | 687. | 380.  | -.0419 | .0354 | .0315 | .0147  | -.0536 | .0585  | 3785. |
| .3070 | -641.  | 461.  | 891.   | -166.  | 667. | 194.  | -.0429 | .0293 | .0325 | .0216  | -.0359 | .0401  | 2966. |
| .3080 | -363.  | 246.  | 1239.  | 103.   | 608. | 14.   | -.0431 | .0231 | .0329 | .0272  | -.0177 | .0215  | 2588. |
| .3090 | -93.   | 61.   | 1538.  | 394.   | 528. | -154. | -.0426 | .0170 | .0328 | .0306  | .0004  | .0026  | 2822. |
| .3100 | 175.   | -81.  | 1765.  | 630.   | 432. | -306. | -.0416 | .0111 | .0322 | .0313  | .0175  | -.0164 | 3434. |
| .3110 | 420.   | -193. | 1912.  | 819.   | 324. | -437. | -.0401 | .0056 | .0313 | .0293  | .0331  | -.0342 | 4105. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE GKWOFF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 05     | MEMBER | 1      | SEQUENCE | 95      | LOCATION | END    | TYPE   | TE     |        |        |        |        |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| .3120   | 604.   | -285.  | 1990.  | 959.     | 204.    | -537.    | -.0301 | .0007  | .0297  | .0247  | .0468  | -.0495 | 4667.  |  |
| .3130   | 720.   | -347.  | 1995.  | 1047.    | 74.     | -604.    | -.0357 | -.0036 | .0276  | .0174  | .0581  | -.0621 | 5052.  |  |
| .3140   | 794.   | -366.  | 1917.  | 1075.    | -56.    | -642.    | -.0332 | -.0073 | .0251  | .0076  | .0665  | -.0726 | 5251.  |  |
| .3150   | 837.   | -338.  | 1754.  | 1042.    | -181.   | -656.    | -.0309 | -.0104 | .0222  | -.0044 | .0715  | -.0810 | 5195.  |  |
| .3160   | 829.   | -278.  | 1521.  | 952.     | -300.   | -645.    | -.0285 | -.0129 | .0189  | -.0181 | .0730  | -.0868 | 4959.  |  |
| .3170   | 751.   | -204.  | 1237.  | 810.     | -413.   | -605.    | -.0262 | -.0148 | .0153  | -.0329 | .0712  | -.0893 | 4557.  |  |
| .3180   | 619.   | -128.  | 906.   | 619.     | -511.   | -542.    | -.0239 | -.0162 | .0115  | -.0482 | .0662  | -.0887 | 4043.  |  |
| .3190   | 458.   | -46.   | 535.   | 382.     | -586.   | -465.    | -.0220 | -.0172 | .0076  | -.0636 | .0583  | -.0858 | 3507.  |  |
| .3200   | 280.   | 51.    | 139.   | 111.     | -634.   | -376.    | -.0204 | -.0180 | .0038  | -.0790 | .0482  | -.0814 | 3111.  |  |
| .3210   | 81.    | 149.   | -257.  | -181.    | -656.   | -277.    | -.0190 | -.0184 | .0001  | -.0935 | .0364  | -.0754 | 3067.  |  |
| .3220   | -140.  | 223.   | -632.  | -479.    | -654.   | -175.    | -.0179 | -.0187 | -.0035 | -.1061 | .0238  | -.0676 | 3461.  |  |
| .3230   | -364.  | 267.   | -973.  | -767.    | -631.   | -76.     | -.0170 | -.0187 | -.0070 | -.1162 | .0108  | -.0583 | 4158.  |  |
| .3240   | -571.  | 302.   | -1269. | -1034.   | -587.   | 14.      | -.0163 | -.0186 | -.0102 | -.1238 | -.0018 | -.0488 | 4963.  |  |
| .3250   | -745.  | 342.   | -1511. | -1267.   | -526.   | 93.      | -.0159 | -.0185 | -.0131 | -.1288 | -.0133 | -.0399 | 5739.  |  |
| .3260   | -885.  | 366.   | -1691. | -1457.   | -455.   | 158.     | -.0156 | -.0183 | -.0156 | -.1306 | -.0233 | -.0312 | 6402.  |  |
| .3270   | -996.  | 358.   | -1802. | -1595.   | -378.   | 207.     | -.0153 | -.0178 | -.0177 | -.1291 | -.0311 | -.0225 | 6897.  |  |
| .3280   | -1075. | 328.   | -1838. | -1677.   | -302.   | 242.     | -.0149 | -.0173 | -.0194 | -.1245 | -.0365 | -.0141 | 7183.  |  |
| .3290   | -1106. | 298.   | -1806. | -1700.   | -225.   | 263.     | -.0145 | -.0166 | -.0206 | -.1173 | -.0391 | -.0068 | 7239.  |  |
| .3300   | -1076. | 274.   | -1713. | -1663.   | -150.   | 265.     | -.0141 | -.0157 | -.0212 | -.1077 | -.0389 | -.0010 | 7058.  |  |
| .3310   | -992.  | 242.   | -1562. | -1568.   | -82.    | 251.     | -.0136 | -.0147 | -.0214 | -.0957 | -.0361 | .0038  | 6656.  |  |
| .3320   | -875.  | 200.   | -1352. | -1413.   | -27.    | 225.     | -.0128 | -.0135 | -.0212 | -.0817 | -.0305 | .0082  | 5970.  |  |
| .3330   | -725.  | 161.   | -1091. | -1202.   | 13.     | 190.     | -.0119 | -.0120 | -.0207 | -.0662 | -.0227 | .0118  | 5078.  |  |
| .3340   | -529.  | 140.   | -800.  | -948.    | 42.     | 145.     | -.0110 | -.0105 | -.0198 | -.0501 | -.0130 | .0141  | 4006.  |  |
| .3350   | -290.  | 135.   | -497.  | -664.    | 62.     | 92.      | -.0101 | -.0090 | -.0185 | -.0337 | -.0020 | .0153  | 2811.  |  |
| .3360   | -38.   | 135.   | -186.  | -361.    | 72.     | 38.      | -.0091 | -.0074 | -.0170 | -.0174 | .0097  | .0163  | 1544.  |  |
| .3370   | 200.   | 131.   | 127.   | -48.     | 70.     | -8.      | -.0081 | -.0058 | -.0154 | -.0018 | .0217  | .0177  | 357.   |  |
| .3380   | 425.   | 129.   | 425.   | 258.     | 60.     | -47.     | -.0070 | -.0044 | -.0136 | .0126  | .0333  | .0193  | 1122.  |  |
| .3390   | 645.   | 138.   | 687.   | 543.     | 48.     | -80.     | -.0062 | -.0032 | -.0117 | .0253  | .0438  | .0208  | 2301.  |  |
| .3400   | 846.   | 157.   | 909.   | 799.     | 35.     | -104.    | -.0057 | -.0025 | -.0097 | .0361  | .0527  | .0224  | 3367.  |  |
| .3410   | 1002.  | 175.   | 1091.  | 1020.    | 18.     | -115.    | -.0054 | -.0022 | -.0079 | .0448  | .0597  | .0246  | 4285.  |  |
| .3420   | 1103.  | 183.   | 1232.  | 1199.    | -1.     | -112.    | -.0052 | -.0023 | -.0062 | .0515  | .0644  | .0279  | 5026.  |  |
| .3430   | 1157.  | 179.   | 1320.  | 1327.    | -17.    | -99.     | -.0054 | -.0031 | -.0048 | .0560  | .0665  | .0320  | 5555.  |  |
| .3440   | 1169.  | 173.   | 1351.  | 1399.    | -24.    | -75.     | -.0060 | -.0045 | -.0036 | .0582  | .0659  | .0366  | 5847.  |  |
| .3450   | 1137.  | 165.   | 1328.  | 1412.    | -21.    | -38.     | -.0070 | -.0066 | -.0027 | .0578  | .0628  | .0416  | 5895.  |  |
| .3460   | 1043.  | 144.   | 1254.  | 1367.    | -8.     | 10.      | -.0081 | -.0094 | -.0020 | .0552  | .0574  | .0474  | 5703.  |  |
| .3470   | 903.   | 95.    | 1133.  | 1264.    | 16.     | 67.      | -.0095 | -.0127 | -.0016 | .0507  | .0499  | .0541  | 5284.  |  |
| .3480   | 724.   | 28.    | 969.   | 1111.    | 50.     | 130.     | -.0110 | -.0166 | -.0016 | .0446  | .0406  | .0613  | 4672.  |  |
| .3490   | 520.   | -43.   | 767.   | 916.     | 91.     | 196.     | -.0126 | -.0211 | -.0018 | .0368  | .0298  | .0683  | 3927.  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKWOFF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |      |       |       |      |       |        |        |        |       |       |       |       |
|-------|-------|------|-------|-------|------|-------|--------|--------|--------|-------|-------|-------|-------|
| .3390 | 645.  | 128. | 687.  | 543.  | 48.  | -80.  | -.0062 | -.0032 | -.0117 | .0253 | .0438 | .0208 | 2301. |
| .3400 | 846.  | 157. | 909.  | 799.  | 35.  | -104. | -.0057 | -.0025 | -.0097 | .0361 | .0527 | .0224 | 3367. |
| .3410 | 1002. | 175. | 1091. | 1020. | 18.  | -115. | -.0054 | -.0022 | -.0079 | .0448 | .0597 | .0246 | 4285. |
| .3420 | 1107. | 183. | 1232. | 1129. | -1.  | -112. | -.0052 | -.0023 | -.0062 | .0515 | .0644 | .0279 | 5026. |
| .3430 | 1157. | 179. | 1320. | 1327. | -17. | -99.  | -.0054 | -.0031 | -.0048 | .0560 | .0665 | .0320 | 5555. |
| .3440 | 1169. | 173. | 1351. | 1399. | -24. | -75.  | -.0040 | -.0045 | -.0026 | .0582 | .0659 | .0366 | 5847. |
| .3450 | 1133. | 165. | 1328. | 1412. | -21. | -38.  | -.0070 | -.0066 | -.0027 | .0578 | .0628 | .0416 | 5895. |
| .3460 | 1043. | 144. | 1254. | 1367. | -8.  | 10.   | -.0081 | -.0094 | -.0020 | .0552 | .0574 | .0474 | 5703. |
| .3470 | 907.  | 95.  | 1133. | 1264. | 16.  | 67.   | -.0095 | -.0127 | -.0016 | .0507 | .0499 | .0541 | 5284. |
| .3480 | 724.  | 28.  | 969.  | 1111. | 50.  | 170.  | -.0110 | -.0166 | -.0016 | .0446 | .0406 | .0613 | 4672. |
| .3490 | 520.  | -43. | 767.  | 916.  | 91.  | 196.  | -.0126 | -.0211 | -.0018 | .0368 | .0298 | .0683 | 3927. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 1      | SEQUENCE | 95      | LOCATION | END | TYPE   | TE     |        |        |        |       |        |  |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|-------|--------|--|
| TIME    | FX     | FY     | FZ     | Mx       | My      | Mz       |     | Dx     | Dy     | Dz     | Rx     | Ry     | Rz    | STRESS |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG) | (PSI)  |  |
| .3500   | 302.   | -115.  | 538.   | 690.     | 137.    | 260.     |     | -.0142 | -.0259 | -.0023 | .0279  | .0180  | .0750 | 3129.  |  |
| .3510   | 77.    | -199.  | 290.   | 444.     | 181.    | 318.     |     | -.0158 | -.0310 | -.0031 | .0186  | .0057  | .0815 | 2403.  |  |
| .3520   | -152.  | -297.  | 37.    | 192.     | 221.    | 368.     |     | -.0171 | -.0361 | -.0043 | .0095  | -.0067 | .0877 | 1963.  |  |
| .3530   | -374.  | -396.  | -211.  | -55.     | 253.    | 410.     |     | -.0180 | -.0411 | -.0057 | .0008  | -.0184 | .0932 | 2023.  |  |
| .3540   | -572.  | -486.  | -448.  | -288.    | 279.    | 441.     |     | -.0187 | -.0460 | -.0072 | -.0074 | -.0291 | .0976 | 2489.  |  |
| .3550   | -735.  | -568.  | -668.  | -502.    | 300.    | 459.     |     | -.0188 | -.0505 | -.0089 | -.0147 | -.0382 | .1006 | 3103.  |  |
| .3560   | -864.  | -651.  | -861.  | -686.    | 314.    | 467.     |     | -.0184 | -.0544 | -.0106 | -.0207 | -.0453 | .1027 | 3701.  |  |
| .3570   | -966.  | -732.  | -1015. | -831.    | 316.    | 465.     |     | -.0174 | -.0577 | -.0124 | -.0251 | -.0502 | .1039 | 4188.  |  |
| .3580   | -1020. | -804.  | -1126. | -931.    | 309.    | 454.     |     | -.0157 | -.0602 | -.0142 | -.0279 | -.0526 | .1039 | 4512.  |  |
| .3590   | -1036. | -857.  | -1197. | -983.    | 291.    | 431.     |     | -.0134 | -.0619 | -.0159 | -.0289 | -.0526 | .1023 | 4643.  |  |
| .3600   | -987.  | -889.  | -1226. | -983.    | 264.    | 396.     |     | -.0106 | -.0628 | -.0174 | -.0281 | -.0504 | .0990 | 4559.  |  |
| .3610   | -896.  | -907.  | -1205. | -929.    | 225.    | 352.     |     | -.0073 | -.0627 | -.0188 | -.0252 | -.0461 | .0947 | 4252.  |  |
| .3620   | -773.  | -914.  | -1134. | -823.    | 175.    | 301.     |     | -.0034 | -.0617 | -.0202 | -.0203 | -.0399 | .0897 | 3728.  |  |
| .3630   | -612.  | -909.  | -1022. | -671.    | 120.    | 244.     |     | .0009  | -.0597 | -.0213 | -.0136 | -.0321 | .0838 | 3023.  |  |
| .3640   | -412.  | -883.  | -877.  | -484.    | 66.     | 183.     |     | .0054  | -.0570 | -.0222 | -.0057 | -.0231 | .0770 | 2178.  |  |
| .3650   | -185.  | -839.  | -706.  | -270.    | 17.     | 123.     |     | .0101  | -.0535 | -.0228 | .0030  | -.0131 | .0697 | 1241.  |  |
| .3660   | 50.    | -785.  | -511.  | -39.     | -24.    | 66.      |     | .0148  | -.0494 | -.0231 | .0123  | -.0026 | .0623 | 336.   |  |
| .3670   | 281.   | -729.  | -300.  | 201.     | -57.    | 16.      |     | .0195  | -.0447 | -.0232 | .0219  | .0082  | .0554 | 873.   |  |
| .3680   | 506.   | -668.  | -85.   | 439.     | -80.    | -28.     |     | .0240  | -.0396 | -.0230 | .0312  | .0186  | .0488 | 1864.  |  |
| .3690   | 722.   | -591.  | 124.   | 667.     | -93.    | -66.     |     | .0281  | -.0343 | -.0225 | .0399  | .0283  | .0425 | 2824.  |  |
| .3700   | 919.   | -498.  | 320.   | 880.     | -100.   | -97.     |     | .0317  | -.0288 | -.0219 | .0475  | .0368  | .0364 | 3717.  |  |
| .3710   | 1084.  | -398.  | 496.   | 1070.    | -105.   | -122.    |     | .0346  | -.0235 | -.0210 | .0539  | .0437  | .0310 | 4515.  |  |
| .3720   | 1209.  | -300.  | 647.   | 1231.    | -110.   | -141.    |     | .0369  | -.0183 | -.0200 | .0589  | .0487  | .0266 | 5193.  |  |
| .3730   | 1291.  | -200.  | 765.   | 1358.    | -114.   | -153.    |     | .0384  | -.0134 | -.0189 | .0621  | .0517  | .0230 | 5723.  |  |
| .3740   | 1332.  | -90.   | 844.   | 1443.    | -116.   | -158.    |     | .0391  | -.0090 | -.0176 | .0631  | .0526  | .0201 | 6078.  |  |
| .3750   | 1331.  | 23.    | 882.   | 1482.    | -110.   | -156.    |     | .0388  | -.0052 | -.0161 | .0618  | .0516  | .0177 | 6236.  |  |
| .3760   | 1282.  | 128.   | 879.   | 1472.    | -97.    | -148.    |     | .0377  | -.0020 | -.0145 | .0581  | .0487  | .0162 | 6187.  |  |
| .3770   | 1181.  | 215.   | 842.   | 1414.    | -75.    | -132.    |     | .0359  | .0004  | -.0128 | .0523  | .0441  | .0159 | 5937.  |  |
| .3780   | 1034.  | 289.   | 773.   | 1312.    | -43.    | -110.    |     | .0333  | .0020  | -.0110 | .0442  | .0383  | .0163 | 5499.  |  |
| .3790   | 856.   | 355.   | 672.   | 1170.    | -0.     | -86.     |     | .0299  | .0028  | -.0091 | .0341  | .0312  | .0169 | 4894.  |  |
| .3800   | 657.   | 414.   | 546.   | 993.     | 52.     | -62.     |     | .0259  | .0028  | -.0071 | .0223  | .0232  | .0175 | 4157.  |  |
| .3810   | 436.   | 456.   | 403.   | 791.     | 108.    | -39.     |     | .0214  | .0020  | -.0051 | .0094  | .0144  | .0181 | 3337.  |  |
| .3820   | 192.   | 474.   | 253.   | 575.     | 163.    | -17.     |     | .0165  | .0005  | -.0031 | -.0043 | .0052  | .0190 | 2497.  |  |
| .3830   | -60.   | 474.   | 102.   | 353.     | 215.    | -0.      |     | .0115  | -.0015 | -.0010 | -.0183 | -.0042 | .0195 | 1725.  |  |
| .3840   | -300.  | 467.   | -51.   | 133.     | 262.    | 10.      |     | .0062  | -.0041 | .0011  | -.0324 | -.0135 | .0192 | 1227.  |  |
| .3850   | -521.  | 453.   | -196.  | -79.     | 305.    | 14.      |     | .0010  | -.0071 | .0032  | -.0462 | -.0222 | .0180 | 1317.  |  |
| .3860   | -725.  | 424.   | -324.  | -273.    | 342.    | 10.      |     | -.0041 | -.0103 | .0054  | -.0592 | -.0301 | .0160 | 1825.  |  |
| .3870   | -911.  | 377.   | -426.  | -441.    | 370.    | 2.       |     | -.0087 | -.0136 | .0075  | -.0710 | -.0366 | .0137 | 2401.  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |      |       |       |      |       |      |        |        |        |        |        |       |       |
|-------|-------|------|-------|-------|------|-------|------|--------|--------|--------|--------|--------|-------|-------|
| .3770 | 1181. | 215. | 642.  | 1414. | -75. | -132. | .359 | .0004  | -.0128 | .0523  | .0441  | .0159  | 5937. |       |
| .3780 | 1034. | 289. | 773.  | 1312. | -43. | -110. | .333 | .0020  | -.0110 | .0442  | .0383  | .0163  | 5499. |       |
| .3790 | 856.  | 355. | 672.  | 1170. | -0.  | -86.  | .309 | .0028  | -.0091 | .0341  | .0312  | .0169  | 4894. |       |
| .3800 | 657.  | 414. | 546.  | 993.  | 52.  | -62.  | .289 | .0028  | -.0071 | .0223  | .0232  | .0175  | 4157. |       |
| .3810 | 436.  | 456. | 403.  | 791.  | 102. | -39.  | .271 | .0020  | -.0051 | .0094  | .0144  | .0181  | 3337. |       |
| .3820 | 190.  | 474. | 253.  | 575.  | 163. | -17.  | .253 | .0005  | -.0031 | -.0043 | .0052  | .0190  | 2497. |       |
| .3830 | -60.  | 474. | 102.  | 353.  | 215. | -0.   | .235 | -.0015 | -.0010 | -.0183 | -.0042 | .0195  | 1725. |       |
| .3840 | -300. | 467. | -51.  | 133.  | 262. | 10.   | .217 | -.0041 | .0011  | -.0324 | -.0135 | .0192  | 1227. |       |
| .3850 | -521. | 453. | -196. | -79.  | 305. | 14.   | .200 | -.0071 | .0032  | -.0462 | -.0222 | .0180  | 1317. |       |
| .3860 | -725. | 424. | -714. | -273. | 342. | 10.   | .182 | -.0041 | -.0103 | .0054  | -.0592 | -.0301 | .0160 | 1825. |
| .3870 | -911. | 377. | -426. | -441. | 370. | 2.    | .164 | -.0087 | -.0136 | .0075  | -.0710 | -.0366 | .0137 | 2401. |

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DIG/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 1     | SEQUENCE | 95      | LOCATION | END | TYPE   | TE     |       |        |        |        |        |
|---------|--------|--------|-------|----------|---------|----------|-----|--------|--------|-------|--------|--------|--------|--------|
| TIME    | FX     | FY     | FZ    | MX       | MY      | MZ       |     | DX     | DY     | DZ    | RX     | RY     | RZ     | STRESS |
| (SEC)   | (LB)   | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)  | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| .3880   | -1066. | 319.   | -498. | -578.    | 390.    | -13.     |     | -.0129 | -.0168 | .0096 | -.0813 | -.0417 | .0106  | 2911.  |
| .3890   | -1177. | 262.   | -542. | -600.    | 405.    | -37.     |     | -.0167 | -.0199 | .0117 | -.0900 | -.0450 | .0064  | 3306.  |
| .3900   | -1240. | 212.   | -557. | -744.    | 411.    | -69.     |     | -.0198 | -.0227 | .0137 | -.0970 | -.0464 | .0013  | 3560.  |
| .3910   | -1261. | 165.   | -539. | -768.    | 405.    | -107.    |     | -.0223 | -.0250 | .0157 | -.1017 | -.0461 | -.0042 | 3650.  |
| .3920   | -1248. | 113.   | -488. | -749.    | 385.    | -152.    |     | -.0239 | -.0267 | .0174 | -.1041 | -.0440 | -.0098 | 3570.  |
| .3930   | -1197. | 61.    | -409. | -600.    | 350.    | -201.    |     | -.0248 | -.0277 | .0191 | -.1041 | -.0402 | -.0152 | 3338.  |
| .3940   | -1101. | 28.    | -309. | -506.    | 303.    | -256.    |     | -.0250 | -.0281 | .0206 | -.1023 | -.0349 | -.0210 | 2986.  |
| .3950   | -962.  | 20.    | -194. | -470.    | 246.    | -313.    |     | -.0246 | -.0278 | .0220 | -.0987 | -.0282 | -.0270 | 2572.  |
| .3960   | -793.  | 23.    | -65.  | -319.    | 180.    | -372.    |     | -.0236 | -.0268 | .0232 | -.0934 | -.0205 | -.0325 | 2179.  |
| .3970   | -612.  | 24.    | 75.   | -149.    | 106.    | -427.    |     | -.0220 | -.0251 | .0242 | -.0864 | -.0119 | -.0369 | 1940.  |
| .3980   | -423.  | 34.    | 222.  | 34.      | 25.     | -478.    |     | -.0200 | -.0229 | .0250 | -.0783 | -.0028 | -.0404 | 2003.  |
| .3990   | -221.  | 67.    | 363.  | 222.     | -55.    | -523.    |     | -.0177 | -.0202 | .0256 | -.0696 | .0065  | -.0433 | 2382.  |
| .4000   | -9.    | 118.   | 491.  | 404.     | -132.   | -563.    |     | -.0153 | -.0172 | .0261 | -.0606 | .0155  | -.0456 | 2943.  |

MAXIMUM VALUE OF STRESS OCCURS AT

| TIME  | FX    | FY    | FZ    | MX      | MY      | MZ      | DX    | DY    | DZ    | RX    | RY    | RZ     | STRESS |
|-------|-------|-------|-------|---------|---------|---------|-------|-------|-------|-------|-------|--------|--------|
| (SEC) | (LB)  | (LB)  | (LB)  | (FT-LB) | (FT-LB) | (FT-LB) | (IN)  | (IN)  | (IN)  | (DEG) | (DEG) | (DEG)  | (PSI)  |
| .2550 | 1904. | -659. | 2086. | 1927.   | -118.   | -1146.  | .0373 | .0042 | .0048 | .0882 | .0915 | -.0997 | 9369.  |

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS | TYPE   | VA     |        |        |        |        |        |
|---------|------|--------|------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       |     | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| 0.0000  | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.     |
| .0010   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | 0.     |
| .0020   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | 0.     |
| .0030   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | 0.     |
| .0040   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | .0000  | 0.     |
| .0050   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | -.0000 | 0.     |
| .0060   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0000 | 0.     |
| .0070   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0001 | 0.     |
| .0080   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0001 | .0000  | -.0000 | .0001  | -.0003 | -.0003 | 0.     |
| .0090   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0001 | .0000  | -.0000 | .0001  | -.0006 | -.0005 | 0.     |
| .0100   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0002 | -.0000 | -.0000 | .0002  | -.0010 | -.0009 | 0.     |
| .0110   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       |     | -.0003 | -.0000 | -.0000 | .0003  | -.0015 | -.0013 | 0.     |

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DIG/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| .0010 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0020 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0030 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0040 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0050 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0060 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0070 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0080 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0090 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0100 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| .0110 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 06      | LOCATION | DIS | TYPE    | VA      |         |         |         |         |        |  |
|---------|------|--------|------|----------|---------|----------|-----|---------|---------|---------|---------|---------|---------|--------|--|
| TIME    | FX   | FY     | FZ   | Mx       | MY      | MZ       |     | DX      | DY      | DZ      | RX      | RY      | RZ      | STRESS |  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)    | (IN)    | (IN)    | (DEG)   | (DEG)   | (DEG)   | (PSI)  |  |
| .0120   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0005 | -0.0000 | -0.0000 | 0.0004  | -0.0022 | -0.0020 | 0.     |  |
| .0130   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0009 | -0.0001 | -0.0000 | 0.0004  | -0.0030 | -0.0031 | 0.     |  |
| .0140   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0013 | -0.0001 | 0.0000  | 0.0004  | -0.0041 | -0.0046 | 0.     |  |
| .0150   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0019 | -0.0002 | 0.0001  | 0.0004  | -0.0052 | -0.0065 | 0.     |  |
| .0160   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0025 | -0.0004 | 0.0001  | 0.0007  | -0.0064 | -0.0082 | 0.     |  |
| .0170   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0032 | -0.0006 | 0.0001  | 0.0012  | -0.0075 | -0.0094 | 0.     |  |
| .0180   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0037 | -0.0009 | 0.0000  | 0.0020  | -0.0081 | -0.0098 | 0.     |  |
| .0190   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0043 | -0.0013 | 0.0000  | 0.0026  | -0.0079 | -0.0094 | 0.     |  |
| .0200   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0047 | -0.0018 | 0.0000  | 0.0030  | -0.0067 | -0.0080 | 0.     |  |
| .0210   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0050 | -0.0023 | 0.0001  | 0.0029  | -0.0041 | -0.0055 | 0.     |  |
| .0220   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0051 | -0.0028 | 0.0003  | 0.0024  | -0.0003 | -0.0020 | 0.     |  |
| .0230   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0050 | -0.0033 | 0.0005  | 0.0016  | 0.0044  | 0.0022  | 0.     |  |
| .0240   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0050 | -0.0036 | 0.0007  | 0.0004  | 0.0091  | 0.0062  | 0.     |  |
| .0250   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0050 | -0.0038 | 0.0009  | -0.0010 | 0.0129  | 0.0092  | 0.     |  |
| .0260   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0051 | -0.0039 | 0.0009  | -0.0017 | 0.0152  | 0.0112  | 0.     |  |
| .0270   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0048 | -0.0037 | 0.0006  | -0.0006 | 0.0154  | 0.0142  | 0.     |  |
| .0280   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0038 | -0.0034 | -0.0002 | 0.0024  | 0.0139  | 0.0195  | 0.     |  |
| .0290   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0026 | -0.0029 | -0.0010 | 0.0051  | 0.0113  | 0.0245  | 0.     |  |
| .0300   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0020 | -0.0020 | -0.0014 | 0.0059  | 0.0085  | 0.0247  | 0.     |  |
| .0310   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -0.0014 | -0.0010 | -0.0018 | 0.0058  | 0.0064  | 0.0235  | 0.     |  |
| .0320   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0004  | 0.0002  | -0.0023 | 0.0061  | 0.0060  | 0.0269  | 0.     |  |
| .0330   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0032  | 0.0014  | -0.0029 | 0.0058  | 0.0076  | 0.0334  | 0.     |  |
| .0340   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0055  | 0.0028  | -0.0030 | 0.0031  | 0.0101  | 0.0353  | 0.     |  |
| .0350   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0066  | 0.0044  | -0.0026 | -0.0015 | 0.0118  | 0.0306  | 0.     |  |
| .0360   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0075  | 0.0059  | -0.0025 | -0.0051 | 0.0115  | 0.0241  | 0.     |  |
| .0370   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0094  | 0.0072  | -0.0031 | -0.0047 | 0.0076  | 0.0205  | 0.     |  |
| .0380   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0118  | 0.0082  | -0.0043 | -0.0004 | 0.0008  | 0.0190  | 0.     |  |
| .0390   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0133  | 0.0090  | -0.0055 | 0.0043  | -0.0075 | 0.0141  | 0.     |  |
| .0400   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0135  | 0.0095  | -0.0061 | 0.0060  | -0.0149 | 0.0023  | 0.     |  |
| .0410   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0132  | 0.0095  | -0.0064 | 0.0062  | -0.0191 | -0.0110 | 0.     |  |
| .0420   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0141  | 0.0088  | -0.0067 | 0.0075  | -0.0186 | -0.0162 | 0.     |  |
| .0430   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0161  | 0.0076  | -0.0068 | 0.0075  | -0.0124 | -0.0138 | 0.     |  |
| .0440   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0171  | 0.0060  | -0.0059 | 0.0021  | -0.0017 | -0.0152 | 0.     |  |
| .0450   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0157  | 0.0040  | -0.0039 | -0.0079 | 0.0100  | -0.0259 | 0.     |  |
| .0460   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0133  | 0.0018  | -0.0019 | -0.0165 | 0.0192  | -0.0379 | 0.     |  |
| .0470   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0120  | -0.0008 | -0.0011 | -0.0194 | 0.0235  | -0.0423 | 0.     |  |
| .0480   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0114  | -0.0035 | -0.0013 | -0.0169 | 0.0223  | -0.0417 | 0.     |  |
| .0490   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.0091  | -0.0061 | -0.0015 | -0.0129 | 0.0167  | -0.0455 | 0.     |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING



|       |    |    |    |    |    |    |    |       |        |        |        |        |        |    |
|-------|----|----|----|----|----|----|----|-------|--------|--------|--------|--------|--------|----|
| .0390 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0133 | .0090  | -.0055 | .0043  | -.0075 | .0141  | 0. |
| .0400 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0135 | .0095  | -.0061 | .0060  | -.0149 | .0023  | 0. |
| .0410 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0132 | .0095  | -.0064 | .0062  | -.0191 | -.0110 | 0. |
| .0420 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0141 | .0088  | -.0067 | .0075  | -.0186 | -.0162 | 0. |
| .0430 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0161 | .0076  | -.0068 | .0075  | -.0124 | -.0138 | 0. |
| .0440 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0171 | .0060  | -.0054 | .0021  | -.0017 | -.0152 | 0. |
| .0450 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0157 | .0040  | -.0034 | -.0079 | .0100  | -.0259 | 0. |
| .0460 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0133 | .0018  | -.0019 | -.0165 | .0192  | -.0379 | 0. |
| .0470 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0120 | -.0008 | -.0011 | -.0194 | .0235  | -.0423 | 0. |
| .0480 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0114 | -.0035 | -.0015 | -.0169 | .0223  | -.0417 | 0. |
| .0490 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0091 | -.0061 | -.0015 | -.0129 | .0167  | -.0455 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS    | TYPE   | VA     |        |        |        |        |  |  |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .0500   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0047  | -.0086 | -.0011 | -.0113 | .0098  | -.0565 | 0.     |  |  |
| .0510   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0001  | -.0108 | -.0003 | -.0124 | .0048  | -.0670 | 0.     |  |  |
| .0520   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0032 | -.0128 | .0004  | -.0134 | .0034  | -.0685 | 0.     |  |  |
| .0530   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0056 | -.0146 | .0013  | -.0145 | .0059  | -.0620 | 0.     |  |  |
| .0540   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0084 | -.0159 | .0029  | -.0197 | .0118  | -.0557 | 0.     |  |  |
| .0550   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0120 | -.0165 | .0052  | -.0289 | .0190  | -.0529 | 0.     |  |  |
| .0560   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0155 | -.0165 | .0074  | -.0369 | .0241  | -.0486 | 0.     |  |  |
| .0570   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0182 | -.0159 | .0088  | -.0400 | .0250  | -.0386 | 0.     |  |  |
| .0580   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0201 | -.0146 | .0094  | -.0394 | .0213  | -.0266 | 0.     |  |  |
| .0590   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0225 | -.0126 | .0099  | -.0372 | .0140  | -.0184 | 0.     |  |  |
| .0600   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0255 | -.0101 | .0103  | -.0335 | .0051  | -.0136 | 0.     |  |  |
| .0610   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0278 | -.0072 | .0105  | -.0285 | -.0023 | -.0065 | 0.     |  |  |
| .0620   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0281 | -.0041 | .0105  | -.0232 | -.0054 | .0070  | 0.     |  |  |
| .0630   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0271 | -.0010 | .0109  | -.0195 | -.0033 | .0243  | 0.     |  |  |
| .0640   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0262 | .0022  | .0120  | -.0193 | .0030  | .0386  | 0.     |  |  |
| .0650   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0258 | .0053  | .0138  | -.0226 | .0116  | .0473  | 0.     |  |  |
| .0660   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0247 | .0082  | .0154  | -.0251 | .0192  | .0544  | 0.     |  |  |
| .0670   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0226 | .0107  | .0160  | -.0220 | .0222  | .0635  | 0.     |  |  |
| .0680   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0199 | .0128  | .0154  | -.0129 | .0191  | .0711  | 0.     |  |  |
| .0690   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0180 | .0144  | .0142  | -.0011 | .0105  | .0713  | 0.     |  |  |
| .0700   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0168 | .0154  | .0128  | .0113  | -.0011 | .0639  | 0.     |  |  |
| .0710   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0156 | .0157  | .0112  | .0237  | -.0122 | .0539  | 0.     |  |  |
| .0720   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0134 | .0151  | .0094  | .0353  | -.0195 | .0466  | 0.     |  |  |
| .0730   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0101 | .0137  | .0077  | .0440  | -.0208 | .0429  | 0.     |  |  |
| .0740   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0065 | .0115  | .0066  | .0474  | -.0160 | .0399  | 0.     |  |  |
| .0750   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0033 | .0087  | .0062  | .0449  | -.0068 | .0338  | 0.     |  |  |
| .0760   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0005 | .0054  | .0060  | .0394  | .0034  | .0252  | 0.     |  |  |
| .0770   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0025  | .0018  | .0050  | .0355  | .0112  | .0183  | 0.     |  |  |
| .0780   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0060  | -.0021 | .0028  | .0353  | .0142  | .0140  | 0.     |  |  |
| .0790   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0091  | -.0060 | -.0002 | .0376  | .0119  | .0081  | 0.     |  |  |
| .0800   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0110  | -.0096 | -.0036 | .0400  | .0055  | -.0027 | 0.     |  |  |
| .0810   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0120  | -.0130 | -.0071 | .0413  | -.0025 | -.0159 | 0.     |  |  |
| .0820   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0132  | -.0160 | -.0105 | .0406  | -.0090 | -.0264 | 0.     |  |  |
| .0830   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0151  | -.0187 | -.0138 | .0371  | -.0116 | -.0319 | 0.     |  |  |
| .0840   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0171  | -.0209 | -.0165 | .0303  | -.0099 | -.0331 | 0.     |  |  |
| .0850   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0191  | -.0226 | -.0185 | .0200  | -.0045 | -.0320 | 0.     |  |  |
| .0860   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0208  | -.0236 | -.0200 | .0071  | .0028  | -.0297 | 0.     |  |  |
| .0870   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0224  | -.0239 | -.0214 | -.0051 | .0093  | -.0260 | 0.     |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |       |        |        |        |        |        |    |
|-------|----|----|----|----|----|----|----|-------|--------|--------|--------|--------|--------|----|
| .0770 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0025 | .0018  | .0050  | .0355  | .0112  | .0183  | 0. |
| .0780 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0060 | -.0021 | .0028  | .0353  | .0142  | .0140  | 0. |
| .0790 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0051 | -.0060 | -.0002 | .0376  | .0119  | .0081  | 0. |
| .0800 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0110 | -.0096 | -.0036 | .0400  | .0055  | -.0027 | 0. |
| .0810 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0120 | -.0130 | -.0071 | .0413  | -.0025 | -.0159 | 0. |
| .0820 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0132 | -.0160 | -.0105 | .0406  | -.0090 | -.0264 | 0. |
| .0830 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0151 | -.0187 | -.0138 | .0371  | -.0116 | -.0319 | 0. |
| .0840 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0171 | -.0209 | -.0165 | .0303  | -.0099 | -.0331 | 0. |
| .0850 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0191 | -.0226 | -.0185 | .0200  | -.0045 | -.0320 | 0. |
| .0860 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0208 | -.0236 | -.0200 | .0071  | .0028  | -.0297 | 0. |
| .0870 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0224 | -.0239 | -.0214 | -.0051 | .0093  | -.0260 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS    | TYPE   | VA     |        |        |        |        |  |  |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .0880   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0238  | -.0235 | -.0230 | -.0137 | .0129  | -.0203 | 0.     |  |  |
| .0890   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0250  | -.0224 | -.0249 | -.0182 | .0129  | -.0138 | 0.     |  |  |
| .0900   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0257  | -.0205 | -.0267 | -.0202 | .0104  | -.0087 | 0.     |  |  |
| .0910   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0257  | -.0180 | -.0281 | -.0205 | .0071  | -.0051 | 0.     |  |  |
| .0920   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0255  | -.0150 | -.0290 | -.0196 | .0047  | -.0008 | 0.     |  |  |
| .0930   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0254  | -.0115 | -.0291 | -.0188 | .0049  | .0055  | 0.     |  |  |
| .0940   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0253  | -.0077 | -.0282 | -.0193 | .0075  | .0120  | 0.     |  |  |
| .0950   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0244  | -.0037 | -.0264 | -.0202 | .0109  | .0162  | 0.     |  |  |
| .0960   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0228  | .0005  | -.0241 | -.0194 | .0128  | .0175  | 0.     |  |  |
| .0970   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0208  | .0046  | -.0217 | -.0145 | .0113  | .0177  | 0.     |  |  |
| .0980   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0188  | .0085  | -.0197 | -.0042 | .0057  | .0182  | 0.     |  |  |
| .0990   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0164  | .0122  | -.0180 | .0107  | -.0033 | .0177  | 0.     |  |  |
| .1000   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0132  | .0154  | -.0159 | .0271  | -.0136 | .0139  | 0.     |  |  |
| .1010   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0093  | .0183  | -.0133 | .0424  | -.0225 | .0077  | 0.     |  |  |
| .1020   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0053  | .0205  | -.0102 | .0557  | -.0282 | .0025  | 0.     |  |  |
| .1030   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0018  | .0220  | -.0066 | .0667  | -.0301 | .0009  | 0.     |  |  |
| .1040   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0014 | .0229  | -.0025 | .0746  | -.0287 | .0020  | 0.     |  |  |
| .1050   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0047 | .0232  | .0020  | .0791  | -.0254 | .0037  | 0.     |  |  |
| .1060   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0082 | .0230  | .0065  | .0811  | -.0218 | .0054  | 0.     |  |  |
| .1070   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0115 | .0225  | .0109  | .0818  | -.0191 | .0078  | 0.     |  |  |
| .1080   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0145 | .0216  | .0147  | .0815  | -.0176 | .0111  | 0.     |  |  |
| .1090   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0173 | .0206  | .0181  | .0796  | -.0168 | .0145  | 0.     |  |  |
| .1100   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0201 | .0195  | .0212  | .0753  | -.0162 | .0165  | 0.     |  |  |
| .1110   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0224 | .0184  | .0241  | .0676  | -.0151 | .0179  | 0.     |  |  |
| .1120   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0241 | .0174  | .0266  | .0568  | -.0140 | .0192  | 0.     |  |  |
| .1130   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0252 | .0164  | .0288  | .0437  | -.0139 | .0196  | 0.     |  |  |
| .1140   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0257 | .0156  | .0305  | .0297  | -.0158 | .0190  | 0.     |  |  |
| .1150   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0252 | .0148  | .0309  | .0165  | -.0201 | .0185  | 0.     |  |  |
| .1160   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0236 | .0143  | .0305  | .0051  | -.0266 | .0185  | 0.     |  |  |
| .1170   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0213 | .0138  | .0294  | -.0052 | -.0335 | .0168  | 0.     |  |  |
| .1180   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0186 | .0134  | .0278  | -.0155 | -.0388 | .0117  | 0.     |  |  |
| .1190   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0150 | .0132  | .0258  | -.0254 | -.0407 | .0061  | 0.     |  |  |
| .1200   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0101 | .0129  | .0234  | -.0342 | -.0379 | .0030  | 0.     |  |  |
| .1210   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0039 | .0125  | .0209  | -.0427 | -.0303 | .0017  | 0.     |  |  |
| .1220   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0030  | .0123  | .0184  | -.0518 | -.0194 | -.0001 | 0.     |  |  |
| .1230   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0099  | .0121  | .0160  | -.0601 | -.0083 | -.0046 | 0.     |  |  |
| .1240   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0166  | .0121  | .0134  | -.0652 | -.0002 | -.0122 | 0.     |  |  |
| .1250   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0230  | .0122  | .0104  | -.0658 | .0035  | -.0228 | 0.     |  |  |

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ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |        |       |       |        |        |        |    |
|-------|----|----|----|----|----|----|----|--------|-------|-------|--------|--------|--------|----|
| .1150 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.252  | .0148 | .0309 | .0185  | -.0201 | .0185  | 0. |
| .1160 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.236  | .0143 | .0305 | .0051  | -.0266 | .0185  | 0. |
| .1170 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0213 | .0138 | .0294 | -.0052 | -.0335 | .0168  | 0. |
| .1180 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0186 | .0134 | .0278 | -.0155 | -.0388 | .0117  | 0. |
| .1190 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0150 | .0132 | .0258 | -.0234 | -.0407 | .0061  | 0. |
| .1200 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0101 | .0129 | .0234 | -.0342 | -.0374 | .0030  | 0. |
| .1210 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0039 | .0125 | .0209 | -.0427 | -.0303 | .0017  | 0. |
| .1220 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0030  | .0123 | .0184 | -.0518 | -.0194 | -.0001 | 0. |
| .1230 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0099  | .0121 | .0160 | -.0601 | -.0083 | -.0046 | 0. |
| .1240 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0166  | .0121 | .0174 | -.0652 | -.0002 | -.0122 | 0. |
| .1250 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0230  | .0122 | .0104 | -.0658 | .0035  | -.0228 | 0. |

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ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 69   | MEMBER | 2    | SEQUENCE | 26      | LOCATION | DIS | TYPE   | VA     |        |        |        |        |       |        |
|---------|------|--------|------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|-------|--------|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       |     |        |        |        |        |        |        |       | STRESS |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  |     |        | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG) | (PSI)  |
| .1260   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0292  | .0125  | .0067  | -.0611 | .0027  | -.0363 | 0.    |        |
| .1270   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0351  | .0128  | .0025  | -.0506 | -.0013 | -.0502 | 0.    |        |
| .1280   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0408  | .0132  | -.0019 | -.0362 | -.0055 | -.0633 | 0.    |        |
| .1290   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0462  | .0138  | -.0057 | -.0225 | -.0065 | -.0754 | 0.    |        |
| .1300   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0511  | .0144  | -.0084 | -.0132 | -.0026 | -.0874 | 0.    |        |
| .1310   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0550  | .0152  | -.0098 | -.0080 | .0049  | -.0996 | 0.    |        |
| .1320   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0581  | .0161  | -.0103 | -.0048 | .0132  | -.1094 | 0.    |        |
| .1330   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0607  | .0172  | -.0105 | -.0018 | .0200  | -.1159 | 0.    |        |
| .1340   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0628  | .0185  | -.0107 | .0026  | .0226  | -.1197 | 0.    |        |
| .1350   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0637  | .0201  | -.0111 | .0100  | .0196  | -.1221 | 0.    |        |
| .1360   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0631  | .0220  | -.0115 | .0199  | .0118  | -.1241 | 0.    |        |
| .1370   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0612  | .0242  | -.0117 | .0293  | .0025  | -.1252 | 0.    |        |
| .1380   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0584  | .0266  | -.0114 | .0360  | -.0053 | -.1252 | 0.    |        |
| .1390   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0547  | .0292  | -.0105 | .0402  | -.0106 | -.1217 | 0.    |        |
| .1400   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0510  | .0317  | -.0091 | .0427  | -.0123 | -.1112 | 0.    |        |
| .1410   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0478  | .0342  | -.0073 | .0422  | -.0107 | -.0936 | 0.    |        |
| .1420   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0446  | .0367  | -.0048 | .0380  | -.0075 | -.0722 | 0.    |        |
| .1430   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0403  | .0391  | -.0019 | .0314  | -.0056 | -.0529 | 0.    |        |
| .1440   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0349  | .0416  | .0012  | .0252  | -.0067 | -.0363 | 0.    |        |
| .1450   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0297  | .0438  | .0036  | .0219  | -.0108 | -.0189 | 0.    |        |
| .1460   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0253  | .0458  | .0052  | .0220  | -.0164 | .0005  | 0.    |        |
| .1470   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0211  | .0474  | .0063  | .0246  | -.0239 | .0193  | 0.    |        |
| .1480   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0164  | .0487  | .0076  | .0266  | -.0294 | .0332  | 0.    |        |
| .1490   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0116  | .0495  | .0095  | .0253  | -.0324 | .0431  | 0.    |        |
| .1500   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0078  | .0497  | .0117  | .0207  | -.0314 | .0520  | 0.    |        |
| .1510   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0051  | .0493  | .0141  | .0147  | -.0281 | .0612  | 0.    |        |
| .1520   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0031  | .0482  | .0164  | .0093  | -.0230 | .0696  | 0.    |        |
| .1530   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0014  | .0463  | .0186  | .0038  | -.0176 | .0739  | 0.    |        |
| .1540   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0001 | .0439  | .0205  | -.0015 | -.0130 | .0718  | 0.    |        |
| .1550   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0019 | .0408  | .0218  | -.0044 | -.0103 | .0633  | 0.    |        |
| .1560   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0037 | .0370  | .0224  | -.0032 | -.0094 | .0506  | 0.    |        |
| .1570   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0050 | .0324  | .0223  | .0004  | -.0088 | .0364  | 0.    |        |
| .1580   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0059 | .0272  | .0218  | .0032  | -.0066 | .0197  | 0.    |        |
| .1590   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0071 | .0212  | .0215  | .0035  | -.0025 | -.0009 | 0.    |        |
| .1600   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0087 | .0147  | .0215  | .0016  | .0035  | -.0230 | 0.    |        |
| .1610   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0099 | .0076  | .0214  | -.0028 | .0111  | -.0434 | 0.    |        |
| .1620   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0107 | .0000  | .0212  | -.0096 | .0203  | -.0623 | 0.    |        |
| .1630   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0120 | -.0077 | .0207  | -.0168 | .0291  | -.0809 | 0.    |        |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |        |        |       |        |        |        |    |
|-------|----|----|----|----|----|----|----|--------|--------|-------|--------|--------|--------|----|
| .1530 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0031 | .0482  | .0164 | .0093  | -.0230 | .0696  | 0. |
| .1540 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0001 | .0463  | .0186 | .0038  | -.0176 | .0739  | 0. |
| .1550 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0019 | .0439  | .0205 | -.0015 | -.0130 | .0718  | 0. |
| .1560 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0037 | .0370  | .0224 | -.0032 | -.0094 | .0506  | 0. |
| .1570 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0050 | .0324  | .0223 | .0004  | -.0088 | .0364  | 0. |
| .1580 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0059 | .0272  | .0218 | .0032  | -.0066 | .0197  | 0. |
| .1590 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0071 | .0212  | .0215 | .0035  | -.0023 | -.0009 | 0. |
| .1600 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0087 | .0147  | .0215 | .0016  | .0033  | -.0230 | 0. |
| .1610 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0099 | .0076  | .0214 | -.0028 | .0111  | -.0434 | 0. |
| .1620 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0107 | .0000  | .0212 | -.0096 | .0203  | -.0623 | 0. |
| .1630 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0120 | -.0077 | .0207 | -.0168 | .0291  | -.0809 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS | TYPE   | VA     |        |        |        |        |        |  |
|---------|------|--------|------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       |     | DX     | DY     | DZ     | FX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| .1640   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0141 | -.0155 | .0197  | -.0229 | .0363  | -.0997 | 0.     |  |
| .1650   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0165 | -.0231 | .0180  | -.0276 | .0421  | -.1165 | 0.     |  |
| .1660   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0187 | -.0304 | .0155  | -.0311 | .0465  | -.1288 | 0.     |  |
| .1670   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0213 | -.0370 | .0126  | -.0341 | .0491  | -.1381 | 0.     |  |
| .1680   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0248 | -.0427 | .0097  | -.0378 | .0497  | -.1459 | 0.     |  |
| .1690   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0286 | -.0473 | .0068  | -.0431 | .0484  | -.1507 | 0.     |  |
| .1700   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0321 | -.0506 | .0038  | -.0492 | .0454  | -.1495 | 0.     |  |
| .1710   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0351 | -.0525 | .0005  | -.0543 | .0403  | -.1416 | 0.     |  |
| .1720   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0381 | -.0529 | -.0029 | -.0579 | .0331  | -.1295 | 0.     |  |
| .1730   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0409 | -.0516 | -.0064 | -.0603 | .0248  | -.1139 | 0.     |  |
| .1740   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0433 | -.0487 | -.0099 | -.0619 | .0164  | -.0954 | 0.     |  |
| .1750   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0454 | -.0441 | -.0133 | -.0623 | .0085  | -.0746 | 0.     |  |
| .1760   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0469 | -.0380 | -.0165 | -.0609 | .0013  | -.0514 | 0.     |  |
| .1770   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0477 | -.0306 | -.0195 | -.0580 | -.0048 | -.0255 | 0.     |  |
| .1780   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0473 | -.0222 | -.0220 | -.0547 | -.0092 | .0026  | 0.     |  |
| .1790   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0460 | -.0130 | -.0239 | -.0510 | -.0123 | .0310  | 0.     |  |
| .1800   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0442 | -.0032 | -.0252 | -.0464 | -.0144 | .0581  | 0.     |  |
| .1810   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0419 | .0066  | -.0259 | -.0404 | -.0153 | .0832  | 0.     |  |
| .1820   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0390 | .0163  | -.0261 | -.0335 | -.0145 | .1044  | 0.     |  |
| .1830   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0360 | .0253  | -.0260 | -.0247 | -.0121 | .1208  | 0.     |  |
| .1840   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0329 | .0333  | -.0256 | -.0134 | -.0084 | .1321  | 0.     |  |
| .1850   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0298 | .0399  | -.0249 | -.0002 | -.0030 | .1386  | 0.     |  |
| .1860   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0266 | .0448  | -.0239 | .0131  | .0039  | .1402  | 0.     |  |
| .1870   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0239 | .0477  | -.0224 | .0254  | .0117  | .1356  | 0.     |  |
| .1880   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0219 | .0485  | -.0204 | .0366  | .0195  | .1250  | 0.     |  |
| .1890   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0206 | .0470  | -.0181 | .0465  | .0266  | .1098  | 0.     |  |
| .1900   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0197 | .0431  | -.0157 | .0530  | .0329  | .0911  | 0.     |  |
| .1910   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0195 | .0370  | -.0135 | .0622  | .0383  | .0697  | 0.     |  |
| .1920   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0203 | .0289  | -.0115 | .0681  | .0428  | .0453  | 0.     |  |
| .1930   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0221 | .0190  | -.0096 | .0716  | .0469  | .0192  | 0.     |  |
| .1940   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0245 | .0076  | -.0079 | .0716  | .0314  | -.0064 | 0.     |  |
| .1950   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0276 | -.0047 | -.0063 | .0672  | .0361  | -.0308 | 0.     |  |
| .1960   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0314 | -.0177 | -.0047 | .0582  | .0399  | -.0336 | 0.     |  |
| .1970   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0359 | -.0306 | -.0032 | .0447  | .0620  | -.0736 | 0.     |  |
| .1980   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0405 | -.0432 | -.0019 | .0277  | .0612  | -.0891 | 0.     |  |
| .1990   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0452 | -.0548 | -.0010 | .0084  | .0367  | -.0996 | 0.     |  |
| .2000   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0500 | -.0630 | -.0006 | -.0120 | .0483  | -.1058 | 0.     |  |
| .2010   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0550 | -.0734 | -.0006 | -.0330 | .0368  | -.1082 | 0.     |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |    |        |        |        |        |       |        |    |
|-------|----|----|----|----|----|----|----|----|--------|--------|--------|--------|-------|--------|----|
| .1900 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0197 | .0431  | -.0157 | .0550  | .0324 | .0911  | 0. |
| .1910 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0195 | .0370  | -.0135 | .0622  | .0383 | .0697  | 0. |
| .1920 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0203 | .0289  | -.0115 | .0681  | .0428 | .0453  | 0. |
| .1930 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0221 | .0190  | -.0096 | .0716  | .0469 | .0192  | 0. |
| .1940 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0245 | .0076  | -.0079 | .0716  | .0514 | -.0064 | 0. |
| .1950 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0276 | -.0047 | -.0063 | .0672  | .0561 | -.0508 | 0. |
| .1960 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0314 | -.0177 | -.0047 | .0582  | .0599 | -.0536 | 0. |
| .1970 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0359 | -.0306 | -.0032 | .0447  | .0620 | -.0756 | 0. |
| .1980 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0405 | -.0432 | -.0019 | .0277  | .0612 | -.0891 | 0. |
| .1990 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0452 | -.0548 | -.0010 | .0084  | .0567 | -.0996 | 0. |
| .2000 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0500 | -.0650 | -.0006 | -.0120 | .0483 | -.1058 | 0. |
| .2010 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0550 | -.0754 | -.0006 | -.0350 | .0368 | -.1082 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS | TYPE   | VA     |        |        |        |        |        |  |
|---------|------|--------|------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX   | FY     | FZ   | FX       | MY      | MZ       |     | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| .2020   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0596 | -.0798 | -.0009 | -.0541 | .0238  | -.1059 | 0.     |  |
| .2030   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0636 | -.0839 | -.0014 | -.0750 | .0109  | -.0980 | 0.     |  |
| .2040   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0666 | -.0857 | -.0020 | -.0953 | -.0005 | -.0841 | 0.     |  |
| .2050   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0686 | -.0852 | -.0022 | -.1152 | -.0100 | -.0653 | 0.     |  |
| .2060   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0696 | -.0823 | -.0020 | -.1347 | -.0173 | -.0430 | 0.     |  |
| .2070   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0695 | -.0773 | -.0012 | -.1527 | -.0232 | -.0184 | 0.     |  |
| .2080   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0684 | -.0703 | -.0002 | -.1667 | -.0286 | .0076  | 0.     |  |
| .2090   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0663 | -.0618 | .0010  | -.1746 | -.0343 | .0340  | 0.     |  |
| .2100   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0632 | -.0520 | .0021  | -.1757 | -.0402 | .0589  | 0.     |  |
| .2110   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0594 | -.0414 | .0033  | -.1698 | -.0457 | .0806  | 0.     |  |
| .2120   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0551 | -.0303 | .0047  | -.1570 | -.0499 | .0979  | 0.     |  |
| .2130   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0503 | -.0192 | .0063  | -.1382 | -.0516 | .1110  | 0.     |  |
| .2140   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0449 | -.0086 | .0082  | -.1148 | -.0500 | .1207  | 0.     |  |
| .2150   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0389 | .0011  | .0106  | -.0882 | -.0443 | .1273  | 0.     |  |
| .2160   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0327 | .0097  | .0133  | -.0594 | -.0358 | .1302  | 0.     |  |
| .2170   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0263 | .0169  | .0164  | -.0290 | -.0248 | .1291  | 0.     |  |
| .2180   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0201 | .0225  | .0194  | .0024  | -.0127 | .1243  | 0.     |  |
| .2190   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0140 | .0265  | .0222  | .0347  | -.0006 | .1159  | 0.     |  |
| .2200   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0086 | .0287  | .0245  | .0673  | .0103  | .1037  | 0.     |  |
| .2210   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0039 | .0293  | .0262  | .0992  | .0198  | .0881  | 0.     |  |
| .2220   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0002  | .0284  | .0272  | .1289  | .0278  | .0709  | 0.     |  |
| .2230   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0039  | .0260  | .0276  | .1544  | .0348  | .0540  | 0.     |  |
| .2240   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0071  | .0225  | .0276  | .1736  | .0409  | .0382  | 0.     |  |
| .2250   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0096  | .0180  | .0273  | .1848  | .0459  | .0234  | 0.     |  |
| .2260   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0115  | .0129  | .0268  | .1872  | .0494  | .0105  | 0.     |  |
| .2270   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0130  | .0074  | .0258  | .1817  | .0505  | .0004  | 0.     |  |
| .2280   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0141  | .0018  | .0242  | .1697  | .0484  | -.0062 | 0.     |  |
| .2290   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0148  | -.0037 | .0218  | .1525  | .0424  | -.0099 | 0.     |  |
| .2300   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0151  | -.0087 | .0187  | .1307  | .0328  | -.0114 | 0.     |  |
| .2310   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0151  | -.0132 | .0152  | .1050  | .0202  | -.0113 | 0.     |  |
| .2320   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0148  | -.0170 | .0113  | .0757  | .0058  | -.0094 | 0.     |  |
| .2330   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0145  | -.0199 | .0073  | .0436  | -.0094 | -.0052 | 0.     |  |
| .2340   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0145  | -.0220 | .0035  | .0093  | -.0239 | .0011  | 0.     |  |
| .2350   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0150  | -.0233 | .0001  | -.0263 | -.0370 | .0091  | 0.     |  |
| .2360   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0158  | -.0239 | -.0028 | -.0616 | -.0478 | .0177  | 0.     |  |
| .2370   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0171  | -.0237 | -.0052 | -.0946 | -.0563 | .0261  | 0.     |  |
| .2380   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0188  | -.0228 | -.0072 | -.1233 | -.0621 | .0333  | 0.     |  |
| .2390   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0209  | -.0215 | -.0088 | -.1460 | -.0653 | .0382  | 0.     |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |       |        |        |        |        |        |    |
|-------|----|----|----|----|----|----|----|-------|--------|--------|--------|--------|--------|----|
| .2290 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .148  | -.0037 | .0218  | .1525  | .0424  | -.0099 | 0. |
| .2300 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .151  | -.0087 | .0187  | .1307  | .0328  | -.0114 | 0. |
| .2310 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0151 | -.0132 | .0152  | .1050  | .0202  | -.0113 | 0. |
| .2320 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0148 | -.0170 | .0113  | .0757  | .0058  | -.0094 | 0. |
| .2330 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0145 | -.0199 | .0073  | .0436  | -.0094 | -.0052 | 0. |
| .2340 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0145 | -.0220 | .0073  | .0093  | -.0239 | .0011  | 0. |
| .2350 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0150 | -.0233 | .0001  | -.0263 | -.0370 | .0091  | 0. |
| .2360 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0158 | -.0239 | -.0028 | -.0616 | -.0478 | .0177  | 0. |
| .2370 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0171 | -.0237 | -.0052 | -.0946 | -.0563 | .0261  | 0. |
| .2380 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0188 | -.0228 | -.0072 | -.1233 | -.0621 | .0333  | 0. |
| .2390 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0209 | -.0215 | -.0088 | -.1460 | -.0653 | .0382  | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS   | TYPE   | VA     |        |        |        |        |  |  |
|---------|------|--------|------|----------|---------|----------|-------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       | DX    | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)  | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .2400   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0233 | -.0197 | -.0101 | -.1616 | -.0659 | .0399  | 0.     |  |  |
| .2410   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0258 | -.0176 | -.0108 | -.1695 | -.0638 | .0377  | 0.     |  |  |
| .2420   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0285 | -.0154 | -.0111 | -.1697 | -.0592 | .0319  | 0.     |  |  |
| .2430   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0315 | -.0130 | -.0109 | -.1626 | -.0520 | .0231  | 0.     |  |  |
| .2440   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0346 | -.0108 | -.0100 | -.1492 | -.0424 | .0114  | 0.     |  |  |
| .2450   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0376 | -.0086 | -.0085 | -.1303 | -.0305 | -.0032 | 0.     |  |  |
| .2460   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0403 | -.0066 | -.0065 | -.1067 | -.0170 | -.0204 | 0.     |  |  |
| .2470   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0426 | -.0047 | -.0041 | -.0790 | -.0024 | -.0393 | 0.     |  |  |
| .2480   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0446 | -.0030 | -.0016 | -.0477 | .0127  | -.0587 | 0.     |  |  |
| .2490   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0461 | -.0014 | .0008  | -.0139 | .0275  | -.0777 | 0.     |  |  |
| .2500   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0469 | .0002  | .0032  | .0206  | .0412  | -.0958 | 0.     |  |  |
| .2510   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0469 | .0017  | .0054  | .0539  | .0533  | -.1123 | 0.     |  |  |
| .2520   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0462 | .0033  | .0075  | .0843  | .0630  | -.1262 | 0.     |  |  |
| .2530   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0448 | .0050  | .0093  | .1105  | .0699  | -.1359 | 0.     |  |  |
| .2540   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0429 | .0069  | .0108  | .1318  | .0736  | -.1403 | 0.     |  |  |
| .2550   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0407 | .0091  | .0119  | .1471  | .0740  | -.1389 | 0.     |  |  |
| .2560   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0379 | .0116  | .0125  | .1560  | .0710  | -.1326 | 0.     |  |  |
| .2570   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0346 | .0145  | .0127  | .1583  | .0648  | -.1218 | 0.     |  |  |
| .2580   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0310 | .0178  | .0125  | .1544  | .0556  | -.1070 | 0.     |  |  |
| .2590   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0273 | .0214  | .0112  | .1451  | .0438  | -.0878 | 0.     |  |  |
| .2600   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0237 | .0252  | .0096  | .1309  | .0298  | -.0648 | 0.     |  |  |
| .2610   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0204 | .0293  | .0076  | .1121  | .0141  | -.0393 | 0.     |  |  |
| .2620   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0175 | .0333  | .0053  | .0893  | -.0027 | -.0128 | 0.     |  |  |
| .2630   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0150 | .0373  | .0028  | .0635  | -.0198 | .0138  | 0.     |  |  |
| .2640   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0132 | .0410  | .0002  | .0364  | -.0366 | .0398  | 0.     |  |  |
| .2650   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0123 | .0443  | -.0025 | .0095  | -.0523 | .0640  | 0.     |  |  |
| .2660   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0122 | .0470  | -.0054 | -.0155 | -.0660 | .0849  | 0.     |  |  |
| .2670   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0129 | .0489  | -.0082 | -.0375 | -.0772 | .1011  | 0.     |  |  |
| .2680   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0145 | .0500  | -.0110 | -.0551 | -.0852 | .1120  | 0.     |  |  |
| .2690   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0170 | .0500  | -.0137 | -.0677 | -.0897 | .1175  | 0.     |  |  |
| .2700   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0204 | .0490  | -.0162 | -.0748 | -.0905 | .1173  | 0.     |  |  |
| .2710   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0245 | .0469  | -.0184 | -.0766 | -.0877 | .1109  | 0.     |  |  |
| .2720   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0293 | .0437  | -.0202 | -.0733 | -.0815 | .0986  | 0.     |  |  |
| .2730   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0346 | .0396  | -.0216 | -.0647 | -.0723 | .0813  | 0.     |  |  |
| .2740   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0404 | .0346  | -.0227 | -.0510 | -.0605 | .0602  | 0.     |  |  |
| .2750   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0464 | .0289  | -.0234 | -.0331 | -.0467 | .0355  | 0.     |  |  |
| .2760   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0522 | .0228  | -.0239 | -.0119 | -.0316 | .0074  | 0.     |  |  |
| .2770   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | .0576 | .0165  | -.0242 | .0119  | -.0157 | -.0228 | 0.     |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE GKWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |       |       |        |        |        |        |    |
|-------|----|----|----|----|----|----|----|-------|-------|--------|--------|--------|--------|----|
| .2670 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0129 | .0489 | -.0082 | -.0375 | -.0772 | .1011  | 0. |
| .2680 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0145 | .0500 | -.0110 | -.0551 | -.0852 | .1120  | 0. |
| .2690 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0170 | .0500 | -.0137 | -.0677 | -.0897 | .1175  | 0. |
| .2700 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0204 | .0490 | -.0162 | -.0748 | -.0905 | .1173  | 0. |
| .2710 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0245 | .0469 | -.0184 | -.0766 | -.0877 | .1109  | 0. |
| .2720 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0293 | .0437 | -.0202 | -.0733 | -.0815 | .0986  | 0. |
| .2730 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0346 | .0396 | -.0216 | -.0647 | -.0723 | .0813  | 0. |
| .2740 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0404 | .0346 | -.0227 | -.0510 | -.0605 | .0602  | 0. |
| .2750 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0464 | .0289 | -.0234 | -.0331 | -.0467 | .0355  | 0. |
| .2760 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0522 | .0228 | -.0234 | -.0119 | -.0316 | .0074  | 0. |
| .2770 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0576 | .0165 | -.0242 | .0119  | -.0157 | -.0228 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION       | 65         | MEMBER     | 2          | SEQUENCE      | 96            | LOCATION      | DIS | TYPE       | VA         |            |             |             |             |                 |  |
|---------------|------------|------------|------------|---------------|---------------|---------------|-----|------------|------------|------------|-------------|-------------|-------------|-----------------|--|
| TIME<br>(SEC) | FX<br>(LB) | FY<br>(LB) | FZ<br>(LB) | MX<br>(FT-LB) | MY<br>(FT-LB) | MZ<br>(FT-LB) |     | DX<br>(IN) | DY<br>(IN) | DZ<br>(IN) | RX<br>(DEG) | RY<br>(DEG) | RZ<br>(DEG) | STRESS<br>(PSI) |  |
| .2780         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0628      | .0103      | -.0243     | .0372       | .0002       | -.0526      | 0.              |  |
| .2790         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0675      | .0044      | -.0243     | .0626       | .0154       | -.0803      | 0.              |  |
| .2800         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0716      | -.0010     | -.0241     | .0863       | .0295       | -.1053      | 0.              |  |
| .2810         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0747      | -.0056     | -.0236     | .1066       | .0416       | -.1272      | 0.              |  |
| .2820         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0768      | -.0091     | -.0229     | .1227       | .0512       | -.1445      | 0.              |  |
| .2830         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0780      | -.0114     | -.0221     | .1342       | .0578       | -.1558      | 0.              |  |
| .2840         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0782      | -.0125     | -.0212     | .1409       | .0610       | -.1605      | 0.              |  |
| .2850         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0771      | -.0122     | -.0205     | .1424       | .0605       | -.1595      | 0.              |  |
| .2860         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0747      | -.0106     | -.0195     | .1391       | .0562       | -.1534      | 0.              |  |
| .2870         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0710      | -.0077     | -.0187     | .1315       | .0482       | -.1414      | 0.              |  |
| .2880         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0665      | -.0057     | -.0180     | .1197       | .0375       | -.1232      | 0.              |  |
| .2890         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0611      | .0012      | -.0171     | .1041       | .0242       | -.0999      | 0.              |  |
| .2900         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0547      | .0068      | -.0161     | .0849       | .0094       | -.0732      | 0.              |  |
| .2910         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0475      | .0128      | -.0148     | .0629       | -.0059      | -.0437      | 0.              |  |
| .2920         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0399      | .0190      | -.0132     | .0394       | -.0211      | -.0119      | 0.              |  |
| .2930         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0321      | .0251      | -.0114     | .0157       | -.0355      | .0211       | 0.              |  |
| .2940         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0240      | .0308      | -.0095     | -.0067      | -.0489      | .0531       | 0.              |  |
| .2950         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0156      | .0360      | -.0070     | -.0268      | -.0609      | .0821       | 0.              |  |
| .2960         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | .0072      | .0403      | -.0045     | -.0435      | -.0714      | .1069       | 0.              |  |
| .2970         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0009     | .0438      | -.0018     | -.0558      | -.0800      | .1274       | 0.              |  |
| .2980         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0086     | .0461      | .0009      | -.0652      | -.0866      | .1430       | 0.              |  |
| .2990         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0158     | .0474      | .0039      | -.0660      | -.0906      | .1530       | 0.              |  |
| .3000         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0224     | .0475      | .0071      | -.0649      | -.0917      | .1566       | 0.              |  |
| .3010         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0283     | .0465      | .0106      | -.0603      | -.0895      | .1541       | 0.              |  |
| .3020         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0333     | .0444      | .0142      | -.0522      | -.0841      | .1464       | 0.              |  |
| .3030         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0372     | .0415      | .0177      | -.0409      | -.0757      | .1343       | 0.              |  |
| .3040         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0401     | .0378      | .0212      | -.0275      | -.0647      | .1178       | 0.              |  |
| .3050         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0422     | .0336      | .0244      | -.0126      | -.0518      | .0972       | 0.              |  |
| .3060         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0435     | .0291      | .0273      | .0029       | -.0377      | .0733       | 0.              |  |
| .3070         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0440     | .0244      | .0297      | .0183       | -.0231      | .0481       | 0.              |  |
| .3080         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0435     | .0197      | .0316      | .0325       | -.0086      | .0228       | 0.              |  |
| .3090         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0423     | .0152      | .0330      | .0439       | .0055       | -.0023      | 0.              |  |
| .3100         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0407     | .0110      | .0339      | .0516       | .0186       | -.0267      | 0.              |  |
| .3110         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0387     | .0073      | .0342      | .0552       | .0303       | -.0491      | 0.              |  |
| .3120         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0363     | .0040      | .0338      | .0547       | .0403       | -.0679      | 0.              |  |
| .3130         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0335     | .0013      | .0327      | .0500       | .0485       | -.0828      | 0.              |  |
| .3140         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0308     | -.0009     | .0308      | .0409       | .0538       | -.0944      | 0.              |  |
| .3150         | 0.         | 0.         | 0.         | 0.            | 0.            | 0.            | 0.  | -.0283     | -.0026     | .0284      | .0279       | .0565       | -.1030      | 0.              |  |

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ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |        |        |       |        |        |        |    |
|-------|----|----|----|----|----|----|----|--------|--------|-------|--------|--------|--------|----|
| .3040 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0401 | .0378  | .0212 | -.0275 | -.0647 | .1178  | 0. |
| .3050 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0422 | .0336  | .0244 | -.0126 | -.0518 | .0972  | 0. |
| .3060 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0435 | .0291  | .0275 | .0029  | -.0377 | .0733  | 0. |
| .3070 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0440 | .0244  | .0297 | .0183  | -.0231 | .0481  | 0. |
| .3080 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0435 | .0197  | .0516 | .0325  | -.0086 | .0228  | 0. |
| .3090 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0423 | .0152  | .0530 | .0439  | .0055  | -.0023 | 0. |
| .3100 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0407 | .0110  | .0539 | .0516  | .0186  | -.0267 | 0. |
| .3110 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0387 | .0073  | .0542 | .0552  | .0303  | -.0491 | 0. |
| .3120 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0363 | .0040  | .0538 | .0547  | .0403  | -.0679 | 0. |
| .3130 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0335 | .0013  | .0527 | .0500  | .0483  | -.0828 | 0. |
| .3140 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0308 | -.0009 | .0508 | .0409  | .0538  | -.0944 | 0. |
| .3150 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0283 | -.0026 | .0484 | .0279  | .0565  | -.1030 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.42.

S/RV PIPING KEWAUNEE CKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION    | MEMBER  | SEQUENCE | LOCATION | DIS        | TYPE       | VA         |         |         |         |          |          |          |              |  |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB)  | FZ (LB)  | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) |  |
| .3160      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0260  | -.0039  | .0253   | .0115    | .0563    | -.1078   | 0.           |  |
| .3170      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0238  | -.0048  | .0215   | -.0075   | .0535    | -.1084   | 0.           |  |
| .3180      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0219  | -.0055  | .0175   | -.0286   | .0481    | -.1051   | 0.           |  |
| .3190      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0203  | -.0059  | .0129   | -.0513   | .0407    | -.0991   | 0.           |  |
| .3200      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0192  | -.0062  | .0085   | -.0748   | .0317    | -.0910   | 0.           |  |
| .3210      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0184  | -.0065  | .0037   | -.0981   | .0219    | -.0810   | 0.           |  |
| .3220      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0178  | -.0067  | -.0009  | -.1197   | .0116    | -.0692   | 0.           |  |
| .3230      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0173  | -.0070  | -.0054  | -.1386   | .0014    | -.0562   | 0.           |  |
| .3240      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0172  | -.0074  | -.0096  | -.1543   | -.0081   | -.0433   | 0.           |  |
| .3250      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0172  | -.0078  | -.0134  | -.1662   | -.0166   | -.0314   | 0.           |  |
| .3260      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0173  | -.0082  | -.0167  | -.1738   | -.0237   | -.0203   | 0.           |  |
| .3270      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0172  | -.0087  | -.0195  | -.1765   | -.0290   | -.0100   | 0.           |  |
| .3280      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0170  | -.0091  | -.0216  | -.1745   | -.0321   | -.0006   | 0.           |  |
| .3290      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0166  | -.0094  | -.0230  | -.1680   | -.0330   | .0071    | 0.           |  |
| .3300      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0161  | -.0096  | -.0236  | -.1573   | -.0316   | .0127    | 0.           |  |
| .3310      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0153  | -.0097  | -.0236  | -.1425   | -.0281   | .0167    | 0.           |  |
| .3320      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0142  | -.0096  | -.0230  | -.1238   | -.0226   | .0196    | 0.           |  |
| .3330      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0129  | -.0093  | -.0219  | -.1020   | -.0154   | .0214    | 0.           |  |
| .3340      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0114  | -.0089  | -.0203  | -.0782   | -.0069   | .0216    | 0.           |  |
| .3350      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0100  | -.0084  | -.0182  | -.0532   | .0024    | .0205    | 0.           |  |
| .3360      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0084  | -.0078  | -.0158  | -.0277   | .0122    | .0190    | 0.           |  |
| .3370      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0068  | -.0073  | -.0133  | -.0027   | .0221    | .0182    | 0.           |  |
| .3380      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0051  | -.0069  | -.0106  | .0209    | .0315    | .0178    | 0.           |  |
| .3390      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0038  | -.0066  | -.0079  | .0423    | .0399    | .0175    | 0.           |  |
| .3400      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0028  | -.0067  | -.0053  | .0607    | .0469    | .0177    | 0.           |  |
| .3410      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0022  | -.0071  | -.0030  | .0760    | .0522    | .0190    | 0.           |  |
| .3420      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0018  | -.0080  | -.0010  | .0880    | .0555    | .0218    | 0.           |  |
| .3430      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0019  | -.0095  | .0005   | .0963    | .0567    | .0259    | 0.           |  |
| .3440      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0024  | -.0115  | .0016   | .1005    | .0559    | .0308    | 0.           |  |
| .3450      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0035  | -.0141  | .0023   | .1004    | .0531    | .0367    | 0.           |  |
| .3460      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0048  | -.0173  | .0025   | .0962    | .0486    | .0437    | 0.           |  |
| .3470      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0065  | -.0210  | .0023   | .0884    | .0426    | .0520    | 0.           |  |
| .3480      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0083  | -.0253  | .0016   | .0773    | .0353    | .0610    | 0.           |  |
| .3490      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0104  | -.0299  | .0005   | .0633    | .0270    | .0701    | 0.           |  |
| .3500      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0125  | -.0349  | -.0009  | .0473    | .0179    | .0788    | 0.           |  |
| .3510      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0146  | -.0400  | -.0027  | .0304    | .0084    | .0871    | 0.           |  |
| .3520      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0164  | -.0451  | -.0048  | .0134    | -.0012   | .0949    | 0.           |  |
| .3530      | 0.      | 0.       | 0.       | 0.         | 0.         | 0.         | -.0179  | -.0501  | -.0071  | -.0031   | -.0104   | .1018    | 0.           |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE CKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING



|       |    |    |    |    |    |    |    |    |        |        |        |        |        |       |    |
|-------|----|----|----|----|----|----|----|----|--------|--------|--------|--------|--------|-------|----|
| .3430 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.018  | -.0080 | -.0010 | .0880  | .0555  | .0218 | 0. |
| .3440 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.019  | -.0095 | -.0005 | .0963  | .0567  | .0259 | 0. |
| .3450 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0024 | -.0115 | .0016  | .1005  | .0554  | .0308 | 0. |
| .3460 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0035 | -.0141 | .0023  | .1004  | .0531  | .0367 | 0. |
| .3470 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0048 | -.0173 | .0025  | .0962  | .0486  | .0457 | 0. |
| .3480 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0065 | -.0210 | .0023  | .0884  | .0426  | .0520 | 0. |
| .3490 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0083 | -.0253 | .0016  | .0773  | .0353  | .0610 | 0. |
| .3500 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0104 | -.0299 | .0005  | .0633  | .0270  | .0701 | 0. |
| .3510 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0125 | -.0349 | -.0009 | .0473  | .0179  | .0788 | 0. |
| .3520 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0146 | -.0400 | -.0027 | .0304  | .0084  | .0871 | 0. |
| .3530 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0164 | -.0451 | -.0048 | .0134  | -.0012 | .0949 | 0. |
| .3530 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0179 | -.0501 | -.0071 | -.0031 | -.0104 | .1018 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS | TYPE | VA     |        |        |        |        |        |    |
|---------|------|--------|------|----------|---------|----------|-----|------|--------|--------|--------|--------|--------|--------|----|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       |     |      | DY     | DZ     | RX     | RY     | RZ     | STRESS |    |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  |     |      | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |    |
| .3540   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0189 | -.0548 | -.0095 | -.0186 | -.0188 | .1073  | 0. |
| .3550   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0195 | -.0591 | -.0118 | -.0325 | -.0259 | .1111  | 0. |
| .3560   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0195 | -.0629 | -.0141 | -.0442 | -.0315 | .1136  | 0. |
| .3570   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0186 | -.0660 | -.0165 | -.0532 | -.0353 | .1148  | 0. |
| .3580   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0170 | -.0683 | -.0182 | -.0592 | -.0372 | .1145  | 0. |
| .3590   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0148 | -.0697 | -.0199 | -.0619 | -.0372 | .1122  | 0. |
| .3600   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0120 | -.0703 | -.0213 | -.0610 | -.0357 | .1078  | 0. |
| .3610   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0085 | -.0699 | -.0224 | -.0565 | -.0326 | .1021  | 0. |
| .3620   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0044 | -.0687 | -.0233 | -.0483 | -.0282 | .0953  | 0. |
| .3630   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0002  | -.0666 | -.0239 | -.0370 | -.0227 | .0876  | 0. |
| .3640   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0051  | -.0636 | -.0241 | -.0234 | -.0161 | .0787  | 0. |
| .3650   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0101  | -.0600 | -.0239 | -.0080 | -.0087 | .0693  | 0. |
| .3660   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0153  | -.0557 | -.0235 | .0085  | -.0007 | .0600  | 0. |
| .3670   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0205  | -.0509 | -.0227 | .0254  | .0077  | .0513  | 0. |
| .3680   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0254  | -.0458 | -.0217 | .0421  | .0160  | .0431  | 0. |
| .3690   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0299  | -.0404 | -.0205 | .0579  | .0238  | .0354  | 0. |
| .3700   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0338  | -.0349 | -.0192 | .0722  | .0307  | .0283  | 0. |
| .3710   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0370  | -.0295 | -.0178 | .0846  | .0362  | .0221  | 0. |
| .3720   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0395  | -.0242 | -.0165 | .0948  | .0400  | .0172  | 0. |
| .3730   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0411  | -.0192 | -.0151 | .1021  | .0422  | .0134  | 0. |
| .3740   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0418  | -.0146 | -.0137 | .1059  | .0426  | .0106  | 0. |
| .3750   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0415  | -.0106 | -.0123 | .1060  | .0415  | .0088  | 0. |
| .3760   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0402  | -.0071 | -.0109 | .1024  | .0391  | .0081  | 0. |
| .3770   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0382  | -.0044 | -.0095 | .0950  | .0355  | .0088  | 0. |
| .3780   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0353  | -.0023 | -.0081 | .0841  | .0311  | .0105  | 0. |
| .3790   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0316  | -.0010 | -.0067 | .0699  | .0260  | .0126  | 0. |
| .3800   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0272  | -.0005 | -.0053 | .0530  | .0203  | .0147  | 0. |
| .3810   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0223  | -.0006 | -.0039 | .0342  | .0141  | .0169  | 0. |
| .3820   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0171  | -.0013 | -.0025 | .0142  | .0076  | .0191  | 0. |
| .3830   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0116  | -.0026 | -.0010 | -.0064 | .0008  | .0209  | 0. |
| .3840   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0059  | -.0043 | .0004  | -.0271 | -.0060 | .0216  | 0. |
| .3850   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | .0002  | -.0064 | .0020  | -.0472 | -.0125 | .0211  | 0. |
| .3860   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0052 | -.0087 | .0037  | -.0660 | -.0184 | .0196  | 0. |
| .3870   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0102 | -.0111 | .0054  | -.0828 | -.0233 | .0174  | 0. |
| .3880   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0147 | -.0134 | .0071  | -.0973 | -.0271 | .0141  | 0. |
| .3890   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0186 | -.0156 | .0090  | -.1091 | -.0296 | .0094  | 0. |
| .3900   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0219 | -.0175 | .0110  | -.1180 | -.0307 | .0034  | 0. |
| .3910   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | 0.   | -.0244 | -.0190 | .0130  | -.1234 | -.0305 | -.0033 | 0. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |    |    |    |    |    |    |    |        |        |        |        |        |        |    |
|-------|----|----|----|----|----|----|----|--------|--------|--------|--------|--------|--------|----|
| .3810 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0223  | -.0006 | -.0039 | .0342  | .0141  | .0169  | 0. |
| .3820 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0171  | -.0013 | -.0025 | .0142  | .0076  | .0191  | 0. |
| .3830 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0116  | -.0026 | -.0010 | -.0064 | .0008  | .0209  | 0. |
| .3840 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0059  | -.0043 | .0004  | -.0271 | -.0060 | .0216  | 0. |
| .3850 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0002  | -.0064 | .0020  | -.0472 | -.0125 | .0211  | 0. |
| .3860 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0052 | -.0087 | .0077  | -.0660 | -.0184 | .0196  | 0. |
| .3870 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0102 | -.0111 | .0054  | -.0828 | -.0233 | .0174  | 0. |
| .3880 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0147 | -.0134 | .0071  | -.0973 | -.0271 | .0141  | 0. |
| .3890 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0186 | -.0156 | .0090  | -.1091 | -.0296 | .0094  | 0. |
| .3900 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0219 | -.0175 | .0110  | -.1180 | -.0307 | .0034  | 0. |
| .3910 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0244 | -.0190 | .0130  | -.1234 | -.0305 | -.0033 | 0. |

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DIG/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE CKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | DIS    | TYPE   | VA    | VA     | DZ     | RX     | RY     | RZ    | STRESS |
|---------|------|--------|------|----------|---------|----------|--------|--------|-------|--------|--------|--------|--------|-------|--------|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       | DX     | DY     | DZ    | RX     | RY     | RZ     | STRESS | (PSI) |        |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)  | (DEG)  | (DEG)  | (DEG)  | (PSI)  | (PSI) |        |
| .3920   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0260 | -.0200 | .0150 | -.1252 | -.0291 | -.0102 | 0.     |       |        |
| .3930   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0268 | -.0205 | .0169 | -.1235 | -.0267 | -.0174 | 0.     |       |        |
| .3940   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0268 | -.0204 | .0188 | -.1188 | -.0232 | -.0250 | 0.     |       |        |
| .3950   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0262 | -.0198 | .0207 | -.1114 | -.0188 | -.0330 | 0.     |       |        |
| .3960   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0249 | -.0186 | .0225 | -.1015 | -.0137 | -.0405 | 0.     |       |        |
| .3970   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0230 | -.0169 | .0241 | -.0893 | -.0080 | -.0469 | 0.     |       |        |
| .3980   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0206 | -.0148 | .0256 | -.0757 | -.0020 | -.0522 | 0.     |       |        |
| .3990   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0179 | -.0123 | .0268 | -.0612 | .0043  | -.0568 | 0.     |       |        |
| .4000   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0151 | -.0096 | .0279 | -.0466 | .0103  | -.0604 | 0.     |       |        |

MAXIMUM VALUE OF DISCONTINUITY FORCE OCCURS AT

| TIME   | FX   | FY   | FZ   | MX      | MY      | MZ      | DX     | DY     | DZ     | RX     | RY     | RZ     | FORCE |
|--------|------|------|------|---------|---------|---------|--------|--------|--------|--------|--------|--------|-------|
| (SEC)  | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (LB)  |
| 0.0000 | 0.   | 0.   | 0.   | 0.      | 0.      | 0.      | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.    |

| SECTION | 65   | MEMBER | 2    | SEQUENCE | 96      | LOCATION | END    | TYPE   | VA     | VA     | DZ     | RX     | RY     | RZ    | STRESS |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|-------|--------|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS | (PSI) |        |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  | (PSI) |        |
| 0.0000  | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.    |        |
| .0010   | 0.   | -0.    | -0.  | 0.       | -0.     | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | .0000  | 0.    |        |
| .0020   | 0.   | 0.     | -0.  | 0.       | -0.     | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | .0000  | 0.    |        |
| .0030   | 0.   | 0.     | -0.  | 0.       | 0.      | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | .0000  | 0.    |        |
| .0040   | -0.  | -0.    | 0.   | 0.       | 0.      | 0.       | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | .0000  | .0000  | 0.    |        |
| .0050   | -1.  | -0.    | 0.   | 0.       | -0.     | -0.      | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | -.0000 | .0000  | 1.    |        |
| .0060   | -1.  | -1.    | 0.   | 0.       | -1.     | -1.      | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0000 | .0000  | 3.    |        |
| .0070   | -2.  | -1.    | 0.   | 1.       | -2.     | -1.      | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0001 | .0000  | 8.    |        |
| .0080   | -2.  | -1.    | -0.  | 3.       | -6.     | -2.      | -.0001 | .0000  | -.0000 | .0001  | -.0003 | -.0003 | .0000  | 19.   |        |
| .0090   | -1.  | 0.     | -1.  | 5.       | -11.    | -3.      | -.0001 | .0000  | -.0000 | .0001  | -.0006 | -.0005 | .0000  | 37.   |        |
| .0100   | 0.   | 1.     | -3.  | 9.       | -18.    | -5.      | -.0002 | -.0000 | -.0000 | .0002  | -.0010 | -.0009 | .0000  | 63.   |        |
| .0110   | 1.   | 1.     | -5.  | 15.      | -30.    | -8.      | -.0003 | -.0000 | -.0000 | .0003  | -.0015 | -.0013 | .0000  | 104.  |        |
| .0120   | 3.   | 1.     | -8.  | 24.      | -47.    | -12.     | -.0005 | -.0000 | -.0000 | .0004  | -.0022 | -.0020 | .0000  | 164.  |        |
| .0130   | 10.  | 6.     | -14. | 37.      | -71.    | -16.     | -.0009 | -.0001 | -.0000 | .0004  | -.0030 | -.0031 | .0000  | 247.  |        |
| .0140   | 25.  | 18.    | -24. | 55.      | -100.   | -19.     | -.0013 | -.0001 | .0000  | .0004  | -.0041 | -.0046 | .0000  | 352.  |        |
| .0150   | 46.  | 34.    | -35. | 75.      | -134.   | -24.     | -.0019 | -.0002 | .0001  | .0004  | -.0052 | -.0065 | .0000  | 472.  |        |

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DIG/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.42.

S/RV PIPING KEWAUNEE CKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |     |     |      |     |       |      |      |        |        |        |       |        |        |      |
|-------|-----|-----|------|-----|-------|------|------|--------|--------|--------|-------|--------|--------|------|
| .0040 | -0. | -0. | 0.   | 0.  | 0.    | 0.   | 0.   | -0.000 | -0.000 | -0.000 | .0000 | -0.000 | -0.000 | 0.   |
| .0050 | -1. | -0. | 0.   | 0.  | -0.   | -0.  | -0.  | -0.000 | -0.000 | -0.000 | .0000 | -0.000 | -0.000 | 1.   |
| .0060 | -1. | -1. | 0.   | 0.  | -1.   | -1.  | -1.  | -0.000 | .0000  | -0.000 | .0000 | -0.001 | -0.000 | 3.   |
| .0070 | -2. | -1. | 0.   | 1.  | -2.   | -1.  | -1.  | -0.000 | .0000  | -0.000 | .0000 | -0.001 | -0.001 | 8.   |
| .0080 | -2. | -1. | -0.  | 3.  | -2.   | -2.  | -2.  | -0.001 | .0000  | -0.000 | .0001 | -0.003 | -0.003 | 19.  |
| .0090 | -1. | 0.  | -1.  | 5.  | -11.  | -3.  | -3.  | -0.001 | .0000  | -0.000 | .0001 | -0.006 | -0.005 | 37.  |
| .0100 | 0.  | 1.  | -7.  | 7.  | -10.  | -5.  | -5.  | -0.002 | -0.000 | -0.000 | .0002 | -0.010 | -0.009 | 63.  |
| .0110 | 1.  | 1.  | -5.  | 15. | -30.  | -8.  | -8.  | -0.003 | -0.000 | -0.000 | .0003 | -0.015 | -0.013 | 104. |
| .0120 | 3.  | 1.  | -8.  | 24. | -47.  | -12. | -12. | -0.005 | -0.000 | -0.000 | .0004 | -0.022 | -0.020 | 164. |
| .0130 | 10. | 6.  | -14. | 37. | -71.  | -16. | -16. | -0.009 | -0.001 | -0.000 | .0004 | -0.030 | -0.031 | 247. |
| .0140 | 25. | 18. | -24. | 55. | -100. | -19. | -19. | -0.013 | -0.001 | .0000  | .0004 | -0.041 | -0.046 | 353. |
| .0150 | 46. | 34. | -35. | 75. | -134. | -24. | -24. | -0.019 | -0.002 | .0001  | .0004 | -0.052 | -0.065 | 472. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.42.

S/RV PIPING KEWAUNEE CKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65    | MEMBER | 2     | SEQUENCE | 96      | LOCATION | END     | TYPE    | VA      |         |         |         |        |  |  |
|---------|-------|--------|-------|----------|---------|----------|---------|---------|---------|---------|---------|---------|--------|--|--|
| TIME    | FX    | FY     | FZ    | RX       | MY      | MZ       | DX      | DY      | DZ      | RX      | RY      | RZ      | STRESS |  |  |
| (SEC)   | (LB)  | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)    | (IN)    | (IN)    | (DEG)   | (DEG)   | (DEG)   | (PSI)  |  |  |
| .0160   | 65.   | 48.    | -45.  | 95.      | -167.   | -32.     | -0.0025 | -0.0004 | .0001   | .0007   | -0.0064 | -0.0082 | 593.   |  |  |
| .0170   | 79.   | 53.    | -51.  | 109.     | -197.   | -44.     | -0.0032 | -0.0006 | .0001   | .0012   | -0.0075 | -0.0094 | 697.   |  |  |
| .0180   | 84.   | 51.    | -52.  | 115.     | -216.   | -59.     | -0.0037 | -0.0009 | .0000   | .0020   | -0.0081 | -0.0098 | 765.   |  |  |
| .0190   | 85.   | 44.    | -49.  | 110.     | -217.   | -72.     | -0.0043 | -0.0013 | .0000   | .0026   | -0.0079 | -0.0094 | 773.   |  |  |
| .0200   | 81.   | 30.    | -41.  | 91.      | -196.   | -82.     | -0.0047 | -0.0018 | .0000   | .0030   | -0.0067 | -0.0080 | 704.   |  |  |
| .0210   | 69.   | 7.     | -26.  | 56.      | -150.   | -88.     | -0.0050 | -0.0023 | .0001   | .0029   | -0.0041 | -0.0055 | 554.   |  |  |
| .0220   | 45.   | -21.   | -6.   | 7.       | -78.    | -85.     | -0.0051 | -0.0028 | .0003   | .0024   | -0.0003 | -0.0020 | 352.   |  |  |
| .0230   | 9.    | -55.   | 21.   | -50.     | 7.      | -75.     | -0.0050 | -0.0033 | .0005   | .0016   | .0044   | .0022   | 276.   |  |  |
| .0240   | -31.  | -94.   | 50.   | -104.    | 93.     | -62.     | -0.0050 | -0.0036 | .0007   | .0004   | .0091   | .0062   | 464.   |  |  |
| .0250   | -53.  | -105.  | 70.   | -145.    | 170.    | -40.     | -0.0050 | -0.0038 | .0009   | -0.0010 | .0129   | .0092   | 689.   |  |  |
| .0260   | -53.  | -70.   | 78.   | -170.    | 238.    | -3.      | -0.0051 | -0.0039 | .0009   | -0.0017 | .0152   | .0112   | 890.   |  |  |
| .0270   | -68.  | -53.   | 83.   | -198.    | 294.    | 22.      | -0.0048 | -0.0037 | .0006   | -0.0006 | .0154   | .0142   | 1079.  |  |  |
| .0280   | -150. | -130.  | 107.  | -229.    | 318.    | 9.       | -0.0038 | -0.0034 | -0.0002 | .0024   | .0139   | .0195   | 1191.  |  |  |
| .0290   | -244. | -201.  | 135.  | -229.    | 312.    | 9.       | -0.0026 | -0.0029 | -0.0010 | .0051   | .0113   | .0245   | 1178.  |  |  |
| .0300   | -211. | -86.   | 107.  | -194.    | 322.    | 82.      | -0.0020 | -0.0020 | -0.0014 | .0059   | .0085   | .0247   | 1171.  |  |  |
| .0310   | -108. | 32.    | 48.   | -184.    | 360.    | 141.     | -0.0014 | -0.0010 | -0.0018 | .0058   | .0064   | .0235   | 1302.  |  |  |
| .0320   | -119. | -15.   | 43.   | -201.    | 396.    | 155.     | .0004   | .0002   | -0.0023 | .0061   | .0060   | .0269   | 1430.  |  |  |
| .0330   | -238. | -90.   | 94.   | -197.    | 424.    | 199.     | .0032   | .0014   | -0.0029 | .0058   | .0076   | .0334   | 1546.  |  |  |
| .0340   | -270. | -67.   | 108.  | -181.    | 462.    | 274.     | .0055   | .0028   | -0.0030 | .0031   | .0101   | .0353   | 1723.  |  |  |
| .0350   | -145. | 17.    | 50.   | -168.    | 494.    | 324.     | .0066   | .0044   | -0.0026 | -0.0015 | .0118   | .0306   | 1869.  |  |  |
| .0360   | -11.  | 134.   | -15.  | -120.    | 474.    | 373.     | .0075   | .0059   | -0.0025 | -0.0051 | .0113   | .0241   | 1870.  |  |  |
| .0370   | 3.    | 219.   | -39.  | -28.     | 375.    | 415.     | .0094   | .0072   | -0.0031 | -0.0047 | .0076   | .0205   | 1704.  |  |  |
| .0380   | -49.  | 163.   | -46.  | 55.      | 208.    | 370.     | .0118   | .0082   | -0.0043 | -0.0004 | .0008   | .0190   | 1302.  |  |  |
| .0390   | -32.  | 93.    | -78.  | 146.     | 1.      | 278.     | .0133   | .0090   | -0.0055 | .0043   | -0.0075 | .0141   | 954.   |  |  |
| .0400   | 121.  | 267.   | -148. | 299.     | -198.   | 277.     | .0135   | .0095   | -0.0061 | .0060   | -0.0149 | .0023   | 1379.  |  |  |
| .0410   | 337.  | 521.   | -232. | 430.     | -339.   | 307.     | .0132   | .0095   | -0.0064 | .0062   | -0.0191 | -0.0110 | 1910.  |  |  |
| .0420   | 391.  | 440.   | -244. | 436.     | -415.   | 205.     | .0141   | .0088   | -0.0067 | .0075   | -0.0186 | -0.0162 | 1935.  |  |  |
| .0430   | 256.  | 140.   | -155. | 379.     | -443.   | 61.      | .0161   | .0076   | -0.0068 | .0075   | -0.0124 | -0.0138 | 1784.  |  |  |
| .0440   | 161.  | 60.    | -65.  | 355.     | -408.   | 49.      | .0171   | .0060   | -0.0059 | .0021   | -0.0017 | -0.0152 | 1651.  |  |  |
| .0450   | 300.  | 146.   | -77.  | 302.     | -308.   | 56.      | .0157   | .0040   | -0.0039 | -0.0079 | .0100   | -0.0259 | 1323.  |  |  |
| .0460   | 495.  | 113.   | -126. | 196.     | -217.   | -40.     | .0133   | .0018   | -0.0019 | -0.0165 | .0192   | -0.0379 | 898.   |  |  |
| .0470   | 454.  | -17.   | -86.  | 142.     | -224.   | -139.    | .0120   | -0.0008 | -0.0011 | -0.0194 | .0235   | -0.0423 | 911.   |  |  |
| .0480   | 246.  | -165.  | 10.   | 153.     | -323.   | -220.    | .0114   | -0.0035 | -0.0013 | -0.0169 | .0223   | -0.0417 | 1278.  |  |  |
| .0490   | 181.  | -332.  | 29.   | 138.     | -441.   | -380.    | .0091   | -0.0061 | -0.0015 | -0.0129 | .0167   | -0.0455 | 1819.  |  |  |
| .0500   | 316.  | -355.  | -39.  | 126.     | -535.   | -524.    | .0047   | -0.0086 | -0.0011 | -0.0113 | .0098   | -0.0565 | 2309.  |  |  |
| .0510   | 422.  | -189.  | -83.  | 167.     | -598.   | -533.    | .0001   | -0.0108 | -0.0003 | -0.0124 | .0048   | -0.0670 | 2489.  |  |  |
| .0520   | 349.  | -183.  | -53.  | 156.     | -607.   | -550.    | -0.0032 | -0.0128 | .0004   | -0.0134 | .0034   | -0.0685 | 2537.  |  |  |
| .0530   | 175.  | -464.  | 12.   | 19.      | -531.   | -671.    | -0.0056 | -0.0146 | .0013   | -0.0145 | .0059   | -0.0620 | 2605.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.43.

S/RV PIPING KEWAUNEE CKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING

|       |      |       |       |      |       |       |        |        |        |        |        |        |       |
|-------|------|-------|-------|------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .0420 | 391. | 440.  | -244. | 476. | -415. | 205.  | .141   | .0088  | -.0067 | .0075  | -.0186 | -.0162 | 1935. |
| .0430 | 256. | 140.  | -155. | 379. | -443. | 61.   | .161   | .0076  | -.0068 | .0075  | -.0124 | -.0138 | 1784. |
| .0440 | 161. | 60.   | -65.  | 355. | -408. | 49.   | .0171  | .0060  | -.0059 | .0021  | -.0017 | -.0152 | 1651. |
| .0450 | 300. | 146.  | -77.  | 307. | -300. | 56.   | .0157  | .0040  | -.0029 | -.0079 | .0100  | -.0259 | 1323. |
| .0460 | 495. | 113.  | -126. | 197. | -217. | -40.  | .0133  | .0018  | -.0019 | -.0165 | .0192  | -.0379 | 898.  |
| .0470 | 454. | -17.  | -86.  | 142. | -224. | -139. | .0120  | -.0008 | -.0011 | -.0194 | .0235  | -.0423 | 911.  |
| .0480 | 246. | -165. | 10.   | 173. | -327. | -220. | .0114  | -.0035 | -.0013 | -.0169 | .0223  | -.0417 | 1278. |
| .0490 | 181. | -332. | 29.   | 138. | -441. | -380. | .0091  | -.0061 | -.0015 | -.0129 | .0167  | -.0455 | 1819. |
| .0500 | 316. | -355. | -30.  | 176. | -535. | -524. | .0047  | -.0086 | -.0011 | -.0113 | .0098  | -.0565 | 2309. |
| .0510 | 422. | -189. | -87.  | 167. | -598. | -573. | .0001  | -.0108 | -.0003 | -.0124 | .0048  | -.0670 | 2489. |
| .0520 | 349. | -183. | -53.  | 156. | -607. | -550. | -.0032 | -.0128 | .0004  | -.0154 | .0034  | -.0685 | 2537. |
| .0530 | 175. | -464. | 10.   | 19.  | -531. | -671. | -.0056 | -.0146 | .0013  | -.0145 | .0059  | -.0620 | 2605. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.45.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITSINTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65    | MEMBER | 2     | SEQUENCE | 06      | LOCATION | END    | TYPE   | VA     |        |        |        |        |  |  |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX    | FY     | FZ    | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)  | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .0540   | 51.   | -618.  | 56.   | -134.    | -369.   | -710.    | -.0084 | -.0159 | .0029  | -.0197 | .0118  | -.0557 | 2468.  |  |  |
| .0550   | 27.   | -472.  | 54.   | -234.    | -159.   | -592.    | -.0120 | -.0165 | .0052  | -.0289 | .0190  | -.0529 | 1995.  |  |  |
| .0560   | 16.   | -323.  | 21.   | -353.    | 37.     | -514.    | -.0155 | -.0165 | .0074  | -.0369 | .0241  | -.0486 | 1899.  |  |  |
| .0570   | -89.  | -509.  | 1.    | -482.    | 160.    | -527.    | -.0182 | -.0159 | .0088  | -.0400 | .0250  | -.0386 | 2226.  |  |  |
| .0580   | -256. | -514.  | -2.   | -512.    | 190.    | -471.    | -.0201 | -.0146 | .0094  | -.0394 | .0215  | -.0266 | 2193.  |  |  |
| .0590   | -330. | -320.  | -41.  | -454.    | 164.    | -344.    | -.0225 | -.0126 | .0099  | -.0372 | .0140  | -.0184 | 1802.  |  |  |
| .0600   | -261. | -122.  | -133. | -402.    | 131.    | -267.    | -.0255 | -.0101 | .0103  | -.0335 | .0051  | -.0136 | 1522.  |  |  |
| .0610   | -209. | 40.    | -200. | -356.    | 114.    | -198.    | -.0278 | -.0072 | .0105  | -.0285 | -.0025 | -.0065 | 1286.  |  |  |
| .0620   | -311. | 188.   | -170. | -225.    | 126.    | -62.     | -.0281 | -.0041 | .0105  | -.0252 | -.0054 | .0070  | 996.   |  |  |
| .0630   | -478. | 229.   | -114. | -279.    | 196.    | 64.      | -.0271 | -.0010 | .0109  | -.0195 | -.0035 | .0243  | 1056.  |  |  |
| .0640   | -541. | 233.   | -82.  | -317.    | 336.    | 165.     | -.0262 | .0022  | .0120  | -.0193 | .0030  | .0386  | 1491.  |  |  |
| .0650   | -486. | 392.   | -84.  | -331.    | 510.    | 332.     | -.0258 | .0053  | .0138  | -.0226 | .0116  | .0473  | 2107.  |  |  |
| .0660   | -444. | 597.   | -66.  | -304.    | 648.    | 524.     | -.0247 | .0082  | .0154  | -.0251 | .0192  | .0544  | 2699.  |  |  |
| .0670   | -489. | 608.   | -5.   | -268.    | 691.    | 608.     | -.0226 | .0107  | .0160  | -.0220 | .0222  | .0635  | 2918.  |  |  |
| .0680   | -544. | 530.   | 64.   | -186.    | 621.    | 611.     | -.0199 | .0128  | .0154  | -.0129 | .0191  | .0711  | 2710.  |  |  |
| .0690   | -491. | 599.   | 100.  | -7.      | 454.    | 632.     | -.0180 | .0144  | .0142  | -.0011 | .0105  | .0713  | 2366.  |  |  |
| .0700   | -313. | 763.   | 105.  | 227.     | 229.    | 645.     | -.0168 | .0154  | .0128  | .0113  | -.0011 | .0639  | 2195.  |  |  |
| .0710   | -107. | 859.   | 120.  | 446.     | 0.      | 605.     | -.0156 | .0157  | .0112  | .0237  | -.0122 | .0539  | 2286.  |  |  |
| .0720   | 23.   | 849.   | 181.  | 619.     | -177.   | 544.     | -.0134 | .0151  | .0094  | .0353  | -.0195 | .0466  | 2563.  |  |  |
| .0730   | 60.   | 734.   | 288.  | 715.     | -263.   | 475.     | -.0101 | .0137  | .0077  | .0440  | -.0208 | .0429  | 2729.  |  |  |
| .0740   | 76.   | 528.   | 402.  | 718.     | -248.   | 387.     | -.0065 | .0115  | .0066  | .0474  | -.0160 | .0399  | 2595.  |  |  |
| .0750   | 149.  | 367.   | 479.  | 671.     | -153.   | 329.     | -.0033 | .0087  | .0062  | .0449  | -.0068 | .0338  | 2322.  |  |  |
| .0760   | 262.  | 284.   | 514.  | 607.     | -26.    | 306.     | -.0005 | .0054  | .0060  | .0394  | .0034  | .0252  | 2069.  |  |  |
| .0770   | 315.  | 114.   | 541.  | 520.     | 69.     | 233.     | .0025  | .0018  | .0050  | .0355  | .0112  | .0183  | 1745.  |  |  |
| .0780   | 266.  | -167.  | 583.  | 439.     | 78.     | 97.      | .0060  | -.0021 | .0028  | .0353  | .0142  | .0140  | 1387.  |  |  |
| .0790   | 213.  | -362.  | 600.  | 418.     | 0.      | -20.     | .0091  | -.0060 | -.0002 | .0376  | .0119  | .0081  | 1273.  |  |  |
| .0800   | 263.  | -416.  | 544.  | 443.     | -131.   | -112.    | .0110  | -.0096 | -.0036 | .0400  | .0055  | -.0027 | 1445.  |  |  |
| .0810   | 376.  | -453.  | 434.  | 459.     | -278.   | -223.    | .0120  | -.0130 | -.0071 | .0413  | -.0025 | -.0159 | 1769.  |  |  |
| .0820   | 430.  | -500.  | 327.  | 456.     | -403.   | -312.    | .0132  | -.0160 | -.0105 | .0406  | -.0090 | -.0264 | 2081.  |  |  |
| .0830   | 393.  | -541.  | 236.  | 413.     | -458.   | -347.    | .0151  | -.0187 | -.0138 | .0371  | -.0116 | -.0319 | 2153.  |  |  |
| .0840   | 328.  | -646.  | 132.  | 278.     | -410.   | -384.    | .0171  | -.0209 | -.0165 | .0393  | -.0099 | -.0331 | 1908.  |  |  |
| .0850   | 277.  | -789.  | 4.    | 26.      | -271.   | -426.    | .0191  | -.0226 | -.0185 | .0200  | -.0045 | -.0320 | 1548.  |  |  |
| .0860   | 221.  | -829.  | -134. | -145.    | -87.    | -395.    | .0208  | -.0236 | -.0200 | .0071  | .0028  | -.0297 | 1308.  |  |  |
| .0870   | 167.  | -799.  | -278. | -336.    | 94.     | -324.    | .0224  | -.0239 | -.0214 | -.0051 | .0093  | -.0260 | 1447.  |  |  |
| .0880   | 111.  | -841.  | -427. | -523.    | 234.    | -306.    | .0238  | -.0235 | -.0230 | -.0137 | .0129  | -.0203 | 1975.  |  |  |
| .0890   | 52.   | -884.  | -564. | -662.    | 309.    | -304.    | .0250  | -.0224 | -.0249 | -.0182 | .0129  | -.0138 | 2408.  |  |  |
| .0900   | 16.   | -779.  | -685. | -712.    | 329.    | -238.    | .0257  | -.0205 | -.0267 | -.0202 | .0104  | -.0087 | 2493.  |  |  |
| .0910   | 26.   | -612.  | 000.  | -723.    | 327.    | -156.    | .0257  | -.0180 | -.0281 | -.0205 | .0071  | -.0051 | 2459.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.45.

S/RV PIPING KEWAUNEE GKW08F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

## INTERNAL FORCES IN THE PIPING

|       |      |       |       |       |       |       |       |        |        |        |        |        |       |
|-------|------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|-------|
| .0810 | 376. | -453. | 434.  | 459.  | -271. | -223. | .0120 | -.0130 | -.0071 | .0413  | -.0025 | -.0159 | 1769. |
| .0820 | 430. | -500. | 327.  | 456.  | -403. | -312. | .0132 | -.0160 | -.0105 | .0406  | -.0090 | -.0264 | 2081. |
| .0830 | 393. | -541. | 236.  | 413.  | -458. | -347. | .0151 | -.0187 | -.0138 | .0371  | -.0116 | -.0319 | 2153. |
| .0840 | 720. | -646. | 132.  | 278.  | -410. | -384. | .0171 | -.0209 | -.0165 | .0303  | -.0099 | -.0331 | 1908. |
| .0850 | 271. | -709. | 4.    | 66.   | -271. | -426. | .0191 | -.0226 | -.0185 | .0200  | -.0045 | -.0320 | 1548. |
| .0860 | 221. | -829. | -134. | -145. | -87.  | -395. | .0208 | -.0236 | -.0200 | .0071  | .0028  | -.0297 | 1308. |
| .0870 | 167. | -799. | -278. | -376. | 94.   | -324. | .0224 | -.0239 | -.0214 | -.0051 | .0093  | -.0260 | 1447. |
| .0880 | 111. | -841. | -427. | -523. | 234.  | -306. | .0238 | -.0235 | -.0230 | -.0137 | .0129  | -.0203 | 1975. |
| .0890 | 52.  | -884. | -564. | -662. | 309.  | -304. | .0250 | -.0224 | -.0249 | -.0182 | .0129  | -.0138 | 2408. |
| .0900 | 16.  | -779. | -685. | -712. | 329.  | -278. | .0257 | -.0205 | -.0267 | -.0202 | .0104  | -.0087 | 2493. |
| .0910 | 26.  | -612. | -800. | -723. | 327.  | -156. | .0257 | -.0180 | -.0281 | -.0205 | .0071  | -.0051 | 2459. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.43.

S/RV PIPING KEWAUNEE CRKWOFF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITSINTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65    | MEMBER | 2     | SEQUENCE | 06      | LOCATION | END    | TYPE   | VA     |        |        |        |        |  |  |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX    | FY     | FZ    | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)  | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .0920   | 39.   | -524.  | -893. | -748.    | 330.    | -117.    | .0255  | -.0150 | -.0290 | -.0196 | .0047  | -.0008 | 2511.  |  |  |
| .0930   | -7.   | -460.  | -934. | -764.    | 346.    | -58.     | .0254  | -.0115 | -.0291 | -.0188 | .0049  | .0055  | 2558.  |  |  |
| .0940   | -87.  | -350.  | -930. | -756.    | 377.    | 51.      | .0253  | -.0077 | -.0282 | -.0193 | .0075  | .0120  | 2574.  |  |  |
| .0950   | -118. | -243.  | -922. | -747.    | 414.    | 145.     | .0244  | -.0037 | -.0264 | -.0202 | .0109  | .0162  | 2636.  |  |  |
| .0960   | -85.  | -139.  | -916. | -721.    | 427.    | 204.     | .0228  | .0005  | -.0241 | -.0194 | .0128  | .0175  | 2623.  |  |  |
| .0970   | -55.  | 6.     | -876. | -627.    | 374.    | 263.     | .0208  | .0046  | -.0217 | -.0145 | .0113  | .0177  | 2360.  |  |  |
| .0980   | -58.  | 127.   | -786. | -470.    | 230.    | 288.     | .0188  | .0085  | -.0197 | -.0042 | .0057  | .0182  | 1827.  |  |  |
| .0990   | -46.  | 181.   | -667. | -283.    | 42.     | 241.     | .0164  | .0122  | -.0180 | .0107  | -.0033 | .0177  | 1138.  |  |  |
| .1000   | 34.   | 272.   | -541. | -65.     | -168.   | 177.     | .0132  | .0154  | -.0159 | .0271  | -.0136 | .0139  | 768.   |  |  |
| .1010   | 160.  | 436.   | -402. | 168.     | -350.   | 138.     | .0093  | .0183  | -.0133 | .0424  | -.0225 | .0077  | 1253.  |  |  |
| .1020   | 262.  | 538.   | -234. | 357.     | -471.   | 82.      | .0053  | .0205  | -.0102 | .0557  | -.0282 | .0025  | 1814.  |  |  |
| .1030   | 294.  | 515.   | -34.  | 471.     | -514.   | -5.      | .0018  | .0220  | -.0066 | .0667  | -.0301 | .0009  | 2122.  |  |  |
| .1040   | 274.  | 461.   | 181.  | 534.     | -481.   | -73.     | -.0014 | .0229  | -.0025 | .0746  | -.0287 | .0020  | 2197.  |  |  |
| .1050   | 247.  | 420.   | 380.  | 560.     | -390.   | -111.    | -.0047 | .0232  | -.0020 | .0791  | -.0254 | .0037  | 2103.  |  |  |
| .1060   | 224.  | 365.   | 552.  | 554.     | -273.   | -146.    | -.0082 | .0230  | .0065  | .0811  | -.0218 | .0054  | 1932.  |  |  |
| .1070   | 177.  | 309.   | 706.  | 546.     | -162.   | -164.    | -.0115 | .0225  | .0109  | .0818  | -.0191 | .0078  | 1804.  |  |  |
| .1080   | 82.   | 273.   | 853.  | 557.     | -73.    | -147.    | -.0145 | .0216  | .0147  | .0815  | -.0176 | .0111  | 1767.  |  |  |
| .1090   | -34.  | 237.   | 982.  | 570.     | 3.      | -115.    | -.0173 | .0206  | .0181  | .0796  | -.0168 | .0145  | 1768.  |  |  |
| .1100   | -130. | 199.   | 1067. | 554.     | 90.     | -82.     | -.0201 | .0195  | .0212  | .0753  | -.0162 | .0165  | 1725.  |  |  |
| .1110   | -247. | 196.   | 1125. | 536.     | 181.    | -9.      | -.0224 | .0184  | .0241  | .0676  | -.0151 | .0179  | 1721.  |  |  |
| .1120   | -491. | 214.   | 1160. | 516.     | 271.    | 100.     | -.0241 | .0174  | .0266  | .0568  | -.0140 | .0192  | 1800.  |  |  |
| .1130   | -535. | 203.   | 1137. | 456.     | 363.    | 188.     | -.0252 | .0164  | .0288  | .0437  | -.0139 | .0196  | 1864.  |  |  |
| .1140   | -633. | 204.   | 1050. | 372.     | 446.    | 265.     | -.0257 | .0156  | .0303  | .0297  | -.0158 | .0190  | 1940.  |  |  |
| .1150   | -735. | 245.   | 928.  | 306.     | 491.    | 358.     | -.0252 | .0148  | .0309  | .0165  | -.0201 | .0185  | 2068.  |  |  |
| .1160   | -834. | 248.   | 783.  | 246.     | 492.    | 417.     | -.0236 | .0143  | .0305  | .0051  | -.0266 | .0185  | 2099.  |  |  |
| .1170   | -869. | 205.   | 611.  | 175.     | 468.    | 419.     | -.0213 | .0138  | .0294  | -.0052 | -.0335 | .0168  | 1984.  |  |  |
| .1180   | -804. | 272.   | 413.  | 125.     | 449.    | 447.     | -.0186 | .0134  | .0278  | -.0155 | -.0388 | .0117  | 1966.  |  |  |
| .1190   | -710. | 371.   | 230.  | 82.      | 452.    | 487.     | -.0150 | .0132  | .0258  | -.0254 | -.0407 | .0061  | 2038.  |  |  |
| .1200   | -648. | 329.   | 88.   | -14.     | 495.    | 464.     | -.0101 | .0129  | .0234  | -.0342 | -.0379 | .0030  | 2065.  |  |  |
| .1210   | -615. | 212.   | -19.  | -165.    | 587.    | 410.     | -.0039 | .0125  | .0209  | -.0427 | -.0303 | .0017  | 2234.  |  |  |
| .1220   | -600. | 111.   | -100. | -321.    | 692.    | 374.     | .0030  | .0123  | .0184  | -.0518 | -.0194 | -.0001 | 2584.  |  |  |
| .1230   | -549. | 62.    | -195. | -451.    | 766.    | 351.     | .0099  | .0121  | .0160  | -.0601 | -.0083 | -.0046 | 2907.  |  |  |
| .1240   | -449. | -36.   | -213. | -556.    | 759.    | 269.     | .0166  | .0121  | .0134  | -.0652 | -.0002 | -.0122 | 2976.  |  |  |
| .1250   | -322. | -124.  | -426. | -594.    | 638.    | 156.     | .0230  | .0122  | .0104  | -.0658 | .0035  | -.0228 | 2693.  |  |  |
| .1260   | -180. | -76.   | -511. | -522.    | 411.    | 83.      | .0292  | .0125  | .0067  | -.0611 | .0027  | -.0363 | 2039.  |  |  |
| .1270   | -36.  | -56.   | -559. | -400.    | 118.    | -30.     | .0351  | .0128  | .0025  | -.0506 | -.0013 | -.0502 | 1271.  |  |  |
| .1280   | 115.  | -145.  | -572. | -269.    | -175.   | -217.    | .0408  | .0132  | -.0019 | -.0362 | -.0055 | -.0633 | 1221.  |  |  |
| .1290   | 244.  | -255.  | -530. | -191.    | -410.   | -396.    | .0462  | .0138  | -.0057 | -.0225 | -.0065 | -.0754 | 1849.  |  |  |

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ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.43.

S/RV PIPING KEWAUNEE CRKWOFF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

## INTERNAL FORCES IN THE PIPING

|       |       |       |       |       |       |       |        |       |        |        |        |        |       |
|-------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|--------|--------|-------|
| .1190 | -710. | 371.  | 230.  | 82.   | 452.  | 487.  | -.0150 | .0132 | .0258  | -.0254 | -.0407 | .0061  | 2038. |
| .1200 | -640. | 329.  | 80.   | -14.  | 495.  | 464.  | -.0101 | .0129 | .0234  | -.0342 | -.0379 | .0030  | 2065. |
| .1210 | -615. | 212.  | -19.  | -165. | 587.  | 410.  | -.0039 | .0125 | .0209  | -.0427 | -.0503 | .0017  | 2234. |
| .1220 | -600. | 111.  | -100. | -301. | 692.  | 374.  | .0030  | .0123 | .0184  | -.0518 | -.0194 | -.0001 | 2584. |
| .1230 | -540. | 62.   | -195. | -451. | 766.  | 351.  | .0099  | .0121 | .0160  | -.0801 | -.0083 | -.0046 | 2907. |
| .1240 | -440. | -36.  | -213. | -556. | 759.  | 269.  | .0166  | .0121 | .0134  | -.0652 | -.0002 | -.0122 | 2976. |
| .1250 | -322. | -124. | -426. | -594. | 638.  | 156.  | .0230  | .0122 | .0104  | -.0658 | .0035  | -.0228 | 2693. |
| .1260 | -180. | -76.  | -511. | -502. | 411.  | 83.   | .0292  | .0125 | .0067  | -.0611 | .0027  | -.0363 | 2039. |
| .1270 | -36.  | -56.  | -559. | -400. | 118.  | -30.  | .0351  | .0128 | .0025  | -.0506 | -.0013 | -.0502 | 1271. |
| .1280 | 115.  | -145. | -572. | -289. | -175. | -217. | .0408  | .0132 | -.0019 | -.0362 | -.0055 | -.0633 | 1221. |
| .1290 | 244.  | -255. | -530. | -191. | -419. | -396. | .0462  | .0138 | -.0057 | -.0225 | -.0065 | -.0754 | 1849. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.43.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65    | MEMBER | 2     | SEQUENCE | 96      | LOCATION | END    | TYPE   | VA     |        |        |        |        |  |  |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX    | FY     | FZ    | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)  | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .1300   | 367.  | -281.  | -450. | -95.     | -583.   | -495.    | .0511  | .0144  | -.0084 | -.0132 | -.0026 | -.0874 | 2344.  |  |  |
| .1310   | 526.  | -280.  | -386. | -42.     | -648.   | -561.    | .0550  | .0152  | -.0098 | -.0080 | .0049  | -.0996 | 2611.  |  |  |
| .1320   | 701.  | -397.  | -342. | -62.     | -646.   | -677.    | .0581  | .0161  | -.0103 | -.0048 | .0132  | -.1094 | 2852.  |  |  |
| .1330   | 824.  | -510.  | -287. | -90.     | -626.   | -769.    | .0607  | .0172  | -.0105 | -.0018 | .0200  | -.1159 | 3028.  |  |  |
| .1340   | 885.  | -536.  | -216. | -74.     | -633.   | -803.    | .0628  | .0185  | -.0107 | .0026  | .0226  | -.1197 | 3119.  |  |  |
| .1350   | 954.  | -556.  | -172. | -34.     | -682.   | -853.    | .0637  | .0201  | -.0111 | .0100  | .0196  | -.1221 | 3325.  |  |  |
| .1360   | 1058. | -582.  | -168. | 21.      | -768.   | -931.    | .0631  | .0220  | -.0115 | .0199  | .0118  | -.1241 | 3672.  |  |  |
| .1370   | 1134. | -545.  | -153. | 118.     | -875.   | -966.    | .0612  | .0242  | -.0117 | .0293  | .0025  | -.1252 | 3982.  |  |  |
| .1380   | 1171. | -355.  | -116. | 248.     | -952.   | -893.    | .0584  | .0266  | -.0114 | .0360  | -.0055 | -.1252 | 4043.  |  |  |
| .1390   | 1177. | -173.  | -82.  | 323.     | -941.   | -798.    | .0547  | .0292  | -.0105 | .0402  | -.0106 | -.1217 | 3879.  |  |  |
| .1400   | 1099. | -133.  | -45.  | 287.     | -826.   | -734.    | .0510  | .0317  | -.0091 | .0427  | -.0123 | -.1112 | 3472.  |  |  |
| .1410   | 878.  | -132.  | 20.   | 192.     | -634.   | -623.    | .0478  | .0342  | -.0075 | .0422  | -.0107 | -.0936 | 2767.  |  |  |
| .1420   | 568.  | -91.   | 92.   | 87.      | -411.   | -438.    | .0446  | .0367  | -.0048 | .0380  | -.0075 | -.0722 | 1848.  |  |  |
| .1430   | 336.  | 32.    | 91.   | -19.     | -178.   | -222.    | .0403  | .0391  | -.0019 | .0314  | -.0056 | -.0529 | 868.   |  |  |
| .1440   | 215.  | 174.   | 16.   | -126.    | 38.     | -36.     | .0349  | .0416  | .0012  | .0252  | -.0067 | -.0363 | 414.   |  |  |
| .1450   | 69.   | 307.   | -38.  | -196.    | 198.    | 134.     | .0297  | .0438  | .0036  | .0219  | -.0108 | -.0189 | 940.   |  |  |
| .1460   | -163. | 447.   | -25.  | -206.    | 295.    | 317.     | .0253  | .0458  | .0052  | .0220  | -.0169 | .0005  | 1459.  |  |  |
| .1470   | -380. | 534.   | 8.    | -196.    | 362.    | 453.     | .0211  | .0474  | .0063  | .0246  | -.0239 | .0193  | 1864.  |  |  |
| .1480   | -458. | 617.   | -5.   | -196.    | 444.    | 546.     | .0164  | .0487  | .0076  | .0266  | -.0299 | .0332  | 2224.  |  |  |
| .1490   | -456. | 736.   | -32.  | -198.    | 549.    | 648.     | .0116  | .0495  | .0095  | .0253  | -.0329 | .0431  | 2652.  |  |  |
| .1500   | -487. | 866.   | -27.  | -195.    | 667.    | 783.     | .0078  | .0497  | .0117  | .0207  | -.0319 | .0520  | 3183.  |  |  |
| .1510   | -543. | 922.   | -11.  | -219.    | 797.    | 896.     | .0051  | .0493  | .0141  | .0147  | -.0281 | .0612  | 3708.  |  |  |
| .1520   | -582. | 820.   | -7.   | -289.    | 916.    | 916.     | .0031  | .0482  | .0164  | .0093  | -.0230 | .0696  | 4037.  |  |  |
| .1530   | -586. | 718.   | -3.   | -333.    | 981.    | 912.     | .0014  | .0463  | .0186  | .0038  | -.0176 | .0739  | 4198.  |  |  |
| .1540   | -554. | 733.   | 19.   | -282.    | 949.    | 943.     | -.0001 | .0439  | .0205  | -.0015 | -.0130 | .0718  | 4159.  |  |  |
| .1550   | -450. | 788.   | 34.   | -162.    | 820.    | 944.     | -.0019 | .0408  | .0218  | -.0044 | -.0103 | .0633  | 3834.  |  |  |
| .1560   | -292. | 759.   | 41.   | -21.     | 609.    | 848.     | -.0037 | .0370  | .0224  | -.0032 | -.0094 | .0506  | 3177.  |  |  |
| .1570   | -182. | 631.   | 96.   | 142.     | 327.    | 685.     | -.0050 | .0324  | .0223  | .0004  | -.0088 | .0364  | 2350.  |  |  |
| .1580   | -109. | 571.   | 193.  | 347.     | 13.     | 559.     | -.0059 | .0272  | .0218  | .0032  | -.0066 | .0197  | 2001.  |  |  |
| .1590   | 27.   | 553.   | 261.  | 530.     | -276.   | 433.     | -.0071 | .0212  | .0215  | .0035  | -.0025 | -.0009 | 2244.  |  |  |
| .1600   | 216.  | 402.   | 280.  | 624.     | -517.   | 219.     | -.0037 | .0147  | .0215  | .0016  | .0033  | -.0230 | 2553.  |  |  |
| .1610   | 348.  | 180.   | 304.  | 667.     | -722.   | -8.      | -.0099 | .0076  | .0214  | -.0028 | .0111  | -.0434 | 2990.  |  |  |
| .1620   | 417.  | 26.    | 344.  | 704.     | -895.   | -171.    | -.0107 | .0000  | .0212  | -.0096 | .0203  | -.0623 | 3503.  |  |  |
| .1630   | 499.  | -170.  | 360.  | 692.     | -1026.  | -368.    | -.0120 | -.0077 | .0207  | -.0168 | .0291  | -.0809 | 3926.  |  |  |
| .1640   | 647.  | -422.  | 335.  | 621.     | -1110.  | -626.    | -.0141 | -.0155 | .0197  | -.0229 | .0363  | -.0997 | 4313.  |  |  |
| .1650   | 760.  | -630.  | 324.  | 548.     | -1168.  | -857.    | -.0165 | -.0231 | .0180  | -.0276 | .0421  | -.1165 | 4714.  |  |  |
| .1660   | 762.  | -828.  | 360.  | 490.     | -1214.  | -1053.   | -.0187 | -.0304 | .0155  | -.0311 | .0465  | -.1288 | 5102.  |  |  |
| .1670   | 737.  | -1039. | 382.  | 377.     | -1222.  | -1243.   | -.0213 | -.0370 | .0126  | -.0341 | .0491  | -.1381 | 5427.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.43.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING

|       |       |        |      |      |        |        |        |        |       |        |        |        |       |
|-------|-------|--------|------|------|--------|--------|--------|--------|-------|--------|--------|--------|-------|
| .1570 | -182. | 631.   | 96.  | 142. | 327.   | 685.   | -.0050 | .0324  | .0224 | -.0032 | -.0094 | .0364  | 2350. |
| .1580 | -109. | 571.   | 193. | 347. | 17.    | 559.   | -.0059 | .0272  | .0218 | .0032  | -.0066 | .0197  | 2001. |
| .1590 | 27.   | 557.   | 261. | 530. | -276.  | 433.   | -.0071 | .0212  | .0215 | .0035  | -.0025 | -.0009 | 2244. |
| .1600 | 216.  | 402.   | 280. | 624. | -517.  | 219.   | -.0087 | .0147  | .0215 | .0016  | .0033  | -.0230 | 2553. |
| .1610 | 348.  | 100.   | 304. | 617. | -722.  | -8.    | -.0099 | .0076  | .0214 | -.0028 | .0111  | -.0434 | 2990. |
| .1620 | 417.  | 26.    | 344. | 704. | -895.  | -171.  | -.0107 | .0000  | .0212 | -.0096 | .0203  | -.0623 | 3503. |
| .1630 | 499.  | -170.  | 360. | 692. | -1026. | -368.  | -.0120 | -.0077 | .0207 | -.0168 | .0291  | -.0809 | 3926. |
| .1640 | 647.  | -422.  | 335. | 621. | -1110. | -626.  | -.0141 | -.0155 | .0197 | -.0229 | .0363  | -.0997 | 4313. |
| .1650 | 760.  | -630.  | 324. | 548. | -1168. | -857.  | -.0165 | -.0231 | .0180 | -.0276 | .0421  | -.1165 | 4714. |
| .1660 | 762.  | -828.  | 360. | 400. | -1214. | -1053. | -.0187 | -.0304 | .0155 | -.0311 | .0465  | -.1288 | 5102. |
| .1670 | 732.  | -1039. | 382. | 377. | -1222. | -1243. | -.0213 | -.0370 | .0126 | -.0341 | .0491  | -.1381 | 5427. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.45.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 05     | MEMBER | 2      | SEQUENCE | 96      | LOCATION | END    | TYPE   | VA     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .1680   | 733.   | -1235. | 342.   | 226.     | -1176.  | -1424.   | -.0248 | -.0427 | .0097  | -.0378 | .0497  | -.1459 | 5659.  |  |  |
| .1690   | 711.   | -1336. | 261.   | 56.      | -1081.  | -1526.   | -.0286 | -.0473 | .0068  | -.0431 | .0484  | -.1507 | 5691.  |  |  |
| .1700   | 589.   | -1397. | 176.   | -128.    | -958.   | -1554.   | -.0321 | -.0506 | .0038  | -.0492 | .0454  | -.1495 | 5566.  |  |  |
| .1710   | 385.   | -1498. | 81.    | -344.    | -808.   | -1558.   | -.0351 | -.0525 | .0005  | -.0543 | .0403  | -.1416 | 5441.  |  |  |
| .1720   | 182.   | -1540. | -53.   | -568.    | -626.   | -1513.   | -.0381 | -.0529 | -.0029 | -.0579 | .0331  | -.1295 | 5273.  |  |  |
| .1730   | -22.   | -1520. | -196.  | -774.    | -429.   | -1415.   | -.0409 | -.0516 | -.0064 | -.0603 | .0248  | -.1139 | 5077.  |  |  |
| .1740   | -236.  | -1415. | -320.  | -976.    | -231.   | -1247.   | -.0433 | -.0487 | -.0099 | -.0619 | .0164  | -.0954 | 4795.  |  |  |
| .1750   | -429.  | -1215. | -436.  | -1053.   | -26.    | -1014.   | -.0454 | -.0441 | -.0133 | -.0623 | .0085  | -.0746 | 4448.  |  |  |
| .1760   | -584.  | -1002. | -556.  | -1153.   | 189.    | -766.    | -.0469 | -.0380 | -.0165 | -.0609 | .0013  | -.0514 | 4250.  |  |  |
| .1770   | -721.  | -774.  | -668.  | -1235.   | 412.    | -499.    | -.0477 | -.0306 | -.0195 | -.0580 | -.0048 | -.0255 | 4242.  |  |  |
| .1780   | -868.  | -515.  | -753.  | -1284.   | 626.    | -195.    | -.0473 | -.0222 | -.0220 | -.0547 | -.0092 | .0026  | 4386.  |  |  |
| .1790   | -983.  | -194.  | -834.  | -1294.   | 824.    | 147.     | -.0460 | -.0130 | -.0239 | -.0510 | -.0123 | .0310  | 4688.  |  |  |
| .1800   | -1026. | 120.   | -928.  | -1280.   | 996.    | 472.     | -.0442 | -.0032 | -.0252 | -.0464 | -.0144 | .0581  | 5137.  |  |  |
| .1810   | -1025. | 385.   | -1005. | -1228.   | 1113.   | 757.     | -.0419 | .0066  | -.0259 | -.0404 | -.0153 | .0832  | 5543.  |  |  |
| .1820   | -987.  | 721.   | -1038. | -1093.   | 1163.   | 1064.    | -.0390 | .0163  | -.0261 | -.0355 | -.0145 | .1044  | 5835.  |  |  |
| .1830   | -899.  | 1082.  | -1024. | -885.    | 1145.   | 1355.    | -.0360 | .0253  | -.0260 | -.0247 | -.0121 | .1208  | 6032.  |  |  |
| .1840   | -751.  | 1367.  | -968.  | -642.    | 1067.   | 1563.    | -.0329 | .0333  | -.0256 | -.0134 | -.0084 | .1321  | 6080.  |  |  |
| .1850   | -581.  | 1580.  | -860.  | -366.    | 930.    | 1701.    | -.0298 | .0399  | -.0249 | -.0002 | -.0030 | .1386  | 6001.  |  |  |
| .1860   | -425.  | 1764.  | -688.  | -49.     | 737.    | 1804.    | -.0266 | .0448  | -.0239 | .0131  | .0039  | .1402  | 5929.  |  |  |
| .1870   | -246.  | 1923.  | -494.  | 279.     | 508.    | 1863.    | -.0239 | .0477  | -.0224 | .0254  | .0117  | .1356  | 5935.  |  |  |
| .1880   | -26.   | 1969.  | -307.  | 574.     | 256.    | 1823.    | -.0219 | .0485  | -.0204 | .0366  | .0195  | .1250  | 5864.  |  |  |
| .1890   | 199.   | 1930.  | -119.  | 839.     | -13.    | 1707.    | -.0206 | .0470  | -.0181 | .0465  | .0266  | .1098  | 5787.  |  |  |
| .1900   | 384.   | 1841.  | 90.    | 1087.    | -295.   | 1549.    | -.0197 | .0431  | -.0157 | .0550  | .0329  | .0911  | 5826.  |  |  |
| .1910   | 541.   | 1655.  | 313.   | 1290.    | -573.   | 1318.    | -.0195 | .0370  | -.0135 | .0622  | .0383  | .0697  | 5875.  |  |  |
| .1920   | 711.   | 1389.  | 523.   | 1432.    | -817.   | 1014.    | -.0203 | .0289  | -.0115 | .0681  | .0428  | .0453  | 5887.  |  |  |
| .1930   | 869.   | 1072.  | 723.   | 1514.    | -1012.  | 667.     | -.0221 | .0190  | -.0096 | .0716  | .0469  | .0192  | 5898.  |  |  |
| .1940   | 965.   | 709.   | 926.   | 1574.    | -1149.  | 306.     | -.0245 | .0076  | -.0079 | .0716  | .0514  | -.0064 | 5903.  |  |  |
| .1950   | 1001.  | 308.   | 1107.  | 1478.    | -1215.  | -58.     | -.0276 | -.0047 | -.0063 | .0672  | .0561  | -.0308 | 5823.  |  |  |
| .1960   | 1009.  | -107.  | 1226.  | 1375.    | -1202.  | -416.    | -.0314 | -.0177 | -.0047 | .0582  | .0599  | -.0536 | 5609.  |  |  |
| .1970   | 974.   | -521.  | 1271.  | 1112.    | -1124.  | -751.    | -.0359 | -.0306 | -.0032 | .0447  | .0620  | -.0736 | 5324.  |  |  |
| .1980   | 855.   | -916.  | 1256.  | 873.     | -1007.  | -1043.   | -.0405 | -.0432 | -.0019 | .0277  | .0612  | -.0891 | 5086.  |  |  |
| .1990   | 657.   | -1266. | 1177.  | 522.     | -875.   | -1277.   | -.0452 | -.0548 | -.0010 | .0084  | .0567  | -.0996 | 4969.  |  |  |
| .2000   | 426.   | -1552. | 1021.  | 195.     | -734.   | -1458.   | -.0500 | -.0650 | -.0006 | -.0120 | .0483  | -.1058 | 5001.  |  |  |
| .2010   | 189.   | -1754. | 797.   | -173.    | -588.   | -1580.   | -.0550 | -.0734 | -.0006 | -.0330 | .0368  | -.1082 | 5143.  |  |  |
| .2020   | -72.   | -1849. | 538.   | -444.    | -431.   | -1619.   | -.0596 | -.0798 | -.0009 | -.0541 | .0238  | -.1059 | 5272.  |  |  |
| .2030   | -369.  | -1852. | 268.   | -736.    | -255.   | -1572.   | -.0636 | -.0839 | -.0014 | -.0750 | .0109  | -.0980 | 5335.  |  |  |
| .2040   | -687.  | -1808. | -12.   | -1025.   | -44.    | -1463.   | -.0666 | -.0857 | -.0020 | -.0953 | -.0005 | -.0841 | 5435.  |  |  |
| .2050   | -999.  | -1721. | -302.  | -1310.   | 202.    | -1298.   | -.0686 | -.0852 | -.0022 | -.1152 | -.0100 | -.0653 | 5642.  |  |  |

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ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.45.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

|       |       |        |       |        |        |        |        |        |        |        |        |        |       |
|-------|-------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| .1950 | 1001. | 308.   | 1107. | 1478.  | -1715. | -58.   | -.0276 | -.0047 | -.0063 | .0672  | .0561  | -.0308 | 5823. |
| .1960 | 1009. | -107.  | 1226. | 1371.  | -1202. | -416.  | -.314  | -.0177 | -.0047 | .0582  | .0599  | -.0536 | 5609. |
| .1970 | 974.  | -521.  | 1271. | 1112.  | -1124. | -751.  | -.0359 | -.0306 | -.0032 | .0447  | .0620  | -.0736 | 5324. |
| .1980 | 855.  | -916.  | 1256. | 873.   | -1007. | -1043. | -.0405 | -.0432 | -.0019 | .0277  | .0612  | -.0891 | 5086. |
| .1990 | 657.  | -1266. | 1177. | 572.   | -975.  | -1277. | -.0452 | -.0548 | -.0010 | .0084  | .0567  | -.0996 | 4969. |
| .2000 | 426.  | -1552. | 1021. | 105.   | -734.  | -1458. | -.0500 | -.0650 | -.0006 | -.0120 | .0483  | -.1058 | 5001. |
| .2010 | 189.  | -1754. | 797.  | -173.  | -588.  | -1580. | -.0550 | -.0734 | -.0006 | -.0330 | .0368  | -.1082 | 5143. |
| .2020 | -72.  | -1849. | 538.  | -444.  | -431.  | -1619. | -.0596 | -.0798 | -.0009 | -.0541 | .0238  | -.1059 | 5272. |
| .2030 | -369. | -1852. | 268.  | -736.  | -255.  | -1572. | -.0636 | -.0839 | -.0014 | -.0750 | .0109  | -.0980 | 5335. |
| .2040 | -687. | -1808. | -12.  | -1025. | -44.   | -1463. | -.0666 | -.0857 | -.0020 | -.0953 | -.0005 | -.0841 | 5435. |
| .2050 | -999. | -1721. | -302. | -1310. | 202.   | -1298. | -.0686 | -.0852 | -.0022 | -.1152 | -.0100 | -.0653 | 5642. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.43.

S/RV PIPING KEWAUNEE CKMOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 2      | SEQUENCE | 96      | LOCATION | END    | TYPE   | VA     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .2060   | -1285. | -1546. | -598.  | -1566.   | 468.    | -1056.   | -.0696 | -.0823 | -.0020 | -.1347 | -.0173 | -.0430 | 5920.  |  |  |
| .2070   | -1532. | -1284. | -890.  | -1776.   | 731.    | -748.    | -.0695 | -.0773 | -.0012 | -.1527 | -.0232 | -.0184 | 6268.  |  |  |
| .2080   | -1725. | -992.  | -1167. | -1331.   | 961.    | -422.    | -.0684 | -.0703 | -.0002 | -.1667 | -.0286 | .0076  | 6686.  |  |  |
| .2090   | -1862. | -692.  | -1408. | -2014.   | 1132.   | -103.    | -.0663 | -.0618 | .0010  | -.1746 | -.0343 | .0340  | 7034.  |  |  |
| .2100   | -1938. | -358.  | -1587. | -1995.   | 1222.   | 213.     | -.0632 | -.0520 | .0021  | -.1757 | -.0402 | .0589  | 7145.  |  |  |
| .2110   | -1932. | 15.    | -1681. | -1865.   | 1229.   | 518.     | -.0594 | -.0414 | .0033  | -.1698 | -.0457 | .0806  | 6974.  |  |  |
| .2120   | -1828. | 392.   | -1703. | -1642.   | 1165.   | 785.     | -.0551 | -.0303 | .0047  | -.1570 | -.0499 | .0979  | 6573.  |  |  |
| .2130   | -1645. | 737.   | -1640. | -1348.   | 1047.   | 1003.    | -.0503 | -.0192 | .0063  | -.1382 | -.0516 | .1110  | 6021.  |  |  |
| .2140   | -1425. | 1033.  | -1481. | -1002.   | 893.    | 1177.    | -.0449 | -.0086 | .0082  | -.1148 | -.0500 | .1207  | 5431.  |  |  |
| .2150   | -1186. | 1263.  | -1234. | -629.    | 722.    | 1305.    | -.0389 | .0011  | .0106  | -.0882 | -.0445 | .1273  | 4923.  |  |  |
| .2160   | -914.  | 1415.  | -925.  | -254.    | 544.    | 1373.    | -.0327 | .0097  | .0133  | -.0594 | -.0358 | .1302  | 4559.  |  |  |
| .2170   | -611.  | 1492.  | -574.  | 114.     | 360.    | 1378.    | -.0263 | .0169  | .0164  | -.0290 | -.0248 | .1291  | 4346.  |  |  |
| .2180   | -304.  | 1499.  | -185.  | 479.     | 155.    | 1326.    | -.0201 | .0225  | .0194  | .0024  | -.0127 | .1243  | 4314.  |  |  |
| .2190   | -2.    | 1450.  | 234.   | 845.     | -76.    | 1219.    | -.0140 | .0265  | .0222  | .0347  | -.0006 | .1159  | 4517.  |  |  |
| .2200   | 309.   | 1355.  | 660.   | 1201.    | -328.   | 1055.    | -.0086 | .0287  | .0245  | .0673  | .0103  | .1037  | 4964.  |  |  |
| .2210   | 626.   | 1223.  | 1072.  | 1532.    | -583.   | 838.     | -.0039 | .0293  | .0262  | .0992  | .0198  | .0881  | 5599.  |  |  |
| .2220   | 911.   | 1050.  | 1465.  | 1818.    | -823.   | 585.     | .0002  | .0284  | .0272  | .1289  | .0278  | .0709  | 6326.  |  |  |
| .2230   | 1133.  | 837.   | 1824.  | 2039.    | -1025.  | 315.     | .0039  | .0260  | .0276  | .1544  | .0348  | .0540  | 7007.  |  |  |
| .2240   | 1292.  | 589.   | 2118.  | 2170.    | -1163.  | 43.      | .0071  | .0225  | .0276  | .1736  | .0409  | .0382  | 7490.  |  |  |
| .2250   | 1407.  | 327.   | 2315.  | 2196.    | -1221.  | -215.    | .0096  | .0180  | .0273  | .1848  | .0459  | .0234  | 7672.  |  |  |
| .2260   | 1457.  | 76.    | 2405.  | 2121.    | -1200.  | -438.    | .0115  | .0129  | .0268  | .1872  | .0494  | .0105  | 7533.  |  |  |
| .2270   | 1433.  | -156.  | 2393.  | 1959.    | -1113.  | -615.    | .0130  | .0074  | .0258  | .1817  | .0505  | .0004  | 7105.  |  |  |
| .2280   | 1329.  | -375.  | 2284.  | 1723.    | -980.   | -752.    | .0141  | .0018  | .0242  | .1697  | .0484  | -.0062 | 6449.  |  |  |
| .2290   | 1160.  | -573.  | 2083.  | 1433.    | -817.   | -851.    | .0148  | -.0037 | .0218  | .1525  | .0424  | -.0099 | 5647.  |  |  |
| .2300   | 947.   | -713.  | 1798.  | 1115.    | -637.   | -898.    | .0151  | -.0087 | .0187  | .1307  | .0328  | -.0114 | 4767.  |  |  |
| .2310   | 701.   | -776.  | 1443.  | 786.     | -447.   | -883.    | .0151  | -.0132 | .0152  | .1050  | .0202  | -.0113 | 3844.  |  |  |
| .2320   | 429.   | -703.  | 1029.  | 446.     | -245.   | -815.    | .0148  | -.0170 | .0113  | .0757  | .0058  | -.0094 | 2922.  |  |  |
| .2330   | 130.   | -761.  | 571.   | 92.      | -29.    | -703.    | .0145  | -.0199 | .0073  | .0436  | -.0094 | -.0052 | 2158.  |  |  |
| .2340   | -187.  | -712.  | 88.    | -269.    | 205.    | -548.    | .0145  | -.0220 | .0035  | .0093  | -.0239 | .0011  | 1959.  |  |  |
| .2350   | -508.  | -636.  | -402.  | -628.    | 452.    | -354.    | .0150  | -.0233 | .0001  | -.0263 | -.0370 | .0091  | 2588.  |  |  |
| .2360   | -809.  | -542.  | -982.  | -971.    | 701.    | -138.    | .0158  | -.0239 | -.0028 | -.0616 | -.0478 | .0177  | 3666.  |  |  |
| .2370   | -1068. | -443.  | -1328. | -1279.   | 934.    | 77.      | .0171  | -.0237 | -.0052 | -.0946 | -.0563 | .0261  | 4824.  |  |  |
| .2380   | -1277. | -342.  | -1714. | -1529.   | 1129.   | 279.     | .0188  | -.0228 | -.0072 | -.1233 | -.0621 | .0333  | 5844.  |  |  |
| .2390   | -1424. | -238.  | -2014. | -1699.   | 1266.   | 455.     | .0209  | -.0215 | -.0088 | -.1460 | -.0653 | .0382  | 6592.  |  |  |
| .2400   | -1489. | -133.  | -2220. | -1778.   | 1334.   | 590.     | .0223  | -.0197 | -.0101 | -.1616 | -.0659 | .0399  | 6996.  |  |  |
| .2410   | -1462. | -34.   | -2328. | -1768.   | 1331.   | 672.     | .0258  | -.0176 | -.0108 | -.1695 | -.0638 | .0377  | 7035.  |  |  |
| .2420   | -1356. | 45.    | -2334. | -1674.   | 1258.   | 697.     | .0285  | -.0154 | -.0111 | -.1697 | -.0592 | .0319  | 6713.  |  |  |
| .2430   | -1192. | 89.    | -2239. | -1507.   | 1119.   | 665.     | .0315  | -.0130 | -.0109 | -.1626 | -.0520 | .0231  | 6058.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.43.

S/RV PIPING KEWAUNEE CKMOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS



|       |        |       |        |        |       |       |       |        |        |        |        |        |       |
|-------|--------|-------|--------|--------|-------|-------|-------|--------|--------|--------|--------|--------|-------|
| .2330 | 130.   | -761. | 571.   | 92.    | -29.  | -703. | .145  | -.0199 | .0073  | .0436  | -.0094 | -.0052 | 2158. |
| .2340 | -187.  | -712. | 88.    | -269.  | 205.  | -548. | .0145 | -.0220 | .0035  | .0093  | -.0239 | .0011  | 1959. |
| .2350 | -500.  | -636. | -402.  | -628.  | 452.  | -354. | .0150 | -.0233 | .0001  | -.0263 | -.0370 | .0091  | 2588. |
| .2360 | -800.  | -542. | -882.  | -971.  | 701.  | -138. | .0158 | -.0239 | -.0028 | -.0616 | -.0478 | .0177  | 3666. |
| .2370 | -1060. | -443. | -1328. | -1279. | 934.  | 77.   | .0171 | -.0237 | -.0052 | -.0946 | -.0563 | .0261  | 4824. |
| .2380 | -1277. | -342. | -1714. | -1529. | 1129. | 279.  | .0188 | -.0228 | -.0072 | -.1233 | -.0621 | .0333  | 5844. |
| .2390 | -1424. | -238. | -2014. | -1699. | 1266. | 455.  | .0209 | -.0215 | -.0088 | -.1460 | -.0653 | .0382  | 6592. |
| .2400 | -1489. | -133. | -2220. | -1778. | 1334. | 590.  | .0233 | -.0197 | -.0101 | -.1616 | -.0659 | .0399  | 6996. |
| .2410 | -1462. | -34.  | -2320. | -1768. | 1331. | 672.  | .0258 | -.0176 | -.0108 | -.1695 | -.0638 | .0377  | 7035. |
| .2420 | -1356. | 45.   | -2334. | -1674. | 1258. | 697.  | .0285 | -.0154 | -.0111 | -.1697 | -.0592 | .0319  | 6713. |
| .2430 | -1192. | 89.   | -2239. | -1507. | 1119. | 665.  | .0315 | -.0130 | -.0109 | -.1626 | -.0520 | .0231  | 6058. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITSINTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 2      | SEQUENCE | 96      | LOCATION | END   | TYPE   | VA     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|-------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX    | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)  | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .2440   | -972.  | 97.    | -2052. | -1280.   | 926.    | 578.     | .0346 | -.0108 | -.0100 | -.1492 | -.0424 | .0114  | 5117.  |  |  |
| .2450   | -694.  | 74.    | -1791. | -1005.   | 689.    | 439.     | .0376 | -.0086 | -.0085 | -.1303 | -.0305 | -.0032 | 3941.  |  |  |
| .2460   | -365.  | 30.    | -1464. | -689.    | 420.    | 259.     | .0403 | -.0066 | -.0065 | -.1067 | -.0170 | -.0204 | 2578.  |  |  |
| .2470   | -10.   | -31.   | -1074. | -339.    | 125.    | 47.      | .0426 | -.0047 | -.0041 | -.0790 | -.0024 | -.0393 | 1110.  |  |  |
| .2480   | 350.   | -116.  | -631.  | 31.      | -183.   | -194.    | .0446 | -.0030 | -.0016 | -.0477 | .0127  | -.0587 | 816.   |  |  |
| .2490   | 702.   | -223.  | -153.  | 407.     | -491.   | -455.    | .0461 | -.0014 | .0008  | -.0139 | .0275  | -.0777 | 2384.  |  |  |
| .2500   | 1037.  | -336.  | 336.   | 774.     | -785.   | -719.    | .0469 | .0002  | .0032  | .0206  | .0412  | -.0958 | 4004.  |  |  |
| .2510   | 1735.  | -430.  | 809.   | 1119.    | -1047.  | -962.    | .0469 | .0017  | .0054  | .0539  | .0533  | -.1123 | 5503.  |  |  |
| .2520   | 1593.  | -503.  | 1236.  | 1417.    | -1260.  | -1171.   | .0462 | .0033  | .0075  | .0843  | .0630  | -.1262 | 6780.  |  |  |
| .2530   | 1787.  | -566.  | 1599.  | 1647.    | -1408.  | -1342.   | .0448 | .0050  | .0093  | .1105  | .0699  | -.1359 | 7754.  |  |  |
| .2540   | 1893.  | -622.  | 1885.  | 1798.    | -1484.  | -1463.   | .0429 | .0069  | .0108  | .1318  | .0736  | -.1403 | 8372.  |  |  |
| .2550   | 1904.  | -659.  | 2086.  | 1867.    | -1483.  | -1523.   | .0407 | .0091  | .0119  | .1471  | .0740  | -.1389 | 8607.  |  |  |
| .2560   | 1837.  | -658.  | 2191.  | 1859.    | -1405.  | -1514.   | .0379 | .0116  | .0125  | .1560  | .0710  | -.1326 | 8454.  |  |  |
| .2570   | 1710.  | -605.  | 2195.  | 1781.    | -1254.  | -1475.   | .0346 | .0145  | .0127  | .1583  | .0648  | -.1218 | 7935.  |  |  |
| .2580   | 1523.  | -502.  | 2105.  | 1641.    | -1039.  | -1171.   | .0310 | .0178  | .0123  | .1544  | .0556  | -.1070 | 7087.  |  |  |
| .2590   | 1266.  | -364.  | 1934.  | 1447.    | -772.   | -1011.   | .0273 | .0214  | .0112  | .1451  | .0438  | -.0878 | 5967.  |  |  |
| .2600   | 946.   | -202.  | 1691.  | 1204.    | -464.   | -816.    | .0237 | .0252  | .0096  | .1309  | .0298  | -.0648 | 4643.  |  |  |
| .2610   | 588.   | -14.   | 1378.  | 921.     | -127.   | -510.    | .0204 | .0293  | .0076  | .1121  | .0141  | -.0393 | 3227.  |  |  |
| .2620   | 217.   | 204.   | 998.   | 611.     | 228.    | -169.    | .0175 | .0333  | .0053  | .0893  | -.0027 | -.0128 | 2048.  |  |  |
| .2630   | -154.  | 438.   | 570.   | 284.     | 582.    | 193.     | .0150 | .0373  | .0028  | .0635  | -.0198 | .0138  | 2057.  |  |  |
| .2640   | -522.  | 665.   | 120.   | -43.     | 919.    | 556.     | .0132 | .0410  | .0002  | .0364  | -.0366 | .0398  | 3263.  |  |  |
| .2650   | -869.  | 868.   | -327.  | -356.    | 1221.   | 898.     | .0123 | .0443  | -.0025 | .0095  | -.0523 | .0640  | 4736.  |  |  |
| .2660   | -1160. | 1048.  | -750.  | -637.    | 1477.   | 1205.    | .0122 | .0470  | -.0054 | -.0155 | -.0660 | .0849  | 6113.  |  |  |
| .2670   | -1398. | 1206.  | -1125. | -870.    | 1675.   | 1464.    | .0129 | .0489  | -.0082 | -.0375 | -.0772 | .1011  | 7266.  |  |  |
| .2680   | -1553. | 1321.  | -1433. | -1046.   | 1806.   | 1658.    | .0145 | .0500  | -.0110 | -.0551 | -.0852 | .1120  | 8109.  |  |  |
| .2690   | -1634. | 1375.  | -1659. | -1163.   | 1865.   | 1774.    | .0170 | .0500  | -.0137 | -.0677 | -.0897 | .1175  | 8590.  |  |  |
| .2700   | -1636. | 1365.  | -1798. | -1218.   | 1849.   | 1808.    | .0204 | .0490  | -.0162 | -.0748 | -.0905 | .1173  | 8697.  |  |  |
| .2710   | -1550. | 1300.  | -1854. | -1215.   | 1765.   | 1763.    | .0245 | .0469  | -.0184 | -.0766 | -.0877 | .1109  | 8441.  |  |  |
| .2720   | -1376. | 1179.  | -1829. | -1160.   | 1618.   | 1638.    | .0293 | .0437  | -.0202 | -.0733 | -.0815 | .0986  | 7842.  |  |  |
| .2730   | -1133. | 988.   | -1724. | -1059.   | 1413.   | 1432.    | .0346 | .0396  | -.0216 | -.0647 | -.0723 | .0813  | 6915.  |  |  |
| .2740   | -844.  | 728.   | -1537. | -914.    | 1152.   | 1154.    | .0404 | .0346  | -.0227 | -.0510 | -.0605 | .0602  | 5687.  |  |  |
| .2750   | -510.  | 423.   | -1278. | -737.    | 846.    | 820.     | .0464 | .0289  | -.0234 | -.0331 | -.0467 | .0355  | 4211.  |  |  |
| .2760   | -124.  | 106.   | -968.  | -504.    | 508.    | 448.     | .0522 | .0228  | -.0239 | -.0119 | -.0316 | .0074  | 2569.  |  |  |
| .2770   | 298.   | -213.  | -621.  | -257.    | 154.    | 53.      | .0576 | .0165  | -.0242 | .0119  | -.0157 | -.0228 | 925.   |  |  |
| .2780   | 712.   | -546.  | -249.  | -1.      | -203.   | -353.    | .0628 | .0103  | -.0243 | .0372  | .0002  | -.0526 | 1239.  |  |  |
| .2790   | 1087.  | -889.  | 135.   | 248.     | -550.   | -750.    | .0675 | .0044  | -.0243 | .0626  | .0154  | -.0803 | 2928.  |  |  |
| .2800   | 1427.  | -1203. | 499.   | 477.     | -865.   | -1112.   | .0716 | -.0010 | -.0241 | .0863  | .0293  | -.1053 | 4525.  |  |  |
| .2810   | 1730.  | -1456. | 809.   | 673.     | -1132.  | -1417.   | .0747 | -.0056 | -.0236 | .1066  | .0416  | -.1272 | 5884.  |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

|       |        |        |        |        |        |        |       |        |        |        |        |        |       |
|-------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|-------|
| .2710 | -1550. | 1100.  | -1854. | -1215. | 1765.  | 1763.  | .0245 | .0449  | -.0184 | -.0766 | -.0877 | .1109  | 8441. |
| .2720 | -1776. | 1179.  | -1829. | -1100. | 1618.  | 1638.  | .0293 | .0437  | -.0202 | -.0733 | -.0815 | .0916  | 7842. |
| .2730 | -1130. | 988.   | -1724. | -1059. | 1413.  | 1422.  | .0346 | .0396  | -.0216 | -.0647 | -.0723 | .0513  | 6915. |
| .2740 | -844.  | 728.   | -1537. | -914.  | 1152.  | 1154.  | .0404 | .0346  | -.0227 | -.0510 | -.0605 | .0502  | 5687. |
| .2750 | -510.  | 423.   | -1278. | -707.  | 846.   | 820.   | .0464 | .0289  | -.0234 | -.0331 | -.0467 | .0355  | 4211. |
| .2760 | -124.  | 106.   | -968.  | -504.  | 507.   | 448.   | .0522 | .0228  | -.0239 | -.0119 | -.0316 | .0074  | 2569. |
| .2770 | 290.   | -213.  | -611.  | -257.  | 154.   | 53.    | .0576 | .0165  | -.0242 | .0119  | -.0157 | -.0228 | 925.  |
| .2780 | 712.   | -546.  | -249.  | -1.    | -203.  | -353.  | .0628 | .0103  | -.0243 | .0372  | .0002  | -.0526 | 1239. |
| .2790 | 1087.  | -889.  | 135.   | 248.   | -550.  | -750.  | .0675 | .0044  | -.0243 | .0626  | .0154  | -.0803 | 2928. |
| .2800 | 1423.  | -1203. | 499.   | 477.   | -865.  | -1112. | .0716 | -.0010 | -.0241 | .0863  | .0295  | -.1053 | 4525. |
| .2810 | 1730.  | -1456. | 809.   | 673.   | -1132. | -1417. | .0747 | -.0056 | -.0236 | .1066  | .0416  | -.1272 | 5884. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | MEMBER | SEQUENCE | LOCATION | END    | TYPE   | VA     | TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | P1 (DEG) | STRESS (PSI) |
|---------|--------|----------|----------|--------|--------|--------|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| .2820   | 1985.  | -1653.   | 1051.    | 823.   | -1342. | -1656. | .0768      | -.0091  | -.0229  | .1227   | .0512      | -.1445     | 6951.      |         |         |         |          |          |          |              |
| .2830   | 2152.  | -1807.   | 1226.    | 923.   | -1494. | -1826. | .0780      | -.0114  | -.0221  | .1342   | .0578      | -.1558     | 7707.      |         |         |         |          |          |          |              |
| .2840   | 2223.  | -1900.   | 1333.    | 976.   | -1589. | -1914. | .0782      | -.0125  | -.0212  | .1409   | .0610      | -.1605     | 8127.      |         |         |         |          |          |          |              |
| .2850   | 2226.  | -1901.   | 1355.    | 984.   | -1622. | -1913. | .0771      | -.0122  | -.0203  | .1424   | .0605      | -.1595     | 8195.      |         |         |         |          |          |          |              |
| .2860   | 2177.  | -1808.   | 1287.    | 949.   | -1592. | -1830. | .0747      | -.0106  | -.0195  | .1391   | .0562      | -.1534     | 7922.      |         |         |         |          |          |          |              |
| .2870   | 2054.  | -1647.   | 1144.    | 869.   | -1507. | -1673. | .0710      | -.0077  | -.0187  | .1315   | .0482      | -.1414     | 7341.      |         |         |         |          |          |          |              |
| .2880   | 1840.  | -1433.   | 944.     | 749.   | -1370. | -1446. | .0665      | -.0037  | -.0180  | .1197   | .0373      | -.1232     | 6474.      |         |         |         |          |          |          |              |
| .2890   | 1556.  | -1165.   | 689.     | 590.   | -1182. | -1155. | .0611      | .0012   | -.0171  | .1041   | .0242      | -.0999     | 5338.      |         |         |         |          |          |          |              |
| .2900   | 1240.  | -847.    | 378.     | 390.   | -939.  | -816.  | .0547      | .0068   | -.0161  | .0849   | .0094      | -.0732     | 3964.      |         |         |         |          |          |          |              |
| .2910   | 897.   | -501.    | 32.      | 155.   | -648.  | -443.  | .0475      | .0128   | -.0148  | .0629   | -.0059     | -.0437     | 2433.      |         |         |         |          |          |          |              |
| .2920   | 512.   | -152.    | -316.    | -101.  | -325.  | -50.   | .0399      | .0190   | -.0132  | .0394   | -.0211     | -.0119     | 1047.      |         |         |         |          |          |          |              |
| .2930   | 96.    | 180.     | -644.    | -365.  | 11.    | 342.   | .0321      | .0251   | -.0114  | .0157   | -.0355     | .0211      | 1522.      |         |         |         |          |          |          |              |
| .2940   | -312.  | 487.     | -941.    | -622.  | 345.   | 712.   | .0240      | .0308   | -.0093  | -.0067  | -.0489     | .0531      | 3061.      |         |         |         |          |          |          |              |
| .2950   | -678.  | 776.     | -1195.   | -852.  | 660.   | 1046.  | .0156      | .0360   | -.0070  | -.0268  | -.0609     | .0821      | 4569.      |         |         |         |          |          |          |              |
| .2960   | -990.  | 1041.    | -1387.   | -1038. | 934.   | 1337.  | .0072      | .0403   | -.0045  | -.0435  | -.0714     | .1069      | 5882.      |         |         |         |          |          |          |              |
| .2970   | -1278. | 1258.    | -1501.   | -1172. | 1153.  | 1570.  | -.0009     | .0438   | -.0018  | -.0558  | -.0800     | .1274      | 6915.      |         |         |         |          |          |          |              |
| .2980   | -1507. | 1401.    | -1533.   | -1255. | 1311.  | 1726.  | -.0086     | .0461   | .0009   | -.0632  | -.0866     | .1430      | 7619.      |         |         |         |          |          |          |              |
| .2990   | -1669. | 1477.    | -1488.   | -1287. | 1409.  | 1805.  | -.0158     | .0474   | .0039   | -.0660  | -.0906     | .1530      | 7990.      |         |         |         |          |          |          |              |
| .3000   | -1751. | 1507.    | -1369.   | -1264. | 1449.  | 1820.  | -.0224     | .0475   | .0071   | -.0649  | -.0917     | .1566      | 8054.      |         |         |         |          |          |          |              |
| .3010   | -1756. | 1491.    | -1180.   | -1101. | 1437.  | 1772.  | -.0283     | .0465   | .0106   | -.0603  | -.0895     | .1541      | 7828.      |         |         |         |          |          |          |              |
| .3020   | -1697. | 1406.    | -925.    | -1078. | 1374.  | 1655.  | -.0333     | .0444   | .0142   | -.0522  | -.0841     | .1464      | 7318.      |         |         |         |          |          |          |              |
| .3030   | -1586. | 1252.    | -610.    | -929.  | 1263.  | 1473.  | -.0372     | .0415   | .0177   | -.0409  | -.0757     | .1343      | 6543.      |         |         |         |          |          |          |              |
| .3040   | -1423. | 1063.    | -250.    | -740.  | 1106.  | 1248.  | -.0401     | .0378   | .0212   | -.0275  | -.0647     | .1178      | 5549.      |         |         |         |          |          |          |              |
| .3050   | -1201. | 870.     | 134.     | -516.  | 910.   | 994.   | -.0422     | .0336   | .0244   | -.0126  | -.0518     | .0972      | 4390.      |         |         |         |          |          |          |              |
| .3060   | -929.  | 673.     | 518.     | -270.  | 682.   | 717.   | -.0435     | .0291   | .0273   | .0029   | -.0377     | .0733      | 3120.      |         |         |         |          |          |          |              |
| .3070   | -641.  | 461.     | 891.     | -15.   | 426.   | 426.   | -.0440     | .0244   | .0297   | .0183   | -.0231     | .0481      | 1832.      |         |         |         |          |          |          |              |
| .3080   | -363.  | 246.     | 1239.    | 239.   | 152.   | 139.   | -.0475     | .0197   | .0316   | .0325   | -.0086     | .0228      | 959.       |         |         |         |          |          |          |              |
| .3090   | -93.   | 61.      | 1538.    | 480.   | -123.  | -123.  | -.0423     | .0152   | .0330   | .0439   | .0055      | -.0023     | 1553.      |         |         |         |          |          |          |              |
| .3100   | 175.   | -81.     | 1765.    | 692.   | -382.  | -350.  | -.0407     | .0110   | .0339   | .0516   | .0186      | -.0267     | 2630.      |         |         |         |          |          |          |              |
| .3110   | 420.   | -193.    | 1912.    | 862.   | -612.  | -541.  | -.0387     | .0073   | .0342   | .0552   | .0303      | -.0491     | 3614.      |         |         |         |          |          |          |              |
| .3120   | 604.   | -285.    | 1990.    | 984.   | -810.  | -690.  | -.0363     | .0040   | .0338   | .0547   | .0403      | -.0679     | 4410.      |         |         |         |          |          |          |              |
| .3130   | 720.   | -347.    | 1995.    | 1057.  | -970.  | -789.  | -.0335     | .0013   | .0327   | .0500   | .0483      | -.0828     | 4981.      |         |         |         |          |          |          |              |
| .3140   | 794.   | -366.    | 1917.    | 1078.  | -1084. | -839.  | -.0308     | -.0009  | .0308   | .0409   | .0538      | -.0944     | 5303.      |         |         |         |          |          |          |              |
| .3150   | 837.   | -338.    | 1754.    | 1043.  | -1147. | -843.  | -.0283     | -.0026  | .0284   | .0279   | .0565      | -.1030     | 5370.      |         |         |         |          |          |          |              |
| .3160   | 829.   | -278.    | 1521.    | 957.   | -1163. | -805.  | -.0260     | -.0039  | .0253   | .0115   | .0563      | -.1078     | 5193.      |         |         |         |          |          |          |              |
| .3170   | 751.   | -204.    | 1237.    | 819.   | -1132. | -729.  | -.0238     | -.0048  | .0215   | -.0075  | .0535      | -.1084     | 4795.      |         |         |         |          |          |          |              |
| .3180   | 619.   | -128.    | 906.     | 671.   | -1054. | -627.  | -.0219     | -.0055  | .0173   | -.0286  | .0481      | -.1051     | 4196.      |         |         |         |          |          |          |              |
| .3190   | 458.   | -46.     | 535.     | 396.   | -929.  | -506.  | -.0203     | -.0059  | .0129   | -.0513  | .0407      | -.0991     | 3437.      |         |         |         |          |          |          |              |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |      |       |       |       |        |       |        |        |       |        |       |        |       |
|-------|------|-------|-------|-------|--------|-------|--------|--------|-------|--------|-------|--------|-------|
| .3090 | -91. | 61.   | 1530. | 480.  | -123.  | -123. | -.0425 | .0197  | .0310 | .0439  | .0055 | -.0023 | 1553. |
| .3100 | 175. | -81.  | 1765. | 692.  | -382.  | -350. | -.0407 | .0110  | .0339 | .0516  | .0186 | -.0267 | 2630. |
| .3110 | 420. | -123. | 1912. | 862.  | -617.  | -541. | -.0387 | .0073  | .0342 | .0552  | .0303 | -.0491 | 3614. |
| .3120 | 604. | -205. | 1990. | 914.  | -810.  | -670. | -.0363 | .0040  | .0338 | .0547  | .0403 | -.0679 | 4410. |
| .3130 | 720. | -347. | 1995. | 1057. | -970.  | -739. | -.0325 | .0013  | .0327 | .0500  | .0483 | -.0828 | 4981. |
| .3140 | 794. | -366. | 1917. | 1077. | -1084. | -839. | -.0308 | -.0009 | .0308 | .0409  | .0538 | -.0944 | 5303. |
| .3150 | 837. | -338. | 1754. | 1043. | -1147. | -843. | -.0283 | -.0026 | .0284 | .0279  | .0565 | -.1030 | 5370. |
| .3160 | 829. | -278. | 1521. | 957.  | -1163. | -805. | -.0260 | -.0039 | .0253 | .0115  | .0563 | -.1078 | 5193. |
| .3170 | 751. | -204. | 1237. | 819.  | -1132. | -729. | -.0238 | -.0048 | .0215 | -.0075 | .0535 | -.1084 | 4795. |
| .3180 | 619. | -128. | 906.  | 671.  | -1054. | -627. | -.0219 | -.0055 | .0175 | -.0286 | .0481 | -.1051 | 4196. |
| .3190 | 458. | -46.  | 535.  | 356.  | -929.  | -506. | -.0203 | -.0059 | .0129 | -.0513 | .0407 | -.0991 | 3437. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 2      | SEQUENCE | 96      | LOCATION | END    | TYPE   | VA     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .3200   | 280.   | 51.    | 139.   | 129.     | -761.   | -367.    | -.0192 | -.0062 | .0083  | -.0748 | .0317  | -.0910 | 2601.  |  |  |
| .3210   | 81.    | 149.   | -257.  | -158.    | -563.   | -216.    | -.0184 | -.0065 | .0037  | -.0981 | .0219  | -.0810 | 1895.  |  |  |
| .3220   | -140.  | 223.   | -632.  | -455.    | -344.   | -71.     | -.0178 | -.0067 | -.0009 | -.1197 | .0116  | -.0692 | 1749.  |  |  |
| .3230   | -364.  | 267.   | -973.  | -749.    | -110.   | 58.      | -.0173 | -.0070 | -.0054 | -.1386 | .0014  | -.0562 | 2314.  |  |  |
| .3240   | -571.  | 303.   | -1269. | -1021.   | 104.    | 173.     | -.0172 | -.0074 | -.0096 | -.1543 | -.0081 | -.0453 | 3167.  |  |  |
| .3250   | -745.  | 342.   | -1511. | -1256.   | 312.    | 277.     | -.0172 | -.0078 | -.0134 | -.1662 | -.0166 | -.0314 | 4027.  |  |  |
| .3260   | -885.  | 366.   | -1691. | -1448.   | 496.    | 359.     | -.0173 | -.0082 | -.0167 | -.1738 | -.0237 | -.0203 | 4784.  |  |  |
| .3270   | -996.  | 358.   | -1802. | -1594.   | 647.    | 410.     | -.0172 | -.0087 | -.0195 | -.1765 | -.0290 | -.0100 | 5380.  |  |  |
| .3280   | -1075. | 328.   | -1838. | -1685.   | 758.    | 436.     | -.0170 | -.0091 | -.0216 | -.1745 | -.0321 | -.0006 | 5774.  |  |  |
| .3290   | -1106. | 298.   | -1806. | -1713.   | 828.    | 445.     | -.0166 | -.0094 | -.0230 | -.1680 | -.0330 | .0071  | 5943.  |  |  |
| .3300   | -1076. | 274.   | -1713. | -1678.   | 855.    | 435.     | -.0161 | -.0096 | -.0236 | -.1573 | -.0316 | .0127  | 5880.  |  |  |
| .3310   | -992.  | 242.   | -1562. | -1583.   | 837.    | 403.     | -.0153 | -.0097 | -.0236 | -.1425 | -.0281 | .0167  | 5584.  |  |  |
| .3320   | -875.  | 200.   | -1352. | -1428.   | 772.    | 353.     | -.0142 | -.0096 | -.0230 | -.1238 | -.0226 | .0196  | 5053.  |  |  |
| .3330   | -725.  | 161.   | -1091. | -1214.   | 662.    | 294.     | -.0129 | -.0093 | -.0219 | -.1020 | -.0154 | .0214  | 4301.  |  |  |
| .3340   | -529.  | 140.   | -800.  | -952.    | 518.    | 231.     | -.0114 | -.0089 | -.0203 | -.0782 | -.0069 | .0216  | 3371.  |  |  |
| .3350   | -290.  | 135.   | -497.  | -655.    | 349.    | 165.     | -.0100 | -.0084 | -.0182 | -.0532 | .0024  | .0205  | 2313.  |  |  |
| .3360   | -38.   | 135.   | -186.  | -337.    | 162.    | 99.      | -.0084 | -.0078 | -.0158 | -.0277 | .0122  | .0190  | 1178.  |  |  |
| .3370   | 200.   | 131.   | 127.   | -11.     | -33.    | 39.      | -.0068 | -.0073 | -.0133 | -.0027 | .0221  | .0182  | 161.   |  |  |
| .3380   | 425.   | 129.   | 425.   | 308.     | -227.   | -11.     | -.0051 | -.0069 | -.0106 | .0209  | .0315  | .0178  | 1164.  |  |  |
| .3390   | 645.   | 138.   | 687.   | 608.     | -406.   | -50.     | -.0038 | -.0066 | -.0079 | .0423  | .0399  | .0175  | 2229.  |  |  |
| .3400   | 846.   | 157.   | 909.   | 879.     | -564.   | -75.     | -.0028 | -.0067 | -.0053 | .0607  | .0469  | .0177  | 3184.  |  |  |
| .3410   | 1002.  | 175.   | 1091.  | 1113.    | -698.   | -86.     | -.0022 | -.0071 | -.0030 | .0760  | .0522  | .0190  | 4003.  |  |  |
| .3420   | 1103.  | 183.   | 1232.  | 1300.    | -802.   | -84.     | -.0018 | -.0080 | -.0010 | .0880  | .0555  | .0218  | 4653.  |  |  |
| .3430   | 1157.  | 179.   | 1320.  | 1431.    | -869.   | -74.     | -.0019 | -.0095 | .0005  | .0963  | .0567  | .0259  | 5099.  |  |  |
| .3440   | 1169.  | 173.   | 1351.  | 1503.    | -893.   | -54.     | -.0024 | -.0115 | .0016  | .1005  | .0559  | .0308  | 5319.  |  |  |
| .3450   | 1133.  | 165.   | 1328.  | 1513.    | -871.   | -19.     | -.0035 | -.0141 | .0023  | .1004  | .0531  | .0367  | 5311.  |  |  |
| .3460   | 1047.  | 144.   | 1254.  | 1459.    | -804.   | 24.      | -.0048 | -.0173 | .0025  | .0962  | .0486  | .0437  | 5069.  |  |  |
| .3470   | 903.   | 95.    | 1133.  | 1340.    | -694.   | 67.      | -.0065 | -.0210 | .0023  | .0884  | .0426  | .0520  | 4595.  |  |  |
| .3480   | 724.   | 28.    | 969.   | 1163.    | -546.   | 109.     | -.0083 | -.0253 | .0016  | .0773  | .0353  | .0610  | 3921.  |  |  |
| .3490   | 520.   | -43.   | 767.   | 941.     | -368.   | 153.     | -.0104 | -.0299 | .0005  | .0633  | .0270  | .0701  | 3109.  |  |  |
| .3500   | 302.   | -115.  | 538.   | 687.     | -170.   | 196.     | -.0125 | -.0349 | -.0009 | .0473  | .0179  | .0788  | 2235.  |  |  |
| .3510   | 77.    | -199.  | 290.   | 411.     | 36.     | 227.     | -.0146 | -.0400 | -.0027 | .0304  | .0084  | .0871  | 1432.  |  |  |
| .3520   | -152.  | -297.  | 37.    | 124.     | 241.    | 245.     | -.0164 | -.0451 | -.0048 | .0134  | -.0012 | .0949  | 1111.  |  |  |
| .3530   | -374.  | -376.  | -211.  | -158.    | 434.    | 254.     | -.0179 | -.0501 | -.0071 | -.0031 | -.0104 | .1018  | 1605.  |  |  |
| .3540   | -572.  | -486.  | -448.  | -425.    | 611.    | 255.     | -.0189 | -.0548 | -.0095 | -.0186 | -.0188 | .1073  | 2393.  |  |  |
| .3550   | -735.  | -568.  | -668.  | -668.    | 767.    | 245.     | -.0195 | -.0591 | -.0118 | -.0325 | -.0259 | .1111  | 3183.  |  |  |
| .3560   | -864.  | -651.  | -861.  | -880.    | 896.    | 222.     | -.0195 | -.0629 | -.0141 | -.0442 | -.0315 | .1136  | 3880.  |  |  |
| .3570   | -966.  | -732.  | -1015. | -1052.   | 990.    | 190.     | -.0186 | -.0660 | -.0163 | -.0532 | -.0353 | .1148  | 4432.  |  |  |

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ADLPIPE STRESS ANALYSIS

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18.29.43.

S/RV PIPING KEWAUNEE GKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |        |        |       |      |        |        |        |        |        |       |       |
|-------|-------|-------|--------|--------|-------|------|--------|--------|--------|--------|--------|-------|-------|
| .3470 | 903.  | 95.   | 1133.  | 1340.  | -694. | 67.  | -.0065 | -.0210 | .0023  | .0884  | .0426  | .0520 | 4595. |
| .3480 | 724.  | 28.   | 969.   | 1163.  | -546. | 109. | -.0083 | -.0253 | .0016  | .0773  | .0353  | .0610 | 3921. |
| .3490 | 520.  | -43.  | 767.   | 941.   | -368. | 153. | -.0104 | -.0299 | .0005  | .0633  | .0270  | .0701 | 3109. |
| .3500 | 302.  | -115. | 538.   | 697.   | -170. | 196. | -.0125 | -.0349 | -.0009 | .0473  | .0179  | .0788 | 2235. |
| .3510 | 77.   | -199. | 290.   | 411.   | 36.   | 227. | -.0146 | -.0400 | -.0027 | .0304  | .0084  | .0871 | 1432. |
| .3520 | -152. | -297. | 37.    | 124.   | 241.  | 245. | -.0164 | -.0451 | -.0046 | .0134  | -.0012 | .0949 | 1111. |
| .3530 | -374. | -396. | -211.  | -158.  | 434.  | 254. | -.0179 | -.0501 | -.0071 | -.0031 | -.0104 | .1018 | 1605. |
| .3540 | -572. | -486. | -448.  | -425.  | 611.  | 255. | -.0189 | -.0548 | -.0095 | -.0186 | -.0188 | .1073 | 2393. |
| .3550 | -739. | -568. | -668.  | -668.  | 767.  | 245. | -.0195 | -.0591 | -.0118 | -.0325 | -.0259 | .1111 | 3183. |
| .3560 | -864. | -651. | -861.  | -860.  | 896.  | 222. | -.0195 | -.0629 | -.0141 | -.0442 | -.0315 | .1136 | 3880. |
| .3570 | -966. | -732. | -1015. | -1052. | 990.  | 190. | -.0186 | -.0660 | -.0163 | -.0532 | -.0353 | .1148 | 4432. |

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ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FRW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65     | MEMBER | 2      | SEQUENCE | 06      | LOCATION | END | TYPE   | VA     |        |        |        |        |        |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       |     | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| .3580   | -1020. | -804.  | -1126. | -1175.   | 1046.   | 151.     |     | -.0170 | -.0683 | -.0182 | -.0592 | -.0372 | .1145  | 4806.  |
| .3590   | -1036. | -857.  | -1197. | -1243.   | 1061.   | 105.     |     | -.0148 | -.0697 | -.0199 | -.0619 | -.0372 | .1122  | 4981.  |
| .3600   | -987.  | -889.  | -1226. | -1252.   | 1035.   | 53.      |     | -.0120 | -.0703 | -.0213 | -.0610 | -.0357 | .1078  | 4943.  |
| .3610   | -896.  | -907.  | -1205. | -1201.   | 965.    | -3.      |     | -.0085 | -.0699 | -.0224 | -.0565 | -.0326 | .1021  | 4686.  |
| .3620   | -773.  | -914.  | -1134. | -1093.   | 855.    | -63.     |     | -.0044 | -.0687 | -.0233 | -.0483 | -.0282 | .0953  | 4225.  |
| .3630   | -612.  | -909.  | -1022. | -935.    | 712.    | -125.    |     | .0002  | -.0666 | -.0239 | -.0370 | -.0227 | .0876  | 3595.  |
| .3640   | -412.  | -883.  | -877.  | -775.    | 548.    | -184.    |     | .0051  | -.0636 | -.0241 | -.0234 | -.0161 | .0787  | 2843.  |
| .3650   | -185.  | -839.  | -706.  | -503.    | 370.    | -236.    |     | .0101  | -.0600 | -.0239 | -.0080 | -.0087 | .0693  | 2030.  |
| .3660   | 50.    | -785.  | -511.  | -249.    | 188.    | -279.    |     | .0153  | -.0557 | -.0235 | .0085  | -.0007 | .0600  | 1274.  |
| .3670   | 281.   | -729.  | -300.  | 13.      | 8.      | -316.    |     | .0205  | -.0509 | -.0227 | .0254  | .0077  | .0513  | 961.   |
| .3680   | 506.   | -668.  | -85.   | 276.     | -162.   | -343.    |     | .0254  | -.0458 | -.0217 | .0421  | .0160  | .0431  | 1428.  |
| .3690   | 722.   | -591.  | 124.   | 532.     | -319.   | -358.    |     | .0299  | -.0404 | -.0205 | .0579  | .0238  | .0354  | 2179.  |
| .3700   | 919.   | -498.  | 320.   | 776.     | -458.   | -358.    |     | .0338  | -.0349 | -.0192 | .0722  | .0307  | .0283  | 2950.  |
| .3710   | 1084.  | -398.  | 496.   | 998.     | -580.   | -347.    |     | .0370  | -.0295 | -.0178 | .0846  | .0362  | .0221  | 3667.  |
| .3720   | 1209.  | -300.  | 647.   | 1190.    | -680.   | -328.    |     | .0395  | -.0242 | -.0165 | .0948  | .0400  | .0172  | 4288.  |
| .3730   | 1291.  | -200.  | 765.   | 1346.    | -756.   | -300.    |     | .0411  | -.0192 | -.0151 | .1021  | .0422  | .0134  | 4784.  |
| .3740   | 1332.  | -90.   | 844.   | 1461.    | -801.   | -259.    |     | .0418  | -.0146 | -.0137 | .1059  | .0426  | .0106  | 5130.  |
| .3750   | 1331.  | 23.    | 882.   | 1529.    | -812.   | -208.    |     | .0415  | -.0106 | -.0123 | .1060  | .0415  | .0088  | 5304.  |
| .3760   | 1282.  | 128.   | 879.   | 1543.    | -787.   | -152.    |     | .0402  | -.0071 | -.0109 | .1024  | .0391  | .0081  | 5289.  |
| .3770   | 1181.  | 215.   | 842.   | 1505.    | -724.   | -93.     |     | .0382  | -.0044 | -.0095 | .0950  | .0355  | .0088  | 5087.  |
| .3780   | 1034.  | 289.   | 773.   | 1417.    | -627.   | -32.     |     | .0353  | -.0023 | -.0081 | .0841  | .0311  | .0105  | 4714.  |
| .3790   | 856.   | 355.   | 672.   | 1285.    | -498.   | 30.      |     | .0316  | -.0010 | -.0067 | .0699  | -.0260 | .0126  | 4194.  |
| .3800   | 657.   | 414.   | 546.   | 1116.    | -343.   | 89.      |     | .0272  | -.0005 | -.0053 | .0530  | .0203  | .0147  | 3563.  |
| .3810   | 436.   | 456.   | 403.   | 918.     | -171.   | 141.     |     | .0223  | -.0006 | -.0039 | .0342  | .0141  | .0169  | 2874.  |
| .3820   | 192.   | 474.   | 253.   | 700.     | 7.      | 181.     |     | .0171  | -.0013 | -.0025 | .0142  | .0076  | .0191  | 2199.  |
| .3830   | -60.   | 474.   | 102.   | 471.     | 184.    | 210.     |     | .0116  | -.0026 | -.0010 | -.0064 | .0008  | .0209  | 1665.  |
| .3840   | -300.  | 467.   | -51.   | 241.     | 356.    | 229.     |     | .0059  | -.0043 | .0004  | -.0271 | -.0060 | .0216  | 1481.  |
| .3850   | -521.  | 453.   | -196.  | 19.      | 515.    | 236.     |     | .0002  | -.0064 | .0020  | -.0472 | -.0125 | .0211  | 1724.  |
| .3860   | -725.  | 424.   | -324.  | -187.    | 656.    | 230.     |     | -.0052 | -.0087 | .0037  | -.0660 | -.0184 | .0196  | 2188.  |
| .3870   | -911.  | 377.   | -426.  | -371.    | 772.    | 209.     |     | -.0102 | -.0111 | .0054  | -.0828 | -.0233 | .0174  | 2683.  |
| .3880   | -1066. | 319.   | -498.  | -525.    | 862.    | 176.     |     | -.0147 | -.0134 | .0071  | -.0973 | -.0271 | .0141  | 3116.  |
| .3890   | -1177. | 262.   | -542.  | -643.    | 922.    | 133.     |     | -.0186 | -.0156 | .0090  | -.1091 | -.0296 | .0094  | 3442.  |
| .3900   | -1240. | 212.   | -557.  | -720.    | 949.    | 82.      |     | -.0219 | -.0175 | .0110  | -.1180 | -.0307 | .0034  | 3632.  |
| .3910   | -1261. | 165.   | -539.  | -753.    | 941.    | 24.      |     | -.0244 | -.0190 | .0130  | -.1234 | -.0305 | -.0033 | 3666.  |
| .3920   | -1248. | 113.   | -488.  | -745.    | 895.    | -44.     |     | -.0260 | -.0200 | .0150  | -.1252 | -.0291 | -.0102 | 3544.  |
| .3930   | -1197. | 61.    | -409.  | -695.    | 813.    | -119.    |     | -.0268 | -.0205 | .0169  | -.1235 | -.0267 | -.0174 | 3274.  |
| .3940   | -1101. | 28.    | -309.  | -603.    | 700.    | -192.    |     | -.0268 | -.0204 | .0188  | -.1188 | -.0232 | -.0250 | 2871.  |
| .3950   | -962.  | 20.    | -194.  | -474.    | 559.    | -260.    |     | -.0262 | -.0198 | .0207  | -.1114 | -.0188 | -.0330 | 2366.  |

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ADLPIPE STRESS ANALYSIS

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18.29.43.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FRW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |      |       |       |      |       |        |        |       |        |        |        |       |
|-------|--------|------|-------|-------|------|-------|--------|--------|-------|--------|--------|--------|-------|
| .3850 | -521.  | 453. | -196. | 19.   | 515. | 236.  | .0002  | -.0064 | .0020 | -.0472 | -.0125 | .0211  | 1724. |
| .3860 | -725.  | 424. | -324. | -187. | 656. | 230.  | -.0052 | -.0087 | .0037 | -.0660 | -.0184 | .0196  | 2188. |
| .3870 | -911.  | 377. | -426. | -371. | 772. | 209.  | -.0102 | -.0111 | .0054 | -.0828 | -.0233 | .0174  | 2683. |
| .3880 | -1066. | 319. | -498. | -575. | 862. | 176.  | -.0147 | -.0134 | .0071 | -.0973 | -.0271 | .0141  | 3116. |
| .3890 | -1177. | 262. | -542. | -643. | 922. | 133.  | -.0186 | -.0156 | .0090 | -.1091 | -.0296 | .0094  | 3442. |
| .3900 | -1240. | 212. | -557. | -720. | 949. | 82.   | -.0219 | -.0175 | .0110 | -.1180 | -.0307 | .0034  | 3632. |
| .3910 | -1261. | 165. | -539. | -753. | 941. | 24.   | -.0244 | -.0190 | .0130 | -.1234 | -.0305 | -.0033 | 3666. |
| .3920 | -1248. | 113. | -488. | -745. | 895. | -44.  | -.0260 | -.0200 | .0150 | -.1252 | -.0291 | -.0102 | 3544. |
| .3930 | -1197. | 61.  | -409. | -695. | 813. | -119. | -.0268 | -.0205 | .0169 | -.1235 | -.0267 | -.0174 | 3274. |
| .3940 | -1101. | 28.  | -300. | -603. | 700. | -192. | -.0268 | -.0204 | .0188 | -.1188 | -.0232 | -.0250 | 2871. |
| .3950 | -962.  | 20.  | -194. | -474. | 559. | -260. | -.0262 | -.0198 | .0207 | -.1114 | -.0188 | -.0330 | 2366. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 65    | MEMBER | 2    | SEQUENCE | 96      | LOCATION | END    | TYPE   | VA    |        |        |        |        |  |  |
|---------|-------|--------|------|----------|---------|----------|--------|--------|-------|--------|--------|--------|--------|--|--|
| TIME    | FX    | FY     | FZ   | MX       | MY      | MZ       | DX     | DY     | DZ    | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)  | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)  | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .3960   | -793. | 23.    | -65. | -317.    | 397.    | -325.    | -.0249 | -.0186 | .0225 | -.1015 | -.0137 | -.0405 | 1835.  |  |  |
| .3970   | -612. | 24.    | 75.  | -140.    | 218.    | -388.    | -.0230 | -.0169 | .0241 | -.0893 | -.0080 | -.0469 | 1420.  |  |  |
| .3980   | -423. | 34.    | 222. | 53.      | 29.     | -443.    | -.0206 | -.0148 | .0256 | -.0757 | -.0020 | -.0522 | 1361.  |  |  |
| .3990   | -221. | 67.    | 363. | 255.     | -162.   | -483.    | -.0179 | -.0123 | .0268 | -.0612 | .0043  | -.0568 | 1733.  |  |  |
| .4000   | -9.   | 118.   | 491. | 455.     | -346.   | -510.    | -.0151 | -.0096 | .0279 | -.0466 | .0103  | -.0604 | 2330.  |  |  |

MAXIMUM VALUE OF STRESS OCCURS AT

| TIME  | FX     | FY    | FZ     | MX      | MY      | MZ      | DX    | DY    | DZ     | RX     | RY     | RZ    | STRESS |
|-------|--------|-------|--------|---------|---------|---------|-------|-------|--------|--------|--------|-------|--------|
| (SEC) | (LB)   | (LB)  | (LB)   | (FT-LB) | (FT-LB) | (FT-LB) | (IN)  | (IN)  | (IN)   | (DEG)  | (DEG)  | (DEG) | (PSI)  |
| .2700 | -1636. | 1365. | -1798. | -1218.  | 1849.   | 1808.   | .0204 | .0490 | -.0162 | -.0748 | -.0905 | .1173 | 8697.  |

| SECTION | 66    | MEMBER | 1    | SEQUENCE | 96      | LOCATION | BEG    | TYPE   | VA     |        |        |        |        |  |  |
|---------|-------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX    | FY     | FZ   | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)  | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| 0.0000  | 0.    | 0.     | 0.   | 0.       | 0.      | 0.       | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.     |  |  |
| .0010   | -0.   | -0.    | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | 0.     |  |  |
| .0020   | -0.   | -0.    | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | 0.     |  |  |
| .0030   | -0.   | -0.    | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | .0000  | 0.     |  |  |
| .0040   | -0.   | -0.    | 0.   | 0.       | 0.      | 0.       | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | .0000  | 0.     |  |  |
| .0050   | -0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | -.0000 | 1.     |  |  |
| .0060   | -1.   | 0.     | 0.   | 0.       | 0.      | 1.       | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0000 | 3.     |  |  |
| .0070   | -3.   | -0.    | 1.   | 1.       | 0.      | 2.       | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0001 | 7.     |  |  |
| .0080   | -6.   | -2.    | 2.   | 1.       | 0.      | 5.       | -.0001 | .0000  | -.0000 | .0001  | -.0003 | -.0003 | 15.    |  |  |
| .0090   | -10.  | -5.    | 3.   | 2.       | 0.      | 9.       | -.0001 | .0000  | -.0000 | .0001  | -.0006 | -.0005 | 27.    |  |  |
| .0100   | -17.  | -9.    | 5.   | 4.       | -0.     | 14.      | -.0002 | -.0000 | -.0000 | .0002  | -.0010 | -.0009 | 44.    |  |  |
| .0110   | -25.  | -12.   | 6.   | 5.       | -0.     | 21.      | -.0003 | -.0000 | -.0000 | .0003  | -.0015 | -.0013 | 66.    |  |  |
| .0120   | -38.  | -18.   | 9.   | 7.       | -0.     | 31.      | -.0005 | -.0000 | -.0000 | .0004  | -.0022 | -.0020 | 98.    |  |  |
| .0130   | -57.  | -32.   | 12.  | 10.      | -0.     | 47.      | -.0009 | -.0001 | -.0000 | .0004  | -.0030 | -.0031 | 147.   |  |  |
| .0140   | -84.  | -57.   | 17.  | 14.      | -0.     | 69.      | -.0013 | -.0001 | .0000  | .0004  | -.0041 | -.0046 | 215.   |  |  |
| .0150   | -115. | -87.   | 22.  | 18.      | -0.     | 95.      | -.0019 | -.0002 | .0001  | .0004  | -.0052 | -.0065 | 295.   |  |  |
| .0160   | -142. | -111.  | 24.  | 20.      | -0.     | 118.     | -.0025 | -.0004 | .0001  | .0007  | -.0064 | -.0082 | 364.   |  |  |
| .0170   | -160. | -120.  | 23.  | 19.      | -0.     | 133.     | -.0032 | -.0006 | .0001  | .0012  | -.0075 | -.0094 | 407.   |  |  |
| .0180   | -164. | -114.  | 17.  | 15.      | -0.     | 136.     | -.0037 | -.0009 | .0000  | .0020  | -.0081 | -.0098 | 417.   |  |  |
| .0190   | -154. | -96.   | 10.  | 8.       | -0.     | 128.     | -.0043 | -.0013 | .0000  | .0026  | -.0079 | -.0094 | 390.   |  |  |

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S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |     |     |     |      |        |        |        |       |        |        |      |
|-------|-------|-------|-----|-----|-----|------|--------|--------|--------|-------|--------|--------|------|
| .0090 | -10.  | -5.   | 3.  | 2.  | 0.  | 9.   | -.0001 | .0000  | -.0000 | .0001 | -.0006 | -.0005 | 27.  |
| .0100 | -17.  | -9.   | 5.  | 4.  | -0. | 14.  | -.0002 | -.0000 | -.0000 | .0002 | -.0010 | -.0009 | 44.  |
| .0110 | -25.  | -12.  | 6.  | 5.  | -0. | 21.  | -.0003 | -.0000 | -.0000 | .0003 | -.0015 | -.0013 | 66.  |
| .0120 | -30.  | -18.  | 9.  | 7.  | -0. | 31.  | -.0005 | -.0000 | -.0000 | .0004 | -.0022 | -.0020 | 98.  |
| .0130 | -57.  | -32.  | 12. | 10. | -0. | 47.  | -.0009 | -.0001 | -.0000 | .0004 | -.0030 | -.0031 | 147. |
| .0140 | -84.  | -57.  | 17. | 14. | -0. | 69.  | -.0013 | -.0001 | .0000  | .0004 | -.0041 | -.0046 | 215. |
| .0150 | -115. | -87.  | 22. | 18. | -0. | 95.  | -.0019 | -.0002 | .0001  | .0004 | -.0052 | -.0065 | 295. |
| .0160 | -142. | -111. | 24. | 20. | -0. | 118. | -.0025 | -.0004 | .0001  | .0007 | -.0064 | -.0082 | 364. |
| .0170 | -160. | -120. | 23. | 19. | -0. | 133. | -.0032 | -.0006 | .0001  | .0012 | -.0075 | -.0094 | 407. |
| .0180 | -164. | -114. | 17. | 15. | -0. | 136. | -.0037 | -.0009 | .0000  | .0020 | -.0081 | -.0098 | 417. |
| .0190 | -154. | -96.  | 10. | 8.  | -0. | 128. | -.0043 | -.0013 | .0000  | .0026 | -.0079 | -.0094 | 390. |

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2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION    | MEMBER  | SEQUENCE | LOCATION | BEG        | TYPE       | VA         |         |         |         |          |          |          |              |  |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB)  | FZ (LB)  | FX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) |  |
| .0200      | -120.   | -65.     | -0.      | -0.        | -0.        | 107.       | -.0047  | -.0018  | .0000   | .0030    | -.0067   | -.0080   | 326.         |  |
| .0210      | -86.    | -15.     | -13.     | -11.       | -0.        | 71.        | -.0050  | -.0023  | .0001   | .0029    | -.0041   | -.0055   | 219.         |  |
| .0220      | -18.    | 54.      | -30.     | -25.       | 0.         | 15.        | -.0051  | -.0028  | .0003   | .0024    | -.0003   | -.0020   | 87.          |  |
| .0230      | 65.     | 133.     | -50.     | -41.       | 0.         | -54.       | -.0050  | -.0033  | .0005   | .0016    | .0044    | .0022    | 207.         |  |
| .0240      | 138.    | 210.     | -66.     | -55.       | 0.         | -115.      | -.0050  | -.0036  | .0007   | .0004    | .0091    | .0062    | 387.         |  |
| .0250      | 189.    | 241.     | -73.     | -61.       | 0.         | -157.      | -.0050  | -.0038  | .0009   | -.0010   | .0129    | .0092    | 512.         |  |
| .0260      | 234.    | 213.     | -76.     | -63.       | 0.         | -194.      | -.0051  | -.0039  | .0009   | -.0017   | .0152    | .0112    | 620.         |  |
| .0270      | 302.    | 221.     | -84.     | -70.       | 0.         | -251.      | -.0048  | -.0037  | .0006   | -.0006   | .0154    | .0142    | 791.         |  |
| .0280      | 394.    | 346.     | -104.    | -86.       | 0.         | -327.      | -.0038  | -.0034  | -.0002  | .0024    | .0139    | .0195    | 1029.        |  |
| .0290      | 467.    | 435.     | -124.    | -103.      | 0.         | -388.      | -.0026  | -.0029  | -.0010  | .0051    | .0113    | .0245    | 1221.        |  |
| .0300      | 490.    | 284.     | -116.    | -97.       | 0.         | -406.      | -.0020  | -.0020  | -.0014  | .0059    | .0085    | .0247    | 1271.        |  |
| .0310      | 455.    | 124.     | -73.     | -61.       | 0.         | -378.      | -.0014  | -.0010  | -.0018  | .0058    | .0064    | .0235    | 1164.        |  |
| .0320      | 460.    | 163.     | -56.     | -46.       | 0.         | -381.      | .0004   | .0002   | -.0023  | .0061    | .0060    | .0269    | 1169.        |  |
| .0330      | 541.    | 243.     | -86.     | -71.       | 0.         | -449.      | .0032   | .0014   | -.0029  | .0058    | .0076    | .0334    | 1382.        |  |
| .0340      | 543.    | 182.     | -80.     | -67.       | 0.         | -451.      | .0055   | .0028   | -.0030  | .0031    | .0101    | .0353    | 1386.        |  |
| .0350      | 371.    | 1.       | 6.       | 5.         | 0.         | -308.      | .0066   | .0044   | -.0026  | -.0015   | .0118    | .0306    | 938.         |  |
| .0360      | 182.    | -229.    | 87.      | 72.        | 0.         | -151.      | .0075   | .0059   | -.0025  | -.0051   | .0113    | .0241    | 509.         |  |
| .0370      | 109.    | -385.    | 98.      | 82.        | 0.         | -91.       | .0094   | .0072   | -.0031  | -.0047   | .0076    | .0205    | 371.         |  |
| .0380      | 54.     | -355.    | 92.      | 76.        | 0.         | -45.       | .0118   | .0082   | -.0043  | -.0004   | .0008    | .0190    | 269.         |  |
| .0390      | -93.    | -329.    | 111.     | 92.        | -0.        | 77.        | .0133   | .0090   | -.0055  | .0043    | -.0075   | .0141    | 365.         |  |
| .0400      | -286.   | -609.    | 133.     | 110.       | -0.        | 237.       | .0135   | .0095   | -.0061  | .0060    | -.0149   | .0023    | 795.         |  |
| .0410      | -467.   | -962.    | 156.     | 130.       | -0.        | 387.       | .0132   | .0095   | -.0064  | .0062    | -.0191   | -.0110   | 1242.        |  |
| .0420      | -592.   | -880.    | 169.     | 140.       | -0.        | 491.       | .0141   | .0088   | -.0067  | .0075    | -.0186   | -.0162   | 1554.        |  |
| .0430      | -598.   | -501.    | 126.     | 104.       | -0.        | 496.       | .0161   | .0076   | -.0068  | .0075    | -.0124   | -.0138   | 1543.        |  |
| .0440      | -567.   | -377.    | 65.      | 54.        | -0.        | 467.       | .0171   | .0060   | -.0059  | .0021    | -.0017   | -.0152   | 1430.        |  |
| .0450      | -709.   | -487.    | 112.     | 93.        | -0.        | 589.       | .0157   | .0040   | -.0039  | -.0079   | .0100    | -.0259   | 1813.        |  |
| .0460      | -949.   | -465.    | 217.     | 180.       | -0.        | 788.       | .0133   | .0018   | -.0019  | -.0165   | .0192    | -.0379   | 2458.        |  |
| .0470      | -947.   | -258.    | 195.     | 162.       | -0.        | 786.       | .0120   | -.0008  | -.0011  | -.0194   | .0235    | -.0423   | 2441.        |  |
| .0480      | -752.   | 19.      | 72.      | 60.        | -0.        | 624.       | .0114   | -.0035  | -.0013  | -.0169   | .0223    | -.0417   | 1908.        |  |
| .0490      | -713.   | 280.     | 36.      | 30.        | -0.        | 592.       | .0091   | -.0061  | -.0015  | -.0129   | .0167    | -.0455   | 1804.        |  |
| .0500      | -927.   | 338.     | 77.      | 64.        | -0.        | 683.       | .0047   | -.0086  | -.0011  | -.0113   | .0098    | -.0565   | 2086.        |  |
| .0510      | -806.   | 201.     | 61.      | 50.        | -0.        | 669.       | .0001   | -.0108  | -.0003  | -.0124   | .0048    | -.0670   | 2040.        |  |
| .0520      | -656.   | 279.     | 3.       | 2.         | -0.        | 544.       | -.0032  | -.0128  | .0004   | -.0134   | .0034    | -.0685   | 1656.        |  |
| .0530      | -518.   | 685.     | -13.     | -11.       | -0.        | 430.       | -.0056  | -.0146  | .0013   | -.0145   | .0059    | -.0620   | 1308.        |  |
| .0540      | -367.   | 945.     | -8.      | -7.        | -0.        | 304.       | -.0084  | -.0159  | .0029   | -.0197   | .0118    | -.0557   | 926.         |  |
| .0550      | -190.   | 849.     | 2.       | 2.         | -0.        | 158.       | -.0120  | -.0165  | .0052   | -.0289   | .0190    | -.0529   | 480.         |  |
| .0560      | -81.    | 789.     | 63.      | 52.        | -0.        | 67.        | -.0155  | -.0165  | .0074   | -.0369   | .0241    | -.0486   | 260.         |  |
| .0570      | 25.     | 938.     | 120.     | 107.       | 0.         | -21.       | -.0182  | -.0159  | .0088   | -.0400   | .0250    | -.0386   | 331.         |  |

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ADLPIPE STRESS ANALYSIS

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18.29.43.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |      |      |     |      |        |        |        |        |       |        |       |
|-------|-------|-------|------|------|-----|------|--------|--------|--------|--------|-------|--------|-------|
| .0470 | -747. | -258. | 95.  | 162. | -0. | 786. | .0120  | -.0008 | -.0011 | -.0194 | .0235 | -.0423 | 2441. |
| .0480 | -752. | 19.   | 72.  | 60.  | -0. | 624. | .0114  | -.0035 | -.0013 | -.0169 | .0223 | -.0417 | 1908. |
| .0490 | -713. | 230.  | 36.  | 30.  | -0. | 592. | .0091  | -.0061 | -.0015 | -.0129 | .0167 | -.0455 | 1804. |
| .0500 | -827. | 328.  | 77.  | 64.  | -0. | 603. | .0047  | -.0086 | -.0011 | -.0113 | .0098 | -.0565 | 2086. |
| .0510 | -806. | 201.  | 61.  | 50.  | -0. | 669. | .0001  | -.0108 | -.0003 | -.0124 | .0048 | -.0670 | 2040. |
| .0520 | -656. | 279.  | 3.   | 2.   | -0. | 544. | -.0032 | -.0128 | .0004  | -.0134 | .0034 | -.0685 | 1656. |
| .0530 | -518. | 605.  | -13. | -11. | -0. | 430. | -.0056 | -.0146 | .0013  | -.0145 | .0059 | -.0620 | 1308. |
| .0540 | -367. | 945.  | -8.  | -7.  | -0. | 304. | -.0084 | -.0159 | .0029  | -.0197 | .0118 | -.0557 | 926.  |
| .0550 | -190. | 849.  | 2.   | 2.   | -0. | 158. | -.0120 | -.0165 | .0052  | -.0289 | .0190 | -.0529 | 480.  |
| .0560 | -81.  | 789.  | 62.  | 52.  | -0. | 67.  | -.0155 | -.0165 | .0074  | -.0369 | .0241 | -.0486 | 260.  |
| .0570 | 25.   | 938.  | 120. | 107. | 0.  | -21. | -.0182 | -.0159 | .0088  | -.0400 | .0250 | -.0386 | 331.  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION    | MEMBER  | SEQUENCE | LOCATION | BEG        | TYPE       | VA         | DX     | DY     | DZ     | FX     | RY     | RZ     | STRESS |
|------------|---------|----------|----------|------------|------------|------------|--------|--------|--------|--------|--------|--------|--------|
| TIME (SEC) | FX (LB) | FY (LB)  | FZ (LB)  | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| .0580      | 257.    | 982.     | 114.     | 95.        | 0.         | -213.      | -.0201 | -.0146 | .0094  | -.0394 | .0213  | -.0266 | 710.   |
| .0590      | 475.    | 784.     | 82.      | 68.        | 0.         | -394.      | -.0225 | -.0126 | .0099  | -.0372 | .0140  | -.0184 | 1217.  |
| .0600      | 516.    | 519.     | 121.     | 100.       | 0.         | -428.      | -.0255 | -.0101 | .0103  | -.0335 | .0051  | -.0136 | 1337.  |
| .0610      | 551.    | 284.     | 148.     | 123.       | 0.         | -457.      | -.0278 | -.0072 | .0105  | -.0285 | -.0023 | -.0065 | 1440.  |
| .0620      | 765.    | 119.     | 76.      | 63.        | 0.         | -635.      | -.0281 | -.0041 | .0105  | -.0232 | -.0054 | .0070  | 1941.  |
| .0630      | 990.    | 82.      | -6.      | -5.        | 0.         | -829.      | -.0271 | -.0010 | .0109  | -.0195 | -.0033 | .0243  | 2523.  |
| .0640      | 1061.   | 20.      | -2.      | -2.        | 0.         | -801.      | -.0262 | .0022  | .0120  | -.0193 | .0030  | .0386  | 2680.  |
| .0650      | 1038.   | -257.    | 34.      | 28.        | 0.         | -862.      | -.0258 | .0053  | .0138  | -.0226 | .0116  | .0473  | 2622.  |
| .0660      | 1056.   | -559.    | 24.      | 20.        | 0.         | -876.      | -.0247 | .0082  | .0154  | -.0251 | .0192  | .0544  | 2666.  |
| .0670      | 1085.   | -612.    | -25.     | -21.       | 0.         | -901.      | -.0226 | .0107  | .0160  | -.0220 | .0222  | .0635  | 2741.  |
| .0680      | 1073.   | -577.    | -96.     | -80.       | 0.         | -891.      | -.0199 | .0128  | .0154  | -.0129 | .0191  | .0711  | 2721.  |
| .0690      | 1002.   | -730.    | -185.    | -154.      | 0.         | -832.      | -.0180 | .0144  | .0142  | -.0011 | .0105  | .0713  | 2572.  |
| .0700      | 830.    | -928.    | -273.    | -226.      | -0.        | -696.      | -.0168 | .0154  | .0128  | .0113  | -.0011 | .0639  | 2227.  |
| .0710      | 618.    | -1181.   | -356.    | -295.      | -0.        | -513.      | -.0156 | .0157  | .0112  | .0237  | -.0122 | .0539  | 1802.  |
| .0720      | 451.    | -1223.   | -460.    | -382.      | -0.        | -374.      | -.0134 | .0151  | .0094  | .0353  | -.0195 | .0466  | 1626.  |
| .0730      | 361.    | -1098.   | -577.    | -479.      | -0.        | -300.      | -.0101 | .0157  | .0077  | .0440  | -.0208 | .0429  | 1717.  |
| .0740      | 266.    | -844.    | -657.    | -545.      | -0.        | -221.      | -.0065 | .0115  | .0066  | .0474  | -.0160 | .0399  | 1790.  |
| .0750      | 110.    | -657.    | -675.    | -560.      | -0.        | -99.       | -.0033 | .0087  | .0062  | .0449  | -.0068 | .0338  | 1729.  |
| .0760      | -52.    | -576.    | -644.    | -575.      | -0.        | 43.        | -.0005 | .0054  | .0060  | .0394  | .0034  | .0252  | 1631.  |
| .0770      | -191.   | -375.    | -604.    | -501.      | -0.        | 158.       | .0025  | .0018  | .0050  | .0355  | .0112  | .0183  | 1600.  |
| .0780      | -253.   | -0.      | -595.    | -494.      | -0.        | 210.       | .0060  | -.0021 | .0028  | .0353  | .0142  | .0140  | 1631.  |
| .0790      | -272.   | 287.     | -604.    | -502.      | -0.        | 225.       | .0091  | -.0060 | -.0002 | .0376  | .0119  | .0081  | 1673.  |
| .0800      | -362.   | 376.     | -569.    | -472.      | -0.        | 300.       | .0110  | -.0096 | -.0036 | .0400  | .0055  | -.0027 | 1701.  |
| .0810      | -533.   | 414.     | -473.    | -393.      | -0.        | 442.       | .0120  | -.0130 | -.0071 | .0413  | -.0025 | -.0159 | 1799.  |
| .0820      | -646.   | 482.     | -376.    | -312.      | -0.        | 576.       | .0132  | -.0160 | -.0105 | .0406  | -.0090 | -.0264 | 1888.  |
| .0830      | -651.   | 565.     | -284.    | -236.      | -0.        | 540.       | .0151  | -.0187 | -.0138 | .0371  | -.0116 | -.0319 | 1793.  |
| .0840      | -655.   | 712.     | -133.    | -110.      | -0.        | 544.       | .0171  | -.0209 | -.0165 | .0303  | -.0099 | -.0331 | 1688.  |
| .0850      | -691.   | 890.     | 80.      | 67.        | -0.        | 573.       | .0191  | -.0226 | -.0185 | .0200  | -.0045 | -.0320 | 1755.  |
| .0860      | -673.   | 958.     | 292.     | 242.       | -0.        | 559.       | .0208  | -.0236 | -.0200 | .0071  | .0028  | -.0297 | 1853.  |
| .0870      | -611.   | 947.     | 489.     | 406.       | -0.        | 508.       | .0224  | -.0239 | -.0214 | -.0051 | .0093  | -.0260 | 1977.  |
| .0880      | -578.   | 1001.    | 692.     | 574.       | 0.         | 479.       | .0238  | -.0235 | -.0230 | -.0137 | .0129  | -.0203 | 2275.  |
| .0890      | -536.   | 1049.    | 860.     | 714.       | 0.         | 445.       | .0250  | -.0224 | -.0249 | -.0182 | .0129  | -.0138 | 2558.  |
| .0900      | -440.   | 937.     | 960.     | 797.       | 0.         | 367.       | .0257  | -.0205 | -.0267 | -.0202 | .0104  | -.0087 | 2668.  |
| .0910      | -372.   | 742.     | 1039.    | 862.       | 0.         | 309.       | .0257  | -.0180 | -.0281 | -.0205 | .0071  | -.0051 | 2785.  |
| .0920      | -258.   | 611.     | 1122.    | 931.       | 0.         | 297.       | .0255  | -.0150 | -.0290 | -.0196 | .0047  | -.0008 | 2973.  |
| .0930      | -307.   | 509.     | 1163.    | 966.       | 0.         | 255.       | .0254  | -.0115 | -.0291 | -.0188 | .0049  | .0055  | 3038.  |
| .0940      | -210.   | 365.     | 1158.    | 962.       | 0.         | 174.       | .0253  | -.0077 | -.0282 | -.0193 | .0075  | .0120  | 2973.  |
| .0950      | -185.   | 204.     | 1163.    | 966.       | 0.         | 154.       | .0244  | -.0037 | -.0264 | -.0202 | .0109  | .0162  | 2974.  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKWOOF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |       |      |     |      |       |        |        |        |       |        |       |
|-------|-------|-------|-------|------|-----|------|-------|--------|--------|--------|-------|--------|-------|
| .0860 | -673. | 958.  | 292.  | 242. | -0. | 559. | .0208 | -.0236 | -.0200 | .0071  | .0028 | -.0297 | 1853. |
| .0870 | -611. | 947.  | 489.  | 406. | -0. | 508. | .0224 | -.0239 | -.0214 | -.0051 | .0093 | -.0260 | 1977. |
| .0880 | -578. | 1001. | 692.  | 574. | 0.  | 479. | .0238 | -.0235 | -.0230 | -.0157 | .0129 | -.0203 | 2275. |
| .0890 | -536. | 1049. | 860.  | 714. | 0.  | 445. | .0250 | -.0224 | -.0249 | -.0182 | .0129 | -.0138 | 2558. |
| .0900 | -442. | 977.  | 960.  | 797. | 0.  | 367. | .0257 | -.0205 | -.0267 | -.0202 | .0104 | -.0087 | 2668. |
| .0910 | -372. | 742.  | 1039. | 862. | 0.  | 309. | .0257 | -.0180 | -.0281 | -.0205 | .0071 | -.0051 | 2785. |
| .0920 | -358. | 611.  | 1122. | 931. | 0.  | 297. | .0255 | -.0150 | -.0290 | -.0196 | .0047 | -.0008 | 2973. |
| .0930 | -307. | 509.  | 1163. | 966. | 0.  | 255. | .0254 | -.0115 | -.0291 | -.0188 | .0049 | .0055  | 3038. |
| .0940 | -210. | 365.  | 1158. | 962. | 0.  | 174. | .0253 | -.0077 | -.0282 | -.0193 | .0075 | .0120  | 2973. |
| .0950 | -185. | 204.  | 1163. | 966. | 0.  | 154. | .0244 | -.0037 | -.0264 | -.0202 | .0109 | .0162  | 2974. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKNOFF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITSINTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION    | MEMBER  | SEQUENCE | LOCATION | BEG        | TYPE       | VA         | DX     | DY    | DZ     | RX     | RY     | RZ     | STRESS |
|------------|---------|----------|----------|------------|------------|------------|--------|-------|--------|--------|--------|--------|--------|
| TIME (SEC) | FX (LB) | FY (LB)  | FZ (LB)  | FX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | (IN)   | (IN)  | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| .0960      | -244.   | 18.      | 1173.    | 974.       | 0.         | 203.       | .0228  | .0005 | -.0241 | -.0194 | .0128  | .0175  | 3026.  |
| .0970      | -271.   | -203.    | 1115.    | 926.       | 0.         | 225.       | .0203  | .0046 | -.0217 | -.0145 | .0113  | .0177  | 2898.  |
| .0980      | -246.   | -366.    | 972.     | 807.       | 0.         | 204.       | .0188  | .0085 | -.0197 | -.0042 | .0057  | .0182  | 2532.  |
| .0990      | -253.   | -447.    | 790.     | 656.       | 0.         | 210.       | .0164  | .0122 | -.0180 | .0107  | -.0033 | .0177  | 2094.  |
| .1000      | -314.   | -505.    | 591.     | 491.       | 0.         | 260.       | .0132  | .0154 | -.0159 | .0271  | -.0136 | .0139  | 1690.  |
| .1010      | -382.   | -801.    | 373.     | 310.       | 0.         | 317.       | .0093  | .0183 | -.0133 | .0424  | -.0223 | .0077  | 1347.  |
| .1020      | -431.   | -924.    | 148.     | 122.       | 0.         | 358.       | .0053  | .0205 | -.0102 | .0557  | -.0282 | .0025  | 1151.  |
| .1030      | -441.   | -878.    | -73.     | -61.       | 0.         | 366.       | .0018  | .0220 | -.0066 | .0667  | -.0301 | .0009  | 1129.  |
| .1040      | -387.   | -776.    | -288.    | -229.      | -0.        | 321.       | -.0014 | .0229 | -.0025 | .0746  | -.0287 | .0020  | 1217.  |
| .1050      | -292.   | -674.    | -482.    | -400.      | -0.        | 242.       | -.0047 | .0232 | .0020  | .0791  | -.0254 | .0037  | 1424.  |
| .1060      | -182.   | -540.    | -649.    | -538.      | -0.        | 151.       | -.0082 | .0230 | .0065  | .0811  | -.0218 | .0054  | 1701.  |
| .1070      | -26.    | -396.    | -808.    | -670.      | -0.        | 22.        | -.0115 | .0225 | .0109  | .0818  | -.0191 | .0078  | 2040.  |
| .1080      | 192.    | -270.    | -973.    | -807.      | -0.        | -160.      | -.0145 | .0216 | .0147  | .0815  | -.0176 | .0111  | 2504.  |
| .1090      | 429.    | -144.    | -1122.   | -931.      | -0.        | -356.      | -.0173 | .0206 | .0181  | .0796  | -.0168 | .0145  | 3033.  |
| .1100      | 649.    | -4.      | -1226.   | -1017.     | -0.        | -529.      | -.0201 | .0195 | .0212  | .0753  | -.0162 | .0165  | 3502.  |
| .1110      | 869.    | 77.      | -1292.   | -1073.     | -0.        | -722.      | -.0224 | .0184 | .0241  | .0676  | -.0151 | .0179  | 3933.  |
| .1120      | 1076.   | 99.      | -1314.   | -1091.     | -0.        | -893.      | -.0241 | .0174 | .0266  | .0568  | -.0140 | .0192  | 4288.  |
| .1130      | 1222.   | 145.     | -1262.   | -1047.     | -0.        | -1020.     | -.0252 | .0164 | .0288  | .0437  | -.0139 | .0196  | 4447.  |
| .1140      | 1254.   | 187.     | -1154.   | -958.      | -0.        | -1124.     | -.0257 | .0156 | .0303  | .0297  | -.0158 | .0190  | 4491.  |
| .1150      | 1481.   | 165.     | -1025.   | -851.      | -0.        | -1229.     | -.0252 | .0148 | .0309  | .0165  | -.0201 | .0185  | 4547.  |
| .1160      | 1559.   | 155.     | -868.    | -721.      | -0.        | -1294.     | -.0236 | .0143 | .0305  | .0051  | -.0266 | .0185  | 4507.  |
| .1170      | 1550.   | 100.     | -683.    | -567.      | -0.        | -1286.     | -.0213 | .0138 | .0294  | -.0052 | -.0335 | .0168  | 4276.  |
| .1180      | 1503.   | 109.     | -503.    | -417.      | 0.         | -1247.     | -.0186 | .0134 | .0278  | -.0155 | -.0388 | .0117  | 4001.  |
| .1190      | 1407.   | -41.     | -324.    | -269.      | 0.         | -1168.     | -.0150 | .0132 | .0258  | -.0254 | -.0407 | .0061  | 3645.  |
| .1200      | 1246.   | -60.     | -132.    | -110.      | 0.         | -1034.     | -.0101 | .0129 | .0234  | -.0342 | -.0379 | .0030  | 3164.  |
| .1210      | 1102.   | 51.      | 43.      | 35.        | 0.         | -915.      | -.0039 | .0125 | .0209  | -.0427 | -.0303 | .0017  | 2784.  |
| .1220      | 986.    | 176.     | 189.     | 157.       | 0.         | -819.      | .0030  | .0123 | .0184  | -.0518 | -.0194 | -.0001 | 2535.  |
| .1230      | 806.    | 198.     | 351.     | 292.       | 0.         | -669.      | .0099  | .0121 | .0160  | -.0601 | -.0083 | -.0046 | 2220.  |
| .1240      | 491.    | 207.     | 551.     | 458.       | 0.         | -408.      | .0166  | .0121 | .0134  | -.0652 | -.0002 | -.0122 | 1864.  |
| .1250      | 163.    | 221.     | 705.     | 565.       | 0.         | -135.      | .0230  | .0122 | .0104  | -.0658 | .0035  | -.0228 | 1827.  |
| .1260      | -70.    | 140.     | 740.     | 621.       | 0.         | 58.        | .0292  | .0125 | .0067  | -.0611 | .0027  | -.0363 | 1896.  |
| .1270      | -325.   | 72.      | 743.     | 617.       | 0.         | 270.       | .0351  | .0128 | .0025  | -.0506 | -.0013 | -.0502 | 2047.  |
| .1280      | -647.   | 96.      | 733.     | 608.       | 0.         | 537.       | .0408  | .0132 | -.0019 | -.0362 | -.0055 | -.0633 | 2468.  |
| .1290      | -924.   | 105.     | 674.     | 559.       | 0.         | 767.       | .0462  | .0138 | -.0057 | -.0225 | -.0065 | -.0754 | 2887.  |
| .1300      | -1120.  | 224.     | 568.     | 472.       | 0.         | 929.       | .0511  | .0144 | -.0084 | -.0132 | -.0026 | -.0874 | 3170.  |
| .1310      | -1365.  | 188.     | 514.     | 426.       | 0.         | 1133.      | .0550  | .0152 | -.0098 | -.0080 | .0049  | -.0996 | 3682.  |
| .1320      | -1703.  | 225.     | 541.     | 449.       | 0.         | 1413.      | .0581  | .0161 | -.0103 | -.0048 | .0132  | -.1094 | 4511.  |
| .1330      | -1922.  | 314.     | 534.     | 443.       | 0.         | 1595.      | .0607  | .0172 | -.0105 | -.0018 | .0200  | -.1159 | 5035.  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKNOFF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITSINTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING



|       |        |      |      |      |    |       |       |       |        |        |        |        |       |
|-------|--------|------|------|------|----|-------|-------|-------|--------|--------|--------|--------|-------|
| .1230 | 806.   | 198. | 551. | 292. | 0. | -669. | .0099 | .0121 | .0160  | -.0601 | -.0083 | -.0046 | 2220. |
| .1240 | 491.   | 207. | 551. | 458. | 0. | -408. | .0166 | .0121 | .0134  | -.0652 | -.0002 | -.0122 | 1864. |
| .1250 | 163.   | 221. | 705. | 585. | 0. | -135. | .0230 | .0122 | .0104  | -.0658 | .0035  | -.0228 | 1827. |
| .1260 | -70.   | 140. | 748. | 621. | 0. | 58.   | .0292 | .0125 | .0067  | -.0611 | .0027  | -.0363 | 1896. |
| .1270 | -325.  | 72.  | 743. | 617. | 0. | 270.  | .0351 | .0128 | .0025  | -.0506 | -.0013 | -.0502 | 2047. |
| .1280 | -647.  | 96.  | 733. | 608. | 0. | 537.  | .0408 | .0132 | -.0019 | -.0362 | -.0055 | -.0653 | 2468. |
| .1290 | -924.  | 185. | 674. | 559. | 0. | 767.  | .0462 | .0138 | -.0057 | -.0225 | -.0065 | -.0754 | 2887. |
| .1300 | -1120. | 224. | 568. | 472. | 0. | 929.  | .0511 | .0144 | -.0084 | -.0132 | -.0026 | -.0874 | 3170. |
| .1310 | -1365. | 188. | 514. | 426. | 0. | 1133. | .0550 | .0152 | -.0098 | -.0080 | .0049  | -.0996 | 3682. |
| .1320 | -1703. | 225. | 541. | 449. | 0. | 1413. | .0581 | .0161 | -.0103 | -.0048 | .0132  | -.1094 | 4511. |
| .1330 | -1922. | 314. | 534. | 443. | 0. | 1595. | .0607 | .0172 | -.0105 | -.0018 | .0200  | -.1159 | 5035. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.45.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | MEMBER | SEQUENCE | LOCATION | BEG     | TYPE    | VA      | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |
|---------|--------|----------|----------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| TIME    | FX     | FY       | FZ       | MX      | MY      | MZ      | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |
| (SEC)   | (LB)   | (LB)     | (LB)     | (FT-LB) | (FT-LB) | (FT-LB) |        |        |        |        |        |        |        |
| .1340   | -1953. | 392.     | 446.     | 370.    | 0.      | 1621.   | .0628  | .0185  | -.0107 | .0026  | .0226  | -.1197 | 5057.  |
| .1350   | -1981. | 428.     | 370.     | 307.    | 0.      | 1644.   | .0637  | .0201  | -.0111 | .0100  | .0196  | -.1221 | 5087.  |
| .1360   | -2077. | 424.     | 341.     | 283.    | 0.      | 1724.   | .0631  | .0220  | -.0115 | .0199  | .0118  | -.1241 | 5314.  |
| .1370   | -2105. | 355.     | 276.     | 229.    | 0.      | 1747.   | .0612  | .0242  | -.0117 | .0293  | .0025  | -.1252 | 5360.  |
| .1380   | -1979. | 179.     | 148.     | 123.    | 0.      | 1643.   | .0584  | .0266  | -.0114 | .0360  | -.0055 | -.1252 | 5011.  |
| .1390   | -1831. | -4.      | 56.      | 47.     | 0.      | 1520.   | .0547  | .0292  | -.0105 | .0402  | -.0106 | -.1217 | 4625.  |
| .1400   | -1679. | -57.     | 34.      | 28.     | 0.      | 1394.   | .0510  | .0317  | -.0091 | .0427  | -.0123 | -.1112 | 4240.  |
| .1410   | -1350. | -1.      | -10.     | -8.     | -0.     | 1121.   | .0478  | .0342  | -.0075 | .0422  | -.0107 | -.0936 | 3410.  |
| .1420   | -871.  | 68.      | -82.     | -68.    | -0.     | 723.    | .0446  | .0367  | -.0048 | .0380  | -.0075 | -.0722 | 2208.  |
| .1430   | -468.  | -20.     | -76.     | -63.    | -0.     | 389.    | .0403  | .0391  | -.0019 | .0314  | -.0056 | -.0529 | 1197.  |
| .1440   | -220.  | -223.    | 22.      | 18.     | 0.      | 183.    | .0349  | .0416  | .0012  | .0252  | -.0067 | -.0363 | 558.   |
| .1450   | 84.    | -375.    | 67.      | 55.     | 0.      | -70.    | .0297  | .0438  | .0026  | .0219  | -.0108 | -.0189 | 272.   |
| .1460   | 554.   | -434.    | -16.     | -13.    | 0.      | -460.   | .0253  | .0458  | .0052  | .0220  | -.0169 | .0005  | 1399.  |
| .1470   | 961.   | -462.    | -108.    | -90.    | 0.      | -798.   | .0211  | .0474  | .0065  | .0246  | -.0239 | .0193  | 2442.  |
| .1480   | 1154.  | -588.    | -116.    | -96.    | 0.      | -958.   | .0164  | .0487  | .0076  | .0266  | -.0299 | .0332  | 2933.  |
| .1490   | 1268.  | -770.    | -103.    | -85.    | 0.      | -1052.  | .0116  | .0495  | .0095  | .0253  | -.0329 | .0431  | 3212.  |
| .1500   | 1440.  | -909.    | -136.    | -113.   | 0.      | -1195.  | .0078  | .0497  | .0117  | .0207  | -.0319 | .0520  | 3652.  |
| .1510   | 1591.  | -974.    | -158.    | -131.   | 0.      | -1321.  | .0051  | .0493  | .0141  | .0147  | -.0281 | .0612  | 4037.  |
| .1520   | 1601.  | -921.    | -116.    | -96.    | 0.      | -1329.  | .0031  | .0482  | .0164  | .0093  | -.0230 | .0696  | 4052.  |
| .1530   | 1569.  | -853.    | -91.     | -75.    | 0.      | -1302.  | .0014  | .0463  | .0186  | .0038  | -.0176 | .0739  | 3967.  |
| .1540   | 1557.  | -875.    | -142.    | -118.   | 0.      | -1292.  | -.0001 | .0439  | .0205  | -.0015 | -.0130 | .0718  | 3947.  |
| .1550   | 1438.  | -979.    | -203.    | -169.   | 0.      | -1194.  | -.0019 | .0408  | .0218  | -.0044 | -.0103 | .0633  | 3667.  |
| .1560   | 1163.  | -1052.   | -235.    | -195.   | 0.      | -965.   | -.0037 | .0370  | .0224  | -.0032 | -.0094 | .0506  | 2995.  |
| .1570   | 878.   | -989.    | -315.    | -261.   | 0.      | -729.   | -.0050 | .0324  | .0225  | -.0004 | -.0088 | .0364  | 2355.  |
| .1580   | 690.   | -923.    | -476.    | -395.   | 0.      | -573.   | -.0059 | .0272  | .0218  | .0032  | -.0066 | .0197  | 2117.  |
| .1590   | 442.   | -912.    | -600.    | -498.   | 0.      | -367.   | -.0071 | .0212  | .0215  | .0035  | -.0025 | -.0009 | 1880.  |
| .1600   | 37.    | -815.    | -608.    | -505.   | 0.      | -28.    | -.0087 | .0147  | .0215  | .0016  | .0033  | -.0230 | 1537.  |
| .1610   | -335.  | -608.    | -602.    | -500.   | 0.      | 278.    | -.0099 | .0076  | .0214  | -.0028 | .0111  | -.0434 | 1740.  |
| .1620   | -537.  | -388.    | -649.    | -538.   | 0.      | 446.    | -.0107 | .0000  | .0212  | -.0096 | .0203  | -.0623 | 2126.  |
| .1630   | -764.  | -120.    | -652.    | -541.   | 0.      | 634.    | -.0120 | -.0077 | .0207  | -.0168 | .0291  | -.0809 | 2537.  |
| .1640   | -1091. | 166.     | -576.    | -478.   | 0.      | 905.    | -.0141 | -.0155 | .0197  | -.0229 | .0363  | -.0997 | 3115.  |
| .1650   | -1321. | 446.     | -530.    | -440.   | 0.      | 1097.   | -.0165 | -.0231 | .0180  | -.0276 | .0421  | -.1165 | 3594.  |
| .1660   | -1372. | 801.     | -555.    | -461.   | 0.      | 1139.   | -.0187 | -.0304 | .0155  | -.0311 | .0465  | -.1288 | 3738.  |
| .1670   | -1382. | 1181.    | -555.    | -460.   | -0.     | 1148.   | -.0213 | -.0370 | .0126  | -.0341 | .0491  | -.1381 | 3762.  |
| .1680   | -1450. | 1483.    | -457.    | -379.   | -0.     | 1203.   | -.0248 | -.0427 | .0097  | -.0378 | .0497  | -.1459 | 3837.  |
| .1690   | -1447. | 1678.    | -322.    | -267.   | -0.     | 1197.   | -.0286 | -.0473 | .0068  | -.0431 | .0484  | -.1507 | 3732.  |
| .1700   | -1271. | 1884.    | -202.    | -167.   | -0.     | 1055.   | -.0321 | -.0506 | .0038  | -.0492 | .0454  | -.1495 | 3248.  |
| .1710   | -1020. | 2133.    | -60.     | -50.    | -0.     | 846.    | -.0351 | -.0525 | .0005  | -.0543 | .0403  | -.1416 | 2578.  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.45.

S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |       |       |       |     |       |        |        |       |        |       |        |       |
|-------|--------|-------|-------|-------|-----|-------|--------|--------|-------|--------|-------|--------|-------|
| .1610 | -235.  | -608. | -602. | -500. | 0.  | 278.  | -.0099 | .0076  | .0214 | -.0028 | .0111 | -.0434 | 1740. |
| .1620 | -537.  | -388. | -649. | -538. | 0.  | 446.  | -.1107 | .0000  | .0212 | -.0096 | .0203 | -.0623 | 2126. |
| .1630 | -764.  | -120. | -652. | -541. | 0.  | 634.  | -.0120 | -.0077 | .0207 | -.0168 | .0291 | -.0809 | 2537. |
| .1640 | -1091. | 166.  | -576. | -478. | 0.  | 905.  | -.0141 | -.0155 | .0197 | -.0229 | .0363 | -.0997 | 3115. |
| .1650 | -1321. | 446.  | -530. | -440. | 0.  | 1097. | -.0165 | -.0231 | .0180 | -.0276 | .0421 | -.1165 | 3594. |
| .1660 | -1372. | 801.  | -555. | -461. | 0.  | 1139. | -.0187 | -.0304 | .0155 | -.0311 | .0465 | -.1288 | 3738. |
| .1670 | -1383. | 1181. | -555. | -460. | -0. | 1148. | -.0213 | -.0370 | .0126 | -.0341 | .0491 | -.1381 | 3762. |
| .1680 | -1450. | 1483. | -457. | -379. | -0. | 1203. | -.0248 | -.0427 | .0097 | -.0378 | .0497 | -.1459 | 3837. |
| .1690 | -1443. | 1678. | -322. | -267. | -0. | 1197. | -.0286 | -.0473 | .0068 | -.0431 | .0484 | -.1507 | 3732. |
| .1700 | -1271. | 1884. | -202. | -167. | -0. | 1055. | -.0321 | -.0506 | .0038 | -.0492 | .0454 | -.1495 | 3248. |
| .1710 | -1020. | 2133. | -60.  | -50.  | -0. | 846.  | -.0351 | -.0525 | .0005 | -.0543 | .0403 | -.1416 | 2578. |

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ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITSINTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 66     | MEMBER | 1      | SEQUENCE | 96      | LOCATION | BEG    | TYPE   | VA     |        |        |        |        |  |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| TIME    | FX     | FY     | FZ     | FX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |  |
| .1720   | -754.  | 2272.  | 126.   | 104.     | -0.     | 625.     | -.0381 | -.0529 | -.0029 | -.0579 | .0331  | -.1295 | 1929.  |  |  |  |
| .1730   | -462.  | 2318.  | 314.   | 261.     | -0.     | 304.     | -.0409 | -.0516 | -.0064 | -.0603 | .0248  | -.1139 | 1411.  |  |  |  |
| .1740   | -106.  | 2281.  | 457.   | 379.     | -0.     | 88.      | -.0433 | -.0487 | -.0099 | -.0619 | .0164  | -.0954 | 1184.  |  |  |  |
| .1750   | 262.   | 2111.  | 576.   | 478.     | -0.     | -217.    | -.0454 | -.0441 | -.0133 | -.0623 | .0085  | -.0746 | 1598.  |  |  |  |
| .1760   | 551.   | 1849.  | 718.   | 596.     | -0.     | -457.    | -.0469 | -.0380 | -.0165 | -.0609 | .0013  | -.0514 | 2284.  |  |  |  |
| .1770   | 814.   | 1538.  | 852.   | 707.     | -0.     | -675.    | -.0477 | -.0306 | -.0195 | -.0580 | -.0048 | -.0255 | 2974.  |  |  |  |
| .1780   | 1112.  | 1205.  | 938.   | 779.     | -0.     | -923.    | -.0473 | -.0222 | -.0220 | -.0547 | -.0092 | .0026  | 3673.  |  |  |  |
| .1790   | 1394.  | 784.   | 1002.  | 832.     | -0.     | -1157.   | -.0460 | -.0130 | -.0239 | -.0510 | -.0123 | .0310  | 4335.  |  |  |  |
| .1800   | 1550.  | 297.   | 1091.  | 906.     | -0.     | -1287.   | -.0442 | -.0032 | -.0252 | -.0464 | -.0144 | .0581  | 4787.  |  |  |  |
| .1810   | 1595.  | -184.  | 1170.  | 971.     | -0.     | -1324.   | -.0419 | .0066  | -.0259 | -.0404 | -.0153 | .0832  | 4995.  |  |  |  |
| .1820   | 1636.  | -726.  | 1163.  | 1065.    | 0.      | -1358.   | -.0390 | .0163  | -.0261 | -.0335 | -.0145 | .1044  | 5068.  |  |  |  |
| .1830   | 1622.  | -1297. | 1084.  | 900.     | 0.      | -1347.   | -.0360 | .0253  | -.0260 | -.0247 | -.0121 | .1208  | 4926.  |  |  |  |
| .1840   | 1471.  | -1821. | 979.   | 812.     | 0.      | -1221.   | -.0329 | .0333  | -.0256 | -.0134 | -.0084 | .1321  | 4462.  |  |  |  |
| .1850   | 1244.  | -2265. | 824.   | 684.     | 0.      | -1032.   | -.0298 | .0399  | -.0249 | -.0002 | -.0030 | .1386  | 3767.  |  |  |  |
| .1860   | 1025.  | -2629. | 590.   | 490.     | 0.      | -851.    | -.0266 | .0448  | -.0239 | .0131  | .0039  | .1402  | 2987.  |  |  |  |
| .1870   | 778.   | -2932. | 325.   | 270.     | 0.      | -646.    | -.0239 | .0477  | -.0224 | .0254  | .0117  | .1356  | 2129.  |  |  |  |
| .1880   | 418.   | -3120. | 97.    | 80.      | 0.      | -347.    | -.0219 | .0485  | -.0204 | .0366  | .0195  | .1250  | 1084.  |  |  |  |
| .1890   | 24.    | -3189. | -120.  | -100.    | 0.      | -20.     | -.0206 | .0470  | -.0181 | .0465  | .0266  | .1098  | 309.   |  |  |  |
| .1900   | -300.  | -3123. | -373.  | -309.    | 0.      | 249.     | -.0197 | .0431  | -.0157 | .0550  | .0329  | .0911  | 1208.  |  |  |  |
| .1910   | -593.  | -2882. | -633.  | -526.    | 0.      | 492.     | -.0195 | .0370  | -.0135 | .0622  | .0383  | .0697  | 2190.  |  |  |  |
| .1920   | -907.  | -2529. | -858.  | -712.    | 0.      | 753.     | -.0203 | .0289  | -.0115 | .0681  | .0428  | .0453  | 3153.  |  |  |  |
| .1930   | -1203. | -2085. | -1054. | -875.    | -0.     | 998.     | -.0221 | .0190  | -.0096 | .0716  | .0469  | .0192  | 4038.  |  |  |  |
| .1940   | -1408. | -1523. | -1242. | -1031.   | -0.     | 1169.    | -.0245 | .0076  | -.0079 | .0716  | .0514  | -.0064 | 4741.  |  |  |  |
| .1950   | -1534. | -870.  | -1390. | -1154.   | -0.     | 1273.    | -.0276 | -.0047 | -.0063 | .0672  | .0561  | -.0308 | 5227.  |  |  |  |
| .1960   | -1631. | -198.  | -1445. | -1199.   | -0.     | 1354.    | -.0314 | -.0177 | -.0047 | .0582  | .0599  | -.0536 | 5502.  |  |  |  |
| .1970   | -1678. | 474.   | -1403. | -1165.   | -0.     | 1393.    | -.0359 | -.0306 | -.0032 | .0447  | .0620  | -.0736 | 5522.  |  |  |  |
| .1980   | -1607. | 1158.  | -1300. | -1079.   | -0.     | 1334.    | -.0405 | -.0432 | -.0019 | .0277  | .0612  | -.0891 | 5220.  |  |  |  |
| .1990   | -1423. | 1808.  | -1143. | -949.    | -0.     | 1181.    | -.0452 | -.0548 | -.0010 | .0084  | .0567  | -.0996 | 4608.  |  |  |  |
| .2000   | -1197. | 2352.  | -909.  | -754.    | -0.     | 994.     | -.0500 | -.0650 | -.0006 | -.0120 | .0483  | -.1058 | 3795.  |  |  |  |
| .2010   | -952.  | 2758.  | -609.  | -506.    | -0.     | 791.     | -.0550 | -.0734 | -.0006 | -.0330 | .0368  | -.1082 | 2856.  |  |  |  |
| .2020   | -644.  | 3031.  | -293.  | -243.    | -0.     | 535.     | -.0596 | -.0798 | -.0009 | -.0541 | .0238  | -.1059 | 1787.  |  |  |  |
| .2030   | -261.  | 3188.  | 20.    | 17.      | -0.     | 217.     | -.0636 | -.0839 | -.0014 | -.0750 | .0109  | -.0980 | 661.   |  |  |  |
| .2040   | 136.   | 3248.  | 351.   | 292.     | -0.     | -113.    | -.0666 | -.0857 | -.0020 | -.0953 | -.0005 | -.0841 | 951.   |  |  |  |
| .2050   | 512.   | 3201.  | 706.   | 586.     | -0.     | -425.    | -.0686 | -.0852 | -.0022 | -.1152 | -.0100 | -.0653 | 2203.  |  |  |  |
| .2060   | 885.   | 3018.  | 1057.  | 877.     | -0.     | -735.    | -.0696 | -.0823 | -.0020 | -.1347 | -.0173 | -.0430 | 3481.  |  |  |  |
| .2070   | 1242.  | 2699.  | 1386.  | 1150.    | -0.     | -1031.   | -.0695 | -.0773 | -.0012 | -.1527 | -.0232 | -.0184 | 4698.  |  |  |  |
| .2080   | 1531.  | 2290.  | 1691.  | 1403.    | -0.     | -1271.   | -.0684 | -.0703 | -.0002 | -.1667 | -.0286 | .0076  | 5759.  |  |  |  |
| .2090   | 1745.  | 1824.  | 1942.  | 1612.    | -0.     | -1449.   | -.0663 | -.0618 | .0010  | -.1746 | -.0343 | .0340  | 6593.  |  |  |  |

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ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKWOOD 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSVCONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITSINTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |       |       |       |     |        |        |        |        |        |        |        |       |
|-------|--------|-------|-------|-------|-----|--------|--------|--------|--------|--------|--------|--------|-------|
| .1990 | -1427. | 1808. | -943. | -949. | -0. | 1181.  | -.452  | -.0548 | -.0019 | .0277  | .0612  | -.0891 | 5220. |
| .2000 | -1197. | 2352. | -609. | -754. | -0. | 994.   | -.0500 | -.0650 | -.0006 | -.0120 | .0483  | -.1058 | 4608. |
| .2010 | -953.  | 2758. | -609. | -506. | -0. | 791.   | -.0550 | -.0734 | -.0006 | -.0330 | .0368  | -.1082 | 3795. |
| .2020 | -644.  | 3031. | -293. | -243. | -0. | 535.   | -.0596 | -.0798 | -.0009 | -.0541 | .0238  | -.1059 | 2856. |
| .2030 | -261.  | 3188. | 20.   | 17.   | -0. | 217.   | -.0636 | -.0839 | -.0014 | -.0750 | .0109  | -.0980 | 1787. |
| .2040 | 136.   | 3248. | 351.  | 292.  | -0. | -113.  | -.0666 | -.0857 | -.0020 | -.0953 | -.0005 | -.0841 | 661.  |
| .2050 | 512.   | 3201. | 706.  | 586.  | -0. | -425.  | -.0686 | -.0852 | -.0022 | -.1152 | -.0100 | -.0653 | 951.  |
| .2060 | 885.   | 3018. | 1057. | 877.  | -0. | -735.  | -.0696 | -.0823 | -.0020 | -.1347 | -.0173 | -.0430 | 2203. |
| .2070 | 1242.  | 2699. | 1386. | 1150. | -0. | -1031. | -.0695 | -.0773 | -.0012 | -.1527 | -.0232 | -.0184 | 3481. |
| .2080 | 1531.  | 2290. | 1691. | 1403. | -0. | -1271. | -.0684 | -.0703 | -.0002 | -.1667 | -.0286 | .0076  | 4698. |
| .2090 | 1745.  | 1824. | 1942. | 1612. | -0. | -1449. | -.0663 | -.0618 | .0010  | -.1746 | -.0343 | .0340  | 5759. |
|       |        |       |       |       |     |        |        |        |        |        |        |        | 6593. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 06     | MEMBER | 1      | SEQUENCE | 26      | LOCATION | BEG    | TYPE   | VA     | DZ     | RX     | RY     | RZ    | STRESS |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|--------|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | (IN)   | (DEG)  | (DEG)  | (DEG) | (PSI)  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG) | (PSI)  |
| .2100   | 1911.  | 1299.  | 2093.  | 1737.    | -0.     | -1586.   | -.0632 | -.0520 | .0021  | -.1757 | -.0402 | .0584  | 7156. |        |
| .2110   | 2009.  | 715.   | 2129.  | 1767.    | -0.     | -1668.   | -.0594 | -.0414 | .0033  | -.1698 | -.0457 | .0806  | 7392. |        |
| .2120   | 1993.  | 95.    | 2071.  | 1719.    | -0.     | -1654.   | -.0551 | -.0303 | .0047  | -.1570 | -.0499 | .0979  | 7256. |        |
| .2130   | 1869.  | -517.  | 1921.  | 1594.    | -0.     | -1551.   | -.0503 | -.0192 | .0063  | -.1382 | -.0516 | .1110  | 6767. |        |
| .2140   | 1695.  | -1064. | 1668.  | 1384.    | -0.     | -1407.   | -.0449 | -.0086 | .0082  | -.1148 | -.0500 | .1207  | 6003. |        |
| .2150   | 1490.  | -1512. | 1324.  | 1099.    | -0.     | -1236.   | -.0389 | .0011  | .0106  | -.0882 | -.0445 | .1273  | 5032. |        |
| .2160   | 1228.  | -1860. | 929.   | 771.     | 0.      | -1019.   | -.0327 | .0097  | .0133  | -.0594 | -.0358 | .1302  | 3888. |        |
| .2170   | 910.   | -2111. | 503.   | 417.     | 0.      | -756.    | -.0263 | .0169  | .0164  | -.0290 | -.0248 | .1291  | 2626. |        |
| .2180   | 576.   | -2254. | 30.    | 32.      | 0.      | -478.    | -.0201 | .0225  | .0194  | .0024  | -.0127 | .1243  | 1459. |        |
| .2190   | 245.   | -2292. | -460.  | -382.    | 0.      | -203.    | -.0140 | .0265  | .0222  | .0347  | -.0006 | .1159  | 1317. |        |
| .2200   | -103.  | -2254. | -964.  | -800.    | 0.      | 86.      | -.0086 | .0287  | .0245  | .0673  | .0103  | .1037  | 2448. |        |
| .2210   | -465.  | -2151. | -1448. | -1202.   | 0.      | 386.     | -.0039 | .0293  | .0262  | .0992  | .0198  | .0881  | 3839. |        |
| .2220   | -794.  | -1962. | -1903. | -1580.   | 0.      | 659.     | .0002  | .0284  | .0272  | .1289  | .0278  | .0709  | 5207. |        |
| .2230   | -1053. | -1680. | -2312. | -1919.   | 0.      | 874.     | .0039  | .0260  | .0276  | .1544  | .0348  | .0540  | 6414. |        |
| .2240   | -1258. | -1332. | -2627. | -2181.   | -0.     | 1044.    | .0071  | .0225  | .0276  | .1736  | .0409  | .0382  | 7355. |        |
| .2250   | -1425. | -961.  | -2811. | -2333.   | -0.     | 1183.    | .0096  | .0180  | .0273  | .1848  | .0459  | .0234  | 7957. |        |
| .2260   | -1529. | -587.  | -2861. | -2375.   | -0.     | 1269.    | .0115  | .0129  | .0268  | .1872  | .0494  | .0105  | 8190. |        |
| .2270   | -1541. | -213.  | -2792. | -2317.   | -0.     | 1279.    | .0130  | .0074  | .0258  | .1817  | .0505  | .0004  | 8051. |        |
| .2280   | -1465. | 158.   | -2611. | -2167.   | -0.     | 1216.    | .0141  | .0018  | .0242  | .1697  | .0484  | -.0062 | 7558. |        |
| .2290   | -1325. | 502.   | -2325. | -1930.   | -0.     | 1099.    | .0148  | -.0037 | .0218  | .1525  | .0424  | -.0099 | 6756. |        |
| .2300   | -1123. | 777.   | -1956. | -1624.   | -0.     | 932.     | .0151  | -.0087 | .0187  | .1307  | .0328  | -.0114 | 5695. |        |
| .2310   | -864.  | 961.   | -1523. | -1264.   | -0.     | 717.     | .0151  | -.0132 | .0152  | .1050  | .0202  | -.0113 | 4422. |        |
| .2320   | -571.  | 1066.  | -1032. | -856.    | -0.     | 474.     | .0148  | -.0170 | .0113  | .0757  | .0058  | -.0094 | 2977. |        |
| .2330   | -259.  | 1114.  | -489.  | -406.    | -0.     | 215.     | .0145  | -.0199 | .0073  | .0436  | -.0094 | -.0052 | 1397. |        |
| .2340   | 73.    | 1117.  | 83.    | 69.      | -0.     | -61.     | .0145  | -.0220 | .0035  | .0093  | -.0239 | .0011  | 279.  |        |
| .2350   | 420.   | 1076.  | 658.   | 546.     | -0.     | -348.    | .0150  | -.0233 | .0001  | -.0263 | -.0370 | .0091  | 1970. |        |
| .2360   | 745.   | 997.   | 1220.  | 1013.    | -0.     | -618.    | .0158  | -.0239 | -.0028 | -.0616 | -.0478 | .0177  | 3609. |        |
| .2370   | 1021.  | 884.   | 1744.  | 1448.    | -0.     | -847.    | .0171  | -.0237 | -.0052 | -.0946 | -.0563 | .0261  | 5103. |        |
| .2380   | 1241.  | 750.   | 2193.  | 1820.    | -0.     | -1030.   | .0188  | -.0228 | -.0072 | -.1233 | -.0621 | .0333  | 6363. |        |
| .2390   | 1397.  | 602.   | 2535.  | 2104.    | -0.     | -1160.   | .0209  | -.0215 | -.0088 | -.1460 | -.0653 | .0382  | 7308. |        |
| .2400   | 1465.  | 437.   | 2759.  | 2290.    | 0.      | -1216.   | .0233  | -.0197 | -.0101 | -.1616 | -.0659 | .0399  | 7887. |        |
| .2410   | 1429.  | 259.   | 2864.  | 2377.    | 0.      | -1186.   | .0258  | -.0176 | -.0108 | -.1695 | -.0638 | .0377  | 8081. |        |
| .2420   | 1300.  | 93.    | 2848.  | 2363.    | 0.      | -1079.   | .0285  | -.0154 | -.0111 | -.1697 | -.0592 | .0319  | 7903. |        |
| .2430   | 1099.  | -34.   | 2710.  | 2250.    | 0.      | -913.    | .0315  | -.0130 | -.0109 | -.1626 | -.0520 | .0231  | 7385. |        |
| .2440   | 829.   | -121.  | 2469.  | 2050.    | 0.      | -688.    | .0346  | -.0108 | -.0100 | -.1492 | -.0424 | .0114  | 6576. |        |
| .2450   | 484.   | -180.  | 2145.  | 1781.    | 0.      | -402.    | .0376  | -.0086 | -.0085 | -.1303 | -.0305 | -.0032 | 5552. |        |
| .2460   | 84.    | -217.  | 1746.  | 1450.    | 0.      | -69.     | .0403  | -.0066 | -.0065 | -.1067 | -.0170 | -.0204 | 4414. |        |
| .2470   | -338.  | -222.  | 1275.  | 1058.    | 0.      | 281.     | .0426  | -.0047 | -.0041 | -.0790 | -.0024 | -.0393 | 3330. |        |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |       |       |     |        |       |        |        |        |        |        |       |
|-------|-------|-------|-------|-------|-----|--------|-------|--------|--------|--------|--------|--------|-------|
| .2370 | 1021. | 884.  | 1744. | 1448. | -0. | -847.  | .171  | -.0237 | -.0052 | -.0946 | -.0563 | .0261  | 5103. |
| .2380 | 1241. | 750.  | 2193. | 1820. | -0. | -1030. | .183  | -.0228 | -.0072 | -.1233 | -.0621 | .0333  | 6363. |
| .2390 | 1397. | 602.  | 2535. | 2104. | -0. | -1160. | .0209 | -.0215 | -.0088 | -.1460 | -.0653 | .0382  | 7308. |
| .2400 | 1465. | 437.  | 2759. | 2290. | 0.  | -1216. | .0233 | -.0197 | -.0101 | -.1616 | -.0659 | .0399  | 7887. |
| .2410 | 1429. | 259.  | 2864. | 2377. | 0.  | -1186. | .0258 | -.0176 | -.0108 | -.1695 | -.0638 | .0377  | 8081. |
| .2420 | 1300. | 93.   | 2848. | 2363. | 0.  | -1079. | .0285 | -.0154 | -.0111 | -.1697 | -.0592 | .0319  | 7903. |
| .2430 | 1099. | -34.  | 2710. | 2250. | 0.  | -913.  | .0315 | -.0130 | -.0109 | -.1626 | -.0520 | .0231  | 7385. |
| .2440 | 829.  | -121. | 2469. | 2050. | 0.  | -688.  | .0346 | -.0108 | -.0100 | -.1492 | -.0424 | .0114  | 6576. |
| .2450 | 484.  | -180. | 2149. | 1781. | 0.  | -402.  | .0376 | -.0086 | -.0085 | -.1303 | -.0305 | -.0032 | 5552. |
| .2460 | 84.   | -217. | 1746. | 1450. | 0.  | -69.   | .0403 | -.0066 | -.0065 | -.1067 | -.0170 | -.0204 | 4414. |
| .2470 | -330. | -222. | 1275. | 1058. | 0.  | 281.   | .0426 | -.0047 | -.0041 | -.0790 | -.0024 | -.0393 | 3330. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.43.

S/RV PIPING KEWAUNEE GKW02F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | MEMBER | SEQUENCE | LOCATION | BEG     | TYPE    | VA      |       |        |        |        |        |        |        |  |
|---------|--------|----------|----------|---------|---------|---------|-------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX     | FY       | FZ       | MX      | MY      | MZ      | DX    | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB)   | (LB)     | (LB)     | (FT-LB) | (FT-LB) | (FT-LB) | (IN)  | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| .2480   | -758.  | -184.    | 744.     | 617.    | 0.      | 629.    | .0446 | -.0030 | -.0016 | -.0477 | .0127  | -.0587 | 2682.  |  |
| .2490   | -1164. | -105.    | 178.     | 147.    | 0.      | 966.    | .0461 | -.0014 | .0008  | -.0139 | .0275  | -.0777 | 2973.  |  |
| .2500   | -1536. | -7.      | -398.    | -330.   | 0.      | 1275.   | .0469 | .0002  | .0032  | .0206  | .0412  | -.0958 | 4007.  |  |
| .2510   | -1854. | 87.      | -954.    | -792.   | 0.      | 1539.   | .0469 | .0017  | .0054  | .0539  | .0533  | -.1123 | 5264.  |  |
| .2520   | -2102. | 171.     | -1458.   | -1210.  | 0.      | 1744.   | .0462 | .0033  | .0075  | .0843  | .0630  | -.1262 | 6458.  |  |
| .2530   | -2262. | 259.     | -1881.   | -1561.  | 0.      | 1877.   | .0448 | .0050  | .0093  | .1105  | .0699  | -.1359 | 7428.  |  |
| .2540   | -2309. | 358.     | -2212.   | -1836.  | 0.      | 1916.   | .0429 | .0069  | .0108  | .1318  | .0736  | -.1403 | 8073.  |  |
| .2550   | -2232. | 454.     | -2442.   | -2027.  | 0.      | 1852.   | .0407 | .0091  | .0119  | .1471  | .0740  | -.1389 | 8353.  |  |
| .2560   | -2048. | 518.     | -2561.   | -2126.  | 0.      | 1700.   | .0379 | .0116  | .0125  | .1560  | .0710  | -.1326 | 8279.  |  |
| .2570   | -1779. | 521.     | -2563.   | -2127.  | 0.      | 1477.   | .0346 | .0145  | .0127  | .1583  | .0648  | -.1218 | 7877.  |  |
| .2580   | -1429. | 466.     | -2457.   | -2040.  | 0.      | 1186.   | .0310 | .0178  | .0123  | .1544  | .0556  | -.1070 | 7177.  |  |
| .2590   | -994.  | 376.     | -2260.   | -1876.  | 0.      | 825.    | .0273 | .0214  | .0112  | .1451  | .0438  | -.0878 | 6233.  |  |
| .2600   | -488.  | 260.     | -1980.   | -1644.  | 0.      | 405.    | .0237 | .0252  | .0096  | .1309  | .0298  | -.0648 | 5149.  |  |
| .2610   | 55.    | 106.     | -1620.   | -1345.  | 0.      | -46.    | .0204 | .0293  | .0076  | .1121  | .0141  | -.0393 | 4092.  |  |
| .2620   | 605.   | -96.     | -1187.   | -985.   | 0.      | -502.   | .0175 | .0333  | .0053  | .0893  | -.0027 | -.0128 | 3363.  |  |
| .2630   | 1143.  | -331.    | -702.    | -583.   | 0.      | -949.   | .0150 | .0373  | .0028  | .0635  | -.0198 | .0138  | 3386.  |  |
| .2640   | 1652.  | -570.    | -193.    | -160.   | 0.      | -1371.  | .0132 | .0410  | .0002  | .0364  | -.0366 | .0398  | 4200.  |  |
| .2650   | 2108.  | -797.    | 314.     | 260.    | 0.      | -1749.  | .0123 | .0443  | -.0025 | .0095  | -.0523 | .0640  | 5380.  |  |
| .2660   | 2482.  | -1011.   | 791.     | 657.    | -0.     | -2060.  | .0122 | .0470  | -.0054 | -.0155 | -.0660 | .0849  | 6577.  |  |
| .2670   | 2755.  | -1210.   | 1213.    | 1007.   | 0.      | -2287.  | .0129 | .0489  | -.0082 | -.0375 | -.0772 | .1011  | 7601.  |  |
| .2680   | 2916.  | -1371.   | 1558.    | 1293.   | -0.     | -2420.  | .0145 | .0500  | -.0110 | -.0551 | -.0852 | .1120  | 8347.  |  |
| .2690   | 2957.  | -1470.   | 1814.    | 1505.   | 0.      | -2454.  | .0170 | .0500  | -.0137 | -.0677 | -.0897 | .1175  | 8758.  |  |
| .2700   | 2875.  | -1504.   | 1974.    | 1638.   | 0.      | -2387.  | .0204 | .0490  | -.0162 | -.0748 | -.0905 | .1173  | 8806.  |  |
| .2710   | 2670.  | -1479.   | 2040.    | 1693.   | 0.      | -2216.  | .0245 | .0469  | -.0184 | -.0766 | -.0877 | .1109  | 8483.  |  |
| .2720   | 2345.  | -1392.   | 2018.    | 1675.   | 0.      | -1946.  | .0293 | .0437  | -.0202 | -.0733 | -.0815 | .0986  | 7810.  |  |
| .2730   | 1919.  | -1226.   | 1907.    | 1583.   | 0.      | -1593.  | .0346 | .0396  | -.0216 | -.0647 | -.0723 | .0813  | 6832.  |  |
| .2740   | 1417.  | -976.    | 1709.    | 1418.   | 0.      | -1176.  | .0404 | .0346  | -.0227 | -.0510 | -.0605 | .0602  | 5605.  |  |
| .2750   | 854.   | -668.    | 1430.    | 1187.   | 0.      | -709.   | .0464 | .0289  | -.0234 | -.0331 | -.0467 | .0355  | 4205.  |  |
| .2760   | 238.   | -341.    | 1090.    | 904.    | 0.      | -197.   | .0522 | .0228  | -.0239 | -.0119 | -.0316 | .0074  | 2816.  |  |
| .2770   | -410.  | -11.     | 708.     | 588.    | 0.      | 340.    | .0576 | .0165  | -.0242 | .0119  | -.0157 | -.0228 | 2066.  |  |
| .2780   | -1049. | 342.     | 299.     | 248.    | 0.      | 871.    | .0628 | .0103  | -.0243 | .0372  | .0002  | -.0526 | 2753.  |  |
| .2790   | -1638. | 719.     | -121.    | -101.   | 0.      | 1359.   | .0675 | .0044  | -.0243 | .0626  | .0154  | -.0803 | 4146.  |  |
| .2800   | -2162. | 1075.    | -520.    | -432.   | 0.      | 1795.   | .0716 | -.0010 | -.0241 | .0863  | .0295  | -.1053 | 5615.  |  |
| .2810   | -2623. | 1359.    | -862.    | -716.   | 0.      | 2177.   | .0747 | -.0056 | -.0236 | .1066  | .0416  | -.1272 | 6971.  |  |
| .2820   | -3004. | 1572.    | -1127.   | -936.   | 0.      | 2494.   | .0768 | -.0091 | -.0229 | .1227  | .0512  | -.1445 | 8102.  |  |
| .2830   | -3270. | 1741.    | -1317.   | -1093.  | 0.      | 2714.   | .0780 | -.0114 | -.0221 | .1342  | .0578  | -.1558 | 8900.  |  |
| .2840   | -3401. | 1852.    | -1433.   | -1190.  | 0.      | 2823.   | .0782 | -.0125 | -.0212 | .1409  | .0610  | -.1605 | 9319.  |  |
| .2850   | -3418. | 1857.    | -1463.   | -1214.  | 0.      | 2837.   | .0771 | -.0122 | -.0203 | .1424  | .0605  | -.1595 | 9387.  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.44.

S/RV PIPING KEWAUNEE GKW02F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |       |        |        |    |       |       |        |        |        |        |        |       |
|-------|--------|-------|--------|--------|----|-------|-------|--------|--------|--------|--------|--------|-------|
| .2750 | 854.   | -668. | 1430.  | 1187.  | 0. | -709. | .0464 | .0289  | -.0234 | -.0331 | -.0467 | .0355  | 4205. |
| .2760 | 230.   | -341. | 1090.  | 904.   | 0. | -197. | .0522 | .0228  | -.0239 | -.0119 | -.0316 | .0074  | 2816. |
| .2770 | -410.  | -11.  | 708.   | 588.   | 0. | 340.  | .0576 | .0165  | -.0242 | .0119  | -.0157 | -.0228 | 2066. |
| .2780 | -1049. | 342.  | 299.   | 248.   | 0. | 871.  | .0628 | .0103  | -.0243 | .0372  | .0002  | -.0526 | 2753. |
| .2790 | -1630. | 719.  | -121.  | -101.  | 0. | 1359. | .0675 | .0044  | -.0243 | .0626  | .0154  | -.0803 | 4146. |
| .2800 | -2162. | 1075. | -520.  | -432.  | 0. | 1795. | .0716 | -.0010 | -.0241 | .0863  | .0295  | -.1053 | 5615. |
| .2810 | -2623. | 1359. | -862.  | -716.  | 0. | 2177. | .0747 | -.0056 | -.0236 | .1066  | .0416  | -.1272 | 6971. |
| .2820 | -3004. | 1572. | -1127. | -936.  | 0. | 2494. | .0768 | -.0091 | -.0229 | .1227  | .0512  | -.1445 | 8102. |
| .2830 | -3270. | 1741. | -1317. | -1093. | 0. | 2714. | .0780 | -.0114 | -.0221 | .1342  | .0578  | -.1558 | 8900. |
| .2840 | -3401. | 1852. | -1433. | -1190. | 0. | 2823. | .0782 | -.0125 | -.0212 | .1409  | .0610  | -.1605 | 9319. |
| .2850 | -3418. | 1857. | -1463. | -1214. | 0. | 2837. | .0771 | -.0122 | -.0203 | .1424  | .0605  | -.1595 | 9387. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.44.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 66     | MEMBER | 1      | SEQUENCE | 96      | LOCATION | BEG    | TYPE   | VA     |        |        |        |        |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| .2860   | -3342. | 1744.  | -1397. | -1159.   | 0.      | 2774.    | .0747  | -.0106 | -.0195 | .1391  | .0562  | -.1534 | 9145.  |  |
| .2870   | -3150. | 1553.  | -1250. | -1037.   | 0.      | 2621.    | .0710  | -.0077 | -.0187 | .1315  | .0482  | -.1414 | 8575.  |  |
| .2880   | -2845. | 1316.  | -1045. | -867.    | 0.      | 2361.    | .0665  | -.0037 | -.0180 | .1197  | .0373  | -.1232 | 7651.  |  |
| .2890   | -2427. | 1025.  | -781.  | -649.    | 0.      | 2014.    | .0611  | .0012  | -.0171 | .1041  | .0242  | -.0999 | 6437.  |  |
| .2900   | -1951. | 671.   | -454.  | -377.    | 0.      | 1619.    | .0547  | .0068  | -.0161 | .0849  | .0094  | -.0732 | 5057.  |  |
| .2910   | -1429. | 284.   | -82.   | -68.     | 0.      | 1186.    | .0475  | .0128  | -.0148 | .0629  | -.0059 | -.0437 | 3613.  |  |
| .2920   | -847.  | -90.   | 295.   | 245.     | 0.      | 703.     | .0399  | .0190  | -.0132 | .0394  | -.0211 | -.0119 | 2265.  |  |
| .2930   | -226.  | -426.  | 653.   | 542.     | 0.      | 187.     | .0321  | .0251  | -.0114 | .0157  | -.0355 | .0211  | 1744.  |  |
| .2940   | 380.   | -732.  | 983.   | 816.     | 0.      | -316.    | .0240  | .0308  | -.0093 | -.0067 | -.0489 | .0531  | 2661.  |  |
| .2950   | 938.   | -1016. | 1268.  | 1053.    | 0.      | -779.    | .0156  | .0360  | -.0070 | -.0268 | -.0609 | .0821  | 3982.  |  |
| .2960   | 1448.  | -1265. | 1479.  | 1227.    | -0.     | -1202.   | .0072  | .0403  | -.0045 | -.0435 | -.0714 | .1069  | 5226.  |  |
| .2970   | 1905.  | -1445. | 1598.  | 1326.    | -0.     | -1581.   | -.0009 | .0438  | -.0018 | -.0558 | -.0800 | .1274  | 6277.  |  |
| .2980   | 2279.  | -1538. | 1629.  | 1352.    | -0.     | -1891.   | -.0086 | .0461  | .0009  | -.0632 | -.0866 | .1430  | 7072.  |  |
| .2990   | 2552.  | -1556. | 1577.  | 1309.    | -0.     | -2118.   | -.0158 | .0474  | .0039  | -.0660 | -.0906 | .1530  | 7574.  |  |
| .3000   | 2725.  | -1521. | 1441.  | 1196.    | -0.     | -2262.   | -.0224 | .0475  | .0071  | -.0649 | -.0917 | .1566  | 7782.  |  |
| .3010   | 2796.  | -1432. | 1225.  | 1017.    | -0.     | -2321.   | -.0283 | .0465  | .0106  | -.0603 | -.0895 | .1541  | 7708.  |  |
| .3020   | 2761.  | -1273. | 945.   | 784.     | -0.     | -2292.   | -.0333 | .0444  | .0142  | -.0522 | -.0841 | .1464  | 7368.  |  |
| .3030   | 2630.  | -1045. | 606.   | 503.     | -0.     | -2183.   | -.0372 | .0415  | .0177  | -.0409 | -.0757 | .1343  | 6813.  |  |
| .3040   | 2419.  | -780.  | 214.   | 178.     | -0.     | -2008.   | -.0401 | .0378  | .0212  | -.0275 | -.0647 | .1178  | 6132.  |  |
| .3050   | 2132.  | -518.  | -207.  | -172.    | -0.     | -1769.   | -.0422 | .0336  | .0244  | -.0126 | -.0518 | .0972  | 5408.  |  |
| .3060   | 1769.  | -271.  | -631.  | -524.    | -0.     | -1468.   | -.0435 | .0291  | .0273  | -.0029 | -.0577 | .0733  | 4741.  |  |
| .3070   | 1358.  | -24.   | -1041. | -864.    | -0.     | -1127.   | -.0440 | .0244  | .0297  | .0183  | -.0231 | .0481  | 4320.  |  |
| .3080   | 938.   | 218.   | -1426. | -1184.   | -0.     | -779.    | -.0435 | .0197  | .0316  | .0325  | -.0086 | .0228  | 4310.  |  |
| .3090   | 520.   | 420.   | -1762. | -1462.   | -0.     | -432.    | -.0423 | .0152  | .0330  | .0439  | .0055  | -.0023 | 4638.  |  |
| .3100   | 96.    | 552.   | -2017. | -1674.   | 0.      | -80.     | -.0407 | .0110  | .0339  | .0516  | .0186  | -.0267 | 5097.  |  |
| .3110   | -313.  | 632.   | -2179. | -1809.   | 0.      | 260.     | -.0387 | .0073  | .0342  | .0552  | .0303  | -.0491 | 5558.  |  |
| .3120   | -664.  | 688.   | -2260. | -1876.   | 0.      | 551.     | -.0363 | .0040  | .0338  | .0547  | .0403  | -.0679 | 5947.  |  |
| .3130   | -938.  | 718.   | -2260. | -1876.   | 0.      | 778.     | -.0335 | .0013  | .0327  | .0500  | .0483  | -.0828 | 6179.  |  |
| .3140   | -1157. | 692.   | -2166. | -1798.   | 0.      | 960.     | -.0308 | -.0009 | .0308  | .0409  | .0538  | -.0944 | 6200.  |  |
| .3150   | -1329. | 607.   | -1973. | -1638.   | 0.      | 1103.    | -.0283 | -.0026 | .0284  | .0279  | .0563  | -.1030 | 6007.  |  |
| .3160   | -1427. | 493.   | -1703. | -1414.   | 0.      | 1184.    | -.0260 | -.0039 | .0253  | .0115  | .0563  | -.1078 | 5610.  |  |
| .3170   | -1429. | 303.   | -1375. | -1142.   | 0.      | 1186.    | -.0238 | -.0048 | .0215  | -.0075 | .0535  | -.1084 | 5007.  |  |
| .3180   | -1756. | 284.   | -992.  | -823.    | 0.      | 1125.    | -.0219 | -.0055 | .0173  | -.0286 | .0481  | -.1051 | 4241.  |  |
| .3190   | -1236. | 182.   | -556.  | -461.    | -0.     | 1026.    | -.0203 | -.0059 | .0129  | -.0513 | .0407  | -.0991 | 3422.  |  |
| .3200   | -1071. | 76.    | -90.   | -75.     | -0.     | 889.     | -.0192 | -.0062 | .0083  | -.0748 | .0317  | -.0910 | 2713.  |  |
| .3210   | -853.  | -13.   | 374.   | 311.     | -0.     | 708.     | -.0184 | -.0065 | .0037  | -.0981 | .0219  | -.0810 | 2352.  |  |
| .3220   | -601.  | -62.   | 820.   | 681.     | -0.     | 499.     | -.0178 | -.0067 | -.0009 | -.1197 | .0116  | -.0692 | 2567.  |  |
| .3230   | -336.  | -70.   | 1233.  | 1023.    | -0.     | 279.     | -.0173 | -.0070 | -.0054 | -.1386 | .0014  | -.0562 | 3226.  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.44.

S/RV PIPING KEWAUNEE CKW00F 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |        |      |        |        |     |       |        |        |        |        |       |        |       |
|-------|--------|------|--------|--------|-----|-------|--------|--------|--------|--------|-------|--------|-------|
| .3120 | -664.  | 688. | -2260. | -1876. | 0.  | 551.  | -.0363 | .0040  | .0338  | .0547  | .0403 | -.0679 | 5947. |
| .3130 | -938.  | 718. | -2260. | -1876. | 0.  | 778.  | -.0335 | .0013  | .0327  | .0500  | .0483 | -.0828 | 6179. |
| .3140 | -1157. | 692. | -2166. | -1798. | 0.  | 960.  | -.0308 | -.0009 | .0308  | .0409  | .0538 | -.0944 | 6200. |
| .3150 | -1329. | 607. | -1973. | -1638. | 0.  | 1103. | -.0283 | -.0026 | .0284  | .0279  | .0565 | -.1030 | 6007. |
| .3160 | -1427. | 493. | -1707. | -1414. | 0.  | 1184. | -.0260 | -.0039 | .0253  | .0115  | .0563 | -.1078 | 5610. |
| .3170 | -1429. | 383. | -1375. | -1142. | 0.  | 1186. | -.0238 | -.0048 | .0215  | -.0075 | .0535 | -.1084 | 5007. |
| .3180 | -1356. | 284. | -.092. | -823.  | 0.  | 1125. | -.0219 | -.0055 | .0173  | -.0286 | .0481 | -.1051 | 4241. |
| .3190 | -1236. | 182. | -556.  | -461.  | -0. | 1026. | -.0203 | -.0059 | .0129  | -.0513 | .0407 | -.0991 | 3422. |
| .3200 | -1071. | 76.  | -90.   | -75.   | -0. | 889.  | -.0192 | -.0062 | .0083  | -.0748 | .0317 | -.0910 | 2713. |
| .3210 | -853.  | -13. | 374.   | 311.   | -0. | 708.  | -.0184 | -.0065 | .0037  | -.0981 | .0219 | -.0810 | 2352. |
| .3220 | -601.  | -62. | 820.   | 681.   | -0. | 499.  | -.0178 | -.0067 | -.0009 | -.1197 | .0116 | -.0692 | 2567. |
| .3230 | -336.  | -70. | 1233.  | 1023.  | -0. | 279.  | -.0173 | -.0070 | -.0054 | -.1386 | .0014 | -.0562 | 3226. |

ADLPIPE PAGE 2590 DIS/ADLPIPE ADLPIPE STRESS ANALYSIS 8/12/02. 18.29.44.

S/RV PIPING KEWAUNEE GKHOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 66     | MEMBER | 1      | SEQUENCE | 96      | LOCATION | BEG    | TYPE   | VA     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .3240   | -72.   | -60.   | 1592.  | 1321.    | -0.     | 59.      | -.0172 | -.0074 | -.0096 | -.1543 | -.0081 | -.0433 | 4024.  |  |  |
| .3250   | 183.   | -49.   | 1883.  | 1563.    | -0.     | -152.    | -.0172 | -.0078 | -.0134 | -.1662 | -.0166 | -.0314 | 4776.  |  |  |
| .3260   | 409.   | -25.   | 2100.  | 1743.    | -0.     | -340.    | -.0173 | -.0082 | -.0167 | -.1738 | -.0237 | -.0203 | 5402.  |  |  |
| .3270   | 597.   | 27.    | 2230.  | 1858.    | -0.     | -496.    | -.0172 | -.0087 | -.0195 | -.1765 | -.0290 | -.0100 | 5850.  |  |  |
| .3280   | 749.   | 98.    | 2290.  | 1901.    | -0.     | -622.    | -.0170 | -.0091 | -.0216 | -.1745 | -.0321 | -.0006 | 6083.  |  |  |
| .3290   | 856.   | 159.   | 2254.  | 1871.    | -0.     | -711.    | -.0166 | -.0094 | -.0230 | -.1680 | -.0330 | .0071  | 6087.  |  |  |
| .3300   | 897.   | 194.   | 2142.  | 1778.    | -0.     | -744.    | -.0161 | -.0096 | -.0236 | -.1573 | -.0316 | .0127  | 5863.  |  |  |
| .3310   | 869.   | 210.   | 1961.  | 1627.    | -0.     | -721.    | -.0153 | -.0097 | -.0236 | -.1425 | -.0281 | .0167  | 5414.  |  |  |
| .3320   | 797.   | 222.   | 1705.  | 1415.    | -0.     | -658.    | -.0142 | -.0096 | -.0230 | -.1238 | -.0226 | .0196  | 4748.  |  |  |
| .3330   | 678.   | 217.   | 1383.  | 1148.    | -0.     | -563.    | -.0129 | -.0093 | -.0219 | -.1020 | -.0154 | .0214  | 3890.  |  |  |
| .3340   | 513.   | 170.   | 1019.  | 846.     | -0.     | -425.    | -.0114 | -.0089 | -.0203 | -.0782 | -.0069 | .0216  | 2880.  |  |  |
| .3350   | 294.   | 78.    | 636.   | 528.     | -0.     | -244.    | -.0100 | -.0084 | -.0182 | -.0532 | .0024  | .0205  | 1768.  |  |  |
| .3360   | 52.    | -33.   | 240.   | 199.     | -0.     | -44.     | -.0084 | -.0078 | -.0158 | -.0277 | .0122  | .0190  | 621.   |  |  |
| .3370   | -177.  | -139.  | -161.  | -134.    | -0.     | 147.     | -.0068 | -.0073 | -.0133 | -.0027 | .0221  | .0182  | 605.   |  |  |
| .3380   | -397.  | -251.  | -545.  | -453.    | -0.     | 329.     | -.0051 | -.0069 | -.0106 | .0209  | .0315  | .0178  | 1703.  |  |  |
| .3390   | -614.  | -382.  | -887.  | -737.    | -0.     | 510.     | -.0038 | -.0066 | -.0079 | .0423  | .0399  | .0175  | 2725.  |  |  |
| .3400   | -810.  | -522.  | -1181. | -980.    | -0.     | 672.     | -.0028 | -.0067 | -.0053 | .0607  | .0469  | .0177  | 3616.  |  |  |
| .3410   | -953.  | -643.  | -1429. | -1186.   | -0.     | 791.     | -.0022 | -.0071 | -.0030 | .0760  | .0522  | .0190  | 4337.  |  |  |
| .3420   | -1034. | -732.  | -1626. | -1349.   | -0.     | 858.     | -.0018 | -.0080 | -.0010 | .0880  | .0555  | .0218  | 4864.  |  |  |
| .3430   | -1065. | -792.  | -1755. | -1457.   | -0.     | 884.     | -.0019 | -.0095 | .0005  | .0963  | .0567  | .0259  | 5183.  |  |  |
| .3440   | -1045. | -830.  | -1812. | -1504.   | -0.     | 868.     | -.0024 | -.0115 | .0016  | .1005  | .0559  | .0308  | 5282.  |  |  |
| .3450   | -964.  | -839.  | -1803. | -1496.   | -0.     | 800.     | -.0035 | -.0141 | .0023  | .1004  | .0531  | .0367  | 5161.  |  |  |
| .3460   | -821.  | -806.  | -1720. | -1434.   | -0.     | 681.     | -.0048 | -.0173 | .0025  | .0962  | .0486  | .0437  | 4829.  |  |  |
| .3470   | -629.  | -721.  | -1586. | -1316.   | -0.     | 522.     | -.0065 | -.0210 | .0023  | .0884  | .0426  | .0520  | 4307.  |  |  |
| .3480   | -399.  | -595.  | -1284. | -1149.   | -0.     | 331.     | -.0083 | -.0253 | .0016  | .0773  | .0353  | .0610  | 3636.  |  |  |
| .3490   | -137.  | -444.  | -1136. | -943.    | -0.     | 114.     | -.0104 | -.0299 | .0005  | .0633  | .0270  | .0701  | 2888.  |  |  |
| .3500   | 142.   | -277.  | -852.  | -707.    | -0.     | -118.    | -.0125 | -.0349 | -.0009 | .0473  | .0179  | .0788  | 2180.  |  |  |
| .3510   | 421.   | -89.   | -542.  | -450.    | -0.     | -349.    | -.0146 | -.0400 | -.0027 | .0304  | .0084  | .0871  | 1732.  |  |  |
| .3520   | 691.   | 118.   | -222.  | -184.    | -0.     | -574.    | -.0164 | -.0451 | -.0048 | .0134  | -.0012 | .0949  | 1833.  |  |  |
| .3530   | 948.   | 330.   | 92.    | 76.      | -0.     | -787.    | -.0179 | -.0501 | -.0071 | -.0031 | -.0104 | .1018  | 2405.  |  |  |
| .3540   | 1174.  | 529.   | 391.   | 325.     | -0.     | -975.    | -.0189 | -.0548 | -.0095 | -.0186 | -.0188 | .1073  | 3125.  |  |  |
| .3550   | 1350.  | 707.   | 672.   | 558.     | -0.     | -1121.   | -.0195 | -.0591 | -.0118 | -.0325 | -.0259 | .1111  | 3807.  |  |  |
| .3560   | 1475.  | 868.   | 921.   | 765.     | -0.     | -1224.   | -.0195 | -.0629 | -.0141 | -.0442 | -.0315 | .1136  | 4390.  |  |  |
| .3570   | 1554.  | 1016.  | 1125.  | 923.     | -0.     | -1290.   | -.0186 | -.0660 | -.0163 | -.0532 | -.0353 | .1148  | 4844.  |  |  |
| .3580   | 1582.  | 1138.  | 1275.  | 1059.    | -0.     | -1313.   | -.0170 | -.0683 | -.0182 | -.0592 | -.0372 | .1145  | 5130.  |  |  |
| .3590   | 1540.  | 1213.  | 1376.  | 1142.    | -0.     | -1278.   | -.0148 | -.0697 | -.0199 | -.0619 | -.0372 | .1122  | 5214.  |  |  |
| .3600   | 1430.  | 1238.  | 1422.  | 1180.    | -0.     | -1187.   | -.0120 | -.0703 | -.0213 | -.0610 | -.0357 | .1078  | 5091.  |  |  |
| .3610   | 1267.  | 1229.  | 1406.  | 1167.    | -0.     | -1052.   | -.0085 | -.0699 | -.0224 | -.0565 | -.0326 | .1021  | 4779.  |  |  |

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S/RV PIPING KEWAUNEE GKHOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24  
LOADS  
SHOCK  
PRESSURE  
ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |       |       |       |     |        |        |        |        |        |        |       |       |
|-------|-------|-------|-------|-------|-----|--------|--------|--------|--------|--------|--------|-------|-------|
| .3510 | 421.  | -89.  | 542.  | -450. | -0. | -349.  | -.0146 | -.0400 | -.0027 | .0304  | .0084  | .0871 | 1732. |
| .3520 | 691.  | 118.  | -222. | -184. | -0. | -574.  | -.0164 | -.0451 | -.0048 | .0134  | -.0012 | .0949 | 1833. |
| .3530 | 948.  | 330.  | 92.   | 76.   | -0. | -787.  | -.0179 | -.0501 | -.0071 | -.0031 | -.0104 | .1018 | 2405. |
| .3540 | 1174. | 529.  | 391.  | 325.  | -0. | -975.  | -.0189 | -.0548 | -.0095 | -.0186 | -.0188 | .1073 | 3125. |
| .3550 | 1350. | 707.  | 672.  | 558.  | -0. | -1121. | -.0195 | -.0591 | -.0118 | -.0325 | -.0259 | .1111 | 3807. |
| .3560 | 1475. | 868.  | 921.  | 765.  | -0. | -1224. | -.0195 | -.0629 | -.0141 | -.0442 | -.0315 | .1136 | 4390. |
| .3570 | 1554. | 1016. | 1125. | 933.  | -0. | -1290. | -.0186 | -.0660 | -.0163 | -.0532 | -.0353 | .1148 | 4844. |
| .3580 | 1582. | 1138. | 1275. | 1059. | -0. | -1313. | -.0170 | -.0683 | -.0182 | -.0592 | -.0372 | .1145 | 5130. |
| .3590 | 1540. | 1213. | 1376. | 1142. | -0. | -1278. | -.0148 | -.0697 | -.0199 | -.0619 | -.0372 | .1122 | 5214. |
| .3600 | 1430. | 1238. | 1422. | 1180. | -0. | -1187. | -.0120 | -.0703 | -.0213 | -.0610 | -.0357 | .1078 | 5091. |
| .3610 | 1267. | 1229. | 1406. | 1197. | -0. | -1052. | -.0085 | -.0699 | -.0224 | -.0565 | -.0326 | .1021 | 4779. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

| SECTION | 66     | MEMBER | 1      | SEQUENCE | 96      | LOCATION | BEG    | TYPE   | VA     |        |        |        |        |  |  |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME    | FX     | FY     | FZ     | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |  |
| (SEC)   | (LB)   | (LB)   | (LB)   | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |  |
| .3620   | 1065.  | 1193.  | 1326.  | 1101.    | -0.     | -884.    | -.0044 | -.0687 | -.0233 | -.0483 | -.0282 | .0953  | 4295.  |  |  |
| .3630   | 820.   | 1124.  | 1194.  | 991.     | -0.     | -681.    | .0002  | -.0666 | -.0239 | -.0370 | -.0227 | .0876  | 3658.  |  |  |
| .3640   | 533.   | 1013.  | 1023.  | 849.     | -0.     | -442.    | .0051  | -.0636 | -.0241 | -.0234 | -.0161 | .0787  | 2912.  |  |  |
| .3650   | 222.   | 868.   | 817.   | 678.     | -0.     | -184.    | .0101  | -.0600 | -.0239 | -.0080 | -.0087 | .0693  | 2137.  |  |  |
| .3660   | -92.   | 709.   | 583.   | 484.     | -0.     | 76.      | .0153  | -.0557 | -.0235 | .0085  | -.0007 | .0600  | 1490.  |  |  |
| .3670   | -401.  | 544.   | 333.   | 276.     | -0.     | 332.     | .0205  | -.0509 | -.0227 | .0254  | .0077  | .0513  | 1315.  |  |  |
| .3680   | -699.  | 372.   | 81.    | 67.      | -0.     | 580.     | .0254  | -.0458 | -.0217 | .0421  | .0160  | .0431  | 1778.  |  |  |
| .3690   | -978.  | 186.   | -164.  | -176.    | -0.     | 812.     | .0299  | -.0404 | -.0205 | .0579  | .0238  | .0354  | 2504.  |  |  |
| .3700   | -1223. | -10.   | -396.  | -328.    | -0.     | 1015.    | .0338  | -.0349 | -.0192 | .0722  | .0307  | .0283  | 3246.  |  |  |
| .3710   | -1427. | -201.  | -604.  | -501.    | -0.     | 1185.    | .0370  | -.0295 | -.0178 | .0846  | .0362  | .0221  | 3913.  |  |  |
| .3720   | -1583. | -377.  | -779.  | -647.    | -0.     | 1314.    | .0395  | -.0242 | -.0165 | .0948  | .0400  | .0172  | 4456.  |  |  |
| .3730   | -1685. | -537.  | -917.  | -761.    | -0.     | 1399.    | .0411  | -.0192 | -.0151 | .1021  | .0422  | .0134  | 4843.  |  |  |
| .3740   | -1729. | -687.  | -1009. | -838.    | -0.     | 1435.    | .0418  | -.0146 | -.0137 | .1059  | .0426  | .0106  | 5055.  |  |  |
| .3750   | -1719. | -821.  | -1051. | -872.    | 0.      | 1427.    | .0415  | -.0106 | -.0123 | .1060  | .0415  | .0088  | 5087.  |  |  |
| .3760   | -1653. | -924.  | -1041. | -864.    | 0.      | 1372.    | .0402  | -.0071 | -.0109 | .1024  | .0391  | .0081  | 4931.  |  |  |
| .3770   | -1527. | -984.  | -983.  | -816.    | 0.      | 1268.    | .0382  | -.0044 | -.0095 | .0950  | .0355  | .0088  | 4586.  |  |  |
| .3780   | -1346. | -1003. | -884.  | -734.    | 0.      | 1117.    | .0353  | -.0023 | -.0081 | .0841  | .0311  | .0105  | 4067.  |  |  |
| .3790   | -1125. | -993.  | -746.  | -619.    | 0.      | 934.     | .0316  | -.0010 | -.0067 | .0699  | .0260  | .0126  | 3408.  |  |  |
| .3800   | -876.  | -959.  | -573.  | -475.    | 0.      | 727.     | .0272  | -.0005 | -.0053 | .0530  | .0203  | .0147  | 2643.  |  |  |
| .3810   | -602.  | -891.  | -377.  | -313.    | -0.     | 499.     | .0223  | -.0006 | -.0039 | .0342  | .0141  | .0169  | 1793.  |  |  |
| .3820   | -304.  | -779.  | -172.  | -143.    | 0.      | 252.     | .0171  | -.0013 | -.0025 | .0142  | .0076  | .0191  | 882.   |  |  |
| .3830   | 2.     | -637.  | 36.    | 30.      | -0.     | -2.      | .0116  | -.0026 | -.0010 | -.0064 | .0008  | .0209  | 90.    |  |  |
| .3840   | 295.   | -486.  | 243.   | 202.     | -0.     | -245.    | .0059  | -.0043 | .0004  | -.0271 | -.0060 | .0216  | 965.   |  |  |
| .3850   | 565.   | -330.  | 441.   | 366.     | -0.     | -469.    | .0002  | -.0064 | .0020  | -.0472 | -.0125 | .0211  | 1810.  |  |  |
| .3860   | 812.   | -160.  | 617.   | 512.     | -0.     | -674.    | -.0052 | -.0087 | .0037  | -.0660 | -.0184 | .0196  | 2574.  |  |  |
| .3870   | 1031.  | 25.    | 761.   | 632.     | -0.     | -856.    | -.0102 | -.0111 | .0054  | -.0828 | -.0233 | .0174  | 3235.  |  |  |
| .3880   | 1208.  | 208.   | 870.   | 722.     | -0.     | -1003.   | -.0147 | -.0134 | .0071  | -.0973 | -.0271 | .0141  | 3759.  |  |  |
| .3890   | 1331.  | 371.   | 943.   | 783.     | -0.     | -1105.   | -.0186 | -.0156 | .0090  | -.1091 | -.0296 | .0094  | 4118.  |  |  |
| .3900   | 1398.  | 506.   | 976.   | 810.     | -0.     | -1160.   | -.0219 | -.0175 | .0110  | -.1180 | -.0307 | .0034  | 4304.  |  |  |
| .3910   | 1414.  | 617.   | 965.   | 801.     | -0.     | -1173.   | -.0244 | -.0190 | .0130  | -.1234 | -.0305 | -.0033 | 4321.  |  |  |
| .3920   | 1378.  | 709.   | 912.   | 757.     | -0.     | -1144.   | -.0260 | -.0200 | .0150  | -.1252 | -.0291 | -.0102 | 4172.  |  |  |
| .3930   | 1290.  | 777.   | 821.   | 682.     | -0.     | -1071.   | -.0268 | -.0205 | .0169  | -.1235 | -.0267 | -.0174 | 3861.  |  |  |
| .3940   | 1151.  | 798.   | 698.   | 579.     | -0.     | -956.    | -.0268 | -.0204 | .0188  | -.1188 | -.0232 | -.0250 | 3399.  |  |  |
| .3950   | 966.   | 766.   | 549.   | 455.     | -0.     | -801.    | -.0262 | -.0198 | .0207  | -.1114 | -.0188 | -.0330 | 2804.  |  |  |
| .3960   | 741.   | 697.   | 380.   | 315.     | -0.     | -615.    | -.0249 | -.0186 | .0225  | -.1015 | -.0137 | -.0405 | 2102.  |  |  |
| .3970   | 492.   | 612.   | 195.   | 162.     | 0.      | -409.    | -.0230 | -.0169 | .0241  | -.0893 | -.0080 | -.0469 | 1337.  |  |  |
| .3980   | 233.   | 502.   | -1.    | -0.      | 0.      | -194.    | -.0206 | -.0148 | .0256  | -.0757 | -.0020 | -.0522 | 589.   |  |  |
| .3990   | -34.   | 355.   | -196.  | -162.    | 0.      | 28.      | -.0179 | -.0123 | .0268  | -.0612 | .0043  | -.0568 | 501.   |  |  |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.44.

S/RV PIPING KEWAUNEE GKWOEF 2 RUP DISK  
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING

|       |       |      |       |       |     |        |        |        |       |        |        |        |       |
|-------|-------|------|-------|-------|-----|--------|--------|--------|-------|--------|--------|--------|-------|
| .3890 | 1331. | 371. | 943.  | 783.  | -0. | -1105. | -.0186 | -.0156 | .0090 | -.1091 | -.0296 | .0094  | 4118. |
| .3900 | 1398. | 506. | 976.  | 810.  | -0. | -1160. | -.0219 | -.0175 | .0110 | -.1180 | -.0307 | .0034  | 4304. |
| .3910 | 1414. | 617. | 965.  | 801.  | -0. | -1173. | -.0244 | -.0190 | .0130 | -.1234 | -.0305 | -.0033 | 4321. |
| .3920 | 1378. | 709. | 912.  | 757.  | -0. | -1144. | -.0260 | -.0200 | .0150 | -.1252 | -.0291 | -.0102 | 4172. |
| .3930 | 1290. | 777. | 821.  | 682.  | -0. | -1071. | -.0268 | -.0205 | .0169 | -.1235 | -.0267 | -.0174 | 3861. |
| .3940 | 1151. | 799. | 698.  | 579.  | -0. | -956.  | -.0268 | -.0204 | .0188 | -.1188 | -.0232 | -.0250 | 3399. |
| .3950 | 966.  | 766. | 549.  | 455.  | -0. | -801.  | -.0262 | -.0198 | .0207 | -.1114 | -.0188 | -.0330 | 2804. |
| .3960 | 741.  | 697. | 380.  | 315.  | -0. | -615.  | -.0249 | -.0186 | .0225 | -.1015 | -.0137 | -.0405 | 2102. |
| .3970 | 492.  | 612. | 195.  | 162.  | 0.  | -409.  | -.0230 | -.0169 | .0241 | -.0893 | -.0080 | -.0469 | 1337. |
| .3980 | 233.  | 502. | -1.   | -0.   | 0.  | -194.  | -.0206 | -.0148 | .0256 | -.0757 | -.0020 | -.0522 | 589.  |
| .3990 | -34.  | 355. | -196. | -162. | 0.  | 28.    | -.0179 | -.0123 | .0268 | -.0612 | .0043  | -.0568 | 501.  |

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| SECTION | 66    | MEMBER | 1     | SEQUENCE | 96      | LOCATION | BEG    | TYPE   | VA    |        |       |        |        |  |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|-------|--------|-------|--------|--------|--|
| TIME    | FX    | FY     | FZ    | MX       | MY      | MZ       | DX     | DY     | DZ    | RX     | RY    | RZ     | STRESS |  |
| (SEC)   | (LB)  | (LB)   | (LB)  | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)  | (DEG)  | (DEG) | (DEG)  | (PSI)  |  |
| .4000   | -307. | 176.   | -378. | -313.    | 0.      | 255.     | -.0151 | -.0096 | .0279 | -.0466 | .0103 | -.0604 | 1229.  |  |

MAXIMUM VALUE OF STRESS OCCURS AT

| TIME  | FX    | FY     | FZ    | MX      | MY      | MZ      | DX    | DY     | DZ     | RX    | RY    | RZ     | STRESS |
|-------|-------|--------|-------|---------|---------|---------|-------|--------|--------|-------|-------|--------|--------|
| (SEC) | (LB)  | (LB)   | (LB)  | (FT-LB) | (FT-LB) | (FT-LB) | (IN)  | (IN)   | (IN)   | (DEG) | (DEG) | (DEG)  | (PSI)  |
| .2850 | 3418. | -1857. | 1463. | 1214.   | 0.      | -2837.  | .0771 | -.0122 | -.0203 | .1424 | .0605 | -.1595 | 9387.  |

| SECTION | 66   | MEMBER | 1    | SEQUENCE | 97      | LOCATION | DIS    | TYPE   | VA     |        |        |        |        |  |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       | DX     | DY     | DZ     | RX     | RY     | RZ     | STRESS |  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  | (PSI)  |  |
| 0.0000  | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.     |  |
| .0010   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | -.0000 | 0.     |  |
| .0020   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | -.0000 | 0.     |  |
| .0030   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | .0000  | -.0000 | .0000  | -.0000 | 0.     |  |
| .0040   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | -.0000 | 0.     |  |
| .0050   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | -.0000 | -.0000 | .0000  | -.0000 | -.0000 | 0.     |  |
| .0060   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0000 | 0.     |  |
| .0070   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | -.0000 | .0000  | -.0001 | -.0001 | 0.     |  |
| .0080   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0000 | .0000  | -.0000 | .0000  | -.0003 | -.0003 | 0.     |  |
| .0090   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0001 | .0000  | .0000  | .0001  | -.0006 | -.0006 | 0.     |  |
| .0100   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0001 | -.0000 | .0000  | .0001  | -.0010 | -.0011 | 0.     |  |
| .0110   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0002 | -.0000 | .0000  | .0002  | -.0015 | -.0017 | 0.     |  |
| .0120   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0003 | -.0000 | .0000  | .0003  | -.0022 | -.0025 | 0.     |  |
| .0130   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0005 | -.0001 | .0000  | .0003  | -.0030 | -.0038 | 0.     |  |
| .0140   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0007 | -.0001 | .0001  | .0002  | -.0041 | -.0058 | 0.     |  |
| .0150   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0011 | -.0002 | .0001  | .0001  | -.0052 | -.0080 | 0.     |  |
| .0160   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0015 | -.0004 | .0002  | .0003  | -.0064 | -.0102 | 0.     |  |
| .0170   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0020 | -.0006 | .0002  | .0009  | -.0075 | -.0116 | 0.     |  |
| .0180   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0025 | -.0009 | .0002  | .0017  | -.0081 | -.0121 | 0.     |  |
| .0190   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0031 | -.0013 | .0003  | .0025  | -.0079 | -.0115 | 0.     |  |
| .0200   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0037 | -.0018 | .0004  | .0030  | -.0067 | -.0098 | 0.     |  |
| .0210   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0043 | -.0023 | .0005  | .0031  | -.0041 | -.0067 | 0.     |  |
| .0220   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0048 | -.0028 | .0006  | .0029  | -.0003 | -.0023 | 0.     |  |
| .0230   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | -.0053 | -.0033 | .0007  | .0023  | .0044  | .0031  | 0.     |  |

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CONDITION 24

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INTERNAL FORCES IN THE PIPING  
FORCES AND MOMENTS ACT ON THE PIPING



|       |    |    |    |    |    |    |    |        |        |       |       |        |        |    |
|-------|----|----|----|----|----|----|----|--------|--------|-------|-------|--------|--------|----|
| .0130 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0005 | -.0001 | .0000 | .0003 | -.0022 | -.0025 | 0. |
| .0140 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0007 | -.0001 | .0001 | .0002 | -.0041 | -.0058 | 0. |
| .0150 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0011 | -.0002 | .0001 | .0001 | -.0052 | -.0080 | 0. |
| .0160 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0015 | -.0004 | .0002 | .0003 | -.0064 | -.0102 | 0. |
| .0170 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0020 | -.0006 | .0002 | .0009 | -.0075 | -.0116 | 0. |
| .0180 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0025 | -.0009 | .0002 | .0017 | -.0081 | -.0121 | 0. |
| .0190 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0031 | -.0013 | .0003 | .0025 | -.0079 | -.0115 | 0. |
| .0200 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0037 | -.0018 | .0004 | .0030 | -.0067 | -.0098 | 0. |
| .0210 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0043 | -.0023 | .0005 | .0031 | -.0041 | -.0067 | 0. |
| .0220 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0048 | -.0028 | .0006 | .0029 | -.0003 | -.0023 | 0. |
| .0230 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0053 | -.0033 | .0007 | .0023 | .0044  | .0031  | 0. |

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| SECTION | 06   | MEMBER | 1    | SEQUENCE | 07      | LOCATION | DIS | TYPE   | VA     |        |        |        |        | STRESS |
|---------|------|--------|------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|
| TIME    | FX   | FY     | FZ   | MX       | MY      | MZ       |     |        |        |        |        |        |        | (PSI)  |
| (SEC)   | (LB) | (LB)   | (LB) | (FT-LB)  | (FT-LB) | (FT-LB)  |     | (IN)   | (IN)   | (IN)   | (DEG)  | (DEG)  | (DEG)  |        |
| .0240   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0057 | -.0036 | .0008  | .0013  | .0091  | .0081  | 0.     |
| .0250   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0062 | -.0038 | .0008  | .0000  | .0129  | .0118  | 0.     |
| .0260   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0065 | -.0039 | .0008  | -.0006 | .0152  | .0144  | 0.     |
| .0270   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0066 | -.0037 | .0006  | .0006  | .0154  | .0183  | 0.     |
| .0280   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0062 | -.0034 | .0002  | .0038  | .0139  | .0250  | 0.     |
| .0290   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0056 | -.0029 | -.0003 | .0069  | .0113  | .0310  | 0.     |
| .0300   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0051 | -.0020 | -.0007 | .0075  | .0085  | .0315  | 0.     |
| .0310   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0044 | -.0010 | -.0011 | .0068  | .0064  | .0298  | 0.     |
| .0320   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0029 | .0002  | -.0016 | .0069  | .0060  | .0333  | 0.     |
| .0330   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0008 | .0014  | -.0022 | .0070  | .0076  | .0408  | 0.     |
| .0340   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0012  | .0028  | -.0026 | .0042  | .0101  | .0428  | 0.     |
| .0350   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0030  | .0044  | -.0028 | -.0016 | .0118  | .0357  | 0.     |
| .0360   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0048  | .0059  | -.0031 | -.0063 | .0113  | .0266  | 0.     |
| .0370   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0072  | .0072  | -.0037 | -.0061 | .0076  | .0220  | 0.     |
| .0380   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0097  | .0082  | -.0045 | -.0016 | .0008  | .0198  | 0.     |
| .0390   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0120  | .0090  | -.0052 | .0028  | -.0075 | .0128  | 0.     |
| .0400   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0136  | .0095  | -.0056 | .0042  | -.0149 | -.0016 | 0.     |
| .0410   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0148  | .0095  | -.0059 | .0041  | -.0191 | -.0174 | 0.     |
| .0420   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0164  | .0089  | -.0061 | .0052  | -.0186 | -.0243 | 0.     |
| .0430   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0182  | .0076  | -.0061 | .0058  | -.0124 | -.0221 | 0.     |
| .0440   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0193  | .0060  | -.0057 | .0012  | -.0017 | -.0230 | 0.     |
| .0450   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0191  | .0040  | -.0048 | -.0094 | .0100  | -.0356 | 0.     |
| .0460   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0182  | .0018  | -.0039 | -.0195 | .0192  | -.0510 | 0.     |
| .0470   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0174  | -.0008 | -.0033 | -.0221 | .0235  | -.0554 | 0.     |
| .0480   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0165  | -.0035 | -.0031 | -.0179 | .0223  | -.0521 | 0.     |
| .0490   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0146  | -.0061 | -.0029 | -.0134 | .0167  | -.0553 | 0.     |
| .0500   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0115  | -.0086 | -.0024 | -.0124 | .0098  | -.0678 | 0.     |
| .0510   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0079  | -.0108 | -.0017 | -.0133 | .0048  | -.0781 | 0.     |
| .0520   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | .0046  | -.0129 | -.0010 | -.0134 | .0034  | -.0775 | 0.     |
| .0530   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0014 | -.0146 | -.0002 | -.0144 | .0059  | -.0691 | 0.     |
| .0540   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0022 | -.0159 | .0008  | -.0196 | .0118  | -.0607 | 0.     |
| .0550   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0062 | -.0165 | .0021  | -.0289 | .0190  | -.0555 | 0.     |
| .0560   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0104 | -.0165 | .0034  | -.0378 | .0241  | -.0497 | 0.     |
| .0570   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0141 | -.0159 | .0044  | -.0418 | .0250  | -.0382 | 0.     |
| .0580   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0176 | -.0146 | .0052  | -.0410 | .0213  | -.0231 | 0.     |
| .0590   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0210 | -.0126 | .0059  | -.0383 | .0140  | -.0118 | 0.     |
| .0600   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0246 | -.0101 | .0066  | -.0352 | .0051  | -.0065 | 0.     |
| .0610   | 0.   | 0.     | 0.   | 0.       | 0.      | 0.       | 0.  | -.0276 | -.0072 | .0073  | -.0306 | -.0023 | .0011  | 0.     |

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