

50-305

RESPONSE TO NUREG-0737 ITEM II.D.1

Docket # *50-305*

Control # *8403280048*

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

| | | | | | | | | | | | | | |
|-------|-------|------|--------|-------|------|-------|--------|--------|--------|--------|--------|--------|-------|
| .3310 | -787. | -8. | -1423. | -929. | -31. | 22. | -.0208 | -.0061 | -.0078 | .1530 | .0906 | -.0109 | 4310. |
| .3320 | -674. | -17. | -1201. | -798. | -61. | -26. | -.0162 | -.0049 | -.0118 | .1333 | .0726 | .0136 | 3341. |
| .3330 | -530. | -31. | -930. | -646. | -75. | -72. | -.0152 | -.0062 | -.0127 | .1133 | .0614 | .0256 | 2729. |
| .3340 | -357. | -34. | -629. | -479. | -76. | -116. | -.0150 | -.0086 | -.0130 | .0882 | .0490 | .0374 | 2080. |
| .3350 | -150. | -19. | -316. | -302. | -68. | -155. | -.0153 | -.0119 | -.0127 | .0594 | .0361 | .0492 | 1444. |
| .3360 | 70. | 2. | 3. | -120. | -50. | -185. | -.0162 | -.0161 | -.0119 | .0277 | .0231 | .0599 | 944. |
| .3370 | 284. | 16. | 336. | 60. | -22. | -204. | -.0177 | -.0210 | -.0105 | -.0073 | .0107 | .0685 | 891. |
| .3380 | 489. | 30. | 651. | 233. | 11. | -212. | -.0194 | -.0262 | -.0088 | -.0422 | -.0009 | .0751 | 1315. |
| .3390 | 686. | 54. | 933. | 391. | 41. | -211. | -.0210 | -.0315 | -.0070 | -.0754 | -.0116 | .0801 | 1864. |
| .3400 | 861. | 83. | 1172. | 528. | 68. | -200. | -.0225 | -.0366 | -.0052 | -.1053 | -.0212 | .0830 | 2375. |
| .3410 | 990. | 105. | 1368. | 638. | 94. | -176. | -.0237 | -.0413 | -.0035 | -.1309 | -.0294 | .0830 | 2789. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.30.

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 | 59 | MEMBER | 2 | SEQUENCE | 85 | LOCATION | END | TYPE | RU | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|
| 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) | |
| .3420 | 1089. | 120. | 1511. | 717. | 116. | -138. | | -.0247 | -.0454 | -.0020 | -.1511 | -.0361 | .0801 | 3085. | |
| .3430 | 1137. | 136. | 1591. | 764. | 130. | -89. | | -.0251 | -.0485 | -.0010 | -.1648 | -.0409 | .0747 | 3254. | |
| .3440 | 1142. | 152. | 1605. | 778. | 131. | -32. | | -.0249 | -.0507 | -.0004 | -.1709 | -.0439 | .0672 | 3295. | |
| .3450 | 1099. | 154. | 1560. | 760. | 119. | 27. | | -.0241 | -.0517 | -.0004 | -.1696 | -.0450 | .0575 | 3214. | |
| .3460 | 1006. | 142. | 1461. | 715. | 93. | 87. | | -.0228 | -.0516 | -.0007 | -.1612 | -.0439 | .0457 | 3033. | |
| .3470 | 869. | 120. | 1311. | 648. | 55. | 149. | | -.0211 | -.0505 | -.0015 | -.1463 | -.0405 | .0325 | 2783. | |
| .3480 | 697. | 89. | 1116. | 560. | 5. | 207. | | -.0189 | -.0484 | -.0026 | -.1251 | -.0350 | .0184 | 2490. | |
| .3490 | 496. | 44. | 883. | 451. | -53. | 259. | | -.0164 | -.0453 | -.0040 | -.0982 | -.0279 | .0038 | 2182. | |
| .3500 | 276. | -8. | 620. | 325. | -115. | 304. | | -.0137 | -.0416 | -.0057 | -.0662 | -.0197 | -.0107 | 1915. | |
| .3510 | 48. | -60. | 335. | 186. | -174. | 343. | | -.0109 | -.0373 | -.0076 | -.0305 | -.0105 | -.0243 | 1782. | |
| .3520 | -184. | -114. | 40. | 39. | -227. | 377. | | -.0082 | -.0327 | -.0095 | .0075 | -.0006 | -.0369 | 1845. | |
| .3530 | -411. | -171. | -251. | -111. | -271. | 403. | | -.0058 | -.0280 | -.0113 | .0463 | .0097 | -.0481 | 2081. | |
| .3540 | -621. | -229. | -530. | -258. | -307. | 418. | | -.0036 | -.0234 | -.0131 | .0847 | .0198 | -.0573 | 2417. | |
| .3550 | -800. | -279. | -788. | -394. | -334. | 421. | | -.0017 | -.0191 | -.0147 | .1213 | .0298 | -.0639 | 2783. | |
| .3560 | -946. | -322. | -1014. | -513. | -351. | 414. | | -.0002 | -.0151 | -.0159 | .1542 | .0395 | -.0680 | 3117. | |
| .3570 | -1059. | -366. | -1193. | -610. | -355. | 397. | | .0008 | -.0118 | -.0167 | .1818 | .0485 | -.0700 | 3379. | |
| .3580 | -1133. | -406. | -1321. | -683. | -345. | 372. | | .0014 | -.0093 | -.0171 | .2036 | .0565 | -.0699 | 3549. | |
| .3590 | -1159. | -434. | -1402. | -730. | -322. | 340. | | .0017 | -.0074 | -.0171 | .2192 | .0629 | -.0676 | 3620. | |
| .3600 | -1133. | -445. | -1435. | -753. | -285. | 302. | | .0017 | -.0062 | -.0169 | .2284 | .0674 | -.0631 | 3590. | |
| .3610 | -1064. | -445. | -1415. | -751. | -233. | 263. | | .0014 | -.0057 | -.0163 | .2306 | .0698 | -.0572 | 3462. | |
| .3620 | -957. | -438. | -1343. | -724. | -167. | 226. | | .0009 | -.0060 | -.0154 | .2257 | .0702 | -.0503 | 3243. | |
| .3630 | -811. | -417. | -1225. | -673. | -91. | 190. | | .0004 | -.0070 | -.0144 | .2142 | .0686 | -.0425 | 2944. | |
| .3640 | -630. | -382. | -1070. | -599. | -12. | 154. | | -.0000 | -.0084 | -.0132 | .1967 | .0652 | -.0337 | 2581. | |
| .3650 | -423. | -340. | -879. | -503. | 64. | 118. | | -.0003 | -.0103 | -.0119 | .1737 | .0602 | -.0244 | 2171. | |
| .3660 | -203. | -296. | -657. | -387. | 137. | 83. | | -.0004 | -.0125 | -.0105 | .1458 | .0542 | -.0152 | 1750. | |
| .3670 | 21. | -249. | -415. | -257. | 202. | 53. | | -.0003 | -.0150 | -.0091 | .1140 | .0477 | -.0063 | 1383. | |
| .3680 | 243. | -196. | -165. | -119. | 258. | 28. | | .0001 | -.0177 | -.0076 | .0797 | .0406 | .0025 | 1190. | |
| .3690 | 455. | -140. | 81. | 17. | 302. | 6. | | .0008 | -.0205 | -.0063 | .0448 | .0332 | .0108 | 1263. | |
| .3700 | 649. | -81. | 313. | 144. | 337. | -9. | | .0018 | -.0233 | -.0052 | .0108 | .0254 | .0185 | 1529. | |
| .3710 | 818. | -18. | 520. | 254. | 364. | -14. | | .0030 | -.0260 | -.0043 | -.0212 | .0175 | .0255 | 1851. | |
| .3720 | 954. | 49. | 695. | 342. | 383. | -9. | | .0043 | -.0286 | -.0036 | -.0501 | .0100 | .0317 | 2144. | |
| .3730 | 1053. | 116. | 833. | 405. | 394. | 6. | | .0058 | -.0311 | -.0030 | -.0750 | .0029 | .0370 | 2358. | |
| .3740 | 1111. | 179. | 928. | 440. | 394. | 25. | | .0073 | -.0334 | -.0027 | -.0948 | -.0035 | .0415 | 2465. | |
| .3750 | 1129. | 238. | 978. | 447. | 379. | 48. | | .0090 | -.0355 | -.0026 | -.1093 | -.0088 | .0452 | 2455. | |
| .3760 | 1104. | 293. | 983. | 431. | 349. | 73. | | .0107 | -.0373 | -.0026 | -.1185 | -.0125 | .0482 | 2335. | |
| .3770 | 1032. | 337. | 949. | 393. | 305. | 102. | | .0122 | -.0389 | -.0026 | -.1229 | -.0144 | .0502 | 2118. | |
| .3780 | 915. | 367. | 878. | 335. | 245. | 130. | | .0135 | -.0403 | -.0027 | -.1225 | -.0144 | .0509 | 1815. | |
| .3790 | 762. | 386. | 770. | 258. | 171. | 155. | | .0148 | -.0415 | -.0029 | -.1173 | -.0129 | .0506 | 1446. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.30.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|------|------|------|------|-------|--------|--------|--------|--------|-------|-------|
| .3690 | 459. | -140. | 81. | 17. | 302. | 6. | .0008 | -.0205 | -.0063 | .0448 | .0332 | .0108 | 1263. |
| .3700 | 649. | -81. | 313. | 144. | 337. | -9. | .0018 | -.0233 | -.0052 | .0109 | .0254 | .0185 | 1529. |
| .3710 | 818. | -18. | 520. | 254. | 364. | -14. | .0030 | -.0260 | -.0043 | -.0212 | .0175 | .0255 | 1851. |
| .3720 | 954. | 49. | 695. | 342. | 383. | -9. | .0043 | -.0286 | -.0036 | -.0501 | .0100 | .0317 | 2144. |
| .3730 | 1053. | 116. | 833. | 405. | 394. | 6. | .0058 | -.0311 | -.0030 | -.0750 | .0029 | .0370 | 2358. |
| .3740 | 1111. | 179. | 928. | 440. | 394. | 25. | .0073 | -.0334 | -.0027 | -.0948 | -.0035 | .0415 | 2465. |
| .3750 | 1129. | 238. | 978. | 447. | 379. | 48. | .0090 | -.0355 | -.0026 | -.1093 | -.0088 | .0452 | 2455. |
| .3760 | 1104. | 293. | 983. | 431. | 340. | 73. | .0107 | -.0373 | -.0026 | -.1185 | -.0125 | .0482 | 2355. |
| .3770 | 1032. | 337. | 949. | 393. | 305. | 102. | .0122 | -.0389 | -.0026 | -.1229 | -.0144 | .0502 | 2118. |
| .3780 | 915. | 367. | 878. | 335. | 245. | 130. | .0135 | -.0403 | -.0027 | -.1225 | -.0144 | .0509 | 1815. |
| .3790 | 762. | 386. | 770. | 258. | 171. | 155. | .0148 | -.0415 | -.0029 | -.1173 | -.0129 | .0506 | 1446. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.30.

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 | 59 | MEMBER | 2 | SEQUENCE | 05 | LOCATION | END | TYPE | RU | | | | | |
|---------|--------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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) | |
| .3800 | 582. | 399. | 629. | 167. | 84. | 178. | .0159 | -.0423 | -.0031 | -.1076 | -.0101 | .0494 | 1076. | |
| .3810 | 379. | 402. | 462. | 63. | -0. | 199. | .0168 | -.0430 | -.0034 | -.0944 | -.0063 | .0470 | 873. | |
| .3820 | 158. | 394. | 282. | -49. | -101. | 221. | .0175 | -.0434 | -.0037 | -.0787 | -.0020 | .0451 | 1036. | |
| .3830 | -72. | 377. | 95. | -164. | -192. | 242. | .0179 | -.0437 | -.0039 | -.0612 | .0024 | .0377 | 1459. | |
| .3840 | -296. | 355. | -96. | -278. | -279. | 259. | .0181 | -.0438 | -.0040 | -.0426 | .0065 | .0312 | 1967. | |
| .3850 | -506. | 329. | -281. | -386. | -361. | 272. | .0181 | -.0437 | -.0041 | -.0239 | .0101 | .0238 | 2480. | |
| .3860 | -699. | 300. | -449. | -483. | -433. | 281. | .0179 | -.0437 | -.0041 | -.0066 | .0131 | .0154 | 2952. | |
| .3870 | -872. | 264. | -593. | -563. | -495. | 289. | .0173 | -.0437 | -.0037 | .0084 | .0156 | .0062 | 3353. | |
| .3880 | -1017. | 226. | -707. | -625. | -544. | 292. | .0163 | -.0438 | -.0031 | .0202 | .0173 | -.0034 | 3668. | |
| .3890 | -1127. | 190. | -791. | -667. | -583. | 290. | .0151 | -.0440 | -.0023 | .0288 | .0182 | -.0126 | 3889. | |
| .3900 | -1196. | 158. | -842. | -689. | -607. | 282. | .0136 | -.0444 | -.0012 | .0339 | .0180 | -.0209 | 4008. | |
| .3910 | -1224. | 131. | -858. | -691. | -614. | 269. | .0119 | -.0450 | .0001 | .0352 | .0168 | -.0280 | 4018. | |
| .3920 | -1213. | 111. | -837. | -674. | -601. | 256. | .0098 | -.0459 | .0018 | .0323 | .0147 | -.0335 | 3915. | |
| .3930 | -1163. | 100. | -781. | -639. | -568. | 240. | .0073 | -.0472 | .0039 | .0255 | .0118 | -.0370 | 3705. | |
| .3940 | -1074. | 76. | -696. | -591. | -518. | 220. | .0047 | -.0487 | .0061 | .0155 | .0078 | -.0383 | 3405. | |
| .3950 | -947. | 102. | -586. | -531. | -453. | 196. | .0019 | -.0504 | .0086 | .0029 | .0031 | -.0370 | 3027. | |
| .3960 | -790. | 120. | -457. | -462. | -375. | 170. | -.0011 | -.0523 | .0112 | -.0122 | -.0019 | -.0331 | 2584. | |
| .3970 | -615. | 145. | -310. | -384. | -286. | 146. | -.0042 | -.0545 | .0141 | -.0297 | -.0067 | -.0272 | 2092. | |
| .3980 | -433. | 172. | -150. | -303. | -189. | 123. | -.0075 | -.0567 | .0171 | -.0485 | -.0114 | -.0195 | 1578. | |
| .3990 | -242. | 202. | 11. | -223. | -90. | 99. | -.0107 | -.0589 | .0200 | -.0674 | -.0159 | -.0102 | 1084. | |
| .4000 | -46. | 242. | 163. | -146. | 7. | 74. | -.0137 | -.0609 | .0227 | -.0854 | -.0202 | .0008 | 683. | |

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 | 1654. | -883. | 1020. | 1076. | 961. | -1058. | .0182 | .0567 | -.0009 | .0141 | -.0133 | -.0331 | 7466. |

| SECTION | 60 | MEMBER | 1 | SEQUENCE | 05 | LOCATION | BEG | TYPE | EL | | | | | |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.30.

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

.2050 1654. -803. 1020. 1076. 961. -1058. .182 .0567 -.0009 .0141 -.0133 -.0331 7466.

| SECTION | 60 | MEMBER | | 1 | SEQUENCE | | | 05 | LOCATION | | | BEG | TYPE | | | EL | STRESS (PSI) |
|---------------|------------|------------|------------|---------------|---------------|---------------|------------|------------|------------|-------------|-------------|-------------|---------|--------|----|----|-----------------|
| 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) | | | | | |
| 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. | | |
| .0010 | 0. | 0. | -0. | 0. | 0. | 0. | -0.0000 | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. | | | |
| .0020 | 0. | 0. | -0. | 0. | 0. | 0. | -0.0000 | -0.0000 | .0000 | -0.0000 | .0000 | -0.0000 | -0.0000 | 0. | | | |
| .0030 | 0. | 0. | -0. | 0. | 0. | 0. | .0000 | -0.0000 | .0000 | -0.0000 | .0000 | -0.0000 | -0.0000 | 0. | | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.30.

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 | 60 | MEMBER | | 1 | SEQUENCE | | | 05 | LOCATION | | | BEG | TYPE | | | EL | STRESS (PSI) |
|---------------|------------|------------|------------|---------------|---------------|---------------|------------|------------|------------|-------------|-------------|-------------|-------|--|--|----|-----------------|
| 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) | | | | | |
| .0040 | 0. | 0. | 0. | -0. | 0. | 0. | .0000 | -0.0000 | .0000 | -0.0000 | .0000 | .0000 | 1. | | | | |
| .0050 | -0. | 0. | 0. | -0. | 0. | 0. | -0.0000 | -0.0000 | .0000 | -0.0000 | .0000 | .0000 | 1. | | | | |
| .0060 | -1. | -1. | 1. | -0. | 0. | -0. | -0.0000 | -0.0000 | .0000 | -0.0001 | .0001 | -0.0000 | 2. | | | | |
| .0070 | -2. | -1. | 1. | -0. | -1. | -1. | -0.0001 | -0.0000 | .0000 | -0.0002 | .0001 | -0.0001 | 5. | | | | |
| .0080 | -2. | -1. | 2. | 0. | -2. | -2. | -0.0001 | -0.0001 | .0001 | -0.0003 | .0001 | -0.0004 | 12. | | | | |
| .0090 | -5. | -2. | 4. | 1. | -5. | -3. | -0.0002 | -0.0001 | .0001 | -0.0004 | -0.0000 | -0.0007 | 26. | | | | |
| .0100 | -11. | -6. | 7. | 3. | -11. | -6. | -0.0004 | -0.0002 | .0002 | -0.0005 | -0.0002 | -0.0011 | 54. | | | | |
| .0110 | -21. | -13. | 12. | 7. | -20. | -12. | -0.0006 | -0.0003 | .0003 | -0.0007 | -0.0005 | -0.0019 | 101. | | | | |
| .0120 | -33. | -20. | 17. | 12. | -34. | -20. | -0.0011 | -0.0005 | .0005 | -0.0012 | -0.0009 | -0.0033 | 173. | | | | |
| .0130 | -45. | -28. | 23. | 20. | -53. | -31. | -0.0018 | -0.0008 | .0008 | -0.0018 | -0.0015 | -0.0054 | 270. | | | | |
| .0140 | -57. | -35. | 29. | 31. | -76. | -43. | -0.0027 | -0.0011 | .0012 | -0.0021 | -0.0025 | -0.0078 | 387. | | | | |
| .0150 | -70. | -44. | 35. | 46. | -101. | -55. | -0.0037 | -0.0015 | .0015 | -0.0020 | -0.0037 | -0.0101 | 517. | | | | |
| .0160 | -82. | -53. | 42. | 62. | -127. | -65. | -0.0047 | -0.0019 | .0018 | -0.0011 | -0.0052 | -0.0116 | 650. | | | | |
| .0170 | -91. | -61. | 48. | 79. | -151. | -71. | -0.0056 | -0.0022 | .0019 | .0007 | -0.0066 | -0.0120 | 769. | | | | |
| .0180 | -95. | -60. | 50. | 92. | -167. | -70. | -0.0063 | -0.0023 | .0019 | .0032 | -0.0079 | -0.0109 | 847. | | | | |
| .0190 | -93. | -51. | 46. | 101. | -170. | -60. | -0.0068 | -0.0023 | .0017 | .0064 | -0.0088 | -0.0082 | 861. | | | | |
| .0200 | -81. | -29. | 35. | 100. | -156. | -38. | -0.0069 | -0.0020 | .0014 | .0098 | -0.0090 | -0.0043 | 789. | | | | |
| .0210 | -59. | 1. | 16. | 88. | -123. | -8. | -0.0067 | -0.0016 | .0009 | .0129 | -0.0080 | .0007 | 632. | | | | |
| .0220 | -47. | 15. | -4. | 63. | -75. | 22. | -0.0063 | -0.0010 | .0004 | .0153 | -0.0058 | .0066 | 419. | | | | |
| .0230 | -17. | 30. | -31. | 28. | -15. | 50. | -0.0059 | -0.0004 | -0.0001 | .0161 | -0.0026 | .0118 | 249. | | | | |
| .0240 | 30. | 61. | -65. | -11. | 53. | 78. | -0.0055 | .0002 | -0.0005 | .0153 | .0011 | .0152 | 396. | | | | |
| .0250 | 113. | 114. | -100. | -43. | 125. | 113. | -0.0046 | .0009 | -0.0012 | .0150 | .0038 | .0176 | 724. | | | | |
| .0260 | 156. | 154. | -120. | -62. | 189. | 150. | -0.0027 | .0020 | -0.0025 | .0174 | .0042 | .0214 | 1039. | | | | |
| .0270 | 138. | 115. | -112. | -74. | 229. | 160. | -0.0001 | .0035 | -0.0042 | .0214 | .0030 | .0275 | 1205. | | | | |
| .0280 | 147. | 75. | -110. | -86. | 240. | 138. | .0022 | .0048 | -0.0054 | .0223 | .0017 | .0305 | 1211. | | | | |
| .0290 | 214. | 130. | -134. | -88. | 241. | 122. | .0041 | .0056 | -0.0063 | .0201 | -0.0005 | .0276 | 1188. | | | | |
| .0300 | 214. | 136. | -133. | -78. | 240. | 122. | .0070 | .0068 | -0.0079 | .0214 | -0.0049 | .0265 | 1197. | | | | |
| .0310 | 138. | 38. | -97. | -80. | 263. | 106. | .0106 | .0082 | -0.0097 | .0228 | -0.0081 | .0285 | 1230. | | | | |
| .0320 | 121. | 3. | -89. | -111. | 276. | 68. | .0128 | .0088 | -0.0101 | .0149 | -0.0065 | .0245 | 1275. | | | | |
| .0330 | 171. | 73. | -126. | -160. | 283. | 29. | .0132 | .0080 | -0.0090 | -0.0017 | -0.0010 | .0127 | 1364. | | | | |
| .0340 | 191. | 100. | -150. | -211. | 306. | -1. | .0135 | .0072 | -0.0079 | -0.0180 | .0055 | .0017 | 1551. | | | | |
| .0350 | 167. | 59. | -135. | -246. | 343. | -14. | .0144 | .0065 | -0.0072 | -0.0295 | .0106 | -0.0047 | 1762. | | | | |
| .0360 | 130. | 41. | -114. | -249. | 342. | -23. | .0150 | .0054 | -0.0066 | -0.0379 | .0130 | -0.0110 | 1769. | | | | |
| .0370 | 67. | 19. | -91. | -219. | 259. | -66. | .0144 | .0038 | -0.0053 | -0.0449 | .0125 | -0.0186 | 1442. | | | | |
| .0380 | -23. | -76. | -46. | -165. | 108. | -159. | .0128 | .0019 | -0.0036 | -0.0499 | .0100 | -0.0247 | 1055. | | | | |
| .0390 | -95. | -159. | 8. | -80. | -60. | -241. | .0109 | -0.0002 | -0.0021 | -0.0502 | .0048 | -0.0297 | 1091. | | | | |
| .0400 | -164. | -156. | 55. | 35. | -208. | -254. | .0094 | -0.0021 | -0.0015 | -0.0431 | -0.0037 | -0.0334 | 1375. | | | | |
| .0410 | -303. | -228. | 124. | 132. | -320. | -245. | .0084 | -0.0034 | -0.0013 | -0.0323 | -0.0104 | -0.0306 | 1772. | | | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.30.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|-------|
| .0310 | 130. | 38. | -97. | -80. | 263. | 106. | .0106 | .0082 | -.0097 | .0228 | -.0081 | .0285 | 1197. |
| .0320 | 121. | 3. | -89. | -111. | 276. | 68. | .0128 | .0088 | -.0101 | .0149 | -.0065 | .0245 | 1275. |
| .0330 | 171. | 73. | -126. | -160. | 283. | 29. | .0132 | .0080 | -.0090 | -.0017 | -.0010 | .0127 | 1364. |
| .0340 | 191. | 100. | -150. | -211. | 306. | -1. | .0135 | .0072 | -.0079 | -.0180 | .0055 | .0017 | 1551. |
| .0350 | 167. | 59. | -135. | -246. | 342. | -14. | .0144 | .0065 | -.0072 | -.0295 | .0106 | -.0047 | 1762. |
| .0360 | 130. | 41. | -114. | -249. | 342. | -23. | .0150 | .0054 | -.0066 | -.0379 | .0130 | -.0110 | 1769. |
| .0370 | 67. | 19. | -91. | -219. | 259. | -66. | .0144 | .0038 | -.0053 | -.0449 | .0125 | -.0186 | 1442. |
| .0380 | -23. | -76. | -46. | -165. | 108. | -159. | .0128 | .0019 | -.0036 | -.0499 | .0100 | -.0247 | 1055. |
| .0390 | -95. | -159. | 8. | -80. | -60. | -241. | .0109 | -.0002 | -.0021 | -.0502 | .0048 | -.0297 | 1091. |
| .0400 | -164. | -156. | 55. | 35. | -208. | -254. | .0094 | -.0021 | -.0015 | -.0431 | -.0037 | -.0334 | 1375. |
| .0410 | -303. | -228. | 124. | 132. | -320. | -245. | .0084 | -.0034 | -.0013 | -.0323 | -.0104 | -.0306 | 1772. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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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 | 60 | MEMBER | 1 | SEQUENCE | 85 | LOCATION | BEG | TYPE | EL | DX | DY | DZ | RX | RY | RZ | STRESS |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|-------|-------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (PSI) |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | | | | | | | | | |
| .0420 | -408. | -345. | 181. | 154. | -393. | -268. | .0060 | -.0049 | .0003 | -.0299 | -.0073 | -.0264 | 2089. | | | |
| .0430 | -373. | -302. | 157. | 113. | -421. | -279. | .0011 | -.0073 | .0038 | -.0394 | .0044 | -.0296 | 2159. | | | |
| .0440 | -284. | -122. | 81. | 52. | -381. | -210. | -.0039 | -.0098 | .0072 | -.0491 | .0179 | -.0361 | 1830. | | | |
| .0450 | -268. | -47. | 53. | -11. | -270. | -93. | -.0070 | -.0107 | .0091 | -.0495 | .0297 | -.0341 | 1195. | | | |
| .0460 | -291. | -76. | 69. | -64. | -163. | 3. | -.0093 | -.0108 | .0101 | -.0442 | .0391 | -.0271 | 750. | | | |
| .0470 | -260. | 1. | 52. | -80. | -154. | 55. | -.0129 | -.0113 | .0117 | -.0399 | .0436 | -.0282 | 760. | | | |
| .0480 | -214. | 123. | 26. | -48. | -240. | 64. | -.0172 | -.0119 | .0134 | -.0335 | .0420 | -.0344 | 1057. | | | |
| .0490 | -240. | 87. | 75. | 19. | -338. | 45. | -.0197 | -.0112 | .0135 | -.0172 | .0347 | -.0335 | 1425. | | | |
| .0500 | -308. | -12. | 165. | 115. | -401. | 52. | -.0203 | -.0093 | .0119 | .0078 | .0230 | -.0276 | 1756. | | | |
| .0510 | -326. | 6. | 208. | 213. | -442. | 92. | -.0211 | -.0077 | .0102 | .0308 | .0108 | -.0269 | 2084. | | | |
| .0520 | -261. | 79. | 206. | 255. | -451. | 109. | -.0231 | -.0068 | .0100 | .0423 | .0060 | -.0305 | 2210. | | | |
| .0530 | -146. | 111. | 198. | 221. | -394. | 99. | -.0254 | -.0061 | .0107 | .0435 | .0106 | -.0319 | 1931. | | | |
| .0540 | -37. | 164. | 176. | 160. | -266. | 132. | -.0265 | -.0052 | .0111 | .0431 | .0179 | -.0300 | 1408. | | | |
| .0550 | 47. | 252. | 143. | 107. | -99. | 218. | -.0263 | -.0041 | .0107 | .0453 | .0232 | -.0254 | 1096. | | | |
| .0560 | 119. | 285. | 127. | 57. | 58. | 279. | -.0257 | -.0032 | .0103 | .0463 | .0280 | -.0181 | 1214. | | | |
| .0570 | 209. | 269. | 123. | 26. | 147. | 269. | -.0258 | -.0031 | .0106 | .0438 | .0311 | -.0116 | 1286. | | | |
| .0580 | 282. | 274. | 109. | 54. | 145. | 225. | -.0263 | -.0037 | .0109 | .0428 | .0275 | -.0081 | 1139. | | | |
| .0590 | 303. | 245. | 118. | 143. | 97. | 178. | -.0257 | -.0043 | .0101 | .0484 | .0166 | -.0019 | 1035. | | | |
| .0600 | 277. | 108. | 177. | 250. | 60. | 124. | -.0235 | -.0046 | .0081 | .0589 | .0037 | .0121 | 1190. | | | |
| .0610 | 247. | -44. | 234. | 339. | 37. | 66. | -.0209 | -.0050 | .0061 | .0662 | -.0069 | .0284 | 1448. | | | |
| .0620 | 256. | -112. | 228. | 384. | 27. | 9. | -.0193 | -.0064 | .0054 | .0634 | -.0122 | .0403 | 1605. | | | |
| .0630 | 313. | -134. | 173. | 360. | 69. | -39. | -.0184 | -.0084 | .0058 | .0496 | -.0101 | .0495 | 1538. | | | |
| .0640 | 381. | -162. | 105. | 275. | 194. | -52. | -.0169 | -.0103 | .0063 | .0302 | -.0025 | .0600 | 1423. | | | |
| .0650 | 422. | -166. | 20. | 169. | 362. | -17. | -.0144 | -.0120 | .0065 | .0102 | .0054 | .0702 | 1671. | | | |
| .0660 | 437. | -144. | -84. | 67. | 502. | 20. | -.0119 | -.0137 | .0066 | -.0101 | .0108 | .0767 | 2116. | | | |
| .0670 | 433. | -149. | -181. | -18. | 560. | 1. | -.0097 | -.0154 | .0069 | -.0310 | .0127 | .0790 | 2340. | | | |
| .0680 | 380. | -203. | -245. | -59. | 521. | -70. | -.0076 | -.0167 | .0067 | -.0475 | .0080 | .0780 | 2208. | | | |
| .0690 | 258. | -291. | -275. | -34. | 403. | -154. | -.0048 | -.0174 | .0054 | -.0546 | -.0058 | .0740 | 1806. | | | |
| .0700 | 112. | -383. | -286. | 34. | 251. | -231. | -.0015 | -.0173 | .0030 | -.0543 | -.0255 | .0669 | 1430. | | | |
| .0710 | -17. | -456. | -295. | 95. | 103. | -304. | .0017 | -.0168 | .0004 | -.0530 | -.0446 | .0566 | 1395. | | | |
| .0720 | -133. | -497. | -317. | 108. | -14. | -366. | .0044 | -.0160 | -.0016 | -.0557 | -.0577 | .0437 | 1595. | | | |
| .0730 | -223. | -493. | -368. | 51. | -69. | -404. | .0065 | -.0149 | -.0028 | -.0644 | -.0620 | .0289 | 1725. | | | |
| .0740 | -248. | -416. | -452. | -74. | -36. | -394. | .0082 | -.0135 | -.0033 | -.0777 | -.0577 | .0128 | 1679. | | | |
| .0750 | -231. | -272. | -550. | -234. | 74. | -320. | .0101 | -.0116 | -.0037 | -.0907 | -.0482 | -.0034 | 1683. | | | |
| .0760 | -220. | -121. | -629. | -394. | 208. | -213. | .0121 | -.0091 | -.0044 | -.0990 | -.0372 | -.0178 | 2060. | | | |
| .0770 | -217. | -5. | -672. | -525. | 300. | -131. | .0138 | -.0061 | -.0050 | -.1023 | -.0267 | -.0311 | 2583. | | | |
| .0780 | -208. | 95. | -676. | -595. | 307. | -97. | .0146 | -.0030 | -.0057 | -.0993 | -.0197 | -.0453 | 2824. | | | |
| .0790 | -224. | 169. | -628. | -578. | 220. | -91. | .0150 | .0003 | -.0069 | -.0861 | -.0189 | -.0597 | 2622. | | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.30.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|------|-------|--------|--------|--------|--------|--------|--------|-------|
| .0690 | 258. | -291. | -275. | -74. | 403. | -154. | -.0048 | -.0174 | .0054 | -.0546 | -.0058 | .0740 | 1806. |
| .0700 | 112. | -383. | -286. | 34. | 251. | -231. | -.0015 | -.0173 | .0030 | -.0543 | -.0255 | .0669 | 1430. |
| .0710 | -17. | -456. | -295. | 95. | 103. | -304. | .0017 | -.0168 | .0004 | -.0530 | -.0446 | .0566 | 1395. |
| .0720 | -137. | -497. | -317. | 101. | -14. | -366. | .0044 | -.0160 | -.0016 | -.0557 | -.0577 | .0437 | 1595. |
| .0730 | -227. | -493. | -368. | 51. | -69. | -404. | .0065 | -.0149 | -.0028 | -.0644 | -.0620 | .0289 | 1725. |
| .0740 | -240. | -416. | -452. | -74. | -36. | -394. | .0082 | -.0135 | -.0033 | -.0777 | -.0577 | .0128 | 1679. |
| .0750 | -231. | -272. | -550. | -234. | 74. | -320. | .0101 | -.0116 | -.0037 | -.0907 | -.0482 | -.0034 | 1683. |
| .0760 | -220. | -121. | -629. | -394. | 208. | -213. | .0121 | -.0091 | -.0044 | -.0990 | -.0372 | -.0178 | 2060. |
| .0770 | -217. | -9. | -672. | -525. | 300. | -131. | .0138 | -.0061 | -.0050 | -.1023 | -.0267 | -.0311 | 2583. |
| .0780 | -208. | 95. | -676. | -595. | 307. | -97. | .0146 | -.0030 | -.0057 | -.0993 | -.0197 | -.0453 | 2824. |
| .0790 | -224. | 169. | -620. | -578. | 220. | -91. | .0150 | .0003 | -.0069 | -.0861 | -.0189 | -.0597 | 2622. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.30.

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 | 60 | MEMBER | 1 | SEQUENCE | 05 | LOCATION | BEG | TYPE | EL | | | | | | |
|---------|-------|--------|--------|----------|---------|----------|--------|-------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .0800 | -281. | 172. | -510. | -484. | 99. | -100. | .0155 | .0040 | -.0091 | -.0616 | -.0232 | -.0713 | 2104. | | |
| .0810 | -326. | 139. | -351. | -352. | -42. | -119. | .0156 | .0079 | -.0113 | -.0323 | -.0281 | -.0812 | 1558. | | |
| .0820 | -316. | 159. | -203. | -218. | -174. | -133. | .0146 | .0113 | -.0127 | -.0050 | -.0294 | -.0924 | 1289. | | |
| .0830 | -276. | 223. | -75. | -114. | -269. | -129. | .0126 | .0143 | -.0132 | .0177 | -.0244 | -.1023 | 1336. | | |
| .0840 | -227. | 264. | 52. | -65. | -292. | -105. | .0108 | .0173 | -.0129 | .0360 | -.0114 | -.1059 | 1325. | | |
| .0850 | -151. | 312. | 169. | -59. | -242. | -49. | .0091 | .0204 | -.0122 | .0509 | .0076 | -.1037 | 1058. | | |
| .0860 | -55. | 411. | 258. | -61. | -159. | 41. | .0076 | .0232 | -.0113 | .0644 | .0278 | -.0990 | 732. | | |
| .0870 | 26. | 499. | 343. | -50. | -89. | 127. | .0061 | .0258 | -.0104 | .0783 | .0462 | -.0917 | 683. | | |
| .0880 | 85. | 512. | 451. | -18. | -58. | 171. | .0046 | .0282 | -.0096 | .0926 | .0618 | -.0810 | 759. | | |
| .0890 | 132. | 492. | 566. | 51. | -79. | 179. | .0031 | .0303 | -.0089 | .1079 | .0722 | -.0695 | 845. | | |
| .0900 | 155. | 472. | 674. | 162. | -141. | 177. | .0018 | .0321 | -.0088 | .1251 | .0761 | -.0583 | 1160. | | |
| .0910 | 145. | 405. | 782. | 280. | -207. | 164. | .0010 | .0337 | -.0091 | .1417 | .0768 | -.0450 | 1606. | | |
| .0920 | 131. | 297. | 877. | 365. | -248. | 137. | .0003 | .0348 | -.0090 | .1521 | .0785 | -.0303 | 1929. | | |
| .0930 | 145. | 233. | 914. | 405. | -257. | 117. | -.0009 | .0351 | -.0082 | .1528 | .0821 | -.0184 | 2062. | | |
| .0940 | 179. | 231. | 882. | 404. | -234. | 117. | -.0024 | .0345 | -.0066 | .1450 | .0862 | -.0097 | 2008. | | |
| .0950 | 201. | 217. | 820. | 370. | -177. | 132. | -.0035 | .0335 | -.0049 | .1327 | .0894 | -.0000 | 1799. | | |
| .0960 | 188. | 163. | 748. | 329. | -118. | 147. | -.0038 | .0325 | -.0037 | .1197 | .0886 | .0118 | 1582. | | |
| .0970 | 136. | 102. | 660. | 308. | -106. | 148. | -.0037 | .0312 | -.0029 | .1078 | .0811 | .0231 | 1495. | | |
| .0980 | 57. | 29. | 561. | 317. | -160. | 117. | -.0035 | .0295 | -.0024 | .0971 | .0666 | .0329 | 1560. | | |
| .0990 | -40. | -82. | 466. | 345. | -254. | 58. | -.0030 | .0277 | -.0024 | .0884 | .0467 | .0431 | 1805. | | |
| .1000 | -154. | -206. | 370. | 382. | -347. | 4. | -.0018 | .0259 | -.0032 | .0822 | .0232 | .0541 | 2154. | | |
| .1010 | -260. | -300. | 253. | 405. | -406. | -20. | .0000 | .0242 | -.0043 | .0763 | -.0011 | .0649 | 2395. | | |
| .1020 | -329. | -356. | 103. | 382. | -407. | -21. | .0021 | .0223 | -.0053 | .0662 | -.0218 | .0748 | 2332. | | |
| .1030 | -351. | -371. | -78. | 299. | -344. | -5. | .0043 | .0203 | -.0058 | .0503 | -.0370 | .0838 | 1901. | | |
| .1040 | -344. | -344. | -280. | 170. | -224. | 35. | .0070 | .0184 | -.0060 | .0309 | -.0479 | .0917 | 1181. | | |
| .1050 | -325. | -296. | -482. | 20. | -63. | 94. | .0105 | .0167 | -.0064 | .0113 | -.0569 | .0985 | 480. | | |
| .1060 | -293. | -255. | -664. | -129. | 111. | 147. | .0145 | .0154 | -.0071 | -.0069 | -.0654 | .1027 | 937. | | |
| .1070 | -244. | -218. | -816. | -255. | 268. | 174. | .0184 | .0140 | -.0079 | -.0236 | -.0744 | .1019 | 1704. | | |
| .1080 | -165. | -167. | -937. | -349. | 393. | 168. | .0219 | .0126 | -.0086 | -.0392 | -.0837 | .0938 | 2304. | | |
| .1090 | -61. | -117. | -1016. | -413. | 501. | 133. | .0251 | .0112 | -.0093 | -.0533 | -.0921 | .0800 | 2764. | | |
| .1100 | 19. | -156. | -1032. | -457. | 603. | 64. | .0283 | .0100 | -.0101 | -.0649 | -.0983 | .0644 | 3168. | | |
| .1110 | 135. | -159. | -1025. | -487. | 705. | -9. | .0310 | .0088 | -.0104 | -.0768 | -.1012 | .0433 | 3577. | | |
| .1120 | 311. | -81. | -1010. | -506. | 806. | -71. | .0328 | .0071 | -.0100 | -.0902 | -.1005 | .0165 | 3982. | | |
| .1130 | 468. | -42. | -955. | -514. | 893. | -140. | .0346 | .0058 | -.0093 | -.1010 | -.0975 | -.0093 | 4341. | | |
| .1140 | 556. | -68. | -855. | -496. | 943. | -218. | .0366 | .0051 | -.0086 | -.1061 | -.0943 | -.0314 | 4539. | | |
| .1150 | 609. | -81. | -730. | -443. | 932. | -295. | .0382 | .0045 | -.0076 | -.1067 | -.0919 | -.0526 | 4480. | | |
| .1160 | 657. | -88. | -584. | -362. | 862. | -382. | .0388 | .0040 | -.0061 | -.1043 | -.0891 | -.0731 | 4215. | | |
| .1170 | 682. | -117. | -415. | -257. | 757. | -471. | .0388 | .0037 | -.0045 | -.0977 | -.0854 | -.0906 | 3871. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.30.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|--------|-------|------|-------|-------|-------|--------|--------|--------|--------|-------|
| .1070 | -244. | -218. | -816. | -255. | 265. | 174. | .0184 | .0140 | -.0079 | -.0236 | -.0744 | .1019 | 1704. |
| .1080 | -165. | -167. | -937. | -349. | 393. | 163. | .0219 | .0126 | -.0086 | -.0392 | -.0837 | .0938 | 2304. |
| .1090 | -61. | -117. | -1016. | -413. | 501. | 173. | .0251 | .0112 | -.0093 | -.0533 | -.0921 | .0800 | 2764. |
| .1100 | 19. | -156. | -1033. | -457. | 603. | 64. | .0283 | .0100 | -.0101 | -.0649 | -.0983 | .0644 | 3168. |
| .1110 | 135. | -159. | -1025. | -487. | 705. | -9. | .0310 | .0088 | -.0104 | -.0768 | -.1012 | .0433 | 3577. |
| .1120 | 311. | -81. | -1010. | -506. | 806. | -71. | .0328 | .0071 | -.0100 | -.0902 | -.1005 | .0165 | 3982. |
| .1130 | 468. | -42. | -955. | -514. | 893. | -140. | .0346 | .0058 | -.0093 | -.1010 | -.0975 | -.0093 | 4341. |
| .1140 | 556. | -68. | -855. | -496. | 943. | -218. | .0366 | .0051 | -.0086 | -.1061 | -.0945 | -.0314 | 4539. |
| .1150 | 609. | -81. | -730. | -443. | 932. | -295. | .0382 | .0045 | -.0076 | -.1067 | -.0919 | -.0526 | 4480. |
| .1160 | 653. | -88. | -584. | -362. | 862. | -302. | .0388 | .0040 | -.0061 | -.1043 | -.0891 | -.0731 | 4215. |
| .1170 | 682. | -117. | -415. | -257. | 757. | -471. | .0388 | .0037 | -.0045 | -.0977 | -.0854 | -.0906 | 3871. |

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ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKWOPE 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 | 60 | MEMBER | 1 | SEQUENCE | 85 | LOCATION | BEG | TYPE | EL | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|-------|-------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .1180 | 658. | -175. | -230. | -135. | 637. | -536. | .0386 | .0039 | -.0032 | -.0854 | -.0807 | -.1029 | 3522. | | |
| .1190 | 654. | -169. | -57. | -26. | 537. | -556. | .0377 | .0043 | -.0015 | -.0727 | -.0712 | -.1117 | 3228. | | |
| .1200 | 688. | -129. | 99. | 34. | 480. | -542. | .0360 | .0049 | .0008 | -.0634 | -.0535 | -.1153 | 3026. | | |
| .1210 | 691. | -121. | 237. | 46. | 461. | -501. | .0342 | .0060 | .0035 | -.0554 | -.0297 | -.1113 | 2847. | | |
| .1220 | 682. | -63. | 332. | 32. | 462. | -412. | .0321 | .0075 | .0065 | -.0476 | -.0037 | -.1035 | 2587. | | |
| .1230 | 656. | 16. | 403. | 14. | 456. | -292. | .0297 | .0092 | .0094 | -.0387 | .0210 | -.0934 | 2259. | | |
| .1240 | 620. | 74. | 473. | 12. | 409. | -177. | .0270 | .0111 | .0123 | -.0276 | .0415 | -.0822 | 1862. | | |
| .1250 | 549. | 106. | 540. | 59. | 283. | -87. | .0241 | .0133 | .0145 | -.0115 | .0535 | -.0717 | 1259. | | |
| .1260 | 398. | 101. | 608. | 170. | 67. | -18. | .0216 | .0159 | .0156 | .0121 | .0552 | -.0611 | 765. | | |
| .1270 | 226. | 75. | 689. | 304. | -189. | 28. | .0196 | .0190 | .0158 | .0384 | .0518 | -.0497 | 1500. | | |
| .1280 | 40. | -18. | 784. | 416. | -431. | 52. | .0180 | .0225 | .0156 | .0627 | .0484 | -.0358 | 2510. | | |
| .1290 | -121. | -81. | 832. | 482. | -622. | 86. | .0165 | .0259 | .0154 | .0805 | .0474 | -.0241 | 3303. | | |
| .1300 | -230. | -35. | 797. | 491. | -734. | 165. | .0149 | .0289 | .0157 | .0892 | .0492 | -.0176 | 3750. | | |
| .1310 | -318. | 29. | 722. | 427. | -757. | 274. | .0136 | .0317 | .0162 | .0894 | .0552 | -.0121 | 3802. | | |
| .1320 | -373. | 96. | 628. | 301. | -713. | 388. | .0129 | .0344 | .0171 | .0816 | .0643 | -.0064 | 3613. | | |
| .1330 | -440. | 172. | 510. | 167. | -671. | 491. | .0129 | .0369 | .0178 | .0712 | .0703 | -.0019 | 3538. | | |
| .1340 | -542. | 251. | 383. | 70. | -675. | 569. | .0135 | .0391 | .0179 | .0631 | .0688 | .0010 | 3696. | | |
| .1350 | -672. | 253. | 300. | 16. | -723. | 597. | .0150 | .0413 | .0172 | .0589 | .0609 | .0054 | 3915. | | |
| .1360 | -804. | 154. | 274. | 4. | -796. | 571. | .0169 | .0434 | .0157 | .0578 | .0484 | .0111 | 4089. | | |
| .1370 | -854. | 103. | 240. | 34. | -873. | 526. | .0184 | .0445 | .0140 | .0570 | .0328 | .0121 | 4255. | | |
| .1380 | -845. | 102. | 187. | 85. | -918. | 489. | .0199 | .0451 | .0119 | .0568 | .0162 | .0112 | 4354. | | |
| .1390 | -803. | 70. | 154. | 111. | -880. | 463. | .0224 | .0456 | .0094 | .0556 | .0045 | .0159 | 4176. | | |
| .1400 | -728. | -5. | 144. | 80. | -752. | 440. | .0258 | .0462 | .0070 | .0504 | -.0001 | .0277 | 3653. | | |
| .1410 | -615. | -51. | 103. | 12. | -575. | 424. | .0292 | .0462 | .0053 | .0402 | .0002 | .0407 | 2982. | | |
| .1420 | -433. | 7. | 10. | -65. | -375. | 429. | .0320 | .0455 | .0042 | .0265 | .0014 | .0499 | 2395. | | |
| .1430 | -248. | 51. | -66. | -132. | -164. | 443. | .0352 | .0447 | .0028 | .0150 | .0009 | .0601 | 2044. | | |
| .1440 | -100. | 13. | -87. | -172. | 35. | 439. | .0391 | .0441 | .0009 | .0083 | -.0024 | .0733 | 1972. | | |
| .1450 | 25. | -48. | -89. | -169. | 171. | 397. | .0427 | .0432 | -.0012 | .0048 | -.0096 | .0842 | 1937. | | |
| .1460 | 129. | -98. | -95. | -126. | 231. | 313. | .0454 | .0419 | -.0032 | .0026 | -.0204 | .0901 | 1707. | | |
| .1470 | 230. | -152. | -82. | -72. | 265. | 210. | .0475 | .0402 | -.0051 | .0000 | -.0308 | .0936 | 1443. | | |
| .1480 | 294. | -269. | -32. | -35. | 320. | 109. | .0495 | .0387 | -.0069 | -.0026 | -.0387 | .0983 | 1420. | | |
| .1490 | 356. | -353. | -6. | -27. | 400. | 37. | .0508 | .0367 | -.0081 | -.0087 | -.0436 | .0995 | 1680. | | |
| .1500 | 439. | -322. | -48. | -54. | 487. | -2. | .0505 | .0338 | -.0079 | -.0217 | -.0450 | .0934 | 2047. | | |
| .1510 | 487. | -283. | -109. | -128. | 576. | -32. | .0491 | .0304 | -.0065 | -.0404 | -.0419 | .0852 | 2466. | | |
| .1520 | 491. | -288. | -154. | -238. | 659. | -67. | .0468 | .0267 | -.0041 | -.0624 | -.0348 | .0777 | 2935. | | |
| .1530 | 455. | -299. | -199. | -336. | 700. | -102. | .0435 | .0224 | -.0013 | -.0830 | -.0287 | .0678 | 3269. | | |
| .1540 | 409. | -245. | -262. | -392. | 676. | -125. | .0386 | .0175 | .0016 | -.0995 | -.0272 | .0515 | 3281. | | |
| .1550 | 332. | -215. | -294. | -379. | 588. | -159. | .0325 | .0123 | .0044 | -.1103 | -.0289 | .0332 | 2993. | | |

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ADLPIPE STRESS ANALYSIS

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S/RV PIPING KEWAUNEE GKWOPE 2 RUP DISK
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CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|------|-------|-------|-------|--------|--------|--------|-------|-------|
| .1440 | -100. | 13. | -87. | -172. | 35. | 439. | .391 | .0441 | .0009 | .0083 | -.0024 | .0733 | 1972. |
| .1450 | 25. | -48. | -87. | -169. | 171. | 397. | .0427 | .0432 | -.0012 | .0048 | -.0096 | .0842 | 1937. |
| .1460 | 129. | -98. | -95. | -126. | 231. | 313. | .0454 | .0419 | -.0032 | .0026 | -.0204 | .0901 | 1707. |
| .1470 | 230. | -152. | -82. | -72. | 265. | 210. | .0475 | .0402 | -.0051 | .0000 | -.0308 | .0936 | 1443. |
| .1480 | 294. | -269. | -32. | -35. | 320. | 109. | .0495 | .0387 | -.0069 | -.0026 | -.0387 | .0983 | 1420. |
| .1490 | 356. | -353. | -6. | -27. | 400. | 37. | .0508 | .0367 | -.0081 | -.0087 | -.0436 | .0995 | 1680. |
| .1500 | 439. | -322. | -48. | -54. | 487. | -2. | .0505 | .0338 | -.0079 | -.0217 | -.0450 | .0934 | 2047. |
| .1510 | 487. | -283. | -109. | -128. | 576. | -32. | .0491 | .0304 | -.0065 | -.0404 | -.0419 | .0852 | 2466. |
| .1520 | 491. | -288. | -154. | -238. | 659. | -67. | .0468 | .0267 | -.0041 | -.0624 | -.0348 | .0777 | 2935. |
| .1530 | 455. | -299. | -199. | -336. | 700. | -102. | .0435 | .0224 | -.0013 | -.0830 | -.0287 | .0678 | 3269. |
| .1540 | 409. | -245. | -262. | -352. | 676. | -125. | .0386 | .0175 | .0016 | -.0995 | -.0272 | .0515 | 3281. |
| .1550 | 332. | -215. | -294. | -379. | 588. | -159. | .0325 | .0123 | .0044 | -.1103 | -.0289 | .0332 | 2993. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.30.

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 | GO | MEMBER | 1 | SEQUENCE | 05 | LOCATION | BEG | TYPE | EL | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .1560 | 198. | -300. | -259. | -347. | 446. | -231. | .0253 | .0070 | .0073 | -.1161 | -.0310 | .0168 | 2547. | | |
| .1570 | 87. | -357. | -222. | -292. | 259. | -315. | .0164 | .0012 | .0105 | -.1204 | -.0326 | -.0028 | 2091. | | |
| .1580 | -16. | -335. | -213. | -218. | 49. | -371. | .0063 | -.0049 | .0140 | -.1222 | -.0346 | -.0259 | 1809. | | |
| .1590 | -157. | -328. | -193. | -158. | -139. | -392. | -.0039 | -.0106 | .0174 | -.1205 | -.0346 | -.0460 | 1857. | | |
| .1600 | -296. | -343. | -156. | -139. | -280. | -387. | -.0143 | -.0158 | .0209 | -.1189 | -.0296 | -.0622 | 2077. | | |
| .1610 | -390. | -277. | -156. | -152. | -401. | -352. | -.0254 | -.0209 | .0252 | -.1196 | -.0211 | -.0804 | 2314. | | |
| .1620 | -467. | -128. | -199. | -173. | -518. | -286. | -.0370 | -.0255 | .0295 | -.1193 | -.0121 | -.1010 | 2573. | | |
| .1630 | -530. | 21. | -226. | -198. | -609. | -201. | -.0477 | -.0290 | .0330 | -.1146 | -.0024 | -.1180 | 2800. | | |
| .1640 | -603. | 97. | -196. | -221. | -665. | -113. | -.0566 | -.0307 | .0350 | -.1026 | .0078 | -.1275 | 2964. | | |
| .1650 | -662. | 169. | -145. | -222. | -715. | -26. | -.0644 | -.0311 | .0357 | -.0845 | .0164 | -.1343 | 3126. | | |
| .1660 | -648. | 316. | -113. | -199. | -762. | 59. | -.0715 | -.0306 | .0356 | -.0636 | .0235 | -.1431 | 3302. | | |
| .1670 | -600. | 441. | -60. | -167. | -786. | 135. | -.0779 | -.0287 | .0342 | -.0394 | .0300 | -.1490 | 3400. | | |
| .1680 | -537. | 513. | 28. | -137. | -760. | 213. | -.0803 | -.0252 | .0315 | -.0116 | .0360 | -.1491 | 3345. | | |
| .1690 | -460. | 583. | 116. | -103. | -704. | 299. | -.0816 | -.0205 | .0278 | .0182 | .0399 | -.1461 | 3219. | | |
| .1700 | -344. | 693. | 177. | -64. | -635. | 381. | -.0813 | -.0152 | .0234 | .0470 | .0417 | -.1428 | 3103. | | |
| .1710 | -194. | 803. | 233. | -27. | -554. | 445. | -.0795 | -.0092 | .0186 | .0736 | .0424 | -.1370 | 2968. | | |
| .1720 | -86. | 810. | 324. | 13. | -461. | 479. | -.0756 | -.0024 | .0128 | .1005 | .0418 | -.1245 | 2776. | | |
| .1730 | 32. | 789. | 421. | 64. | -359. | 492. | -.0704 | .0046 | .0065 | .1251 | .0397 | -.1093 | 2556. | | |
| .1740 | 183. | 785. | 494. | 131. | -255. | 487. | -.0647 | .0109 | -.0001 | .1454 | .0365 | -.0948 | 2358. | | |
| .1750 | 331. | 753. | 557. | 201. | -147. | 461. | -.0585 | .0166 | -.0066 | .1606 | .0327 | -.0786 | 2187. | | |
| .1760 | 469. | 673. | 627. | 256. | -25. | 415. | -.0518 | .0215 | -.0127 | .1691 | .0307 | -.0588 | 2039. | | |
| .1770 | 572. | 550. | 671. | 290. | 98. | 354. | -.0450 | .0254 | -.0183 | .1701 | .0301 | -.0355 | 1953. | | |
| .1780 | 655. | 451. | 669. | 304. | 211. | 293. | -.0385 | .0277 | -.0229 | .1626 | .0297 | -.0115 | 1970. | | |
| .1790 | 680. | 339. | 630. | 297. | 309. | 234. | -.0324 | .0285 | -.0264 | .1479 | .0291 | .0142 | 2038. | | |
| .1800 | 644. | 179. | 575. | 264. | 392. | 167. | -.0268 | .0278 | -.0289 | .1260 | .0291 | .0419 | 2092. | | |
| .1810 | 594. | 30. | 485. | 213. | 450. | 94. | -.0227 | .0253 | -.0299 | .0961 | .0292 | .0672 | 2114. | | |
| .1820 | 504. | -105. | 357. | 165. | 465. | 18. | -.0201 | .0211 | -.0299 | .0617 | .0276 | .0882 | 2061. | | |
| .1830 | 376. | -243. | 210. | 120. | 446. | -62. | -.0190 | .0155 | -.0291 | .0244 | .0246 | .1058 | 1945. | | |
| .1840 | 215. | -418. | 72. | 68. | 407. | -153. | -.0191 | .0089 | -.0277 | -.0145 | .0221 | .1215 | 1836. | | |
| .1850 | 38. | -593. | -72. | 7. | 347. | -245. | -.0205 | .0014 | -.0256 | -.0547 | .0197 | .1331 | 1774. | | |
| .1860 | -133. | -699. | -251. | -57. | 265. | -320. | -.0236 | -.0067 | -.0228 | -.0951 | .0163 | .1374 | 1750. | | |
| .1870 | -324. | -778. | -445. | -129. | 172. | -372. | -.0275 | -.0150 | -.0196 | -.1329 | .0117 | .1367 | 1794. | | |
| .1880 | -522. | -843. | -633. | -218. | 82. | -401. | -.0319 | -.0228 | -.0162 | -.1670 | .0066 | .1324 | 1937. | | |
| .1890 | -721. | -872. | -819. | -315. | -15. | -407. | -.0366 | -.0300 | -.0127 | -.1957 | .0002 | .1235 | 2149. | | |
| .1900 | -909. | -840. | -1009. | -404. | -127. | -392. | -.0418 | -.0363 | -.0094 | -.2175 | -.0082 | .1086 | 2408. | | |
| .1910 | -1066. | -755. | -1184. | -486. | -238. | -357. | -.0469 | -.0414 | -.0065 | -.2312 | -.0175 | .0889 | 2705. | | |
| .1920 | -1209. | -675. | -1307. | -560. | -328. | -310. | -.0514 | -.0449 | -.0045 | -.2350 | -.0261 | .0680 | 3000. | | |
| .1930 | -1309. | -577. | -1384. | -625. | -388. | -247. | -.0554 | -.0468 | -.0032 | -.2298 | -.0330 | .0447 | 3240. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.30.

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

| | | | | | | | | | | | | | |
|-------|--------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|-------|-------|
| .1820 | 504. | -175. | 77. | 125. | 465. | 18. | -.0201 | .0211 | -.0299 | .0617 | .0276 | .0882 | 2061. |
| .1830 | 376. | -243. | 210. | 120. | 446. | -62. | -.0190 | .0155 | -.0291 | .0244 | .0246 | .1058 | 1945. |
| .1840 | 215. | -418. | 72. | 68. | 407. | -153. | -.0191 | .0089 | -.0277 | -.0145 | .0221 | .1215 | 1836. |
| .1850 | 38. | -593. | -72. | 7. | 347. | -245. | -.0205 | .0014 | -.0256 | -.0547 | .0197 | .1331 | 1774. |
| .1860 | -132. | -699. | -251. | -57. | 265. | -320. | -.0236 | -.0067 | -.0228 | -.0951 | .0163 | .1374 | 1750. |
| .1870 | -324. | -778. | -445. | -129. | 172. | -372. | -.0275 | -.0150 | -.0196 | -.1329 | .0117 | .1367 | 1794. |
| .1880 | -522. | -843. | -633. | -218. | 87. | -401. | -.0319 | -.0228 | -.0162 | -.1670 | .0066 | .1324 | 1937. |
| .1890 | -721. | -872. | -819. | -315. | -15. | -407. | -.0366 | -.0300 | -.0127 | -.1957 | .0002 | .1235 | 2149. |
| .1900 | -909. | -840. | -1009. | -404. | -127. | -392. | -.0418 | -.0363 | -.0094 | -.2175 | -.0082 | .1086 | 2408. |
| .1910 | -1066. | -755. | -1184. | -486. | -238. | -357. | -.0469 | -.0414 | -.0065 | -.2312 | -.0175 | .0889 | 2705. |
| .1920 | -1208. | -675. | -1307. | -560. | -328. | -310. | -.0514 | -.0449 | -.0045 | -.2350 | -.0261 | .0680 | 3000. |
| .1930 | -1309. | -577. | -1384. | -625. | -388. | -247. | -.0554 | -.0468 | -.0032 | -.2298 | -.0330 | .0447 | 3240. |

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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 | 60 | MEMBER | 1 | SEQUENCE | 05 | LOCATION | BEG | TYPE | EL | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|
| 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) |
| .1940 | -1332. | -413. | -1438. | -681. | -416. | -169. | | -.0594 | -.0474 | -.0022 | -.2182 | -.0371 | .0168 | 3405. |
| .1950 | -1279. | -201. | -1461. | -730. | -403. | -77. | | -.0631 | -.0469 | -.0015 | -.2007 | -.0378 | -.0139 | 3495. |
| .1960 | -1180. | 12. | -1430. | -771. | -345. | 25. | | -.0658 | -.0450 | -.0013 | -.1766 | -.0351 | -.0437 | 3526. |
| .1970 | -1044. | 219. | -1343. | -791. | -259. | 131. | | -.0676 | -.0420 | -.0014 | -.1460 | -.0303 | -.0715 | 3518. |
| .1980 | -866. | 434. | -1215. | -775. | -172. | 227. | | -.0686 | -.0384 | -.0018 | -.1098 | -.0249 | -.0982 | 3447. |
| .1990 | -654. | 636. | -1039. | -709. | -102. | 299. | | -.0691 | -.0343 | -.0022 | -.0685 | -.0199 | -.1230 | 3240. |
| .2000 | -422. | 787. | -799. | -588. | -50. | 338. | | -.0687 | -.0301 | -.0030 | -.0222 | -.0156 | -.1435 | 2838. |
| .2010 | -172. | 878. | -497. | -412. | -11. | 345. | | -.0675 | -.0258 | -.0041 | .0277 | -.0115 | -.1587 | 2243. |
| .2020 | 98. | 930. | -160. | -191. | 20. | 322. | | -.0659 | -.0220 | -.0053 | .0783 | -.0071 | -.1690 | 1565. |
| .2030 | 385. | 948. | 193. | 54. | 53. | 274. | | -.0638 | -.0188 | -.0064 | .1258 | -.0007 | -.1744 | 1184. |
| .2040 | 678. | 925. | 550. | 293. | 105. | 204. | | -.0615 | -.0166 | -.0069 | .1665 | .0093 | -.1735 | 1553. |
| .2050 | 966. | 867. | 889. | 507. | 182. | 125. | | -.0587 | -.0152 | -.0067 | .1981 | .0229 | -.1666 | 2309. |
| .2060 | 1231. | 797. | 1183. | 692. | 275. | 48. | | -.0557 | -.0149 | -.0058 | .2196 | .0379 | -.1549 | 3115. |
| .2070 | 1452. | 718. | 1418. | 847. | 366. | -27. | | -.0524 | -.0157 | -.0043 | .2309 | .0522 | -.1393 | 3855. |
| .2080 | 1612. | 606. | 1602. | 971. | 440. | -112. | | -.0489 | -.0173 | -.0022 | .2323 | .0645 | -.1199 | 4474. |
| .2090 | 1697. | 451. | 1733. | 1069. | 477. | -213. | | -.0451 | -.0197 | .0002 | .2249 | .0731 | -.0974 | 4967. |
| .2100 | 1706. | 271. | 1802. | 1150. | 468. | -329. | | -.0412 | -.0227 | .0026 | .2100 | .0761 | -.0740 | 5361. |
| .2110 | 1644. | 76. | 1805. | 1213. | 419. | -451. | | -.0372 | -.0261 | .0048 | .1889 | .0734 | -.0506 | 5676. |
| .2120 | 1520. | -137. | 1745. | 1244. | 348. | -570. | | -.0332 | -.0296 | .0067 | .1615 | .0661 | -.0274 | 5893. |
| .2130 | 1346. | -350. | 1617. | 1226. | 274. | -677. | | -.0293 | -.0332 | .0084 | .1275 | .0559 | -.0048 | 5957. |
| .2140 | 1137. | -529. | 1403. | 1149. | 207. | -757. | | -.0255 | -.0366 | .0101 | .0867 | .0439 | .0158 | 5806. |
| .2150 | 900. | -659. | 1104. | 1005. | 159. | -799. | | -.0219 | -.0396 | .0119 | .0402 | .0309 | .0346 | 5400. |
| .2160 | 630. | -754. | 741. | 798. | 136. | -798. | | -.0181 | -.0421 | .0135 | -.0093 | .0175 | .0528 | 4745. |
| .2170 | 332. | -822. | 333. | 543. | 131. | -822. | | -.0141 | -.0437 | .0148 | -.0591 | .0028 | .0704 | 3929. |
| .2180 | 29. | -844. | -110. | 262. | 120. | -687. | | -.0104 | -.0445 | .0157 | -.1068 | -.0131 | .0854 | 3116. |
| .2190 | -263. | -822. | -565. | -17. | 114. | -595. | | -.0070 | -.0447 | .0163 | -.1494 | -.0309 | .0971 | 2530. |
| .2200 | -543. | -795. | -995. | -276. | 89. | -491. | | -.0037 | -.0438 | .0161 | -.1837 | -.0500 | .1066 | 2378. |
| .2210 | -808. | -749. | -1374. | -503. | 58. | -379. | | -.0004 | -.0420 | .0151 | -.2077 | -.0694 | .1152 | 2640. |
| .2220 | -1036. | -700. | -1696. | -695. | 25. | -263. | | .0029 | -.0392 | .0135 | -.2218 | -.0874 | .1221 | 3104. |
| .2230 | -1209. | -620. | -1961. | -855. | 1. | -143. | | .0059 | -.0358 | .0116 | -.2273 | -.1023 | .1262 | 3619. |
| .2240 | -1319. | -515. | -2159. | -989. | -2. | -18. | | .0087 | -.0318 | .0097 | -.2253 | -.1122 | .1278 | 4126. |
| .2250 | -1365. | -393. | -2282. | -1096. | 27. | 112. | | .0115 | -.0273 | .0080 | -.2161 | -.1164 | .1274 | 4597. |
| .2260 | -1348. | -253. | -2325. | -1168. | 81. | 243. | | .0143 | -.0225 | .0063 | -.2000 | -.1154 | .1244 | 4990. |
| .2270 | -1268. | -101. | -2285. | -1194. | 144. | 359. | | .0170 | -.0174 | .0049 | -.1772 | -.1099 | .1181 | 5237. |
| .2280 | -1133. | 38. | -2149. | -1162. | 201. | 443. | | .0197 | -.0123 | .0036 | -.1478 | -.1005 | .1088 | 5256. |
| .2290 | -951. | 144. | -1908. | -1064. | 242. | 482. | | .0224 | -.0072 | .0023 | -.1120 | -.0883 | .0966 | 4977. |
| .2300 | -728. | 213. | -1569. | -895. | 262. | 475. | | .0251 | -.0021 | .0008 | -.0701 | -.0744 | .0813 | 4366. |
| .2310 | -469. | 254. | -1151. | -662. | 261. | 426. | | .0276 | .0026 | -.0006 | -.0242 | -.0592 | .0625 | 3461. |

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ADLPIPE STRESS ANALYSIS

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18.29.30.

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

| | | | | | | | | | | | | | |
|-------|--------|-------|--------|--------|------|-------|--------|--------|--------|--------|--------|-------|-------|
| .2210 | -808. | -749. | -1374. | -503. | 58. | -379. | -.0004 | -.0420 | .0151 | -.2077 | -.0694 | .1152 | 2640. |
| .2220 | -1036. | -700. | -1696. | -695. | 25. | -263. | .0029 | -.0392 | .0135 | -.2218 | -.0874 | .1221 | 3104. |
| .2230 | -1209. | -620. | -1961. | -855. | 1. | -143. | .0059 | -.0358 | .0116 | -.2273 | -.1023 | .1262 | 3619. |
| .2240 | -1319. | -515. | -2159. | -989. | -2. | -18. | .0087 | -.0318 | .0097 | -.2253 | -.1122 | .1278 | 4126. |
| .2250 | -1365. | -393. | -2282. | -1096. | 27. | 112. | .0115 | -.0273 | .0080 | -.2161 | -.1164 | .1274 | 4597. |
| .2260 | -1348. | -253. | -2325. | -1168. | 81. | 243. | .0143 | -.0225 | .0063 | -.2000 | -.1154 | .1244 | 4990. |
| .2270 | -1260. | -101. | -2285. | -1194. | 144. | 359. | .0170 | -.0174 | .0049 | -.1772 | -.1099 | .1181 | 5237. |
| .2280 | -1133. | 38. | -2149. | -1162. | 201. | 443. | .0197 | -.0123 | .0036 | -.1478 | -.1005 | .1088 | 5256. |
| .2290 | -951. | 144. | -1908. | -1064. | 242. | 482. | .0224 | -.0072 | .0023 | -.1120 | -.0883 | .0966 | 4977. |
| .2300 | -728. | 213. | -1569. | -895. | 262. | 475. | .0251 | -.0021 | .0008 | -.0701 | -.0744 | .0813 | 4366. |
| .2310 | -469. | 254. | -1151. | -662. | 261. | 426. | .0276 | .0026 | -.0006 | -.0242 | -.0592 | .0625 | 3461. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE CKW02F 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 | 60 | MEMBER | 1 | SEQUENCE | 85 | LOCATION | BEG | TYPE | EL | DZ | RX | RY | RZ | STRESS |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|
| 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) | |
| .2320 | -179. | 270. | -673. | -385. | 249. | 339. | .0299 | .0068 | -.0019 | .0226 | -.0422 | .0406 | 2380. | |
| .2330 | 128. | 264. | -161. | -91. | 233. | 222. | .0319 | .0104 | -.0027 | .0673 | -.0229 | .0164 | 1396. | |
| .2340 | 430. | 245. | 358. | 201. | 220. | 89. | .0334 | .0133 | -.0028 | .1074 | -.0016 | -.0090 | 1297. | |
| .2350 | 735. | 227. | 855. | 475. | 212. | -48. | .0347 | .0155 | -.0023 | .1414 | .0212 | -.0348 | 2178. | |
| .2360 | 1005. | 206. | 1315. | 717. | 211. | -180. | .0355 | .0169 | -.0012 | .1683 | .0446 | -.0596 | 3210. | |
| .2370 | 1234. | 176. | 1725. | 924. | 210. | -305. | .0359 | .0175 | .0005 | .1879 | .0676 | -.0823 | 4155. | |
| .2380 | 1416. | 139. | 2070. | 1094. | 200. | -422. | .0356 | .0172 | .0026 | .2001 | .0888 | -.1026 | 4966. | |
| .2390 | 1544. | 101. | 2338. | 1230. | 173. | -526. | .0345 | .0162 | .0050 | .2054 | .1071 | -.1202 | 5632. | |
| .2400 | 1609. | 58. | 2525. | 1331. | 128. | -613. | .0327 | .0145 | .0074 | .2046 | .1214 | -.1338 | 6138. | |
| .2410 | 1602. | 2. | 2627. | 1391. | 67. | -676. | .0303 | .0123 | .0098 | .1983 | .1310 | -.1424 | 6459. | |
| .2420 | 1522. | -54. | 2634. | 1403. | -8. | -709. | .0275 | .0096 | .0121 | .1864 | .1360 | -.1457 | 6563. | |
| .2430 | 1375. | -97. | 2537. | 1363. | -95. | -709. | .0242 | .0065 | .0145 | .1684 | .1364 | -.1443 | 6425. | |
| .2440 | 1167. | -124. | 2340. | 1268. | -187. | -671. | .0204 | .0032 | .0170 | .1449 | .1324 | -.1383 | 6037. | |
| .2450 | 905. | -137. | 2053. | 1120. | -275. | -595. | .0165 | -.0001 | .0194 | .1169 | .1244 | -.1277 | 5416. | |
| .2460 | 604. | -133. | 1689. | 929. | -356. | -484. | .0127 | -.0033 | .0214 | .0858 | .1125 | -.1133 | 4617. | |
| .2470 | 281. | -112. | 1265. | 707. | -429. | -347. | .0090 | -.0062 | .0230 | .0530 | .0973 | -.0960 | 3741. | |
| .2480 | -52. | -85. | 805. | 465. | -492. | -196. | .0056 | -.0087 | .0241 | .0200 | .0794 | -.0763 | 2943. | |
| .2490 | -381. | -63. | 334. | 216. | -543. | -42. | .0028 | -.0105 | .0243 | -.0117 | .0596 | -.0548 | 2447. | |
| .2500 | -684. | -39. | -132. | -29. | -577. | 111. | .0008 | -.0115 | .0238 | -.0411 | .0385 | -.0327 | 2456. | |
| .2510 | -948. | -4. | -581. | -260. | -590. | 262. | -.0003 | -.0118 | .0226 | -.0672 | .0166 | -.0110 | 2904. | |
| .2520 | -1167. | 33. | -993. | -473. | -576. | 406. | -.0002 | -.0113 | .0205 | -.0891 | -.0052 | .0101 | 3545. | |
| .2530 | -1337. | 64. | -1353. | -664. | -536. | 536. | .0012 | -.0098 | .0178 | -.1065 | -.0259 | .0307 | 4206. | |
| .2540 | -1450. | 92. | -1649. | -827. | -472. | 643. | .0040 | -.0074 | .0145 | -.1195 | -.0447 | .0498 | 4796. | |
| .2550 | -1497. | 118. | -1872. | -954. | -386. | 723. | .0081 | -.0044 | .0108 | -.1278 | -.0609 | .0665 | 5249. | |
| .2560 | -1474. | 136. | -2012. | -1037. | -270. | 773. | .0132 | -.0007 | .0067 | -.1310 | -.0742 | .0805 | 5520. | |
| .2570 | -1381. | 140. | -2058. | -1069. | -150. | 789. | .0194 | .0035 | .0021 | -.1287 | -.0841 | .0913 | 5580. | |
| .2580 | -1221. | 126. | -2008. | -1048. | -10. | 767. | .0264 | .0080 | -.0026 | -.1213 | -.0903 | .0987 | 5421. | |
| .2590 | -1002. | 94. | -1869. | -977. | 134. | 704. | .0338 | .0126 | -.0075 | -.1098 | -.0927 | .1025 | 5056. | |
| .2600 | -733. | 47. | -1650. | -860. | 275. | 603. | .0413 | .0172 | -.0121 | -.0950 | -.0913 | .1026 | 4533. | |
| .2610 | -432. | -13. | -1363. | -707. | 409. | 475. | .0489 | .0217 | -.0165 | -.0776 | -.0865 | .0998 | 3944. | |
| .2620 | -117. | -85. | -1024. | -526. | 535. | 330. | .0562 | .0259 | -.0204 | -.0582 | -.0789 | .0945 | 3418. | |
| .2630 | 197. | -161. | -654. | -327. | 643. | 174. | .0631 | .0296 | -.0237 | -.0380 | -.0690 | .0870 | 3097. | |
| .2640 | 502. | -231. | -271. | -122. | 728. | 14. | .0691 | .0329 | -.0262 | -.0184 | -.0571 | .0773 | 3080. | |
| .2650 | 785. | -298. | 109. | 80. | 785. | -144. | .0740 | .0355 | -.0279 | .0002 | -.0438 | .0661 | 3349. | |
| .2660 | 1028. | -361. | 474. | 274. | 816. | -292. | .0777 | .0377 | -.0290 | .0178 | -.0298 | .0544 | 3791. | |
| .2670 | 1222. | -417. | 809. | 450. | 819. | -420. | .0803 | .0394 | -.0294 | .0343 | -.0158 | .0428 | 4274. | |
| .2680 | 1360. | -463. | 1099. | 601. | 793. | -523. | .0815 | .0407 | -.0293 | .0489 | -.0023 | .0315 | 4692. | |
| .2690 | 1440. | -490. | 1328. | 716. | 739. | -598. | .0812 | .0417 | -.0286 | .0607 | .0104 | .0205 | 4966. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE CKW02F 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

| | | | | | | | | | | | | | |
|-------|--------|-------|--------|-------|------|-------|-------|-------|--------|--------|--------|-------|-------|
| .2590 | -1002. | 74. | -1869. | -977. | 134. | 704. | .338 | .0126 | -.0075 | -.1098 | -.0927 | .1025 | 5056. |
| .2600 | -733. | 47. | -1650. | -860. | 275. | 603. | .413 | .0172 | -.0121 | -.0950 | -.0913 | .1026 | 4533. |
| .2610 | -430. | -13. | -1363. | -707. | 409. | 475. | .0489 | .0217 | -.0165 | -.0776 | -.0865 | .0998 | 3944. |
| .2620 | -117. | -85. | -1024. | -576. | 535. | 330. | .0562 | .0259 | -.0204 | -.0582 | -.0789 | .0945 | 3418. |
| .2630 | 197. | -161. | -654. | -327. | 643. | 174. | .0631 | .0296 | -.0237 | -.0380 | -.0690 | .0870 | 3097. |
| .2640 | 502. | -231. | -271. | -122. | 728. | 14. | .0691 | .0329 | -.0262 | -.0184 | -.0571 | .0773 | 3080. |
| .2650 | 785. | -298. | 109. | 80. | 785. | -144. | .0740 | .0355 | -.0279 | .0002 | -.0438 | .0661 | 3349. |
| .2660 | 1028. | -361. | 474. | 274. | 816. | -292. | .0777 | .0377 | -.0290 | .0178 | -.0298 | .0544 | 3791. |
| .2670 | 1222. | -417. | 809. | 450. | 819. | -420. | .0803 | .0394 | -.0294 | .0343 | -.0158 | .0428 | 4274. |
| .2680 | 1360. | -463. | 1099. | 601. | 793. | -523. | .0815 | .0407 | -.0293 | .0489 | -.0023 | .0315 | 4692. |
| .2690 | 1440. | -490. | 1328. | 716. | 739. | -598. | .0812 | .0417 | -.0286 | .0607 | .0104 | .0205 | 4966. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE CKW00F 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 | 60 | MEMBER | 1 | SEQUENCE | S5 | LOCATION | BEG | TYPE | EL | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-------|-------|--------|--------|--------|--------|--------|--|--|
| 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 | 1460. | -487. | 1484. | 786. | 660. | -636. | .0795 | .0423 | -.0273 | .0692 | .0217 | .0099 | 5039. | | |
| .2710 | 1410. | -455. | 1559. | 808. | 560. | -629. | .0767 | .0427 | -.0255 | .0748 | .0309 | .0005 | 4872. | | |
| .2720 | 1286. | -401. | 1556. | 779. | 444. | -578. | .0731 | .0432 | -.0234 | .0778 | .0377 | -.0070 | 4451. | | |
| .2730 | 1097. | -326. | 1476. | 698. | 313. | -488. | .0687 | .0438 | -.0211 | .0779 | .0419 | -.0128 | 3786. | | |
| .2740 | 853. | -222. | 1321. | 573. | 167. | -365. | .0635 | .0444 | -.0184 | .0748 | .0438 | -.0180 | 2918. | | |
| .2750 | 577. | -92. | 1104. | 413. | 12. | -215. | .0578 | .0451 | -.0157 | .0697 | .0430 | -.0226 | 1942. | | |
| .2760 | 270. | 47. | 844. | 230. | -143. | -42. | .0520 | .0460 | -.0132 | .0639 | .0397 | -.0262 | 1144. | | |
| .2770 | -57. | 180. | 562. | 34. | -294. | 141. | .0463 | .0473 | -.0111 | .0581 | .0342 | -.0284 | 1369. | | |
| .2780 | -787. | 312. | 267. | -168. | -440. | 323. | .0408 | .0487 | -.0092 | .0517 | .0275 | -.0300 | 2384. | | |
| .2790 | -687. | 446. | -32. | -370. | -576. | 496. | .0355 | .0502 | -.0075 | .0444 | .0203 | -.0319 | 3528. | | |
| .2800 | -964. | 575. | -317. | -561. | -696. | 656. | .0308 | .0517 | -.0059 | .0370 | .0128 | -.0336 | 4629. | | |
| .2810 | -1213. | 684. | -571. | -734. | -791. | 802. | .0268 | .0532 | -.0047 | .0307 | .0054 | -.0342 | 5611. | | |
| .2820 | -1422. | 767. | -780. | -881. | -861. | 923. | .0237 | .0547 | -.0036 | .0251 | -.0012 | -.0339 | 6424. | | |
| .2830 | -1569. | 831. | -939. | -994. | -912. | 1008. | .0212 | .0558 | -.0025 | .0198 | -.0064 | -.0338 | 7028. | | |
| .2840 | -1648. | 877. | -1042. | -1062. | -946. | 1053. | .0193 | .0564 | -.0016 | .0155 | -.0104 | -.0340 | 7385. | | |
| .2850 | -1669. | 886. | -1073. | -1076. | -961. | 1058. | .0182 | .0567 | -.0009 | .0141 | -.0133 | -.0331 | 7466. | | |
| .2860 | -1637. | 843. | -1022. | -1034. | -955. | 1023. | .0181 | .0568 | -.0007 | .0163 | -.0154 | -.0301 | 7260. | | |
| .2870 | -1545. | 762. | -900. | -938. | -932. | 946. | .0187 | .0564 | -.0008 | .0211 | -.0162 | -.0256 | 6787. | | |
| .2880 | -1387. | 663. | -724. | -798. | -897. | 831. | .0196 | .0554 | -.0010 | .0275 | -.0158 | -.0207 | 6095. | | |
| .2890 | -1175. | 549. | -505. | -622. | -844. | 691. | .0211 | .0539 | -.0012 | .0351 | -.0141 | -.0145 | 5240. | | |
| .2900 | -929. | 410. | -248. | -427. | -761. | 538. | .0232 | .0522 | -.0017 | .0441 | -.0114 | -.0058 | 4277. | | |
| .2910 | -657. | 259. | 28. | -224. | -649. | 381. | .0258 | .0503 | -.0024 | .0535 | -.0076 | .0052 | 3277. | | |
| .2920 | -360. | 119. | 298. | -26. | -515. | 225. | .0287 | .0480 | -.0031 | .0619 | -.0032 | .0170 | 2348. | | |
| .2930 | -47. | -6. | 549. | 160. | -365. | 75. | .0315 | .0455 | -.0038 | .0684 | .0014 | .0289 | 1691. | | |
| .2940 | 261. | -127. | 778. | 326. | -202. | -66. | .0343 | .0430 | -.0046 | .0736 | .0054 | .0414 | 1622. | | |
| .2950 | 549. | -244. | 974. | 470. | -32. | -190. | .0371 | .0405 | -.0058 | .0778 | .0074 | .0541 | 2121. | | |
| .2960 | 806. | -343. | 1123. | 590. | 133. | -295. | .0396 | .0380 | -.0072 | .0806 | .0067 | .0656 | 2809. | | |
| .2970 | 1023. | -422. | 1214. | 679. | 282. | -382. | .0417 | .0355 | -.0087 | .0810 | .0029 | .0752 | 3456. | | |
| .2980 | 1191. | -483. | 1243. | 726. | 413. | -449. | .0431 | .0330 | -.0102 | .0781 | -.0037 | .0828 | 3960. | | |
| .2990 | 1302. | -523. | 1206. | 729. | 528. | -491. | .0439 | .0306 | -.0116 | .0715 | -.0129 | .0883 | 4277. | | |
| .3000 | 1354. | -533. | 1097. | 684. | 628. | -499. | .0441 | .0281 | -.0129 | .0613 | -.0245 | .0914 | 4398. | | |
| .3010 | 1345. | -512. | 919. | 591. | 714. | -473. | .0434 | .0255 | -.0139 | .0471 | -.0377 | .0922 | 4344. | | |
| .3020 | 1281. | -470. | 682. | 451. | 785. | -422. | .0419 | .0227 | -.0144 | .0285 | -.0514 | .0908 | 4169. | | |
| .3030 | 1172. | -407. | 396. | 272. | 837. | -351. | .0392 | .0196 | -.0144 | .0057 | -.0648 | .0871 | 3955. | | |
| .3040 | 1023. | -324. | 73. | 68. | 867. | -263. | .0356 | .0161 | -.0139 | -.0199 | -.0778 | .0812 | 3793. | | |
| .3050 | 834. | -233. | -266. | -144. | 874. | -161. | .0311 | .0123 | -.0130 | -.0464 | -.0903 | .0740 | 3758. | | |
| .3060 | 612. | -151. | -601. | -354. | 856. | -55. | .0258 | .0082 | -.0117 | -.0728 | -.1017 | .0660 | 3873. | | |
| .3070 | 374. | -78. | -918. | -554. | 808. | 44. | .0196 | .0035 | -.0098 | -.0990 | -.1111 | .0571 | 4094. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE GKW00F 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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|------|-------|-------|-------|--------|--------|--------|-------|-------|
| .2970 | 1023. | -422. | 1214. | 679. | 282. | -322. | .0417 | .0355 | -.0087 | .0810 | .0029 | .0752 | 3456. |
| .2980 | 1191. | -483. | 1243. | 726. | 413. | -449. | .0431 | .0330 | -.0102 | .0781 | -.0037 | .0828 | 3960. |
| .2990 | 1302. | -523. | 1206. | 729. | 528. | -491. | .0439 | .0306 | -.0116 | .0715 | -.0129 | .0883 | 4277. |
| .3000 | 1354. | -533. | 1097. | 684. | 620. | -499. | .0441 | .0281 | -.0129 | .0613 | -.0245 | .0914 | 4398. |
| .3010 | 1345. | -512. | 919. | 591. | 714. | -473. | .0434 | .0255 | -.0139 | .0471 | -.0377 | .0922 | 4344. |
| .3020 | 1281. | -470. | 682. | 451. | 785. | -422. | .0419 | .0227 | -.0144 | .0285 | -.0514 | .0908 | 4169. |
| .3030 | 1172. | -407. | 396. | 272. | 837. | -351. | .0392 | .0196 | -.0144 | .0057 | -.0648 | .0871 | 3955. |
| .3040 | 1023. | -324. | 73. | 68. | 867. | -263. | .0356 | .0161 | -.0139 | -.0199 | -.0778 | .0812 | 3793. |
| .3050 | 834. | -233. | -266. | -144. | 874. | -161. | .0311 | .0123 | -.0130 | -.0464 | -.0903 | .0740 | 3758. |
| .3060 | 612. | -151. | -601. | -354. | 856. | -55. | .0258 | .0082 | -.0117 | -.0728 | -.1017 | .0660 | 3873. |
| .3070 | 374. | -78. | -918. | -554. | 808. | 44. | .0196 | .0035 | -.0098 | -.0990 | -.1111 | .0571 | 4094. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

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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 | 60 | MEMBER | 1 | SEQUENCE | 85 | LOCATION | BEG | TYPE | EL | | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| 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 | 136. | -3. | -1211. | -732. | 731. | 104. | .0125 | -.0016 | -.0073 | -.1244 | -.1180 | .0466 | 4355. | | | |
| .3090 | -96. | 68. | -1466. | -881. | 633. | 214. | .0048 | -.0070 | -.0043 | -.1477 | -.1222 | .0354 | 4615. | | | |
| .3100 | -319. | 120. | -1663. | -995. | 525. | 285. | -.0030 | -.0127 | -.0011 | -.1671 | -.1231 | .0249 | 4842. | | | |
| .3110 | -519. | 151. | -1793. | -1070. | 411. | 341. | -.0109 | -.0183 | .0025 | -.1826 | -.1202 | .0151 | 4992. | | | |
| .3120 | -678. | 174. | -1858. | -1104. | 290. | 376. | -.0188 | -.0239 | .0062 | -.1940 | -.1132 | .0052 | 5015. | | | |
| .3130 | -787. | 192. | -1854. | -1091. | 165. | 389. | -.0266 | -.0294 | .0101 | -.2006 | -.1025 | -.0050 | 4882. | | | |
| .3140 | -852. | 191. | -1773. | -1029. | 44. | 383. | -.0337 | -.0343 | .0136 | -.2009 | -.0887 | -.0143 | 4587. | | | |
| .3150 | -875. | 165. | -1612. | -920. | -67. | 359. | -.0399 | -.0383 | .0166 | -.1942 | -.0726 | -.0222 | 4132. | | | |
| .3160 | -851. | 129. | -1386. | -769. | -170. | 318. | -.0452 | -.0416 | .0190 | -.1809 | -.0547 | -.0293 | 3545. | | | |
| .3170 | -779. | 94. | -1109. | -584. | -264. | 262. | -.0494 | -.0439 | .0209 | -.1623 | -.0356 | -.0363 | 2889. | | | |
| .3180 | -667. | 56. | -791. | -376. | -345. | 194. | -.0524 | -.0450 | .0221 | -.1388 | -.0157 | -.0423 | 2277. | | | |
| .3190 | -525. | 13. | -441. | -155. | -402. | 124. | -.0541 | -.0450 | .0224 | -.1107 | .0043 | -.0469 | 1871. | | | |
| .3200 | -360. | -25. | -78. | 70. | -434. | 59. | -.0543 | -.0438 | .0219 | -.0790 | .0236 | -.0501 | 1850. | | | |
| .3210 | -175. | -50. | 280. | 289. | -444. | 1. | -.0534 | -.0415 | .0207 | -.0453 | .0416 | -.0524 | 2211. | | | |
| .3220 | 21. | -66. | 622. | 494. | -435. | -53. | -.0514 | -.0383 | .0188 | -.0111 | .0581 | -.0536 | 2756. | | | |
| .3230 | 218. | -78. | 938. | 678. | -408. | -101. | -.0486 | -.0343 | .0162 | .0224 | .0727 | -.0535 | 3327. | | | |
| .3240 | 406. | -82. | 1213. | 836. | -366. | -137. | -.0450 | -.0298 | .0131 | .0546 | .0845 | -.0521 | 3851. | | | |
| .3250 | 572. | -76. | 1437. | 966. | -312. | -158. | -.0409 | -.0250 | .0095 | .0845 | .0930 | -.0492 | 4289. | | | |
| .3260 | 709. | -67. | 1604. | 1061. | -252. | -165. | -.0365 | -.0201 | .0056 | .1105 | .0983 | -.0445 | 4602. | | | |
| .3270 | 813. | -56. | 1705. | 1114. | -189. | -161. | -.0321 | -.0156 | .0018 | .1309 | .1007 | -.0383 | 4763. | | | |
| .3280 | 880. | -35. | 1733. | 1125. | -128. | -145. | -.0279 | -.0116 | -.0017 | .1448 | .1002 | -.0307 | 4765. | | | |
| .3290 | 902. | -9. | 1689. | 1097. | -69. | -115. | -.0241 | -.0084 | -.0050 | .1522 | .0967 | -.0217 | 4610. | | | |
| .3300 | 874. | 13. | 1580. | 1030. | -15. | -71. | -.0208 | -.0061 | -.0078 | .1530 | .0906 | -.0109 | 4310. | | | |
| .3310 | 799. | 25. | 1413. | 929. | 31. | -22. | -.0180 | -.0049 | -.0102 | .1468 | .0824 | .0013 | 3879. | | | |
| .3320 | 684. | 35. | 1191. | 798. | 61. | 26. | -.0162 | -.0049 | -.0118 | .1333 | .0726 | .0136 | 3341. | | | |
| .3330 | 541. | 46. | 922. | 646. | 75. | 72. | -.0152 | -.0062 | -.0127 | .1133 | .0614 | .0256 | 2729. | | | |
| .3340 | 364. | 47. | 622. | 479. | 76. | 116. | -.0150 | -.0086 | -.0130 | .0882 | .0490 | .0374 | 2080. | | | |
| .3350 | 157. | 31. | 307. | 302. | 68. | 155. | -.0153 | -.0119 | -.0127 | .0594 | .0361 | .0492 | 1444. | | | |
| .3360 | -62. | 8. | -16. | 120. | 50. | 185. | -.0162 | -.0161 | -.0119 | .0272 | .0231 | .0599 | 944. | | | |
| .3370 | -281. | -11. | -341. | -60. | 22. | 204. | -.0177 | -.0210 | -.0105 | -.0073 | .0107 | .0685 | 891. | | | |
| .3380 | -491. | -30. | -652. | -233. | -11. | 212. | -.0194 | -.0262 | -.0088 | -.0422 | -.0009 | .0751 | 1315. | | | |
| .3390 | -690. | -58. | -931. | -391. | -41. | 211. | -.0210 | -.0315 | -.0070 | -.0754 | -.0116 | .0801 | 1864. | | | |
| .3400 | -865. | -90. | -1170. | -528. | -68. | 200. | -.0225 | -.0366 | -.0052 | -.1053 | -.0212 | .0830 | 2375. | | | |
| .3410 | -1007. | -115. | -1364. | -638. | -94. | 176. | -.0237 | -.0413 | -.0035 | -.1309 | -.0294 | .0830 | 2789. | | | |
| .3420 | -1098. | -134. | -1505. | -717. | -116. | 138. | -.0247 | -.0454 | -.0020 | -.1511 | -.0361 | .0801 | 3085. | | | |
| .3430 | -1148. | -153. | -1583. | -764. | -130. | 89. | -.0251 | -.0485 | -.0010 | -.1648 | -.0409 | .0747 | 3254. | | | |
| .3440 | -1157. | -169. | -1597. | -776. | -131. | 32. | -.0249 | -.0507 | -.0004 | -.1709 | -.0439 | .0672 | 3295. | | | |
| .3450 | -1108. | -172. | -1553. | -760. | -119. | -27. | -.0241 | -.0517 | -.0004 | -.1696 | -.0450 | .0575 | 3214. | | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

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

| | | | | | | | | | | | | | |
|-------|--------|-------|--------|-------|-------|------|---------|---------|---------|---------|---------|-------|-------|
| .3350 | 157. | 31. | 307. | 302. | 68. | 155. | -0.153 | -0.0119 | -0.0127 | .0594 | .0361 | .0492 | 1444. |
| .3360 | -62. | 8. | -16. | 120. | 50. | 185. | -0.0162 | -0.0161 | -0.0119 | .0272 | .0231 | .0599 | 944. |
| .3370 | -281. | -11. | -341. | -60. | 22. | 204. | -0.0177 | -0.0210 | -0.0105 | -0.0073 | .0107 | .0685 | 891. |
| .3380 | -491. | -30. | -652. | -233. | -11. | 212. | -0.0194 | -0.0262 | -0.0088 | -0.0422 | -0.0009 | .0751 | 1315. |
| .3390 | -690. | -58. | -931. | -391. | -41. | 211. | -0.0210 | -0.0315 | -0.0070 | -0.0754 | -0.0116 | .0801 | 1864. |
| .3400 | -865. | -70. | -1170. | -528. | -60. | 200. | -0.0225 | -0.0366 | -0.0052 | -0.1053 | -0.0212 | .0830 | 2375. |
| .3410 | -1007. | -115. | -1364. | -638. | -94. | 176. | -0.0237 | -0.0413 | -0.0035 | -0.1309 | -0.0294 | .0830 | 2789. |
| .3420 | -1098. | -134. | -1505. | -717. | -116. | 138. | -0.0247 | -0.0454 | -0.0020 | -0.1511 | -0.0361 | .0801 | 3085. |
| .3430 | -1148. | -153. | -1583. | -764. | -130. | 89. | -0.0251 | -0.0485 | -0.0010 | -0.1648 | -0.0409 | .0747 | 3254. |
| .3440 | -1157. | -169. | -1597. | -778. | -131. | 32. | -0.0249 | -0.0507 | -0.0004 | -0.1709 | -0.0439 | .0672 | 3295. |
| .3450 | -1107. | -172. | -1553. | -760. | -119. | -27. | -0.0241 | -0.0517 | -0.0004 | -0.1696 | -0.0450 | .0575 | 3214. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE GKN00F 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 | 60 | MEMBER | 1 | SEQUENCE | 05 | LOCATION | BEG | TYPE | EL | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|---------|---------|---------|---------|---------|---------|--------|
| 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) |
| .3460 | -1014. | -159. | -1455. | -715. | -93. | -87. | | -0.0228 | -0.0516 | -0.0007 | -0.1612 | -0.0439 | .0457 | 3033. |
| .3470 | -877. | -137. | -1305. | -648. | -55. | -149. | | -0.0211 | -0.0505 | -0.0015 | -0.1463 | -0.0405 | .0325 | 2783. |
| .3480 | -704. | -104. | -1110. | -560. | -5. | -207. | | -0.0189 | -0.0484 | -0.0026 | -0.1251 | -0.0350 | .0184 | 2490. |
| .3490 | -501. | -57. | -878. | -451. | 53. | -259. | | -0.0164 | -0.0453 | -0.0040 | -0.0982 | -0.0279 | .0038 | 2182. |
| .3500 | -270. | -2. | -617. | -325. | 115. | -304. | | -0.0137 | -0.0416 | -0.0057 | -0.0662 | -0.0197 | -0.0107 | 1915. |
| .3510 | -48. | 54. | -334. | -186. | 174. | -343. | | -0.0109 | -0.0373 | -0.0076 | -0.0305 | -0.0105 | -0.0243 | 1782. |
| .3520 | 186. | 110. | -40. | -39. | 227. | -377. | | -0.0082 | -0.0327 | -0.0095 | .0075 | -0.0006 | -0.0369 | 1845. |
| .3530 | 417. | 170. | 251. | 111. | 271. | -403. | | -0.0058 | -0.0280 | -0.0113 | .0463 | .0097 | -0.0481 | 2081. |
| .3540 | 627. | 230. | 528. | 258. | 307. | -418. | | -0.0036 | -0.0234 | -0.0131 | .0847 | .0198 | -0.0573 | 2417. |
| .3550 | 804. | 283. | 784. | 394. | 334. | -421. | | -0.0017 | -0.0191 | -0.0147 | .1213 | .0298 | -0.0639 | 2783. |
| .3560 | 952. | 330. | 1008. | 513. | 351. | -414. | | -0.0002 | -0.0151 | -0.0159 | .1542 | .0395 | -0.0680 | 3117. |
| .3570 | 1064. | 374. | 1187. | 610. | 355. | -397. | | .0008 | -0.0118 | -0.0167 | .1818 | .0485 | -0.0700 | 3379. |
| .3580 | 1136. | 415. | 1317. | 683. | 345. | -372. | | .0014 | -0.0093 | -0.0171 | .2036 | .0565 | -0.0699 | 3549. |
| .3590 | 1161. | 443. | 1398. | 730. | 322. | -340. | | .0017 | -0.0074 | -0.0171 | .2192 | .0629 | -0.0676 | 3620. |
| .3600 | 1136. | 455. | 1431. | 753. | 285. | -302. | | .0017 | -0.0062 | -0.0169 | .2284 | .0674 | -0.0631 | 3590. |
| .3610 | 1066. | 455. | 1411. | 751. | 233. | -263. | | .0014 | -0.0057 | -0.0163 | .2306 | .0698 | -0.0572 | 3462. |
| .3620 | 956. | 445. | 1340. | 724. | 167. | -226. | | .0009 | -0.0060 | -0.0154 | .2257 | .0702 | -0.0503 | 3243. |
| .3630 | 808. | 423. | 1224. | 673. | 91. | -190. | | .0004 | -0.0070 | -0.0144 | .2142 | .0686 | -0.0425 | 2944. |
| .3640 | 626. | 387. | 1069. | 599. | 12. | -154. | | -0.0000 | -0.0084 | -0.0132 | .1967 | .0652 | -0.0337 | 2581. |
| .3650 | 419. | 344. | 877. | 503. | -64. | -118. | | -0.0003 | -0.0103 | -0.0119 | .1737 | .0602 | -0.0244 | 2171. |
| .3660 | 199. | 299. | 656. | 307. | -137. | -83. | | -0.0004 | -0.0125 | -0.0105 | .1458 | .0542 | -0.0152 | 1750. |
| .3670 | -26. | 250. | 415. | 257. | -202. | -53. | | -0.0003 | -0.0150 | -0.0091 | .1140 | .0477 | -0.0063 | 1383. |
| .3680 | -249. | 196. | 167. | 119. | -258. | -28. | | .0001 | -0.0177 | -0.0076 | .0797 | .0406 | .0025 | 1190. |
| .3690 | -460. | 139. | -78. | -17. | -302. | -6. | | .0008 | -0.0205 | -0.0063 | .0448 | .0332 | .0108 | 1263. |
| .3700 | -654. | 79. | -310. | -144. | -337. | 9. | | .0018 | -0.0233 | -0.0052 | .0108 | .0254 | .0185 | 1529. |
| .3710 | -821. | 16. | -517. | -254. | -364. | 14. | | .0030 | -0.0260 | -0.0043 | -0.0212 | .0175 | .0255 | 1851. |
| .3720 | -957. | -52. | -692. | -342. | -383. | 9. | | .0043 | -0.0286 | -0.0036 | -0.0501 | .0100 | .0317 | 2144. |
| .3730 | -1056. | -120. | -829. | -405. | -394. | -6. | | .0058 | -0.0311 | -0.0030 | -0.0750 | .0029 | .0370 | 2358. |
| .3740 | -1117. | -183. | -925. | -440. | -394. | -25. | | .0073 | -0.0334 | -0.0027 | -0.0948 | -0.0035 | .0415 | 2465. |
| .3750 | -1130. | -242. | -976. | -447. | -379. | -48. | | .0090 | -0.0355 | -0.0026 | -0.1093 | -0.0088 | .0452 | 2455. |
| .3760 | -1107. | -297. | -983. | -431. | -349. | -73. | | .0107 | -0.0373 | -0.0026 | -0.1185 | -0.0125 | .0482 | 2335. |
| .3770 | -1031. | -341. | -948. | -393. | -305. | -102. | | .0122 | -0.0389 | -0.0026 | -0.1229 | -0.0144 | .0502 | 2118. |
| .3780 | -914. | -372. | -876. | -335. | -245. | -130. | | .0135 | -0.0403 | -0.0027 | -0.1225 | -0.0144 | .0509 | 1815. |
| .3790 | -761. | -391. | -768. | -258. | -171. | -155. | | .0148 | -0.0415 | -0.0029 | -0.1173 | -0.0129 | .0506 | 1446. |
| .3800 | -580. | -403. | -620. | -167. | -84. | -178. | | .0159 | -0.0423 | -0.0031 | -0.1076 | -0.0101 | .0494 | 1076. |
| .3810 | -376. | -405. | -463. | -63. | 8. | -199. | | .0168 | -0.0430 | -0.0034 | -0.0944 | -0.0063 | .0470 | 873. |
| .3820 | -154. | -397. | -283. | 49. | 101. | -221. | | .0175 | -0.0434 | -0.0037 | -0.0787 | -0.0020 | .0431 | 1036. |
| .3830 | 74. | -380. | -95. | 164. | 192. | -242. | | .0179 | -0.0437 | -0.0039 | -0.0612 | .0024 | .0377 | 1459. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE GKN00F 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 | -1056. | -120. | -829. | -405. | -394. | -6. | .0058 | -.0311 | -.0030 | -.0750 | .0029 | .0370 | 2358. |
| .3740 | -1117. | -183. | -925. | -440. | -394. | -25. | .0073 | -.0334 | -.0027 | -.0948 | -.0035 | .0415 | 2465. |
| .3750 | -1130. | -242. | -976. | -447. | -379. | -48. | .0090 | -.0355 | -.0026 | -.1093 | -.0088 | .0452 | 2455. |
| .3760 | -1107. | -297. | -987. | -431. | -349. | -73. | .0107 | -.0373 | -.0026 | -.1185 | -.0125 | .0482 | 2335. |
| .3770 | -1031. | -341. | -948. | -393. | -305. | -102. | .0122 | -.0389 | -.0026 | -.1229 | -.0144 | .0502 | 2118. |
| .3780 | -914. | -372. | -876. | -335. | -245. | -130. | .0135 | -.0403 | -.0027 | -.1225 | -.0144 | .0509 | 1815. |
| .3790 | -761. | -391. | -768. | -258. | -171. | -155. | .0148 | -.0415 | -.0029 | -.1173 | -.0129 | .0506 | 1446. |
| .3800 | -580. | -403. | -628. | -167. | -84. | -178. | .0159 | -.0423 | -.0031 | -.1076 | -.0101 | .0494 | 1076. |
| .3810 | -376. | -405. | -463. | -63. | 8. | -199. | .0168 | -.0430 | -.0034 | -.0944 | -.0063 | .0470 | 873. |
| .3820 | -154. | -397. | -283. | 49. | 101. | -221. | .0175 | -.0434 | -.0037 | -.0787 | -.0020 | .0431 | 1036. |
| .3830 | 74. | -380. | -95. | 164. | 192. | -242. | .0179 | -.0437 | -.0039 | -.0612 | .0024 | .0377 | 1459. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.30.

S/RV PIPING KEWAUNEE GROUND 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 | 60 | MEMBER | 1 | SEQUENCE | 85 | LOCATION | BEG | TYPE | EL | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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) | |
| .3840 | 299. | -357. | 95. | 278. | 279. | -259. | .0181 | -.0438 | -.0040 | -.0426 | .0065 | .0312 | 1967. | |
| .3850 | 510. | -330. | 278. | 306. | 361. | -272. | .0181 | -.0437 | -.0041 | -.0239 | .0101 | .0238 | 2480. | |
| .3860 | 705. | -299. | 446. | 483. | 433. | -281. | .0179 | -.0437 | -.0041 | -.0066 | .0131 | .0154 | 2952. | |
| .3870 | 877. | -263. | 589. | 563. | 495. | -289. | .0173 | -.0437 | -.0037 | .0084 | .0156 | .0062 | 3353. | |
| .3880 | 1021. | -224. | 704. | 625. | 544. | -292. | .0163 | -.0438 | -.0031 | .0202 | .0173 | -.0034 | 3668. | |
| .3890 | 1130. | -188. | 788. | 667. | 583. | -290. | .0151 | -.0440 | -.0023 | .0288 | .0182 | -.0126 | 3889. | |
| .3900 | 1201. | -154. | 838. | 689. | 607. | -282. | .0136 | -.0444 | -.0012 | .0339 | .0180 | -.0209 | 4008. | |
| .3910 | 1230. | -127. | 852. | 691. | 614. | -269. | .0119 | -.0450 | .0001 | .0352 | .0168 | -.0280 | 4018. | |
| .3920 | 1210. | -107. | 832. | 674. | 601. | -256. | .0098 | -.0459 | .0018 | .0323 | .0147 | -.0335 | 3915. | |
| .3930 | 1166. | -95. | 778. | 639. | 568. | -240. | .0073 | -.0472 | .0039 | .0255 | .0118 | -.0370 | 3705. | |
| .3940 | 1076. | -92. | 693. | 591. | 518. | -220. | .0047 | -.0487 | .0061 | .0155 | .0078 | -.0383 | 3405. | |
| .3950 | 950. | -98. | 583. | 521. | 453. | -196. | .0019 | -.0504 | .0086 | .0029 | .0031 | -.0370 | 3027. | |
| .3960 | 793. | -117. | 454. | 462. | 375. | -170. | -.0011 | -.0523 | .0112 | -.0122 | -.0019 | -.0351 | 2584. | |
| .3970 | 618. | -143. | 308. | 304. | 286. | -146. | -.0042 | -.0545 | .0141 | -.0297 | -.0067 | -.0272 | 2092. | |
| .3980 | 432. | -172. | 151. | 303. | 189. | -123. | -.0075 | -.0567 | .0171 | -.0485 | -.0114 | -.0195 | 1578. | |
| .3990 | 239. | -205. | -8. | 223. | 90. | -99. | -.0107 | -.0589 | .0200 | -.0674 | -.0159 | -.0102 | 1084. | |
| .4000 | 43. | -246. | -160. | 146. | -7. | -74. | -.0137 | -.0609 | .0227 | -.0854 | -.0202 | .0008 | 683. | |

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 | 1669. | -886. | 1073. | 1076. | 961. | -1058. | .0182 | .0567 | -.0009 | .0141 | -.0133 | -.0331 | 7466. |

| SECTION | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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 | 1. | |
| .0050 | 0. | -0. | -0. | 0. | -0. | -0. | -.0000 | -.0000 | .0000 | -.0000 | .0000 | -.0000 | 2. | |
| .0060 | 1. | 1. | -1. | 0. | -0. | 0. | -.0000 | -.0000 | .0000 | -.0001 | .0001 | -.0000 | 2. | |
| .0070 | 2. | 1. | -1. | 0. | 0. | 0. | -.0001 | -.0000 | .0000 | -.0002 | .0001 | -.0001 | 3. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.30.

S/RV PIPING KEWAUNEE GROUND 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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | FL | DZ | RX | RY | RZ | STRESS |
|---------|------|--------|------|----------|---------|----------|---------|---------|--------|---------|---------|---------|---------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | | | | (IN) | (DEG) | (DEG) | (DEG) | (PSI) |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | | | | | | | |
| 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. | -0.0000 | -0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0020 | -0. | -0. | 0. | 0. | -0. | 0. | -0.0000 | -0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0030 | -0. | -0. | 0. | 0. | -0. | -0. | 0.0000 | -0.0000 | 0.0000 | -0.0000 | 0.0000 | -0.0000 | -0.0000 | 0. |
| .0040 | -0. | -0. | -0. | 0. | -0. | -0. | 0.0000 | -0.0000 | 0.0000 | -0.0000 | 0.0000 | -0.0000 | -0.0000 | 1. |
| .0050 | 0. | -0. | -0. | 0. | -0. | -0. | -0.0000 | -0.0000 | 0.0000 | -0.0000 | 0.0000 | -0.0000 | -0.0000 | 2. |
| .0060 | 1. | 1. | -1. | 0. | -0. | 0. | -0.0000 | -0.0000 | 0.0000 | -0.0001 | 0.0001 | -0.0000 | -0.0000 | 2. |
| .0070 | 2. | 1. | -1. | 0. | 0. | 0. | -0.0001 | -0.0000 | 0.0000 | -0.0002 | 0.0001 | -0.0001 | -0.0001 | 3. |

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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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | FL | DZ | RX | RY | RZ | STRESS |
|---------|-------|--------|-------|----------|---------|----------|---------|---------|---------|---------|---------|---------|---------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | | | | (IN) | (DEG) | (DEG) | (DEG) | (PSI) |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | | | | | | | |
| .0080 | 2. | 1. | -2. | -0. | 2. | 1. | -0.0001 | -0.0001 | 0.0001 | -0.0003 | 0.0001 | -0.0003 | -0.0003 | 9. |
| .0090 | 1. | 2. | -4. | -1. | 4. | 3. | -0.0002 | -0.0001 | 0.0001 | -0.0004 | 0.0001 | -0.0006 | -0.0006 | 22. |
| .0100 | 11. | 6. | -7. | -3. | 9. | 5. | -0.0004 | -0.0002 | 0.0002 | -0.0006 | 0.0002 | -0.0009 | -0.0009 | 45. |
| .0110 | 21. | 13. | -12. | -7. | 17. | 9. | -0.0006 | -0.0004 | 0.0003 | -0.0009 | 0.0002 | -0.0015 | -0.0015 | 85. |
| .0120 | 33. | 20. | -17. | -12. | 30. | 16. | -0.0011 | -0.0007 | 0.0005 | -0.0015 | 0.0004 | -0.0026 | -0.0026 | 150. |
| .0130 | 45. | 28. | -23. | -20. | 48. | 25. | -0.0018 | -0.0011 | 0.0009 | -0.0023 | 0.0004 | -0.0043 | -0.0043 | 240. |
| .0140 | 57. | 35. | -29. | -31. | 69. | 35. | -0.0027 | -0.0016 | 0.0012 | -0.0030 | 0.0004 | -0.0064 | -0.0064 | 350. |
| .0150 | 70. | 44. | -35. | -46. | 93. | 44. | -0.0036 | -0.0021 | 0.0016 | -0.0032 | 0.0001 | -0.0083 | -0.0083 | 472. |
| .0160 | 82. | 53. | -42. | -63. | 118. | 52. | -0.0046 | -0.0025 | 0.0019 | -0.0028 | -0.0004 | -0.0095 | -0.0095 | 597. |
| .0170 | 91. | 61. | -48. | -79. | 140. | 56. | -0.0055 | -0.0028 | 0.0021 | -0.0015 | -0.0010 | -0.0097 | -0.0097 | 710. |
| .0180 | 95. | 60. | -50. | -93. | 159. | 56. | -0.0062 | -0.0028 | 0.0022 | 0.0007 | -0.0017 | -0.0086 | -0.0086 | 790. |
| .0190 | 93. | 51. | -46. | -101. | 160. | 47. | -0.0066 | -0.0026 | 0.0021 | 0.0037 | -0.0024 | -0.0064 | -0.0064 | 812. |
| .0200 | 81. | 29. | -35. | -100. | 148. | 31. | -0.0068 | -0.0022 | 0.0018 | 0.0071 | -0.0030 | -0.0031 | -0.0031 | 758. |
| .0210 | 59. | -1. | -16. | -88. | 120. | 9. | -0.0067 | -0.0015 | 0.0013 | 0.0105 | -0.0033 | 0.0010 | 0.0010 | 622. |
| .0220 | 42. | -15. | 4. | -63. | 77. | -17. | -0.0063 | -0.0005 | 0.0007 | 0.0136 | -0.0029 | 0.0058 | 0.0058 | 422. |
| .0230 | 17. | -30. | 31. | -28. | 24. | -42. | -0.0060 | 0.0004 | 0.0001 | 0.0153 | -0.0018 | 0.0101 | 0.0101 | 233. |
| .0240 | -39. | -61. | 65. | 11. | -35. | -62. | -0.0056 | 0.0011 | -0.0004 | 0.0156 | -0.0006 | 0.0126 | 0.0126 | 301. |
| .0250 | -113. | -114. | 100. | 44. | -99. | -83. | -0.0047 | 0.0019 | -0.0012 | 0.0162 | -0.0006 | 0.0140 | 0.0140 | 571. |
| .0260 | -156. | -154. | 120. | 64. | -160. | -110. | -0.0029 | 0.0032 | -0.0025 | 0.0191 | -0.0026 | 0.0166 | 0.0166 | 852. |
| .0270 | -138. | -115. | 112. | 75. | -201. | -130. | -0.0003 | 0.0051 | -0.0040 | 0.0235 | -0.0053 | 0.0222 | 0.0222 | 1048. |
| .0280 | -143. | -75. | 110. | 85. | -214. | -120. | 0.0020 | 0.0066 | -0.0051 | 0.0246 | -0.0071 | 0.0258 | 0.0258 | 1082. |
| .0290 | -214. | -130. | 134. | 89. | -210. | -91. | 0.0039 | 0.0072 | -0.0059 | 0.0226 | -0.0092 | 0.0237 | 0.0237 | 1023. |
| .0300 | -214. | -136. | 133. | 79. | -216. | -89. | 0.0069 | 0.0083 | -0.0072 | 0.0236 | -0.0139 | 0.0226 | 0.0226 | 1028. |
| .0310 | -138. | -38. | 97. | 79. | -240. | -98. | 0.0105 | 0.0100 | -0.0088 | 0.0250 | -0.0178 | 0.0247 | 0.0247 | 1131. |
| .0320 | -121. | -3. | 89. | 109. | -255. | -70. | 0.0127 | 0.0102 | -0.0093 | 0.0179 | -0.0167 | 0.0220 | 0.0220 | 1192. |
| .0330 | -171. | -73. | 126. | 159. | -253. | -12. | 0.0131 | 0.0088 | -0.0086 | 0.0027 | -0.0114 | 0.0120 | 0.0120 | 1247. |
| .0340 | -191. | -100. | 150. | 210. | -269. | 24. | 0.0134 | 0.0072 | -0.0079 | -0.0122 | -0.0057 | 0.0024 | 0.0024 | 1428. |
| .0350 | -167. | -59. | 135. | 244. | -309. | 26. | 0.0143 | 0.0060 | -0.0076 | -0.0228 | -0.0020 | -0.0037 | -0.0037 | 1648. |
| .0360 | -130. | -41. | 114. | 247. | -314. | 31. | 0.0149 | 0.0046 | -0.0071 | -0.0311 | 0.0003 | -0.0098 | -0.0098 | 1672. |
| .0370 | -67. | -19. | 91. | 217. | -235. | 70. | 0.0144 | 0.0025 | -0.0060 | -0.0389 | 0.0029 | -0.0159 | -0.0159 | 1367. |
| .0380 | 23. | 76. | 46. | 162. | -94. | 138. | 0.0129 | 0.0003 | -0.0043 | -0.0455 | 0.0061 | -0.0190 | -0.0190 | 969. |
| .0390 | 95. | 159. | -8. | 76. | 61. | 199. | 0.0110 | -0.0020 | -0.0027 | -0.0480 | 0.0071 | -0.0215 | -0.0215 | 923. |
| .0400 | 164. | 156. | -55. | -38. | 197. | 214. | 0.0096 | -0.0041 | -0.0018 | -0.0440 | 0.0041 | -0.0248 | -0.0248 | 1222. |
| .0410 | 303. | 228. | -124. | -136. | 294. | 188. | 0.0087 | -0.0051 | -0.0013 | -0.0359 | 0.0016 | -0.0227 | -0.0227 | 1563. |
| .0420 | 408. | 345. | -181. | -160. | 354. | 181. | 0.0061 | -0.0063 | 0.0001 | -0.0342 | 0.0073 | -0.0181 | -0.0181 | 1787. |
| .0430 | 373. | 302. | -157. | -117. | 387. | 202. | 0.0013 | -0.0090 | 0.0028 | -0.0426 | 0.0201 | -0.0208 | -0.0208 | 1889. |
| .0440 | 284. | 122. | -81. | -53. | 367. | 183. | -0.0039 | -0.0120 | 0.0055 | -0.0507 | 0.0323 | -0.0289 | -0.0289 | 1724. |
| .0450 | 268. | 47. | -53. | 11. | 263. | 87. | -0.0070 | -0.0130 | 0.0067 | -0.0494 | 0.0400 | -0.0308 | -0.0308 | 1158. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.30.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|------|--------|--------|--------|--------|--------|--------|-------|
| .0340 | -191. | -100. | 150. | 210. | -269. | 24. | .0134 | .0072 | -.0079 | -.0122 | -.0057 | .0024 | 1428. |
| .0350 | -167. | -59. | 135. | 244. | -309. | 26. | .0143 | .0060 | -.0076 | -.0228 | -.0020 | -.0037 | 1648. |
| .0360 | -130. | -41. | 114. | 247. | -314. | 31. | .0149 | .0046 | -.0071 | -.0311 | .0003 | -.0098 | 1672. |
| .0370 | -67. | -19. | 91. | 217. | -235. | 70. | .0144 | .0025 | -.0060 | -.0389 | .0029 | -.0159 | 1367. |
| .0380 | 27. | 76. | 46. | 162. | -94. | 138. | .0129 | .0003 | -.0043 | -.0455 | .0061 | -.0190 | 969. |
| .0390 | 95. | 159. | -8. | 76. | 61. | 199. | .0110 | -.0020 | -.0027 | -.0480 | .0071 | -.0215 | 923. |
| .0400 | 164. | 156. | -55. | -38. | 197. | 214. | .0096 | -.0041 | -.0018 | -.0440 | .0041 | -.0248 | 1222. |
| .0410 | 303. | 228. | -124. | -136. | 294. | 188. | .0087 | -.0051 | -.0013 | -.0359 | .0016 | -.0227 | 1563. |
| .0420 | 408. | 345. | -181. | -160. | 354. | 181. | .0061 | -.0063 | .0001 | -.0342 | .0073 | -.0181 | 1787. |
| .0430 | 373. | 302. | -157. | -117. | 387. | 202. | .0013 | -.0090 | .0028 | -.0426 | .0201 | -.0208 | 1889. |
| .0440 | 284. | 122. | -81. | -53. | 267. | 183. | -.0039 | -.0120 | .0055 | -.0507 | .0323 | -.0289 | 1724. |
| .0450 | 268. | 47. | -53. | 11. | 263. | 87. | -.0070 | -.0130 | .0067 | -.0494 | .0400 | -.0308 | 1158. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.30.

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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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 | 291. | 76. | -69. | 64. | 152. | -17. | -.0093 | -.0127 | .0073 | -.0427 | .0451 | -.0274 | 690. | |
| .0470 | 260. | -1. | -52. | 81. | 147. | -49. | -.0130 | -.0133 | .0087 | -.0380 | .0494 | -.0300 | 729. | |
| .0480 | 214. | -123. | -26. | 53. | 239. | -23. | -.0172 | -.0142 | .0104 | -.0325 | .0511 | -.0360 | 1027. | |
| .0490 | 240. | -87. | -75. | -15. | 324. | -15. | -.0197 | -.0133 | .0109 | -.0180 | .0474 | -.0346 | 1354. | |
| .0500 | 308. | 12. | -165. | -111. | 364. | -48. | -.0203 | -.0110 | .0101 | .0044 | .0377 | -.0296 | 1599. | |
| .0510 | 326. | -6. | -208. | -207. | 393. | -82. | -.0210 | -.0092 | .0092 | .0248 | .0270 | -.0303 | 1885. | |
| .0520 | 261. | -79. | -206. | -247. | 400. | -80. | -.0230 | -.0085 | .0093 | .0353 | .0225 | -.0343 | 1992. | |
| .0530 | 146. | -111. | -198. | -213. | 342. | -64. | -.0253 | -.0078 | .0099 | .0374 | .0248 | -.0351 | 1702. | |
| .0540 | 37. | -164. | -176. | -150. | 217. | -84. | -.0265 | -.0068 | .0100 | .0388 | .0272 | -.0341 | 1158. | |
| .0550 | -47. | -252. | -143. | -96. | 57. | -148. | -.0263 | -.0056 | .0094 | .0425 | .0262 | -.0323 | 773. | |
| .0560 | -119. | -285. | -127. | -45. | -98. | -201. | -.0257 | -.0043 | .0090 | .0449 | .0250 | -.0270 | 954. | |
| .0570 | -209. | -269. | -123. | -15. | -89. | -198. | -.0259 | -.0038 | .0092 | .0433 | .0246 | -.0203 | 1143. | |
| .0580 | -282. | -274. | -109. | -44. | -184. | -154. | -.0264 | -.0042 | .0097 | .0415 | .0211 | -.0152 | 1019. | |
| .0590 | -303. | -245. | -118. | -133. | -140. | -116. | -.0258 | -.0044 | .0094 | .0449 | .0121 | -.0075 | 938. | |
| .0600 | -277. | -108. | -177. | -242. | -118. | -100. | -.0236 | -.0036 | .0082 | .0525 | .0004 | .0076 | 1200. | |
| .0610 | -247. | 44. | -234. | -334. | -111. | -84. | -.0210 | -.0030 | .0069 | .0575 | -.0095 | .0252 | 1510. | |
| .0620 | -256. | 112. | -228. | -381. | -99. | -47. | -.0195 | -.0036 | .0064 | .0535 | -.0144 | .0388 | 1655. | |
| .0630 | -313. | 134. | -173. | -359. | -128. | -7. | -.0186 | -.0051 | .0067 | .0404 | -.0137 | .0496 | 1592. | |
| .0640 | -381. | 162. | -105. | -278. | -235. | -4. | -.0172 | -.0065 | .0068 | .0233 | -.0105 | .0606 | 1517. | |
| .0650 | -422. | 166. | -20. | -174. | -381. | -41. | -.0149 | -.0077 | .0066 | .0062 | -.0087 | .0695 | 1754. | |
| .0660 | -437. | 144. | 84. | -74. | -491. | -72. | -.0124 | -.0092 | .0065 | -.0114 | -.0082 | .0748 | 2094. | |
| .0670 | -433. | 149. | 181. | 9. | -522. | -54. | -.0103 | -.0108 | .0066 | -.0301 | -.0080 | .0779 | 2189. | |
| .0680 | -380. | 203. | 245. | 47. | -463. | 3. | -.0081 | -.0123 | .0066 | -.0456 | -.0108 | .0793 | 1940. | |
| .0690 | -258. | 291. | 275. | 19. | -332. | 64. | -.0052 | -.0131 | .0059 | -.0535 | -.0199 | .0780 | 1415. | |
| .0700 | -112. | 303. | 286. | -52. | -173. | 119. | -.0017 | -.0134 | .0045 | -.0551 | -.0335 | .0733 | 902. | |
| .0710 | 17. | 456. | 295. | -116. | -19. | 174. | .0016 | -.0134 | .0029 | -.0555 | -.0467 | .0653 | 877. | |
| .0720 | 133. | 497. | 317. | -131. | 100. | 228. | .0045 | -.0133 | .0015 | -.0587 | -.0551 | .0546 | 1187. | |
| .0730 | 223. | 493. | 368. | -74. | 180. | 270. | .0067 | -.0131 | .0005 | -.0659 | -.0570 | .0414 | 1390. | |
| .0740 | 248. | 416. | 452. | 50. | 172. | 282. | .0085 | -.0128 | -.0003 | -.0759 | -.0536 | .0254 | 1394. | |
| .0750 | 231. | 272. | 550. | 212. | 89. | 248. | .0104 | -.0120 | -.0012 | -.0847 | -.0479 | .0074 | 1414. | |
| .0760 | 220. | 121. | 629. | 374. | -22. | 184. | .0124 | -.0105 | -.0024 | -.0888 | -.0418 | -.0100 | 1744. | |
| .0770 | 217. | 5. | 672. | 508. | -103. | 135. | .0141 | -.0084 | -.0036 | -.0886 | -.0348 | -.0255 | 2235. | |
| .0780 | 208. | -95. | 676. | 581. | -109. | 129. | .0149 | -.0062 | -.0046 | -.0838 | -.0280 | -.0405 | 2524. | |
| .0790 | 224. | -169. | 628. | 567. | -43. | 145. | .0154 | -.0037 | -.0059 | -.0710 | -.0245 | -.0547 | 2450. | |
| .0800 | 281. | -172. | 510. | 476. | 54. | 156. | .0161 | -.0005 | -.0078 | -.0490 | -.0244 | -.0660 | 2104. | |
| .0810 | 326. | -139. | 351. | 347. | 151. | 167. | .0163 | .0030 | -.0098 | -.0232 | -.0246 | -.0755 | 1725. | |
| .0820 | 316. | -159. | 203. | 217. | 241. | 186. | .0152 | .0059 | -.0112 | .0006 | -.0216 | -.0862 | 1562. | |
| .0830 | 276. | -223. | 75. | 119. | 299. | 200. | .0134 | .0084 | -.0119 | .0207 | -.0136 | -.0961 | 1581. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.30.

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

| | | | | | | | | | | | | | |
|-------|------|-------|------|-------|-------|------|-------|--------|--------|--------|--------|--------|-------|
| .0720 | 137. | 497. | 217. | -131. | 100. | 228. | .0045 | -.0133 | .0015 | -.0587 | -.0551 | .0546 | 1187. |
| .0730 | 223. | 493. | 368. | -74. | 180. | 270. | .0067 | -.0131 | .0005 | -.0659 | -.0570 | .0414 | 1390. |
| .0740 | 248. | 416. | 452. | 50. | 172. | 282. | .0085 | -.0128 | -.0003 | -.0759 | -.0536 | .0254 | 1394. |
| .0750 | 231. | 272. | 550. | 212. | 89. | 248. | .0104 | -.0120 | -.0012 | -.0847 | -.0479 | .0074 | 1414. |
| .0760 | 220. | 121. | 629. | 374. | -22. | 184. | .0124 | -.0105 | -.0024 | -.0888 | -.0418 | -.0100 | 1744. |
| .0770 | 217. | 5. | 672. | 508. | -103. | 135. | .0141 | -.0084 | -.0036 | -.0886 | -.0348 | -.0255 | 2235. |
| .0780 | 200. | -95. | 676. | 581. | -109. | 129. | .0149 | -.0062 | -.0046 | -.0838 | -.0280 | -.0405 | 2524. |
| .0790 | 224. | -169. | 628. | 567. | -43. | 145. | .0154 | -.0037 | -.0059 | -.0710 | -.0245 | -.0547 | 2450. |
| .0800 | 281. | -172. | 510. | 476. | 54. | 156. | .0161 | -.0005 | -.0078 | -.0490 | -.0244 | -.0660 | 2104. |
| .0810 | 326. | -139. | 351. | 347. | 151. | 167. | .0163 | .0030 | -.0098 | -.0232 | -.0246 | -.0755 | 1725. |
| .0820 | 310. | -159. | 203. | 217. | 241. | 186. | .0152 | .0059 | -.0112 | .0006 | -.0216 | -.0862 | 1562. |
| .0830 | 276. | -223. | 75. | 119. | 299. | 200. | .0134 | .0084 | -.0119 | .0207 | -.0136 | -.0961 | 1581. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE GKW00F 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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | EL | 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) | | | |
| .0840 | 227. | -264. | -52. | 74. | 284. | 186. | .0114 | .0114 | -.0124 | .0378 | -.0005 | -.1004 | 1452. | | |
| .0850 | 151. | -312. | -169. | 72. | 198. | 142. | .0096 | .0146 | -.0127 | .0526 | .0159 | -.1000 | 1061. | | |
| .0860 | 55. | -411. | -258. | 80. | 87. | 78. | .0079 | .0176 | -.0128 | .0662 | .0324 | -.0982 | 591. | | |
| .0870 | -26. | -499. | -343. | 74. | -9. | 14. | .0063 | .0207 | -.0129 | .0799 | .0477 | -.0937 | 316. | | |
| .0880 | -85. | -512. | -451. | 45. | -72. | -28. | .0047 | .0238 | -.0128 | .0934 | .0614 | -.0846 | 373. | | |
| .0890 | -132. | -492. | -566. | -22. | -86. | -43. | .0030 | .0266 | -.0128 | .1070 | .0720 | -.0737 | 409. | | |
| .0900 | -155. | -472. | -674. | -131. | -55. | -46. | .0017 | .0291 | -.0129 | .1213 | .0778 | -.0626 | 622. | | |
| .0910 | -145. | -405. | -782. | -248. | -19. | -52. | .0008 | .0316 | -.0132 | .1348 | .0806 | -.0493 | 1061. | | |
| .0920 | -131. | -297. | -877. | -334. | -6. | -56. | .0000 | .0337 | -.0133 | .1430 | .0834 | -.0343 | 1415. | | |
| .0930 | -145. | -233. | -914. | -375. | -7. | -54. | -.0013 | .0347 | -.0126 | .1426 | .0872 | -.0220 | 1583. | | |
| .0940 | -179. | -231. | -882. | -375. | -23. | -56. | -.0029 | .0346 | -.0113 | .1348 | .0905 | -.0133 | 1584. | | |
| .0950 | -201. | -217. | -820. | -343. | -62. | -75. | -.0041 | .0342 | -.0098 | .1233 | .0918 | -.0043 | 1489. | | |
| .0960 | -188. | -163. | -748. | -305. | -100. | -105. | -.0044 | .0337 | -.0086 | .1114 | .0892 | .0068 | 1410. | | |
| .0970 | -136. | -102. | -660. | -289. | -85. | -122. | -.0043 | .0330 | -.0073 | .0999 | .0817 | .0177 | 1356. | | |
| .0980 | -57. | -29. | -561. | -302. | -1. | -110. | -.0041 | .0319 | -.0061 | .0889 | .0699 | .0284 | 1340. | | |
| .0990 | 40. | 82. | -466. | -336. | 123. | -80. | -.0035 | .0307 | -.0051 | .0793 | .0542 | .0402 | 1529. | | |
| .1000 | 154. | 206. | -370. | -379. | 246. | -59. | -.0022 | .0296 | -.0046 | .0720 | .0349 | .0526 | 1901. | | |
| .1010 | 260. | 300. | -253. | -408. | 342. | -59. | -.0003 | .0285 | -.0044 | .0653 | .0137 | .0637 | 2233. | | |
| .1020 | 329. | 356. | -103. | -390. | 387. | -72. | .0019 | .0272 | -.0042 | .0557 | -.0062 | .0735 | 2314. | | |
| .1030 | 351. | 371. | 78. | -312. | 376. | -92. | .0042 | .0256 | -.0037 | .0419 | -.0228 | .0819 | 2074. | | |
| .1040 | 344. | 344. | 280. | -187. | 313. | -124. | .0069 | .0240 | -.0033 | .0258 | -.0373 | .0886 | 1609. | | |
| .1050 | 325. | 296. | 482. | -41. | 210. | -170. | .0103 | .0226 | -.0030 | .0101 | -.0515 | .0936 | 1140. | | |
| .1060 | 293. | 255. | 664. | 104. | 86. | -212. | .0144 | .0213 | -.0031 | -.0041 | -.0659 | .0962 | 1049. | | |
| .1070 | 244. | 218. | 816. | 228. | -29. | -229. | .0184 | .0198 | -.0032 | -.0175 | -.0802 | .0947 | 1354. | | |
| .1080 | 165. | 167. | 937. | 320. | -122. | -211. | .0219 | .0178 | -.0033 | -.0306 | -.0937 | .0872 | 1680. | | |
| .1090 | 61. | 117. | 1016. | 383. | -210. | -165. | .0253 | .0155 | -.0034 | -.0429 | -.1059 | .0749 | 1950. | | |
| .1100 | -19. | 156. | 1032. | 426. | -310. | -109. | .0286 | .0134 | -.0038 | -.0531 | -.1161 | .0616 | 2245. | | |
| .1110 | -135. | 159. | 1025. | 456. | -418. | -40. | .0314 | .0109 | -.0039 | -.0641 | -.1231 | .0432 | 2586. | | |
| .1120 | -311. | 81. | 1010. | 478. | -527. | 40. | .0333 | .0077 | -.0034 | -.0768 | -.1265 | .0190 | 2976. | | |
| .1130 | -468. | 42. | 955. | 488. | -635. | 117. | .0352 | .0048 | -.0029 | -.0871 | -.1272 | -.0041 | 3380. | | |
| .1140 | -556. | 68. | 855. | 472. | -716. | 184. | .0373 | .0028 | -.0023 | -.0925 | -.1266 | -.0235 | 3663. | | |
| .1150 | -609. | 81. | 730. | 422. | -742. | 256. | .0389 | .0011 | -.0015 | -.0943 | -.1244 | -.0420 | 3722. | | |
| .1160 | -652. | 88. | 584. | 344. | -715. | 340. | .0397 | -.0006 | -.0003 | -.0939 | -.1197 | -.0595 | 3605. | | |
| .1170 | -682. | 117. | 415. | 243. | -659. | 421. | .0398 | -.0018 | .0010 | -.0900 | -.1128 | -.0739 | 3415. | | |
| .1180 | -658. | 175. | 230. | 124. | -591. | 470. | .0395 | -.0021 | .0020 | -.0809 | -.1044 | -.0842 | 3194. | | |
| .1190 | -654. | 169. | 57. | 20. | -540. | 491. | .0386 | -.0021 | .0030 | -.0710 | -.0919 | -.0924 | 3048. | | |
| .1200 | -688. | 129. | -99. | -35. | -528. | 488. | .0369 | -.0017 | .0042 | -.0632 | -.0729 | -.0964 | 3006. | | |
| .1210 | -691. | 121. | -237. | -43. | -548. | 449. | .0348 | -.0004 | .0055 | -.0554 | -.0491 | -.0938 | 2964. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.30.

S/RV PIPING KEWAUNEE GKW00F 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

| | | | | | | | | | | | | | |
|-------|-------|------|-------|------|-------|------|-------|--------|--------|--------|--------|--------|-------|
| .1110 | -135. | 159. | 1025. | 476. | -418. | -40. | .0314 | .0109 | -.0039 | -.0641 | -.1231 | .0432 | 2586. |
| .1120 | -311. | 81. | 1010. | 478. | -527. | 40. | .0333 | .0077 | -.0034 | -.0768 | -.1265 | .0190 | 2976. |
| .1130 | -468. | 42. | 955. | 408. | -635. | 117. | .0352 | .0048 | -.0029 | -.0871 | -.1272 | -.0041 | 3380. |
| .1140 | -556. | 68. | 855. | 472. | -716. | 184. | .0373 | .0028 | -.0025 | -.0925 | -.1266 | -.0235 | 3663. |
| .1150 | -609. | 81. | 730. | 422. | -742. | 256. | .0389 | .0011 | -.0015 | -.0943 | -.1244 | -.0420 | 3722. |
| .1160 | -657. | 88. | 584. | 344. | -715. | 340. | .0397 | -.0006 | -.0003 | -.0939 | -.1197 | -.0595 | 3605. |
| .1170 | -682. | 117. | 415. | 243. | -659. | 421. | .0398 | -.0018 | .0010 | -.0900 | -.1128 | -.0739 | 3415. |
| .1180 | -658. | 175. | 230. | 124. | -591. | 470. | .0395 | -.0021 | .0020 | -.0809 | -.1044 | -.0842 | 3194. |
| .1190 | -654. | 169. | 57. | 20. | -540. | 491. | .0386 | -.0021 | .0030 | -.0710 | -.0919 | -.0924 | 3048. |
| .1200 | -688. | 129. | -99. | -75. | -528. | 488. | .0369 | -.0017 | .0042 | -.0632 | -.0729 | -.0964 | 3006. |
| .1210 | -691. | 121. | -237. | -43. | -548. | 449. | .0348 | -.0004 | .0055 | -.0554 | -.0491 | -.0938 | 2964. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.30.

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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .1220 | -682. | 63. | -732. | -25. | -576. | 377. | .0326 | .0015 | .0070 | -.0473 | -.0236 | -.0890 | 2875. | | |
| .1230 | -656. | -16. | -403. | -3. | -590. | 280. | .0300 | .0037 | .0085 | -.0380 | .0009 | -.0830 | 2724. | | |
| .1240 | -620. | -74. | -477. | 2. | -562. | 182. | .0271 | .0062 | .0101 | -.0270 | .0228 | -.0757 | 2466. | | |
| .1250 | -549. | -106. | -540. | -43. | -452. | 103. | .0241 | .0090 | .0116 | -.0122 | .0394 | -.0683 | 1945. | | |
| .1260 | -398. | -101. | -608. | -151. | -252. | 37. | .0216 | .0123 | .0124 | .0082 | .0492 | -.0603 | 1236. | | |
| .1270 | -226. | -75. | -689. | -284. | -13. | -13. | .0195 | .0162 | .0127 | .0307 | .0553 | -.0508 | 1190. | | |
| .1280 | -40. | 18. | -784. | -397. | 207. | -58. | .0179 | .0206 | .0125 | .0518 | .0609 | -.0383 | 1883. | | |
| .1290 | 121. | 81. | -832. | -464. | 389. | -106. | .0164 | .0248 | .0122 | .0676 | .0670 | -.0281 | 2563. | | |
| .1300 | 230. | 35. | -797. | -472. | 514. | -169. | .0147 | .0281 | .0123 | .0760 | .0735 | -.0243 | 2997. | | |
| .1310 | 318. | -29. | -722. | -408. | 561. | -257. | .0134 | .0312 | .0125 | .0776 | .0807 | -.0223 | 3087. | | |
| .1320 | 373. | -96. | -628. | -282. | 546. | -351. | .0126 | .0341 | .0128 | .0730 | .0886 | -.0203 | 2952. | | |
| .1330 | 440. | -172. | -510. | -149. | 539. | -430. | .0125 | .0366 | .0132 | .0660 | .0935 | -.0191 | 2944. | | |
| .1340 | 542. | -251. | -383. | -53. | 582. | -483. | .0132 | .0389 | .0134 | .0603 | .0929 | -.0184 | 3167. | | |
| .1350 | 672. | -253. | -300. | -1. | 657. | -509. | .0147 | .0413 | .0130 | .0573 | .0873 | -.0150 | 3469. | | |
| .1360 | 804. | -154. | -274. | 7. | 742. | -507. | .0167 | .0437 | .0122 | .0564 | .0779 | -.0088 | 3750. | | |
| .1370 | 854. | -103. | -240. | -25. | 830. | -474. | .0182 | .0450 | .0113 | .0548 | .0655 | -.0063 | 3991. | | |
| .1380 | 845. | -102. | -187. | -78. | 889. | -438. | .0199 | .0456 | .0101 | .0532 | .0509 | -.0059 | 4151. | | |
| .1390 | 803. | -70. | -154. | -105. | 860. | -423. | .0224 | .0464 | .0084 | .0514 | .0377 | -.0005 | 4023. | | |
| .1400 | 728. | 5. | -144. | -77. | 733. | -423. | .0257 | .0476 | .0064 | .0470 | .0284 | .0118 | 3547. | | |
| .1410 | 615. | 51. | -103. | -11. | 564. | -423. | .0290 | .0484 | .0048 | .0388 | .0221 | .0251 | 2942. | | |
| .1420 | 437. | -7. | -10. | 66. | 385. | -416. | .0318 | .0481 | .0038 | .0273 | .0159 | .0344 | 2382. | | |
| .1430 | 248. | -51. | 66. | 131. | 190. | -422. | .0350 | .0479 | .0027 | .0177 | .0075 | .0443 | 2007. | | |
| .1440 | 100. | -13. | 87. | 170. | -7. | -433. | .0388 | .0480 | .0011 | .0122 | -.0033 | .0573 | 1941. | | |
| .1450 | -25. | 48. | 89. | 166. | -147. | -411. | .0423 | .0479 | -.0004 | .0088 | -.0159 | .0694 | 1948. | | |
| .1460 | -129. | 98. | 95. | 120. | -208. | -344. | .0450 | .0469 | -.0017 | .0056 | -.0289 | .0781 | 1753. | | |
| .1470 | -230. | 152. | 82. | 65. | -249. | -259. | .0472 | .0456 | -.0029 | .0018 | -.0408 | .0850 | 1522. | | |
| .1480 | -294. | 269. | 32. | 26. | -320. | -193. | .0492 | .0444 | -.0042 | -.0017 | -.0510 | .0927 | 1564. | | |
| .1490 | -356. | 353. | 6. | 16. | -409. | -146. | .0505 | .0426 | -.0050 | -.0079 | -.0591 | .0961 | 1813. | | |
| .1500 | -439. | 322. | 48. | 43. | -487. | -101. | .0503 | .0393 | -.0048 | -.0200 | -.0637 | .0915 | 2083. | | |
| .1510 | -487. | 283. | 109. | 117. | -559. | -61. | .0489 | .0353 | -.0035 | -.0367 | -.0637 | .0847 | 2398. | | |
| .1520 | -491. | 288. | 154. | 226. | -629. | -27. | .0466 | .0310 | -.0016 | -.0557 | -.0596 | .0786 | 2792. | | |
| .1530 | -455. | 299. | 199. | 322. | -657. | 5. | .0432 | .0261 | .0008 | -.0738 | -.0550 | .0701 | 3054. | | |
| .1540 | -409. | 245. | 262. | 368. | -617. | 45. | .0384 | .0202 | .0035 | -.0891 | -.0522 | .0550 | 2990. | | |
| .1550 | -332. | 215. | 294. | 365. | -514. | 90. | .0324 | .0135 | .0063 | -.1000 | -.0503 | .0381 | 2658. | | |
| .1560 | -198. | 300. | 259. | 331. | -378. | 140. | .0253 | .0076 | .0090 | -.1068 | -.0470 | .0240 | 2178. | | |
| .1570 | -87. | 357. | 222. | 276. | -198. | 211. | .0166 | .0007 | .0122 | -.1126 | -.0416 | .0072 | 1668. | | |
| .1580 | 16. | 335. | 213. | 203. | 13. | 277. | .0066 | -.0068 | .0155 | -.1164 | -.0355 | -.0137 | 1433. | | |
| .1590 | 157. | 328. | 193. | 143. | 198. | 303. | -.0035 | -.0136 | .0186 | -.1165 | -.0283 | -.0329 | 1625. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.30.

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

| | | | | | | | | | | | | | |
|-------|-------|------|------|------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .1480 | -274. | 209. | 11. | 10. | -220. | -173. | .0472 | .0444 | -.0042 | -.0017 | -.0510 | .0927 | 1564. |
| .1490 | -356. | 353. | 6. | 16. | -400. | -146. | .0505 | .0426 | -.0050 | -.0079 | -.0591 | .0961 | 1813. |
| .1500 | -437. | 322. | 40. | 43. | -487. | -101. | .0503 | .0393 | -.0048 | -.0200 | -.0637 | .0915 | 2083. |
| .1510 | -487. | 283. | 109. | 117. | -559. | -61. | .0489 | .0353 | -.0035 | -.0367 | -.0637 | .0847 | 2398. |
| .1520 | -491. | 288. | 154. | 226. | -620. | -27. | .0466 | .0310 | -.0016 | -.0557 | -.0596 | .0786 | 2792. |
| .1530 | -455. | 299. | 199. | 320. | -657. | 5. | .0432 | .0261 | .0008 | -.0738 | -.0550 | .0701 | 3054. |
| .1540 | -409. | 245. | 262. | 368. | -617. | 45. | .0384 | .0202 | .0035 | -.0891 | -.0522 | .0550 | 2990. |
| .1550 | -332. | 215. | 294. | 365. | -514. | 90. | .0324 | .0138 | .0063 | -.1000 | -.0503 | .0381 | 2658. |
| .1560 | -198. | 300. | 259. | 331. | -378. | 140. | .0253 | .0076 | .0090 | -.1068 | -.0470 | .0240 | 2178. |
| .1570 | -87. | 357. | 222. | 276. | -198. | 211. | .0166 | .0007 | .0122 | -.1126 | -.0416 | .0072 | 1668. |
| .1580 | 16. | 335. | 213. | 203. | 13. | 277. | .0066 | -.0068 | .0155 | -.1164 | -.0355 | -.0137 | 1433. |
| .1590 | 157. | 328. | 193. | 143. | 198. | 303. | -.0035 | -.0136 | .0186 | -.1165 | -.0283 | -.0329 | 1625. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.30.

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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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) | |
| .1600 | 296. | 343. | 156. | 125. | 333. | 297. | -.0138 | -.0198 | .0218 | -.1155 | -.0179 | -.0493 | 1934. | |
| .1610 | 390. | 277. | 156. | 140. | 456. | 283. | -.0249 | -.0260 | .0253 | -.1160 | -.0048 | -.0684 | 2316. | |
| .1620 | 467. | 128. | 199. | 164. | 588. | 261. | -.0363 | -.0319 | .0290 | -.1153 | .0089 | -.0906 | 2772. | |
| .1630 | 530. | -21. | 226. | 193. | 689. | 220. | -.0470 | -.0365 | .0319 | -.1100 | .0222 | -.1099 | 3123. | |
| .1640 | 603. | -97. | 196. | 219. | 739. | 156. | -.0560 | -.0388 | .0333 | -.0975 | .0344 | -.1221 | 3282. | |
| .1650 | 662. | -169. | 145. | 223. | 776. | 91. | -.0637 | -.0396 | .0335 | -.0795 | .0447 | -.1317 | 3390. | |
| .1660 | 648. | -316. | 113. | 205. | 815. | 47. | -.0708 | -.0396 | .0330 | -.0592 | .0535 | -.1430 | 3511. | |
| .1670 | 600. | -441. | 60. | 179. | 820. | 6. | -.0763 | -.0380 | .0315 | -.0358 | .0605 | -.1511 | 3504. | |
| .1680 | 537. | -513. | -20. | 153. | 768. | -53. | -.0797 | -.0344 | .0285 | -.0087 | .0650 | -.1537 | 3277. | |
| .1690 | 460. | -583. | -116. | 123. | 684. | -122. | -.0810 | -.0295 | .0247 | .0203 | .0662 | -.1536 | 2945. | |
| .1700 | 344. | -693. | -177. | 89. | 595. | -176. | -.0808 | -.0238 | .0205 | .0482 | .0650 | -.1529 | 2615. | |
| .1710 | 194. | -803. | -233. | 57. | 494. | -212. | -.0790 | -.0174 | .0158 | .0740 | .0622 | -.1490 | 2254. | |
| .1720 | 86. | -810. | -324. | 19. | 371. | -247. | -.0752 | -.0097 | .0103 | .0999 | .0574 | -.1379 | 1862. | |
| .1730 | -32. | -789. | -421. | -31. | 238. | -269. | -.0700 | -.0018 | .0043 | .1233 | .0509 | -.1234 | 1504. | |
| .1740 | -187. | -785. | -494. | -95. | 109. | -269. | -.0644 | .0056 | -.0018 | .1421 | .0431 | -.1089 | 1273. | |
| .1750 | -331. | -753. | -557. | -165. | -22. | -256. | -.0582 | .0124 | -.0079 | .1556 | .0349 | -.0921 | 1273. | |
| .1760 | -469. | -673. | -622. | -221. | -165. | -236. | -.0517 | .0186 | -.0138 | .1628 | .0280 | -.0712 | 1514. | |
| .1770 | -572. | -550. | -671. | -257. | -306. | -212. | -.0450 | .0238 | -.0191 | .1630 | .0224 | -.0463 | 1886. | |
| .1780 | -655. | -451. | -669. | -274. | -421. | -181. | -.0387 | .0276 | -.0236 | .1553 | .0177 | -.0207 | 2227. | |
| .1790 | -680. | -339. | -630. | -271. | -508. | -154. | -.0326 | .0299 | -.0271 | .1409 | .0136 | .0066 | 2488. | |
| .1800 | -644. | -179. | -575. | -244. | -574. | -133. | -.0272 | .0309 | -.0295 | .1198 | .0107 | .0360 | 2663. | |
| .1810 | -594. | -30. | -485. | -200. | -606. | -101. | -.0232 | .0298 | -.0307 | .0913 | .0092 | .0632 | 2694. | |
| .1820 | -504. | 105. | -357. | -159. | -582. | -61. | -.0208 | .0267 | -.0307 | .0580 | .0077 | .0865 | 2529. | |
| .1830 | -376. | 243. | -210. | -122. | -517. | -16. | -.0197 | .0220 | -.0300 | .0218 | .0064 | .1064 | 2217. | |
| .1840 | -215. | 418. | -72. | -78. | -434. | 29. | -.0199 | .0162 | -.0286 | -.0160 | .0062 | .1247 | 1843. | |
| .1850 | -38. | 593. | 72. | -27. | -328. | 76. | -.0214 | .0093 | -.0266 | -.0547 | .0070 | .1390 | 1408. | |
| .1860 | 133. | 699. | 251. | 30. | -190. | 125. | -.0244 | .0013 | -.0239 | -.0937 | .0079 | .1457 | 956. | |
| .1870 | 324. | 778. | 445. | 95. | -36. | 159. | -.0283 | -.0072 | -.0207 | -.1298 | .0079 | .1467 | 788. | |
| .1880 | 522. | 843. | 633. | 178. | 114. | 175. | -.0326 | -.0154 | -.0173 | -.1618 | .0074 | .1434 | 1143. | |
| .1890 | 721. | 872. | 819. | 268. | 269. | 178. | -.0373 | -.0233 | -.0137 | -.1883 | .0058 | .1348 | 1751. | |
| .1900 | 909. | 840. | 1009. | 354. | 441. | 176. | -.0423 | -.0307 | -.0101 | -.2080 | .0027 | .1196 | 2471. | |
| .1910 | 1066. | 755. | 1184. | 434. | 606. | 170. | -.0472 | -.0371 | -.0069 | -.2197 | -.0013 | .0993 | 3188. | |
| .1920 | 1208. | 675. | 1307. | 507. | 735. | 148. | -.0515 | -.0419 | -.0044 | -.2217 | -.0058 | .0772 | 3777. | |
| .1930 | 1309. | 577. | 1384. | 573. | 820. | 116. | -.0554 | -.0452 | -.0027 | -.2150 | -.0099 | .0522 | 4204. | |
| .1940 | 1332. | 413. | 1438. | 633. | 864. | 86. | -.0592 | -.0475 | -.0015 | -.2020 | -.0128 | .0224 | 4482. | |
| .1950 | 1279. | 201. | 1461. | 687. | 855. | 53. | -.0627 | -.0488 | -.0007 | -.1831 | -.0140 | -.0106 | 4585. | |
| .1960 | 1180. | -12. | 1430. | 735. | 786. | 8. | -.0653 | -.0487 | -.0004 | -.1578 | -.0139 | -.0431 | 4492. | |
| .1970 | 1044. | -219. | 1343. | 764. | 672. | -42. | -.0669 | -.0473 | -.0006 | -.1265 | -.0130 | -.0738 | 4248. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|------|-------|------|--------|--------|--------|--------|--------|--------|-------|
| .1860 | 133. | 679. | 751. | 30. | -190. | 125. | -.0244 | .0013 | -.0239 | -.0937 | .0079 | .1457 | 956. |
| .1870 | 324. | 778. | 445. | 95. | -36. | 159. | -.0283 | -.0072 | -.0207 | -.1298 | .0079 | .1467 | 788. |
| .1880 | 522. | 843. | 633. | 178. | 114. | 175. | -.0326 | -.0154 | -.0173 | -.1618 | .0074 | .1434 | 1143. |
| .1890 | 721. | 872. | 819. | 268. | 269. | 178. | -.0373 | -.0233 | -.0137 | -.1883 | .0058 | .1348 | 1751. |
| .1900 | 909. | 840. | 1009. | 354. | 441. | 176. | -.0423 | -.0307 | -.0101 | -.2080 | .0027 | .1196 | 2471. |
| .1910 | 1066. | 755. | 1184. | 434. | 606. | 170. | -.0472 | -.0371 | -.0069 | -.2197 | -.0013 | .0993 | 3188. |
| .1920 | 1208. | 675. | 1307. | 507. | 735. | 148. | -.0515 | -.0419 | -.0044 | -.2217 | -.0058 | .0772 | 3777. |
| .1930 | 1309. | 577. | 1384. | 573. | 820. | 116. | -.0554 | -.0452 | -.0027 | -.2150 | -.0099 | .0522 | 4204. |
| .1940 | 1332. | 413. | 1431. | 632. | 864. | 86. | -.0592 | -.0475 | -.0015 | -.2020 | -.0128 | .0224 | 4482. |
| .1950 | 1279. | 201. | 1461. | 687. | 855. | 53. | -.0627 | -.0488 | -.0007 | -.1831 | -.0140 | -.0106 | 4585. |
| .1960 | 1180. | -12. | 1430. | 735. | 786. | 8. | -.0653 | -.0487 | -.0004 | -.1578 | -.0139 | -.0431 | 4492. |
| .1970 | 1044. | -219. | 1343. | 764. | 672. | -42. | -.0669 | -.0472 | -.0006 | -.1265 | -.0130 | -.0738 | 4248. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.31.

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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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 | 866. | -434. | 1215. | 757. | 543. | -81. | -.0679 | -.0451 | -.0009 | -.0905 | -.0118 | -.1030 | 3903. | | |
| .1990 | 654. | -636. | 1039. | 702. | 417. | -101. | -.0682 | -.0424 | -.0014 | -.0507 | -.0106 | -.1296 | 3432. | | |
| .2000 | 422. | -787. | 799. | 591. | 290. | -104. | -.0678 | -.0392 | -.0021 | -.0073 | -.0096 | -.1510 | 2780. | | |
| .2010 | 172. | -878. | 497. | 426. | 157. | -91. | -.0666 | -.0355 | -.0032 | .0383 | -.0088 | -.1662 | 1931. | | |
| .2020 | -98. | -930. | 160. | 214. | 23. | -60. | -.0649 | -.0320 | -.0044 | .0835 | -.0074 | -.1759 | 933. | | |
| .2030 | -385. | -948. | -193. | -21. | -119. | -14. | -.0629 | -.0288 | -.0056 | .1250 | -.0042 | -.1798 | 508. | | |
| .2040 | -678. | -925. | -550. | -252. | -281. | 42. | -.0606 | -.0262 | -.0065 | .1599 | .0018 | -.1769 | 1584. | | |
| .2050 | -966. | -867. | -889. | -459. | -463. | 97. | -.0580 | -.0241 | -.0069 | .1862 | .0106 | -.1677 | 2752. | | |
| .2060 | -1231. | -797. | -1183. | -639. | -647. | 148. | -.0552 | -.0230 | -.0067 | .2032 | .0204 | -.1539 | 3846. | | |
| .2070 | -1452. | -718. | -1418. | -790. | -813. | 195. | -.0521 | -.0226 | -.0059 | .2107 | .0299 | -.1363 | 4800. | | |
| .2080 | -1612. | -606. | -1602. | -913. | -943. | 243. | -.0487 | -.0230 | -.0045 | .2092 | .0384 | -.1146 | 5569. | | |
| .2090 | -1697. | -451. | -1733. | -1012. | -1020. | 298. | -.0451 | -.0240 | -.0026 | .1993 | .0449 | -.0893 | 6124. | | |
| .2100 | -1706. | -271. | -1802. | -1096. | -1031. | 363. | -.0414 | -.0255 | -.0005 | .1824 | .0480 | -.0626 | 6460. | | |
| .2110 | -1644. | -76. | -1805. | -1165. | -980. | 431. | -.0376 | -.0275 | .0017 | .1595 | .0473 | -.0359 | 6603. | | |
| .2120 | -1520. | 137. | -1745. | -1204. | -889. | 493. | -.0336 | -.0297 | .0038 | .1312 | .0432 | -.0093 | 6576. | | |
| .2130 | -1346. | 350. | -1617. | -1196. | -773. | 543. | -.0297 | -.0320 | .0059 | .0975 | .0367 | .0163 | 6360. | | |
| .2140 | -1137. | 529. | -1403. | -1129. | -640. | 578. | -.0260 | -.0343 | .0081 | .0584 | .0285 | .0391 | 5926. | | |
| .2150 | -900. | 659. | -1104. | -997. | -499. | 589. | -.0224 | -.0365 | .0103 | .0154 | .0191 | .0591 | 5261. | | |
| .2160 | -630. | 754. | -741. | -802. | -365. | 568. | -.0186 | -.0381 | .0124 | -.0291 | .0085 | .0772 | 4373. | | |
| .2170 | -332. | 822. | -333. | -558. | -235. | 516. | -.0146 | -.0390 | .0144 | -.0726 | -.0036 | .0934 | 3322. | | |
| .2180 | -29. | 844. | 110. | -290. | -98. | 446. | -.0108 | -.0393 | .0161 | -.1134 | -.0170 | .1061 | 2258. | | |
| .2190 | 263. | 822. | 565. | -22. | 54. | 368. | -.0073 | -.0391 | .0175 | -.1491 | -.0318 | .1149 | 1555. | | |
| .2200 | 543. | 785. | 995. | 227. | 210. | 281. | -.0040 | -.0380 | .0183 | -.1771 | -.0476 | .1213 | 1745. | | |
| .2210 | 808. | 749. | 1374. | 446. | 357. | 187. | -.0005 | -.0359 | .0183 | -.1955 | -.0637 | .1263 | 2508. | | |
| .2220 | 1036. | 700. | 1696. | 632. | 487. | 90. | .0028 | -.0329 | .0177 | -.2049 | -.0788 | .1295 | 3351. | | |
| .2230 | 1209. | 620. | 1961. | 787. | 592. | -2. | .0059 | -.0294 | .0167 | -.2065 | -.0912 | .1298 | 4111. | | |
| .2240 | 1319. | 515. | 2159. | 919. | 654. | -95. | .0088 | -.0255 | .0154 | -.2012 | -.1000 | .1276 | 4724. | | |
| .2250 | 1365. | 393. | 2282. | 1026. | 662. | -189. | .0116 | -.0211 | .0140 | -.1894 | -.1048 | .1231 | 5157. | | |
| .2260 | 1348. | 253. | 2325. | 1101. | 620. | -281. | .0144 | -.0165 | .0125 | -.1714 | -.1057 | .1161 | 5403. | | |
| .2270 | 1268. | 101. | 2285. | 1133. | 543. | -356. | .0172 | -.0118 | .0109 | -.1479 | -.1029 | .1063 | 5448. | | |
| .2280 | 1133. | -38. | 2149. | 1108. | 443. | -403. | .0199 | -.0072 | .0093 | -.1192 | -.0966 | .0945 | 5259. | | |
| .2290 | 951. | -144. | 1908. | 1019. | 329. | -417. | .0226 | -.0026 | .0074 | -.0857 | -.0873 | .0812 | 4797. | | |
| .2300 | 728. | -213. | 1569. | 861. | 206. | -396. | .0252 | .0018 | .0054 | -.0479 | -.0760 | .0662 | 4048. | | |
| .2310 | 469. | -254. | 1151. | 640. | 80. | -342. | .0277 | .0057 | .0032 | -.0078 | -.0631 | .0491 | 3046. | | |
| .2320 | 179. | -270. | 673. | 376. | -52. | -257. | .0300 | .0090 | .0011 | .0323 | -.0482 | .0300 | 1915. | | |
| .2330 | -128. | -264. | 161. | 94. | -191. | -150. | .0319 | .0115 | -.0006 | .0697 | -.0311 | .0096 | 1089. | | |
| .2340 | -438. | -245. | -358. | -105. | -334. | -30. | .0335 | .0133 | -.0019 | .1027 | -.0121 | -.0115 | 1599. | | |
| .2350 | -735. | -227. | -855. | -446. | -477. | 94. | .0347 | .0143 | -.0026 | .1300 | .0082 | -.0328 | 2753. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.31.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|-------|
| .2240 | 1319. | 515. | 1157. | 719. | 654. | -95. | .0088 | -.0255 | .0154 | -.2012 | -.1000 | .1276 | 4724. |
| .2250 | 1365. | 393. | 2282. | 1026. | 662. | -189. | .0116 | -.0211 | .0140 | -.1894 | -.1048 | .1231 | 5157. |
| .2260 | 1348. | 253. | 2325. | 1101. | 620. | -281. | .0144 | -.0165 | .0125 | -.1714 | -.1057 | .1161 | 5403. |
| .2270 | 1268. | 101. | 2285. | 1133. | 543. | -356. | .0172 | -.0118 | .0109 | -.1479 | -.1029 | .1063 | 5448. |
| .2280 | 1133. | -38. | 2149. | 1108. | 443. | -403. | .0199 | -.0072 | .0093 | -.1192 | -.0966 | .0945 | 5259. |
| .2290 | 951. | -144. | 1908. | 1019. | 329. | -417. | .0226 | -.0026 | .0074 | -.0857 | -.0873 | .0812 | 4797. |
| .2300 | 728. | -213. | 1569. | 861. | 206. | -396. | .0252 | .0018 | .0054 | -.0479 | -.0760 | .0662 | 4048. |
| .2310 | 469. | -254. | 1151. | 640. | 80. | -342. | .0277 | .0057 | .0032 | -.0078 | -.0631 | .0491 | 3046. |
| .2320 | 179. | -270. | 673. | 376. | -52. | -257. | .0300 | .0090 | .0011 | .0323 | -.0482 | .0300 | 1915. |
| .2330 | -128. | -264. | 161. | 94. | -191. | -150. | .0319 | .0115 | -.0006 | .0697 | -.0311 | .0096 | 1089. |
| .2340 | -438. | -245. | -358. | -105. | -334. | -30. | .0335 | .0133 | -.0019 | .1027 | -.0121 | -.0115 | 1599. |
| .2350 | -739. | -227. | -855. | -446. | -477. | 94. | .0347 | .0143 | -.0026 | .1300 | .0082 | -.0328 | 2753. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.31.

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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|
| 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 | -1005. | -206. | -1315. | -678. | -614. | 213. | | .0355 | .0145 | -.0028 | .1511 | .0292 | -.0533 | 3920. |
| .2370 | -1234. | -176. | -1725. | -875. | -737. | 324. | | .0358 | .0140 | -.0025 | .1657 | .0500 | -.0718 | 4962. |
| .2380 | -1416. | -139. | -2070. | -1038. | -830. | 426. | | .0354 | .0128 | -.0016 | .1738 | .0698 | -.0883 | 5825. |
| .2390 | -1544. | -101. | -2338. | -1168. | -884. | 516. | | .0343 | .0108 | -.0004 | .1757 | .0876 | -.1024 | 6481. |
| .2400 | -1609. | -58. | -2525. | -1265. | -894. | 589. | | .0325 | .0084 | .0011 | .1724 | .1026 | -.1132 | 6915. |
| .2410 | -1602. | -2. | -2627. | -1324. | -861. | 636. | | .0301 | .0057 | .0028 | .1646 | .1141 | -.1198 | 7106. |
| .2420 | -1522. | 54. | -2634. | -1338. | -786. | 655. | | .0273 | .0027 | .0047 | .1522 | .1220 | -.1222 | 7030. |
| .2430 | -1375. | 97. | -2537. | -1302. | -667. | 646. | | .0239 | -.0003 | .0069 | .1352 | .1264 | -.1209 | 6674. |
| .2440 | -1167. | 124. | -2340. | -1212. | -513. | 606. | | .0202 | -.0035 | .0094 | .1138 | .1271 | -.1162 | 6047. |
| .2450 | -905. | 137. | -2053. | -1072. | -335. | 533. | | .0163 | -.0064 | .0120 | .0893 | .1240 | -.1081 | 5188. |
| .2460 | -604. | 133. | -1689. | -890. | -142. | 431. | | .0125 | -.0091 | .0146 | .0627 | .1173 | -.0974 | 4168. |
| .2470 | -281. | 112. | -1265. | -678. | 61. | 308. | | .0088 | -.0113 | .0169 | .0352 | .1072 | -.0846 | 3117. |
| .2480 | 52. | 85. | -805. | -447. | 265. | 173. | | .0055 | -.0129 | .0188 | .0081 | .0943 | -.0699 | 2287. |
| .2490 | 381. | 63. | -334. | -210. | 459. | 34. | | .0028 | -.0138 | .0201 | -.0177 | .0790 | -.0535 | 2113. |
| .2500 | 684. | 39. | 133. | 24. | 635. | -105. | | .0008 | -.0139 | .0207 | -.0412 | .0618 | -.0366 | 2688. |
| .2510 | 948. | 4. | 581. | 246. | 783. | -240. | | -.0003 | -.0132 | .0206 | -.0617 | .0428 | -.0199 | 3566. |
| .2520 | 1167. | -33. | 993. | 449. | 893. | -368. | | -.0001 | -.0116 | .0198 | -.0784 | .0227 | -.0035 | 4445. |
| .2530 | 1337. | -64. | 1353. | 632. | 960. | -404. | | .0014 | -.0091 | .0182 | -.0912 | .0023 | .0127 | 5204. |
| .2540 | 1450. | -92. | 1649. | 788. | 983. | -580. | | .0042 | -.0059 | .0161 | -.1002 | -.0173 | .0282 | 5790. |
| .2550 | 1497. | -118. | 1872. | 910. | 962. | -652. | | .0083 | -.0020 | .0135 | -.1053 | -.0357 | .0423 | 6160. |
| .2560 | 1474. | -136. | 2012. | 990. | 893. | -697. | | .0135 | .0025 | .0103 | -.1063 | -.0524 | .0546 | 6278. |
| .2570 | 1381. | -140. | 2058. | 1021. | 776. | -714. | | .0196 | .0073 | .0065 | -.1031 | -.0670 | .0648 | 6125. |
| .2580 | 1221. | -126. | 2008. | 1001. | 617. | -700. | | .0266 | .0123 | .0023 | -.0961 | -.0790 | .0729 | 5711. |
| .2590 | 1002. | -94. | 1869. | 932. | 427. | -652. | | .0339 | .0173 | -.0022 | -.0861 | -.0877 | .0785 | 5071. |
| .2600 | 733. | -47. | 1650. | 820. | 216. | -572. | | .0414 | .0221 | -.0067 | -.0740 | -.0930 | .0818 | 4268. |
| .2610 | 432. | 13. | 1363. | 672. | -9. | -468. | | .0489 | .0267 | -.0111 | -.0602 | -.0950 | .0831 | 3418. |
| .2620 | 117. | 85. | 1024. | 497. | -240. | -351. | | .0563 | .0308 | -.0153 | -.0450 | -.0941 | .0825 | 2730. |
| .2630 | -197. | 161. | 654. | 306. | -463. | -225. | | .0631 | .0344 | -.0190 | -.0295 | -.0903 | .0800 | 2498. |
| .2640 | -502. | 231. | 271. | 108. | -665. | -93. | | .0690 | .0374 | -.0220 | -.0147 | -.0839 | .0754 | 2840. |
| .2650 | -785. | 298. | -109. | -86. | -839. | 40. | | .0738 | .0396 | -.0244 | -.0010 | -.0749 | .0693 | 3526. |
| .2660 | -1028. | 361. | -474. | -272. | -981. | 163. | | .0775 | .0414 | -.0262 | .0119 | -.0640 | .0624 | 4301. |
| .2670 | -1222. | 417. | -809. | -442. | -1084. | 270. | | .0800 | .0426 | -.0274 | .0241 | -.0520 | .0549 | 5016. |
| .2680 | -1360. | 463. | -1099. | -587. | -1145. | 357. | | .0811 | .0435 | -.0281 | .0351 | -.0390 | .0470 | 5574. |
| .2690 | -1440. | 490. | -1328. | -696. | -1159. | 422. | | .0808 | .0439 | -.0282 | .0440 | -.0255 | .0384 | 5912. |
| .2700 | -1460. | 497. | -1484. | -763. | -1124. | 460. | | .0792 | .0440 | -.0276 | .0508 | -.0119 | .0291 | 5987. |
| .2710 | -1410. | 455. | -1559. | -782. | -1045. | 464. | | .0764 | .0439 | -.0265 | .0557 | .0007 | .0197 | 5781. |
| .2720 | -1286. | 401. | -1556. | -751. | -924. | 431. | | .0727 | .0439 | -.0249 | .0593 | .0120 | .0107 | 5287. |
| .2730 | -1093. | 326. | -1476. | -670. | -764. | 367. | | .0683 | .0440 | -.0229 | .0612 | .0218 | .0021 | 4511. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.31.

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

| | | | | | | | | | | | | | |
|-------|--------|------|--------|-------|--------|-------|-------|-------|--------|--------|--------|-------|-------|
| .2630 | -197. | 161. | 654. | 306. | -463. | -225. | .0631 | .0344 | -.0190 | -.0295 | -.0903 | .0800 | 2498. |
| .2640 | -502. | 271. | 271. | 108. | -665. | -93. | .0690 | .0774 | -.0220 | -.0147 | -.0839 | .0754 | 2840. |
| .2650 | -785. | 298. | -109. | -86. | -839. | 40. | .0738 | .0396 | -.0244 | -.0010 | -.0749 | .0693 | 3526. |
| .2660 | -1020. | 361. | -474. | -272. | -981. | 163. | .0775 | .0414 | -.0262 | .0119 | -.0640 | .0624 | 4301. |
| .2670 | -1222. | 417. | -509. | -442. | -1084. | 270. | .0800 | .0426 | -.0274 | .0241 | -.0520 | .0549 | 5016. |
| .2680 | -1360. | 463. | -1099. | -507. | -1145. | 357. | .0811 | .0435 | -.0281 | .0351 | -.0390 | .0470 | 5574. |
| .2690 | -1440. | 490. | -1328. | -696. | -1159. | 422. | .0808 | .0439 | -.0282 | .0440 | -.0255 | .0384 | 5912. |
| .2700 | -1460. | 487. | -1484. | -763. | -1124. | 460. | .0792 | .0440 | -.0276 | .0508 | -.0119 | .0291 | 5987. |
| .2710 | -1410. | 455. | -1519. | -782. | -1045. | 464. | .0764 | .0439 | -.0265 | .0557 | .0007 | .0197 | 5781. |
| .2720 | -1286. | 401. | -1556. | -751. | -924. | 431. | .0727 | .0439 | -.0249 | .0593 | .0120 | .0107 | 5287. |
| .2730 | -1090. | 326. | -1476. | -670. | -764. | 367. | .0683 | .0440 | -.0229 | .0612 | .0218 | .0021 | 4511. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .2740 | -853. | 222. | -1321. | -546. | -568. | 280. | .0632 | .0441 | -.0205 | .0612 | .0301 | -.0067 | 3487. | | |
| .2750 | -577. | 92. | -1104. | -307. | -347. | 174. | .0576 | .0444 | -.0180 | .0597 | .0365 | -.0159 | 2278. | | |
| .2760 | -270. | -47. | -844. | -207. | -105. | 49. | .0519 | .0449 | -.0155 | .0583 | .0405 | -.0248 | 991. | | |
| .2770 | 57. | -180. | -562. | -15. | 136. | -89. | .0463 | .0458 | -.0132 | .0572 | .0424 | -.0326 | 680. | | |
| .2780 | 383. | -312. | -267. | 184. | 375. | -225. | .0409 | .0469 | -.0111 | .0556 | .0429 | -.0399 | 1981. | | |
| .2790 | 687. | -446. | 32. | 382. | 606. | -351. | .0357 | .0480 | -.0091 | .0531 | .0426 | -.0471 | 3329. | | |
| .2800 | 964. | -575. | 317. | 570. | 815. | -468. | .0310 | .0492 | -.0072 | .0503 | .0412 | -.0536 | 4587. | | |
| .2810 | 1213. | -684. | 571. | 740. | 989. | -576. | .0271 | .0505 | -.0056 | .0481 | .0389 | -.0587 | 5688. | | |
| .2820 | 1422. | -767. | 780. | 884. | 1125. | -669. | .0241 | .0518 | -.0043 | .0461 | .0361 | -.0622 | 6590. | | |
| .2830 | 1569. | -831. | 939. | 994. | 1225. | -732. | .0216 | .0527 | -.0030 | .0435 | .0337 | -.0647 | 7259. | | |
| .2840 | 1640. | -877. | 1042. | 1061. | 1291. | -762. | .0197 | .0533 | -.0018 | .0409 | .0316 | -.0662 | 7664. | | |
| .2850 | 1669. | -886. | 1073. | 1075. | 1315. | -764. | .0187 | .0537 | -.0010 | .0397 | .0293 | -.0654 | 7770. | | |
| .2860 | 1637. | -843. | 1022. | 1032. | 1293. | -742. | .0185 | .0540 | -.0007 | .0409 | .0268 | -.0614 | 7568. | | |
| .2870 | 1545. | -762. | 900. | 938. | 1234. | -690. | .0191 | .0539 | -.0007 | .0434 | .0245 | -.0547 | 7080. | | |
| .2880 | 1287. | -663. | 724. | 799. | 1144. | -608. | .0200 | .0534 | -.0008 | .0462 | .0227 | -.0462 | 6351. | | |
| .2890 | 1175. | -549. | 505. | 626. | 1022. | -505. | .0214 | .0525 | -.0011 | .0496 | .0211 | -.0358 | 5426. | | |
| .2900 | 929. | -410. | 248. | 432. | 859. | -398. | .0234 | .0516 | -.0016 | .0538 | .0193 | -.0225 | 4343. | | |
| .2910 | 657. | -259. | -28. | 232. | 661. | -291. | .0259 | .0505 | -.0024 | .0584 | .0172 | -.0069 | 3164. | | |
| .2920 | 360. | -119. | -298. | 37. | 441. | -183. | .0286 | .0492 | -.0032 | .0619 | .0151 | .0095 | 1997. | | |
| .2930 | 47. | 6. | -549. | -146. | 210. | -75. | .0313 | .0476 | -.0040 | .0641 | .0125 | .0260 | 1112. | | |
| .2940 | -261. | 127. | -778. | -310. | -27. | 23. | .0340 | .0460 | -.0048 | .0653 | .0089 | .0427 | 1301. | | |
| .2950 | -549. | 244. | -974. | -453. | -261. | 107. | .0367 | .0444 | -.0059 | .0661 | .0033 | .0590 | 2227. | | |
| .2960 | -806. | 343. | -1123. | -572. | -476. | 177. | .0391 | .0427 | -.0071 | .0662 | -.0046 | .0736 | 3192. | | |
| .2970 | -1023. | 422. | -1214. | -660. | -658. | 236. | .0411 | .0409 | -.0083 | .0645 | -.0147 | .0858 | 4011. | | |
| .2980 | -1191. | 483. | -1243. | -709. | -802. | 282. | .0426 | .0389 | -.0092 | .0605 | -.0265 | .0954 | 4619. | | |
| .2990 | -1302. | 523. | -1206. | -713. | -909. | 309. | .0434 | .0368 | -.0100 | .0541 | -.0399 | .1021 | 4991. | | |
| .3000 | -1354. | 533. | -1097. | -672. | -979. | 313. | .0436 | .0344 | -.0105 | .0451 | -.0548 | .1055 | 5126. | | |
| .3010 | -1345. | 512. | -919. | -583. | -1015. | 294. | .0430 | .0318 | -.0107 | .0333 | -.0705 | .1056 | 5035. | | |
| .3020 | -1281. | 470. | -682. | -448. | -1017. | 256. | .0416 | .0288 | -.0104 | .0182 | -.0857 | .1027 | 4757. | | |
| .3030 | -1172. | 407. | -396. | -274. | -984. | 205. | .0391 | .0252 | -.0096 | -.0001 | -.0995 | .0970 | 4348. | | |
| .3040 | -1023. | 324. | -73. | -76. | -918. | 145. | .0355 | .0211 | -.0084 | -.0206 | -.1120 | .0885 | 3892. | | |
| .3050 | -834. | 233. | 266. | 130. | -823. | 73. | .0312 | .0166 | -.0068 | -.0418 | -.1230 | .0783 | 3491. | | |
| .3060 | -612. | 151. | 601. | 335. | -703. | -4. | .0260 | .0117 | -.0050 | -.0631 | -.1319 | .0673 | 3250. | | |
| .3070 | -374. | 78. | 918. | 528. | -558. | -76. | .0199 | .0063 | -.0027 | -.0844 | -.1377 | .0554 | 3223. | | |
| .3080 | -136. | 3. | 1211. | 701. | -391. | -138. | .0130 | .0003 | .0000 | -.1055 | -.1401 | .0423 | 3401. | | |
| .3090 | 96. | -68. | 1436. | 846. | -214. | -192. | .0054 | -.0060 | .0031 | -.1251 | -.1391 | .0289 | 3728. | | |
| .3100 | 319. | -120. | 1663. | 956. | -43. | -243. | -.0023 | -.0125 | .0062 | -.1420 | -.1348 | .0162 | 4120. | | |
| .3110 | 510. | -151. | 1793. | 1029. | 114. | -285. | -.0101 | -.0189 | .0093 | -.1557 | -.1267 | .0047 | 4483. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

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

| | | | | | | | | | | | | | |
|-------|--------|-------|-------|-------|--------|-------|--------|--------|--------|--------|--------|-------|-------|
| .3010 | -1340. | 512. | 219. | -503. | -1015. | 294. | 2430 | .0318 | -.0107 | .0333 | -.0705 | .1056 | 5035. |
| .3020 | -1281. | 470. | -682. | -448. | -1017. | 256. | .416 | .0288 | -.0104 | .0182 | -.0857 | .1027 | 4757. |
| .3030 | -1172. | 407. | -396. | -274. | -984. | 205. | .0391 | .0252 | -.0096 | -.0001 | -.0995 | .0970 | 4348. |
| .3040 | -1027. | 324. | -73. | -76. | -918. | 145. | .0355 | .0211 | -.0084 | -.0206 | -.1120 | .0885 | 3892. |
| .3050 | -834. | 233. | 266. | 130. | -827. | 73. | .0312 | .0166 | -.0068 | -.0418 | -.1230 | .0783 | 3491. |
| .3060 | -612. | 151. | 601. | 335. | -702. | -4. | .0260 | .0117 | -.0050 | -.0631 | -.1319 | .0673 | 3250. |
| .3070 | -374. | 78. | 918. | 528. | -558. | -76. | .0199 | .0063 | -.0027 | -.0844 | -.1577 | .0554 | 3223. |
| .3080 | -136. | 3. | 1211. | 701. | -391. | -138. | .0130 | .0003 | .0000 | -.1055 | -.1401 | .0423 | 3401. |
| .3090 | 96. | -68. | 1466. | 846. | -214. | -192. | .0054 | -.0060 | .0031 | -.1251 | -.1391 | .0289 | 3728. |
| .3100 | 319. | -120. | 1663. | 956. | -47. | -243. | -.0023 | -.0125 | .0062 | -.1420 | -.1348 | .0162 | 4120. |
| .3110 | 519. | -151. | 1793. | 1029. | 114. | -285. | -.0101 | -.0189 | .0093 | -.1557 | -.1267 | .0047 | 4483. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.31.

S/RV PIPING KEWAUNEE GKHOOF 2 RUP DISK
2 SAFETY COLD FKWD4F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | | | | | | |
|---------|-------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|--|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | | | | | | | | | STRESS |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | | | | | | | | (PSI) |
| .3120 | 678. | -174. | 1058. | 1062. | 259. | -309. | -.0180 | -.0252 | .0125 | -.1664 | -.1146 | -.0062 | 4740. | | |
| .3130 | 787. | -192. | 1854. | 1049. | 386. | -315. | -.0258 | -.0313 | .0155 | -.1735 | -.0991 | -.0168 | 4848. | | |
| .3140 | 852. | -191. | 1773. | 990. | 485. | -307. | -.0330 | -.0367 | .0181 | -.1755 | -.0811 | -.0259 | 4776. | | |
| .3150 | 875. | -165. | 1612. | 884. | 551. | -290. | -.0393 | -.0412 | .0200 | -.1716 | -.0615 | -.0331 | 4514. | | |
| .3160 | 551. | -129. | 1386. | 738. | 589. | -260. | -.0446 | -.0447 | .0213 | -.1622 | -.0408 | -.0391 | 4086. | | |
| .3170 | 779. | -94. | 1109. | 558. | 603. | -215. | -.0489 | -.0473 | .0219 | -.1483 | -.0194 | -.0443 | 3545. | | |
| .3180 | 667. | -56. | 791. | 357. | 589. | -161. | -.0520 | -.0486 | .0219 | -.1300 | .0019 | -.0484 | 2953. | | |
| .3190 | 525. | -13. | 441. | 145. | 543. | -107. | -.0538 | -.0486 | .0212 | -.1075 | .0223 | -.0509 | 2386. | | |
| .3200 | 360. | 25. | 78. | -72. | 467. | -57. | -.0542 | -.0473 | .0196 | -.0814 | .0409 | -.0522 | 1985. | | |
| .3210 | 175. | 50. | -230. | -204. | 369. | -10. | -.0534 | -.0449 | .0174 | -.0531 | .0574 | -.0528 | 1944. | | |
| .3220 | -21. | 66. | -622. | -481. | 257. | 34. | -.0515 | -.0415 | .0146 | -.0240 | .0717 | -.0525 | 2279. | | |
| .3230 | -218. | 78. | -938. | -656. | 135. | 73. | -.0488 | -.0373 | .0114 | .0050 | .0836 | -.0511 | 2812. | | |
| .3240 | -406. | 82. | -1213. | -808. | 9. | 104. | -.0453 | -.0325 | .0078 | .0334 | .0923 | -.0486 | 3399. | | |
| .3250 | -572. | 76. | -1437. | -932. | -113. | 121. | -.0413 | -.0273 | .0039 | .0601 | .0975 | -.0451 | 3951. | | |
| .3260 | -709. | 67. | -1604. | -1022. | -225. | 128. | -.0369 | -.0220 | -.0001 | .0838 | .0995 | -.0403 | 4400. | | |
| .3270 | -817. | 56. | -1705. | -1072. | -320. | 125. | -.0326 | -.0169 | -.0039 | .1030 | .0989 | -.0343 | 4700. | | |
| .3280 | -880. | 35. | -1732. | -1082. | -391. | 113. | -.0285 | -.0125 | -.0073 | .1167 | .0959 | -.0273 | 4826. | | |
| .3290 | -902. | 9. | -1689. | -1054. | -437. | 89. | -.0247 | -.0087 | -.0102 | .1248 | .0904 | -.0193 | 4777. | | |
| .3300 | -874. | -13. | -1580. | -990. | -460. | 53. | -.0213 | -.0058 | -.0126 | .1273 | .0828 | -.0099 | 4560. | | |
| .3310 | -799. | -25. | -1413. | -892. | -456. | 9. | -.0186 | -.0039 | -.0144 | .1236 | .0738 | .0007 | 4181. | | |
| .3320 | -686. | -35. | -1191. | -767. | -420. | -34. | -.0167 | -.0033 | -.0155 | .1134 | .0640 | .0116 | 3651. | | |
| .3330 | -541. | -46. | -922. | -621. | -353. | -73. | -.0158 | -.0041 | -.0157 | .0971 | .0537 | .0221 | 2996. | | |
| .3340 | -364. | -47. | -622. | -461. | -264. | -112. | -.0155 | -.0059 | -.0154 | .0762 | .0429 | .0326 | 2267. | | |
| .3350 | -157. | -31. | -307. | -293. | -160. | -150. | -.0158 | -.0088 | -.0145 | .0516 | .0320 | .0432 | 1529. | | |
| .3360 | 62. | -8. | 16. | -121. | -44. | -181. | -.0167 | -.0125 | -.0131 | .0240 | .0215 | .0530 | 926. | | |
| .3370 | 281. | 11. | 341. | 51. | 83. | -200. | -.0181 | -.0171 | -.0112 | -.0061 | .0119 | .0611 | 927. | | |
| .3380 | 491. | 30. | 652. | 216. | 210. | -208. | -.0197 | -.0222 | -.0089 | -.0368 | .0033 | .0676 | 1528. | | |
| .3390 | 690. | 58. | 931. | 366. | 326. | -210. | -.0213 | -.0274 | -.0066 | -.0661 | -.0047 | .0728 | 2227. | | |
| .3400 | 865. | 90. | 1170. | 496. | 427. | -204. | -.0227 | -.0325 | -.0044 | -.0926 | -.0119 | .0762 | 2860. | | |
| .3410 | 1003. | 115. | 1364. | 600. | 511. | -184. | -.0239 | -.0373 | -.0024 | -.1155 | -.0181 | .0772 | 3377. | | |
| .3420 | 1098. | 134. | 1505. | 675. | 576. | -149. | -.0248 | -.0416 | -.0007 | -.1338 | -.0231 | .0756 | 3755. | | |
| .3430 | 1148. | 153. | 1583. | 719. | 614. | -103. | -.0252 | -.0451 | .0006 | -.1462 | -.0270 | .0721 | 3970. | | |
| .3440 | 1153. | 169. | 1597. | 732. | 619. | -51. | -.0249 | -.0477 | .0013 | -.1520 | -.0299 | .0667 | 4009. | | |
| .3450 | 1108. | 172. | 1553. | 716. | 593. | 6. | -.0241 | -.0492 | .0014 | -.1510 | -.0317 | .0590 | 3880. | | |
| .3460 | 1014. | 159. | 1455. | 674. | 537. | 68. | -.0227 | -.0498 | .0011 | -.1436 | -.0322 | .0494 | 3607. | | |
| .3470 | 877. | 137. | 1305. | 611. | 452. | 132. | -.0209 | -.0493 | .0002 | -.1302 | -.0311 | .0385 | 3217. | | |
| .3480 | 704. | 104. | 1110. | 528. | 341. | 196. | -.0187 | -.0478 | -.0010 | -.1111 | -.0286 | .0265 | 2748. | | |
| .3490 | 501. | 57. | 878. | 427. | 211. | 256. | -.0162 | -.0454 | -.0027 | -.0866 | -.0251 | .0139 | 2256. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.31.

S/RV PIPING KEWAUNEE GKHOOF 2 RUP DISK
2 SAFETY COLD FKWD4F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| | | | | | | | | | | | | | |
|-------|-------|------|-------|------|------|-------|--------|--------|--------|--------|--------|-------|-------|
| .3390 | 690. | 58. | 931. | 366. | 326. | -210. | -.0213 | -.0274 | -.0066 | -.0661 | -.0047 | .0728 | 2227. |
| .3400 | 869. | 90. | 1170. | 496. | 427. | -204. | -.0227 | -.0325 | -.0044 | -.0926 | -.0119 | .0762 | 2860. |
| .3410 | 1003. | 115. | 1364. | 600. | 511. | -184. | -.0239 | -.0373 | -.0024 | -.1155 | -.0181 | .0772 | 3377. |
| .3420 | 1090. | 134. | 1505. | 675. | 576. | -149. | -.0248 | -.0416 | -.0007 | -.1338 | -.0231 | .0756 | 3755. |
| .3430 | 1140. | 153. | 1587. | 719. | 614. | -103. | -.0252 | -.0451 | .0006 | -.1462 | -.0270 | .0721 | 3970. |
| .3440 | 1152. | 169. | 1597. | 732. | 619. | -51. | -.0249 | -.0477 | .0013 | -.1520 | -.0299 | .0667 | 4009. |
| .3450 | 1100. | 172. | 1553. | 716. | 593. | 6. | -.0241 | -.0492 | .0014 | -.1510 | -.0317 | .0590 | 3880. |
| .3460 | 1014. | 159. | 1455. | 674. | 537. | 68. | -.0227 | -.0498 | .0011 | -.1436 | -.0322 | .0494 | 3607. |
| .3470 | 877. | 137. | 1305. | 611. | 452. | 132. | -.0209 | -.0493 | .0002 | -.1302 | -.0311 | .0385 | 3217. |
| .3480 | 704. | 104. | 1110. | 528. | 341. | 196. | -.0187 | -.0478 | -.0010 | -.1111 | -.0286 | .0265 | 2748. |
| .3490 | 501. | 57. | 878. | 427. | 211. | 256. | -.0162 | -.0454 | -.0027 | -.0866 | -.0251 | .0139 | 2256. |

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ADLPIPE STRESS ANALYSIS

8/3/12/02.

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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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | LL | | | | | |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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 | 279. | 2. | 617. | 309. | 69. | 310. | -.0135 | -.0423 | -.0047 | -.0576 | -.0207 | .0011 | 1849. | |
| .3510 | 48. | -54. | 334. | 179. | -78. | 359. | -.0107 | -.0386 | -.0069 | -.0252 | -.0154 | -.0111 | 1706. | |
| .3520 | -186. | -110. | 40. | 41. | -222. | 404. | -.0081 | -.0345 | -.0091 | .0092 | -.0092 | -.0224 | 1929. | |
| .3530 | -413. | -170. | -251. | -100. | -355. | 441. | -.0057 | -.0302 | -.0114 | .0444 | -.0023 | -.0326 | 2399. | |
| .3540 | -627. | -230. | -528. | -238. | -475. | 468. | -.0035 | -.0259 | -.0135 | .0793 | .0050 | -.0413 | 2955. | |
| .3550 | -804. | -283. | -784. | -366. | -581. | 481. | -.0016 | -.0217 | -.0155 | .1126 | .0125 | -.0477 | 3499. | |
| .3560 | -952. | -330. | -1008. | -478. | -666. | 483. | -.0002 | -.0178 | -.0171 | .1426 | .0203 | -.0520 | 3971. | |
| .3570 | -1064. | -374. | -1187. | -569. | -724. | 477. | .0008 | -.0145 | -.0184 | .1679 | .0282 | -.0546 | 4326. | |
| .3580 | -1136. | -415. | -1317. | -627. | -752. | 462. | .0013 | -.0118 | -.0191 | .1878 | .0358 | -.0554 | 4543. | |
| .3590 | -1161. | -443. | -1398. | -682. | -753. | 436. | .0015 | -.0097 | -.0195 | .2022 | .0427 | -.0542 | 4615. | |
| .3600 | -1136. | -455. | -1431. | -704. | -726. | 402. | .0015 | -.0083 | -.0195 | .2107 | .0484 | -.0510 | 4540. | |
| .3610 | -1066. | -455. | -1411. | -702. | -666. | 365. | .0012 | -.0075 | -.0191 | .2128 | .0530 | -.0465 | 4317. | |
| .3620 | -956. | -445. | -1340. | -677. | -576. | 328. | .0006 | -.0075 | -.0184 | .2085 | .0564 | -.0410 | 3956. | |
| .3630 | -808. | -423. | -1224. | -630. | -463. | 290. | .0001 | -.0080 | -.0173 | .1981 | .0584 | -.0344 | 3479. | |
| .3640 | -626. | -387. | -1069. | -560. | -335. | 248. | -.0003 | -.0091 | -.0161 | .1823 | .0589 | -.0270 | 2914. | |
| .3650 | -419. | -344. | -877. | -470. | -198. | 205. | -.0006 | -.0106 | -.0147 | .1615 | .0580 | -.0191 | 2294. | |
| .3660 | -199. | -299. | -656. | -362. | -56. | 163. | -.0007 | -.0125 | -.0132 | .1364 | .0561 | -.0111 | 1673. | |
| .3670 | 26. | -250. | -415. | -239. | 85. | 125. | -.0005 | -.0147 | -.0116 | .1076 | .0534 | -.0032 | 1181. | |
| .3680 | 249. | -196. | -167. | -109. | 217. | 90. | -.0001 | -.0171 | -.0099 | .0767 | .0499 | .0046 | 1082. | |
| .3690 | 460. | -139. | 78. | 19. | 338. | 58. | .0006 | -.0196 | -.0084 | .0450 | .0455 | .0121 | 1433. | |
| .3700 | 654. | -79. | 310. | 138. | 444. | 31. | .0016 | -.0221 | -.0070 | .0140 | .0404 | .0192 | 1945. | |
| .3710 | 821. | -16. | 517. | 241. | 535. | 11. | .0028 | -.0246 | -.0058 | -.0154 | .0348 | .0259 | 2449. | |
| .3720 | 957. | 52. | 692. | 323. | 608. | 1. | .0041 | -.0270 | -.0048 | -.0421 | .0289 | .0321 | 2873. | |
| .3730 | 1056. | 120. | 829. | 380. | 661. | -1. | .0056 | -.0293 | -.0040 | -.0655 | .0231 | .0377 | 3182. | |
| .3740 | 1113. | 183. | 925. | 411. | 689. | 1. | .0072 | -.0314 | -.0034 | -.0845 | .0172 | .0426 | 3349. | |
| .3750 | 1130. | 242. | 976. | 415. | 690. | 8. | .0089 | -.0333 | -.0030 | -.0988 | .0116 | .0468 | 3361. | |
| .3760 | 1102. | 297. | 987. | 397. | 661. | 17. | .0106 | -.0350 | -.0028 | -.1084 | .0068 | .0505 | 3220. | |
| .3770 | 1031. | 341. | 948. | 359. | 605. | 31. | .0121 | -.0365 | -.0027 | -.1137 | .0030 | .0532 | 2937. | |
| .3780 | 914. | 372. | 876. | 302. | 521. | 47. | .0134 | -.0379 | -.0027 | -.1147 | .0003 | .0546 | 2521. | |
| .3790 | 761. | 391. | 768. | 227. | 412. | 63. | .0146 | -.0390 | -.0029 | -.1114 | -.0016 | .0550 | 1981. | |
| .3800 | 580. | 403. | 628. | 139. | 280. | 78. | .0157 | -.0398 | -.0032 | -.1039 | -.0030 | .0544 | 1344. | |
| .3810 | 376. | 405. | 463. | 39. | 134. | 94. | .0166 | -.0405 | -.0035 | -.0931 | -.0038 | .0526 | 702. | |
| .3820 | 154. | 397. | 282. | -67. | -16. | 112. | .0173 | -.0411 | -.0039 | -.0801 | -.0040 | .0492 | 551. | |
| .3830 | -74. | 380. | 95. | -177. | -167. | 132. | .0176 | -.0415 | -.0041 | -.0653 | -.0042 | .0444 | 1156. | |
| .3840 | -299. | 357. | -95. | -286. | -315. | 150. | .0178 | -.0419 | -.0044 | -.0494 | -.0045 | .0384 | 1882. | |
| .3850 | -510. | 320. | -278. | -389. | -455. | 165. | .0179 | -.0422 | -.0045 | -.0333 | -.0051 | .0313 | 2591. | |
| .3860 | -705. | 299. | -446. | -481. | -581. | 178. | .0176 | -.0425 | -.0044 | -.0182 | -.0059 | .0233 | 3233. | |
| .3870 | -877. | 263. | -589. | -556. | -688. | 192. | .0170 | -.0430 | -.0041 | -.0052 | -.0067 | .0143 | 3778. | |

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ADLPIPE STRESS ANALYSIS

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18.29.31.

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

| | | | | | | | | | | | | | |
|-------|-------|------|-------|-------|-------|------|-------|--------|--------|--------|--------|-------|-------|
| .3760 | 1107. | 297. | 97. | 377. | 661. | 17. | .0106 | -.0350 | -.0028 | -.1084 | .0068 | .0505 | 3220. |
| .3770 | 1031. | 341. | 948. | 359. | 605. | 31. | .0121 | -.0365 | -.0027 | -.1137 | .0030 | .0532 | 2937. |
| .3780 | 914. | 372. | 876. | 301. | 521. | 47. | .0134 | -.0379 | -.0027 | -.1147 | .0003 | .0546 | 2521. |
| .3790 | 761. | 391. | 768. | 227. | 412. | 63. | .0146 | -.0390 | -.0029 | -.1114 | -.0016 | .0550 | 1981. |
| .3800 | 580. | 403. | 628. | 139. | 286. | 78. | .0157 | -.0398 | -.0032 | -.1039 | -.0030 | .0544 | 1344. |
| .3810 | 376. | 405. | 463. | 79. | 134. | 94. | .0166 | -.0405 | -.0035 | -.0931 | -.0038 | .0526 | 702. |
| .3820 | 154. | 397. | 283. | -67. | -16. | 112. | .0173 | -.0411 | -.0039 | -.0801 | -.0040 | .0492 | 551. |
| .3830 | -74. | 380. | 95. | -177. | -167. | 132. | .0176 | -.0415 | -.0041 | -.0653 | -.0042 | .0444 | 1156. |
| .3840 | -299. | 357. | -95. | -286. | -315. | 150. | .0178 | -.0419 | -.0044 | -.0494 | -.0045 | .0384 | 1882. |
| .3850 | -510. | 330. | -278. | -389. | -455. | 161. | .0179 | -.0422 | -.0045 | -.0333 | -.0051 | .0313 | 2591. |
| .3860 | -705. | 299. | -444. | -481. | -581. | 178. | .0176 | -.0425 | -.0044 | -.0182 | -.0059 | .0233 | 3233. |
| .3870 | -877. | 263. | -589. | -556. | -688. | 192. | .0170 | -.0430 | -.0041 | -.0052 | -.0067 | .0143 | 3778. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.31.

S/RV PIPING KEWAUNEE CRUDD 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 | 60 | MEMBER | 1 | SEQUENCE | 829 | LOCATION | END | TYPE | EL | 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) | | | | | | | | | | |
| .3880 | -1021. | 224. | -704. | -614. | -775. | 203. | .0161 | -.0436 | -.0035 | .0052 | -.0075 | .0049 | 4210. | | | |
| .3890 | -1130. | 188. | -788. | -652. | -840. | 208. | .0149 | -.0443 | -.0026 | .0128 | -.0086 | -.0043 | 4522. | | | |
| .3900 | -1201. | 154. | -838. | -672. | -881. | 207. | .0135 | -.0451 | -.0015 | .0175 | -.0100 | -.0128 | 4704. | | | |
| .3910 | -1230. | 127. | -852. | -673. | -892. | 202. | .0118 | -.0462 | -.0001 | .0187 | -.0116 | -.0202 | 4741. | | | |
| .3920 | -1218. | 107. | -832. | -656. | -873. | 194. | .0097 | -.0475 | .0017 | .0162 | -.0131 | -.0261 | 4623. | | | |
| .3930 | -1166. | 95. | -778. | -622. | -823. | 184. | .0073 | -.0490 | .0039 | .0102 | -.0145 | -.0300 | 4374. | | | |
| .3940 | -1076. | 92. | -693. | -576. | -746. | 167. | .0047 | -.0506 | .0063 | .0014 | -.0161 | -.0319 | 3996. | | | |
| .3950 | -950. | 98. | -582. | -520. | -647. | 144. | .0020 | -.0524 | .0089 | -.0099 | -.0177 | -.0314 | 3514. | | | |
| .3960 | -793. | 117. | -454. | -454. | -528. | 117. | -.0009 | -.0542 | .0117 | -.0234 | -.0189 | -.0284 | 2946. | | | |
| .3970 | -618. | 143. | -308. | -381. | -392. | 90. | -.0041 | -.0561 | .0146 | -.0390 | -.0195 | -.0233 | 2312. | | | |
| .3980 | -432. | 172. | -151. | -304. | -245. | 64. | -.0074 | -.0581 | .0177 | -.0560 | -.0195 | -.0165 | 1652. | | | |
| .3990 | -239. | 205. | 8. | -229. | -95. | 34. | -.0106 | -.0598 | .0207 | -.0731 | -.0193 | -.0080 | 1044. | | | |
| .4000 | -43. | 246. | 160. | -157. | 51. | 3. | -.0135 | -.0612 | .0234 | -.0894 | -.0190 | .0020 | 690. | | | |

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 | 1660. | -886. | 1073. | 1075. | 1315. | -764. | .0187 | .0537 | -.0010 | .0397 | .0293 | -.0654 | 7770. |

| SECTION | 60 | MEMBER | 2 | SEQUENCE | 86 | LOCATION | END | TYPE | EL | 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) | | | | | | | | | | |
| 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. |
| .0010 | -0. | -0. | 0. | -0. | 0. | 0. | -.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 | 0. |
| .0030 | -0. | -0. | 0. | -0. | 0. | 0. | .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 | 1. |
| .0050 | 0. | -0. | -0. | 0. | -0. | -0. | -.0000 | -.0000 | .0000 | -.0000 | .0000 | -.0000 | -.0000 | -.0000 | -.0000 | 2. |
| .0060 | 1. | 1. | -1. | 1. | -0. | -0. | -.0000 | -.0000 | .0000 | -.0001 | .0001 | -.0000 | -.0000 | -.0000 | -.0000 | 3. |
| .0070 | 2. | 1. | -1. | 1. | -0. | 0. | -.0000 | -.0000 | .0000 | -.0002 | .0001 | -.0001 | -.0001 | -.0001 | -.0001 | 3. |
| .0080 | 2. | 1. | -2. | 0. | 1. | 1. | -.0001 | -.0001 | .0001 | -.0003 | .0002 | -.0003 | -.0003 | -.0003 | -.0003 | 6. |
| .0090 | 5. | 2. | -4. | -1. | 3. | 2. | -.0002 | -.0001 | .0001 | -.0005 | .0003 | -.0005 | -.0005 | -.0005 | -.0005 | 15. |
| .0100 | 11. | 6. | -7. | -2. | 5. | 3. | -.0003 | -.0002 | .0002 | -.0007 | .0004 | -.0008 | -.0008 | -.0008 | -.0008 | 28. |
| .0110 | 21. | 13. | -12. | -4. | 11. | 6. | -.0006 | -.0004 | .0003 | -.0011 | .0008 | -.0013 | -.0013 | -.0013 | -.0013 | 54. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.31.

S/RV PIPING KEWAUNEE CRUDD 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

| | | | | | | | | | | | | | | |
|-------|-----|-----|------|-----|-----|-----|-----|---------|---------|---------|---------|---------|---------|-----|
| .0000 | 0. | 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. | -0.0000 | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0020 | -0. | -0. | 0. | -0. | 0. | 0. | 0. | -0.0000 | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0030 | -0. | -0. | 0. | -0. | 0. | 0. | 0. | .0000 | -0.0000 | -0.0000 | -0.0000 | .0000 | -0.0000 | 0. |
| .0040 | -0. | -0. | -0. | 0. | -0. | -0. | -0. | .0000 | -0.0000 | -0.0000 | -0.0000 | .0000 | -0.0000 | 1. |
| .0050 | 0. | -0. | -0. | 0. | -0. | -0. | -0. | -0.0000 | -0.0000 | .0000 | -0.0000 | .0000 | -0.0000 | 2. |
| .0060 | 1. | 1. | -1. | 1. | -0. | -0. | -0. | -0.0000 | -0.0000 | .0000 | -0.0001 | .0001 | -0.0000 | 3. |
| .0070 | 2. | 1. | -1. | 1. | -0. | 0. | 0. | -0.0000 | -0.0000 | .0000 | -0.0002 | .0001 | -0.0001 | 3. |
| .0080 | 2. | 1. | -2. | 0. | 1. | 1. | 1. | -0.0001 | -0.0001 | .0001 | -0.0003 | .0002 | -0.0003 | 6. |
| .0090 | 5. | 2. | -4. | -1. | 3. | 2. | 2. | -0.0002 | -0.0001 | .0001 | -0.0005 | .0003 | -0.0005 | 15. |
| .0100 | 11. | 6. | -7. | -2. | 5. | 3. | 3. | -0.0003 | -0.0002 | .0002 | -0.0007 | .0004 | -0.0008 | 28. |
| .0110 | 21. | 13. | -12. | -4. | 11. | 6. | 6. | -0.0006 | -0.0004 | .0003 | -0.0011 | .0008 | -0.0013 | 54. |

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D15/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE CRHOFF 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 | 60 | MEMBER | 2 | SEQUENCE | 06 | LOCATION | END | TYPE | EL | | | | | |
|---------|-------|--------|-------|----------|---------|----------|-----|---------|---------|---------|---------|---------|---------|--------|
| 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) |
| .0120 | 33. | 20. | -17. | -8. | 20. | 11. | | -0.0010 | -0.0007 | .0005 | -0.0019 | .0013 | -0.0022 | 103. |
| .0130 | 47. | 28. | -23. | -15. | 35. | 19. | | -0.0017 | -0.0011 | .0008 | -0.0030 | .0020 | -0.0035 | 176. |
| .0140 | 57. | 35. | -29. | -25. | 53. | 28. | | -0.0026 | -0.0017 | .0011 | -0.0040 | .0027 | -0.0052 | 269. |
| .0150 | 70. | 44. | -35. | -38. | 73. | 35. | | -0.0035 | -0.0023 | .0015 | -0.0048 | .0032 | -0.0068 | 373. |
| .0160 | 82. | 53. | -42. | -53. | 93. | 41. | | -0.0045 | -0.0028 | .0018 | -0.0048 | .0036 | -0.0077 | 479. |
| .0170 | 91. | 61. | -48. | -68. | 112. | 44. | | -0.0054 | -0.0031 | .0020 | -0.0040 | .0038 | -0.0077 | 577. |
| .0180 | 95. | 60. | -50. | -81. | 127. | 43. | | -0.0061 | -0.0032 | .0021 | -0.0023 | .0037 | -0.0066 | 654. |
| .0190 | 97. | 51. | -46. | -91. | 132. | 37. | | -0.0066 | -0.0030 | .0020 | .0005 | .0032 | -0.0045 | 688. |
| .0200 | 81. | 29. | -35. | -95. | 126. | 26. | | -0.0068 | -0.0025 | .0018 | .0040 | .0022 | -0.0016 | 666. |
| .0210 | 59. | -1. | -16. | -88. | 106. | 10. | | -0.0067 | -0.0018 | .0014 | .0078 | .0010 | .0017 | 575. |
| .0220 | 43. | -15. | 4. | -66. | 71. | -13. | | -0.0064 | -0.0008 | .0008 | .0117 | -0.0000 | .0057 | 406. |
| .0230 | 17. | -30. | 31. | -34. | 28. | -35. | | -0.0060 | .0002 | .0002 | .0146 | -0.0008 | .0090 | 234. |
| .0240 | -39. | -61. | 65. | -1. | -14. | -49. | | -0.0056 | .0010 | -0.0003 | .0161 | -0.0015 | .0108 | 211. |
| .0250 | -113. | -114. | 100. | 22. | -56. | -59. | | -0.0049 | .0018 | -0.0010 | .0176 | -0.0036 | .0115 | 353. |
| .0260 | -156. | -154. | 120. | 35. | -105. | -77. | | -0.0031 | .0031 | -0.0022 | .0212 | -0.0076 | .0134 | 563. |
| .0270 | -138. | -115. | 112. | 53. | -151. | -106. | | -0.0007 | .0051 | -0.0035 | .0261 | -0.0120 | .0180 | 802. |
| .0280 | -143. | -75. | 110. | 70. | -163. | -105. | | .0015 | .0067 | -0.0046 | .0277 | -0.0142 | .0218 | 861. |
| .0290 | -214. | -130. | 134. | 64. | -141. | -64. | | .0034 | .0073 | -0.0052 | .0254 | -0.0159 | .0208 | 700. |
| .0300 | -214. | -136. | 133. | 53. | -148. | -61. | | .0062 | .0083 | -0.0064 | .0261 | -0.0208 | .0199 | 702. |
| .0310 | -138. | -28. | 97. | 71. | -193. | -91. | | .0096 | .0100 | -0.0077 | .0278 | -0.0260 | .0213 | 940. |
| .0320 | -121. | -3. | 89. | 107. | -213. | -71. | | .0118 | .0104 | -0.0082 | .0216 | -0.0256 | .0191 | 1038. |
| .0330 | -171. | -73. | 126. | 145. | -193. | 2. | | .0124 | .0091 | -0.0079 | .0074 | -0.0199 | .0111 | 1009. |
| .0340 | -191. | -100. | 150. | 190. | -201. | 45. | | .0130 | .0076 | -0.0074 | -0.0063 | -0.0147 | .0024 | 1170. |
| .0350 | -167. | -59. | 135. | 232. | -249. | 38. | | .0140 | .0066 | -0.0073 | -0.0156 | -0.0127 | -0.0039 | 1430. |
| .0360 | -130. | -41. | 114. | 239. | -265. | 39. | | .0147 | .0051 | -0.0069 | -0.0238 | -0.0108 | -0.0100 | 1497. |
| .0370 | -67. | -19. | 91. | 213. | -202. | 73. | | .0143 | .0031 | -0.0060 | -0.0328 | -0.0055 | -0.0148 | 1264. |
| .0380 | 23. | 76. | 46. | 175. | -88. | 121. | | .0131 | .0011 | -0.0046 | -0.0411 | .0026 | -0.0158 | 960. |
| .0390 | 95. | 159. | -8. | 105. | 42. | 164. | | .0114 | -0.0011 | -0.0032 | -0.0464 | .0091 | -0.0161 | 832. |
| .0400 | 164. | 156. | -55. | -9. | 155. | 181. | | .0100 | -0.0033 | -0.0022 | -0.0460 | .0107 | -0.0183 | 993. |
| .0410 | 303. | 228. | -124. | -23. | 212. | 140. | | .0090 | -0.0045 | -0.0017 | -0.0404 | .0113 | -0.0168 | 1129. |
| .0420 | 408. | 345. | -181. | -26. | 240. | 108. | | .0068 | -0.0055 | -0.0006 | -0.0391 | .0187 | -0.0128 | 1168. |
| .0430 | 373. | 302. | -157. | -61. | 285. | 139. | | .0024 | -0.0081 | .0015 | -0.0464 | .0329 | -0.0148 | 1348. |
| .0440 | 284. | 122. | -81. | -30. | 297. | 158. | | -0.0023 | -0.0112 | .0035 | -0.0531 | .0449 | -0.0232 | 1411. |
| .0450 | 268. | 47. | -53. | 20. | 203. | 79. | | -0.0052 | -0.0125 | .0045 | -0.0496 | .0489 | -0.0282 | 913. |
| .0460 | 291. | 76. | -69. | 78. | 83. | -31. | | -0.0074 | -0.0124 | .0050 | -0.0405 | .0497 | -0.0286 | 494. |
| .0470 | 260. | -1. | -52. | 82. | 88. | -46. | | -0.0109 | -0.0133 | .0062 | -0.0353 | .0539 | -0.0320 | 537. |
| .0480 | 214. | -123. | -26. | 31. | 195. | 6. | | -0.0150 | -0.0147 | .0078 | -0.0312 | .0594 | -0.0365 | 824. |
| .0490 | 240. | -87. | -75. | -30. | 264. | 7. | | -0.0176 | -0.0142 | .0084 | -0.0188 | .0586 | -0.0346 | 1107. |

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ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE CRHOFF 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 | 95. | 159. | -8. | 105. | 42. | 164. | .114 | -.0011 | -.0032 | -.0464 | .0091 | -.0161 | 832. |
| .0400 | 164. | 156. | -55. | -9. | 155. | 121. | .0100 | -.0033 | -.0022 | -.0460 | .0107 | -.0183 | 993. |
| .0410 | 303. | 228. | -124. | -73. | 212. | 140. | .0090 | -.0045 | -.0017 | -.0404 | .0113 | -.0168 | 1129. |
| .0420 | 409. | 345. | -181. | -76. | 240. | 108. | .0068 | -.0055 | -.0006 | -.0391 | .0187 | -.0128 | 1168. |
| .0430 | 373. | 302. | -157. | -61. | 285. | 139. | .0024 | -.0081 | .0015 | -.0464 | .0329 | -.0148 | 1348. |
| .0440 | 284. | 122. | -81. | -70. | 297. | 158. | -.0023 | -.0112 | .0035 | -.0531 | .0449 | -.0232 | 1411. |
| .0450 | 268. | 47. | -53. | 20. | 203. | 79. | -.0052 | -.0125 | .0045 | -.0496 | .0489 | -.0282 | 913. |
| .0460 | 291. | 76. | -69. | 78. | 83. | -31. | -.0074 | -.0124 | .0050 | -.0405 | .0497 | -.0286 | 494. |
| .0470 | 260. | -1. | -52. | 82. | 88. | -46. | -.0109 | -.0133 | .0062 | -.0353 | .0539 | -.0320 | 537. |
| .0480 | 214. | -123. | -26. | 31. | 195. | 6. | -.0150 | -.0147 | .0078 | -.0312 | .0594 | -.0365 | 824. |
| .0490 | 240. | -87. | -75. | -30. | 264. | 7. | -.0176 | -.0142 | .0084 | -.0188 | .0586 | -.0346 | 1107. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.31.

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 | GO | MEMBER | 2 | SEQUENCE | 06 | LOCATION | END | TYPE | FL | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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 | 308. | 12. | -165. | -107. | 271. | -47. | -.0185 | -.0125 | .0080 | .0012 | .0499 | -.0306 | 1234. | |
| .0510 | 326. | -6. | -208. | -206. | 288. | -77. | -.0196 | -.0115 | .0077 | .0189 | .0401 | -.0318 | 1512. | |
| .0520 | 261. | -79. | -206. | -259. | 307. | -60. | -.0217 | -.0113 | .0080 | .0279 | .0360 | -.0352 | 1696. | |
| .0530 | 146. | -111. | -198. | -231. | 271. | -38. | -.0239 | -.0108 | .0085 | .0309 | .0364 | -.0356 | 1496. | |
| .0540 | 37. | -164. | -176. | -178. | 171. | -47. | -.0252 | -.0099 | .0086 | .0341 | .0345 | -.0354 | 1050. | |
| .0550 | -42. | -252. | -143. | -140. | 33. | -92. | -.0251 | -.0087 | .0083 | .0397 | .0279 | -.0355 | 712. | |
| .0560 | -119. | -285. | -127. | -96. | -105. | -139. | -.0248 | -.0074 | .0080 | .0438 | .0211 | -.0321 | 829. | |
| .0570 | -209. | -269. | -123. | -62. | -178. | -140. | -.0251 | -.0066 | .0083 | .0432 | .0176 | -.0255 | 982. | |
| .0580 | -282. | -274. | -109. | -92. | -150. | -96. | -.0257 | -.0066 | .0089 | .0403 | .0145 | -.0188 | 861. | |
| .0590 | -303. | -245. | -118. | -176. | -111. | -65. | -.0254 | -.0065 | .0091 | .0409 | .0072 | -.0096 | 909. | |
| .0600 | -277. | -108. | -177. | -260. | -107. | -79. | -.0237 | -.0052 | .0084 | .0456 | -.0040 | .0062 | 1219. | |
| .0610 | -247. | 44. | -234. | -324. | -118. | -97. | -.0215 | -.0038 | .0075 | .0482 | -.0139 | .0242 | 1494. | |
| .0620 | -256. | 112. | -228. | -358. | -104. | -75. | -.0202 | -.0036 | .0073 | .0427 | -.0183 | .0389 | 1588. | |
| .0630 | -313. | 134. | -173. | -333. | -110. | -40. | -.0193 | -.0040 | .0075 | .0301 | -.0183 | .0508 | 1474. | |
| .0640 | -381. | 162. | -105. | -247. | -189. | -44. | -.0180 | -.0043 | .0076 | .0155 | -.0187 | .0613 | 1312. | |
| .0650 | -422. | 166. | -20. | -143. | -309. | -82. | -.0157 | -.0046 | .0073 | .0018 | -.0219 | .0685 | 1461. | |
| .0660 | -437. | 144. | 84. | -49. | -393. | -109. | -.0133 | -.0052 | .0072 | -.0126 | -.0251 | .0723 | 1715. | |
| .0670 | -433. | 149. | 181. | 34. | -403. | -92. | -.0112 | -.0061 | .0074 | -.0289 | -.0257 | .0755 | 1731. | |
| .0680 | -380. | 203. | 245. | 81. | -339. | -46. | -.0091 | -.0069 | .0074 | -.0434 | -.0261 | .0783 | 1468. | |
| .0690 | -258. | 291. | 275. | 68. | -225. | -3. | -.0064 | -.0074 | .0070 | -.0523 | -.0304 | .0788 | 980. | |
| .0700 | -112. | 383. | 286. | 14. | -89. | 33. | -.0033 | -.0077 | .0061 | -.0561 | -.0384 | .0758 | 399. | |
| .0710 | 17. | 456. | 295. | -36. | 44. | 73. | -.0003 | -.0080 | .0050 | -.0586 | -.0461 | .0697 | 387. | |
| .0720 | 133. | 497. | 317. | -44. | 155. | 119. | .0024 | -.0082 | .0039 | -.0624 | -.0499 | .0607 | 835. | |
| .0730 | 223. | 493. | 368. | 11. | 222. | 162. | .0046 | -.0084 | .0029 | -.0683 | -.0492 | .0485 | 1149. | |
| .0740 | 240. | 416. | 452. | 121. | 228. | 192. | .0066 | -.0085 | .0020 | -.0749 | -.0458 | .0325 | 1340. | |
| .0750 | 231. | 272. | 550. | 256. | 170. | 190. | .0086 | -.0084 | .0009 | -.0790 | -.0428 | .0131 | 1508. | |
| .0760 | 220. | 121. | 629. | 390. | 78. | 160. | .0109 | -.0077 | -.0006 | -.0783 | -.0405 | -.0066 | 1787. | |
| .0770 | 217. | 5. | 672. | 502. | 7. | 137. | .0128 | -.0065 | -.0020 | -.0741 | -.0364 | -.0239 | 2170. | |
| .0780 | 208. | -95. | 676. | 557. | 4. | 152. | .0139 | -.0053 | -.0033 | -.0674 | -.0299 | -.0391 | 2408. | |
| .0790 | 224. | -169. | 628. | 530. | 56. | 185. | .0146 | -.0039 | -.0048 | -.0553 | -.0241 | -.0524 | 2354. | |
| .0800 | 281. | -172. | 510. | 440. | 117. | 197. | .0154 | -.0019 | -.0068 | -.0362 | -.0210 | -.0628 | 2070. | |
| .0810 | 326. | -139. | 351. | 318. | 171. | 201. | .0156 | .0002 | -.0088 | -.0142 | -.0184 | -.0714 | 1724. | |
| .0820 | 316. | -159. | 203. | 186. | 229. | 225. | .0148 | .0018 | -.0103 | .0055 | -.0126 | -.0807 | 1550. | |
| .0830 | 276. | -223. | 75. | 78. | 266. | 252. | .0133 | .0032 | -.0115 | .0223 | -.0029 | -.0893 | 1564. | |
| .0840 | 227. | -264. | -52. | 27. | 232. | 248. | .0118 | .0053 | -.0125 | .0380 | .0093 | -.0936 | 1419. | |
| .0850 | 151. | -312. | -169. | 18. | 133. | 213. | .0106 | .0080 | -.0135 | .0529 | .0221 | -.0945 | 1051. | |
| .0860 | 55. | -411. | -258. | 8. | 20. | 170. | .0095 | .0105 | -.0143 | .0669 | .0343 | -.0944 | 714. | |
| .0870 | -26. | -499. | -343. | -13. | -81. | 125. | .0083 | .0132 | -.0149 | .0806 | .0458 | -.0915 | 623. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.31.

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

| | | | | | | | | | | | | | |
|-------|------|-------|-------|------|------|------|-------|--------|--------|--------|--------|--------|-------|
| .0770 | 217. | 5. | 672. | 502. | 7. | 137. | .0128 | -.0065 | -.0020 | -.0741 | -.0364 | -.0239 | 2170. |
| .0780 | 208. | -95. | 676. | 557. | 4. | 152. | .0139 | -.0053 | -.0033 | -.0674 | -.0299 | -.0391 | 2408. |
| .0790 | 224. | -169. | 628. | 530. | 56. | 165. | .0146 | -.0039 | -.0048 | -.0553 | -.0241 | -.0524 | 2354. |
| .0800 | 281. | -172. | 510. | 440. | 117. | 177. | .0154 | -.0019 | -.0068 | -.0362 | -.0210 | -.0628 | 2070. |
| .0810 | 326. | -179. | 351. | 318. | 171. | 201. | .0156 | .0002 | -.0028 | -.0142 | -.0184 | -.0714 | 1724. |
| .0820 | 316. | -159. | 203. | 186. | 229. | 225. | .0148 | .0018 | -.0103 | .0055 | -.0126 | -.0807 | 1550. |
| .0830 | 276. | -223. | 75. | 78. | 266. | 252. | .0133 | .0032 | -.0115 | .0223 | -.0029 | -.0893 | 1564. |
| .0840 | 227. | -264. | -52. | 27. | 232. | 248. | .0118 | .0053 | -.0125 | .0380 | .0093 | -.0936 | 1419. |
| .0850 | 151. | -312. | -169. | 18. | 133. | 213. | .0106 | .0080 | -.0135 | .0529 | .0221 | -.0945 | 1051. |
| .0860 | 55. | -411. | -258. | 8. | 20. | 170. | .0095 | .0105 | -.0143 | .0669 | .0343 | -.0944 | 714. |
| .0870 | -26. | -499. | -343. | -13. | -81. | 125. | .0083 | .0132 | -.0149 | .0806 | .0458 | -.0915 | 623. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.31.

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 | 60 | MEMBER | 2 | SEQUENCE | 86 | LOCATION | END | TYPE | EL | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|--------|--|
| TIME | FX | FY | FZ | MX | MY | MZ | | | | DZ | RX | RY | RZ | STRESS | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | |
| .0880 | -85. | -512. | -451. | -43. | -157. | 85. | .0071 | .0162 | -.0155 | .0934 | .0568 | -.0836 | 767. | | |
| .0890 | -132. | -492. | -566. | -105. | -188. | 66. | .0058 | .0191 | -.0159 | .1052 | .0665 | -.0728 | 938. | | |
| .0900 | -155. | -472. | -674. | -209. | -177. | 57. | .0047 | .0217 | -.0163 | .1163 | .0731 | -.0614 | 1166. | | |
| .0910 | -145. | -405. | -782. | -313. | -167. | 36. | .0039 | .0243 | -.0167 | .1265 | .0767 | -.0480 | 1489. | | |
| .0920 | -131. | -297. | -877. | -379. | -177. | 9. | .0032 | .0269 | -.0169 | .1325 | .0796 | -.0330 | 1746. | | |
| .0930 | -145. | -233. | -914. | -408. | -184. | -4. | .0020 | .0285 | -.0164 | .1311 | .0832 | -.0207 | 1867. | | |
| .0940 | -179. | -231. | -882. | -407. | -187. | -7. | .0005 | .0291 | -.0153 | .1233 | .0862 | -.0121 | 1870. | | |
| .0950 | -201. | -217. | -820. | -374. | -208. | -29. | -.0007 | .0295 | -.0138 | .1130 | .0864 | -.0039 | 1789. | | |
| .0960 | -188. | -163. | -748. | -327. | -232. | -71. | -.0012 | .0300 | -.0124 | .1025 | .0826 | .0057 | 1700. | | |
| .0970 | -136. | -102. | -660. | -300. | -208. | -101. | -.0014 | .0302 | -.0109 | .0918 | .0759 | .0158 | 1581. | | |
| .0980 | -57. | -29. | -561. | -301. | -115. | -104. | -.0015 | .0300 | -.0092 | .0805 | .0675 | .0266 | 1414. | | |
| .0990 | 40. | 82. | -466. | -316. | 12. | -98. | -.0015 | .0298 | -.0076 | .0700 | .0567 | .0391 | 1382. | | |
| .1000 | 154. | 206. | -370. | -338. | 136. | -103. | -.0008 | .0296 | -.0063 | .0615 | .0422 | .0519 | 1579. | | |
| .1010 | 260. | 300. | -253. | -351. | 238. | -123. | .0004 | .0293 | -.0052 | .0542 | .0248 | .0628 | 1842. | | |
| .1020 | 329. | 356. | -103. | -325. | 305. | -147. | .0018 | .0288 | -.0041 | .0453 | .0072 | .0718 | 1958. | | |
| .1030 | 351. | 371. | 78. | -245. | 330. | -170. | .0035 | .0280 | -.0029 | .0340 | -.0091 | .0791 | 1858. | | |
| .1040 | 344. | 344. | 280. | -128. | 314. | -197. | .0056 | .0272 | -.0017 | .0217 | -.0251 | .0842 | 1635. | | |
| .1050 | 325. | 296. | 482. | 8. | 259. | -232. | .0084 | .0265 | -.0008 | .0106 | -.0422 | .0870 | 1452. | | |
| .1060 | 297. | 255. | 664. | 143. | 181. | -265. | .0117 | .0257 | -.0001 | .0008 | -.0605 | .0877 | 1468. | | |
| .1070 | 244. | 218. | 816. | 259. | 109. | -275. | .0151 | .0245 | .0005 | -.0088 | -.0782 | .0851 | 1640. | | |
| .1080 | 165. | 167. | 937. | 340. | 56. | -247. | .0181 | .0226 | .0011 | -.0194 | -.0945 | .0778 | 1770. | | |
| .1090 | 61. | 117. | 1016. | 394. | 5. | -191. | .0209 | .0202 | .0016 | -.0302 | -.1094 | .0669 | 1826. | | |
| .1100 | -19. | 156. | 1033. | 443. | -77. | -144. | .0238 | .0179 | .0018 | -.0393 | -.1230 | .0551 | 1972. | | |
| .1110 | -135. | 159. | 1025. | 474. | -165. | -77. | .0263 | .0150 | .0021 | -.0497 | -.1338 | .0387 | 2119. | | |
| .1120 | -311. | 81. | 1010. | 482. | -246. | 19. | .0280 | .0111 | .0028 | -.0623 | -.1410 | .0173 | 2261. | | |
| .1130 | -468. | 42. | 955. | 486. | -338. | 103. | .0298 | .0077 | .0035 | -.0729 | -.1456 | -.0031 | 2507. | | |
| .1140 | -556. | 68. | 855. | 475. | -426. | 163. | .0319 | .0050 | .0040 | -.0790 | -.1483 | -.0204 | 2749. | | |
| .1150 | -609. | 81. | 730. | 429. | -470. | 232. | .0337 | .0026 | .0047 | -.0826 | -.1475 | -.0364 | 2827. | | |
| .1160 | -653. | 88. | 584. | 354. | -467. | 314. | .0347 | .0002 | .0057 | -.0850 | -.1423 | -.0507 | 2776. | | |
| .1170 | -682. | 117. | 415. | 260. | -443. | 387. | .0351 | -.0016 | .0066 | -.0845 | -.1340 | -.0621 | 2684. | | |
| .1180 | -650. | 175. | 230. | 153. | -421. | 424. | .0352 | -.0027 | .0071 | -.0790 | -.1240 | -.0703 | 2574. | | |
| .1190 | -654. | 169. | 57. | 50. | -409. | 446. | .0348 | -.0034 | .0075 | -.0724 | -.1103 | -.0773 | 2536. | | |
| .1200 | -688. | 129. | -99. | -11. | -426. | 452. | .0338 | -.0034 | .0079 | -.0663 | -.0914 | -.0809 | 2593. | | |
| .1210 | -691. | 121. | -237. | -19. | -476. | 415. | .0327 | -.0022 | .0081 | -.0586 | -.0690 | -.0795 | 2637. | | |
| .1220 | -682. | 63. | -332. | -10. | -527. | 356. | .0313 | -.0006 | .0084 | -.0497 | -.0451 | -.0769 | 2652. | | |
| .1230 | -656. | -16. | -403. | -2. | -561. | 276. | .0297 | .0015 | .0088 | -.0393 | -.0215 | -.0738 | 2609. | | |
| .1240 | -620. | -74. | -473. | -6. | -555. | 192. | .0277 | .0038 | .0094 | -.0278 | .0011 | -.0694 | 2452. | | |
| .1250 | -549. | -106. | -540. | -56. | -473. | 120. | .0254 | .0064 | .0100 | -.0141 | .0214 | -.0643 | 2052. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.31.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|------|-------|------|-------|--------|-------|--------|--------|--------|-------|
| .1140 | -556. | 68. | 55. | 475. | -426. | 163. | .0319 | .0050 | .0040 | -.0790 | -.1483 | -.0204 | 2749. |
| .1150 | -609. | 81. | 730. | 429. | -470. | 232. | .0337 | .0026 | .0047 | -.0826 | -.1475 | -.0364 | 2827. |
| .1160 | -653. | 88. | 584. | 314. | -467. | 314. | .0347 | .0002 | .0057 | -.0850 | -.1423 | -.0507 | 2776. |
| .1170 | -682. | 117. | 415. | 260. | -443. | 387. | .0351 | -.0016 | .0066 | -.0845 | -.1340 | -.0621 | 2684. |
| .1180 | -650. | 175. | 230. | 153. | -421. | 424. | .0352 | -.0027 | .0071 | -.0790 | -.1240 | -.0703 | 2574. |
| .1190 | -654. | 169. | 57. | 50. | -409. | 446. | .0348 | -.0034 | .0075 | -.0724 | -.1103 | -.0773 | 2536. |
| .1200 | -680. | 179. | -90. | -11. | -426. | 452. | .0338 | -.0034 | .0079 | -.0663 | -.0914 | -.0809 | 2593. |
| .1210 | -691. | 121. | -237. | -19. | -476. | 415. | .0327 | -.0022 | .0081 | -.0586 | -.0690 | -.0795 | 2637. |
| .1220 | -682. | 63. | -732. | -10. | -527. | 356. | .0313 | -.0006 | .0084 | -.0497 | -.0451 | -.0769 | 2652. |
| .1230 | -656. | -16. | -403. | -2. | -561. | 276. | .0297 | .0015 | .0088 | -.0393 | -.0215 | -.0738 | 2609. |
| .1240 | -620. | -74. | -473. | -6. | -555. | 192. | .0277 | .0038 | .0094 | -.0278 | .0011 | -.0694 | 2452. |
| .1250 | -549. | -106. | -540. | -56. | -473. | 120. | .0254 | .0064 | .0100 | -.0141 | .0214 | -.0643 | 2052. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.31.

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 | 60 | MEMBER | 2 | SEQUENCE | 06 | LOCATION | END | TYPE | EL | | | | | |
|---------|-------|--------|-------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|
| 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) |
| .1260 | -399. | -101. | -609. | -163. | -315. | 55. | | .0233 | .0094 | .0103 | .0034 | .0380 | -.0579 | 1499. |
| .1270 | -226. | -75. | -689. | -291. | -126. | 2. | | .0217 | .0129 | .0101 | .0221 | .0523 | -.0494 | 1322. |
| .1280 | -40. | 18. | -784. | -385. | 40. | -62. | | .0205 | .0171 | .0095 | .0403 | .0654 | -.0381 | 1637. |
| .1290 | 121. | 81. | -832. | -440. | 182. | -123. | | .0193 | .0212 | .0089 | .0545 | .0777 | -.0294 | 2053. |
| .1300 | 230. | 35. | -797. | -457. | 296. | -174. | | .0180 | .0244 | .0085 | .0628 | .0888 | -.0273 | 2384. |
| .1310 | 318. | -29. | -722. | -405. | 343. | -247. | | .0170 | .0273 | .0084 | .0666 | .0979 | -.0283 | 2444. |
| .1320 | 373. | -96. | -628. | -293. | 338. | -326. | | .0165 | .0303 | .0084 | .0661 | .1054 | -.0298 | 2310. |
| .1330 | 440. | -172. | -510. | -175. | 346. | -388. | | .0166 | .0330 | .0085 | .0633 | .1104 | -.0315 | 2286. |
| .1340 | 542. | -251. | -383. | -94. | 399. | -422. | | .0173 | .0354 | .0087 | .0605 | .1117 | -.0328 | 2455. |
| .1350 | 672. | -253. | -300. | -44. | 469. | -445. | | .0186 | .0380 | .0085 | .0591 | .1089 | -.0305 | 2705. |
| .1360 | 804. | -154. | -274. | -18. | 535. | -464. | | .0203 | .0407 | .0081 | .0588 | .1025 | -.0247 | 2958. |
| .1370 | 854. | -103. | -240. | -41. | 622. | -442. | | .0215 | .0423 | .0077 | .0561 | .0934 | -.0212 | 3190. |
| .1380 | 845. | -102. | -187. | -94. | 695. | -407. | | .0226 | .0430 | .0071 | .0527 | .0814 | -.0193 | 3383. |
| .1390 | 803. | -70. | -154. | -116. | 680. | -399. | | .0246 | .0442 | .0060 | .0501 | .0673 | -.0134 | 3326. |
| .1400 | 728. | 5. | -144. | -74. | 569. | -417. | | .0275 | .0461 | .0046 | .0469 | .0535 | -.0016 | 2961. |
| .1410 | 615. | 51. | -103. | -0. | 429. | -428. | | .0303 | .0478 | .0034 | .0408 | .0412 | .0112 | 2530. |
| .1420 | 433. | -7. | -10. | 65. | 304. | -410. | | .0327 | .0483 | .0028 | .0315 | .0292 | .0205 | 2148. |
| .1430 | 240. | -51. | 66. | 121. | 159. | -408. | | .0353 | .0488 | .0022 | .0238 | .0143 | .0300 | 1898. |
| .1440 | 100. | -13. | 87. | 167. | -6. | -429. | | .0386 | .0497 | .0013 | .0198 | -.0034 | .0424 | 1921. |
| .1450 | -25. | 48. | 89. | 174. | -122. | -422. | | .0415 | .0503 | .0005 | .0163 | -.0209 | .0549 | 1971. |
| .1460 | -129. | 98. | 95. | 137. | -164. | -367. | | .0436 | .0500 | -.0002 | .0115 | -.0359 | .0658 | 1774. |
| .1470 | -230. | 152. | 82. | 92. | -189. | -295. | | .0452 | .0492 | -.0008 | .0058 | -.0491 | .0755 | 1511. |
| .1480 | -294. | 269. | 32. | 75. | -260. | -256. | | .0468 | .0486 | -.0016 | .0012 | -.0620 | .0851 | 1554. |
| .1490 | -354. | 353. | 6. | 80. | -343. | -229. | | .0477 | .0472 | -.0020 | -.0053 | -.0734 | .0897 | 1752. |
| .1500 | -439. | 322. | 49. | 101. | -397. | -177. | | .0472 | .0442 | -.0014 | -.0169 | -.0806 | .0867 | 1862. |
| .1510 | -487. | 283. | 109. | 167. | -447. | -129. | | .0458 | .0405 | -.0001 | -.0317 | -.0830 | .0809 | 2062. |
| .1520 | -491. | 288. | 154. | 276. | -506. | -97. | | .0436 | .0366 | .0016 | -.0476 | -.0813 | .0753 | 2440. |
| .1530 | -455. | 299. | 199. | 374. | -531. | -66. | | .0404 | .0320 | .0037 | -.0630 | -.0777 | .0672 | 2723. |
| .1540 | -409. | 245. | 262. | 409. | -481. | -14. | | .0358 | .0259 | .0063 | -.0773 | -.0731 | .0534 | 2636. |
| .1550 | -332. | 215. | 294. | 401. | -389. | 38. | | .0300 | .0192 | .0089 | -.0887 | -.0675 | .0381 | 2335. |
| .1560 | -198. | 300. | 259. | 383. | -285. | 71. | | .0232 | .0126 | .0113 | -.0965 | -.0596 | .0255 | 2012. |
| .1570 | -87. | 357. | 222. | 338. | -133. | 131. | | .0148 | .0053 | .0140 | -.1043 | -.0479 | .0110 | 1610. |
| .1580 | 16. | 335. | 213. | 261. | 57. | 202. | | .0053 | -.0029 | .0169 | -.1109 | -.0342 | -.0073 | 1400. |
| .1590 | 157. | 328. | 193. | 200. | 213. | 232. | | -.0043 | -.0106 | .0196 | -.1129 | -.0205 | -.0252 | 1556. |
| .1600 | 296. | 343. | 156. | 186. | 314. | 223. | | -.0141 | -.0175 | .0221 | -.1125 | -.0056 | -.0418 | 1787. |
| .1610 | 390. | 277. | 156. | 189. | 421. | 225. | | -.0245 | -.0246 | .0250 | -.1127 | .0120 | -.0612 | 2141. |
| .1620 | 467. | 128. | 192. | 185. | 548. | 237. | | -.0353 | -.0317 | .0279 | -.1117 | .0306 | -.0836 | 2610. |
| .1630 | 530. | -21. | 226. | 187. | 643. | 231. | | -.0453 | -.0374 | .0300 | -.1058 | .0476 | -.1037 | 2956. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.31.

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

| | | | | | | | | | | | | | |
|-------|-------|------|------|------|-------|------|--------|--------|-------|--------|--------|--------|-------|
| .1530 | -455. | 299. | 199. | 374. | -531. | -66. | .0404 | .0320 | .0037 | -.0630 | -.0777 | .0672 | 2723. |
| .1540 | -409. | 245. | 262. | 409. | -481. | -14. | .0358 | .0259 | .0063 | -.0773 | -.0731 | .0534 | 2636. |
| .1550 | -332. | 215. | 294. | 401. | -389. | 38. | .0300 | .0192 | .0089 | -.0887 | -.0675 | .0381 | 2335. |
| .1560 | -198. | 300. | 259. | 303. | -205. | 71. | .0232 | .0126 | .0113 | -.0965 | -.0596 | .0255 | 2012. |
| .1570 | -87. | 357. | 222. | 328. | -133. | 131. | .0148 | .0053 | .0140 | -.1043 | -.0479 | .0110 | 1610. |
| .1580 | 16. | 335. | 213. | 261. | 57. | 202. | .0053 | -.0029 | .0169 | -.1109 | -.0342 | -.0073 | 1400. |
| .1590 | 157. | 328. | 193. | 200. | 213. | 232. | -.0043 | -.0106 | .0196 | -.1129 | -.0205 | -.0252 | 1556. |
| .1600 | 296. | 343. | 156. | 186. | 314. | 223. | -.0141 | -.0175 | .0221 | -.1125 | -.0056 | -.0418 | 1787. |
| .1610 | 390. | 277. | 156. | 109. | 421. | 225. | -.0245 | -.0246 | .0250 | -.1127 | .0120 | -.0612 | 2141. |
| .1620 | 467. | 128. | 192. | 105. | 545. | 237. | -.0353 | -.0317 | .0279 | -.1117 | .0306 | -.0836 | 2610. |
| .1630 | 530. | -21. | 226. | 107. | 643. | 231. | -.0453 | -.0374 | .0300 | -.1058 | .0476 | -.1037 | 2956. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE GRW00F 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 | 60 | MEMBER | 2 | SEQUENCE | 06 | LOCATION | END | TYPE | FL | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | | | | | | | | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .1640 | 603. | -97. | 196. | 199. | 673. | 184. | -.0537 | -.0409 | .0309 | -.0925 | .0614 | -.1179 | 3030. | | |
| .1650 | 662. | -169. | 145. | 191. | 688. | 135. | -.0610 | -.0428 | .0306 | -.0741 | .0727 | -.1294 | 3034. | | |
| .1660 | 648. | -316. | 113. | 147. | 723. | 124. | -.0677 | -.0441 | .0297 | -.0546 | .0828 | -.1413 | 3120. | | |
| .1670 | 600. | -441. | 60. | 98. | 725. | 110. | -.0730 | -.0438 | .0278 | -.0322 | .0899 | -.1501 | 3089. | | |
| .1680 | 537. | -513. | -28. | 61. | 665. | 67. | -.0762 | -.0415 | .0248 | -.0057 | .0923 | -.1542 | 2800. | | |
| .1690 | 460. | -583. | -116. | 19. | 575. | 13. | -.0775 | -.0376 | .0211 | .0226 | .0902 | -.1558 | 2401. | | |
| .1700 | 344. | -693. | -177. | -34. | 493. | -18. | -.0775 | -.0330 | .0171 | .0495 | .0856 | -.1562 | 2065. | | |
| .1710 | 194. | -803. | -237. | -86. | 406. | -31. | -.0759 | -.0274 | .0127 | .0742 | .0792 | -.1529 | 1739. | | |
| .1720 | 86. | -810. | -324. | -124. | 283. | -66. | -.0724 | -.0202 | .0075 | .0992 | .0697 | -.1426 | 1320. | | |
| .1730 | -32. | -789. | -421. | -169. | 150. | -94. | -.0676 | -.0125 | .0020 | .1215 | .0581 | -.1287 | 1021. | | |
| .1740 | -183. | -705. | -494. | -232. | 32. | -96. | -.0624 | -.0051 | -.0036 | .1383 | .0455 | -.1138 | 1056. | | |
| .1750 | -331. | -753. | -557. | -295. | -86. | -91. | -.0567 | .0020 | -.0092 | .1499 | .0326 | -.0964 | 1339. | | |
| .1760 | -469. | -673. | -622. | -336. | -219. | -91. | -.0506 | .0090 | -.0146 | .1556 | .0203 | -.0748 | 1716. | | |
| .1770 | -572. | -550. | -671. | -349. | -351. | -96. | -.0444 | .0155 | -.0196 | .1550 | .0093 | -.0495 | 2105. | | |
| .1780 | -655. | -451. | -669. | -348. | -451. | -88. | -.0383 | .0208 | -.0238 | .1470 | .0007 | -.0231 | 2406. | | |
| .1790 | -680. | -339. | -630. | -326. | -525. | -86. | -.0326 | .0249 | -.0270 | .1328 | -.0065 | .0045 | 2605. | | |
| .1800 | -644. | -179. | -575. | -270. | -586. | -100. | -.0274 | .0281 | -.0293 | .1130 | -.0117 | .0338 | 2725. | | |
| .1810 | -594. | -30. | -485. | -200. | -606. | -100. | -.0236 | .0293 | -.0304 | .0861 | -.0142 | .0612 | 2696. | | |
| .1820 | -504. | 105. | -357. | -136. | -570. | -89. | -.0212 | .0286 | -.0305 | .0542 | -.0144 | .0850 | 2473. | | |
| .1830 | -376. | 243. | -210. | -76. | -496. | -74. | -.0202 | .0262 | -.0298 | .0192 | -.0130 | .1056 | 2115. | | |
| .1840 | -215. | 418. | -72. | -2. | -411. | -67. | -.0203 | .0227 | -.0286 | -.0170 | -.0099 | .1243 | 1737. | | |
| .1850 | -38. | 593. | 72. | 80. | -305. | -57. | -.0217 | .0180 | -.0268 | -.0540 | -.0049 | .1391 | 1335. | | |
| .1860 | 133. | 699. | 251. | 154. | -158. | -29. | -.0246 | .0117 | -.0243 | -.0912 | .0014 | .1466 | 927. | | |
| .1870 | 324. | 778. | 445. | 231. | 4. | -11. | -.0283 | .0047 | -.0214 | -.1255 | .0076 | .1481 | 966. | | |
| .1880 | 522. | 843. | 633. | 323. | 160. | -7. | -.0325 | -.0026 | -.0181 | -.1550 | .0130 | .1446 | 1506. | | |
| .1890 | 721. | 872. | 819. | 417. | 321. | -9. | -.0371 | -.0099 | -.0146 | -.1787 | .0176 | .1354 | 2198. | | |
| .1900 | 909. | 840. | 1009. | 495. | 501. | -1. | -.0420 | -.0173 | -.0110 | -.1960 | .0213 | .1199 | 2940. | | |
| .1910 | 1066. | 755. | 1184. | 558. | 676. | 13. | -.0469 | -.0243 | -.0077 | -.2058 | .0238 | .0993 | 3659. | | |
| .1920 | 1200. | 675. | 1307. | 615. | 808. | 11. | -.0512 | -.0301 | -.0052 | -.2058 | .0243 | .0764 | 4237. | | |
| .1930 | 1309. | 577. | 1384. | 663. | 892. | 2. | -.0551 | -.0349 | -.0033 | -.1972 | .0235 | .0504 | 4637. | | |
| .1940 | 1332. | 413. | 1438. | 692. | 943. | 8. | -.0589 | -.0392 | -.0020 | -.1827 | .0224 | .0200 | 4882. | | |
| .1950 | 1279. | 201. | 1461. | 708. | 949. | 21. | -.0624 | -.0428 | -.0010 | -.1628 | .0212 | -.0135 | 4944. | | |
| .1960 | 1180. | -12. | 1430. | 718. | 891. | 23. | -.0650 | -.0452 | -.0007 | -.1364 | .0188 | -.0468 | 4776. | | |
| .1970 | 1044. | -219. | 1343. | 710. | 782. | 17. | -.0666 | -.0465 | -.0007 | -.1045 | .0154 | -.0784 | 4408. | | |
| .1980 | 866. | -434. | 1215. | 666. | 657. | 24. | -.0676 | -.0471 | -.0009 | -.0691 | .0116 | -.1080 | 3905. | | |
| .1990 | 654. | -676. | 1039. | 576. | 530. | 48. | -.0679 | -.0472 | -.0013 | -.0313 | .0079 | -.1340 | 3271. | | |
| .2000 | 422. | -787. | 799. | 440. | 391. | 76. | -.0675 | -.0465 | -.0019 | .0083 | .0036 | -.1543 | 2478. | | |
| .2010 | 172. | -878. | 497. | 262. | 237. | 107. | -.0664 | -.0452 | -.0028 | .0487 | -.0012 | -.1678 | 1539. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE GRW00F 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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|------|------|------|--------|--------|--------|--------|--------|--------|-------|
| .1910 | 1066. | 755. | 1184. | 558. | 676. | 13. | -.0420 | -.0173 | -.0110 | -.1960 | .0213 | .1199 | 2940. |
| .1920 | 1205. | 675. | 1307. | 615. | 808. | 11. | -.0512 | -.0301 | -.0052 | -.2058 | .0243 | .0764 | 4237. |
| .1930 | 1307. | 577. | 1384. | 663. | 892. | 2. | -.0551 | -.0349 | -.0033 | -.1972 | .0235 | .0504 | 4637. |
| .1940 | 1332. | 413. | 1430. | 652. | 947. | 8. | -.0589 | -.0392 | -.0020 | -.1827 | .0224 | .0200 | 4882. |
| .1950 | 1279. | 201. | 1461. | 701. | 945. | 21. | -.0624 | -.0428 | -.0010 | -.1628 | .0212 | -.0135 | 4944. |
| .1960 | 1180. | -12. | 1430. | 718. | 891. | 23. | -.0650 | -.0457 | -.0007 | -.1364 | .0188 | -.0468 | 4776. |
| .1970 | 1044. | -219. | 1343. | 710. | 782. | 17. | -.0666 | -.0465 | -.0007 | -.1045 | .0154 | -.0784 | 4408. |
| .1980 | 866. | -434. | 1215. | 666. | 657. | 24. | -.0676 | -.0471 | -.0009 | -.0691 | .0116 | -.1080 | 3905. |
| .1990 | 654. | -636. | 1039. | 576. | 530. | 48. | -.0679 | -.0472 | -.0013 | -.0313 | .0079 | -.1340 | 3271. |
| .2000 | 422. | -707. | 790. | 446. | 391. | 76. | -.0675 | -.0465 | -.0019 | .0083 | .0036 | -.1543 | 2478. |
| .2010 | 172. | -878. | 497. | 260. | 237. | 107. | -.0664 | -.0452 | -.0028 | .0487 | -.0012 | -.1678 | 1539. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE GKWOOF 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 | 60 | MEMBER | 2 | SEQUENCE | 06 | LOCATION | END | TYPE | EL | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|
| 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) | |
| .2020 | -98. | -970. | 160. | 44. | 76. | 146. | | -.0648 | -.0436 | -.0039 | .0874 | -.0056 | -.1751 | 710. | |
| .2030 | -385. | -948. | -193. | -191. | -93. | 194. | | -.0628 | -.0420 | -.0050 | .1216 | -.0085 | -.1761 | 1198. | |
| .2040 | -670. | -925. | -550. | -412. | -281. | 240. | | -.0604 | -.0403 | -.0060 | .1494 | -.0093 | -.1703 | 2314. | |
| .2050 | -966. | -867. | -889. | -607. | -486. | 280. | | -.0577 | -.0387 | -.0066 | .1694 | -.0082 | -.1584 | 3449. | |
| .2060 | -1231. | -797. | -1183. | -771. | -688. | 312. | | -.0547 | -.0373 | -.0067 | .1811 | -.0059 | -.1422 | 4504. | |
| .2070 | -1452. | -718. | -1418. | -905. | -866. | 339. | | -.0515 | -.0363 | -.0062 | .1842 | -.0030 | -.1226 | 5416. | |
| .2080 | -1612. | -606. | -1602. | -1005. | -1000. | 361. | | -.0479 | -.0354 | -.0051 | .1791 | .0003 | -.0991 | 6129. | |
| .2090 | -1697. | -451. | -1733. | -1075. | -1099. | 381. | | -.0442 | -.0347 | -.0035 | .1665 | .0035 | -.0721 | 6610. | |
| .2100 | -1706. | -271. | -1802. | -1126. | -1123. | 405. | | -.0404 | -.0342 | -.0016 | .1473 | .0060 | -.0436 | 6850. | |
| .2110 | -1644. | -76. | -1805. | -1160. | -1084. | 430. | | -.0366 | -.0340 | .0005 | .1225 | .0069 | -.0151 | 6865. | |
| .2120 | -1520. | 137. | -1745. | -1161. | -1003. | 446. | | -.0328 | -.0338 | .0027 | .0933 | .0061 | .0128 | 6667. | |
| .2130 | -1346. | 350. | -1617. | -1115. | -890. | 451. | | -.0291 | -.0335 | .0049 | .0601 | .0041 | .0390 | 6245. | |
| .2140 | -1137. | 529. | -1403. | -1016. | -746. | 448. | | -.0256 | -.0333 | .0073 | .0233 | .0014 | .0619 | 5590. | |
| .2150 | -900. | 659. | -1104. | -866. | -582. | 433. | | -.0223 | -.0330 | .0098 | -.0155 | -.0020 | .0809 | 4714. | |
| .2160 | -630. | 754. | -741. | -657. | -416. | 393. | | -.0188 | -.0323 | .0122 | -.0538 | -.0068 | .0969 | 3638. | |
| .2170 | -332. | 822. | -333. | -406. | -250. | 330. | | -.0152 | -.0310 | .0145 | -.0896 | -.0130 | .1098 | 2419. | |
| .2180 | -29. | 844. | 110. | -139. | -68. | 258. | | -.0118 | -.0294 | .0167 | -.1220 | -.0201 | .1187 | 1255. | |
| .2190 | 267. | 822. | 565. | 121. | 132. | 188. | | -.0087 | -.0277 | .0186 | -.1494 | -.0279 | .1235 | 1083. | |
| .2200 | 542. | 785. | 995. | 359. | 333. | 112. | | -.0058 | -.0255 | .0200 | -.1696 | -.0367 | .1259 | 2097. | |
| .2210 | 808. | 749. | 1374. | 567. | 516. | 28. | | -.0029 | -.0227 | .0206 | -.1812 | -.0464 | .1268 | 3204. | |
| .2220 | 1036. | 700. | 1696. | 740. | 677. | -54. | | .0000 | -.0195 | .0206 | -.1848 | -.0557 | .1260 | 4194. | |
| .2230 | 1209. | 620. | 1961. | 879. | 810. | -128. | | .0027 | -.0161 | .0201 | -.1815 | -.0635 | .1228 | 5016. | |
| .2240 | 1319. | 515. | 2159. | 989. | 897. | -196. | | .0053 | -.0126 | .0192 | -.1721 | -.0694 | .1173 | 5651. | |
| .2250 | 1365. | 393. | 2282. | 1073. | 923. | -263. | | .0080 | -.0091 | .0181 | -.1569 | -.0734 | .1097 | 6008. | |
| .2260 | 1348. | 253. | 2325. | 1123. | 894. | -323. | | .0108 | -.0056 | .0167 | -.1366 | -.0757 | .0999 | 6139. | |
| .2270 | 1260. | 101. | 2285. | 1127. | 822. | -365. | | .0136 | -.0024 | .0151 | -.1121 | -.0757 | .0881 | 6018. | |
| .2280 | 1137. | -38. | 2149. | 1079. | 717. | -383. | | .0165 | .0006 | .0133 | -.0843 | -.0734 | .0754 | 5637. | |
| .2290 | 951. | -144. | 1908. | 973. | 581. | -375. | | .0194 | .0033 | .0112 | -.0536 | -.0690 | .0627 | 4984. | |
| .2300 | 728. | -213. | 1569. | 806. | 424. | -341. | | .0224 | .0057 | .0087 | -.0208 | -.0635 | .0495 | 4058. | |
| .2310 | 469. | -254. | 1151. | 582. | 251. | -280. | | .0254 | .0075 | .0061 | .0124 | -.0562 | .0355 | 2891. | |
| .2320 | 170. | -270. | 673. | 320. | 65. | -195. | | .0281 | .0086 | .0035 | .0441 | -.0477 | .0207 | 1589. | |
| .2330 | -120. | -264. | 161. | 45. | -132. | -93. | | .0306 | .0091 | .0011 | .0726 | -.0372 | .0053 | 700. | |
| .2340 | -430. | -245. | -350. | -226. | -335. | 20. | | .0327 | .0090 | -.0009 | .0968 | -.0250 | -.0104 | 1687. | |
| .2350 | -735. | -227. | -855. | -478. | -534. | 137. | | .0346 | .0082 | -.0024 | .1157 | -.0115 | -.0263 | 3046. | |
| .2360 | -1005. | -206. | -1315. | -701. | -725. | 249. | | .0361 | .0069 | -.0034 | .1294 | .0029 | -.0417 | 4336. | |
| .2370 | -1234. | -176. | -1725. | -809. | -898. | 350. | | .0371 | .0053 | -.0039 | .1376 | .0179 | -.0557 | 5470. | |
| .2380 | -1416. | -139. | -2070. | -1041. | -1035. | 442. | | .0374 | .0032 | -.0039 | .1404 | .0331 | -.0682 | 6399. | |
| .2390 | -1544. | -101. | -2338. | -1162. | -1125. | 522. | | .0370 | .0007 | -.0035 | .1382 | .0481 | -.0788 | 7092. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE GKWOOF 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

| | | | | | | | | | | | | | |
|-------|--------|-------|--------|--------|--------|-------|-------|-------|--------|--------|--------|--------|-------|
| .2280 | 1137. | -38. | 149. | 1079. | 717. | -383. | .165 | .0006 | .0133 | -.0843 | -.0734 | .0754 | 5637. |
| .2290 | 951. | -144. | 1908. | 973. | 581. | -375. | .194 | .0033 | .0112 | -.0536 | -.0690 | .0627 | 4984. |
| .2300 | 728. | -213. | 1567. | 866. | 424. | -341. | .0224 | .0057 | .0087 | -.0208 | -.0633 | .0495 | 4058. |
| .2310 | 469. | -254. | 1151. | 582. | 251. | -280. | .0254 | .0075 | .0061 | .0124 | -.0562 | .0355 | 2891. |
| .2320 | 179. | -270. | 673. | 320. | 65. | -195. | .0281 | .0086 | .0035 | .0441 | -.0477 | .0207 | 1589. |
| .2330 | -120. | -264. | 161. | 45. | -132. | -93. | .0306 | .0091 | .0011 | .0726 | -.0372 | .0053 | 700. |
| .2340 | -430. | -245. | -750. | -226. | -335. | 20. | .0327 | .0090 | -.0009 | .0968 | -.0250 | -.0104 | 1687. |
| .2350 | -735. | -227. | -555. | -470. | -534. | 137. | .0346 | .0082 | -.0024 | .1157 | -.0115 | -.0263 | 3046. |
| .2360 | -1005. | -206. | -1215. | -701. | -725. | 249. | .0361 | .0069 | -.0034 | .1294 | .0029 | -.0417 | 4336. |
| .2370 | -1234. | -176. | -1725. | -809. | -898. | 350. | .0371 | .0053 | -.0039 | .1376 | .0179 | -.0557 | 5470. |
| .2380 | -1416. | -139. | -2070. | -1041. | -1035. | 442. | .0374 | .0032 | -.0039 | .1404 | .0331 | -.0682 | 6399. |
| .2390 | -1544. | -101. | -2330. | -1162. | -1125. | 522. | .0370 | .0007 | -.0025 | .1382 | .0481 | -.0788 | 7092. |

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DIS/ADLPIE

ADLPIE STRESS ANALYSIS

8/12/02. 18.29.31.

S/RV PIPING KEWAUNEE CRUDD 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 | 60 | MEMBER | 2 | SEQUENCE | 86 | LOCATION | END | TYPE | FL | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-------|--------|--------|--------|--------|--------|--------|--|--|
| 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 | -1609. | -58. | -2525. | -1249. | -1165. | 584. | .0357 | -.0020 | -.0027 | .1317 | .0620 | -.0869 | 7532. | | |
| .2410 | -1602. | -2. | -2627. | -1297. | -1156. | 620. | .0339 | -.0046 | -.0016 | .1220 | .0743 | -.0918 | 7698. | | |
| .2420 | -1522. | 54. | -2634. | -1301. | -1097. | 627. | .0314 | -.0072 | -.0001 | .1093 | .0848 | -.0937 | 7567. | | |
| .2430 | -1375. | 97. | -2537. | -1258. | -983. | 610. | .0283 | -.0096 | .0017 | .0934 | .0936 | -.0931 | 7131. | | |
| .2440 | -1167. | 124. | -2340. | -1165. | -823. | 566. | .0247 | -.0118 | .0040 | .0750 | .1005 | -.0903 | 6405. | | |
| .2450 | -905. | 137. | -2053. | -1028. | -628. | 493. | .0209 | -.0136 | .0066 | .0550 | .1047 | -.0855 | 5425. | | |
| .2460 | -604. | 133. | -1689. | -848. | -408. | 395. | .0170 | -.0150 | .0093 | .0343 | .1061 | -.0791 | 4259. | | |
| .2470 | -281. | 112. | -1265. | -644. | -170. | 280. | .0131 | -.0158 | .0119 | .0137 | .1046 | -.0713 | 3016. | | |
| .2480 | 52. | 85. | -805. | -423. | 76. | 155. | .0095 | -.0160 | .0141 | -.0061 | .1005 | -.0622 | 1909. | | |
| .2490 | 381. | 63. | -334. | -195. | 316. | 24. | .0063 | -.0154 | .0159 | -.0242 | .0938 | -.0516 | 1553. | | |
| .2500 | 684. | 39. | 137. | 30. | 541. | -106. | .0038 | -.0141 | .0172 | -.0401 | .0844 | -.0403 | 2303. | | |
| .2510 | 948. | 4. | 581. | 240. | 740. | -231. | .0021 | -.0121 | .0178 | -.0534 | .0723 | -.0291 | 3388. | | |
| .2520 | 1167. | -33. | 993. | 433. | 903. | -348. | .0016 | -.0094 | .0179 | -.0635 | .0576 | -.0178 | 4424. | | |
| .2530 | 1337. | -64. | 1393. | 606. | 1019. | -455. | .0023 | -.0060 | .0172 | -.0703 | .0409 | -.0063 | 5302. | | |
| .2540 | 1450. | -92. | 1647. | 754. | 1088. | -545. | .0044 | -.0018 | .0160 | -.0742 | .0232 | .0054 | 5975. | | |
| .2550 | 1497. | -118. | 1872. | 869. | 1108. | -610. | .0077 | .0028 | .0142 | -.0754 | .0049 | .0166 | 6405. | | |
| .2560 | 1474. | -136. | 2012. | 944. | 1075. | -651. | .0122 | .0077 | .0119 | -.0738 | -.0137 | .0270 | 6558. | | |
| .2570 | 1381. | -140. | 2058. | 974. | 984. | -668. | .0177 | .0129 | .0089 | -.0695 | -.0323 | .0366 | 6416. | | |
| .2580 | 1221. | -126. | 2008. | 957. | 843. | -659. | .0240 | .0180 | .0054 | -.0631 | -.0501 | .0451 | 5992. | | |
| .2590 | 1002. | -94. | 1669. | 806. | 662. | -620. | .0309 | .0230 | .0015 | -.0553 | -.0660 | .0526 | 5320. | | |
| .2600 | 732. | -47. | 1650. | 794. | 451. | -553. | .0380 | .0277 | -.0026 | -.0467 | -.0794 | .0590 | 4456. | | |
| .2610 | 432. | 13. | 1363. | 660. | 216. | -466. | .0452 | .0319 | -.0067 | -.0375 | -.0903 | .0641 | 3492. | | |
| .2620 | 117. | 85. | 1024. | 502. | -33. | -369. | .0523 | .0357 | -.0108 | -.0279 | -.0988 | .0680 | 2602. | | |
| .2630 | -197. | 161. | 654. | 328. | -282. | -263. | .0591 | .0389 | -.0144 | -.0185 | -.1043 | .0703 | 2112. | | |
| .2640 | -502. | 231. | 271. | 147. | -514. | -149. | .0651 | .0413 | -.0176 | -.0100 | -.1063 | .0708 | 2318. | | |
| .2650 | -785. | 298. | -109. | -31. | -722. | -75. | .0701 | .0430 | -.0202 | -.0025 | -.1048 | .0699 | 3019. | | |
| .2660 | -1028. | 361. | -474. | -202. | -900. | 72. | .0741 | .0442 | -.0224 | .0044 | -.1002 | .0677 | 3862. | | |
| .2670 | -1222. | 417. | -809. | -358. | -1043. | 164. | .0769 | .0449 | -.0241 | .0112 | -.0931 | .0644 | 4655. | | |
| .2680 | -1360. | 463. | -1099. | -492. | -1144. | 240. | .0785 | .0451 | -.0254 | .0175 | -.0834 | .0599 | 5292. | | |
| .2690 | -1440. | 490. | -1328. | -594. | -1194. | 298. | .0787 | .0449 | -.0261 | .0229 | -.0711 | .0539 | 5703. | | |
| .2700 | -1460. | 487. | -1484. | -659. | -1191. | 336. | .0776 | .0444 | -.0261 | .0275 | -.0569 | .0462 | 5851. | | |
| .2710 | -1410. | 455. | -1559. | -693. | -1137. | 348. | .0754 | .0437 | -.0256 | .0318 | -.0418 | .0372 | 5724. | | |
| .2720 | -1286. | 401. | -1550. | -662. | -1038. | 329. | .0723 | .0431 | -.0247 | .0362 | -.0263 | .0271 | 5319. | | |
| .2730 | -1093. | 326. | -1476. | -596. | -895. | 283. | .0684 | .0426 | -.0233 | .0406 | -.0107 | .0163 | 4641. | | |
| .2740 | -853. | 222. | -1321. | -492. | -707. | 222. | .0638 | .0422 | -.0214 | .0444 | .0051 | .0044 | 3712. | | |
| .2750 | -577. | 92. | -1104. | -359. | -484. | 147. | .0587 | .0418 | -.0193 | .0478 | .0201 | -.0086 | 2591. | | |
| .2760 | -270. | -47. | -544. | -207. | -244. | 56. | .0533 | .0417 | -.0172 | .0519 | .0334 | -.0218 | 1356. | | |
| .2770 | 57. | -180. | -562. | -41. | 1. | -48. | .0481 | .0420 | -.0152 | .0567 | .0448 | -.0347 | 264. | | |

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DIS/ADLPIE

ADLPIE STRESS ANALYSIS

8/12/02. 18.29.31.

S/RV PIPING KEWAUNEE CRUDD 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 | -1222. | 417. | -809. | -358. | -1047. | 164. | .769 | .0449 | -.0241 | .0112 | -.0931 | .0644 | .0677 | 5867. |
| .2680 | -1260. | 463. | -1099. | -492. | -1144. | 260. | .785 | .0451 | -.0254 | .0175 | -.0834 | .0599 | .0599 | 5292. |
| .2690 | -1440. | 490. | -1328. | -594. | -1194. | 298. | .0787 | .0449 | -.0261 | .0229 | -.0711 | .0539 | .0539 | 5703. |
| .2700 | -1460. | 407. | -1484. | -650. | -1191. | 376. | .0776 | .0444 | -.0261 | .0275 | -.0569 | .0462 | .0462 | 5851. |
| .2710 | -1410. | 455. | -1559. | -673. | -1137. | 348. | .0754 | .0437 | -.0256 | .0318 | -.0418 | .0372 | .0372 | 5724. |
| .2720 | -1286. | 401. | -1556. | -662. | -1038. | 329. | .0723 | .0431 | -.0247 | .0362 | -.0263 | .0271 | .0271 | 5319. |
| .2730 | -1097. | 326. | -1476. | -566. | -895. | 283. | .0684 | .0426 | -.0233 | .0406 | -.0107 | .0163 | .0163 | 4641. |
| .2740 | -853. | 222. | -1321. | -492. | -707. | 222. | .0638 | .0422 | -.0214 | .0444 | .0051 | .0044 | .0044 | 3712. |
| .2750 | -577. | 92. | -1104. | -359. | -484. | 147. | .0587 | .0418 | -.0193 | .0478 | .0201 | -.0086 | -.0086 | 2591. |
| .2760 | -270. | -47. | -844. | -207. | -244. | 56. | .0533 | .0417 | -.0172 | .0519 | .0334 | -.0218 | -.0218 | 1356. |
| .2770 | 57. | -180. | -562. | -41. | 1. | -48. | .0491 | .0420 | -.0152 | .0567 | .0448 | -.0347 | -.0347 | 264. |

ADLPIPE PAGE 2393

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE CKW02F 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 | 60 | MEMBER | 2 | SEQUENCE | 86 | LOCATION | END | TYPE | EL | | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--|--|-------|
| TIME | FX | FY | FZ | MX | MY | MZ | | | | | | | | | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | | | (PSI) |
| .2780 | 387. | -312. | -267. | 131. | 246. | -152. | | .0429 | .0426 | -.0133 | .0614 | .0547 | -.0470 | | | 1325. |
| .2790 | 687. | -446. | 32. | 301. | 489. | -245. | | .0379 | .0432 | -.0114 | .0649 | .0635 | -.0588 | | | 2604. |
| .2800 | 964. | -575. | 317. | 463. | 711. | -330. | | .0334 | .0439 | -.0096 | .0679 | .0706 | -.0696 | | | 3799. |
| .2810 | 1213. | -684. | 571. | 610. | 897. | -411. | | .0296 | .0448 | -.0081 | .0709 | .0752 | -.0787 | | | 4841. |
| .2820 | 1422. | -767. | 780. | 737. | 1041. | -483. | | .0266 | .0459 | -.0067 | .0734 | .0779 | -.0856 | | | 5692. |
| .2830 | 1569. | -831. | 939. | 834. | 1150. | -530. | | .0242 | .0467 | -.0054 | .0743 | .0796 | -.0905 | | | 6330. |
| .2840 | 1648. | -877. | 1047. | 892. | 1224. | -549. | | .0223 | .0472 | -.0042 | .0736 | .0802 | -.0932 | | | 6724. |
| .2850 | 1669. | -886. | 1073. | 903. | 1251. | -549. | | .0211 | .0476 | -.0033 | .0729 | .0790 | -.0925 | | | 6837. |
| .2860 | 1637. | -843. | 1022. | 869. | 1225. | -537. | | .0209 | .0481 | -.0028 | .0728 | .0755 | -.0877 | | | 6655. |
| .2870 | 1545. | -762. | 900. | 791. | 1155. | -504. | | .0213 | .0484 | -.0026 | .0724 | .0706 | -.0791 | | | 6208. |
| .2880 | 1387. | -663. | 724. | 671. | 1055. | -445. | | .0220 | .0484 | -.0026 | .0710 | .0651 | -.0676 | | | 5538. |
| .2890 | 1175. | -549. | 505. | 521. | 922. | -371. | | .0232 | .0481 | -.0028 | .0690 | .0585 | -.0534 | | | 4681. |
| .2900 | 929. | -410. | 248. | 356. | 746. | -276. | | .0250 | .0478 | -.0031 | .0674 | .0501 | -.0361 | | | 3665. |
| .2910 | 657. | -259. | -28. | 186. | 536. | -226. | | .0272 | .0475 | -.0036 | .0659 | .0401 | -.0166 | | | 2547. |
| .2920 | 360. | -119. | -290. | 18. | 309. | -152. | | .0296 | .0471 | -.0041 | .0636 | .0293 | .0039 | | | 1441. |
| .2930 | 47. | 6. | -549. | -139. | 79. | -76. | | .0319 | .0464 | -.0046 | .0602 | .0178 | .0243 | | | 739. |
| .2940 | -261. | 127. | -778. | -279. | -153. | -8. | | .0342 | .0457 | -.0051 | .0564 | .0051 | .0446 | | | 1327. |
| .2950 | -549. | 244. | -974. | -398. | -379. | 47. | | .0364 | .0450 | -.0058 | .0530 | -.0094 | .0639 | | | 2303. |
| .2960 | -806. | 343. | -1123. | -498. | -580. | 92. | | .0383 | .0442 | -.0064 | .0495 | -.0254 | .0810 | | | 3214. |
| .2970 | -1027. | 422. | -1214. | -571. | -743. | 131. | | .0398 | .0432 | -.0070 | .0452 | -.0420 | .0953 | | | 3948. |
| .2980 | -1191. | 483. | -1243. | -609. | -863. | 162. | | .0406 | .0419 | -.0073 | .0397 | -.0589 | .1064 | | | 4459. |
| .2990 | -1302. | 523. | -1206. | -606. | -942. | 179. | | .0408 | .0403 | -.0074 | .0331 | -.0759 | .1139 | | | 4733. |
| .3000 | -1354. | 533. | -1097. | -564. | -979. | 180. | | .0404 | .0384 | -.0071 | .0254 | -.0929 | .1171 | | | 4773. |
| .3010 | -1345. | 512. | -919. | -481. | -976. | 165. | | .0392 | .0362 | -.0065 | .0163 | -.1091 | .1161 | | | 4593. |
| .3020 | -1281. | 470. | -682. | -355. | -937. | 138. | | .0372 | .0334 | -.0056 | .0053 | -.1234 | .1115 | | | 4220. |
| .3030 | -1172. | 407. | -396. | -196. | -860. | 103. | | .0342 | .0301 | -.0042 | -.0078 | -.1351 | .1034 | | | 3707. |
| .3040 | -1023. | 324. | -73. | -17. | -749. | 62. | | .0303 | .0262 | -.0024 | -.0223 | -.1441 | .0923 | | | 3139. |
| .3050 | -834. | 233. | 266. | 170. | -613. | 13. | | .0256 | .0218 | -.0005 | -.0373 | -.1506 | .0790 | | | 2655. |
| .3060 | -612. | 151. | 601. | 356. | -459. | -44. | | .0202 | .0170 | -.0017 | -.0523 | -.1540 | .0646 | | | 2429. |
| .3070 | -374. | 78. | 918. | 533. | -286. | -97. | | .0141 | .0116 | .0041 | -.0677 | -.1537 | .0496 | | | 2556. |
| .3080 | -136. | 3. | 1211. | 689. | -97. | -140. | | .0073 | .0057 | .0067 | -.0837 | -.1491 | .0340 | | | 2963. |
| .3090 | 96. | -68. | 1466. | 818. | 95. | -176. | | -.0001 | -.0007 | .0095 | -.0990 | -.1409 | .0182 | | | 3514. |
| .3100 | 310. | -120. | 1663. | 917. | 270. | -212. | | -.0075 | -.0073 | .0123 | -.1125 | -.1299 | .0036 | | | 4085. |
| .3110 | 510. | -151. | 1793. | 983. | 420. | -246. | | -.0148 | -.0137 | .0149 | -.1239 | -.1158 | -.0096 | | | 4577. |
| .3120 | 670. | -174. | 1858. | 1011. | 550. | -263. | | -.0221 | -.0202 | .0174 | -.1337 | -.0985 | -.0214 | | | 4926. |
| .3130 | 787. | -192. | 1854. | 995. | 656. | -264. | | -.0291 | -.0265 | .0195 | -.1413 | -.0785 | -.0320 | | | 5095. |
| .3140 | 850. | -191. | 1773. | 937. | 726. | -256. | | -.0355 | -.0323 | .0212 | -.1451 | -.0573 | -.0405 | | | 5059. |
| .3150 | 875. | -165. | 1612. | 838. | 752. | -244. | | -.0410 | -.0372 | .0221 | -.1444 | -.0359 | -.0467 | | | 4807. |

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ADLPIPE STRESS ANALYSIS

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18.29.31.

S/RV PIPING KEWAUNEE CKW02F 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 | -102. | 524. | -77. | -17. | -74. | 62. | .0303 | .0262 | -.0024 | -.0223 | -.1441 | .0923 | 3139. |
| .3050 | -934. | 233. | 266. | 170. | -613. | 13. | .0256 | .0218 | -.0005 | -.0373 | -.1506 | .0790 | 2655. |
| .3060 | -612. | 151. | 601. | 356. | -459. | -44. | .0202 | .0170 | .0017 | -.0523 | -.1540 | .0646 | 2429. |
| .3070 | -374. | 78. | 210. | 523. | -286. | -97. | .0141 | .0116 | .0041 | -.0677 | -.1537 | .0496 | 2556. |
| .3080 | -136. | 3. | 1211. | 679. | -97. | -140. | .0073 | .0057 | .0067 | -.0837 | -.1491 | .0340 | 2963. |
| .3090 | 96. | -68. | 1466. | 818. | 95. | -176. | -.0001 | -.0007 | .0095 | -.0990 | -.1409 | .0182 | 3514. |
| .3100 | 210. | -120. | 1663. | 917. | 270. | -212. | -.0075 | -.0073 | .0123 | -.1125 | -.1299 | .0036 | 4085. |
| .3110 | 519. | -151. | 1793. | 983. | 420. | -246. | -.0148 | -.0137 | .0149 | -.1239 | -.1158 | -.0096 | 4577. |
| .3120 | 670. | -174. | 1858. | 1011. | 550. | -263. | -.0221 | -.0202 | .0174 | -.1337 | -.0985 | -.0214 | 4926. |
| .3130 | 787. | -192. | 1954. | 995. | 656. | -264. | -.0291 | -.0265 | .0195 | -.1413 | -.0785 | -.0320 | 5095. |
| .3140 | 852. | -191. | 1773. | 927. | 726. | -256. | -.0355 | -.0323 | .0212 | -.1451 | -.0573 | -.0405 | 5059. |
| .3150 | 875. | -165. | 1610. | 838. | 752. | -244. | -.0410 | -.0372 | .0221 | -.1444 | -.0359 | -.0467 | 4807. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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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 | 60 | MEMBER | 2 | SEQUENCE | 86 | LOCATION | END | TYPE | EL | | | | | | |
|---------|-------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .3160 | 851. | -129. | 1386. | 700. | 743. | -222. | -.0455 | -.0412 | .0224 | -.1395 | -.0148 | -.0511 | 4361. | | |
| .3170 | 779. | -94. | 1109. | 530. | 709. | -186. | -.0490 | -.0443 | .0221 | -.1310 | .0061 | -.0541 | 3774. | | |
| .3180 | 667. | -56. | 791. | 329. | 645. | -142. | -.0513 | -.0463 | .0211 | -.1189 | .0258 | -.0554 | 3096. | | |
| .3190 | 525. | -13. | 441. | 137. | 546. | -99. | -.0524 | -.0471 | .0195 | -.1029 | .0433 | -.0552 | 2385. | | |
| .3200 | 360. | 25. | 78. | -69. | 419. | -59. | -.0521 | -.0466 | .0172 | -.0834 | .0578 | -.0538 | 1789. | | |
| .3210 | 175. | 50. | -280. | -272. | 275. | -20. | -.0507 | -.0451 | .0143 | -.0616 | .0696 | -.0518 | 1617. | | |
| .3220 | -21. | 66. | -622. | -462. | 122. | 19. | -.0485 | -.0426 | .0110 | -.0384 | .0788 | -.0491 | 1997. | | |
| .3230 | -218. | 78. | -938. | -632. | -35. | 54. | -.0454 | -.0393 | .0074 | -.0148 | .0852 | -.0454 | 2652. | | |
| .3240 | -406. | 82. | -1213. | -780. | -186. | 81. | -.0417 | -.0353 | .0035 | .0090 | .0884 | -.0411 | 3366. | | |
| .3250 | -572. | 76. | -1437. | -903. | -330. | 98. | -.0376 | -.0308 | -.0005 | .0319 | .0885 | -.0363 | 4033. | | |
| .3260 | -709. | 67. | -1604. | -993. | -454. | 105. | -.0333 | -.0262 | -.0045 | .0529 | .0859 | -.0308 | 4578. | | |
| .3270 | -813. | 56. | -1705. | -1044. | -552. | 104. | -.0291 | -.0215 | -.0081 | .0706 | .0816 | -.0245 | 4950. | | |
| .3280 | -880. | 35. | -1733. | -1058. | -618. | 96. | -.0252 | -.0172 | -.0115 | .0840 | .0760 | -.0178 | 5127. | | |
| .3290 | -902. | 9. | -1689. | -1035. | -650. | 78. | -.0216 | -.0135 | -.0139 | .0931 | .0690 | -.0106 | 5110. | | |
| .3300 | -874. | -13. | -1580. | -975. | -653. | 46. | -.0186 | -.0103 | -.0159 | .0976 | .0610 | -.0026 | 4904. | | |
| .3310 | -799. | -25. | -1413. | -882. | -626. | 6. | -.0162 | -.0079 | -.0173 | .0971 | .0526 | .0061 | 4513. | | |
| .3320 | -686. | -35. | -1191. | -760. | -561. | -33. | -.0147 | -.0066 | -.0179 | .0907 | .0449 | .0149 | 3946. | | |
| .3330 | -541. | -46. | -922. | -619. | -460. | -68. | -.0141 | -.0063 | -.0178 | .0790 | .0379 | .0234 | 3233. | | |
| .3340 | -364. | -47. | -622. | -463. | -337. | -105. | -.0142 | -.0071 | -.0171 | .0630 | .0313 | .0318 | 2430. | | |
| .3350 | -157. | -71. | -307. | -296. | -200. | -145. | -.0146 | -.0086 | -.0158 | .0437 | .0251 | .0401 | 1608. | | |
| .3360 | 62. | -8. | 16. | -122. | -52. | -178. | -.0160 | -.0110 | -.0140 | .0213 | .0198 | .0478 | 928. | | |
| .3370 | 281. | 11. | 341. | 49. | 108. | -199. | -.0176 | -.0143 | -.0118 | -.0035 | .0159 | .0543 | 967. | | |
| .3380 | 491. | 30. | 652. | 214. | 267. | -210. | -.0195 | -.0180 | -.0093 | -.0293 | .0128 | .0595 | 1674. | | |
| .3390 | 690. | 58. | 931. | 367. | 409. | -216. | -.0213 | -.0220 | -.0068 | -.0541 | .0099 | .0637 | 2464. | | |
| .3400 | 865. | 90. | 1170. | 500. | 531. | -215. | -.0229 | -.0260 | -.0044 | -.0767 | .0070 | .0665 | 3172. | | |
| .3410 | 1007. | 115. | 1364. | 606. | 633. | -199. | -.0243 | -.0299 | -.0022 | -.0966 | .0045 | .0674 | 3752. | | |
| .3420 | 1098. | 134. | 1505. | 683. | 713. | -167. | -.0253 | -.0336 | -.0003 | -.1128 | .0023 | .0666 | 4178. | | |
| .3430 | 1148. | 153. | 1583. | 730. | 759. | -125. | -.0258 | -.0368 | .0011 | -.1241 | .0000 | .0642 | 4425. | | |
| .3440 | 1153. | 169. | 1597. | 746. | 767. | -76. | -.0256 | -.0394 | .0019 | -.1297 | -.0026 | .0603 | 4476. | | |
| .3450 | 1108. | 172. | 1553. | 731. | 739. | -20. | -.0249 | -.0413 | .0022 | -.1295 | -.0055 | .0546 | 4337. | | |
| .3460 | 1014. | 159. | 1455. | 687. | 677. | 43. | -.0236 | -.0424 | .0019 | -.1237 | -.0083 | .0473 | 4031. | | |
| .3470 | 877. | 137. | 1205. | 622. | 583. | 111. | -.0218 | -.0429 | .0011 | -.1126 | -.0107 | .0389 | 3588. | | |
| .3480 | 704. | 94. | 1110. | 575. | 461. | 180. | -.0196 | -.0425 | -.0002 | -.0963 | -.0128 | .0296 | 3042. | | |
| .3490 | 501. | 57. | 878. | 428. | 316. | 248. | -.0170 | -.0416 | -.0018 | -.0753 | -.0147 | .0196 | 2450. | | |
| .3500 | 279. | 2. | 617. | 303. | 196. | 312. | -.0142 | -.0400 | -.0038 | -.0507 | -.0163 | .0095 | 1929. | | |
| .3510 | 48. | -54. | 334. | 166. | -12. | 372. | -.0113 | -.0380 | -.0061 | -.0220 | -.0171 | -.0002 | 1599. | | |
| .3520 | -186. | -110. | 40. | 21. | -179. | 426. | -.0086 | -.0356 | -.0085 | .0079 | -.0169 | -.0090 | 1931. | | |
| .3530 | -417. | -170. | -251. | -128. | -336. | 475. | -.0060 | -.0330 | -.0109 | .0386 | -.0157 | -.0170 | 2485. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.31.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .3420 | 1095. | 134. | 1505. | 683. | 712. | -167. | -.0253 | -.0336 | -.0003 | -.1128 | .0023 | .0666 | 4178. |
| .3430 | 1140. | 153. | 1583. | 730. | 759. | -125. | -.0258 | -.0368 | .0011 | -.1241 | .0000 | .0642 | 4425. |
| .3440 | 1157. | 169. | 1597. | 746. | 767. | -76. | -.0256 | -.0394 | .0019 | -.1297 | -.0026 | .0603 | 4476. |
| .3450 | 1108. | 172. | 1553. | 731. | 739. | -20. | -.0249 | -.0413 | .0022 | -.1295 | -.0055 | .0546 | 4337. |
| .3460 | 1014. | 159. | 1455. | 687. | 677. | 43. | -.0236 | -.0424 | .0019 | -.1237 | -.0083 | .0473 | 4031. |
| .3470 | 877. | 137. | 1205. | 622. | 587. | 111. | -.0218 | -.0429 | .0011 | -.1126 | -.0107 | .0389 | 3588. |
| .3480 | 704. | 104. | 1110. | 575. | 461. | 180. | -.0196 | -.0425 | -.0002 | -.0963 | -.0128 | .0296 | 3042. |
| .3490 | 501. | 57. | 878. | 428. | 316. | 248. | -.0170 | -.0416 | -.0018 | -.0753 | -.0147 | .0196 | 2450. |
| .3500 | 279. | 2. | 617. | 303. | 156. | 312. | -.0142 | -.0400 | -.0038 | -.0502 | -.0163 | .0095 | 1929. |
| .3510 | 40. | -54. | 334. | 166. | -12. | 372. | -.0113 | -.0380 | -.0061 | -.0220 | -.0171 | -.0002 | 1699. |
| .3520 | -186. | -110. | 40. | 71. | -170. | 426. | -.0086 | -.0356 | -.0085 | .0079 | -.0169 | -.0090 | 1931. |
| .3530 | -417. | -170. | -251. | -120. | -336. | 475. | -.0060 | -.0330 | -.0109 | .0386 | -.0157 | -.0170 | 2485. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.31.

S/RV PIPING KEWAUNEE CFW00F 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 | 60 | MEMBER | 2 | SEQUENCE | 86 | LOCATION | END | TYPE | EL | | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .3540 | -623. | -230. | -528. | -274. | -480. | 512. | | -.0037 | -.0303 | -.0132 | .0691 | -.0137 | -.0237 | 3146. | | |
| .3550 | -804. | -283. | -784. | -409. | -610. | 536. | | -.0016 | -.0276 | -.0154 | .0983 | -.0108 | -.0288 | 3794. | | |
| .3560 | -952. | -330. | -1000. | -527. | -718. | 546. | | .0001 | -.0249 | -.0173 | .1249 | -.0068 | -.0323 | 4361. | | |
| .3570 | -1064. | -374. | -1187. | -624. | -795. | 549. | | .0013 | -.0226 | -.0188 | .1474 | -.0015 | -.0343 | 4800. | | |
| .3580 | -1136. | -415. | -1317. | -698. | -840. | 542. | | .0021 | -.0207 | -.0198 | .1653 | .0047 | -.0351 | 5088. | | |
| .3590 | -1161. | -443. | -1398. | -747. | -855. | 522. | | .0025 | -.0191 | -.0205 | .1784 | .0112 | -.0343 | 5215. | | |
| .3600 | -1136. | -455. | -1431. | -771. | -839. | 491. | | .0027 | -.0178 | -.0208 | .1864 | .0178 | -.0321 | 5177. | | |
| .3610 | -1066. | -455. | -1411. | -769. | -787. | 455. | | .0026 | -.0170 | -.0207 | .1888 | .0245 | -.0288 | 4972. | | |
| .3620 | -956. | -445. | -1340. | -744. | -701. | 417. | | .0023 | -.0165 | -.0201 | .1853 | .0313 | -.0247 | 4609. | | |
| .3630 | -809. | -423. | -1224. | -693. | -589. | 376. | | .0019 | -.0165 | -.0193 | .1766 | .0377 | -.0197 | 4108. | | |
| .3640 | -626. | -387. | -1069. | -619. | -459. | 328. | | .0016 | -.0166 | -.0183 | .1631 | .0432 | -.0141 | 3496. | | |
| .3650 | -419. | -344. | -877. | -523. | -317. | 277. | | .0015 | -.0171 | -.0170 | .1454 | .0478 | -.0083 | 2803. | | |
| .3660 | -199. | -299. | -656. | -409. | -166. | 228. | | .0014 | -.0178 | -.0155 | .1237 | .0516 | -.0025 | 2073. | | |
| .3670 | 26. | -250. | -415. | -280. | -12. | 181. | | .0016 | -.0186 | -.0139 | .0989 | .0546 | .0032 | 1393. | | |
| .3680 | 249. | -196. | -167. | -147. | 135. | 136. | | .0019 | -.0196 | -.0123 | .0722 | .0566 | .0089 | 998. | | |
| .3690 | 460. | -139. | 78. | -7. | 272. | 93. | | .0026 | -.0207 | -.0107 | .0447 | .0575 | .0145 | 1200. | | |
| .3700 | 654. | -79. | 310. | 121. | 395. | 55. | | .0034 | -.0218 | -.0092 | .0175 | .0567 | .0198 | 1738. | | |
| .3710 | 821. | -16. | 517. | 233. | 501. | 23. | | .0045 | -.0230 | -.0079 | -.0085 | .0549 | .0250 | 2309. | | |
| .3720 | 957. | 52. | 692. | 325. | 589. | -1. | | .0057 | -.0242 | -.0067 | -.0327 | .0523 | .0302 | 2807. | | |
| .3730 | 1056. | 120. | 829. | 393. | 654. | -17. | | .0070 | -.0253 | -.0057 | -.0541 | .0487 | .0351 | 3187. | | |
| .3740 | 1113. | 103. | 925. | 434. | 694. | -28. | | .0084 | -.0265 | -.0049 | -.0720 | .0442 | .0396 | 3418. | | |
| .3750 | 1130. | 242. | 976. | 449. | 703. | -35. | | .0099 | -.0277 | -.0043 | -.0860 | .0388 | .0438 | 3484. | | |
| .3760 | 1103. | 297. | 903. | 441. | 681. | -38. | | .0113 | -.0288 | -.0039 | -.0961 | .0330 | .0476 | 3387. | | |
| .3770 | 1031. | 341. | 948. | 411. | 629. | -34. | | .0126 | -.0299 | -.0035 | -.1025 | .0272 | .0508 | 3139. | | |
| .3780 | 914. | 372. | 876. | 360. | 551. | -26. | | .0138 | -.0311 | -.0034 | -.1052 | .0213 | .0530 | 2748. | | |
| .3790 | 761. | 391. | 768. | 290. | 445. | -16. | | .0148 | -.0323 | -.0033 | -.1040 | .0152 | .0542 | 2218. | | |
| .3800 | 580. | 403. | 628. | 205. | 315. | -6. | | .0158 | -.0334 | -.0035 | -.0991 | .0088 | .0545 | 1568. | | |
| .3810 | 376. | 405. | 463. | 108. | 169. | 7. | | .0165 | -.0344 | -.0036 | -.0914 | .0024 | .0537 | 838. | | |
| .3820 | 154. | 397. | 283. | 1. | 19. | 26. | | .0170 | -.0356 | -.0038 | -.0816 | -.0038 | .0516 | 133. | | |
| .3830 | -74. | 380. | 95. | -110. | -132. | 47. | | .0172 | -.0367 | -.0039 | -.0702 | -.0098 | .0481 | 743. | | |
| .3840 | -299. | 357. | -95. | -221. | -282. | 68. | | .0173 | -.0379 | -.0040 | -.0576 | -.0159 | .0434 | 1520. | | |
| .3850 | -510. | 330. | -278. | -326. | -424. | 86. | | .0172 | -.0390 | -.0040 | -.0447 | -.0220 | .0375 | 2263. | | |
| .3860 | -705. | 299. | -446. | -422. | -553. | 105. | | .0168 | -.0402 | -.0038 | -.0325 | -.0278 | .0305 | 2934. | | |
| .3870 | -877. | 263. | -589. | -503. | -660. | 124. | | .0161 | -.0415 | -.0033 | -.0218 | -.0327 | .0225 | 3502. | | |
| .3880 | -1021. | 224. | -704. | -566. | -747. | 142. | | .0151 | -.0429 | -.0026 | -.0133 | -.0369 | .0140 | 3954. | | |
| .3890 | -1130. | 188. | -788. | -610. | -811. | 154. | | .0138 | -.0443 | -.0016 | -.0069 | -.0405 | .0053 | 4284. | | |
| .3900 | -1201. | 154. | -830. | -679. | -850. | 160. | | .0124 | -.0457 | -.0003 | -.0029 | -.0435 | -.0030 | 4480. | | |
| .3910 | -1230. | 127. | -850. | -641. | -860. | 161. | | .0106 | -.0472 | .0012 | -.0018 | -.0456 | -.0104 | 4527. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.31.

S/RV PIPING KEWAUNEE CFW00F 2 RUP DISK
2 SAFETY COLD FKW24F--2 PSV

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

| | | | | | | | | | | | | | |
|-------|--------|------|-------|-------|-------|------|-------|--------|--------|--------|--------|--------|-------|
| .3800 | 580. | 403. | 428. | 205. | 315. | -6. | .0158 | -.0334 | -.0035 | -.0991 | .0088 | .0545 | 1568. |
| .3810 | 376. | 405. | 463. | 108. | 169. | 7. | .0165 | -.0344 | -.0036 | -.0914 | .0024 | .0537 | 838. |
| .3820 | 154. | 397. | 283. | 1. | 19. | 26. | .0170 | -.0356 | -.0038 | -.0816 | -.0038 | .0516 | 133. |
| .3830 | -74. | 380. | 95. | -110. | -132. | 47. | .0172 | -.0367 | -.0039 | -.0702 | -.0098 | .0481 | 743. |
| .3840 | -299. | 357. | -95. | -221. | -282. | 68. | .0173 | -.0379 | -.0040 | -.0576 | -.0159 | .0434 | 1520. |
| .3850 | -510. | 330. | -270. | -326. | -424. | 86. | .0172 | -.0390 | -.0040 | -.0447 | -.0220 | .0375 | 2263. |
| .3860 | -705. | 299. | -446. | -422. | -553. | 105. | .0168 | -.0402 | -.0038 | -.0325 | -.0278 | .0305 | 2934. |
| .3870 | -877. | 263. | -589. | -503. | -660. | 124. | .0161 | -.0415 | -.0033 | -.0218 | -.0327 | .0225 | 3502. |
| .3880 | -1021. | 224. | -704. | -566. | -747. | 142. | .0151 | -.0429 | -.0026 | -.0133 | -.0369 | .0140 | 3954. |
| .3890 | -1130. | 188. | -788. | -610. | -811. | 154. | .0138 | -.0443 | -.0016 | -.0069 | -.0405 | .0053 | 4284. |
| .3900 | -1201. | 154. | -838. | -635. | -850. | 160. | .0124 | -.0457 | -.0003 | -.0029 | -.0435 | -.0030 | 4480. |
| .3910 | -1230. | 127. | -852. | -641. | -860. | 161. | .0106 | -.0472 | .0012 | -.0018 | -.0456 | -.0104 | 4527. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.31.

S/RV PIPING KEWAUNEE GKM00F 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 | 60 | MEMBER | 2 | SEQUENCE | 86 | LOCATION | END | TYPE | EL | | | | | | |
|---------|--------|--------|-------|----------|---------|----------|--------|--------|-------|--------|--------|--------|--------|--|--|
| 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) | | |
| .3920 | -1218. | 107. | -832. | -628. | -838. | 158. | .0085 | -.0487 | .0030 | -.0038 | -.0463 | -.0166 | 4419. | | |
| .3930 | -1166. | 95. | -778. | -597. | -785. | 150. | .0061 | -.0502 | .0052 | -.0088 | -.0457 | -.0210 | 4163. | | |
| .3940 | -1076. | 92. | -693. | -552. | -706. | 135. | .0035 | -.0516 | .0076 | -.0162 | -.0442 | -.0237 | 3782. | | |
| .3950 | -950. | 98. | -583. | -496. | -605. | 112. | .0008 | -.0530 | .0102 | -.0256 | -.0419 | -.0243 | 3297. | | |
| .3960 | -793. | 117. | -454. | -428. | -485. | 82. | -.0021 | -.0542 | .0129 | -.0371 | -.0385 | -.0226 | 2722. | | |
| .3970 | -618. | 143. | -308. | -352. | -349. | 52. | -.0052 | -.0554 | .0158 | -.0504 | -.0338 | -.0189 | 2079. | | |
| .3980 | -432. | 172. | -151. | -272. | -200. | 21. | -.0083 | -.0564 | .0187 | -.0649 | -.0281 | -.0135 | 1412. | | |
| .3990 | -239. | 205. | 8. | -192. | -50. | -14. | -.0114 | -.0572 | .0215 | -.0796 | -.0221 | -.0065 | 830. | | |
| .4000 | -43. | 246. | 160. | -114. | 95. | -52. | -.0142 | -.0576 | .0241 | -.0934 | -.0161 | .0020 | 657. | | |

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) | | |
| .2410 | -1602. | -2. | -2627. | -1297. | -1156. | 620. | .0339 | -.0046 | -.0016 | .1220 | .0743 | -.0918 | 7698. | | |

| SECTION | 61 | MEMBER | 1 | SEQUENCE | 86 | LOCATION | BEG | TYPE | RU | | | | | | |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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 | 1. | | |
| .0050 | 0. | 0. | 0. | -0. | 0. | 0. | -.0000 | -.0000 | .0000 | -.0000 | .0000 | -.0000 | 2. | | |
| .0060 | 0. | 0. | 0. | -1. | 0. | 0. | -.0000 | -.0000 | .0000 | -.0001 | .0001 | -.0000 | 3. | | |
| .0070 | -0. | -0. | 1. | -1. | 0. | -0. | -.0000 | -.0000 | .0000 | -.0002 | .0001 | -.0001 | 3. | | |
| .0080 | -1. | -1. | 2. | -0. | -1. | -1. | -.0001 | -.0001 | .0001 | -.0003 | .0002 | -.0003 | 6. | | |
| .0090 | -7. | -2. | 3. | 1. | -3. | -2. | -.0002 | -.0001 | .0001 | -.0005 | .0003 | -.0005 | 15. | | |
| .0100 | -6. | -4. | 5. | 2. | -5. | -3. | -.0003 | -.0002 | .0002 | -.0007 | .0004 | -.0008 | 28. | | |
| .0110 | -12. | -8. | 8. | 4. | -11. | -6. | -.0006 | -.0004 | .0003 | -.0011 | .0008 | -.0013 | 54. | | |
| .0120 | -21. | -13. | 13. | 8. | -20. | -11. | -.0010 | -.0007 | .0003 | -.0019 | .0013 | -.0022 | 103. | | |
| .0130 | -35. | -22. | 20. | 15. | -35. | -19. | -.0017 | -.0011 | .0008 | -.0030 | .0020 | -.0035 | 176. | | |
| .0140 | -51. | -33. | 28. | 25. | -52. | -28. | -.0026 | -.0017 | .0011 | -.0040 | .0027 | -.0052 | 269. | | |
| .0150 | -67. | -44. | 37. | 38. | -73. | -35. | -.0035 | -.0023 | .0015 | -.0048 | .0032 | -.0068 | 373. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

S/RV PIPING KEWAUNEE GKM00F 2 RUP DISK
2 SAFETY COLD FKW24F--2 PSVCONDITION 24
LOADS
SHOCK

| | | | | | | | | | | | | | | | | |
|-------|------|------|-----|-----|------|------|-----|--------|--------|-------|---------|-------|---------|-------|---------|------|
| .0050 | 0. | 0. | 0. | 0. | -0. | 0. | 0. | -0.000 | -0.000 | .0000 | -0.0000 | .0000 | -0.0000 | .0000 | -0.0000 | 2. |
| .0060 | 0. | 0. | 0. | 0. | -1. | 0. | 0. | -0.000 | -0.000 | .0000 | -0.0000 | .0000 | -0.0001 | .0001 | -0.0000 | 3. |
| .0070 | -0. | -0. | 1. | -1. | 0. | 0. | -0. | -0.000 | -0.000 | .0000 | -0.0002 | .0001 | -0.0001 | .0001 | -0.0001 | 3. |
| .0080 | -1. | -1. | 2. | -0. | -1. | -1. | -0. | -0.001 | -0.001 | .0001 | -0.0003 | .0002 | -0.0003 | .0002 | -0.0003 | 6. |
| .0090 | -1. | -2. | 3. | 1. | -3. | -2. | -0. | -0.002 | -0.001 | .0001 | -0.0005 | .0003 | -0.0005 | .0003 | -0.0005 | 15. |
| .0100 | -6. | -4. | 5. | 2. | -5. | -3. | -0. | -0.003 | -0.002 | .0002 | -0.0007 | .0004 | -0.0008 | .0004 | -0.0008 | 28. |
| .0110 | -12. | -8. | 8. | 4. | -11. | -6. | -0. | -0.006 | -0.004 | .0003 | -0.0011 | .0008 | -0.0013 | .0008 | -0.0013 | 54. |
| .0120 | -21. | -13. | 13. | 8. | -20. | -11. | -0. | -0.010 | -0.007 | .0005 | -0.0019 | .0013 | -0.0022 | .0013 | -0.0022 | 103. |
| .0130 | -35. | -22. | 20. | 15. | -35. | -19. | -0. | -0.017 | -0.011 | .0008 | -0.0030 | .0020 | -0.0035 | .0020 | -0.0035 | 176. |
| .0140 | -51. | -33. | 28. | 25. | -52. | -28. | -0. | -0.026 | -0.017 | .0011 | -0.0040 | .0027 | -0.0052 | .0027 | -0.0052 | 269. |
| .0150 | -67. | -44. | 37. | 38. | -73. | -35. | -0. | -0.035 | -0.023 | .0015 | -0.0048 | .0032 | -0.0068 | .0032 | -0.0068 | 373. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

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 | MEMBER | SEQUENCE | LOCATION | BEG | TYPE | RU | | | | | | | | | |
|---------|--------|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--|--|
| 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) | | |
| .0160 | -83. | -55. | 45. | 53. | -93. | -41. | -0.0045 | -0.0028 | .0018 | -0.0048 | .0036 | -0.0077 | 479. | | |
| .0170 | -97. | -64. | 53. | 68. | -112. | -44. | -0.0054 | -0.0031 | .0020 | -0.0040 | .0038 | -0.0077 | 577. | | |
| .0180 | -103. | -69. | 58. | 81. | -127. | -43. | -0.0061 | -0.0032 | .0021 | -0.0023 | .0037 | -0.0066 | 654. | | |
| .0190 | -109. | -68. | 56. | 91. | -132. | -37. | -0.0066 | -0.0030 | .0020 | .0005 | .0032 | -0.0045 | 688. | | |
| .0200 | -100. | -58. | 47. | 95. | -126. | -26. | -0.0068 | -0.0025 | .0018 | .0040 | .0022 | -0.0016 | 666. | | |
| .0210 | -80. | -38. | 29. | 88. | -106. | -10. | -0.0067 | -0.0018 | .0014 | .0078 | .0010 | .0017 | 575. | | |
| .0220 | -51. | -6. | 0. | 66. | -71. | 13. | -0.0064 | -0.0008 | .0008 | .0117 | -0.0000 | .0057 | 406. | | |
| .0230 | -17. | -31. | -32. | 34. | -28. | 35. | -0.0060 | .0002 | .0002 | .0146 | -0.0008 | .0090 | 234. | | |
| .0240 | 21. | 64. | -58. | 1. | 14. | 49. | -0.0056 | .0010 | -0.0003 | .0161 | -0.0015 | .0108 | 211. | | |
| .0250 | 65. | 92. | -80. | -22. | 56. | 59. | -0.0049 | .0018 | -0.0010 | .0176 | -0.0036 | .0115 | 353. | | |
| .0260 | 118. | 118. | -107. | -35. | 105. | 77. | -0.0031 | .0031 | -0.0022 | .0212 | -0.0076 | .0134 | 563. | | |
| .0270 | 162. | 146. | -135. | -53. | 151. | 106. | -0.0007 | .0051 | -0.0035 | .0261 | -0.0120 | .0180 | 802. | | |
| .0280 | 174. | 150. | -135. | -70. | 163. | 105. | .0015 | .0067 | -0.0046 | .0277 | -0.0142 | .0218 | 861. | | |
| .0290 | 163. | 121. | -111. | -64. | 141. | 64. | .0034 | .0073 | -0.0052 | .0254 | -0.0159 | .0208 | 700. | | |
| .0300 | 177. | 113. | -118. | -53. | 148. | 61. | .0062 | .0083 | -0.0064 | .0261 | -0.0208 | .0199 | 702. | | |
| .0310 | 215. | 135. | -146. | -71. | 193. | 91. | .0096 | .0100 | -0.0077 | .0278 | -0.0260 | .0213 | 940. | | |
| .0320 | 219. | 131. | -148. | -107. | 213. | 71. | .0118 | .0104 | -0.0082 | .0216 | -0.0256 | .0191 | 1038. | | |
| .0330 | 179. | 95. | -131. | -145. | 193. | -2. | .0124 | .0091 | -0.0079 | .0074 | -0.0199 | .0111 | 1009. | | |
| .0340 | 160. | 81. | -132. | -190. | 201. | -45. | .0130 | .0076 | -0.0074 | -0.0063 | -0.0147 | .0024 | 1170. | | |
| .0350 | 186. | 92. | -147. | -232. | 249. | -38. | .0140 | .0066 | -0.0073 | -0.0156 | -0.0127 | -0.0039 | 1430. | | |
| .0360 | 190. | 79. | -140. | -239. | 265. | -39. | .0147 | .0051 | -0.0069 | -0.0238 | -0.0108 | -0.0100 | 1497. | | |
| .0370 | 118. | 22. | -117. | -213. | 202. | -73. | .0143 | .0031 | -0.0060 | -0.0328 | -0.0055 | -0.0148 | 1264. | | |
| .0380 | 0. | -60. | -49. | -175. | 88. | -121. | .0131 | .0011 | -0.0046 | -0.0411 | .0026 | -0.0158 | 960. | | |
| .0390 | -115. | -153. | 33. | -105. | -42. | -164. | .0114 | -0.0011 | -0.0032 | -0.0464 | .0091 | -0.0161 | 832. | | |
| .0400 | -200. | -236. | 88. | 9. | -155. | -181. | .0100 | -0.0033 | -0.0022 | -0.0460 | .0107 | -0.0183 | 993. | | |
| .0410 | -245. | -266. | 101. | 93. | -212. | -140. | .0090 | -0.0045 | -0.0017 | -0.0404 | .0113 | -0.0168 | 1129. | | |
| .0420 | -285. | -263. | 120. | 96. | -240. | -108. | .0068 | -0.0055 | -0.0006 | -0.0391 | .0187 | -0.0128 | 1168. | | |
| .0430 | -354. | -269. | 156. | 61. | -285. | -139. | .0024 | -0.0081 | .0015 | -0.0464 | .0329 | -0.0148 | 1348. | | |
| .0440 | -390. | -246. | 149. | -30. | -297. | -158. | -0.0023 | -0.0112 | .0035 | -0.0531 | .0449 | -0.0232 | 1411. | | |
| .0450 | -319. | -142. | 84. | -20. | -203. | -79. | -0.0052 | -0.0125 | .0045 | -0.0496 | .0489 | -0.0282 | 913. | | |
| .0460 | -214. | -14. | 25. | -78. | -83. | 31. | -0.0074 | -0.0124 | .0050 | -0.0405 | .0497 | -0.0286 | 494. | | |
| .0470 | -216. | 30. | 28. | -82. | -88. | 46. | -0.0109 | -0.0133 | .0062 | -0.0353 | .0539 | -0.0320 | 537. | | |
| .0480 | -307. | 6. | 81. | -71. | -195. | -6. | -0.0150 | -0.0147 | .0078 | -0.0312 | .0594 | -0.0365 | 824. | | |
| .0490 | -337. | 5. | 135. | 30. | -264. | -7. | -0.0176 | -0.0142 | .0084 | -0.0188 | .0586 | -0.0346 | 1107. | | |
| .0500 | -296. | 35. | 161. | 107. | -271. | 47. | -0.0185 | -0.0125 | .0080 | .0012 | .0499 | -0.0306 | 1234. | | |
| .0510 | -267. | 51. | 169. | 206. | -288. | 77. | -0.0196 | -0.0115 | .0077 | .0189 | .0401 | -0.0318 | 1512. | | |
| .0520 | -249. | 57. | 197. | 259. | -307. | 60. | -0.0217 | -0.0113 | .0080 | .0279 | .0360 | -0.0352 | 1696. | | |
| .0530 | -203. | 89. | 221. | 231. | -271. | 28. | -0.0239 | -0.0108 | .0085 | .0309 | .0364 | -0.0356 | 1496. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

| | | | | | | | | | | | | | | |
|-------|-------|-------|------|------|-------|-------|------|--------|--------|-------|--------|-------|--------|-------|
| .0430 | -354. | -269. | 156. | 61. | -285. | -139. | 156. | .0024 | -.0081 | .0015 | -.0464 | .0329 | -.0148 | 1348. |
| .0440 | -390. | -246. | 149. | 30. | -297. | -158. | 149. | -.0023 | -.0112 | .0035 | -.0531 | .0449 | -.0232 | 1411. |
| .0450 | -319. | -142. | 84. | -20. | -203. | -79. | 84. | -.0052 | -.0125 | .0045 | -.0496 | .0489 | -.0282 | 913. |
| .0460 | -214. | -14. | 25. | -78. | -83. | 31. | 25. | -.0074 | -.0124 | .0050 | -.0405 | .0497 | -.0286 | 494. |
| .0470 | -216. | 30. | 28. | -82. | -80. | 46. | 28. | -.0109 | -.0133 | .0062 | -.0353 | .0539 | -.0320 | 537. |
| .0480 | -307. | 6. | 81. | -71. | -195. | -6. | 81. | -.0150 | -.0147 | .0078 | -.0312 | .0594 | -.0365 | 824. |
| .0490 | -337. | 5. | 135. | 30. | -264. | -7. | 135. | -.0176 | -.0142 | .0084 | -.0188 | .0586 | -.0346 | 1107. |
| .0500 | -296. | 35. | 161. | 107. | -271. | 47. | 161. | -.0185 | -.0125 | .0080 | .0012 | .0499 | -.0306 | 1234. |
| .0510 | -263. | 51. | 169. | 206. | -288. | 77. | 169. | -.0196 | -.0115 | .0077 | .0189 | .0401 | -.0318 | 1512. |
| .0520 | -249. | 57. | 193. | 259. | -307. | 60. | 193. | -.0217 | -.0113 | .0080 | .0279 | .0360 | -.0352 | 1696. |
| .0530 | -203. | 89. | 221. | 231. | -271. | 38. | 221. | -.0239 | -.0108 | .0085 | .0309 | .0364 | -.0356 | 1496. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.32.

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 | MEMBER | SEQUENCE | LOCATION | BEG | TYPE | RU | DZ | RX | RY | RZ | 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) |
| .0540 | -107. | 155. | 204. | 178. | -171. | 47. | -.0252 | -.0099 | .0086 | .0341 | .0345 | -.0354 | 1050. |
| .0550 | 24. | 238. | 141. | 140. | -33. | 92. | -.0251 | -.0087 | .0083 | .0397 | .0279 | -.0355 | 712. |
| .0560 | 158. | 309. | 93. | 96. | 105. | 139. | -.0248 | -.0074 | .0080 | .0438 | .0211 | -.0321 | 829. |
| .0570 | 235. | 324. | 100. | 62. | 178. | 140. | -.0251 | -.0066 | .0083 | .0432 | .0176 | -.0255 | 982. |
| .0580 | 232. | 267. | 135. | 92. | 158. | 96. | -.0257 | -.0066 | .0089 | .0403 | .0145 | -.0188 | 861. |
| .0590 | 218. | 179. | 166. | 176. | 111. | 65. | -.0254 | -.0065 | .0091 | .0409 | .0072 | -.0096 | 909. |
| .0600 | 255. | 102. | 188. | 260. | 107. | 79. | -.0237 | -.0052 | .0084 | .0456 | -.0040 | .0062 | 1219. |
| .0610 | 296. | 25. | 200. | 324. | 118. | 97. | -.0215 | -.0038 | .0075 | .0482 | -.0139 | .0242 | 1494. |
| .0620 | 290. | -67. | 200. | 358. | 104. | 75. | -.0202 | -.0036 | .0073 | .0427 | -.0183 | .0389 | 1588. |
| .0630 | 282. | -140. | 180. | 333. | 110. | 40. | -.0193 | -.0040 | .0073 | .0301 | -.0183 | .0508 | 1474. |
| .0640 | 332. | -159. | 122. | 247. | 189. | 44. | -.0180 | -.0043 | .0076 | .0155 | -.0187 | .0613 | 1312. |
| .0650 | 414. | -139. | 15. | 143. | 309. | 82. | -.0157 | -.0046 | .0073 | .0018 | -.0219 | .0685 | 1461. |
| .0660 | 459. | -126. | -103. | 49. | 393. | 109. | -.0133 | -.0052 | .0072 | -.0126 | -.0251 | .0723 | 1715. |
| .0670 | 434. | -152. | -180. | -34. | 403. | 92. | -.0112 | -.0061 | .0074 | -.0289 | -.0257 | .0755 | 1731. |
| .0680 | 349. | -215. | -218. | -81. | 339. | 46. | -.0091 | -.0069 | .0074 | -.0434 | -.0261 | .0783 | 1468. |
| .0690 | 237. | -299. | -248. | -68. | 225. | 3. | -.0064 | -.0074 | .0070 | -.0523 | -.0304 | .0788 | 980. |
| .0700 | 114. | -386. | -274. | -14. | 89. | -33. | -.0033 | -.0077 | .0061 | -.0561 | -.0384 | .0758 | 399. |
| .0710 | 0. | -460. | -296. | 36. | -44. | -73. | -.0003 | -.0080 | .0050 | -.0586 | -.0461 | .0697 | 387. |
| .0720 | -110. | -502. | -325. | 44. | -155. | -119. | .0024 | -.0082 | .0039 | -.0624 | -.0499 | .0607 | 835. |
| .0730 | -205. | -493. | -373. | -11. | -222. | -162. | .0046 | -.0084 | .0029 | -.0683 | -.0492 | .0485 | 1149. |
| .0740 | -254. | -425. | -442. | -121. | -228. | -192. | .0066 | -.0085 | .0020 | -.0749 | -.0458 | .0325 | 1340. |
| .0750 | -246. | -302. | -532. | -256. | -170. | -190. | .0086 | -.0084 | .0009 | -.0790 | -.0428 | .0131 | 1508. |
| .0760 | -202. | -146. | -627. | -390. | -78. | -160. | .0109 | -.0077 | -.0006 | -.0783 | -.0405 | -.0066 | 1787. |
| .0770 | -171. | -1. | -681. | -502. | -7. | -137. | .0128 | -.0065 | -.0020 | -.0741 | -.0364 | -.0239 | 2170. |
| .0780 | -185. | 93. | -667. | -557. | -4. | -152. | .0139 | -.0053 | -.0033 | -.0674 | -.0299 | -.0391 | 2408. |
| .0790 | -229. | 137. | -602. | -520. | -56. | -115. | .0146 | -.0039 | -.0048 | -.0553 | -.0241 | -.0524 | 2354. |
| .0800 | -257. | 163. | -506. | -440. | -117. | -197. | .0154 | -.0019 | -.0068 | -.0712 | -.0210 | -.0628 | 2070. |
| .0810 | -263. | 178. | -378. | -318. | -171. | -201. | .0156 | .0002 | -.0088 | -.0142 | -.0184 | -.0714 | 1724. |
| .0820 | -277. | 177. | -227. | -186. | -229. | -225. | .0148 | .0018 | -.0103 | .0055 | -.0126 | -.0807 | 1550. |
| .0830 | -280. | 185. | -80. | -78. | -266. | -252. | .0133 | .0032 | -.0115 | .0223 | -.0029 | -.0893 | 1564. |
| .0840 | -240. | 236. | 49. | -27. | -232. | -248. | .0118 | .0053 | -.0125 | .0380 | .0093 | -.0936 | 1419. |
| .0850 | -151. | 322. | 150. | -18. | -133. | -213. | .0106 | .0080 | -.0135 | .0529 | .0221 | -.0945 | 1051. |
| .0860 | -54. | 409. | 250. | -8. | -20. | -170. | .0095 | .0105 | -.0143 | .0669 | .0343 | -.0944 | 714. |
| .0870 | 29. | 480. | 337. | 13. | 81. | -125. | .0083 | .0132 | -.0149 | .0806 | .0458 | -.0915 | 623. |
| .0880 | 95. | 521. | 442. | 43. | 157. | -85. | .0071 | .0162 | -.0155 | .0934 | .0568 | -.0836 | 767. |
| .0890 | 129. | 515. | 565. | 105. | 188. | -66. | .0058 | .0191 | -.0159 | .1052 | .0665 | -.0728 | 938. |
| .0900 | 137. | 467. | 679. | 209. | 177. | -57. | .0047 | .0217 | -.0163 | .1163 | .0731 | -.0614 | 1166. |
| .0910 | 141. | 409. | 770. | 312. | 167. | -36. | .0039 | .0243 | -.0167 | .1265 | .0767 | -.0480 | 1489. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.32.

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

| | | | | | | | | | | | | | |
|-------|-------|------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|-------|
| .0000 | -257. | 163. | 506. | -440. | -117. | -197. | .0154 | -.0019 | -.0068 | -.0362 | -.0210 | -.0628 | 2070. |
| .0010 | -263. | 178. | -378. | -318. | -171. | -201. | .0156 | .0002 | -.0088 | -.0142 | -.0184 | -.0714 | 1724. |
| .0020 | -277. | 177. | -227. | -186. | -229. | -225. | .0148 | .0018 | -.0103 | .0055 | -.0126 | -.0807 | 1550. |
| .0030 | -280. | 185. | -80. | -78. | -266. | -252. | .0133 | .0032 | -.0115 | .0223 | -.0029 | -.0893 | 1564. |
| .0040 | -240. | 236. | 49. | -27. | -232. | -248. | .0118 | .0053 | -.0125 | .0380 | .0093 | -.0936 | 1419. |
| .0050 | -151. | 322. | 159. | -18. | -133. | -213. | .0106 | .0080 | -.0135 | .0529 | .0221 | -.0945 | 1051. |
| .0060 | -54. | 409. | 250. | -8. | -20. | -170. | .0095 | .0105 | -.0143 | .0669 | .0343 | -.0944 | 714. |
| .0070 | 29. | 480. | 337. | 13. | 81. | -125. | .0083 | .0132 | -.0149 | .0806 | .0458 | -.0915 | 623. |
| .0080 | 95. | 521. | 442. | 43. | 157. | -85. | .0071 | .0162 | -.0155 | .0934 | .0568 | -.0836 | 767. |
| .0090 | 129. | 515. | 565. | 105. | 188. | -66. | .0058 | .0191 | -.0159 | .1052 | .0665 | -.0728 | 938. |
| .0000 | 133. | 467. | 679. | 209. | 177. | -57. | .0047 | .0217 | -.0163 | .1163 | .0731 | -.0614 | 1166. |
| .0010 | 141. | 409. | 770. | 313. | 167. | -36. | .0039 | .0243 | -.0167 | .1265 | .0767 | -.0480 | 1489. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

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 | 61 | MEMBER | 1 | SEQUENCE | 86 | LOCATION | BEG | TYPE | RU | | | | | | |
|---------|-------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|--------|--|
| 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 | 163. | 357. | 838. | 379. | 177. | -9. | .0032 | .0267 | -.0169 | .1325 | .0796 | -.0330 | 1746. | | |
| .0930 | 170. | 302. | 875. | 408. | 184. | 4. | .0020 | .0285 | -.0164 | .1311 | .0832 | -.0207 | 1867. | | |
| .0940 | 163. | 251. | 867. | 407. | 187. | 7. | .0005 | .0291 | -.0153 | .1233 | .0862 | -.0121 | 1870. | | |
| .0950 | 168. | 218. | 818. | 374. | 208. | 29. | -.0007 | .0295 | -.0138 | .1130 | .0864 | -.0039 | 1789. | | |
| .0960 | 178. | 193. | 738. | 327. | 233. | 71. | -.0012 | .0300 | -.0124 | .1025 | .0826 | .0057 | 1700. | | |
| .0970 | 144. | 140. | 647. | 300. | 208. | 101. | -.0014 | .0302 | -.0109 | .0918 | .0759 | .0158 | 1581. | | |
| .0980 | 52. | 46. | 560. | 301. | 115. | 104. | -.0015 | .0300 | -.0092 | .0805 | .0675 | .0266 | 1414. | | |
| .0990 | -65. | -69. | 479. | 316. | -12. | 98. | -.0015 | .0298 | -.0076 | .0700 | .0567 | .0391 | 1382. | | |
| .1000 | -175. | -181. | 379. | 338. | -136. | 103. | -.0008 | .0296 | -.0063 | .0615 | .0422 | .0519 | 1579. | | |
| .1010 | -265. | -272. | 248. | 351. | -238. | 123. | .0004 | .0293 | -.0052 | .0542 | .0248 | .0628 | 1842. | | |
| .1020 | -331. | -331. | 92. | 325. | -305. | 147. | .0018 | .0288 | -.0041 | .0453 | .0072 | .0718 | 1958. | | |
| .1030 | -371. | -353. | -80. | 245. | -330. | 170. | .0035 | .0280 | -.0029 | .0340 | -.0091 | .0791 | 1858. | | |
| .1040 | -379. | -337. | -270. | 128. | -314. | 197. | .0056 | .0272 | -.0017 | .0217 | -.0251 | .0842 | 1635. | | |
| .1050 | -351. | -289. | -471. | -8. | -259. | 232. | .0084 | .0265 | -.0008 | .0106 | -.0422 | .0870 | 1452. | | |
| .1060 | -291. | -226. | -661. | -143. | -181. | 265. | .0117 | .0257 | -.0001 | .0008 | -.0603 | .0877 | 1468. | | |
| .1070 | -222. | -173. | -818. | -259. | -109. | 275. | .0151 | .0245 | .0005 | -.0088 | -.0782 | .0851 | 1640. | | |
| .1080 | -154. | -141. | -930. | -340. | -56. | 247. | .0181 | .0226 | .0011 | -.0194 | -.0945 | .0778 | 1770. | | |
| .1090 | -71. | -136. | -998. | -394. | -5. | 191. | .0209 | .0202 | .0016 | -.0302 | -.1094 | .0669 | 1826. | | |
| .1100 | 37. | -113. | -1041. | -443. | 77. | 144. | .0238 | .0179 | .0018 | -.0393 | -.1230 | .0551 | 1972. | | |
| .1110 | 170. | -99. | -1047. | -474. | 165. | 77. | .0263 | .0150 | .0021 | -.0497 | -.1338 | .0387 | 2119. | | |
| .1120 | 309. | -100. | -1011. | -482. | 246. | -19. | .0280 | .0111 | .0028 | -.0623 | -.1410 | .0173 | 2261. | | |
| .1130 | 447. | -92. | -947. | -486. | 338. | -103. | .0298 | .0077 | .0035 | -.0729 | -.1456 | -.0031 | 2507. | | |
| .1140 | 574. | -74. | -864. | -475. | 426. | -163. | .0319 | .0050 | .0040 | -.0790 | -.1483 | -.0204 | 2749. | | |
| .1150 | 654. | -79. | -746. | -429. | 470. | -232. | .0337 | .0026 | .0047 | -.0826 | -.1475 | -.0364 | 2827. | | |
| .1160 | 687. | -110. | -584. | -354. | 467. | -314. | .0347 | .0002 | .0057 | -.0850 | -.1423 | -.0507 | 2776. | | |
| .1170 | 695. | -150. | -397. | -260. | 443. | -387. | .0351 | -.0016 | .0066 | -.0845 | -.1340 | -.0621 | 2684. | | |
| .1180 | 694. | -175. | -225. | -153. | 421. | -424. | .0352 | -.0027 | .0071 | -.0790 | -.1240 | -.0703 | 2574. | | |
| .1190 | 690. | -194. | -57. | -50. | 409. | -446. | .0348 | -.0034 | .0075 | -.0724 | -.1103 | -.0773 | 2536. | | |
| .1200 | 695. | -190. | 106. | 11. | 426. | -452. | .0338 | -.0034 | .0079 | -.0663 | -.0914 | -.0809 | 2593. | | |
| .1210 | 705. | -141. | 233. | 19. | 476. | -415. | .0327 | -.0022 | .0081 | -.0586 | -.0690 | -.0795 | 2637. | | |
| .1220 | 701. | -71. | 322. | 10. | 527. | -356. | .0313 | -.0006 | .0084 | -.0497 | -.0451 | -.0769 | 2652. | | |
| .1230 | 682. | 8. | 391. | 2. | 561. | -276. | .0297 | .0015 | .0088 | -.0393 | -.0215 | -.0738 | 2609. | | |
| .1240 | 637. | 72. | 469. | 6. | 555. | -192. | .0277 | .0038 | .0094 | -.0278 | .0011 | -.0694 | 2452. | | |
| .1250 | 540. | 96. | 555. | 56. | 473. | -120. | .0254 | .0064 | .0100 | -.0141 | .0214 | -.0643 | 2052. | | |
| .1260 | 381. | 80. | 631. | 163. | 315. | -55. | .0233 | .0094 | .0103 | .0034 | .0380 | -.0579 | 1499. | | |
| .1270 | 203. | 35. | 713. | 291. | 126. | -2. | .0217 | .0129 | .0101 | .0221 | .0523 | -.0494 | 1322. | | |
| .1280 | 44. | -2. | 783. | 385. | -40. | 62. | .0205 | .0171 | .0095 | .0403 | .0654 | -.0381 | 1637. | | |
| .1290 | -106. | -21. | 814. | 440. | -182. | 123. | .0193 | .0212 | .0089 | .0545 | .0777 | -.0294 | 2053. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

| | | | | | | | | | | | | | |
|-------|-------|-------|------|-------|-------|-------|-------|--------|-------|--------|--------|--------|-------|
| .1180 | 694. | -175. | 215. | -173. | 421. | -424. | .0352 | -.0027 | .0071 | -.0790 | -.1240 | -.0703 | 2574. |
| .1190 | 690. | -194. | -57. | -50. | 409. | -446. | .0348 | -.0034 | .0075 | -.0724 | -.1103 | -.0773 | 2536. |
| .1200 | 695. | -190. | 106. | 11. | 426. | -452. | .0338 | -.0034 | .0079 | -.0663 | -.0914 | -.0809 | 2593. |
| .1210 | 705. | -141. | 277. | 10. | 476. | -415. | .0327 | -.0022 | .0081 | -.0586 | -.0690 | -.0795 | 2637. |
| .1220 | 701. | -71. | 322. | 10. | 527. | -356. | .0313 | -.0006 | .0084 | -.0497 | -.0451 | -.0769 | 2652. |
| .1230 | 682. | 0. | 391. | 2. | 561. | -276. | .0297 | .0015 | .0088 | -.0393 | -.0215 | -.0738 | 2609. |
| .1240 | 630. | 77. | 469. | 6. | 557. | -192. | .0277 | .0030 | .0094 | -.0272 | .0011 | -.0694 | 2452. |
| .1250 | 540. | 96. | 555. | 56. | 477. | -120. | .0254 | .0064 | .0100 | -.041 | .0214 | -.0643 | 2052. |
| .1260 | 381. | 80. | 631. | 163. | 315. | -55. | .0233 | .0094 | .0103 | .0034 | .0380 | -.0579 | 1499. |
| .1270 | 203. | 35. | 713. | 291. | 126. | -2. | .0217 | .0129 | .0101 | .0221 | .0523 | -.0494 | 1322. |
| .1280 | 44. | -2. | 783. | 395. | -40. | 62. | .0205 | .0171 | .0095 | .0403 | .0654 | -.0381 | 1637. |
| .1290 | -106. | -21. | 814. | 440. | -182. | 123. | .0193 | .0212 | .0089 | .0545 | .0777 | -.0294 | 2053. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

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 | G1 | MEMBER | 1 | SEQUENCE | 06 | LOCATION | BEG | TYPE | RU | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|
| 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 | -246. | -18. | 787. | 457. | -296. | 174. | | .0180 | .0244 | .0085 | .0628 | .0888 | -.0273 | 2384. | |
| .1310 | -341. | 37. | 710. | 405. | -343. | 247. | | .0170 | .0273 | .0084 | .0666 | .0979 | -.0283 | 2444. | |
| .1320 | -397. | 121. | 616. | 293. | -338. | 326. | | .0165 | .0303 | .0084 | .0661 | .1054 | -.0298 | 2310. | |
| .1330 | -469. | 199. | 508. | 175. | -346. | 388. | | .0166 | .0330 | .0085 | .0633 | .1104 | -.0315 | 2286. | |
| .1340 | -580. | 240. | 399. | 94. | -399. | 422. | | .0173 | .0354 | .0087 | .0605 | .1117 | -.0328 | 2455. | |
| .1350 | -689. | 248. | 316. | 44. | -469. | 445. | | .0186 | .0380 | .0085 | .0591 | .1089 | -.0305 | 2705. | |
| .1360 | -771. | 230. | 267. | 18. | -535. | 464. | | .0203 | .0407 | .0081 | .0588 | .1025 | -.0247 | 2958. | |
| .1370 | -845. | 164. | 246. | 41. | -622. | 442. | | .0215 | .0423 | .0077 | .0561 | .0934 | -.0212 | 3190. | |
| .1380 | -891. | 80. | 217. | 94. | -695. | 407. | | .0226 | .0430 | .0071 | .0527 | .0814 | -.0193 | 3383. | |
| .1390 | -851. | 27. | 175. | 116. | -680. | 399. | | .0246 | .0442 | .0060 | .0501 | .0673 | -.0134 | 3326. | |
| .1400 | -725. | 17. | 127. | 74. | -569. | 417. | | .0275 | .0461 | .0046 | .0469 | .0535 | -.0016 | 2961. | |
| .1410 | -581. | 24. | 67. | 0. | -429. | 428. | | .0303 | .0478 | .0034 | .0408 | .0412 | -.0112 | 2530. | |
| .1420 | -447. | 20. | 9. | -65. | -304. | 410. | | .0327 | .0483 | .0028 | .0315 | .0292 | .0205 | 2148. | |
| .1430 | -282. | 26. | -48. | -121. | -159. | 408. | | .0353 | .0488 | .0022 | .0238 | .0143 | .0300 | 1898. | |
| .1440 | -85. | 37. | -89. | -167. | 6. | 429. | | .0386 | .0497 | .0013 | .0198 | -.0034 | .0424 | 1921. | |
| .1450 | 73. | 10. | -104. | -174. | 122. | 422. | | .0415 | .0503 | .0005 | .0163 | -.0209 | .0549 | 1971. | |
| .1460 | 158. | -67. | -97. | -137. | 164. | 367. | | .0436 | .0500 | -.0002 | .0115 | -.0359 | .0658 | 1774. | |
| .1470 | 226. | -161. | -70. | -92. | 189. | 295. | | .0452 | .0492 | -.0008 | .0058 | -.0491 | .0755 | 1511. | |
| .1480 | 331. | -222. | -52. | -75. | 260. | 256. | | .0468 | .0486 | -.0016 | .0012 | -.0620 | .0851 | 1554. | |
| .1490 | 434. | -254. | -59. | -80. | 343. | 229. | | .0477 | .0472 | -.0020 | -.0053 | -.0734 | .0897 | 1752. | |
| .1500 | 491. | -279. | -89. | -101. | 397. | 177. | | .0472 | .0442 | -.0014 | -.0169 | -.0806 | .0867 | 1862. | |
| .1510 | 521. | -274. | -133. | -167. | 447. | 129. | | .0458 | .0405 | -.0001 | -.0317 | -.0830 | .0809 | 2062. | |
| .1520 | 546. | -240. | -178. | -276. | 506. | 97. | | .0436 | .0366 | .0016 | -.0476 | -.0813 | .0753 | 2440. | |
| .1530 | 538. | -206. | -225. | -374. | 531. | 66. | | .0404 | .0320 | .0037 | -.0630 | -.0777 | .0672 | 2723. | |
| .1540 | 472. | -205. | -266. | -409. | 481. | 14. | | .0358 | .0259 | .0063 | -.0773 | -.0731 | .0534 | 2636. | |
| .1550 | 382. | -226. | -285. | -401. | 389. | -38. | | .0300 | .0192 | .0089 | -.0887 | -.0675 | .0381 | 2335. | |
| .1560 | 280. | -247. | -277. | -383. | 285. | -71. | | .0232 | .0126 | .0113 | -.0965 | -.0596 | .0255 | 2012. | |
| .1570 | 157. | -295. | -237. | -338. | 133. | -131. | | .0148 | .0053 | .0140 | -.1043 | -.0479 | .0110 | 1610. | |
| .1580 | -10. | -353. | -201. | -261. | -57. | -202. | | .0053 | -.0029 | .0169 | -.1109 | -.0342 | -.0073 | 1400. | |
| .1590 | -151. | -365. | -187. | -200. | -213. | -232. | | -.0043 | -.0106 | .0196 | -.1129 | -.0205 | -.0252 | 1556. | |
| .1600 | -240. | -323. | -178. | -186. | -314. | -223. | | -.0141 | -.0175 | .0221 | -.1125 | -.0056 | -.0418 | 1787. | |
| .1610 | -361. | -263. | -165. | -189. | -421. | -225. | | -.0245 | -.0246 | .0250 | -.1127 | .0120 | -.0612 | 2141. | |
| .1620 | -503. | -193. | -162. | -185. | -548. | -237. | | -.0353 | -.0317 | .0279 | -.1117 | .0306 | -.0836 | 2610. | |
| .1630 | -614. | -99. | -156. | -187. | -643. | -231. | | -.0453 | -.0374 | .0300 | -.1058 | .0476 | -.1037 | 2956. | |
| .1640 | -658. | 27. | -140. | -199. | -673. | -184. | | -.0537 | -.0409 | .0309 | -.0925 | .0614 | -.1179 | 3030. | |
| .1650 | -683. | 150. | -114. | -191. | -688. | -135. | | -.0610 | -.0428 | .0306 | -.0741 | .0727 | -.1294 | 3034. | |
| .1660 | -716. | 239. | -64. | -147. | -723. | -124. | | -.0677 | -.0441 | .0297 | -.0546 | .0828 | -.1413 | 3120. | |
| .1670 | -710. | 370. | -1. | -98. | -725. | -110. | | -.0730 | -.0438 | .0278 | -.0322 | .0899 | -.1501 | 3089. | |

ADLPIPE PAGE 2401

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|--------|--------|--------|-------|
| .1570 | 157. | -295. | -237. | -238. | 133. | -131. | .0148 | .0053 | .0140 | -.0965 | -.0596 | .0255 | 2012. |
| .1580 | -10. | -353. | -201. | -261. | -57. | -202. | .0053 | -.0029 | .0169 | -.1109 | -.0342 | -.0073 | 1400. |
| .1590 | -151. | -365. | -187. | -200. | -213. | -232. | -.0043 | -.0106 | .0196 | -.1129 | -.0205 | -.0252 | 1556. |
| .1600 | -249. | -323. | -170. | -176. | -314. | -223. | -.0141 | -.0175 | .0221 | -.1125 | -.0056 | -.0418 | 1787. |
| .1610 | -361. | -263. | -165. | -159. | -421. | -225. | -.0245 | -.0246 | .0250 | -.1127 | .0120 | -.0612 | 2141. |
| .1620 | -507. | -193. | -162. | -185. | -540. | -237. | -.0353 | -.0317 | .0279 | -.1117 | .0306 | -.0836 | 2610. |
| .1630 | -614. | -99. | -156. | -187. | -643. | -231. | -.0453 | -.0374 | .0300 | -.1058 | .0476 | -.1037 | 2956. |
| .1640 | -658. | 27. | -140. | -199. | -673. | -184. | -.0537 | -.0409 | .0309 | -.0925 | .0614 | -.1179 | 3030. |
| .1650 | -683. | 150. | -114. | -191. | -688. | -135. | -.0610 | -.0428 | .0306 | -.0741 | .0727 | -.1294 | 3034. |
| .1660 | -716. | 239. | -64. | -147. | -723. | -124. | -.0677 | -.0441 | .0297 | -.0546 | .0828 | -.1413 | 3120. |
| .1670 | -710. | 370. | -1. | -98. | -725. | -110. | -.0730 | -.0438 | .0278 | -.0322 | .0899 | -.1501 | 3089. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

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18.29.32.

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 | MEMBER | SEQUENCE | LOCATION | BEG | TYPE | RU | 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) | (PSI) |
| .1680 | -635. | 441. | 67. | -61. | -665. | -67. | -.0762 | -.0415 | .0248 | -.0057 | .0923 | -.1542 | 2800. |
| .1690 | -524. | 555. | 129. | -19. | -575. | -13. | -.0775 | -.0376 | .0211 | .0226 | .0902 | -.1558 | 2401. |
| .1700 | -418. | 647. | 195. | 34. | -493. | 18. | -.0775 | -.0330 | .0171 | .0495 | .0856 | -.1562 | 2065. |
| .1710 | -301. | 715. | 274. | 86. | -406. | 31. | -.0759 | -.0274 | .0127 | .0742 | .0792 | -.1529 | 1739. |
| .1720 | -152. | 781. | 348. | 124. | -283. | 66. | -.0724 | -.0202 | .0075 | .0992 | .0697 | -.1426 | 1320. |
| .1730 | 11. | 817. | 422. | 169. | -150. | 94. | -.0676 | -.0125 | .0020 | .1215 | .0581 | -.1287 | 1021. |
| .1740 | 162. | 806. | 493. | 232. | -32. | 96. | -.0624 | -.0051 | -.0036 | .1383 | .0455 | -.1138 | 1056. |
| .1750 | 307. | 763. | 552. | 295. | 86. | 91. | -.0567 | .0020 | -.0092 | .1499 | .0326 | -.0964 | 1339. |
| .1760 | 457. | 699. | 601. | 376. | 219. | 91. | -.0506 | .0090 | -.0146 | .1556 | .0203 | -.0748 | 1716. |
| .1770 | 588. | 620. | 625. | 349. | 351. | 96. | -.0444 | .0155 | -.0196 | .1550 | .0095 | -.0495 | 2105. |
| .1780 | 669. | 514. | 621. | 348. | 451. | 88. | -.0383 | .0208 | -.0238 | .1470 | .0007 | -.0231 | 2406. |
| .1790 | 706. | 398. | 580. | 326. | 525. | 86. | -.0326 | .0249 | -.0270 | .1328 | -.0065 | .0045 | 2605. |
| .1800 | 714. | 282. | 511. | 270. | 586. | 100. | -.0274 | .0281 | -.0293 | .1130 | -.0117 | .0338 | 2725. |
| .1810 | 675. | 146. | 428. | 200. | 606. | 100. | -.0236 | .0293 | -.0304 | .0861 | -.0142 | .0612 | 2696. |
| .1820 | 575. | -12. | 317. | 136. | 570. | 89. | -.0212 | .0286 | -.0305 | .0542 | -.0144 | .0850 | 2473. |
| .1830 | 436. | -181. | 184. | 76. | 496. | 74. | -.0202 | .0262 | -.0298 | .0192 | -.0130 | .1056 | 2115. |
| .1840 | 287. | -343. | 40. | 2. | 411. | 67. | -.0203 | .0227 | -.0286 | -.0170 | -.0099 | .1243 | 1737. |
| .1850 | 110. | -498. | -114. | -80. | 305. | 57. | -.0217 | .0180 | -.0268 | -.0540 | -.0049 | .1391 | 1335. |
| .1860 | -87. | -647. | -279. | -154. | 158. | 29. | -.0246 | .0117 | -.0243 | -.0912 | .0014 | .1466 | 927. |
| .1870 | -298. | -761. | -462. | -231. | -4. | 11. | -.0283 | .0047 | -.0214 | -.1255 | .0076 | .1481 | 966. |
| .1880 | -498. | -828. | -647. | -323. | -160. | 7. | -.0325 | -.0026 | -.0181 | -.1550 | .0130 | .1446 | 1506. |
| .1890 | -696. | -853. | -828. | -417. | -321. | 9. | -.0371 | -.0099 | -.0146 | -.1787 | .0176 | .1354 | 2198. |
| .1900 | -903. | -847. | -999. | -495. | -501. | 2. | -.0420 | -.0173 | -.0110 | -.1960 | .0213 | .1199 | 2940. |
| .1910 | -1093. | -809. | -1146. | -558. | -676. | -13. | -.0469 | -.0243 | -.0077 | -.2058 | .0238 | .0993 | 3659. |
| .1920 | -1228. | -721. | -1270. | -615. | -808. | -11. | -.0512 | -.0301 | -.0052 | -.2058 | .0243 | .0764 | 4237. |
| .1930 | -1307. | -591. | -1363. | -663. | -892. | -2. | -.0551 | -.0349 | -.0033 | -.1972 | .0235 | .0504 | 4637. |
| .1940 | -1341. | -437. | -1418. | -692. | -943. | -8. | -.0589 | -.0392 | -.0020 | -.1827 | .0224 | .0200 | 4882. |
| .1950 | -1322. | -255. | -1432. | -708. | -949. | -21. | -.0624 | -.0428 | -.0010 | -.1628 | .0212 | -.0135 | 4944. |
| .1960 | -1229. | -40. | -1407. | -718. | -891. | -23. | -.0650 | -.0452 | -.0007 | -.1364 | .0188 | -.0468 | 4776. |
| .1970 | -1075. | 193. | -1337. | -710. | -782. | -17. | -.0666 | -.0465 | -.0007 | -.1045 | .0154 | -.0784 | 4408. |
| .1980 | -892. | 415. | -1212. | -666. | -657. | -24. | -.0676 | -.0471 | -.0009 | -.0691 | .0116 | -.1080 | 3905. |
| .1990 | -690. | 606. | -1027. | -576. | -530. | -48. | -.0679 | -.0472 | -.0013 | -.0313 | .0079 | -.1340 | 3271. |
| .2000 | -458. | 761. | -783. | -440. | -391. | -76. | -.0675 | -.0465 | -.0019 | .0083 | .0036 | -.1543 | 2478. |
| .2010 | -195. | 874. | -489. | -262. | -237. | -107. | -.0664 | -.0452 | -.0028 | .0487 | -.0012 | -.1678 | 1539. |
| .2020 | 84. | 937. | -160. | -44. | -76. | -146. | -.0648 | -.0436 | -.0039 | .0874 | -.0056 | -.1751 | 710. |
| .2030 | 369. | 952. | 185. | 191. | 93. | -194. | -.0628 | -.0420 | -.0050 | .1216 | -.0085 | -.1761 | 1198. |
| .2040 | 662. | 933. | 532. | 413. | 281. | -240. | -.0604 | -.0403 | -.0060 | .1494 | -.0093 | -.1703 | 2314. |
| .2050 | 954. | 890. | 860. | 607. | 486. | -280. | -.0577 | -.0387 | -.0066 | .1694 | -.0082 | -.1584 | 3449. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.32.

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

| | | | | | | | | | | | | | |
|-------|--------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .1940 | -1241. | -477. | -417. | -602. | -947. | -8. | -.589 | -.0392 | -.0020 | -.1628 | .0224 | .0200 | 4882. |
| .1950 | -1322. | -255. | -1432. | -708. | -949. | -21. | -.624 | -.0428 | -.0010 | -.1364 | .0188 | -.0135 | 4944. |
| .1960 | -1229. | -40. | -1407. | -718. | -891. | -23. | -.0650 | -.0452 | -.0007 | -.1045 | .0154 | -.0784 | 4408. |
| .1970 | -1075. | 193. | -1337. | -710. | -782. | -17. | -.0666 | -.0465 | -.0007 | -.0691 | .0116 | -.1080 | 3905. |
| .1980 | -892. | 415. | -1212. | -666. | -657. | -24. | -.0676 | -.0471 | -.0009 | -.0313 | .0079 | -.1340 | 3271. |
| .1990 | -690. | 606. | -1027. | -576. | -530. | -48. | -.0679 | -.0472 | -.0013 | .0083 | .0036 | -.1543 | 2478. |
| .2000 | -458. | 761. | -783. | -440. | -391. | -76. | -.0675 | -.0465 | -.0019 | .0487 | -.0012 | -.1678 | 1539. |
| .2010 | -195. | 874. | -489. | -262. | -237. | -107. | -.0664 | -.0452 | -.0028 | .0874 | -.0056 | -.1751 | 710. |
| .2020 | 84. | 937. | -160. | -44. | -76. | -146. | -.0648 | -.0436 | -.0039 | .1216 | -.0085 | -.1761 | 1198. |
| .2030 | 369. | 952. | 185. | 191. | 93. | -194. | -.0628 | -.0420 | -.0050 | .1494 | -.0093 | -.1703 | 2314. |
| .2040 | 662. | 933. | 532. | 413. | 281. | -240. | -.0604 | -.0403 | -.0060 | .1694 | -.0082 | -.1584 | 3449. |
| .2050 | 954. | 890. | 860. | 607. | 486. | -280. | -.0577 | -.0387 | -.0066 | | | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02. 18.29.32.

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 | 01 | MEMBER | 1 | SEQUENCE | 86 | LOCATION | BEG | TYPE | RU | 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) | | | | | | | | | | |
| .2060 | 1220. | 825. | 1148. | 771. | 688. | -312. | -.0547 | -.0373 | -.0067 | .1811 | -.0059 | -.1422 | 4504. | | | |
| .2070 | 1440. | 735. | 1386. | 905. | 866. | -339. | -.0515 | -.0363 | -.0062 | .1842 | -.0030 | -.1226 | 5416. | | | |
| .2080 | 1603. | 619. | 1575. | 1005. | 1008. | -361. | -.0479 | -.0354 | -.0051 | .1791 | .0003 | -.0991 | 6129. | | | |
| .2090 | 1697. | 472. | 1712. | 1075. | 1099. | -381. | -.0442 | -.0347 | -.0035 | .1665 | .0035 | -.0721 | 6610. | | | |
| .2100 | 1709. | 291. | 1790. | 1126. | 1123. | -405. | -.0404 | -.0342 | -.0016 | .1473 | .0060 | -.0436 | 6850. | | | |
| .2110 | 1645. | 83. | 1801. | 1160. | 1084. | -430. | -.0366 | -.0340 | .0005 | .1225 | .0069 | -.0151 | 6865. | | | |
| .2120 | 1527. | -132. | 1741. | 1161. | 1007. | -446. | -.0328 | -.0338 | .0027 | .0933 | .0061 | .0128 | 6667. | | | |
| .2130 | 1361. | -339. | 1606. | 1115. | 890. | -451. | -.0291 | -.0335 | .0049 | .0601 | .0041 | .0390 | 6245. | | | |
| .2140 | 1147. | -525. | 1394. | 1018. | 746. | -448. | -.0256 | -.0333 | .0073 | .0233 | .0014 | .0619 | 5590. | | | |
| .2150 | 895. | -677. | 1105. | 866. | 582. | -433. | -.0223 | -.0330 | .0098 | -.0155 | -.0020 | .0809 | 4714. | | | |
| .2160 | 625. | -778. | 747. | 657. | 416. | -393. | -.0188 | -.0323 | .0122 | -.0538 | -.0068 | .0969 | 3638. | | | |
| .2170 | 346. | -828. | 236. | 406. | 250. | -330. | -.0152 | -.0310 | .0145 | -.0896 | -.0130 | .1098 | 2419. | | | |
| .2180 | 51. | -845. | -100. | 139. | 68. | -258. | -.0118 | -.0294 | .0167 | -.1220 | -.0201 | .1187 | 1255. | | | |
| .2190 | -254. | -840. | -538. | -121. | -132. | -188. | -.0087 | -.0277 | .0186 | -.1494 | -.0279 | .1235 | 1083. | | | |
| .2200 | -545. | -814. | -957. | -359. | -333. | -112. | -.0058 | -.0255 | .0200 | -.1696 | -.0367 | .1259 | 2097. | | | |
| .2210 | -803. | -766. | -1340. | -567. | -516. | -28. | -.0029 | -.0227 | .0206 | -.1812 | -.0464 | .1268 | 3204. | | | |
| .2220 | -1023. | -701. | -1673. | -740. | -677. | 54. | .0000 | -.0195 | .0206 | -.1848 | -.0557 | .1260 | 4194. | | | |
| .2230 | -1201. | -620. | -1943. | -879. | -810. | 128. | .0027 | -.0161 | .0201 | -.1815 | -.0635 | .1228 | 5016. | | | |
| .2240 | -1321. | -517. | -2144. | -989. | -897. | 196. | .0053 | -.0126 | .0192 | -.1721 | -.0694 | .1173 | 5631. | | | |
| .2250 | -1369. | -385. | -2271. | -1073. | -923. | 263. | .0080 | -.0091 | .0181 | -.1569 | -.0734 | .1097 | 6008. | | | |
| .2260 | -1340. | -236. | -2317. | -1123. | -894. | 323. | .0108 | -.0056 | .0167 | -.1366 | -.0757 | .0999 | 6139. | | | |
| .2270 | -1269. | -85. | -2274. | -1127. | -822. | 365. | .0136 | -.0024 | .0151 | -.1121 | -.0757 | .0881 | 6018. | | | |
| .2280 | -1137. | 53. | -2133. | -1079. | -717. | 383. | .0165 | .0006 | .0133 | -.0843 | -.0734 | .0754 | 5637. | | | |
| .2290 | -953. | 166. | -1891. | -973. | -581. | 375. | .0194 | .0033 | .0112 | -.0536 | -.0690 | .0627 | 4984. | | | |
| .2300 | -723. | 247. | -1559. | -806. | -424. | 341. | .0224 | .0057 | .0087 | -.0208 | -.0635 | .0495 | 4058. | | | |
| .2310 | -458. | 292. | -1150. | -582. | -251. | 280. | .0254 | .0075 | .0061 | .0124 | -.0562 | .0355 | 2891. | | | |
| .2320 | -165. | 307. | -683. | -320. | -65. | 195. | .0281 | .0086 | .0035 | .0441 | -.0477 | .0207 | 1589. | | | |
| .2330 | 144. | 301. | -180. | -45. | 132. | 93. | .0306 | .0091 | .0011 | .0726 | -.0372 | .0053 | 700. | | | |
| .2340 | 455. | 282. | 332. | 226. | 335. | -20. | .0327 | .0090 | -.0009 | .0968 | -.0250 | -.0104 | 1687. | | | |
| .2350 | 754. | 256. | 828. | 478. | 534. | -137. | .0346 | .0082 | -.0024 | .1157 | -.0115 | -.0263 | 3046. | | | |
| .2360 | 1030. | 229. | 1289. | 701. | 725. | -249. | .0361 | .0069 | -.0034 | .1294 | .0029 | -.0417 | 4336. | | | |
| .2370 | 1270. | 200. | 1699. | 889. | 898. | -350. | .0371 | .0053 | -.0039 | .1376 | .0179 | -.0557 | 5470. | | | |
| .2380 | 1460. | 163. | 2045. | 1041. | 1035. | -442. | .0374 | .0032 | -.0039 | .1404 | .0331 | -.0682 | 6399. | | | |
| .2390 | 1584. | 114. | 2319. | 1162. | 1125. | -522. | .0370 | .0007 | -.0035 | .1382 | .0481 | -.0788 | 7092. | | | |
| .2400 | 1642. | 57. | 2510. | 1249. | 1165. | -584. | .0357 | -.0020 | -.0027 | .1317 | .0620 | -.0869 | 7532. | | | |
| .2410 | 1634. | -3. | 2608. | 1297. | 1156. | -620. | .0339 | -.0046 | -.0016 | .1220 | .0743 | -.0918 | 7698. | | | |
| .2420 | 1555. | -59. | 2610. | 1301. | 1097. | -627. | .0314 | -.0072 | -.0001 | .1093 | .0848 | -.0937 | 7567. | | | |
| .2430 | 1402. | -108. | 2515. | 1258. | 983. | -610. | .0283 | -.0096 | .0017 | .0934 | .0936 | -.0931 | 7131. | | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02. 18.29.32.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|--------|--------|-------|
| .2325 | -161. | 307. | -180. | -45. | 132. | 93. | .0306 | .0091 | .0011 | .0726 | -.0372 | .0053 | 1589. |
| .2330 | 144. | 301. | -180. | -45. | 132. | 93. | .0306 | .0091 | .0011 | .0726 | -.0372 | .0053 | 700. |
| .2340 | 455. | 282. | 332. | 276. | 335. | -20. | .0327 | .0090 | -.0009 | .0968 | -.0250 | -.0104 | 1687. |
| .2350 | 754. | 256. | 328. | 478. | 534. | -137. | .0346 | .0082 | -.0024 | .1157 | -.0115 | -.0263 | 3046. |
| .2360 | 1030. | 229. | 1289. | 701. | 725. | -249. | .0361 | .0069 | -.0034 | .1294 | .0029 | -.0417 | 4336. |
| .2370 | 1270. | 200. | 1690. | 879. | 890. | -350. | .0371 | .0053 | -.0039 | .1376 | .0179 | -.0557 | 5470. |
| .2380 | 1460. | 163. | 2045. | 1041. | 1035. | -442. | .0374 | .0032 | -.0039 | .1404 | .0331 | -.0682 | 6399. |
| .2390 | 1584. | 114. | 2310. | 1162. | 1125. | -522. | .0370 | .0007 | -.0035 | .1382 | .0481 | -.0788 | 7092. |
| .2400 | 1642. | 57. | 2510. | 1249. | 1165. | -584. | .0357 | -.0020 | -.0027 | .1317 | .0620 | -.0869 | 7532. |
| .2410 | 1634. | -3. | 2608. | 1297. | 1156. | -620. | .0339 | -.0046 | -.0016 | .1220 | .0743 | -.0918 | 7698. |
| .2420 | 1557. | -59. | 2610. | 1301. | 1097. | -627. | .0314 | -.0072 | -.0001 | .1093 | .0848 | -.0937 | 7567. |
| .2430 | 1402. | -108. | 2515. | 1258. | 983. | -610. | .0283 | -.0096 | .0017 | .0934 | .0936 | -.0931 | 7131. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.32.

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 | 01 | MEMBER | 1 | SEQUENCE | 06 | LOCATION | BEG | TYPE | RU | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|-----|-------|--------|--------|--------|--------|--------|--------|--|
| 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 | 1182. | -144. | 2325. | 1165. | 823. | -566. | | .0247 | -.0118 | .0040 | .0750 | .1005 | -.0903 | 6405. | |
| .2450 | 911. | -161. | 2046. | 1026. | 628. | -493. | | .0209 | -.0136 | .0066 | .0550 | .1047 | -.0855 | 5425. | |
| .2460 | 603. | -161. | 1692. | 848. | 408. | -395. | | .0170 | -.0150 | .0093 | .0343 | .1061 | -.0791 | 4259. | |
| .2470 | 260. | -149. | 1280. | 644. | 170. | -280. | | .0131 | -.0158 | .0119 | .0137 | .1046 | -.0713 | 3016. | |
| .2480 | -77. | -130. | 830. | 423. | -76. | -155. | | .0095 | -.0160 | .0141 | -.0061 | .1005 | -.0622 | 1909. | |
| .2490 | -414. | -105. | 363. | 195. | -316. | -24. | | .0063 | -.0154 | .0159 | -.0242 | .0938 | -.0516 | 1553. | |
| .2500 | -729. | -77. | -101. | -30. | -541. | 106. | | .0038 | -.0141 | .0172 | -.0401 | .0844 | -.0403 | 2303. | |
| .2510 | -1008. | -49. | -547. | -240. | -740. | 231. | | .0021 | -.0121 | .0178 | -.0534 | .0723 | -.0291 | 3388. | |
| .2520 | -1237. | -16. | -959. | -433. | -903. | 348. | | .0016 | -.0094 | .0179 | -.0635 | .0576 | -.0178 | 4424. | |
| .2530 | -1408. | 21. | -1321. | -606. | -1019. | 455. | | .0023 | -.0060 | .0172 | -.0703 | .0409 | -.0063 | 5302. | |
| .2540 | -1517. | 59. | -1618. | -754. | -1088. | 545. | | .0044 | -.0018 | .0160 | -.0742 | .0232 | .0054 | 5975. | |
| .2550 | -1562. | 90. | -1839. | -869. | -1108. | 610. | | .0077 | .0028 | .0142 | -.0754 | .0049 | .0166 | 6405. | |
| .2560 | -1534. | 114. | -1977. | -944. | -1075. | 651. | | .0122 | .0077 | .0119 | -.0738 | -.0137 | .0270 | 6558. | |
| .2570 | -1430. | 125. | -2026. | -974. | -984. | 668. | | .0177 | .0129 | .0089 | -.0695 | -.0323 | .0366 | 6416. | |
| .2580 | -1255. | 120. | -1984. | -957. | -843. | 659. | | .0240 | .0180 | .0054 | -.0631 | -.0501 | .0451 | 5992. | |
| .2590 | -1024. | 95. | -1854. | -896. | -662. | 620. | | .0309 | .0230 | .0015 | -.0553 | -.0660 | .0526 | 5320. | |
| .2600 | -749. | 50. | -1642. | -794. | -451. | 553. | | .0380 | .0277 | -.0026 | -.0467 | -.0794 | .0590 | 4456. | |
| .2610 | -439. | -9. | -1364. | -660. | -216. | 466. | | .0452 | .0319 | -.0067 | -.0375 | -.0903 | .0641 | 3492. | |
| .2620 | -107. | -74. | -1036. | -502. | 33. | 369. | | .0523 | .0357 | -.0108 | -.0279 | -.0988 | .0680 | 2602. | |
| .2630 | 227. | -143. | -675. | -328. | 282. | 263. | | .0591 | .0389 | -.0144 | -.0185 | -.1043 | .0703 | 2112. | |
| .2640 | 543. | -216. | -294. | -147. | 514. | 149. | | .0651 | .0413 | -.0176 | -.0100 | -.1063 | .0708 | 2318. | |
| .2650 | 828. | -288. | 90. | 31. | 722. | 35. | | .0701 | .0430 | -.0202 | -.0025 | -.1048 | .0699 | 3019. | |
| .2660 | 1077. | -355. | 456. | 202. | 900. | -72. | | .0741 | .0442 | -.0274 | .0044 | -.1002 | .0677 | 3862. | |
| .2670 | 1280. | -412. | 788. | 358. | 1043. | -164. | | .0769 | .0449 | -.0241 | .0112 | -.0931 | .0644 | 4655. | |
| .2680 | 1426. | -456. | 1073. | 492. | 1144. | -240. | | .0785 | .0451 | -.0254 | .0175 | -.0834 | .0599 | 5292. | |
| .2690 | 1505. | -484. | 1299. | 594. | 1194. | -298. | | .0787 | .0449 | -.0261 | .0229 | -.0711 | .0539 | 5703. | |
| .2700 | 1513. | -491. | 1450. | 659. | 1191. | -336. | | .0776 | .0444 | -.0261 | .0275 | -.0569 | .0462 | 5851. | |
| .2710 | 1451. | -471. | 1537. | 683. | 1137. | -348. | | .0754 | .0437 | -.0256 | .0318 | -.0418 | .0372 | 5724. | |
| .2720 | 1323. | -418. | 1534. | 662. | 1038. | -329. | | .0723 | .0431 | -.0247 | .0362 | -.0263 | .0271 | 5319. | |
| .2730 | 1132. | -335. | 1454. | 596. | 895. | -283. | | .0684 | .0426 | -.0233 | .0406 | -.0107 | .0163 | 4641. | |
| .2740 | 881. | -231. | 1307. | 492. | 707. | -222. | | .0638 | .0422 | -.0214 | .0444 | .0051 | .0044 | 3712. | |
| .2750 | 585. | -112. | 1104. | 359. | 484. | -147. | | .0587 | .0418 | -.0193 | .0478 | .0201 | -.0086 | 2591. | |
| .2760 | 265. | 21. | 852. | 207. | 244. | -56. | | .0533 | .0417 | -.0172 | .0519 | .0334 | -.0218 | 1356. | |
| .2770 | -62. | 164. | 566. | 41. | -1. | 48. | | .0481 | .0420 | -.0152 | .0567 | .0448 | -.0347 | 264. | |
| .2780 | -390. | 306. | 268. | -131. | -246. | 152. | | .0429 | .0426 | -.0133 | .0614 | .0547 | -.0470 | 1325. | |
| .2790 | -710. | 438. | -26. | -301. | -488. | 245. | | .0379 | .0432 | -.0114 | .0649 | .0635 | -.0588 | 2604. | |
| .2800 | -1005. | 561. | -306. | -463. | -711. | 330. | | .0334 | .0439 | -.0096 | .0679 | .0706 | -.0696 | 3799. | |
| .2810 | -1254. | 676. | -562. | -610. | -897. | 411. | | .0296 | .0448 | -.0081 | .0709 | .0752 | -.0787 | 4841. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.32.

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

| | | | | | | | | | | | | | |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|-------|
| .2710 | 1451. | -471. | 1537. | 683. | 1137. | -348. | .0754 | .0437 | -.0256 | .0318 | -.0418 | .0372 | 5724. |
| .2720 | 1323. | -418. | 1534. | 662. | 1030. | -329. | .0723 | .0431 | -.0247 | .0362 | -.0263 | .0271 | 5319. |
| .2730 | 1132. | -335. | 1454. | 596. | 895. | -283. | .0684 | .0426 | -.0233 | .0406 | -.0107 | .0163 | 4641. |
| .2740 | 881. | -231. | 1307. | 492. | 707. | -222. | .0638 | .0422 | -.0214 | .0444 | .0051 | .0044 | 3712. |
| .2750 | 585. | -112. | 1104. | 359. | 484. | -147. | .0587 | .0418 | -.0193 | .0478 | .0201 | -.0086 | 2591. |
| .2760 | 265. | 21. | 852. | 207. | 244. | -56. | .0533 | .0417 | -.0172 | .0519 | .0334 | -.0218 | 1356. |
| .2770 | -62. | 164. | 566. | 41. | -1. | 48. | .0481 | .0420 | -.0152 | .0567 | .0448 | -.0347 | 264. |
| .2780 | -390. | 306. | 268. | -131. | -246. | 152. | .0429 | .0426 | -.0133 | .0614 | .0547 | -.0470 | 1325. |
| .2790 | -710. | 438. | -26. | -301. | -488. | 245. | .0379 | .0432 | -.0114 | .0649 | .0635 | -.0588 | 2604. |
| .2800 | -1005. | 561. | -306. | -463. | -711. | 330. | .0334 | .0439 | -.0096 | .0679 | .0706 | -.0696 | 3799. |
| .2810 | -1254. | 676. | -562. | -610. | -897. | 411. | .0296 | .0448 | -.0081 | .0709 | .0752 | -.0787 | 4841. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.32.

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 | 61 | MEMBER | 1 | SEQUENCE | 86 | LOCATION | BEG | TYPE | RU | | | | | | |
|---------|--------|--------|--------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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) | | |
| .2820 | -1450. | 775. | -777. | -737. | -1041. | 483. | .0266 | .0459 | -.0067 | .0734 | .0779 | -.0856 | 5692. | | |
| .2830 | -1596. | 846. | -934. | -834. | -1150. | 530. | .0242 | .0467 | -.0054 | .0743 | .0796 | -.0905 | 6330. | | |
| .2840 | -1690. | 880. | -1025. | -892. | -1224. | 549. | .0223 | .0472 | -.0042 | .0736 | .0802 | -.0932 | 6724. | | |
| .2850 | -1718. | 880. | -1049. | -903. | -1251. | 549. | .0211 | .0476 | -.0033 | .0729 | .0790 | -.0925 | 6837. | | |
| .2860 | -1672. | 848. | -1005. | -869. | -1225. | 537. | .0209 | .0481 | -.0028 | .0728 | .0755 | -.0877 | 6655. | | |
| .2870 | -1564. | 780. | -893. | -791. | -1155. | 504. | .0213 | .0484 | -.0026 | .0724 | .0706 | -.0791 | 6208. | | |
| .2880 | -1409. | 675. | -717. | -671. | -1055. | 445. | .0220 | .0484 | -.0026 | .0710 | .0651 | -.0676 | 5538. | | |
| .2890 | -1209. | 544. | -492. | -521. | -922. | 371. | .0232 | .0481 | -.0028 | .0690 | .0585 | -.0534 | 4681. | | |
| .2900 | -957. | 406. | -239. | -356. | -746. | 296. | .0250 | .0478 | -.0031 | .0674 | .0501 | -.0361 | 3665. | | |
| .2910 | -666. | 267. | 28. | -186. | -536. | 226. | .0272 | .0475 | -.0036 | .0659 | .0401 | -.0166 | 2547. | | |
| .2920 | -358. | 129. | 296. | -18. | -309. | 152. | .0296 | .0471 | -.0041 | .0636 | .0293 | .0039 | 1441. | | |
| .2930 | -48. | -7. | 553. | 139. | -79. | 76. | .0319 | .0464 | -.0046 | .0602 | .0178 | .0243 | 739. | | |
| .2940 | 261. | -131. | 785. | 279. | 153. | 8. | .0342 | .0457 | -.0051 | .0564 | .0051 | .0446 | 1327. | | |
| .2950 | 561. | -240. | 976. | 398. | 379. | -47. | .0364 | .0450 | -.0058 | .0530 | -.0094 | .0639 | 2303. | | |
| .2960 | 830. | -333. | 1117. | 498. | 580. | -92. | .0383 | .0442 | -.0064 | .0495 | -.0254 | .0810 | 3214. | | |
| .2970 | 1052. | -413. | 1204. | 571. | 743. | -131. | .0398 | .0432 | -.0070 | .0452 | -.0420 | .0953 | 3948. | | |
| .2980 | 1221. | -474. | 1231. | 609. | 863. | -162. | .0406 | .0419 | -.0073 | .0397 | -.0589 | .1064 | 4459. | | |
| .2990 | 1334. | -509. | 1191. | 606. | 942. | -179. | .0408 | .0403 | -.0074 | .0331 | -.0759 | .1139 | 4733. | | |
| .3000 | 1389. | -516. | 1080. | 564. | 979. | -180. | .0404 | .0384 | -.0071 | .0254 | -.0929 | .1171 | 4773. | | |
| .3010 | 1387. | -494. | 892. | 481. | 976. | -165. | .0392 | .0362 | -.0065 | .0163 | -.1091 | .1161 | 4593. | | |
| .3020 | 1330. | -446. | 661. | 355. | 937. | -138. | .0372 | .0334 | -.0056 | .0053 | -.1234 | .1115 | 4220. | | |
| .3030 | 1219. | -379. | 378. | 196. | 860. | -103. | .0342 | .0301 | -.0042 | -.0078 | -.1351 | .1034 | 3707. | | |
| .3040 | 1061. | -301. | 62. | 17. | 749. | -62. | .0303 | .0262 | -.0024 | -.0223 | -.1441 | .0923 | 3139. | | |
| .3050 | 868. | -216. | -275. | -170. | 613. | -13. | .0256 | .0218 | -.0005 | -.0373 | -.1506 | .0790 | 2655. | | |
| .3060 | 651. | -128. | -613. | -356. | 459. | 44. | .0202 | .0170 | .0017 | -.0523 | -.1540 | .0646 | 2429. | | |
| .3070 | 414. | -48. | -933. | -533. | 286. | 97. | .0141 | .0116 | .0041 | -.0677 | -.1537 | .0496 | 2556. | | |
| .3080 | 160. | 18. | -1219. | -689. | 97. | 140. | .0073 | .0057 | .0067 | -.0837 | -.1491 | .0340 | 2963. | | |
| .3090 | -93. | 70. | -1462. | -818. | -95. | 176. | -.0001 | -.0007 | .0095 | -.0990 | -.1409 | .0182 | 3514. | | |
| .3100 | -323. | 114. | -1655. | -917. | -270. | 212. | -.0075 | -.0073 | .0123 | -.1125 | -.1299 | .0036 | 4085. | | |
| .3110 | -520. | 148. | -1786. | -983. | -420. | 246. | -.0148 | -.0137 | .0149 | -.1239 | -.1158 | -.0096 | 4577. | | |
| .3120 | -688. | 164. | -1844. | -1011. | -550. | 263. | -.0221 | -.0202 | .0174 | -.1337 | -.0985 | -.0214 | 4926. | | |
| .3130 | -821. | 160. | -1826. | -995. | -656. | 264. | -.0291 | -.0265 | .0195 | -.1413 | -.0785 | -.0320 | 5095. | | |
| .3140 | -902. | 142. | -1736. | -937. | -726. | 256. | -.0355 | -.0323 | .0212 | -.1451 | -.0573 | -.0405 | 5059. | | |
| .3150 | -926. | 116. | -1577. | -838. | -752. | 244. | -.0410 | -.0372 | .0221 | -.1444 | -.0559 | -.0467 | 4807. | | |
| .3160 | -902. | 79. | -1354. | -700. | -743. | 222. | -.0455 | -.0412 | .0224 | -.1395 | -.0148 | -.0511 | 4361. | | |
| .3170 | -839. | 33. | -1075. | -530. | -709. | 186. | -.0490 | -.0443 | .0221 | -.1310 | .0061 | -.0541 | 3774. | | |
| .3180 | -738. | -16. | -753. | -339. | -645. | 142. | -.0513 | -.0463 | .0211 | -.1189 | .0258 | -.0554 | 3096. | | |
| .3190 | -596. | -56. | -405. | -137. | -546. | 99. | -.0524 | -.0471 | .0195 | -.1029 | .0433 | -.0552 | 2385. | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.32.

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

| | | | | | | | | | | | | | |
|-------|-------|------|--------|--------|-------|------|--------|--------|-------|--------|--------|--------|-------|
| .3090 | -93. | 70. | -1462. | -818. | -95. | 176. | -.0001 | -.0007 | .0095 | -.0837 | -.1491 | .0340 | 2985. |
| .3100 | -323. | 114. | -1655. | -917. | -270. | 212. | -.0075 | -.0073 | .0123 | -.1125 | -.1299 | .0036 | 4085. |
| .3110 | -520. | 148. | -1786. | -983. | -420. | 246. | -.0148 | -.0137 | .0149 | -.1239 | -.1158 | -.0096 | 4577. |
| .3120 | -688. | 164. | -1844. | -1011. | -550. | 263. | -.0221 | -.0202 | .0174 | -.1337 | -.0985 | -.0214 | 4926. |
| .3130 | -821. | 160. | -1826. | -995. | -656. | 264. | -.0291 | -.0265 | .0195 | -.1413 | -.0785 | -.0320 | 5095. |
| .3140 | -902. | 142. | -1736. | -937. | -726. | 256. | -.0355 | -.0323 | .0212 | -.1451 | -.0573 | -.0405 | 5059. |
| .3150 | -926. | 116. | -1577. | -838. | -752. | 244. | -.0410 | -.0372 | .0221 | -.1444 | -.0359 | -.0467 | 4807. |
| .3160 | -907. | 79. | -1354. | -700. | -743. | 222. | -.0455 | -.0412 | .0224 | -.1395 | -.0148 | -.0511 | 4361. |
| .3170 | -839. | 33. | -1075. | -570. | -709. | 186. | -.0490 | -.0443 | .0221 | -.1310 | .0061 | -.0541 | 3774. |
| .3180 | -738. | -16. | -753. | -339. | -645. | 142. | -.0513 | -.0463 | .0211 | -.1189 | .0258 | -.0554 | 3096. |
| .3190 | -596. | -56. | -405. | -137. | -546. | 99. | -.0524 | -.0471 | .0195 | -.1029 | .0433 | -.0552 | 2385. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.32.

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 | MEMBER | SEQUENCE | LOCATION | BEG | TYPE | RU | 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) | (PSI) |
| .3200 | -420. | -86. | -48. | 69. | -419. | 59. | -.0521 | -.0466 | .0172 | -.0834 | .0578 | -.0538 | 1789. |
| .3210 | -226. | -107. | 305. | 272. | -275. | 20. | -.0507 | -.0451 | .0143 | -.0616 | .0696 | -.0518 | 1617. |
| .3220 | -23. | -119. | 643. | 462. | -122. | -19. | -.0485 | -.0426 | .0110 | -.0384 | .0788 | -.0491 | 1997. |
| .3230 | 181. | -121. | 954. | 632. | 35. | -54. | -.0454 | -.0393 | .0074 | -.0148 | .0852 | -.0454 | 2652. |
| .3240 | 377. | -114. | 1223. | 780. | 188. | -81. | -.0417 | -.0353 | .0035 | .0090 | .0884 | -.0411 | 3366. |
| .3250 | 557. | -98. | 1437. | 903. | 330. | -98. | -.0376 | -.0308 | -.0005 | .0319 | .0885 | -.0363 | 4033. |
| .3260 | 709. | -75. | 1591. | 993. | 454. | -105. | -.0333 | -.0262 | -.0045 | .0529 | .0859 | -.0308 | 4578. |
| .3270 | 825. | -47. | 1683. | 1044. | 552. | -104. | -.0291 | -.0215 | -.0081 | .0706 | .0816 | -.0245 | 4950. |
| .3280 | 896. | -19. | 1708. | 1058. | 618. | -96. | -.0252 | -.0172 | -.0113 | .0840 | .0760 | -.0178 | 5127. |
| .3290 | 921. | 11. | 1662. | 1035. | 650. | -78. | -.0216 | -.0135 | -.0139 | .0931 | .0690 | -.0106 | 5110. |
| .3300 | 907. | 42. | 1548. | 975. | 653. | -46. | -.0186 | -.0103 | -.0159 | .0976 | .0610 | -.0026 | 4904. |
| .3310 | 841. | 69. | 1375. | 882. | 626. | -6. | -.0162 | -.0079 | -.0173 | .0971 | .0526 | .0061 | 4513. |
| .3320 | 730. | 85. | 1153. | 760. | 561. | 33. | -.0147 | -.0066 | -.0179 | .0907 | .0449 | .0149 | 3946. |
| .3330 | 574. | 86. | 892. | 619. | 460. | 68. | -.0141 | -.0063 | -.0178 | .0790 | .0379 | .0234 | 3233. |
| .3340 | 387. | 78. | 598. | 463. | 337. | 105. | -.0142 | -.0071 | -.0171 | .0630 | .0313 | .0318 | 2430. |
| .3350 | 182. | 64. | 283. | 296. | 200. | 145. | -.0148 | -.0086 | -.0158 | .0437 | .0251 | .0401 | 1608. |
| .3360 | -39. | 42. | -39. | 122. | 52. | 178. | -.0160 | -.0110 | -.0140 | .0213 | .0198 | .0478 | 928. |
| .3370 | -271. | 8. | -354. | -49. | -108. | 199. | -.0176 | -.0143 | -.0118 | -.0035 | .0159 | .0543 | 967. |
| .3380 | -500. | -30. | -652. | -214. | -267. | 210. | -.0195 | -.0180 | -.0093 | -.0293 | .0128 | .0595 | 1674. |
| .3390 | -705. | -67. | -924. | -367. | -409. | 216. | -.0213 | -.0220 | -.0068 | -.0541 | .0099 | .0637 | 2464. |
| .3400 | -881. | -101. | -1159. | -500. | -531. | 215. | -.0229 | -.0260 | -.0044 | -.0767 | .0070 | .0665 | 3172. |
| .3410 | -1024. | -137. | -1346. | -606. | -633. | 199. | -.0243 | -.0299 | -.0022 | -.0966 | .0045 | .0674 | 3752. |
| .3420 | -1130. | -172. | -1477. | -683. | -713. | 167. | -.0253 | -.0336 | -.0003 | -.1128 | .0023 | .0666 | 4178. |
| .3430 | -1187. | -199. | -1550. | -730. | -759. | 125. | -.0258 | -.0368 | .0011 | -.1241 | .0000 | .0642 | 4425. |
| .3440 | -1189. | -215. | -1565. | -746. | -767. | 76. | -.0256 | -.0394 | .0019 | -.1297 | -.0026 | .0603 | 4476. |
| .3450 | -1141. | -220. | -1523. | -731. | -739. | 20. | -.0249 | -.0413 | .0022 | -.1295 | -.0055 | .0546 | 4337. |
| .3460 | -1045. | -211. | -1426. | -687. | -677. | -43. | -.0236 | -.0424 | .0019 | -.1237 | -.0083 | .0473 | 4031. |
| .3470 | -906. | -188. | -1278. | -622. | -583. | -111. | -.0218 | -.0429 | .0011 | -.1126 | -.0107 | .0389 | 3588. |
| .3480 | -727. | -150. | -1085. | -535. | -461. | -180. | -.0196 | -.0425 | -.0002 | -.0963 | -.0128 | .0296 | 3042. |
| .3490 | -519. | -101. | -856. | -428. | -316. | -248. | -.0170 | -.0416 | -.0018 | -.0753 | -.0147 | .0196 | 2450. |
| .3500 | -290. | -43. | -600. | -303. | -156. | -312. | -.0142 | -.0400 | -.0038 | -.0502 | -.0163 | .0095 | 1929. |
| .3510 | -40. | 22. | -324. | -166. | 12. | -372. | -.0113 | -.0380 | -.0061 | -.0220 | -.0171 | -.0002 | 1699. |
| .3520 | 191. | 87. | -36. | -21. | 179. | -426. | -.0086 | -.0356 | -.0085 | .0079 | -.0169 | -.0090 | 1931. |
| .3530 | 419. | 151. | 251. | 128. | 336. | -475. | -.0060 | -.0330 | -.0109 | .0386 | -.0157 | -.0170 | 2485. |
| .3540 | 630. | 214. | 524. | 274. | 480. | -512. | -.0037 | -.0303 | -.0172 | .0691 | -.0137 | -.0237 | 3146. |
| .3550 | 818. | 275. | 773. | 409. | 610. | -536. | -.0016 | -.0276 | -.0154 | .0983 | -.0108 | -.0288 | 3794. |
| .3560 | 972. | 332. | 990. | 527. | 718. | -546. | .0001 | -.0249 | -.0173 | .1249 | -.0068 | -.0323 | 4361. |
| .3570 | 1083. | 380. | 1167. | 624. | 795. | -549. | .0013 | -.0226 | -.0188 | .1474 | -.0015 | -.0343 | 4800. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.32.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .3470 | -700. | -100. | -278. | -622. | -583. | -111. | .0218 | -.0429 | .0011 | -.1126 | -.0107 | .0389 | 3588. |
| .3480 | -727. | -150. | -1085. | -531. | -461. | -180. | -.0196 | -.0425 | -.0002 | -.0963 | -.0128 | .0296 | 3042. |
| .3490 | -519. | -101. | -856. | -428. | -316. | -248. | .0170 | -.0416 | -.0018 | -.0753 | -.0147 | .0196 | 2450. |
| .3500 | -290. | -43. | -600. | -303. | -156. | -312. | -.0142 | -.0400 | -.0038 | -.0502 | -.0165 | .0095 | 1929. |
| .3510 | -49. | 22. | -724. | -166. | 10. | -372. | -.0113 | -.0380 | -.0061 | -.0220 | -.0171 | -.0002 | 1699. |
| .3520 | 191. | 87. | -36. | -21. | 179. | -476. | -.0086 | -.0356 | -.0085 | .0079 | -.0169 | -.0090 | 1931. |
| .3530 | 419. | 151. | 251. | 128. | 336. | -475. | -.0060 | -.0330 | -.0109 | .0386 | -.0157 | -.0170 | 2485. |
| .3540 | 630. | 214. | 524. | 274. | 480. | -512. | -.0037 | -.0303 | -.0172 | .0691 | -.0137 | -.0237 | 3146. |
| .3550 | 818. | 275. | 773. | 409. | 610. | -536. | -.0016 | -.0276 | -.0154 | .0983 | -.0108 | -.0288 | 3794. |
| .3560 | 972. | 332. | 990. | 527. | 718. | -546. | .0001 | -.0249 | -.0173 | .1249 | -.0068 | -.0323 | 4361. |
| .3570 | 1087. | 390. | 1167. | 624. | 795. | -549. | .0013 | -.0226 | -.0188 | .1474 | -.0015 | -.0343 | 4800. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.32.

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 | 61 | MEMBER | 1 | SEQUENCE | 06 | LOCATION | BEG | TYPE | RU | DX | DY | DZ | RX | RY | RZ | STRESS |
|---------|--------|--------|-------|----------|---------|----------|-------|--------|--------|--------|--------|--------|-------|-------|-------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (PSI) |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | | | | | | | | | |
| .3580 | 1148. | 418. | 1300. | 698. | 840. | -542. | .0021 | -.0207 | -.0198 | .1653 | .0047 | -.0351 | 5088. | | | |
| .3590 | 1169. | 447. | 1382. | 747. | 855. | -522. | .0025 | -.0191 | -.0205 | .1784 | .0112 | -.0343 | 5215. | | | |
| .3600 | 1146. | 464. | 1412. | 771. | 839. | -491. | .0027 | -.0178 | -.0208 | .1864 | .0178 | -.0321 | 5177. | | | |
| .3610 | 1075. | 466. | 1393. | 769. | 787. | -455. | .0026 | -.0170 | -.0207 | .1888 | .0245 | -.0288 | 4972. | | | |
| .3620 | 956. | 451. | 1326. | 744. | 701. | -417. | .0023 | -.0165 | -.0201 | .1853 | .0313 | -.0247 | 4609. | | | |
| .3630 | 799. | 424. | 1214. | 693. | 589. | -376. | .0019 | -.0165 | -.0193 | .1766 | .0377 | -.0197 | 4108. | | | |
| .3640 | 615. | 389. | 1060. | 619. | 459. | -328. | .0016 | -.0166 | -.0185 | .1631 | .0432 | -.0141 | 3496. | | | |
| .3650 | 409. | 347. | 869. | 523. | 317. | -277. | .0015 | -.0171 | -.0170 | .1454 | .0478 | -.0083 | 2803. | | | |
| .3660 | 187. | 298. | 651. | 409. | 166. | -228. | .0014 | -.0178 | -.0155 | .1237 | .0516 | -.0025 | 2073. | | | |
| .3670 | -42. | 246. | 415. | 280. | 12. | -181. | .0016 | -.0186 | -.0139 | .0989 | .0546 | .0032 | 1393. | | | |
| .3680 | -267. | 190. | 171. | 143. | -135. | -136. | .0019 | -.0196 | -.0123 | .0722 | .0566 | .0089 | 998. | | | |
| .3690 | -477. | 132. | -71. | 7. | -272. | -93. | .0026 | -.0207 | -.0107 | .0447 | .0573 | .0145 | 1200. | | | |
| .3700 | -668. | 72. | -301. | -121. | -395. | -55. | .0034 | -.0218 | -.0092 | .0175 | .0567 | .0198 | 1738. | | | |
| .3710 | -832. | 8. | -508. | -233. | -501. | -23. | .0045 | -.0230 | -.0079 | -.0085 | .0549 | .0250 | 2309. | | | |
| .3720 | -966. | -59. | -682. | -325. | -589. | 1. | .0057 | -.0242 | -.0067 | -.0327 | .0523 | .0302 | 2807. | | | |
| .3730 | -1064. | -127. | -817. | -393. | -654. | 17. | .0070 | -.0253 | -.0057 | -.0541 | .0487 | .0351 | 3187. | | | |
| .3740 | -1121. | -193. | -912. | -434. | -694. | 28. | .0084 | -.0265 | -.0049 | -.0720 | .0442 | .0396 | 3418. | | | |
| .3750 | -1133. | -252. | -965. | -449. | -703. | 35. | .0099 | -.0277 | -.0043 | -.0860 | .0388 | .0438 | 3484. | | | |
| .3760 | -1100. | -303. | -974. | -441. | -681. | 38. | .0113 | -.0288 | -.0039 | -.0961 | .0330 | .0476 | 3387. | | | |
| .3770 | -1025. | -345. | -940. | -411. | -629. | 34. | .0126 | -.0299 | -.0035 | -.1025 | .0272 | .0508 | 3139. | | | |
| .3780 | -911. | -378. | -867. | -360. | -551. | 26. | .0138 | -.0311 | -.0034 | -.1052 | .0213 | .0530 | 2748. | | | |
| .3790 | -759. | -399. | -759. | -290. | -445. | 16. | .0148 | -.0323 | -.0033 | -.1040 | .0152 | .0542 | 2218. | | | |
| .3800 | -572. | -407. | -623. | -205. | -315. | 6. | .0158 | -.0334 | -.0035 | -.0991 | .0088 | .0545 | 1568. | | | |
| .3810 | -363. | -405. | -463. | -108. | -169. | -7. | .0165 | -.0344 | -.0036 | -.0914 | .0024 | .0537 | 838. | | | |
| .3820 | -142. | -397. | -285. | -1. | -19. | -26. | .0170 | -.0356 | -.0038 | -.0816 | -.0038 | .0516 | 133. | | | |
| .3830 | 83. | -382. | -97. | 110. | 132. | -47. | .0172 | -.0367 | -.0039 | -.0702 | -.0098 | .0481 | 743. | | | |
| .3840 | 307. | -358. | 91. | 221. | 282. | -68. | .0173 | -.0379 | -.0040 | -.0576 | -.0159 | .0434 | 1520. | | | |
| .3850 | 524. | -328. | 269. | 326. | 424. | -86. | .0172 | -.0390 | -.0040 | -.0447 | -.0220 | .0375 | 2263. | | | |
| .3860 | 722. | -294. | 432. | 422. | 553. | -105. | .0168 | -.0402 | -.0038 | -.0325 | -.0278 | .0305 | 2934. | | | |
| .3870 | 893. | -258. | 575. | 503. | 660. | -124. | .0161 | -.0415 | -.0033 | -.0218 | -.0327 | .0225 | 3502. | | | |
| .3880 | 1033. | -222. | 691. | 566. | 747. | -142. | .0151 | -.0429 | -.0026 | -.0133 | -.0369 | .0140 | 3954. | | | |
| .3890 | 1143. | -186. | 775. | 610. | 811. | -154. | .0138 | -.0443 | -.0016 | -.0069 | -.0405 | .0053 | 4284. | | | |
| .3900 | 1216. | -152. | 822. | 635. | 850. | -160. | .0124 | -.0457 | -.0003 | -.0029 | -.0435 | -.0030 | 4480. | | | |
| .3910 | 1247. | -124. | 835. | 641. | 860. | -161. | .0106 | -.0472 | .0012 | -.0018 | -.0456 | -.0104 | 4527. | | | |
| .3920 | 1234. | -104. | 815. | 628. | 838. | -158. | .0085 | -.0487 | .0030 | -.0038 | -.0463 | -.0166 | 4419. | | | |
| .3930 | 1178. | -95. | 764. | 597. | 785. | -150. | .0061 | -.0502 | .0052 | -.0088 | -.0457 | -.0210 | 4163. | | | |
| .3940 | 1085. | -94. | 683. | 552. | 706. | -135. | .0035 | -.0516 | .0076 | -.0162 | -.0442 | -.0237 | 3782. | | | |
| .3950 | 959. | -102. | 574. | 496. | 605. | -112. | .0008 | -.0530 | .0102 | -.0256 | -.0419 | -.0243 | 3297. | | | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.33.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|------|------|------|-------|-------|--------|--------|--------|--------|--------|-------|
| .3840 | 507. | -328. | 267. | 326. | 424. | -86. | .173 | -.0379 | -.0040 | -.0576 | -.0159 | .0434 | 1520. |
| .3850 | 524. | -328. | 267. | 326. | 424. | -86. | .172 | -.0390 | -.0040 | -.0447 | -.0220 | .0375 | 2263. |
| .3860 | 720. | -294. | 432. | 422. | 552. | -105. | .168 | -.0402 | -.0038 | -.0325 | -.0278 | .0305 | 2934. |
| .3870 | 893. | -258. | 575. | 503. | 660. | -124. | .0161 | -.0415 | -.0033 | -.0218 | -.0327 | .0225 | 3502. |
| .3880 | 1033. | -222. | 691. | 566. | 747. | -142. | .0151 | -.0429 | -.0026 | -.0133 | -.0369 | .0140 | 3954. |
| .3890 | 1147. | -186. | 775. | 610. | 811. | -154. | .0138 | -.0443 | -.0016 | -.0069 | -.0405 | .0053 | 4284. |
| .3900 | 1216. | -152. | 822. | 635. | 850. | -160. | .0124 | -.0457 | -.0003 | -.0029 | -.0435 | -.0030 | 4480. |
| .3910 | 1247. | -124. | 835. | 641. | 860. | -161. | .0106 | -.0472 | .0012 | -.0018 | -.0456 | -.0104 | 4527. |
| .3920 | 1234. | -104. | 815. | 628. | 838. | -158. | .0085 | -.0487 | .0030 | -.0038 | -.0463 | -.0166 | 4419. |
| .3930 | 1178. | -95. | 764. | 597. | 785. | -150. | .0061 | -.0502 | .0052 | -.0088 | -.0457 | -.0210 | 4163. |
| .3940 | 1085. | -94. | 683. | 552. | 706. | -135. | .0035 | -.0516 | .0076 | -.0162 | -.0442 | -.0237 | 3782. |
| .3950 | 959. | -102. | 574. | 496. | 605. | -112. | .0008 | -.0530 | .0102 | -.0256 | -.0419 | -.0243 | 3297. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.35.

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 | TYPE | RU | 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) |
|---------|--------|----------|----------|------|----|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| 61 | 1 | 06 | BEG | | | .3960 | 805. | -119. | 445. | 428. | 485. | -82. | -.0021 | -.0542 | .0129 | -.0371 | -.0385 | -.0226 | 2722. |
| | | | | | | .3970 | 626. | -146. | 304. | 352. | 349. | -52. | -.0052 | -.0554 | .0158 | -.0504 | -.0338 | -.0189 | 2079. |
| | | | | | | .3980 | 429. | -182. | 155. | 272. | 200. | -21. | -.0083 | -.0564 | .0187 | -.0649 | -.0281 | -.0135 | 1412. |
| | | | | | | .3990 | 228. | -223. | 2. | 192. | 50. | 14. | -.0114 | -.0572 | .0215 | -.0796 | -.0221 | -.0065 | 830. |
| | | | | | | .4000 | 31. | -264. | -148. | 114. | -95. | 52. | -.0142 | -.0576 | .0241 | -.0934 | -.0161 | .0020 | 657. |

MAXIMUM VALUE OF STRESS OCCURS AT

| 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) |
|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| .2410 | -1634. | 3. | -2600. | -1297. | -1156. | 620. | .0339 | -.0046 | -.0016 | .1220 | .0743 | -.0918 | 7698. |

| SECTION | MEMBER | SEQUENCE | LOCATION | TYPE | RU | 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) |
|---------|--------|----------|----------|------|----|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| 61 | 1 | 07 | END | | | 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 | -.0000 | -.0000 | 2. |
| | | | | | | .0070 | 0. | 0. | -1. | 1. | -2. | 0. | -.0000 | -.0000 | .0000 | -.0000 | .0000 | -.0001 | 8. |
| | | | | | | .0080 | 1. | 1. | -2. | 2. | -3. | -0. | -.0000 | -.0000 | .0000 | -.0001 | .0000 | -.0002 | 17. |
| | | | | | | .0090 | 3. | 2. | -3. | 4. | -6. | -0. | -.0001 | -.0001 | .0000 | -.0003 | .0000 | -.0003 | 30. |
| | | | | | | .0100 | 6. | 4. | -5. | 6. | -11. | -1. | -.0002 | -.0001 | .0001 | -.0004 | .0001 | -.0006 | 51. |
| | | | | | | .0110 | 12. | 8. | -8. | 10. | -19. | -2. | -.0003 | -.0002 | .0001 | -.0007 | .0002 | -.0009 | 90. |
| | | | | | | .0120 | 21. | 13. | -13. | 17. | -32. | -2. | -.0004 | -.0003 | .0002 | -.0012 | .0005 | -.0013 | 151. |
| | | | | | | .0130 | 35. | 22. | -20. | 26. | -49. | -3. | -.0007 | -.0005 | .0002 | -.0020 | .0010 | -.0021 | 232. |
| | | | | | | .0140 | 51. | 33. | -28. | 35. | -68. | -5. | -.0011 | -.0008 | .0004 | -.0031 | .0016 | -.0032 | 320. |
| | | | | | | .0150 | 67. | 44. | -37. | 43. | -87. | -9. | -.0017 | -.0012 | .0005 | -.0042 | .0023 | -.0045 | 406. |
| | | | | | | .0160 | 83. | 55. | -45. | 48. | -105. | -14. | -.0023 | -.0016 | .0006 | -.0049 | .0028 | -.0055 | 484. |
| | | | | | | .0170 | 97. | 64. | -53. | 50. | -120. | -20. | -.0029 | -.0020 | .0007 | -.0051 | .0033 | -.0058 | 548. |
| | | | | | | .0180 | 107. | 69. | -58. | 46. | -128. | -26. | -.0034 | -.0022 | .0007 | -.0047 | .0036 | -.0055 | 579. |
| | | | | | | .0190 | 109. | 68. | -56. | 34. | -124. | -31. | -.0040 | -.0025 | .0006 | -.0037 | .0037 | -.0045 | 553. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.35.

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

| | | | | | | | | | | | | | |
|-------|------|-----|------|-----|-------|------|--------|--------|-------|--------|-------|--------|------|
| .0080 | 1. | 1. | -2. | 2. | -3. | -0. | -.0000 | -.0000 | .0000 | -.0001 | .0000 | -.0002 | 17. |
| .0090 | 3. | 2. | -3. | 4. | -6. | -0. | -.0001 | -.0001 | .0000 | -.0003 | .0000 | -.0003 | 30. |
| .0100 | 6. | 4. | -5. | 6. | -11. | -1. | -.0002 | -.0001 | .0001 | -.0004 | .0001 | -.0006 | 51. |
| .0110 | 12. | 8. | -8. | 10. | -19. | -2. | -.0003 | -.0002 | .0001 | -.0007 | .0002 | -.0009 | 90. |
| .0120 | 21. | 13. | -13. | 17. | -32. | -2. | -.0004 | -.0003 | .0002 | -.0012 | .0005 | -.0013 | 151. |
| .0130 | 35. | 22. | -20. | 26. | -49. | -3. | -.0007 | -.0005 | .0002 | -.0020 | .0010 | -.0021 | 232. |
| .0140 | 51. | 33. | -28. | 35. | -68. | -5. | -.0011 | -.0008 | .0004 | -.0031 | .0016 | -.0032 | 320. |
| .0150 | 67. | 44. | -37. | 43. | -87. | -9. | -.0017 | -.0012 | .0005 | -.0042 | .0023 | -.0045 | 406. |
| .0160 | 83. | 55. | -45. | 48. | -105. | -14. | -.0023 | -.0016 | .0006 | -.0049 | .0028 | -.0055 | 484. |
| .0170 | 97. | 64. | -53. | 50. | -120. | -20. | -.0029 | -.0020 | .0007 | -.0051 | .0033 | -.0058 | 548. |
| .0180 | 107. | 69. | -58. | 46. | -128. | -26. | -.0034 | -.0022 | .0007 | -.0047 | .0036 | -.0055 | 579. |
| .0190 | 109. | 68. | -56. | 34. | -124. | -31. | -.0040 | -.0025 | .0006 | -.0037 | .0037 | -.0045 | 553. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.33.

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 | RU | | | | | | | | |
|---------|--------|----------|----------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--|
| 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) | |
| .0200 | 100. | 58. | -47. | 12. | -105. | -32. | -.0045 | -.0026 | .0006 | -.0021 | .0036 | -.0029 | 461. | |
| .0210 | 80. | 38. | -29. | -17. | -71. | -28. | -.0050 | -.0027 | .0004 | .0000 | .0034 | -.0007 | 325. | |
| .0220 | 51. | 6. | -0. | -54. | -23. | -19. | -.0053 | -.0026 | .0002 | .0026 | .0032 | .0019 | 260. | |
| .0230 | 17. | -31. | 32. | -91. | 29. | -4. | -.0056 | -.0025 | .0000 | .0052 | .0031 | .0047 | 397. | |
| .0240 | -21. | -64. | 58. | -119. | 82. | 16. | -.0058 | -.0023 | -.0002 | .0071 | .0031 | .0070 | 607. | |
| .0250 | -65. | -92. | 80. | -146. | 144. | 33. | -.0061 | -.0022 | -.0004 | .0084 | .0024 | .0083 | 866. | |
| .0260 | -118. | -118. | 107. | -182. | 218. | 40. | -.0062 | -.0020 | -.0005 | .0102 | .0001 | .0090 | 1198. | |
| .0270 | -162. | -146. | 135. | -216. | 281. | 40. | -.0057 | -.0012 | -.0008 | .0137 | -.0031 | .0110 | 1489. | |
| .0280 | -174. | -150. | 135. | -206. | 291. | 45. | -.0045 | .0002 | -.0013 | .0173 | -.0055 | .0156 | 1500. | |
| .0290 | -163. | -121. | 111. | -158. | 270. | 56. | -.0031 | .0016 | -.0017 | .0185 | -.0071 | .0193 | 1327. | |
| .0300 | -177. | -113. | 118. | -155. | 296. | 52. | -.0021 | .0024 | -.0019 | .0186 | -.0107 | .0183 | 1409. | |
| .0310 | -215. | -135. | 146. | -177. | 348. | 43. | -.0010 | .0032 | -.0019 | .0197 | -.0154 | .0163 | 1641. | |
| .0320 | -219. | -131. | 148. | -133. | 338. | 59. | .0009 | .0048 | -.0023 | .0196 | -.0170 | .0179 | 1537. | |
| .0330 | -179. | -95. | 131. | -30. | 266. | 97. | .0035 | .0066 | -.0030 | .0166 | -.0149 | .0204 | 1189. | |
| .0340 | -160. | -81. | 132. | 42. | 225. | 125. | .0055 | .0077 | -.0034 | .0121 | -.0131 | .0187 | 1089. | |
| .0350 | -186. | -92. | 147. | 62. | 241. | 130. | .0066 | .0080 | -.0033 | .0073 | -.0132 | .0127 | 1173. | |
| .0360 | -190. | -79. | 148. | 93. | 233. | 118. | .0077 | .0081 | -.0031 | .0017 | -.0129 | .0061 | 1157. | |
| .0370 | -118. | -22. | 117. | 172. | 132. | 95. | .0097 | .0086 | -.0035 | -.0032 | -.0103 | .0027 | 990. | |
| .0380 | -0. | 60. | 49. | 285. | -39. | 61. | .0122 | .0096 | -.0041 | -.0060 | -.0061 | .0035 | 1226. | |
| .0390 | 115. | 153. | -33. | 386. | -204. | 12. | .0139 | .0100 | -.0046 | -.0091 | -.0020 | .0029 | 1823. | |
| .0400 | 200. | 236. | -88. | 426. | -301. | -56. | .0145 | .0087 | -.0046 | -.0145 | .0007 | -.0042 | 2189. | |
| .0410 | 245. | 266. | -101. | 396. | -339. | -125. | .0144 | .0067 | -.0046 | -.0182 | .0026 | -.0129 | 2238. | |
| .0420 | 285. | 263. | -120. | 388. | -406. | -155. | .0150 | .0057 | -.0051 | -.0182 | .0073 | -.0142 | 2431. | |
| .0430 | 354. | 269. | -156. | 433. | -522. | -130. | .0159 | .0050 | -.0059 | -.0192 | .0168 | -.0108 | 2882. | |
| .0440 | 390. | 246. | -149. | 423. | -569. | -88. | .0157 | .0026 | -.0062 | -.0238 | .0263 | -.0138 | 2982. | |
| .0450 | 319. | 142. | -84. | 280. | -468. | -63. | .0134 | -.0014 | -.0056 | -.0275 | .0308 | -.0243 | 2291. | |
| .0460 | 214. | 14. | -25. | 105. | -335. | -45. | .0105 | -.0055 | -.0047 | -.0279 | .0325 | -.0334 | 1475. | |
| .0470 | 216. | -30. | -28. | 27. | -337. | -16. | .0087 | -.0086 | -.0044 | -.0280 | .0369 | -.0362 | 1412. | |
| .0480 | 303. | -6. | -81. | 19. | -444. | 12. | .0078 | -.0109 | -.0045 | -.0274 | .0424 | -.0345 | 1856. | |
| .0490 | 337. | -5. | -135. | -38. | -492. | 12. | .0057 | -.0133 | -.0042 | -.0236 | .0430 | -.0336 | 2061. | |
| .0500 | 296. | -35. | -161. | -171. | -434. | -12. | .0021 | -.0165 | -.0031 | -.0196 | .0387 | -.0379 | 1949. | |
| .0510 | 263. | -51. | -169. | -209. | -365. | -27. | -.0019 | -.0201 | -.0019 | -.0189 | .0348 | -.0449 | 1973. | |
| .0520 | 249. | -57. | -197. | -364. | -344. | -3. | -.0051 | -.0223 | -.0011 | -.0181 | .0335 | -.0459 | 2090. | |
| .0530 | 203. | -89. | -221. | -395. | -323. | 51. | -.0077 | -.0229 | -.0004 | -.0146 | .0329 | -.0398 | 2140. | |
| .0540 | 107. | -155. | -204. | -462. | -230. | 107. | -.0107 | -.0234 | .0007 | -.0121 | .0305 | -.0358 | 2201. | |
| .0550 | -24. | -238. | -141. | -577. | -63. | 145. | -.0143 | -.0244 | .0024 | -.0121 | .0259 | -.0372 | 2497. | |
| .0560 | -158. | -309. | -93. | -664. | 92. | 170. | -.0178 | -.0244 | .0041 | -.0113 | .0203 | -.0361 | 2887. | |
| .0570 | -235. | -324. | -100. | -659. | 155. | 183. | -.0203 | -.0226 | .0056 | -.0091 | .0159 | -.0281 | 2926. | |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.33.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|------|--------|--------|--------|--------|-------|--------|-------|
| .0470 | 216. | -30. | -25. | 27. | -337. | -16. | .0087 | -.0086 | -.0044 | -.0280 | .0369 | -.0362 | 1412. |
| .0480 | 303. | -6. | -81. | 19. | -444. | 12. | .0078 | -.0109 | -.0045 | -.0274 | .0424 | -.0345 | 1856. |
| .0490 | 337. | -5. | -135. | -38. | -492. | 12. | .0057 | -.0133 | -.0042 | -.0236 | .0430 | -.0336 | 2061. |
| .0500 | 296. | -35. | -161. | -171. | -434. | -12. | .0021 | -.0165 | -.0031 | -.0196 | .0387 | -.0379 | 1949. |
| .0510 | 263. | -51. | -169. | -259. | -365. | -27. | -.0019 | -.0201 | -.0019 | -.0189 | .0348 | -.0449 | 1973. |
| .0520 | 240. | -57. | -197. | -364. | -344. | -3. | -.0051 | -.0223 | -.0011 | -.0181 | .0335 | -.0459 | 2090. |
| .0530 | 207. | -89. | -221. | -395. | -323. | 51. | -.0077 | -.0229 | -.0004 | -.0146 | .0329 | -.0398 | 2140. |
| .0540 | 167. | -155. | -204. | -462. | -230. | 107. | -.0107 | -.0234 | .0007 | -.0121 | .0305 | -.0358 | 2201. |
| .0550 | -24. | -238. | -141. | -577. | -63. | 145. | -.0143 | -.0244 | .0024 | -.0121 | .0259 | -.0372 | 2497. |
| .0560 | -150. | -309. | -97. | -664. | 92. | 170. | -.0178 | -.0244 | .0041 | -.0113 | .0203 | -.0361 | 2887. |
| .0570 | -235. | -324. | -100. | -659. | 155. | 183. | -.0203 | -.0226 | .0056 | -.0091 | .0159 | -.0281 | 2926. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.33.

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 | 01 | MEMBER | 1 | SEQUENCE | 07 | LOCATION | END | TYPE | RU | | | | | |
|---------|-------|--------|-------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|
| 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) |
| .0580 | -232. | -267. | -135. | -583. | 135. | 170. | | -.0219 | -.0198 | .0068 | -.0083 | .0129 | -.0184 | 2596. |
| .0590 | -218. | -179. | -166. | -505. | 125. | 114. | | -.0236 | -.0170 | .0080 | -.0083 | .0082 | -.0113 | 2222. |
| .0600 | -255. | -102. | -188. | -448. | 173. | 23. | | -.0257 | -.0137 | .0094 | -.0065 | .0006 | -.0047 | 2005. |
| .0610 | -296. | -25. | -200. | -369. | 226. | -72. | | -.0272 | -.0097 | .0105 | -.0038 | -.0065 | .0040 | 1830. |
| .0620 | -290. | 67. | -200. | -234. | 230. | -142. | | -.0272 | -.0049 | .0110 | -.0024 | -.0097 | .0156 | 1493. |
| .0630 | -282. | 140. | -180. | -75. | 229. | -180. | | -.0265 | .0005 | .0113 | -.0016 | -.0101 | .0288 | 1256. |
| .0640 | -332. | 159. | -122. | 45. | 301. | -202. | | -.0261 | .0053 | .0119 | -.0013 | -.0111 | .0389 | 1525. |
| .0650 | -414. | 139. | -15. | 112. | 439. | -221. | | -.0261 | .0089 | .0129 | -.0030 | -.0130 | .0427 | 2104. |
| .0660 | -459. | 126. | 107. | 184. | 553. | -235. | | -.0255 | .0120 | .0138 | -.0057 | -.0141 | .0446 | 2624. |
| .0670 | -434. | 152. | 180. | 313. | 575. | -243. | | -.0236 | .0156 | .0141 | -.0064 | -.0139 | .0503 | 2916. |
| .0680 | -349. | 215. | 218. | 477. | 522. | -262. | | -.0209 | .0192 | .0139 | -.0054 | -.0136 | .0572 | 3147. |
| .0690 | -233. | 299. | 248. | 619. | 452. | -302. | | -.0184 | .0215 | .0136 | -.0048 | -.0149 | .0590 | 3440. |
| .0700 | -114. | 386. | 274. | 725. | 395. | -353. | | -.0164 | .0223 | .0133 | -.0050 | -.0175 | .0553 | 3747. |
| .0710 | -0. | 460. | 296. | 811. | 340. | -387. | | -.0144 | .0221 | .0127 | -.0049 | -.0199 | .0500 | 4008. |
| .0720 | 110. | 502. | 325. | 880. | 276. | -383. | | -.0118 | .0215 | .0116 | -.0038 | -.0206 | .0457 | 4166. |
| .0730 | 205. | 493. | 373. | 918. | 218. | -330. | | -.0085 | .0204 | .0101 | -.0020 | -.0192 | .0424 | 4172. |
| .0740 | 254. | 425. | 442. | 904. | 201. | -233. | | -.0053 | .0184 | .0085 | -.0005 | -.0165 | .0378 | 3984. |
| .0750 | 246. | 302. | 532. | 812. | 249. | -112. | | -.0027 | .0148 | .0071 | -.0004 | -.0142 | .0289 | 3577. |
| .0760 | 202. | 146. | 627. | 658. | 332. | 14. | | -.0005 | .0103 | .0058 | -.0004 | -.0125 | .0170 | 3077. |
| .0770 | 171. | 1. | 681. | 503. | 373. | 136. | | .0021 | .0058 | .0040 | .0014 | -.0104 | .0076 | 2674. |
| .0780 | 185. | -93. | 667. | 386. | 329. | 245. | | .0052 | .0019 | .0015 | .0047 | -.0072 | .0024 | 2350. |
| .0790 | 229. | -137. | 602. | 277. | 236. | 322. | | .0084 | -.0021 | -.0013 | .0079 | -.0041 | -.0028 | 2028. |
| .0800 | 257. | -163. | 506. | 140. | 148. | 360. | | .0107 | -.0066 | -.0041 | .0108 | -.0029 | -.0110 | 1727. |
| .0810 | 263. | -178. | 378. | -9. | 64. | 379. | | .0122 | -.0112 | -.0068 | .0132 | -.0023 | -.0200 | 1603. |
| .0820 | 273. | -177. | 227. | -139. | -47. | 402. | | .0138 | -.0154 | -.0097 | .0143 | -.0001 | -.0276 | 1784. |
| .0830 | 280. | -185. | 80. | -263. | -169. | 437. | | .0156 | -.0188 | -.0127 | .0147 | .0038 | -.0329 | 2244. |
| .0840 | 240. | -236. | -49. | -408. | -259. | 484. | | .0175 | -.0214 | -.0155 | .0165 | .0074 | -.0354 | 2854. |
| .0850 | 151. | -322. | -159. | -574. | -304. | 534. | | .0190 | -.0233 | -.0180 | .0187 | .0104 | -.0364 | 3512. |
| .0860 | 54. | -409. | -250. | -745. | -330. | 578. | | .0203 | -.0248 | -.0202 | .0197 | .0131 | -.0378 | 4169. |
| .0870 | -29. | -480. | -337. | -896. | -364. | 605. | | .0215 | -.0255 | -.0221 | .0205 | .0154 | -.0380 | 4760. |
| .0880 | -95. | -521. | -442. | -1002. | -425. | 606. | | .0226 | -.0247 | -.0240 | .0232 | .0171 | -.0344 | 5200. |
| .0890 | -128. | -515. | -565. | -1053. | -516. | 580. | | .0238 | -.0229 | -.0258 | .0263 | .0185 | -.0285 | 5459. |
| .0900 | -133. | -467. | -679. | -1068. | -611. | 523. | | .0246 | -.0205 | -.0272 | .0282 | .0194 | -.0236 | 5580. |
| .0910 | -141. | -409. | -770. | -1066. | -676. | 445. | | .0248 | -.0177 | -.0283 | .0301 | .0192 | -.0193 | 5586. |
| .0920 | -163. | -357. | -838. | -1035. | -714. | 365. | | .0247 | -.0140 | -.0288 | .0325 | .0188 | -.0137 | 5467. |
| .0930 | -170. | -302. | -875. | -964. | -744. | 298. | | .0245 | -.0097 | -.0289 | .0336 | .0199 | -.0077 | 5234. |
| .0940 | -163. | -251. | -867. | -869. | -754. | 244. | | .0240 | -.0054 | -.0283 | .0323 | .0221 | -.0032 | 4908. |
| .0950 | -160. | -218. | -819. | -775. | -715. | 189. | | .0229 | -.0012 | -.0268 | .0305 | .0233 | -.0003 | 4474. |

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DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.33.

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