

50-305

RESPONSE TO NUREG-0737 ITEM II.D.1

Docket # *50-305*

Control # *8403280048*

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

| | | | | | | | | | | | | | |
|-------|------|------|------|-----|------|-------|-------|-------|--------|-------|--------|--------|------|
| .2400 | -4. | 44. | -89. | 92. | 13. | -85. | .0266 | .0048 | .0009 | .0156 | .0507 | -.0221 | 385. |
| .2410 | 31. | 26. | -94. | 86. | -5. | -63. | .0299 | .0068 | .0016 | .0165 | .0502 | -.0228 | 325. |
| .2420 | 76. | 4. | -91. | 79. | -22. | -39. | .0328 | .0086 | .0016 | .0192 | .0559 | -.0245 | 277. |
| .2430 | 137. | -7. | -82. | 68. | -40. | -26. | .0356 | .0103 | .0013 | .0232 | .0525 | -.0267 | 253. |
| .2440 | 202. | -14. | -70. | 55. | -58. | -19. | .0381 | .0119 | .0011 | .0277 | .0467 | -.0295 | 250. |
| .2450 | 287. | -24. | -59. | 45. | -75. | -13. | .0403 | .0136 | .0011 | .0323 | .0391 | -.0331 | 268. |
| .2460 | 370. | -26. | -47. | 36. | -88. | -20. | .0420 | .0154 | .0013 | .0369 | .0299 | -.0374 | 295. |
| .2470 | 455. | -9. | -29. | 26. | -95. | -52. | .0432 | .0174 | .0015 | .0417 | .0190 | -.0424 | 339. |
| .2480 | 531. | 17. | -5. | 21. | -95. | -100. | .0437 | .0196 | .0014 | .0467 | .0068 | -.0485 | 424. |
| .2490 | 598. | 39. | 24. | 25. | -88. | -149. | .0435 | .0220 | .0009 | .0519 | -.0065 | -.0561 | 533. |
| .2500 | 657. | 62. | 57. | 39. | -73. | -206. | .0424 | .0246 | -.0000 | .0571 | -.0202 | -.0649 | 676. |
| .2510 | 690. | 102. | 94. | 56. | -48. | -286. | .0406 | .0274 | -.0010 | .0618 | -.0336 | -.0741 | 898. |

ADLPIPE PAGE 2773

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.55.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | BEG | TYPE | VA | TIME (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) |
|---------|--------|----------|----------|-----|------|----|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| .2520 | 69 | 1 | 101 | | | | 708. | 157. | 131. | 76. | -14. | -385. | .0381 | .0304 | -.0019 | .0656 | -.0458 | -.0853 | 1195. | |
| .2530 | | | | | | | 707. | 213. | 162. | 104. | 25. | -487. | .0353 | .0335 | -.0024 | .0678 | -.0556 | -.0924 | 1515. | |
| .2540 | | | | | | | 687. | 264. | 190. | 127. | 68. | -586. | .0324 | .0366 | -.0026 | .0681 | -.0625 | -.1011 | 1842. | |
| .2550 | | | | | | | 634. | 323. | 214. | 171. | 115. | -692. | .0296 | .0398 | -.0025 | .0667 | -.0663 | -.1089 | 2197. | |
| .2560 | | | | | | | 563. | 390. | 233. | 205. | 164. | -804. | .0267 | .0428 | -.0020 | .0638 | -.0669 | -.1153 | 2573. | |
| .2570 | | | | | | | 475. | 449. | 245. | 242. | 216. | -906. | .0238 | .0455 | -.0013 | .0598 | -.0645 | -.1206 | 2927. | |
| .2580 | | | | | | | 371. | 499. | 252. | 282. | 267. | -994. | .0209 | .0480 | -.0005 | .0549 | -.0594 | -.1246 | 3247. | |
| .2590 | | | | | | | 254. | 548. | 255. | 318. | 317. | -1077. | .0183 | .0500 | .0000 | .0497 | -.0520 | -.1271 | 3548. | |
| .2600 | | | | | | | 130. | 590. | 255. | 350. | 362. | -1147. | .0161 | .0516 | .0003 | .0444 | -.0428 | -.1280 | 3810. | |
| .2610 | | | | | | | 6. | 619. | 250. | 381. | 400. | -1198. | .0143 | .0527 | .0004 | .0389 | -.0320 | -.1273 | 4013. | |
| .2620 | | | | | | | -111. | 641. | 238. | 404. | 432. | -1234. | .0130 | .0531 | .0004 | .0336 | -.0202 | -.1247 | 4164. | |
| .2630 | | | | | | | -218. | 658. | 221. | 418. | 455. | -1258. | .0122 | .0530 | .0003 | .0286 | -.0080 | -.1202 | 4264. | |
| .2640 | | | | | | | -309. | 661. | 200. | 424. | 467. | -1259. | .0121 | .0522 | -.0002 | .0244 | .0040 | -.1143 | 4283. | |
| .2650 | | | | | | | -380. | 644. | 176. | 424. | 467. | -1232. | .0127 | .0508 | -.0011 | .0210 | .0152 | -.1074 | 4211. | |
| .2660 | | | | | | | -430. | 616. | 150. | 417. | 456. | -1186. | .0140 | .0488 | -.0024 | .0188 | .0250 | -.0995 | 4069. | |
| .2670 | | | | | | | -463. | 582. | 125. | 400. | 438. | -1129. | .0158 | .0463 | -.0041 | .0180 | .0332 | -.0907 | 3877. | |
| .2680 | | | | | | | -474. | 539. | 100. | 375. | 409. | -1055. | .0182 | .0434 | -.0062 | .0184 | .0393 | -.0814 | 3628. | |
| .2690 | | | | | | | -462. | 480. | 75. | 346. | 371. | -960. | .0212 | .0400 | -.0086 | .0200 | .0434 | -.0721 | 3303. | |
| .2700 | | | | | | | -427. | 407. | 51. | 314. | 323. | -847. | .0248 | .0364 | -.0112 | .0224 | .0455 | -.0627 | 2918. | |
| .2710 | | | | | | | -374. | 335. | 27. | 276. | 270. | -729. | .0289 | .0325 | -.0136 | .0252 | .0456 | -.0531 | 2510. | |
| .2720 | | | | | | | -304. | 268. | 3. | 231. | 212. | -613. | .0334 | .0286 | -.0159 | .0284 | .0438 | -.0434 | 2096. | |
| .2730 | | | | | | | -221. | 194. | -19. | 186. | 150. | -489. | .0383 | .0246 | -.0181 | .0319 | .0402 | -.0342 | 1657. | |
| .2740 | | | | | | | -125. | 110. | -37. | 145. | 85. | -356. | .0432 | .0207 | -.0204 | .0357 | .0345 | -.0259 | 1199. | |
| .2750 | | | | | | | -20. | 35. | -50. | 106. | 22. | -235. | .0480 | .0168 | -.0229 | .0399 | .0265 | -.0182 | 785. | |
| .2760 | | | | | | | 85. | -20. | -57. | 65. | -36. | -136. | .0523 | .0132 | -.0256 | .0446 | .0169 | -.0108 | 471. | |
| .2770 | | | | | | | 186. | -71. | -59. | 29. | -88. | -43. | .0561 | .0098 | -.0283 | .0495 | .0058 | -.0044 | 310. | |
| .2780 | | | | | | | 281. | -134. | -58. | 3. | -136. | 58. | .0593 | .0066 | -.0311 | .0543 | -.0059 | .0009 | 450. | |
| .2790 | | | | | | | 370. | -191. | -53. | -17. | -180. | 148. | .0623 | .0037 | -.0338 | .0585 | -.0176 | .0057 | 711. | |
| .2800 | | | | | | | 446. | -220. | -46. | -38. | -217. | 209. | .0647 | .0011 | -.0361 | .0616 | -.0284 | .0109 | 924. | |
| .2810 | | | | | | | 506. | -238. | -43. | -58. | -247. | 254. | .0665 | -.0013 | -.0375 | .0633 | -.0375 | .0163 | 1093. | |
| .2820 | | | | | | | 555. | -261. | -44. | -70. | -272. | 304. | .0676 | -.0033 | -.0382 | .0635 | -.0445 | .0217 | 1258. | |
| .2830 | | | | | | | 593. | -280. | -49. | -77. | -293. | 345. | .0681 | -.0051 | -.0386 | .0625 | -.0497 | .0271 | 1396. | |
| .2840 | | | | | | | 617. | -275. | -51. | -85. | -308. | 358. | .0677 | -.0066 | -.0388 | .0608 | -.0536 | .0327 | 1460. | |
| .2850 | | | | | | | 620. | -258. | -50. | -91. | -313. | 358. | .0661 | -.0078 | -.0391 | .0589 | -.0566 | .0381 | 1473. | |
| .2860 | | | | | | | 604. | -253. | -50. | -88. | -310. | 367. | .0632 | -.0088 | -.0396 | .0570 | -.0586 | .0425 | 1485. | |
| .2870 | | | | | | | 571. | -255. | -49. | -77. | -300. | 381. | .0592 | -.0095 | -.0403 | .0550 | -.0597 | .0461 | 1493. | |
| .2880 | | | | | | | 517. | -244. | -43. | -67. | -286. | 382. | .0544 | -.0100 | -.0410 | .0526 | -.0598 | .0493 | 1465. | |
| .2890 | | | | | | | 443. | -230. | -37. | -59. | -266. | 379. | .0490 | -.0101 | -.0412 | .0491 | -.0579 | .0522 | 1419. | |

ADLPIPE PAGE 2774

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.55.

S/RV PIPING KEWAUNEE GEWOOF 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

| | | | | | | | | | | | | | |
|-------|------|-------|------|------|-------|------|-------|--------|--------|-------|--------|-------|-------|
| .2700 | 370. | -191. | -57. | -17. | -180. | 148. | .0623 | .0037 | -.0338 | .0585 | -.0176 | .0009 | 450. |
| .2800 | 446. | -220. | -46. | -38. | -217. | 209. | .0647 | .0011 | -.0361 | .0616 | -.0284 | .0109 | 924. |
| .2810 | 506. | -238. | -43. | -58. | -247. | 254. | .0665 | -.0013 | -.0375 | .0633 | -.0375 | .0163 | 1093. |
| .2820 | 555. | -261. | -44. | -70. | -277. | 304. | .0676 | -.0033 | -.0382 | .0635 | -.0445 | .0217 | 1258. |
| .2830 | 597. | -280. | -49. | -77. | -293. | 345. | .0681 | -.0051 | -.0386 | .0625 | -.0497 | .0271 | 1396. |
| .2840 | 617. | -275. | -51. | -85. | -308. | 358. | .0677 | -.0066 | -.0388 | .0608 | -.0536 | .0327 | 1460. |
| .2850 | 620. | -258. | -50. | -71. | -317. | 358. | .0661 | -.0078 | -.0391 | .0589 | -.0566 | .0381 | 1473. |
| .2860 | 604. | -253. | -50. | -88. | -310. | 367. | .0672 | -.0088 | -.0396 | .0570 | -.0586 | .0425 | 1485. |
| .2870 | 571. | -255. | -49. | -77. | -300. | 381. | .0592 | -.0095 | -.0403 | .0550 | -.0597 | .0461 | 1493. |
| .2880 | 517. | -244. | -47. | -67. | -286. | 382. | .0544 | -.0100 | -.0410 | .0526 | -.0598 | .0493 | 1465. |
| .2890 | 443. | -230. | -37. | -59. | -266. | 379. | .0490 | -.0101 | -.0412 | .0491 | -.0579 | .0522 | 1419. |

ADLPIPE PAGE 2774

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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 | 69 | MEMBER | 1 | SEQUENCE | 101 | LOCATION | BEG | TYPE | VA | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|-------|--------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .2900 | 352. | -230. | -39. | -47. | -244. | 389. | .0432 | -.0100 | -.0402 | .0435 | -.0529 | .0548 | 1404. | | |
| .2910 | 250. | -234. | -52. | -37. | -219. | 403. | .0373 | -.0095 | -.0377 | .0355 | -.0446 | .0576 | 1401. | | |
| .2920 | 137. | -221. | -68. | -35. | -194. | 400. | .0316 | -.0087 | -.0337 | .0250 | -.0335 | .0607 | 1355. | | |
| .2930 | 7. | -200. | -86. | -38. | -168. | 386. | .0262 | -.0075 | -.0286 | .0127 | -.0204 | .0637 | 1286. | | |
| .2940 | -121. | -193. | -108. | -37. | -142. | 384. | .0206 | -.0060 | -.0227 | -.0008 | -.0066 | .0657 | 1250. | | |
| .2950 | -246. | -192. | -129. | -31. | -112. | 383. | .0147 | -.0041 | -.0167 | -.0144 | .0064 | .0663 | 1217. | | |
| .2960 | -372. | -170. | -139. | -28. | -75. | 357. | .0082 | -.0019 | -.0111 | -.0269 | .0168 | .0657 | 1113. | | |
| .2970 | -495. | -139. | -136. | -25. | -34. | 317. | .0014 | .0006 | -.0063 | -.0379 | .0239 | .0634 | 971. | | |
| .2980 | -605. | -129. | -126. | -11. | 8. | 291. | -.0056 | .0034 | -.0023 | -.0475 | .0277 | .0590 | 887. | | |
| .2990 | -697. | -129. | -111. | 8. | 48. | 272. | -.0127 | .0063 | .0012 | -.0561 | .0286 | .0531 | 842. | | |
| .3000 | -775. | -106. | -91. | 20. | 90. | 225. | -.0194 | .0094 | .0047 | -.0638 | .0274 | .0471 | 739. | | |
| .3010 | -838. | -60. | -69. | 20. | 120. | 153. | -.0256 | .0126 | .0084 | -.0713 | .0249 | .0417 | 610. | | |
| .3020 | -876. | -32. | -52. | 21. | 158. | 97. | -.0308 | .0157 | .0125 | -.0788 | .0220 | .0362 | 566. | | |
| .3030 | -889. | -25. | -40. | 23. | 177. | 61. | -.0350 | .0187 | .0167 | -.0862 | .0187 | .0307 | 573. | | |
| .3040 | -884. | -6. | -28. | 14. | 189. | 16. | -.0383 | .0216 | .0208 | -.0927 | .0146 | .0262 | 577. | | |
| .3050 | -865. | 28. | -13. | -7. | 196. | -44. | -.0409 | .0242 | .0245 | -.0978 | .0094 | .0227 | 611. | | |
| .3060 | -828. | 42. | 1. | -28. | 196. | -81. | -.0429 | .0265 | .0275 | -.1012 | .0031 | .0195 | 651. | | |
| .3070 | -770. | 24. | 13. | -45. | 186. | -82. | -.0442 | .0285 | .0296 | -.1028 | -.0043 | .0163 | 635. | | |
| .3080 | -696. | 4. | 27. | -68. | 168. | -78. | -.0448 | .0300 | .0307 | -.1027 | -.0124 | .0139 | 601. | | |
| .3090 | -610. | -2. | 41. | -102. | 144. | -82. | -.0448 | .0312 | .0311 | -.1011 | -.0206 | .0132 | 592. | | |
| .3100 | -513. | -17. | 48. | -137. | 115. | -73. | -.0442 | .0320 | .0312 | -.0988 | -.0277 | .0137 | 587. | | |
| .3110 | -403. | -51. | 45. | -170. | 77. | -39. | -.0430 | .0324 | .0311 | -.0962 | -.0330 | .0153 | 579. | | |
| .3120 | -288. | -83. | 37. | -204. | 34. | -1. | -.0410 | .0326 | .0306 | -.0932 | -.0365 | .0182 | 630. | | |
| .3130 | -175. | -102. | 28. | -243. | -12. | 27. | -.0385 | .0324 | .0296 | -.0898 | -.0385 | .0223 | 744. | | |
| .3140 | -68. | -125. | 16. | -274. | -57. | 65. | -.0358 | .0321 | .0281 | -.0860 | -.0389 | .0269 | 875. | | |
| .3150 | 37. | -159. | -1. | -204. | -99. | 115. | -.0333 | .0316 | .0261 | -.0819 | -.0379 | .0315 | 1007. | | |
| .3160 | 120. | -180. | -16. | -208. | -135. | 154. | -.0309 | .0310 | .0234 | -.0773 | -.0359 | .0363 | 1126. | | |
| .3170 | 189. | -104. | -25. | -316. | -165. | 176. | -.0286 | .0304 | .0200 | -.0725 | -.0331 | .0411 | 1210. | | |
| .3180 | 240. | -188. | -34. | -312. | -189. | 198. | -.0264 | .0298 | .0163 | -.0680 | -.0292 | .0453 | 1263. | | |
| .3190 | 278. | -196. | -46. | -293. | -206. | 222. | -.0244 | .0291 | .0126 | -.0642 | -.0238 | .0489 | 1282. | | |
| .3200 | 298. | -191. | -58. | -269. | -214. | 222. | -.0226 | .0286 | .0093 | -.0614 | -.0170 | .0526 | 1243. | | |
| .3210 | 296. | -139. | -67. | -243. | -212. | 191. | -.0209 | .0280 | .0062 | -.0595 | -.0092 | .0562 | 1140. | | |
| .3220 | 279. | -96. | -75. | -207. | -204. | 159. | -.0193 | .0275 | .0034 | -.0585 | -.0007 | .0590 | 1008. | | |
| .3230 | 251. | -68. | -82. | -158. | -191. | 137. | -.0178 | .0269 | .0008 | -.0582 | .0081 | .0606 | 862. | | |
| .3240 | 210. | -27. | -86. | -107. | -171. | 99. | -.0165 | .0261 | -.0014 | -.0583 | .0164 | .0616 | 684. | | |
| .3250 | 155. | 38. | -83. | -61. | -147. | 34. | -.0154 | .0252 | -.0033 | -.0585 | .0238 | .0625 | 483. | | |
| .3260 | 95. | 100. | -77. | -15. | -111. | -30. | -.0145 | .0239 | -.0050 | -.0588 | .0302 | .0626 | 353. | | |
| .3270 | 38. | 137. | -71. | 35. | -81. | -70. | -.0135 | .0224 | -.0062 | -.0592 | .0356 | .0618 | 343. | | |

ADLPIPE PAGE 2775

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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

| | | | | | | | | | | | | | |
|-------|------|-------|------|-------|-------|------|--------|-------|--------|--------|--------|-------|-------|
| .3170 | 189. | -184. | -25. | -316. | -165. | 176. | -.286 | .0304 | .0200 | -.0725 | -.0331 | .0585 | 1126. |
| .3180 | 240. | -188. | -34. | -312. | -189. | 198. | -.264 | .0298 | .0163 | -.0680 | -.0292 | .0453 | 1263. |
| .3190 | 270. | -196. | -46. | -293. | -206. | 222. | -.0244 | .0791 | .0126 | -.0642 | -.0238 | .0489 | 1282. |
| .3200 | 297. | -191. | -50. | -269. | -214. | 222. | -.0226 | .0286 | .0093 | -.0614 | -.0170 | .0526 | 1243. |
| .3210 | 296. | -139. | -67. | -243. | -212. | 191. | -.0209 | .0280 | .0062 | -.0595 | -.0092 | .0562 | 1140. |
| .3220 | 270. | -96. | -75. | -207. | -204. | 159. | -.0193 | .0275 | .0034 | -.0585 | -.0007 | .0590 | 1008. |
| .3230 | 251. | -68. | -82. | -158. | -191. | 137. | -.0178 | .0269 | .0008 | -.0582 | .0081 | .0606 | 862. |
| .3240 | 210. | -27. | -86. | -107. | -171. | 99. | -.0165 | .0261 | -.0014 | -.0583 | .0164 | .0616 | 684. |
| .3250 | 155. | 38. | -83. | -61. | -143. | 34. | -.0154 | .0252 | -.0033 | -.0585 | .0238 | .0625 | 483. |
| .3260 | 95. | 100. | -77. | -15. | -111. | -30. | -.0145 | .0239 | -.0050 | -.0588 | .0302 | .0626 | 353. |
| .3270 | 30. | 137. | -71. | 35. | -81. | -70. | -.0135 | .0224 | -.0062 | -.0592 | .0356 | .0618 | 343. |

ADLPIPE PAGE 2775

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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 | 69 | MEMBER | 1 | SEQUENCE | 101 | LOCATION | BEG | TYPE | VA | | | | | | |
|---------|-------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .3280 | -15. | 168. | -64. | 80. | -54. | -105. | -.0124 | .0204 | -.0071 | -.0595 | .0398 | .0606 | 433. | | |
| .3290 | -64. | 212. | -55. | 110. | -27. | -153. | -.0112 | .0179 | -.0074 | -.0597 | .0426 | .0598 | 581. | | |
| .3300 | -105. | 252. | -47. | 130. | -4. | -196. | -.0098 | .0148 | -.0072 | -.0595 | .0443 | .0592 | 716. | | |
| .3310 | -132. | 264. | -43. | 145. | 11. | -209. | -.0084 | .0112 | -.0066 | -.0589 | .0447 | .0583 | 776. | | |
| .3320 | -146. | 258. | -38. | 153. | 20. | -204. | -.0068 | .0070 | -.0059 | -.0576 | .0435 | .0571 | 778. | | |
| .3330 | -150. | 254. | -30. | 145. | 22. | -200. | -.0051 | .0023 | -.0052 | -.0552 | .0406 | .0563 | 754. | | |
| .3340 | -143. | 244. | -23. | 127. | 19. | -187. | -.0034 | -.0029 | -.0043 | -.0521 | .0365 | .0557 | 691. | | |
| .3350 | -124. | 212. | -19. | 105. | 11. | -151. | -.0019 | -.0085 | -.0033 | -.0483 | .0314 | .0549 | 561. | | |
| .3360 | -96. | 168. | -18. | 77. | -2. | -102. | -.0004 | -.0145 | -.0023 | -.0441 | .0259 | .0540 | 389. | | |
| .3370 | -62. | 130. | -15. | 39. | -21. | -57. | .0012 | -.0206 | -.0012 | -.0396 | .0199 | .0534 | 219. | | |
| .3380 | -24. | 90. | -14. | -4. | -42. | -11. | .0027 | -.0268 | -.0002 | -.0351 | .0141 | .0526 | 133. | | |
| .3390 | 18. | 39. | -17. | -45. | -64. | 47. | .0039 | -.0330 | .0010 | -.0307 | .0085 | .0515 | 277. | | |
| .3400 | 58. | -11. | -22. | -84. | -84. | 103. | .0046 | -.0390 | .0019 | -.0264 | .0033 | .0498 | 476. | | |
| .3410 | 91. | -45. | -23. | -123. | -100. | 141. | .0049 | -.0446 | .0023 | -.0221 | -.0018 | .0476 | 645. | | |
| .3420 | 115. | -75. | -19. | -158. | -111. | 172. | .0048 | -.0499 | .0027 | -.0179 | -.0066 | .0445 | 786. | | |
| .3430 | 129. | -112. | -16. | -181. | -118. | 207. | .0041 | -.0546 | .0025 | -.0141 | -.0106 | .0401 | 911. | | |
| .3440 | 133. | -145. | -13. | -196. | -118. | 234. | .0030 | -.0588 | .0022 | -.0110 | -.0135 | .0349 | 997. | | |
| .3450 | 121. | -154. | -8. | -209. | -111. | 235. | .0015 | -.0623 | .0019 | -.0088 | -.0149 | .0294 | 1015. | | |
| .3460 | 97. | -149. | -3. | -217. | -90. | 219. | -.0001 | -.0652 | .0017 | -.0078 | -.0144 | .0235 | 985. | | |
| .3470 | 64. | -148. | -2. | -215. | -83. | 206. | -.0017 | -.0674 | .0017 | -.0081 | -.0119 | .0169 | 939. | | |
| .3480 | 25. | -146. | -4. | -205. | -65. | 189. | -.0034 | -.0690 | .0019 | -.0095 | -.0076 | .0100 | 870. | | |
| .3490 | -24. | -125. | -5. | -194. | -43. | 150. | -.0051 | -.0701 | .0021 | -.0115 | -.0020 | .0033 | 757. | | |
| .3500 | -80. | -90. | -5. | -182. | -16. | 96. | -.0069 | -.0707 | .0022 | -.0137 | .0043 | -.0033 | 628. | | |
| .3510 | -135. | -63. | -5. | -163. | 10. | 51. | -.0086 | -.0710 | .0020 | -.0157 | .0108 | -.0102 | 519. | | |
| .3520 | -189. | -47. | -5. | -137. | 35. | 19. | -.0101 | -.0710 | .0014 | -.0172 | .0172 | -.0172 | 434. | | |
| .3530 | -240. | -28. | -3. | -113. | 59. | -16. | -.0114 | -.0708 | .0004 | -.0179 | .0232 | -.0238 | 390. | | |
| .3540 | -285. | -1. | 0. | -93. | 80. | -55. | -.0123 | -.0706 | -.0007 | -.0179 | .0287 | -.0293 | 409. | | |
| .3550 | -320. | 17. | 0. | -74. | 97. | -81. | -.0127 | -.0704 | -.0018 | -.0172 | .0340 | -.0339 | 445. | | |
| .3560 | -342. | 21. | -4. | -55. | 107. | -88. | -.0124 | -.0704 | -.0029 | -.0159 | .0390 | -.0373 | 454. | | |
| .3570 | -350. | 23. | -9. | -43. | 110. | -88. | -.0112 | -.0706 | -.0039 | -.0138 | .0434 | -.0391 | 448. | | |
| .3580 | -345. | 27. | -15. | -38. | 106. | -84. | -.0093 | -.0711 | -.0049 | -.0108 | .0468 | -.0392 | 429. | | |
| .3590 | -325. | 23. | -22. | -25. | 97. | -68. | -.0069 | -.0718 | -.0060 | -.0065 | .0489 | -.0379 | 376. | | |
| .3600 | -291. | 8. | -30. | -33. | 83. | -35. | -.0040 | -.0729 | -.0073 | -.0008 | .0495 | -.0354 | 292. | | |
| .3610 | -247. | -11. | -34. | -34. | 65. | 7. | -.0006 | -.0742 | -.0090 | .0066 | .0480 | -.0317 | 224. | | |
| .3620 | -193. | -32. | -34. | -36. | 43. | 55. | .0031 | -.0758 | -.0111 | .0154 | .0446 | -.0270 | 241. | | |
| .3630 | -133. | -62. | -33. | -38. | 19. | 116. | .0072 | -.0776 | -.0133 | .0252 | .0397 | -.0214 | 375. | | |
| .3640 | -67. | -98. | -32. | -39. | -7. | 187. | .0114 | -.0795 | -.0155 | .0356 | .0340 | -.0149 | 581. | | |
| .3650 | 1. | -131. | -33. | -42. | -34. | 256. | .0160 | -.0814 | -.0173 | .0461 | .0281 | -.0074 | 796. | | |

ADLPIPE PAGE 2776

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|------|------|------|------|--------|--------|--------|--------|-------|--------|------|
| .3540 | -250. | 17. | 0. | -74. | 97. | -81. | -127 | -.0704 | -.0018 | -.0172 | .0340 | -.0339 | 445. |
| .3550 | -320. | 21. | -4. | -75. | 107. | -88. | -.0124 | -.0704 | -.0029 | -.0159 | .0390 | -.0373 | 454. |
| .3570 | -350. | 23. | -9. | -43. | 110. | -88. | -.0112 | -.0706 | -.0039 | -.0138 | .0434 | -.0391 | 448. |
| .3580 | -345. | 27. | -15. | -38. | 106. | -84. | -.0093 | -.0711 | -.0049 | -.0108 | .0468 | -.0392 | 429. |
| .3590 | -325. | 23. | -22. | -31. | 97. | -68. | -.0069 | -.0718 | -.0060 | -.0085 | .0489 | -.0379 | 376. |
| .3600 | -291. | 8. | -30. | -33. | 83. | -35. | -.0040 | -.0729 | -.0073 | -.0008 | .0495 | -.0354 | 292. |
| .3610 | -247. | -11. | -34. | -34. | 65. | 7. | -.0006 | -.0742 | -.0090 | .0066 | .0480 | -.0317 | 224. |
| .3620 | -193. | -32. | -34. | -36. | 43. | 55. | .0031 | -.0758 | -.0111 | .0154 | .0446 | -.0270 | 241. |
| .3630 | -137. | -62. | -33. | -38. | 19. | 116. | .0072 | -.0776 | -.0133 | .0252 | .0397 | -.0214 | 375. |
| .3640 | -67. | -98. | -32. | -39. | -7. | 187. | .0114 | -.0795 | -.0155 | .0356 | .0340 | -.0149 | 581. |
| .3650 | 1. | -131. | -33. | -42. | -34. | 256. | .0160 | -.0814 | -.0173 | .0461 | .0281 | -.0074 | 796. |

ADLPIPE PAGE 2776

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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 | VA | | | | | | | | |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) | |
| .3660 | 68. | -157. | -33. | -47. | -62. | 321. | .0208 | -.0832 | -.0186 | .0561 | .0225 | .0011 | 1004. | |
| .3670 | 137. | -185. | -36. | -51. | -91. | 389. | .0258 | -.0848 | -.0194 | .0653 | .0174 | .0100 | 1225. | |
| .3680 | 197. | -218. | -42. | -51. | -118. | 460. | .0308 | -.0861 | -.0196 | .0736 | .0130 | .0189 | 1454. | |
| .3690 | 254. | -242. | -47. | -51. | -142. | 521. | .0353 | -.0870 | -.0195 | .0813 | .0090 | .0277 | 1650. | |
| .3700 | 302. | -253. | -50. | -50. | -161. | 565. | .0392 | -.0873 | -.0193 | .0885 | .0050 | .0360 | 1794. | |
| .3710 | 343. | -262. | -50. | -45. | -173. | 603. | .0423 | -.0871 | -.0192 | .0953 | .0009 | .0430 | 1914. | |
| .3720 | 376. | -276. | -46. | -33. | -181. | 641. | .0445 | -.0861 | -.0193 | .1017 | -.0035 | .0481 | 2027. | |
| .3730 | 400. | -286. | -39. | -16. | -181. | 666. | .0455 | -.0844 | -.0195 | .1075 | -.0080 | .0516 | 2100. | |
| .3740 | 412. | -281. | -28. | 0. | -174. | 669. | .0456 | -.0819 | -.0197 | .1125 | -.0121 | .0536 | 2102. | |
| .3750 | 413. | -266. | -16. | 17. | -160. | 654. | .0446 | -.0786 | -.0196 | .1160 | -.0154 | .0542 | 2049. | |
| .3760 | 404. | -252. | -6. | 37. | -142. | 632. | .0429 | -.0744 | -.0189 | .1178 | -.0171 | .0531 | 1973. | |
| .3770 | 384. | -237. | 3. | 57. | -120. | 600. | .0406 | -.0694 | -.0176 | .1174 | -.0169 | .0506 | 1868. | |
| .3780 | 355. | -210. | 9. | 73. | -94. | 548. | .0377 | -.0636 | -.0155 | .1149 | -.0149 | .0470 | 1705. | |
| .3790 | 316. | -172. | 14. | 87. | -64. | 476. | .0343 | -.0571 | -.0127 | .1104 | -.0111 | .0425 | 1484. | |
| .3800 | 268. | -130. | 17. | 100. | -30. | 392. | .0303 | -.0500 | -.0092 | .1042 | -.0060 | .0369 | 1234. | |
| .3810 | 215. | -88. | 21. | 115. | 6. | 301. | .0258 | -.0424 | -.0055 | .0967 | -.0002 | .0301 | 980. | |
| .3820 | 157. | -42. | 28. | 129. | 45. | 199. | .0209 | -.0345 | -.0018 | .0885 | .0056 | .0222 | 735. | |
| .3830 | 99. | 10. | 37. | 143. | 86. | 87. | .0156 | -.0263 | .0019 | .0800 | .0110 | .0136 | 573. | |
| .3840 | 40. | 63. | 48. | 158. | 129. | -29. | .0100 | -.0180 | .0053 | .0712 | .0156 | .0043 | 629. | |
| .3850 | -14. | 116. | 61. | 175. | 173. | -148. | .0042 | -.0098 | .0087 | .0626 | .0195 | -.0052 | 874. | |
| .3860 | -63. | 174. | 76. | 189. | 216. | -271. | -.0015 | -.0018 | .0118 | .0541 | .0224 | -.0146 | 1200. | |
| .3870 | -104. | 231. | 91. | 203. | 254. | -392. | -.0069 | .0058 | .0147 | .0459 | .0245 | -.0235 | 1548. | |
| .3880 | -134. | 282. | 106. | 216. | 289. | -503. | -.0118 | .0128 | .0175 | .0381 | .0257 | -.0317 | 1882. | |
| .3890 | -154. | 332. | 119. | 227. | 318. | -608. | -.0163 | .0192 | .0201 | .0309 | .0259 | -.0388 | 2198. | |
| .3900 | -162. | 385. | 132. | 233. | 343. | -708. | -.0201 | .0247 | .0225 | .0246 | .0251 | -.0446 | 2496. | |
| .3910 | -160. | 431. | 145. | 237. | 361. | -791. | -.0233 | .0294 | .0244 | .0194 | .0230 | -.0492 | 2741. | |
| .3920 | -146. | 456. | 156. | 242. | 371. | -842. | -.0258 | .0330 | .0258 | .0156 | .0195 | -.0529 | 2892. | |
| .3930 | -119. | 465. | 167. | 246. | 372. | -865. | -.0276 | .0357 | .0265 | .0132 | .0146 | -.0554 | 2959. | |
| .3940 | -81. | 473. | 177. | 245. | 367. | -873. | -.0287 | .0373 | .0267 | .0123 | .0085 | -.0564 | 2976. | |
| .3950 | -36. | 476. | 185. | 239. | 355. | -866. | -.0292 | .0378 | .0265 | .0126 | .0015 | -.0559 | 2939. | |
| .3960 | 18. | 461. | 190. | 232. | 336. | -829. | -.0291 | .0374 | .0259 | .0140 | -.0061 | -.0542 | 2811. | |
| .3970 | 81. | 428. | 191. | 224. | 308. | -763. | -.0282 | .0361 | .0250 | .0162 | -.0137 | -.0516 | 2593. | |
| .3980 | 149. | 390. | 189. | 212. | 273. | -682. | -.0268 | .0339 | .0238 | .0190 | -.0214 | -.0478 | 2324. | |
| .3990 | 215. | 352. | 185. | 195. | 236. | -593. | -.0250 | .0310 | .0224 | .0222 | -.0287 | -.0429 | 2030. | |
| .4000 | 289. | 306. | 177. | 176. | 196. | -491. | -.0229 | .0275 | .0210 | .0256 | -.0355 | -.0374 | 1695. | |

ADLPIPE PAGE 2777

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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

| | | | | | | | | | | | | | |
|-------|-------|------|------|------|------|-------|--------|-------|-------|-------|--------|--------|-------|
| .3930 | -119. | 465. | 167. | 246. | 372. | -865. | -.0276 | .0357 | .0265 | .0132 | .0146 | -.0554 | 2959. |
| .3940 | -81. | 473. | 177. | 245. | 367. | -873. | -.0287 | .0373 | .0267 | .0123 | .0085 | -.0564 | 2976. |
| .3950 | -36. | 476. | 185. | 239. | 355. | -866. | -.0292 | .0378 | .0265 | .0126 | .0015 | -.0559 | 2939. |
| .3960 | 10. | 461. | 190. | 232. | 336. | -829. | -.0291 | .0374 | .0259 | .0140 | -.0061 | -.0542 | 2811. |
| .3970 | 81. | 420. | 191. | 224. | 300. | -763. | -.0282 | .0361 | .0250 | .0162 | -.0137 | -.0516 | 2593. |
| .3980 | 140. | 390. | 180. | 212. | 273. | -682. | -.0268 | .0339 | .0238 | .0190 | -.0214 | -.0478 | 2324. |
| .3990 | 215. | 352. | 185. | 195. | 236. | -593. | -.0250 | .0310 | .0224 | .0222 | -.0287 | -.0429 | 2030. |
| .4000 | 280. | 306. | 177. | 176. | 190. | -491. | -.0229 | .0275 | .0210 | .0256 | -.0355 | -.0374 | 1695. |

ADLPIPE PAGE 2777

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

S/RV PIPING KEWAUNEE SKWOOD 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

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) |
|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| .2640 | 300. | -661. | -200. | -424. | -467. | 1259. | .0121 | .0522 | -.0002 | .0244 | .0040 | -.1143 | 4283. |

| SECTION | MEMBER | SEQUENCE | LOCATION | DIS | TYPE | VA | TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) |
|---------|--------|----------|----------|-----|------|----|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| 69 | 1 | 103 | | | | | 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 | -.0001 | .0001 | -.0001 | -.0000 | 0. |
| | | | | | | | .0070 | 0. | 0. | 0. | 0. | 0. | 0. | -.0001 | -.0000 | -.0002 | .0002 | -.0002 | -.0001 | 0. |
| | | | | | | | .0080 | 0. | 0. | 0. | 0. | 0. | 0. | -.0003 | -.0000 | -.0004 | .0005 | -.0006 | -.0002 | 0. |
| | | | | | | | .0090 | 0. | 0. | 0. | 0. | 0. | 0. | -.0005 | -.0000 | -.0008 | .0009 | -.0013 | -.0004 | 0. |
| | | | | | | | .0100 | 0. | 0. | 0. | 0. | 0. | 0. | -.0009 | -.0000 | -.0013 | .0016 | -.0023 | -.0006 | 0. |
| | | | | | | | .0110 | 0. | 0. | 0. | 0. | 0. | 0. | -.0015 | -.0000 | -.0022 | .0025 | -.0038 | -.0009 | 0. |
| | | | | | | | .0120 | 0. | 0. | 0. | 0. | 0. | 0. | -.0024 | -.0001 | -.0033 | .0039 | -.0059 | -.0014 | 0. |
| | | | | | | | .0130 | 0. | 0. | 0. | 0. | 0. | 0. | -.0035 | -.0001 | -.0049 | .0057 | -.0087 | -.0019 | 0. |
| | | | | | | | .0140 | 0. | 0. | 0. | 0. | 0. | 0. | -.0050 | -.0001 | -.0067 | .0080 | -.0124 | -.0025 | 0. |
| | | | | | | | .0150 | 0. | 0. | 0. | 0. | 0. | 0. | -.0068 | -.0002 | -.0089 | .0106 | -.0166 | -.0032 | 0. |
| | | | | | | | .0160 | 0. | 0. | 0. | 0. | 0. | 0. | -.0087 | -.0003 | -.0111 | .0133 | -.0210 | -.0041 | 0. |
| | | | | | | | .0170 | 0. | 0. | 0. | 0. | 0. | 0. | -.0104 | -.0003 | -.0132 | .0157 | -.0250 | -.0054 | 0. |
| | | | | | | | .0180 | 0. | 0. | 0. | 0. | 0. | 0. | -.0118 | -.0002 | -.0145 | .0172 | -.0276 | -.0070 | 0. |
| | | | | | | | .0190 | 0. | 0. | 0. | 0. | 0. | 0. | -.0124 | -.0001 | -.0146 | .0170 | -.0281 | -.0085 | 0. |
| | | | | | | | .0200 | 0. | 0. | 0. | 0. | 0. | 0. | -.0120 | .0001 | -.0130 | .0146 | -.0255 | -.0095 | 0. |
| | | | | | | | .0210 | 0. | 0. | 0. | 0. | 0. | 0. | -.0104 | .0003 | -.0093 | .0097 | -.0194 | -.0093 | 0. |
| | | | | | | | .0220 | 0. | 0. | 0. | 0. | 0. | 0. | -.0076 | .0004 | -.0037 | .0027 | -.0097 | -.0072 | 0. |
| | | | | | | | .0230 | 0. | 0. | 0. | 0. | 0. | 0. | -.0039 | .0004 | .0032 | -.0057 | .0023 | -.0039 | 0. |
| | | | | | | | .0240 | 0. | 0. | 0. | 0. | 0. | 0. | -.0002 | .0003 | .0102 | -.0141 | .0147 | .0000 | 0. |
| | | | | | | | .0250 | 0. | 0. | 0. | 0. | 0. | 0. | .0029 | .0000 | .0162 | -.0214 | .0253 | .0036 | 0. |
| | | | | | | | .0260 | 0. | 0. | 0. | 0. | 0. | 0. | .0051 | -.0003 | .0203 | -.0267 | .0325 | .0060 | 0. |
| | | | | | | | .0270 | 0. | 0. | 0. | 0. | 0. | 0. | .0067 | -.0009 | .0221 | -.0287 | .0362 | .0076 | 0. |
| | | | | | | | .0280 | 0. | 0. | 0. | 0. | 0. | 0. | .0077 | -.0015 | .0213 | -.0279 | .0367 | .0075 | 0. |
| | | | | | | | .0290 | 0. | 0. | 0. | 0. | 0. | 0. | .0080 | -.0022 | .0185 | -.0255 | .0340 | .0048 | 0. |
| | | | | | | | .0300 | 0. | 0. | 0. | 0. | 0. | 0. | .0077 | -.0031 | .0161 | -.0222 | .0303 | .0036 | 0. |
| | | | | | | | .0310 | 0. | 0. | 0. | 0. | 0. | 0. | .0083 | -.0044 | .0153 | -.0199 | .0296 | .0064 | 0. |
| | | | | | | | .0320 | 0. | 0. | 0. | 0. | 0. | 0. | .0112 | -.0056 | .0162 | -.0205 | .0334 | .0097 | 0. |

| | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|-------|--------|-------|--------|-------|-------|----|
| .0330 | 0. | 0. | 0. | 0. | 0. | 0. | .0158 | -.0067 | .0186 | -.0237 | .0406 | .0127 | 0. |
|-------|----|----|----|----|----|----|-------|--------|-------|--------|-------|-------|----|

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|--------|--------|--------|--------|--------|--------|----|
| .0180 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0118 | -.0002 | -.0145 | .0172 | -.0276 | -.0070 | 0. |
| .0190 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0124 | -.0001 | -.0146 | .0170 | -.0281 | -.0085 | 0. |
| .0200 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0120 | .0001 | -.0130 | .0146 | -.0255 | -.0095 | 0. |
| .0210 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0104 | .0003 | -.0093 | .0097 | -.0194 | -.0093 | 0. |
| .0220 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0076 | .0004 | -.0027 | .0027 | -.0097 | -.0072 | 0. |
| .0230 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0039 | .0004 | .0032 | -.0057 | .0023 | -.0039 | 0. |
| .0240 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0002 | .0003 | .0102 | -.0141 | .0147 | .0000 | 0. |
| .0250 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0029 | .0000 | .0162 | -.0214 | .0253 | .0036 | 0. |
| .0260 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0051 | -.0003 | .0203 | -.0267 | .0325 | .0060 | 0. |
| .0270 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0067 | -.0009 | .0221 | -.0287 | .0362 | .0076 | 0. |
| .0280 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0077 | -.0015 | .0213 | -.0279 | .0367 | .0075 | 0. |
| .0290 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0080 | -.0022 | .0185 | -.0255 | .0340 | .0048 | 0. |
| .0300 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0077 | -.0031 | .0161 | -.0222 | .0303 | .0036 | 0. |
| .0310 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0083 | -.0044 | .0153 | -.0199 | .0296 | .0064 | 0. |
| .0320 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0112 | -.0056 | .0162 | -.0205 | .0334 | .0097 | 0. |

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|-------|--------|-------|--------|-------|-------|----|
| .0330 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0158 | -.0067 | .0186 | -.0237 | .0406 | .0127 | 0. |
|-------|----|----|----|----|----|----|----|-------|--------|-------|--------|-------|-------|----|

ADLPIPE PAGE 2770

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02. 18.29.55.

S/RV PIPING KEWAUNEE CRYOGEN 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

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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | DIS | TYPE | VA | | | | | | |
|---------|------|--------|------|----------|---------|----------|-----|--------|--------|--------|--------|--------|--------|--------|--|
| TIME | FX | FY | FZ | MX | MY | MZ | | DX | DY | DZ | RX | RY | RZ | STRESS | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | |
| .0340 | 0. | 0. | 0. | 0. | 0. | 0. | | .0205 | -.0081 | .0225 | -.0272 | .0494 | .0193 | 0. | |
| .0350 | 0. | 0. | 0. | 0. | 0. | 0. | | .0236 | -.0098 | .0258 | -.0284 | .0565 | .0293 | 0. | |
| .0360 | 0. | 0. | 0. | 0. | 0. | 0. | | .0244 | -.0113 | .0252 | -.0249 | .0562 | .0356 | 0. | |
| .0370 | 0. | 0. | 0. | 0. | 0. | 0. | | .0231 | -.0124 | .0183 | -.0149 | .0458 | .0340 | 0. | |
| .0380 | 0. | 0. | 0. | 0. | 0. | 0. | | .0197 | -.0131 | .0060 | .0012 | .0272 | .0272 | 0. | |
| .0390 | 0. | 0. | 0. | 0. | 0. | 0. | | .0138 | -.0136 | -.0090 | .0207 | .0029 | .0191 | 0. | |
| .0400 | 0. | 0. | 0. | 0. | 0. | 0. | | .0066 | -.0137 | -.0233 | .0395 | -.0231 | .0111 | 0. | |
| .0410 | 0. | 0. | 0. | 0. | 0. | 0. | | .0012 | -.0135 | -.0329 | .0536 | -.0421 | .0052 | 0. | |
| .0420 | 0. | 0. | 0. | 0. | 0. | 0. | | .0006 | -.0125 | -.0356 | .0585 | -.0463 | .0017 | 0. | |
| .0430 | 0. | 0. | 0. | 0. | 0. | 0. | | .0046 | -.0107 | -.0313 | .0530 | -.0368 | .0003 | 0. | |
| .0440 | 0. | 0. | 0. | 0. | 0. | 0. | | .0105 | -.0084 | -.0206 | .0398 | -.0189 | .0035 | 0. | |
| .0450 | 0. | 0. | 0. | 0. | 0. | 0. | | .0155 | -.0062 | -.0061 | .0238 | .0030 | .0135 | 0. | |
| .0460 | 0. | 0. | 0. | 0. | 0. | 0. | | .0181 | -.0036 | .0062 | .0104 | .0208 | .0233 | 0. | |
| .0470 | 0. | 0. | 0. | 0. | 0. | 0. | | .0178 | -.0002 | .0099 | .0040 | .0247 | .0215 | 0. | |
| .0480 | 0. | 0. | 0. | 0. | 0. | 0. | | .0137 | .0041 | .0048 | .0058 | .0136 | .0072 | 0. | |
| .0490 | 0. | 0. | 0. | 0. | 0. | 0. | | .0057 | .0084 | -.0047 | .0131 | -.0055 | -.0088 | 0. | |
| .0500 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0048 | .0123 | -.0142 | .0217 | -.0271 | -.0198 | 0. | |
| .0510 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0142 | .0161 | -.0211 | .0272 | -.0458 | -.0281 | 0. | |
| .0520 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0193 | .0201 | -.0226 | .0248 | -.0529 | -.0363 | 0. | |
| .0530 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0196 | .0242 | -.0166 | .0126 | -.0439 | -.0409 | 0. | |
| .0540 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0169 | .0275 | -.0041 | -.0062 | -.0243 | -.0371 | 0. | |
| .0550 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0137 | .0299 | .0112 | -.0266 | -.0023 | -.0272 | 0. | |
| .0560 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0112 | .0319 | .0248 | -.0447 | .0176 | -.0196 | 0. | |
| .0570 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0107 | .0335 | .0322 | -.0564 | .0293 | -.0198 | 0. | |
| .0580 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0134 | .0343 | .0314 | -.0580 | .0266 | -.0253 | 0. | |
| .0590 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0193 | .0342 | .0247 | -.0510 | .0123 | -.0319 | 0. | |
| .0600 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0266 | .0332 | .0165 | -.0409 | -.0043 | -.0384 | 0. | |
| .0610 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0320 | .0316 | .0101 | -.0327 | -.0167 | -.0449 | 0. | |
| .0620 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0328 | .0295 | .0080 | -.0294 | -.0202 | -.0481 | 0. | |
| .0630 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0287 | .0267 | .0130 | -.0336 | -.0100 | -.0454 | 0. | |
| .0640 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0212 | .0234 | .0251 | -.0455 | .0129 | -.0370 | 0. | |
| .0650 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0126 | .0195 | .0406 | -.0603 | .0403 | -.0234 | 0. | |
| .0660 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0046 | .0151 | .0534 | -.0713 | .0628 | -.0074 | 0. | |
| .0670 | 0. | 0. | 0. | 0. | 0. | 0. | | .0007 | .0105 | .0585 | -.0738 | .0735 | .0031 | 0. | |
| .0680 | 0. | 0. | 0. | 0. | 0. | 0. | | .0015 | .0062 | .0533 | -.0653 | .0675 | .0022 | 0. | |
| .0690 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0031 | .0019 | .0389 | -.0455 | .0441 | -.0056 | 0. | |
| .0700 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0112 | -.0027 | .0192 | -.0183 | .0101 | -.0129 | 0. | |
| .0710 | 0. | 0. | 0. | 0. | 0. | 0. | | -.0193 | -.0071 | -.0005 | .0088 | -.0233 | -.0187 | 0. | |

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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|--------|--------|--------|--------|--------|--------|----|
| .0610 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0320 | .0316 | .0101 | -.0327 | -.0167 | -.0449 | 0. |
| .0620 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0328 | .0295 | .0080 | -.0294 | -.0202 | -.0481 | 0. |
| .0630 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0227 | .0267 | .0130 | -.0336 | -.0100 | -.0454 | 0. |
| .0640 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0212 | .0234 | .0251 | -.0455 | .0129 | -.0370 | 0. |
| .0650 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0126 | .0195 | .0406 | -.0603 | .0403 | -.0234 | 0. |
| .0660 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0046 | .0151 | .0534 | -.0713 | .0628 | -.0074 | 0. |
| .0670 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0007 | .0105 | .0585 | -.0738 | .0735 | .0031 | 0. |
| .0680 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0015 | .0062 | .0533 | -.0653 | .0675 | .0022 | 0. |
| .0690 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0031 | .0019 | .0589 | -.0455 | .0441 | -.0056 | 0. |
| .0700 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0112 | -.0027 | .0192 | -.0183 | .0101 | -.0129 | 0. |
| .0710 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0193 | -.0071 | -.0005 | .0088 | -.0235 | -.0187 | 0. |

ADLPIPE PAGE 2779

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | DIS | TYPE | VA | | | | | | |
|---------|------|--------|------|----------|---------|----------|-----|--------|--------|--------|-------|--------|--------|--------|--|
| TIME | FX | FY | FZ | MX | MY | MZ | | DX | DY | DZ | RX | RY | RZ | STRESS | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | |
| .0720 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0238 | -.0109 | -.0152 | .0286 | -.0471 | -.0243 | 0. | |
| .0730 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0227 | -.0143 | -.0213 | .0376 | -.0545 | -.0248 | 0. | |
| .0740 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0166 | -.0175 | -.0179 | .0356 | -.0448 | -.0154 | 0. | |
| .0750 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0074 | -.0206 | -.0073 | .0256 | -.0231 | .0003 | 0. | |
| .0760 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0023 | -.0231 | .0055 | .0127 | .0021 | .0150 | 0. | |
| .0770 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0106 | -.0252 | .0145 | .0035 | .0219 | .0254 | 0. | |
| .0780 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0156 | -.0269 | .0156 | .0029 | .0292 | .0305 | 0. | |
| .0790 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0159 | -.0284 | .0079 | .0122 | .0208 | .0287 | 0. | |
| .0800 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0119 | -.0296 | -.0058 | .0288 | .0010 | .0215 | 0. | |
| .0810 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0061 | -.0307 | -.0214 | .0480 | -.0221 | .0140 | 0. | |
| .0820 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0017 | -.0318 | -.0348 | .0645 | -.0408 | .0093 | 0. | |
| .0830 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0012 | -.0326 | -.0419 | .0734 | -.0480 | .0076 | 0. | |
| .0840 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0052 | -.0332 | -.0407 | .0721 | -.0392 | .0099 | 0. | |
| .0850 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0128 | -.0338 | -.0320 | .0622 | -.0170 | .0183 | 0. | |
| .0860 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0219 | -.0344 | -.0198 | .0487 | .0104 | .0309 | 0. | |
| .0870 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0305 | -.0349 | -.0083 | .0360 | .0360 | .0421 | 0. | |
| .0880 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0369 | -.0351 | -.0008 | .0276 | .0550 | .0473 | 0. | |
| .0890 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0402 | -.0350 | .0010 | .0254 | .0637 | .0471 | 0. | |
| .0900 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0405 | -.0350 | -.0019 | .0291 | .0625 | .0447 | 0. | |
| .0910 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0392 | -.0349 | -.0062 | .0350 | .0568 | .0418 | 0. | |
| .0920 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0384 | -.0345 | -.0088 | .0386 | .0540 | .0393 | 0. | |
| .0930 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0390 | -.0339 | -.0081 | .0379 | .0562 | .0389 | 0. | |
| .0940 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0410 | -.0331 | -.0040 | .0335 | .0626 | .0429 | 0. | |
| .0950 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0427 | -.0322 | .0018 | .0275 | .0706 | .0499 | 0. | |
| .0960 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0423 | -.0310 | .0060 | .0235 | .0742 | .0549 | 0. | |
| .0970 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0386 | -.0293 | .0047 | .0256 | .0669 | .0540 | 0. | |
| .0980 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0313 | -.0271 | -.0036 | .0355 | .0467 | .0463 | 0. | |
| .0990 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0207 | -.0244 | -.0171 | .0512 | .0171 | .0327 | 0. | |
| .1000 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0081 | -.0212 | -.0322 | .0687 | -.0165 | .0158 | 0. | |
| .1010 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0041 | -.0176 | -.0449 | .0836 | -.0471 | .0000 | 0. | |
| .1020 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0138 | -.0137 | -.0519 | .0920 | -.0682 | -.0116 | 0. | |
| .1030 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0197 | -.0094 | -.0522 | .0917 | -.0766 | -.0199 | 0. | |
| .1040 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0223 | -.0046 | -.0462 | .0832 | -.0741 | -.0264 | 0. | |
| .1050 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0230 | .0005 | -.0361 | .0698 | -.0652 | -.0304 | 0. | |
| .1060 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0233 | .0057 | -.0247 | .0546 | -.0543 | -.0325 | 0. | |
| .1070 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0241 | .0110 | -.0146 | .0404 | -.0456 | -.0361 | 0. | |
| .1080 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0255 | .0164 | -.0067 | .0278 | -.0407 | -.0434 | 0. | |
| .1090 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0273 | .0217 | -.0003 | .0165 | -.0380 | -.0511 | 0. | |

ADLPIPE PAGE 2780

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|--------|--------|--------|-------|--------|--------|----|
| .0990 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0207 | -.0244 | -.0171 | .0512 | .0171 | .0327 | 0. |
| .1000 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0081 | -.0212 | -.0322 | .0687 | -.0165 | .0158 | 0. |
| .1010 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0041 | -.0176 | -.0449 | .0836 | -.0471 | .0000 | 0. |
| .1020 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0138 | -.0137 | -.0519 | .0920 | -.0682 | -.0116 | 0. |
| .1030 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0197 | -.0094 | -.0522 | .0917 | -.0766 | -.0199 | 0. |
| .1040 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0223 | -.0046 | -.0462 | .0832 | -.0741 | -.0264 | 0. |
| .1050 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0230 | .0005 | -.0361 | .0698 | -.0652 | -.0304 | 0. |
| .1060 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0233 | .0057 | -.0247 | .0546 | -.0543 | -.0325 | 0. |
| .1070 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0241 | .0110 | -.0146 | .0404 | -.0456 | -.0361 | 0. |
| .1080 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0255 | .0164 | -.0067 | .0278 | -.0407 | -.0434 | 0. |
| .1090 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0273 | .0217 | -.0003 | .0165 | -.0380 | -.0511 | 0. |

ADLPIPE PAGE 2780

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | DIS | TYPE | VA | | | | | | |
|---------|------|--------|------|----------|---------|----------|--------|-------|--------|--------|--------|--------|--------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .1100 | 0. | 0. | 0. | 0. | 0. | 0. | -.0287 | .0264 | .0062 | .0066 | -.0344 | -.0530 | 0. | | |
| .1110 | 0. | 0. | 0. | 0. | 0. | 0. | -.0294 | .0307 | .0132 | -.0040 | -.0292 | -.0532 | 0. | | |
| .1120 | 0. | 0. | 0. | 0. | 0. | 0. | -.0291 | .0348 | .0203 | -.0157 | -.0224 | -.0543 | 0. | | |
| .1130 | 0. | 0. | 0. | 0. | 0. | 0. | -.0284 | .0381 | .0268 | -.0257 | -.0152 | -.0513 | 0. | | |
| .1140 | 0. | 0. | 0. | 0. | 0. | 0. | -.0279 | .0405 | .0308 | -.0313 | -.0109 | -.0451 | 0. | | |
| .1150 | 0. | 0. | 0. | 0. | 0. | 0. | -.0280 | .0425 | .0307 | -.0324 | -.0120 | -.0441 | 0. | | |
| .1160 | 0. | 0. | 0. | 0. | 0. | 0. | -.0286 | .0443 | .0267 | -.0296 | -.0178 | -.0491 | 0. | | |
| .1170 | 0. | 0. | 0. | 0. | 0. | 0. | -.0292 | .0453 | .0205 | -.0234 | -.0257 | -.0520 | 0. | | |
| .1180 | 0. | 0. | 0. | 0. | 0. | 0. | -.0287 | .0453 | .0150 | -.0155 | -.0323 | -.0497 | 0. | | |
| .1190 | 0. | 0. | 0. | 0. | 0. | 0. | -.0254 | .0451 | .0124 | -.0115 | -.0319 | -.0491 | 0. | | |
| .1200 | 0. | 0. | 0. | 0. | 0. | 0. | -.0178 | .0450 | .0151 | -.0148 | -.0196 | -.0492 | 0. | | |
| .1210 | 0. | 0. | 0. | 0. | 0. | 0. | -.0058 | .0441 | .0233 | -.0232 | .0035 | -.0401 | 0. | | |
| .1220 | 0. | 0. | 0. | 0. | 0. | 0. | .0086 | .0426 | .0345 | -.0337 | .0317 | -.0233 | 0. | | |
| .1230 | 0. | 0. | 0. | 0. | 0. | 0. | .0224 | .0411 | .0445 | -.0433 | .0576 | -.0100 | 0. | | |
| .1240 | 0. | 0. | 0. | 0. | 0. | 0. | .0330 | .0400 | .0491 | -.0475 | .0740 | -.0048 | 0. | | |
| .1250 | 0. | 0. | 0. | 0. | 0. | 0. | .0388 | .0385 | .0448 | -.0410 | .0734 | -.0015 | 0. | | |
| .1260 | 0. | 0. | 0. | 0. | 0. | 0. | .0398 | .0366 | .0312 | -.0225 | .0546 | -.0005 | 0. | | |
| .1270 | 0. | 0. | 0. | 0. | 0. | 0. | .0376 | .0355 | .0118 | .0013 | .0256 | -.0073 | 0. | | |
| .1280 | 0. | 0. | 0. | 0. | 0. | 0. | .0351 | .0351 | -.0079 | .0237 | -.0028 | -.0213 | 0. | | |
| .1290 | 0. | 0. | 0. | 0. | 0. | 0. | .0346 | .0346 | -.0227 | .0409 | -.0237 | -.0269 | 0. | | |
| .1300 | 0. | 0. | 0. | 0. | 0. | 0. | .0372 | .0338 | -.0297 | .0502 | -.0328 | -.0199 | 0. | | |
| .1310 | 0. | 0. | 0. | 0. | 0. | 0. | .0426 | .0336 | -.0286 | .0498 | -.0286 | -.0101 | 0. | | |
| .1320 | 0. | 0. | 0. | 0. | 0. | 0. | .0492 | .0343 | -.0226 | .0413 | -.0153 | -.0037 | 0. | | |
| .1330 | 0. | 0. | 0. | 0. | 0. | 0. | .0550 | .0350 | -.0169 | .0330 | -.0038 | .0063 | 0. | | |
| .1340 | 0. | 0. | 0. | 0. | 0. | 0. | .0578 | .0355 | -.0159 | .0309 | -.0026 | .0184 | 0. | | |
| .1350 | 0. | 0. | 0. | 0. | 0. | 0. | .0561 | .0367 | -.0211 | .0349 | -.0123 | .0198 | 0. | | |
| .1360 | 0. | 0. | 0. | 0. | 0. | 0. | .0502 | .0387 | -.0313 | .0433 | -.0307 | .0084 | 0. | | |
| .1370 | 0. | 0. | 0. | 0. | 0. | 0. | .0419 | .0407 | -.0435 | .0543 | -.0542 | -.0024 | 0. | | |
| .1380 | 0. | 0. | 0. | 0. | 0. | 0. | .0336 | .0421 | -.0535 | .0646 | -.0759 | -.0042 | 0. | | |
| .1390 | 0. | 0. | 0. | 0. | 0. | 0. | .0277 | .0438 | -.0571 | .0667 | -.0862 | -.0054 | 0. | | |
| .1400 | 0. | 0. | 0. | 0. | 0. | 0. | .0257 | .0462 | -.0527 | .0572 | -.0809 | -.0102 | 0. | | |
| .1410 | 0. | 0. | 0. | 0. | 0. | 0. | .0273 | .0483 | -.0420 | .0406 | -.0646 | -.0087 | 0. | | |
| .1420 | 0. | 0. | 0. | 0. | 0. | 0. | .0303 | .0498 | -.0284 | .0215 | -.0443 | .0006 | 0. | | |
| .1430 | 0. | 0. | 0. | 0. | 0. | 0. | .0320 | .0514 | -.0146 | .0022 | -.0246 | .0054 | 0. | | |
| .1440 | 0. | 0. | 0. | 0. | 0. | 0. | .0310 | .0533 | -.0037 | -.0150 | -.0097 | -.0003 | 0. | | |
| .1450 | 0. | 0. | 0. | 0. | 0. | 0. | .0276 | .0547 | .0019 | -.0258 | -.0042 | -.0068 | 0. | | |
| .1460 | 0. | 0. | 0. | 0. | 0. | 0. | .0228 | .0553 | .0023 | -.0291 | -.0078 | -.0096 | 0. | | |
| .1470 | 0. | 0. | 0. | 0. | 0. | 0. | .0173 | .0558 | .0006 | -.0307 | -.0139 | -.0182 | 0. | | |

ADLPIPE PAGE 2781

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

S/RV PIPING KEWAUNEE GKHOFF 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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|-------|-------|--------|--------|--------|--------|----|
| .1370 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0419 | .0407 | -.0435 | .0543 | -.0542 | -.0024 | 0. |
| .1380 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0336 | .0421 | -.0535 | .0646 | -.0759 | -.0042 | 0. |
| .1390 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0277 | .0438 | -.0571 | .0667 | -.0862 | -.0054 | 0. |
| .1400 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0257 | .0462 | -.0527 | .0572 | -.0809 | -.0102 | 0. |
| .1410 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0273 | .0483 | -.0420 | .0406 | -.0646 | -.0087 | 0. |
| .1420 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0303 | .0498 | -.0284 | .0215 | -.0443 | .0006 | 0. |
| .1430 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0320 | .0514 | -.0146 | .0022 | -.0246 | .0054 | 0. |
| .1440 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0310 | .0533 | -.0037 | -.0150 | -.0097 | -.0003 | 0. |
| .1450 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0276 | .0547 | .0019 | -.0258 | -.0042 | -.0068 | 0. |
| .1460 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0228 | .0553 | .0023 | -.0291 | -.0078 | -.0096 | 0. |
| .1470 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0173 | .0558 | .0006 | -.0307 | -.0139 | -.0182 | 0. |

ADLPIPE PAGE 2781

DIS/ADLPIPE ADLPIPE STRESS ANALYSIS
S/RV PIPING KEWAUNEE GKWOBF 2 RUP DISK
2 SAFETY COLD FKW24F--2 PSV

8/12/02. 18.29.55.

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| SECTION | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | DIS | TYPE | VA | | | | | | |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .1480 | 0. | 0. | 0. | 0. | 0. | 0. | .0119 | .0567 | .0006 | -.0349 | -.0161 | -.0331 | 0. | | |
| .1490 | 0. | 0. | 0. | 0. | 0. | 0. | .0083 | .0568 | .0043 | -.0419 | -.0123 | -.0412 | 0. | | |
| .1500 | 0. | 0. | 0. | 0. | 0. | 0. | .0076 | .0560 | .0120 | -.0517 | -.0024 | -.0381 | 0. | | |
| .1510 | 0. | 0. | 0. | 0. | 0. | 0. | .0096 | .0552 | .0229 | -.0655 | .0139 | -.0349 | 0. | | |
| .1520 | 0. | 0. | 0. | 0. | 0. | 0. | .0127 | .0549 | .0349 | -.0822 | .0337 | -.0382 | 0. | | |
| .1530 | 0. | 0. | 0. | 0. | 0. | 0. | .0150 | .0542 | .0446 | -.0950 | .0486 | -.0386 | 0. | | |
| .1540 | 0. | 0. | 0. | 0. | 0. | 0. | .0147 | .0526 | .0489 | -.0993 | .0522 | -.0338 | 0. | | |
| .1550 | 0. | 0. | 0. | 0. | 0. | 0. | .0110 | .0512 | .0471 | -.0958 | .0449 | -.0357 | 0. | | |
| .1560 | 0. | 0. | 0. | 0. | 0. | 0. | .0047 | .0505 | .0401 | -.0868 | .0300 | -.0494 | 0. | | |
| .1570 | 0. | 0. | 0. | 0. | 0. | 0. | -.0027 | .0499 | .0294 | -.0734 | .0096 | -.0645 | 0. | | |
| .1580 | 0. | 0. | 0. | 0. | 0. | 0. | -.0101 | .0489 | .0179 | -.0573 | -.0135 | -.0717 | 0. | | |
| .1590 | 0. | 0. | 0. | 0. | 0. | 0. | -.0167 | .0480 | .0088 | -.0436 | -.0326 | -.0764 | 0. | | |
| .1600 | 0. | 0. | 0. | 0. | 0. | 0. | -.0217 | .0480 | .0038 | -.0361 | -.0432 | -.0844 | 0. | | |
| .1610 | 0. | 0. | 0. | 0. | 0. | 0. | -.0248 | .0484 | .0019 | -.0329 | -.0476 | -.0895 | 0. | | |
| .1620 | 0. | 0. | 0. | 0. | 0. | 0. | -.0264 | .0486 | .0019 | -.0309 | -.0493 | -.0870 | 0. | | |
| .1630 | 0. | 0. | 0. | 0. | 0. | 0. | -.0277 | .0492 | .0030 | -.0310 | -.0480 | -.0852 | 0. | | |
| .1640 | 0. | 0. | 0. | 0. | 0. | 0. | -.0295 | .0506 | .0045 | -.0332 | -.0444 | -.0899 | 0. | | |
| .1650 | 0. | 0. | 0. | 0. | 0. | 0. | -.0318 | .0523 | .0048 | -.0345 | -.0421 | -.0947 | 0. | | |
| .1660 | 0. | 0. | 0. | 0. | 0. | 0. | -.0343 | .0536 | .0035 | -.0343 | -.0419 | -.0947 | 0. | | |
| .1670 | 0. | 0. | 0. | 0. | 0. | 0. | -.0370 | .0549 | .0020 | -.0344 | -.0410 | -.0944 | 0. | | |
| .1680 | 0. | 0. | 0. | 0. | 0. | 0. | -.0401 | .0565 | .0013 | -.0370 | -.0376 | -.0981 | 0. | | |
| .1690 | 0. | 0. | 0. | 0. | 0. | 0. | -.0431 | .0576 | .0010 | -.0404 | -.0335 | -.0995 | 0. | | |
| .1700 | 0. | 0. | 0. | 0. | 0. | 0. | -.0456 | .0578 | .0004 | -.0431 | -.0298 | -.0943 | 0. | | |
| .1710 | 0. | 0. | 0. | 0. | 0. | 0. | -.0477 | .0574 | -.0008 | -.0461 | -.0259 | -.0892 | 0. | | |
| .1720 | 0. | 0. | 0. | 0. | 0. | 0. | -.0496 | .0567 | -.0023 | -.0493 | -.0217 | -.0885 | 0. | | |
| .1730 | 0. | 0. | 0. | 0. | 0. | 0. | -.0512 | .0549 | -.0043 | -.0517 | -.0177 | -.0869 | 0. | | |
| .1740 | 0. | 0. | 0. | 0. | 0. | 0. | -.0522 | .0516 | -.0065 | -.0522 | -.0143 | -.0784 | 0. | | |
| .1750 | 0. | 0. | 0. | 0. | 0. | 0. | -.0523 | .0471 | -.0080 | -.0520 | -.0096 | -.0674 | 0. | | |
| .1760 | 0. | 0. | 0. | 0. | 0. | 0. | -.0509 | .0418 | -.0082 | -.0532 | -.0012 | -.0599 | 0. | | |
| .1770 | 0. | 0. | 0. | 0. | 0. | 0. | -.0477 | .0354 | -.0067 | -.0550 | .0106 | -.0509 | 0. | | |
| .1780 | 0. | 0. | 0. | 0. | 0. | 0. | -.0427 | .0276 | -.0039 | -.0562 | .0242 | -.0352 | 0. | | |
| .1790 | 0. | 0. | 0. | 0. | 0. | 0. | -.0363 | .0187 | -.0001 | -.0568 | .0388 | -.0168 | 0. | | |
| .1800 | 0. | 0. | 0. | 0. | 0. | 0. | -.0294 | .0094 | .0044 | -.0572 | .0543 | -.0020 | 0. | | |
| .1810 | 0. | 0. | 0. | 0. | 0. | 0. | -.0224 | -.0004 | .0084 | -.0564 | .0684 | .0110 | 0. | | |
| .1820 | 0. | 0. | 0. | 0. | 0. | 0. | -.0158 | -.0107 | .0111 | -.0517 | .0781 | .0279 | 0. | | |
| .1830 | 0. | 0. | 0. | 0. | 0. | 0. | -.0100 | -.0213 | .0124 | -.0439 | .0835 | .0451 | 0. | | |
| .1840 | 0. | 0. | 0. | 0. | 0. | 0. | -.0051 | -.0311 | .0126 | -.0350 | .0864 | .0569 | 0. | | |
| .1850 | 0. | 0. | 0. | 0. | 0. | 0. | -.0011 | -.0401 | .0118 | -.0249 | .0864 | .0653 | 0. | | |

ADLPIPE PAGE 2782

DIS/ADLPIPE ADLPIPE STRESS ANALYSIS
S/RV PIPING KEWAUNEE GKWOBF 2 RUP DISK
2 SAFETY COLD FKW24F--2 PSV

8/12/02. 18.29.55.

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|--------|--------|-------|--------|--------|-------|----|
| .2130 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0440 | -.0249 | .0261 | -.0442 | .0514 | .0260 | 0. |
| .2140 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0366 | -.0397 | .0173 | -.0181 | .0331 | .0377 | 0. |
| .2150 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0310 | -.0469 | .0156 | -.0079 | .0264 | .0471 | 0. |
| .2160 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0242 | -.0535 | .0163 | -.0009 | .0227 | .0573 | 0. |
| .2170 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0170 | -.0591 | .0184 | .0035 | .0205 | .0663 | 0. |
| .2180 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0103 | -.0638 | .0204 | .0074 | .0170 | .0741 | 0. |
| .2190 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0048 | -.0675 | .0207 | .0126 | .0099 | .0798 | 0. |
| .2200 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0012 | -.0698 | .0187 | .0195 | -.0012 | .0814 | 0. |
| .2210 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0006 | -.0709 | .0147 | .0276 | -.0154 | .0781 | 0. |
| .2220 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0013 | -.0706 | .0097 | .0360 | -.0504 | .0724 | 0. |
| .2230 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0018 | -.0692 | .0050 | .0430 | -.0436 | .0661 | 0. |

ADLPIPE PAGE 2783

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | DIS | TYPE | VA | 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) |
| .2240 | 0. | 0. | 0. | 0. | 0. | 0. | .0029 | -.0667 | .0022 | .0467 | -.0519 | .0593 | 0. |
| .2250 | 0. | 0. | 0. | 0. | 0. | 0. | .0046 | -.0631 | .0022 | .0462 | -.0537 | .0524 | 0. |
| .2260 | 0. | 0. | 0. | 0. | 0. | 0. | .0071 | -.0588 | .0045 | .0421 | -.0499 | .0469 | 0. |
| .2270 | 0. | 0. | 0. | 0. | 0. | 0. | .0098 | -.0539 | .0078 | .0364 | -.0427 | .0427 | 0. |
| .2280 | 0. | 0. | 0. | 0. | 0. | 0. | .0120 | -.0484 | .0105 | .0306 | -.0346 | .0374 | 0. |
| .2290 | 0. | 0. | 0. | 0. | 0. | 0. | .0133 | -.0425 | .0113 | .0262 | -.0277 | .0293 | 0. |
| .2300 | 0. | 0. | 0. | 0. | 0. | 0. | .0131 | -.0365 | .0096 | .0245 | -.0235 | .0197 | 0. |
| .2310 | 0. | 0. | 0. | 0. | 0. | 0. | .0118 | -.0306 | .0059 | .0255 | -.0219 | .0102 | 0. |
| .2320 | 0. | 0. | 0. | 0. | 0. | 0. | .0100 | -.0249 | .0011 | .0278 | -.0211 | .0008 | 0. |
| .2330 | 0. | 0. | 0. | 0. | 0. | 0. | .0086 | -.0195 | -.0033 | .0297 | -.0190 | -.0083 | 0. |
| .2340 | 0. | 0. | 0. | 0. | 0. | 0. | .0084 | -.0144 | -.0063 | .0302 | -.0139 | -.0153 | 0. |
| .2350 | 0. | 0. | 0. | 0. | 0. | 0. | .0096 | -.0098 | -.0071 | .0287 | -.0054 | -.0190 | 0. |
| .2360 | 0. | 0. | 0. | 0. | 0. | 0. | .0122 | -.0058 | -.0057 | .0253 | .0062 | -.0202 | 0. |
| .2370 | 0. | 0. | 0. | 0. | 0. | 0. | .0160 | -.0022 | -.0028 | .0207 | .0197 | -.0205 | 0. |
| .2380 | 0. | 0. | 0. | 0. | 0. | 0. | .0204 | .0010 | .0006 | .0163 | .0330 | -.0204 | 0. |
| .2390 | 0. | 0. | 0. | 0. | 0. | 0. | .0249 | .0037 | .0036 | .0133 | .0441 | -.0198 | 0. |
| .2400 | 0. | 0. | 0. | 0. | 0. | 0. | .0290 | .0060 | .0057 | .0125 | .0519 | -.0198 | 0. |
| .2410 | 0. | 0. | 0. | 0. | 0. | 0. | .0325 | .0080 | .0067 | .0137 | .0558 | -.0210 | 0. |
| .2420 | 0. | 0. | 0. | 0. | 0. | 0. | .0354 | .0099 | .0067 | .0168 | .0561 | -.0232 | 0. |
| .2430 | 0. | 0. | 0. | 0. | 0. | 0. | .0380 | .0116 | .0061 | .0212 | .0534 | -.0257 | 0. |
| .2440 | 0. | 0. | 0. | 0. | 0. | 0. | .0402 | .0133 | .0052 | .0261 | .0482 | -.0287 | 0. |
| .2450 | 0. | 0. | 0. | 0. | 0. | 0. | .0420 | .0151 | .0045 | .0311 | .0414 | -.0324 | 0. |
| .2460 | 0. | 0. | 0. | 0. | 0. | 0. | .0432 | .0170 | .0038 | .0360 | .0328 | -.0365 | 0. |
| .2470 | 0. | 0. | 0. | 0. | 0. | 0. | .0438 | .0192 | .0030 | .0409 | .0225 | -.0407 | 0. |
| .2480 | 0. | 0. | 0. | 0. | 0. | 0. | .0436 | .0216 | .0017 | .0458 | .0106 | -.0456 | 0. |
| .2490 | 0. | 0. | 0. | 0. | 0. | 0. | .0426 | .0244 | -.0001 | .0506 | -.0025 | -.0520 | 0. |
| .2500 | 0. | 0. | 0. | 0. | 0. | 0. | .0408 | .0275 | -.0024 | .0551 | -.0163 | -.0594 | 0. |
| .2510 | 0. | 0. | 0. | 0. | 0. | 0. | .0382 | .0309 | -.0047 | .0590 | -.0301 | -.0667 | 0. |
| .2520 | 0. | 0. | 0. | 0. | 0. | 0. | .0350 | .0344 | -.0068 | .0616 | -.0428 | -.0736 | 0. |
| .2530 | 0. | 0. | 0. | 0. | 0. | 0. | .0316 | .0382 | -.0083 | .0625 | -.0535 | -.0802 | 0. |
| .2540 | 0. | 0. | 0. | 0. | 0. | 0. | .0282 | .0421 | -.0092 | .0613 | -.0614 | -.0866 | 0. |
| .2550 | 0. | 0. | 0. | 0. | 0. | 0. | .0251 | .0459 | -.0094 | .0584 | -.0664 | -.0918 | 0. |
| .2560 | 0. | 0. | 0. | 0. | 0. | 0. | .0221 | .0495 | -.0090 | .0539 | -.0684 | -.0956 | 0. |
| .2570 | 0. | 0. | 0. | 0. | 0. | 0. | .0193 | .0529 | -.0081 | .0482 | -.0675 | -.0985 | 0. |
| .2580 | 0. | 0. | 0. | 0. | 0. | 0. | .0166 | .0559 | -.0069 | .0418 | -.0639 | -.1004 | 0. |
| .2590 | 0. | 0. | 0. | 0. | 0. | 0. | .0143 | .0584 | -.0056 | .0351 | -.0581 | -.1009 | 0. |
| .2600 | 0. | 0. | 0. | 0. | 0. | 0. | .0125 | .0603 | -.0045 | .0284 | -.0504 | -.1002 | 0. |
| .2610 | 0. | 0. | 0. | 0. | 0. | 0. | .0113 | .0615 | -.0033 | .0217 | -.0410 | -.0983 | 0. |

ADLPIPE PAGE 2784

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|-------|-------|--------|-------|--------|--------|----|
| .2510 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0382 | .0309 | -.0047 | .0590 | -.0301 | -.0667 | 0. |
| .2520 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0350 | .0344 | -.0068 | .0616 | -.0428 | -.0736 | 0. |
| .2530 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0316 | .0382 | -.0085 | .0625 | -.0535 | -.0802 | 0. |
| .2540 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0282 | .0421 | -.0092 | .0613 | -.0614 | -.0866 | 0. |
| .2550 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0251 | .0459 | -.0094 | .0584 | -.0664 | -.0918 | 0. |
| .2560 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0221 | .0495 | -.0090 | .0559 | -.0684 | -.0956 | 0. |
| .2570 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0193 | .0529 | -.0081 | .0482 | -.0675 | -.0985 | 0. |
| .2580 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0166 | .0559 | -.0069 | .0418 | -.0639 | -.1004 | 0. |
| .2590 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0143 | .0584 | -.0056 | .0351 | -.0581 | -.1009 | 0. |
| .2600 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0125 | .0603 | -.0045 | .0284 | -.0504 | -.1002 | 0. |
| .2610 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0113 | .0615 | -.0033 | .0217 | -.0410 | -.0983 | 0. |

ADLPIPE PAGE 2784

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.55.

S/RV PIPING KEWAUNEE GKWOSE 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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | DIS | TYPE | VA | | | | | | |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | FX | RY | RZ | STRESS | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .2620 | 0. | 0. | 0. | 0. | 0. | 0. | .0106 | .0620 | -.0022 | .0155 | -.0304 | -.0949 | 0. | | |
| .2630 | 0. | 0. | 0. | 0. | 0. | 0. | .0105 | .0616 | -.0012 | .0100 | -.0192 | -.0899 | 0. | | |
| .2640 | 0. | 0. | 0. | 0. | 0. | 0. | .0111 | .0605 | -.0006 | .0056 | -.0079 | -.0841 | 0. | | |
| .2650 | 0. | 0. | 0. | 0. | 0. | 0. | .0123 | .0587 | -.0004 | .0023 | .0030 | -.0778 | 0. | | |
| .2660 | 0. | 0. | 0. | 0. | 0. | 0. | .0141 | .0561 | -.0007 | .0006 | .0129 | -.0709 | 0. | | |
| .2670 | 0. | 0. | 0. | 0. | 0. | 0. | .0164 | .0529 | -.0017 | .0006 | .0212 | -.0636 | 0. | | |
| .2680 | 0. | 0. | 0. | 0. | 0. | 0. | .0192 | .0491 | -.0032 | .0022 | .0280 | -.0560 | 0. | | |
| .2690 | 0. | 0. | 0. | 0. | 0. | 0. | .0226 | .0449 | -.0052 | .0051 | .0329 | -.0489 | 0. | | |
| .2700 | 0. | 0. | 0. | 0. | 0. | 0. | .0264 | .0404 | -.0075 | .0090 | .0362 | -.0422 | 0. | | |
| .2710 | 0. | 0. | 0. | 0. | 0. | 0. | .0307 | .0356 | -.0099 | .0156 | .0377 | -.0353 | 0. | | |
| .2720 | 0. | 0. | 0. | 0. | 0. | 0. | .0352 | .0307 | -.0125 | .0188 | .0375 | -.0284 | 0. | | |
| .2730 | 0. | 0. | 0. | 0. | 0. | 0. | .0399 | .0258 | -.0148 | .0242 | .0356 | -.0221 | 0. | | |
| .2740 | 0. | 0. | 0. | 0. | 0. | 0. | .0447 | .0210 | -.0176 | .0299 | .0317 | -.0169 | 0. | | |
| .2750 | 0. | 0. | 0. | 0. | 0. | 0. | .0492 | .0163 | -.0209 | .0359 | .0256 | -.0120 | 0. | | |
| .2760 | 0. | 0. | 0. | 0. | 0. | 0. | .0531 | .0118 | -.0244 | .0423 | .0176 | -.0070 | 0. | | |
| .2770 | 0. | 0. | 0. | 0. | 0. | 0. | .0564 | .0076 | -.0282 | .0489 | .0081 | -.0027 | 0. | | |
| .2780 | 0. | 0. | 0. | 0. | 0. | 0. | .0591 | .0038 | -.0321 | .0549 | -.0021 | .0003 | 0. | | |
| .2790 | 0. | 0. | 0. | 0. | 0. | 0. | .0615 | .0003 | -.0359 | .0601 | -.0124 | .0030 | 0. | | |
| .2800 | 0. | 0. | 0. | 0. | 0. | 0. | .0635 | -.0029 | -.0391 | .0642 | -.0220 | .0067 | 0. | | |
| .2810 | 0. | 0. | 0. | 0. | 0. | 0. | .0649 | -.0058 | -.0414 | .0667 | -.0301 | .0111 | 0. | | |
| .2820 | 0. | 0. | 0. | 0. | 0. | 0. | .0657 | -.0083 | -.0427 | .0675 | -.0363 | .0153 | 0. | | |
| .2830 | 0. | 0. | 0. | 0. | 0. | 0. | .0660 | -.0105 | -.0435 | .0668 | -.0409 | .0197 | 0. | | |
| .2840 | 0. | 0. | 0. | 0. | 0. | 0. | .0654 | -.0124 | -.0441 | .0654 | -.0444 | .0249 | 0. | | |
| .2850 | 0. | 0. | 0. | 0. | 0. | 0. | .0638 | -.0140 | -.0447 | .0637 | -.0472 | .0302 | 0. | | |
| .2860 | 0. | 0. | 0. | 0. | 0. | 0. | .0608 | -.0153 | -.0453 | .0617 | -.0494 | .0344 | 0. | | |
| .2870 | 0. | 0. | 0. | 0. | 0. | 0. | .0567 | -.0163 | -.0461 | .0594 | -.0509 | .0376 | 0. | | |
| .2880 | 0. | 0. | 0. | 0. | 0. | 0. | .0519 | -.0169 | -.0468 | .0567 | -.0514 | .0407 | 0. | | |
| .2890 | 0. | 0. | 0. | 0. | 0. | 0. | .0466 | -.0171 | -.0468 | .0528 | -.0502 | .0436 | 0. | | |
| .2900 | 0. | 0. | 0. | 0. | 0. | 0. | .0411 | -.0169 | -.0453 | .0470 | -.0460 | .0460 | 0. | | |
| .2910 | 0. | 0. | 0. | 0. | 0. | 0. | .0357 | -.0163 | -.0419 | .0386 | -.0387 | .0484 | 0. | | |
| .2920 | 0. | 0. | 0. | 0. | 0. | 0. | .0306 | -.0152 | -.0368 | .0281 | -.0286 | .0515 | 0. | | |
| .2930 | 0. | 0. | 0. | 0. | 0. | 0. | .0258 | -.0137 | -.0304 | .0157 | -.0167 | .0547 | 0. | | |
| .2940 | 0. | 0. | 0. | 0. | 0. | 0. | .0210 | -.0117 | -.0232 | .0022 | -.0040 | .0565 | 0. | | |
| .2950 | 0. | 0. | 0. | 0. | 0. | 0. | .0157 | -.0092 | -.0158 | -.0116 | .0078 | .0571 | 0. | | |
| .2960 | 0. | 0. | 0. | 0. | 0. | 0. | .0098 | -.0063 | -.0092 | -.0244 | .0170 | .0570 | 0. | | |
| .2970 | 0. | 0. | 0. | 0. | 0. | 0. | .0033 | -.0030 | -.0036 | -.0357 | .0227 | .0556 | 0. | | |
| .2980 | 0. | 0. | 0. | 0. | 0. | 0. | -.0037 | .0006 | .0008 | -.0459 | .0251 | .0517 | 0. | | |
| .2990 | 0. | 0. | 0. | 0. | 0. | 0. | -.0107 | .0045 | .0044 | -.0551 | .0248 | .0463 | 0. | | |

ADLPIPE PAGE 2785

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.55.

S/RV PIPING KEWAUNEE GKWOSE 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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|--------|--------|--------|--------|--------|-------|----|
| .2890 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0466 | -.0171 | -.0468 | .0528 | -.0502 | .0436 | 0. |
| .2900 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .411 | -.0169 | -.0453 | .0470 | -.0460 | .0460 | 0. |
| .2910 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0357 | -.0163 | -.0419 | .0386 | -.0387 | .0484 | 0. |
| .2920 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0306 | -.0152 | -.0368 | .0281 | -.0286 | .0515 | 0. |
| .2930 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0258 | -.0137 | -.0304 | .0157 | -.0167 | .0547 | 0. |
| .2940 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0210 | -.0117 | -.0232 | .0022 | -.0040 | .0565 | 0. |
| .2950 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0157 | -.0092 | -.0158 | -.0116 | .0078 | .0571 | 0. |
| .2960 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0098 | -.0063 | -.0092 | -.0244 | .0170 | .0570 | 0. |
| .2970 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0033 | -.0030 | -.0036 | -.0357 | .0227 | .0556 | 0. |
| .2980 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0077 | .0004 | .0008 | -.0459 | .0251 | .0517 | 0. |
| .2990 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0107 | .0045 | .0044 | -.0551 | .0248 | .0463 | 0. |

ADLPIPE PAGE 2785

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.55.

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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | DIS | TYPE | VA | | | | | | |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|-------|--------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .3000 | 0. | 0. | 0. | 0. | 0. | 0. | -.0176 | .0085 | .0078 | -.0634 | .0225 | .0415 | 0. | | |
| .3010 | 0. | 0. | 0. | 0. | 0. | 0. | -.0240 | .0125 | .0113 | -.0713 | .0190 | .0377 | 0. | | |
| .3020 | 0. | 0. | 0. | 0. | 0. | 0. | -.0294 | .0164 | .0151 | -.0791 | .0153 | .0335 | 0. | | |
| .3030 | 0. | 0. | 0. | 0. | 0. | 0. | -.0339 | .0203 | .0191 | -.0867 | .0116 | .0289 | 0. | | |
| .3040 | 0. | 0. | 0. | 0. | 0. | 0. | -.0374 | .0239 | .0228 | -.0931 | .0073 | .0254 | 0. | | |
| .3050 | 0. | 0. | 0. | 0. | 0. | 0. | -.0403 | .0270 | .0261 | -.0979 | .0020 | .0232 | 0. | | |
| .3060 | 0. | 0. | 0. | 0. | 0. | 0. | -.0426 | .0297 | .0286 | -.1008 | -.0041 | .0209 | 0. | | |
| .3070 | 0. | 0. | 0. | 0. | 0. | 0. | -.0444 | .0321 | .0300 | -.1019 | -.0110 | .0177 | 0. | | |
| .3080 | 0. | 0. | 0. | 0. | 0. | 0. | -.0454 | .0338 | .0303 | -.1010 | -.0184 | .0154 | 0. | | |
| .3090 | 0. | 0. | 0. | 0. | 0. | 0. | -.0458 | .0350 | .0300 | -.0984 | -.0257 | .0147 | 0. | | |
| .3100 | 0. | 0. | 0. | 0. | 0. | 0. | -.0456 | .0356 | .0295 | -.0950 | -.0317 | .0150 | 0. | | |
| .3110 | 0. | 0. | 0. | 0. | 0. | 0. | -.0446 | .0358 | .0289 | -.0911 | -.0358 | .0158 | 0. | | |
| .3120 | 0. | 0. | 0. | 0. | 0. | 0. | -.0427 | .0355 | .0280 | -.0869 | -.0379 | .0179 | 0. | | |
| .3130 | 0. | 0. | 0. | 0. | 0. | 0. | -.0402 | .0348 | .0269 | -.0822 | -.0384 | .0213 | 0. | | |
| .3140 | 0. | 0. | 0. | 0. | 0. | 0. | -.0375 | .0338 | .0253 | -.0773 | -.0374 | .0250 | 0. | | |
| .3150 | 0. | 0. | 0. | 0. | 0. | 0. | -.0349 | .0327 | .0234 | -.0722 | -.0352 | .0285 | 0. | | |
| .3160 | 0. | 0. | 0. | 0. | 0. | 0. | -.0323 | .0315 | .0209 | -.0670 | -.0321 | .0324 | 0. | | |
| .3170 | 0. | 0. | 0. | 0. | 0. | 0. | -.0298 | .0302 | .0178 | -.0619 | -.0285 | .0366 | 0. | | |
| .3180 | 0. | 0. | 0. | 0. | 0. | 0. | -.0273 | .0290 | .0144 | -.0574 | -.0238 | .0403 | 0. | | |
| .3190 | 0. | 0. | 0. | 0. | 0. | 0. | -.0250 | .0279 | .0113 | -.0541 | -.0179 | .0435 | 0. | | |
| .3200 | 0. | 0. | 0. | 0. | 0. | 0. | -.0228 | .0269 | .0085 | -.0520 | -.0110 | .0471 | 0. | | |
| .3210 | 0. | 0. | 0. | 0. | 0. | 0. | -.0207 | .0259 | .0061 | -.0511 | -.0033 | .0514 | 0. | | |
| .3220 | 0. | 0. | 0. | 0. | 0. | 0. | -.0186 | .0250 | .0041 | -.0514 | .0049 | .0549 | 0. | | |
| .3230 | 0. | 0. | 0. | 0. | 0. | 0. | -.0167 | .0242 | .0024 | -.0527 | .0132 | .0570 | 0. | | |
| .3240 | 0. | 0. | 0. | 0. | 0. | 0. | -.0150 | .0234 | .0009 | -.0546 | .0208 | .0589 | 0. | | |
| .3250 | 0. | 0. | 0. | 0. | 0. | 0. | -.0135 | .0223 | -.0004 | -.0566 | .0274 | .0612 | 0. | | |
| .3260 | 0. | 0. | 0. | 0. | 0. | 0. | -.0123 | .0210 | -.0014 | -.0586 | .0328 | .0628 | 0. | | |
| .3270 | 0. | 0. | 0. | 0. | 0. | 0. | -.0111 | .0195 | -.0022 | -.0607 | .0373 | .0629 | 0. | | |
| .3280 | 0. | 0. | 0. | 0. | 0. | 0. | -.0097 | .0176 | -.0027 | -.0627 | .0406 | .0626 | 0. | | |
| .3290 | 0. | 0. | 0. | 0. | 0. | 0. | -.0084 | .0152 | -.0028 | -.0640 | .0427 | .0629 | 0. | | |
| .3300 | 0. | 0. | 0. | 0. | 0. | 0. | -.0070 | .0122 | -.0024 | -.0647 | .0437 | .0633 | 0. | | |
| .3310 | 0. | 0. | 0. | 0. | 0. | 0. | -.0055 | .0086 | -.0018 | -.0646 | .0436 | .0626 | 0. | | |
| .3320 | 0. | 0. | 0. | 0. | 0. | 0. | -.0040 | .0045 | -.0013 | -.0635 | .0422 | .0614 | 0. | | |
| .3330 | 0. | 0. | 0. | 0. | 0. | 0. | -.0024 | -.0003 | -.0008 | -.0609 | .0394 | .0605 | 0. | | |
| .3340 | 0. | 0. | 0. | 0. | 0. | 0. | -.0010 | -.0056 | -.0004 | -.0571 | .0353 | .0595 | 0. | | |
| .3350 | 0. | 0. | 0. | 0. | 0. | 0. | .0003 | -.0113 | .0001 | -.0525 | .0306 | .0579 | 0. | | |
| .3360 | 0. | 0. | 0. | 0. | 0. | 0. | .0015 | -.0173 | .0006 | -.0471 | .0253 | .0559 | 0. | | |
| .3370 | 0. | 0. | 0. | 0. | 0. | 0. | .0028 | -.0236 | .0010 | -.0413 | .0201 | .0542 | 0. | | |

ADLPIPE PAGE 2786

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|--------|--------|--------|--------|-------|-------|----|
| .3270 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0111 | .0195 | -.0022 | -.0607 | .0373 | .0629 | 0. |
| .3280 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0097 | .0176 | -.0027 | -.0627 | .0406 | .0626 | 0. |
| .3290 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0084 | .0152 | -.0028 | -.0640 | .0427 | .0629 | 0. |
| .3300 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0070 | .0122 | -.0024 | -.0647 | .0437 | .0633 | 0. |
| .3310 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0055 | .0086 | -.0018 | -.0646 | .0436 | .0626 | 0. |
| .3320 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0040 | .0045 | -.0013 | -.0635 | .0422 | .0614 | 0. |
| .3330 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0024 | -.0003 | -.0008 | -.0609 | .0394 | .0605 | 0. |
| .3340 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | -.0010 | -.0056 | -.0004 | -.0571 | .0353 | .0595 | 0. |
| .3350 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0003 | -.0113 | .0001 | -.0525 | .0306 | .0579 | 0. |
| .3360 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0015 | -.0173 | .0006 | -.0471 | .0255 | .0559 | 0. |
| .3370 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0028 | -.0236 | .0010 | -.0413 | .0201 | .0542 | 0. |

ADLPIPE PAGE 2786

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | DIS | TYPE | VA | 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) |
| .3380 | 0. | 0. | 0. | 0. | 0. | 0. | .0040 | -.0300 | .0015 | -.0352 | .0149 | .0524 | 0. |
| .3390 | 0. | 0. | 0. | 0. | 0. | 0. | .0048 | -.0362 | .0021 | -.0293 | .0101 | .0499 | 0. |
| .3400 | 0. | 0. | 0. | 0. | 0. | 0. | .0053 | -.0422 | .0026 | -.0235 | .0055 | .0469 | 0. |
| .3410 | 0. | 0. | 0. | 0. | 0. | 0. | .0053 | -.0479 | .0027 | -.0178 | .0009 | .0439 | 0. |
| .3420 | 0. | 0. | 0. | 0. | 0. | 0. | .0049 | -.0530 | .0024 | -.0124 | -.0035 | .0400 | 0. |
| .3430 | 0. | 0. | 0. | 0. | 0. | 0. | .0040 | -.0575 | .0018 | -.0077 | -.0073 | .0349 | 0. |
| .3440 | 0. | 0. | 0. | 0. | 0. | 0. | .0027 | -.0613 | .0011 | -.0039 | -.0101 | .0291 | 0. |
| .3450 | 0. | 0. | 0. | 0. | 0. | 0. | .0011 | -.0645 | .0007 | -.0013 | -.0116 | .0235 | 0. |
| .3460 | 0. | 0. | 0. | 0. | 0. | 0. | -.0005 | -.0669 | .0005 | -.0001 | -.0115 | .0180 | 0. |
| .3470 | 0. | 0. | 0. | 0. | 0. | 0. | -.0021 | -.0685 | .0007 | -.0005 | -.0093 | .0118 | 0. |
| .3480 | 0. | 0. | 0. | 0. | 0. | 0. | -.0037 | -.0694 | .0013 | -.0023 | -.0057 | .0053 | 0. |
| .3490 | 0. | 0. | 0. | 0. | 0. | 0. | -.0052 | -.0698 | .0020 | -.0049 | -.0009 | -.0005 | 0. |
| .3500 | 0. | 0. | 0. | 0. | 0. | 0. | -.0067 | -.0697 | .0027 | -.0077 | .0046 | -.0059 | 0. |
| .3510 | 0. | 0. | 0. | 0. | 0. | 0. | -.0081 | -.0693 | .0031 | -.0105 | .0103 | -.0117 | 0. |
| .3520 | 0. | 0. | 0. | 0. | 0. | 0. | -.0095 | -.0685 | .0031 | -.0129 | .0159 | -.0180 | 0. |
| .3530 | 0. | 0. | 0. | 0. | 0. | 0. | -.0105 | -.0678 | .0027 | -.0146 | .0211 | -.0237 | 0. |
| .3540 | 0. | 0. | 0. | 0. | 0. | 0. | -.0112 | -.0671 | .0020 | -.0153 | .0259 | -.0283 | 0. |
| .3550 | 0. | 0. | 0. | 0. | 0. | 0. | -.0114 | -.0665 | .0014 | -.0153 | .0307 | -.0322 | 0. |
| .3560 | 0. | 0. | 0. | 0. | 0. | 0. | -.0108 | -.0663 | .0008 | -.0146 | .0353 | -.0354 | 0. |
| .3570 | 0. | 0. | 0. | 0. | 0. | 0. | -.0095 | -.0664 | .0002 | -.0129 | .0396 | -.0372 | 0. |
| .3580 | 0. | 0. | 0. | 0. | 0. | 0. | -.0074 | -.0670 | -.0005 | -.0100 | .0431 | -.0375 | 0. |
| .3590 | 0. | 0. | 0. | 0. | 0. | 0. | -.0048 | -.0681 | -.0015 | -.0058 | .0455 | -.0365 | 0. |
| .3600 | 0. | 0. | 0. | 0. | 0. | 0. | -.0019 | -.0696 | -.0028 | .0001 | .0464 | -.0348 | 0. |
| .3610 | 0. | 0. | 0. | 0. | 0. | 0. | .0015 | -.0716 | -.0046 | .0076 | .0455 | -.0321 | 0. |
| .3620 | 0. | 0. | 0. | 0. | 0. | 0. | .0051 | -.0740 | -.0071 | .0167 | .0428 | -.0285 | 0. |
| .3630 | 0. | 0. | 0. | 0. | 0. | 0. | .0089 | -.0768 | -.0099 | .0269 | .0387 | -.0242 | 0. |
| .3640 | 0. | 0. | 0. | 0. | 0. | 0. | .0130 | -.0797 | -.0127 | .0377 | .0339 | -.0194 | 0. |
| .3650 | 0. | 0. | 0. | 0. | 0. | 0. | .0174 | -.0828 | -.0151 | .0485 | .0289 | -.0134 | 0. |
| .3660 | 0. | 0. | 0. | 0. | 0. | 0. | .0220 | -.0858 | -.0170 | .0589 | .0241 | -.0065 | 0. |
| .3670 | 0. | 0. | 0. | 0. | 0. | 0. | .0268 | -.0887 | -.0183 | .0686 | .0200 | .0008 | 0. |
| .3680 | 0. | 0. | 0. | 0. | 0. | 0. | .0316 | -.0911 | -.0190 | .0773 | .0164 | .0081 | 0. |
| .3690 | 0. | 0. | 0. | 0. | 0. | 0. | .0361 | -.0932 | -.0193 | .0852 | .0132 | .0155 | 0. |
| .3700 | 0. | 0. | 0. | 0. | 0. | 0. | .0399 | -.0946 | -.0195 | .0926 | .0098 | .0227 | 0. |
| .3710 | 0. | 0. | 0. | 0. | 0. | 0. | .0428 | -.0953 | -.0198 | .0994 | .0061 | .0288 | 0. |
| .3720 | 0. | 0. | 0. | 0. | 0. | 0. | .0448 | -.0951 | -.0204 | .1055 | .0020 | .0331 | 0. |
| .3730 | 0. | 0. | 0. | 0. | 0. | 0. | .0457 | -.0940 | -.0211 | .1110 | -.0024 | .0360 | 0. |
| .3740 | 0. | 0. | 0. | 0. | 0. | 0. | .0455 | -.0919 | -.0218 | .1154 | -.0066 | .0380 | 0. |
| .3750 | 0. | 0. | 0. | 0. | 0. | 0. | .0444 | -.0888 | -.0220 | .1184 | -.0101 | .0389 | 0. |

ADLPIPE PAGE 2787

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

S/RV PIPING KEWAUNEE SKHOFF 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

| | | | | | | | | | | | | | | |
|-------|----|----|----|----|----|----|----|-------|--------|--------|-------|--------|--------|----|
| .3650 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .174 | -.0828 | -.0151 | .0485 | .0289 | -.0134 | 0. |
| .3660 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0220 | -.0858 | -.0170 | .0589 | .0241 | -.0065 | 0. |
| .3670 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0268 | -.0887 | -.0183 | .0686 | .0200 | .0008 | 0. |
| .3680 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0316 | -.0911 | -.0190 | .0773 | .0164 | .0081 | 0. |
| .3690 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0361 | -.0932 | -.0193 | .0852 | .0132 | .0155 | 0. |
| .3700 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0399 | -.0946 | -.0193 | .0926 | .0098 | .0227 | 0. |
| .3710 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0428 | -.0953 | -.0198 | .0994 | .0061 | .0288 | 0. |
| .3720 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0448 | -.0951 | -.0204 | .1055 | .0020 | .0331 | 0. |
| .3730 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0457 | -.0940 | -.0211 | .1110 | -.0024 | .0360 | 0. |
| .3740 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0455 | -.0919 | -.0218 | .1154 | -.0066 | .0380 | 0. |
| .3750 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | .0444 | -.0888 | -.0220 | .1184 | -.0101 | .0389 | 0. |

ADLPIPE PAGE 2787

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| SECTION | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | DIS | TYPE | VA | VA | DZ | RX | RY | RZ | STRESS |
|---------|------|--------|------|----------|---------|----------|--------|--------|--------|-------|--------|--------|--------|-------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | (PSI) | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .3760 | 0. | 0. | 0. | 0. | 0. | 0. | .0426 | -.0846 | -.0215 | .1194 | -.0123 | .0384 | 0. | | |
| .3770 | 0. | 0. | 0. | 0. | 0. | 0. | .0402 | -.0794 | -.0202 | .1183 | -.0127 | .0367 | 0. | | |
| .3780 | 0. | 0. | 0. | 0. | 0. | 0. | .0374 | -.0732 | -.0179 | .1150 | -.0114 | .0344 | 0. | | |
| .3790 | 0. | 0. | 0. | 0. | 0. | 0. | .0341 | -.0661 | -.0147 | .1098 | -.0084 | .0315 | 0. | | |
| .3800 | 0. | 0. | 0. | 0. | 0. | 0. | .0303 | -.0583 | -.0108 | .1028 | -.0043 | .0279 | 0. | | |
| .3810 | 0. | 0. | 0. | 0. | 0. | 0. | .0260 | -.0497 | -.0065 | .0945 | .0004 | .0232 | 0. | | |
| .3820 | 0. | 0. | 0. | 0. | 0. | 0. | .0214 | -.0407 | -.0022 | .0854 | .0051 | .0178 | 0. | | |
| .3830 | 0. | 0. | 0. | 0. | 0. | 0. | .0162 | -.0314 | .0020 | .0759 | .0093 | .0118 | 0. | | |
| .3840 | 0. | 0. | 0. | 0. | 0. | 0. | .0107 | -.0219 | .0060 | .0661 | .0128 | .0053 | 0. | | |
| .3850 | 0. | 0. | 0. | 0. | 0. | 0. | .0050 | -.0125 | .0097 | .0564 | .0154 | -.0014 | 0. | | |
| .3860 | 0. | 0. | 0. | 0. | 0. | 0. | -.0006 | -.0034 | .0131 | .0469 | .0172 | -.0079 | 0. | | |
| .3870 | 0. | 0. | 0. | 0. | 0. | 0. | -.0060 | .0053 | .0163 | .0378 | .0182 | -.0139 | 0. | | |
| .3880 | 0. | 0. | 0. | 0. | 0. | 0. | -.0110 | .0134 | .0192 | .0291 | .0183 | -.0195 | 0. | | |
| .3890 | 0. | 0. | 0. | 0. | 0. | 0. | -.0155 | .0207 | .0219 | .0210 | .0180 | -.0242 | 0. | | |
| .3900 | 0. | 0. | 0. | 0. | 0. | 0. | -.0194 | .0270 | .0242 | .0141 | .0166 | -.0276 | 0. | | |
| .3910 | 0. | 0. | 0. | 0. | 0. | 0. | -.0228 | .0323 | .0260 | .0084 | .0141 | -.0303 | 0. | | |
| .3920 | 0. | 0. | 0. | 0. | 0. | 0. | -.0255 | .0364 | .0270 | .0042 | .0103 | -.0328 | 0. | | |
| .3930 | 0. | 0. | 0. | 0. | 0. | 0. | -.0275 | .0394 | .0274 | .0016 | .0057 | -.0347 | 0. | | |
| .3940 | 0. | 0. | 0. | 0. | 0. | 0. | -.0290 | .0411 | .0270 | .0006 | -.0001 | -.0356 | 0. | | |
| .3950 | 0. | 0. | 0. | 0. | 0. | 0. | -.0298 | .0416 | .0262 | .0012 | -.0067 | -.0352 | 0. | | |
| .3960 | 0. | 0. | 0. | 0. | 0. | 0. | -.0300 | .0410 | .0249 | .0030 | -.0133 | -.0344 | 0. | | |
| .3970 | 0. | 0. | 0. | 0. | 0. | 0. | -.0295 | .0394 | .0232 | .0057 | -.0203 | -.0333 | 0. | | |
| .3980 | 0. | 0. | 0. | 0. | 0. | 0. | -.0284 | .0368 | .0213 | .0092 | -.0269 | -.0314 | 0. | | |
| .3990 | 0. | 0. | 0. | 0. | 0. | 0. | -.0269 | .0333 | .0193 | .0133 | -.0331 | -.0286 | 0. | | |
| .4000 | 0. | 0. | 0. | 0. | 0. | 0. | -.0252 | .0293 | .0173 | .0177 | -.0388 | -.0255 | 0. | | |

MAXIMUM VALUE OF DISCONTINUITY FORCE OCCURS AT

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

| SECTION | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | END | TYPE | VA | VA | DZ | RX | RY | RZ | STRESS |
|---------|------|--------|------|----------|---------|----------|------|------|------|-------|-------|-------|--------|-------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | (PSI) | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |

ADLPIPE PAGE 2788

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| 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) | FORCE (LB) |
|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|------------|
| 0.0000 | 0. | 0. | 0. | 0. | 0. | 0. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0. |

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | VA | DX | DY | DZ | RX | RY | RZ | STRESS (PSI) |
|------------|---------|----------|----------|------------|------------|------------|------|------|------|-------|-------|-------|--------------|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | FX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | |

ADLPIPE PAGE 2788

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.56.

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 | END | TYPE | VA | DX | DY | DZ | RX | RY | RZ | STRESS (PSI) |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|---------|---------|---------|--------------|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | FX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | |
| 0.0000 | 0. | 0. | 0. | 0. | 0. | 0. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0. |
| .0010 | 0. | 0. | -0. | -0. | -0. | -0. | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0020 | 0. | 0. | -0. | -0. | -0. | -0. | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0030 | 0. | 0. | -0. | -0. | -0. | -0. | .0000 | .0000 | .0000 | -0.0000 | .0000 | -0.0000 | 1. |
| .0040 | -0. | 0. | 0. | -0. | 0. | -0. | -0.0000 | .0000 | .0000 | -0.0000 | .0000 | -0.0000 | 1. |
| .0050 | -1. | 0. | 0. | -0. | 0. | -0. | -0.0000 | .0000 | -0.0000 | .0000 | -0.0000 | -0.0000 | 1. |
| .0060 | -2. | -0. | 0. | -0. | 1. | 0. | -0.0000 | -0.0000 | -0.0001 | .0001 | -0.0001 | -0.0000 | 3. |
| .0070 | -5. | -1. | 1. | -1. | 2. | 1. | -0.0001 | -0.0000 | -0.0002 | .0002 | -0.0002 | -0.0001 | 6. |
| .0080 | -9. | -1. | 1. | -2. | 3. | 2. | -0.0003 | -0.0000 | -0.0004 | .0005 | -0.0006 | -0.0002 | 12. |
| .0090 | -15. | -3. | 0. | -4. | 5. | 4. | -0.0005 | -0.0000 | -0.0008 | .0009 | -0.0013 | -0.0004 | 22. |
| .0100 | -23. | -6. | -1. | -6. | 7. | 7. | -0.0009 | -0.0000 | -0.0013 | .0016 | -0.0023 | -0.0006 | 36. |
| .0110 | -35. | -11. | -3. | -9. | 11. | 12. | -0.0015 | -0.0000 | -0.0022 | .0025 | -0.0038 | -0.0009 | 57. |
| .0120 | -50. | -17. | -6. | -14. | 16. | 19. | -0.0024 | -0.0001 | -0.0033 | .0039 | -0.0059 | -0.0014 | 87. |
| .0130 | -70. | -26. | -11. | -20. | 23. | 29. | -0.0035 | -0.0001 | -0.0049 | .0057 | -0.0087 | -0.0019 | 127. |
| .0140 | -93. | -40. | -18. | -26. | 30. | 44. | -0.0050 | -0.0001 | -0.0067 | .0080 | -0.0124 | -0.0025 | 179. |
| .0150 | -117. | -56. | -27. | -33. | 36. | 61. | -0.0068 | -0.0002 | -0.0089 | .0106 | -0.0166 | -0.0032 | 238. |
| .0160 | -137. | -71. | -37. | -39. | 41. | 78. | -0.0087 | -0.0003 | -0.0111 | .0133 | -0.0210 | -0.0041 | 294. |
| .0170 | -149. | -80. | -47. | -44. | 45. | 89. | -0.0104 | -0.0003 | -0.0132 | .0157 | -0.0250 | -0.0054 | 333. |
| .0180 | -149. | -76. | -57. | -47. | 45. | 91. | -0.0118 | -0.0002 | -0.0145 | .0172 | -0.0276 | -0.0070 | 340. |
| .0190 | -132. | -61. | -63. | -45. | 39. | 83. | -0.0124 | -0.0001 | -0.0146 | .0170 | -0.0281 | -0.0085 | 313. |
| .0200 | -97. | -36. | -64. | -40. | 28. | 66. | -0.0120 | .0001 | -0.0130 | .0146 | -0.0255 | -0.0095 | 249. |
| .0210 | -47. | -11. | -57. | -27. | 11. | 45. | -0.0104 | .0003 | -0.0093 | .0097 | -0.0194 | -0.0093 | 163. |
| .0220 | 19. | -0. | -43. | -5. | -11. | 28. | -0.0076 | .0004 | -0.0037 | .0027 | -0.0097 | -0.0072 | 93. |
| .0230 | 87. | 4. | -24. | 22. | -33. | 14. | -0.0039 | .0004 | .0032 | -0.0057 | .0023 | -0.0039 | 127. |
| .0240 | 139. | 4. | 3. | 49. | -51. | 3. | -0.0002 | .0003 | .0102 | -0.0141 | .0147 | .0000 | 214. |
| .0250 | 181. | 8. | 28. | 67. | -68. | -7. | .0029 | .0000 | .0162 | -0.0214 | .0253 | .0036 | 293. |
| .0260 | 235. | 20. | 41. | 75. | -93. | -23. | .0051 | -0.0003 | .0203 | -0.0267 | .0323 | .0060 | 372. |
| .0270 | 297. | 17. | 41. | 83. | -119. | -34. | .0067 | -0.0009 | .0221 | -0.0287 | .0362 | .0076 | 452. |
| .0280 | 325. | 21. | 38. | 85. | -124. | -50. | .0077 | -0.0015 | .0213 | -0.0279 | .0367 | .0075 | 483. |
| .0290 | 327. | 74. | 31. | 71. | -119. | -92. | .0080 | -0.0022 | .0185 | -0.0255 | .0340 | .0048 | 506. |
| .0300 | 382. | 116. | 9. | 58. | -138. | -129. | .0077 | -0.0031 | .0161 | -0.0222 | .0303 | .0036 | 603. |
| .0310 | 434. | 96. | 2. | 58. | -164. | -137. | .0083 | -0.0044 | .0153 | -0.0199 | .0296 | .0064 | 674. |
| .0320 | 434. | 100. | 17. | 57. | -160. | -159. | .0112 | -0.0056 | .0162 | -0.0205 | .0334 | .0097 | 708. |
| .0330 | 424. | 159. | 36. | 58. | -137. | -205. | .0158 | -0.0067 | .0186 | -0.0237 | .0406 | .0127 | 771. |
| .0340 | 395. | 167. | 68. | 70. | -115. | -220. | .0205 | -0.0081 | .0225 | -0.0272 | .0494 | .0193 | 786. |
| .0350 | 307. | 84. | 125. | 83. | -95. | -185. | .0236 | -0.0098 | .0258 | -0.0284 | .0565 | .0293 | 681. |
| .0360 | 207. | 25. | 159. | 82. | -69. | -160. | .0244 | -0.0113 | .0252 | -0.0249 | .0562 | .0356 | 585. |
| .0370 | 130. | 59. | 141. | 70. | -31. | -179. | .0231 | -0.0124 | .0183 | -0.0149 | .0458 | .0340 | 593. |

ADLPIPE PAGE 2789

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02. 18.29.56.

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

| | | | | | | | | | | | | | |
|-------|------|------|------|-----|-------|-------|-------|--------|-------|--------|-------|-------|------|
| .0270 | 297. | 17. | 41. | 83. | -119. | -34. | .067 | -.0009 | .0221 | -.0287 | .0362 | .0076 | 452. |
| .0280 | 325. | 21. | 38. | 85. | -124. | -50. | .077 | -.0015 | .0213 | -.0279 | .0367 | .0075 | 483. |
| .0290 | 327. | 74. | 31. | 71. | -119. | -92. | .0880 | -.0027 | .0185 | -.0255 | .0340 | .0048 | 506. |
| .0300 | 382. | 116. | 9. | 59. | -130. | -129. | .0077 | -.0031 | .0161 | -.0222 | .0303 | .0036 | 603. |
| .0310 | 434. | 96. | 3. | 58. | -164. | -137. | .0083 | -.0044 | .0153 | -.0199 | .0296 | .0064 | 674. |
| .0320 | 434. | 100. | 17. | 57. | -160. | -159. | .0112 | -.0056 | .0162 | -.0205 | .0334 | .0097 | 708. |
| .0330 | 424. | 159. | 36. | 58. | -137. | -205. | .0158 | -.0067 | .0186 | -.0237 | .0406 | .0127 | 771. |
| .0340 | 395. | 167. | 65. | 70. | -115. | -220. | .0205 | -.0081 | .0225 | -.0272 | .0494 | .0193 | 786. |
| .0350 | 307. | 84. | 125. | 83. | -95. | -185. | .0236 | -.0098 | .0258 | -.0284 | .0565 | .0293 | 681. |
| .0360 | 207. | 25. | 159. | 82. | -60. | -160. | .0244 | -.0113 | .0252 | -.0249 | .0562 | .0356 | 585. |
| .0370 | 130. | 55. | 141. | 70. | -31. | -179. | .0231 | -.0124 | .0183 | -.0149 | .0458 | .0340 | 593. |

ADLPIPE PAGE 2789

DIG/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.56.

S/RV PIPING KEWAUNEE CRK00F 2 RUP DISK
2 SAFETY COLD FRW24F--2 PSV

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | VA | | | | | | | | |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) | |
| .0380 | 36. | 103. | 102. | 52. | 20. | -204. | .0197 | -.0131 | .0060 | .0012 | .0272 | .0272 | 647. | |
| .0390 | -105. | 119. | 60. | 22. | 89. | -206. | .0138 | -.0136 | -.0090 | .0207 | .0029 | .0191 | 687. | |
| .0400 | -170. | 144. | -7. | -14. | 117. | -208. | .0066 | -.0137 | -.0233 | .0395 | -.0231 | .0111 | 726. | |
| .0410 | -176. | 162. | -72. | -27. | 117. | -209. | .0012 | -.0135 | -.0329 | .0536 | -.0421 | .0052 | 733. | |
| .0420 | -220. | 176. | -74. | -14. | 146. | -216. | .0006 | -.0125 | -.0356 | .0585 | -.0463 | .0017 | 793. | |
| .0430 | -312. | 220. | -35. | 13. | 201. | -239. | .0046 | -.0107 | -.0313 | .0530 | -.0368 | .0003 | 951. | |
| .0440 | -330. | 250. | 8. | 52. | 227. | -245. | .0105 | -.0084 | -.0206 | .0298 | -.0189 | .0035 | 1028. | |
| .0450 | -355. | 154. | 84. | 98. | 218. | -175. | .0155 | -.0062 | -.0061 | .0238 | .0030 | .0135 | 901. | |
| .0460 | -437. | -16. | 173. | 130. | 211. | -60. | .0181 | -.0036 | .0062 | .0104 | .0208 | .0233 | 776. | |
| .0470 | -467. | -60. | 180. | 132. | 217. | -6. | .0178 | -.0002 | .0099 | .0040 | .0247 | .0215 | 771. | |
| .0480 | -419. | 39. | 104. | 101. | 225. | -22. | .0137 | .0041 | .0048 | .0058 | .0136 | .0072 | 752. | |
| .0490 | -422. | 84. | 31. | 48. | 222. | -5. | .0057 | .0084 | -.0047 | .0131 | -.0055 | -.0088 | 691. | |
| .0500 | -436. | -2. | -33. | -13. | 190. | 88. | -.0048 | .0123 | -.0142 | .0217 | -.0271 | -.0198 | 638. | |
| .0510 | -361. | -96. | -124. | -66. | 135. | 187. | -.0142 | .0161 | -.0211 | .0272 | -.0458 | -.0281 | 730. | |
| .0520 | -287. | -109. | -184. | -105. | 99. | 237. | -.0193 | .0201 | -.0226 | .0248 | -.0529 | -.0363 | 845. | |
| .0530 | -298. | -106. | -159. | -129. | 92. | 269. | -.0196 | .0242 | -.0166 | .0126 | -.0439 | -.0409 | 949. | |
| .0540 | -273. | -183. | -109. | -130. | 63. | 336. | -.0169 | .0275 | -.0041 | -.0062 | -.0245 | -.0371 | 1113. | |
| .0550 | -162. | -325. | -74. | -114. | -3. | 434. | -.0137 | .0299 | .0112 | -.0266 | -.0025 | -.0272 | 1364. | |
| .0560 | -104. | -427. | -21. | -105. | -53. | 503. | -.0112 | .0319 | .0248 | -.0447 | -.0176 | -.0196 | 1570. | |
| .0570 | -114. | -432. | 26. | -116. | -68. | 512. | -.0107 | .0335 | .0322 | -.0564 | .0293 | -.0198 | 1610. | |
| .0580 | -58. | -397. | -5. | -137. | -84. | 496. | -.0134 | .0343 | .0314 | -.0580 | .0266 | -.0253 | 1586. | |
| .0590 | 47. | -391. | -87. | -162. | -118. | 493. | -.0193 | .0342 | .0247 | -.0510 | .0123 | -.0319 | 1620. | |
| .0600 | 97. | -390. | -143. | -196. | -157. | 485. | -.0266 | .0332 | .0165 | -.0409 | -.0043 | -.0384 | 1658. | |
| .0610 | 143. | -342. | -180. | -222. | -181. | 441. | -.0320 | .0316 | .0101 | -.0327 | -.0167 | -.0449 | 1599. | |
| .0620 | 248. | -271. | -221. | -216. | -202. | 369. | -.0328 | .0295 | .0080 | -.0294 | -.0202 | -.0481 | 1438. | |
| .0630 | 324. | -214. | -209. | -177. | -205. | 290. | -.0287 | .0267 | .0130 | -.0336 | -.0100 | -.0454 | 1206. | |
| .0640 | 327. | -163. | -118. | -124. | -199. | 207. | -.0212 | .0234 | .0251 | -.0455 | .0129 | -.0370 | 952. | |
| .0650 | 337. | -143. | -10. | -61. | -208. | 145. | -.0126 | .0195 | .0406 | -.0603 | .0403 | -.0234 | 794. | |
| .0660 | 363. | -191. | 70. | 5. | -217. | 125. | -.0046 | .0151 | .0534 | -.0713 | .0628 | -.0074 | 764. | |
| .0670 | 335. | -223. | 124. | 51. | -197. | 102. | .0007 | .0105 | .0585 | -.0738 | .0735 | .0031 | 693. | |
| .0680 | 282. | -140. | 132. | 60. | -160. | 25. | .0015 | .0062 | .0533 | -.0653 | .0675 | .0022 | 526. | |
| .0690 | 269. | -17. | 72. | 40. | -138. | -63. | -.0031 | .0019 | .0389 | -.0455 | .0441 | -.0056 | 477. | |
| .0700 | 254. | 16. | -22. | 11. | -126. | -91. | -.0112 | -.0027 | .0192 | -.0183 | .0101 | -.0129 | 476. | |
| .0710 | 208. | 14. | -104. | -22. | -110. | -93. | -.0193 | -.0071 | -.0005 | .0088 | -.0235 | -.0187 | 444. | |
| .0720 | 182. | 84. | -163. | -44. | -91. | -129. | -.0238 | -.0109 | -.0152 | .0286 | -.0471 | -.0243 | 499. | |
| .0730 | 175. | 159. | -181. | -38. | -69. | -168. | -.0227 | -.0143 | -.0213 | .0376 | -.0545 | -.0248 | 566. | |
| .0740 | 140. | 134. | -136. | 0. | -45. | -156. | -.0166 | -.0175 | -.0179 | .0356 | -.0448 | -.0154 | 494. | |
| .0750 | 99. | 64. | -46. | 59. | -30. | -121. | -.0074 | -.0206 | -.0073 | .0256 | -.0231 | .0003 | 418. | |

ADLPIPE PAGE 2790

DIG/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.56.

S/RV PIPING KEWAUNEE CRK00F 2 RUP DISK
2 SAFETY COLD FRW24F--2 PSV

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| | | | | | | | | | | | | | |
|-------|------|-------|-------|------|-------|-------|--------|--------|--------|--------|--------|--------|------|
| .0650 | 337. | -143. | -10. | -61. | -200. | 145. | -.0126 | .0195 | .0406 | -.0603 | .0405 | -.0234 | 952. |
| .0660 | 363. | -191. | 70. | 5. | -217. | 125. | -.0046 | .0151 | .0534 | -.0713 | .0628 | -.0074 | 764. |
| .0670 | 335. | -223. | 124. | 51. | -197. | 102. | .0007 | .0105 | .0585 | -.0738 | .0735 | .0031 | 693. |
| .0680 | 282. | -140. | 132. | 60. | -160. | 25. | .0015 | .0062 | .0533 | -.0653 | .0675 | .0022 | 526. |
| .0690 | 265. | -17. | 72. | 40. | -138. | -63. | -.0031 | .0019 | .0589 | -.0455 | .0441 | -.0056 | 477. |
| .0700 | 254. | 16. | -22. | 11. | -126. | -91. | -.0112 | -.0027 | .0192 | -.0183 | .0101 | -.0129 | 476. |
| .0710 | 208. | 14. | -104. | -22. | -110. | -93. | -.0193 | -.0071 | -.0005 | .0088 | -.0235 | -.0187 | 444. |
| .0720 | 182. | 84. | -163. | -44. | -91. | -129. | -.0238 | -.0109 | -.0152 | .0286 | -.0471 | -.0243 | 499. |
| .0730 | 175. | 159. | -181. | -38. | -69. | -168. | -.0227 | -.0143 | -.0213 | .0376 | -.0545 | -.0248 | 566. |
| .0740 | 140. | 134. | -136. | 0. | -45. | -156. | -.0166 | -.0175 | -.0179 | .0356 | -.0448 | -.0154 | 494. |
| .0750 | 99. | 64. | -46. | 59. | -30. | -121. | -.0074 | -.0206 | -.0073 | .0256 | -.0231 | .0003 | 418. |

ADLPIPE PAGE 2790

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | VA | DZ | RX | RY | RZ | STRESS | | |
|------------|---------|----------|----------|------------|------------|------------|--------|--------|--------|--------|--------|--------|-------|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .0760 | 85. | 46. | 52. | 119. | -20. | -112. | .0023 | -.0231 | .0055 | .0127 | .0021 | .0150 | 505. |
| .0770 | 59. | 56. | 133. | 169. | -16. | -118. | .0106 | -.0252 | .0145 | .0035 | .0219 | .0254 | 629. |
| .0780 | 18. | 54. | 167. | 197. | 10. | -115. | .0156 | -.0269 | .0156 | .0029 | .0292 | .0305 | 694. |
| .0790 | 13. | 81. | 134. | 197. | 30. | -119. | .0159 | -.0284 | .0079 | .0122 | .0208 | .0287 | 707. |
| .0800 | 21. | 142. | 62. | 173. | 36. | -136. | .0119 | -.0296 | -.0058 | .0288 | .0010 | .0215 | 678. |
| .0810 | -11. | 178. | -4. | 137. | 46. | -139. | .0061 | -.0307 | -.0214 | .0480 | -.0221 | .0140 | 608. |
| .0820 | -46. | 177. | -63. | 109. | 63. | -127. | .0017 | -.0318 | -.0348 | .0645 | -.0408 | .0093 | 544. |
| .0830 | -44. | 196. | -101. | 101. | 70. | -137. | .0012 | -.0326 | -.0419 | .0734 | -.0480 | .0076 | 571. |
| .0840 | -60. | 236. | -77. | 114. | 97. | -172. | .0052 | -.0332 | -.0407 | .0721 | -.0392 | .0099 | 693. |
| .0850 | -101. | 237. | 4. | 144. | 117. | -196. | .0128 | -.0338 | -.0320 | .0622 | -.0170 | .0183 | 821. |
| .0860 | -104. | 191. | 88. | 197. | 123. | -202. | .0219 | -.0344 | -.0198 | .0487 | .0104 | .0309 | 917. |
| .0870 | -67. | 165. | 152. | 228. | 120. | -222. | .0305 | -.0349 | -.0083 | .0360 | .0360 | .0421 | 1035. |
| .0880 | -52. | 200. | 206. | 250. | 126. | -279. | .0369 | -.0351 | -.0008 | .0276 | .0550 | .0473 | 1201. |
| .0890 | -36. | 268. | 224. | 248. | 134. | -352. | .0402 | -.0350 | .0010 | .0254 | .0637 | .0471 | 1371. |
| .0900 | 34. | 317. | 186. | 233. | 125. | -410. | .0405 | -.0350 | -.0019 | .0291 | .0623 | .0447 | 1485. |
| .0910 | 106. | 344. | 137. | 210. | 110. | -453. | .0392 | -.0349 | -.0062 | .0350 | .0568 | .0418 | 1556. |
| .0920 | 120. | 375. | 121. | 183. | 106. | -495. | .0384 | -.0345 | -.0088 | .0386 | .0540 | .0393 | 1638. |
| .0930 | 111. | 398. | 125. | 163. | 112. | -527. | .0390 | -.0339 | -.0081 | .0379 | .0562 | .0389 | 1711. |
| .0940 | 96. | 364. | 140. | 154. | 120. | -520. | .0410 | -.0331 | -.0040 | .0335 | .0626 | .0429 | 1690. |
| .0950 | 32. | 271. | 181. | 147. | 130. | -474. | .0427 | -.0322 | .0018 | .0275 | .0706 | .0499 | 1561. |
| .0960 | -66. | 175. | 227. | 129. | 140. | -418. | .0423 | -.0310 | .0060 | .0235 | .0742 | .0549 | 1398. |
| .0970 | -133. | 114. | 226. | 94. | 145. | -373. | .0386 | -.0293 | .0047 | .0256 | .0669 | .0540 | 1251. |
| .0980 | -173. | 77. | 171. | 43. | 149. | -335. | .0313 | -.0271 | -.0036 | .0355 | .0467 | .0463 | 1123. |
| .0990 | -226. | 62. | 92. | -26. | 157. | -304. | .0207 | -.0244 | -.0171 | .0512 | .0171 | .0327 | 1044. |
| .1000 | -265. | 70. | 3. | -102. | 155. | -281. | .0081 | -.0212 | -.0322 | .0687 | -.0165 | .0158 | 1023. |
| .1010 | -272. | 65. | -84. | -168. | 136. | -247. | -.0041 | -.0176 | -.0449 | .0836 | -.0471 | .0000 | 998. |
| .1020 | -281. | 17. | -136. | -212. | 115. | -191. | -.0138 | -.0137 | -.0519 | .0920 | -.0682 | -.0116 | 935. |
| .1030 | -297. | -32. | -143. | -232. | 98. | -137. | -.0197 | -.0094 | -.0522 | .0917 | -.0766 | -.0199 | 870. |
| .1040 | -278. | -44. | -123. | -230. | 72. | -103. | -.0223 | -.0046 | -.0462 | .0832 | -.0741 | -.0264 | 798. |
| .1050 | -220. | -61. | -92. | -213. | 20. | -66. | -.0230 | .0005 | -.0361 | .0698 | -.0652 | -.0304 | 684. |
| .1060 | -145. | -110. | -59. | -186. | -23. | -10. | -.0233 | .0057 | -.0247 | .0546 | -.0543 | -.0325 | 572. |
| .1070 | -41. | -134. | -45. | -160. | -82. | 38. | -.0241 | .0110 | -.0146 | .0404 | -.0456 | -.0361 | 559. |
| .1080 | 95. | -85. | -59. | -144. | -144. | 52. | -.0255 | .0164 | -.0067 | .0278 | -.0407 | -.0434 | 639. |
| .1090 | 229. | -26. | -84. | -134. | -205. | 67. | -.0273 | .0217 | -.0063 | .0165 | -.0380 | -.0511 | 772. |
| .1100 | 342. | -82. | -100. | -107. | -264. | 145. | -.0287 | .0264 | .0062 | .0066 | -.0344 | -.0530 | 972. |
| .1110 | 431. | -127. | -106. | -80. | -313. | 221. | -.0294 | .0307 | .0132 | -.0040 | -.0292 | -.0532 | 1191. |
| .1120 | 482. | -97. | -99. | -65. | -347. | 262. | -.0291 | .0348 | .0203 | -.0157 | -.0224 | -.0543 | 1336. |
| .1130 | 483. | -139. | -74. | -45. | -366. | 338. | -.0284 | .0381 | .0268 | -.0257 | -.0152 | -.0513 | 1520. |

ADLPIPE PAGE 2791

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .1030 | -297. | -52. | -143. | -232. | 98. | -137. | -.0197 | -.0094 | -.0522 | .0917 | -.0766 | -.0199 | 870. |
| .1040 | -278. | -44. | -127. | -229. | 72. | -103. | -.0223 | -.0046 | -.0462 | .0832 | -.0741 | -.0264 | 798. |
| .1050 | -220. | -61. | -92. | -213. | 29. | -66. | -.0230 | .0005 | -.0361 | .0698 | -.0652 | -.0304 | 684. |
| .1060 | -145. | -110. | -59. | -176. | -23. | -10. | -.0233 | .0057 | -.0247 | .0546 | -.0543 | -.0325 | 572. |
| .1070 | -41. | -134. | -45. | -160. | -82. | 78. | -.0241 | .0110 | -.0146 | .0404 | -.0456 | -.0361 | 559. |
| .1080 | 95. | -85. | -59. | -144. | -144. | 52. | -.0255 | .0164 | -.0067 | .0278 | -.0407 | -.0434 | 639. |
| .1090 | 229. | -26. | -84. | -134. | -205. | 67. | -.0273 | .0217 | -.0003 | .0165 | -.0380 | -.0511 | 772. |
| .1100 | 340. | -82. | -100. | -107. | -264. | 145. | -.0287 | .0264 | .0062 | .0066 | -.0344 | -.0530 | 972. |
| .1110 | 431. | -127. | -106. | -80. | -313. | 221. | -.0294 | .0307 | .0132 | -.0040 | -.0292 | -.0532 | 1191. |
| .1120 | 482. | -97. | -99. | -65. | -347. | 262. | -.0291 | .0348 | .0203 | -.0157 | -.0224 | -.0543 | 1356. |
| .1130 | 483. | -139. | -74. | -45. | -366. | 338. | -.0284 | .0381 | .0268 | -.0257 | -.0152 | -.0513 | 1520. |

ADLPIPE PAGE 2791

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | VA | | | | | | | | |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | Rx (FT-LB) | My (FT-LB) | Mz (FT-LB) | Dx (IN) | Dy (IN) | Dz (IN) | Rx (DEG) | Ry (DEG) | Rz (DEG) | STRESS (PSI) | |
| .1140 | 475. | -263. | -57. | -15. | -380. | 445. | -.0279 | .0405 | .0308 | -.0313 | -.0109 | -.0451 | 1781. | |
| .1150 | 491. | -286. | -68. | 2. | -387. | 487. | -.0280 | .0425 | .0307 | -.0324 | -.0120 | -.0441 | 1892. | |
| .1160 | 492. | -191. | -91. | -3. | -377. | 455. | -.0286 | .0443 | .0267 | -.0296 | -.0178 | -.0491 | 1796. | |
| .1170 | 463. | -151. | -113. | -9. | -354. | 437. | -.0292 | .0453 | .0205 | -.0234 | -.0257 | -.0520 | 1712. | |
| .1180 | 478. | -201. | -148. | 6. | -342. | 450. | -.0287 | .0453 | .0150 | -.0155 | -.0323 | -.0497 | 1719. | |
| .1190 | 509. | -132. | -165. | 21. | -326. | 381. | -.0254 | .0451 | .0124 | -.0115 | -.0319 | -.0491 | 1528. | |
| .1200 | 490. | 50. | -124. | 36. | -288. | 237. | -.0178 | .0450 | .0151 | -.0148 | -.0196 | -.0492 | 1139. | |
| .1210 | 455. | 108. | -47. | 82. | -241. | 145. | -.0058 | .0441 | .0233 | -.0232 | .0035 | -.0401 | 891. | |
| .1220 | 415. | 38. | 42. | 149. | -192. | 111. | .0086 | .0426 | .0345 | -.0337 | .0317 | -.0233 | 811. | |
| .1230 | 354. | 50. | 133. | 204. | -137. | 29. | .0224 | .0411 | .0445 | -.0433 | .0576 | -.0100 | 751. | |
| .1240 | 220. | 175. | 224. | 220. | -63. | -108. | .0330 | .0400 | .0491 | -.0475 | .0740 | -.0048 | 771. | |
| .1250 | 67. | 212. | 258. | 211. | 12. | -186. | .0388 | .0385 | .0448 | -.0410 | .0734 | -.0015 | 856. | |
| .1260 | -8. | 139. | 196. | 189. | 67. | -194. | .0398 | .0366 | .0312 | -.0225 | .0546 | .0005 | 848. | |
| .1270 | -79. | 199. | 103. | 131. | 122. | -262. | .0376 | .0355 | .0118 | .0013 | .0256 | -.0073 | 965. | |
| .1280 | -185. | 302. | 32. | 51. | 182. | -386. | .0351 | .0351 | -.0079 | .0237 | -.0028 | -.0213 | 1308. | |
| .1290 | -294. | 426. | -19. | -11. | 238. | -425. | .0346 | .0346 | -.0227 | .0409 | -.0237 | -.0269 | 1481. | |
| .1300 | -378. | 281. | -47. | -38. | 279. | -353. | .0372 | .0338 | -.0297 | .0502 | -.0328 | -.0199 | 1373. | |
| .1310 | -469. | 191. | -19. | -48. | 313. | -295. | .0426 | .0336 | -.0286 | .0498 | -.0286 | -.0101 | 1317. | |
| .1320 | -623. | 211. | 73. | -70. | 355. | -294. | .0492 | .0343 | -.0226 | .0413 | -.0153 | -.0037 | 1420. | |
| .1330 | -736. | 139. | 141. | -89. | 383. | -222. | .0550 | .0350 | -.0169 | .0330 | -.0038 | .0063 | 1375. | |
| .1340 | -761. | -79. | 135. | -102. | 387. | -59. | .0578 | .0355 | -.0159 | .0309 | -.0026 | .0184 | 1230. | |
| .1350 | -765. | -173. | 96. | -141. | 382. | 45. | .0561 | .0367 | -.0211 | .0349 | -.0123 | .0198 | 1245. | |
| .1360 | -781. | -71. | 47. | -212. | 375. | 51. | .0502 | .0387 | -.0313 | .0433 | -.0307 | .0084 | 1320. | |
| .1370 | -788. | -38. | -27. | -286. | 361. | 103. | .0419 | .0407 | -.0435 | .0543 | -.0542 | -.0024 | 1436. | |
| .1380 | -732. | -203. | -125. | -329. | 323. | 263. | .0336 | .0421 | -.0535 | .0646 | -.0759 | -.0042 | 1616. | |
| .1390 | -672. | -311. | -175. | -358. | 275. | 387. | .0277 | .0438 | -.0571 | .0667 | -.0862 | -.0054 | 1808. | |
| .1400 | -640. | -248. | -150. | -382. | 232. | 407. | .0257 | .0462 | -.0527 | .0572 | -.0809 | -.0102 | 1839. | |
| .1410 | -572. | -261. | -107. | -373. | 184. | 455. | .0273 | .0483 | -.0420 | .0406 | -.0646 | -.0087 | 1874. | |
| .1420 | -469. | -431. | -72. | -333. | 130. | 571. | .0303 | .0498 | -.0284 | .0215 | -.0443 | .0006 | 2048. | |
| .1430 | -361. | -506. | -29. | -299. | 68. | 623. | .0320 | .0514 | -.0146 | .0022 | -.0246 | .0054 | 2112. | |
| .1440 | -274. | -387. | 24. | -295. | 3. | 564. | .0310 | .0533 | -.0037 | -.0150 | -.0097 | -.0003 | 1935. | |
| .1450 | -164. | -330. | 30. | -301. | -62. | 534. | .0276 | .0547 | .0019 | -.0258 | -.0042 | -.0068 | 1875. | |
| .1460 | 7. | -438. | -32. | -297. | -129. | 589. | .0228 | .0553 | .0023 | -.0291 | -.0078 | -.0096 | 2045. | |
| .1470 | 159. | -440. | -95. | -309. | -184. | 579. | .0173 | .0558 | .0006 | -.0307 | -.0139 | -.0182 | 2074. | |
| .1480 | 267. | -264. | -113. | -334. | -232. | 463. | .0119 | .0567 | .0006 | -.0349 | -.0161 | -.0331 | 1873. | |
| .1490 | 354. | -178. | -105. | -338. | -275. | 385. | .0083 | .0568 | .0043 | -.0419 | -.0123 | -.0412 | 1769. | |
| .1500 | 443. | -281. | -94. | -306. | -309. | 400. | .0076 | .0560 | .0120 | -.0517 | -.0024 | -.0381 | 1798. | |
| .1510 | 518. | -317. | -59. | -260. | -328. | 374. | .0096 | .0552 | .0224 | -.0655 | .0139 | -.0349 | 1708. | |

ADLPIPE PAGE 2792

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|------|-------|-------|--------|--------|--------|--------|-------|
| .1410 | -572. | -261. | -107. | -373. | 184. | 455. | .0273 | .0483 | -.0420 | .0406 | -.0646 | -.0087 | 1874. |
| .1420 | -469. | -431. | -72. | -333. | 130. | 571. | .0303 | .0498 | -.0284 | .0215 | -.0443 | -.0006 | 2048. |
| .1430 | -361. | -506. | -29. | -299. | 68. | 623. | .0320 | .0514 | -.0146 | .0022 | -.0246 | .0054 | 2112. |
| .1440 | -274. | -387. | 24. | -295. | 3. | 564. | .0310 | .0533 | -.0077 | -.0150 | -.0097 | -.0003 | 1935. |
| .1450 | -164. | -370. | 30. | -301. | -62. | 534. | .0276 | .0547 | .0019 | -.0258 | -.0042 | -.0068 | 1875. |
| .1460 | 7. | -438. | -32. | -297. | -129. | 589. | .0228 | .0553 | .0023 | -.0291 | -.0078 | -.0096 | 2045. |
| .1470 | 150. | -440. | -95. | -309. | -184. | 579. | .0173 | .0558 | .0006 | -.0307 | -.0139 | -.0182 | 2074. |
| .1480 | 267. | -264. | -113. | -334. | -232. | 463. | .0119 | .0567 | .0006 | -.0349 | -.0161 | -.0331 | 1873. |
| .1490 | 354. | -178. | -105. | -338. | -275. | 385. | .0083 | .0568 | .0043 | -.0419 | -.0123 | -.0412 | 1769. |
| .1500 | 443. | -201. | -94. | -306. | -309. | 400. | .0076 | .0560 | .0120 | -.0517 | -.0024 | -.0381 | 1798. |
| .1510 | 518. | -317. | -59. | -260. | -328. | 374. | .0096 | .0552 | .0229 | -.0655 | .0139 | -.0349 | 1708. |

ADLPIPE PAGE 2792

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.56.

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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | END | TYPE | VA | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|-------|--------|
| TIME | FX | FY | FZ | Mx | My | Mz | | | | | | | | | STRESS |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) |
| .1520 | 521. | -171. | 20. | -226. | -320. | 251. | .0127 | .0549 | .0349 | -.0822 | .0337 | -.0382 | 1417. | | |
| .1530 | 502. | -104. | 82. | -186. | -304. | 178. | .0150 | .0542 | .0446 | -.0950 | .0486 | -.0386 | 1213. | | |
| .1540 | 497. | -217. | 85. | -136. | -288. | 212. | .0147 | .0526 | .0489 | -.0993 | .0522 | -.0338 | 1165. | | |
| .1550 | 469. | -254. | 61. | -101. | -262. | 210. | .0110 | .0512 | .0471 | -.0958 | .0449 | -.0357 | 1068. | | |
| .1560 | 383. | -92. | 39. | -88. | -214. | 107. | .0047 | .0505 | .0401 | -.0868 | .0300 | -.0494 | 777. | | |
| .1570 | 251. | 51. | 5. | -79. | -143. | 23. | -.0027 | .0499 | .0294 | -.0734 | .0096 | -.0645 | 504. | | |
| .1580 | 148. | 8. | -66. | -49. | -76. | 52. | -.0101 | .0489 | .0179 | -.0573 | -.0135 | -.0717 | 318. | | |
| .1590 | 46. | -46. | -121. | -7. | -16. | 99. | -.0167 | .0480 | .0088 | -.0436 | -.0326 | -.0764 | 306. | | |
| .1600 | -131. | 36. | -110. | 27. | 57. | 80. | -.0217 | .0480 | .0038 | -.0361 | -.0432 | -.0844 | 310. | | |
| .1610 | -317. | 99. | -84. | 69. | 137. | 78. | -.0248 | .0484 | .0019 | -.0329 | -.0476 | -.0895 | 524. | | |
| .1620 | -414. | 11. | -90. | 138. | 199. | 162. | -.0264 | .0486 | .0019 | -.0309 | -.0493 | -.0870 | 885. | | |
| .1630 | -510. | -56. | -82. | 199. | 252. | 234. | -.0277 | .0492 | .0030 | -.0310 | -.0480 | -.0852 | 1209. | | |
| .1640 | -615. | 19. | -46. | 273. | 294. | 232. | -.0295 | .0506 | .0045 | -.0332 | -.0444 | -.0899 | 1342. | | |
| .1650 | -658. | 81. | -37. | 257. | 315. | 242. | -.0318 | .0523 | .0048 | -.0345 | -.0421 | -.0947 | 1438. | | |
| .1660 | -657. | 7. | -63. | 275. | 322. | 329. | -.0343 | .0536 | .0035 | -.0343 | -.0419 | -.0947 | 1631. | | |
| .1670 | -644. | -78. | -83. | 278. | 320. | 422. | -.0370 | .0549 | .0020 | -.0344 | -.0410 | -.0944 | 1818. | | |
| .1680 | -651. | -48. | -74. | 253. | 306. | 449. | -.0401 | .0565 | .0013 | -.0370 | -.0376 | -.0981 | 1823. | | |
| .1690 | -626. | -45. | -68. | 217. | 274. | 484. | -.0431 | .0576 | .0010 | -.0404 | -.0335 | -.0995 | 1816. | | |
| .1700 | -569. | -180. | -81. | 182. | 229. | 585. | -.0456 | .0578 | .0004 | -.0431 | -.0298 | -.0943 | 1989. | | |
| .1710 | -517. | -290. | -90. | 131. | 185. | 663. | -.0477 | .0574 | -.0008 | -.0461 | -.0259 | -.0892 | 2131. | | |
| .1720 | -426. | -204. | -95. | 64. | 128. | 657. | -.0496 | .0567 | -.0023 | -.0493 | -.0217 | -.0885 | 2044. | | |
| .1730 | -326. | -259. | -102. | -13. | 64. | 630. | -.0512 | .0549 | -.0043 | -.0517 | -.0177 | -.0869 | 1927. | | |
| .1740 | -209. | -355. | -121. | -81. | -3. | 654. | -.0522 | .0516 | -.0065 | -.0522 | -.0143 | -.0784 | 2005. | | |
| .1750 | -73. | -453. | -141. | -140. | -72. | 662. | -.0523 | .0471 | -.0080 | -.0520 | -.0096 | -.0674 | 2070. | | |
| .1760 | 44. | -404. | -131. | -201. | -130. | 572. | -.0509 | .0418 | -.0082 | -.0532 | -.0012 | -.0599 | 1886. | | |
| .1770 | 155. | -321. | -104. | -248. | -179. | 446. | -.0477 | .0354 | -.0067 | -.0550 | .0106 | -.0509 | 1645. | | |
| .1780 | 269. | -333. | -78. | -267. | -218. | 357. | -.0427 | .0276 | -.0039 | -.0562 | .0242 | -.0352 | 1509. | | |
| .1790 | 397. | -353. | -53. | -262. | -251. | 299. | -.0363 | .0187 | -.0001 | -.0568 | .0388 | -.0168 | 1356. | | |
| .1800 | 482. | -249. | -5. | -248. | -265. | 87. | -.0294 | .0094 | .0044 | -.0572 | .0543 | -.0020 | 1135. | | |
| .1810 | 512. | -90. | 59. | -227. | -254. | -119. | -.0224 | -.0004 | .0084 | -.0564 | .0684 | .0110 | 1096. | | |
| .1820 | 557. | -24. | 95. | -179. | -236. | -270. | -.0158 | -.0107 | .0111 | -.0517 | .0781 | .0279 | 1219. | | |
| .1830 | 584. | 14. | 115. | -118. | -209. | -399. | -.0100 | -.0213 | .0124 | -.0439 | .0835 | .0451 | 1416. | | |
| .1840 | 567. | 146. | 147. | -59. | -164. | -568. | -.0051 | -.0311 | .0126 | -.0350 | .0864 | .0569 | 1806. | | |
| .1850 | 505. | 314. | 180. | 2. | -104. | -741. | -.0011 | -.0401 | .0118 | -.0249 | .0864 | .0653 | 2276. | | |
| .1860 | 437. | 393. | 193. | 75. | -39. | -847. | .0019 | -.0485 | .0101 | -.0134 | .0826 | .0753 | 2589. | | |
| .1870 | 360. | 405. | 194. | 155. | 27. | -898. | .0037 | -.0558 | .0079 | -.0012 | .0759 | .0858 | 2772. | | |
| .1880 | 232. | 475. | 212. | 222. | 99. | -958. | .0039 | -.0614 | .0054 | .0097 | .0674 | .0909 | 3008. | | |
| .1890 | 93. | 570. | 223. | 278. | 168. | -1010. | .0023 | -.0652 | .0020 | .0200 | .0559 | .0914 | 3228. | | |

ADLPIPE PAGE 2792

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.56.

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

| | | | | | | | | | | | | | |
|-------|------|-------|------|-------|-------|--------|--------|--------|--------|--------|-------|--------|-------|
| .1790 | 267. | -353. | -53. | -262. | -251. | 259. | -.0363 | .0187 | -.0001 | -.0568 | .0388 | -.0168 | 1509. |
| .1800 | 482. | -249. | -5. | -248. | -265. | 87. | -.0294 | .0094 | .0044 | -.0572 | .0543 | -.0020 | 1135. |
| .1810 | 512. | -90. | 59. | -227. | -254. | -119. | -.0224 | -.0004 | .0084 | -.0564 | .0684 | .0110 | 1096. |
| .1820 | 557. | -74. | 95. | -179. | -236. | -270. | -.0158 | -.0107 | .0111 | -.0517 | .0781 | .0279 | 1219. |
| .1830 | 584. | 14. | 115. | -118. | -209. | -399. | -.0100 | -.0213 | .0124 | -.0439 | .0835 | .0451 | 1416. |
| .1840 | 567. | 146. | 147. | -59. | -164. | -568. | -.0051 | -.0311 | .0126 | -.0350 | .0864 | .0569 | 1806. |
| .1850 | 505. | 314. | 180. | 2. | -104. | -741. | -.0011 | -.0401 | .0118 | -.0249 | .0864 | .0653 | 2276. |
| .1860 | 437. | 393. | 193. | 75. | -39. | -847. | .0019 | -.0485 | .0101 | -.0134 | .0826 | .0753 | 2589. |
| .1870 | 360. | 405. | 194. | 155. | 27. | -898. | .0037 | -.0558 | .0079 | -.0012 | .0759 | .0858 | 2772. |
| .1880 | 230. | 475. | 212. | 202. | 99. | -958. | .0039 | -.0614 | .0054 | .0097 | .0674 | .0909 | 3008. |
| .1890 | 97. | 570. | 223. | 278. | 168. | -1010. | .0023 | -.0652 | .0020 | .0200 | .0559 | .0914 | 3228. |

ADLPIPE PAGE 2793

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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 | VA | | | | | | | | |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) | |
| .1900 | -14. | 578. | 201. | 331. | 226. | -992. | -.0008 | -.0674 | -.0027 | .0308 | .0404 | .0917 | 3255. | |
| .1910 | -108. | 535. | 164. | 372. | 272. | -927. | -.0055 | -.0679 | -.0082 | .0406 | .0228 | .0902 | 3150. | |
| .1920 | -186. | 543. | 130. | 395. | 302. | -874. | -.0112 | -.0664 | -.0133 | .0477 | .0059 | .0834 | 3059. | |
| .1930 | -235. | 580. | 97. | 404. | 315. | -823. | -.0173 | -.0631 | -.0168 | .0507 | -.0082 | .0732 | 2950. | |
| .1940 | -256. | 540. | 63. | 410. | 313. | -723. | -.0230 | -.0584 | -.0179 | .0496 | -.0179 | .0648 | 2702. | |
| .1950 | -260. | 438. | 39. | 414. | 298. | -583. | -.0279 | -.0526 | -.0160 | .0436 | -.0221 | .0587 | 2356. | |
| .1960 | -257. | 368. | 36. | 407. | 270. | -456. | -.0322 | -.0457 | -.0113 | .0325 | -.0204 | .0513 | 2033. | |
| .1970 | -242. | 315. | 46. | 398. | 231. | -339. | -.0363 | -.0380 | -.0050 | .0181 | -.0153 | .0430 | 1718. | |
| .1980 | -212. | 202. | 45. | 364. | 184. | -192. | -.0408 | -.0303 | .0006 | .0038 | -.0106 | .0363 | 1371. | |
| .1990 | -163. | 62. | 26. | 331. | 132. | -38. | -.0461 | -.0227 | .0039 | -.0081 | -.0089 | .0294 | 1091. | |
| .2000 | -107. | -6. | -3. | 282. | 78. | 66. | -.0528 | -.0154 | .0044 | -.0170 | -.0107 | .0182 | 912. | |
| .2010 | -49. | -13. | -36. | 221. | 23. | 122. | -.0603 | -.0087 | .0026 | -.0229 | -.0153 | .0042 | 771. | |
| .2020 | 26. | -52. | -79. | 163. | -34. | 180. | -.0676 | -.0032 | -.0003 | -.0263 | -.0207 | -.0074 | 746. | |
| .2030 | 117. | -117. | -120. | 119. | -89. | 233. | -.0733 | .0009 | -.0023 | -.0292 | -.0236 | -.0151 | 841. | |
| .2040 | 199. | -127. | -135. | 85. | -136. | 238. | -.0761 | .0038 | -.0017 | -.0341 | -.0201 | -.0209 | 871. | |
| .2050 | 262. | -90. | -114. | 66. | -170. | 196. | -.0759 | .0052 | .0024 | -.0420 | -.0091 | -.0236 | 814. | |
| .2060 | 322. | -84. | -73. | 70. | -197. | 153. | -.0728 | .0048 | .0095 | -.0512 | .0072 | -.0202 | 787. | |
| .2070 | 380. | -108. | -25. | 91. | -217. | 111. | -.0677 | .0027 | .0181 | -.0599 | .0258 | -.0116 | 792. | |
| .2080 | 418. | -86. | 30. | 115. | -224. | 32. | -.0618 | -.0007 | .0259 | -.0666 | .0432 | -.0027 | 773. | |
| .2090 | 435. | -5. | 80. | 135. | -217. | -84. | -.0560 | -.0052 | .0311 | -.0691 | .0560 | .0043 | 818. | |
| .2100 | 450. | 63. | 104. | 151. | -202. | -194. | -.0510 | -.0110 | .0326 | -.0658 | .0613 | .0115 | 969. | |
| .2110 | 467. | 96. | 101. | 164. | -187. | -284. | -.0471 | -.0177 | .0305 | -.0568 | .0589 | .0195 | 1142. | |
| .2120 | 456. | 150. | 90. | 169. | -157. | -381. | -.0440 | -.0249 | .0261 | -.0442 | .0514 | .0260 | 1355. | |
| .2130 | 428. | 238. | 81. | 170. | -125. | -492. | -.0408 | -.0323 | .0212 | -.0307 | .0420 | .0311 | 1629. | |
| .2140 | 392. | 304. | 75. | 175. | -88. | -585. | -.0366 | -.0397 | .0173 | -.0181 | .0331 | .0377 | 1877. | |
| .2150 | 349. | 320. | 75. | 188. | -50. | -643. | -.0310 | -.0469 | .0156 | -.0079 | .0264 | .0471 | 2044. | |
| .2160 | 295. | 328. | 88. | 204. | -14. | -687. | -.0242 | -.0535 | .0163 | -.0009 | .0227 | .0573 | 2182. | |
| .2170 | 237. | 350. | 112. | 219. | 21. | -729. | -.0170 | -.0591 | .0184 | .0035 | .0205 | .0663 | 2315. | |
| .2180 | 172. | 355. | 128. | 230. | 52. | -748. | -.0103 | -.0638 | .0204 | .0074 | .0170 | .0741 | 2387. | |
| .2190 | 118. | 332. | 126. | 236. | 79. | -740. | -.0048 | -.0675 | .0126 | .0126 | .0099 | .0798 | 2374. | |
| .2200 | 71. | 320. | 109. | 229. | 100. | -725. | -.0012 | -.0698 | .0187 | .0195 | -.0012 | .0814 | 2333. | |
| .2210 | 33. | 336. | 80. | 210. | 112. | -713. | .0006 | -.0709 | .0147 | .0276 | -.0154 | .0781 | 2288. | |
| .2220 | 8. | 343. | 41. | 195. | 116. | -687. | .0013 | -.0706 | .0097 | .0360 | -.0304 | .0724 | 2193. | |
| .2230 | -2. | 321. | -1. | 161. | 115. | -638. | .0018 | -.0692 | .0050 | .0430 | -.0436 | .0661 | 2031. | |
| .2240 | -9. | 299. | -29. | 140. | 109. | -583. | .0029 | -.0667 | .0022 | .0467 | -.0519 | .0593 | 1854. | |
| .2250 | -18. | 288. | -33. | 122. | 100. | -531. | .0046 | -.0631 | .0022 | .0462 | -.0537 | .0524 | 1685. | |
| .2260 | -26. | 256. | -20. | 110. | 84. | -466. | .0071 | -.0588 | .0045 | .0421 | -.0499 | .0469 | 1479. | |
| .2270 | -24. | 193. | -2. | 101. | 65. | -384. | .0098 | -.0539 | .0078 | .0364 | -.0427 | .0427 | 1225. | |

ADLPIPE PAGE 2794

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

| | | | | | | | | | | | | | |
|-------|------|------|------|------|------|-------|--------|--------|-------|-------|--------|-------|-------|
| .2180 | 177. | 355. | 128. | 210. | 52. | -748. | -.0103 | -.0638 | .0204 | .0074 | .0170 | .0741 | 2315. |
| .2190 | 118. | 332. | 126. | 216. | 79. | -740. | -.0048 | -.0675 | .0207 | .0126 | .0099 | .0798 | 2374. |
| .2200 | 71. | 320. | 109. | 229. | 100. | -725. | -.0012 | -.0698 | .0187 | .0195 | -.0012 | .0814 | 2333. |
| .2210 | 33. | 376. | 80. | 210. | 112. | -713. | .0006 | -.0709 | .0147 | .0276 | -.0154 | .0781 | 2288. |
| .2220 | 5. | 343. | 41. | 185. | 116. | -687. | .0013 | -.0706 | .0097 | .0360 | -.0304 | .0724 | 2193. |
| .2230 | -7. | 321. | -1. | 161. | 115. | -678. | .0018 | -.0692 | .0050 | .0430 | -.0436 | .0661 | 2031. |
| .2240 | -9. | 299. | -29. | 140. | 109. | -583. | .0029 | -.0667 | .0022 | .0467 | -.0519 | .0593 | 1854. |
| .2250 | -18. | 288. | -33. | 122. | 100. | -531. | .0046 | -.0631 | .0022 | .0462 | -.0537 | .0524 | 1685. |
| .2260 | -26. | 256. | -20. | 110. | 84. | -466. | .0071 | -.0580 | .0045 | .0421 | -.0499 | .0469 | 1479. |
| .2270 | -24. | 193. | -2. | 101. | 65. | -304. | .0098 | -.0539 | .0078 | .0364 | -.0427 | .0427 | 1225. |

ADLPIPE PAGE 2794

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.56.

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 | MEMBER | SEQUENCE | LOCATION | END | TYPE | VA | | | | | | | | |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) | |
| .2280 | -15. | 140. | 14. | 89. | 44. | -308. | .0120 | -.0484 | .0105 | .0306 | -.0346 | .0374 | 985. | |
| .2290 | -4. | 122. | 25. | 68. | 23. | -252. | .0133 | -.0425 | .0113 | .0262 | -.0277 | .0293 | 798. | |
| .2300 | 14. | 109. | 23. | 38. | -1. | -200. | .0131 | -.0365 | .0096 | .0245 | -.0235 | .0197 | 620. | |
| .2310 | 38. | 75. | 7. | 4. | -26. | -139. | .0118 | -.0306 | .0059 | .0255 | -.0219 | .0102 | 431. | |
| .2320 | 57. | 44. | -12. | -33. | -49. | -83. | .0100 | -.0249 | .0011 | .0278 | -.0211 | .0008 | 310. | |
| .2330 | 66. | 34. | -24. | -70. | -67. | -43. | .0086 | -.0195 | -.0033 | .0297 | -.0190 | -.0083 | 323. | |
| .2340 | 69. | 24. | -26. | -100. | -80. | -10. | .0084 | -.0144 | -.0063 | .0302 | -.0139 | -.0153 | 390. | |
| .2350 | 71. | -7. | -19. | -118. | -89. | 29. | .0096 | -.0098 | -.0071 | .0287 | -.0054 | -.0190 | 460. | |
| .2360 | 69. | -39. | -0. | -127. | -94. | 60. | .0122 | -.0058 | -.0057 | .0253 | .0062 | -.0202 | 514. | |
| .2370 | 60. | -48. | 28. | -128. | -93. | 72. | .0160 | -.0022 | -.0028 | .0207 | .0197 | -.0205 | 529. | |
| .2380 | 46. | -45. | 56. | -122. | -86. | 72. | .0204 | .0010 | .0006 | .0163 | .0330 | -.0204 | 504. | |
| .2390 | 29. | -46. | 77. | -111. | -72. | 70. | .0249 | .0037 | .0036 | .0133 | .0441 | -.0198 | 457. | |
| .2400 | 4. | -44. | 89. | -99. | -53. | 66. | .0290 | .0060 | .0057 | .0125 | .0519 | -.0198 | 396. | |
| .2410 | -31. | -26. | 94. | -87. | -29. | 53. | .0325 | .0080 | .0067 | .0137 | .0558 | -.0210 | 324. | |
| .2420 | -76. | -4. | 91. | -76. | 0. | 41. | .0354 | .0099 | .0067 | .0168 | .0561 | -.0232 | 262. | |
| .2430 | -133. | 7. | 82. | -63. | 35. | 35. | .0380 | .0116 | .0061 | .0212 | .0534 | -.0257 | 243. | |
| .2440 | -207. | 14. | 70. | -49. | 75. | 35. | .0402 | .0133 | .0052 | .0261 | .0482 | -.0287 | 293. | |
| .2450 | -283. | 24. | 59. | -36. | 117. | 37. | .0420 | .0151 | .0045 | .0311 | .0414 | -.0324 | 389. | |
| .2460 | -370. | 26. | 47. | -27. | 157. | 49. | .0432 | .0170 | .0038 | .0360 | .0328 | -.0365 | 507. | |
| .2470 | -455. | 9. | 29. | -23. | 192. | 78. | .0438 | .0192 | .0030 | .0409 | .0225 | -.0407 | 635. | |
| .2480 | -531. | -17. | 5. | -25. | 222. | 117. | .0436 | .0216 | .0017 | .0458 | .0106 | -.0456 | 767. | |
| .2490 | -598. | -39. | -24. | -36. | 244. | 160. | .0426 | .0244 | -.0001 | .0506 | -.0025 | -.0520 | 895. | |
| .2500 | -653. | -62. | -57. | -56. | 257. | 210. | .0408 | .0275 | -.0024 | .0551 | -.0163 | -.0594 | 1023. | |
| .2510 | -690. | -102. | -94. | -85. | 257. | 273. | .0382 | .0309 | -.0047 | .0590 | -.0301 | -.0667 | 1170. | |
| .2520 | -708. | -157. | -131. | -121. | 244. | 348. | .0350 | .0344 | -.0068 | .0616 | -.0428 | -.0736 | 1346. | |
| .2530 | -707. | -213. | -162. | -163. | 219. | 425. | .0316 | .0382 | -.0083 | .0625 | -.0535 | -.0802 | 1537. | |
| .2540 | -683. | -264. | -190. | -210. | 182. | 500. | .0282 | .0421 | -.0092 | .0613 | -.0614 | -.0866 | 1741. | |
| .2550 | -634. | -323. | -214. | -260. | 135. | 578. | .0251 | .0459 | -.0094 | .0584 | -.0664 | -.0918 | 1971. | |
| .2560 | -563. | -390. | -233. | -310. | 76. | 657. | .0221 | .0495 | -.0090 | .0539 | -.0684 | -.0956 | 2222. | |
| .2570 | -475. | -449. | -245. | -363. | 9. | 728. | .0193 | .0529 | -.0081 | .0482 | -.0675 | -.0985 | 2474. | |
| .2580 | -371. | -499. | -252. | -415. | -65. | 789. | .0166 | .0559 | -.0069 | .0418 | -.0639 | -.1004 | 2719. | |
| .2590 | -254. | -548. | -255. | -463. | -141. | 844. | .0143 | .0584 | -.0056 | .0351 | -.0581 | -.1009 | 2959. | |
| .2600 | -130. | -590. | -255. | -506. | -216. | 890. | .0125 | .0603 | -.0045 | .0284 | -.0504 | -.1002 | 3181. | |
| .2610 | -6. | -619. | -250. | -543. | -287. | 922. | .0113 | .0615 | -.0033 | .0217 | -.0410 | -.0983 | 3369. | |
| .2620 | 111. | -641. | -238. | -571. | -353. | 943. | .0106 | .0620 | -.0022 | .0155 | -.0304 | -.0949 | 3521. | |
| .2630 | 218. | -658. | -221. | -588. | -409. | 954. | .0105 | .0616 | -.0012 | .0100 | -.0192 | -.0899 | 3629. | |
| .2640 | 309. | -661. | -200. | -594. | -452. | 949. | .0111 | .0605 | -.0006 | .0056 | -.0079 | -.0841 | 3673. | |
| .2650 | 380. | -644. | -176. | -589. | -480. | 927. | .0123 | .0587 | -.0004 | .0023 | .0030 | -.0778 | 3645. | |

ADLPIPE PAGE 2795

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

83/12/02.

18.29.56.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|------|-------|-------|--------|-------|--------|--------|-------|
| .2540 | -60. | -204. | -190. | -210. | 162. | 500. | .0252 | .0421 | -.0092 | .0613 | -.0614 | -.0866 | 1741. |
| .2550 | -634. | -323. | -214. | -260. | 135. | 578. | .0251 | .0459 | -.0094 | .0584 | -.0664 | -.0918 | 1971. |
| .2560 | -567. | -370. | -233. | -310. | 76. | 657. | .0221 | .0495 | -.0090 | .0539 | -.0684 | -.0956 | 2222. |
| .2570 | -475. | -449. | -245. | -363. | 9. | 728. | .0193 | .0529 | -.0081 | .0482 | -.0675 | -.0985 | 2474. |
| .2580 | -371. | -499. | -252. | -415. | -65. | 789. | .0166 | .0557 | -.0069 | .0418 | -.0639 | -.1004 | 2719. |
| .2590 | -254. | -548. | -255. | -467. | -141. | 844. | .0143 | .0584 | -.0056 | .0351 | -.0581 | -.1009 | 2959. |
| .2600 | -130. | -590. | -255. | -506. | -216. | 890. | .0125 | .0603 | -.0045 | .0284 | -.0504 | -.1002 | 3181. |
| .2610 | -6. | -619. | -250. | -543. | -287. | 922. | .0113 | .0615 | -.0033 | .0217 | -.0410 | -.0983 | 3369. |
| .2620 | 111. | -641. | -230. | -571. | -353. | 943. | .0106 | .0620 | -.0022 | .0155 | -.0304 | -.0949 | 3521. |
| .2630 | 219. | -658. | -221. | -598. | -409. | 954. | .0105 | .0616 | -.0012 | .0100 | -.0192 | -.0899 | 3629. |
| .2640 | 300. | -661. | -200. | -504. | -452. | 949. | .0111 | .0605 | -.0006 | .0056 | -.0079 | -.0841 | 3673. |
| .2650 | 380. | -644. | -174. | -506. | -480. | 927. | .0123 | .0587 | -.0004 | .0023 | .0030 | -.0778 | 3645. |

ADLPIPE PAGE 2795

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | VA | | | | | | | | |
|------------|---------|----------|----------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|--|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | MX (FT-LB) | MY (FT-LB) | MZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) | |
| .2660 | 430. | -616. | -150. | -573. | -494. | 891. | .0141 | .0561 | -.0007 | .0006 | .0129 | -.0709 | 3556. | |
| .2670 | 467. | -592. | -125. | -547. | -494. | 847. | .0164 | .0529 | -.0017 | .0006 | .0212 | -.0636 | 3415. | |
| .2680 | 474. | -539. | -100. | -511. | -480. | 792. | .0192 | .0491 | -.0032 | .0022 | .0280 | -.0560 | 3217. | |
| .2690 | 462. | -480. | -75. | -466. | -450. | 724. | .0226 | .0449 | -.0052 | .0051 | .0329 | -.0489 | 2955. | |
| .2700 | 427. | -407. | -51. | -415. | -404. | 645. | .0264 | .0404 | -.0075 | .0090 | .0362 | -.0422 | 2637. | |
| .2710 | 374. | -335. | -27. | -358. | -348. | 562. | .0307 | .0356 | -.0099 | .0136 | .0377 | -.0353 | 2288. | |
| .2720 | 304. | -268. | -9. | -297. | -284. | 479. | .0352 | .0307 | -.0123 | .0188 | .0375 | -.0284 | 1920. | |
| .2730 | 221. | -194. | 10. | -232. | -212. | 392. | .0399 | .0258 | -.0148 | .0242 | .0356 | -.0221 | 1529. | |
| .2740 | 125. | -110. | 37. | -170. | -132. | 301. | .0447 | .0210 | -.0176 | .0299 | .0317 | -.0169 | 1126. | |
| .2750 | 20. | -35. | 50. | -112. | -49. | 218. | .0492 | .0163 | -.0209 | .0359 | .0256 | -.0120 | 760. | |
| .2760 | -85. | 20. | 57. | -57. | 31. | 149. | .0531 | .0118 | -.0244 | .0423 | .0176 | -.0070 | 494. | |
| .2770 | -186. | 71. | 59. | -9. | 107. | 83. | .0564 | .0076 | -.0282 | .0489 | .0081 | -.0027 | 413. | |
| .2780 | -281. | 134. | 58. | 32. | 178. | 15. | .0591 | .0038 | -.0321 | .0549 | -.0021 | .0003 | 553. | |
| .2790 | -370. | 191. | 53. | 65. | 246. | -46. | .0615 | .0003 | -.0359 | .0601 | -.0124 | .0030 | 787. | |
| .2800 | -446. | 220. | 46. | 94. | 305. | -89. | .0635 | -.0029 | -.0391 | .0642 | -.0220 | .0067 | 1007. | |
| .2810 | -506. | 238. | 43. | 118. | 351. | -124. | .0649 | -.0058 | -.0414 | .0667 | -.0301 | .0111 | 1188. | |
| .2820 | -555. | 261. | 44. | 136. | 387. | -160. | .0657 | -.0083 | -.0427 | .0675 | -.0363 | .0153 | 1338. | |
| .2830 | -593. | 289. | 43. | 147. | 415. | -191. | .0660 | -.0105 | -.0435 | .0668 | -.0409 | .0197 | 1460. | |
| .2840 | -617. | 275. | 51. | 154. | 435. | -206. | .0654 | -.0124 | -.0441 | .0654 | -.0444 | .0249 | 1537. | |
| .2850 | -620. | 258. | 50. | 156. | 441. | -213. | .0638 | -.0140 | -.0447 | .0637 | -.0472 | .0302 | 1564. | |
| .2860 | -624. | 253. | 50. | 151. | 434. | -225. | .0608 | -.0153 | -.0453 | .0617 | -.0494 | .0344 | 1557. | |
| .2870 | -571. | 255. | 49. | 141. | 417. | -240. | .0567 | -.0163 | -.0461 | .0594 | -.0509 | .0376 | 1525. | |
| .2880 | -517. | 244. | 43. | 128. | 392. | -248. | .0519 | -.0169 | -.0468 | .0567 | -.0514 | .0407 | 1464. | |
| .2890 | -447. | 230. | 37. | 116. | 357. | -255. | .0466 | -.0171 | -.0468 | .0528 | -.0502 | .0436 | 1380. | |
| .2900 | -352. | 230. | 39. | 105. | 311. | -270. | .0411 | -.0169 | -.0453 | .0470 | -.0460 | .0460 | 1293. | |
| .2910 | -250. | 234. | 52. | 96. | 257. | -287. | .0357 | -.0163 | -.0419 | .0386 | -.0387 | .0484 | 1207. | |
| .2920 | -137. | 221. | 68. | 92. | 196. | -295. | .0306 | -.0152 | -.0368 | .0281 | -.0286 | .0515 | 1112. | |
| .2930 | -7. | 200. | 86. | 91. | 132. | -296. | .0258 | -.0137 | -.0304 | .0157 | -.0167 | .0547 | 1024. | |
| .2940 | 121. | 193. | 108. | 89. | 65. | -303. | .0210 | -.0117 | -.0232 | .0022 | -.0040 | .0565 | 981. | |
| .2950 | 244. | 192. | 129. | 84. | -5. | -309. | .0157 | -.0092 | -.0158 | -.0116 | .0078 | .0571 | 973. | |
| .2960 | 372. | 170. | 139. | 76. | -77. | -299. | .0098 | -.0063 | -.0092 | -.0244 | .0170 | .0570 | 966. | |
| .2970 | 495. | 139. | 136. | 65. | -147. | -278. | .0033 | -.0030 | -.0036 | -.0357 | .0227 | .0556 | 977. | |
| .2980 | 605. | 129. | 126. | 49. | -211. | -262. | -.0037 | .0006 | .0008 | -.0459 | .0251 | .0517 | 1035. | |
| .2990 | 697. | 120. | 111. | 28. | -267. | -248. | -.0107 | .0045 | .0044 | -.0551 | .0248 | .0463 | 1111. | |
| .3000 | 775. | 106. | 91. | 10. | -318. | -215. | -.0176 | .0085 | .0078 | -.0634 | .0225 | .0415 | 1167. | |
| .3010 | 830. | 60. | 69. | -2. | -362. | -166. | -.0240 | .0125 | .0113 | -.0713 | .0190 | .0377 | 1211. | |
| .3020 | 876. | 32. | 52. | -11. | -393. | -124. | -.0294 | .0164 | .0151 | -.0791 | .0153 | .0335 | 1255. | |
| .3030 | 880. | 25. | 40. | -15. | -410. | -93. | -.0339 | .0203 | .0191 | -.0867 | .0116 | .0289 | 1280. | |

ADLPIPE PAGE 2796

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

| | | | | | | | | | | | | | |
|-------|------|------|------|------|-------|-------|--------|--------|--------|--------|--------|-------|-------|
| .2940 | 121. | 197. | 100. | 89. | 65. | -303. | .0210 | -.0117 | -.0232 | .0022 | -.0040 | .0565 | 981. |
| .2950 | 246. | 192. | 129. | 84. | -5. | -309. | .0157 | -.0092 | -.0158 | -.0116 | .0078 | .0571 | 973. |
| .2960 | 372. | 170. | 132. | 76. | -77. | -299. | .0098 | -.0063 | -.0092 | -.0244 | .0170 | .0570 | 966. |
| .2970 | 495. | 139. | 136. | 65. | -147. | -278. | .0033 | -.0030 | -.0036 | -.0357 | .0227 | .0556 | 977. |
| .2980 | 605. | 109. | 126. | 49. | -211. | -263. | -.0037 | .0006 | .0008 | -.0459 | .0251 | .0517 | 1035. |
| .2990 | 697. | 129. | 111. | 28. | -267. | -248. | -.0107 | .0045 | .0044 | -.0551 | .0248 | .0463 | 1111. |
| .3000 | 775. | 106. | 91. | 10. | -318. | -215. | -.0176 | .0085 | .0078 | -.0634 | .0225 | .0415 | 1157. |
| .3010 | 838. | 60. | 69. | -2. | -362. | -166. | -.0240 | .0125 | .0113 | -.0713 | .0190 | .0377 | 1211. |
| .3020 | 876. | 32. | 52. | -11. | -397. | -124. | -.0294 | .0164 | .0151 | -.0791 | .0153 | .0335 | 1255. |
| .3030 | 885. | 25. | 40. | -15. | -410. | -93. | -.0339 | .0203 | .0191 | -.0867 | .0116 | .0289 | 1280. |

ADLPIPE PAGE 2796

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | END | TYPE | VA | | | | | STRESS |
|---------|-------|--------|------|----------|---------|----------|-----|--------|--------|--------|--------|--------|-------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | | DX | DY | DZ | RX | RY | RZ | (PSI) |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | |
| .3040 | 884. | 6. | 28. | -11. | -415. | -55. | | -.0374 | .0239 | .0228 | -.0931 | .0073 | .0254 | 1275. |
| .3050 | 865. | -28. | 13. | 1. | -411. | -9. | | -.0403 | .0270 | .0261 | -.0979 | .0020 | .0232 | 1252. |
| .3060 | 828. | -42. | -1. | 18. | -396. | 23. | | -.0426 | .0297 | .0286 | -.1008 | -.0041 | .0209 | 1209. |
| .3070 | 770. | -24. | -13. | 39. | -367. | 35. | | -.0444 | .0321 | .0300 | -.1019 | -.0110 | .0177 | 1129. |
| .3080 | 696. | -4. | -27. | 66. | -325. | 43. | | -.0454 | .0338 | .0303 | -.1010 | -.0184 | .0154 | 1018. |
| .3090 | 610. | 2. | -41. | 100. | -274. | 54. | | -.0458 | .0350 | .0300 | -.0984 | -.0257 | .0147 | 903. |
| .3100 | 517. | 17. | -48. | 139. | -218. | 56. | | -.0456 | .0356 | .0295 | -.0950 | -.0317 | .0150 | 804. |
| .3110 | 403. | 51. | -45. | 180. | -155. | 42. | | -.0446 | .0358 | .0289 | -.0911 | -.0358 | .0158 | 754. |
| .3120 | 280. | 83. | -37. | 223. | -88. | 25. | | -.0427 | .0355 | .0280 | -.0869 | -.0379 | .0179 | 732. |
| .3130 | 175. | 102. | -28. | 266. | -18. | 10. | | -.0402 | .0348 | .0269 | -.0822 | -.0384 | .0213 | 811. |
| .3140 | 68. | 125. | -16. | 304. | 48. | -12. | | -.0375 | .0338 | .0255 | -.0773 | -.0374 | .0250 | 957. |
| .3150 | -33. | 159. | 1. | 333. | 107. | -42. | | -.0349 | .0327 | .0234 | -.0722 | -.0352 | .0285 | 1071. |
| .3160 | -120. | 180. | 16. | 352. | 158. | -68. | | -.0323 | .0315 | .0209 | -.0670 | -.0321 | .0324 | 1192. |
| .3170 | -189. | 184. | 25. | 362. | 200. | -85. | | -.0298 | .0302 | .0178 | -.0619 | -.0285 | .0366 | 1284. |
| .3180 | -240. | 180. | 34. | 359. | 233. | -102. | | -.0273 | .0290 | .0144 | -.0574 | -.0238 | .0403 | 1359. |
| .3190 | -278. | 166. | 46. | 343. | 253. | -121. | | -.0250 | .0279 | .0113 | -.0541 | -.0179 | .0435 | 1348. |
| .3200 | -298. | 181. | 58. | 315. | 260. | -127. | | -.0228 | .0269 | .0085 | -.0520 | -.0110 | .0471 | 1302. |
| .3210 | -296. | 139. | 67. | 279. | 254. | -115. | | -.0207 | .0259 | .0061 | -.0511 | -.0033 | .0514 | 1201. |
| .3220 | -279. | 94. | 75. | 234. | 239. | -103. | | -.0186 | .0250 | .0041 | -.0514 | .0049 | .0549 | 1063. |
| .3230 | -251. | 68. | 82. | 178. | 216. | -95. | | -.0167 | .0242 | .0024 | -.0527 | .0132 | .0570 | 898. |
| .3240 | -210. | 27. | 86. | 118. | 184. | -77. | | -.0150 | .0234 | .0009 | -.0546 | .0208 | .0589 | 703. |
| .3250 | -155. | -38. | 83. | 56. | 143. | -44. | | -.0135 | .0223 | -.0004 | -.0566 | .0274 | .0612 | 486. |
| .3260 | -95. | -100. | 77. | -6. | 100. | -11. | | -.0123 | .0210 | -.0014 | -.0586 | .0328 | .0628 | 306. |
| .3270 | -30. | -137. | 71. | -65. | 59. | 10. | | -.0111 | .0195 | -.0022 | -.0607 | .0373 | .0629 | 268. |
| .3280 | 15. | -168. | 64. | -118. | 21. | 29. | | -.0097 | .0176 | -.0027 | -.0627 | .0406 | .0626 | 375. |
| .3290 | 64. | -212. | 55. | -159. | -12. | 55. | | -.0084 | .0152 | -.0028 | -.0640 | .0427 | .0629 | 514. |
| .3300 | 105. | -252. | 47. | -189. | -42. | 79. | | -.0070 | .0122 | -.0024 | -.0647 | .0437 | .0633 | 635. |
| .3310 | 132. | -264. | 43. | -207. | -62. | 86. | | -.0055 | .0086 | -.0018 | -.0646 | .0436 | .0626 | 708. |
| .3320 | 144. | -258. | 38. | -213. | -72. | 82. | | -.0040 | .0045 | -.0013 | -.0635 | .0422 | .0614 | 729. |
| .3330 | 150. | -254. | 30. | -205. | -72. | 79. | | -.0024 | -.0003 | -.0008 | -.0609 | .0394 | .0605 | 704. |
| .3340 | 143. | -244. | 23. | -185. | -64. | 72. | | -.0010 | -.0056 | -.0004 | -.0571 | .0353 | .0595 | 634. |
| .3350 | 124. | -212. | 19. | -159. | -50. | 51. | | .0003 | -.0113 | .0001 | -.0525 | .0306 | .0579 | 520. |
| .3360 | 94. | -168. | 18. | -117. | -29. | 32. | | .0015 | -.0173 | .0006 | -.0471 | .0255 | .0559 | 372. |
| .3370 | 62. | -130. | 15. | -69. | -9. | -4. | | .0028 | -.0236 | .0010 | -.0413 | .0201 | .0542 | 211. |
| .3380 | 24. | -70. | 14. | -17. | 30. | -31. | | .0040 | -.0300 | .0015 | -.0352 | .0149 | .0524 | 141. |
| .3390 | -10. | -39. | 17. | 36. | 60. | -64. | | .0048 | -.0362 | .0021 | -.0293 | .0101 | .0499 | 289. |
| .3400 | -50. | 11. | 22. | 17. | 80. | -95. | | .0053 | -.0422 | .0026 | -.0235 | .0055 | .0469 | 475. |
| .3410 | -91. | 45. | 23. | 135. | 112. | -116. | | .0053 | -.0479 | .0027 | -.0178 | .0009 | .0439 | 641. |

ADLPIPE PAGE 2797

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

| | | | | | | | | | | | | | |
|-------|------|-------|-----|-------|------|-------|--------|--------|--------|--------|-------|-------|------|
| .3320 | 147. | -258. | 38. | -213. | -72. | 82. | -.0040 | .0045 | -.0013 | -.0635 | .0422 | .0614 | 729. |
| .3330 | 150. | -254. | 30. | -205. | -72. | 79. | -.0024 | -.0003 | -.0008 | -.0609 | .0394 | .0605 | 704. |
| .3340 | 147. | -244. | 23. | -175. | -64. | 72. | -.0010 | -.0056 | -.0004 | -.0571 | .0353 | .0595 | 634. |
| .3350 | 124. | -212. | 19. | -155. | -50. | 51. | .0003 | -.0113 | .0001 | -.0525 | .0306 | .0579 | 520. |
| .3360 | 91. | -168. | 15. | -117. | -29. | 22. | .0015 | -.0173 | .0006 | -.0471 | .0255 | .0559 | 372. |
| .3370 | 62. | -130. | 15. | -69. | -1. | -4. | .0028 | -.0236 | .0010 | -.0413 | .0201 | .0542 | 211. |
| .3380 | 24. | -20. | 14. | -17. | 30. | -71. | .0040 | -.0300 | .0015 | -.0352 | .0149 | .0524 | 141. |
| .3390 | -18. | -39. | 17. | 36. | 60. | -64. | .0048 | -.0362 | .0021 | -.0293 | .0101 | .0499 | 289. |
| .3400 | -57. | 11. | 27. | 67. | 80. | -95. | .0053 | -.0422 | .0026 | -.0235 | .0053 | .0469 | 475. |
| .3410 | -91. | 45. | 23. | 175. | 112. | -116. | .0053 | -.0479 | .0027 | -.0178 | .0009 | .0439 | 641. |

ADLPIPE PAGE 2797

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.56.

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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | END | TYPE | VA | | | | | | |
|---------|-------|--------|------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME | FY | FY | F2 | 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 | -115. | 75. | 19. | 177. | 130. | -133. | .0049 | -.0530 | .0024 | -.0124 | -.0035 | .0400 | 781. | | |
| .3430 | -120. | 112. | 16. | 209. | 142. | -151. | .0040 | -.0575 | .0018 | -.0077 | -.0075 | .0349 | 896. | | |
| .3440 | -133. | 145. | 13. | 232. | 145. | -163. | .0027 | -.0613 | .0011 | -.0039 | -.0101 | .0291 | 969. | | |
| .3450 | -121. | 154. | 8. | 247. | 137. | -161. | .0011 | -.0645 | .0007 | -.0013 | -.0116 | .0235 | 988. | | |
| .3460 | -97. | 149. | 3. | 253. | 120. | -148. | -.0005 | -.0669 | .0005 | -.0001 | -.0115 | .0180 | 965. | | |
| .3470 | -64. | 148. | 2. | 251. | 98. | -136. | -.0021 | -.0685 | .0007 | -.0005 | -.0095 | .0118 | 918. | | |
| .3480 | -25. | 146. | 4. | 241. | 69. | -122. | -.0037 | -.0694 | .0013 | -.0023 | -.0057 | .0053 | 847. | | |
| .3490 | 24. | 125. | 5. | 225. | 34. | -95. | -.0052 | -.0698 | .0020 | -.0049 | -.0009 | -.0005 | 750. | | |
| .3500 | 80. | 90. | 5. | 204. | -5. | -60. | -.0067 | -.0697 | .0027 | -.0077 | .0046 | -.0059 | 647. | | |
| .3510 | 135. | 63. | 5. | 178. | -45. | -30. | -.0081 | -.0693 | .0031 | -.0105 | .0103 | -.0117 | 566. | | |
| .3520 | 189. | 47. | 5. | 149. | -83. | -6. | -.0095 | -.0685 | .0031 | -.0129 | .0159 | -.0180 | 519. | | |
| .3530 | 240. | 28. | 3. | 120. | -118. | 17. | -.0105 | -.0678 | .0027 | -.0146 | .0211 | -.0237 | 514. | | |
| .3540 | 285. | 1. | -0. | 93. | -149. | 42. | -.0112 | -.0671 | .0020 | -.0153 | .0259 | -.0283 | 551. | | |
| .3550 | 320. | -17. | -0. | 70. | -175. | 58. | -.0114 | -.0665 | .0014 | -.0153 | .0307 | -.0322 | 599. | | |
| .3560 | 342. | -21. | 4. | 51. | -192. | 62. | -.0108 | -.0663 | .0008 | -.0146 | .0353 | -.0354 | 633. | | |
| .3570 | 356. | -23. | 9. | 38. | -199. | 61. | -.0095 | -.0664 | .0002 | -.0129 | .0396 | -.0372 | 644. | | |
| .3580 | 345. | -27. | 15. | 32. | -197. | 56. | -.0074 | -.0670 | -.0005 | -.0100 | .0431 | -.0375 | 629. | | |
| .3590 | 325. | -23. | 22. | 31. | -186. | 42. | -.0048 | -.0681 | -.0015 | -.0058 | .0455 | -.0365 | 587. | | |
| .3600 | 291. | -8. | 30. | 33. | -167. | 18. | -.0019 | -.0696 | -.0028 | .0001 | .0464 | -.0348 | 520. | | |
| .3610 | 247. | 11. | 34. | 38. | -140. | -14. | .0015 | -.0716 | -.0046 | .0076 | .0455 | -.0321 | 443. | | |
| .3620 | 197. | 32. | 34. | 46. | -106. | -50. | .0051 | -.0740 | -.0071 | .0167 | .0428 | -.0285 | 382. | | |
| .3630 | 133. | 62. | 33. | 55. | -66. | -95. | .0089 | -.0768 | -.0099 | .0269 | .0387 | -.0242 | 388. | | |
| .3640 | 67. | 98. | 32. | 65. | -23. | -146. | .0130 | -.0797 | -.0127 | .0377 | .0339 | -.0194 | 491. | | |
| .3650 | -1. | 131. | 33. | 75. | 20. | -198. | .0174 | -.0828 | -.0151 | .0485 | .0289 | -.0134 | 646. | | |
| .3660 | -68. | 157. | 33. | 87. | 64. | -248. | .0220 | -.0858 | -.0170 | .0589 | .0241 | -.0065 | 821. | | |
| .3670 | -133. | 185. | 36. | 98. | 107. | -300. | .0268 | -.0887 | -.0183 | .0686 | .0200 | .0008 | 1012. | | |
| .3680 | -197. | 218. | 42. | 106. | 147. | -354. | .0316 | -.0911 | -.0190 | .0773 | .0164 | .0081 | 1209. | | |
| .3690 | -254. | 242. | 47. | 112. | 183. | -401. | .0361 | -.0932 | -.0193 | .0852 | .0132 | .0155 | 1383. | | |
| .3700 | -302. | 253. | 50. | 114. | 212. | -438. | .0399 | -.0946 | -.0195 | .0926 | .0098 | .0227 | 1520. | | |
| .3710 | -347. | 262. | 50. | 111. | 234. | -470. | .0428 | -.0953 | -.0198 | .0994 | .0061 | .0288 | 1633. | | |
| .3720 | -376. | 276. | 46. | 102. | 251. | -499. | .0448 | -.0951 | -.0204 | .1055 | .0020 | .0331 | 1728. | | |
| .3730 | -400. | 286. | 39. | 87. | 261. | -519. | .0457 | -.0940 | -.0211 | .1110 | -.0024 | .0360 | 1788. | | |
| .3740 | -417. | 281. | 29. | 69. | 261. | -524. | .0455 | -.0919 | -.0218 | .1154 | -.0066 | .0380 | 1793. | | |
| .3750 | -417. | 266. | 16. | 48. | 253. | -516. | .0444 | -.0888 | -.0220 | .1184 | -.0101 | .0389 | 1753. | | |
| .3760 | -404. | 252. | 6. | 25. | 237. | -500. | .0426 | -.0846 | -.0215 | .1194 | -.0123 | .0384 | 1684. | | |
| .3770 | -384. | 237. | -3. | 1. | 214. | -476. | .0402 | -.0794 | -.0202 | .1183 | -.0127 | .0367 | 1586. | | |
| .3780 | -357. | 210. | -9. | -23. | 184. | -437. | .0374 | -.0732 | -.0179 | .1150 | -.0114 | .0344 | 1444. | | |
| .3790 | -316. | 172. | -14. | -46. | 147. | -394. | .0341 | -.0661 | -.0147 | .1098 | -.0084 | .0315 | 1258. | | |

ADLPIPE PAGE 2798

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.56.

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

| | | | | | | | | | | | | | |
|-------|-------|------|------|------|------|-------|-------|--------|--------|-------|--------|-------|-------|
| .3690 | -254. | 242. | 47. | 112. | 181. | -401. | .0361 | -.0932 | -.0193 | .0852 | .0132 | .0155 | 1383. |
| .3700 | -302. | 253. | 50. | 114. | 212. | -438. | .0399 | -.0946 | -.0195 | .0926 | .0098 | .0227 | 1520. |
| .3710 | -343. | 262. | 50. | 111. | 234. | -470. | .0428 | -.0953 | -.0198 | .0994 | .0061 | .0288 | 1633. |
| .3720 | -376. | 276. | 46. | 102. | 251. | -499. | .0448 | -.0951 | -.0204 | .1055 | .0020 | .0331 | 1728. |
| .3730 | -400. | 286. | 39. | 87. | 261. | -519. | .0457 | -.0940 | -.0211 | .1110 | -.0024 | .0360 | 1788. |
| .3740 | -412. | 281. | 29. | 69. | 261. | -524. | .0455 | -.0919 | -.0218 | .1154 | -.0066 | .0380 | 1793. |
| .3750 | -417. | 266. | 16. | 48. | 253. | -516. | .0444 | -.0888 | -.0220 | .1184 | -.0101 | .0389 | 1753. |
| .3760 | -404. | 252. | 6. | 25. | 237. | -500. | .0426 | -.0846 | -.0215 | .1194 | -.0123 | .0384 | 1684. |
| .3770 | -384. | 237. | -3. | 1. | 214. | -476. | .0402 | -.0794 | -.0202 | .1183 | -.0127 | .0367 | 1586. |
| .3780 | -351. | 210. | -9. | -03. | 184. | -427. | .0374 | -.0732 | -.0179 | .1150 | -.0114 | .0344 | 1444. |
| .3790 | -316. | 172. | -14. | -46. | 147. | -384. | .0341 | -.0661 | -.0147 | .1098 | -.0084 | .0315 | 1258. |

ADLPIPE PAGE 2790

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.56.

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 | 69 | MEMBER | 1 | SEQUENCE | 103 | LOCATION | END | TYPE | VA | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|-------|--------|--------|--------|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | STRESS | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | |
| .3800 | -260. | 130. | -17. | -69. | 103. | -321. | .0303 | -.0583 | -.0108 | .1028 | -.0043 | .0279 | 1048. | |
| .3810 | -215. | 88. | -21. | -94. | 55. | -251. | .0260 | -.0497 | -.0065 | .0945 | .0004 | .0232 | 834. | |
| .3820 | -157. | 42. | -28. | -120. | 5. | -173. | .0214 | -.0407 | -.0022 | .0854 | .0051 | .0178 | 642. | |
| .3830 | -99. | -10. | -37. | -147. | -46. | -87. | .0162 | -.0314 | .0020 | .0759 | .0093 | .0118 | 539. | |
| .3840 | -40. | -63. | -48. | -176. | -98. | 3. | .0107 | -.0219 | .0060 | .0661 | .0128 | .0053 | 613. | |
| .3850 | 14. | -116. | -61. | -206. | -149. | 96. | .0050 | -.0125 | .0097 | .0564 | .0154 | -.0014 | 826. | |
| .3860 | 67. | -174. | -76. | -235. | -197. | 190. | -.0006 | -.0034 | .0131 | .0469 | .0172 | -.0079 | 1098. | |
| .3870 | 104. | -231. | -91. | -263. | -239. | 284. | -.0060 | .0053 | .0163 | .0378 | .0182 | -.0139 | 1383. | |
| .3880 | 14. | -282. | -106. | -289. | -274. | 371. | -.0110 | .0134 | .0192 | .0291 | .0185 | -.0195 | 1655. | |
| .3890 | 154. | -332. | -119. | -313. | -302. | 452. | -.0153 | .0207 | .0219 | .0210 | .0180 | -.0242 | 1909. | |
| .3900 | 162. | -305. | -132. | -333. | -323. | 528. | -.0194 | .0270 | .0242 | .0141 | .0166 | -.0276 | 2139. | |
| .3910 | 160. | -431. | -145. | -348. | -336. | 591. | -.0228 | .0323 | .0260 | .0084 | .0141 | -.0303 | 2323. | |
| .3920 | 146. | -456. | -156. | -360. | -336. | 631. | -.0255 | .0364 | .0270 | .0042 | .0105 | -.0328 | 2435. | |
| .3930 | 119. | -465. | -167. | -367. | -326. | 651. | -.0275 | .0394 | .0274 | .0016 | .0057 | -.0347 | 2480. | |
| .3940 | 81. | -473. | -177. | -368. | -308. | 658. | -.0290 | .0411 | .0270 | .0006 | -.0001 | -.0356 | 2478. | |
| .3950 | 36. | -476. | -185. | -363. | -281. | 652. | -.0298 | .0410 | .0262 | .0012 | -.0067 | -.0352 | 2426. | |
| .3960 | -18. | -461. | -190. | -353. | -246. | 624. | -.0300 | .0410 | .0249 | .0030 | -.0135 | -.0344 | 2306. | |
| .3970 | -81. | -428. | -191. | -337. | -203. | 575. | -.0295 | .0394 | .0232 | .0057 | -.0203 | -.0333 | 2120. | |
| .3980 | -149. | -390. | -189. | -315. | -153. | 515. | -.0284 | .0368 | .0213 | .0092 | -.0269 | -.0314 | 1894. | |
| .3990 | -215. | -352. | -185. | -289. | -101. | 446. | -.0269 | .0333 | .0193 | .0133 | -.0331 | -.0286 | 1646. | |
| .4000 | -280. | -306. | -177. | -259. | -49. | 368. | -.0252 | .0293 | .0173 | .0177 | -.0388 | -.0255 | 1376. | |

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) |
| .2640 | 309. | -661. | -200. | -594. | -452. | 949. | .0111 | .0605 | -.0006 | .0056 | -.0079 | -.0841 | 3673. |

| SECTION | 69 | MEMBER | 2 | SEQUENCE | 704 | 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) | |
| 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. | |

ADLPIPE PAGE 2790

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.56.

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

.2640 309. -661. -200. -594. -452. 949. .0111 .0605 -.0006 .0056 -.0079 -.0841 3673.

| SECTION | 69 | MEMBER | 2 | SEQUENCE | 704 | LOCATION | END | TYPE | RU | DZ | RX | RY | RZ | STRESS |
|---------|------|--------|------|----------|---------|----------|---------|--------|---------|---------|---------|---------|-------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | (PSI) | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | | |
| 0.0000 | 0. | 0. | 0. | 0. | 0. | 0. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0. | |
| .0010 | 0. | 0. | -0. | 0. | -0. | -0. | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. | |
| .0020 | 0. | 0. | -0. | 0. | -0. | -0. | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. | |
| .0030 | 0. | 0. | -0. | 0. | -0. | -0. | .0000 | .0000 | .0000 | -0.0000 | .0000 | -0.0000 | 0. | |

ADLPIPE PAGE 2799

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| SECTION | 69 | MEMBER | 2 | SEQUENCE | 704 | LOCATION | END | TYPE | RU | DZ | RX | RY | RZ | STRESS |
|---------|-------|--------|------|----------|---------|----------|---------|---------|---------|---------|---------|---------|-------|--------|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | RX | RY | RZ | (PSI) | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | | |
| .0040 | -0. | 0. | 0. | -0. | 0. | -0. | .0000 | .0000 | .0000 | -0.0000 | .0000 | -0.0000 | 0. | |
| .0050 | -1. | 0. | 0. | -0. | 0. | 0. | -0.0000 | .0000 | -0.0000 | -0.0000 | .0000 | -0.0000 | 3. | |
| .0060 | -2. | -0. | 0. | -0. | 1. | 0. | -0.0000 | -0.0000 | -0.0001 | .0000 | -0.0000 | -0.0000 | 8. | |
| .0070 | -5. | -1. | 1. | -1. | 2. | 1. | -0.0001 | -0.0000 | -0.0002 | .0001 | -0.0002 | -0.0000 | 19. | |
| .0080 | -9. | -1. | 1. | -2. | 5. | 2. | -0.0003 | -0.0000 | -0.0005 | .0003 | -0.0005 | -0.0001 | 39. | |
| .0090 | -15. | -3. | 0. | -4. | 8. | 3. | -0.0006 | -0.0000 | -0.0009 | .0006 | -0.0010 | -0.0002 | 67. | |
| .0100 | -23. | -6. | -1. | -7. | 13. | 6. | -0.0010 | -0.0001 | -0.0015 | .0011 | -0.0018 | -0.0002 | 109. | |
| .0110 | -35. | -11. | -3. | -12. | 20. | 9. | -0.0017 | -0.0001 | -0.0025 | .0019 | -0.0030 | -0.0003 | 172. | |
| .0120 | -50. | -17. | -6. | -18. | 30. | 14. | -0.0026 | -0.0001 | -0.0038 | .0029 | -0.0048 | -0.0004 | 260. | |
| .0130 | -70. | -26. | -11. | -26. | 42. | 22. | -0.0039 | -0.0002 | -0.0056 | .0042 | -0.0072 | -0.0005 | 376. | |
| .0140 | -93. | -40. | -18. | -36. | 57. | 32. | -0.0056 | -0.0004 | -0.0078 | .0060 | -0.0104 | -0.0005 | 517. | |
| .0150 | -117. | -56. | -27. | -46. | 72. | 43. | -0.0075 | -0.0005 | -0.0103 | .0080 | -0.0141 | -0.0004 | 670. | |
| .0160 | -137. | -71. | -37. | -57. | 86. | 55. | -0.0096 | -0.0006 | -0.0129 | .0102 | -0.0181 | -0.0005 | 813. | |
| .0170 | -149. | -80. | -47. | -64. | 96. | 64. | -0.0116 | -0.0007 | -0.0153 | .0122 | -0.0217 | -0.0013 | 918. | |
| .0180 | -149. | -76. | -57. | -66. | 100. | 67. | -0.0130 | -0.0005 | -0.0169 | .0135 | -0.0243 | -0.0027 | 955. | |
| .0190 | -132. | -61. | -63. | -61. | 93. | 65. | -0.0137 | -0.0003 | -0.0171 | .0135 | -0.0251 | -0.0045 | 897. | |
| .0200 | -97. | -36. | -64. | -50. | 74. | 56. | -0.0132 | .0001 | -0.0152 | .0116 | -0.0232 | -0.0062 | 736. | |
| .0210 | -47. | -11. | -57. | -32. | 44. | 42. | -0.0113 | .0006 | -0.0110 | .0077 | -0.0181 | -0.0069 | 480. | |
| .0220 | 19. | -0. | -43. | -7. | 2. | 27. | -0.0081 | .0008 | -0.0046 | .0022 | -0.0099 | -0.0058 | 196. | |
| .0230 | 87. | 4. | -24. | 22. | -42. | 12. | -0.0039 | .0009 | .0033 | -0.0045 | .0005 | -0.0034 | 342. | |
| .0240 | 139. | 4. | 3. | 50. | -82. | -1. | .0005 | .0008 | .0114 | -0.0114 | .0116 | -0.0002 | 668. | |
| .0250 | 181. | 8. | 28. | 70. | -119. | -12. | .0041 | .0006 | .0183 | -0.0175 | .0209 | .0027 | 965. | |
| .0260 | 235. | 20. | 41. | 82. | -161. | -25. | .0066 | .0004 | .0231 | -0.0221 | .0265 | .0044 | 1268. | |
| .0270 | 297. | 17. | 41. | 88. | -200. | -40. | .0083 | -0.0002 | .0252 | -0.0237 | .0288 | .0053 | 1545. | |
| .0280 | 325. | 21. | 38. | 91. | -210. | -55. | .0094 | -0.0008 | .0243 | -0.0226 | .0289 | .0044 | 1642. | |
| .0290 | 327. | 74. | 31. | 88. | -203. | -76. | .0095 | -0.0013 | .0214 | -0.0205 | .0265 | .0001 | 1629. | |
| .0300 | 382. | 116. | 9. | 84. | -225. | -99. | .0090 | -0.0022 | .0185 | -0.0176 | .0218 | -0.0025 | 1810. | |
| .0310 | 434. | 96. | -2. | 79. | -259. | -118. | .0096 | -0.0038 | .0177 | -0.0153 | .0197 | -0.0003 | 2054. | |
| .0320 | 434. | 100. | 17. | 80. | -261. | -137. | .0126 | -0.0052 | .0189 | -0.0159 | .0235 | .0020 | 2129. | |
| .0330 | 424. | 159. | 30. | 84. | -243. | -160. | .0176 | -0.0063 | .0220 | -0.0184 | .0317 | .0031 | 2129. | |
| .0340 | 395. | 167. | 68. | 110. | -229. | -170. | .0228 | -0.0081 | .0266 | -0.0210 | .0415 | .0090 | 2127. | |
| .0350 | 307. | 84. | 125. | 107. | -212. | -164. | .0263 | -0.0107 | .0307 | -0.0220 | .0494 | .0200 | 2009. | |
| .0360 | 207. | 25. | 159. | 84. | -170. | -158. | .0272 | -0.0129 | .0300 | -0.0190 | .0505 | .0271 | 1785. | |
| .0370 | 138. | 55. | 141. | 88. | -118. | -163. | .0255 | -0.0143 | .0222 | -0.0093 | .0425 | .0249 | 1528. | |
| .0380 | 36. | 103. | 102. | 79. | -21. | -164. | .0211 | -0.0151 | .0084 | .0062 | .0276 | .0175 | 1279. | |
| .0390 | -105. | 119. | 60. | 51. | 88. | -154. | .0142 | -0.0157 | -0.0087 | .0240 | .0075 | .0097 | 1285. | |
| .0400 | -170. | 144. | -7. | 17. | 158. | -142. | .0057 | -0.0160 | -0.0253 | .0408 | -0.0165 | .0021 | 1488. | |
| .0410 | -176. | 162. | -72. | 6. | 184. | -136. | -0.0006 | -0.0159 | -0.0367 | .0542 | -0.0348 | -0.0036 | 1596. | |

ADLPIPE PAGE 2800

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

| | | | | | | | | | | | | | |
|-------|-------|------|------|------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .0310 | 434. | 96. | 2. | 79. | -259. | -118. | .0096 | -.0038 | .0177 | -.0153 | .0197 | -.0003 | 1810. |
| .0320 | 434. | 100. | 17. | 80. | -261. | -137. | .0126 | -.0052 | .0189 | -.0159 | .0235 | .0020 | 2129. |
| .0330 | 424. | 159. | 36. | 94. | -243. | -160. | .0176 | -.0063 | .0220 | -.0184 | .0317 | .0051 | 2129. |
| .0340 | 395. | 157. | 68. | 110. | -229. | -170. | .0228 | -.0081 | .0266 | -.0210 | .0415 | .0090 | 2127. |
| .0350 | 307. | 84. | 125. | 107. | -212. | -164. | .0263 | -.0107 | .0307 | -.0220 | .0494 | .0200 | 2009. |
| .0360 | 207. | 25. | 159. | 94. | -178. | -158. | .0272 | -.0129 | .0300 | -.0190 | .0505 | .0271 | 1785. |
| .0370 | 138. | 55. | 141. | 88. | -118. | -163. | .0255 | -.0143 | .0222 | -.0093 | .0425 | .0249 | 1528. |
| .0380 | 36. | 103. | 102. | 79. | -21. | -164. | .0211 | -.0151 | .0084 | .0062 | .0276 | .0175 | 1279. |
| .0390 | -105. | 119. | 60. | 51. | 88. | -154. | .0142 | -.0157 | -.0087 | .0240 | .0075 | .0097 | 1285. |
| .0400 | -178. | 144. | -7. | 17. | 158. | -142. | .0057 | -.0160 | -.0255 | .0408 | -.0165 | .0021 | 1488. |
| .0410 | -176. | 162. | -72. | 6. | 184. | -126. | -.0006 | -.0159 | -.0367 | .0542 | -.0348 | -.0036 | 1596. |

ADLPIPE PAGE 2800

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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 | 69 | MEMBER | 2 | SEQUENCE | 704 | 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) | | | |
| .0420 | -228. | 176. | -74. | 21. | 226. | -135. | -.0014 | -.0148 | -.0398 | .0600 | -.0374 | -.0074 | 1837. | | | |
| .0430 | -312. | 220. | -35. | 59. | 283. | -137. | .0031 | -.0126 | -.0345 | .0565 | -.0251 | -.0097 | 2226. | | | |
| .0440 | -330. | 250. | 8. | 107. | 295. | -131. | .0099 | -.0101 | -.0221 | .0459 | -.0062 | -.0066 | 2367. | | | |
| .0450 | -355. | 154. | 84. | 135. | 262. | -98. | .0159 | -.0081 | -.0056 | .0317 | .0146 | .0058 | 2160. | | | |
| .0460 | -437. | -16. | 173. | 134. | 237. | -47. | .0194 | -.0061 | .0082 | .0187 | .0316 | .0196 | 1924. | | | |
| .0470 | -463. | -60. | 180. | 126. | 245. | -10. | .0193 | -.0023 | .0124 | .0119 | .0358 | .0201 | 1922. | | | |
| .0480 | -419. | 39. | 104. | 114. | 274. | 12. | .0146 | .0031 | .0063 | .0124 | .0257 | .0061 | 2070. | | | |
| .0490 | -422. | 84. | 31. | 68. | 301. | 47. | .0055 | .0085 | -.0048 | .0167 | .0070 | -.0083 | 2174. | | | |
| .0500 | -436. | -2. | -33. | -14. | 298. | 105. | -.0060 | .0128 | -.0163 | .0206 | -.0156 | -.0150 | 2203. | | | |
| .0510 | -361. | -96. | -124. | -92. | 263. | 164. | -.0164 | .0169 | -.0250 | .0218 | -.0365 | -.0188 | 2252. | | | |
| .0520 | -287. | -109. | -184. | -137. | 235. | 206. | -.0219 | .0217 | -.0271 | .0166 | -.0452 | -.0245 | 2375. | | | |
| .0530 | -298. | -106. | -159. | -159. | 220. | 239. | -.0218 | .0266 | -.0202 | .0028 | -.0368 | -.0273 | 2518. | | | |
| .0540 | -273. | -183. | -109. | -175. | 166. | 274. | -.0183 | .0303 | -.0060 | -.0168 | -.0195 | -.0208 | 2541. | | | |
| .0550 | -162. | -325. | -74. | -188. | 62. | 310. | -.0139 | .0326 | .0113 | -.0376 | -.0014 | -.0075 | 2565. | | | |
| .0560 | -104. | -427. | -21. | -199. | -22. | 336. | -.0105 | .0346 | .0266 | -.0561 | .0154 | .0025 | 2720. | | | |
| .0570 | -114. | -432. | 26. | -209. | -53. | 343. | -.0095 | .0367 | .0350 | -.0685 | .0260 | .0029 | 2822. | | | |
| .0580 | -58. | -397. | -5. | -223. | -69. | 340. | -.0124 | .0382 | .0340 | -.0711 | .0225 | -.0030 | 2870. | | | |
| .0590 | 47. | -391. | -87. | -251. | -93. | 325. | -.0191 | .0383 | .0260 | -.0656 | .0068 | -.0096 | 2983. | | | |
| .0600 | 97. | -390. | -143. | -287. | -116. | 325. | -.0272 | .0375 | .0162 | -.0575 | -.0113 | -.0164 | 3123. | | | |
| .0610 | 147. | -342. | -180. | -304. | -140. | 297. | -.0333 | .0362 | .0086 | -.0505 | -.0249 | -.0245 | 3117. | | | |
| .0620 | 248. | -271. | -221. | -284. | -168. | 250. | -.0343 | .0343 | .0062 | -.0461 | -.0295 | -.0308 | 2881. | | | |
| .0630 | 324. | -214. | -209. | -233. | -192. | 190. | -.0297 | .0317 | .0120 | -.0472 | -.0199 | -.0319 | 2481. | | | |
| .0640 | 327. | -163. | -118. | -164. | -223. | 128. | -.0211 | .0283 | .0262 | -.0552 | .0026 | -.0275 | 2123. | | | |
| .0650 | 337. | -143. | -10. | -93. | -278. | 73. | -.0111 | .0240 | .0441 | -.0658 | .0286 | -.0172 | 2100. | | | |
| .0660 | 363. | -191. | 70. | -33. | -325. | 33. | -.0020 | .0186 | .0589 | -.0729 | .0498 | -.0031 | 2284. | | | |
| .0670 | 335. | -223. | 124. | 8. | -320. | -1. | .0040 | .0133 | .0650 | -.0726 | .0612 | .0056 | 2225. | | | |
| .0680 | 282. | -140. | 132. | 75. | -275. | -43. | .0045 | .0088 | .0593 | -.0627 | .0572 | .0016 | 1950. | | | |
| .0690 | 269. | -17. | 77. | 40. | -225. | -81. | -.0012 | .0045 | .0428 | -.0430 | .0355 | -.0094 | 1689. | | | |
| .0700 | 254. | 16. | -22. | 13. | -173. | -96. | -.0110 | -.0006 | .0200 | -.0172 | .0030 | -.0176 | 1380. | | | |
| .0710 | 208. | 14. | -104. | -23. | -114. | -96. | -.0207 | -.0057 | -.0028 | .0079 | -.0288 | -.0235 | 1051. | | | |
| .0720 | 182. | 84. | -163. | -33. | -65. | -103. | -.0263 | -.0099 | -.0196 | .0270 | -.0508 | -.0299 | 881. | | | |
| .0730 | 175. | 159. | -181. | -12. | -35. | -112. | -.0255 | -.0135 | -.0264 | .0369 | -.0589 | -.0317 | 820. | | | |
| .0740 | 140. | 134. | -136. | 24. | -21. | -108. | -.0188 | -.0176 | -.0221 | .0371 | -.0462 | -.0221 | 784. | | | |
| .0750 | 99. | 64. | -46. | 71. | -33. | -99. | -.0085 | -.0216 | -.0095 | .0300 | -.0244 | -.0056 | 879. | | | |
| .0760 | 85. | 46. | 52. | 131. | -67. | -98. | .0025 | -.0249 | .0055 | .0206 | .0000 | .0090 | 1231. | | | |
| .0770 | 59. | 56. | 133. | 186. | -83. | -99. | .0118 | -.0274 | .0163 | .0145 | .0198 | .0189 | 1577. | | | |
| .0780 | 19. | 54. | 167. | 216. | -61. | -94. | .0172 | -.0296 | .0180 | .0155 | .0282 | .0240 | 1693. | | | |
| .0790 | 17. | 81. | 134. | 220. | -27. | -88. | .0171 | -.0313 | .0096 | .0250 | .0212 | .0222 | 1662. | | | |

ADLPIPE PAGE 2801

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

| | | | | | | | | | | | | | |
|-------|------|-------|-------|------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .0680 | 282. | -140. | 132. | 35. | -275. | -43. | .045 | .0088 | .0593 | -.0627 | .0572 | -.0016 | 1950. |
| .0690 | 269. | -17. | 70. | 40. | -225. | -81. | -.0017 | .0045 | .0428 | -.0430 | .0353 | -.0094 | 1689. |
| .0700 | 254. | 16. | -22. | 13. | -173. | -96. | -.0110 | -.0006 | .0200 | -.0172 | .0030 | -.0176 | 1380. |
| .0710 | 208. | 14. | -104. | -23. | -114. | -96. | -.0207 | -.0057 | -.0028 | .0079 | -.0288 | -.0233 | 1051. |
| .0720 | 182. | 84. | -167. | -33. | -65. | -103. | -.0263 | -.0099 | -.0196 | .0270 | -.0508 | -.0299 | 881. |
| .0730 | 175. | 159. | -181. | -12. | -35. | -112. | -.0255 | -.0135 | -.0264 | .0369 | -.0569 | -.0317 | 820. |
| .0740 | 140. | 134. | -136. | 74. | -21. | -108. | -.0188 | -.0176 | -.0221 | .0371 | -.0462 | -.0221 | 784. |
| .0750 | 99. | 64. | -46. | 71. | -33. | -99. | -.0085 | -.0216 | -.0095 | .0300 | -.0244 | -.0056 | 879. |
| .0760 | 85. | 45. | 52. | 131. | -67. | -90. | .0025 | -.0249 | .0055 | .0206 | .0000 | .0090 | 1231. |
| .0770 | 59. | 54. | 133. | 166. | -83. | -99. | .0118 | -.0274 | .0163 | .0145 | .0198 | .0189 | 1577. |
| .0780 | 10. | 54. | 167. | 216. | -61. | -94. | -.0172 | -.0296 | .0180 | .0155 | .0282 | .0240 | 1693. |
| .0790 | 13. | 81. | 134. | 220. | -27. | -88. | .0171 | -.0313 | .0096 | .0250 | .0212 | .0222 | 1662. |

ADLPIPE PAGE 2801

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

S/RV PIPING KEWAUNEE CROWDF 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 | 69 | MEMBER | 2 | SEQUENCE | 704 | LOCATION | END | TYPE | FU | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 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 | 21. | 142. | 62. | 206. | 7. | -80. | .0122 | -.0326 | -.0059 | .0406 | .0023 | .0149 | 1541. | | |
| .0810 | -11. | 178. | -4. | 175. | 50. | -67. | .0052 | -.0339 | -.0237 | .0578 | -.0196 | .0078 | 1351. | | |
| .0820 | -46. | 177. | -63. | 145. | 98. | -54. | -.0000 | -.0354 | -.0387 | .0725 | -.0368 | .0039 | 1273. | | |
| .0830 | -46. | 196. | -101. | 139. | 129. | -57. | -.0009 | -.0364 | -.0465 | .0811 | -.0428 | .0019 | 1381. | | |
| .0840 | -60. | 236. | -77. | 162. | 141. | -74. | .0036 | -.0371 | -.0445 | .0810 | -.0333 | .0028 | 1584. | | |
| .0850 | -101. | 237. | 4. | 196. | 137. | -97. | .0122 | -.0379 | -.0338 | .0732 | -.0107 | .0098 | 1796. | | |
| .0860 | -104. | 191. | 88. | 233. | 110. | -121. | .0227 | -.0390 | -.0191 | .0620 | .0163 | .0214 | 1979. | | |
| .0870 | -67. | 165. | 152. | 271. | 73. | -153. | .0326 | -.0398 | -.0054 | .0518 | .0410 | .0311 | 2224. | | |
| .0880 | -52. | 200. | 206. | 302. | 55. | -196. | .0399 | -.0400 | .0008 | .0452 | .0598 | .0336 | 2536. | | |
| .0890 | -36. | 268. | 224. | 316. | 52. | -243. | .0436 | -.0397 | .0064 | .0437 | .0687 | .0303 | 2797. | | |
| .0900 | 34. | 317. | 186. | 310. | 43. | -285. | .0438 | -.0395 | .0033 | .0471 | .0668 | .0254 | 2945. | | |
| .0910 | 106. | 344. | 137. | 291. | 32. | -320. | .0422 | -.0393 | -.0016 | .0520 | .0607 | .0207 | 3017. | | |
| .0920 | 120. | 375. | 121. | 270. | 31. | -350. | .0412 | -.0387 | -.0045 | .0544 | .0578 | .0165 | 3083. | | |
| .0930 | 111. | 398. | 125. | 255. | 38. | -372. | .0420 | -.0379 | -.0035 | .0528 | .0603 | .0149 | 3148. | | |
| .0940 | 96. | 364. | 140. | 239. | 43. | -378. | .0442 | -.0373 | .0011 | .0478 | .0670 | .0190 | 3129. | | |
| .0950 | 32. | 271. | 181. | 214. | 50. | -367. | .0464 | -.0368 | .0078 | .0406 | .0753 | .0275 | 2975. | | |
| .0960 | -66. | 175. | 227. | 177. | 64. | -345. | .0462 | -.0359 | .0123 | .0348 | .0795 | .0346 | 2735. | | |
| .0970 | -133. | 114. | 226. | 129. | 83. | -322. | .0422 | -.0343 | .0104 | .0343 | .0727 | .0357 | 2481. | | |
| .0980 | -177. | 77. | 171. | 67. | 119. | -297. | .0339 | -.0319 | .0003 | .0408 | .0534 | .0299 | 2272. | | |
| .0990 | -226. | 62. | 92. | -9. | 170. | -270. | .0218 | -.0288 | -.0158 | .0521 | .0250 | .0181 | 2218. | | |
| .1000 | -265. | 70. | 3. | -87. | 211. | -241. | .0076 | -.0249 | -.0339 | .0650 | -.0077 | .0030 | 2312. | | |
| .1010 | -272. | 65. | -84. | -158. | 229. | -209. | -.0062 | -.0207 | -.0493 | .0757 | -.0385 | -.0107 | 2420. | | |
| .1020 | -281. | 17. | -136. | -214. | 231. | -172. | -.0169 | -.0163 | -.0582 | .0808 | -.0601 | -.0196 | 2496. | | |
| .1030 | -297. | -32. | -143. | -245. | 220. | -136. | -.0233 | -.0114 | -.0592 | .0788 | -.0692 | -.0255 | 2478. | | |
| .1040 | -278. | -44. | -123. | -245. | 181. | -109. | -.0259 | -.0057 | -.0530 | .0701 | -.0683 | -.0304 | 2254. | | |
| .1050 | -220. | -61. | -92. | -230. | 114. | -81. | -.0263 | .0003 | -.0421 | .0573 | -.0619 | -.0328 | 1875. | | |
| .1060 | -145. | -110. | -59. | -213. | 32. | -48. | -.0261 | .0061 | -.0298 | .0432 | -.0543 | -.0327 | 1535. | | |
| .1070 | -41. | -134. | -45. | -191. | -55. | -14. | -.0265 | .0122 | -.0189 | .0300 | -.0491 | -.0344 | 1390. | | |
| .1080 | 95. | -85. | -59. | -165. | -141. | 14. | -.0279 | .0188 | -.0106 | .0185 | -.0477 | -.0407 | 1512. | | |
| .1090 | 229. | -26. | -84. | -144. | -221. | 47. | -.0297 | .0253 | -.0040 | .0078 | -.0483 | -.0472 | 1864. | | |
| .1100 | 342. | -82. | -100. | -129. | -298. | 97. | -.0310 | .0304 | .0028 | -.0014 | -.0480 | -.0460 | 2361. | | |
| .1110 | 431. | -127. | -106. | -112. | -365. | 151. | -.0314 | .0350 | .0102 | -.0111 | -.0455 | -.0430 | 2857. | | |
| .1120 | 482. | -97. | -99. | -90. | -412. | 202. | -.0309 | .0396 | .0179 | -.0220 | -.0406 | -.0419 | 3255. | | |
| .1130 | 483. | -139. | -74. | -78. | -441. | 261. | -.0298 | .0429 | .0250 | -.0316 | -.0347 | -.0355 | 3609. | | |
| .1140 | 475. | -263. | -57. | -75. | -461. | 319. | -.0290 | .0448 | .0294 | -.0367 | -.0311 | -.0252 | 3935. | | |
| .1150 | 491. | -286. | -68. | -63. | -467. | 351. | -.0292 | .0467 | .0292 | -.0372 | -.0326 | -.0224 | 4090. | | |
| .1160 | 497. | -191. | -91. | -48. | -448. | 357. | -.0301 | .0489 | .0247 | -.0340 | -.0377 | -.0281 | 3999. | | |
| .1170 | 467. | -151. | -113. | -47. | -409. | 357. | -.0311 | .0499 | .0179 | -.0278 | -.0442 | -.0315 | 3795. | | |

ADLPIPE PAGE 2802

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

S/RV PIPING KEWAUNEE CROWDF 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

| | | | | | | | | | | | | | |
|-------|------|-------|-------|-------|-------|------|--------|-------|--------|--------|--------|--------|-------|
| .1070 | -41. | -134. | -45. | -101. | -55. | -14. | -.0265 | .0122 | -.0189 | .0300 | -.0491 | -.0344 | 1390. |
| .1080 | 95. | -85. | -59. | -165. | -141. | 14. | -.0279 | .0188 | -.0106 | .0185 | -.0477 | -.0407 | 1512. |
| .1090 | 229. | -26. | -84. | -144. | -221. | 47. | -.0297 | .0253 | -.0040 | .0078 | -.0483 | -.0472 | 1864. |
| .1100 | 740. | -82. | -100. | -129. | -290. | 97. | -.0310 | .0304 | .0028 | -.0014 | -.0480 | -.0460 | 2361. |
| .1110 | 431. | -127. | -106. | -112. | -365. | 151. | -.0314 | .0350 | .0102 | -.0111 | -.0455 | -.0430 | 2857. |
| .1120 | 482. | -97. | -90. | -90. | -412. | 202. | -.0309 | .0396 | .0179 | -.0220 | -.0406 | -.0419 | 3255. |
| .1130 | 483. | -139. | -74. | -78. | -441. | 261. | -.0298 | .0429 | .0250 | -.0316 | -.0347 | -.0355 | 3609. |
| .1140 | 475. | -263. | -57. | -75. | -461. | 319. | -.0290 | .0448 | .0294 | -.0367 | -.0311 | -.0252 | 3935. |
| .1150 | 491. | -286. | -68. | -63. | -467. | 351. | -.0292 | .0467 | .0292 | -.0372 | -.0326 | -.0224 | 4090. |
| .1160 | 497. | -191. | -91. | -48. | -448. | 357. | -.0301 | .0489 | .0247 | -.0340 | -.0377 | -.0281 | 3999. |
| .1170 | 463. | -151. | -113. | -47. | -409. | 357. | -.0311 | .0499 | .0179 | -.0278 | -.0442 | -.0315 | 3795. |

ADLPIPE PAGE 2802

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | 69 | MEMBER | 2 | SEQUENCE | 704 | LOCATION | END | TYPE | RU | | | | | |
|---------|-------|--------|-------|----------|---------|----------|-----|--------|-------|--------|--------|--------|--------|--------|
| TIME | FX | FY | FZ | FX | MY | MZ | | DX | DY | DZ | RX | RY | RZ | STRESS |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) |
| .1180 | 478. | -201. | -148. | -44. | -387. | 349. | | -.0308 | .0492 | .0117 | -.0194 | -.0499 | -.0291 | 3639. |
| .1190 | 509. | -132. | -165. | -15. | -371. | 307. | | -.0275 | .0490 | .0092 | -.0157 | -.0487 | -.0314 | 3353. |
| .1200 | 490. | 50. | -124. | 42. | -345. | 236. | | -.0193 | .0493 | .0130 | -.0143 | -.0348 | -.0372 | 2923. |
| .1210 | 455. | 108. | -47. | 103. | -321. | 169. | | -.0062 | .0482 | .0233 | -.0190 | -.0099 | -.0325 | 2627. |
| .1220 | 415. | 38. | 42. | 159. | -299. | 108. | | .0097 | .0457 | .0370 | -.0257 | .0201 | -.0185 | 2472. |
| .1230 | 354. | 50. | 133. | 220. | -267. | 34. | | .0248 | .0437 | .0495 | -.0313 | .0483 | -.0095 | 2422. |
| .1240 | 220. | 175. | 224. | 268. | -201. | -47. | | .0362 | .0425 | .0556 | -.0330 | .0680 | -.0101 | 2356. |
| .1250 | 67. | 212. | 258. | 268. | -106. | -104. | | .0421 | .0406 | .0513 | -.0262 | .0716 | -.0102 | 2132. |
| .1260 | -8. | 139. | 196. | 228. | -10. | -137. | | .0423 | .0378 | .0361 | -.0093 | .0563 | -.0091 | 1853. |
| .1270 | -79. | 199. | 103. | 179. | 98. | -179. | | .0388 | .0364 | .0141 | .0118 | .0312 | -.0195 | 1887. |
| .1280 | -185. | 382. | 32. | 136. | 210. | -225. | | .0348 | .0366 | -.0080 | .0312 | .0068 | -.0375 | 2340. |
| .1290 | -294. | 426. | -19. | 81. | 309. | -241. | | .0334 | .0359 | -.0246 | .0452 | -.0104 | -.0442 | 2788. |
| .1300 | -378. | 281. | -47. | 22. | 380. | -224. | | .0357 | .0340 | -.0324 | .0518 | -.0169 | -.0346 | 3075. |
| .1310 | -469. | 181. | -19. | -9. | 423. | -203. | | .0414 | .0329 | -.0308 | .0500 | -.0109 | -.0228 | 3264. |
| .1320 | -623. | 211. | 73. | -21. | 461. | -183. | | .0487 | .0334 | -.0235 | .0405 | .0043 | -.0158 | 3459. |
| .1330 | -736. | 139. | 141. | -53. | 487. | -135. | | .0551 | .0335 | -.0167 | .0304 | .0169 | -.0026 | 3538. |
| .1340 | -761. | -79. | 135. | -114. | 498. | -58. | | .0582 | .0328 | -.0156 | .0254 | .0184 | .0158 | 3580. |
| .1350 | -765. | -173. | 96. | -174. | 510. | 8. | | .0561 | .0335 | -.0217 | .0261 | .0087 | .0218 | 3751. |
| .1360 | -781. | -71. | 47. | -225. | 526. | 56. | | .0492 | .0362 | -.0335 | .0307 | -.0095 | .0121 | 4005. |
| .1370 | -788. | -38. | -27. | -296. | 544. | 122. | | .0397 | .0385 | -.0478 | .0372 | -.0331 | .0047 | 4390. |
| .1380 | -732. | -203. | -125. | -379. | 533. | 213. | | .0304 | .0393 | -.0598 | .0430 | -.0561 | .0097 | 4785. |
| .1390 | -672. | -311. | -175. | -473. | 491. | 291. | | .0240 | .0407 | -.0643 | .0420 | -.0686 | .0139 | 4988. |
| .1400 | -640. | -248. | -150. | -442. | 431. | 335. | | .0222 | .0440 | -.0595 | .0314 | -.0658 | .0109 | 4892. |
| .1410 | -572. | -261. | -107. | -434. | 351. | 374. | | .0245 | .0467 | -.0474 | .0149 | -.0526 | .0146 | 4679. |
| .1420 | -469. | -431. | -72. | -430. | 261. | 418. | | .0285 | .0480 | -.0320 | -.0035 | -.0357 | .0278 | 4551. |
| .1430 | -361. | -506. | -29. | -410. | 158. | 435. | | .0311 | .0498 | -.0165 | -.0215 | -.0199 | .0343 | 4306. |
| .1440 | -274. | -387. | 24. | -379. | 53. | 420. | | .0307 | .0532 | -.0043 | -.0375 | -.0091 | .0266 | 3953. |
| .1450 | -164. | -330. | 30. | -372. | -39. | 409. | | .0274 | .0557 | .0017 | -.0483 | -.0073 | .0191 | 3856. |
| .1460 | 7. | -438. | -32. | -394. | -118. | 413. | | .0224 | .0565 | .0017 | -.0524 | -.0144 | .0179 | 4056. |
| .1470 | 159. | -440. | -95. | -409. | -181. | 396. | | .0164 | .0579 | -.0006 | -.0548 | -.0233 | .0087 | 4156. |
| .1480 | 267. | -264. | -113. | -396. | -245. | 346. | | .0108 | .0604 | -.0009 | -.0589 | -.0282 | -.0103 | 4035. |
| .1490 | 754. | -178. | -105. | -382. | -310. | 298. | | .0072 | .0618 | .0032 | -.0653 | -.0269 | -.0216 | 4002. |
| .1500 | 443. | -291. | -94. | -372. | -368. | 268. | | .0070 | .0611 | .0117 | -.0739 | -.0192 | -.0189 | 4092. |
| .1510 | 518. | -317. | -59. | -332. | -418. | 224. | | .0097 | .0607 | .0241 | -.0850 | -.0044 | -.0178 | 4027. |
| .1520 | 521. | -171. | 20. | -263. | -442. | 160. | | .0137 | .0616 | .0379 | -.0981 | .0151 | -.0261 | 3747. |
| .1530 | 502. | -104. | 82. | -206. | -446. | 115. | | .0166 | .0616 | .0490 | -.1078 | .0304 | -.0298 | 3512. |
| .1540 | 497. | -217. | 85. | -180. | -431. | 104. | | .0166 | .0596 | .0537 | -.1099 | .0348 | -.0246 | 3329. |
| .1550 | 469. | -254. | 61. | -154. | -389. | 89. | | .0126 | .0582 | .0513 | -.1045 | .0291 | -.0271 | 2976. |

ADLPIPE PAGE 2803

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.56.

S/RV PIPING KEWAUNEE CRWOODF 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

| | | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|-------|-------|
| .1450 | -164. | -330. | 30. | -372. | -39. | -330. | 409. | .0274 | .0557 | .0017 | -.0483 | -.0073 | .0191 | 3856. |
| .1460 | 7. | -438. | -32. | -394. | -118. | 413. | .224 | .0565 | .0017 | -.0524 | -.0144 | .0179 | 4056. | |
| .1470 | 159. | -440. | -95. | -409. | -181. | 396. | .0164 | .0579 | -.0006 | -.0548 | -.0233 | .0087 | 4156. | |
| .1480 | 267. | -264. | -113. | -396. | -245. | 346. | .0108 | .0604 | -.0009 | -.0589 | -.0282 | -.0103 | 4035. | |
| .1490 | 354. | -178. | -105. | -382. | -310. | 298. | .0072 | .0618 | .0032 | -.0653 | -.0269 | -.0216 | 4002. | |
| .1500 | 443. | -201. | -94. | -372. | -368. | 268. | .0070 | .0611 | .0117 | -.0739 | -.0192 | -.0189 | 4092. | |
| .1510 | 518. | -317. | -59. | -332. | -418. | 224. | .0097 | .0607 | .0241 | -.0850 | -.0044 | -.0178 | 4027. | |
| .1520 | 521. | -171. | 20. | -263. | -442. | 160. | .0137 | .0616 | .0379 | -.0981 | .0151 | -.0261 | 3747. | |
| .1530 | 502. | -104. | 82. | -206. | -446. | 115. | .0166 | .0616 | .0490 | -.1078 | .0304 | -.0298 | 3512. | |
| .1540 | 497. | -217. | 85. | -180. | -431. | 104. | .0166 | .0596 | .0537 | -.1099 | .0348 | -.0246 | 3329. | |
| .1550 | 469. | -254. | 61. | -154. | -389. | 89. | .0126 | .0582 | .0513 | -.1045 | .0291 | -.0271 | 2976. | |

ADLPIPE PAGE 2803

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.56.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | 69 | MEMBER | 2 | SEQUENCE | 704 | LOCATION | END | TYPE | RU | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| TIME | FX | FY | FZ | Mx | My | Mz | | | | | | | | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | | | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) |
| .1560 | 383. | -92. | 39. | -107. | -313. | 54. | .0055 | .0585 | .0430 | -.0933 | .0173 | -.0446 | 2335. | | |
| .1570 | 251. | 51. | 5. | -68. | -200. | 33. | -.0030 | .0587 | .0306 | -.0781 | .0013 | -.0626 | 1489. | | |
| .1580 | 148. | 8. | -66. | -50. | -82. | 49. | -.0114 | .0574 | .0171 | -.0606 | -.0174 | -.0688 | 752. | | |
| .1590 | 46. | -46. | -121. | -22. | 22. | 78. | -.0189 | .0562 | .0064 | -.0450 | -.0325 | -.0718 | 588. | | |
| .1600 | -131. | 36. | -110. | 30. | 130. | 100. | -.0244 | .0566 | .0005 | -.0349 | -.0388 | -.0800 | 1161. | | |
| .1610 | -313. | 99. | -84. | 87. | 238. | 131. | -.0276 | .0572 | -.0016 | -.0288 | -.0387 | -.0848 | 1990. | | |
| .1620 | -414. | 11. | -90. | 137. | 325. | 184. | -.0292 | .0568 | -.0016 | -.0236 | -.0368 | -.0792 | 2766. | | |
| .1630 | -510. | -56. | -82. | 184. | 395. | 234. | -.0304 | .0570 | -.0003 | -.0209 | -.0323 | -.0746 | 3442. | | |
| .1640 | -615. | 19. | -46. | 236. | 446. | 266. | -.0321 | .0590 | .0016 | -.0205 | -.0267 | -.0789 | 3971. | | |
| .1650 | -658. | 81. | -37. | 273. | 473. | 303. | -.0343 | .0610 | .0021 | -.0202 | -.0232 | -.0828 | 4342. | | |
| .1660 | -653. | 7. | -63. | 274. | 489. | 360. | -.0367 | .0622 | .0009 | -.0198 | -.0225 | -.0792 | 4636. | | |
| .1670 | -644. | -78. | -83. | 257. | 493. | 418. | -.0394 | .0633 | -.0006 | -.0208 | -.0216 | -.0749 | 4843. | | |
| .1680 | -651. | -48. | -74. | 239. | 478. | 457. | -.0423 | .0652 | -.0010 | -.0249 | -.0190 | -.0768 | 4894. | | |
| .1690 | -626. | -45. | -68. | 205. | 437. | 493. | -.0452 | .0666 | -.0010 | -.0205 | -.0166 | -.0763 | 4802. | | |
| .1700 | -569. | -180. | -81. | 140. | 386. | 537. | -.0475 | .0663 | -.0013 | -.0367 | -.0153 | -.0671 | 4702. | | |
| .1710 | -513. | -298. | -90. | 62. | 332. | 566. | -.0494 | .0655 | -.0022 | -.0438 | -.0139 | -.0588 | 4586. | | |
| .1720 | -426. | -284. | -95. | -2. | 258. | 561. | -.0511 | .0649 | -.0035 | -.0509 | -.0128 | -.0580 | 4299. | | |
| .1730 | -326. | -259. | -102. | -74. | 176. | 540. | -.0526 | .0633 | -.0052 | -.0576 | -.0124 | -.0571 | 3987. | | |
| .1740 | -209. | -355. | -121. | -163. | 91. | 520. | -.0535 | .0593 | -.0072 | -.0628 | -.0127 | -.0479 | 3849. | | |
| .1750 | -77. | -453. | -141. | -245. | 0. | 483. | -.0532 | .0539 | -.0085 | -.0666 | -.0119 | -.0372 | 3769. | | |
| .1760 | 44. | -404. | -131. | -295. | -88. | 408. | -.0515 | .0483 | -.0080 | -.0707 | -.0070 | -.0335 | 3556. | | |
| .1770 | 155. | -321. | -104. | -322. | -171. | 311. | -.0478 | .0415 | -.0056 | -.0740 | .0017 | -.0299 | 3335. | | |
| .1780 | 269. | -333. | -78. | -343. | -245. | 212. | -.0420 | .0326 | -.0017 | -.0760 | .0126 | -.0189 | 3284. | | |
| .1790 | 393. | -353. | -53. | -341. | -315. | 101. | -.0349 | .0224 | .0033 | -.0758 | .0249 | -.0057 | 3308. | | |
| .1800 | 482. | -249. | -5. | -302. | -368. | -34. | -.0271 | .0122 | .0090 | -.0738 | .0389 | .0011 | 3322. | | |
| .1810 | 512. | -90. | 59. | -244. | -389. | -176. | -.0194 | .0018 | .0142 | -.0696 | .0529 | .0051 | 3422. | | |
| .1820 | 552. | -24. | 95. | -181. | -394. | -303. | -.0122 | -.0100 | .0177 | -.0609 | .0631 | .0146 | 3682. | | |
| .1830 | 584. | 14. | 115. | -110. | -382. | -418. | -.0060 | -.0221 | .0194 | -.0485 | .0696 | .0253 | 4016. | | |
| .1840 | 563. | 146. | 147. | -21. | -345. | -533. | -.0009 | -.0331 | .0199 | -.0343 | .0746 | .0294 | 4425. | | |
| .1850 | 505. | 314. | 180. | 79. | -287. | -636. | .0032 | -.0429 | .0191 | -.0187 | .0776 | .0302 | 4889. | | |
| .1860 | 437. | 393. | 193. | 168. | -211. | -708. | .0062 | -.0525 | .0171 | -.0018 | .0773 | .0353 | 5276. | | |
| .1870 | 360. | 405. | 194. | 252. | -130. | -751. | .0078 | -.0613 | .0144 | .0155 | .0742 | .0429 | 5583. | | |
| .1880 | 232. | 475. | 212. | 335. | -37. | -778. | .0077 | -.0677 | .0112 | .0312 | .0697 | .0452 | 5900. | | |
| .1890 | 93. | 570. | 223. | 412. | 59. | -785. | .0057 | -.0720 | .0068 | .0456 | .0623 | .0438 | 6186. | | |
| .1900 | -14. | 578. | 201. | 466. | 148. | -760. | .0018 | -.0748 | .0008 | .0594 | .0503 | .0448 | 6288. | | |
| .1910 | -108. | 535. | 164. | 496. | 229. | -708. | -.0035 | -.0758 | -.0062 | .0711 | .0357 | .0461 | 6226. | | |
| .1920 | -186. | 543. | 130. | 519. | 291. | -648. | -.0101 | -.0742 | -.0127 | .0792 | .0210 | .0420 | 6122. | | |
| .1930 | -235. | 580. | 97. | 534. | 327. | -581. | -.0169 | -.0702 | -.0174 | .0826 | .0081 | .0346 | 5946. | | |

ADLPIPE PAGE 2804

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.57.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| | | | | | | | | | | | | | |
|-------|-------|------|------|-------|-------|-------|--------|--------|--------|--------|-------|-------|-------|
| .1830 | 584. | 14. | 117. | -110. | -382. | -418. | -.060 | -.0221 | .0194 | -.0485 | .0696 | .0253 | 4016. |
| .1840 | 563. | 146. | 147. | -21. | -345. | -533. | -.009 | -.0331 | .0199 | -.0343 | .0746 | .0294 | 4425. |
| .1850 | 505. | 314. | 180. | 79. | -287. | -636. | .0072 | -.0429 | .0191 | -.0187 | .0776 | .0302 | 4889. |
| .1860 | 437. | 393. | 193. | 168. | -211. | -708. | .0062 | -.0525 | .0171 | -.0018 | .0773 | .0353 | 5276. |
| .1870 | 360. | 405. | 194. | 252. | -130. | -751. | .0078 | -.0613 | .0144 | .0155 | .0742 | .0429 | 5583. |
| .1880 | 232. | 475. | 212. | 335. | -37. | -778. | .0077 | -.0677 | .0112 | .0312 | .0697 | .0452 | 5900. |
| .1890 | 93. | 570. | 223. | 412. | 59. | -785. | .0057 | -.0720 | .0068 | .0456 | .0623 | .0438 | 6186. |
| .1900 | -14. | 578. | 201. | 466. | 148. | -760. | .0018 | -.0748 | .0008 | .0594 | .0503 | .0448 | 6288. |
| .1910 | -100. | 535. | 164. | 496. | 229. | -708. | -.0035 | -.0758 | -.0062 | .0711 | .0357 | .0461 | 6226. |
| .1920 | -186. | 543. | 130. | 519. | 291. | -648. | -.0101 | -.0742 | -.0127 | .0792 | .0210 | .0420 | 6122. |
| .1930 | -235. | 580. | 97. | 534. | 327. | -581. | -.0169 | -.0702 | -.0174 | .0826 | .0081 | .0346 | 5946. |

ADLPIPE PAGE 2804

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.57.

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 | 69 | MEMBER | 2 | SEQUENCE | 704 | LOCATION | END | TYPE | RU | | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|--|
| TIME | FX | FY | FZ | MX | MY | MZ | DX | DY | DZ | PX | RY | RZ | STRESS | | |
| (SEC) | (LB) | (LB) | (LB) | (FT-LB) | (FT-LB) | (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) | | |
| .1940 | -256. | 540. | 63. | 530. | 343. | -496. | -.0231 | -.0650 | -.0193 | .0810 | -.0014 | .0310 | 5588. | | |
| .1950 | -260. | 438. | 39. | 511. | 339. | -396. | -.0282 | -.0587 | -.0178 | .0739 | -.0061 | .0310 | 5082. | | |
| .1960 | -255. | 368. | 36. | 489. | 311. | -298. | -.0325 | -.0510 | -.0128 | .0612 | -.0059 | .0294 | 4535. | | |
| .1970 | -242. | 315. | 46. | 459. | 265. | -202. | -.0365 | -.0422 | -.0061 | .0447 | -.0029 | .0266 | 3949. | | |
| .1980 | -212. | 202. | 45. | 410. | 212. | -102. | -.0408 | -.0335 | -.0001 | .0275 | -.0006 | .0264 | 3289. | | |
| .1990 | -163. | 62. | 26. | 346. | 157. | -6. | -.0461 | -.0251 | .0034 | .0120 | -.0016 | .0262 | 2644. | | |
| .2000 | -107. | -6. | -3. | 281. | 103. | 68. | -.0530 | -.0166 | .0038 | -.0008 | -.0061 | .0199 | 2133. | | |
| .2010 | -49. | -13. | -36. | 216. | 49. | 119. | -.0610 | -.0085 | .0015 | -.0108 | -.0134 | .0090 | 1752. | | |
| .2020 | 26. | -52. | -70. | 149. | -8. | 108. | -.0687 | -.0019 | -.0019 | -.0182 | -.0216 | .0002 | 1510. | | |
| .2030 | 117. | -117. | -120. | 88. | -67. | 181. | -.0745 | .0029 | -.0043 | -.0245 | -.0273 | -.0052 | 1478. | | |
| .2040 | 199. | -127. | -135. | 51. | -125. | 178. | -.0773 | .0065 | -.0034 | -.0315 | -.0263 | -.0106 | 1554. | | |
| .2050 | 262. | -90. | -114. | 42. | -181. | 149. | -.0766 | .0086 | .0017 | -.0400 | -.0175 | -.0151 | 1656. | | |
| .2060 | 322. | -84. | -73. | 48. | -238. | 106. | -.0728 | .0084 | .0102 | -.0487 | -.0031 | -.0158 | 1840. | | |
| .2070 | 380. | -108. | -25. | 66. | -290. | 51. | -.0668 | .0061 | .0203 | -.0561 | .0138 | -.0078 | 2100. | | |
| .2080 | 410. | -86. | 30. | 98. | -327. | -20. | -.0600 | .0024 | .0297 | -.0607 | .0302 | -.0029 | 2382. | | |
| .2090 | 435. | -5. | 80. | 137. | -344. | -104. | -.0536 | -.0024 | .0360 | -.0610 | .0428 | -.0011 | 2678. | | |
| .2100 | 450. | 63. | 104. | 169. | -342. | -188. | -.0483 | -.0087 | .0379 | -.0556 | .0486 | .0010 | 2961. | | |
| .2110 | 462. | 96. | 101. | 189. | -324. | -265. | -.0445 | -.0164 | .0355 | -.0451 | .0472 | .0047 | 3198. | | |
| .2120 | 456. | 150. | 90. | 206. | -292. | -340. | -.0416 | -.0245 | .0305 | -.0314 | .0412 | .0067 | 3436. | | |
| .2130 | 428. | 238. | 81. | 225. | -251. | -415. | -.0388 | -.0327 | .0247 | -.0167 | .0336 | .0070 | 3720. | | |
| .2140 | 392. | 304. | 75. | 244. | -204. | -480. | -.0350 | -.0410 | .0201 | -.0029 | .0267 | .0095 | 4007. | | |
| .2150 | 349. | 320. | 75. | 261. | -156. | -530. | -.0295 | -.0494 | .0178 | .0086 | .0222 | .0161 | 4252. | | |
| .2160 | 295. | 328. | 88. | 279. | -113. | -569. | -.0228 | -.0570 | .0182 | .0168 | .0204 | .0241 | 4479. | | |
| .2170 | 233. | 350. | 112. | 300. | -75. | -598. | -.0156 | -.0636 | .0201 | .0225 | .0199 | .0312 | 4686. | | |
| .2180 | 173. | 355. | 128. | 313. | -37. | -613. | -.0089 | -.0691 | .0218 | .0273 | .0181 | .0379 | 4799. | | |
| .2190 | 118. | 372. | 126. | 313. | 3. | -612. | -.0037 | -.0735 | .0215 | .0327 | .0126 | .0439 | 4784. | | |
| .2200 | 71. | 320. | 102. | 304. | 41. | -600. | -.0006 | -.0763 | .0186 | .0390 | .0028 | .0462 | 4687. | | |
| .2210 | 33. | 336. | 80. | 287. | 73. | -580. | .0005 | -.0774 | .0133 | .0460 | -.0103 | .0438 | 4532. | | |
| .2220 | 8. | 343. | 41. | 261. | 98. | -550. | .0005 | -.0771 | .0070 | .0528 | -.0247 | .0396 | 4293. | | |
| .2230 | -2. | 321. | -1. | 231. | 116. | -509. | .0004 | -.0756 | .0011 | .0580 | -.0375 | .0358 | 3972. | | |
| .2240 | -9. | 299. | -20. | 204. | 123. | -463. | .0010 | -.0728 | -.0023 | .0600 | -.0458 | .0317 | 3622. | | |
| .2250 | -10. | 288. | -33. | 183. | 117. | -415. | .0026 | -.0687 | -.0025 | .0580 | -.0481 | .0274 | 3260. | | |
| .2260 | -26. | 256. | -20. | 164. | 98. | -363. | .0052 | -.0638 | .0001 | .0527 | -.0451 | .0250 | 2854. | | |
| .2270 | -24. | 193. | -2. | 143. | 71. | -306. | .0082 | -.0584 | .0040 | .0456 | -.0391 | .0245 | 2402. | | |
| .2280 | -15. | 140. | 14. | 121. | 41. | -251. | .0108 | -.0524 | .0074 | .0384 | -.0322 | .0226 | 1962. | | |
| .2290 | -4. | 122. | 25. | 96. | 13. | -203. | .0122 | -.0457 | .0088 | .0324 | -.0266 | .0172 | 1565. | | |
| .2300 | 14. | 109. | 23. | 63. | -13. | -157. | .0122 | -.0389 | .0074 | .0286 | -.0236 | .0103 | 1182. | | |
| .2310 | 38. | 75. | 7. | 21. | -37. | -111. | .0109 | -.0324 | .0038 | .0270 | -.0233 | .0038 | 826. | | |

ADLPIPE PAGE 2805

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|------|------|------|------|------|-------|-------|--------|--------|-------|--------|-------|-------|
| .2220 | 0. | 343. | 41. | 261. | 98. | -550. | .0005 | -.0771 | .0070 | .0528 | -.0247 | .0396 | 4293. |
| .2230 | -2. | 321. | -1. | 231. | 116. | -509. | .0004 | -.0756 | .0011 | .0580 | -.0375 | .0358 | 3972. |
| .2240 | -5. | 299. | -29. | 204. | 123. | -463. | .0010 | -.0728 | -.0023 | .0600 | -.0458 | .0317 | 3622. |
| .2250 | -10. | 238. | -33. | 183. | 117. | -415. | .0026 | -.0687 | -.0025 | .0580 | -.0481 | .0274 | 3260. |
| .2260 | -20. | 256. | -20. | 164. | 98. | -363. | .0052 | -.0638 | .0001 | .0527 | -.0451 | .0250 | 2854. |
| .2270 | -24. | 193. | -2. | 143. | 71. | -306. | .0082 | -.0584 | .0040 | .0456 | -.0391 | .0245 | 2402. |
| .2280 | -15. | 140. | 14. | 121. | 41. | -251. | .0108 | -.0524 | .0074 | .0384 | -.0322 | .0226 | 1962. |
| .2290 | -4. | 122. | 25. | 96. | 13. | -203. | .0122 | -.0457 | .0088 | .0324 | -.0266 | .0172 | 1565. |
| .2300 | 14. | 109. | 23. | 63. | -13. | -157. | .0122 | -.0389 | .0074 | .0286 | -.0236 | .0103 | 1182. |
| .2310 | 30. | 75. | 7. | 21. | -37. | -111. | .0109 | -.0324 | .0038 | .0270 | -.0233 | .0038 | 826. |

ADLPIPE PAGE 2805

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | 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) |
| .2320 | 57. | 44. | -12. | -24. | -57. | -68. | .0090 | -.0261 | -.0010 | .0266 | -.0236 | -.0028 | 638. |
| .2330 | 66. | 34. | -24. | -63. | -72. | -32. | .0076 | -.0200 | -.0053 | .0260 | -.0223 | -.0098 | 704. |
| .2340 | 69. | 24. | -26. | -26. | -85. | -3. | .0075 | -.0143 | -.0079 | .0244 | -.0179 | -.0150 | 890. |
| .2350 | 71. | -7. | -19. | -121. | -97. | 23. | .0091 | -.0095 | -.0079 | .0215 | -.0100 | -.0169 | 1091. |
| .2360 | 69. | -39. | -0. | -135. | -109. | 41. | .0123 | -.0052 | -.0056 | .0173 | .0011 | -.0168 | 1244. |
| .2370 | 60. | -48. | 28. | -137. | -118. | 50. | .0167 | -.0014 | -.0015 | .0125 | .0145 | -.0166 | 1305. |
| .2380 | 46. | -45. | 56. | -130. | -119. | 52. | .0217 | .0020 | .0031 | .0085 | .0280 | -.0165 | 1274. |
| .2390 | 29. | -46. | 77. | -118. | -110. | 50. | .0267 | .0047 | .0071 | .0062 | .0396 | -.0161 | 1175. |
| .2400 | 4. | -44. | 89. | -105. | -90. | 48. | .0312 | .0071 | .0099 | .0061 | .0482 | -.0163 | 1017. |
| .2410 | -31. | -26. | 94. | -89. | -60. | 45. | .0348 | .0092 | .0112 | .0082 | .0536 | -.0180 | 809. |
| .2420 | -75. | -4. | 91. | -73. | -20. | 42. | .0378 | .0111 | .0113 | .0122 | .0556 | -.0207 | 602. |
| .2430 | -132. | 7. | 82. | -57. | 31. | 44. | .0402 | .0128 | .0105 | .0175 | .0549 | -.0234 | 549. |
| .2440 | -202. | 14. | 70. | -43. | 91. | 49. | .0422 | .0145 | .0092 | .0233 | .0521 | -.0263 | 779. |
| .2450 | -283. | 24. | 59. | -29. | 155. | 59. | .0437 | .0164 | .0079 | .0291 | .0478 | -.0299 | 1170. |
| .2460 | -370. | 26. | 47. | -20. | 219. | 75. | .0445 | .0184 | .0066 | .0344 | .0417 | -.0333 | 1615. |
| .2470 | -455. | 9. | 29. | -19. | 280. | 101. | .0446 | .0206 | .0049 | .0394 | .0536 | -.0362 | 2073. |
| .2480 | -531. | -17. | 5. | -28. | 336. | 133. | .0439 | .0232 | .0026 | .0459 | .0237 | -.0393 | 2520. |
| .2490 | -598. | -39. | -24. | -45. | 384. | 170. | .0423 | .0262 | -.0003 | .0477 | .0123 | -.0436 | 2941. |
| .2500 | -653. | -62. | -57. | -72. | 422. | 213. | .0398 | .0296 | -.0037 | .0505 | -.0003 | -.0486 | 3328. |
| .2510 | -690. | -102. | -94. | -111. | 445. | 262. | .0365 | .0333 | -.0072 | .0521 | -.0136 | -.0528 | 3678. |
| .2520 | -708. | -157. | -131. | -161. | 451. | 316. | .0326 | .0372 | -.0104 | .0518 | -.0266 | -.0561 | 3991. |
| .2530 | -707. | -213. | -162. | -216. | 438. | 370. | .0287 | .0414 | -.0129 | .0494 | -.0583 | -.0592 | 4267. |
| .2540 | -687. | -264. | -190. | -276. | 407. | 424. | .0249 | .0457 | -.0145 | .0448 | -.0480 | -.0619 | 4517. |
| .2550 | -634. | -323. | -214. | -339. | 359. | 475. | .0215 | .0500 | -.0152 | .0381 | -.0554 | -.0635 | 4770. |
| .2560 | -563. | -390. | -233. | -405. | 293. | 525. | .0183 | .0541 | -.0151 | .0298 | -.0604 | -.0637 | 5044. |
| .2570 | -475. | -449. | -245. | -471. | 211. | 568. | .0154 | .0579 | -.0141 | .0202 | -.0631 | -.0632 | 5343. |
| .2580 | -371. | -499. | -252. | -534. | 117. | 605. | .0128 | .0612 | -.0127 | .0100 | -.0637 | -.0523 | 5675. |
| .2590 | -254. | -548. | -255. | -593. | 16. | 635. | .0107 | .0640 | -.0111 | -.0002 | -.0622 | -.0603 | 6048. |
| .2600 | -130. | -590. | -255. | -645. | -85. | 658. | .0093 | .0661 | -.0093 | -.0100 | -.0587 | -.0575 | 6443. |
| .2610 | -6. | -619. | -250. | -688. | -186. | 674. | .0084 | .0674 | -.0075 | -.0192 | -.0535 | -.0541 | 6827. |
| .2620 | 111. | -641. | -238. | -721. | -282. | 681. | .0082 | .0679 | -.0055 | -.0274 | -.0468 | -.0497 | 7175. |
| .2630 | 218. | -658. | -221. | -741. | -368. | 681. | .0086 | .0574 | -.0036 | -.0340 | -.0390 | -.0443 | 7456. |
| .2640 | 300. | -661. | -200. | -746. | -440. | 671. | .0097 | .0660 | -.0021 | -.0388 | -.0304 | -.0388 | 7625. |
| .2650 | 380. | -644. | -176. | -737. | -492. | 652. | .0115 | .0638 | -.0010 | -.0416 | -.0214 | -.0355 | 7657. |
| .2660 | 430. | -616. | -150. | -714. | -527. | 626. | .0138 | .0608 | -.0005 | -.0420 | -.0127 | -.0284 | 7558. |
| .2670 | 463. | -582. | -125. | -679. | -545. | 594. | .0165 | .0570 | -.0008 | -.0401 | -.0046 | -.0231 | 7334. |
| .2680 | 474. | -539. | -100. | -632. | -543. | 556. | .0197 | .0526 | -.0017 | -.0358 | .0025 | -.0182 | 6973. |
| .2690 | 462. | -480. | -75. | -574. | -520. | 512. | .0234 | .0478 | -.0032 | -.0295 | .0089 | -.0142 | 6462. |

ADLPIPE PAGE 2806

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|------|-------|-------|--------|--------|--------|--------|-------|
| .2600 | -130. | -590. | -255. | -645. | -85. | 658. | .0093 | .0661 | -.0093 | -.0100 | -.0587 | -.0575 | 6443. |
| .2610 | -6. | -619. | -250. | -688. | -186. | 674. | .0084 | .0674 | -.0075 | -.0192 | -.0535 | -.0541 | 6827. |
| .2620 | 111. | -641. | -238. | -721. | -282. | 681. | .0082 | .0679 | -.0055 | -.0274 | -.0468 | -.0497 | 7175. |
| .2630 | 218. | -658. | -221. | -741. | -368. | 681. | .0086 | .0674 | -.0036 | -.0340 | -.0390 | -.0443 | 7456. |
| .2640 | 300. | -661. | -200. | -747. | -440. | 671. | .0097 | .0660 | -.0021 | -.0388 | -.0304 | -.0388 | 7625. |
| .2650 | 380. | -644. | -176. | -737. | -492. | 652. | .0115 | .0638 | -.0010 | -.0416 | -.0214 | -.0355 | 7657. |
| .2660 | 430. | -616. | -150. | -714. | -527. | 626. | .0138 | .0608 | -.0005 | -.0420 | -.0127 | -.0284 | 7558. |
| .2670 | 463. | -582. | -125. | -679. | -545. | 594. | .0165 | .0570 | -.0008 | -.0401 | -.0046 | -.0231 | 7334. |
| .2680 | 474. | -539. | -100. | -672. | -543. | 556. | .0197 | .0526 | -.0017 | -.0358 | .0025 | -.0182 | 6973. |
| .2690 | 462. | -480. | -75. | -574. | -520. | 512. | .0234 | .0478 | -.0032 | -.0295 | .0089 | -.0142 | 6462. |

ADLPIPE PAGE 2806

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | 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) | |
| .2700 | 427. | -407. | -51. | -506. | -477. | 463. | .0274 | .0426 | -.0052 | -.0217 | .0143 | -.0111 | 5817. | |
| .2710 | 374. | -335. | -27. | -432. | -419. | 412. | .0318 | .0372 | -.0075 | -.0128 | .0186 | -.0080 | 5079. | |
| .2720 | 304. | -268. | -3. | -355. | -349. | 359. | .0365 | .0315 | -.0098 | -.0031 | .0218 | -.0050 | 4273. | |
| .2730 | 221. | -194. | 19. | -274. | -267. | 305. | .0412 | .0259 | -.0124 | .0071 | .0236 | -.0028 | 3407. | |
| .2740 | 125. | -110. | 37. | -193. | -174. | 252. | .0459 | .0206 | -.0155 | .0175 | .0240 | -.0017 | 2517. | |
| .2750 | 20. | -35. | 50. | -117. | -73. | 203. | .0502 | .0154 | -.0191 | .0279 | .0225 | -.0006 | 1710. | |
| .2760 | -85. | 20. | 57. | -51. | 27. | 160. | .0539 | .0103 | -.0232 | .0383 | .0188 | .0011 | 1184. | |
| .2770 | -186. | 71. | 59. | 9. | 123. | 120. | .0568 | .0055 | -.0277 | .0484 | .0135 | .0023 | 1200. | |
| .2780 | -281. | 134. | 58. | 64. | 216. | 81. | .0592 | .0012 | -.0324 | .0577 | .0073 | .0023 | 1669. | |
| .2790 | -370. | 191. | 53. | 109. | 305. | 47. | .0612 | -.0026 | -.0370 | .0656 | .0008 | .0024 | 2280. | |
| .2800 | -446. | 220. | 46. | 144. | 383. | 18. | .0628 | -.0063 | -.0409 | .0718 | -.0054 | .0040 | 2852. | |
| .2810 | -506. | 238. | 43. | 172. | 444. | -7. | .0639 | -.0096 | -.0438 | .0760 | -.0110 | .0067 | 3314. | |
| .2820 | -555. | 261. | 44. | 194. | 490. | -32. | .0645 | -.0124 | -.0456 | .0782 | -.0152 | .0092 | 3673. | |
| .2830 | -597. | 280. | 49. | 210. | 525. | -54. | .0646 | -.0149 | -.0467 | .0785 | -.0183 | .0121 | 3952. | |
| .2840 | -617. | 275. | 51. | 216. | 549. | -70. | .0640 | -.0172 | -.0476 | .0776 | -.0207 | .0165 | 4135. | |
| .2850 | -620. | 258. | 50. | 215. | 556. | -83. | .0623 | -.0192 | -.0484 | .0760 | -.0232 | .0213 | 4190. | |
| .2860 | -604. | 253. | 50. | 208. | 546. | -98. | .0592 | -.0207 | -.0492 | .0757 | -.0258 | .0249 | 4122. | |
| .2870 | -571. | 255. | 49. | 198. | 522. | -113. | .0551 | -.0218 | -.0501 | .0709 | -.0282 | .0274 | 3965. | |
| .2880 | -517. | 244. | 43. | 183. | 487. | -128. | .0503 | -.0225 | -.0509 | .0674 | -.0302 | .0300 | 3732. | |
| .2890 | -447. | 230. | 37. | 168. | 439. | -143. | .0450 | -.0228 | -.0508 | .0628 | -.0309 | .0324 | 3419. | |
| .2900 | -352. | 230. | 39. | 157. | 372. | -162. | .0397 | -.0225 | -.0490 | .0563 | -.0295 | .0340 | 3031. | |
| .2910 | -250. | 234. | 52. | 149. | 290. | -182. | .0345 | -.0216 | -.0450 | .0475 | -.0254 | .0356 | 2603. | |
| .2920 | -133. | 221. | 68. | 143. | 198. | -200. | .0299 | -.0203 | -.0391 | .0366 | -.0190 | .0381 | 2196. | |
| .2930 | -7. | 200. | 86. | 138. | 99. | -216. | .0256 | -.0185 | -.0317 | .0241 | -.0109 | .0409 | 1911. | |
| .2940 | 121. | 193. | 108. | 136. | -5. | -231. | .0213 | -.0160 | -.0234 | .0103 | -.0022 | .0423 | 1864. | |
| .2950 | 246. | 192. | 129. | 131. | -110. | -242. | .0165 | -.0129 | -.0151 | -.0037 | .0054 | .0425 | 2066. | |
| .2960 | 372. | 170. | 139. | 119. | -214. | -246. | .0109 | -.0094 | -.0077 | -.0173 | .0103 | .0427 | 2418. | |
| .2970 | 495. | 139. | 136. | 101. | -310. | -243. | .0046 | -.0056 | -.0017 | -.0296 | .0120 | .0420 | 2831. | |
| .2980 | 605. | 129. | 126. | 82. | -393. | -237. | -.0023 | -.0012 | .0029 | -.0409 | .0110 | .0389 | 3244. | |
| .2990 | 697. | 129. | 111. | 61. | -463. | -226. | -.0095 | .0036 | .0065 | -.0515 | .0077 | .0343 | 3612. | |
| .3000 | 775. | 106. | 91. | 37. | -523. | -205. | -.0166 | .0083 | .0096 | -.0613 | .0026 | .0310 | 3921. | |
| .3010 | 838. | 60. | 69. | 14. | -572. | -177. | -.0231 | .0129 | .0128 | -.0705 | -.0031 | .0292 | 4169. | |
| .3020 | 876. | 32. | 52. | -2. | -605. | -149. | -.0288 | .0175 | .0164 | -.0793 | -.0084 | .0269 | 4336. | |
| .3030 | 889. | 25. | 40. | -8. | -620. | -121. | -.0335 | .0221 | .0200 | -.0873 | -.0129 | .0238 | 4397. | |
| .3040 | 884. | 6. | 28. | -8. | -619. | -90. | -.0372 | .0261 | .0235 | -.0939 | -.0173 | .0221 | 4355. | |
| .3050 | 865. | -28. | 13. | -5. | -605. | -57. | -.0403 | .0295 | .0264 | -.0984 | -.0222 | .0219 | 4230. | |
| .3060 | 828. | -42. | -1. | 9. | -577. | -29. | -.0430 | .0325 | .0284 | -.1006 | -.0273 | .0209 | 4018. | |
| .3070 | 770. | -24. | -13. | 33. | -530. | -8. | -.0450 | .0351 | .0292 | -.1004 | -.0323 | .0185 | 3697. | |

ADLPIPE PAGE 2807

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|------|------|------|-----|-------|-------|--------|--------|-------|--------|--------|-------|-------|
| .2980 | 605. | 129. | 126. | 82. | -393. | -237. | -.0023 | -.0012 | .0029 | -.0409 | .0110 | .0389 | 3244. |
| .2990 | 697. | 129. | 111. | 61. | -463. | -226. | -.0095 | .0036 | .0065 | -.0515 | .0077 | .0343 | 3612. |
| .3000 | 775. | 106. | 91. | 37. | -523. | -205. | -.0166 | .0083 | .0096 | -.0613 | .0026 | .0310 | 3921. |
| .3010 | 838. | 60. | 69. | 14. | -572. | -177. | -.0231 | .0129 | .0128 | -.0705 | -.0031 | .0292 | 4169. |
| .3020 | 876. | 32. | 52. | -2. | -605. | -149. | -.0288 | .0175 | .0164 | -.0793 | -.0084 | .0269 | 4356. |
| .3030 | 889. | 25. | 40. | -8. | -620. | -121. | -.0335 | .0221 | .0200 | -.0873 | -.0129 | .0238 | 4397. |
| .3040 | 884. | 6. | 28. | -8. | -619. | -90. | -.0372 | .0261 | .0235 | -.0939 | -.0173 | .0221 | 4355. |
| .3050 | 865. | -28. | 17. | -5. | -605. | -57. | -.0403 | .0295 | .0264 | -.0984 | -.0222 | .0219 | 4250. |
| .3060 | 828. | -42. | -1. | 9. | -577. | -29. | -.0430 | .0325 | .0284 | -.1006 | -.0273 | .0209 | 4018. |
| .3070 | 770. | -24. | -13. | 33. | -530. | -8. | -.0450 | .0351 | .0292 | -.1004 | -.0323 | .0185 | 3697. |

ADLPIPE PAGE 2807

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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 | 69 | MEMBER | 2 | SEQUENCE | 704 | 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) |
| .3080 | 696. | -4. | -27. | 64. | -466. | 11. | | -.0464 | .0370 | .0290 | -.0978 | -.0372 | .0166 | 3275. |
| .3090 | 610. | 2. | -41. | 99. | -391. | 29. | | -.0471 | .0380 | .0282 | -.0932 | -.0414 | .0164 | 2813. |
| .3100 | 513. | 17. | -48. | 141. | -310. | 41. | | -.0471 | .0384 | .0272 | -.0874 | -.0441 | .0168 | 2388. |
| .3110 | 403. | 51. | -45. | 189. | -225. | 46. | | -.0462 | .0383 | .0263 | -.0808 | -.0446 | .0171 | 2071. |
| .3120 | 288. | 83. | -37. | 239. | -136. | 46. | | -.0443 | .0377 | .0254 | -.0738 | -.0430 | .0184 | 1940. |
| .3130 | 175. | 102. | -28. | 287. | -45. | 43. | | -.0418 | .0365 | .0243 | -.0663 | -.0396 | .0210 | 2043. |
| .3140 | 68. | 125. | -16. | 331. | 39. | 35. | | -.0389 | .0350 | .0229 | -.0588 | -.0350 | .0237 | 2331. |
| .3150 | -37. | 159. | 1. | 368. | 114. | 23. | | -.0361 | .0334 | .0212 | -.0516 | -.0295 | .0259 | 2682. |
| .3160 | -120. | 180. | 16. | 392. | 177. | 10. | | -.0333 | .0316 | .0190 | -.0449 | -.0237 | .0286 | 2998. |
| .3170 | -189. | 184. | 25. | 403. | 231. | -3. | | -.0306 | .0298 | .0163 | -.0390 | -.0177 | .0320 | 3253. |
| .3180 | -240. | 188. | 34. | 402. | 271. | -17. | | -.0278 | .0281 | .0133 | -.0345 | -.0113 | .0349 | 3376. |
| .3190 | -278. | 196. | 46. | 387. | 296. | -31. | | -.0252 | .0266 | .0107 | -.0320 | -.0044 | .0373 | 3399. |
| .3200 | -298. | 181. | 58. | 357. | 302. | -41. | | -.0227 | .0252 | .0085 | -.0316 | .0028 | .0407 | 3268. |
| .3210 | -296. | 139. | 67. | 312. | 292. | -47. | | -.0202 | .0238 | .0068 | -.0330 | .0101 | .0453 | 2993. |
| .3220 | -279. | 96. | 75. | 258. | 269. | -52. | | -.0177 | .0227 | .0054 | -.0363 | .0173 | .0493 | 2621. |
| .3230 | -251. | 68. | 82. | 196. | 237. | -57. | | -.0154 | .0218 | .0044 | -.0411 | .0242 | .0519 | 2180. |
| .3240 | -210. | 27. | 86. | 127. | 195. | -58. | | -.0133 | .0209 | .0035 | -.0469 | .0300 | .0547 | 1668. |
| .3250 | -155. | -38. | 83. | 51. | 144. | -53. | | -.0116 | .0198 | .0027 | -.0530 | .0343 | .0584 | 1124. |
| .3260 | -95. | -100. | 77. | -24. | 90. | -47. | | -.0101 | .0184 | .0021 | -.0592 | .0373 | .0614 | 723. |
| .3270 | -38. | -137. | 71. | -92. | 38. | -43. | | -.0087 | .0171 | .0016 | -.0652 | .0395 | .0625 | 754. |
| .3280 | 15. | -168. | 64. | -152. | -8. | -39. | | -.0073 | .0153 | .0013 | -.0705 | .0408 | .0632 | 1091. |
| .3290 | 64. | -212. | 55. | -203. | -49. | -32. | | -.0059 | .0129 | .0014 | -.0747 | .0410 | .0646 | 1471. |
| .3300 | 105. | -252. | 47. | -242. | -84. | -27. | | -.0044 | .0098 | .0018 | -.0775 | .0404 | .0659 | 1789. |
| .3310 | 132. | -264. | 43. | -263. | -108. | -26. | | -.0030 | .0063 | .0023 | -.0786 | .0393 | .0656 | 1987. |
| .3320 | 146. | -258. | 38. | -268. | -119. | -27. | | -.0016 | .0022 | .0028 | -.0778 | .0374 | .0643 | 2049. |
| .3330 | 150. | -254. | 30. | -259. | -116. | -29. | | -.0001 | -.0025 | .0029 | -.0747 | .0346 | .0632 | 1990. |
| .3340 | 143. | -244. | 23. | -237. | -104. | -33. | | .0011 | -.0079 | .0030 | -.0697 | .0310 | .0618 | 1819. |
| .3350 | 124. | -212. | 19. | -201. | -85. | -40. | | .0022 | -.0137 | .0031 | -.0630 | .0272 | .0593 | 1542. |
| .3360 | 96. | -168. | 18. | -153. | -57. | -49. | | .0032 | -.0198 | .0031 | -.0550 | .0233 | .0561 | 1183. |
| .3370 | 62. | -130. | 15. | -97. | -21. | -58. | | .0042 | -.0262 | .0031 | -.0460 | .0193 | .0531 | 801. |
| .3380 | 24. | -90. | 14. | -36. | 10. | -68. | | .0051 | -.0327 | .0032 | -.0365 | .0161 | .0500 | 552. |
| .3390 | -18. | -39. | 17. | 28. | 57. | -79. | | .0058 | -.0390 | .0033 | -.0270 | .0130 | .0460 | 706. |
| .3400 | -58. | 11. | 22. | 90. | 92. | -88. | | .0060 | -.0450 | .0034 | -.0177 | .0099 | .0417 | 1088. |
| .3410 | -91. | 45. | 23. | 146. | 123. | -94. | | .0058 | -.0507 | .0031 | -.0088 | .0067 | .0376 | 1481. |
| .3420 | -115. | 75. | 19. | 194. | 148. | -98. | | .0052 | -.0558 | .0024 | -.0007 | .0034 | .0330 | 1829. |
| .3430 | -129. | 112. | 16. | 235. | 164. | -100. | | .0041 | -.0600 | .0015 | .0062 | .0003 | .0271 | 2110. |
| .3440 | -137. | 145. | 13. | 264. | 168. | -100. | | .0026 | -.0635 | .0006 | .0115 | -.0023 | .0208 | 2288. |
| .3450 | -121. | 154. | 8. | 280. | 160. | -94. | | .0009 | -.0663 | -.0001 | .0150 | -.0042 | .0154 | 2341. |

ADLPIPE PAGE 2808

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|-------|-------|-----|-------|------|-------|-------|--------|--------|--------|--------|-------|-------|
| .3360 | 97. | -168. | 10. | -153. | -57. | -49. | .0032 | -.0198 | .0031 | -.0550 | .0233 | .0561 | 1183. |
| .3370 | 62. | -130. | 15. | -97. | -21. | -58. | .0042 | -.0262 | .0031 | -.0460 | .0195 | .0531 | 801. |
| .3380 | 24. | -90. | 14. | -36. | 19. | -68. | .0051 | -.0327 | .0032 | -.0365 | .0161 | .0500 | 552. |
| .3390 | -18. | -39. | 17. | 28. | 57. | -79. | .0058 | -.0390 | .0033 | -.0270 | .0130 | .0460 | 706. |
| .3400 | -58. | 11. | 22. | 90. | 92. | -88. | .0060 | -.0450 | .0034 | -.0177 | .0099 | .0417 | 1088. |
| .3410 | -91. | 45. | 23. | 146. | 123. | -94. | .0058 | -.0507 | .0031 | -.0088 | .0067 | .0376 | 1481. |
| .3420 | -115. | 75. | 19. | 194. | 148. | -98. | .0052 | -.0558 | .0024 | -.0007 | .0034 | .0330 | 1829. |
| .3430 | -129. | 112. | 16. | 235. | 164. | -100. | .0041 | -.0600 | .0015 | .0062 | .0003 | .0271 | 2110. |
| .3440 | -133. | 145. | 13. | 264. | 168. | -100. | .0026 | -.0635 | .0006 | .0115 | -.0023 | .0208 | 2288. |
| .3450 | -121. | 154. | 8. | 280. | 160. | -94. | .0009 | -.0663 | -.0001 | .0150 | -.0042 | .0154 | 2341. |

ADLPIPE PAGE 2808

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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 | END | TYPE | RU | DX | DY | DZ | FX | RY | RZ | STRESS |
|------------|---------|----------|----------|------------|------------|------------|--------|--------|--------|--------|--------|--------|--------|
| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | Mx (FT-LB) | My (FT-LB) | Mz (FT-LB) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (PSI) |
| .3460 | -97. | 149. | 3. | 286. | 140. | -85. | -.0008 | -.0683 | -.0003 | .0165 | -.0050 | .0104 | 2293. |
| .3470 | -64. | 148. | 2. | 283. | 111. | -74. | -.0024 | -.0694 | .0001 | .0158 | -.0041 | .0048 | 2180. |
| .3480 | -25. | 146. | 4. | 273. | 73. | -62. | -.0038 | -.0697 | .0009 | .0133 | -.0020 | -.0009 | 2012. |
| .3490 | 24. | 125. | 5. | 252. | 27. | -46. | -.0052 | -.0695 | .0020 | .0095 | .0009 | -.0055 | 1794. |
| .3500 | 80. | 90. | 5. | 224. | -24. | -28. | -.0065 | -.0690 | .0031 | .0050 | .0041 | -.0094 | 1577. |
| .3510 | 135. | 63. | 5. | 192. | -77. | -10. | -.0078 | -.0679 | .0040 | .0003 | .0076 | -.0138 | 1440. |
| .3520 | 189. | 47. | 5. | 159. | -126. | 4. | -.0090 | -.0666 | .0043 | -.0041 | .0111 | -.0189 | 1416. |
| .3530 | 240. | 28. | 3. | 126. | -171. | 18. | -.0099 | -.0653 | .0043 | -.0076 | .0143 | -.0234 | 1486. |
| .3540 | 285. | 1. | -0. | 93. | -211. | 30. | -.0104 | -.0642 | .0040 | -.0103 | .0174 | -.0269 | 1622. |
| .3550 | 320. | -17. | -0. | 66. | -245. | 38. | -.0104 | -.0633 | .0037 | -.0119 | .0207 | -.0301 | 1783. |
| .3560 | 342. | -21. | 4. | 46. | -268. | 40. | -.0097 | -.0628 | .0035 | -.0124 | .0244 | -.0330 | 1912. |
| .3570 | 350. | -23. | 9. | 33. | -279. | 37. | -.0082 | -.0628 | .0032 | -.0114 | .0282 | -.0348 | 1972. |
| .3580 | 345. | -27. | 15. | 27. | -278. | 31. | -.0059 | -.0635 | .0028 | -.0089 | .0318 | -.0353 | 1953. |
| .3590 | 325. | -23. | 22. | 26. | -265. | 19. | -.0032 | -.0649 | .0020 | -.0045 | .0348 | -.0350 | 1861. |
| .3600 | 291. | -8. | 30. | 32. | -242. | 2. | -.0002 | -.0668 | .0008 | .0017 | .0367 | -.0343 | 1701. |
| .3610 | 247. | 11. | 34. | 42. | -207. | -20. | .0031 | -.0693 | -.0012 | .0098 | .0373 | -.0330 | 1479. |
| .3620 | 193. | 32. | 34. | 54. | -162. | -45. | .0067 | -.0724 | -.0039 | .0198 | .0365 | -.0311 | 1227. |
| .3630 | 133. | 62. | 33. | 70. | -108. | -75. | .0104 | -.0758 | -.0070 | .0310 | .0347 | -.0289 | 1038. |
| .3640 | 67. | 98. | 32. | 87. | -51. | -109. | .0143 | -.0796 | -.0102 | .0428 | .0323 | -.0263 | 1037. |
| .3650 | -1. | 131. | 33. | 105. | 7. | -145. | .0185 | -.0835 | -.0131 | .0548 | .0297 | -.0227 | 1248. |
| .3660 | -68. | 157. | 33. | 122. | 65. | -182. | .0230 | -.0875 | -.0154 | .0664 | .0274 | -.0180 | 1590. |
| .3670 | -133. | 185. | 36. | 139. | 121. | -220. | .0278 | -.0913 | -.0170 | .0772 | .0257 | -.0131 | 1998. |
| .3680 | -197. | 218. | 42. | 155. | 173. | -258. | .0325 | -.0947 | -.0180 | .0869 | .0244 | -.0083 | 2418. |
| .3690 | -254. | 242. | 47. | 167. | 219. | -293. | .0369 | -.0976 | -.0186 | .0956 | .0231 | -.0030 | 2798. |
| .3700 | -302. | 253. | 50. | 171. | 257. | -324. | .0406 | -.0999 | -.0191 | .1034 | .0213 | .0024 | 3115. |
| .3710 | -343. | 262. | 50. | 170. | 289. | -350. | .0435 | -.1014 | -.0198 | .1103 | .0189 | .0070 | 3376. |
| .3720 | -376. | 276. | 46. | 164. | 315. | -372. | .0453 | -.1018 | -.0207 | .1162 | .0159 | .0100 | 3580. |
| .3730 | -400. | 286. | 39. | 151. | 332. | -388. | .0460 | -.1011 | -.0218 | .1210 | .0122 | .0122 | 3707. |
| .3740 | -412. | 281. | 28. | 131. | 340. | -394. | .0457 | -.0993 | -.0229 | .1243 | .0081 | .0140 | 3735. |
| .3750 | -417. | 266. | 16. | 107. | 337. | -391. | .0444 | -.0964 | -.0234 | .1259 | .0043 | .0153 | 3668. |
| .3760 | -404. | 252. | 6. | 80. | 323. | -381. | .0425 | -.0923 | -.0232 | .1254 | .0014 | .0156 | 3521. |
| .3770 | -384. | 237. | -3. | 52. | 299. | -364. | .0401 | -.0869 | -.0219 | .1226 | -.0002 | .0151 | 3299. |
| .3780 | -355. | 210. | -0. | 23. | 265. | -337. | .0373 | -.0804 | -.0195 | .1176 | -.0004 | .0146 | 2992. |
| .3790 | -316. | 172. | -14. | -9. | 222. | -301. | .0341 | -.0729 | -.0161 | .1104 | .0003 | .0142 | 2605. |
| .3800 | -268. | 130. | -17. | -42. | 169. | -257. | .0304 | -.0646 | -.0118 | .1014 | .0023 | .0135 | 2163. |
| .3810 | -215. | 88. | -21. | -76. | 111. | -207. | .0263 | -.0554 | -.0072 | .0909 | .0044 | .0120 | 1716. |
| .3820 | -157. | 42. | -28. | -112. | 50. | -150. | .0217 | -.0456 | -.0023 | .0796 | .0064 | .0102 | 1349. |
| .3830 | -99. | -10. | -37. | -151. | -10. | -87. | .0167 | -.0355 | .0021 | .0676 | .0079 | .0082 | 1215. |

ADLPIPE PAGE 2809

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|-------|------|------|-------|------|-------|-------|--------|--------|-------|--------|-------|-------|
| .3720 | -400. | 281. | 28. | 131. | 340. | -394. | .0460 | -.1011 | -.0218 | .1210 | .0081 | .0122 | 3707. |
| .3740 | -412. | 266. | 16. | 107. | 337. | -391. | .0444 | -.0964 | -.0234 | .1259 | .0043 | .0153 | 3668. |
| .3760 | -404. | 252. | 6. | 80. | 323. | -381. | .0425 | -.0923 | -.0232 | .1254 | .0014 | .0156 | 3521. |
| .3770 | -384. | 277. | -3. | 52. | 290. | -364. | .0401 | -.0869 | -.0219 | .1226 | -.0002 | .0151 | 3299. |
| .3780 | -355. | 210. | -9. | 23. | 265. | -337. | .0373 | -.0804 | -.0195 | .1176 | -.0004 | .0146 | 2992. |
| .3790 | -316. | 172. | -14. | -9. | 222. | -301. | .0341 | -.0729 | -.0161 | .1104 | .0005 | .0142 | 2605. |
| .3800 | -268. | 130. | -17. | -42. | 169. | -257. | .0304 | -.0646 | -.0118 | .1014 | .0023 | .0135 | 2163. |
| .3810 | -215. | 88. | -21. | -76. | 111. | -207. | .0263 | -.0554 | -.0072 | .0909 | .0044 | .0120 | 1716. |
| .3820 | -157. | 42. | -28. | -112. | 50. | -150. | .0217 | -.0456 | -.0025 | .0796 | .0064 | .0102 | 1349. |
| .3830 | -99. | -10. | -37. | -151. | -10. | -87. | .0167 | -.0355 | .0021 | .0676 | .0079 | .0082 | 1215. |

ADLPIPE PAGE 2809

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

CONDITION 24
LOADS
SHOCK
PRESSURE
ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | 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) |
| .3840 | -40. | -63. | -48. | -192. | -70. | -20. | .0113 | -.0252 | .0063 | .0554 | .0086 | .0060 | 1427. |
| .3850 | 14. | -116. | -61. | -234. | -128. | 48. | .0056 | -.0150 | .0102 | .0430 | .0085 | .0036 | 1885. |
| .3860 | 62. | -174. | -76. | -276. | -180. | 118. | -.0001 | -.0050 | .0138 | .0309 | .0078 | .0016 | 2439. |
| .3870 | 104. | -231. | -91. | -317. | -225. | 187. | -.0055 | .0045 | .0171 | .0192 | .0067 | -.0002 | 3001. |
| .3880 | 134. | -282. | -106. | -355. | -261. | 252. | -.0105 | .0133 | .0200 | .0081 | .0052 | -.0017 | 3532. |
| .3890 | 154. | -332. | -119. | -390. | -288. | 313. | -.0151 | .0212 | .0227 | -.0021 | .0034 | -.0025 | 4017. |
| .3900 | 162. | -385. | -132. | -422. | -306. | 367. | -.0191 | .0279 | .0249 | -.0110 | .0009 | -.0025 | 4439. |
| .3910 | 160. | -431. | -145. | -448. | -312. | 411. | -.0226 | .0336 | .0265 | -.0182 | -.0021 | -.0024 | 4760. |
| .3920 | 146. | -456. | -156. | -466. | -306. | 442. | -.0255 | .0380 | .0273 | -.0234 | -.0056 | -.0029 | 4949. |
| .3930 | 119. | -465. | -167. | -475. | -285. | 459. | -.0278 | .0413 | .0272 | -.0267 | -.0097 | -.0039 | 5011. |
| .3940 | 81. | -473. | -177. | -479. | -254. | 465. | -.0295 | .0431 | .0265 | -.0278 | -.0143 | -.0044 | 4972. |
| .3950 | 36. | -476. | -185. | -475. | -215. | 459. | -.0306 | .0435 | .0251 | -.0269 | -.0193 | -.0044 | 4835. |
| .3960 | -18. | -461. | -190. | -461. | -166. | 440. | -.0311 | .0428 | .0235 | -.0242 | -.0242 | -.0049 | 4584. |
| .3970 | -81. | -428. | -191. | -438. | -108. | 407. | -.0309 | .0410 | .0211 | -.0200 | -.0285 | -.0060 | 4231. |
| .3980 | -149. | -390. | -189. | -408. | -44. | 365. | -.0300 | .0382 | .0187 | -.0146 | -.0323 | -.0069 | 3823. |
| .3990 | -215. | -352. | -185. | -373. | 21. | 315. | -.0287 | .0345 | .0162 | -.0083 | -.0356 | -.0074 | 3400. |
| .4000 | -280. | -306. | -177. | -333. | 84. | 257. | -.0272 | .0301 | .0138 | -.0014 | -.0385 | -.0080 | 2985. |

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) |
|------------|---------|---------|---------|------------|------------|------------|---------|---------|---------|----------|----------|----------|--------------|
| .2650 | 380. | -644. | -176. | -737. | -492. | 652. | .0115 | .0638 | -.0010 | -.0416 | -.0214 | -.0335 | 7657. |

| SECTION | MEMBER | SEQUENCE | LOCATION | END | 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) |
| 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 | -1. | 0. | 0. | -0. | 0. | 0. | -.0000 | .0000 | -.0000 | -.0000 | .0000 | -.0000 | 3. |
| .0060 | -2. | -0. | 0. | -0. | 1. | 0. | -.0000 | -.0000 | -.0001 | .0000 | -.0000 | -.0000 | 8. |
| .0070 | -5. | -1. | 1. | -1. | 2. | 1. | -.0001 | -.0000 | -.0002 | .0001 | -.0002 | -.0000 | 19. |

ADLPIPE PAGE 2810

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| TIME (SEC) | FX (LB) | FY (LB) | FZ (LB) | FX (FT-LB) | FY (FT-LB) | FZ (FT-LB) | DX (IN) | DY (IN) | DZ (IN) | RX (DEG) | RY (DEG) | RZ (DEG) | STRESS (PSI) |
|---------------|------------|------------|------------|---------------|---------------|---------------|------------|------------|------------|-------------|-------------|-------------|-----------------|
| 0.0000 | 0. | 0. | 0. | 0. | 0. | 0. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0. |
| .0010 | 0. | 0. | -0. | 0. | -0. | -0. | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0020 | 0. | 0. | -0. | 0. | -0. | -0. | -0.0000 | .0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | 0. |
| .0030 | 0. | 0. | -0. | 0. | -0. | -0. | .0000 | .0000 | .0000 | -0.0000 | .0000 | -0.0000 | 0. |
| .0040 | -0. | 0. | 0. | -0. | 0. | -0. | .0000 | .0000 | .0000 | -0.0000 | .0000 | -0.0000 | 0. |
| .0050 | -1. | 0. | 0. | -0. | 0. | 0. | -0.0000 | .0000 | -0.0000 | -0.0000 | .0000 | -0.0000 | 3. |
| .0060 | -2. | -0. | 0. | -0. | 1. | 0. | -0.0000 | -0.0000 | -0.0001 | .0000 | -0.0000 | -0.0000 | 8. |
| .0070 | -5. | -1. | 1. | -1. | 2. | 1. | -0.0001 | -0.0000 | -0.0002 | .0001 | -0.0002 | -0.0000 | 19. |

ADLPIPE PAGE 2810

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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 | 69 | MEMBER | 3 | SEQUENCE | 104 | LOCATION | END | 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) | | |
| .0080 | -9. | -1. | 1. | -2. | 5. | 2. | -0.0003 | -0.0000 | -0.0005 | .0003 | -0.0005 | -0.0001 | 39. | | |
| .0090 | -15. | -3. | 0. | -4. | 8. | 3. | -0.0006 | -0.0000 | -0.0009 | .0006 | -0.0010 | -0.0002 | 67. | | |
| .0100 | -23. | -6. | -1. | -7. | 13. | 6. | -0.0010 | -0.0001 | -0.0015 | .0011 | -0.0018 | -0.0002 | 109. | | |
| .0110 | -35. | -11. | -3. | -12. | 20. | 9. | -0.0017 | -0.0001 | -0.0025 | .0019 | -0.0030 | -0.0003 | 172. | | |
| .0120 | -50. | -17. | -6. | -18. | 30. | 14. | -0.0026 | -0.0001 | -0.0038 | .0029 | -0.0048 | -0.0004 | 260. | | |
| .0130 | -70. | -26. | -11. | -26. | 42. | 22. | -0.0039 | -0.0002 | -0.0056 | .0042 | -0.0072 | -0.0005 | 376. | | |
| .0140 | -93. | -40. | -18. | -36. | 57. | 32. | -0.0056 | -0.0004 | -0.0078 | .0060 | -0.0104 | -0.0005 | 517. | | |
| .0150 | -117. | -56. | -27. | -46. | 72. | 43. | -0.0075 | -0.0005 | -0.0103 | .0080 | -0.0141 | -0.0004 | 670. | | |
| .0160 | -137. | -71. | -37. | -57. | 86. | 55. | -0.0096 | -0.0006 | -0.0129 | .0102 | -0.0181 | -0.0005 | 813. | | |
| .0170 | -149. | -80. | -47. | -64. | 96. | 64. | -0.0116 | -0.0007 | -0.0153 | .0122 | -0.0217 | -0.0005 | 918. | | |
| .0180 | -149. | -80. | -47. | -64. | 100. | 67. | -0.0130 | -0.0005 | -0.0169 | .0135 | -0.0243 | -0.0007 | 955. | | |
| .0190 | -132. | -61. | -63. | -61. | 92. | 65. | -0.0137 | -0.0003 | -0.0171 | .0135 | -0.0251 | -0.0005 | 897. | | |
| .0200 | -97. | -36. | -64. | -50. | 74. | 56. | -0.0132 | .0001 | -0.0152 | .0116 | -0.0232 | -0.0002 | 736. | | |
| .0210 | -47. | -11. | -57. | -32. | 44. | 42. | -0.0113 | .0006 | -0.0110 | .0077 | -0.0181 | -0.0006 | 480. | | |
| .0220 | 19. | -0. | -43. | -7. | 2. | 27. | -0.0081 | .0008 | -0.0046 | .0022 | -0.0099 | -0.0005 | 196. | | |
| .0230 | 87. | 4. | -24. | 22. | -42. | 12. | -0.0039 | .0009 | .0033 | -0.0045 | .0005 | -0.0034 | 342. | | |
| .0240 | 139. | 4. | 3. | 50. | -82. | -1. | .0005 | .0008 | .0114 | -0.0114 | .0116 | -0.0002 | 668. | | |
| .0250 | 181. | 8. | 28. | 70. | -119. | -12. | .0041 | .0006 | .0183 | -0.0175 | .0209 | .0027 | 965. | | |
| .0260 | 235. | 20. | 41. | 82. | -161. | -25. | .0066 | .0004 | .0231 | -0.0221 | .0265 | .0044 | 1268. | | |
| .0270 | 297. | 17. | 41. | 88. | -200. | -40. | .0083 | -0.0002 | .0252 | -0.0237 | .0288 | .0053 | 1545. | | |
| .0280 | 325. | 21. | 38. | 91. | -210. | -55. | .0094 | -0.0008 | .0243 | -0.0226 | .0289 | .0044 | 1642. | | |
| .0290 | 327. | 74. | 31. | 88. | -203. | -76. | .0095 | -0.0013 | .0214 | -0.0205 | .0265 | .0001 | 1629. | | |
| .0300 | 382. | 116. | 9. | 84. | -225. | -99. | .0090 | -0.0022 | .0185 | -0.0176 | .0218 | -0.0025 | 1811. | | |
| .0310 | 434. | 96. | 2. | 79. | -259. | -117. | .0096 | -0.0038 | .0177 | -0.0153 | .0197 | -0.0003 | 2054. | | |
| .0320 | 434. | 100. | 17. | 80. | -261. | -137. | .0126 | -0.0052 | .0189 | -0.0159 | .0235 | .0020 | 2129. | | |
| .0330 | 424. | 159. | 36. | 94. | -243. | -160. | .0176 | -0.0063 | .0220 | -0.0184 | .0317 | .0031 | 2129. | | |
| .0340 | 395. | 167. | 68. | 110. | -229. | -170. | .0228 | -0.0081 | .0266 | -0.0210 | .0415 | .0090 | 2127. | | |
| .0350 | 307. | 84. | 125. | 107. | -212. | -164. | .0263 | -0.0107 | .0307 | -0.0220 | .0494 | .0200 | 2009. | | |
| .0360 | 207. | 25. | 159. | 94. | -178. | -158. | .0272 | -0.0129 | .0300 | -0.0190 | .0505 | .0271 | 1785. | | |
| .0370 | 138. | 55. | 141. | 88. | -118. | -163. | .0255 | -0.0143 | .0222 | -0.0093 | .0425 | .0249 | 1528. | | |
| .0380 | 36. | 103. | 102. | 79. | -21. | -164. | .0211 | -0.0151 | .0084 | .0062 | .0276 | .0175 | 1279. | | |
| .0390 | -105. | 119. | 60. | 51. | 88. | -154. | .0142 | -0.0157 | -0.0087 | .0240 | .0073 | .0097 | 1285. | | |
| .0400 | -178. | 144. | -7. | 17. | 158. | -142. | .0057 | -0.0160 | -0.0253 | .0408 | -0.0165 | .0021 | 1488. | | |
| .0410 | -176. | 162. | -72. | 6. | 184. | -136. | -0.0006 | -0.0159 | -0.0367 | .0542 | -0.0348 | -0.0036 | 1597. | | |
| .0420 | -228. | 176. | -74. | 22. | 226. | -135. | -0.0014 | -0.0148 | -0.0398 | .0600 | -0.0374 | -0.0074 | 1837. | | |
| .0430 | -312. | 220. | -35. | 59. | 283. | -137. | .0031 | -0.0126 | -0.0345 | .0565 | -0.0251 | -0.0097 | 2226. | | |
| .0440 | -330. | 250. | 8. | 107. | 295. | -131. | .0099 | -0.0101 | -0.0221 | .0459 | -0.0062 | -0.0066 | 2367. | | |
| .0450 | -355. | 154. | 84. | 135. | 262. | -98. | .0159 | -0.0081 | -0.0056 | .0317 | .0146 | .0058 | 2160. | | |

ADLPIPE PAGE 2811

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

| | | | | | | | | | | | | | |
|-------|-------|------|------|------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| .0350 | 307. | 84. | 125. | 107. | -212. | -164. | .0263 | -.0107 | .0307 | -.0220 | .0494 | .0200 | 2009. |
| .0360 | 207. | 25. | 159. | 94. | -178. | -158. | .0272 | -.0129 | .0300 | -.0190 | .0505 | .0271 | 1785. |
| .0370 | 138. | 55. | 141. | 88. | -118. | -163. | .0255 | -.0143 | .0222 | -.0093 | .0425 | .0249 | 1528. |
| .0380 | 36. | 103. | 102. | 79. | -21. | -164. | .0211 | -.0151 | .0084 | .0062 | .0276 | .0175 | 1279. |
| .0390 | -105. | 119. | 60. | 51. | 88. | -154. | .0142 | -.0157 | -.0087 | .0240 | .0073 | .0097 | 1285. |
| .0400 | -178. | 144. | -7. | 17. | 158. | -142. | .0057 | -.0160 | -.0253 | .0408 | -.0165 | .0021 | 1488. |
| .0410 | -176. | 162. | -72. | 6. | 184. | -136. | -.0006 | -.0159 | -.0367 | .0542 | -.0348 | -.0036 | 1597. |
| .0420 | -228. | 176. | -74. | 22. | 226. | -135. | -.0014 | -.0148 | -.0398 | .0600 | -.0374 | -.0074 | 1837. |
| .0430 | -312. | 220. | -35. | 59. | 283. | -137. | .0031 | -.0126 | -.0345 | .0565 | -.0251 | -.0097 | 2226. |
| .0440 | -330. | 250. | 8. | 107. | 295. | -131. | .0099 | -.0101 | -.0221 | .0459 | -.0062 | -.0066 | 2367. |
| .0450 | -355. | 154. | 84. | 135. | 262. | -98. | .0159 | -.0081 | -.0056 | .0317 | .0146 | .0058 | 2160. |

ADLPIPE PAGE 2011

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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 | 69 | MEMBER | 3 | SEQUENCE | 104 | LOCATION | END | TYPE | 50 | | | | | |
|---------|-------|--------|-------|----------|---------|----------|--------|--------|--------|--------|--------|--------|--------|--|
| 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 | -437. | -16. | 173. | 134. | 237. | -47. | .0194 | -.0061 | .0082 | .0187 | .0316 | .0196 | 1924. | |
| .0470 | -463. | -60. | 180. | 126. | 245. | -10. | .0193 | -.0023 | .0124 | .0119 | .0358 | .0201 | 1922. | |
| .0480 | -419. | 39. | 104. | 114. | 274. | 12. | .0146 | .0031 | .0063 | .0124 | .0257 | .0061 | 2070. | |
| .0490 | -422. | 84. | 31. | 68. | 301. | 47. | .0055 | .0085 | -.0048 | .0167 | .0070 | -.0083 | 2174. | |
| .0500 | -436. | -2. | -33. | -14. | 298. | 105. | -.0060 | .0128 | -.0163 | .0206 | -.0155 | -.0150 | 2203. | |
| .0510 | -361. | -96. | -124. | -92. | 263. | 164. | -.0164 | .0169 | -.0250 | .0218 | -.0365 | -.0188 | 2252. | |
| .0520 | -287. | -109. | -184. | -137. | 235. | 206. | -.0219 | .0217 | -.0271 | .0166 | -.0452 | -.0245 | 2375. | |
| .0530 | -298. | -106. | -159. | -159. | 220. | 239. | -.0218 | .0266 | -.0202 | .0028 | -.0368 | -.0273 | 2518. | |
| .0540 | -273. | -183. | -109. | -175. | 166. | 274. | -.0183 | .0303 | -.0060 | -.0168 | -.0195 | -.0208 | 2541. | |
| .0550 | -162. | -325. | -74. | -188. | 62. | 310. | -.0139 | .0326 | .0113 | -.0376 | -.0014 | -.0075 | 2563. | |
| .0560 | -104. | -427. | -21. | -199. | -22. | 336. | -.0105 | .0346 | .0266 | -.0561 | .0154 | .0025 | 2720. | |
| .0570 | -114. | -432. | 26. | -209. | -53. | 343. | -.0095 | .0367 | .0350 | -.0685 | .0260 | .0029 | 2822. | |
| .0580 | -58. | -397. | -5. | -223. | -69. | 340. | -.0124 | .0382 | .0340 | -.0711 | .0225 | -.0030 | 2870. | |
| .0590 | 47. | -391. | -87. | -251. | -92. | 335. | -.0191 | .0383 | .0260 | -.0656 | .0068 | -.0096 | 2983. | |
| .0600 | 97. | -390. | -143. | -287. | -116. | 325. | -.0272 | .0375 | .0162 | -.0576 | -.0113 | -.0164 | 3123. | |
| .0610 | 143. | -342. | -180. | -304. | -140. | 297. | -.0333 | .0362 | .0086 | -.0505 | -.0249 | -.0245 | 3177. | |
| .0620 | 248. | -271. | -221. | -284. | -168. | 250. | -.0343 | .0343 | .0062 | -.0461 | -.0295 | -.0308 | 2881. | |
| .0630 | 324. | -214. | -209. | -233. | -192. | 190. | -.0297 | .0317 | .0120 | -.0472 | -.0199 | -.0319 | 2481. | |
| .0640 | 327. | -163. | -118. | -164. | -223. | 128. | -.0211 | .0283 | .0262 | -.0552 | .0026 | -.0275 | 2123. | |
| .0650 | 337. | -143. | -10. | -93. | -278. | 73. | -.0111 | .0240 | .0441 | -.0658 | .0286 | -.0172 | 2100. | |
| .0660 | 363. | -191. | 70. | -33. | -325. | 33. | -.0020 | .0186 | .0389 | -.0729 | .0498 | -.0031 | 2284. | |
| .0670 | 335. | -223. | 124. | 8. | -320. | -1. | .0040 | .0133 | .0650 | -.0726 | .0612 | .0056 | 2226. | |
| .0680 | 282. | -140. | 132. | 35. | -275. | -43. | .0045 | .0088 | .0593 | -.0627 | .0572 | .0016 | 1950. | |
| .0690 | 269. | -17. | 72. | 40. | -225. | -81. | -.0012 | .0045 | .0428 | -.0430 | .0355 | -.0094 | 1689. | |
| .0700 | 254. | 16. | -22. | 13. | -173. | -96. | -.0110 | -.0006 | .0200 | -.0172 | .0030 | -.0176 | 1380. | |
| .0710 | 208. | 14. | -104. | -23. | -114. | -96. | -.0207 | -.0057 | -.0028 | .0079 | -.0288 | -.0233 | 1051. | |
| .0720 | 182. | 84. | -163. | -33. | -65. | -103. | -.0263 | -.0099 | -.0196 | .0270 | -.0508 | -.0299 | 881. | |
| .0730 | 175. | 159. | -181. | -12. | -35. | -112. | -.0255 | -.0135 | -.0264 | .0369 | -.0569 | -.0317 | 820. | |
| .0740 | 140. | 134. | -136. | 24. | -21. | -108. | -.0188 | -.0176 | -.0221 | .0371 | -.0462 | -.0221 | 784. | |
| .0750 | 99. | 64. | -46. | 71. | -33. | -99. | -.0085 | -.0216 | -.0095 | .0300 | -.0244 | -.0056 | 879. | |
| .0760 | 85. | 46. | 52. | 131. | -67. | -98. | .0025 | -.0249 | .0055 | .0206 | .0000 | .0090 | 1231. | |
| .0770 | 59. | 56. | 133. | 186. | -83. | -99. | .0118 | -.0274 | .0163 | .0145 | .0198 | .0189 | 1577. | |
| .0780 | 18. | 54. | 167. | 216. | -61. | -94. | .0172 | -.0296 | .0180 | .0155 | .0282 | .0240 | 1693. | |
| .0790 | 13. | 81. | 134. | 220. | -27. | -88. | .0171 | -.0313 | .0096 | .0250 | .0212 | .0222 | 1662. | |
| .0800 | 21. | 142. | 62. | 206. | 7. | -80. | .0122 | -.0326 | -.0059 | .0406 | .0023 | .0149 | 1541. | |
| .0810 | -11. | 178. | -4. | 175. | 50. | -67. | .0052 | -.0339 | -.0237 | .0578 | -.0196 | .0078 | 1351. | |
| .0820 | -46. | 177. | -63. | 145. | 98. | -54. | -.0000 | -.0354 | -.0387 | .0725 | -.0368 | .0039 | 1274. | |
| .0830 | -46. | 196. | -101. | 139. | 129. | -57. | -.0009 | -.0364 | -.0465 | .0811 | -.0428 | .0019 | 1381. | |

ADLPIPE PAGE 2012

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|------|------|-------|------|------|-------|--------|--------|--------|-------|--------|--------|-------|
| .0730 | 175. | 159. | -181. | -12. | -35. | -112. | -.0255 | -.0135 | -.0264 | .0369 | -.0569 | -.0517 | 881. |
| .0740 | 140. | 134. | -136. | 24. | -21. | -108. | -.0188 | -.0176 | -.0221 | .0371 | -.0462 | -.0221 | 784. |
| .0750 | 99. | 64. | -46. | 71. | -32. | -99. | -.0085 | -.0216 | -.0095 | .0300 | -.0244 | -.0056 | 879. |
| .0760 | 85. | 46. | 52. | 131. | -67. | -98. | .0025 | -.0249 | .0055 | .0206 | .0000 | .0090 | 1231. |
| .0770 | 59. | 56. | 133. | 186. | -83. | -99. | .0118 | -.0274 | .0163 | .0145 | .0198 | .0189 | 1577. |
| .0780 | 18. | 54. | 167. | 216. | -61. | -94. | .0172 | -.0296 | .0180 | .0155 | .0282 | .0240 | 1693. |
| .0790 | 13. | 81. | 134. | 220. | -27. | -88. | .0171 | -.0313 | .0096 | .0250 | .0212 | .0222 | 1662. |
| .0800 | 21. | 142. | 62. | 206. | 7. | -80. | .0122 | -.0326 | -.0059 | .0406 | .0023 | .0149 | 1541. |
| .0810 | -11. | 178. | -4. | 175. | 50. | -67. | .0052 | -.0339 | -.0237 | .0578 | -.0196 | .0078 | 1351. |
| .0820 | -46. | 177. | -63. | 145. | 98. | -54. | -.0000 | -.0354 | -.0387 | .0725 | -.0368 | .0039 | 1274. |
| .0830 | -46. | 196. | -101. | 139. | 129. | -57. | -.0009 | -.0364 | -.0465 | .0811 | -.0428 | .0019 | 1381. |

ADLPIPE PAGE 2812

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

CONDITION 24

LOADS

SHOCK

PRESSURE

ENGLISH UNITS

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

| SECTION | MEMBER | SEQUENCE | LOCATION | END | TYPE | 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) | | | | | | | |
| .0840 | -60. | 236. | -77. | 162. | 141. | -74. | .0036 | -.0371 | -.0445 | .0810 | -.0333 | .0028 | 1584. |
| .0850 | -101. | 237. | 4. | 196. | 137. | -97. | .0122 | -.0379 | -.0338 | .0732 | -.0107 | .0098 | 1797. |
| .0860 | -104. | 191. | 88. | 233. | 110. | -121. | .0227 | -.0390 | -.0191 | .0620 | .0163 | .0214 | 1979. |
| .0870 | -67. | 165. | 152. | 271. | 73. | -153. | .0326 | -.0398 | -.0054 | .0518 | .0410 | .0311 | 2224. |
| .0880 | -52. | 200. | 206. | 302. | 55. | -196. | .0399 | -.0400 | .0038 | .0452 | .0598 | .0336 | 2536. |
| .0890 | -36. | 268. | 224. | 316. | 52. | -243. | .0436 | -.0397 | .0064 | .0437 | .0687 | .0303 | 2797. |
| .0900 | 34. | 317. | 186. | 310. | 43. | -285. | .0438 | -.0395 | .0035 | .0471 | .0668 | .0254 | 2945. |
| .0910 | 106. | 344. | 137. | 291. | 32. | -320. | .0422 | -.0393 | -.0016 | .0520 | .0607 | .0207 | 3017. |
| .0920 | 120. | 375. | 121. | 270. | 31. | -350. | .0412 | -.0387 | -.0045 | .0544 | .0578 | .0165 | 3083. |
| .0930 | 111. | 398. | 125. | 255. | 38. | -372. | .0420 | -.0379 | -.0035 | .0528 | .0603 | .0149 | 3148. |
| .0940 | 96. | 364. | 140. | 239. | 43. | -378. | .0442 | -.0373 | .0011 | .0478 | .0670 | .0190 | 3129. |
| .0950 | 32. | 271. | 181. | 214. | 50. | -367. | .0464 | -.0368 | .0078 | .0406 | .0753 | .0275 | 2975. |
| .0960 | -66. | 175. | 227. | 177. | 64. | -345. | .0462 | -.0359 | .0123 | .0348 | .0795 | .0346 | 2735. |
| .0970 | -133. | 114. | 226. | 129. | 83. | -322. | .0422 | -.0343 | .0104 | .0343 | .0727 | .0357 | 2481. |
| .0980 | -173. | 77. | 171. | 67. | 119. | -297. | .0339 | -.0319 | .0003 | .0408 | .0534 | .0299 | 2272. |
| .0990 | -226. | 62. | 92. | -9. | 170. | -270. | .0218 | -.0288 | -.0158 | .0521 | .0250 | .0181 | 2218. |
| .1000 | -265. | 70. | 3. | -87. | 211. | -241. | .0076 | -.0249 | -.0539 | .0650 | -.0077 | .0030 | 2312. |
| .1010 | -272. | 65. | -84. | -158. | 229. | -209. | -.0062 | -.0207 | -.0493 | .0757 | -.0383 | -.0107 | 2420. |
| .1020 | -281. | 17. | -136. | -214. | 231. | -172. | -.0169 | -.0163 | -.0582 | .0808 | -.0601 | -.0196 | 2496. |
| .1030 | -297. | -32. | -143. | -245. | 220. | -136. | -.0233 | -.0114 | -.0592 | .0787 | -.0692 | -.0255 | 2478. |
| .1040 | -278. | -44. | -123. | -245. | 181. | -109. | -.0259 | -.0057 | -.0570 | .0701 | -.0683 | -.0304 | 2254. |
| .1050 | -220. | -61. | -92. | -230. | 114. | -81. | -.0263 | .0003 | -.0421 | .0573 | -.0619 | -.0328 | 1875. |
| .1060 | -145. | -110. | -59. | -213. | 32. | -48. | -.0261 | .0061 | -.0298 | .0432 | -.0543 | -.0327 | 1535. |
| .1070 | -41. | -134. | -45. | -191. | -55. | -14. | -.0265 | .0122 | -.0189 | .0300 | -.0491 | -.0344 | 1390. |
| .1080 | 95. | -85. | -59. | -165. | -141. | 14. | -.0279 | .0188 | -.0106 | .0185 | -.0477 | -.0407 | 1512. |
| .1090 | 229. | -26. | -84. | -144. | -221. | 47. | -.0297 | .0253 | -.0040 | .0078 | -.0483 | -.0472 | 1864. |
| .1100 | 342. | -82. | -100. | -129. | -298. | 97. | -.0310 | .0304 | .0028 | -.0014 | -.0480 | -.0460 | 2361. |
| .1110 | 431. | -127. | -106. | -112. | -365. | 151. | -.0314 | .0350 | .0102 | -.0111 | -.0455 | -.0430 | 2857. |
| .1120 | 482. | -97. | -99. | -90. | -412. | 202. | -.0309 | .0396 | .0179 | -.0220 | -.0407 | -.0419 | 3255. |
| .1130 | 483. | -139. | -74. | -78. | -441. | 261. | -.0298 | .0429 | .0250 | -.0316 | -.0347 | -.0355 | 3609. |
| .1140 | 475. | -263. | -57. | -75. | -461. | 319. | -.0290 | .0448 | .0294 | -.0367 | -.0312 | -.0252 | 3935. |
| .1150 | 491. | -286. | -68. | -63. | -467. | 351. | -.0292 | .0467 | .0292 | -.0372 | -.0326 | -.0224 | 4090. |
| .1160 | 493. | -191. | -91. | -48. | -448. | 357. | -.0301 | .0489 | .0247 | -.0340 | -.0377 | -.0281 | 3999. |
| .1170 | 463. | -151. | -113. | -47. | -410. | 357. | -.0311 | .0499 | .0179 | -.0278 | -.0442 | -.0315 | 3795. |
| .1180 | 478. | -201. | -148. | -44. | -387. | 349. | -.0308 | .0492 | .0117 | -.0194 | -.0499 | -.0291 | 3639. |
| .1190 | 509. | -132. | -165. | -15. | -371. | 307. | -.0275 | .0490 | .0092 | -.0137 | -.0487 | -.0314 | 3353. |
| .1200 | 490. | 50. | -124. | 42. | -345. | 236. | -.0193 | .0493 | .0130 | -.0143 | -.0348 | -.0372 | 2923. |
| .1210 | 455. | 108. | -47. | 103. | -321. | 169. | -.0062 | .0482 | .0233 | -.0190 | -.0099 | -.0325 | 2627. |

ADLPIPE PAGE 2813

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|------|-------|-------|-------|-------|------|--------|-------|-------|--------|--------|--------|-------|
| .1110 | 431. | -127. | -106. | -112. | -365. | 151. | -.0314 | .0350 | .0102 | -.0111 | -.0455 | -.0430 | 2857. |
| .1120 | 482. | -57. | -99. | -90. | -412. | 202. | -.0309 | .0396 | .0179 | -.0220 | -.0407 | -.0419 | 3255. |
| .1130 | 483. | -139. | -74. | -78. | -441. | 261. | -.0298 | .0429 | .0250 | -.0316 | -.0347 | -.0355 | 3609. |
| .1140 | 475. | -263. | -57. | -75. | -461. | 319. | -.0290 | .0448 | .0294 | -.0367 | -.0312 | -.0252 | 3935. |
| .1150 | 491. | -286. | -68. | -63. | -467. | 351. | -.0292 | .0467 | .0292 | -.0372 | -.0326 | -.0224 | 4090. |
| .1160 | 493. | -191. | -91. | -48. | -448. | 357. | -.0301 | .0489 | .0247 | -.0340 | -.0377 | -.0281 | 3999. |
| .1170 | 463. | -151. | -113. | -47. | -410. | 357. | -.0311 | .0499 | .0179 | -.0278 | -.0442 | -.0315 | 3795. |
| .1180 | 478. | -201. | -148. | -44. | -387. | 349. | -.0308 | .0492 | .0117 | -.0194 | -.0499 | -.0291 | 3639. |
| .1190 | 509. | -132. | -165. | -15. | -371. | 307. | -.0275 | .0490 | .0092 | -.0137 | -.0487 | -.0314 | 3353. |
| .1200 | 490. | 50. | -124. | 42. | -345. | 236. | -.0193 | .0493 | .0130 | -.0143 | -.0348 | -.0372 | 2923. |
| .1210 | 455. | 108. | -47. | 103. | -321. | 169. | -.0062 | .0482 | .0233 | -.0190 | -.0099 | -.0325 | 2627. |

ADLPIPE PAGE 2813

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.57.

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 | 09 | MEMBER | 3 | SEQUENCE | 104 | LOCATION | END | TYPE | RU | RU | 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) | | | |
| .1220 | 415. | 38. | 42. | 159. | -299. | 108. | .0097 | .0457 | .0370 | -.0257 | .0201 | -.0185 | 2472. | | |
| .1230 | 354. | 50. | 133. | 220. | -267. | 34. | .0248 | .0437 | .0495 | -.0313 | .0483 | -.0095 | 2422. | | |
| .1240 | 220. | 175. | 224. | 268. | -201. | -47. | .0362 | .0425 | .0356 | -.0330 | .0680 | -.0101 | 2356. | | |
| .1250 | 67. | 212. | 258. | 268. | -106. | -104. | .0421 | .0406 | .0513 | -.0262 | .0716 | -.0102 | 2132. | | |
| .1260 | -8. | 139. | 196. | 228. | -10. | -137. | .0423 | .0378 | .0361 | -.0093 | .0363 | -.0091 | 1853. | | |
| .1270 | -79. | 199. | 103. | 179. | 98. | -179. | .0388 | .0364 | .0141 | .0118 | .0312 | -.0195 | 1887. | | |
| .1280 | -185. | 382. | 32. | 136. | 210. | -225. | .0348 | .0366 | -.0080 | .0312 | .0068 | -.0375 | 2340. | | |
| .1290 | -294. | 426. | -19. | 81. | 309. | -241. | .0374 | .0359 | -.0246 | .0452 | -.0104 | -.0442 | 2788. | | |
| .1300 | -378. | 281. | -47. | 22. | 380. | -224. | .0357 | .0340 | -.0324 | .0518 | -.0169 | -.0346 | 3075. | | |
| .1310 | -469. | 181. | -19. | -9. | 423. | -203. | .0414 | .0329 | -.0308 | .0500 | -.0109 | -.0228 | 3264. | | |
| .1320 | -623. | 211. | 73. | -21. | 461. | -183. | .0487 | .0334 | -.0235 | .0405 | .0043 | -.0158 | 3459. | | |
| .1330 | -736. | 139. | 141. | -53. | 487. | -135. | .0551 | .0335 | -.0167 | .0304 | .0169 | -.0026 | 3538. | | |
| .1340 | -761. | -79. | 135. | -114. | 498. | -58. | .0582 | .0328 | -.0156 | .0254 | .0184 | .0158 | 3580. | | |
| .1350 | -765. | -173. | 96. | -174. | 510. | 8. | .0561 | .0335 | -.0217 | .0261 | .0087 | .0218 | 3751. | | |
| .1360 | -781. | -71. | 47. | -225. | 526. | 56. | .0492 | .0362 | -.0335 | .0307 | -.0095 | .0121 | 4005. | | |
| .1370 | -788. | -38. | -27. | -296. | 544. | 122. | .0397 | .0385 | -.0478 | .0372 | -.0331 | .0047 | 4390. | | |
| .1380 | -732. | -203. | -125. | -379. | 533. | 213. | .0304 | .0393 | -.0398 | .0430 | -.0361 | .0097 | 4785. | | |
| .1390 | -672. | -311. | -175. | -433. | 491. | 291. | .0240 | .0407 | -.0643 | .0420 | -.0686 | .0139 | 4988. | | |
| .1400 | -640. | -248. | -150. | -442. | 431. | 335. | .0222 | .0440 | -.0395 | .0314 | -.0658 | .0109 | 4892. | | |
| .1410 | -572. | -261. | -107. | -434. | 351. | 374. | .0245 | .0467 | -.0474 | .0149 | -.0326 | .0146 | 4679. | | |
| .1420 | -469. | -431. | -72. | -430. | 261. | 418. | .0285 | .0480 | -.0320 | -.0035 | -.0357 | .0278 | 4551. | | |
| .1430 | -361. | -506. | -29. | -410. | 158. | 435. | .0311 | .0498 | -.0165 | -.0215 | -.0199 | .0343 | 4306. | | |
| .1440 | -274. | -397. | 24. | -379. | 53. | 420. | .0307 | .0532 | -.0043 | -.0375 | -.0091 | .0266 | 3933. | | |
| .1450 | -164. | -330. | 30. | -372. | -39. | 409. | .0274 | .0557 | .0017 | -.0483 | -.0073 | .0191 | 3856. | | |
| .1460 | 7. | -438. | -32. | -394. | -118. | 413. | .0224 | .0565 | .0017 | -.0524 | -.0144 | .0179 | 4056. | | |
| .1470 | 159. | -440. | -95. | -409. | -181. | 396. | .0164 | .0579 | -.0006 | -.0548 | -.0233 | .0087 | 4155. | | |
| .1480 | 267. | -264. | -113. | -396. | -245. | 345. | .0108 | .0604 | -.0009 | -.0589 | -.0282 | -.0103 | 4035. | | |
| .1490 | 354. | -178. | -105. | -382. | -310. | 298. | .0072 | .0618 | .0032 | -.0653 | -.0269 | -.0216 | 4002. | | |
| .1500 | 443. | -281. | -94. | -372. | -368. | 268. | .0070 | .0611 | .0117 | -.0739 | -.0192 | -.0189 | 4092. | | |
| .1510 | 518. | -317. | -59. | -332. | -418. | 224. | .0097 | .0607 | .0241 | -.0850 | -.0044 | -.0178 | 4027. | | |
| .1520 | 521. | -171. | 20. | -263. | -442. | 160. | .0137 | .0616 | .0379 | -.0981 | .0151 | -.0261 | 3747. | | |
| .1530 | 502. | -104. | 82. | -206. | -446. | 115. | .0166 | .0616 | .0490 | -.1078 | .0304 | -.0298 | 3512. | | |
| .1540 | 497. | -217. | 85. | -180. | -431. | 104. | .0166 | .0596 | .0537 | -.1099 | .0348 | -.0246 | 3329. | | |
| .1550 | 469. | -254. | 61. | -154. | -389. | 89. | .0126 | .0582 | .0513 | -.1045 | .0291 | -.0271 | 2976. | | |
| .1560 | 387. | -92. | 39. | -107. | -313. | 54. | .0055 | .0585 | .0430 | -.0933 | .0173 | -.0446 | 2355. | | |
| .1570 | 251. | 51. | 5. | -68. | -200. | 33. | -.0030 | .0587 | .0306 | -.0781 | .0013 | -.0626 | 1489. | | |
| .1580 | 148. | 8. | -66. | -50. | -82. | 49. | -.0114 | .0574 | .0171 | -.0606 | -.0174 | -.0688 | 752. | | |
| .1590 | 46. | -46. | -121. | -22. | 22. | 78. | -.0189 | .0562 | .0064 | -.0430 | -.0323 | -.0718 | 588. | | |

ADLPIPE PAGE 2814

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/31/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|------|-------|-------|-------|-------|------|--------|-------|-------|--------|--------|--------|-------|
| .1500 | 447. | -281. | -94. | -372. | -368. | 268. | .0070 | .0611 | .0117 | -.0739 | -.0192 | -.0189 | 4092. |
| .1510 | 518. | -317. | -59. | -372. | -418. | 224. | .0097 | .0607 | .0241 | -.0850 | -.0044 | -.0178 | 4027. |
| .1520 | 521. | -171. | 20. | -263. | -442. | 160. | .0137 | .0616 | .0379 | -.0981 | .0151 | -.0261 | 3747. |
| .1530 | 502. | -104. | 82. | -206. | -446. | 119. | .0166 | .0616 | .0490 | -.1078 | .0304 | -.0298 | 3512. |
| .1540 | 497. | -217. | 85. | -180. | -431. | 104. | .0166 | .0596 | .0537 | -.1099 | .0348 | -.0246 | 3329. |
| .1550 | 469. | -254. | 61. | -154. | -389. | 89. | .0126 | .0582 | .0513 | -.1045 | .0291 | -.0271 | 2976. |
| .1560 | 387. | -92. | 39. | -107. | -317. | 54. | .0055 | .0585 | .0430 | -.0933 | .0173 | -.0446 | 2355. |
| .1570 | 251. | 51. | 5. | -68. | -200. | 33. | -.0030 | .0587 | .0306 | -.0781 | .0013 | -.0626 | 1489. |
| .1580 | 148. | 8. | -66. | -50. | -82. | 49. | -.0114 | .0574 | .0171 | -.0606 | -.0174 | -.0688 | 752. |
| .1590 | 46. | -46. | -121. | -22. | 22. | 78. | -.0189 | .0562 | .0064 | -.0450 | -.0323 | -.0718 | 588. |

ADLPIPE PAGE 2814

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.57.

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 | END | TYPE | RU | DX | DY | DZ | FX | 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) | | | | | | | |
| .1600 | -131. | 36. | -110. | 30. | 130. | 100. | -.0244 | .0566 | .0005 | -.0349 | -.0388 | -.0800 | 1161. |
| .1610 | -317. | 99. | -84. | 87. | 239. | 131. | -.0276 | .0572 | -.0016 | -.0288 | -.0387 | -.0848 | 1990. |
| .1620 | -414. | 11. | -90. | 137. | 325. | 184. | -.0292 | .0568 | -.0016 | -.0256 | -.0368 | -.0792 | 2766. |
| .1630 | -510. | -56. | -82. | 104. | 395. | 234. | -.0304 | .0570 | -.0003 | -.0209 | -.0323 | -.0746 | 3442. |
| .1640 | -615. | 19. | -46. | 236. | 446. | 266. | -.0321 | .0590 | .0016 | -.0205 | -.0267 | -.0789 | 3971. |
| .1650 | -658. | 81. | -37. | 273. | 473. | 303. | -.0343 | .0610 | .0021 | -.0202 | -.0232 | -.0828 | 4342. |
| .1660 | -653. | 7. | -63. | 274. | 489. | 360. | -.0367 | .0622 | .0009 | -.0198 | -.0223 | -.0792 | 4636. |
| .1670 | -644. | -78. | -83. | 257. | 497. | 418. | -.0394 | .0633 | -.0006 | -.0208 | -.0216 | -.0749 | 4843. |
| .1680 | -651. | -48. | -74. | 239. | 478. | 457. | -.0423 | .0652 | -.0010 | -.0249 | -.0190 | -.0768 | 4894. |
| .1690 | -626. | -45. | -68. | 205. | 437. | 493. | -.0452 | .0666 | -.0010 | -.0305 | -.0166 | -.0763 | 4802. |
| .1700 | -569. | -180. | -81. | 140. | 386. | 537. | -.0475 | .0663 | -.0013 | -.0267 | -.0153 | -.0671 | 4702. |
| .1710 | -513. | -298. | -90. | 62. | 332. | 566. | -.0494 | .0655 | -.0022 | -.0438 | -.0139 | -.0588 | 4586. |
| .1720 | -426. | -284. | -95. | -2. | 259. | 561. | -.0511 | .0649 | -.0033 | -.0509 | -.0128 | -.0580 | 4299. |
| .1730 | -326. | -259. | -102. | -74. | 176. | 540. | -.0526 | .0633 | -.0052 | -.0576 | -.0124 | -.0571 | 3986. |
| .1740 | -209. | -355. | -121. | -163. | 91. | 520. | -.0535 | .0593 | -.0072 | -.0628 | -.0127 | -.0479 | 3849. |
| .1750 | -73. | -453. | -141. | -245. | 0. | 483. | -.0532 | .0539 | -.0085 | -.0666 | -.0119 | -.0372 | 3769. |
| .1760 | 44. | -404. | -131. | -295. | -88. | 408. | -.0515 | .0483 | -.0080 | -.0707 | -.0070 | -.0335 | 3555. |
| .1770 | 115. | -321. | -104. | -322. | -171. | 311. | -.0478 | .0415 | -.0056 | -.0741 | .0017 | -.0299 | 3335. |
| .1780 | 269. | -333. | -78. | -343. | -245. | 212. | -.0420 | .0326 | -.0017 | -.0760 | .0126 | -.0189 | 3284. |
| .1790 | 393. | -353. | -53. | -341. | -315. | 101. | -.0349 | .0224 | .0033 | -.0758 | .0249 | -.0057 | 3308. |
| .1800 | 482. | -249. | -5. | -302. | -368. | -34. | -.0271 | .0122 | .0090 | -.0738 | .0389 | .0011 | 3323. |
| .1810 | 512. | -90. | 59. | -244. | -389. | -176. | -.0194 | .0018 | .0142 | -.0696 | .0529 | .0051 | 3422. |
| .1820 | 553. | -24. | 95. | -181. | -394. | -303. | -.0122 | -.0100 | .0177 | -.0609 | .0631 | .0146 | 3682. |
| .1830 | 584. | 14. | 115. | -110. | -382. | -418. | -.0060 | -.0221 | .0194 | -.0485 | .0696 | .0253 | 4016. |
| .1840 | 563. | 146. | 147. | -21. | -345. | -533. | -.0009 | -.0351 | .0199 | -.0343 | .0745 | .0294 | 4425. |
| .1850 | 505. | 314. | 180. | 79. | -287. | -636. | .0032 | -.0429 | .0191 | -.0187 | .0776 | .0302 | 4889. |
| .1860 | 437. | 393. | 193. | 168. | -211. | -708. | .0062 | -.0525 | .0171 | -.0018 | .0773 | .0353 | 5276. |
| .1870 | 360. | 405. | 194. | 252. | -130. | -751. | .0078 | -.0613 | .0144 | .0155 | .0742 | .0429 | 5583. |
| .1880 | 232. | 475. | 212. | 335. | -37. | -778. | .0077 | -.0677 | .0112 | .0312 | .0697 | .0452 | 5900. |
| .1890 | 93. | 570. | 223. | 412. | 59. | -785. | .0057 | -.0720 | .0068 | .0456 | .0623 | .0458 | 6186. |
| .1900 | -14. | 578. | 201. | 466. | 148. | -760. | .0019 | -.0748 | .0008 | .0595 | .0503 | .0448 | 6288. |
| .1910 | -108. | 535. | 164. | 496. | 229. | -708. | -.0035 | -.0758 | -.0062 | .0711 | .0357 | .0460 | 6226. |
| .1920 | -186. | 543. | 130. | 519. | 291. | -648. | -.0101 | -.0742 | -.0127 | .0792 | .0210 | .0419 | 6122. |
| .1930 | -235. | 580. | 97. | 534. | 327. | -581. | -.0169 | -.0702 | -.0174 | .0826 | .0081 | .0346 | 5946. |
| .1940 | -256. | 540. | 63. | 530. | 347. | -496. | -.0231 | -.0650 | -.0193 | .0810 | -.0014 | .0310 | 5588. |
| .1950 | -260. | 438. | 39. | 511. | 339. | -396. | -.0282 | -.0587 | -.0178 | .0739 | -.0061 | .0310 | 5082. |
| .1960 | -255. | 368. | 36. | 489. | 311. | -298. | -.0325 | -.0510 | -.0128 | .0612 | -.0059 | .0294 | 4535. |
| .1970 | -240. | 315. | 46. | 459. | 265. | -202. | -.0365 | -.0422 | -.0061 | .0447 | -.0029 | .0266 | 3949. |

ADLPIPE PAGE 2815

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|-------|------|------|------|-------|-------|--------|--------|--------|-------|--------|-------|-------|
| .1870 | 360. | 405. | 194. | 252. | -130. | -751. | .0078 | -.0613 | .0144 | .0155 | .0742 | .0429 | 5583. |
| .1880 | 232. | 475. | 212. | 335. | -37. | -778. | .0077 | -.0677 | .0112 | .0312 | .0697 | .0452 | 5900. |
| .1890 | 93. | 570. | 223. | 412. | 59. | -785. | .0057 | -.0720 | .0068 | .0456 | .0623 | .0438 | 6186. |
| .1900 | -14. | 578. | 201. | 466. | 146. | -760. | .0019 | -.0748 | .0008 | .0595 | .0503 | .0448 | 6288. |
| .1910 | -108. | 535. | 164. | 476. | 229. | -708. | -.0035 | -.0758 | -.0062 | .0711 | .0357 | .0460 | 6226. |
| .1920 | -186. | 543. | 130. | 519. | 291. | -648. | -.0101 | -.0742 | -.0127 | .0792 | .0210 | .0419 | 6122. |
| .1930 | -235. | 580. | 97. | 534. | 327. | -581. | -.0169 | -.0702 | -.0174 | .0826 | .0081 | .0346 | 5946. |
| .1940 | -256. | 540. | 63. | 530. | 343. | -496. | -.0231 | -.0650 | -.0193 | .0810 | -.0014 | .0310 | 5588. |
| .1950 | -260. | 438. | 39. | 511. | 339. | -396. | -.0282 | -.0587 | -.0178 | .0739 | -.0061 | .0310 | 5082. |
| .1960 | -255. | 368. | 36. | 489. | 311. | -298. | -.0325 | -.0510 | -.0128 | .0612 | -.0059 | .0294 | 4535. |
| .1970 | -242. | 315. | 46. | 459. | 265. | -202. | -.0365 | -.0422 | -.0061 | .0447 | -.0029 | .0266 | 3949. |

ADLPIPE PAGE 2815

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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 | 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) | (IN) | (IN) | (IN) | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (DEG) | (PSI) |
| .1980 | -212. | 202. | 45. | 410. | 212. | -102. | -.0408 | -.0335 | -.0001 | .0275 | -.0006 | .0264 | 3289. | | | | | | |
| .1990 | -163. | 62. | 26. | 346. | 157. | -6. | -.0461 | -.0251 | -.0034 | .0120 | -.0016 | .0262 | 2644. | | | | | | |
| .2000 | -107. | -6. | -3. | 281. | 103. | 68. | -.0530 | -.0166 | .0038 | -.0008 | -.0061 | .0199 | 2133. | | | | | | |
| .2010 | -49. | -13. | -36. | 216. | 49. | 119. | -.0610 | -.0085 | .0015 | -.0108 | -.0134 | .0090 | 1752. | | | | | | |
| .2020 | 26. | -52. | -79. | 149. | -8. | 158. | -.0687 | -.0019 | -.0019 | -.0182 | -.0216 | .0002 | 1510. | | | | | | |
| .2030 | 117. | -117. | -120. | 88. | -67. | 181. | -.0745 | .0029 | -.0043 | -.0245 | -.0273 | -.0052 | 1478. | | | | | | |
| .2040 | 199. | -127. | -135. | 51. | -125. | 178. | -.0773 | .0065 | -.0034 | -.0315 | -.0263 | -.0106 | 1554. | | | | | | |
| .2050 | 262. | -90. | -114. | 42. | -181. | 149. | -.0766 | .0086 | .0017 | -.0400 | -.0175 | -.0151 | 1656. | | | | | | |
| .2060 | 322. | -84. | -73. | 48. | -230. | 106. | -.0728 | .0084 | .0102 | -.0487 | -.0031 | -.0138 | 1840. | | | | | | |
| .2070 | 380. | -108. | -25. | 66. | -290. | 51. | -.0668 | .0061 | .0203 | -.0561 | .0138 | -.0078 | 2101. | | | | | | |
| .2080 | 410. | -86. | 30. | 98. | -327. | -20. | -.0600 | .0024 | .0297 | -.0607 | .0302 | -.0029 | 2382. | | | | | | |
| .2090 | 435. | -5. | 80. | 137. | -344. | -104. | -.0536 | -.0024 | .0360 | -.0610 | .0428 | -.0011 | 2678. | | | | | | |
| .2100 | 450. | 63. | 104. | 169. | -342. | -188. | -.0483 | -.0087 | .0379 | -.0556 | .0486 | .0010 | 2961. | | | | | | |
| .2110 | 463. | 96. | 101. | 189. | -324. | -265. | -.0445 | -.0163 | .0356 | -.0451 | .0472 | .0047 | 3198. | | | | | | |
| .2120 | 456. | 150. | 90. | 206. | -292. | -340. | -.0416 | -.0245 | .0305 | -.0314 | .0412 | .0067 | 3436. | | | | | | |
| .2130 | 428. | 238. | 81. | 225. | -251. | -415. | -.0388 | -.0327 | .0247 | -.0167 | .0336 | .0070 | 3720. | | | | | | |
| .2140 | 392. | 304. | 75. | 244. | -204. | -480. | -.0350 | -.0410 | .0201 | -.0029 | .0267 | .0095 | 4007. | | | | | | |
| .2150 | 349. | 320. | 75. | 261. | -156. | -530. | -.0295 | -.0494 | .0178 | .0086 | .0222 | .0161 | 4252. | | | | | | |
| .2160 | 295. | 328. | 88. | 279. | -113. | -569. | -.0228 | -.0570 | .0182 | .0168 | .0204 | .0241 | 4479. | | | | | | |
| .2170 | 233. | 350. | 112. | 300. | -75. | -598. | -.0156 | -.0636 | .0201 | .0225 | .0199 | .0312 | 4685. | | | | | | |
| .2180 | 173. | 355. | 128. | 313. | -37. | -613. | -.0089 | -.0691 | .0218 | .0273 | .0181 | .0379 | 4799. | | | | | | |
| .2190 | 110. | 332. | 126. | 313. | 3. | -612. | -.0037 | -.0735 | .0215 | .0327 | .0126 | .0439 | 4784. | | | | | | |
| .2200 | 71. | 320. | 109. | 304. | 41. | -600. | -.0006 | -.0763 | .0186 | .0390 | .0028 | .0462 | 4687. | | | | | | |
| .2210 | 33. | 336. | 80. | 287. | 73. | -580. | .0005 | -.0774 | .0133 | .0460 | -.0103 | .0438 | 4532. | | | | | | |
| .2220 | 8. | 343. | 41. | 261. | 98. | -550. | .0005 | -.0771 | .0070 | .0528 | -.0247 | .0396 | 4293. | | | | | | |
| .2230 | -2. | 321. | -1. | 231. | 116. | -509. | .0004 | -.0756 | .0011 | .0580 | -.0375 | .0358 | 3972. | | | | | | |
| .2240 | -9. | 299. | -29. | 204. | 123. | -463. | .0010 | -.0728 | -.0023 | .0600 | -.0458 | .0317 | 3621. | | | | | | |
| .2250 | -18. | 288. | -33. | 183. | 117. | -415. | .0026 | -.0687 | -.0025 | .0580 | -.0481 | .0274 | 3260. | | | | | | |
| .2260 | -26. | 256. | -20. | 164. | 98. | -362. | .0052 | -.0638 | .0001 | .0527 | -.0451 | .0250 | 2853. | | | | | | |
| .2270 | -24. | 193. | -2. | 143. | 71. | -306. | .0082 | -.0584 | .0040 | .0456 | -.0391 | .0245 | 2402. | | | | | | |
| .2280 | -15. | 140. | 14. | 121. | 41. | -251. | .0108 | -.0524 | .0074 | .0384 | -.0322 | .0226 | 1962. | | | | | | |
| .2290 | -4. | 122. | 25. | 96. | 13. | -203. | .0122 | -.0457 | .0088 | .0324 | -.0266 | .0172 | 1565. | | | | | | |
| .2300 | 14. | 109. | 23. | 63. | -13. | -157. | .0122 | -.0389 | .0074 | .0286 | -.0236 | .0103 | 1182. | | | | | | |
| .2310 | 38. | 75. | 7. | 21. | -37. | -111. | .0109 | -.0324 | .0038 | .0270 | -.0233 | .0038 | 826. | | | | | | |
| .2320 | 57. | 44. | -12. | -24. | -57. | -68. | .0090 | -.0261 | -.0010 | .0266 | -.0236 | -.0028 | 637. | | | | | | |
| .2330 | 66. | 34. | -24. | -63. | -72. | -32. | .0076 | -.0200 | -.0053 | .0260 | -.0223 | -.0098 | 704. | | | | | | |
| .2340 | 69. | 24. | -26. | -96. | -85. | -3. | .0075 | -.0143 | -.0079 | .0244 | -.0179 | -.0150 | 890. | | | | | | |
| .2350 | 71. | -7. | -19. | -121. | -97. | 23. | .0091 | -.0095 | -.0079 | .0215 | -.0100 | -.0169 | 1091. | | | | | | |

ADLPIPE PAGE 2816

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| | | | | | | | | | | | | | |
|-------|------|------|------|-------|------|-------|-------|--------|--------|-------|--------|--------|-------|
| .2250 | -10. | 288. | -33. | 163. | 117. | -415. | .0026 | -.0687 | -.0025 | .0580 | -.0481 | .0274 | 3260. |
| .2260 | -24. | 256. | -20. | 164. | 98. | -362. | .0052 | -.0638 | .0001 | .0527 | -.0451 | .0250 | 2853. |
| .2270 | -24. | 193. | -2. | 143. | 71. | -306. | .0082 | -.0584 | .0040 | .0456 | -.0391 | .0245 | 2402. |
| .2280 | -15. | 140. | 14. | 121. | 41. | -251. | .0108 | -.0524 | .0074 | .0384 | -.0322 | .0226 | 1962. |
| .2290 | -4. | 122. | 25. | 96. | 13. | -203. | .0122 | -.0457 | .0088 | .0324 | -.0266 | .0172 | 1565. |
| .2300 | 14. | 109. | 23. | 63. | -12. | -157. | .0122 | -.0389 | .0074 | .0286 | -.0236 | .0103 | 1182. |
| .2310 | 38. | 75. | 7. | 21. | -37. | -111. | .0109 | -.0324 | .0038 | .0270 | -.0233 | .0038 | 826. |
| .2320 | 57. | 44. | -12. | -24. | -57. | -68. | .0090 | -.0261 | -.0010 | .0266 | -.0236 | -.0028 | 657. |
| .2330 | 66. | 34. | -24. | -63. | -72. | -32. | .0076 | -.0200 | -.0053 | .0260 | -.0223 | -.0098 | 704. |
| .2340 | 69. | 24. | -26. | -96. | -85. | -3. | .0075 | -.0143 | -.0079 | .0244 | -.0179 | -.0150 | 890. |
| .2350 | 71. | -7. | -19. | -121. | -97. | 23. | .0091 | -.0095 | -.0079 | .0215 | -.0100 | -.0169 | 1091. |

ADLPIPE PAGE 2816

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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 | END | TYPE | RU | FX | 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) | FX (DEG) | RY (DEG) | RZ (DEG) | (PSI) |
| .2360 | 69. | -39. | -0. | -135. | -109. | 41. | .0123 | -.0052 | -.0056 | .0173 | .0011 | -.0168 | 1244. |
| .2370 | 60. | -48. | 28. | -137. | -118. | 50. | .0167 | -.0014 | -.0015 | .0125 | .0145 | -.0166 | 1305. |
| .2380 | 46. | -45. | 56. | -130. | -119. | 52. | .0217 | .0020 | .0031 | .0085 | .0279 | -.0165 | 1274. |
| .2390 | 29. | -46. | 77. | -118. | -110. | 50. | .0267 | .0047 | .0071 | .0062 | .0396 | -.0161 | 1175. |
| .2400 | 4. | -44. | 89. | -105. | -90. | 48. | .0312 | .0071 | .0099 | .0061 | .0483 | -.0163 | 1017. |
| .2410 | -31. | -26. | 94. | -89. | -60. | 45. | .0348 | .0092 | .0112 | .0082 | .0536 | -.0180 | 809. |
| .2420 | -76. | -4. | 91. | -73. | -20. | 42. | .0378 | .0111 | .0115 | .0122 | .0556 | -.0207 | 602. |
| .2430 | -133. | 7. | 82. | -57. | 31. | 44. | .0402 | .0128 | .0105 | .0175 | .0549 | -.0234 | 549. |
| .2440 | -202. | 14. | 70. | -43. | 91. | 49. | .0422 | .0145 | .0092 | .0233 | .0521 | -.0263 | 779. |
| .2450 | -282. | 24. | 59. | -29. | 155. | 59. | .0437 | .0164 | .0079 | .0291 | .0478 | -.0299 | 1170. |
| .2460 | -370. | 26. | 47. | -20. | 219. | 75. | .0445 | .0184 | .0066 | .0344 | .0417 | -.0333 | 1615. |
| .2470 | -455. | 9. | 29. | -19. | 280. | 101. | .0446 | .0206 | .0049 | .0394 | .0336 | -.0362 | 2073. |
| .2480 | -531. | -17. | 5. | -28. | 336. | 133. | .0439 | .0232 | .0026 | .0439 | .0237 | -.0393 | 2520. |
| .2490 | -598. | -39. | -24. | -45. | 384. | 170. | .0423 | .0262 | -.0003 | .0477 | .0123 | -.0436 | 2941. |
| .2500 | -653. | -62. | -57. | -72. | 422. | 213. | .0398 | .0296 | -.0037 | .0505 | -.0003 | -.0485 | 3328. |
| .2510 | -690. | -102. | -94. | -111. | 445. | 262. | .0365 | .0333 | -.0072 | .0521 | -.0136 | -.0528 | 3678. |
| .2520 | -708. | -157. | -131. | -161. | 451. | 315. | .0326 | .0372 | -.0104 | .0518 | -.0266 | -.0561 | 3991. |
| .2530 | -707. | -213. | -162. | -216. | 438. | 370. | .0287 | .0414 | -.0129 | .0494 | -.0383 | -.0592 | 4267. |
| .2540 | -687. | -264. | -190. | -276. | 407. | 424. | .0249 | .0457 | -.0145 | .0448 | -.0479 | -.0619 | 4517. |
| .2550 | -634. | -323. | -214. | -339. | 359. | 475. | .0215 | .0500 | -.0152 | .0381 | -.0554 | -.0635 | 4770. |
| .2560 | -563. | -390. | -233. | -405. | 293. | 525. | .0183 | .0541 | -.0151 | .0297 | -.0604 | -.0637 | 5044. |
| .2570 | -475. | -449. | -245. | -471. | 211. | 568. | .0154 | .0579 | -.0141 | .0202 | -.0631 | -.0632 | 5343. |
| .2580 | -371. | -499. | -252. | -534. | 117. | 605. | .0128 | .0612 | -.0127 | .0100 | -.0637 | -.0623 | 5675. |
| .2590 | -254. | -548. | -255. | -593. | 16. | 635. | .0107 | .0640 | -.0111 | -.0002 | -.0622 | -.0603 | 6048. |
| .2600 | -130. | -590. | -255. | -645. | -85. | 658. | .0093 | .0661 | -.0093 | -.0100 | -.0587 | -.0575 | 6443. |
| .2610 | -6. | -619. | -250. | -688. | -186. | 674. | .0084 | .0674 | -.0075 | -.0192 | -.0535 | -.0541 | 6827. |
| .2620 | 111. | -641. | -238. | -721. | -282. | 681. | .0082 | .0679 | -.0055 | -.0274 | -.0468 | -.0497 | 7175. |
| .2630 | 210. | -658. | -221. | -741. | -368. | 681. | .0086 | .0674 | -.0036 | -.0340 | -.0390 | -.0443 | 7456. |
| .2640 | 300. | -661. | -200. | -746. | -440. | 671. | .0097 | .0660 | -.0021 | -.0389 | -.0304 | -.0387 | 7625. |
| .2650 | 380. | -644. | -176. | -737. | -492. | 652. | .0115 | .0638 | -.0010 | -.0416 | -.0214 | -.0335 | 7657. |
| .2660 | 430. | -616. | -150. | -714. | -527. | 626. | .0138 | .0608 | -.0005 | -.0420 | -.0127 | -.0284 | 7558. |
| .2670 | 467. | -582. | -125. | -679. | -545. | 594. | .0165 | .0570 | -.0008 | -.0401 | -.0047 | -.0231 | 7334. |
| .2680 | 474. | -539. | -100. | -632. | -543. | 556. | .0197 | .0526 | -.0017 | -.0358 | .0025 | -.0181 | 6973. |
| .2690 | 462. | -480. | -75. | -574. | -520. | 512. | .0234 | .0478 | -.0032 | -.0295 | .0089 | -.0142 | 6462. |
| .2700 | 427. | -407. | -51. | -506. | -477. | 463. | .0274 | .0426 | -.0052 | -.0217 | .0143 | -.0111 | 5817. |
| .2710 | 374. | -335. | -27. | -433. | -419. | 412. | .0318 | .0372 | -.0075 | -.0128 | .0186 | -.0080 | 5079. |
| .2720 | 304. | -268. | -3. | -355. | -349. | 359. | .0365 | .0315 | -.0098 | -.0031 | .0217 | -.0050 | 4273. |
| .2730 | 221. | -194. | 19. | -274. | -267. | 305. | .0412 | .0259 | -.0124 | .0071 | .0236 | -.0028 | 3407. |

ADLPIPE PAGE 2817

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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 | 218. | -658. | -221. | -741. | -368. | 681. | .0086 | .0674 | -.0026 | -.0340 | -.0390 | -.0443 | 7456. |
| .2640 | 309. | -661. | -200. | -746. | -440. | 671. | .0097 | .0660 | -.0021 | -.0389 | -.0304 | -.0387 | 7625. |
| .2650 | 380. | -644. | -176. | -737. | -492. | 652. | .0115 | .0638 | -.0010 | -.0416 | -.0214 | -.0335 | 7657. |
| .2660 | 430. | -616. | -150. | -714. | -527. | 626. | .0138 | .0608 | -.0005 | -.0420 | -.0177 | -.0284 | 7558. |
| .2670 | 463. | -582. | -125. | -679. | -545. | 594. | .0165 | .0570 | -.0008 | -.0401 | -.0047 | -.0231 | 7334. |
| .2680 | 474. | -539. | -100. | -622. | -543. | 556. | .0197 | .0526 | -.0017 | -.0358 | .0025 | -.0181 | 6973. |
| .2690 | 462. | -480. | -75. | -574. | -520. | 512. | .0234 | .0478 | -.0032 | -.0295 | .0089 | -.0142 | 6462. |
| .2700 | 427. | -407. | -51. | -506. | -477. | 463. | .0274 | .0426 | -.0052 | -.0217 | .0143 | -.0111 | 5817. |
| .2710 | 374. | -335. | -27. | -433. | -419. | 412. | .0318 | .0372 | -.0075 | -.0128 | .0186 | -.0080 | 5079. |
| .2720 | 304. | -268. | -3. | -355. | -349. | 359. | .0365 | .0315 | -.0098 | -.0031 | .0217 | -.0050 | 4273. |
| .2730 | 221. | -194. | 19. | -274. | -267. | 305. | .0412 | .0259 | -.0124 | .0071 | .0236 | -.0028 | 3407. |

ADLPIPE PAGE 2017

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

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

| SECTION | MEMBER | SEQUENCE | LOCATION | 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) | |
| .2740 | 125. | -110. | 37. | -193. | -174. | 252. | .0459 | .0206 | -.0155 | .0175 | .0240 | -.0017 | 2517. | |
| .2750 | 20. | -35. | 50. | -117. | -73. | 203. | .0502 | .0154 | -.0191 | .0279 | .0225 | -.0006 | 1710. | |
| .2760 | -85. | 20. | 57. | -51. | 27. | 160. | .0539 | .0103 | -.0232 | .0383 | .0188 | .0011 | 1184. | |
| .2770 | -186. | 71. | 59. | 9. | 123. | 120. | .0568 | .0055 | -.0277 | .0484 | .0135 | .0023 | 1200. | |
| .2780 | -281. | 134. | 58. | 64. | 216. | 81. | .0592 | .0012 | -.0324 | .0577 | .0073 | .0023 | 1669. | |
| .2790 | -370. | 191. | 53. | 109. | 305. | 47. | .0612 | -.0026 | -.0370 | .0656 | .0008 | .0024 | 2280. | |
| .2800 | -446. | 220. | 46. | 144. | 383. | 18. | .0628 | -.0063 | -.0409 | .0718 | -.0054 | .0040 | 2853. | |
| .2810 | -506. | 238. | 43. | 172. | 444. | -7. | .0639 | -.0096 | -.0438 | .0760 | -.0110 | .0067 | 3314. | |
| .2820 | -555. | 261. | 44. | 194. | 490. | -32. | .0645 | -.0124 | -.0456 | .0782 | -.0152 | .0092 | 3673. | |
| .2830 | -593. | 280. | 49. | 210. | 525. | -54. | .0646 | -.0149 | -.0467 | .0785 | -.0182 | .0121 | 3952. | |
| .2840 | -617. | 275. | 51. | 216. | 549. | -70. | .0640 | -.0172 | -.0476 | .0776 | -.0207 | .0165 | 4135. | |
| .2850 | -620. | 258. | 50. | 215. | 556. | -83. | .0622 | -.0192 | -.0484 | .0760 | -.0232 | .0213 | 4190. | |
| .2860 | -604. | 253. | 50. | 208. | 546. | -98. | .0592 | -.0207 | -.0492 | .0737 | -.0258 | .0249 | 4123. | |
| .2870 | -571. | 255. | 49. | 198. | 522. | -113. | .0551 | -.0218 | -.0501 | .0709 | -.0282 | .0274 | 3965. | |
| .2880 | -517. | 244. | 43. | 183. | 487. | -128. | .0503 | -.0225 | -.0509 | .0674 | -.0302 | .0300 | 3732. | |
| .2890 | -443. | 230. | 37. | 168. | 439. | -143. | .0450 | -.0228 | -.0508 | .0628 | -.0309 | .0324 | 3419. | |
| .2900 | -352. | 230. | 39. | 157. | 373. | -162. | .0397 | -.0225 | -.0490 | .0563 | -.0295 | .0340 | 3031. | |
| .2910 | -250. | 234. | 52. | 149. | 290. | -182. | .0345 | -.0216 | -.0450 | .0475 | -.0254 | .0356 | 2603. | |
| .2920 | -133. | 221. | 68. | 143. | 190. | -200. | .0299 | -.0203 | -.0391 | .0366 | -.0190 | .0381 | 2196. | |
| .2930 | -7. | 200. | 86. | 138. | 99. | -216. | .0256 | -.0185 | -.0317 | .0241 | -.0109 | .0409 | 1911. | |
| .2940 | 121. | 193. | 108. | 126. | -5. | -231. | .0213 | -.0160 | -.0234 | .0104 | -.0022 | .0423 | 1864. | |
| .2950 | 246. | 192. | 129. | 131. | -110. | -242. | .0165 | -.0129 | -.0151 | -.0037 | .0054 | .0425 | 2066. | |
| .2960 | 372. | 170. | 139. | 119. | -214. | -246. | .0109 | -.0094 | -.0077 | -.0173 | .0103 | .0427 | 2418. | |
| .2970 | 495. | 139. | 136. | 101. | -310. | -243. | .0046 | -.0056 | -.0017 | -.0296 | .0120 | .0420 | 2831. | |
| .2980 | 605. | 129. | 126. | 82. | -393. | -237. | -.0023 | -.0012 | .0029 | -.0409 | .0110 | .0389 | 3244. | |
| .2990 | 697. | 129. | 111. | 61. | -463. | -226. | -.0095 | .0036 | .0065 | -.0515 | .0077 | .0343 | 3612. | |
| .3000 | 775. | 106. | 91. | 37. | -523. | -205. | -.0166 | .0083 | .0096 | -.0613 | .0026 | .0310 | 3921. | |
| .3010 | 838. | 60. | 69. | 14. | -572. | -177. | -.0231 | .0129 | .0128 | -.0705 | -.0031 | .0292 | 4169. | |
| .3020 | 876. | 32. | 52. | -2. | -605. | -149. | -.0288 | .0175 | .0164 | -.0793 | -.0084 | .0269 | 4337. | |
| .3030 | 889. | 25. | 40. | -8. | -620. | -121. | -.0335 | .0221 | .0200 | -.0873 | -.0129 | .0238 | 4397. | |
| .3040 | 884. | 6. | 28. | -8. | -619. | -90. | -.0372 | .0261 | .0235 | -.0939 | -.0173 | .0221 | 4355. | |
| .3050 | 865. | -28. | 13. | -5. | -605. | -57. | -.0403 | .0295 | .0264 | -.0984 | -.0222 | .0219 | 4250. | |
| .3060 | 820. | -42. | -1. | 9. | -577. | -29. | -.0430 | .0325 | .0284 | -.1006 | -.0273 | .0209 | 4018. | |
| .3070 | 770. | -24. | -13. | 33. | -530. | -8. | -.0450 | .0351 | .0292 | -.1004 | -.0323 | .0185 | 3697. | |
| .3080 | 696. | -4. | -27. | 64. | -466. | 11. | -.0464 | .0370 | .0290 | -.0978 | -.0372 | .0166 | 3275. | |
| .3090 | 610. | 2. | -41. | 99. | -391. | 29. | -.0471 | .0380 | .0282 | -.0932 | -.0414 | .0164 | 2813. | |
| .3100 | 513. | 17. | -48. | 141. | -310. | 41. | -.0471 | .0384 | .0272 | -.0874 | -.0441 | .0168 | 2388. | |
| .3110 | 403. | 51. | -45. | 189. | -225. | 46. | -.0462 | .0383 | .0263 | -.0808 | -.0446 | .0171 | 2071. | |

ADLPIPE PAGE 2018

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/12/02.

18.29.57.

S/RV PIPING KEWAUNEE GKWOBF 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

| | | | | | | | | | | | | | |
|-------|------|------|------|------|-------|-------|--------|-------|-------|--------|--------|-------|-------|
| .3010 | 837. | 68. | 69. | 14. | -572. | -177. | -.0231 | .0129 | .0128 | -.0705 | -.0031 | .0292 | 4169. |
| .3020 | 876. | 32. | 52. | -2. | -605. | -149. | -.0288 | .0175 | .0164 | -.0793 | -.0084 | .0269 | 4337. |
| .3030 | 889. | 25. | 40. | -8. | -620. | -121. | -.0335 | .0221 | .0200 | -.0873 | -.0129 | .0238 | 4397. |
| .3040 | 884. | 6. | 20. | -8. | -619. | -90. | -.0372 | .0261 | .0235 | -.0939 | -.0173 | .0221 | 4355. |
| .3050 | 865. | -28. | 13. | -5. | -605. | -57. | -.0403 | .0295 | .0264 | -.0984 | -.0222 | .0219 | 4230. |
| .3060 | 828. | -42. | -1. | 9. | -577. | -29. | -.0430 | .0325 | .0284 | -.1006 | -.0273 | .0209 | 4018. |
| .3070 | 770. | -24. | -13. | 33. | -530. | -8. | -.0450 | .0351 | .0292 | -.1004 | -.0323 | .0185 | 3697. |
| .3080 | 696. | -4. | -27. | 64. | -466. | 11. | -.0464 | .0370 | .0290 | -.0978 | -.0372 | .0166 | 3275. |
| .3090 | 610. | 2. | -41. | 99. | -391. | 29. | -.0471 | .0380 | .0282 | -.0932 | -.0414 | .0164 | 2813. |
| .3100 | 513. | 17. | -48. | 141. | -310. | 41. | -.0471 | .0384 | .0272 | -.0874 | -.0441 | .0168 | 2388. |
| .3110 | 407. | 51. | -45. | 189. | -225. | 46. | -.0462 | .0383 | .0263 | -.0808 | -.0446 | .0171 | 2071. |

ADLPIPE PAGE 2818

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.57.

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 | END | 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) |
| .3120 | 288. | 83. | -37. | 239. | -136. | 46. | -.0443 | .0377 | .0254 | -.0737 | -.0430 | .0184 | 1940. |
| .3130 | 175. | 102. | -28. | 287. | -45. | 43. | -.0418 | .0365 | .0243 | -.0663 | -.0396 | .0210 | 2043. |
| .3140 | 68. | 125. | -16. | 331. | 39. | 35. | -.0389 | .0350 | .0229 | -.0587 | -.0350 | .0237 | 2331. |
| .3150 | -33. | 159. | 1. | 368. | 114. | 23. | -.0361 | .0334 | .0212 | -.0516 | -.0295 | .0259 | 2682. |
| .3160 | -120. | 180. | 16. | 392. | 177. | 10. | -.0333 | .0316 | .0190 | -.0449 | -.0237 | .0286 | 2998. |
| .3170 | -189. | 184. | 25. | 403. | 231. | -3. | -.0306 | .0298 | .0163 | -.0390 | -.0177 | .0320 | 3233. |
| .3180 | -240. | 188. | 34. | 402. | 271. | -17. | -.0278 | .0281 | .0133 | -.0345 | -.0113 | .0349 | 3376. |
| .3190 | -278. | 196. | 46. | 387. | 296. | -31. | -.0252 | .0266 | .0107 | -.0320 | -.0044 | .0373 | 3399. |
| .3200 | -299. | 181. | 58. | 357. | 302. | -41. | -.0227 | .0252 | .0085 | -.0316 | .0028 | .0407 | 3268. |
| .3210 | -296. | 139. | 67. | 312. | 292. | -47. | -.0202 | .0238 | .0068 | -.0330 | .0101 | .0453 | 2993. |
| .3220 | -279. | 96. | 75. | 258. | 269. | -52. | -.0177 | .0227 | .0054 | -.0363 | .0173 | .0493 | 2621. |
| .3230 | -251. | 68. | 82. | 196. | 237. | -57. | -.0154 | .0218 | .0044 | -.0411 | .0242 | .0519 | 2180. |
| .3240 | -210. | 27. | 86. | 127. | 195. | -58. | -.0133 | .0209 | .0035 | -.0469 | .0300 | .0547 | 1668. |
| .3250 | -155. | -38. | 83. | 51. | 144. | -53. | -.0116 | .0198 | .0027 | -.0530 | .0343 | .0584 | 1124. |
| .3260 | -95. | -100. | 77. | -24. | 90. | -47. | -.0101 | .0184 | .0021 | -.0592 | .0373 | .0614 | 723. |
| .3270 | -38. | -137. | 71. | -92. | 38. | -43. | -.0087 | .0171 | .0016 | -.0652 | .0395 | .0625 | 754. |
| .3280 | 15. | -168. | 64. | -152. | -8. | -39. | -.0073 | .0153 | .0013 | -.0705 | .0408 | .0632 | 1091. |
| .3290 | 64. | -212. | 55. | -203. | -49. | -32. | -.0059 | .0129 | .0014 | -.0747 | .0410 | .0646 | 1471. |
| .3300 | 105. | -252. | 47. | -242. | -84. | -27. | -.0044 | .0098 | .0018 | -.0775 | .0404 | .0659 | 1790. |
| .3310 | 132. | -264. | 43. | -263. | -108. | -26. | -.0030 | .0063 | .0023 | -.0786 | .0393 | .0656 | 1987. |
| .3320 | 146. | -258. | 38. | -268. | -119. | -27. | -.0016 | .0022 | .0028 | -.0778 | .0374 | .0643 | 2049. |
| .3330 | 150. | -254. | 30. | -259. | -116. | -29. | -.0001 | -.0025 | .0029 | -.0747 | .0346 | .0632 | 1990. |
| .3340 | 143. | -244. | 23. | -237. | -104. | -33. | .0011 | -.0079 | .0030 | -.0697 | .0310 | .0618 | 1819. |
| .3350 | 124. | -212. | 19. | -201. | -85. | -40. | .0022 | -.0137 | .0031 | -.0630 | .0272 | .0593 | 1542. |
| .3360 | 96. | -168. | 18. | -153. | -57. | -49. | .0032 | -.0198 | .0031 | -.0550 | .0233 | .0561 | 1183. |
| .3370 | 62. | -120. | 15. | -97. | -21. | -58. | .0042 | -.0262 | .0031 | -.0460 | .0195 | .0531 | 801. |
| .3380 | 24. | -90. | 14. | -26. | 19. | -68. | .0051 | -.0327 | .0032 | -.0365 | .0161 | .0500 | 552. |
| .3390 | -18. | -39. | 17. | 28. | 57. | -79. | .0058 | -.0390 | .0033 | -.0270 | .0130 | .0460 | 706. |
| .3400 | -58. | 11. | 22. | 90. | 92. | -88. | .0060 | -.0450 | .0034 | -.0177 | .0099 | .0417 | 1088. |
| .3410 | -91. | 45. | 23. | 146. | 123. | -94. | .0058 | -.0507 | .0031 | -.0088 | .0067 | .0376 | 1481. |
| .3420 | -115. | 75. | 19. | 194. | 148. | -98. | .0052 | -.0558 | .0024 | -.0007 | .0034 | .0330 | 1829. |
| .3430 | -129. | 112. | 16. | 235. | 164. | -100. | .0041 | -.0600 | .0015 | .0062 | .0003 | .0271 | 2110. |
| .3440 | -132. | 145. | 13. | 264. | 168. | -100. | .0026 | -.0635 | .0006 | .0115 | -.0023 | .0208 | 2288. |
| .3450 | -121. | 154. | 8. | 280. | 160. | -94. | .0009 | -.0663 | -.0001 | .0150 | -.0042 | .0154 | 2341. |
| .3460 | -97. | 149. | 3. | 286. | 140. | -85. | -.0008 | -.0683 | -.0003 | .0165 | -.0050 | .0104 | 2293. |
| .3470 | -64. | 148. | 2. | 283. | 111. | -74. | -.0024 | -.0694 | .0001 | .0158 | -.0041 | .0048 | 2180. |
| .3480 | -25. | 146. | 4. | 273. | 73. | -62. | -.0038 | -.0697 | .0009 | .0133 | -.0020 | -.0009 | 2012. |
| .3490 | 24. | 125. | 5. | 252. | 27. | -46. | -.0052 | -.0695 | .0020 | .0095 | .0009 | -.0055 | 1794. |

ADLPIPE PAGE 2819

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.58.

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

| | | | | | | | | | | | | | |
|-------|-------|------|-----|------|------|-------|--------|--------|--------|--------|--------|--------|-------|
| .3400 | -58. | 11. | 22. | 90. | 92. | -88. | .0060 | -.0450 | .0034 | -.0177 | .0099 | .0417 | 1088. |
| .3410 | -91. | 45. | 23. | 146. | 123. | -94. | .0058 | -.0507 | .0031 | -.0088 | .0067 | .0376 | 1481. |
| .3420 | -115. | 75. | 19. | 194. | 148. | -98. | .0052 | -.0558 | .0024 | -.0007 | .0034 | .0330 | 1829. |
| .3430 | -129. | 112. | 16. | 235. | 164. | -100. | .0041 | -.0600 | .0015 | .0062 | .0003 | .0271 | 2110. |
| .3440 | -133. | 145. | 13. | 264. | 168. | -100. | .0026 | -.0635 | .0006 | .0115 | -.0023 | .0208 | 2288. |
| .3450 | -121. | 154. | 8. | 280. | 160. | -94. | .0009 | -.0663 | -.0001 | .0150 | -.0042 | .0154 | 2341. |
| .3460 | -97. | 149. | 7. | 286. | 140. | -85. | -.0008 | -.0683 | -.0003 | .0165 | -.0050 | .0104 | 2293. |
| .3470 | -64. | 148. | 2. | 283. | 111. | -74. | -.0024 | -.0694 | .0001 | .0158 | -.0041 | .0048 | 2180. |
| .3480 | -25. | 146. | 4. | 273. | 73. | -62. | -.0038 | -.0697 | .0009 | .0133 | -.0020 | -.0009 | 2012. |
| .3490 | 24. | 125. | 5. | 252. | 27. | -46. | -.0052 | -.0695 | .0020 | .0095 | .0009 | -.0055 | 1794. |

ADLPIPE PAGE 2019

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.58.

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 | 69 | MEMBER | 3 | SEQUENCE | 104 | LOCATION | END | 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) | | | | | | | | | | |
| .3500 | 80. | 90. | 5. | 224. | -24. | -28. | -.0065 | -.0690 | .0031 | .0050 | .0041 | -.0094 | .0050 | .0041 | -.0094 | 1577. |
| .3510 | 135. | 63. | 5. | 192. | -77. | -10. | -.0078 | -.0679 | .0040 | .0003 | .0076 | -.0138 | .0003 | .0076 | -.0138 | 1440. |
| .3520 | 180. | 47. | 5. | 159. | -126. | 5. | -.0090 | -.0666 | .0043 | -.0040 | .0111 | -.0189 | -.0040 | .0111 | -.0189 | 1416. |
| .3530 | 240. | 28. | 3. | 126. | -171. | 18. | -.0099 | -.0653 | .0043 | -.0076 | .0143 | -.0234 | -.0076 | .0143 | -.0234 | 1486. |
| .3540 | 285. | 1. | -0. | 93. | -211. | 30. | -.0104 | -.0642 | .0040 | -.0103 | .0174 | -.0269 | -.0103 | .0174 | -.0269 | 1622. |
| .3550 | 320. | -17. | -0. | 66. | -245. | 38. | -.0104 | -.0633 | .0037 | -.0119 | .0207 | -.0301 | -.0119 | .0207 | -.0301 | 1783. |
| .3560 | 342. | -21. | 4. | 46. | -268. | 40. | -.0097 | -.0628 | .0035 | -.0124 | .0244 | -.0330 | -.0124 | .0244 | -.0330 | 1912. |
| .3570 | 350. | -23. | 9. | 33. | -279. | 37. | -.0082 | -.0628 | .0032 | -.0114 | .0282 | -.0348 | -.0114 | .0282 | -.0348 | 1972. |
| .3580 | 345. | -27. | 15. | 27. | -278. | 31. | -.0059 | -.0635 | .0028 | -.0089 | .0318 | -.0353 | -.0089 | .0318 | -.0353 | 1954. |
| .3590 | 325. | -23. | 22. | 26. | -265. | 19. | -.0032 | -.0649 | .0020 | -.0045 | .0348 | -.0350 | -.0045 | .0348 | -.0350 | 1861. |
| .3600 | 291. | -8. | 30. | 32. | -242. | 2. | -.0002 | -.0668 | .0008 | -.0017 | .0367 | -.0343 | -.0017 | .0367 | -.0343 | 1701. |
| .3610 | 247. | 11. | 34. | 42. | -207. | -20. | .0031 | -.0693 | -.0012 | .0098 | .0373 | -.0330 | .0098 | .0373 | -.0330 | 1479. |
| .3620 | 193. | 32. | 34. | 54. | -162. | -45. | .0067 | -.0724 | -.0039 | .0198 | .0365 | -.0311 | .0198 | .0365 | -.0311 | 1227. |
| .3630 | 133. | 62. | 33. | 70. | -108. | -75. | .0104 | -.0758 | -.0070 | .0310 | .0347 | -.0289 | .0310 | .0347 | -.0289 | 1038. |
| .3640 | 67. | 98. | 32. | 87. | -51. | -109. | .0143 | -.0796 | -.0102 | .0428 | .0323 | -.0263 | .0428 | .0323 | -.0263 | 1037. |
| .3650 | -1. | 131. | 33. | 105. | 7. | -145. | .0185 | -.0835 | -.0131 | .0548 | .0297 | -.0227 | .0548 | .0297 | -.0227 | 1248. |
| .3660 | -68. | 157. | 33. | 122. | 65. | -182. | .0230 | -.0875 | -.0154 | .0664 | .0274 | -.0180 | .0664 | .0274 | -.0180 | 1590. |
| .3670 | -133. | 185. | 36. | 139. | 121. | -220. | .0278 | -.0913 | -.0170 | .0772 | .0257 | -.0131 | .0772 | .0257 | -.0131 | 1998. |
| .3680 | -197. | 218. | 42. | 155. | 173. | -258. | .0325 | -.0947 | -.0180 | .0869 | .0244 | -.0083 | .0869 | .0244 | -.0083 | 2418. |
| .3690 | -254. | 242. | 47. | 167. | 219. | -293. | .0369 | -.0976 | -.0186 | .0956 | .0231 | -.0030 | .0956 | .0231 | -.0030 | 2798. |
| .3700 | -302. | 253. | 50. | 171. | 257. | -324. | .0406 | -.0999 | -.0191 | .1034 | .0214 | .0024 | .1034 | .0214 | .0024 | 3115. |
| .3710 | -343. | 262. | 50. | 170. | 289. | -350. | .0435 | -.1014 | -.0198 | .1103 | .0189 | .0070 | .1103 | .0189 | .0070 | 3376. |
| .3720 | -376. | 276. | 46. | 164. | 315. | -372. | .0453 | -.1018 | -.0207 | .1162 | .0159 | .0100 | .1162 | .0159 | .0100 | 3580. |
| .3730 | -400. | 286. | 39. | 151. | 332. | -388. | .0460 | -.1011 | -.0218 | .1210 | .0122 | .0121 | .1210 | .0122 | .0121 | 3707. |
| .3740 | -412. | 281. | 28. | 131. | 340. | -394. | .0457 | -.0993 | -.0229 | .1244 | .0081 | .0140 | .1244 | .0081 | .0140 | 3735. |
| .3750 | -413. | 266. | 16. | 107. | 337. | -391. | .0444 | -.0964 | -.0234 | .1259 | .0043 | .0153 | .1259 | .0043 | .0153 | 3668. |
| .3760 | -404. | 252. | 6. | 80. | 323. | -381. | .0425 | -.0923 | -.0232 | .1254 | .0014 | .0156 | .1254 | .0014 | .0156 | 3521. |
| .3770 | -384. | 237. | -3. | 52. | 299. | -364. | .0401 | -.0869 | -.0219 | .1226 | -.0002 | .0151 | .1226 | -.0002 | .0151 | 3299. |
| .3780 | -355. | 210. | -9. | 23. | 265. | -337. | .0373 | -.0804 | -.0195 | .1176 | -.0004 | .0146 | .1176 | -.0004 | .0146 | 2992. |
| .3790 | -316. | 172. | -14. | -9. | 222. | -301. | .0341 | -.0729 | -.0161 | .1104 | .0003 | .0142 | .1104 | .0003 | .0142 | 2605. |
| .3800 | -268. | 130. | -17. | -42. | 169. | -257. | .0304 | -.0646 | -.0118 | .1014 | .0023 | .0135 | .1014 | .0023 | .0135 | 2163. |
| .3810 | -215. | 88. | -21. | -76. | 111. | -207. | .0263 | -.0554 | -.0072 | .0909 | .0044 | .0120 | .0909 | .0044 | .0120 | 1716. |
| .3820 | -157. | 42. | -28. | -112. | 50. | -150. | .0217 | -.0456 | -.0025 | .0796 | .0064 | .0102 | .0796 | .0064 | .0102 | 1349. |
| .3830 | -99. | -10. | -37. | -151. | -10. | -87. | .0167 | -.0355 | .0021 | .0676 | .0079 | .0082 | .0676 | .0079 | .0082 | 1215. |
| .3840 | -40. | -63. | -48. | -192. | -70. | -20. | .0113 | -.0252 | .0063 | .0554 | .0086 | .0060 | .0554 | .0086 | .0060 | 1427. |
| .3850 | 14. | -116. | -61. | -234. | -128. | 48. | .0056 | -.0150 | .0102 | .0430 | .0085 | .0036 | .0430 | .0085 | .0036 | 1885. |
| .3860 | 63. | -174. | -76. | -276. | -180. | 118. | -.0001 | -.0050 | .0138 | .0309 | .0078 | .0016 | .0309 | .0078 | .0016 | 2439. |
| .3870 | 104. | -231. | -91. | -317. | -225. | 187. | -.0055 | .0045 | .0171 | .0192 | .0067 | -.0002 | .0192 | .0067 | -.0002 | 3001. |

ADLPIPE PAGE 2020

DIS/ADLPIPE

ADLPIPE STRESS ANALYSIS

8/3/12/02.

18.29.58.

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