PARET/ANL INPUT FILE FOR RAI 4.24 (it also applies to RAI 4.25, RAI 4.26, RAI 4.27):

/home/sol1a/olson/rinsc/july2610/T3/rising_power.inp

```
     0 10000     0     0     0.          0     0     0     0     0     0
* PARET: LEU RINSC Transient#1 - Equilib Core - With Power Trip
! rising_power.inp
! reactivity ramp of 0.02%/s for 100 s to $2.61643
! Tin=45.34000 C or 113.6 F; this yields 123.0 F Tout at 1.8 MW
! May 26/2010 Doppler data from S.-C. Mo, over 300-400K
! input parameters as of July 26, 2010
! period trip failed; power trip at 2.3 MW
!       NCHN          NZ    NR IGEOM IPROP IRXSWT
1001,     -2          17     7     0     1     1
!                       IDLYGP
1002,             0     0     6    -1     0    10
!xxxxx11111111111122222222222233333333333344444444444455555555555566666666666
!                                          123.0 F = 50.55556 C
! PRESUR IS BASED ON 23' 9.1" OR 23.758 FT
!  At 113.6 F, and 1.715E+5 Pa, water density is 990.53 kg/m^3
!             POWER          PF      PRESUR      ENTHIN          RS
1003,    1.80000-0  .0056207     1.71500+5   -45.34000   6.35000-4
!               RF          RC          PW          FW          AL      ALDDIN
1004,    2.54000-4   2.54000-4   6.78400-2   6.08300-2  0.59055    0.0
!       ALDDEX      BBEFF         EL         GRAV      QW
1005,   0.0         0.00755354    69.400-6   9.80664   0.009130
!       TRANST      RXXCON       RXXEXP      RHOREF       GAMMA0
1006,   180.        0.8000       1.0           990.530 0.
! Doppler feedback based on 300 - 350K, linear
!       GAMMA1        GAMMA2     GAMMA3      GAMMA4      DOPPN     EPS3
1007,   5.28680E-4  0.         0.           0.0           1.      0.001
!       DNBQDP        TAUUNB     TAUTTB      ALAMNB      ALAMTB    ALAMFB
1008,   0.0           0.0005     0.001       0.03        0.05      0.05
!       HTTCON      HTTEXP
1009,   1.4           0.33
1111,   .046909     1.00        1.00
1112,      1     1     1     0     0        4.035000+5
!           RDRATE       TDLAY       POWTP       FLOTP         OPT        POW0
!            m/s         s           MW          %
!1113,   0.8467      0.500     10000.00      0.0
1113,   0.65617     0.100         2.30      0.0
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
1114,    0.0        0.0
1116,   0.5         0.5         0.5         0.5
2001,   0.0         0.0         139.6       0.0         0.0
2002,   0.0          925.0       2.03000+6   0.0         0.0
2003,   0.0        0.0          180.0       0.0         0.0
2004,   0.0          1.24200+3   2.06910+6   0.0         0.0
! RADIAL DESCRIPTION
3001,    6.35000-5     5     1   0.955
3002,    1.90500-4     7     2   0.0
! AXIAL DESCRIPTION: from DIF3D
4001,   3.690940-2    14
4002,   3.374690-2    16
4003,   0.632500-2    17
! hot channel first
```

```
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
!      IFLOW  DELP          RN          BM      ALOSCN      ALOSCX       SIGIN
5100,      1     0   1.75750-3  0.00325      0.55       0.65       1.0
!      SIGEX        DVOID             DTMP
5100,  1.0         1.0000          1.0000
!      ALPPIN       ALPPEX      DEEIN        DEEEX
5101,   0.0         0.0         0.3048      0.3048
!       PFQ         VOIDVC      DOPPLR      TEMPC
5102,   1.9373      1.0         1.0         1.0
5103,   1.9958      1.0         1.0         1.0
5104,   2.3073      1.0         1.0         1.0
5105,   2.5799      1.0         1.0         1.0
5106,   2.6870      1.0         1.0         1.0
5107,   2.7649      1.0         1.0         1.0
5108,   2.7356      1.0         1.0         1.0
5109,   2.6188      1.0         1.0         1.0
5110,   2.4436      1.0         1.0         1.0
5111,   2.2294      1.0         1.0         1.0
5112,   1.9958      1.0         1.0         1.0
5113,   1.7524      1.0         1.0         1.0
5114,   1.5479      1.0         1.0         1.0
5115,   1.2851      1.0         1.0         1.0
5116,   1.0612      1.0         1.0         1.0
5117,   0.9346      1.0         1.0         1.0
5118,   1.2267      1.0         1.0         1.0
! average channel
5200,      1     0   1.75750-3  0.99675      0.55       0.65       1.0
5200,  1.0         1.0000          1.0000
5201,   0.0         0.0         0.3048      0.3048
5202,   0.8910      1.0         1.0       1.0
5203,   0.9179      1.0         1.0       1.0
5204,   1.0612      1.0         1.0       1.0
5205,   1.1865      1.0         1.0       1.0
5206,   1.2358      1.0         1.0       1.0
5207,   1.2716      1.0         1.0       1.0
5208,   1.2582      1.0         1.0       1.0
5209,   1.2044      1.0         1.0       1.0
5210,   1.1238      1.0         1.0       1.0
5211,   1.0253      1.0         1.0       1.0
5212,   0.9179      1.0         1.0       1.0
5213,   0.8059      1.0         1.0       1.0
5214,   0.7119      1.0         1.0       1.0
5215,   0.5910      1.0         1.0       1.0
5216,   0.4880      1.0         1.0       1.0
5217,   0.4298      1.0         1.0       1.0
5218,   0.5642      1.0         1.0       1.0
! DELAYED NEUTRON INFORMATION FROM S-C MO, JULY 6, 2010
6001,    3.51888-2   1.33370-2   1.81465-1   3.27120-2   1.74594-1   1.20750-1
6002,    3.83727-1   3.02790-1   1.58734-1   8.49660-1   6.62921-2   2.8538
! REACTIVITY TABLE FOR 0.02% dk/k per sec
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
9000,      4
!          $       Time          $           Time
9001,         0.00         0.0     0.00000          1.
9002,      2.64777        101.
9003,      2.64777        200.
! COOLANT MASS VELOCITY TABLE FOR 1740 GPM DOWN-FLOW
```

```
10000,     2
10001,  -1.63625+3   0.0        -1.63625+3  2000.0
! CLAD EXPANSION TABLE
11000,     2
11001,   0.0        98.0        0.0         1000.0
! TOTAL PRESSURE DROP TABLE
12000,     2
12001,   0.0        0.0         0.0         0.0
! TIME INCREMENT VS. TIME TABLE
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
14000,     3
14001,      0.0002         0.0       .0002        40.0       .0002        200.
! PRINT FREQENCY TABLE
16000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
16001,        0.20         500         0.0         0.2         500         10.
16002,        0.50         500        100.
! PUMP MASS VELOCITY TABLE
17000,     2
17001,    1.0       0.0          1.0      20.
! ROD WORTH VS. LOCATION TABLE
18000,     2
18001,    0.0       0.0         -18.78    0.59055
! the following data is at 300-340K, 340K-390K
! coolant reactivity change with temperature, input in $/degree K vs. K
19000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
19001,    1.5225-2      300.00
19002,   1.48275-2      340.00
19003,   1.48275-2      390.00
! coolant void worth in $/%void vs % void; extrapolated above 5% void
! from S-C Mo, July 6, 2010
20000,     5
20001,     0.28669         2.0
20002,     0.29377         3.0
20003,     0.30145         5.0
20004,     0.30145         8.0
20005,     0.30145        10.0
```

PARET/ANL INPUT FILES FOR RAI 13.7:

CASE 1: /home/sol1a/olson/rinsc/july2610/T1/rapid_insertion.inp

CASE 2: /home/sol1a/olson/rinsc/july2610/T2/startup_accident.inp

CASE3: /home/sol1a/olson/rinsc/july2610/T3/rising_power.inp

CASE4: /home/sol1a/olson/rinsc/july2610/T5/rising_power.inp

CASE5: /home/sol1a/olson/rinsc/july2610/T4/natural_conv.inp

APPENDIX 13.7: PARET/ANL INPUT FILES FOR RAI 13.7:

CASE 1: /home/sol1a/olson/rinsc/july2610/T1/rapid_insertion.inp

```
     0 10000     0     0     0.          0     0     0     0     0     0
* PARET: LEU RINSC Transient#1 - Equilib Core - With Power Trip
! rapid_insertion.inp
!  $0.79433 insertion as a  ramp to .1 s (0.6% dk/k)
! Tin=50.55556 C or 123.0 F
! May 26/2010 Doppler data from S.-C. Mo, over 300-400K
! input parameters as of July 26, 2010
! period trip failed; power trip at 2.3 MW
!       NCHN          NZ    NR IGEOM IPROP IRXSWT
1001,     -2          17     7     0     1     1
!                       IDLYGP
1002,             0     0     6    -1     0    10
!xxxxx11111111111122222222222233333333333344444444444455555555555566666666666
!                                          123.0 F = 50.55556 C
! PRESUR IS BASED ON  head of 23' 9.1" OR 7.24154 m
!  At 123 F, and 1.71E+5 Pa, water density is 988.361 kg/m^3
!   total pressure = 1 atm. + rho * head * 9.80665
!                  = 101325. + 988.36 kg/m^3 * 7.24154 m * 9.80665 = 1.715E5 Pa
!             POWER          PF      PRESUR      ENTHIN          RS
1003,    1.00000-5  .0056207     1.71500+5   -50.55556   6.35000-4
!               RF          RC          PW          FW          AL      ALDDIN
1004,    2.54000-4   2.54000-4   6.78400-2   6.08300-2  0.59055    0.0
!       ALDDEX      BBEFF         EL          GRAV      QW
1005,   0.0         0.00755354    69.400-6    9.80664   0.009130
!       TRANST      RXXCON       RXXEXP      RHOREF       GAMMA0
1006,   180.        0.8000       1.0           988.361 0.
! Doppler feedback based on 300 - 350K, linear
!       GAMMA1        GAMMA2     GAMMA3      GAMMA4      DOPPN     EPS3
1007,   5.28680E-4  0.         0.          0.0           1.      0.001
!       DNBQDP        TAUUNB     TAUTTB      ALAMNB      ALAMTB    ALAMFB
1008,   0.0           0.0005     0.001       0.03        0.05      0.05
!       HTTCON      HTTEXP
1009,   1.4           0.33
1111,   .046909     1.00        1.00
1112,      1     1     1     0     0        4.035000+5
!          RDRATE       TDLAY       POWTP       FLOTP          OPT        POW0
!           m/s         s           MW          %
!1113,   0.8467      0.500     10000.00      0.0
1113,   0.65617     0.100         2.30      0.0
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
1114,    0.0        0.0
1116,   0.5         0.5         0.5         0.5
2001,   0.0         0.0         139.6       0.0         0.0
2002,   0.0          925.0       2.03000+6   0.0         0.0
2003,   0.0        0.0          180.0       0.0         0.0
2004,   0.0          1.24200+3   2.06910+6   0.0         0.0
! RADIAL DESCRIPTION
3001,    6.35000-5     5     1   0.955
3002,    1.90500-4     7     2   0.0
! AXIAL DESCRIPTION: from DIF3D
4001,   3.690940-2    14
4002,   3.374690-2    16
```

```
4003,   0.632500-2    17
! hot channel first
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
!      IFLOW  DELP          RN          BM      ALOSCN      ALOSCX       SIGIN
5100,      1     0   1.75750-3  0.00325      0.55       0.65       1.0
!      SIGEX        DVOID             DTMP
5100,  1.0         1.0000          1.0000
!      ALPPIN       ALPPEX      DEEIN        DEEEX
5101,   0.0         0.0         0.3048      0.3048
!       PFQ         VOIDVC      DOPPLR      TEMPC
5102,   1.9373      1.0         1.0         1.0
5103,   1.9958      1.0         1.0         1.0
5104,   2.3073      1.0         1.0         1.0
5105,   2.5799      1.0         1.0         1.0
5106,   2.6870      1.0         1.0         1.0
5107,   2.7649      1.0         1.0         1.0
5108,   2.7356      1.0         1.0         1.0
5109,   2.6188      1.0         1.0         1.0
5110,   2.4436      1.0         1.0         1.0
5111,   2.2294      1.0         1.0         1.0
5112,   1.9958      1.0         1.0         1.0
5113,   1.7524      1.0         1.0         1.0
5114,   1.5479      1.0         1.0         1.0
5115,   1.2851      1.0         1.0         1.0
5116,   1.0612      1.0         1.0         1.0
5117,   0.9346      1.0         1.0         1.0
5118,   1.2267      1.0         1.0         1.0
! average channel
5200,      1     0   1.75750-3  0.99675      0.55       0.65       1.0
5200,  1.0         1.0000          1.0000
5201,   0.0         0.0         0.3048      0.3048
5202,   0.8910      1.0         1.0       1.0
5203,   0.9179      1.0         1.0       1.0
5204,   1.0612      1.0         1.0       1.0
5205,   1.1865      1.0         1.0       1.0
5206,   1.2358      1.0         1.0       1.0
5207,   1.2716      1.0         1.0       1.0
5208,   1.2582      1.0         1.0       1.0
5209,   1.2044      1.0         1.0       1.0
5210,   1.1238      1.0         1.0       1.0
5211,   1.0253      1.0         1.0       1.0
5212,   0.9179      1.0         1.0       1.0
5213,   0.8059      1.0         1.0       1.0
5214,   0.7119      1.0         1.0       1.0
5215,   0.5910      1.0         1.0       1.0
5216,   0.4880      1.0         1.0       1.0
5217,   0.4298      1.0         1.0       1.0
5218,   0.5642      1.0         1.0       1.0
! DELAYED NEUTRON INFORMATION FROM S-C MO, JULY 6, 2010
6001,    3.51888-2   1.33370-2   1.81465-1   3.27120-2   1.74594-1   1.20750-1
6002,    3.83727-1   3.02790-1   1.58734-1   8.49660-1   6.62921-2   2.8538
! REACTIVITY TABLE FOR 0.6% dk/k step (as a ramp over 0-0.1 s)
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
9000,      3
!          $       Time          $           Time
9001,         0.00         0.0     0.79433        0.10
9002,      0.79433        200.
```

```
! COOLANT MASS VELOCITY TABLE FOR 1740 GPM DOWN-FLOW
10000,     2
10001,  -1.63625+3   0.0        -1.63625+3  2000.0
! CLAD EXPANSION TABLE
11000,     2
11001,   0.0        98.0        0.0         1000.0
! TOTAL PRESSURE DROP TABLE
12000,     2
12001,   0.0        0.0         0.0         0.0
! TIME INCREMENT VS. TIME TABLE
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
14000,     3
14001,      0.0002         0.0       .0002        40.0       .0002        200.
! PRINT FREQENCY TABLE
16000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
16001,        0.20         500         0.0         0.2         500         10.
16002,        0.50         500        100.
! PUMP MASS VELOCITY TABLE
17000,     2
17001,    1.0       0.0          1.0      20.
! ROD WORTH VS. LOCATION TABLE
18000,     2
18001,    0.0       0.0         -18.78    0.59055
! the following data is at 300-340K, 340K-390K
! coolant reactivity change with temperature, input in $/degree K vs. K
19000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
19001,    1.5225-2      300.00
19002,   1.48275-2      340.00
19003,   1.48275-2      390.00
! coolant void worth in $/%void vs % void; extrapolated above 5% void
! from S-C Mo, July 6, 2010
20000,     5
20001,     0.28669         2.0
20002,     0.29377         3.0
20003,     0.30145         5.0
20004,     0.30145         8.0
20005,     0.30145        10.0
```

CASE 2: /home/sol1a/olson/rinsc/july2610/T2/startup_accident.inp

```
     0 10000     0     0     0.          0     0     0     0     0     0
* PARET: LEU RINSC Transient#1 - Equilib Core - With Power Trip
! startup_accident.inp
! reactivity ramp of 0.02%/s for 100 s to $2.61643
! Tin=50.55556 C or 123.0 F
! May 26/2010 Doppler data from S.-C. Mo, over 300-400K
! input parameters as of July 26, 2010
! period trip failed; power trip at 2.3 MW
!       NCHN          NZ    NR IGEOM IPROP IRXSWT
1001,     -2          17     7     0     1     1
!                       IDLYGP
1002,            0     0     6    -1     0    10
!xxxxx11111111111122222222222233333333333344444444444455555555555566666666666
!                                           123.0 F = 50.55556 C
! PRESUR IS BASED ON  head of 23' 9.1" OR 7.24154 m
!  At 123 F, and 1.71E+5 Pa, water density is 988.361 kg/m^3
!   total pressure = 1 atm. + rho * head * 9.80665
!                  = 101325. + 988.36 kg/m^3 * 7.24154 m * 9.80665 = 1.715E5 Pa
!            POWER          PF      PRESUR      ENTHIN          RS
1003,    1.00000-5  .0056207     1.71500+5   -50.55556   6.35000-4
!               RF          RC          PW          FW          AL      ALDDIN
1004,    2.54000-4   2.54000-4   6.78400-2   6.08300-2  0.59055    0.0
!       ALDDEX      BBEFF         EL         GRAV      QW
1005,   0.0         0.00755354    69.400-6   9.80664   0.009130
!       TRANST      RXXCON       RXXEXP      RHOREF       GAMMA0
1006,   180.        0.8000       1.0           988.361 0.
! Doppler feedback based on 300 - 350K, linear
!       GAMMA1        GAMMA2     GAMMA3      GAMMA4      DOPPN     EPS3
1007,   5.28680E-4  0.         0.          0.0           1.      0.001
!       DNBQDP        TAUUNB     TAUTTB      ALAMNB      ALAMTB    ALAMFB
1008,   0.0           0.0005     0.001       0.03        0.05      0.05
!       HTTCON      HTTEXP
1009,   1.4           0.33
1111,   .046909     1.00        1.00
1112,      1     1     1     0     0        4.035000+5
!           RDRATE       TDLAY       POWTP       FLOTP          OPT        POW0
!            m/s         s           MW          %
!1113,   0.8467      0.500     10000.00      0.0
1113,   0.65617     0.100         2.30      0.0
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
1114,    0.0        0.0
1116,   0.5         0.5         0.5         0.5
2001,   0.0         0.0         139.6       0.0         0.0
2002,   0.0          925.0       2.03000+6   0.0         0.0
2003,   0.0        0.0          180.0       0.0         0.0
2004,   0.0          1.24200+3   2.06910+6   0.0         0.0
! RADIAL DESCRIPTION
3001,    6.35000-5     5     1   0.955
3002,    1.90500-4     7     2   0.0
! AXIAL DESCRIPTION: from DIF3D
4001,   3.690940-2    14
4002,   3.374690-2    16
4003,   0.632500-2    17
! hot channel first
```

```
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
!      IFLOW  DELP          RN          BM      ALOSCN      ALOSCX       SIGIN
5100,      1     0   1.75750-3  0.00325      0.55       0.65       1.0
!      SIGEX        DVOID             DTMP
5100,  1.0         1.0000          1.0000
!      ALPPIN       ALPPEX      DEEIN        DEEEX
5101,   0.0         0.0         0.3048      0.3048
!       PFQ         VOIDVC      DOPPLR      TEMPC
5102,   1.9373      1.0         1.0         1.0
5103,   1.9958      1.0         1.0         1.0
5104,   2.3073      1.0         1.0         1.0
5105,   2.5799      1.0         1.0         1.0
5106,   2.6870      1.0         1.0         1.0
5107,   2.7649      1.0         1.0         1.0
5108,   2.7356      1.0         1.0         1.0
5109,   2.6188      1.0         1.0         1.0
5110,   2.4436      1.0         1.0         1.0
5111,   2.2294      1.0         1.0         1.0
5112,   1.9958      1.0         1.0         1.0
5113,   1.7524      1.0         1.0         1.0
5114,   1.5479      1.0         1.0         1.0
5115,   1.2851      1.0         1.0         1.0
5116,   1.0612      1.0         1.0         1.0
5117,   0.9346      1.0         1.0         1.0
5118,   1.2267      1.0         1.0         1.0
! average channel
5200,      1     0   1.75750-3  0.99675      0.55       0.65       1.0
5200,  1.0         1.0000          1.0000
5201,   0.0         0.0         0.3048      0.3048
5202,   0.8910      1.0         1.0       1.0
5203,   0.9179      1.0         1.0       1.0
5204,   1.0612      1.0         1.0       1.0
5205,   1.1865      1.0         1.0       1.0
5206,   1.2358      1.0         1.0       1.0
5207,   1.2716      1.0         1.0       1.0
5208,   1.2582      1.0         1.0       1.0
5209,   1.2044      1.0         1.0       1.0
5210,   1.1238      1.0         1.0       1.0
5211,   1.0253      1.0         1.0       1.0
5212,   0.9179      1.0         1.0       1.0
5213,   0.8059      1.0         1.0       1.0
5214,   0.7119      1.0         1.0       1.0
5215,   0.5910      1.0         1.0       1.0
5216,   0.4880      1.0         1.0       1.0
5217,   0.4298      1.0         1.0       1.0
5218,   0.5642      1.0         1.0       1.0
! DELAYED NEUTRON INFORMATION FROM S-C MO, JULY 6, 2010
6001,    3.51888-2   1.33370-2   1.81465-1   3.27120-2   1.74594-1   1.20750-1
6002,    3.83727-1   3.02790-1   1.58734-1   8.49660-1   6.62921-2   2.8538
! REACTIVITY TABLE FOR 0.02% dk/k per sec
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
9000,      3
!          $       Time          $           Time
9001,         0.00         0.0     2.64777        100.
9002,      2.64777        200.
! COOLANT MASS VELOCITY TABLE FOR 1740 GPM DOWN-FLOW
10000,     2
```

```
10001,  -1.63625+3   0.0        -1.63625+3  2000.0
! CLAD EXPANSION TABLE
11000,     2
11001,   0.0        98.0        0.0         1000.0
! TOTAL PRESSURE DROP TABLE
12000,     2
12001,   0.0        0.0         0.0         0.0
! TIME INCREMENT VS. TIME TABLE
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
14000,     3
14001,      0.0002         0.0       .0002        40.0       .0002        200.
! PRINT FREQENCY TABLE
16000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
16001,        0.20         500         0.0         0.2         500         10.
16002,        0.50         500        100.
! PUMP MASS VELOCITY TABLE
17000,     2
17001,    1.0       0.0          1.0      20.
! ROD WORTH VS. LOCATION TABLE
18000,     2
18001,    0.0       0.0         -18.78    0.59055
! the following data is at 300-340K, 340K-390K
! coolant reactivity change with temperature, input in $/degree K vs. K
19000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
19001,    1.5225-2      300.00
19002,   1.48275-2      340.00
19003,   1.48275-2      390.00
! coolant void worth in $/%void vs % void; extrapolated above 5% void
! from S-C Mo, July 6, 2010
20000,     5
20001,     0.28669         2.0
20002,     0.29377         3.0
20003,     0.30145         5.0
20004,     0.30145         8.0
20005,     0.30145        10.0
```

CASE3: /home/sol1a/olson/rinsc/july2610/T3/rising_power.inp

```
     0 10000     0     0     0.          0     0     0     0     0     0
* PARET: LEU RINSC Transient#1 - Equilib Core - With Power Trip
! rising_power.inp
! reactivity ramp of 0.02%/s for 100 s to $2.61643
! Tin=45.34000 C or 113.6 F; this yields 123.0 F Tout at 1.8 MW
! May 26/2010 Doppler data from S.-C. Mo, over 300-400K
! input parameters as of July 26, 2010
! period trip failed; power trip at 2.3 MW
!       NCHN          NZ    NR IGEOM IPROP IRXSWT
1001,     -2          17     7     0     1     1
!                       IDLYGP
1002,            0     0     6    -1     0    10
!xxxxx11111111111122222222222233333333333344444444444455555555555566666666666
!                                            123.0 F = 50.55556 C
! PRESUR IS BASED ON 23' 9.1" OR 23.758 FT
!  At 113.6 F, and 1.715E+5 Pa, water density is 990.53 kg/m^3
!            POWER          PF      PRESUR      ENTHIN          RS
1003,    1.80000-0  .0056207     1.71500+5   -45.34000   6.35000-4
!              RF          RC          PW          FW          AL      ALDDIN
1004,    2.54000-4   2.54000-4   6.78400-2   6.08300-2  0.59055    0.0
!       ALDDEX      BBEFF         EL         GRAV      QW
1005,   0.0         0.00755354    69.400-6   9.80664   0.009130
!       TRANST      RXXCON       RXXEXP      RHOREF       GAMMA0
1006,   180.        0.8000       1.0           990.530 0.
! Doppler feedback based on 300 - 350K, linear
!       GAMMA1        GAMMA2     GAMMA3      GAMMA4      DOPPN     EPS3
1007,   5.28680E-4  0.         0.          0.0           1.      0.001
!       DNBQDP        TAUUNB     TAUTTB      ALAMNB      ALAMTB    ALAMFB
1008,   0.0           0.0005     0.001       0.03        0.05      0.05
!       HTTCON      HTTEXP
1009,   1.4           0.33
1111,   .046909     1.00        1.00
1112,      1     1     1     0     0        4.035000+5
!           RDRATE       TDLAY       POWTP       FLOTP          OPT        POW0
!            m/s         s           MW          %
!1113,   0.8467      0.500     10000.00      0.0
1113,   0.65617     0.100         2.30      0.0
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
1114,    0.0        0.0
1116,   0.5         0.5         0.5         0.5
2001,   0.0         0.0         139.6       0.0         0.0
2002,   0.0          925.0       2.03000+6   0.0         0.0
2003,   0.0        0.0          180.0       0.0         0.0
2004,   0.0          1.24200+3   2.06910+6   0.0         0.0
! RADIAL DESCRIPTION
3001,    6.35000-5     5     1   0.955
3002,    1.90500-4     7     2   0.0
! AXIAL DESCRIPTION: from DIF3D
4001,   3.690940-2    14
4002,   3.374690-2    16
4003,   0.632500-2    17
! hot channel first
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
!      IFLOW  DELP          RN          BM      ALOSCN      ALOSCX       SIGIN
```

```
5100,      1     0   1.75750-3  0.00325      0.55       0.65       1.0
!      SIGEX         DVOID              DTMP
5100,  1.0          1.0000           1.0000
!      ALPPIN        ALPPEX       DEEIN         DEEEX
5101,   0.0          0.0          0.3048       0.3048
!       PFQ          VOIDVC       DOPPLR       TEMPC
5102,   1.9373       1.0          1.0          1.0
5103,   1.9958       1.0          1.0          1.0
5104,   2.3073       1.0          1.0          1.0
5105,   2.5799       1.0          1.0          1.0
5106,   2.6870       1.0          1.0          1.0
5107,   2.7649       1.0          1.0          1.0
5108,   2.7356       1.0          1.0          1.0
5109,   2.6188       1.0          1.0          1.0
5110,   2.4436       1.0          1.0          1.0
5111,   2.2294       1.0          1.0          1.0
5112,   1.9958       1.0          1.0          1.0
5113,   1.7524       1.0          1.0          1.0
5114,   1.5479       1.0          1.0          1.0
5115,   1.2851       1.0          1.0          1.0
5116,   1.0612       1.0          1.0          1.0
5117,   0.9346       1.0          1.0          1.0
5118,   1.2267       1.0          1.0          1.0
! average channel
5200,      1     0   1.75750-3  0.99675      0.55       0.65       1.0
5200,  1.0          1.0000           1.0000
5201,   0.0          0.0          0.3048       0.3048
5202,   0.8910       1.0          1.0        1.0
5203,   0.9179       1.0          1.0        1.0
5204,   1.0612       1.0          1.0        1.0
5205,   1.1865       1.0          1.0        1.0
5206,   1.2358       1.0          1.0        1.0
5207,   1.2716       1.0          1.0        1.0
5208,   1.2582       1.0          1.0        1.0
5209,   1.2044       1.0          1.0        1.0
5210,   1.1238       1.0          1.0        1.0
5211,   1.0253       1.0          1.0        1.0
5212,   0.9179       1.0          1.0        1.0
5213,   0.8059       1.0          1.0        1.0
5214,   0.7119       1.0          1.0        1.0
5215,   0.5910       1.0          1.0        1.0
5216,   0.4880       1.0          1.0        1.0
5217,   0.4298       1.0          1.0        1.0
5218,   0.5642       1.0          1.0        1.0
! DELAYED NEUTRON INFORMATION FROM S-C MO, JULY 6, 2010
6001,    3.51888-2   1.33370-2   1.81465-1   3.27120-2   1.74594-1   1.20750-1
6002,    3.83727-1   3.02790-1   1.58734-1   8.49660-1   6.62921-2   2.8538
! REACTIVITY TABLE FOR 0.02% dk/k per sec
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
9000,      4
!          $       Time          $           Time
9001,         0.00          0.0     0.00000          1.
9002,      2.64777        101.
9003,      2.64777        200.
! COOLANT MASS VELOCITY TABLE FOR 1740 GPM DOWN-FLOW
10000,     2
10001,  -1.63625+3   0.0        -1.63625+3  2000.0
```

```
! CLAD EXPANSION TABLE
11000,     2
11001,   0.0        98.0        0.0         1000.0
! TOTAL PRESSURE DROP TABLE
12000,     2
12001,   0.0        0.0         0.0         0.0
! TIME INCREMENT VS. TIME TABLE
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
14000,     3
14001,      0.0002         0.0       .0002        40.0       .0002        200.
! PRINT FREQENCY TABLE
16000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
16001,        0.20         500         0.0         0.2         500         10.
16002,        0.50         500        100.
! PUMP MASS VELOCITY TABLE
17000,     2
17001,    1.0       0.0          1.0      20.
! ROD WORTH VS. LOCATION TABLE
18000,     2
18001,    0.0       0.0         -18.78    0.59055
! the following data is at 300-340K, 340K-390K
! coolant reactivity change with temperature, input in $/degree K vs. K
19000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
19001,    1.5225-2      300.00
19002,   1.48275-2      340.00
19003,   1.48275-2      390.00
! coolant void worth in $/%void vs % void; extrapolated above 5% void
! from S-C Mo, July 6, 2010
20000,     5
20001,     0.28669         2.0
20002,     0.29377         3.0
20003,     0.30145         5.0
20004,     0.30145         8.0
20005,     0.30145        10.0
```

CASE4: /home/sol1a/olson/rinsc/july2610/T5/rising_power.inp

```
     0 10000     0     0     0.          0     0     0     0     0     0
* PARET: LEU RINSC Transient#1 - Equilib Core - With Power Trip
! rising_power.inp
! reactivity ramp of 0.02%/s for 100 s to $2.61643
! Tin=45.34000 C or 113.6 F; this yields 123.0 F Tout at 1.8 MW
! May 26/2010 Doppler data from S.-C. Mo, over 300-400K
! input parameters as of July 26, 2010
! period trip failed; power trip at 2.3 MW
!       NCHN          NZ    NR IGEOM IPROP IRXSWT
1001,     -2          17     7     0     1     1
!                       IDLYGP
1002,            0     0     6    -1     0    10
!xxxxx11111111111122222222222233333333333344444444444455555555555566666666666
!                                           123.0 F = 50.55556 C
! PRESUR IS BASED ON 23' 9.1" OR 23.758 FT
!  At 113.6 F, and 1.715E+5 Pa, water density is 990.53 kg/m^3
!  At 44.19 C, and 1.717E+5 Pa, water density is 990.743 kg/m^3
!            POWER          PF      PRESUR      ENTHIN          RS
1003,    2.20000-0  .0056207     1.71700+5   -44.19000   6.35000-4
!               RF          RC          PW          FW          AL      ALDDIN
1004,    2.54000-4   2.54000-4   6.78400-2   6.08300-2  0.59055    0.0
!       ALDDEX      BBEFF         EL          GRAV      QW
1005,   0.0         0.00755354    69.400-6    9.80664   0.009130
!       TRANST      RXXCON       RXXEXP      RHOREF       GAMMA0
1006,   180.        0.8000       1.0           990.743 0.
! Doppler feedback based on 300 - 350K, linear
!       GAMMA1        GAMMA2     GAMMA3      GAMMA4      DOPPN     EPS3
1007,   5.28680E-4  0.         0.          0.0           1.      0.001
!       DNBQDP        TAUUNB     TAUTTB      ALAMNB      ALAMTB    ALAMFB
1008,   0.0           0.0005     0.001       0.03        0.05      0.05
!       HTTCON      HTTEXP
1009,   1.4           0.33
1111,   .046909     1.00        1.00
1112,      1     1     1     0     0        4.035000+5
!           RDRATE       TDLAY       POWTP       FLOTP          OPT        POW0
!            m/s         s           MW          %
!1113,   0.8467      0.500     10000.00      0.0
1113,   0.65617     0.100         2.30      0.0
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
1114,    0.0        0.0
1116,   0.5         0.5         0.5         0.5
2001,   0.0         0.0         139.6       0.0         0.0
2002,   0.0          925.0       2.03000+6   0.0         0.0
2003,   0.0        0.0          180.0       0.0         0.0
2004,   0.0          1.24200+3   2.06910+6   0.0         0.0
! RADIAL DESCRIPTION
3001,    6.35000-5     5     1   0.955
3002,    1.90500-4     7     2   0.0
! AXIAL DESCRIPTION: from DIF3D
4001,   3.690940-2    14
4002,   3.374690-2    16
4003,   0.632500-2    17
! hot channel first
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
```

```
!      IFLOW  DELP          RN          BM      ALOSCN      ALOSCX       SIGIN
5100,      1     0   1.75750-3  0.00325      0.55       0.65       1.0
!      SIGEX        DVOID             DTMP
5100,  1.0         1.0000          1.0000
!      ALPPIN       ALPPEX      DEEIN        DEEEX
5101,   0.0         0.0         0.3048      0.3048
!       PFQ         VOIDVC      DOPPLR      TEMPC
5102,   1.9373      1.0         1.0         1.0
5103,   1.9958      1.0         1.0         1.0
5104,   2.3073      1.0         1.0         1.0
5105,   2.5799      1.0         1.0         1.0
5106,   2.6870      1.0         1.0         1.0
5107,   2.7649      1.0         1.0         1.0
5108,   2.7356      1.0         1.0         1.0
5109,   2.6188      1.0         1.0         1.0
5110,   2.4436      1.0         1.0         1.0
5111,   2.2294      1.0         1.0         1.0
5112,   1.9958      1.0         1.0         1.0
5113,   1.7524      1.0         1.0         1.0
5114,   1.5479      1.0         1.0         1.0
5115,   1.2851      1.0         1.0         1.0
5116,   1.0612      1.0         1.0         1.0
5117,   0.9346      1.0         1.0         1.0
5118,   1.2267      1.0         1.0         1.0
! average channel
5200,      1     0   1.75750-3  0.99675      0.55       0.65       1.0
5200,  1.0         1.0000          1.0000
5201,   0.0         0.0         0.3048      0.3048
5202,   0.8910      1.0         1.0       1.0
5203,   0.9179      1.0         1.0       1.0
5204,   1.0612      1.0         1.0       1.0
5205,   1.1865      1.0         1.0       1.0
5206,   1.2358      1.0         1.0       1.0
5207,   1.2716      1.0         1.0       1.0
5208,   1.2582      1.0         1.0       1.0
5209,   1.2044      1.0         1.0       1.0
5210,   1.1238      1.0         1.0       1.0
5211,   1.0253      1.0         1.0       1.0
5212,   0.9179      1.0         1.0       1.0
5213,   0.8059      1.0         1.0       1.0
5214,   0.7119      1.0         1.0       1.0
5215,   0.5910      1.0         1.0       1.0
5216,   0.4880      1.0         1.0       1.0
5217,   0.4298      1.0         1.0       1.0
5218,   0.5642      1.0         1.0       1.0
! DELAYED NEUTRON INFORMATION FROM S-C MO, JULY 6, 2010
6001,    3.51888-2   1.33370-2   1.81465-1   3.27120-2   1.74594-1   1.20750-1
6002,    3.83727-1   3.02790-1   1.58734-1   8.49660-1   6.62921-2   2.8538
! REACTIVITY TABLE FOR 0.02% dk/k per sec
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
9000,      4
!          $       Time          $           Time
9001,         0.00         0.0     0.00000          1.
9002,      2.64777        101.
9003,      2.64777        200.
! COOLANT MASS VELOCITY TABLE FOR 1740 GPM DOWN-FLOW
10000,     2
```

```
10001,  -1.63625+3   0.0        -1.63625+3  2000.0
! CLAD EXPANSION TABLE
11000,     2
11001,   0.0        98.0        0.0         1000.0
! TOTAL PRESSURE DROP TABLE
12000,     2
12001,   0.0        0.0         0.0         0.0
! TIME INCREMENT VS. TIME TABLE
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
14000,     3
14001,      0.0002         0.0       .0002        40.0       .0002        200.
! PRINT FREQENCY TABLE
16000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
16001,        0.20         500         0.0         0.2         500         10.
16002,        0.50         500        100.
! PUMP MASS VELOCITY TABLE
17000,     2
17001,    1.0       0.0          1.0      20.
! ROD WORTH VS. LOCATION TABLE
18000,     2
18001,    0.0       0.0         -18.78    0.59055
! the following data is at 300-340K, 340K-390K
! coolant reactivity change with temperature, input in $/degree K vs. K
19000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
19001,    1.5225-2      300.00
19002,   1.48275-2      340.00
19003,   1.48275-2      390.00
! coolant void worth in $/%void vs % void; extrapolated above 5% void
! from S-C Mo, July 6, 2010
20000,     5
20001,     0.28669         2.0
20002,     0.29377         3.0
20003,     0.30145         5.0
20004,     0.30145         8.0
20005,     0.30145        10.0
```

CASE5: /home/sol1a/olson/rinsc/july2610/T4/natural_conv.inp

```
     0 10000     0     0     0.          0     0     0     0     0     0
* PARET: LEU RINSC Transient#1 - Equilib Core - With Power Trip
! natural_conv.inp
!  $0.79433 step over 0.1 second, starting at 360 seconds
! Search was performed for Tin such that Tout = 130 F at 360 s.
! Tin= 96.8 F or 36.0000 C
! May 26/2010 Doppler data from S.-C. Mo, over 300-400K
! input parameters as of July 29, 2010
! inlet and outlet pressure loss coeffs. are 1.
! pressure specified at outlet, at top of fuel meat
!       NCHN          NZ    NR IGEOM IPROP IRXSWT
1001,     -2          17     7     0     1     1
!                       IDLYGP
1002,            1     0     6    -1     0    10
!xxxxx111111111112222222222223333333333344444444444555555555555666666666666
!                                          123.5 F = 50.83333 C
! PRESUR IS BASED ON 23' 9.1" OR 7.24154 m
!  At 36.0 C, and 1.719E+5 Pa, water density is 993.846 kg/m^3
!   so head is 993.846 * 7.24154 * 9.80665 Pa + 101325 Pa = 1.719E+5 Pa
! or 24.7820 psi, which is 1.70866E+5 Pa
!            POWER          PF      PRESUR      ENTHIN          RS
1003,    1.00000-5  .0056207     1.71900+5   -34.78000   6.35000-4
!              RF          RC          PW          FW          AL      ALDDIN
1004,    2.54000-4   2.54000-4   6.78400-2   6.08300-2  0.59055    0.0
!       ALDDEX      BBEFF         EL         GRAV      QW
1005,   0.0         0.00755354    69.400-6   9.80664   0.009130
!       TRANST      RXXCON       RXXEXP      RHOREF       GAMMA0
1006,   400.        0.8000       1.0           993.846 0.
! Doppler feedback based on 300 - 350K, linear
!       GAMMA1        GAMMA2     GAMMA3      GAMMA4      DOPPN     EPS3
1007,   5.28680E-4  0.         0.          0.0           1.      0.001
!       DNBQDP        TAUUNB     TAUTTB      ALAMNB      ALAMTB    ALAMFB
1008,   0.0           0.0005     0.001       0.03        0.05      0.05
!       HTTCON      HTTEXP
1009,   1.4           0.33
1111,   .046909     1.00        1.00
1112,      1     1     1     0     0        4.035000+5
!           RDRATE       TDLAY       POWTP       FLOTP          OPT        POW0
!            m/s         s           MW          %
!1113,   0.8467      0.500         2.300      0.0
1113,   0.65617     0.100         .125       0.0
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
1114,    0.0        0.0
1116,   0.5         0.5         0.5         0.5
2001,   0.0         0.0         139.6       0.0         0.0
2002,   0.0          925.0       2.03000+6   0.0         0.0
2003,   0.0        0.0          180.0       0.0         0.0
2004,   0.0          1.24200+3   2.06910+6   0.0         0.0
! RADIAL DESCRIPTION
3001,    6.35000-5     5     1   0.955
3002,    1.90500-4     7     2   0.0
! AXIAL DESCRIPTION: from DIF3D
4001,   3.690940-2    14
4002,   3.374690-2    16
```

```
4003,   0.632500-2    17
! hot channel first
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
!            IFLOW        DELP          RN          BM      ALOSCN      ALOSCX
5100,            4         10.   1.75750-3     0.00325        1.00        1.00
!            SIGIN       SIGEX       DVOID        DTMP
5100,          1.0         1.0      1.0000      1.0000
!      ALPPIN       ALPPEX      DEEIN        DEEEX
5101,   0.0         0.0         0.3048      0.3048
!       PFQ         VOIDVC      DOPPLR      TEMPC
5102,   1.9373      1.0         1.0         1.0
5103,   1.9958      1.0         1.0         1.0
5104,   2.3073      1.0         1.0         1.0
5105,   2.5799      1.0         1.0         1.0
5106,   2.6870      1.0         1.0         1.0
5107,   2.7649      1.0         1.0         1.0
5108,   2.7356      1.0         1.0         1.0
5109,   2.6188      1.0         1.0         1.0
5110,   2.4436      1.0         1.0         1.0
5111,   2.2294      1.0         1.0         1.0
5112,   1.9958      1.0         1.0         1.0
5113,   1.7524      1.0         1.0         1.0
5114,   1.5479      1.0         1.0         1.0
5115,   1.2851      1.0         1.0         1.0
5116,   1.0612      1.0         1.0         1.0
5117,   0.9346      1.0         1.0         1.0
5118,   1.2267      1.0         1.0         1.0
! average channel
!            IFLOW        DELP          RN          BM      ALOSCN      ALOSCX
5200,            4         10.   1.75750-3     0.99675        1.00        1.00
!            SIGIN       SIGEX       DVOID        DTMP
5200,          1.0         1.0      1.0000      1.0000
5201,   0.0         0.0         0.3048      0.3048
5202,   0.8910      1.0         1.0         1.0
5203,   0.9179      1.0         1.0         1.0
5204,   1.0612      1.0         1.0         1.0
5205,   1.1865      1.0         1.0         1.0
5206,   1.2358      1.0         1.0         1.0
5207,   1.2716      1.0         1.0         1.0
5208,   1.2582      1.0         1.0         1.0
5209,   1.2044      1.0         1.0         1.0
5210,   1.1238      1.0         1.0         1.0
5211,   1.0253      1.0         1.0         1.0
5212,   0.9179      1.0         1.0         1.0
5213,   0.8059      1.0         1.0         1.0
5214,   0.7119      1.0         1.0         1.0
5215,   0.5910      1.0         1.0         1.0
5216,   0.4880      1.0         1.0         1.0
5217,   0.4298      1.0         1.0         1.0
5218,   0.5642      1.0         1.0         1.0
! DELAYED NEUTRON INFORMATION FROM S-C MO, JULY 6, 2010
6001,    3.51888-2   1.33370-2   1.81465-1   3.27120-2   1.74594-1   1.20750-1
6002,    3.83727-1   3.02790-1   1.58734-1   8.49660-1   6.62921-2   2.8538
! REACTIVITY TABLE  found from running at 100 kw for 180 sec
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
9000,      7
!          $       Time          $           Time
```

```
9001,         0.00         0.0
9002,      0.50000         0.1
9003,      0.50000        40.0
9004,      0.27650        50.0
9005,      0.27650       360.0
! now introduce 0.6% (0.79433$ ) as a fast ramp over 0.1 second
9006,      1.07083       360.1
9007,      1.07083       500.0
! COOLANT MASS VELOCITY TABLE FOR 1740 GPM UP-FLOW * 0.001
!  (1740 gpm = -1.63259E+3 )
10000,     2
! start at about 0.1% of full flow
10001,   2.00000+0   0.0         2.00000+0  2000.0
! CLAD EXPANSION TABLE
11000,     2
11001,   0.0        98.0        0.0         1000.0
! TOTAL PRESSURE DROP TABLE
12000,     2
12001,   0.0        0.0         0.0         0.0
! TIME INCREMENT VS. TIME TABLE
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
14000,     3
14001,      0.0002         0.0       .0002        40.0       .0010        500.
! PRINT FREQENCY TABLE
16000,     4
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
16001,        1.00         500         0.0
16002,        0.01           5        360.
16003,        1.00         500       360.2
16004,        1.00         500        500.
! PUMP MASS VELOCITY TABLE
17000,     2
17001,    1.0       0.0          1.0      20.
! ROD WORTH VS. LOCATION TABLE
18000,     2
18001,    0.0       0.0         -18.78    0.59055
! the following data is at 300-340K, 340K-390K
! coolant reactivity change with temperature, input in $/degree K vs. K
19000,     3
!     aaaaaabbbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
19001,    1.5225-2      300.00
19002,   1.48275-2      340.00
19003,   1.48275-2      390.00
! coolant void worth in $/%void vs % void; extrapolated above 5% void
! from S-C Mo, July 6, 2010
20000,     5
20001,     0.28669         2.0
20002,     0.29377         3.0
20003,     0.30145         5.0
20004,     0.30145         8.0
20005,     0.30145        10.0
```