

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

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      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
!xxxxx11111111111122222222222333333333334444444444555555555556666666666666
!
!      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      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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll
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
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!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkkllllll
!      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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkkllllll
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

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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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
14000,      3
14001,   0.0002          0.0          .0002          40.0          .0002          200.
! PRINT FREQUENCY TABLE
16000,      3
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
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

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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
!xxxxx111111111111222222222222333333333333444444444445555555555556666666666666
! 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
! aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjkkkkkklllllll
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

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4003, 0.632500-2 17
! hot channel first
! aaaaaabbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiijjjjjkkkkkkllllll
! 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)
! aaaaaabbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiijjjjjkkkkkkllllll
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
!      aaaaaabbbbbbbccccccddddddeeeeeefffffffgggggghhhhhhiiiiijjjjjjkkkkkklllllll
14000,      3
14001,    0.0002          0.0          .0002          40.0          .0002          200.
! PRINT FREQUENCY TABLE
16000,      3
!      aaaaaabbbbbbbccccccddddddeeeeeefffffffgggggghhhhhhiiiiijjjjjjkkkkkklllllll
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
!      aaaaaabbbbbbbccccccddddddeeeeeefffffffgggggghhhhhhiiiiijjjjjjkkkkkklllllll
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
!xxxxx11111111111122222222222333333333334444444444455555555555666666666666
!
!      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
!
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
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

```



```

!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkkllllll
!      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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkkllllll
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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll
14000,    3
14001,   0.0002        0.0        .0002        40.0        .0002        200.
! PRINT FREQUENCY TABLE
16000,    3
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll
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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll
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
!xxxxx1111111111112222222222233333333333444444444445555555555566666666666666
!
!      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
!
!      aaaaaabbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
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
!
!      aaaaaabbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiiijjjjjjkkkkkkllllll
!
!      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 |
| 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                                    |      |           |         |            |      |           |
| !      | aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll |      |           |         |            |      |           |
| 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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjkkkkkklllllll
14000,      3
14001,      0.0002      0.0      .0002      40.0      .0002      200.
! PRINT FREQUENCY TABLE
16000,      3
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjkkkkkklllllll
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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjkkkkkklllllll
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
!xxxxx111111111111222222222222333333333333444444444445555555555556666666666666
!
!      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
!
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
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
!
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll

```

| !      | 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                                     |      |           |           |           |           |           |
| !      | aaaaaabbbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll |      |           |           |           |           |           |
| 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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll
14000,    3
14001,    0.0002          0.0          .0002          40.0          .0002          200.
! PRINT FREQUENCY TABLE
16000,    3
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll
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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiiiijjjjjjkkkkkklllllll
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
!xxxxx1111111111112222222222233333333333344444444444555555555556666666666666
!
      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
!
      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjkkkkkkllllll
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
! aaaaaabbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiijjjjjkkkkkkllllll
! 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
! aaaaaabbbbbccccccddddddeeeeeeffffffgggggghhhhhhiiiiijjjjjkkkkkkllllll
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
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
14000,      3
14001,      0.0002      0.0      .0002      40.0      .0010      500.
! PRINT FREQUENCY TABLE
16000,      4
!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
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
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!      aaaaaabbbbbccccccddddddeeeeeeffffffggggggghhhhhhiiiiijjjjjjkkkkkklllllll
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! from S-C Mo, July 6, 2010
20000,      5
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20003,      0.30145      5.0
20004,      0.30145      8.0
20005,      0.30145      10.0

```