Appendix A
(APDL for heat transfer analysis)

/PREP7
ET,1,55
ET,2,70
TOFFST,273

MP,EX,1,1210
MP,PRXY,1,0.3
MP,DENS,1,1.277E-6

MPIEMP,1,37.8
MPTEMP,2,93.3
MPTEMP,3,148.9
MPTEMP,4,204.4
MPTEMP,5,260
MPTEMP,6,315.6
MPTEMP,7,371.1
MPTEMP,8,426.7
MPTEMP,9,571.1

MPDATA,KXX,1,162
MPDATA,KXX,1,177
MPDATA,KXX,1,184
MPDATA,KXX,1,192
MPDATA,KXX,1,201
MPDATA,KXX,1,207
MPDATA,KXX,1,217
MPDATA,KXX,1,223
MPDATA,KXX,1,253

MPTEMP,1,37.8
MPTEMP,2,93.3
MPTEMP,3,148.9
MPTEMP,4,204.4
MPTEMP,5,260
MPTEMP,6,315.6
MPTEMP,7,371.1
MPTEMP,8,426.7
MPTEMP,9,571.1

MPDATA,C,1,945
MPDATA,C,1,978
MPDATA,C,1,1004
MPDATA,C,1,1028
MPDATA,C,1,,1052
MPDATA,C,1,,1078
MPDATA,C,1,,1104
MPDATA,C,1,,1133
MPDATA,C,1,,1230

BLC4,0,0,0.15,0.06,
WPOFFS,0.015
CSYS,4
CYL4,0,0,0.005,,0.180,
AGEN,18,2,,0.005,,
AOVLAP,ALL
AGLUE,ALL
CYL4,0,0,0.005,0,0.014,180
AGEN,18,1,,0.005,,
AOVLAP,ALL
AGLUE,ALL
WPOFFS,-0.015
CYL4,0.012,0.048,0.007,,
CYL4,0.062,0.048,0.007,,
CYL4,0.112,0.048,0.007,,
CYL4,0.138,0.012,0.005,,
AOVLAP,ALL
AGLUE,ALL
WPCSYS,-1,0
WPROTA,90,
WPOFFS,-0.03
ASBW,ALL
WPCSYS,-1,0
ASEL,S,AREA,,6
ASEL,A,AREA,,199
ASEL,A,AREA,,228
HPTCRETE,AREA,228,1111,COORD,0.12,0.008
HPTCRETE,AREA,199,2222,COORD,0.11,0.012
HPTCRETE,AREA,6,3333,COORD,0.10,0.016
HPTCRETE,AREA,6,4444,COORD,0.09,0.025
ALLSEL
ASEL,R,LOC,Y,0,0.03
AESIZE,ALL,0.00075
AMESH,ALL
ASEL,INVE
AESIZE,ALL,0.0025
AMESH,ALL
ALLSEL
TYPE,1
EXTOPT, ESIZE, 4, 0,
EXTOPT, ACLEAR, 0
EXTOPT, ATTR, 0, 0, 0
MAT, 1
REAL, 1
ESYS, 0
VEXT, ALL, , 0, 0, -0.004,, ,

VSYMM, Y, ALL, , , 0, 0
EPL0T
NUMMRG, NODE, 1E-9, , LOW

WPCSYS, -1, 0
WPOFFS, 0.030
CSYS, 4
CSWPLA, 11, 1
WPOFFS, 0.005
CSWPLA, 12, 1
WPOFFS, 0.005
CSWPLA, 13, 1
WPOFFS, 0.005
CSWPLA, 14, 1
WPOFFS, 0.005
CSWPLA, 15, 1
WPOFFS, 0.005
CSWPLA, 16, 1
WPOFFS, 0.005
CSWPLA, 17, 1
WPOFFS, 0.005
CSWPLA, 18, 1
WPOFFS, 0.005
CSWPLA, 19, 1
WPOFFS, 0.005
CSWPLA, 20, 1
WPOFFS, 0.005
CSWPLA, 21, 1
WPOFFS, 0.005
CSWPLA, 22, 1
WPOFFS, 0.005
CSWPLA, 23, 1
WPOFFS, 0.005
CSWPLA, 24, 1
WPOFFS, 0.005
CSWPLA, 25, 1
WPOFFS, 0.005
define the tool node component to apply heat flux

CSYS,11
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T1,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F1,NODE

CSYS,12
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T2,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F2,NODE

CSYS,13
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T3,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F3,NODE

CSYS,14
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T4,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F4,NODE
CSYS,15
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T5,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F5,NODE

CSYS,16
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T6,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F6,NODE

CSYS,17
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T7,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F7,NODE

CSYS,18
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T8,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,
CM,F8,NODE

CSYS,19
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T9,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014

173
NSEL,R,LOC,Z,0,,
CM,F9,NODE

CSYS,20
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T10,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,,
CM,F10,NODE

CSYS,21
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T11,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,,
CM,F11,NODE

CSYS,22
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T12,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,,
CM,F12,NODE

CSYS,23
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T13,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,,
CM,F13,NODE

CSYS,24
NSEL,S,LOC,X,0,0.005,
NPLOT
CM,T14,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,,
CM,F14,NODE

CSYS,25
NSEL,S,LOC,X,0,0.005,
NPFLOT
CM,T15,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,0,
CM,F15,NODE

CSYS,26
NSEL,S,LOC,X,0,0.005,
NPFLOT
CM,T17,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,0,
CM,F16,NODE

CSYS,27
NSEL,S,LOC,X,0,0.005,
NPFLOT
CM,T17,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,0,
CM,F17,NODE

CSYS,28
NSEL,S,LOC,X,0,0.005,
NPFLOT
CM,T18,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,0,
CM,F18,NODE

CSYS,29
NSEL,S,LOC,X,0,0.005,
NPFLOT
CM,T19,NODE
ALLSE
NSEL,S,LOC,X,0.005,0.014
NSEL,R,LOC,Z,0,0,
CM,FI 9, NODE
ALLSEL
WPCSYS,-1,0

!!!!! define side left node component to apply convection

CSYS,0
NSELS, EXTN
NSEL,R, LOC,X,0
CM, SIDE_LEFT, NODE
ALLSEL
NPLOT

!!!!! define side right node component to apply convection

NSELS, EXTN
NSEL,R, LOC,X,0.1505
CM, SIDE_RIGHT, NODE

!!! front side heat flux application to apply convection

CSYS,0
ALLSEL
NPLOT
NSELS, EXTN
NPLOT
NSELS, LOC,Y,0
NPLOT
CSYS, 11
NSELU, LOC,X,0,0.005
CM, SIDE_FRONT 1, NODE

CSYS,0
ALLSEL
NPLOT
NSELS, EXTN
NPLOT
NSELS, LOC,Y,0
NPLOT
CSYS,12
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT2,NODE

CSYS,0
ALLSEL
N PLOT
NSEL,S,EXT
N PLOT
NSEL,S,LOC,Y,0
N PLOT
CSYS,13
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT3,NODE

CSYS,0
ALLSEL
N PLOT
NSEL,S,EXT
N PLOT
NSEL,S,LOC,Y,0
N PLOT
CSYS,14
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT4,NODE

CSYS,0
ALLSEL
N PLOT
NSEL,S,EXT
N PLOT
NSEL,S,LOC,Y,0
N PLOT
CSYS,15
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT5,NODE

CSYS,0
ALLSEL
N PLOT
NSEL,S,EXT
N PLOT
NSEL,S,LOC,Y,0
N PLOT
CSYS,16
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT6,NODE

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,17
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT7,NODE

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,18
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT8,NODE

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,19
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT9,NODE

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,20
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT10,NODE
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,25
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT15,NODE

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,26
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT16,NODE

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,27
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT17,NODE

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,28
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT18,NODE
CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0
NPLOT
CSYS,29
NSEL,U,LOC,X,0,0.005
CM,SIDE_FRONT19,NODE

!!!! define the back side node component to apply convection

CSYS,0
ALLSEL
NPLOT
NSEL,S,EXT
NPLOT
NSEL,S,LOC,Y,0.06
CM,SIDE_BACK,NODE

!!!! define the bottom side node component apply convection

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,11
NSEL,U,LOC,X,0,0.005
CM,BOTTOM1,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,12
NSEL,U,LOC,X,0,0.005
CM,BOTTOM2,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,13
NSEL,U,LOC,X,0,0.005
CM,BOTTOM3,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,14
NSEL,U,LOC,X,0,0.005
CM,BOTTOM4,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,15
NSEL,U,LOC,X,0,0.005
CM,BOTTOM5,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,16
NSEL,U,LOC,X,0,0.005
CM,BOTTOM6,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,17
NSEL,U,LOC,X,0,0.005
CM,BOTTOM7,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,18
NSEL,U,LOC,X,0,0.005
CM,BOTTOM8,NODE
CSYS, 0
ALLSEL
NSEL, S, EXT
NSEL, R, LOC, Z, -0.004
CSYS, 19
NSEL, U, LOC, X, 0, 0.005
CM, BOTTOM9, NODE

CSYS, 0
ALLSEL
NSEL, S, EXT
NSEL, R, LOC, Z, -0.004
CSYS, 20
NSEL, U, LOC, X, 0, 0.005
CM, BOTTOM10, NODE

CSYS, 0
ALLSEL
NSEL, S, EXT
NSEL, R, LOC, Z, -0.004
CSYS, 21
NSEL, U, LOC, X, 0, 0.005
CM, BOTTOM11, NODE

CSYS, 0
ALLSEL
NSEL, S, EXT
NSEL, R, LOC, Z, -0.004
CSYS, 22
NSEL, U, LOC, X, 0, 0.005
CM, BOTTOM12, NODE

CSYS, 0
ALLSEL
NSEL, S, EXT
NSEL, R, LOC, Z, -0.004
CSYS, 23
NSEL, U, LOC, X, 0, 0.005
CM, BOTTOM13, NODE

CSYS, 0
ALLSEL
NSEL, S, EXT
NSEL,R,LOC,Z,-0.004
CSYS,24
NSEL,U,LOC,X,0,0.005
CM,BOTTOM14,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,25
NSEL,U,LOC,X,0,0.005
CM,BOTTOM15,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,26
NSEL,U,LOC,X,0,0.005
CM,BOTTOM16,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,27
NSEL,U,LOC,X,0,0.005
CM,BOTTOM17,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,28
NSEL,U,LOC,X,0,0.005
CM,BOTTOM18,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,-0.004
CSYS,29
NSEL,U,LOC,X,0,0.005
CM,BOTTOM19,NODE
!!!! define the top node components

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,11
NSEL,U,LOC,X,0,0.014
CM,TOP1,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,12
NSEL,U,LOC,X,0,0.014
CM,TOP2,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,13
NSEL,U,LOC,X,0,0.014
CM,TOP3,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,14
NSEL,U,LOC,X,0,0.014
CM,TOP4,NODE
CM,TOP5,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,16
NSEL,U,LOC,X,0,0.014
CM,TOP6,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,17
NSEL,U,LOC,X,0,0.014
CM,TOP7,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,18
NSEL,U,LOC,X,0,0.014
CM,TOP8,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,19
NSEL,U,LOC,X,0,0.014
CM,TOP9,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,20
NSEL,U,LOC,X,0,0.014
CM,TOP10,NODE
CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,21
NSEL,U,LOC,X,0,0.014
CM,TOP11,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,22
NSEL,U,LOC,X,0,0.014
CM,TOP12,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,23
NSEL,U,LOC,X,0,0.014
CM,TOP13,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,24
NSEL,U,LOC,X,0,0.014
CM,TOP14,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,25
NSEL,U,LOC,X,0,0.014
CM,TOP15,NODE
CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,26
NSEL,U,LOC,X,0,0.014
CM,TOPI 6,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,27
NSEL,U,LOC,X,0,0.014
CM,TOPI 7,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,28
NSEL,U,LOC,X,0,0.014
CM,TOPI 8,NODE

CSYS,0
ALLSEL
NSEL,S,EXT
NSEL,R,LOC,Z,0
CSYS,29
NSEL,U,LOC,X,0,0.014
CM,TOPI 9,NODE

/SOLU
ANTYPE,4
TRNOPT,full
TIME,0.00000001
AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM1
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP1
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F1
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T1
SF,ALL,HFLUX,300000
ALLSEL
SOLVE

TIME,5.684210526
AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM2
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,POP2
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F2

189
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T2
SF,ALL,HFLUX,300000
ALLSEL
SOLVE

TIME,11.368422
AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM3
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP3
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F3
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T3
SF,ALL,HFLUX,300000
ALLSEL
SOLVE

TIME,17.052633
AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30

190
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM4
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP4
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F4
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T4
SF,ALL,HFLUX,300000
SOLVE

TIME,22.736844
AUTOTS,-1
DELTIM,5.684210526,,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM5
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP5
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F5
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T5
SF,ALL,HFLUX,300000
SOLVE
TIME, 28.421055
AUTOTSTOP,-1
DELTIM, 5.684210526, 1
KBC, 0
CMSEL, S, SIDE_RIGHT
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, SIDE_BACK
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, SIDE_LEFT
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, BOTTOM6
SF, ALL, CONV, 300, 30
ALLSEL
CMSEL, S, TOP6
SF, ALL, CONV, 300, 30
ALLSEL
CMSEL, S, F6
SF, ALL, HFLUX, 1.5E6
ALLSEL
CMSEL, S, T6
SF, ALL, HFLUX, 300000
ALLSEL
SOLVE

TIME, 34.105266
AUTOTSTOP,-1
DELTIM, 5.684210526, 1
KBC, 0
CMSEL, S, SIDE_RIGHT
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, SIDE_BACK
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, SIDE_LEFT
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, BOTTOM6
SF, ALL, CONV, 300, 30
ALLSEL
CMSEL,S,TOP6
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F6
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T6
SF,ALL,HFLUX,300000
ALLSEL
SOLVE

TIME,39.789477

AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM7
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP7
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F7
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T7
SF,ALL,HFLUX,300000
ALLSEL
SOLVE

TIME,45.473688

AUTOTS,-1
DELTIM,5.684210526,0
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM7
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP8
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F8
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T8
SF,ALL,HFLUX,300000

ALLSEL
SOLVE

TIME,51.157899
AUTOTS,-1
DELTIM,5.684210526,0
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM9
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP9
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F9
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T9
SF,ALL,HFLUX,300000

ALLSEL
SOLVE

TIME,56.84211
AUTOTS,-1
DELTIM,5.684210526,,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM10
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP10
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F10
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T10
SF,ALL,HFLUX,300000

ALLSEL
SOLVE

TIME,62.526321
AUTOTS,-1
DELTIM,5.684210526,,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM11
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S, TOP11
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F11
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T11
SF,ALL,HFLUX,300000

ALLSEL
SOLVE

TIME,68.210532
AUTOTS,-1
DELTIM,5.684210526,,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM12
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S, TOP12
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F12
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T12
SF,ALL,HFLUX,300000

196
ALLSEL
SOLVE

TIME,73.894743
AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM13
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP13
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F13
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T13
SF,ALL,HFLUX,300000

ALLSEL
SOLVE

TIME,79.578954
AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM14
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S, TOP14
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F14
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T14
SF,ALL,HFLUX,300000
ALLSEL
SOLVE
TIME,85.263165
AUTOTS,-1
DELTIM,5.684210526,,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM15
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S, TOP15
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F15
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T15
SF,ALL,HFLUX,300000
ALLSEL
SOLVE
TIME,90.947376
AUTOTS,-1
DELTIM,5.684210526,,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM16
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP16
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F16
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T16
SF,ALL,HFLUX,300000

ALLSEL
SOLVE

TIME,96.631587
AUTOTS,-1
DELTIM,5.684210526, ,1
KBC,0
CMSEL,S,SIDE_RIGHT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_BACK
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM17
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOP17
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F17

199
SF, ALL, HFLUX, 1.5E6
ALLSEL
CMSEL, S, T17
SF, ALL, HFLUX, 300000
ALLSEL
SOLVE

TIME, 102.315798
AUTOTS, -1
DELTIM, 5.684210526, . , 1
KBC, 0
CMSEL, S, SIDE_RIGHT
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, SIDE_BACK
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, SIDE_LEFT
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, BOTTOM18
SF, ALL, CONV, 300, 30
ALLSEL
CMSEL, S, TOP18
SF, ALL, CONV, 300, 30
ALLSEL
CMSEL, S, F18
SF, ALL, HFLUX, 1.5E6
ALLSEL
CMSEL, S, T18
SF, ALL, HFLUX, 300000
ALLSEL
SOLVE

TIME, 108
AUTOTS, -1
DELTIM, 5.684210526, . , 1
KBC, 0
CMSEL, S, SIDE_RIGHT
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL, S, SIDE_BACK
SF, ALL, CONV, 15, 30
ALLSEL
CMSEL,S,SIDE_LEFT
SF,ALL,CONV,15,30
ALLSEL
CMSEL,S,BOTTOM19
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,TOPI9
SF,ALL,CONV,300,30
ALLSEL
CMSEL,S,F19
SF,ALL,HFLUX,1.5E6
ALLSEL
CMSEL,S,T19
SF,ALL,HFLUX,300000
ALLSEL
SOLVE
!KSEL,S,HPT, ,ALL ! SELECT KPS ATTACHED TO HARDS POINTS
!NSLK ! SELECT NODE AT THE LOCATION OF THERMO COUPLE