```
 Date and time of run 20-MAY-2011  16:39:24
> 20110520163908 MTDATA 4.81 2007-12-06, LOG /obelix/users/ashwin/mt/mt945.log
> 20110520163908 U-32986 on LNX-000-* (UNIX) using sgm000.exe
> 20110520163924 MODULE 3     creates MPI file /obelix/users/ashwin/mt/def.mpi
> 20110520163924 MODULE 3     reads MPI file /obelix/users/ashwin/mt/def.mpi
> 20110520163924 MODULE 3     creates MPR file /obelix/users/ashwin/mt/def.mpr
 $(Number of lines of title)   8
 * DATAFILE = /obelix/users/ashwin/mt/def.mpi -  CREATED 16:39:24 20-MAY-2011
 * SYSTEM = Fe,Mn,C,
 * NUMBER OF PHASES  =   14
 * NUMBER OF SPECIES =   40
 *

 DATA FILE = /obelix/users/ashwin/mt/def.mpi



 *** PROBLEM settings ***

 SYSTEM ELEMENTS : CFeMn


 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P
    1      Fe                      # TO BAL    1740.53
    2      Mn                      NORMAL      36.4046
    3      C                       NORMAL      66.6073


 NUMBER    PHASE                   STATUS      MODEL
    1      DIAMOND_FCC_A4          absent      PURE SUBSTANCE
    2      GRAPHITE                absent      PURE SUBSTANCE
    3      LIQUID                  absent      REDLICH-KISTER
    4      BCC_A2                  NORMAL      SUBLATTICE
    5      CEMENTITE               NORMAL      SUBLATTICE
    6      FCC_A1                  NORMAL      SUBLATTICE
    7      FE4N                    absent      SUBLATTICE
    8      FECN_CHI                absent      PURE SUBSTANCE
    9      HCP_A3                  absent      SUBLATTICE
   10      KSI_CARBIDE             absent      PURE SUBSTANCE
   11      M5C2                    absent      SUBLATTICE
   12      M7C3                    absent      SUBLATTICE
   13      M23C6                   absent      SUBLATTICE
   14      LAVES_PHASE_C14         absent      SUBLATTICE


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT
    1      C<DIAMOND_FCC_A4>       NORMAL
    2      C<GRAPHITE>             NORMAL
    3      C<LIQUID>               NORMAL
    4      Fe<LIQUID>              NORMAL
    5      Mn<LIQUID>              NORMAL
    6      Fe:1<BCC_A2>            NORMAL
    7      Mn:1<BCC_A2>            NORMAL
    8      C:2<BCC_A2>             NORMAL
    9      Va:2<BCC_A2>            NORMAL
   10      Fe:1<CEMENTITE>         NORMAL
   11      Mn:1<CEMENTITE>         NORMAL
   12      C:2<CEMENTITE>          NORMAL
   13      Fe:1<FCC_A1>            NORMAL
   14      Mn:1<FCC_A1>            NORMAL
   15      C:2<FCC_A1>             NORMAL
   16      Va:2<FCC_A1>            NORMAL
   17      Fe:1<FE4N>              NORMAL
   18      Mn:1<FE4N>              NORMAL
   19      C:2<FE4N>               NORMAL
```

20	Fe2.2C<FECN_CHI>	NORMAL
21	Fe:1<HCP_A3>	NORMAL
22	Mn:1<HCP_A3>	NORMAL
23	C:2<HCP_A3>	NORMAL
24	Va:2<HCP_A3>	NORMAL
25	Fe3C<KSI_CARBIDE>	NORMAL
26	Fe:1<M5C2>	NORMAL
27	Mn:1<M5C2>	NORMAL
28	C:2<M5C2>	NORMAL
29	Fe:1<M7C3>	NORMAL
30	Mn:1<M7C3>	NORMAL
31	C:2<M7C3>	NORMAL
32	Fe:1<M23C6>	NORMAL
33	Mn:1<M23C6>	NORMAL
34	Fe:2<M23C6>	NORMAL
35	Mn:2<M23C6>	NORMAL
36	C:3<M23C6>	NORMAL
37	Fe:1<LAVES_PHASE_C14	NORMAL
38	Mn:1<LAVES_PHASE_C14	NORMAL
39	Fe:2<LAVES_PHASE_C14	NORMAL
40	Mn:2<LAVES_PHASE_C14	NORMAL

UNARY	SOURCE	Tmin/K	Tmax/K
C<DIAMOND_FCC_A4>	tcfe	298.15	6000.00
C<GRAPHITE>	tcfe	298.15	6000.00
C<LIQUID>	tcfe	298.15	6000.00
Fe<LIQUID>	tcfe	298.15	6000.00
Mn<LIQUID>	tcfe	298.15	2000.00
Fe:C<BCC_A2:1:3>	tcfe	298.15	6000.00
Fe:Va<BCC_A2:1:3>	tcfe	298.15	6000.00
Mn:C<BCC_A2:1:3>	tcfe	298.15	2000.00
Mn:Va<BCC_A2:1:3>	tcfe	298.15	2000.00
Fe:C<CEMENTITE:3:1>	tcfe	298.15	6000.00
Mn:C<CEMENTITE:3:1>	tcfe	298.15	2000.00
Fe:C<FCC_A1:1:1>	tcfe	298.15	6000.00
Fe:Va<FCC_A1:1:1>	tcfe	298.15	6000.00
Mn:C<FCC_A1:1:1>	tcfe	298.15	2000.00
Mn:Va<FCC_A1:1:1>	tcfe	298.15	2000.00
Fe:C<FE4N:4:1>	tcfe	298.15	6000.00
Mn:C<FE4N:4:1>	tcfe	298.15	300.00
Fe2.2C<FECN_CHI>	tcfe	298.15	6000.00
Fe:C<HCP_A3:1:0.5>	tcfe	298.15	6000.00
Fe:Va<HCP_A3:1:0.5>	tcfe	298.15	6000.00
Mn:C<HCP_A3:1:0.5>	tcfe	298.15	2000.00
Mn:Va<HCP_A3:1:0.5>	tcfe	298.15	2000.00
Fe3C<KSI_CARBIDE>	tcfe	298.15	6000.00
Fe:C<M5C2:5:2>	tcfe	298.15	6000.00
Mn:C<M5C2:5:2>	tcfe	298.15	2000.00
Fe:C<M7C3:7:3>	tcfe	298.15	6000.00
Mn:C<M7C3:7:3>	tcfe	298.15	2000.00
Fe:Fe:C<M23C6:20:3:6>	tcfe	298.15	6000.00
Fe:Mn:C<M23C6:20:3:6>	tcfe	298.15	2000.00
Mn:Fe:C<M23C6:20:3:6>	tcfe	298.15	2000.00
Mn:Mn:C<M23C6:20:3:6>	tcfe	298.15	2000.00
Fe:Fe<LAVES_PHASE_C14:2:1>	tcfe	298.15	6000.00
Fe:Mn<LAVES_PHASE_C14:2:1>	tcfe	298.15	6000.00
Mn:Fe<LAVES_PHASE_C14:2:1>	tcfe	298.15	6000.00
Mn:Mn<LAVES_PHASE_C14:2:1>	tcfe	298.15	2000.00

TEMPERATURE	:	800.0000
PRESSURE/Pa	:	101325.0
VOLUME/m3	:	undefined
SYSTEM AMOUNT/mol	:	undefined

```
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


 Stage 1* only requested

*** MULTIPHASE - Stage 1* Results ***

Temperature =   800.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -2.993454E+04 1.110514E-02 1.740532E+03 9.720000E+01
Mn                          -6.077940E+04 1.075506E-04 3.640464E+01 2.000000E+00
C                           -4.323492E+03 5.220499E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 8.808340E+01 BCC_A2             0.9960321       0.0039563       0.0000115
 1.191660E+01 CEMENTITE          0.7943627       0.1385893       0.0670480

Gibbs Energy = -5.4600944655E+07 J   System Enthalpy =  2.9792231424E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   810.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   810.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.050673E+04 1.078339E-02 1.740532E+03 9.720000E+01
```

```
Mn                          -6.157825E+04 1.069277E-04 3.640464E+01 2.000000E+00
C                           -4.813913E+03 4.892964E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe             Mn             C
 8.808549E+01 BCC_A2             0.9957722      0.0042144      0.0000134
 1.191451E+01 CEMENTITE          0.7962492      0.1367049      0.0670459

Gibbs Energy = -5.5660358614E+07 J   System Enthalpy =  3.0516601041E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   820.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   820.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.108537E+04 1.046858E-02 1.740532E+03 9.720000E+01
Mn                          -6.239108E+04 1.061060E-04 3.640464E+01 2.000000E+00
C                           -5.300520E+03 4.595802E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe             Mn             C
 8.808791E+01 BCC_A2             0.9955033      0.0044811      0.0000155
 1.191209E+01 CEMENTITE          0.7981969      0.1347593      0.0670438

Gibbs Energy = -5.6728771214E+07 J   System Enthalpy =  3.1250066930E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P
```

```
 NUMBER    PHASE                   STATUS      MODEL

 NUMBER    SUBSTANCE               STATUS/CONSTRAINT

 TEMPERATURE       :   830.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000

 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   830.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.166798E+04 1.016436E-02 1.740532E+03 9.720000E+01
Mn                          -6.321685E+04 1.051127E-04 3.640464E+01 2.000000E+00
C                           -5.784520E+03 4.324842E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 8.809070E+01 BCC_A2             0.9952256       0.0047564       0.0000180
 1.190930E+01 CEMENTITE          0.8002046       0.1327539       0.0670416

Gibbs Energy = -5.7806185715E+07 J   System Enthalpy =  3.1992974312E+07 J


 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P

 NUMBER    PHASE                   STATUS      MODEL

 NUMBER    SUBSTANCE               STATUS/CONSTRAINT

 TEMPERATURE       :   840.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000

 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000
```

*** MULTIPHASE - Stage 1* Results ***

Temperature = 840.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.225677E+04	9.867168E-03	1.740532E+03	9.720000E+01
Mn		-6.405709E+04	1.039365E-04	3.640464E+01	2.000000E+00
C		-6.264435E+03	4.078135E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
8.809391E+01	BCC_A2	0.9949393	0.0050400	0.0000207
1.190609E+01	CEMENTITE	0.8022709	0.1306898	0.0670393

Gibbs Energy = -5.8892609621E+07 J System Enthalpy = 3.2745695996E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE	:	850.0000		
PRESSURE/Pa	:	101325.0		
VOLUME/m3	:	undefined		
SYSTEM AMOUNT/mol	:	undefined		
COMP. AMOUNTS/mol	:	1740.532	36.40464	66.60727
SYSTEM MASS/kg	:	100.0000		
COMP. MASSES/kg	:	97.20000	2.000000	0.8000000

STEPPED VARIABLE	INITIAL, FINAL AND STEP VALUES OF VARIABLE				
TEMPERATURE	800.000	to	1300.00	by	10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 850.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.284972E+04	9.579725E-03	1.740532E+03	9.720000E+01
Mn		-6.491103E+04	1.026016E-04	3.640464E+01	2.000000E+00
C		-6.741262E+03	3.852502E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
8.809758E+01	BCC_A2	0.9946443	0.0053318	0.0000238
1.190242E+01	CEMENTITE	0.8043945	0.1285686	0.0670369

Gibbs Energy = -5.9988054874E+07 J System Enthalpy = 3.3508635485E+07 J

```
 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   860.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   860.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.344802E+04 9.300085E-03 1.740532E+03 9.720000E+01
Mn                          -6.577968E+04 1.011062E-04 3.640464E+01 2.000000E+00
C                           -7.214096E+03 3.646210E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                   Fe              Mn              C
 8.810177E+01 BCC_A2             0.9943410       0.0056317       0.0000273
 1.189823E+01 CEMENTITE          0.8065739       0.1263916       0.0670345

Gibbs Energy = -6.1092538083E+07 J   System Enthalpy =  3.4282230928E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   870.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
```

```
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   870.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.405128E+04 9.028571E-03 1.740532E+03 9.720000E+01
Mn                          -6.666318E+04 9.946167E-05 3.640464E+01 2.000000E+00
C                           -7.682978E+03 3.457220E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 8.810654E+01 BCC_A2             0.9940292       0.0059395       0.0000313
 1.189346E+01 CEMENTITE          0.8088078       0.1241602       0.0670321

Gibbs Energy = -6.2206080783E+07 J   System Enthalpy =  3.5066959019E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   880.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   880.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.465969E+04 8.764715E-03 1.740532E+03 9.720000E+01
Mn                          -6.756205E+04 9.767509E-05 3.640464E+01 2.000000E+00
C                           -8.147596E+03 3.283907E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02
```

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
8.811195E+01	BCC_A2	0.9937093	0.0062550	0.0000357
1.188805E+01	CEMENTITE	0.8110949	0.1218756	0.0670295

Gibbs Energy = -6.3328709739E+07 J System Enthalpy = 3.5863339767E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER	COMPONENT	STATUS	AMOUNT	DELTA	REF.P

NUMBER	PHASE	STATUS	MODEL

NUMBER	SUBSTANCE	STATUS/CONSTRAINT

TEMPERATURE	:	890.0000	
PRESSURE/Pa	:	101325.0	
VOLUME/m3	:	undefined	
SYSTEM AMOUNT/mol	:	undefined	
COMP. AMOUNTS/mol	:	1740.532	36.40464 66.60727
SYSTEM MASS/kg	:	100.0000	
COMP. MASSES/kg	:	97.20000	2.000000 0.8000000

STEPPED VARIABLE	INITIAL, FINAL AND STEP VALUES OF VARIABLE				
TEMPERATURE	800.000	to	1300.00	by	10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 890.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.527214E+04	8.509591E-03	1.740532E+03	9.720000E+01
Mn		-6.847611E+04	9.576288E-05	3.640464E+01	2.000000E+00
C		-8.608396E+03	3.124501E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
8.811808E+01	BCC_A2	0.9933812	0.0065781	0.0000408
1.188192E+01	CEMENTITE	0.8134339	0.1195391	0.0670270

Gibbs Energy = -6.4460457285E+07 J System Enthalpy = 3.6671941740E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER	COMPONENT	STATUS	AMOUNT	DELTA	REF.P

NUMBER	PHASE	STATUS	MODEL

```
 NUMBER    SUBSTANCE              STATUS/CONSTRAINT


 TEMPERATURE       :   900.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   900.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.589189E+04 8.259272E-03 1.740532E+03 9.720000E+01
Mn                          -6.940755E+04 9.371137E-05 3.640464E+01 2.000000E+00
C                           -9.063344E+03 2.978451E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 8.812499E+01 BCC_A2             0.9930450       0.0069086       0.0000464
 1.187501E+01 CEMENTITE          0.8158238       0.1171519       0.0670243

Gibbs Energy = -6.5601361715E+07 J   System Enthalpy =  3.7493387539E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT              STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                  STATUS      MODEL


 NUMBER    SUBSTANCE              STATUS/CONSTRAINT


 TEMPERATURE       :   910.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   910.0000 K
```

Fixed pressure = 1.013250E+05 Pa,   1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.651495E+04	8.018050E-03	1.740532E+03	9.720000E+01
Mn		-7.035477E+04	9.155639E-05	3.640464E+01	2.000000E+00
C		-9.514433E+03	2.843666E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
8.813279E+01	BCC_A2	0.9927008	0.0072465	0.0000527
1.186721E+01	CEMENTITE	0.8182635	0.1147149	0.0670216

Gibbs Energy = -6.6751467726E+07 J   System Enthalpy = 3.8328361749E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE	:	920.0000		
PRESSURE/Pa	:	101325.0		
VOLUME/m3	:	undefined		
SYSTEM AMOUNT/mol	:	undefined		
COMP. AMOUNTS/mol	:	1740.532	36.40464	66.60727
SYSTEM MASS/kg	:	100.0000		
COMP. MASSES/kg	:	97.20000	2.000000	0.8000000

STEPPED VARIABLE	INITIAL, FINAL AND STEP VALUES OF VARIABLE				
TEMPERATURE	800.000	to	1300.00	by	10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature =   920.0000 K

Fixed pressure = 1.013250E+05 Pa,   1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.714461E+04	7.782191E-03	1.740532E+03	9.720000E+01
Mn		-7.132005E+04	8.928519E-05	3.640464E+01	2.000000E+00
C		-9.959641E+03	2.719806E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
8.814156E+01	BCC_A2	0.9923487	0.0075916	0.0000597
1.185844E+01	CEMENTITE	0.8207521	0.1122290	0.0670189

Gibbs Energy = -6.7910826916E+07 J   System Enthalpy = 3.9177616140E+07 J

*** PROBLEM settings ***

Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE : 930.0000
PRESSURE/Pa : 101325.0
VOLUME/m3 : undefined
SYSTEM AMOUNT/mol : undefined
COMP. AMOUNTS/mol : 1740.532 36.40464 66.60727
SYSTEM MASS/kg : 100.0000
COMP. MASSES/kg : 97.20000 2.000000 0.8000000

STEPPED VARIABLE INITIAL, FINAL AND STEP VALUES OF VARIABLE
TEMPERATURE 800.000 to 1300.00 by 10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 930.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.777832E+04	7.554154E-03	1.740532E+03	9.720000E+01
Mn		-7.230263E+04	8.692258E-05	3.640464E+01	2.000000E+00
C		-1.040017E+04	2.605408E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
8.815140E+01	BCC_A2	0.9919885	0.0079440	0.0000675
1.184860E+01	CEMENTITE	0.8232891	0.1096948	0.0670161

Gibbs Energy = -6.9079498346E+07 J System Enthalpy = 4.0041980079E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE : 940.0000
PRESSURE/Pa : 101325.0
VOLUME/m3 : undefined
SYSTEM AMOUNT/mol : undefined
COMP. AMOUNTS/mol : 1740.532 36.40464 66.60727
SYSTEM MASS/kg : 100.0000
COMP. MASSES/kg : 97.20000 2.000000 0.8000000

```
 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   940.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.841764E+04 7.332175E-03 1.740532E+03 9.720000E+01
Mn                          -7.330404E+04 8.446717E-05 3.640464E+01 2.000000E+00
C                           -1.083491E+04 2.499957E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 8.816244E+01 BCC_A2             0.9916203       0.0083034       0.0000763
 1.183756E+01 CEMENTITE          0.8258739       0.1071129       0.0670132

Gibbs Energy = -7.0257549177E+07 J   System Enthalpy =  4.0922368577E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   950.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   950.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.906227E+04 7.116406E-03 1.740532E+03 9.720000E+01
Mn                          -7.432481E+04 8.192949E-05 3.640464E+01 2.000000E+00
C                           -1.126380E+04 2.402642E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
```

```
 8.817478E+01 BCC_A2              0.9912441       0.0086698       0.0000861
 1.182522E+01 CEMENTITE           0.8285063       0.1044834       0.0670103

Gibbs Energy = -7.1445055379E+07 J   System Enthalpy =  4.1819794465E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   960.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   960.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.971193E+04 6.906934E-03 1.740532E+03 9.720000E+01
Mn                          -7.536510E+04 7.932436E-05 3.640464E+01 2.000000E+00
C                           -1.168690E+04 2.312698E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 8.818858E+01 BCC_A2             0.9908597       0.0090434       0.0000969
 1.181142E+01 CEMENTITE          0.8311862       0.1018064       0.0670074

Gibbs Energy = -7.2642102540E+07 J   System Enthalpy =  4.2735377485E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT
```

```
 TEMPERATURE       :   970.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   970.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.035570E+04 6.712659E-03 1.740532E+03 9.720000E+01
Mn                          -7.773801E+04 6.514820E-05 3.640464E+01 2.000000E+00
C                           -1.173935E+04 2.332654E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 7.234617E+01 BCC_A2             0.9919428       0.0079443       0.0001129
 1.008421E+01 CEMENTITE          0.8472149       0.0857955       0.0669897
 1.756962E+01 FCC_A1             0.9615032       0.0318776       0.0066191

Gibbs Energy = -7.3852329904E+07 J   System Enthalpy =  4.5048717718E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   980.0000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =   980.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm
```

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.099327E+04	6.532618E-03	1.740532E+03	9.720000E+01
Mn		-8.214090E+04	4.187425E-05	3.640464E+01	2.000000E+00
C		-1.146748E+04	2.447887E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.711114E+01	BCC_A2	0.9944454	0.0054195	0.0001351
3.697523E+00	CEMENTITE	0.8754806	0.0575609	0.0669585
7.919133E+01	FCC_A1	0.9716567	0.0213967	0.0069466

Gibbs Energy = -7.5104211386E+07 J System Enthalpy = 5.0824943897E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER	COMPONENT	STATUS	AMOUNT	DELTA	REF.P

NUMBER	PHASE	STATUS	MODEL

NUMBER	SUBSTANCE	STATUS/CONSTRAINT

TEMPERATURE	: 990.0000		
PRESSURE/Pa	: 101325.0		
VOLUME/m3	: undefined		
SYSTEM AMOUNT/mol	: undefined		
COMP. AMOUNTS/mol	: 1740.532	36.40464	66.60727
SYSTEM MASS/kg	: 100.0000		
COMP. MASSES/kg	: 97.20000	2.000000	0.8000000

STEPPED VARIABLE	INITIAL, FINAL AND STEP VALUES OF VARIABLE				
TEMPERATURE	800.000	to	1300.00	by	10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 990.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.169567E+04	6.310995E-03	1.740532E+03	9.720000E+01
Mn		-8.396818E+04	3.713306E-05	3.640464E+01	2.000000E+00
C		-1.167206E+04	2.421984E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.328217E+00	CEMENTITE	0.8811020	0.0519457	0.0669523
9.867178E+01	FCC_A1	0.9732236	0.0195700	0.0072064

Gibbs Energy = -7.6406913901E+07 J System Enthalpy = 5.3041386527E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

```
 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P

 NUMBER    PHASE                   STATUS      MODEL

 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1000.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1000.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.241547E+04 6.088339E-03 1.740532E+03 9.720000E+01
Mn                          -8.499167E+04 3.635824E-05 3.640464E+01 2.000000E+00
C                           -1.198417E+04 2.366068E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 9.189452E-01 CEMENTITE          0.8815726       0.0514756       0.0669518
 9.908105E+01 FCC_A1             0.9728387       0.0197081       0.0074532

Gibbs Energy = -7.7717819822E+07 J   System Enthalpy =  5.3706895220E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P

 NUMBER    PHASE                   STATUS      MODEL

 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1010.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000
```

```
 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1010.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.313896E+04 5.875143E-03 1.740532E+03 9.720000E+01
Mn                          -8.601984E+04 3.559460E-05 3.640464E+01 2.000000E+00
C                           -1.229730E+04 2.312229E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 5.045141E-07 BCC_A2             0.9999999       0.0000001       0.0000000
 5.012996E-01 CEMENTITE          0.8820323       0.0510164       0.0669513
 9.949870E+01 FCC_A1             0.9724533       0.0198437       0.0077030

Gibbs Energy = -7.9035396201E+07 J   System Enthalpy =  5.4375473727E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1020.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1020.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.386617E+04 5.670892E-03 1.740532E+03 9.720000E+01
Mn                          -8.705271E+04 3.484221E-05 3.640464E+01 2.000000E+00
C                           -1.261135E+04 2.260392E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
```

```
 7.517935E-02 CEMENTITE          0.8824818       0.0505674       0.0669508
 9.992482E+01 FCC_A1             0.9720673       0.0199770       0.0079556

Gibbs Energy = -8.0359607604E+07 J   System Enthalpy =  5.5047166434E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1030.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1030.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.458552E+04 5.482529E-03 1.740532E+03 9.720000E+01
Mn                          -8.808877E+04 3.410715E-05 3.640464E+01 2.000000E+00
C                           -1.322507E+04 2.134671E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 3.496331E-07 BCC_A2             0.9999998       0.0000002       0.0000000
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -8.1690154753E+07 J   System Enthalpy =  5.5656072636E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT
```

```
 TEMPERATURE       :   1040.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1040.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.530550E+04 5.303478E-03 1.740532E+03 9.720000E+01
Mn                          -8.912813E+04 3.338856E-05 3.640464E+01 2.000000E+00
C                           -1.390392E+04 2.003016E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 3.168321E-07 BCC_A2             0.9999998       0.0000002       0.0000000
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -8.3026499229E+07 J   System Enthalpy =  5.6252763706E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1050.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1050.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm
```

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.602874E+04	5.131607E-03	1.740532E+03	9.720000E+01
Mn		-9.017109E+04	3.268490E-05	3.640464E+01	2.000000E+00
C		-1.458486E+04	1.881313E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -8.4368588742E+07 J System Enthalpy = 5.6851026655E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER	COMPONENT	STATUS	AMOUNT	DELTA	REF.P

NUMBER	PHASE	STATUS	MODEL

NUMBER	SUBSTANCE	STATUS/CONSTRAINT

TEMPERATURE	:	1060.000		
PRESSURE/Pa	:	101325.0		
VOLUME/m3	:	undefined		
SYSTEM AMOUNT/mol	:	undefined		
COMP. AMOUNTS/mol	:	1740.532	36.40464	66.60727
SYSTEM MASS/kg	:	100.0000		
COMP. MASSES/kg	:	97.20000	2.000000	0.8000000

STEPPED VARIABLE	INITIAL, FINAL AND STEP VALUES OF VARIABLE				
TEMPERATURE	800.000	to	1300.00	by	10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 1060.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.675539E+04	4.966467E-03	1.740532E+03	9.720000E+01
Mn		-9.121768E+04	3.199572E-05	3.640464E+01	2.000000E+00
C		-1.526785E+04	1.768685E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
2.719329E-07	BCC_A2	0.9999998	0.0000002	0.0000000
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -8.5716383540E+07 J System Enthalpy = 5.7450860492E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER	COMPONENT	STATUS	AMOUNT	DELTA	REF.P

```
 NUMBER    PHASE                    STATUS      MODEL

 NUMBER    SUBSTANCE                STATUS/CONSTRAINT

 TEMPERATURE       :   1070.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000

 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1070.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.748450E+04 4.808256E-03 1.740532E+03 9.720000E+01
Mn                          -9.226754E+04 3.132207E-05 3.640464E+01 2.000000E+00
C                           -1.595301E+04 1.664313E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -8.7069844616E+07 J   System Enthalpy =  5.8052264288E+07 J


 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT                STATUS      AMOUNT     DELTA    REF.P

 NUMBER    PHASE                    STATUS      MODEL

 NUMBER    SUBSTANCE                STATUS/CONSTRAINT

 TEMPERATURE       :   1080.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000

 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000
```

*** MULTIPHASE - Stage 1* Results ***

Temperature = 1080.0000 K

Fixed pressure = 1.013250E+05 Pa,   1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.821632E+04	4.656469E-03	1.740532E+03	9.720000E+01
Mn		-9.332074E+04	3.066326E-05	3.640464E+01	2.000000E+00
C		-1.664028E+04	1.567496E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
2.431549E-07	BCC_A2	0.9999997	0.0000002	0.0000000
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -8.8428933679E+07 J   System Enthalpy = 5.8655237208E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE	:	1090.000		
PRESSURE/Pa	:	101325.0		
VOLUME/m3	:	undefined		
SYSTEM AMOUNT/mol	:	undefined		
COMP. AMOUNTS/mol	:	1740.532	36.40464	66.60727
SYSTEM MASS/kg	:	100.0000		
COMP. MASSES/kg	:	97.20000	2.000000	0.8000000

STEPPED VARIABLE	INITIAL, FINAL AND STEP VALUES OF VARIABLE				
TEMPERATURE	800.000	to	1300.00	by	10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 1090.0000 K

Fixed pressure = 1.013250E+05 Pa,   1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.895278E+04	4.509823E-03	1.740532E+03	9.720000E+01
Mn		-9.437801E+04	3.001654E-05	3.640464E+01	2.000000E+00
C		-1.732936E+04	1.477640E-01	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -8.9793613141E+07 J   System Enthalpy = 5.9259778467E+07 J

```
 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1100.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1100.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.969055E+04 4.369705E-03 1.740532E+03 9.720000E+01
Mn                          -9.543806E+04 2.938592E-05 3.640464E+01 2.000000E+00
C                           -1.802075E+04 1.394079E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -9.1163846107E+07 J   System Enthalpy =  5.9865887366E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1110.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000
```

```
 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1110.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.043333E+04 4.234052E-03 1.740532E+03 9.720000E+01
Mn                          -9.650230E+04 2.876648E-05 3.640464E+01 2.000000E+00
C                           -1.871385E+04 1.316380E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 2.155708E-07 BCC_A2             0.9999997       0.0000003       0.0000001
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -9.2539596328E+07 J   System Enthalpy =  6.0473563256E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1120.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1120.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.117748E+04 4.104320E-03 1.740532E+03 9.720000E+01
Mn                          -9.756932E+04 2.816242E-05 3.640464E+01 2.000000E+00
C                           -1.940921E+04 1.243984E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
```

```
                                    Fe              Mn              C
 1.000000E+02 FCC_A1              0.9720000       0.0200000       0.0080000

Gibbs Energy = -9.3920828216E+07 J   System Enthalpy =  6.1082805550E+07 J


 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1130.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1130.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.192478E+04 3.979419E-03 1.740532E+03 9.720000E+01
Mn                          -9.863978E+04 2.757129E-05 3.640464E+01 2.000000E+00
C                           -2.010655E+04 1.176498E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                    Fe              Mn              C
 1.000000E+02 FCC_A1              0.9720000       0.0200000       0.0080000

Gibbs Energy = -9.5307506809E+07 J   System Enthalpy =  6.1693613726E+07 J


 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1140.000
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```
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1140.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.267510E+04 3.859180E-03 1.740532E+03 9.720000E+01
Mn                          -9.971363E+04 2.699296E-05 3.640464E+01 2.000000E+00
C                           -2.080587E+04 1.113530E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -9.6699597762E+07 J   System Enthalpy =  6.2305987325E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1150.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1150.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.342932E+04 3.743046E-03 1.740532E+03 9.720000E+01
```

```
Mn                          -1.007912E+05 2.642619E-05 3.640464E+01 2.000000E+00
C                           -2.150696E+04 1.054746E-01 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.943374E-07 BCC_A2             0.9999997       0.0000003       0.0000001
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -9.8097067326E+07 J   System Enthalpy =  6.2919925929E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1160.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1160.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.418568E+04 3.631513E-03 1.740532E+03 9.720000E+01
Mn                          -1.018718E+05 2.587270E-05 3.640464E+01 2.000000E+00
C                           -2.221017E+04 9.997798E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.907223E-07 BCC_A2             0.9999996       0.0000003       0.0000001
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -9.9499882338E+07 J   System Enthalpy =  6.3535429185E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P
```

```
 NUMBER    PHASE                   STATUS      MODEL

 NUMBER    SUBSTANCE               STATUS/CONSTRAINT

 TEMPERATURE       :   1170.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000

 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1170.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.494403E+04 3.524409E-03 1.740532E+03 9.720000E+01
Mn                          -1.029554E+05 2.533231E-05 3.640464E+01 2.000000E+00
C                           -2.291551E+04 9.483377E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.879087E-07 BCC_A2             0.9999996       0.0000003       0.0000001
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.0090801020E+08 J   System Enthalpy =  6.4152496781E+07 J


 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P

 NUMBER    PHASE                   STATUS      MODEL

 NUMBER    SUBSTANCE               STATUS/CONSTRAINT

 TEMPERATURE       :   1180.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000

 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000
```

*** MULTIPHASE - Stage 1* Results ***

Temperature = 1180.0000 K

Fixed pressure = 1.013250E+05 Pa,   1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-5.570746E+04	3.420424E-03	1.740532E+03	9.720000E+01
Mn		-1.040431E+05	2.480155E-05	3.640464E+01	2.000000E+00
C		-2.362236E+04	9.002103E-02	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -1.0232141888E+08 J   System Enthalpy = 6.4771128458E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE	:	1190.000		
PRESSURE/Pa	:	101325.0		
VOLUME/m3	:	undefined		
SYSTEM AMOUNT/mol	:	undefined		
COMP. AMOUNTS/mol	:	1740.532	36.40464	66.60727
SYSTEM MASS/kg	:	100.0000		
COMP. MASSES/kg	:	97.20000	2.000000	0.8000000

STEPPED VARIABLE	INITIAL, FINAL AND STEP VALUES OF VARIABLE				
TEMPERATURE	800.000	to	1300.00	by	10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 1190.0000 K

Fixed pressure = 1.013250E+05 Pa,   1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-5.647047E+04	3.321319E-03	1.740532E+03	9.720000E+01
Mn		-1.051328E+05	2.428560E-05	3.640464E+01	2.000000E+00
C		-2.433162E+04	8.550647E-02	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -1.0374007687E+08 J   System Enthalpy = 6.5391323996E+07 J

```
 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1200.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1200.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.724073E+04 3.224325E-03 1.740532E+03 9.720000E+01
Mn                          -1.062274E+05 2.377701E-05 3.640464E+01 2.000000E+00
C                           -2.504220E+04 8.127721E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.0516395319E+08 J   System Enthalpy =  6.6013083229E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1210.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000
```

```
 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1210.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.801123E+04 3.131620E-03 1.740532E+03 9.720000E+01
Mn                          -1.073243E+05 2.328199E-05 3.640464E+01 2.000000E+00
C                           -2.575506E+04 7.730448E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.0659301741E+08 J   System Enthalpy =  6.6636406038E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1220.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1220.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -5.878501E+04 3.042053E-03 1.740532E+03 9.720000E+01
Mn                          -1.084246E+05 2.279749E-05 3.640464E+01 2.000000E+00
C                           -2.646972E+04 7.357330E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000
```

Gibbs Energy = -1.0802723955E+08 J   System Enthalpy = 6.7261292325E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE : 1230.000
PRESSURE/Pa : 101325.0
VOLUME/m3 : undefined
SYSTEM AMOUNT/mol : undefined
COMP. AMOUNTS/mol : 1740.532 36.40464 66.60727
SYSTEM MASS/kg : 100.0000
COMP. MASSES/kg : 97.20000 2.000000 0.8000000

STEPPED VARIABLE INITIAL, FINAL AND STEP VALUES OF VARIABLE
TEMPERATURE 800.000 to 1300.00 by 10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 1230.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-5.955904E+04	2.956371E-03	1.740532E+03	9.720000E+01
Mn		-1.095271E+05	2.232584E-05	3.640464E+01	2.000000E+00
C		-2.718662E+04	7.006319E-02	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -1.0946659015E+08 J   System Enthalpy = 6.7887742052E+07 J

*** PROBLEM settings ***
Changes only listed under components/phases/substances

NUMBER COMPONENT STATUS AMOUNT DELTA REF.P

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE : 1240.000
PRESSURE/Pa : 101325.0
VOLUME/m3 : undefined

```
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1240.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -6.033978E+04 2.872557E-03 1.740532E+03 9.720000E+01
Mn                          -1.106343E+05 2.186139E-05 3.640464E+01 2.000000E+00
C                           -2.790483E+04 6.676470E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.1091104024E+08 J   System Enthalpy =  6.8515755219E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1250.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1250.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -6.112346E+04 2.791611E-03 1.740532E+03 9.720000E+01
Mn                          -1.117448E+05 2.140711E-05 3.640464E+01 2.000000E+00
C                           -2.862485E+04 6.365952E-02 6.660727E+01 8.000000E-01
```

```
Total                                                 1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.1236056130E+08 J   System Enthalpy =  6.9145331848E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1260.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1260.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -6.190662E+04 2.714313E-03 1.740532E+03 9.720000E+01
Mn                          -1.128572E+05 2.096545E-05 3.640464E+01 2.000000E+00
C                           -2.934721E+04 6.073108E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.1381512526E+08 J   System Enthalpy =  6.9776472011E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT
```

```
 TEMPERATURE       :   1270.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1270.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -6.269480E+04 2.639069E-03 1.740532E+03 9.720000E+01
Mn                          -1.139735E+05 2.053183E-05 3.640464E+01 2.000000E+00
C                           -3.007105E+04 5.797223E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.1527470450E+08 J   System Enthalpy =  7.0409175794E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1280.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1280.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm
```

```
Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -6.348521E+04 2.566499E-03 1.740532E+03 9.720000E+01
Mn                          -1.150929E+05 2.010820E-05 3.640464E+01 2.000000E+00
C                           -3.079678E+04 5.536906E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.1673927186E+08 J   System Enthalpy =  7.1043443348E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P


 NUMBER    PHASE                   STATUS      MODEL


 NUMBER    SUBSTANCE               STATUS/CONSTRAINT


 TEMPERATURE       :   1290.000
 PRESSURE/Pa       :   101325.0
 VOLUME/m3         :    undefined
 SYSTEM AMOUNT/mol :    undefined
 COMP. AMOUNTS/mol :   1740.532       36.40464       66.60727
 SYSTEM MASS/kg    :   100.0000
 COMP. MASSES/kg   :   97.20000       2.000000      0.8000000


 STEPPED VARIABLE     INITIAL, FINAL AND STEP VALUES OF VARIABLE
 TEMPERATURE            800.000       to      1300.00       by      10.0000


*** MULTIPHASE - Stage 1* Results ***

Temperature =  1290.0000 K

Fixed pressure =  1.013250E+05 Pa,    1.000000E+00 atm

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -6.427822E+04 2.496399E-03 1.740532E+03 9.720000E+01
Mn                          -1.162152E+05 1.969403E-05 3.640464E+01 2.000000E+00
C                           -3.152434E+04 5.291145E-02 6.660727E+01 8.000000E-01
Total                                                  1.843544E+03 1.000000E+02

Mass/kg       Phase               Mass fraction of component within phase
                                  Fe              Mn              C
 1.000000E+02 FCC_A1             0.9720000       0.0200000       0.0080000

Gibbs Energy = -1.1820880058E+08 J   System Enthalpy =  7.1679274832E+07 J



 *** PROBLEM settings ***
 Changes only listed under components/phases/substances

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P
```

NUMBER PHASE STATUS MODEL

NUMBER SUBSTANCE STATUS/CONSTRAINT

TEMPERATURE : 1300.000
PRESSURE/Pa : 101325.0
VOLUME/m3 : undefined
SYSTEM AMOUNT/mol : undefined
COMP. AMOUNTS/mol : 1740.532 36.40464 66.60727
SYSTEM MASS/kg : 100.0000
COMP. MASSES/kg : 97.20000 2.000000 0.8000000

STEPPED VARIABLE INITIAL, FINAL AND STEP VALUES OF VARIABLE
TEMPERATURE 800.000 to 1300.00 by 10.0000

*** MULTIPHASE - Stage 1* Results ***

Temperature = 1300.0000 K

Fixed pressure = 1.013250E+05 Pa, 1.000000E+00 atm

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-6.507122E+04	2.429250E-03	1.740532E+03	9.720000E+01
Mn		-1.173397E+05	1.929087E-05	3.640464E+01	2.000000E+00
C		-3.225407E+04	5.058808E-02	6.660727E+01	8.000000E-01
Total				1.843544E+03	1.000000E+02

Mass/kg	Phase	Mass fraction of component within phase		
		Fe	Mn	C
1.000000E+02	FCC_A1	0.9720000	0.0200000	0.0080000

Gibbs Energy = -1.1968326432E+08 J System Enthalpy = 7.2316670428E+07 J