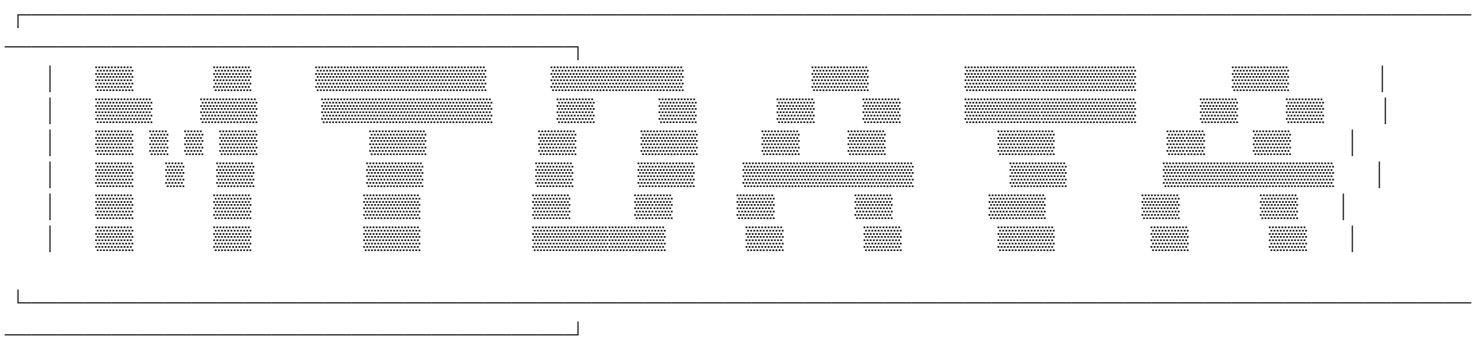
Table I. Chemical Compositions

Steel	C	Mo	Cr	V	Ni
M-50NiL	0.11 to 0.15	4.0 to 4.5	4.0 to 4.25	1.2 to 1.4	3.2 to 3.6
CBS-1000M	0.10 to 0.16	4.0 to 5.0	0.90 to 1.20	0.25 to 0.50	2.75 to 3.25
M-50	0.80 to 0.85	4.0 to 4.5	4.0 to 4.25	0.90 to 1.10	—

formation. This material was developed by General Electric

taken the upper limits of the chemical composition of M50_NiL, but with the total carbon set to 1.15 wt% in order to represent the carburised case

```
Last login: Sun Sep 19 02:00:18 on console
harshad-bhadeshias-macbook-pro-2:~ harshadbhadeshia$ ssh hkdb@ptlin5.msm.cam.ac.uk
hkdb@ptlin5.msm.cam.ac.uk's password:
Last login: Fri Sep 10 08:56:35 2010 from 141.223.237.123
[hkdb@ptlin5 hkdb]$ mtdata
                        ******************************
                        * USING DEFAULT MTSIGNON FILE *
                        ******************************
```



```
                  - THERMODYNAMICS AND PROCESS MODELLING GROUP -
                            - NPL MATERIALS CENTRE -
                          - NATIONAL PHYSICAL LABORATORY -

                    Authorised for use by Dr H K D H Bhadeshia
                            at University of Cambridge
                  under the terms and conditions of NPL 79/199-3

                          ┌──────────────────────────────┐
                          │ VERSION 4.73   FOR LNX RH 7.3 │
                          │          2002-11-15          │
                          └──────────────────────────────┘
                          ******************************
                          * USING DEFAULT MTCONFIG FILE *
                          ******************************
                         17 of 18 DATABASES ARE AVAILABLE

 WHICH MODULE ? multiphase
 MULTIPHASE OPTION ? system
 SYSTEM  KEYWORD NOT RECOGNISED
 MULTIPHASE OPTION ? ?

 DEFINE
 LIST
 CLASSIFY
 UNITS_FOR_OUTPUT
 STEP
 SET
 PLOT
```

```
COMPUTE
LASER
ABSCISSA
ORDINATE
RETURN
<'Macro name'>

MULTIPHASE OPTION ? define system
ENTER <'SYSTEM ELEMENTS'> : 'Fe,C,Mo,Cr,V,Ni' !

SEARCHING FOR SYSTEM Fe,C,Mo,Cr,V,Ni

SEARCHING DATABASE(S) :

sgte_sol        - SGTE Solution Database 3.01 - 19/7/93

WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Fe:V:C<M23C6:20:3:6>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Fe:Cr:Mo<MONI_DELTA:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Fe:Cr:Mo<MONI_DELTA:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Cr:Fe:Mo<MONI_DELTA:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Cr:Fe:Mo<P_PHASE:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Cr:Fe:Mo<MONI_DELTA:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Cr:Fe:Mo<MONI_DELTA:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Cr:Fe:Mo<P_PHASE:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Fe:Cr:Mo<MONI_DELTA:24:20:12>
WARNING: BINARY INTERACTION REJECTED - MISSING ? UNARY
Fe:Ni:Fe<MONI_DELTA:24:20:12>
SIMPLIFIED MODEL USED FOR PHASE FE4N:4:1
SIMPLIFIED MODEL USED FOR PHASE FECN_CHI:2.2:1
SIMPLIFIED MODEL USED FOR PHASE MC_ETA:1:1
SIMPLIFIED MODEL USED FOR PHASE MC_SHP:1:1
SIMPLIFIED MODEL USED FOR PHASE CR3SI:3:1
SIMPLIFIED MODEL USED FOR PHASE CRSI2:1:2
SIMPLIFIED MODEL USED FOR PHASE MONI3_GAMMA:1:3
SIMPLIFIED MODEL USED FOR PHASE MONI4_BETA:1:4
SIMPLIFIED MODEL USED FOR PHASE AL3NI2:.6:.4
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ERROR: NO DATA FOR BINARY INTERACTION Ni,V<LIQUID>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           Mo:C<BCC_A2:1:3>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           V:C<BCC_A2:1:3>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           V:Va<BCC_A2:1:3>
ERROR: NO DATA FOR BINARY INTERACTION Mo,Ni:C<BCC_A2:1:3>
ERROR: NO DATA FOR BINARY INTERACTION Mo,V:C<BCC_A2:1:3>
ERROR: NO DATA FOR BINARY INTERACTION Mo,V:Va<BCC_A2:1:3>
ERROR: NO DATA FOR BINARY INTERACTION Ni,V:C<BCC_A2:1:3>
ERROR: NO DATA FOR BINARY INTERACTION Ni,V:Va<BCC_A2:1:3>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:C<CEMENTITE:3:1>
ERROR: NO DATA FOR BINARY INTERACTION Cr,V:C<CEMENTITE:3:1>
ERROR: NO DATA FOR BINARY INTERACTION Mo,Ni:C<CEMENTITE:3:1>
ERROR: NO DATA FOR BINARY INTERACTION Mo,V:C<CEMENTITE:3:1>
ERROR: NO DATA FOR BINARY INTERACTION Ni,V:C<CEMENTITE:3:1>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           Mo:C<FCC_A1:1:1>
```

```
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           V:C<FCC_A1:1:1>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           V:Va<FCC_A1:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Mo,Ni:C<FCC_A1:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Mo,V:Va<FCC_A1:1:1>
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ERROR: NO DATA FOR BINARY INTERACTION Ni,V:Va<FCC_A1:1:1>
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                           Mo:C<HCP_A3:1:.5>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           Mo:Va<HCP_A3:1:.5>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           V:C<HCP_A3:1:.5>
MISSING DATA ASSUMED ZERO: PHASE MAGNETIC BUT NO MAGNETIC DATA FOR
                           V:Va<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:C<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Va<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Mo,Ni:C<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Mo,V:C<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Mo,Ni:Va<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Mo,V:Va<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Ni,V:C<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Ni,V:Va<HCP_A3:1:.5>
ERROR: NO DATA FOR BINARY INTERACTION Mo,V:C<M7C3:7:3>
ERROR: NO DATA FOUND FOR UNARY Cr:Ni:C<M23C6>
ERROR: NO DATA FOUND FOR UNARY Fe:Ni:C<M23C6>
ERROR: NO DATA FOUND FOR UNARY Fe:V:C<M23C6>
ERROR: NO DATA FOUND FOR UNARY Ni:Cr:C<M23C6>
ERROR: NO DATA FOUND FOR UNARY Ni:Fe:C<M23C6>
ERROR: NO DATA FOUND FOR UNARY Ni:Mo:C<M23C6>
ERROR: NO DATA FOUND FOR UNARY Ni:V:C<M23C6>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Cr,Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Cr:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Fe,Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Fe,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Fe:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Mo,Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Mo,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Mo:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Ni,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Cr:C<M23C6:20:3:6>
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ERROR: NO DATA FOR BINARY INTERACTION Fe:Fe,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Fe:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo,Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Mo:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Ni,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Ni:C<M23C6:20:3:6>
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ERROR: NO DATA FOR BINARY INTERACTION Ni:Cr,Fe:C<M23C6:20:3:6>
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ERROR: NO DATA FOR BINARY INTERACTION Ni:Cr,Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Cr,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Fe,Mo:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Fe,Ni:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Fe,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Mo,Ni:C<M23C6:20:3:6>
```

ERROR: NO DATA FOR BINARY INTERACTION Ni:Mo,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Ni,V:C<M23C6:20:3:6>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo:Cr,V:C<M6C:2:2:2:1>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo:Fe,V:C<M6C:2:2:2:1>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo:Mo,V:C<M6C:2:2:2:1>
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ERROR: NO DATA FOUND FOR UNARY Ni:C<CBCC_A12>
ERROR: NO DATA FOR BINARY INTERACTION Cr:C,Va<CBCC_A12:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:C<CBCC_A12:1:1>
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ERROR: NO DATA FOUND FOR UNARY Ni:C<CUB_A13>
ERROR: NO DATA FOR BINARY INTERACTION Cr:C,Va<CUB_A13:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:C<CUB_A13:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:C<CUB_A13:1:1>
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ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Va<CUB_A13:1:1>
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ERROR: NO DATA FOR BINARY INTERACTION Cr,V:Va<CUB_A13:1:1>
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ERROR: NO DATA FOR BINARY INTERACTION Fe,V:C<CUB_A13:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Va<CUB_A13:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Ni:C,Va<CUB_A13:1:1>
ERROR: NO DATA FOR BINARY INTERACTION Ni,V:C<CUB_A13:1:1>
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ERROR: NO DATA FOR BINARY INTERACTION V:C,Va<CUB_A13:1:1>
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ERROR: NO DATA FOUND FOR UNARY Ni:V:V<SIGMA>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr:Mo,Ni<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr:Mo,V<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,V:Mo<SIGMA:8:4:18>
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ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Cr:V<SIGMA:8:4:18>
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ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo,V:Cr<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Mo:Cr<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo:Fe,V<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo,V:Fe<SIGMA:8:4:18>
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ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo,V:V<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Mo:V<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:V:Cr,Mo<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:V:Cr,Ni<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:V:Cr<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:V:Fe,Mo<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:V:Fe,Ni<SIGMA:8:4:18>

ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:V:Fe<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:V:Mo,Ni<SIGMA:8:4:18>
ERROR: NO DATA FOR BINARY INTERACTION Fe:V:Mo,V<SIGMA:8:4:18>
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ERROR: NO DATA FOR BINARY INTERACTION Cr:Mo:Fe,Ni<MU_PHASE:7:2:4>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Mo:Fe<MU_PHASE:7:2:4>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Mo:Ni<MU_PHASE:7:2:4>
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ERROR: NO DATA FOR BINARY INTERACTION Ni:Mo:Cr,Fe<MU_PHASE:7:2:4>
ERROR: NO DATA FOUND FOR UNARY Cr:Mo:Ni<R_PHASE>
ERROR: NO DATA FOUND FOR UNARY Ni:Mo:Cr<R_PHASE>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Mo:Cr,Ni<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Mo:Cr<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Mo:Fe,Ni<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Mo:Fe<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Mo:Mo,Ni<R_PHASE:27:14:12>
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ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Mo:Ni<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Mo:Ni<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Mo:Cr,Ni<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Mo:Cr<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Mo:Cr,Fe<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Mo:Cr,Mo<R_PHASE:27:14:12>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Mo:Cr,Ni<R_PHASE:27:14:12>
ERROR: NO DATA FOUND FOR UNARY Cr:Fe:Mo<MONI_DELTA>
ERROR: NO DATA FOUND FOR UNARY Fe:Cr:Mo<MONI_DELTA>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Cr,Fe:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Cr:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Fe,Mo:Mo<MONI_DELTA:24:20:12>

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ERROR: NO DATA FOR BINARY INTERACTION Cr:Fe,Ni:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Fe:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Fe:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Ni:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,Fe:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,Mo:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,Ni:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Cr:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Cr,Fe:Mo<MONI_DELTA:24:20:12>
ERROR: NO DATA FOUND FOR UNARY Cr:Fe:Mo<P_PHASE>
ERROR: NO DATA FOUND FOR UNARY Fe:Cr:Mo<P_PHASE>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Cr,Fe:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Cr:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Fe,Mo:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr:Fe,Ni:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Fe:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Ni:Fe:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Cr,Fe:Ni:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,Fe:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,Mo:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe:Cr,Ni:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Fe,Ni:Cr:Mo<P_PHASE:24:20:12>
ERROR: NO DATA FOR BINARY INTERACTION Ni:Cr,Fe:Mo<P_PHASE:24:20:12>

******   15 PHASES IDENTIFIED WITH INCORRECT OR MISSING DATA ******
PHASE: LIQUID
ERROR: Missing data for binary interaction(s)
PHASE: BCC_A2:1:3
ERROR: Missing data for binary interaction(s)
PHASE: CEMENTITE:3:1
ERROR: Missing data for binary interaction(s)
PHASE: FCC_A1:1:1
ERROR: Missing data for binary interaction(s)
PHASE: HCP_A3:1:.5
ERROR: Missing data for binary interaction(s)
PHASE: M7C3:7:3
ERROR: Missing data for binary interaction(s)
PHASE: M23C6:20:3:6
ERROR: Missing data for unary(s)
PHASE: M6C:2:2:2:1
ERROR: Missing data for binary interaction(s)
PHASE: CBCC_A12:1:1
ERROR: Missing data for unary(s)
PHASE: CUB_A13:1:1
ERROR: Missing data for unary(s)
PHASE: SIGMA:8:4:18
ERROR: Missing data for unary(s)
PHASE: MU_PHASE:7:2:4
ERROR: Missing data for binary interaction(s)
PHASE: R_PHASE:27:14:12
ERROR: Missing data for unary(s)
PHASE: MONI_DELTA:24:20:12
ERROR: Missing data for unary(s)
PHASE: P_PHASE:24:20:12
ERROR: Missing data for unary(s)
****** GOOD DATAFILE CREATED (but missing/inconsistent data) ******

              ************************************************
              * FOR MISSING INTERACTION DATA SEE FILE misbin.dbl *
              ************************************************
Date and time of run 19-SEP-2010  13:43:37
* DATAFILE = /numerobis/users/hkdb/def.mpi -  CREATED 13:43:36 19-SEP-2010
* SYSTEM = Fe,C,Mo,Cr,V,Ni,
* NUMBER OF PHASES  =   35
* NUMBER OF SPECIES =  157
```

```
*
                        ********************************
                        * UNASSESSED OR INCORRECT DATA *
                        ********************************
                      ************************************
                      * WARNING/ERRORS HAVE BEEN DETECTED *
                      ************************************

     8 Warnings: UNASSESSED DATA -  Missing data for binary(s)
     7 Warnings: UNASSESSED DATA -  Missing data for unary(s)

MULTIPHASE OPTION ? classify normal p(*) !
MULTIPHASE OPTION ? lis sys ph !

NUMBER    PHASE                    STATUS      MODEL
   1      DIAMOND_A4               NORMAL      PURE SUBSTANCE
   2      GRAPHITE                 NORMAL      PURE SUBSTANCE
   3      LIQUID                   NORMAL      REDLICH-KISTER
   4      GAS                      NORMAL      IDEAL GAS
   5      BCC_A2                   NORMAL      SUBLATTICE
   6      CEMENTITE                NORMAL      SUBLATTICE
   7      FCC_A1                   NORMAL      SUBLATTICE
   8      HCP_A3                   NORMAL      SUBLATTICE
   9      KSI_CARBIDE              NORMAL      SUBLATTICE
  10      M3C2                     NORMAL      SUBLATTICE
  11      M7C3                     NORMAL      SUBLATTICE
  12      M23C6                    NORMAL      SUBLATTICE
  13      M6C                      NORMAL      SUBLATTICE
  14      CBCC_A12                 NORMAL      SUBLATTICE
  15      CUB_A13                  NORMAL      SUBLATTICE
  16      FE4N                     NORMAL      PURE SUBSTANCE
  17      FECN_CHI                 NORMAL      PURE SUBSTANCE
  18      M5C2                     NORMAL      SUBLATTICE
  19      V3C2                     NORMAL      SUBLATTICE
  20      MC_ETA                   NORMAL      REDLICH-KISTER
  21      MC_SHP                   NORMAL      PURE SUBSTANCE
>>>>> Type return for more, Q to quit paging :
  22      CR3SI                    NORMAL      PURE SUBSTANCE
  23      CRSI2                    NORMAL      PURE SUBSTANCE
  24      CHI_A12                  NORMAL      SUBLATTICE
  25      SIGMA                    NORMAL      SUBLATTICE
  26      LAVES_PHASE              NORMAL      SUBLATTICE
  27      MU_PHASE                 NORMAL      SUBLATTICE
  28      R_PHASE                  NORMAL      SUBLATTICE
  29      MONI_DELTA               NORMAL      SUBLATTICE
  30      P_PHASE                  NORMAL      SUBLATTICE
  31      AL5FE4                   NORMAL      PURE SUBSTANCE
  32      MONI3_GAMMA              NORMAL      PURE SUBSTANCE
  33      MONI4_BETA               NORMAL      PURE SUBSTANCE
  34      AL3NI2                   NORMAL      PURE SUBSTANCE
  35      ALNI_B2                  NORMAL      SUBLATTICE

MULTIPHASE OPTION ?
MULTIPHASE OPTION ? cla abs p(22) !
MULTIPHASE OPTION ? cls^?a
CLSA  KEYWORD NOT RECOGNISED
MULTIPHASE OPTION ? cla abs p(23,24) !
MULTIPHASE OPTION ? cla b^?
B  KEYWORD NOT RECOGNISED
WHAT CLASSIFICATION ? cla abs^?^?
CLA  KEYWORD NOT RECOGNISED
WHAT CLASSIFICATION ? ?

NORMAL
ABSENT
```

```
FREE
MISCIBILITY(*)
DELTA(*)
REFERENCE(*)
STOP

WHAT CLASSIFICATION ? abs p(35,34,33) !
MULTIPHASE OPTION ? ls
LS  KEYWORD NOT RECOGNISED
MULTIPHASE OPTION ? lis sys ph !

NUMBER    PHASE                    STATUS      MODEL
   1      DIAMOND_A4               NORMAL      PURE SUBSTANCE
   2      GRAPHITE                 NORMAL      PURE SUBSTANCE
   3      LIQUID                   NORMAL      REDLICH-KISTER
   4      GAS                      NORMAL      IDEAL GAS
   5      BCC_A2                   NORMAL      SUBLATTICE
   6      CEMENTITE                NORMAL      SUBLATTICE
   7      FCC_A1                   NORMAL      SUBLATTICE
   8      HCP_A3                   NORMAL      SUBLATTICE
   9      KSI_CARBIDE              NORMAL      SUBLATTICE
  10      M3C2                     NORMAL      SUBLATTICE
  11      M7C3                     NORMAL      SUBLATTICE
  12      M23C6                    NORMAL      SUBLATTICE
  13      M6C                      NORMAL      SUBLATTICE
  14      CBCC_A12                 NORMAL      SUBLATTICE
  15      CUB_A13                  NORMAL      SUBLATTICE
  16      FE4N                     NORMAL      PURE SUBSTANCE
  17      FECN_CHI                 NORMAL      PURE SUBSTANCE
  18      M5C2                     NORMAL      SUBLATTICE
  19      V3C2                     NORMAL      SUBLATTICE
  20      MC_ETA                   NORMAL      REDLICH-KISTER
  21      MC_SHP                   NORMAL      PURE SUBSTANCE
>>>>> Type return for more, Q to quit paging :
  22      CR3SI                    ABSENT      PURE SUBSTANCE
  23      CRSI2                    ABSENT      PURE SUBSTANCE
  24      CHI_A12                  ABSENT      SUBLATTICE
  25      SIGMA                    NORMAL      SUBLATTICE
  26      LAVES_PHASE              NORMAL      SUBLATTICE
  27      MU_PHASE                 NORMAL      SUBLATTICE
  28      R_PHASE                  NORMAL      SUBLATTICE
  29      MONI_DELTA               NORMAL      SUBLATTICE
  30      P_PHASE                  NORMAL      SUBLATTICE
  31      AL5FE4                   NORMAL      PURE SUBSTANCE
  32      MONI3_GAMMA              NORMAL      PURE SUBSTANCE
  33      MONI4_BETA               ABSENT      PURE SUBSTANCE
  34      AL3NI2                   ABSENT      PURE SUBSTANCE
  35      ALNI_B2                  ABSENT      SUBLATTICE

MULTIPHASE OPTION ? cl abs p(25,26,27,28,29,30,21,32,33) !
MULTIPHASE OPTION ? lis sy ph !

NUMBER    PHASE                    STATUS      MODEL
   1      DIAMOND_A4               NORMAL      PURE SUBSTANCE
   2      GRAPHITE                 NORMAL      PURE SUBSTANCE
   3      LIQUID                   NORMAL      REDLICH-KISTER
   4      GAS                      NORMAL      IDEAL GAS
   5      BCC_A2                   NORMAL      SUBLATTICE
   6      CEMENTITE                NORMAL      SUBLATTICE
   7      FCC_A1                   NORMAL      SUBLATTICE
   8      HCP_A3                   NORMAL      SUBLATTICE
   9      KSI_CARBIDE              NORMAL      SUBLATTICE
  10      M3C2                     NORMAL      SUBLATTICE
  11      M7C3                     NORMAL      SUBLATTICE
  12      M23C6                    NORMAL      SUBLATTICE
```

```
  13      M6C                     NORMAL      SUBLATTICE
  14      CBCC_A12                NORMAL      SUBLATTICE
  15      CUB_A13                 NORMAL      SUBLATTICE
  16      FE4N                    NORMAL      PURE SUBSTANCE
  17      FECN_CHI                NORMAL      PURE SUBSTANCE
  18      M5C2                    NORMAL      SUBLATTICE
  19      V3C2                    NORMAL      SUBLATTICE
  20      MC_ETA                  NORMAL      REDLICH-KISTER
  21      MC_SHP                  ABSENT      PURE SUBSTANCE
>>>>> Type return for more, Q to quit paging : qcl^?^?
  22      CR3SI                   ABSENT      PURE SUBSTANCE
  23      CRSI2                   ABSENT      PURE SUBSTANCE
  24      CHI_A12                 ABSENT      SUBLATTICE
  25      SIGMA                   ABSENT      SUBLATTICE
  26      LAVES_PHASE             ABSENT      SUBLATTICE
  27      MU_PHASE                ABSENT      SUBLATTICE
  28      R_PHASE                 ABSENT      SUBLATTICE
  29      MONI_DELTA              ABSENT      SUBLATTICE
  30      P_PHASE                 ABSENT      SUBLATTICE
  31      AL5FE4                  NORMAL      PURE SUBSTANCE
  32      MONI3_GAMMA             ABSENT      PURE SUBSTANCE
  33      MONI4_BETA              ABSENT      PURE SUBSTANCE
  34      AL3NI2                  ABSENT      PURE SUBSTANCE
  35      ALNI_B2                 ABSENT      SUBLATTICE

MULTIPHASE OPTION ? cl abs 14,15^?^?^?^?^?
15  KEYWORD NOT RECOGNISED
WHAT CLASSIFICATION ? abs p(14,15) !
MULTIPHASE OPTION ? cl abs p (16,17,20) !
P  KEYWORD IS NOT UNIQUE. IT COULD CORRESPOND TO
PHASE(*)
PRESSURE

ENTER ABSENT COMPONENT(*),SUBSTANCE(*) OR PHASE(*) : p(16,17,20) !
MULTIPHASE OPTION ? li sys ph !

NUMBER    PHASE                   STATUS      MODEL
   1      DIAMOND_A4              NORMAL      PURE SUBSTANCE
   2      GRAPHITE                NORMAL      PURE SUBSTANCE
   3      LIQUID                  NORMAL      REDLICH-KISTER
   4      GAS                     NORMAL      IDEAL GAS
   5      BCC_A2                  NORMAL      SUBLATTICE
   6      CEMENTITE               NORMAL      SUBLATTICE
   7      FCC_A1                  NORMAL      SUBLATTICE
   8      HCP_A3                  NORMAL      SUBLATTICE
   9      KSI_CARBIDE             NORMAL      SUBLATTICE
  10      M3C2                    NORMAL      SUBLATTICE
  11      M7C3                    NORMAL      SUBLATTICE
  12      M23C6                   NORMAL      SUBLATTICE
  13      M6C                     NORMAL      SUBLATTICE
  14      CBCC_A12                ABSENT      SUBLATTICE
  15      CUB_A13                 ABSENT      SUBLATTICE
  16      FE4N                    ABSENT      PURE SUBSTANCE
  17      FECN_CHI                ABSENT      PURE SUBSTANCE
  18      M5C2                    NORMAL      SUBLATTICE
  19      V3C2                    NORMAL      SUBLATTICE
  20      MC_ETA                  ABSENT      REDLICH-KISTER
  21      MC_SHP                  ABSENT      PURE SUBSTANCE
>>>>> Type return for more, Q to quit paging : q
  22      CR3SI                   ABSENT      PURE SUBSTANCE
  23      CRSI2                   ABSENT      PURE SUBSTANCE
  24      CHI_A12                 ABSENT      SUBLATTICE
  25      SIGMA                   ABSENT      SUBLATTICE
  26      LAVES_PHASE             ABSENT      SUBLATTICE
  27      MU_PHASE                ABSENT      SUBLATTICE
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  28      R_PHASE                 ABSENT      SUBLATTICE
  29      MONI_DELTA              ABSENT      SUBLATTICE
  30      P_PHASE                 ABSENT      SUBLATTICE
  31      AL5FE4                  NORMAL      PURE SUBSTANCE
  32      MONI3_GAMMA             ABSENT      PURE SUBSTANCE
  33      MONI4_BETA              ABSENT      PURE SUBSTANCE
  34      AL3NI2                  ABSENT      PURE SUBSTANCE
  35      ALNI_B2                 ABSENT      SUBLATTICE

 MULTIPHASE OPTION ? ?

 DEFINE
 LIST
 CLASSIFY
 UNITS_FOR_OUTPUT
 STEP
 SET
 PLOT
 COMPUTE
 LASER
 ABSCISSA
 ORDINATE
 RETURN
 <'Macro name'>

 MULTIPHASE OPTION ? set w=100)^?
 100)  KEYWORD NOT RECOGNISED
 SET WHAT ? w=100 !
 MULTIPHASE OPTION ? lis sys co !

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P
    1      Fe                      NORMAL     undefined
    2      C                       NORMAL     undefined
    3      Mo                      NORMAL     undefined
    4      Cr                      NORMAL     undefined
    5      V                       NORMAL     undefined
    6      Ni                      NORMAL     undefined

 MULTIPHASE OPTION ? set w(1)=84^?
 84  KEYWORD NOT RECOGNISED
 SET WHAT ? w(1)=85.1 w(2)=1.15 w(3)=4.5 w(4)=1.4 w(5)=1.4 w(6)=3.5 !
 MULTIPHASE OPTION ? set w(4)=4.25 w(6)=3.6 !
 MULTIPHASE OPTION ? lis sys com !

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P
    1      Fe                      NORMAL      1523.81
    2      C                       NORMAL      95.7456
    3      Mo                      NORMAL      46.9043
    4      Cr                      NORMAL      81.7371
    5      V                       NORMAL      27.4825
    6      Ni                      NORMAL      61.3392

 MULTIPHASE OPTION ? step temp 773 973 10 !
 MULTIPHASE OPTION ? comp pr br pr mole !
 NUMBER OF STEPS =  21

     773.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   773.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -2.867360E+04 1.154680E-02 1.523806E+03 8.510000E+01
```

```
C                          -2.431934E+04 2.273466E-02 9.574557E+01 1.150000E+00
Mo                         -4.877971E+04 5.056462E-04 4.690431E+01 4.500000E+00
Cr                         -4.919973E+04 4.736581E-04 8.173706E+01 4.250000E+00
V                          -1.134131E+05 2.169813E-08 2.748250E+01 1.400000E+00
Ni                         -4.470152E+04 9.537161E-04 6.133924E+01 3.600000E+00
Total                                                 1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                 Fe             C              Mo
 1.4807E+03 BCC_A2              0.9549320      0.0000012      0.0008304
 7.2275E+01 FCC_A1              0.0000282      0.4732607      0.0914046
 2.1988E+01 HCP_A3              0.0009511      0.3333303      0.5459137
 2.6201E+02 M23C6               0.4189814      0.2068966      0.1032956

                                 Cr             V              Ni
 1.4807E+03 BCC_A2              0.0027797      0.0000451      0.0414117
 7.2275E+01 FCC_A1              0.0618540      0.3734510      0.0000015
 2.1988E+01 HCP_A3              0.1004226      0.0193125      0.0000698
 2.6201E+02 M23C6               0.2707587      0.0000000      0.0000678

Gibbs Energy = -5.8200924613E+07 J   System Enthalpy =  2.0908789537E+07 J
     783.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   783.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                         -2.924592E+04 1.119508E-02 1.523806E+03 8.510000E+01
C                          -2.458043E+04 2.292231E-02 9.574557E+01 1.150000E+00
Mo                         -4.932298E+04 5.125100E-04 4.690431E+01 4.500000E+00
Cr                         -4.977790E+04 4.779198E-04 8.173706E+01 4.250000E+00
V                          -1.139039E+05 2.520932E-08 2.748250E+01 1.400000E+00
Ni                         -4.562168E+04 9.049262E-04 6.133924E+01 3.600000E+00
Total                                                 1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                 Fe             C              Mo
 1.4804E+03 BCC_A2              0.9545966      0.0000015      0.0009267
 7.2461E+01 FCC_A1              0.0000333      0.4729019      0.0934369
 2.1304E+01 HCP_A3              0.0011070      0.3333298      0.5455153
 2.6281E+02 M23C6               0.4206805      0.2068966      0.1032684

                                 Cr             V              Ni
 1.4804E+03 BCC_A2              0.0030031      0.0000516      0.0414206
 7.2461E+01 FCC_A1              0.0613572      0.3722691      0.0000018
 2.1304E+01 HCP_A3              0.0997313      0.0202427      0.0000739
 2.6281E+02 M23C6               0.2690898      0.0000000      0.0000647

Gibbs Energy = -5.9228794350E+07 J   System Enthalpy =  2.1602425537E+07 J
     793.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   793.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                         -2.979958E+04 1.089334E-02 1.523806E+03 8.510000E+01
C                          -2.486348E+04 2.302991E-02 9.574557E+01 1.150000E+00
Mo                         -4.986993E+04 5.190006E-04 4.690431E+01 4.500000E+00
Cr                         -5.035267E+04 4.823590E-04 8.173706E+01 4.250000E+00
```

```
V                          -1.143991E+05 2.915804E-08 2.748250E+01 1.400000E+00
Ni                         -4.653587E+04 8.605490E-04 6.133924E+01 3.600000E+00
Total                                                 1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe             C              Mo
 1.4801E+03 BCC_A2             0.9542438      0.0000019      0.0010304
 7.2661E+01 FCC_A1             0.0000391      0.4725525      0.0954780
 2.0597E+01 HCP_A3             0.0012840      0.3333293      0.5450736
 2.6362E+02 M23C6              0.4224369      0.2068966      0.1032369

                                Cr             V              Ni
 1.4801E+03 BCC_A2             0.0032359      0.0000586      0.0414293
 7.2661E+01 FCC_A1             0.0608916      0.3710368      0.0000020
 2.0597E+01 HCP_A3             0.0990709      0.0211641      0.0000781
 2.6362E+02 M23C6              0.2673680      0.0000000      0.0000617

Gibbs Energy = -6.0265578170E+07 J   System Enthalpy =  2.2304776344E+07 J
     803.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   803.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                         -3.039038E+04 1.054812E-02 1.523806E+03 8.510000E+01
C                          -2.236829E+04 3.507468E-02 9.574557E+01 1.150000E+00
Mo                         -5.098882E+04 4.822735E-04 4.690431E+01 4.500000E+00
Cr                         -5.308003E+04 3.525857E-04 8.173706E+01 4.250000E+00
V                          -1.054746E+05 1.377591E-07 2.748250E+01 1.400000E+00
Ni                         -4.712358E+04 8.604360E-04 6.133924E+01 3.600000E+00
Total                                                 1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe             C              Mo
 1.4129E+03 BCC_A2             0.9527505      0.0000035      0.0010480
 3.6192E+02 M23C6              0.4742258      0.2068966      0.1032188
 1.5549E+01 M6C                0.3105708      0.1428571      0.5187805
 4.6597E+01 V3C2               0.0248647      0.4000000      0.0000000

                                Cr             V              Ni
 1.4129E+03 BCC_A2             0.0025322      0.0002712      0.0433946
 3.6192E+02 M23C6              0.2155896      0.0000000      0.0000693
 1.5549E+01 M6C                0.0085134      0.0192782      0.0000000
 4.6597E+01 V3C2               0.0000000      0.5751353      0.0000000

Gibbs Energy = -6.0979712073E+07 J   System Enthalpy =  2.3294718232E+07 J
     813.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   813.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                         -3.096893E+04 1.024046E-02 1.523806E+03 8.510000E+01
C                          -2.514009E+04 2.425544E-02 9.574557E+01 1.150000E+00
Mo                         -5.070761E+04 5.522759E-04 4.690431E+01 4.500000E+00
Cr                         -5.185728E+04 4.659000E-04 8.173706E+01 4.250000E+00
V                          -1.158228E+05 3.619579E-08 2.748250E+01 1.400000E+00
Ni                         -4.832061E+04 7.861678E-04 6.133924E+01 3.600000E+00
Total                                                 1.837015E+03 1.000000E+02
```

Amount Phase Mole fraction of component within phase
compnt moles

		Fe	C	Mo
1.4656E+03	BCC_A2	0.9532117	0.0000031	0.0013143
7.4979E+01	FCC_A1	0.0000529	0.4717529	0.1067461
2.8141E+02	M23C6	0.4337557	0.2068966	0.1031767
1.5027E+01	M6C	0.3136325	0.1428571	0.5283337

		Cr	V	Ni
1.4656E+03	BCC_A2	0.0035590	0.0000705	0.0418414
7.4979E+01	FCC_A1	0.0571472	0.3642982	0.0000027
2.8141E+02	M23C6	0.2561132	0.0000000	0.0000578
1.5027E+01	M6C	0.0108936	0.0042830	0.0000000

Gibbs Energy = -6.2362593906E+07 J System Enthalpy = 2.3741311934E+07 J
823.000
*** MULTIPHASE - Stage 1* Results ***

Temperature = 823.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.155411E+04	9.939302E-03	1.523806E+03	8.510000E+01
C		-2.543558E+04	2.430417E-02	9.574557E+01	1.150000E+00
Mo		-5.125342E+04	5.585993E-04	4.690431E+01	4.500000E+00
Cr		-5.244348E+04	4.694297E-04	8.173706E+01	4.250000E+00
V		-1.163365E+05	4.134987E-08	2.748250E+01	1.400000E+00
Ni		-4.925847E+04	7.476766E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount Phase Mole fraction of component within phase
compnt moles

		Fe	C	Mo
1.4660E+03	BCC_A2	0.9528135	0.0000039	0.0014526
7.5221E+01	FCC_A1	0.0000615	0.4713877	0.1088860
2.8143E+02	M23C6	0.4351209	0.2068966	0.1031317
1.4389E+01	M6C	0.3157009	0.1428571	0.5254336

		Cr	V	Ni
1.4660E+03	BCC_A2	0.0038195	0.0000793	0.0418311
7.5221E+01	FCC_A1	0.0567088	0.3629530	0.0000031
2.8143E+02	M23C6	0.2547956	0.0000000	0.0000552
1.4389E+01	M6C	0.0115133	0.0044950	0.0000000

Gibbs Energy = -6.3426152650E+07 J System Enthalpy = 2.4472772330E+07 J
833.000
*** MULTIPHASE - Stage 1* Results ***

Temperature = 833.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.211766E+04	9.684110E-03	1.523806E+03	8.510000E+01
C		-2.591070E+04	2.372837E-02	9.574557E+01	1.150000E+00
Mo		-5.214436E+04	5.373835E-04	4.690431E+01	4.500000E+00
Cr		-5.274799E+04	4.925310E-04	8.173706E+01	4.250000E+00
V		-1.165631E+05	4.907996E-08	2.748250E+01	1.400000E+00
Ni		-5.026040E+04	7.053719E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount Phase Mole fraction of component within phase
compnt moles

		Fe	C	Mo
1.4790E+03	BCC_A2	0.9526584	0.0000047	0.0015238
7.3609E+01	FCC_A1	0.0000726	0.4712502	0.1037453
1.7525E+01	HCP_A3	0.0022498	0.3333265	0.5429209
2.6684E+02	M23C6	0.4300027	0.2068966	0.1030546

		Cr	V	Ni
1.4790E+03	BCC_A2	0.0042585	0.0000928	0.0414618
7.3609E+01	FCC_A1	0.0593184	0.3656103	0.0000033
1.7525E+01	HCP_A3	0.0967043	0.0247020	0.0000965
2.6684E+02	M23C6	0.2599948	0.0000000	0.0000514

Gibbs Energy = -6.4501888232E+07 J System Enthalpy = 2.5206845889E+07 J
     843.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   843.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.273446E+04	9.369847E-03	1.523806E+03	8.510000E+01
C		-2.614720E+04	2.398209E-02	9.574557E+01	1.150000E+00
Mo		-5.274368E+04	5.394319E-04	4.690431E+01	4.500000E+00
Cr		-5.337589E+04	4.929060E-04	8.173706E+01	4.250000E+00
V		-1.171549E+05	5.507257E-08	2.748250E+01	1.400000E+00
Ni		-5.121311E+04	6.710769E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount Phase Mole fraction of component within phase
compnt moles

		Fe	C	Mo
1.4788E+03	BCC_A2	0.9522188	0.0000059	0.0016676
7.3886E+01	FCC_A1	0.0000842	0.4709482	0.1058408
1.6693E+01	HCP_A3	0.0025686	0.3333256	0.5422959
2.6765E+02	M23C6	0.4320199	0.2068966	0.1029908

		Cr	V	Ni
1.4788E+03	BCC_A2	0.0045357	0.0001028	0.0414693
7.3886E+01	FCC_A1	0.0589917	0.3641313	0.0000037
1.6693E+01	HCP_A3	0.0961721	0.0255363	0.0001014
2.6765E+02	M23C6	0.2580436	0.0000000	0.0000491

Gibbs Energy = -6.5583298678E+07 J System Enthalpy = 2.5957074106E+07 J
     853.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   853.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.333174E+04	9.097790E-03	1.523806E+03	8.510000E+01
C		-2.638196E+04	2.423844E-02	9.574557E+01	1.150000E+00
Mo		-5.334761E+04	5.410875E-04	4.690431E+01	4.500000E+00
Cr		-5.400489E+04	4.931951E-04	8.173706E+01	4.250000E+00
V		-1.177561E+05	6.154978E-08	2.748250E+01	1.400000E+00
Ni		-5.216545E+04	6.392296E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount Phase Mole fraction of component within phase
compnt moles

		Fe	C	Mo
1.4785E+03	BCC_A2	0.9517622	0.0000073	0.0018198
7.4180E+01	FCC_A1	0.0000973	0.4706556	0.1079485

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 1.5835E+01 HCP_A3             0.0029240       0.3333246       0.5416390
 2.6846E+02 M23C6              0.4340833       0.2068966       0.1029178

                                Cr              V               Ni
 1.4785E+03 BCC_A2             0.0048209       0.0001132       0.0414765
 7.4180E+01 FCC_A1             0.0586897       0.3626046       0.0000042
 1.5835E+01 HCP_A3             0.0956601       0.0263457       0.0001065
 2.6846E+02 M23C6              0.2560554       0.0000000       0.0000470

Gibbs Energy = -6.6673670988E+07 J   System Enthalpy =  2.6717886563E+07 J
     863.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   863.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.393937E+04 8.826934E-03 1.523806E+03 8.510000E+01
C                           -2.659253E+04 2.457422E-02 9.574557E+01 1.150000E+00
Mo                          -5.396391E+04 5.417749E-04 4.690431E+01 4.500000E+00
Cr                          -5.464721E+04 4.925634E-04 8.173706E+01 4.250000E+00
V                           -1.183792E+05 6.840111E-08 2.748250E+01 1.400000E+00
Ni                          -5.312890E+04 6.086366E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase              Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.4783E+03 BCC_A2             0.9512889       0.0000090       0.0019806
 7.4490E+01 FCC_A1             0.0001122       0.4703723       0.1100686
 1.4950E+01 HCP_A3             0.0033191       0.3333235       0.5409510
 2.6927E+02 M23C6              0.4361906       0.2068966       0.1028344

                                Cr              V               Ni
 1.4783E+03 BCC_A2             0.0051139       0.0001242       0.0414834
 7.4490E+01 FCC_A1             0.0584115       0.3610307       0.0000047
 1.4950E+01 HCP_A3             0.0951664       0.0271283       0.0001116
 2.6927E+02 M23C6              0.2540335       0.0000000       0.0000450

Gibbs Energy = -6.7773026489E+07 J   System Enthalpy =  2.7489683823E+07 J
     873.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   873.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.452746E+04 8.593177E-03 1.523806E+03 8.510000E+01
C                           -2.316328E+04 4.112394E-02 9.574557E+01 1.150000E+00
Mo                          -5.795673E+04 3.406698E-04 4.690431E+01 4.500000E+00
Cr                          -5.708399E+04 3.841946E-04 8.173706E+01 4.250000E+00
V                           -1.097513E+05 2.712447E-07 2.748250E+01 1.400000E+00
Ni                          -5.424598E+04 5.680095E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase              Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.3995E+03 BCC_A2             0.9534493       0.0000176       0.0013527
 2.7527E+01 FCC_A1             0.8213060       0.0012150       0.0021689
 2.1120E+01 HCP_A3             0.0054042       0.3333321       0.4480228
 3.4653E+02 M23C6              0.4769116       0.2068966       0.1024118
 4.2377E+01 V3C2               0.0355591       0.4000000       0.0000000
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                                   Cr             V              Ni
 1.3995E+03 BCC_A2                0.0042074      0.0004869      0.0404860
 2.7527E+01 FCC_A1                0.0058560      0.0001029      0.1693512
 2.1120E+01 HCP_A3                0.0767859      0.1363100      0.0001451
 3.4653E+02 M23C6                 0.2137341      0.0000000      0.0000459
 4.2377E+01 V3C2                  0.0000000      0.5644409      0.0000000

Gibbs Energy = -6.8563042674E+07 J   System Enthalpy =  2.8519888979E+07 J
     883.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   883.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.516516E+04 8.314315E-03 1.523806E+03 8.510000E+01
C                           -2.700137E+04 2.527844E-02 9.574557E+01 1.150000E+00
Mo                          -5.522353E+04 5.411103E-04 4.690431E+01 4.500000E+00
Cr                          -5.595369E+04 4.898846E-04 8.173706E+01 4.250000E+00
V                           -1.196724E+05 8.333981E-08 2.748250E+01 1.400000E+00
Ni                          -5.507147E+04 5.524349E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                   Fe             C              Mo
 1.4779E+03 BCC_A2                0.9502925      0.0000137      0.0023282
 7.5164E+01 FCC_A1                0.0001481      0.4698330      0.1143449
 1.3103E+01 HCP_A3                0.0042408      0.3333211      0.5394836
 2.7088E+02 M23C6                 0.4405288      0.2068966      0.1026308

                                   Cr             V              Ni
 1.4779E+03 BCC_A2                0.0057219      0.0001475      0.0414962
 7.5164E+01 FCC_A1                0.0579235      0.3577446      0.0000058
 1.3103E+01 HCP_A3                0.0942266      0.0286057      0.0001222
 2.7088E+02 M23C6                 0.2499026      0.0000000      0.0000413

Gibbs Energy = -6.9998794381E+07 J   System Enthalpy =  2.9068015223E+07 J
     893.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   893.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.578393E+04 8.071002E-03 1.523806E+03 8.510000E+01
C                           -2.719141E+04 2.567561E-02 9.574557E+01 1.150000E+00
Mo                          -5.586805E+04 5.397195E-04 4.690431E+01 4.500000E+00
Cr                          -5.661971E+04 4.877555E-04 8.173706E+01 4.250000E+00
V                           -1.203443E+05 9.137486E-08 2.748250E+01 1.400000E+00
Ni                          -5.605298E+04 5.264430E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                   Fe             C              Mo
 1.4777E+03 BCC_A2                0.9497699      0.0000168      0.0025151
 7.5529E+01 FCC_A1                0.0001695      0.4695769      0.1165006
 1.2141E+01 HCP_A3                0.0047741      0.3333196      0.5387041
 2.7167E+02 M23C6                 0.4427556      0.2068966      0.1025077

                                   Cr             V              Ni
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 1.4777E+03 BCC_A2              0.0060364       0.0001597       0.0415020
 7.5529E+01 FCC_A1              0.0577124       0.3560342       0.0000065
 1.2141E+01 HCP_A3              0.0937771       0.0292974       0.0001276
 2.7167E+02 M23C6               0.2478007       0.0000000       0.0000395

Gibbs Energy = -7.1125272317E+07 J   System Enthalpy =  2.9875545631E+07 J
     903.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   903.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.635143E+04 7.893697E-03 1.523806E+03 8.510000E+01
C                           -2.392251E+04 4.132582E-02 9.574557E+01 1.150000E+00
Mo                          -5.996802E+04 3.397794E-04 4.690431E+01 4.500000E+00
Cr                          -5.899548E+04 3.867704E-04 8.173706E+01 4.250000E+00
V                           -1.113895E+05 3.603815E-07 2.748250E+01 1.400000E+00
Ni                          -5.782299E+04 4.521419E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.3455E+03 BCC_A2              0.9554457       0.0000315       0.0017138
 8.1761E+01 FCC_A1              0.8507087       0.0019612       0.0023308
 2.0678E+01 HCP_A3              0.0074097       0.3333315       0.4390828
 3.4690E+02 M23C6               0.4811141       0.2068966       0.1018404
 4.2195E+01 V3C2                0.0394663       0.4000000       0.0000000

                                Cr              V               Ni
 1.3455E+03 BCC_A2              0.0049893       0.0006260       0.0371936
 8.1761E+01 FCC_A1              0.0068761       0.0001598       0.1379635
 2.0678E+01 HCP_A3              0.0761296       0.1438982       0.0001481
 3.4690E+02 M23C6               0.2101122       0.0000000       0.0000368
 4.2195E+01 V3C2                0.0000000       0.5605337       0.0000000

Gibbs Energy = -7.1941461649E+07 J   System Enthalpy =  3.1043824194E+07 J
     913.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   913.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.698787E+04 7.654206E-03 1.523806E+03 8.510000E+01
C                           -2.413116E+04 4.163328E-02 9.574557E+01 1.150000E+00
Mo                          -6.066422E+04 3.383456E-04 4.690431E+01 4.500000E+00
Cr                          -5.965710E+04 3.863478E-04 8.173706E+01 4.250000E+00
V                           -1.119662E+05 3.929524E-07 2.748250E+01 1.400000E+00
Ni                          -5.910534E+04 4.154751E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.3184E+03 BCC_A2              0.9562576       0.0000381       0.0018475
 1.0924E+02 FCC_A1              0.8599546       0.0022787       0.0023814
 2.0609E+01 HCP_A3              0.0081821       0.3333313       0.4360628
 3.4669E+02 M23C6               0.4825327       0.2068966       0.1015960
 4.2122E+01 V3C2                0.0408127       0.4000000       0.0000000

                                Cr              V               Ni
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 1.3184E+03 BCC_A2              0.0052669       0.0006772       0.0359127
 1.0924E+02 FCC_A1              0.0072432       0.0001837       0.1279584
 2.0609E+01 HCP_A3              0.0759490       0.1463271       0.0001476
 3.4669E+02 M23C6               0.2089408       0.0000000       0.0000340
 4.2122E+01 V3C2                0.0000000       0.5591873       0.0000000

Gibbs Energy = -7.3086860507E+07 J   System Enthalpy =  3.1941013378E+07 J
     923.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   923.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.767554E+04 7.377521E-03 1.523806E+03 8.510000E+01
C                           -2.770963E+04 2.703272E-02 9.574557E+01 1.150000E+00
Mo                          -5.786029E+04 5.316662E-04 4.690431E+01 4.500000E+00
Cr                          -5.866959E+04 4.784542E-04 8.173706E+01 4.250000E+00
V                           -1.224612E+05 1.174412E-07 2.748250E+01 1.400000E+00
Ni                          -5.904147E+04 4.558217E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.4772E+03 BCC_A2              0.9481070       0.0000305       0.0031290
 7.6733E+01 FCC_A1              0.0002506       0.4688607       0.1230305
 9.1152E+00 HCP_A3              0.0067039       0.3333145       0.5361778
 2.7398E+02 M23C6               0.4496464       0.2068966       0.1020309

                                Cr              V               Ni
 1.4772E+03 BCC_A2              0.0070190       0.0001980       0.0415165
 7.6733E+01 FCC_A1              0.0572048       0.3506446       0.0000089
 9.1152E+00 HCP_A3              0.0924902       0.0311694       0.0001441
 2.7398E+02 M23C6               0.2413913       0.0000000       0.0000348

Gibbs Energy = -7.4559587331E+07 J   System Enthalpy =  3.2378636444E+07 J
     933.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   933.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.826712E+04 7.205155E-03 1.523806E+03 8.510000E+01
C                           -2.453959E+04 4.228330E-02 9.574557E+01 1.150000E+00
Mo                          -6.204715E+04 3.359974E-04 4.690431E+01 4.500000E+00
Cr                          -6.098314E+04 3.853927E-04 8.173706E+01 4.250000E+00
V                           -1.131296E+05 4.640063E-07 2.748250E+01 1.400000E+00
Ni                          -6.180356E+04 3.467152E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.2431E+03 BCC_A2              0.9580962       0.0000549       0.0021364
 1.8597E+02 FCC_A1              0.8775138       0.0030305       0.0024833
 2.0728E+01 HCP_A3              0.0098854       0.3333307       0.4299103
 3.4528E+02 M23C6               0.4852799       0.2068966       0.1010084
 4.1921E+01 V3C2                0.0435348       0.4000000       0.0000000

                                Cr              V               Ni
 1.2431E+03 BCC_A2              0.0058540       0.0007877       0.0330709
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 1.8597E+02 FCC_A1              0.0080290       0.0002403       0.1087032
 2.0728E+01 HCP_A3              0.0756676       0.1510619       0.0001441
 3.4528E+02 M23C6               0.2067866       0.0000000       0.0000286
 4.1921E+01 V3C2                0.0000000       0.5564652       0.0000000

Gibbs Energy = -7.5408003638E+07 J   System Enthalpy =  3.3846764826E+07 J
     943.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   943.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.886487E+04 7.034805E-03 1.523806E+03 8.510000E+01
C                           -2.486500E+04 4.194818E-02 9.574557E+01 1.150000E+00
Mo                          -6.275966E+04 3.339686E-04 4.690431E+01 4.500000E+00
Cr                          -6.161550E+04 3.864393E-04 8.173706E+01 4.250000E+00
V                           -1.136746E+05 5.052405E-07 2.748250E+01 1.400000E+00
Ni                          -6.319843E+04 3.157924E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.1913E+03 BCC_A2              0.9591174       0.0000656       0.0022926
 2.3916E+02 FCC_A1              0.8857934       0.0034674       0.0025367
 2.0995E+01 HCP_A3              0.0108139       0.3333304       0.4267465
 3.4380E+02 M23C6               0.4865418       0.2068966       0.1006589
 4.1771E+01 V3C2                0.0448891       0.4000000       0.0000000

                                Cr              V               Ni
 1.1913E+03 BCC_A2              0.0061678       0.0008473       0.0315093
 2.3916E+02 FCC_A1              0.0084534       0.0002737       0.0994754
 2.0995E+01 HCP_A3              0.0755833       0.1533849       0.0001409
 3.4380E+02 M23C6               0.2058767       0.0000000       0.0000260
 4.1771E+01 V3C2                0.0000000       0.5551109       0.0000000

Gibbs Energy = -7.6584417886E+07 J   System Enthalpy =  3.4868517600E+07 J
     953.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   953.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.950182E+04 6.838023E-03 1.523806E+03 8.510000E+01
C                           -2.512539E+04 4.196557E-02 9.574557E+01 1.150000E+00
Mo                          -6.346101E+04 3.324624E-04 4.690431E+01 4.500000E+00
Cr                          -6.226249E+04 3.867521E-04 8.173706E+01 4.250000E+00
V                           -1.142434E+05 5.475074E-07 2.748250E+01 1.400000E+00
Ni                          -6.467452E+04 2.852534E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.1265E+03 BCC_A2              0.9601998       0.0000781       0.0024576
 3.0596E+02 FCC_A1              0.8937168       0.0039451       0.0025934
 2.1478E+01 HCP_A3              0.0117896       0.3333300       0.4234931
 3.4155E+02 M23C6               0.4876631       0.2068966       0.1002682
 4.1565E+01 V3C2                0.0462173       0.4000000       0.0000000

                                Cr              V               Ni
```

```
 1.1265E+03 BCC_A2              0.0064995       0.0009103       0.0298547
 3.0596E+02 FCC_A1              0.0089048       0.0003111       0.0905289
 2.1478E+01 HCP_A3              0.0755541       0.1556963       0.0001368
 3.4155E+02 M23C6               0.2051486       0.0000000       0.0000236
 4.1565E+01 V3C2                0.0000000       0.5537827       0.0000000

Gibbs Energy = -7.7771962493E+07 J   System Enthalpy =  3.5947834764E+07 J
     963.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   963.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.014296E+04 6.647181E-03 1.523806E+03 8.510000E+01
C                           -2.539900E+04 4.191342E-02 9.574557E+01 1.150000E+00
Mo                          -6.417200E+04 3.305957E-04 4.690431E+01 4.500000E+00
Cr                          -6.290213E+04 3.874140E-04 8.173706E+01 4.250000E+00
V                           -1.148084E+05 5.926083E-07 2.748250E+01 1.400000E+00
Ni                          -6.622003E+04 2.559832E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 1.0450E+03 BCC_A2              0.9613343       0.0000925       0.0026323
 3.9030E+02 FCC_A1              0.9012652       0.0044616       0.0026548
 2.2261E+01 HCP_A3              0.0128064       0.3333296       0.4201149
 3.3822E+02 M23C6               0.4885694       0.2068966       0.0998333
 4.1277E+01 V3C2                0.0474957       0.4000000       0.0000000

                                Cr              V               Ni
 1.0450E+03 BCC_A2              0.0068546       0.0009773       0.0281091
 3.9030E+02 FCC_A1              0.0093897       0.0003531       0.0818757
 2.2261E+01 HCP_A3              0.0756010       0.1580164       0.0001316
 3.3822E+02 M23C6               0.2046795       0.0000000       0.0000212
 4.1277E+01 V3C2                0.0000000       0.5525043       0.0000000

Gibbs Energy = -7.8971183301E+07 J   System Enthalpy =  3.7096389429E+07 J
     973.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   973.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -4.078912E+04 6.461416E-03 1.523806E+03 8.510000E+01
C                           -2.569602E+04 4.174138E-02 9.574557E+01 1.150000E+00
Mo                          -6.487891E+04 3.289433E-04 4.690431E+01 4.500000E+00
Cr                          -6.352650E+04 3.887965E-04 8.173706E+01 4.250000E+00
V                           -1.153619E+05 6.412949E-07 2.748250E+01 1.400000E+00
Ni                          -6.784177E+04 2.280694E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe              C               Mo
 9.4173E+02 BCC_A2              0.9625068       0.0001091       0.0028179
 4.9755E+02 FCC_A1              0.9084167       0.0050127       0.0027226
 2.3457E+01 HCP_A3              0.0138552       0.3333292       0.4165628
 3.3341E+02 M23C6               0.4891575       0.2068966       0.0993521
 4.0873E+01 V3C2                0.0486913       0.4000000       0.0000000
```

```
                                 Cr              V               Ni
 9.4173E+02 BCC_A2               0.0072409       0.0010491       0.0262762
 4.9755E+02 FCC_A1               0.0099176       0.0004002       0.0735303
 2.3457E+01 HCP_A3               0.0757538       0.1603737       0.0001254
 3.3341E+02 M23C6                0.2045749       0.0000000       0.0000189
 4.0873E+01 V3C2                 0.0000000       0.5513087       0.0000000

Gibbs Energy = -8.0182751860E+07 J   System Enthalpy =  3.8329047058E+07 J

                      ************************************
                      * WARNING/ERRORS HAVE BEEN DETECTED *
                      ************************************

   1008 Warnings: Multiphase, temperature range violation -  Unary data
      4 Warnings: Multiphase, Stage 1 - Less accuracy than normal

 MULTIPHASE OPTION ? li sys co !

 NUMBER    COMPONENT               STATUS      AMOUNT     DELTA    REF.P
    1      Fe                      NORMAL      1523.81
    2      C                       NORMAL      95.7456
    3      Mo                      NORMAL      46.9043
    4      Cr                      NORMAL      81.7371
    5      V                       NORMAL      27.4825
    6      Ni                      NORMAL      61.3392

 MULTIPHASE OPTION ? li sys p !

 NUMBER    PHASE                   STATUS      MODEL
    1      DIAMOND_A4              NORMAL      PURE SUBSTANCE
    2      GRAPHITE                NORMAL      PURE SUBSTANCE
    3      LIQUID                  NORMAL      REDLICH-KISTER
    4      GAS                     NORMAL      IDEAL GAS
    5      BCC_A2                  NORMAL      SUBLATTICE
    6      CEMENTITE               NORMAL      SUBLATTICE
    7      FCC_A1                  NORMAL      SUBLATTICE
    8      HCP_A3                  NORMAL      SUBLATTICE
    9      KSI_CARBIDE             NORMAL      SUBLATTICE
   10      M3C2                    NORMAL      SUBLATTICE
   11      M7C3                    NORMAL      SUBLATTICE
   12      M23C6                   NORMAL      SUBLATTICE
   13      M6C                     NORMAL      SUBLATTICE
   14      CBCC_A12                ABSENT      SUBLATTICE
   15      CUB_A13                 ABSENT      SUBLATTICE
   16      FE4N                    ABSENT      PURE SUBSTANCE
   17      FECN_CHI                ABSENT      PURE SUBSTANCE
   18      M5C2                    NORMAL      SUBLATTICE
   19      V3C2                    NORMAL      SUBLATTICE
   20      MC_ETA                  ABSENT      REDLICH-KISTER
   21      MC_SHP                  ABSENT      PURE SUBSTANCE
 >>>>> Type return for more, Q to quit paging : q
   22      CR3SI                   ABSENT      PURE SUBSTANCE
   23      CRSI2                   ABSENT      PURE SUBSTANCE
   24      CHI_A12                 ABSENT      SUBLATTICE
   25      SIGMA                   ABSENT      SUBLATTICE
   26      LAVES_PHASE             ABSENT      SUBLATTICE
   27      MU_PHASE                ABSENT      SUBLATTICE
   28      R_PHASE                 ABSENT      SUBLATTICE
   29      MONI_DELTA              ABSENT      SUBLATTICE
   30      P_PHASE                 ABSENT      SUBLATTICE
   31      AL5FE4                  NORMAL      PURE SUBSTANCE
   32      MONI3_GAMMA             ABSENT      PURE SUBSTANCE
   33      MONI4_BETA              ABSENT      PURE SUBSTANCE
   34      AL3NI2                  ABSENT      PURE SUBSTANCE
   35      ALNI_B2                 ABSENT      SUBLATTICE
```

```
 MULTIPHASE OPTION ? cl misc p(7) !
 ERROR IN KEYWORD SUBSCRIPT
 P(7)  KEYWORD NOT RECOGNISED
 WHAT CLASSIFICATION ? cl misc FCC_A1 !
 CL  KEYWORD NOT RECOGNISED
 WHAT CLASSIFICATION ? misc FCC_1^?
 ERROR IN KEYWORD SUBSCRIPT
 FCC_1  KEYWORD NOT RECOGNISED
 WHAT CLASSIFICATION ? misc FCC_A1 !
 ERROR IN KEYWORD SUBSCRIPT
 FCC_A1  KEYWORD NOT RECOGNISED
 WHAT CLASSIFICATION ? class misc(FCC_A1) 1 !
 CLASS  KEYWORD NOT RECOGNISED
 WHAT CLASSIFICATION ? misc(FCC_A1) 1 !
 MULTIPHASE OPTION ? li sys ph !

 NUMBER    PHASE                    STATUS      MODEL
    1      DIAMOND_A4               NORMAL      PURE SUBSTANCE
    2      GRAPHITE                 NORMAL      PURE SUBSTANCE
    3      LIQUID                   NORMAL      REDLICH-KISTER
    4      GAS                      NORMAL      IDEAL GAS
    5      BCC_A2                   NORMAL      SUBLATTICE
    6      CEMENTITE                NORMAL      SUBLATTICE
    7      FCC_A1                   1  M-G      SUBLATTICE
    8      HCP_A3                   NORMAL      SUBLATTICE
    9      KSI_CARBIDE              NORMAL      SUBLATTICE
   10      M3C2                     NORMAL      SUBLATTICE
   11      M7C3                     NORMAL      SUBLATTICE
   12      M23C6                    NORMAL      SUBLATTICE
   13      M6C                      NORMAL      SUBLATTICE
   14      CBCC_A12                 ABSENT      SUBLATTICE
   15      CUB_A13                  ABSENT      SUBLATTICE
   16      FE4N                     ABSENT      PURE SUBSTANCE
   17      FECN_CHI                 ABSENT      PURE SUBSTANCE
   18      M5C2                     NORMAL      SUBLATTICE
   19      V3C2                     NORMAL      SUBLATTICE
   20      MC_ETA                   ABSENT      REDLICH-KISTER
   21      MC_SHP                   ABSENT      PURE SUBSTANCE
 >>>>> Type return for more, Q to quit paging :
   22      CR3SI                    ABSENT      PURE SUBSTANCE
   23      CRSI2                    ABSENT      PURE SUBSTANCE
   24      CHI_A12                  ABSENT      SUBLATTICE
   25      SIGMA                    ABSENT      SUBLATTICE
   26      LAVES_PHASE              ABSENT      SUBLATTICE
   27      MU_PHASE                 ABSENT      SUBLATTICE
   28      R_PHASE                  ABSENT      SUBLATTICE
   29      MONI_DELTA               ABSENT      SUBLATTICE
   30      P_PHASE                  ABSENT      SUBLATTICE
   31      AL5FE4                   NORMAL      PURE SUBSTANCE
   32      MONI3_GAMMA              ABSENT      PURE SUBSTANCE
   33      MONI4_BETA               ABSENT      PURE SUBSTANCE
   34      AL3NI2                   ABSENT      PURE SUBSTANCE
   35      ALNI_B2                  ABSENT      SUBLATTICE

 MULTIPHASE OPTION ? step temp 573 873 20 !
 MULTIPHASE OPTION ? comp pr br pr mol !
 NUMBER OF STEPS =  16

     573.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   573.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-1.840537E+04	2.099955E-02	1.523806E+03	8.510000E+01
C		-1.620920E+04	3.329721E-02	9.574557E+01	1.150000E+00
Mo		-4.023171E+04	2.150665E-04	4.690431E+01	4.500000E+00
Cr		-4.009587E+04	2.212866E-04	8.173706E+01	4.250000E+00
V		-1.079063E+05	1.457187E-10	2.748250E+01	1.400000E+00
Ni		-3.014635E+04	1.786201E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4136E+03	BCC_A2	0.9749827	0.0000000	0.0000324
4.8386E+01	FCC_A1	0.4560737	0.0000003	0.0000188
7.1599E+01	FCC_A1	0.0000004	0.4824799	0.0556149
2.7877E+02	M23C6	0.4176778	0.2068966	0.1034458
2.4674E+01	M6C	0.2868799	0.1428571	0.5689658

Amount compnt moles	Phase	Mole fraction of component within phase		
		Cr	V	Ni
1.4136E+03	BCC_A2	0.0002340	0.0000005	0.0247503
4.8386E+01	FCC_A1	0.0000033	0.0000000	0.5439039
7.1599E+01	FCC_A1	0.0781827	0.3837220	0.0000000
2.7877E+02	M23C6	0.2718548	0.0000000	0.0001251
2.4674E+01	M6C	0.0009819	0.0003153	0.0000000

Gibbs Energy = -3.9577862875E+07 J System Enthalpy = 8.1355581763E+06 J
     593.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   593.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-1.934315E+04	1.977854E-02	1.523806E+03	8.510000E+01
C		-1.702535E+04	3.164847E-02	9.574557E+01	1.150000E+00
Mo		-4.094289E+04	2.475255E-04	4.690431E+01	4.500000E+00
Cr		-4.092736E+04	2.483067E-04	8.173706E+01	4.250000E+00
V		-1.082896E+05	2.894092E-10	2.748250E+01	1.400000E+00
Ni		-3.125103E+04	1.767299E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4216E+03	BCC_A2	0.9717737	0.0000000	0.0000501
4.0350E+01	FCC_A1	0.4618685	0.0000005	0.0000305
7.1718E+01	FCC_A1	0.0000007	0.4814941	0.0598665
2.7927E+02	M23C6	0.4180431	0.2068966	0.1034442
2.4036E+01	M6C	0.2874830	0.1428571	0.5678745

Amount compnt moles	Phase	Mole fraction of component within phase		
		Cr	V	Ni
1.4216E+03	BCC_A2	0.0003256	0.0000010	0.0278496
4.0350E+01	FCC_A1	0.0000066	0.0000000	0.5380939
7.1718E+01	FCC_A1	0.0756076	0.3830310	0.0000001
2.7927E+02	M23C6	0.2714917	0.0000000	0.0001245
2.4036E+01	M6C	0.0013351	0.0004503	0.0000000

Gibbs Energy = -4.1263935531E+07 J System Enthalpy = 9.3383852696E+06 J
     613.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   613.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.032402E+04	1.854403E-02	1.523806E+03	8.510000E+01
C		-1.871233E+04	2.544101E-02	9.574557E+01	1.150000E+00
Mo		-4.146388E+04	2.930152E-04	4.690431E+01	4.500000E+00
Cr		-4.122081E+04	3.073283E-04	8.173706E+01	4.250000E+00
V		-1.077630E+05	6.570332E-10	2.748250E+01	1.400000E+00
Ni		-3.238937E+04	1.738293E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4559E+03	BCC_A2	0.9683594	0.0000000	0.0000785
7.0610E+01	FCC_A1	0.0000011	0.4799741	0.0591953
3.0272E+01	FCC_A1	0.4686655	0.0000008	0.0000508
3.0692E+01	HCP_A3	0.0000461	0.3333332	0.5453524
2.4943E+02	M23C6	0.3999492	0.2068966	0.1034412
1.2231E-01	M6C	0.2881952	0.1428571	0.5663289

Amount compnt moles	Phase	Cr	V	Ni
1.4559E+03	BCC_A2	0.0004953	0.0000021	0.0310647
7.0610E+01	FCC_A1	0.0742951	0.3865343	0.0000001
3.0272E+01	FCC_A1	0.0000146	0.0000000	0.5312683
3.0692E+01	HCP_A3	0.1151814	0.0060698	0.0000170
2.4943E+02	M23C6	0.2895953	0.0000000	0.0001178
1.2231E-01	M6C	0.0018993	0.0007195	0.0000000

Gibbs Energy = -4.2992627933E+07 J   System Enthalpy = 1.0570535053E+07 J
     633.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   633.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.126932E+04	1.757589E-02	1.523806E+03	8.510000E+01
C		-1.946500E+04	2.476308E-02	9.574557E+01	1.150000E+00
Mo		-4.225923E+04	3.257547E-04	4.690431E+01	4.500000E+00
Cr		-4.210567E+04	3.353996E-04	8.173706E+01	4.250000E+00
V		-1.083072E+05	1.155592E-09	2.748250E+01	1.400000E+00
Ni		-3.354814E+04	1.704923E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4645E+03	BCC_A2	0.9648849	0.0000000	0.0001137
7.0719E+01	FCC_A1	0.0000018	0.4790604	0.0632305
2.1070E+01	FCC_A1	0.4769888	0.0000012	0.0000800
2.9864E+01	HCP_A3	0.0000726	0.3333331	0.5461805
2.5091E+02	M23C6	0.4014423	0.2068966	0.1034372

Amount compnt moles	Phase	Cr	V	Ni
1.4645E+03	BCC_A2	0.0006563	0.0000034	0.0343417
7.0719E+01	FCC_A1	0.0722694	0.3854377	0.0000001
2.1070E+01	FCC_A1	0.0000290	0.0000000	0.5229009
2.9864E+01	HCP_A3	0.1130279	0.0073636	0.0000223
2.5091E+02	M23C6	0.2881078	0.0000000	0.0001162

Gibbs Energy = -4.4760366695E+07 J   System Enthalpy = 1.1823737682E+07 J
     653.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   653.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.230713E+04	1.643075E-02	1.523806E+03	8.510000E+01
C		-1.939987E+04	2.806783E-02	9.574557E+01	1.150000E+00
Mo		-4.323665E+04	3.479445E-04	4.690431E+01	4.500000E+00
Cr		-4.358504E+04	3.263190E-04	8.173706E+01	4.250000E+00
V		-1.097661E+05	1.658959E-09	2.748250E+01	1.400000E+00
Ni		-3.475912E+04	1.658158E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4491E+03	BCC_A2	0.9614526	0.0000001	0.0001564
7.2317E+01	FCC_A1	0.0000030	0.4786231	0.0729737
1.3279E+01	FCC_A1	0.4879686	0.0000024	0.0001238
2.8023E+02	M23C6	0.4198494	0.2068966	0.1034325
2.2073E+01	M6C	0.2907612	0.1428571	0.5623777
		Cr	V	Ni
1.4491E+03	BCC_A2	0.0007707	0.0000046	0.0376156
7.2317E+01	FCC_A1	0.0687964	0.3796037	0.0000002
1.3279E+01	FCC_A1	0.0000543	0.0000000	0.5118509
2.8023E+02	M23C6	0.2697028	0.0000000	0.0001187
2.2073E+01	M6C	0.0029173	0.0010866	0.0000000

Gibbs Energy = -4.6565749217E+07 J   System Enthalpy = 1.3087940268E+07 J
     673.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   673.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.332064E+04	1.548898E-02	1.523806E+03	8.510000E+01
C		-2.088488E+04	2.393694E-02	9.574557E+01	1.150000E+00
Mo		-4.398812E+04	3.854468E-04	4.690431E+01	4.500000E+00
Cr		-4.399736E+04	3.848113E-04	8.173706E+01	4.250000E+00
V		-1.095510E+05	3.143783E-09	2.748250E+01	1.400000E+00
Ni		-3.600582E+04	1.605065E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4826E+03	BCC_A2	0.9578469	0.0000001	0.0002201
7.1060E+01	FCC_A1	0.0000044	0.4773353	0.0713038
1.5417E+00	FCC_A1	0.5054817	0.0000036	0.0002143
2.7889E+01	HCP_A3	0.0001675	0.3333328	0.5468896
2.5389E+02	M23C6	0.4052440	0.2068966	0.1034230
		Cr	V	Ni
1.4826E+03	BCC_A2	0.0010864	0.0000082	0.0408383
7.1060E+01	FCC_A1	0.0688025	0.3825537	0.0000003
1.5417E+00	FCC_A1	0.0001447	0.0000000	0.4941557
2.7889E+01	HCP_A3	0.1093068	0.0102670	0.0000362
2.5389E+02	M23C6	0.2843253	0.0000000	0.0001111

Gibbs Energy = -4.8415084878E+07 J   System Enthalpy = 1.4391646345E+07 J
     693.000

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

Temperature =   693.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.435686E+04	1.459339E-02	1.523806E+03	8.510000E+01
C		-2.092345E+04	2.648146E-02	9.574557E+01	1.150000E+00
Mo		-4.490362E+04	4.125630E-04	4.690431E+01	4.500000E+00
Cr		-4.548191E+04	3.731667E-04	8.173706E+01	4.250000E+00
V		-1.109805E+05	4.316086E-09	2.748250E+01	1.400000E+00
Ni		-3.756727E+04	1.473844E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4629E+03	BCC_A2	0.9565454	0.0000002	0.0002964
7.2856E+01	FCC_A1	0.0000067	0.4767790	0.0816903
2.8061E+02	M23C6	0.4219551	0.2068966	0.1034134
2.0666E+01	M6C	0.2944926	0.1428571	0.5564907
		Cr	V	Ni
1.4629E+03	BCC_A2	0.0012376	0.0000106	0.0419099
7.2856E+01	FCC_A1	0.0650074	0.3765160	0.0000005
2.8061E+02	M23C6	0.2676286	0.0000000	0.0001063
2.0666E+01	M6C	0.0044409	0.0017186	0.0000000

Gibbs Energy = -5.0297187268E+07 J   System Enthalpy = 1.5645943365E+07 J
     713.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   713.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.540552E+04	1.376669E-02	1.523806E+03	8.510000E+01
C		-2.233577E+04	2.310545E-02	9.574557E+01	1.150000E+00
Mo		-4.579219E+04	4.419080E-04	4.690431E+01	4.500000E+00
Cr		-4.598272E+04	4.279315E-04	8.173706E+01	4.250000E+00
V		-1.109062E+05	7.501967E-09	2.748250E+01	1.400000E+00
Ni		-3.937809E+04	1.303825E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4827E+03	BCC_A2	0.9565871	0.0000003	0.0003954
7.1423E+01	FCC_A1	0.0000097	0.4756080	0.0793301
2.5694E+01	HCP_A3	0.0003535	0.3333322	0.5472226
2.5719E+02	M23C6	0.4100313	0.2068966	0.1033943
		Cr	V	Ni
1.4827E+03	BCC_A2	0.0016466	0.0000176	0.0413530
7.1423E+01	FCC_A1	0.0655682	0.3794833	0.0000006
2.5694E+01	HCP_A3	0.1053142	0.0137293	0.0000483
2.5719E+02	M23C6	0.2795866	0.0000000	0.0000912

Gibbs Energy = -5.2221367860E+07 J   System Enthalpy = 1.6916788879E+07 J
     733.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   733.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.647903E+04	1.297518E-02	1.523806E+03	8.510000E+01
C		-2.301854E+04	2.289321E-02	9.574557E+01	1.150000E+00
Mo		-4.675109E+04	4.661588E-04	4.690431E+01	4.500000E+00
Cr		-4.702465E+04	4.456975E-04	8.173706E+01	4.250000E+00
V		-1.116775E+05	1.101279E-08	2.748250E+01	1.400000E+00
Ni		-4.113256E+04	1.171947E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4820E+03	BCC_A2	0.9561017	0.0000004	0.0005151
7.1660E+01	FCC_A1	0.0000141	0.4747894	0.0833399
2.4525E+01	HCP_A3	0.0004996	0.3333317	0.5470136
2.5881E+02	M23C6	0.4127754	0.2068966	0.1033710
		Cr	V	Ni
1.4820E+03	BCC_A2	0.0019845	0.0000247	0.0413736
7.1660E+01	FCC_A1	0.0641815	0.3776742	0.0000009
2.4525E+01	HCP_A3	0.1035321	0.0155682	0.0000549
2.5881E+02	M23C6	0.2768745	0.0000000	0.0000824

Gibbs Energy = -5.4178720000E+07 J System Enthalpy = 1.8216582021E+07 J
753.000
*** MULTIPHASE - Stage 1* Results ***

Temperature = 753.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.756689E+04	1.223965E-02	1.523806E+03	8.510000E+01
C		-2.367158E+04	2.280208E-02	9.574557E+01	1.150000E+00
Mo		-4.774863E+04	4.873294E-04	4.690431E+01	4.500000E+00
Cr		-4.809842E+04	4.608488E-04	8.173706E+01	4.250000E+00
V		-1.125146E+05	1.567479E-08	2.748250E+01	1.400000E+00
Ni		-4.290886E+04	1.055706E-03	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4814E+03	BCC_A2	0.9555508	0.0000007	0.0006593
7.1943E+01	FCC_A1	0.0000200	0.4740066	0.0873615
2.3294E+01	HCP_A3	0.0006946	0.3333311	0.5465685
2.6041E+02	M23C6	0.4157590	0.2068966	0.1033391
		Cr	V	Ni
1.4814E+03	BCC_A2	0.0023623	0.0000338	0.0413931
7.1943E+01	FCC_A1	0.0629471	0.3756636	0.0000012
2.3294E+01	HCP_A3	0.1019054	0.0174384	0.0000621
2.6041E+02	M23C6	0.2739307	0.0000000	0.0000747

Gibbs Energy = -5.6171947511E+07 J System Enthalpy = 1.9546677981E+07 J
773.000
*** MULTIPHASE - Stage 1* Results ***

Temperature = 773.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.868196E+04	1.153179E-02	1.523806E+03	8.510000E+01
C		-2.428690E+04	2.284968E-02	9.574557E+01	1.150000E+00
Mo		-4.878806E+04	5.049902E-04	4.690431E+01	4.500000E+00
Cr		-4.920935E+04	4.729500E-04	8.173706E+01	4.250000E+00
V		-1.134234E+05	2.166351E-08	2.748250E+01	1.400000E+00
Ni		-4.471140E+04	9.522515E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4807E+03	BCC_A2	0.9549319	0.0000012	0.0008304
7.2275E+01	FCC_A1	0.0000282	0.4732607	0.0914045
2.1988E+01	HCP_A3	0.0009511	0.3333303	0.5459136
2.6201E+02	M23C6	0.4189814	0.2068966	0.1032956
		Cr	V	Ni
1.4807E+03	BCC_A2	0.0027797	0.0000451	0.0414117
7.2275E+01	FCC_A1	0.0618540	0.3734510	0.0000015
2.1988E+01	HCP_A3	0.1004227	0.0193125	0.0000698
2.6201E+02	M23C6	0.2707587	0.0000000	0.0000678

Gibbs Energy = -5.8200924613E+07 J System Enthalpy = 2.0908789603E+07 J
     793.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   793.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-2.981627E+04	1.086581E-02	1.523806E+03	8.510000E+01
C		-2.486276E+04	2.303242E-02	9.574557E+01	1.150000E+00
Mo		-4.986901E+04	5.190726E-04	4.690431E+01	4.500000E+00
Cr		-5.035620E+04	4.821011E-04	8.173706E+01	4.250000E+00
V		-1.144028E+05	2.914182E-08	2.748250E+01	1.400000E+00
Ni		-4.653890E+04	8.601530E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4801E+03	BCC_A2	0.9542438	0.0000019	0.0010304
7.2661E+01	FCC_A1	0.0000391	0.4725525	0.0954779
2.0597E+01	HCP_A3	0.0012840	0.3333293	0.5450736
2.6362E+02	M23C6	0.4224369	0.2068966	0.1032369
		Cr	V	Ni
1.4801E+03	BCC_A2	0.0032359	0.0000586	0.0414293
7.2661E+01	FCC_A1	0.0608916	0.3710368	0.0000020
2.0597E+01	HCP_A3	0.0990709	0.0211641	0.0000781
2.6362E+02	M23C6	0.2673679	0.0000000	0.0000617

Gibbs Energy = -6.0265578169E+07 J System Enthalpy = 2.2304776282E+07 J
     813.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   813.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.097033E+04	1.023835E-02	1.523806E+03	8.510000E+01
C		-2.540483E+04	2.332383E-02	9.574557E+01	1.150000E+00

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Mo                          -5.098775E+04 5.298561E-04 4.690431E+01 4.500000E+00
Cr                          -5.153745E+04 4.884737E-04 8.173706E+01 4.250000E+00
V                           -1.154512E+05 3.824161E-08 2.748250E+01 1.400000E+00
Ni                          -4.838987E+04 7.781541E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                 Fe              C               Mo
 1.4796E+03 BCC_A2              0.9534859       0.0000030       0.0012611
 7.3104E+01 FCC_A1              0.0000536       0.4718823       0.0995897
 1.9111E+01 HCP_A3              0.0017104       0.3333280       0.5440701
 2.6523E+02 M23C6               0.4261152       0.2068966       0.1031585

                                 Cr              V               Ni
 1.4796E+03 BCC_A2              0.0037295       0.0000745       0.0414460
 7.3104E+01 FCC_A1              0.0600495       0.3684223       0.0000026
 1.9111E+01 HCP_A3              0.0978362       0.0229681       0.0000871
 2.6523E+02 M23C6               0.2637735       0.0000000       0.0000563

Gibbs Energy = -6.2365887945E+07 J   System Enthalpy =  2.3736691529E+07 J
     833.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   833.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.213760E+04 9.656277E-03 1.523806E+03 8.510000E+01
C                           -2.591437E+04 2.371579E-02 9.574557E+01 1.150000E+00
Mo                          -5.214853E+04 5.370601E-04 4.690431E+01 4.500000E+00
Cr                          -5.275239E+04 4.922182E-04 8.173706E+01 4.250000E+00
V                           -1.165677E+05 4.904755E-08 2.748250E+01 1.400000E+00
Ni                          -5.026387E+04 7.050183E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                 Fe              C               Mo
 1.4790E+03 BCC_A2              0.9526583       0.0000047       0.0015238
 7.3609E+01 FCC_A1              0.0000726       0.4712502       0.1037452
 1.7525E+01 HCP_A3              0.0022498       0.3333265       0.5429209
 2.6684E+02 M23C6               0.4300027       0.2068966       0.1030546

                                 Cr              V               Ni
 1.4790E+03 BCC_A2              0.0042585       0.0000928       0.0414618
 7.3609E+01 FCC_A1              0.0593184       0.3656103       0.0000033
 1.7525E+01 HCP_A3              0.0967043       0.0247020       0.0000965
 2.6684E+02 M23C6               0.2599948       0.0000000       0.0000514

Gibbs Energy = -6.4501888232E+07 J   System Enthalpy =  2.5206846029E+07 J
     853.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   853.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.333795E+04 9.089831E-03 1.523806E+03 8.510000E+01
C                           -2.637454E+04 2.426380E-02 9.574557E+01 1.150000E+00
Mo                          -5.334905E+04 5.409774E-04 4.690431E+01 4.500000E+00
Cr                          -5.400794E+04 4.929836E-04 8.173706E+01 4.250000E+00
V                           -1.177593E+05 6.152186E-08 2.748250E+01 1.400000E+00
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Ni                          -5.216858E+04 6.389473E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                 Fe              C               Mo
 1.4785E+03 BCC_A2              0.9517622       0.0000073       0.0018198
 7.4180E+01 FCC_A1              0.0000973       0.4706556       0.1079485
 1.5835E+01 HCP_A3              0.0029240       0.3333246       0.5416391
 2.6846E+02 M23C6               0.4340833       0.2068966       0.1029178

                                 Cr              V               Ni
 1.4785E+03 BCC_A2              0.0048209       0.0001132       0.0414765
 7.4180E+01 FCC_A1              0.0586897       0.3626047       0.0000042
 1.5835E+01 HCP_A3              0.0956600       0.0263458       0.0001065
 2.6846E+02 M23C6               0.2560553       0.0000000       0.0000470

Gibbs Energy = -6.6673670988E+07 J   System Enthalpy =  2.6717886810E+07 J
     873.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   873.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -3.454036E+04 8.577919E-03 1.523806E+03 8.510000E+01
C                           -2.683372E+04 2.480192E-02 9.574557E+01 1.150000E+00
Mo                          -5.457184E+04 5.430732E-04 4.690431E+01 4.500000E+00
Cr                          -5.529119E+04 4.918341E-04 8.173706E+01 4.250000E+00
V                           -1.189806E+05 7.606003E-08 2.748250E+01 1.400000E+00
Ni                          -5.429824E+04 5.639345E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                 Fe              C               Mo
 1.4649E+03 BCC_A2              0.9519464       0.0000112       0.0021561
 7.4791E+01 FCC_A1              0.0001289       0.4700690       0.1121780
 1.3098E+01 FCC_A1              0.8191920       0.0007661       0.0034309
 1.3972E+01 HCP_A3              0.0037552       0.3333223       0.5403466
 2.7021E+02 M23C6               0.4384190       0.2068966       0.1027402

                                 Cr              V               Ni
 1.4649E+03 BCC_A2              0.0053999       0.0001366       0.0403500
 7.4791E+01 FCC_A1              0.0580689       0.3595501       0.0000051
 1.3098E+01 FCC_A1              0.0074353       0.0000283       0.1691474
 1.3972E+01 HCP_A3              0.0944900       0.0279724       0.0001134
 2.7021E+02 M23C6               0.2519024       0.0000000       0.0000419

Gibbs Energy = -6.8881568937E+07 J   System Enthalpy =  2.8299306017E+07 J

                    ************************************
                    * WARNING/ERRORS HAVE BEEN DETECTED *
                    ************************************

    768 Warnings: Multiphase, temperature range violation -  Unary data
      1 Warnings: Multiphase, Stage 1 - Less accuracy than normal

 MULTIPHASE OPTION ? step temp 1273 773 50 !
 MULTIPHASE OPTION ? comp pr br pr mol !
 STEPPING ERROR : TOO MANY STEPS

 MULTIPHASE OPTION ? step temp 1273 773 -50 !
 MULTIPHASE OPTION ? compute print brief print mole !
```

NUMBER OF STEPS = 11

1273.00
*** MULTIPHASE - Stage 1* Results ***

Temperature = 1273.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-6.362566E+04	2.450939E-03	1.523806E+03	8.510000E+01
C		-3.614132E+04	3.288978E-02	9.574557E+01	1.150000E+00
Mo		-8.415786E+04	3.522591E-04	4.690431E+01	4.500000E+00
Cr		-8.195930E+04	4.335834E-04	8.173706E+01	4.250000E+00
V		-1.487282E+05	7.896456E-07	2.748250E+01	1.400000E+00
Ni		-1.015394E+05	6.818200E-05	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.7405E+03	FCC_A1	0.8722771	0.0317068	0.0164677
8.4525E+01	FCC_A1	0.0063098	0.4595711	0.1621344
1.2007E+01	M6C	0.4238587	0.1428571	0.3779642
		Cr	V	Ni
1.7405E+03	FCC_A1	0.0431156	0.0011931	0.0352397
8.4525E+01	FCC_A1	0.0725250	0.2993989	0.0000609
1.2007E+01	M6C	0.0470548	0.0082652	0.0000000

Gibbs Energy = -1.2137594177E+08 J System Enthalpy = 6.6545315861E+07 J

1223.00
*** MULTIPHASE - Stage 1* Results ***

Temperature = 1223.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-5.952511E+04	2.869007E-03	1.523806E+03	8.510000E+01
C		-3.468567E+04	3.300683E-02	9.574557E+01	1.150000E+00
Mo		-8.010009E+04	3.793074E-04	4.690431E+01	4.500000E+00
Cr		-7.829919E+04	4.527995E-04	8.173706E+01	4.250000E+00
V		-1.448826E+05	6.489058E-07	2.748250E+01	1.400000E+00
Ni		-9.657849E+04	7.502610E-05	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.6854E+03	FCC_A1	0.8888205	0.0244842	0.0132319
8.3118E+01	FCC_A1	0.0044954	0.4611681	0.1588326
1.5644E+01	HCP_A3	0.0498008	0.3329690	0.4663056
5.2876E+01	M23C6	0.4663068	0.2068966	0.0776679
		Cr	V	Ni
1.6854E+03	FCC_A1	0.0362414	0.0008308	0.0363912
8.3118E+01	FCC_A1	0.0702292	0.3052313	0.0000435
1.5644E+01	HCP_A3	0.1052631	0.0455077	0.0001538
5.2876E+01	M23C6	0.2491221	0.0000000	0.0000067

Gibbs Energy = -1.1408680884E+08 J System Enthalpy = 6.1895018954E+07 J

1173.00
*** MULTIPHASE - Stage 1* Results ***

Temperature = 1173.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-5.548053E+04	3.384304E-03	1.523806E+03	8.510000E+01
C		-3.343314E+04	3.245135E-02	9.574557E+01	1.150000E+00
Mo		-7.611388E+04	4.080116E-04	4.690431E+01	4.500000E+00
Cr		-7.499052E+04	4.578211E-04	8.173706E+01	4.250000E+00
V		-1.408867E+05	5.325479E-07	2.748250E+01	1.400000E+00
Ni		-9.160126E+04	8.337283E-05	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.6285E+03	FCC_A1	0.9037197	0.0181139	0.0106049
8.2882E+01	FCC_A1	0.0030526	0.4624923	0.1560785
1.5181E+01	HCP_A3	0.0403938	0.3330998	0.4813320
1.1048E+02	M23C6	0.4639692	0.2068966	0.0850024
		Cr	V	Ni
1.6285E+03	FCC_A1	0.0293169	0.0005811	0.0376636
8.2882E+01	FCC_A1	0.0662178	0.3121282	0.0000304
1.5181E+01	HCP_A3	0.1011466	0.0438948	0.0001330
1.1048E+02	M23C6	0.2441245	0.0000000	0.0000072

Gibbs Energy = -1.0698591906E+08 J   System Enthalpy = 5.7415652718E+07 J
     1123.00
*** MULTIPHASE - Stage 1* Results ***

Temperature = 1123.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-5.161787E+04	3.973139E-03	1.523806E+03	8.510000E+01
C		-3.239206E+04	3.114373E-02	9.574557E+01	1.150000E+00
Mo		-7.202106E+04	4.468217E-04	4.690431E+01	4.500000E+00
Cr		-7.167200E+04	4.638416E-04	8.173706E+01	4.250000E+00
V		-1.367801E+05	4.345502E-07	2.748250E+01	1.400000E+00
Ni		-8.668088E+04	9.295490E-05	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.5832E+03	FCC_A1	0.9158820	0.0129264	0.0084365
8.2082E+01	FCC_A1	0.0019986	0.4636272	0.1518739
1.3454E+01	HCP_A3	0.0314412	0.3331861	0.4958538
1.5825E+02	M23C6	0.4623688	0.2068966	0.0910572
		Cr	V	Ni
1.5832E+03	FCC_A1	0.0236070	0.0004078	0.0387404
8.2082E+01	FCC_A1	0.0624997	0.3199802	0.0000205
1.3454E+01	HCP_A3	0.0968741	0.0425324	0.0001125
1.5825E+02	M23C6	0.2396697	0.0000000	0.0000078

Gibbs Energy = -1.0007007978E+08 J   System Enthalpy = 5.3209540950E+07 J
     1073.00
*** MULTIPHASE - Stage 1* Results ***

Temperature = 1073.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.782169E+04	4.699529E-03	1.523806E+03	8.510000E+01
C		-3.156732E+04	2.906112E-02	9.574557E+01	1.150000E+00
Mo		-6.806175E+04	4.861541E-04	4.690431E+01	4.500000E+00
Cr		-6.834244E+04	4.710970E-04	8.173706E+01	4.250000E+00
V		-1.325715E+05	3.519302E-07	2.748250E+01	1.400000E+00
Ni		-8.183104E+04	1.038698E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.5479E+03	FCC_A1	0.9256204	0.0088198	0.0066597
8.0707E+01	FCC_A1	0.0012543	0.4645793	0.1460507
1.1787E+01	HCP_A3	0.0232610	0.3332413	0.5093705
1.9657E+02	M23C6	0.4609926	0.2068966	0.0956605
		Cr	V	Ni
1.5479E+03	FCC_A1	0.0189888	0.0002876	0.0396237
8.0707E+01	FCC_A1	0.0591504	0.3289522	0.0000131
1.1787E+01	HCP_A3	0.0925753	0.0414597	0.0000923
1.9657E+02	M23C6	0.2364419	0.0000000	0.0000084

Gibbs Energy = -9.3335565488E+07 J System Enthalpy = 4.9267644514E+07 J
     1023.00
*** MULTIPHASE - Stage 1* Results ***

Temperature = 1023.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.413361E+04	5.579350E-03	1.523806E+03	8.510000E+01
C		-3.089874E+04	2.644493E-02	9.574557E+01	1.150000E+00
Mo		-6.417982E+04	5.284997E-04	4.690431E+01	4.500000E+00
Cr		-6.500933E+04	4.793922E-04	8.173706E+01	4.250000E+00
V		-1.283398E+05	2.799647E-07	2.748250E+01	1.400000E+00
Ni		-7.688727E+04	1.186358E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
5.1503E+01	BCC_A2	0.9638623	0.0001675	0.0064646
1.4684E+03	FCC_A1	0.9324737	0.0057228	0.0052087
7.8939E+01	FCC_A1	0.0007521	0.4654220	0.1388166
1.0457E+01	HCP_A3	0.0162530	0.3332760	0.5215894
2.2769E+02	M23C6	0.4596909	0.2068966	0.0988635
		Cr	V	Ni
5.1503E+01	BCC_A2	0.0115642	0.0004388	0.0175026
1.4684E+03	FCC_A1	0.0152374	0.0002016	0.0411558
7.8939E+01	FCC_A1	0.0562488	0.3387523	0.0000082
1.0457E+01	HCP_A3	0.0883664	0.0404407	0.0000745
2.2769E+02	M23C6	0.2345398	0.0000000	0.0000092

Gibbs Energy = -8.6778931794E+07 J System Enthalpy = 4.5415694583E+07 J
     973.000
*** MULTIPHASE - Stage 1* Results ***

Temperature = 973.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-4.081260E+04	6.442691E-03	1.523806E+03	8.510000E+01
C		-2.906530E+04	2.752293E-02	9.574557E+01	1.150000E+00
Mo		-6.103849E+04	5.287928E-04	4.690431E+01	4.500000E+00
Cr		-6.204335E+04	4.670270E-04	8.173706E+01	4.250000E+00
V		-1.255719E+05	1.815314E-07	2.748250E+01	1.400000E+00
Ni		-6.773706E+04	2.310404E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.0427E+03	BCC_A2	0.9596427	0.0000763	0.0045302
4.4095E+02	FCC_A1	0.9045542	0.0034383	0.0043470
7.8409E+01	FCC_A1	0.0004492	0.4672814	0.1327380
4.9714E+00	HCP_A3	0.0110147	0.3333007	0.5316321
2.6996E+02	M23C6	0.4601053	0.2068966	0.1008033

Amount compnt moles	Phase	Mole fraction of component within phase		
		Cr	V	Ni
1.0427E+03	BCC_A2	0.0087241	0.0002966	0.0267300
4.4095E+02	FCC_A1	0.0116682	0.0001076	0.0758847
7.8409E+01	FCC_A1	0.0558160	0.3437065	0.0000089
4.9714E+00	HCP_A3	0.0885155	0.0354310	0.0001060
2.6996E+02	M23C6	0.2321770	0.0000000	0.0000179

Gibbs Energy = -8.0513176250E+07 J System Enthalpy = 3.8023058881E+07 J
     923.000
*** MULTIPHASE - Stage 1* Results ***

Temperature = 923.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.762181E+04	7.429355E-03	1.523806E+03	8.510000E+01
C		-2.793956E+04	2.623477E-02	9.574557E+01	1.150000E+00
Mo		-5.773912E+04	5.401271E-04	4.690431E+01	4.500000E+00
Cr		-5.862613E+04	4.811709E-04	8.173706E+01	4.250000E+00
V		-1.222034E+05	1.214539E-07	2.748250E+01	1.400000E+00
Ni		-6.044859E+04	3.794591E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.3561E+03	BCC_A2	0.9550986	0.0000304	0.0031852
1.2163E+02	FCC_A1	0.8658821	0.0017282	0.0038664
7.6534E+01	FCC_A1	0.0002482	0.4686614	0.1227730
8.8911E+00	HCP_A3	0.0066772	0.3333142	0.5367372
2.7387E+02	M23C6	0.4498819	0.2068966	0.1020432

Amount compnt moles	Phase	Mole fraction of component within phase		
		Cr	V	Ni
1.3561E+03	BCC_A2	0.0069350	0.0002074	0.0345435
1.2163E+02	FCC_A1	0.0093694	0.0000577	0.1190962
7.6534E+01	FCC_A1	0.0566862	0.3516239	0.0000073
8.8911E+00	HCP_A3	0.0913281	0.0318251	0.0001181
2.7387E+02	M23C6	0.2411496	0.0000000	0.0000288

Gibbs Energy = -7.4567358260E+07 J System Enthalpy = 3.2678588406E+07 J
     873.000
*** MULTIPHASE - Stage 1* Results ***

Temperature = 873.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.454036E+04	8.577919E-03	1.523806E+03	8.510000E+01
C		-2.683372E+04	2.480192E-02	9.574557E+01	1.150000E+00
Mo		-5.457184E+04	5.430732E-04	4.690431E+01	4.500000E+00
Cr		-5.529119E+04	4.918341E-04	8.173706E+01	4.250000E+00
V		-1.189806E+05	7.606003E-08	2.748250E+01	1.400000E+00
Ni		-5.429824E+04	5.639345E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4649E+03	BCC_A2	0.9519464	0.0000112	0.0021561
7.4791E+01	FCC_A1	0.0001289	0.4700690	0.1121780
1.3098E+01	FCC_A1	0.8191920	0.0007661	0.0034309
1.3972E+01	HCP_A3	0.0037552	0.3333223	0.5403466
2.7021E+02	M23C6	0.4384190	0.2068966	0.1027402
		Cr	V	Ni
1.4649E+03	BCC_A2	0.0053999	0.0001366	0.0403500
7.4791E+01	FCC_A1	0.0580689	0.3595501	0.0000051
1.3098E+01	FCC_A1	0.0074353	0.0000283	0.1691474
1.3972E+01	HCP_A3	0.0944900	0.0279724	0.0001134
2.7021E+02	M23C6	0.2519024	0.0000000	0.0000419

Gibbs Energy = -6.8881568937E+07 J System Enthalpy = 2.8299306017E+07 J
     823.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   823.0000 K

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

Component	Ref.Phase	Chem.Pot.	Activity	Amount/mol	Mass/kg
Fe		-3.155293E+04	9.941022E-03	1.523806E+03	8.510000E+01
C		-2.566273E+04	2.351063E-02	9.574557E+01	1.150000E+00
Mo		-5.156258E+04	5.339230E-04	4.690431E+01	4.500000E+00
Cr		-5.214095E+04	4.906496E-04	8.173706E+01	4.250000E+00
V		-1.160012E+05	4.342654E-08	2.748250E+01	1.400000E+00
Ni		-4.932422E+04	7.405272E-04	6.133924E+01	3.600000E+00
Total				1.837015E+03	1.000000E+02

Amount compnt moles	Phase	Mole fraction of component within phase		
		Fe	C	Mo
1.4793E+03	BCC_A2	0.9530808	0.0000038	0.0013883
7.3349E+01	FCC_A1	0.0000625	0.4715615	0.1016617
1.8331E+01	HCP_A3	0.0019647	0.3333273	0.5435126
2.6603E+02	M23C6	0.4280338	0.2068966	0.1031102
		Cr	V	Ni
1.4793E+03	BCC_A2	0.0039897	0.0000834	0.0414540
7.3349E+01	FCC_A1	0.0596707	0.3670406	0.0000029
1.8331E+01	HCP_A3	0.0972586	0.0238451	0.0000917
2.6603E+02	M23C6	0.2619058	0.0000000	0.0000537

Gibbs Energy = -6.3429422428E+07 J System Enthalpy = 2.4466832639E+07 J
     773.000
*** MULTIPHASE - Stage 1* Results ***

Temperature =   773.0000 K

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

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Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -2.868196E+04 1.153179E-02 1.523806E+03 8.510000E+01
C                           -2.428690E+04 2.284968E-02 9.574557E+01 1.150000E+00
Mo                          -4.878806E+04 5.049902E-04 4.690431E+01 4.500000E+00
Cr                          -4.920935E+04 4.729500E-04 8.173706E+01 4.250000E+00
V                           -1.134234E+05 2.166351E-08 2.748250E+01 1.400000E+00
Ni                          -4.471140E+04 9.522515E-04 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe             C              Mo
 1.4807E+03 BCC_A2             0.9549319      0.0000012      0.0008304
 7.2275E+01 FCC_A1             0.0000282      0.4732607      0.0914045
 2.1988E+01 HCP_A3             0.0009511      0.3333303      0.5459136
 2.6201E+02 M23C6              0.4189814      0.2068966      0.1032956

                                Cr             V              Ni
 1.4807E+03 BCC_A2             0.0027797      0.0000451      0.0414117
 7.2275E+01 FCC_A1             0.0618540      0.3734510      0.0000015
 2.1988E+01 HCP_A3             0.1004227      0.0193125      0.0000698
 2.6201E+02 M23C6              0.2707587      0.0000000      0.0000678

Gibbs Energy = -5.8200924613E+07 J   System Enthalpy =  2.0908789603E+07 J

                    ************************************
                    * WARNING/ERRORS HAVE BEEN DETECTED *
                    ************************************

    528 Warnings: Multiphase, temperature range violation -  Unary data

 MULTIPHASE OPTION ? set temp 583 !
 MULTIPHASE OPTION ? comp pr br pr mol !

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

Temperature =   583.0000 K

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

Component      Ref.Phase     Chem.Pot.    Activity     Amount/mol   Mass/kg
Fe                          -1.886948E+04 2.038953E-02 1.523806E+03 8.510000E+01
C                           -1.742798E+04 2.745094E-02 9.574557E+01 1.150000E+00
Mo                          -4.038204E+04 2.409962E-04 4.690431E+01 4.500000E+00
Cr                          -3.998544E+04 2.615433E-04 8.173706E+01 4.250000E+00
V                           -1.072135E+05 2.479197E-10 2.748250E+01 1.400000E+00
Ni                          -3.069431E+04 1.778168E-03 6.133924E+01 3.600000E+00
Total                                                  1.837015E+03 1.000000E+02

Amount      Phase               Mole fraction of component within phase
compnt moles
                                Fe             C              Mo
 1.4418E+03 BCC_A2             0.9733580      0.0000000      0.0000422
 4.3250E+01 FCC_A1             0.4588619      0.0000004      0.0000250
 7.0614E+01 FCC_A1             0.0000005      0.4814777      0.0533310
 2.9206E+01 HCP_A3             0.0000224      0.3333333      0.5435525
 2.4972E+02 M23C6              0.3999165      0.2068966      0.1034448
 2.4083E+00 M6C                0.2870972      0.1428571      0.5683827

                                Cr             V              Ni
 1.4418E+03 BCC_A2             0.0003084      0.0000009      0.0262905
 4.3250E+01 FCC_A1             0.0000052      0.0000000      0.5411076
 7.0614E+01 FCC_A1             0.0778201      0.3873707      0.0000000
 2.9206E+01 HCP_A3             0.1187588      0.0043220      0.0000111
 2.4972E+02 M23C6              0.2896227      0.0000000      0.0001195
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 2.4083E+00 M6C                0.0012278       0.0004352       0.0000000

Gibbs Energy = -4.0417183435E+07 J   System Enthalpy =  8.7338193898E+06 J
                     ************************************
                     * WARNING/ERRORS HAVE BEEN DETECTED *
                     ************************************

     48 Warnings: Multiphase, temperature range violation -  Unary data

 MULTIPHASE OPTION ?
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