APPENDIX K: EXAMPLE OF THE INPUT FILE: CUSP_INP$TXT1 FOR A TEST RUN

This input file provides various data relevant to the drilling equations and the intrusion time. Because it is designed for a test run, specific numerical values are defined for each of the various parameters. The file is stored in the CMS portion of the WIPP Alpha cluster under the name: CUSP_TEST_2.INP. Corresponding input files for the other test problems may be found by replacing the number 2 in the file's name by the problem number of interest. This file is discussed in Section 6.1 above as file number 3.

Definitions of the various parameters used in this input file are given at the end of this appendix.

```
----------------------------------------------------------------------------
                    BEGINNING        OF    A    TEST - LIKE   INPUT    FILE
----------------------------------------------------------------------------
!
!   TEST PROBLEM 2, STUCK PIPE
!
! INTRUSION            -       ..

   TINTR         2000.0
   DIAMMOD       0.3556
   PRESSURE      12.5E6
   TCLOUT        6.40E4


!
!   Initial porosity is required, hence two entries
!

   POROSITY        0.88      0.070405

! PROPERTIES

   DNSFLUID     0.1210E+04
   DOMEGA       0.7800E+01
   VISCO        0.9170E-02
   YLDSTRSS     0.4400E+01
   ABSROUGH     0.2500E-01
   TAUFAIL      8.1120E+00


----------------------------------------------------------------------------
                    END       OF    A    TEST - LIKE   INPUT    FILE
----------------------------------------------------------------------------
```

Explanation of Input Parameters Used in Appendices J and K

In the list that follows, two entries are made for each listing. The first applies to a test-like input file such as the one given in Appendix E. The second applies to a regulatory-calculation-like input file such as the one given in Appendix D. Both pertain to drilling and intrusion parameters.

```
VARIable_name  <default values> Only capitalized portion of name is
  or                              required
VARI           MATERIAL_NAME:PROPERTY_NAME  fetch input from CDB file
```

Drilling Parameters

```
DENSity     <1.210E+03>  -  Density of the drilling fluid (mud) in kg/m³.
  or
DENS        MATERIAL_NAME:PROPERTY_NAME



DOMEga      <0.7800E+01>  -  Angular velocity of the drill string in rad/s.
  or
DOME        MATERIAL_NAME:PROPERTY_NAME



ROUGH       <.0250>  -  Absolute borehole roughness (m)
  or
ROUGH       MATERIAL_NAME:PROPERTY_NAME


TAUFail     <0.1000E+03>  -  Effective shear resistance to erosion (Pa).
  or
TAUF        MATERIAL_NAME:PROPERTY_NAME


VISCo       <0.9170E-02>  -  Plastic viscosity of drilling mud
  or                          associated with an Oldroyd type fluid model  (Pa-s)
                              (zero shear-rate viscosity).
VISC        MATERIAL_NAME:PROPERTY_NAME


YLDSTrss    <0.4400E+01>  -  Yield Stress of the drilling fluid (mud)   (Pa).
  or
YLDS        MATERIAL_NAME:PROPERTY_NAME
```

Intrusion Parameters

```
VARIable_name  <default value> Only capitalized portion of name is
  or                              required
VARI           MATERIAL_NAME:PROPERTY_NAME  fetch input from CDB file
  or     if nhits .gt. 1 (testing mode), then
VARI   variable(1) variable(2) ... variable(nhits)


UNITS       <SEC> - Type of time units that
UNITS               the times of intrusions
                    are specified [CHARACTER].
                    Valid responses are:
                    YEARS or SECONDS.

NHITS       <1> - Number of intrusions [REAL]*.
NHITS
```

---

* [REAL] signifies a real, floating-point number.

```
DBDIAM        <0.5080E+00>    - Drilling bit diameter  (m); (outside
                               diameter of drill-string annulus)
                               corresponding to the first
 or                            intrusion time [REAL].
DBDIAM        MATERIAL_NAME:PROPERTY_NAME
 or
DBDIAM(nhits)



TINTR         <>   -  First intrusion time   (m)   [REAL].
 or
TINTR         MATERIAL_NAME:PROPERITY_NAME
 or
TINTR(nhits)



TCLOUT        <>   - Clean-out time**   (s) [REAL].
 or
TCLOUT        MATERIAL_NAME:PROPERITY_NAME
 or
TCLOUT(nhits)



PARTDIA       <>   - Particle diameter (m) [REAL].
 or
PARTDIA(nhits)        -
```

Note!!!   The following two parameters are NOT required if a BRAGFLO CDB file
is attached.

```
POROSITY      <>   - Porosity at time of intrusion (unitless) [REAL].
 or
POROSITY      MATERIAL_NAME:PROPERITY_NAME
 or
POROSITY(nhits)



PRESSure      <>   - Repository pressure at time of intrusion (Pa) [REAL].
 or
PRESS         MATERIAL_NAME:PROPERITY_NAME
 or
PRESS(nhits)
```

Note!!!   The preceding two parameters are NOT required if a BRAGFLO CDB file
is attached.

END OF APPENDIX K

** Clean-out time is the time required to replace all of the borehole drilling fluid at the present pumping rate.