

CENTER FOR NUCLEAR WASTE
REGULATORY ANALYSES

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Title:

Radionuclide Chemistry in Reduced Groundwaters: Implications for the Performance of a Proposed High-Level Waste Nuclear Repository at Yucca Mountain, Nevada

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Objectives:

The objectives of this work were to i) evaluate the release of radionuclides to the critical group at 20 km at the proposed high level waste repository at Yucca Mountain by conducting sensitivity analyses of selected variables using the TPA 3.2 Total System Performance Assessment Code developed by the CNWRA and ii) to prepare and present a paper on the findings for the Materials Research Society (MRS) Annual Meeting in the Fall of 1999 at Boston, Massachusetts.

Computer Analyses:

The sensitivity analyses were each conducted for a 50,000 year period, with 250 realizations, and results reported for the 20km critical group using the TPA version 3.2 computer code. Sensitivity analyses were conducted for the following cases: i) Case 1: Base Case with values set to the nominal values assigned for the Base Case by TSPA code 3.2. The *tpa.inp* file for the Base Case run is shown in Figure 1 as *tpa1.inp.wpd.*; ii) Case 2: Enhanced SolubilityTc - technetium was selected as a representative radionuclide for these computer runs. In the Enhanced Solubility Case only the value assigned to the solubility of Technetium was changed with all other values in the Base Case remaining the same. Technetium solubility was changed from $9.73 \times 10^{-1} \text{ kg/m}^3$ in the Base Case to a more realistic value of $3 \times 10^{-7} \text{ kg/m}^3$ in Enhanced SolubilityTc Run. The *tpa.inp* file for the Enhanced SolubilityTc case is shown in Figure 2 as *tpa2.inp.wpd.*; iii) Case 3: Enhanced TcRD - In the Enhanced TcRD Case only the values for AlluviumMatrixRD_SAV_Tc and ImmobileRD_STFF_Tc were changed from the Base Case values. AlluviumMatrixRD_SAV_Tc was changed from a constant 1.0 to 1.64×10^4 while ImmobileRD_STFF_Tc was changed from a loguniform variance of 1 to 30 to a constant 2.45×10^5 . The *tpa.inp* file for the Enhanced TcRD case is shown in Figure 3 as *tpa3.inp.wpd.*; iv) Case 4: Enhanced Solubility and Enhanced TcRD - The variables changed in Case 2 and Case 3 were changed in the same run, Case 4. The *tpa.inp* file for the Enhanced TcRD and SolubilityTc case is shown in Figure 4 as *tpa4.inp.wpd.*; v) Case 5: Enhanced Canister Failure - The Enhanced Canister Failure Case involved the selection of Alloy 625 as the canister material. Because Alloy 625 corrodes more quickly than Alloy C-22 there are earlier (than 10,000 years) canister failures which release radionuclides at earlier times than the Base Case (which uses Alloy C-22 as the canister material). The *tpa.inp* file for the Enhanced Canister Failure Case is shown in Figure 5 as *tpa5.inp.wpd.*; vi) Case 6: Enhanced SolubilityTc, Enhanced TcRD, and Enhanced Canister Failure - Case Six changes the variables modified in Case Two, Case Three, and Case Five all in the same run. The *tpa.inp* file for the Enhanced SolubilityTc, Enhanced TcRD, and Enhanced Canister Failure Case is shown in Figure 6 as *tpa6.inp.wpd.*; vii) Case 7: Enhanced Canister Failure and Enhanced SolubilityTc - the changes made in Case 2 and case 5 were simultaneously made in Case 7. The *tpa.inp* file for

the Enhanced SolubilityTc, and Enhanced Canister Failure Case is shown in Figure 7.; viii) Case 8: Enhanced TcRD and Enhanced Canister Failure - The changes made in Case 3 and Case 5 were made simultaneously in the Case 8 run. The *tpa.inp* file for the Enhanced TcRD and Enhanced Canister Failure Case is shown in Figure 8 as *tpa8.inp.wpd.*; ix) Case 9: Enhanced AlluviumMatrixRD_SAV_Tc - The Base Case was changed to have AlluviumMatrixRD_SAV_Tc be a constant $1.6e^4$. The *tpa.inp* file for the Enhanced AlluviumMatrixRD_SAV_Tc is shown in Figure 9 as *tpa9.inp.wpd.*; and x) Enhanced ImmobileRD_STFF_Tc - The Base Case was changed to have ImmobileRD_STFF_Tc be a constant of $2.4e^5$. The *tpa.inp* file for the Enhanced ImmobileRD_STFF_Tc is shown in Figure 10 as *tpa10.inp.wpd.*

The output file *gwpkdos.res* was used to evaluate the radiation dose attributable to Tc. All 10 of the *gwpkdos.res* files are contained on the accompanying CD ROM and are identified as *gwpkdos1.res* through *gwpkdos9.res* and *gwpkdos10.res* for Cases 1 through 10 discussed earlier..

On page 63 and 64 the release of radiation due to Technetium (Tc) at 20 kilometers for each of the 10 different cases is graphed for each of the 250 realizations run for each case. The data used to construct these graphs is found in the files *gwpkds1.res* through *gwpkds9.res* and *gwpkds10.res*.

On Page 65 is a CDROM which contains the files generated for this effort. Files are in folder Tpa-chem. 03/27/00 *nm*

Base Case

```

title
Input file tpa3.2.inp as supplied with TPA Version 3.2.1
**
** ***** Parameter Sampling <<<***
**
Base case data set Rev 3.2.1 2/22/99
**
Code ***** 5/25/1998 tpa3.2 new parameter/option to conduct
direct-release only calculation
**
***** GLOBAL PARAMETERS <<<***
**
***** Disruptive Scenario flags <<<***
**
iflag
DirectReleaseOnlyFlag[yes=1,no=0]
0
**
iflag
VolcanicDisruptiveScenarioFlag[yes=1,no=0]
0
**
iflag
FaultingDisruptiveScenarioFlag[yes=1,no=0]
0
**
iflag
SeismicDisruptiveScenarioFlag[yes=1,no=0]
1
**
***** Subarea Size <<<***
**
Number and Location of Subareas[m] Based On
Fig3.4.1 in TSPA95
**
subarea
**
1
ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
**
547405.7 4079323.7
548069.2 4079362.2
548469.3 4079362.2
548469.3 4079337.8
547405.7 4079237.8
547405.7 4079362.2
subarea
7
ZONE T="Subarea 1", I=5, F=POINT
547472.0, 4079323.7
548069.2, 4079136.5
547847.3, 4077816.2
547318.4, 4077834.0
547472.0, 4079323.7
ZONE T="Subarea 2", I=5, F=POINT
548069.2, 4079136.5
548609.7, 4078969.6
548547.9, 4077654.1
547847.3, 4077816.2
548069.2, 4079136.5
ZONE T="Subarea 3", I=5, F=POINT
547318.4, 4077834.0
547847.3, 4077816.2
548322.7, 4077192.2
547474.7, 4077281.6
547318.4, 4077934.0
ZONE T="Subarea 4", I=5, F=POINT
547847.3, 4077816.2
548547.9, 4077654.1
548504.8, 4077170.0
548322.7, 4077192.2
547847.3, 4077816.2
ZONE T="Subarea 5", I=5, F=POINT
547474.7, 4077282.6
547887.3, 4077238.1
547995.0, 4076338.9
547670.4, 4076435.5
547474.7, 4077282.6
ZONE T="Subarea 6", I=5, F=POINT
547887.3, 4077238.1
548322.7, 4077192.2
548319.5, 4076220.2
547995.0, 4076338.9
547887.3, 4077238.1
ZONE T="Subarea 7", I=5, F=POINT
548322.7, 4077192.2
548504.8, 4077170.0
548473.1, 4076533.7
548319.5, 4076220.2
548322.7, 4077192.2
**
icountant
StartAtSubarea
1
**
icountant
StopAtSubarea
7
**
***** Nuclides and Chains <<<***
**
5/25/1998 tpa3.2 new parameter section
**
Nuclides can be eliminated from the basecase set.
However, if additional nuclides (Pu242, Am242m,
U236, U232, Sm151,
Pu237, Sm151, Sn126, Ag108m, Pd167, Mo93, Zr93,
Sr90, or Ni63)
are added to the basecase set, then corresponding
RDS,
solubilities, gap fractions, and correlations must
be added.
**
iflag
CheckNuclidesAndChains[yes=1,no=0]
0
**
aqueousnuclides
** number of nuclides, number of chains
20
13
2
chain 1
Cm246
U238
**
chain 2
3
Cm245
Am241
Mo237
**
chain 3
2
Am243
Pu239
**
chain 4
1
Pu240
**
chain 5
4
U234
Th230
Ra226
Pb210
**
chain 6
1
Cm135
**
chain 7
1
I129
**
chain 8
1
Tc99
**
chain 9
1
Ni59
**
chain 10
1
C14
**
chain 11
1
Se79
**
chain 12
1
Nb94
**
chain 13
1
C136
**
endofnuclides
**
***** UZFLOWS <<<***
**
uniform
Area[AverageMeanAnnualInfiltrationAtStart[mm/yr]
1.0, 10.0
**
uniform
MeanAveragePrecipitationMultiplierAtGlacialMaximum
1.5, 2.5
**
uniform
MeanAverageOfTemperatureIncreaseAtGlacialMaximum[degC]
-10, -5
**
constant
TimeStepForClimate[yr]
500.0
**
constant
StandardDeviationOfMAPAboutMeanInOneTimePeriod[mm/yr]
0.0
**
constant
StandardDeviationOfMATAboutMeanInOneTimePeriod[degC]
0.0
**
constant
CorrelationBetweenMAPandMAT
-0.8
**
icountant
ClimatePerturbationSet
1
**
***** NPERNV <<<***
**
iflag
TabularTemperatureRUFFlag[yes=1,no=0]
0
**
icountant
NetUsedToPickTempRHDataSet
1
**
**
6/2/98 tpa3.2 name change for UseReflux2
**
icountant
SelectRefluxModel(1,2,3)
3
**
constant
LengthOfRefluxZone[s]
20

```

Tpa1.inp.wpd

```

**
constant
MaximumFluxInRefluxZone[m/s]
1.0e-9
**
constant
PerchedBucketVolumePerSAarea[m3/m2]
0.5
**
constant
Reflux2Thickness
100.0
**
constant
Reflux2Porosity
0.14
**
constant
Reflux2SatInit
0.9
**
constant
Reflux2SatResid
0.1
**
constant
Reflux2Period
100.0
**
constant
Reflux2LossI
0.1
**
constant
Reflux2LossD
0.1
**
constant
WPLength[m]
5.682
**
constant
WPDiameter[m]
1.802
**
constant
EmplacementDriftDiameter[m]
5.0
**
constant
WPSpacingAlongEmplacementDrift[m]
15.0
**
** 6/4/98 tpa3.2: Next 4 new parameters specific to
** reflux3 model
**
constant
WPHitCellWidth[m]
22.5
**
loguniform
FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
uniform
FractionOfCondensateTowardRepository[1/yr]
0.0, 1.0
**
loguniform
FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
constant
DensityOfWaterAtBoiling[kg/m^3]
960.5
**
constant
EnthalpyOfPhaseChangeForWater[J/kg]
2.46e6
**
uniform
TemperatureGradientInVicinityOfBoilingIsotherm[K/m]
** 0.0, 100.0
**
constant
AreaMassLoading[MTU/acre]
83.0
**
constant
WastePackagePayload[MTU]
9.76
**
constant
AgeOfWaste[yr]
20.0
**
constant
AmbientRepositoryTemperature[C]
20.0
**
constant
MassDensityOfYMRock[kg/m^3]
2580.0
**
constant
SpecificHeatOfYMRock[J/(kg-K)]
840.0
**
uniform
ThermalConductivityOfYMRock[W/(m-K)]
1.8, 2.2
**
constant
EmissivityOfDriftWall[-]
0.8
**
constant
EmissivityOfWastePackage[-]
0.7
**
constant
ThermalConductivityOfFloor[W/(m-C)]
0.6
**
constant
EffectiveThermalConductivityOfUnbackfilledDrift[W/(m-C)]
0.90
**
constant
ThermalConductivityOfBackfill[W/(m-C)]
0.60
**
constant
ThermalConductivityOfInnerStainlessSteelWall[W/(m-C)]
15.0
**
constant
ThermalConductivityOfOuterCarbonSteelWall[W/(m-C)]
50.0
**
constant
EffectiveThermalConductivityOfBasketSFInWP[W/(m-C)]
1.0
**
constant
ElevationOfRepositoryHorizon[m]
1072.0
**
constant
ElevationOfGroundSurface[m]
1400.0
**
**
** ***** EHSFAIL <<<*****
**
constant
OuterWPTHickness[m]
0.1
**
constant
InnerWPTHickness[m]
0.02
**
constant
MetalGrainRadius[micrometer]
13.75
**
constant
GrainBoundaryThickness[micrometer]
7.0e-4
**
constant
DryOxidationConstant
0.00001
**
constant
CriticalRelativeHumidityHumidAirCorrosion
0.55
**
normal
CriticalRelativeHumidityAqueousCorrosion
0.75, 0.85
**
uniform
ThicknessOfWaterFilm[m]
0.001, 0.003
**
constant
BoilingPointOfWater[C]
97.0
**
constant
OuterOverpackExpIntercept
-620.3
**
constant
TempCoeffOfOuterPackExpIntercept
0.47
**
constant
OuterOverpackExpSlope
-55.2
**
constant
TempCoeffOfOuterPackExpSlope
0.88
**
uniform
InnerOverpackExpIntercept
1040.0, 1240.0
** 48.5, 148.5 >>> 625 <<<
**
constant
TempCoeffOfInnerPackExpIntercept
0.0
**
constant
InnerOverpackExpSlope
0.0
** -160.8 >>> 625 <<<
**
constant
TempCoeffOfInnerPackExpSlope
0.0
**
constant
OuterWFBetaKineticsParameterForOxygen
0.75
**
constant
OuterWFBetaKineticsParameterForWater
0.5
**
constant
InnerWFBetaKineticsParameterForOxygen
0.75
**
constant
InnerWFBetaKineticsParameterForWater
0.5
**
constant
OuterWFRateConstantForOxygenReduction[coulomb-m/mole/yr]
3.8e12
**
constant
OuterWFRateConstantForWaterReduction[coulomb-m/m^2/yr]
1.6e-1
**
constant
InnerWFRateConstantForOxygenReduction[coulomb-m/mole/yr]
3.0e10
**
constant
InnerWFRateConstantForWaterReduction[coulomb-m/m^2/yr]
3.2
**
uniform
InnerWFActivationEnergyForOxygenReduction[J/mole]
40000.0
**
constant
InnerWFActivationEnergyForWaterReduction[J/mole]
25000.0
**
constant
AA_1_l[C/m2/yr]
3.15e5
**
uniform
AA_2_l[C/m2/yr]
2.0e4, 6.3e4
**
constant
MeasuredGalvanicCouplePotential
-0.46
**
uniform
CoeffForLocCorrOfOuterOverpack
8.66e-4, 8.66e-3
**
constant
ExponentForLocCorrOfOuterOverpack
0.45
**
constant
HumidAirCorrosionRate[m/yr]
1.16e-3
**
constant
LocalisedCorrRateOfInnerOverpack[m/yr]
2.5e-4
**
constant
FractionalCouplingStrength
0.0
**
constant
FactorForDefiningChoiceOfCritPotential
0.0
**
constant
CritChlorideConcForFirstLayer[mol/L]
3.0e-4
**
constant
CritChlorideConcForSecondLayer[mol/L]
1.0
** 3.0e-2 >>> 625 <<<
**
uniform

```

Base Case

```

ChlorideMultFactor 0.28
1.0, 30.0
constant
ReferenceDepth 0.14
9.0
constant
WpSurfaceScaleThickness[m] 0.4
0.0
constant
TortuosityOfScaleonWP 0.46
1.0
constant
PorosityOfScaleonWP 0.5
1.0
constant
YieldStrength[MPa] 205.0
**
constant
SafetyFactor 1.4
**
constant
FractureToughness[MPa-m**0.5] 250.0
**
***** SEISMO <<<<<
**
hazardcurve
SeismicHazardCurveforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 2400.0
0.25 4400.0
0.30 7800.0
0.35 11000.0
0.40 20000.0
0.45 30000.0
0.50 44000.0
**
constant
WeightPercentageOfRockFallThatHitsWPforSEISMO
1.0
**
constant
WeightOfWPforSEISMO[N] 1.27D05
**
constant
WpStiffnessforSEISMO[Pa*m] 21D10
**
constant
WpModulusOfElasticityforSEISMO[Pa] 2.07D11
**
normal
RockModulusOfElasticityforSEISMO[Pa] 2.76D10, 4.14D10
**
constant
WpPoissonRatioforSEISMO[] 0.2D0
**
normal
RockPoissonRatioforSEISMO[] 0.15, 0.25
**
constant
RockFallingDistanceforSEISMO[m] 2.0D0
**
constant
WpFallingDistanceforSEISMO[m] 0.3D0
**
constant
WpNumberofSupportPairforSEISMO 2
**
constant
WpSupportStiffnessforSEISMO[pa*m] 5.5D09
**
constant
DistributionJointSpacing1forSEISMO 5.0D-03
**
constant
DistributionJointSpacing2forSEISMO 5.0D-03
**
constant
DistributionJointSpacing3forSEISMO 5.0D-03
**
constant
DistributionJointSpacing4forSEISMO 0.629D0
**
constant
DistributionJointSpacing5forSEISMO 0.356D0
**
normal
SEISMOJointSpacing1[m] 0.466, 0.600
**
normal
SEISMOJointSpacing2[m] 0.333, 0.466
**
normal
SEISMOJointSpacing3[m] 0.20, 0.333
**
normal
SEISMOJointSpacing4[m] 0.06, 0.20
**
normal
SEISMOJointSpacing5[m] 0.03, 0.06
**
** 5/28/1998 tpa3.2 new value (mmh)
**
constant
WEUllimateStrength[N/m^2] 4.5D08
**
constant
GrainDensityforTSw2SEISMO[] 2.55
**
** 5/28/1998 tpa3.2 new values next 60
parameters(replacing seismo.dat)
**
constant
FractionAreaForGroundMotion1 0.05
**
constant
FractionAreaForGroundMotion2 0.12
**
constant
FractionAreaForGroundMotion3 0.17
**
constant
FractionAreaForGroundMotion4 0.23
**
constant
FractionAreaForGroundMotion5

```

Tpa1.inp.wpd

```

uniform
VerticalExtentOfRockFall14_6[m] 0.5 7.5
**
constant
FractionAreaForGroundMotion6 0.14
**
uniform
VerticalExtentOfRockFall14_7[m] 0.5 8.0
**
constant
FractionAreaForGroundMotion7 0.4
**
uniform
VerticalExtentOfRockFall14_8[m] 0.5 8.5
**
constant
FractionAreaForGroundMotion8 0.46
**
uniform
VerticalExtentOfRockFall14_9[m] 0.5 9.3
**
constant
FractionAreaForGroundMotion9 0.5
**
uniform
VerticalExtentOfRockFall14_10[m] 0.5 10.0
**
constant
FractionAreaForGroundMotion10 0.54
**
** rwr 7/8/98 modify the VerticalExtentOfRockFall
names by adding "_"
**
constant
VerticalExtentOfRockFall11_1[m] 0.5 8.33
**
constant
VerticalExtentOfRockFall11_2[m] 0.0
**
constant
VerticalExtentOfRockFall11_3[m] 0.0
**
constant
VerticalExtentOfRockFall11_4[m] 0.0
**
constant
VerticalExtentOfRockFall11_5[m] 0.0
**
constant
VerticalExtentOfRockFall11_6[m] 0.0
**
constant
VerticalExtentOfRockFall11_7[m] 0.0
**
constant
VerticalExtentOfRockFall11_8[m] 0.0
**
constant
VerticalExtentOfRockFall11_9[m] 0.0
**
constant
VerticalExtentOfRockFall11_10[m] 0.0
**
constant
WpYieldPoint[] 0.002
**
constant
WpPlasticElongation[] 0.02
**
***** EBSREL <<<<<
**
** rwr 7/8/98 modify flow model flag
iflag
FlowModelFlag(0=BathTub,1=FlowThrough)
0
lognormal
FowFactor 0.01, 3.0
**
constant
WpFracturePorosity 0.01, 0.2
**
constant
SubAreaWetFraction 1.0
**
** 5/21/98 tpa3.2: New parameter; nonzero initial
failure times
**
constant
InitialFailureTime[yr] 0.0
**
uniform
DefectiveFractionOfWPs/cell 1.0e-4, 1.0e-2
**
** 6/2/1998 tpa3.2 5 new parameters; number of SEISMO
insertvals not to exceed 4
**
constant
NumberofSEISMONWPFailureIntervals 4
**
constant
BeginningofSEISMONWPFailureInterval1[yr] 0.0
**
constant
BeginningofSEISMONWPFailureInterval2[yr] 2000.0
**
constant
BeginningofSEISMONWPFailureInterval3[yr] 5000.0
**
constant
BeginningofSEISMONWPFailureInterval4[yr] 10000.0
**
constant
WpInternalVolume[m3] 4.83
**
constant
FlowOutletTemperature[C] 999.
**
constant
VpDensity[kg/m3] 10600.
**
constant
SurfaceAreaModel 1
**
constant
Model 2
**
constant
OxygenPartialPressure[atm] 0.21
**
constant
NegativeLog10CarbonateConcentration[mol/L] 3.71
**
constant
UserLeachRate[kg/yr/m2] 2.3e-6
**
uniform
RD_Invert_Cm 6.0e3
**
uniform
RD_Invert_Pu 3.0e3

```

Base Case

```

**
constant
ZyrOxideAndCrudC-14InvPerKgSP[ci] 2.48e-5
**
constant
GapAndGrainBoundaryInventoryPerKgSP[ci] 6.2e-6
**
uniform
SolubilityAm[kg/m3] 2.4e-8, 2.4e-4
**
logtriangular
SolubilityNb[kg/m3] 1.2e-3, 3.4e-2, 2.4e-1
**
constant
Solubility_I[kg/m3] 1.29e2
**
constant
SolubilityTc[kg/m3] 9.93e1
**
constant
SolubilityCl[kg/m3] 3.6e1
**
constant
Solubility_C[kg/m3] 1.4e1
**
constant
Solubility_U[kg/m3] 7.4e-3
**
constant
SolubilityCm[kg/m3] 2.4e-4
**
uniform
SolubilityPu[kg/m3] 2.4e-6, 2.4e-4
**
constant
SolubilityTh[kg/m3] 2.3e-4
**
constant
SolubilityRa[kg/m3] 2.3e-5
**
constant
SolubilityPb[kg/m3] 6.0e2
**
constant
GapFractionForCM246 0.0
**
constant
GapFractionForU238 0.0
**
constant
GapFractionForCM245 0.0
**
constant
GapFractionForAM241 0.0
**
constant
GapFractionForNF237 0.0
**
constant
GapFractionForAM243 0.0
**
constant
GapFractionForPU239 0.0
**
constant
GapFractionForPU240 0.0
**
constant
GapFractionForU234 0.0
**
constant
GapFractionForTM230 0.0
**
constant
GapFractionForRA226 0.0
**
constant
GapFractionForPB210 0.0
**
constant
GapFractionForCS135 0.06
**
constant
GapFractionForI129 0.06
**
constant
GapFractionForFC99 0.01
**
constant
GapFractionForNI59 0.0
**
constant
GapFractionForCL36 0.12
**
constant
GapFractionForC14 0.1
**
constant
GapFractionForSE79 0.06
**
constant
GapFractionForNB94 0.0
**
constant
InitialRadiusofSPParticle[m] 7.0e-4, 3.0e-3
**
constant
RadiusofSFGrain[m] 1.25e-5
**
constant
CladdingCorrectionFactor 1.0
**
normal
SubGrainFragmentRadiusAfterTransPrac[m] 5.0e-7, 2.0e-6
**
constant
ThicknessofCladding[m] 6.1e-4
**
constant
SFC-14InventoryPerKgSP[ci] 7.2e-4
**
constant
CladC-14InventoryPerKgSP[ci] 4.89e-4

```

Tpa1.inp.wpd

```

0.0, 1.0
**
uniform
SFwettedFraction_SEISMO2_7 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO3_1 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO3_2 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO3_3 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO3_4 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO3_5 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO3_6 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO3_7 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO4_1 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO4_2 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO4_3 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO4_4 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO4_5 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO4_6 0.0, 1.0
**
uniform
SFwettedFraction_SEISMO4_7 0.0, 1.0
**
uniform
SFwettedFraction_Corrosion_1 0.0, 1.0
**
uniform
SFwettedFraction_Corrosion_2 0.0, 1.0
**
uniform
SFwettedFraction_Corrosion_3 0.0, 1.0
**
uniform
SFwettedFraction_Corrosion_4 0.0, 1.0
**
uniform
SFwettedFraction_Corrosion_5 0.0, 1.0
**
uniform
SFwettedFraction_Corrosion_6 0.0, 1.0
**
uniform
SFwettedFraction_Corrosion_7 0.0, 1.0
**
** 7/4/1998 tpa3.2 four new parameters for invert
iflag
InvertBypass(0=ebfilt,1=bypass-ebfilt)
0
**
constant
InvertRockPorosity 0.3
**
constant
InvertThickness[m] 0.75
**
constant
InvertDiffusionCoefficient[m^2/yr] 4.4e-5
**
constant
InvertMatrixPermeability[m^2] 2.0e-18, 2.0e-16
**
***** UZFT <<<<<
**
constant
UnsaturatedZoneMinimumVelocityChangeFactor[Fraction] 0.4
**
constant
MatrixlongitudinalDispersivity[FractionOfflayer] 0.1
**
constant
FractureLongitudinalDispersivity[FractionOfflayer] 0.1
**
lognormal
MatrixKD_TSw_Am[m3/kg] 4.2e+00 3.8e+06
**
uniform
MatrixKD_ChmvAm[m3/kg] 1.3e+01 1.2e+07
**
lognormal
MatrixKD_ChmvAm[m3/kg] 1.2e+01 1.1e+07
**
uniform
MatrixKD_PPw_Am[m3/kg] 9.5e+00 8.7e+06
**
lognormal
MatrixKD_UCF_Am[m3/kg] 9.6e+01 9.1e+06
**
uniform
MatrixKD_BPw_Am[m3/kg] 4.1e+00 3.7e+06
**
lognormal
MatrixKD_UCF_U[m3/kg] 3.9e+00 3.5e+06
**
lognormal
MatrixKD_TSw_Np[m3/kg] 1.6e+06 2.2e+01
**
lognormal
MatrixKD_ChmvNp[m3/kg] 4.8e+06 6.6e+01

```

```

0.0e-6, 0.50
**
constant
MatrixKD_TSw_C[m3/kg]
0.0
**
constant
MatrixKD_Chnvc[m3/kg]
0.0
**
constant
MatrixKD_ChnzC[m3/kg]
0.0
**
constant
MatrixKD_PPw_C[m3/kg]
0.0
**
constant
MatrixKD_UCF_C[m3/kg]
0.0
**
constant
MatrixKD_BPw_C[m3/kg]
0.0
**
constant
MatrixKD_UFz_C[m3/kg]
0.0
**
loguniform
MatrixKD_TSw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_ChnvSe[m3/kg]
2.0e-7, 0.020
**
loguniform
MatrixKD_ChnzSe[m3/kg]
1.5e-7, 0.015
**
loguniform
MatrixKD_PPw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_UCF_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_BPw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_UFz_Se[m3/kg]
3.0e-7, 0.030
**
constant
MatrixKD_TSw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_ChnvNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_ChnzNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_PPw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UCF_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_BPw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UFz_Nb[m3/kg]
0.10, 2.0
**
constant
FractureRD_TSw_Am
1.0
**
constant
FractureRD_ChnvAm
1.0
**
constant
FractureRD_ChnzAm
1.0
**
constant
FractureRD_PPw_Am
1.0
**
constant
FractureRD_UCF_Am
1.0
**
constant
FractureRD_BPw_Am
1.0
**
constant
FractureRD_UFz_Am
1.0
**
constant
FractureRD_TSw_Np
1.0
**
constant
FractureRD_ChnvNp
1.0
**
constant
FractureRD_ChnzNp
1.0
**
constant
FractureRD_PPw_Np
1.0
**
constant
FractureRD_UCF_Np
1.0
**
constant
FractureRD_BPw_Np
1.0
**
constant
FractureRD_UFz_Np
1.0
**
constant
FractureRD_TSw_I
1.0
**
constant
FractureRD_ChnvI
1.0
**
constant
FractureRD_ChnzI
1.0
**
constant
FractureRD_PPw_I
1.0
**
constant
FractureRD_UCF_I
1.0
**
constant
FractureRD_BPw_I
1.0
**
constant
FractureRD_UFz_I
1.0
**
constant
FractureRD_TSw_Tc
1.0
**
constant
FractureRD_ChnvTc
1.0
**
constant
FractureRD_ChnzTc
1.0
**
constant
FractureRD_PPw_Tc
1.0
**
constant
FractureRD_UCF_Tc
1.0
**
constant
FractureRD_BPw_Tc
1.0
**
constant
FractureRD_UFz_Tc
1.0
**
constant
FractureRD_TSw_C1
1.0
**
constant
FractureRD_ChnvC1
1.0
**
constant
FractureRD_ChnzC1
1.0
**
constant
FractureRD_PPw_C1
1.0
**
constant
FractureRD_UCF_C1
1.0
**
constant
FractureRD_BPw_C1
1.0
**
constant
FractureRD_UFz_C1
1.0
**
constant
FractureRD_TSw_Cm
1.0
**
constant
FractureRD_ChnvCm
1.0
**
constant
FractureRD_ChnzCm
1.0
**
constant
FractureRD_PPw_Cm
1.0
**
constant
FractureRD_UCF_Cm
1.0
**
constant
FractureRD_BPw_Cm
1.0
**
constant
FractureRD_UFz_Cm
1.0
**
constant
FractureRD_TSw_U
1.0
**
constant
FractureRD_ChnvU
1.0
**
constant
FractureRD_ChnzU
1.0
**
constant
FractureRD_PPw_U
1.0
**
constant
FractureRD_UCF_U
1.0
**
constant
FractureRD_BPw_U
1.0
**
constant
FractureRD_UFz_U
1.0
**
constant
FractureRD_TSw_Pu
1.0
**
constant
FractureRD_ChnvPu
1.0
**
constant
FractureRD_ChnzPu
1.0
**
constant
FractureRD_PPw_Pu
1.0
**
constant
FractureRD_UCF_Pu
1.0
**
constant
FractureRD_BPw_Pu
1.0
**
constant
FractureRD_UFz_Pu
1.0
**
constant
FractureRD_TSw_Th
1.0
**
constant
FractureRD_ChnvTh
1.0
**
constant
FractureRD_ChnzTh
1.0
**
constant
FractureRD_PPw_Th
1.0
**

```

```

constant
FractureRD_UCF_Th
1.0
**
constant
FractureRD_BFw_Th
1.0
**
constant
FractureRD_UFz_Th
1.0
**
constant
FractureRD_TSw_Ra
1.0
**
constant
FractureRD_ChnvRa
1.0
**
constant
FractureRD_ChnzRa
1.0
**
constant
FractureRD_PPw_Ra
1.0
**
constant
FractureRD_UCF_Ra
1.0
**
constant
FractureRD_BFw_Ra
1.0
**
constant
FractureRD_UFz_Ra
1.0
**
constant
FractureRD_TSw_Pb
1.0
**
constant
FractureRD_ChnvPb
1.0
**
constant
FractureRD_ChnzPb
1.0
**
constant
FractureRD_PPw_Pb
1.0
**
constant
FractureRD_UCF_Pb
1.0
**
constant
FractureRD_BFw_Pb
1.0
**
constant
FractureRD_UFz_Pb
1.0
**
constant
FractureRD_TSw-Cs
1.0
**
constant
FractureRD_ChnvCs
1.0
**
constant
FractureRD_ChnzCs
1.0
**
constant
FractureRD_PPw-Cs
1.0
**
constant
FractureRD_UCF-Cs
1.0
**
constant
FractureRD_BFw-Cs
1.0
**
constant
FractureRD_UFz-Cs
1.0
**
constant
FractureRD_TSw_M1
1.0
**
constant
FractureRD_ChnvM1
1.0
**
constant
FractureRD_ChnzM1
1.0
**
constant
FractureRD_PPw_M1
1.0
**
constant
FractureRD_UCF_M1
1.0
**
constant
FractureRD_BFw_M1
1.0
**
constant
FractureRD_UFz_M1
1.0
**
constant
FractureRD_TSw_C
1.0
**
constant
FractureRD_ChnvC
1.0
**
constant
FractureRD_ChnzC
1.0
**
constant
FractureRD_PPw_C
1.0
**
constant
FractureRD_UCF_C
1.0
**
constant
FractureRD_BFw_C
1.0
**
constant
FractureRD_UFz_C
1.0
**
constant
FractureRD_TSw_Se
1.0
**
constant
FractureRD_ChnvSe
1.0
**
constant
FractureRD_ChnzSe
1.0
**
constant
FractureRD_PPw_Se
1.0
**
constant
FractureRD_UCF_Se
1.0
**
constant
FractureRD_BFw_Se
1.0
**
constant
FractureRD_UFz_Se
1.0
**
lognormal
MatrixGrainDensity_TSw_m2
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability_Chnv_m2
0.2e-14, 0.2e-12
**
lognormal
MatrixPermeability_Chnz_m2
0.5e-18, 0.5e-16
**
lognormal
MatrixPermeability_PPw_m2
0.1e-17, 0.1e-15
**
lognormal
MatrixPermeability_UCF_m2
0.3e-18, 0.3e-16
**
lognormal
MatrixPermeability_BFw_m2
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability_UFz_m2
1.8e-18, 2.1e-16
**
constant
MatrixPorosity_TSw_
0.12
**
constant
MatrixPorosity_Chnv
0.33
**
constant
MatrixPorosity_Chnz
0.32
**
constant
MatrixPorosity_PPw_
0.28
**
constant
MatrixPorosity_UCF_
0.28
**
constant
MatrixPorosity_BFw_
0.12
**
constant
MatrixPorosity_UFz_
0.12
**
constant
MatrixBeta_TSw_
1.5
**
constant
MatrixBeta_Chnv
1.3
**
constant
MatrixBeta_Chnz
2.3
**
constant
MatrixBeta_PPw_
1.5
**
constant
MatrixBeta_UCF_
1.4
**
constant
MatrixBeta_BFw_
1.7
**
constant
MatrixBeta_UFz_
2.3
**
constant
MatrixGrainDensity_TSw_kgm3
2460.0
**
constant
MatrixGrainDensity_Chnv_kgm3
2260.0
**
constant
MatrixGrainDensity_Chnz_kgm3
2400.0
**
constant
MatrixGrainDensity_PPw_kgm3
2540.0
**
constant
MatrixGrainDensity_UCF_kgm3
2420.0
**
constant
MatrixGrainDensity_BFw_kgm3
2570.0
**
constant
MatrixGrainDensity_UFz_kgm3
2630.0
**
lognormal
FracturePermeability_TSw_m2
8.0e-15, 8.0e-11
**
lognormal
FracturePermeability_Chnv_m2

```

06/15/02

```
0e-15, 8.0e-11
lognormal
FracturePermeability_Chnz [m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_PFW [m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_UCF [m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_BFW [m2]
3.0e-15, 3.0e-11
**
lognormal
FracturePermeability_UPZ [m2]
1.0e-13, 1.0e-11
**
loguniform
FracturePorosity_TSW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_Chnv
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_Chnz
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_PFW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UCF_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_BFW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UPZ_
1.0e-3, 1.0e-2
**
constant
FractureBeta_TSW_
3.0
**
constant
FractureBeta_Chnv
3.0
**
constant
FractureBeta_Chnz
3.0
**
constant
FractureBeta_PFW_
3.0
**
constant
FractureBeta_UCF_
3.0
**
constant
FractureBeta_BFW_
3.0
**
constant
FractureBeta_UPZ_
3.0
**
constant
InletArea_1SubArea[m2]
5.4e5
**
constant
InletArea_2SubArea[m2]
5.4e5
**
constant
InletArea_3SubArea[m2]
5.4e5
**
constant
InletArea_4SubArea[m2]
5.4e5
**
constant
InletArea_5SubArea[m2]
5.4e5
**
constant
InletArea_6SubArea[m2]
5.4e5
**
constant
InletArea_7SubArea[m2]
5.4e5
**
constant
TSW_Thickness_1SubArea[m]
33.0
**
constant
ChnvThickness_1SubArea[m]
0.0
**
constant
ChnzThickness_1SubArea[m]
163.0
**
constant
PFW_Thickness_1SubArea[m]
34.0
**
constant
UCF_Thickness_1SubArea[m]
67.0
**
constant
BFW_Thickness_1SubArea[m]
0.0
**
constant
UPZ_Thickness_1SubArea[m]
0.0
**
constant
TSW_Thickness_2SubArea[m]
116.0
**
constant
ChnvThickness_2SubArea[m]
0.0
**
constant
ChnzThickness_2SubArea[m]
154.0
**
constant
PFW_Thickness_2SubArea[m]
29.0
**
constant
UCF_Thickness_2SubArea[m]
29.0
**
constant
BFW_Thickness_2SubArea[m]
0.0
**
constant
UPZ_Thickness_2SubArea[m]
0.0
**
constant
TSW_Thickness_3SubArea[m]
20.0
**
constant
ChnvThickness_3SubArea[m]
0.0
**
constant
ChnzThickness_3SubArea[m]
122.0
**
constant
PFW_Thickness_3SubArea[m]
40.0
**
constant
UCF_Thickness_3SubArea[m]
158.0
**
constant
BFW_Thickness_3SubArea[m]
0.0
**
constant
UPZ_Thickness_3SubArea[m]
0.0
**
constant
TSW_Thickness_4SubArea[m]
110.0
**
constant
ChnvThickness_4SubArea[m]
0.0
**
constant
ChnzThickness_4SubArea[m]
122.0
**
constant
PFW_Thickness_4SubArea[m]
34.0
**
constant
UCF_Thickness_4SubArea[m]
57.0
**
constant
BFW_Thickness_4SubArea[m]
0.0
**
constant
UPZ_Thickness_4SubArea[m]
0.0
**
constant
TSW_Thickness_5SubArea[m]
20.0
**
constant
ChnvThickness_5SubArea[m]
113.0
**
constant
ChnzThickness_5SubArea[m]
0.0
**
constant
PFW_Thickness_5SubArea[m]
38.0
**
constant
UCF_Thickness_5SubArea[m]
158.0
**
constant
BFW_Thickness_5SubArea[m]
32.0
**
constant
UPZ_Thickness_5SubArea[m]
0.0
**
constant
TSW_Thickness_6SubArea[m]
53.0
**
constant
ChnvThickness_6SubArea[m]
125.0
**
constant
ChnzThickness_6SubArea[m]
0.0
**
constant
PFW_Thickness_6SubArea[m]
26.0
**
constant
UCF_Thickness_6SubArea[m]
126.0
**
constant
BFW_Thickness_6SubArea[m]
0.0
**
constant
UPZ_Thickness_6SubArea[m]
0.0
**
constant
TSW_Thickness_7SubArea[m]
121.0
**
constant
ChnvThickness_7SubArea[m]
0.0
**
constant
ChnzThickness_7SubArea[m]
114.0
**
constant
PFW_Thickness_7SubArea[m]
43.0
**
constant
UCF_Thickness_7SubArea[m]
53.0
**
constant
BFW_Thickness_7SubArea[m]
0.0
**
constant
UPZ_Thickness_7SubArea[m]
0.0
**
***** SZT <
constant
MixingZoneDispersionFraction
0.01
**
constant
DispersionFraction_STFF
0.01
**
constant
DispersionFraction_SAV
0.1
**
constant
MinimumResidenceTime_STFF[yr]
10.0
**
constant
MinimumResidenceTime_SAV[yr]
10.0
**
constant
```

```

FractureRD_STFF_Am
1.0
** rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Am
7.5e4, 4.6e10
**
constant
FractureRD_STFF_Np
1.0
** rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Np
1.0, 3.9e3
**
constant
FractureRD_STFF_I
1.0
**
loguniform
AlluviumMatrixRD_SAV_I
1.0, 4.0
**
constant
FractureRD_STFF_Tc
1.0
**
constant
AlluviumMatrixRD_SAV_Tc
1.0
**
constant
FractureRD_STFF_Cl
1.0
**
constant
AlluviumMatrixRD_SAV_Cl
1.0
**
constant
FractureRD_STFF_Cm
1.0
**
constant
AlluviumMatrixRD_SAV_Cm
7.5e4
**
constant
FractureRD_STFF_U
1.0
** rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_U
1.0, 1.9e4
**
constant
FractureRD_STFF_Pu
1.0
** rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Pu
4.2e2, 3.9e5
**
constant
FractureRD_STFF_Th
1.0
**
rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Th
1.0, 4.5e7
**
constant
FractureRD_STFF_Ra
1.0
**
loguniform
AlluviumMatrixRD_SAV_Ra
2.0e3, 8.0e3
**
constant
FractureRD_STFF_Pb
1.0
**
loguniform
AlluviumMatrixRD_SAV_Pb
2.0e3, 8.0e3
**
constant
FractureRD_STFF_Nl
1.0
**
loguniform
AlluviumMatrixRD_SAV_Nl
1.0, 8.0e3
**
constant
FractureRD_STFF_C
1.0
**
constant
AlluviumMatrixRD_SAV_C
1.0
**
constant
FractureRD_STFF_Se
1.0
**
loguniform
AlluviumMatrixRD_SAV_Se
1.0, 500.0
**
constant
FractureRD_STFF_Nb
1.0
**
loguniform
AlluviumMatrixRD_SAV_Nb
2.0e3, 3.0e4
**
loguniform
FracturePorosity_STFF
1.e-3, 1.e-2
**
uniform
AlluviumMatrixPorosity_SAV
1.e-1, 1.5e-1
**
constant
ImmobilerD_STFF_Am
1.8e4
**
constant
ImmobilerD_STFF_Np
19.0
**
constant
ImmobilerD_STFF_I
1.0
**
loguniform
ImmobilerD_STFF_Tc
1.0, 30.0
**
constant
ImmobilerD_STFF_Cl
1.0
**
uniform
ImmobilerD_STFF_Cm
1.8e4
**
constant
ImmobilerD_STFF_Pb
1.8e4
**
constant
ImmobilerD_STFF_Nb
1.8e4
**
constant
ImmobilerPorosity_STFF
0.01
**
constant
DiffusionRate_STFF
0.0
**
***** DCAGH <<***
constant
DistanceToReceptorGroup[km] [should_be_10_or_20]
20.0
**
uniform
WellPumpingRateAtReceptorGroup10km[gal/day]
1.5e4, 2.64e5
**
uniform
WellPumpingRateAtReceptorGroup20km[gal/day]
4.5e4, 1.3e7
**
uniform
FlumeThickness5km[m]
10.0, 100.0
**
uniform
AquiferThickness5km[m]
300.0, 700.0
**
uniform
WinkinsonZoneThickness20km[m]
56.0, 200.0
**
***** FAULTO <<***
finiteexponential
TimeOfNextFaultingEventInRegionOfInterest[yr]
100.0, 10000.0, 2.0e-5
**
userdistribution
ThresholdDisplacementForFaultDisruptionOFWP[m]
4
0.1
0.2
0.3
0.4
**
uniform
XLocationOfFaultingEventInRegionOfInterest[m]
54700.0, 54860.0
**
uniform
YLocationOfFaultingEventInRegionOfInterest[m]
4076200.0, 4079940.0
**
constant
ProbabilityFormWOrientationOfFaults
0.05
**
uniform
NEtoDetermineFaultOrientation
0.0, 1.0
**
constant
NEFaultStrikeOrientationMeasuredFromNorthClockwise[]
-32.5
**
constant
NEFaultStrikeOrientationMeasuredFromNorthClockwise[]
10.0
**
constant
NEFaultTraceLength[m]
4000.0
**
constant
NEFaultTraceLength[m]
4000.0
**
beta
NEFaultZoneWidth[m]
0.5, 275.0, 1.25, 15.0
**
beta
NEFaultZoneWidth[m]
0.5, 365.0, 1.25, 15.0
**
lognormal
NEAmountOfLargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
lognormal
NEAmountOfLargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
constant
NECumulativeDisplacementRate[mm/yr]
0.0005
**
constant
NECumulativeDisplacementRate[mm/yr]
0.0005
**
***** VOLCANO <<***
finiteexponential
TimeOfNextVolcanicEventInRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
constant
XLocationInRegionOfInterest[m]

```

06/15/00

Base Case

```

540000.0
**
constant
KdOfPlutoniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfAmericiumInVolcanicAsh[cm3/g]
1900.0
**
uniform
RNdetermineIfExtrusiveOrIntrusiveVolcanicEvent
0.0, 1.0
**
constant
FractionOfTimeVolcanicEventIsExtrusive
0.999
**
uniform
AngleOfVolcanicDikeMeasuredFromNorthClockwise[degrees]
0.0, 15.0
**
constant
LengthOfVolcanicDike[m]
2000.0, 11000.0
**
uniform
WidthOfVolcanicDike[m]
1.0, 10.0
**
uniform
DiameterOfVolcanicCone[m]
24.6, 77.9
**
****>>> ASHPUMD <<<****
**
constant
DensityOfAirAtSTP[g/cm3]
0.00129
**
constant
ViscosityOfAirAtSTP[g/cm-s]
0.00018
**
constant
ConstantRelatingFallTimeToSteadyDiffusivity[cm2/s/5/2]
0.001
**
constant
MaximumParticleDiameterForParticleTransport[cm]
10.40
**
constant
MinimumFuelParticulateSize[cm]
0.0001
**
constant
MaximumFuelParticulateSize[cm]
0.001
**
constant
MaximumFuelParticulateSize[cm]
0.01
**
constant
MinimumAshDensityForVariationWithSize[g/cm3]
1.2
**
constant
MaximumAshDensityForVariationWithSize[g/cm3]
2.0
**
constant
MinimumAshLogDiameterForDensityVariation
-1.0
**
constant
MaximumAshLogDiameterForDensityVariation
1.0
**
constant
ParticleShapeParameter
0.5
**
constant
IncorporationRatio
0.3
**
constant
WindDirection[degrees]
-90.0
**
exponential
WindSpeed[cm/s]
0.00083
**
loguniform
VolcanicEventDuration[s]
6.13e4, 7.24e6
**
loguniform
VolcanicEventPower[W]
2.57e9, 3.55e11
**
constant
VolcanicColumnConstantBeta
10.0
**
logtriangular
AshMeanParticleDiameter[d_in_cm]
0.01, 0.1, 1.0
**
constant
AshParticleSizeDistributionStandardDeviation
1.0
**
****>>> ASHPUMOV <<<****
**
constant
RelativeRateOfBlanketRemoval[1/yr]
0.001
**
constant
FractionOfPrecipitationLostToEvapotranspiration
0.68
**
constant
FractionOfIrrigationLostToEvapotranspiration
0.5
**
constant
AnnualPrecipitation[m/yr]
0.085
**
constant
AnnualIrrigation[m/yr]
1.12
**
constant
FractionOfYearSoilsSaturatedDueToPrecipitation
0.0054
**
constant
FractionOfYearSoilsSaturatedDueToIrrigation
0.2
**
constant
AshBulkDensity[g/cm3]
1.4
**
constant
AshVolumetricMoistureFractionAtSaturation
0.4
**
constant
DepthOfTheRootingZone[m]
0.15
**
constant
KdOfRadiumInVolcanicAsh[cm3/g]
35.0
**
constant
KdOfFranciumInVolcanicAsh[cm3/g]
4000.0
**

```

Tpa1.inp.wpd

```

1.0
**
constant
SolubilityOfNiobiumInVolcanicAsh[moles/liter]
1.0e-4
**
constant
SolubilityOfZirconiumInVolcanicAsh[moles/liter]
2.2e-10
**
constant
SolubilityOfStrontiumInVolcanicAsh[moles/liter]
1.3e-4
**
constant
SolubilityOfSeleniumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfNickelInVolcanicAsh[moles/liter]
2.0e-3
**
constant
SolubilityOfChlorineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfCarbonInVolcanicAsh[moles/liter]
1.0
**
****>>> DCAGS <<<****
**
constant
DistanceCutoffForDoseConversionDualityInDCAGS[m]
12.99
**
loguniform
AlChlorineMassLoadForVolcanismDoseCalculation[g/m3]
1.0e-4, 1.0e-2
**
constant
OccupancyFactorForVolcanismDoseCalculation[-1]
0.24
**
constant
DepthOfResuspendableLayer[cm]
0.3
**
****>>> CORRELATED PARAMETERS <<<****
**
correlateinputs
SubareaWetFraction
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
0.631
**
correlateinputs
SubareaWetFraction
MatrixPermeability_TSW_[m2]
-0.623
**
correlateinputs
FowFactor
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
-0.224
**
correlateinputs
FowFactor
MatrixPermeability_TSW_[m2]
0.13
**
correlateinputs
SubareaWetFraction
SubareaWetFraction
0.346
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.964
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.346
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.837
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.112
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Np
0.881
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Th
0.109
**
correlateinputs
AlluviumMatrixRD_SAV_Np
AlluviumMatrixRD_SAV_Th
0.260
**
correlateinputs
AlluviumMatrixRD_SAV_Th
AlluviumMatrixRD_SAV_U
0.165
**
endoffile
**

```

Enhanced SolubilityTc

```

title
Input file tpa.inp as supplied with TPA Version 3.2.1
Code
Base case data set Rev 3.2.1 2/22/99
****>>> GLOBAL PARAMETERS <<<****
****>>> Disruptive Scenario flags <<<****
iflag
VolcanismDisruptiveScenarioFlag[yes=1,no=0]
0
**
constant
SeedForRandomNumber
188910452.0
**
iflag
FaultingDisruptiveScenarioFlag[yes=1,no=0]
0
**
iflag
SeismicDisruptiveScenarioFlag[yes=1,no=0]
0
**
****>>> Subarea Size <<<****
**
Number and Location of Subareas[m] Based On
Fig3.4-1 in TSPA95
**
subarea
**
ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
**
547405.7 407632.2
548469.3 407632.2
548469.3 4079237.8
547405.7 4079237.8
547405.7 407632.2
subarea
7
ZONE T="Subarea 1", I=5, F=POINT
547472.0, 4079323.7
548069.2, 4079136.5
547847.3, 4077816.2
547318.4, 4077934.0
547472.0, 4079323.7
ZONE T="Subarea 2", I=5, F=POINT
548069.2, 4079136.5
548069.2, 4079136.5
548547.9, 4077654.1
547847.3, 4077816.2
ZONE T="Subarea 3", I=5, F=POINT
547318.4, 4077934.0
548322.7, 4077192.2
547472.0, 4077934.0
547318.4, 4077934.0
ZONE T="Subarea 4", I=5, F=POINT
547847.3, 4077816.2
548547.9, 4077654.1
548504.8, 4077192.2
548322.7, 4077192.2
547847.3, 4077816.2
ZONE T="Subarea 5", I=5, F=POINT
547895.0, 4076338.9
547670.4, 4076435.5
547472.0, 4077282.6
ZONE T="Subarea 6", I=5, F=POINT
547887.3, 4077238.1
548322.7, 4077192.2
548319.5, 4076220.2
547995.0, 4076338.9
547995.0, 4076338.9
547887.3, 4077238.1
ZONE T="Subarea 7", I=5, F=POINT
548322.7, 4077192.2
548504.8, 4077192.2
548473.1, 4076533.7
548319.5, 4076220.2
548322.7, 4077192.2
**
icountant
StartAtSubarea
1
**
icountant
StopAtSubarea
7
**
****>>> Nuclides and Chains <<<****
**
5/25/1998 tpa3.2 new parameter section
**
Nuclides can be eliminated from the base case set.
**
However, if additional nuclides (Pu242, Am242m,
U235, Pa231, Ac227, Pu241, U233, Th229, Cm244,
U236, U232, Sm151,
Cs137, Sm126, Sm127m, Ag108m, Pd107, Mo93, Zr93,
Sr90, or Ni63)
**
are added to the base case set, then corresponding
RD, Kd, and solubilities, gap fractions, and correlations must
be added.
**
iflag
CheckNuclidesAndChains[yes=1,no=0]
0
**
aqueousnuclides
number of nuclides, number of chains
20
13
1.0, 10.0
**
chain 1
2
Cm246
U238
chain 2
3
Cm245
Am241
Np237
chain 3
2
Am243
Pa239
chain 4
1
Pu240
chain 5
4
U234
Th230
Ra226
Th210
chain 6
1
Cm135
chain 7
1
I129
chain 8
1
Tc99
chain 9
1
Ni59
chain 10
1
C14
chain 11
1
Se79
chain 12
1
Nb94
chain 13
1
C136
endofnuclides

```

Tpa2.inp.wpd

```

**
constant
MaximumFluxInRefluxZone[m/s]
1.0e-3
**
constant
PerchedBunkerVolumePerSArea[m3/m2]
0.5
**
constant
Reflux2Thickness
100.0
**
constant
Reflux2Porosity
0.14
**
iflag
LatinHypercubeSampling[yes=1,no=0]
1
**
icountant
NumberOfRealizations
250
**
icountant
StartAtRealization
0
**
icountant
Reflux2SatResid
100.0
**
constant
Reflux2Period
100.0
**
constant
Reflux2LossI
0.1
**
constant
Reflux2LossD
0.1
**
constant
WLength[m]
5.682
**
constant
WPDiameter[m]
1.802
**
constant
EmplacementDriftDiameter[m]
5.0
**
constant
WPSpacingAlongEmplacementDrift[m]
15.0
**
constant
RatioOfLastToFirstTimeStepInCompliancePeriod
100.0
**
Next two parameters ignored if MaximumTime [yr] =
DurationOfCompliancePeriod[yr]
**
icountant
NumberOfTimeStepsAfterCompliancePeriod
200
**
constant
RatioOfLastToFirstTimeStepAfterCompliancePeriod
1.0e-8, 1.0
**
loguniform
FractionOfCondensateTowardRepository[1/yr]
0.0, 1.0
**
loguniform
FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
icountant
UserDefinedLowerRealizationAppended
1
**
icountant
UserDefinedUpperRealizationAppended
1
**
5/25/1998 tpa3.2 new parameter
**
Select Append Files
0 = append all files
1 = uzflow.ech and uzflow.rlt only
2 = nfmv.ech and nfmv.rlt only
3 = ebsefal.ech and ebsefal.rlt only
4 = seismo.ech and seismo.rlt only
5 = faulto.ech and faulto.rlt only
6 = volcano.ech and volcano.rlt only
7 = ebsefal.ech and ebsefal.rlt only
8 = uft.ech and uft.rlt only
9 = seift.ech and seift.rlt only
10 = dcagw.ech and dcagw.rlt only
11 = ashplume.ech and ashplume.rlt only
12 = ashmove.ech and ashmove.rlt only
13 = dcags.ech and dcags.rlt only
14 = ashplume.cum only
15 = fault.cum only
16 = nfmv.cum only
17 = releaset.cum only
**
icountant
SpecificHeatOfYRock[J/(kg-K)]
840.0
**
uniform
ThermalConductivityOfYRock[W/(m-K)]
1.8, 2.2
**
constant
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
1.0, 10.0
**
constant
EmisivityOfDriftWall[-]
0.8
**
uniform
MeanAveragePrecipitationMultiplierAtGlacialMaximum
1.5, 2.5
**
uniform
MeanAverageTemperatureIncreaseAtGlacialMaximum[degC]
-10, -5
**
constant
TimeStepForClimate[yr]
500.0
**
constant
StandardDeviationOfNAPAboutMeanInOneTimePeriod[mm/yr]
0.0
**
constant
StandardDeviationOfNAPAboutMeanInOneTimePeriod[degC]
0.0
**
constant
CorrelationBetweenNAPandMAT
-0.8
**
constant
ThermalConductivityOfInnerStainlessSteelWall[W/(m-K)]
15.0
**
ClimatePerturbationSet
1
**
constant
ThermalConductivityOfOuterCarbonSteelWall[W/(m-K)]
50.0
**
****>>> NFMV <<<****
**
iflag
TabularTemperatureRHFlag[yes=1,no=0]
1
**
icountant
ElevationOfRepositoryHorizon[m]
1072.0
**
icountant
ElevationOfGroundSurface[m]
1400.0
**
icountant
SelectRefluxModel[1,2,3]
3
**
constant
LengthOfRefluxZone[m]
20
**
constant
InnerWetThickness[m]
0.02
**
constant
MetaGrainRadius[micrometer]
13.75
**
constant
GrainBoundaryThickness[micrometer]
7.0e-4
**
constant
DryOxidationConstant
0.0001
**
constant
CriticalRelativeHumidityHumidAirCorrosion
0.55
**
normal
CriticalRelativeHumidityAqueousCorrosion
0.75, 0.85
**
uniform
ThicknessOfWaterFilm[m]
0.001, 0.003
**
constant
BoilingPointOfWater[C]
95.2
**
constant
OuterOverpackExpIntercept
-620.3
**
constant
TempCoeffOfOuterPackExpIntercept
0.47
**
constant
OuterOverpackExpSlope
0.88
**
constant
TempCoeffOfOuterPackExpSlope
0.88
**
uniform
InnerOverpackExpIntercept
1040.0, 1240.0
**
****>>> tpa3.2: Next 4 new parameters specific to
reflux2 model
**
constant
WPUnitCellWidth[m]
22.5
**
loguniform
FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
constant
TempCoeffOfInnerPackExpSlope
0.0
**
constant
InnerOverpackExpSlope
-160.8 >>> 625 <<<
0.0
**
constant
TempCoeffOfInnerPackExpSlope
0.0
**
constant
OuterWetBetaKineticsParameterForOxygen
0.75
**
constant
OuterWetBetaKineticsParameterForWater
0.5
**
constant
InnerWetBetaKineticsParameterForOxygen
0.75
**
constant
InnerWetBetaKineticsParameterForWater
0.5
**
constant
OuterWetRateConstantForOxygenReduction[coulomb-m/mole/yr]
3.8e12
**
constant
OuterWetRateConstantForWaterReduction[coulomb-m/mole/yr]
1.6e-1
**
constant
AgeOfWaste[yr]
26.0
**
constant
AmbientRepositoryTemperature[C]
20.0
**
constant
MassDensityOfYRock[kg/m3]
2580.0
**
constant
InnerWetRateConstantForOxygenReduction[coulomb-m/mole/yr]
3.0e10
**
constant
SpecificHeatOfYRock[J/(kg-K)]
840.0
**
uniform
ThermalConductivityOfYRock[W/(m-K)]
1.8, 2.2
**
constant
EmisivityOfDriftWall[-]
0.8
**
uniform
ThermalConductivityOfFloor[W/(m-K)]
0.6
**
constant
EffectiveThermalConductivityOfUnbackfilledDrift[W/(m-K)]
0.90
**
constant
TimeOfBackfillReplaced[yr]
10000.0
**
constant
EffectiveThermalConductivityOfBackfill[W/(m-K)]
0.60
**
constant
CorrelationBetweenNAPandMAT
-0.8
**
constant
ThermalConductivityOfInnerStainlessSteelWall[W/(m-K)]
15.0
**
ClimatePerturbationSet
1
**
constant
ThermalConductivityOfOuterCarbonSteelWall[W/(m-K)]
50.0
**
****>>> NFMV <<<****
**
iflag
TabularTemperatureRHFlag[yes=1,no=0]
1
**
icountant
ElevationOfRepositoryHorizon[m]
1072.0
**
icountant
ElevationOfGroundSurface[m]
1400.0
**
****>>> EBPAIL <<<****
**
constant
CriticalChlorideConcForFirstLayer[mol/L]
1.0
**
constant
CriticalChlorideConcForSecondLayer[mol/L]
3.0e-4
**
constant
FactorForDefiningChoiceOfCritPotential
0.0
**
constant
CriticalChlorideConcForFirstLayer[mol/L]
1.0
**
constant
CriticalChlorideConcForSecondLayer[mol/L]
3.0e-4
**
constant
OuterWetThickness[m]
0.1

```

```

chlorideFactor 1.0, 30.0
**
constant ReferenceP 0.0
**
constant WPsurfaceScaleThickness[m] 0.0
**
constant TortuosityOfScaleonWP 1.0
**
constant PorosityOfScaleonWP 1.0
**
constant YieldStrength[MPa] 205.0
**
constant SafetyFactor 1.4
**
constant FractureToughness[MPa-m**0.5] 250.0
**
**      ***>>> SEISMO <<<***
hazardcurve
SeismicHazardCurvesforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 1400.0
0.25 4400.0
0.30 7800.0
0.35 11000.0
0.40 30000.0
0.45 10000.0
0.50 44000.0
**
constant WeightPercentageOfRockFallThatHitsWPforSEISMO 1.0
**
constant WeightOfWPforSEISMO[N] 2.7005
**
constant WPStiffnessforSEISMO[Pa*m] 1.21D10
**
constant WPModulusOfElasticityforSEISMO[Pa] 2.07D11
**
normal RockModulusOfElasticityforSEISMO[Pa] 2.76D10, 0.414D10
**
constant WPPoissonRatioforSEISMO[] 0.2D0
**
normal RockPoissonRatioforSEISMO[] 0.15, 0.25
**
constant RockFallingDistanceforSEISMO[m] 2.0D0
**
constant WPFallingDistanceforSEISMO[m] 0.2D0
**
constant WPNumberOfSupportPairforSEISMO 2
**
constant WPSupportStiffnessforSEISMO[pa*m] 5.5D09
**
constant DistributionJointSpacing1forSEISMO 5.0D-03
**
constant DistributionJointSpacing2forSEISMO 5.0D-03
**
constant DistributionJointSpacing3forSEISMO 5.0D-03
**
constant DistributionJointSpacing4forSEISMO 0.629D0
**
constant DistributionJointSpacing5forSEISMO 0.356D0
**
normal SEISMOJointSpacing1[m] 0.466, 0.600
**
normal SEISMOJointSpacing2[m] 0.333, 0.466
**
normal SEISMOJointSpacing3[m] 0.20, 0.333
**
normal SEISMOJointSpacing4[m] 0.06, 0.20
**
normal SEISMOJointSpacing5[m] 0.03, 0.06
**
** 5/28/1998 tpa3.2 new value (smh)
**
constant WPUltimateStrength[N/m^2] 4.5D08
**
constant GrainDensityforTSw2SEISMO[] 2.55
**
** 5/28/1998 tpa3.2 new values next 60
parameters(replacing seismo.dat)
**
constant FractionAreaForGroundMotion1 0.05
**
constant FractionAreaForGroundMotion2 0.12
**
constant FractionAreaForGroundMotion3 0.17
**
constant FractionAreaForGroundMotion4 0.23
**
constant FractionAreaForGroundMotion5 0.28
**
constant FractionAreaForGroundMotion6 0.34
**
constant FractionAreaForGroundMotion7 0.4
**
constant FractionAreaForGroundMotion8 0.46
**
constant FractionAreaForGroundMotion9 0.5
**
constant FractionAreaForGroundMotion10 0.54
**
** rwr 7/8/98 modify the VerticalExtentOfRockFall
names by adding "_"
**
constant VerticalExtentOfRockFall1_1[m] 0.0
**
constant VerticalExtentOfRockFall1_2[m] 0.0
**
constant VerticalExtentOfRockFall1_3[m] 0.0
**
constant VerticalExtentOfRockFall1_4[m] 0.0
**
constant VerticalExtentOfRockFall1_5[m] 0.0
**
constant VerticalExtentOfRockFall1_6[m] 0.0
**
constant VerticalExtentOfRockFall1_7[m] 0.0
**
constant VerticalExtentOfRockFall1_8[m] 0.0
**
constant VerticalExtentOfRockFall1_9[m] 0.0
**
constant VerticalExtentOfRockFall1_10[m] 0.0
**
uniform VerticalExtentOfRockFall2_1[m] 0.5 0.6
**
uniform VerticalExtentOfRockFall2_2[m] 0.5 1.0
**
uniform VerticalExtentOfRockFall2_3[m] 0.5 1.1
**
uniform VerticalExtentOfRockFall2_4[m] 0.5 1.2
**
uniform VerticalExtentOfRockFall2_5[m] 0.5 1.3
**
uniform VerticalExtentOfRockFall2_6[m] 0.5 1.4
**
uniform VerticalExtentOfRockFall2_7[m] 0.5 1.45
**
uniform VerticalExtentOfRockFall2_8[m] 0.5 1.5
**
uniform VerticalExtentOfRockFall2_9[m] 0.5 1.65
**
uniform VerticalExtentOfRockFall2_10[m] 0.5 1.8
**
uniform VerticalExtentOfRockFall3_1[m] 0.5 1.0
**
uniform VerticalExtentOfRockFall3_2[m] 0.5 2.0
**
uniform VerticalExtentOfRockFall3_3[m] 0.5 2.5
**
uniform VerticalExtentOfRockFall3_4[m] 0.5 3.0
**
uniform VerticalExtentOfRockFall3_5[m] 0.5 3.5
**
uniform VerticalExtentOfRockFall3_6[m] 0.5 4.0
**
uniform VerticalExtentOfRockFall3_7[m] 0.5 4.5
**
uniform VerticalExtentOfRockFall3_8[m] 0.5 5.0
**
uniform VerticalExtentOfRockFall3_9[m] 0.5 5.7
**
uniform VerticalExtentOfRockFall3_10[m] 0.5 6.5
**
uniform VerticalExtentOfRockFall4_1[m] 0.5 2.7
**
uniform VerticalExtentOfRockFall4_2[m] 0.5 5.5
**
uniform VerticalExtentOfRockFall4_3[m] 0.5 6.0
**
uniform VerticalExtentOfRockFall4_4[m] 0.5 6.5
**
uniform VerticalExtentOfRockFall4_5[m] 0.5 7.0
**
uniform VerticalExtentOfRockFall4_6[m] 0.5 7.5
**
uniform VerticalExtentOfRockFall4_7[m] 0.5 8.0
**
uniform VerticalExtentOfRockFall4_8[m] 0.5 8.5
**
uniform VerticalExtentOfRockFall4_9[m] 0.5 9.3
**
uniform VerticalExtentOfRockFall4_10[m] 0.5 10.0
**
uniform VerticalExtentOfRockFall5_1[m] 0.5 4.7
**
uniform VerticalExtentOfRockFall5_2[m] 0.5 9.33
**
uniform VerticalExtentOfRockFall5_3[m] 0.5 9.7
**
uniform VerticalExtentOfRockFall5_4[m] 0.5 10.0
**
uniform VerticalExtentOfRockFall5_5[m] 0.5 10.7
**
uniform VerticalExtentOfRockFall5_6[m] 0.5 11.33
**
uniform VerticalExtentOfRockFall5_7[m] 0.5 12.0
**
uniform VerticalExtentOfRockFall5_8[m] 0.5 12.66
**
uniform VerticalExtentOfRockFall5_9[m] 0.5 13.3
**
uniform VerticalExtentOfRockFall5_10[m] 0.5 14.0
**
** 5/28/1998 tpa3.2 two new parameters introduced
**
constant WPYieldPoint[] 0.002
**
constant WPPlasticElongation[] 0.02
**
**      ***>>> SEISREL <<<***
**
** rwr 7/8/98 modify flow model flag
iflag
FlowModelFlag(0=BathTub,1=FlowThrough)
0
lognormal FlowFactor 0.01, 3.0
**
lognormal PoreFactor 0.01, 0.2
**
constant SubAreaWetFraction 1.0
**
** 5/21/98 tpa3.2: New parameter: nonzero initial
failure times
**
constant InitialFailureTime[yr] 0.0
**
uniform DefectiveFractionOfWPs/cell 1.0e-4, 1.0e-2
**
** 6/2/1998 tpa3.2 5 new parameters; number of SE
intervals not to exceed 4
**
icount NumberOfSEISMONWPFailureIntervals 4
**
constant BeginningOfSEISMONWPFailureInterval1[yr] 0.0
**
constant BeginningOfSEISMONWPFailureInterval2[yr] 2000.0
**
constant BeginningOfSEISMONWPFailureInterval3[yr] 5000.0
**
constant BeginningOfSEISMONWPFailureInterval4[yr] 10000.0
**
constant WPInternalVolume[m3] 4.81
**
constant FlowOnsetTemperature[C] 999.
**
constant SFDensity[kg/m3] 10600.
**
icount SurfaceAreaModel 1
**
icount IModel 2
**
constant OxygenPartialPressure[atm] 0.21
**
constant NegativeLog10CarbonateConcentration[mol/L] 3.71
**
constant UserLeachRate[kg/yr/m2] 2.5e-6
**
constant RD_Invert_Cn 6.00e3
**
constant RD_Invert_Pu 3.00e3

```

```

**
constant
ZyrOxideandCrudC-14InvPerKgSP[c]
2.40e-5
**
constant
GapAndrainBoundaryInventoryPerKgSP[c]
6.2e-6
**
uniform
SolubilityAm[kg/m3]
2.4e-03, 2.4e-4
**
logNormal
SolubilityBp[kg/m3]
1.2e-3, 3.4e-2, 2.4e-1
**
constant
SolubilityI[kg/m3]
1.29e2
**
constant
SolubilityTc[kg/m3]
3.0e-7
**
constant
SolubilityCl[kg/m3]
3.6e1
**
constant
SolubilityC[kg/m3]
1.4e1
**
constant
SolubilityU[kg/m3]
7.6e-3
**
constant
SolubilityCm[kg/m3]
2.4e-4
**
uniform
SolubilityBp[kg/m3]
2.4e-6, 2.4e-4
**
constant
SolubilityTh[kg/m3]
2.3e-4
**
constant
SolubilityRa[kg/m3]
2.3e-5
**
constant
SolubilityPb[kg/m3]
6.6e-5
**
constant
SolubilityCs[kg/m3]
1.35e2
**
constant
SolubilityNi[kg/m3]
1.1e-1
**
constant
SolubilitySe[kg/m3]
7.9e1
**
constant
SolubilityNb[kg/m3]
8.1e-7
**
new parameters
6/2/1998 tpa3.2 next parameter replaced with 44
SPWettedFraction_(failurekind)_subarea
**
uniform
SPWettedFraction_Initial_1
0.0, 1.0
**
uniform
SPWettedFraction_Initial_2
0.0, 1.0
**
uniform
SPWettedFraction_Initial_3
0.0, 1.0
**
uniform
SPWettedFraction_Initial_4
0.0, 1.0
**
uniform
SPWettedFraction_Initial_5
0.0, 1.0
**
uniform
SPWettedFraction_Initial_6
0.0, 1.0
**
uniform
SPWettedFraction_Initial_7
0.0, 1.0
**
uniform
SPWettedFraction_PAULTO
0.0, 1.0
**
uniform
SPWettedFraction_VOLCANO
0.0, 1.0
**
uniform
SPWettedFraction_SEISM01_1
0.0, 1.0
**
uniform
SPWettedFraction_SEISM01_2
0.0, 1.0
**
uniform
SPWettedFraction_SEISM01_3
0.0, 1.0
**
uniform
SPWettedFraction_SEISM01_4
0.0, 1.0
**
uniform
SPWettedFraction_SEISM01_5
0.0, 1.0
**
uniform
SPWettedFraction_SEISM01_6
0.0, 1.0
**
uniform
SPWettedFraction_SEISM01_7
0.0, 1.0
**
uniform
SPWettedFraction_SEISM02_1
0.0, 1.0
**
uniform
SPWettedFraction_SEISM02_2
0.0, 1.0
**
uniform
SPWettedFraction_SEISM02_3
0.0, 1.0
**
uniform
SPWettedFraction_SEISM02_4
0.0, 1.0
**
uniform
SPWettedFraction_SEISM02_5
0.0, 1.0
**
uniform
SPWettedFraction_SEISM02_6
0.0, 1.0
**
0.0, 1.0
**
uniform
MatrixKD_ChnzBp[m3/kg]
4.4e-06, 6.0e-01
**
logNormal
MatrixKD_BPw_Bp[m3/kg]
1.6e-06, 5.0e-01
**
logNormal
MatrixKD_UCF_Bp[m3/kg]
2.8e-06, 5.2e-01
**
logNormal
MatrixKD_BPw_Bp[m3/kg]
1.5e-06, 2.1e-01
**
logNormal
MatrixKD_UPZ_Bp[m3/kg]
1.5e-06, 2.0e-01
**
constant
MatrixKD_TSw_I[m3/kg]
0.0
**
constant
MatrixKD_ChnvI[m3/kg]
0.0
**
constant
MatrixKD_ChnzI[m3/kg]
0.0
**
constant
MatrixKD_PPw_I[m3/kg]
0.0
**
constant
MatrixKD_UCF_I[m3/kg]
0.0
**
constant
MatrixKD_BPw_I[m3/kg]
0.0
**
constant
MatrixKD_UPZ_I[m3/kg]
0.0
**
constant
MatrixKD_TSw_Tc[m3/kg]
0.0
**
constant
MatrixKD_ChnvTc[m3/kg]
0.0
**
constant
MatrixKD_ChnzTc[m3/kg]
0.0
**
constant
MatrixKD_PPw_Tc[m3/kg]
0.0
**
constant
MatrixKD_UCF_Tc[m3/kg]
0.0
**
constant
MatrixKD_BPw_Tc[m3/kg]
0.0
**
constant
MatrixKD_UPZ_Tc[m3/kg]
0.0
**
constant
MatrixKD_TSw_Cl[m3/kg]
0.0
**
constant
MatrixKD_ChnvCl[m3/kg]
0.0
**
constant
MatrixKD_ChnzCl[m3/kg]
0.0
**
constant
MatrixKD_PPw_Cl[m3/kg]
0.0
**
constant
MatrixKD_UCF_Cl[m3/kg]
0.0
**
constant
MatrixKD_BPw_Cl[m3/kg]
0.0
**
constant
MatrixKD_UPZ_Cl[m3/kg]
0.0
**
constant
MatrixKD_TSw_Cm[m3/kg]
0.0
**
constant
MatrixKD_ChnvCm[m3/kg]
0.0
**
constant
MatrixKD_ChnzCm[m3/kg]
0.0
**
constant
MatrixKD_PPw_Cm[m3/kg]
0.0
**
constant
MatrixKD_UCF_Cm[m3/kg]
0.0
**
constant
MatrixKD_BPw_Cm[m3/kg]
0.0
**
constant
MatrixKD_UPZ_Cm[m3/kg]
0.0
**
logNormal
MatrixKD_TSw_U[m3/kg]
4.2e-10, 1.1e+00
**
logNormal
MatrixKD_ChnvU[m3/kg]
1.3e-09, 3.3e+00
**
logNormal
MatrixKD_ChnzU[m3/kg]
1.2e-09, 3.0e+00
**
logNormal
MatrixKD_PPw_U[m3/kg]
9.6e-10, 2.5e+00
**
logNormal
MatrixKD_UCF_U[m3/kg]
1.0e-09, 2.6e+00
**
logNormal
MatrixKD_BPw_U[m3/kg]
4.1e-10, 1.0e+00
**
logNormal
MatrixKD_UPZ_U[m3/kg]
3.9e-10, 1.0e+00
**
logNormal
MatrixKD_TSw_Pu[m3/kg]
2.3e-01, 1.2e+00
**
logNormal
MatrixKD_ChnvPu[m3/kg]
1.3e-02, 6.7e+01
**
logNormal
MatrixKD_ChnzPu[m3/kg]
6.5e-02, 6.1e+01
**
logNormal
MatrixKD_PPw_Pu[m3/kg]
5.3e-02, 5.0e+01
**
logNormal
MatrixKD_UCF_Pu[m3/kg]
5.6e-02, 5.2e+01
**
logNormal
MatrixKD_BPw_Pu[m3/kg]
2.3e-02, 2.1e+01
**
logNormal
MatrixKD_UPZ_Pu[m3/kg]
2.3e-02, 2.1e+01
**
logNormal
MatrixKD_TSw_Th[m3/kg]
4.8e-05, 2.5e+03
**
logNormal
MatrixKD_ChnvTh[m3/kg]
1.5e-04, 7.6e+03
**
logNormal
MatrixKD_ChnzTh[m3/kg]
1.3e-04, 6.9e+03
**
logNormal
MatrixKD_PPw_Th[m3/kg]
1.1e-04, 5.7e+03
**
logNormal
MatrixKD_UCF_Th[m3/kg]
1.1e-04, 5.5e+03
**
logNormal
MatrixKD_BPw_Th[m3/kg]
4.7e-05, 2.4e+03
**
logNormal
MatrixKD_UPZ_Th[m3/kg]
4.5e-05, 2.3e+03
**
logNormal
MatrixKD_TSw_Ra[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_ChnvRa[m3/kg]
0.050, 0.10
**
logNormal
MatrixKD_ChnzRa[m3/kg]
1.0, 5.0
**
logNormal
MatrixKD_PPw_Ra[m3/kg]
0.1, 0.5
**
logNormal
MatrixKD_UCF_Ra[m3/kg]
0.1, 0.5
**
logNormal
MatrixKD_BPw_Ra[m3/kg]
0.1, 0.5
**
logNormal
MatrixKD_UPZ_Ra[m3/kg]
0.1, 0.5
**
logNormal
MatrixKD_TSw_Fb[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_ChnvFb[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_ChnzFb[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_PPw_Fb[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_UCF_Fb[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_BPw_Fb[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_UPZ_Fb[m3/kg]
0.10, 0.50
**
logNormal
MatrixKD_TSw_Cs[m3/kg]
0.020, 1.0
**
logNormal
MatrixKD_ChnvCs[m3/kg]
0.010, 0.10
**
logNormal
MatrixKD_ChnzCs[m3/kg]
0.50, 5.0
**
logNormal
MatrixKD_PPw_Cs[m3/kg]
0.020, 1.0
**
logNormal
MatrixKD_UCF_Cs[m3/kg]
0.020, 1.0
**
logNormal
MatrixKD_BPw_Cs[m3/kg]
0.020, 1.0
**
logNormal
MatrixKD_UPZ_Cs[m3/kg]
0.020, 1.0
**
logNormal
MatrixKD_TSw_Ni[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnvNi[m3/kg]
1.0e-6, 0.10
**
logNormal
MatrixKD_ChnzNi[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_PPw_Ni[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UCF_Ni[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_BPw_Ni[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UPZ_Ni[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_TSw_Mn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnvMn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnzMn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_PPw_Mn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UCF_Mn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_BPw_Mn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UPZ_Mn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_TSw_Zn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnvZn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnzZn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_PPw_Zn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UCF_Zn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_BPw_Zn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UPZ_Zn[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_TSw_Cd[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnvCd[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnzCd[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_PPw_Cd[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UCF_Cd[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_BPw_Cd[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UPZ_Cd[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_TSw_Hg[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnvHg[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnzHg[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_PPw_Hg[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UCF_Hg[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_BPw_Hg[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UPZ_Hg[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_TSw_Pb[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnvPb[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_ChnzPb[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_PPw_Pb[m3/kg]
5.0e-6, 0.50
**
logNormal
MatrixKD_UCF_Pb[m3/kg
```



```
0.0e-6, 0.50
**
constant MatrixKD_TSw_C[m3/kg]
0.0
**
constant MatrixKD_ChnvC[m3/kg]
0.0
**
constant MatrixKD_ChnzC[m3/kg]
0.0
**
constant MatrixKD_PPw_C[m3/kg]
0.0
**
constant MatrixKD_UCF_C[m3/kg]
0.0
**
constant MatrixKD_BPw_C[m3/kg]
0.0
**
constant MatrixKD_UFZ_C[m3/kg]
0.0
**
loguniform MatrixKD_TSw_Se[m3/kg]
2.0e-7, 0.030
**
loguniform MatrixKD_ChnvSe[m3/kg]
2.0e-7, 0.020
**
loguniform MatrixKD_ChnzSe[m3/kg]
1.3e-7, 0.015
**
loguniform MatrixKD_PPw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform MatrixKD_UCF_Se[m3/kg]
3.0e-7, 0.030
**
constant MatrixKD_TSw_Nb[m3/kg]
0.10, 2.0
**
constant MatrixKD_ChnvNb[m3/kg]
0.10, 1.0
**
constant MatrixKD_ChnzNb[m3/kg]
0.10, 1.0
**
constant MatrixKD_PPw_Nb[m3/kg]
0.10, 2.0
**
constant MatrixKD_UCF_Nb[m3/kg]
0.10, 2.0
**
constant MatrixKD_BPw_Nb[m3/kg]
0.10, 2.0
**
constant MatrixKD_UFZ_Nb[m3/kg]
0.10, 2.0
**
constant FractureRD_TSw_Am
1.0
**
constant FractureRD_ChnvAm
1.0
**
constant FractureRD_ChnzAm
1.0
**
constant FractureRD_PPw_Am
1.0
**
constant FractureRD_UCF_Am
1.0
**
constant FractureRD_BPw_Am
1.0
**
constant FractureRD_UFZ_Am
1.0
**
constant FractureRD_TSw_Np
1.0
**
constant FractureRD_ChnvNp
1.0
**
constant FractureRD_ChnzNp
1.0
**
constant FractureRD_PPw_Np
1.0
**
constant FractureRD_UCF_Np
1.0
**
constant FractureRD_BPw_Np
1.0
**
constant FractureRD_UFZ_Np
1.0
**
constant FractureRD_TSw_I
1.0
**
constant FractureRD_ChnvI
1.0
**
constant FractureRD_ChnzI
1.0
**
constant FractureRD_PPw_I
1.0
**
constant FractureRD_UCF_I
1.0
**
constant FractureRD_BPw_I
1.0
**
FractureRD_BPw_I
1.0
**
constant FractureRD_UFZ_I
1.0
**
constant FractureRD_TSw_Tc
1.0
**
constant FractureRD_ChnvTc
1.0
**
constant FractureRD_ChnzTc
1.0
**
constant FractureRD_PPw_Tc
1.0
**
constant FractureRD_UCF_Tc
1.0
**
constant FractureRD_BPw_Tc
1.0
**
constant FractureRD_UFZ_Tc
1.0
**
constant FractureRD_TSw_Cl
1.0
**
constant FractureRD_ChnvCl
1.0
**
constant FractureRD_ChnzCl
1.0
**
constant FractureRD_PPw_Cl
1.0
**
constant FractureRD_UCF_Cl
1.0
**
constant FractureRD_BPw_Cl
1.0
**
constant FractureRD_UFZ_Cl
1.0
**
constant FractureRD_TSw_Cn
1.0
**
constant FractureRD_ChnvCn
1.0
**
constant FractureRD_ChnzCn
1.0
**
constant FractureRD_PPw_Cn
1.0
**
constant FractureRD_UCF_Cn
1.0
**
constant FractureRD_BPw_Cn
1.0
**
constant FractureRD_UFZ_Cn
1.0
**
constant FractureRD_TSw_U
1.0
**
constant FractureRD_ChnvU
1.0
**
constant FractureRD_ChnzU
1.0
**
constant FractureRD_PPw_U
1.0
**
constant FractureRD_UCF_U
1.0
**
constant FractureRD_BPw_U
1.0
**
constant FractureRD_UFZ_U
1.0
**
constant FractureRD_TSw_Pu
1.0
**
constant FractureRD_ChnvPu
1.0
**
constant FractureRD_ChnzPu
1.0
**
constant FractureRD_PPw_Pu
1.0
**
constant FractureRD_UCF_Pu
1.0
**
constant FractureRD_BPw_Pu
1.0
**
constant FractureRD_UFZ_Pu
1.0
**
constant FractureRD_TSw_Th
1.0
**
constant FractureRD_ChnvTh
1.0
**
constant FractureRD_ChnzTh
1.0
**
constant FractureRD_PPw_Th
1.0
**
constant FractureRD_UCF_Th
1.0
**
constant FractureRD_BPw_Th
1.0
**
constant FractureRD_UFZ_Th
1.0
**
constant FractureRD_TSw_Ra
1.0
**
constant FractureRD_ChnvRa
1.0
**
constant FractureRD_UCF_Ra
1.0
**
constant FractureRD_BPw_Ra
1.0
**
constant FractureRD_UFZ_Ra
1.0
**
constant FractureRD_TSw_Pb
1.0
**
constant FractureRD_ChnvPb
1.0
**
constant FractureRD_ChnzPb
1.0
**
constant FractureRD_PPw_Pb
1.0
**
constant FractureRD_UCF_Pb
1.0
**
constant FractureRD_BPw_Pb
1.0
**
constant FractureRD_UFZ_Pb
1.0
**
constant FractureRD_TSw-Cs
1.0
**
constant FractureRD_ChnvCs
1.0
**
constant FractureRD_ChnzCs
1.0
**
constant FractureRD_PPw-Cs
1.0
**
constant FractureRD_UCF-Cs
1.0
**
constant FractureRD_BPw-Cs
1.0
**
constant FractureRD_UFZ-Cs
1.0
**
constant FractureRD_TSw-Ni
1.0
**
constant FractureRD_ChnvNi
1.0
**
constant FractureRD_ChnzNi
1.0
**
constant FractureRD_PPw-Ni
1.0
**
constant FractureRD_UCF-Ni
1.0
**
constant FractureRD_BPw-Ni
1.0
**
constant FractureRD_UFZ-Ni
1.0
**
constant FractureRD_TSw-C
1.0
**
constant FractureRD_ChnvC
1.0
**
constant FractureRD_ChnzC
1.0
**
constant FractureRD_PPw-C
1.0
**
constant FractureRD_UCF-C
1.0
**
constant FractureRD_BPw-C
1.0
**
constant FractureRD_UFZ-C
1.0
**
constant FractureRD_TSw-Se
1.0
**
constant FractureRD_ChnvSe
1.0
**
constant FractureRD_ChnzSe
1.0
**
constant FracturePermeability_TSw_[m2]
0.2e-19, 0.2e-17
**
lognormal MatrixPermeability_Chnv[m2]
0.2e-14, 0.2e-12
**
lognormal MatrixPermeability_Chnz[m2]
0.5e-18, 0.5e-16
**
lognormal MatrixPermeability_PPw_[m2]
0.1e-17, 0.1e-15
**
lognormal MatrixPermeability_UCF_[m2]
0.3e-18, 0.3e-16
**
lognormal MatrixPermeability_BPw_[m2]
0.2e-19, 0.2e-17
**
lognormal MatrixPermeability_UFZ_[m2]
1.8e-18, 2.1e-16
**
constant MatrixPorosity_TSw_
0.12
**
constant MatrixPorosity_Chnv
0.33
**
constant MatrixPorosity_Chnz
0.32
**
constant MatrixPorosity_PPw_
0.28
**
constant MatrixPorosity_UCF_
0.28
**
constant MatrixPorosity_BPw_
0.12
**
constant MatrixPorosity_UFZ_
0.12
**
constant MatrixBeta_TSw_
1.5
**
constant MatrixBeta_Chnv
1.3
**
constant MatrixBeta_Chnz
2.3
**
constant MatrixBeta_PPw_
1.5
**
constant MatrixBeta_UCF_
1.4
**
constant MatrixBeta_BPw_
1.7
**
constant MatrixBeta_UFZ_
2.3
**
constant MatrixGrainDensity_TSw_[kg/m3]
2460.0
**
constant MatrixGrainDensity_Chnv[kg/m3]
2260.0
**
constant MatrixGrainDensity_Chnz[kg/m3]
2400.0
**
constant MatrixGrainDensity_PPw_[kg/m3]
2540.0
**
constant MatrixGrainDensity_UCF_[kg/m3]
2420.0
**
constant MatrixGrainDensity_BPw_[kg/m3]
2570.0
**
constant MatrixGrainDensity_UFZ_[kg/m3]
2630.0
**
lognormal FracturePermeability_TSw_[m2]
8.0e-15, 8.0e-11
**
lognormal FracturePermeability_Chnv[m2]
```

Enhanced SolubilityTc

Tpa2.inp.wpd

[illegible]

```

**
48000.0
**
constant
LocationInRegionOfInterest[m]
4078000.0
**
uniform
RtToDetermineIfExtrusiveOrIntrusiveVolcanicEvent
0.0, 1.0
**
constant
FractionOfTimeVolcanicEventIsExtrusive
0.999
**
uniform
AngleOfVolcanicDikeMeasuredFromNorthClockwise[degrees]
0.0, 15.0
**
uniform
LengthOfVolcanicDike[m]
2000.0, 11000.0
**
uniform
WidthOfVolcanicDike[m]
1.0, 10.0
**
uniform
DiameterOfVolcanicCone[m]
24.6, 77.9
**
**
***>>> ASHPLUMO <<<***
**
constant
DensityOfAirAtSTP[g/cm3]
0.00129
**
constant
ViscosityOfAirAtSTP[g/cm-s]
0.00018
**
constant
ConstantRelatingFallTimeToEddyDiffusivity[cm2/s5/2]
400.0
**
constant
MaximumParticleDiameterForParticleTransport[cm]
10.40
**
constant
MinimumFuelParticulateSize[cm]
0.0001
**
constant
NodeFuelParticulateSize[cm]
0.001
**
constant
MaximumFuelParticulateSize[cm]
0.01
**
constant
MinimumAshDensityForVariationWithSize[g/cm3]
1.2
**
constant
MaximumAshDensityForVariationWithSize[g/cm3]
2.0
**
constant
MinimumAshLogdiameterForDensityVariation
-2.0
**
constant
MaximumAshLogdiameterForDensityVariation
-1.0
**
constant
ParticleShapeParameter
0.5
**
constant
IncorporationRatio
0.3
**
constant
WindDirection[degrees]
-90.0
**
exponential
Windspeed[cm/s]
0.0093
**
loguniform
VolcanicEventDuration[s]
6.13e4, 7.24e6
**
loguniform
VolcanicEventPower[W]
2.57e9, 3.55e11
**
constant
VolcanicColumnConstantBeta
10.0
**
logtriangular
AshMeanParticleLogDiameter[d_in_cm]
0.01, 0.1, 1.0
**
constant
AshParticleSizeDistributionStandardDeviation
1.0
**
**
***>>> ASHRMOVO <<<***
**
constant
RelativeRateOfBlanketRemoval[1/yr]
0.001
**
constant
FractionOfPrecipitationLostToEvapotranspiration
0.68
**
constant
FractionOfIrrigationLostToEvapotranspiration
0.5
**
constant
AnnualPrecipitation[m/yr]
0.685
**
constant
AnnualIrrigation[m/yr]
1.52
**
constant
FractionOfYearSoilIsSaturatedDueToPrecipitation
0.5054
**
constant
FractionOfYearSoilIsSaturatedDueToIrrigation
0.2
**
constant
AshBulkDensity[g/cm3]
1.4
**
constant
AshVolumetricMoistureFractionAtSaturation
0.4
**
constant
DepthOfTheRootingZone[m]
0.15
**
constant
KdOfUraniumInVolcanicAsh[cm3/g]
35.0
**
constant
KdOfCuriumInVolcanicAsh[cm3/g]
4000.0
**
constant
KdOfPlutoniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfAmericiumInVolcanicAsh[cm3/g]
1900.0
**
constant
KdOfThoriumInVolcanicAsh[cm3/g]
3200.0
**
constant
KdOfRadiumInVolcanicAsh[cm3/g]
500.0
**
constant
KdOfLeadInVolcanicAsh[cm3/g]
270.0
**
constant
KdOfProtactiniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfActiniumInVolcanicAsh[cm3/g]
450.0
**
constant
KdOfNeptuniumInVolcanicAsh[cm3/g]
5.0
**
constant
KdOfSamariumInVolcanicAsh[cm3/g]
245.0
**
constant
KdOfCesiumInVolcanicAsh[cm3/g]
280.0
**
constant
KdOfIodineInVolcanicAsh[cm3/g]
1.0
**
constant
KdOfTinInVolcanicAsh[cm3/g]
130.0
**
constant
KdOfSilverInVolcanicAsh[cm3/g]
55.0
**
constant
KdOfPalladiumInVolcanicAsh[cm3/g]
55.0
**
constant
KdOfTechnetiumInVolcanicAsh[cm3/g]
0.1
**
constant
KdOfMolybdenumInVolcanicAsh[cm3/g]
10.0
**
constant
KdOfNiobiumInVolcanicAsh[cm3/g]
150.0
**
constant
KdOfZirconiumInVolcanicAsh[cm3/g]
600.0
**
constant
KdOfStrontiumInVolcanicAsh[cm3/g]
15.0
**
constant
KdOfSeleniumInVolcanicAsh[cm3/g]
150.0
**
constant
KdOfRbInVolcanicAsh[cm3/g]
400.0
**
constant
KdOfChlorineInVolcanicAsh[cm3/g]
0.0
**
constant
KdOfCarbonInVolcanicAsh[cm3/g]
5.0
**
constant
SolubilityOfUraniumInVolcanicAsh[moles/liter]
4.5e-5
**
constant
SolubilityOfCuriumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfPlutoniumInVolcanicAsh[moles/liter]
5.0e-6
**
constant
SolubilityOfAmericiumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfThoriumInVolcanicAsh[moles/liter]
3.2e-9
**
constant
SolubilityOfNeptuniumInVolcanicAsh[moles/liter]
1.0e-4
**
constant
SolubilityOfLeadInVolcanicAsh[moles/liter]
3.2e-7
**
constant
SolubilityOfProtactiniumInVolcanicAsh[moles/liter]
3.2e-8
**
constant
SolubilityOfActiniumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfSamariumInVolcanicAsh[moles/liter]
5.0e-6
**
constant
SolubilityOfCesiumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfIodineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfTinInVolcanicAsh[moles/liter]
5.0e-8
**
constant
SolubilityOfSilverInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfPalladiumInVolcanicAsh[moles/liter]
9.5e-4
**
constant
SolubilityOfTechnetiumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfMolybdenumInVolcanicAsh[moles/liter]
1.0

```

```

title
  Input file tpa.imp as supplied with TPA Version 3.2.1
Code.
Base case data set Rev 3.2.1 2/22/99
**
** ***** GLOBAL PARAMETERS *****
**
** ***** Disruptive Scenario flags *****
**
iflag
VolcanismDisruptiveScenarioFlag(yes=1,no=0)
0
**
iflag
DisruptiveScenarioFlag(yes=1,no=0)
0
**
iflag
SeismicDisruptiveScenarioFlag(yes=1,no=0)
1
**
** ***** Subarea Size *****
**
** Number and Location of Subareas[m] Based On
Fig3.4-1 in TSPA95
**subarea
1
**ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
547405.7 4076362.2
**548469.3 4076362.2
**548469.3 4079237.8
**547405.7 4092377.8
**547405.7 4076362.2
subarea
7
ZONE T="Subarea 1",I=5,F=POINT
547472.0, 4079323.7
548069.2, 4079136.5
547847.3, 4077816.2
547318.4, 4077934.0
547472.0, 4079323.7
ZONE T="Subarea 2",I=5,F=POINT
548069.2, 4079136.5
548069.2, 4078968.6
548547.9, 4077654.1
547847.3, 4077816.2
548069.2, 4079136.5
ZONE T="Subarea 3",I=5,F=POINT
547318.4, 4077934.0
548222.7, 4077192.2
547474.7, 4077816.2
547318.4, 4077934.0
ZONE T="Subarea 4",I=5,F=POINT
547847.3, 4077816.2
548547.9, 4077654.1
548504.8, 4077170.0
548322.7, 4077192.2
547847.3, 4077816.2
ZONE T="Subarea 5",I=5,F=POINT
547474.7, 4077282.6
547887.3, 4077238.1
547995.0, 4076338.9
547670.4, 4076335.5
547474.7, 4077282.6
ZONE T="Subarea 6",I=5,F=POINT
547887.3, 4077238.1
548322.7, 4077192.2
548319.5, 4076220.2
547995.0, 4076338.9
547887.3, 4077238.1
ZONE T="Subarea 7",I=5,F=POINT
548322.7, 4077192.2
548504.8, 4077170.0
548473.1, 4076533.7
548319.5, 4076220.2
548322.7, 4077192.2
**
!constant
StartAtSubarea
1
**
!constant
StopAtSubarea
7
**
** ***** Nuclides and Chains *****
**
5/25/1998 tpa3.2 new parameter section
**
** Nuclides can be eliminated from the basecase set.
** However, if additional nuclides (Pu242, Am242m,
Pu238, Cm243, Ac227, Pu241, U233, Th229, Cm244,
U236, U232, Sm151,
Cs135, Pu231, Sm126, Sm12m, Ag108m, Pd107, Mo93, Zr93,
Sr90, or Rb137)
** are added to the basecase set, then corresponding
RDS, KDS,
** solubilities, gap fractions, and correlations must
be added.
**
iflag
CheckNuclidesAndChains(yes=1,no=0)
0
**
aqueousnuclides
** number of nuclides, number of chains
20
13
**
** chain 1
2
Cm246
U238
** chain 2
3
Cm245
Am241
Np237
** chain 3
2
Am243
Pu239
** chain 4
1
Pu240
** chain 5
4
U234
Th230
Ra226
Pu210
** chain 6
1
Cs135
** chain 7
1
1129
** chain 8
1
Tc99
** chain 9
1
Ni59
** chain 10
1
C14
** chain 11
1
Se79
** chain 12
1
Nb94
** chain 13
1
C136
**
endofnuclides

```

```

**
** ***** Parameter Sampling *****
**
** 5/25/1998 tpa3.2 new parameter: option to conduct
direct-release only calculation
**
iflag
DirectReleaseOnlyFlag (yes=1, no=0)
0
**
constant
SeedForRandomNumber
188910452.0
**
iflag
LatinHypercubeSampling (yes=1, no=0)
1
**
constant
NumberOfRealizations
250
**
constant
StartAtRealization
1
**
constant
StopAtRealization
0
**
** ***** Simulation Times *****
**
** 6/2/1998 tpa3.2 4 new parameters; calculations at
two time periods
**
constant
DurationOfCompliancePeriod[yr]
1.0e4
**
constant
MaximumTime[yr]
5.0e4
**
** Sum of pre- and post-compliance time steps must not
exceed 201
**
constant
NumberofTimeStepsInCompliancePeriod
201
**
constant
RatioOfLastToFirstTimeStepInCompliancePeriod
100.0
**
** Next two parameters ignored if MaximumTime[yr] =
DurationOfCompliancePeriod[yr]
**
constant
NumberofTimeStepsAfterCompliancePeriod
200
**
constant
RatioOfLastToFirstTimeStepAfterCompliancePeriod
100.0
**
** ***** Output Print Options *****
**
constant
OutputMode (0=None, 1=All, 2=UserDefined)
0
**
constant
UserDefinedLowerRealizationAppended
1
**
constant
UserDefinedUpperRealizationAppended
1
**
** 5/25/1998 tpa3.2 new parameter
**
** Select Append Files
**
0 = append all files
1 = uflow.ech and uflow.rlt only
2 = nflow.ech and nflow.rlt only
3 = ebsfall.ech and ebsfall.rlt only
4 = seismo.ech and seismo.rlt only
5 = faulto.ech and faulto.rlt only
6 = volcano.ech and volcano.rlt only
7 = ebsrel.ech and ebsrel.rlt only
8 = uirt.ech and uirt.rlt only
9 = sirt.ech and sirt.rlt only
10 = dcagw.ech and dcagw.rlt only
11 = ashlpmo.ech and ashlpmo.rlt only
12 = ashrmo.ech and ashrmo.rlt only
13 = dcags.ech and dcags.rlt only
14 = ashlpmo.cum only
15 = fault.cum only
16 = nflow.cum only
17 = releaset.cum only
**
constant
SelectAppendFiles
0
**
** ***** UZFLOW *****
**
uniform
ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]
1.0, 10.0
**
uniform
MeanAveragePrecipitationMultiplierAtGlacialMaximum
1.5, 2.5
**
uniform
MeanAverageTemperatureIncreaseAtGlacialMaximum[degC]
-10, -5
**
constant
TimeStepForClimate[yr]
500.0
**
constant
StandardDeviationOfMAPAboutMeanInOneTimePeriod[mm/yr]
0.0
**
constant
StandardDeviationOfMATAboutMeanInOneTimePeriod[degC]
0.0
**
constant
CorrelationBetweenMAPandMAT
-0.8
**
constant
ClimatePerturbationSet
1
**
** ***** NFEN *****
**
iflag
TubularTemperatureRHFflag (yes=1, no=0)
0
**
constant
usedToPickTempRHDDataSet
1
**
** 6/2/98 tpa3.2 name change for UseRefLuz2
**
constant
SelectRefLuzModel (1,2,3)
3
**
constant
LengthOfRefLuzZone[m]
20
**
constant
MaximumFluxInRefLuzZone[m/s]
1.0e-9
**
constant
PerchedBucketVolumePerSAarea[m3/m2]
0.5
**
constant
RefLuz2Thickness
100.0
**
constant
RefLuz2Porosity
0.14
**
constant
RefLuz2SatInit
0.9
**
constant
RefLuz2SatResid
0.1
**
constant
RefLuz2Period
100.0
**
constant
RefLuz2LossI
0.1
**
constant
RefLuz2LossD
0.1
**
constant
WLength[m]
5.682
**
constant
WDiameter[m]
1.802
**
constant
EmplacementDriftDiameter[m]
5.0
**
constant
WSpacingAlongEmplacementDrift[m]
19.0
**
** 6/4/98 tpa3.2: Next 4 new parameters specific to
RefLuz3 model
**
constant
WUnitCellWidth[m]
22.5
**
loguniform
FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
uniform
FractionOfCondensateTowardRepository[1/yr]
0.0, 1.0
**
loguniform
FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
constant
DensityOfWaterAtBoiling[kg/m^3]
960.5
**
constant
EnthalpyOfPhaseChangeForWater[J/kg]
2.4e6
**
uniform
TemperatureGradientInVicinityOfBoilingIsotherm[K/m]
1.0, 100.0
**
constant
ArealMassLoading[MTU/acre]
83.0
**
constant
WastePackagePayload[MTU]
9.76
**
constant
AgeOfWaste[yr]
26.0
**
constant
ReservoirTemperature[C]
20.0
**
constant
MassDensityOfYMRock[kg/m^3]
2580.0
**
constant
SpecificHeatOfYMRock[J/(g-K)]
840.0
**
uniform
ThermalConductivityOfYMRock[W/(m-K)]
1.8, 2.2
**
constant
RelisivityOfDriftWall[-]
0.0
**
constant
RelisivityOfWastePackage[-]
0.7
**
constant
ThermalConductivityOfFloor[W/(m-C)]
0.6
**
constant
EffectiveThermalConductivityOfUnbackfilledDrift[W/(m-C)]
0.90
**
constant
TimeOfBackfillEmplaced[yr]
100001.0
**
constant
EffectiveThermalConductivityOfBackfill[W/(m-C)]
0.60
**
constant
ThermalConductivityOfInnerStainlessSteelWall[W/(m-C)]
15.0
**
constant
ThermalConductivityOfOuterCarbonSteelWall[W/(m-C)]
50.0
**
constant
EffectiveThermalConductivityOfBasketSFNWP[W/(m-C)]
1.0
**
constant
ElevationOfRepositoryHorizon[m]
1072.0
**
constant
RAdvectionOfGroundSurface[m]
1400.0
**
** ***** EBSFAIL *****
**
constant
OuterWPTHickness[m]
0.1
**
constant
InnerWPTHickness[m]
0.02
**
constant
MetalGrainRadius[micrometer]
13.75
**
constant
GrainBoundaryThickness[micrometer]
7.0e-4
**
constant
DryOxidationConstant
0.0001
**
constant
CriticalRelativeHumidityHumidAirCorrosion
0.55
**
normal
CriticalRelativeHumidityAqueousCorrosion
0.75, 0.85
**
uniform
ThicknessOfWaterFilm[m]
0.001, 0.003
**
constant
BoilingPointOfWater[C]
37.0
**
constant
OuterOverpackExpIntercept
-620.3
**
constant
TempCoeffOfOuterPackExpIntercept
0.47
**
constant
OuterOverpackExpSlope
-95.2
**
constant
TempCoeffOfOuterPackExpSlope
0.88
**
uniform
InnerOverpackExpIntercept
1040.0, 1240.0
**
** 48.5, 149.5 >>> 625 <<<
**
constant
TempCoeffOfInnerPackExpIntercept
0.0
**
constant
InnerOverpackExpSlope
0.0
**
** -160.8 >>> 625 <<<
**
constant
TempCoeffOfInnerPackExpSlope
0.0
**
constant
OuterWPBetaKineticsParameterforOxygen
0.75
**
constant
OuterWPBetaKineticsParameterforWater
0.5
**
constant
InnerWPBetaKineticsParameterforOxygen
0.75
**
constant
InnerWPBetaKineticsParameterforWater
0.5
**
constant
OuterWPRateConstantforOxygenReduction[coulomb-m/mole/yr]
3.8e12
**
constant
OuterWPRateConstantforWaterReduction[coulomb-m/m^2/yr]
1.6e-1
**
constant
OuterWPActivationEnergyforOxygenReduction[J/mole]
27300.0
**
constant
OuterWPActivationEnergyforWaterReduction[J/mole]
25000.0
**
constant
InnerWPRateConstantforOxygenReduction[coulomb-m/mole/yr]
3.0e10
**
constant
InnerWPRateConstantforWaterReduction[coulomb-m/m^2/yr]
3.2
**
constant
InnerWPActivationEnergyforOxygenReduction[J/mole]
40900.0
**
constant
InnerWPActivationEnergyforWaterReduction[J/mole]
25000.0
**
constant
AA_1_1[C/m2/yr]
3.15e5
**
uniform
AA_2_1[C/m2/yr]
2.0e4, 6.3e4
**
constant
MeasuredGalvanicCouplePotential
-0.46
**
uniform
CoeffForLocCorrOfOuterOverpack
8.66e-4, 8.66e-3
**
constant
ExponentForLocCorrOfOuterOverpack
0.45
**
constant
HumidAirCorrosionRate[m/yr]
1.16e-5
**
constant
LocalizedCorrRateOfInnerOverpack[m/yr]
2.3e-4
**
constant
FractionalCouplingStrength
0.0
**
constant
FactorForDefiningChoiceOfCritPotential
0.0
**
constant
CriticlChlorideConcForFirstLayer[mol/L]
3.0e-4
**
constant
CriticlChlorideConcForSecondLayer[mol/L]
1.0
**
** 3.0e-2 >>> 625 <<<
**
uniform

```



```

0.0e-6, 0.50
constant
MatrixKD_TSw_C[m3/kg]
0.0
**
constant
MatrixKD_CHnvC[m3/kg]
0.0
**
constant
MatrixKD_CHnzC[m3/kg]
0.0
**
constant
MatrixKD_PPw_C[m3/kg]
0.0
**
constant
MatrixKD_UCF_C[m3/kg]
0.0
**
constant
MatrixKD_BPw_C[m3/kg]
0.0
**
constant
MatrixKD_UFZ_C[m3/kg]
0.0
**
loguniform
MatrixKD_TSw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_CHnvSe[m3/kg]
2.0e-7, 0.020
**
loguniform
MatrixKD_CHnzSe[m3/kg]
1.5e-7, 0.015
**
loguniform
MatrixKD_BPw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_UFZ_Se[m3/kg]
3.0e-7, 0.030
**
constant
MatrixKD_TSw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_CHnvNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_CHnzNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_PPw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UCF_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_BPw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UFZ_Nb[m3/kg]
0.10, 2.0
**
constant
FractureRD_TSw_Am
1.0
**
constant
FractureRD_CHnvAm
1.0
**
constant
FractureRD_CHnzAm
1.0
**
constant
FractureRD_PPw_Am
1.0
**
constant
FractureRD_UCF_Am
1.0
**
constant
FractureRD_BPw_Am
1.0
**
constant
FractureRD_UFZ_Am
1.0
**
constant
FractureRD_TSw_Np
1.0
**
constant
FractureRD_CHnvNp
1.0
**
constant
FractureRD_CHnzNp
1.0
**
constant
FractureRD_PPw_Np
1.0
**
constant
FractureRD_UCF_Np
1.0
**
constant
FractureRD_BPw_Np
1.0
**
constant
FractureRD_UFZ_Np
1.0
**
constant
FractureRD_TSw_I
1.0
**
constant
FractureRD_CHnvI
1.0
**
constant
FractureRD_CHnzI
1.0
**
constant
FractureRD_PPw_I
1.0
**
constant
FractureRD_UCF_I
1.0
**
constant
FractureRD_TSw_Th
1.0
**
constant
FractureRD_CHnvTh
1.0
**
constant
FractureRD_CHnzTh
1.0
**
constant
FractureRD_PPw_Th
1.0
**
constant
FractureRD_UCF_Th
1.0
**
constant
FractureRD_BPw_Th
1.0
**
constant
FractureRD_UFZ_Th
1.0
**
constant
FractureRD_TSw_Ra
1.0
**
constant
FractureRD_UCF_Ra
1.0
**
constant
FractureRD_BPw_Ra
1.0
**
constant
FractureRD_UFZ_Ra
1.0
**
constant
FractureRD_TSw_Pb
1.0
**
constant
FractureRD_CHnvPb
1.0
**
constant
FractureRD_CHnzPb
1.0
**
constant
FractureRD_PPw_Pb
1.0
**
constant
FractureRD_UCF_Pb
1.0
**
constant
FractureRD_BPw_Pb
1.0
**
constant
FractureRD_UFZ_Pb
1.0
**
constant
FractureRD_TSw-Cs
1.0
**
constant
FractureRD_CHnvCs
1.0
**
constant
FractureRD_CHnzCs
1.0
**
constant
FractureRD_PPw-Cs
1.0
**
constant
FractureRD_UCF-Cs
1.0
**
constant
FractureRD_BPw-Cs
1.0
**
constant
FractureRD_UFZ-Cs
1.0
**
constant
FractureRD_TSw_Ni
1.0
**
constant
FractureRD_CHnvNi
1.0
**
constant
FractureRD_CHnzNi
1.0
**
constant
FractureRD_PPw_Ni
1.0
**
constant
FractureRD_UCF_Ni
1.0
**
constant
FractureRD_BPw_Ni
1.0
**
constant
FractureRD_UFZ_Ni
1.0
**
constant
FractureRD_TSw_C
1.0
**
constant
FractureRD_CHnvC
1.0
**
constant
FractureRD_CHnzC
1.0
**
constant
FractureRD_PPw_C
1.0
**
constant
FractureRD_UCF_C
1.0
**
constant
FractureRD_BPw_C
1.0
**
constant
FractureRD_UFZ_C
1.0
**
constant
FractureRD_BPw-Se
1.0
**
constant
FractureRD_CHnvSe
1.0
**
constant
FractureRD_CHnzSe
1.0
**
lognormal
MatrixPermeability
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability
0.2e-14, 0.2e-12
**
lognormal
MatrixPermeability
0.5e-18, 0.5e-16
**
lognormal
MatrixPermeability
0.1e-17, 0.1e-15
**
lognormal
MatrixPermeability
0.3e-18, 0.3e-16
**
lognormal
MatrixPermeability
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability
1.5e-18, 2.1e-16
**
constant
MatrixPorosity
0.12
**
constant
MatrixPorosity
0.33
**
constant
MatrixPorosity
0.32
**
constant
MatrixPorosity
0.28
**
constant
MatrixPorosity
0.28
**
constant
MatrixPorosity
0.12
**
constant
MatrixBeta_TSw
0.12
**
constant
MatrixBeta_TSw
1.5
**
constant
MatrixBeta_CHnv
1.3
**
constant
MatrixBeta_CHnv
2.3
**
constant
MatrixBeta_PPw
1.5
**
constant
MatrixBeta_UCF
1.4
**
constant
MatrixBeta_BPw
1.7
**
constant
MatrixBeta_UFZ
2.3
**
constant
MatrixGrainDensity
2460.0
**
constant
MatrixGrainDensity
2260.0
**
constant
MatrixGrainDensity
2460.0
**
constant
MatrixGrainDensity
2540.0
**
constant
MatrixGrainDensity
2420.0
**
constant
MatrixGrainDensity
2570.0
**
constant
MatrixGrainDensity
2630.0
**
lognormal
FracturePermeability
8.0e-15, 8.0e-13
**
lognormal
FracturePermeability

```

```

8.0e-15, 8.0e-11
lognormal
FracturePermeability_Chms[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_PPw[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_UCF[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_BFW[m2]
3.0e-15, 3.0e-11
**
lognormal
FracturePermeability_UPZ[m2]
1.0e-15, 1.0e-11
**
loguniform
FracturePorosity_TSW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_CHnv
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_Chms
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_PPw_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UCF_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_BFW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UPZ_
1.0e-3, 1.0e-2
**
constant
FractureBeta_TSW_
3.0
**
constant
FractureBeta_CHnv
3.0
**
constant
FractureBeta_Chms
3.0
**
constant
FractureBeta_PPw_
3.0
**
constant
FractureBeta_UCF_
3.0
**
constant
FractureBeta_BFW_
3.0
**
constant
FractureBeta_UPZ_
3.0
**
constant
InletArea_1SubArea[m2]
5.4e5
**
constant
InletArea_2SubArea[m2]
5.4e5
**
constant
InletArea_3SubArea[m2]
5.4e5
**
constant
InletArea_4SubArea[m2]
5.4e5
**
constant
InletArea_5SubArea[m2]
5.4e5
**
constant
InletArea_6SubArea[m2]
5.4e5
**
constant
InletArea_7SubArea[m2]
5.4e5
**
constant
TSW_Thickness_1SubArea[m]
33.0
**
constant
CHnvThickness_1SubArea[m]
0.0
**
constant
CHmsThickness_1SubArea[m]
163.0
**
constant
PPw_Thickness_1SubArea[m]
34.0
**
constant
UCF_Thickness_1SubArea[m]
67.0
**
constant
BPw_Thickness_1SubArea[m]
0.0
**
constant
UPZ_Thickness_1SubArea[m]
0.0
**
constant
TSW_Thickness_2SubArea[m]
116.0
**
constant
CHnvThickness_2SubArea[m]
0.0
**
constant
CHmsThickness_2SubArea[m]
154.0
**
constant
PPw_Thickness_2SubArea[m]
39.0
**
constant
UCF_Thickness_2SubArea[m]
20.0
**
constant
BPw_Thickness_2SubArea[m]
0.0
**
constant
UPZ_Thickness_2SubArea[m]
0.0
**
constant
TSW_Thickness_3SubArea[m]
20.0
**
constant
CHnvThickness_3SubArea[m]
0.0
**
constant
CHmsThickness_3SubArea[m]
122.0
**
constant
PPw_Thickness_3SubArea[m]
40.0
**
constant
UCF_Thickness_3SubArea[m]
158.0
**
constant
BPw_Thickness_3SubArea[m]
0.0
**
constant
UPZ_Thickness_3SubArea[m]
0.0
**
constant
TSW_Thickness_4SubArea[m]
110.0
**
constant
CHnvThickness_4SubArea[m]
0.0
**
constant
CHmsThickness_4SubArea[m]
132.0
**
constant
PPw_Thickness_4SubArea[m]
34.0
**
constant
UCF_Thickness_4SubArea[m]
57.0
**
constant
BPw_Thickness_4SubArea[m]
0.0
**
constant
UPZ_Thickness_4SubArea[m]
0.0
**
constant
TSW_Thickness_5SubArea[m]
20.0
**
constant
CHnvThickness_5SubArea[m]
113.0
**
constant
CHmsThickness_5SubArea[m]
0.0
**
constant
CHnvThickness_6SubArea[m]
125.0
**
constant
CHmsThickness_6SubArea[m]
0.0
**
constant
PPw_Thickness_6SubArea[m]
26.0
**
constant
UCF_Thickness_6SubArea[m]
136.0
**
constant
BPw_Thickness_6SubArea[m]
0.0
**
constant
UPZ_Thickness_6SubArea[m]
0.0
**
constant
TSW_Thickness_7SubArea[m]
121.0
**
constant
CHnvThickness_7SubArea[m]
0.0
**
constant
CHmsThickness_7SubArea[m]
114.0
**
constant
PPw_Thickness_7SubArea[m]
43.0
**
constant
UCF_Thickness_7SubArea[m]
63.0
**
constant
BPw_Thickness_7SubArea[m]
0.0
**
constant
UPZ_Thickness_7SubArea[m]
0.0
**
***** SEPT <<***
constant
MixingZoneDispersionFraction
0.01
**
constant
DispersionFraction_STFF
0.01
**
constant
DispersionFraction_SAV
0.1
**
constant
MinimumResidenceTime_STFF[yr]
10.0
**
constant
MinimumResidenceTime_SAV[yr]
10.0
**
constant
ImmobileRD_STFF_Am
1.8e4
**
constant
ImmobileRD_STFF_Np
19.0
**
constant
ImmobileRD_STFF_I
1.0
**
constant
ImmobileRD_STFF_Tc
2.4e5
**
constant
ImmobileRD_STFF_C1
1.0
**
rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Am
7.5e4, 8.0e10
**
constant
FractureRD_STFF_Mp
1.0
**
rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Mp
1.0, 3.9e3
**
constant
FractureRD_STFF_I
1.0
**
loguniform
AlluviumMatrixRD_SAV_I
1.0, 4.0
**
constant
FractureRD_STFF_Tc
1.0
**
constant
AlluviumMatrixRD_SAV_Tc
1.0e4
**
constant
FractureRD_STFF_C1
1.0
**
constant
AlluviumMatrixRD_SAV_C1
1.0
**
constant
FractureRD_STFF_Cm
1.0
**
constant
AlluviumMatrixRD_SAV_Cm
7.5e4
**
constant
FractureRD_STFF_U
2.0
**
rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_U
1.0, 1.9e4
**
constant
FractureRD_STFF_Pu
1.0
**
rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Pu
4.2e2, 3.9e5
**
constant
FractureRD_STFF_Th
1.0
**
rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Th
1.9, 4.5e7
**
constant
FractureRD_STFF_Ra
1.0
**
loguniform
AlluviumMatrixRD_SAV_Ra
2.0e3, 8.0e3
**
constant
FractureRD_STFF_Pb
1.0
**
loguniform
AlluviumMatrixRD_SAV_Pb
2.0e3, 8.0e3
**
constant
FractureRD_STFF-Cs
1.0
**
loguniform
AlluviumMatrixRD_SAV-Cs
9.0e4, 1.0e5
**
constant
FractureRD_STFF-Ni
1.0
**
loguniform
AlluviumMatrixRD_SAV-Ni
1.0, 8.0e3
**
constant
FractureRD_STFF-C
1.0
**
constant
AlluviumMatrixRD_SAV-C
1.0
**
constant
FractureRD_STFF-Se
1.0
**
loguniform
AlluviumMatrixRD_SAV-Se
1.0, 500.0
**
constant
FractureRD_STFF-Nb
1.0
**
loguniform
AlluviumMatrixRD_SAV-Nb
2.0e3, 3.0e4
**
lognormal
FracturePorosity_STFF
1.e-3, 1.e-2
**
uniform
AlluviumMatrixPorosity_SAV
1.e-3, 1.5e-1
**
constant
ImmobileRD_STFF_Am
1.8e4
**
constant
ImmobileRD_STFF_Np
19.0
**
constant
ImmobileRD_STFF_I
1.0
**
constant
ImmobileRD_STFF_Tc
2.4e5
**
constant
ImmobileRD_STFF_C1
1.0
**
****>>> VOLCANO <<<***
finiteexponential
TimeOfNextVolcanicEventInRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
constant
XLocationInRegionOfInterest[m]
1.0
**
finiteexponential
TimeOfNextFaultingEventInRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
constant
XLocationOfFaultingEventInRegionOfInterest[m]
547400.0, 548600.0
**
uniform
YLocationOfFaultingEventInRegionOfInterest[m]
4076200.0, 4079040.0
**
constant
ProbabilityForRWOrientationOffaults
0.05
**
RNDetermineFaultOrientation
0.0, 1.0
**
constant
NEFaultStrikeOrientationMeasuredfromNorthClockwise)
-32.5
**
constant
NEFaultStrikeOrientationMeasuredfromNorthClockwise)
10.0
**
constant
NEFaultTraceLength[m]
4000.0
**
constant
NEFaultTraceLength[m]
4000.0
**
beta
NEFaultZonewidth[m]
0.5, 275.0, 1.25, 15.0
**
beta
NEFaultZonewidth[m]
0.5, 365.0, 1.25, 15.0
**
lognormal
MWAmountOfLargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
lognormal
NWAmountOfLargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
constant
NWCumulativeDisplacementRate[mm/yr]
0.00005
**
constant
NWCumulativeDisplacementRate[mm/yr]
0.00005
**
****>>> VOLCANO <<<***
finiteexponential
TimeOfNextVolcanicEventInRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
constant
XLocationInRegionOfInterest[m]
1.0

```



```

48900.0
constant
KdOfPlutoniumInVolcanicAsh[cm3/g]
550.0
**
locationInRegionOfInterest[m]
4078000.0
**
uniform
RnToDetermineIfExtrusiveOrIntrusiveVolcanicEvent
0.0, 1.0
**
constant
FractionOfTimeVolcanicEventIsExtrusive
0.999
**
uniform
AngleOfVolcanicDikeMeasuredFromNorthClockwise[degrees]
0.0, 15.0
**
uniform
LengthOfVolcanicDike[m]
2000.0, 11000.0
**
uniform
WidthOfVolcanicDike[m]
1.0, 10.0
**
uniform
DiameterOfVolcanicCone[m]
24.6, 77.9
**
**
***** ASHFLOOD <<<***
**
constant
DensityOfAirAtSTP[g/cm3]
0.00129
**
constant
ViscosityOfAirAtSTP[g/cm-s]
0.00018
**
constant
ConstantRelatingFallTimeToEddyDiffusivity[cm2/s/5/2]
400.0
**
constant
MaximumParticleDiameterForParticleTransport[cm]
10.0
**
constant
MinimumFuelParticulateSize[cm]
0.0001
**
constant
ModeFuelParticulateSize[cm]
0.001
**
constant
MaximumFuelParticulateSize[cm]
0.01
**
constant
MinimumAshDensityForVariationWithSize[g/cm3]
1.2
**
constant
MaximumAshDensityForVariationWithSize[g/cm3]
2.0
**
constant
MinimumAshLogDiameterForDensityVariation
-2.0
**
constant
MaximumAshLogDiameterForDensityVariation
-1.0
**
constant
ParticleShapeParameter
0.5
**
constant
IncorporationRatio
0.3
**
constant
WindDirection[degrees]
-90.0
**
exponential
WindSpeed[cm/s]
0.30083
**
loguniform
VolcanicEventDuration[s]
6.13e4, 7.24e6
**
loguniform
VolcanicEventPower[W]
2.57e9, 3.55e11
**
constant
VolcanicColumnConstantBeta
10.0
**
logtriangular
AshMeanParticleLogDiameter[d_in_cm]
0.01, 0.1, 1.0
**
constant
AshParticleSizeDistributionStandardDeviation
1.0
**
**
***** ASHRMOVO <<<***
**
constant
RelativeRateOfBlanketRemoval[1/yr]
0.001
**
constant
FractionOfPrecipitationLostToEvapotranspiration
0.68
**
constant
FractionOfIrrigationLostToEvapotranspiration
0.5
**
constant
AnnualPrecipitation[m/yr]
0.085
**
constant
AnnualIrrigation[m/yr]
1.52
**
constant
FractionOfYearSoilIsSaturatedDueToPrecipitation
0.0054
**
constant
FractionOfYearSoilIsSaturatedDueToIrrigation
0.2
**
constant
AshBulkDensity[g/cm3]
1.4
**
constant
AshVolumetricMoistureFractionAtSaturation
0.4
**
constant
DepthOfTheRootingZone[m]
0.15
**
constant
KdOfUraniumInVolcanicAsh[cm3/g]
35.0
**
constant
KdOfCuriumInVolcanicAsh[cm3/g]
4800.0
**
constant
KdOfPlutoniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfAmericiumInVolcanicAsh[cm3/g]
1900.0
**
constant
KdOfThoriumInVolcanicAsh[cm3/g]
320.0
**
constant
KdOfRadiumInVolcanicAsh[cm3/g]
500.0
**
constant
KdOfLeadInVolcanicAsh[cm3/g]
270.0
**
constant
KdOfProtactiniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfActiniumInVolcanicAsh[cm3/g]
450.0
**
constant
KdOfNeptuniumInVolcanicAsh[cm3/g]
5.0
**
constant
KdOfSamariumInVolcanicAsh[cm3/g]
245.0
**
constant
KdOfCesiumInVolcanicAsh[cm3/g]
380.0
**
constant
KdOfIodineInVolcanicAsh[cm3/g]
1.0
**
constant
KdOfTinInVolcanicAsh[cm3/g]
130.0
**
constant
KdOfSilverInVolcanicAsh[cm3/g]
55.0
**
constant
KdOfPalladiumInVolcanicAsh[cm3/g]
55.0
**
constant
KdOfTechnetiumInVolcanicAsh[cm3/g]
0.1
**
constant
KdOfMolybdenumInVolcanicAsh[cm3/g]
10.0
**
constant
KdOfNiobiumInVolcanicAsh[cm3/g]
160.0
**
constant
KdOfZirconiumInVolcanicAsh[cm3/g]
600.0
**
constant
KdOfStrontiumInVolcanicAsh[cm3/g]
15.0
**
constant
KdOfSeleniumInVolcanicAsh[cm3/g]
150.0
**
constant
KdOfNickelInVolcanicAsh[cm3/g]
400.0
**
constant
KdOfChlorineInVolcanicAsh[cm3/g]
0.0
**
constant
KdOfCarbonInVolcanicAsh[cm3/g]
5.0
**
constant
SolubilityOfUraniumInVolcanicAsh[moles/liter]
4.5e-5
**
constant
SolubilityOfCuriumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfPlutoniumInVolcanicAsh[moles/liter]
5.0e-6
**
constant
SolubilityOfAmericiumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfThoriumInVolcanicAsh[moles/liter]
3.2e-9
**
constant
SolubilityOfRadiumInVolcanicAsh[moles/liter]
1.0e-7
**
constant
SolubilityOfLeadInVolcanicAsh[moles/liter]
3.2e-7
**
constant
SolubilityOfProtactiniumInVolcanicAsh[moles/liter]
3.2e-8
**
constant
SolubilityOfActiniumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfNeptuniumInVolcanicAsh[moles/liter]
1.0e-4
**
constant
SolubilityOfSamariumInVolcanicAsh[moles/liter]
5.0e-6
**
constant
SolubilityOfCesiumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfIodineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfTinInVolcanicAsh[moles/liter]
5.0e-8
**
constant
SolubilityOfSilverInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfPalladiumInVolcanicAsh[moles/liter]
9.5e-4
**
constant
SolubilityOfTechnetiumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfMolybdenumInVolcanicAsh[moles/liter]
1.0

```

```

**
constant
SolubilityOfNiobiumInVolcanicAsh[moles/liter]
1.0e-8
**
constant
SolubilityOfZirconiumInVolcanicAsh[moles/liter]
3.2e-10
**
constant
SolubilityOfStrontiumInVolcanicAsh[moles/liter]
1.3e-4
**
constant
SolubilityOfSeleniumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfNickelInVolcanicAsh[moles/liter]
2.0e-3
**
constant
SolubilityOfChlorineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfCarbonInVolcanicAsh[moles/liter]
1.0
**
***>>> DCAGS <<<***
**
constant
DistanceCutoffForDoseConversionDualityInDCAGS[km]
19.99
**
loguniform
AirborneMassLoadForVolcanismDoseCalculation[g/m3]
1.0e-4, 1.0e-2
**
constant
OccupancyFactorForVolcanismDoseCalculation[-]
0.24
**
constant
DepthOfResuspendableLayer[cm]
0.3
**
***>>> CORRELATED PARAMETERS <<<***
**
correlateinputs
SubAreaWetFraction
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
0.631
**
correlateinputs
SubAreaWetFraction
MatrixPermeability_TSW_m2]
-0.623
**
correlateinputs
PowFactor
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
-0.224
**
correlateinputs
PowFactor
MatrixPermeability_TSW_m2]
0.13
**
correlateinputs
PowFactor
SubAreaWetFraction
-0.366
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.964
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_U
0.346
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Np
0.937
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Th
0.112
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_U
0.489
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Np
0.881
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Th
0.109
**
correlateinputs
AlluviumMatrixRD_SAV_Np
AlluviumMatrixRD_SAV_Th
0.260
**
correlateinputs
AlluviumMatrixRD_SAV_Np
AlluviumMatrixRD_SAV_U
0.610
**
correlateinputs
AlluviumMatrixRD_SAV_Th
AlluviumMatrixRD_SAV_U
0.165
**
endoffile

```

Michael S. Wilkey
06/15/60

```

title
Input file tpa.imp as supplied with TPA Version 3.2.1
***** Parameter Sampling <<<***
Base case data set Rev 3.2.1 2/22/99
** 5/25/1998 tpa3.2 new parameter; option to conduct
direct-release only calculation
**
** ***** GLOBAL PARAMETERS <<<***
**
** ***** Disruptive Scenario flags <<<***
**
iflag DirectReleaseOnlyFlag[yes=1,no=0]
0
**
constant
SeedForRandomNumber
188310452.0
**
iflag
FaultingDisruptiveScenarioFlag[yes=1,no=0]
0
**
iflag
SeismicDisruptiveScenarioFlag[yes=1,no=0]
0
**
** ***** Subarea Size <<<***
**
** Number and Location of Subareas[m] Based On
Fig3.4-1 in TSPA95
**subarea
**1
**ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
**
** *547405.7 4079323.7
** *548469.3 4076362.2
** *548469.3 4079237.8
** *547405.7 4079237.8
** *547405.7 4076362.2
subarea
7
**
ZONE T="Subarea 1", I=5, F=POINT
547472.0, 4079323.7
548069.2, 4079136.5
547847.3, 4077816.2
547318.4, 4077934.0
547472.0, 4079323.7
ZONE T="Subarea 2", I=5, F=POINT
548069.2, 4079136.5
548069.2, 4078968.6
548047.9, 4077654.1
547847.3, 4077816.2
548069.2, 4079136.5
ZONE T="Subarea 3", I=5, F=POINT
547318.4, 4077934.0
547847.3, 4077816.2
548047.9, 4077654.1
548069.2, 4078968.6
547318.4, 4077934.0
ZONE T="Subarea 4", I=5, F=POINT
547847.3, 4077816.2
548047.9, 4077654.1
548069.2, 4078968.6
548322.7, 4077192.2
547847.3, 4077816.2
ZONE T="Subarea 5", I=5, F=POINT
547474.7, 4077282.6
547847.3, 4077816.2
548047.9, 4077654.1
548322.7, 4077192.2
547474.7, 4077282.6
ZONE T="Subarea 6", I=5, F=POINT
547847.3, 4077816.2
548047.9, 4077654.1
548322.7, 4077192.2
548319.5, 4076220.2
548322.7, 4077192.2
**
iconstant
StartAtSubarea
1
**
iconstant
StopAtSubarea
7
**
** ***** Nuclides and Chains <<<***
**
** 5/25/1998 tpa3.2 new parameter section
**
** Nuclides can be eliminated from the basecase set.
** However, if additional nuclides (Pu242, Am242m,
** Cm245,
** U235, Pa231, Ac227, Pu241, U233, Th229, Cm244,
** U236, U232, Sm151,
** Cm137, Sm126, Sm12m, Ag108m, Pd107, Mo93, Zr93,
** Sr90, or Ni63)
** are added to the basecase set, then corresponding
** RDN,
** solubilities, gap fractions, and correlations must
** be added.
**
iflag
CheckNuclidesAndChains[yes=1,no=0]
0
**
** ***** UZFLOW <<<***
**
uniform
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
1.0, 10.0
**
uniform
MeanAveragePrecipitationMultiplierAtGlacialMaximum
1.5, 2.5
**
uniform
MeanAverageTemperatureIncreaseAtGlacialMaximum[degC]
-10, -5
**
constant
TimeStepForClimate[yr]
500.0
**
constant
StandardDeviationOfMAAboutMeanInOneTimePeriod[mm/yr]
0.0
**
constant
StandardDeviationOfMAAboutMeanInOneTimePeriod[degC]
0.0
**
constant
CorrelationBetweenMAPAndMAT
-0.8
**
iconstant
ClimatePerturbationSet
1
**
** ***** NFRNV <<<***
**
iflag
TabularTemperatureRHFFlag[yes=1,no=0]
0
**
iconstant
nsetUsedToPickTempRHDataSet
1
**
** 6/2/98 tpa3.2 name change for UseReflux2
**
iconstant
SelectRefluxModel(1,2,3)
3
**
constant
LengthOfRefluxZone[m]
20
endofnuclides

```

```

constant
MaximumFluxInRefluxZone[m/s]
1.0e-9
**
constant
PerchedBucketVolumeForSAarea[m3/m2]
0.5
**
constant
Reflux2Thickness
100.0
**
constant
Reflux2Porosity
0.14
**
constant
Reflux2SatInit
0.9
**
constant
Reflux2SatResid
0.1
**
constant
Reflux2Period
100.0
**
constant
Reflux2LossI
0.1
**
constant
Reflux2LossD
0.1
**
constant
WPLength[m]
5.682
**
constant
WPDiameter[m]
1.802
**
constant
ReplacementDriftDiameter[m]
5.0
**
constant
WSPacingAlongReplacementDrift[m]
19.0
**
** 64/98 tpa3.2: Next 4 new parameters specific to
** reflux3 model
constant
WPUncellWidth[m]
22.5
**
loguniform
FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
uniform
FractionOfCondensateTowardRepository[1/yr]
0.0, 1.0
**
loguniform
FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
constant
DensityOfWaterAtBoiling[kg/m^3]
960.5
**
constant
EnthalpyOfPhaseChangeForWater[J/kg]
2.4e5
**
uniform
TemperatureGradientInVicinityOfBoilingIsotherm[K/m]
1.0, 100.0
**
constant
ArealMassLoading[MTU/acre]
83.0
**
constant
WastePackagePayload[MTU]
2.76
**
constant
AgeOfWaste[yr]
26.0
**
constant
AmbientRepositoryTemperature[C]
20.0
**
constant
WasteDensityOfYMRock[kg/m^3]
2580.0
**
constant
SpecificHeatOfYMRock[J/(kg-K)]
840.0
**
uniform
ThermalConductivityOfYMRock[W/(m-K)]
1.8, 2.2
**
constant
EmissivityOfDriftWall[-]
0.8
**
constant
EmissivityOfWastePackage[-]
0.7
**
constant
ThermalConductivityOfFloor[W/(m-C)]
0.6
**
constant
EffectiveThermalConductivityOfUnbackfilledDrift[W/(m-C)]
0.90
**
constant
TimeOfBackfillEmplaced[yr]
100001.0
**
constant
EffectiveThermalConductivityOfBackfill[W/(m-C)]
0.60
**
constant
ThermalConductivityOfInnerStainlessSteelWall[W/(m-C)]
15.0
**
constant
ThermalConductivityOfOuterCarbonSteelWall[W/(m-C)]
50.0
**
constant
EffectiveThermalConductivityOfBasket&SPinWP[W/(m-C)]
1.0
**
constant
ElevationOfRepositoryHorizon[m]
1072.0
**
constant
ElevationOfGroundSurface[m]
1400.0
**
**
***>>> EBSFALL <<<***
constant
OuterWPTHickness[m]
0.02
**
constant
InnerWPTHickness[m]
13.75
**
constant
MetalGrainRadius[micrometer]
13.75
**
constant
GrainBoundaryThickness[micrometer]
7.0e-4
**
constant
DryOxidationConstant
0.00001
**
constant
CriticalRelativeHumidityHumidAirCorrosion
0.55
**
normal
CriticalRelativeHumidityAqueousCorrosion
0.75, 0.85
**
uniform
ThicknessOfWaterFilm[m]
0.001, 0.003
**
constant
BoilingPointOfWater[C]
97.0
**
constant
OuterOverpackExpIntercept
-620.3
**
constant
TempCoefOfOuterPackExpIntercept
0.47
**
constant
OuterOverpackExpSlope
-95.2
**
constant
TempCoefOfOuterPackExpSlope
0.88
**
uniform
InnerOverpackExpIntercept
1040.0, 1240.0
**
**48.5, 148.5 >>> 625 <<<
constant
TempCoefOfInnerPackExpIntercept
0.0
**
constant
InnerOverpackExpSlope
0.0
**
**160.8 >>> 625 <<<
constant
TempCoefOfInnerPackExpSlope
0.0
**
constant
OuterWPBataKineticParameterforOxygen
0.75
**
constant
OuterWFBetaKineticParameterforWater
0.5
**
constant
InnerWPBataKineticParameterforOxygen
0.75
**
constant
InnerWFBetaKineticParameterforWater
0.5
**
constant
OuterWPRateConstantforOxygenReduction[coulomb-m/mole/yr]
3.8e12
**
constant
OuterWPRateConstantforWaterReduction[coulomb-m/m^2/yr]
1.6e-1
**
constant
OuterWPActivationEnergyforOxygenReduction[J/mole]
37300.0
**
constant
OuterWPActivationEnergyforWaterReduction[J/mole]
25000.0
**
constant
InnerWPRateConstantforOxygenReduction[coulomb-m/mole/yr]
3.0e10
**
constant
InnerWPRateConstantforWaterReduction[coulomb-m/m^2/yr]
3.2
**
constant
InnerWPActivationEnergyforOxygenReduction[J/mole]
40000.0
**
constant
InnerWPActivationEnergyforWaterReduction[J/mole]
25000.0
**
constant
AA_1_1[C/m2/yr]
3.15e5
**
uniform
AA_2_1[C/m2/yr]
2.0e4, 6.3e4
**
constant
MeasuredGalvanicCouplePotential
-0.46
**
uniform
CoefForLocCorrOfOuterOverpack
8.66e-4, 8.66e-3
**
constant
ExponentForLocCorrOfOuterOverpack
0.45
**
constant
HumidAirCorrosionRate[m/yr]
1.16e-5
**
constant
LocalizedCorrRateOfInnerOverpack[m/yr]
2.5e-4
**
constant
FractionalCouplingStrength
0.0
**
constant
FactorForDefiningChoiceOfCritPotential
0.0
**
constant
ChlorideConcForFirstLayer[mol/L]
3.0e-4
**
constant
ChlorideConcForSecondLayer[mol/L]
1.0
**
**3.0e-2 >>> 625 <<<
uniform

```

Michael J. Minich
06/15/00

```

ChlorideMiltFactor      0.28
1.0, 30. 0.0          **
constant               FractionAreaForGroundMotion6
ReferencePsi            0.34
**
constant               FractionAreaForGroundMotion7
WSurfaceScaleThickness[m] 0.4
**
constant               FractionAreaForGroundMotion8
PorosityOfScaleonWP    0.46
**
constant               FractionAreaForGroundMotion9
PorosityOfScaleonWP    0.5
**
constant               FractionAreaForGroundMotion10
YieldStrength[MPa]     0.54
**
** twr 7/8/98 modify the VerticalExtentOfRockFall
SafetyFactor            constant
                        names by adding "_"
                        VerticalExtentOfRockFall1_1[m]
                        0.0
**
constant               VerticalExtentOfRockFall1_2[m]
FractureToughness[MPa-m**0.5] 250.0
**
**
** >>>> SEISMO <<<<<<
**
hazardcurve
SeismicHazardCurveforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 2400.0
0.25 4400.0
0.30 7800.0
0.35 11000.0
0.40 20000.0
0.45 31000.0
0.50 44000.0
**
constant               VerticalExtentOfRockFall1_7[m]
WeightPercentageOfRockFallThatHitsWPforSEISMO 1.0
**
constant               VerticalExtentOfRockFall1_8[m]
WeightOfWPforSEISMO[N] 1.27D05
**
constant               VerticalExtentOfRockFall1_9[m]
WPsStiffnessforSEISMO[Pa*m] 1.21D10
**
constant               VerticalExtentOfRockFall1_10[m]
WPModulusOfElasticityforSEISMO[Pa] 2.67D11
**
normal                 VerticalExtentOfRockFall2_1[m]
RockModulusOfElasticityforSEISMO[Pa] 2.76D10, 4.14D10
**
uniform                 VerticalExtentOfRockFall2_2[m]
constant               WPPoissonRatioforSEISMO[] 0.2D0
**
uniform                 VerticalExtentOfRockFall2_3[m]
normal                 RockPoissonRatioforSEISMO[] 0.15, 0.25
**
uniform                 VerticalExtentOfRockFall2_4[m]
constant               RockFallingDistanceforSEISMO[m] 2.0D0
**
uniform                 VerticalExtentOfRockFall2_5[m]
constant               WPFallingDistanceforSEISMO[m] 0.3D0
**
uniform                 VerticalExtentOfRockFall2_6[m]
iconstant              WPNumberofSupportPairforSEISMO 2
**
uniform                 VerticalExtentOfRockFall2_7[m]
constant               WPSupportStiffnessforSEISMO[pa*m] 5.5D09
**
uniform                 VerticalExtentOfRockFall2_8[m]
constant               DistributionJointSpacing1forSEISMO 5.0D-03
**
uniform                 VerticalExtentOfRockFall2_9[m]
constant               DistributionJointSpacing2forSEISMO 5.0D-03
**
uniform                 VerticalExtentOfRockFall2_10[m]
constant               DistributionJointSpacing3forSEISMO 5.0D-03
**
uniform                 VerticalExtentOfRockFall3_1[m]
constant               DistributionJointSpacing4forSEISMO 0.629D0
**
uniform                 VerticalExtentOfRockFall3_2[m]
constant               DistributionJointSpacing5forSEISMO 0.356D0
**
uniform                 VerticalExtentOfRockFall3_3[m]
normal                 SEISMOJointSpacing1[m] 0.466, 0.600
**
uniform                 VerticalExtentOfRockFall3_4[m]
normal                 SEISMOJointSpacing2[m] 0.333 0.466
**
uniform                 VerticalExtentOfRockFall3_5[m]
normal                 SEISMOJointSpacing3[m] 0.20, 0.333
**
uniform                 VerticalExtentOfRockFall3_6[m]
normal                 SEISMOJointSpacing4[m] 0.06, 0.20
**
uniform                 VerticalExtentOfRockFall3_7[m]
normal                 SEISMOJointSpacing5[m] 0.03, 0.06
**
uniform                 VerticalExtentOfRockFall3_8[m]
** 5/28/1998 tpa3.2 new value (sah)
**
uniform                 VerticalExtentOfRockFall3_9[m]
constant               WPUltimateStrength[N/m*2] 1.5D09
**
uniform                 VerticalExtentOfRockFall3_10[m]
constant               GrainDensityforTSw2SEISMO[] 2.55
**
** 5/28/1998 tpa3.2 new values next 60
parameters(replacing selismo.dat)
**
constant               FractionAreaForGroundMotion1
0.05
**
constant               VerticalExtentOfRockFall4_2[m]
FractionAreaForGroundMotion2 0.12
**
uniform                 VerticalExtentOfRockFall4_3[m]
FractionAreaForGroundMotion3 0.17
**
uniform                 VerticalExtentOfRockFall4_4[m]
constant               FractionAreaForGroundMotion4 0.23
**
uniform                 VerticalExtentOfRockFall4_5[m]
constant               FractionAreaForGroundMotion5
0.5 7.0
**

```

```

uniform
VerticalExtentOfRockFall14_6[m]
0.5 7.5
**
uniform
VerticalExtentOfRockFall14_7[m]
0.5 8.0
**
uniform
VerticalExtentOfRockFall14_8[m]
0.5 8.5
**
uniform
VerticalExtentOfRockFall14_9[m]
0.5 9.3
**
uniform
VerticalExtentOfRockFall14_10[m]
0.5 10.0
**
uniform
VerticalExtentOfRockFall15_1[m]
0.5 4.7
**
uniform
VerticalExtentOfRockFall15_2[m]
0.5 9.33
**
uniform
VerticalExtentOfRockFall15_3[m]
0.5 9.7
**
uniform
VerticalExtentOfRockFall15_4[m]
0.5 10.0
**
uniform
VerticalExtentOfRockFall15_5[m]
0.5 10.7
**
uniform
VerticalExtentOfRockFall15_6[m]
0.5 11.33
**
uniform
VerticalExtentOfRockFall15_7[m]
0.5 12.0
**
uniform
VerticalExtentOfRockFall15_8[m]
0.5 12.66
**
uniform
VerticalExtentOfRockFall15_9[m]
0.5 13.3
**
uniform
VerticalExtentOfRockFall15_10[m]
0.5 14.0
**
** 5/28/1998 tpa3.2 two new parameters introduced
**
constant
WPYieldPoint()
0.002
**
constant
WPPlasticElongation[]
0.02
**
** ***** EHSREL <<<***
**
** tpr 7/8/98 modify flow model flag
iflag
FlowModelFlag(0=BathTub,1=FlowThrough)
0
lognormal
PowFactor
0.01, 3.0
**
lognormal
PmuFactor
0.01, 0.2
**
constant
SubareaWetFraction
1.0
**
** 5/21/98 tpa3.2: New parameter; nonzero initial
failure times
constant
InitialFailureTime[yr]
0.0
**
uniform
DefectiveFractionOfWPs/cell
1.0e-4, 1.0e-2
**
** 6/2/1998 tpa3.2 5 new parameters; number of SEISMO
inservals not to exceed 4
**
icount
NumberOfSEISNOWPFailureIntervals
4
**
constant
BeginningOfSEISNOWPFailureInterval1[yr]
0.0
**
constant
BeginningOfSEISNOWPFailureInterval2[yr]
2000.0
**
constant
BeginningOfSEISNOWPFailureInterval3[yr]
5000.0
**
constant
BeginningOfSEISNOWPFailureInterval4[yr]
10000.0
**
constant
WPInternalVolume[m3]
4.83
**
constant
FlowOnsetTemperature[C]
999.
**
constant
SPDensity[kg/m3]
10600.
**
icount
SurfaceAreaModel
1
**
icount
IModel
2
**
constant
OxygenPartialPressure[atm]
0.21
**
constant
NegativeLog10CarbonateConcentration[mol/L]
3.71
**
constant
UserLeachRate[kg/yr/m2]
2.5e-6
**
constant
RD_Invert_On
6.00e3
**
constant
RD_Invert_Pu
3.00e3
**
constant
RD_Invert_U
6.01e2
**
constant
RD_Invert_Am
5.00e3
**
constant
RD_Invert_Np
1.20e3
**
constant
RD_Invert_Th
3.00e3
**
constant
RD_Invert_Ra
6.01e2
**
constant
RD_Invert_Pb
3.01e2
**
constant
RD_Invert-Cs
1.21e2
**
constant
RD_Invert_I
7.00e0
**
constant
RD_Invert_Tc
1.0
**
constant
RD_Invert_Ni
6.10e1
**
constant
RD_Invert_Cl
1.0
**
constant
RD_Invert_C
6.10e1
**
constant
RD_Invert-Se
1.0
**
constant
RD_Invert_Nb
6.01e2
**
constant
GapFractionForCM246
0.0
**
constant
GapFractionForU238
0.0
**
constant
GapFractionForCM245
0.0
**
constant
GapFractionForAM241
0.0
**
constant
GapFractionForNP237
0.0
**
constant
GapFractionForAM243
0.0
**
constant
GapFractionForPU239
0.0
**
constant
GapFractionForPU240
0.0
**
constant
GapFractionForPU234
0.0
**
constant
GapFractionForTH230
0.0
**
constant
GapFractionForRA226
0.0
**
constant
GapFractionForPB210
0.0
**
constant
GapFractionForCS135
0.06
**
constant
GapFractionForI129
0.06
**
constant
GapFractionForTC99
0.01
**
constant
GapFractionForNI159
0.0
**
constant
GapFractionForCL36
0.12
**
constant
GapFractionForCL14
0.1
**
constant
GapFractionForSE79
0.06
**
constant
GapFractionForNB94
0.0
**
normal
InitialRadiusOfSFPParticle[m]
7.0e-4, 3.0e-3
**
constant
RadiusOfSFGrain[m]
1.25e-5
**
constant
CladdingCorrectionFactor
1.0
**
constant
SubGrainFragmentRadiusAfterTransFrac[m]
5.0e-7, 2.9e-6
**
constant
ThicknessOfCladding[m]
6.1e-4
**
constant
SFC-14InventoryPerKGSP[ci]
7.2e-4
**
constant
Clad-14InventoryPerKGSP[ci]
4.89e-4

```

```

constant 0.0, 1.0
ZyOxideAndCrudC-14InvPerKgSP[c1] uniform MatrixKD_ChnvNp[m3/kg]
2.48e-5 SPWettedFraction_SEISNO2_7 4.4e-06 6.0e-01
constant 0.0, 1.0
GapAndGrainBoundaryInventoryPerKgSP[c1] uniform MatrixKD_PPw_Np[m3/kg]
6.2e-6 SPWettedFraction_SEISNO1_1 3.4e-06 5.0e-01
uniform 0.0, 1.0
SolubilityAm[kg/m3] uniform MatrixKD_UCF_Np[m3/kg]
2.4e-8 2.4e-4 SPWettedFraction_SEISNO3_2 3.8e-06 5.2e-01
logtriangular 0.0, 1.0
SolubilityBp[kg/m3] uniform MatrixKD_BPw_Np[m3/kg]
1.2e-3, 3.4e-2, 2.4e-1 SPWettedFraction_SEISNO3_3 1.5e-06 2.1e-01
constant 0.0, 1.0
SolubilityI[kg/m3] uniform MatrixKD_UFZ_Pu[m3/kg]
1.29e2 SPWettedFraction_SEISNO3_4 1.5e-06 2.0e-01
constant 0.0, 1.0
SolubilityTc[kg/m3] uniform MatrixKD_TSw_I[m3/kg]
3.0e-7 SPWettedFraction_SEISNO3_5 0.0
constant 0.0, 1.0
SolubilityCl[kg/m3] uniform MatrixKD_ChnvI[m3/kg]
3.6e1 SPWettedFraction_SEISNO3_6 0.0
constant 0.0, 1.0
SolubilityC[kg/m3] uniform MatrixKD_ChnzI[m3/kg]
1.4e1 SPWettedFraction_SEISNO3_7 0.0
constant 0.0, 1.0
SolubilityU[kg/m3] uniform MatrixKD_PPw_I[m3/kg]
7.6e-3 SPWettedFraction_SEISNO4_1 0.0
constant 0.0, 1.0
SolubilityCn[kg/m3] uniform MatrixKD_UCF_I[m3/kg]
2.4e-4 SPWettedFraction_SEISNO4_2 0.0
uniform 0.0, 1.0
SolubilityPu[kg/m3] uniform MatrixKD_BPw_I[m3/kg]
2.4e-6, 2.4e-4 SPWettedFraction_SEISNO4_3 0.0
constant 0.0, 1.0
SolubilityTh[kg/m3] uniform MatrixKD_UFZ_I[m3/kg]
2.3e-4 SPWettedFraction_SEISNO4_4 0.0
constant 0.0, 1.0
SolubilityRa[kg/m3] uniform MatrixKD_TSw_Tc[m3/kg]
2.3e-5 SPWettedFraction_SEISNO4_5 0.0
constant 0.0, 1.0
SolubilityPb[kg/m3] uniform MatrixKD_ChnvTc[m3/kg]
6.6e-5 SPWettedFraction_SEISNO4_6 0.0
constant 0.0, 1.0
SolubilityCs[kg/m3] uniform MatrixKD_ChnzTc[m3/kg]
1.3e2 SPWettedFraction_SEISNO4_7 0.0
constant 0.0, 1.0
SolubilityMl[kg/m3] uniform MatrixKD_PPw_Tc[m3/kg]
1.1e-1 SPWettedFraction_Corrosion_1 0.0
constant 0.0, 1.0
SolubilitySe[kg/m3] uniform MatrixKD_UCF_Tc[m3/kg]
7.9e1 SPWettedFraction_Corrosion_2 0.0
constant 0.0, 1.0
SolubilityRb[kg/m3] uniform MatrixKD_BPw_Tc[m3/kg]
9.3e-7 SPWettedFraction_Corrosion_3 0.0
constant 0.0, 1.0
6/2/1998 tpa3.2 next parameter replaced with 44 new parameters SPWettedFraction_(failurekind)_subarea uniform MatrixKD_UFZ_Tc[m3/kg]
uniform 0.0, 1.0
SPWettedFraction_Initial_1 uniform MatrixKD_TSw_Cl[m3/kg]
0.0, 1.0 SPWettedFraction_Corrosion_5 0.0
constant 0.0, 1.0
SPWettedFraction_Initial_2 uniform MatrixKD_ChnvCl[m3/kg]
0.0, 1.0 SPWettedFraction_Corrosion_6 0.0
uniform 0.0, 1.0
SPWettedFraction_Initial_3 uniform MatrixKD_ChnzCl[m3/kg]
0.0, 1.0 SPWettedFraction_Corrosion_7 0.0
uniform 0.0, 1.0
SPWettedFraction_Initial_4 uniform MatrixKD_PPw_Cl[m3/kg]
0.0, 1.0
uniform iflag
SPWettedFraction_Initial_5 InvertBypass(0=ebasflt,1=bypass=ebasflt) 0
0.0, 1.0
constant
SPWettedFraction_Initial_6 InvertRockPorosity 0.3
0.0, 1.0
constant
uniform InvertThickness[m] 0.75
0.0, 1.0
constant
SPWettedFraction_PAULTO InvertDiffusionCoefficient[m^2/yr] 4.4e-5
0.0, 1.0
lognormal
SPWettedFraction_VOLCANO InvertMatrixPermeability[m^2] 2.0e-18, 2.0e-16
0.0, 1.0
constant
uniform ***>>> UZFT <<<***
SPWettedFraction_SEISNO1_1 MatrixKD_ChnzCs[m3/kg]
0.0, 1.0
constant
uniform UnsaturatedZoneMinimumVelocityChangeFactor[Fraction] 0.4
0.0, 1.0
constant
SPWettedFraction_SEISNO1_2 MatrixLongitudinalDispersivity[FractionOffLayer] 0.1
0.0, 1.0
constant
uniform FractureLongitudinalDispersivity[FractionOffLayer] 0.1
0.0, 1.0
lognormal
SPWettedFraction_SEISNO1_4 MatrixKD_TSw_Am[m3/kg]
0.0, 1.0 4.2e+00 3.8e+06
uniform 0.0, 1.0
SPWettedFraction_SEISNO1_5 MatrixKD_ChnvAm[m3/kg]
0.0, 1.0 1.3e+01 1.2e+07
uniform 0.0, 1.0
SPWettedFraction_SEISNO1_6 MatrixKD_ChnzAm[m3/kg]
0.0, 1.0 1.2e+01 1.1e+07
uniform 0.0, 1.0
SPWettedFraction_SEISNO1_7 MatrixKD_PPw_Am[m3/kg]
0.0, 1.0 9.5e+00 8.7e+06
uniform 0.0, 1.0
SPWettedFraction_SEISNO2_1 MatrixKD_ChnvU[m3/kg]
0.0, 1.0 1.2e-09 3.0e+00
uniform 0.0, 1.0
SPWettedFraction_SEISNO2_2 MatrixKD_UCF_Am[m3/kg]
0.0, 1.0 1.0e+01 9.1e+06
uniform 0.0, 1.0
SPWettedFraction_SEISNO2_3 MatrixKD_BPw_Am[m3/kg]
0.0, 1.0 4.1e+00 3.7e+06
uniform 0.0, 1.0
SPWettedFraction_SEISNO2_4 MatrixKD_UFZ_Am[m3/kg]
0.0, 1.0 3.5e+00 3.5e+06
uniform 0.0, 1.0
SPWettedFraction_SEISNO2_5 MatrixKD_TSw_Np[m3/kg]
0.0, 1.0 1.6e-06 2.2e-01
uniform 0.0, 1.0
SPWettedFraction_SEISNO2_6 MatrixKD_ChnvNp[m3/kg]
0.0, 1.0 4.8e-06 6.6e-01
lognormal MatrixKD_ChnvNp[m3/kg]
4.4e-06 6.0e-01
lognormal MatrixKD_PPw_Np[m3/kg]
3.4e-06 5.0e-01
lognormal MatrixKD_UCF_Np[m3/kg]
3.8e-06 5.2e-01
lognormal MatrixKD_BPw_Np[m3/kg]
1.5e-06 2.1e-01
lognormal MatrixKD_UFZ_Pu[m3/kg]
1.5e-06 2.0e-01
constant MatrixKD_TSw_I[m3/kg]
0.0
constant MatrixKD_ChnvI[m3/kg]
0.0
constant MatrixKD_ChnzI[m3/kg]
0.0
constant MatrixKD_PPw_I[m3/kg]
0.0
constant MatrixKD_UCF_I[m3/kg]
0.0
constant MatrixKD_BPw_I[m3/kg]
0.0
constant MatrixKD_UFZ_I[m3/kg]
0.0
constant MatrixKD_TSw_Tc[m3/kg]
0.0
constant MatrixKD_ChnvTc[m3/kg]
0.0
constant MatrixKD_ChnzTc[m3/kg]
0.0
constant MatrixKD_PPw_Tc[m3/kg]
0.0
constant MatrixKD_UCF_Tc[m3/kg]
0.0
constant MatrixKD_BPw_Tc[m3/kg]
0.0
constant MatrixKD_UFZ_Tc[m3/kg]
0.0
constant MatrixKD_TSw_Cl[m3/kg]
0.0
constant MatrixKD_ChnvCl[m3/kg]
0.0
constant MatrixKD_ChnzCl[m3/kg]
0.0
constant MatrixKD_PPw_Cl[m3/kg]
0.0
constant MatrixKD_UCF_Cl[m3/kg]
0.0
constant MatrixKD_BPw_Cl[m3/kg]
0.0
constant MatrixKD_UFZ_Cl[m3/kg]
0.0
constant MatrixKD_TSw_Cs[m3/kg]
0.0
constant MatrixKD_ChnvCs[m3/kg]
0.0
constant MatrixKD_ChnzCs[m3/kg]
0.0
constant MatrixKD_PPw_Cs[m3/kg]
0.0
constant MatrixKD_UCF_Cs[m3/kg]
0.0
constant MatrixKD_BPw_Cs[m3/kg]
0.0
constant MatrixKD_UFZ_Cs[m3/kg]
0.0
constant MatrixKD_TSw_Nl[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnvNl[m3/kg]
1.0e-6, 0.10
lognormal MatrixKD_ChnzNl[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_PPw_Nl[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UCF_Nl[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_BPw_Nl[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UFZ_Nl[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_TSw_Pu[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnvPu[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnzPu[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_PPw_Pu[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UCF_Pu[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_BPw_Pu[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UFZ_Pu[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_TSw_Th[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnvTh[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnzTh[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_PPw_Th[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UCF_Th[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_BPw_Th[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UFZ_Th[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_TSw_Ra[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnvRa[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnzRa[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_PPw_Ra[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UCF_Ra[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_BPw_Ra[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UFZ_Ra[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_TSw_Rb[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnvRb[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnzRb[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_PPw_Rb[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UCF_Rb[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_BPw_Rb[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UFZ_Rb[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_TSw_Rc[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnvRc[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnzRc[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_PPw_Rc[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UCF_Rc[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_BPw_Rc[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UFZ_Rc[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_TSw_Rd[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnvRd[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_ChnzRd[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_PPw_Rd[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_UCF_Rd[m3/kg]
5.0e-6, 0.50
lognormal MatrixKD_BPw_Rd[m3/kg]
5.0e-6,
```

4

5

Enhanced SolubilityTc, and TcRD

tpa4.inp.wpd

```

548000.0
**
constant
KdOfPlutoniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfAmericiumInVolcanicAsh[cm3/g]
1900.0
**
uniform
RhtOfDeterminifExtrusiveOrIntrusiveVolcanicEvent
0.0, 1.0
**
constant
FractionOfTimeVolcanicEventIsExtrusive
0.999
**
uniform
AngleOfVolcanicDikeMeasuredFromNorthClockwise[degrees]
0.0, 15.0
**
uniform
LengthOfVolcanicDike[m]
2000.0, 11000.0
**
uniform
WidthOfVolcanicDike[m]
1.0, 10.0
**
uniform
DiameterOfVolcanicCone[m]
24.6, 77.9
**
****>>> ASHPUM0 <<<<<<
**
constant
DensityOfAirAtSTP[g/cm3]
0.00129
**
constant
ViscosityOfAirAtSTP[g/cm-s]
0.00018
**
constant
ConstantRelatingFallTimeToEddyDiffusivity[cm2/s/2]
1.0
**
constant
MaximumParticleDiameterForParticleTransport[cm]
10.0
**
constant
MinimumFuelParticleSize[cm]
0.0001
**
constant
MaximumFuelParticleSize[cm]
0.001
**
constant
MaximumFuelParticleSize[cm]
0.01
**
constant
MinimumAshDensityForVariationWithSize[g/cm3]
2.0
**
constant
MaximumAshDensityForVariationWithSize[g/cm3]
2.0
**
constant
MinimumAshLogdiameterForDensityVariation
2.0
**
constant
MaximumAshLogdiameterForDensityVariation
-1.0
**
constant
ParticleShapeParameter
0.5
**
constant
IncorporationRatio
0.3
**
constant
WindDirection[degrees]
-90.0
**
exponential
WindSpeed[cm/s]
0.00083
**
loguniform
VolcanicEventDuration[s]
6.13e4, 7.24e6
**
loguniform
VolcanicEventPower[W]
2.57e9, 3.55e11
**
constant
VolcanicColumnConstantBeta
10.0
**
logtriangular
AshMeanParticleLogDiameter[d_in_cm]
0.01, 0.1, 1.0
**
constant
AshParticleSizeDistributionStandardDeviation
0.0
**
****>>> ASHPUM0 <<<<<<
**
constant
RelativeRateOfBlanketRemoval[1/yr]
0.001
**
constant
FractionOfPrecipitationLostToEvapotranspiration
0.68
**
constant
FractionOfIrrigationLostToEvapotranspiration
0.5
**
constant
AnnualPrecipitation[m/yr]
0.085
**
constant
AnnualIrrigation[m/yr]
1.52
**
constant
FractionOfYearSoilIsSaturatedDueToPrecipitation
0.0054
**
constant
FractionOfYearSoilIsSaturatedDueToIrrigation
0.2
**
constant
AshBulkDensity[g/cm3]
1.4
**
constant
AshVolumetricMoistureFractionAtSaturation
0.4
**
constant
DepthOfTheRootingZone[m]
0.15
**
constant
KdOfUraniumInVolcanicAsh[cm3/g]
35.0
**
constant
KdOfCuriumInVolcanicAsh[cm3/g]
4000.0

```

```

1.0
**
constant
SolubilityOfNiobiumInVolcanicAsh[moles/liter]
1.0e-8
**
constant
SolubilityOfZirconiumInVolcanicAsh[moles/liter]
3.2e-10
**
constant
SolubilityOfStrontiumInVolcanicAsh[moles/liter]
1.3e-4
**
constant
SolubilityOfSeleniumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfNickelInVolcanicAsh[moles/liter]
2.0e-3
**
constant
SolubilityOfChlorineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfCarbonInVolcanicAsh[moles/liter]
1.0
**
****>>> DCAGS <<<<<<
**
constant
DistanceCutoffForDoseConversionDualityInDCAGS[m]
19.99
**
loguniform
AirborneMassLoadForVolcanismDoseCalculation[g/m3]
1.0e-4, 1.0e-2
**
constant
OccupancyFactorForVolcanismDoseCalculation[-]
0.24
**
constant
DepthOfResuspendableLayer[cm]
0.3
**
****>>> CORRELATED PARAMETERS <<<<<<
**
correlateinputs
SubareaWetFraction
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
0.611
**
correlateinputs
SubareaWetFraction
MatrixPermeability_TSW_m2
-0.623
**
correlateinputs
PowFactor
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
-0.224
**
correlateinputs
PowFactor
MatrixPermeability_TSW_m2
-0.113
**
correlateinputs
SubareaWetFraction
PowFactor
SubareaWetFraction
-0.365
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.564
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.246
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.837
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.112
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_U
0.489
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Np
0.881
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Th
0.109
**
correlateinputs
AlluviumMatrixRD_SAV_Np
AlluviumMatrixRD_SAV_U
0.610
**
correlateinputs
AlluviumMatrixRD_SAV_Th
AlluviumMatrixRD_SAV_U
0.165
**
endoffile

```

Miner's Mark
06/15/00

Enhanced Canister Failure tpa5.inp.wpd

```

title
Input file tpa.inp as supplied with TPA Version 3.2.1
Code
Base case data set Rev 3.2.1 2/22/99
****>>> GLOBAL PARAMETERS <<<<<<
****>>> Disruptive Scenario flags <<<<<<
iflag
VolcanismDisruptiveScenarioFlag[yes=1,no=0]
0
**
iflag
FaultingDisruptiveScenarioFlag[yes=1,no=0]
0
**
iflag
SeismicDisruptiveScenarioFlag[yes=1,no=0]
1
**
****>>> Subarea Size <<<<<<
** Number and Location Of Subareas[m] Based On
Fig3.4-1 in TSPA95
** Subarea
**
** ZONE T="ONE RECTANGULAR ZONE SUBAREA", P=POINT
**
** 547405.2 4076362.2
** 548469.3 4076362.2
** 548469.3 4079237.8
** 547405.7 4079237.8
** 547405.7 4076362.2
** Subarea
7
ZONE T="Subarea 1", I=5, P=POINT
547472.0, 4079323.7
548069.2, 4079136.5
547847.3, 4077816.2
547318.4, 4077934.0
547472.0, 4079323.7
ZONE T="Subarea 2", I=5, P=POINT
548069.2, 4079136.5
548609.7, 4078968.6
548547.9, 4077654.1
547847.3, 4077816.2
548069.2, 4079136.5
ZONE T="Subarea 3", I=5, P=POINT
547318.4, 4077934.0
547472.0, 4077816.2
548547.9, 4077654.1
548504.8, 4077170.0
548322.7, 4077192.2
547847.3, 4077816.2
548547.9, 4077654.1
547995.0, 4076338.9
547670.4, 4076435.5
547474.7, 4077282.6
ZONE T="Subarea 4", I=5, P=POINT
547847.3, 4077282.6
548322.7, 4077192.2
548504.8, 4077170.0
547995.0, 4076338.9
547847.3, 4077282.6
ZONE T="Subarea 5", I=5, P=POINT
548322.7, 4077192.2
548504.8, 4077170.0
548473.1, 4076533.7
548319.5, 4076220.2
548322.7, 4077192.2
**
icountant
StartAtSubarea
1
**
icountant
StopAtSubarea
7
**
****>>> Nuclides and Chains <<<<<<
** 5/25/1998 tpa3.2 new parameter section
** Nuclides can be eliminated from the base case set.
** However, if additional nuclides (Pu242, Am242m,
Pu239, Cm243)
** U235, Pu231, Ac227, Pu241, U233, Th229, Cm244,
U236, U238, Sm151,
** Ce137, Sm126, Sm12m, Ag108m, Pd107, Mo93, Zr93,
Sr90, or Ni63)
** are added to the base case set, then corresponding
** solubilities, gap fractions, and correlations must
** be added.
**
icountant
CheckNuclidesAndChains[yes=1,no=0]
0
**
aqueousnuclides
** number of nuclides, number of chains
20
13
2
chain 1
20
Cm246
U238
**
chain 2
3
Cm245
Am241
Np237
**
chain 3
2
Am243
Pu239
**
chain 4
1
Pu240
**
chain 5
4
U234
Th230
Ra226
Po210
**
chain 6
1
Cm135
**
chain 7
1
I129
**
chain 8
1
Tc99
**
chain 9
1
Ni59
**
chain 10
1
C14
**
chain 11
1
Se79
**
chain 12
1
Nb94
**
chain 13
1
C136
**
endofnuclides
****>>> Parameter Sampling <<<<<<
** 5/25/1998 tpa3.2 new parameter; option to conduct
direct-release only calculation
iflag
DirectReleaseOnlyFlag[yes=1,no=0]
0
**
constant
SeedForRandomNumber
188910452.0
**
icountant
NumberOfRealizations
250
**
icountant
StartAtRealization
1
**
icountant
StopAtRealization
0
**
****>>> Simulation Times <<<<<<
** 6/2/1998 tpa3.2 4 new parameters; calculations at
two time periods
**
constant
DurationOfCompliancePeriod[yr]
1.0
**
constant
MaximumTime[yr]
5.0e4
**
** Sum of pre- and post-compliance time steps must not
exceed 201
**
icountant
NumberOfTimeStepsInCompliancePeriod
201
**
constant
RatioOfLastToFirstTimeStepInCompliancePeriod
100.0
**
** Next two parameters ignored if MaximumTime[yr] =
DurationOfCompliancePeriod[yr]
**
icountant
NumberOfTimeStepsAfterCompliancePeriod
200
**
constant
RatioOfLastToFirstTimeStepAfterCompliancePeriod
100.0
**
loguniform
FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
loguniform
FractionOfCondensateTowardRepository[1/yr]
0.0, 1.0
**
loguniform
FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
icountant
OutputMode[0=None, 1=All, 2=UserDefined]
0
**
icountant
UserDefinedLowerRealizationAppended
1
**
icountant
UserDefinedUpperRealizationAppended
1
**
** 5/25/1998 tpa3.2 new parameter
**
** Select Append Files
** 0 = append all files
** 1 = usflow.ech and usflow.rlt only
** 2 = nfasv.ech and nfasv.rlt only
** 3 = ebwfil.ech and ebwfil.rlt only
** 4 = seismo.ech and seismo.rlt only
** 5 = faulto.ech and faulto.rlt only
** 6 = volcano.ech and volcano.rlt only
** 7 = ebwfil.ech and ebwfil.rlt only
** 8 = usflow.ech and usflow.rlt only
** 9 = srtf.ech and srtf.rlt only
** 10 = dcagw.ech and dcagw.rlt only
** 11 = ashpumo.ech and ashpumo.rlt only
** 12 = ashmove.ech and ashmove.rlt only
** 13 = dcagw.ech and dcagw.rlt only
** 14 = ashpumo.cum only
** 15 = faulto.cum only
** 16 = netliuz.cum only
** 17 = releaset.cum only
**
icountant
SpecificHeatOfYMRock[J/(kg-K)]
840.0
**
****>>> UEFLON <<<<<<
**
uniform
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
0.0, 10.0
**
uniform
MeanAveragePrecipitationMultiplierAtGlacialMaximum
1.5, 2.5
**
uniform
MeanAverageTemperatureIncreaseAtGlacialMaximum[degC]
-10, -5
**
constant
TimeStepForClimate[yr]
500.0
**
constant
StandardDeviationOfHMATAboutMeanInOneTimePeriod[mm/yr]
0.0
**
constant
StandardDeviationOfHMATAboutMeanInOneTimePeriod[degC]
0.0
**
constant
CorrelationBetweenMAPandMAT
-0.8
**
icountant
ClimatePerturbationSet
1
**
****>>> NFERV <<<<<<
**
iflag
TabularTemperatureRFlag[yes=1,no=0]
0
**
icountant
ElevationOfRepositoryHorizon[m]
1072.0
**
icountant
ElevationOfGroundSurface[m]
1400.0
**
****>>> EBSFAIL <<<<<<
**
constant
OuterWetThickness[m]
0.1

```

Miner's Mark
06/15/00


```

constant ReferenceDepth 9.0
**
constant WfourfaceScaleThickness[m] 0.0
**
constant TortuosityOfScaleneonMP 1.0
**
constant PorosityOfScaleneonMP 1.0
**
constant YieldStrength[MPa] 205.0
**
constant SafetyFactor 1.0
**
constant FractureToughness[MPa-m**0.5] 250.0
**
** ***** SEISMO <<***
hazardcurve SeismicHazardCurveforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 2400.0
0.25 4400.0
0.30 7800.0
0.35 11000.0
0.40 20000.0
0.45 30000.0
0.50 44000.0
**
constant WeightPercentageOfRockFallThatHitsWPforSEISMO 1.0
**
constant WeightCofWPFforSEISMO[N] 1.27D05
**
constant WPStiffnessforSEISMO[Pa*m] 1.21D10
**
constant WPModulusOfElasticityforSEISMO[Pa] 2.07D11
**
normal RockModulusOfElasticityforSEISMO[Pa] 2.76D10, 4.14D10
**
constant WPPoissonRatioforSEISMO{} 0.2D0
**
normal RockPoissonRatioforSEISMO{} 0.15, 0.25
**
constant RockFallingDistanceforSEISMO[m] 2.0D0
**
constant WPFallingDistanceforSEISMO[m] 0.2D0
**
icountant WPNumberOfSupportPairforSEISMO 2
**
constant WPsupportStiffnessforSEISMO[pa*m] 5.5D09
**
constant DistributionJointSpacing1forSEISMO 5.0D-03
**
constant DistributionJointSpacing2forSEISMO 5.0D-03
**
constant DistributionJointSpacing3forSEISMO 5.0D-03
**
constant DistributionJointSpacing4forSEISMO 0.629D0
**
constant DistributionJointSpacing5forSEISMO 0.356D0
**
normal SEISMOJointSpacing1[m] 0.466, 0.600
**
normal SEISMOJointSpacing2[m] 0.333, 0.466
**
normal SEISMOJointSpacing3[m] 0.20, 0.333
**
normal SEISMOJointSpacing4[m] 0.06, 0.20
**
normal SEISMOJointSpacing5[m] 0.03, 0.06
**
** 5/28/1998 tpa3.2 new value (mmh)
constant WPultimateStrength[N/m^2] 4.5D08
**
constant GrainDensityforTSw2SEISMO[] 2.55
**
** 5/28/1998 tpa3.2 new values next 60 parameters (replacing seismo.dat)
constant FractionAreaForGroundMotion1 0.05
**
constant FractionAreaForGroundMotion2 0.12
**
constant FractionAreaForGroundMotion3 0.17
**
constant FractionAreaForGroundMotion4 0.23
**
constant FractionAreaForGroundMotion5 0.28
**
constant FractionAreaForGroundMotion6 0.34
**
constant FractionAreaForGroundMotion7 0.4
**
constant FractionAreaForGroundMotion8 0.46
**
constant FractionAreaForGroundMotion9 0.5
**
constant FractionAreaForGroundMotion10 0.54
**
** pwr 7/8/98 modify the VerticalExtentOfRockFall names by adding "-"
constant VerticalExtentOfRockFall1_1[m] 0.0
**
constant VerticalExtentOfRockFall1_2[m] 0.0
**
constant VerticalExtentOfRockFall1_3[m] 0.0
**
constant VerticalExtentOfRockFall1_4[m] 0.0
**
constant VerticalExtentOfRockFall1_5[m] 0.0
**
constant VerticalExtentOfRockFall1_6[m] 0.0
**
constant VerticalExtentOfRockFall1_7[m] 0.0
**
constant VerticalExtentOfRockFall1_8[m] 0.0
**
constant VerticalExtentOfRockFall1_9[m] 0.0
**
constant VerticalExtentOfRockFall1_10[m] 0.0
**
uniform VerticalExtentOfRockFall2_1[m] 0.5 1.0
**
uniform VerticalExtentOfRockFall2_2[m] 0.5 1.0
**
uniform VerticalExtentOfRockFall2_3[m] 0.5 1.1
**
uniform VerticalExtentOfRockFall2_4[m] 0.5 1.2
**
uniform VerticalExtentOfRockFall2_5[m] 0.5 1.3
**
uniform VerticalExtentOfRockFall2_6[m] 0.5 1.4
**
uniform VerticalExtentOfRockFall2_7[m] 0.5 1.45
**
uniform VerticalExtentOfRockFall2_8[m] 0.5 1.5
**
uniform VerticalExtentOfRockFall2_9[m] 0.5 1.65
**
uniform VerticalExtentOfRockFall2_10[m] 0.5 1.8
**
uniform VerticalExtentOfRockFall3_1[m] 0.5 1.0
**
uniform VerticalExtentOfRockFall3_2[m] 0.5 2.0
**
uniform VerticalExtentOfRockFall3_3[m] 0.5 2.5
**
uniform VerticalExtentOfRockFall3_4[m] 0.5 3.0
**
uniform VerticalExtentOfRockFall3_5[m] 0.5 3.5
**
uniform VerticalExtentOfRockFall3_6[m] 0.5 4.0
**
uniform VerticalExtentOfRockFall3_7[m] 0.5 4.5
**
uniform VerticalExtentOfRockFall3_8[m] 0.5 5.0
**
uniform VerticalExtentOfRockFall3_9[m] 0.5 5.7
**
uniform VerticalExtentOfRockFall3_10[m] 0.5 6.5
**
uniform VerticalExtentOfRockFall4_1[m] 0.5 2.7
**
uniform VerticalExtentOfRockFall4_2[m] 0.5 5.5
**
uniform VerticalExtentOfRockFall4_3[m] 0.5 6.0
**
uniform VerticalExtentOfRockFall4_4[m] 0.5 6.5
**
uniform VerticalExtentOfRockFall4_5[m] 0.5 7.0
**
uniform VerticalExtentOfRockFall4_6[m] 0.5 7.5
**
uniform VerticalExtentOfRockFall4_7[m] 0.5 8.0
**
uniform VerticalExtentOfRockFall4_8[m] 0.5 8.5
**
uniform VerticalExtentOfRockFall4_9[m] 0.5 9.3
**
uniform VerticalExtentOfRockFall4_10[m] 0.5 10.0
**
uniform VerticalExtentOfRockFall15_1[m] 0.5 4.7
**
uniform VerticalExtentOfRockFall15_2[m] 0.5 9.33
**
uniform VerticalExtentOfRockFall15_3[m] 0.5 9.7
**
uniform VerticalExtentOfRockFall15_4[m] 0.5 10.0
**
uniform VerticalExtentOfRockFall15_5[m] 0.5 10.7
**
uniform VerticalExtentOfRockFall15_6[m] 0.5 11.33
**
uniform VerticalExtentOfRockFall15_7[m] 0.5 12.0
**
uniform VerticalExtentOfRockFall15_8[m] 0.5 12.66
**
uniform VerticalExtentOfRockFall15_9[m] 0.5 13.3
**
uniform VerticalExtentOfRockFall15_10[m] 0.5 14.0
**
** 5/28/1998 tpa3.2 two new parameters introduced
constant WPYieldPoint[] 0.002
**
constant WPPlasticElongation[] 0.02
**
** ***** BSREL <<***
**
** pwr 7/8/98 modify flow model flag
iflowModelFlag{0=BathTub,1=FlowThrough} 0
lognormal lognormal
PowFactor 0.01, 3.0
**
lognormal PowFactor 0.01, 0.2
**
constant SubareaWetFraction 1.0
**
** 5/21/98 tpa3.2: New parameter; nonzero initial failure times
constant InitialFailureTime[yr] 0.0
**
uniform DefectiveFractionOfWPs/call 1.0e-4, 1.0e-2
**
** 6/2/1998 tpa3.2 5 new parameters; number of SE intervals not to exceed 4
icountant NumberOfSEISMONWPFailureIntervals 4
**
constant BeginningOfSEISNONWPFailureInterval1[yr] 0.0
**
constant BeginningOfSEISNONWPFailureInterval2[yr] 2000.0
**
constant BeginningOfSEISNONWPFailureInterval3[yr] 5000.0
**
constant BeginningOfSEISNONWPFailureInterval4[yr] 10000.0
**
constant WPInternalVolume[m3] 4.83
**
constant FlowOnsetTemperature[C] 999.
**
constant SFDensity[kg/m3] 10000.
**
icountant SurfaceAreaModel 1
**
icountant IModel 2
**
constant OxygenPartialPressure[atm] 0.21
**
constant NegativeLog10CarbonateConcentration[mol/L] 2.71
**
constant UserLeachRate[kg/yr/m2] 2.5e-6
**
constant RD_Invert_Cm 6.00e3
**
constant RD_Invert_Pa 3.00e3
**
constant RD_Invert_U 6.01e2

```

Enhanced Canister Failure tpa5.inp.wpd

Michael J. Wilkey
06/15/00

```

2.48e-5
** constant
CapAndGrainBoundaryInventoryPerKgSF[ci]
6.2e-6
** uniform
SolubilityAn[kg/m3]
2.4e-6, 2.4e-4
** logTriangular
SolubilityB[kg/m3]
1.2e-3, 3.4e-2, 2.4e-1
** constant
SolubilityI[kg/m3]
1.29e2
** constant
SolubilityTc[kg/m3]
9.93e11
** constant
SolubilityCl[kg/m3]
3.6e1
** constant
SolubilityC[kg/m3]
1.1e1
** constant
SolubilityU[kg/m3]
7.6e-3
** constant
SolubilityCa[kg/m3]
2.4e-4
** uniform
SolubilityP[kg/m3]
2.4e-6, 2.4e-4
** constant
SolubilityTh[kg/m3]
2.3e-4
** constant
SolubilityRa[kg/m3]
2.3e-5
** constant
SolubilityPb[kg/m3]
6.6e-5
** constant
SolubilityCs[kg/m3]
1.35e2
** constant
SolubilityHl[kg/m3]
1.1e-1
** constant
SolubilitySe[kg/m3]
7.9e1
** constant
SolubilityNb[kg/m3]
9.3e-7
** 6/2/1998 tpa3.2 next parameter replaced with 44 new parameters
** SFWettedFraction_([failurekind],subarea)
uniform
SFWettedFraction_Initial_1
0.0, 1.0
** uniform
SFWettedFraction_Initial_2
0.0, 1.0
** uniform
SFWettedFraction_Initial_3
0.0, 1.0
** uniform
SFWettedFraction_Initial_4
0.0, 1.0
** uniform
SFWettedFraction_Initial_5
0.0, 1.0
** iflag
InvertByPass(0=absfilt,1=bypass-absfilt)
0
** constant
InvertRockPorosity
0.3
** constant
InvertThickness[m]
0.75
** constant
InvertDiffusionCoefficient[m^2/yr]
4.4e-5
** lognormal
InvertMatrixPermeability[m^2]
2.0e-18, 2.0e-16
** **** UZPT *****
constant
UnsaturatedZoneMinimumVelocityChangeFactor[Fraction]
0.4
** constant
MatrixLongitudinalDispersivity[FractionOfLayer]
0.1
** constant
FractureLongitudinalDispersivity[FractionOfLayer]
0.1
** lognormal
MatrixKD_TSw_Am[m3/kg]
4.2e+00 3.8e+06
** lognormal
MatrixKD_ChnvAm[m3/kg]
1.3e+01 1.2e+07
** lognormal
MatrixKD_ChnzAm[m3/kg]
1.2e+01 1.1e+07
** lognormal
MatrixKD_PPw_Am[m3/kg]
9.5e+00 8.7e+06
** lognormal
MatrixKD_UCF_Am[m3/kg]
1.0e+01 9.1e+06
** lognormal
MatrixKD_BPw_Am[m3/kg]
4.1e+00 3.7e+06
** lognormal
MatrixKD_UPz_Am[m3/kg]
3.9e+00 3.5e+06
** lognormal
MatrixKD_TSw_Mp[m3/kg]
1.6e-06 2.2e-01
** lognormal
MatrixKD_ChnvMp[m3/kg]
4.8e-06 6.6e-01
** lognormal
MatrixKD_ChnzMp[m3/kg]
4.4e-06 6.0e-01
** lognormal
MatrixKD_PPw_Mp[m3/kg]
3.6e-06 5.0e-01
** lognormal
MatrixKD_UCF_Mp[m3/kg]
3.8e-06 5.2e-01
** lognormal
MatrixKD_BPw_Mp[m3/kg]
1.5e-06 2.1e-01
** lognormal
MatrixKD_UPz_Mp[m3/kg]
1.5e-06 2.0e-01
** constant
MatrixKD_TSw_I[m3/kg]
0.0
** constant
MatrixKD_ChnvI[m3/kg]
0.0
** constant
MatrixKD_ChnzI[m3/kg]
0.0
** constant
MatrixKD_PPw_I[m3/kg]
0.0
** constant
MatrixKD_UCF_I[m3/kg]
0.0
** constant
MatrixKD_BPw_I[m3/kg]
0.0
** constant
MatrixKD_UPz_I[m3/kg]
0.0
** constant
MatrixKD_TSw_Tc[m3/kg]
0.0
** constant
MatrixKD_ChnvTc[m3/kg]
0.0
** constant
MatrixKD_ChnzTc[m3/kg]
0.0
** constant
MatrixKD_PPw_Tc[m3/kg]
0.0
** constant
MatrixKD_UCF_Tc[m3/kg]
0.0
** constant
MatrixKD_BPw_Tc[m3/kg]
0.0
** constant
MatrixKD_UPz_Tc[m3/kg]
0.0
** constant
MatrixKD_TSw_Cm[m3/kg]
0.0
** constant
MatrixKD_ChnvCm[m3/kg]
0.0
** constant
MatrixKD_ChnCm[m3/kg]
0.0
** constant
MatrixKD_PPw_Cm[m3/kg]
0.0
** constant
MatrixKD_UCF_Cm[m3/kg]
0.0
** constant
MatrixKD_BPw_Cm[m3/kg]
0.0
** constant
MatrixKD_UPz_Cm[m3/kg]
0.0
** constant
MatrixKD_TSw_Pm[m3/kg]
4.2e-10 1.1e+00
** lognormal
MatrixKD_ChnvPm[m3/kg]
1.3e-09 3.3e+00
** lognormal
MatrixKD_ChnPm[m3/kg]
3.2e-09 3.0e+00
** lognormal
MatrixKD_PPw_Pm[m3/kg]
9.6e-10 2.5e+00
** lognormal
MatrixKD_UCF_Pm[m3/kg]
9.0e-09 2.6e+00
** lognormal
MatrixKD_BPw_Pm[m3/kg]
4.1e-10 1.0e+00
** lognormal
MatrixKD_UPz_Pm[m3/kg]
3.9e-10 1.0e+00
** lognormal
MatrixKD_TSw_Pu[m3/kg]
2.3e-02 2.3e+01
** lognormal
MatrixKD_ChnvPu[m3/kg]
5.0e-6 0.50
** lognormal
MatrixKD_ChnPu[m3/kg]
1.0e-6 0.10
** lognormal
MatrixKD_PPw_Pu[m3/kg]
5.0e-6 0.50
** lognormal
MatrixKD_UCF_Pu[m3/kg]
5.0e-6 0.50
** lognormal
MatrixKD_BPw_Pu[m3/kg]
5.0e-6 0.50
** lognormal
MatrixKD_UPz_Pu[m3/kg]
5.0e-6 0.50
** constant

```

```

MatrixKD_TSw_C[m3/kg]
0.0
**
constant
FractureRD_UFZ_I
1.0
**
constant
FractureRD_TSw_Tc
1.0
**
constant
FractureRD_ChmVtc
1.0
**
constant
FractureRD_ChmVc
1.0
**
constant
FractureRD_PPw_C[m3/kg]
0.0
**
constant
FractureRD_UCF_C[m3/kg]
0.0
**
constant
FractureRD_BPw_C[m3/kg]
0.0
**
constant
MatrixKD_UFZ_C[m3/kg]
0.0
**
loguniform
MatrixKD_TSw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_ChmVse[m3/kg]
2.0e-7, 0.020
**
loguniform
MatrixKD_ChmVse[m3/kg]
1.1e-7, 0.015
**
loguniform
MatrixKD_BPw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_UCF_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_BPw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_UFZ_Se[m3/kg]
3.0e-7, 0.030
**
constant
MatrixKD_TSw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_ChmVNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_ChmNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_BPw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UCF_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_BPw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UFZ_Nb[m3/kg]
0.10, 2.0
**
constant
FractureRD_TSw_Aa
1.0
**
constant
FractureRD_ChmVaa
1.0
**
constant
FractureRD_ChmVaa
1.0
**
constant
FractureRD_PPw_Aa
1.0
**
constant
FractureRD_UCF_Aa
1.0
**
constant
FractureRD_BPw_Aa
1.0
**
constant
FractureRD_UFZ_Aa
1.0
**
constant
FractureRD_TSw_Np
1.0
**
constant
FractureRD_ChmVnp
1.0
**
constant
FractureRD_ChmVnp
1.0
**
constant
FractureRD_PPw_Np
1.0
**
constant
FractureRD_UCF_Np
1.0
**
constant
FractureRD_BPw_Np
1.0
**
constant
FractureRD_UFZ_Np
1.0
**
constant
FractureRD_TSw_I
1.0
**
constant
FractureRD_ChmVi
1.0
**
constant
FractureRD_ChmVi
1.0
**
constant
FractureRD_PPw_I
1.0
**
constant
FractureRD_UCF_I
1.0
**
constant
FractureRD_BPw_I
1.0
**
constant
FractureRD_UFZ_I
1.0
**
constant
FractureRD_TSw_Th
1.0
**
constant
FractureRD_ChmVth
1.0
**
constant
FractureRD_ChmVth
1.0
**
constant
FractureRD_PPw_Th
1.0
**
constant
FractureRD_UCF_Th
1.0
**
constant
FractureRD_BPw_Th
1.0
**
constant
FractureRD_UFZ_Th
1.0
**
constant
FractureRD_TSw_Ra
1.0
**
constant
FractureRD_ChmVra
1.0
**
constant
FractureRD_ChmVra
1.0
**
constant
FractureRD_PPw_Ra
1.0
**
constant
FractureRD_UCF_Ra
1.0
**
constant
FractureRD_BPw_Ra
1.0
**
constant
FractureRD_UFZ_Ra
1.0
**
constant
FractureRD_TSw_Pb
1.0
**
constant
FractureRD_ChmVpb
1.0
**
constant
FractureRD_ChmVpb
1.0
**
constant
FractureRD_PPw_Pb
1.0
**
constant
FractureRD_UCF_Pb
1.0
**
constant
FractureRD_BPw_Pb
1.0
**
constant
FractureRD_UFZ_Pb
1.0
**
constant
FractureRD_TSw_Cs
1.0
**
constant
FractureRD_ChmVcs
1.0
**
constant
FractureRD_ChmVcs
1.0
**
constant
FractureRD_PPw_Cs
1.0
**
constant
FractureRD_UCF_Cs
1.0
**
constant
FractureRD_BPw_Cs
1.0
**
constant
FractureRD_UFZ_Cs
1.0
**
constant
FractureRD_TSw_Ni
1.0
**
constant
FractureRD_ChmVni
1.0
**
constant
FractureRD_ChmVni
1.0
**
constant
FractureRD_PPw_Ni
1.0
**
constant
FractureRD_UCF_Ni
1.0
**
constant
FractureRD_BPw_Ni
1.0
**
constant
FractureRD_UFZ_Ni
1.0
**
constant
FractureRD_TSw_C
1.0
**
constant
FractureRD_ChmVc
1.0
**
constant
FractureRD_ChmVc
1.0
**
constant
FractureRD_PPw_C
1.0
**
constant
FractureRD_UCF_C
1.0
**
constant
FractureRD_BPw_C
1.0
**
constant
FractureRD_UFZ_C
1.0
**
constant
FractureRD_TSw_Se
1.0
**
constant
FractureRD_ChmVse
1.0
**
constant
FractureRD_ChmVse
1.0
**
constant
FractureRD_PPw_Se
1.0
**
constant
FractureRD_UCF_Se
1.0
**
constant
FractureRD_BPw_Se
1.0
**
constant
FractureRD_UFZ_Se
1.0

```

```

1.0
constant
FractureRD_UCF_Se
1.0
**
constant
FractureRD_PPw_Se
1.0
**
constant
FractureRD_UFZ_Se
1.0
**
constant
FractureRD_TSw_Nb
1.0
**
constant
FractureRD_ChnvNb
1.0
**
constant
FractureRD_ChnzNb
1.0
**
constant
FractureRD_PPw_Nb
1.0
**
constant
FractureRD_UCF_Nb
1.0
**
constant
FractureRD_PPw_Nb
1.0
**
constant
FractureRD_UFZ_Nb
1.0
**
lognormal
MatrixPermeability_TSw_[m2]
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability_Chnv[m2]
0.2e-14, 0.2e-12
**
lognormal
MatrixPermeability_Chnz[m2]
0.5e-18, 0.5e-16
**
lognormal
MatrixPermeability_PPw_[m2]
0.1e-17, 0.1e-15
**
lognormal
MatrixPermeability_UCF_[m2]
0.3e-18, 0.3e-16
**
lognormal
MatrixPermeability_PPw_Nb_[m2]
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability_UFZ_[m2]
0.8e-18, 2.1e-16
**
constant
MatrixPorosity_TSw_
0.12
**
constant
MatrixPorosity_Chnv
0.33
**
constant
MatrixPorosity_Chnz
0.32
**
constant
MatrixPorosity_PPw_
0.28
**
constant
MatrixPorosity_UCF_
0.28
**
constant
MatrixPorosity_PPw_
0.12
**
constant
MatrixPermeability_UFZ_
0.12
**
constant
MatrixBeta_TSw_
1.5
**
constant
MatrixBeta_Chnv
1.3
**
constant
MatrixBeta_Chnz
2.3
**
constant
MatrixBeta_PPw_
1.5
**
constant
MatrixBeta_UCF_
1.4
**
constant
MatrixBeta_PPw_
1.7
**
constant
MatrixBeta_UFZ_
2.3
**
constant
MatrixGrainDensity_TSw_[kg/m3]
2460.0
**
constant
MatrixGrainDensity_Chnv[kg/m3]
2286.0
**
constant
MatrixGrainDensity_Chnz[kg/m3]
2400.0
**
constant
MatrixGrainDensity_PPw_[kg/m3]
2540.0
**
constant
MatrixGrainDensity_UCF_[kg/m3]
2420.0
**
constant
MatrixGrainDensity_PPw_Nb_[kg/m3]
2370.0
**
constant
MatrixGrainDensity_UFZ_[kg/m3]
2630.0
**
lognormal
FracturePermeability_TSw_[m2]
8.0e-15, 8.0e-11
**
lognormal
FracturePermeability_Chnv[m2]
8.0e-15, 8.0e-11
**
lognormal

```

```

FracturePermeability_CHNs[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_PPW_[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_UCF_[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_UFZ_[m2]
1.0e-13, 1.0e-11
**
loguniform
FracturePorosity_TSW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_CHnv
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_CHnz
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_PPW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UCF_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_BPW_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UFZ_
1.0e-3, 1.0e-2
**
constant
FractureBeta_TSW_
3.0
**
constant
FractureBeta_CHnv
3.0
**
constant
FractureBeta_CHnz
3.0
**
constant
FractureBeta_PPW_
3.0
**
constant
FractureBeta_UCF_
3.0
**
constant
FractureBeta_BPW_
3.0
**
constant
FractureBeta_UFZ_
3.0
**
constant
InletArea_1SubArea[m2]
5.4e5
**
constant
InletArea_2SubArea[m2]
5.4e5
**
constant
InletArea_3SubArea[m2]
5.4e5
**
constant
InletArea_4SubArea[m2]
5.4e5
**
constant
InletArea_5SubArea[m2]
5.4e5
**
constant
InletArea_6SubArea[m2]
5.4e5
**
constant
InletArea_7SubArea[m2]
5.4e5
**
constant
TSW_Thickness_1SubArea[m]
33.0
**
constant
CHnvThickness_1SubArea[m]
0.0
**
constant
CHnzThickness_1SubArea[m]
163.0
**
constant
PPW_Thickness_1SubArea[m]
34.0
**
constant
UCF_Thickness_1SubArea[m]
67.0
**
constant
BPW_Thickness_1SubArea[m]
0.0
**
constant
UFZ_Thickness_1SubArea[m]
0.0
**
constant
TSW_Thickness_2SubArea[m]
116.0
**
constant
CHnvThickness_2SubArea[m]
0.0
**
constant
CHnzThickness_2SubArea[m]
154.0
**
constant
PPW_Thickness_2SubArea[m]
39.0
**
constant
UCF_Thickness_2SubArea[m]
20.0
**
constant
BPW_Thickness_2SubArea[m]
0.0
**
constant
UFZ_Thickness_2SubArea[m]
0.0
**
constant
TSW_Thickness_3SubArea[m]
20.0
**
constant
FractureRD_STFF_Am
1.0
**
constant
FractureRD_STFF_I
1.0
**
loguniform
AlluviumMatrixRD_SAV_I
1.0, 4.0
**
constant
FractureRD_STFF_Tc
1.0
**
constant
AlluviumMatrixRD_SAV_Tc
1.0
**
constant
FractureRD_STFF_C1
1.0
**
constant
AlluviumMatrixRD_SAV_C1
1.0
**
constant
FractureRD_STFF_Cm
1.0
**
constant
AlluviumMatrixRD_SAV_Cm
7.5e4
**
constant
FractureRD_STFF_U
1.0
**
** rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_U
1.0, 1.9e4
**
constant
FractureRD_STFF_Pu
1.0
**
** rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Pu
4.2e2, 3.9e5
**
constant
FractureRD_STFF_Th
1.0
**
** rwr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Th
1.9, 4.5e7
**
constant
FractureRD_STFF_Ra
1.0
**
loguniform
AlluviumMatrixRD_SAV_Ra
2.0e3, 8.0e3
**
constant
FractureRD_STFF_Pb
1.0
**
loguniform
AlluviumMatrixRD_SAV_Pb
2.0e3, 8.0e3
**
constant
FractureRD_STFF-Cs
1.0
**
loguniform
AlluviumMatrixRD_SAV-Cs
9.0e4, 1.0e5
**
constant
FractureRD_STFF_Ni
1.0
**
loguniform
AlluviumMatrixRD_SAV_Ni
1.0, 8.0e3
**
constant
FractureRD_STFF_C
1.0
**
constant
AlluviumMatrixRD_SAV_C
1.0
**
constant
FractureRD_STFF_Se
1.0
**
loguniform
AlluviumMatrixRD_SAV_Se
1.0, 500.0
**
constant
FractureRD_STFF_Nb
1.0
**
loguniform
AlluviumMatrixRD_SAV_Nb
2.0e3, 3.0e4
**
loguniform
FracturePorosity_STFF
1e-3, 1e-2
**
uniform
AlluviumMatrixPorosity_SAV
1e-1, 1.5e-1
**
constant
ImmobilerD_STFF_Am
1.8e4
**
constant
ImmobilerD_STFF_Np
19.0
**
constant
ImmobilerD_STFF_I
1.0
**
loguniform
ImmobilerD_STFF_Tc
1.0, 30.0
**
constant
ImmobilerD_STFF_C1
1.0
**
constant
ImmobilerD_STFF_Cm
1.0
**
constant
ImmobilerD_STFF_C
1.0
**
constant
ImmobilerD_STFF_Se
55.0
**
constant
ImmobilerD_STFF_Nb
1.8e4
**
constant
ImmobilerPorosity_STFF
0.01
**
constant
DiffusionRate_STFF
0.0
**
** ***** DCAGM <<<<<<
**
constant
DistanceToReceptorGroup[km][should_be_10_or_20]
20.0
**
uniform
WellPumpingRateAtReceptorGroup10km[gal/day]
1.5e4, 3.44e5
**
uniform
WellPumpingRateAtReceptorGroup20km[gal/day]
4.5e6, 1.3e7
**
uniform
PlumeThickness5km[m]
10.0, 100.0
**
uniform
AquiferThickness5km[m]
300.0, 700.0
**
uniform
MixingZoneThickness20km[m]
50.0, 200.0
**
**
** ***** FAULTO <<<<<<
**
finiteexponential
TimeOfNextFaultingEventInRegionOfInterest[yr]
100.0, 10000.0, 2.0e-5
**
usedistribution
ThresholdDisplacementForFaultDisruptionOfFWP[m]
4
**
0.1
0.2
0.3
0.4
**
uniform
XlocationOfFaultingEventInRegionOfInterest[m]
547400.0, 548600.0
**
uniform
YlocationOfFaultingEventInRegionOfInterest[m]
4076200.0, 4079040.0
**
constant
ProbabilityForNWOrientationOfFaults
0.05
**
uniform
RhtoDetermineFaultOrientation
0.0, 1.0
**
constant
NWFaultStrikeOrientationMeasuredfromNorthClockwise[-]
-32.5
**
constant
NEFaultStrikeOrientationMeasuredfromNorthClockwise[-]
10.0
**
constant
NWFaultTraceLength[m]
4000.0
**
constant
NEFaultTraceLength[m]
4000.0
**
beta
NWFaultZoneWidth[m]
0.5, 275.0, 1.25, 15.0
**
beta
NEFaultZoneWidth[m]
0.5, 365.0, 1.25, 15.0
**
lognormal
NWAmountOfLargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
lognormal
NEAmountOfLargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
constant
NWCumulativeDisplacementRate[mm/yr]
0.00025
**
constant
NECumulativeDisplacementRate[mm/yr]
0.00005
**
**
** ***** VOLCANO <<<<<<
**
finiteexponential
TimeOfNextVolcanicEventInRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
constant
XlocationInRegionOfInterest[m]
548000.0
**
constant

```

```

input
  Input file tpa.inp as supplied with TPA Version 3.2.1
code
  Base case data set Rev 3.2.1 2/22/99
  ***** GLOBAL PARAMETERS <<<***
  ***** Disruptive Scenario flags <<<***
  iflag
    Volcanic=DisruptiveScenarioFlag(yes=1,no=0)
  0
  iflag
    Faulting=DisruptiveScenarioFlag(yes=1,no=0)
  0
  iflag
    Seismic=DisruptiveScenarioFlag(yes=1,no=0)
  0
  ***** Subarea Size <<<***
  ** Number and Location Of SubAreas[n] Based On
  Fig3.4-1 in TSPA95
  subarea
    1
    ZONE T="ONE RECTANGULAR ZONE SUBAREA", P=POINT
    474742.0, 4079323.7
    548469.3, 4076362.2
    548469.3, 4077816.2
    547405.7, 4079237.8
    547405.7, 4076237.8
    547405.7, 4076362.2
  subarea
    7
    ZONE T="Subarea 1", I=5, P=POINT
    547472.0, 4079323.7
    548069.2, 4079136.5
    547847.3, 4077816.2
    547318.4, 4077934.0
    547472.0, 4079237.7
    ZONE T="Subarea 2", I=5, P=POINT
    548069.2, 4078968.6
    548547.9, 4077654.1
    547847.3, 4077816.2
    548069.2, 4079136.5
    ZONE T="Subarea 3", I=5, P=POINT
    547318.4, 4077934.0
    547847.3, 4077816.2
    548322.7, 4077192.2
    547474.7, 4077282.4
    547318.4, 4077934.0
    ZONE T="Subarea 4", I=5, P=POINT
    547847.3, 4077816.2
    548547.9, 4077654.1
    548069.2, 4077937.8
    548322.7, 4077192.2
    547847.3, 4077816.2
    ZONE T="Subarea 5", I=5, P=POINT
    547474.7, 4077282.4
    547897.5, 4077238.1
    547995.0, 4076338.9
    547670.4, 4076435.5
    547474.7, 4077282.4
    ZONE T="Subarea 6", I=5, P=POINT
    547897.5, 4077238.1
    548322.7, 4077192.2
    548319.5, 4076520.2
    547995.0, 4076338.9
    547897.5, 4077238.1
    ZONE T="Subarea 7", I=5, P=POINT
    548322.7, 4077192.2
    548504.8, 4077170.0
    548473.1, 4076533.7
    548319.5, 4076220.2
    548322.7, 4077192.2
  *****
  !constant
  !StartSubarea
  1
  *****
  !constant
  !StopAtSubarea
  7
  *****
  ** 5/25/1998 tpa3.2 new parameter: section
  *****
  ** Nuclides can be eliminated from the basecase set.
  ** However, if additional nuclides (Pu242, Am242m,
  Pu238, Ce243,
  ** U235, Pe231, Ac227, Pu241, U233, Th229, Cm244,
  U236, U232, Sm151,
  ** Pu239, Pu240, Pu241m, Sn112m, Ag108m, Pd107, Mo93, Zr93,
  Rf90, or Ni63)
  ** are added to the basecase set, then corresponding
  ** solubilities, gap fractions, and correlations must
  be added.
  iflag
    CheckNuclidesAndChains(yes=1,no=0)
  0
  *****
  !iflag
  !aqueousnuclides
  ** number of nuclides, number of chains
  20
  12
  *****
  ** chain 1
  2
  ** chain 2
  3
  ** chain 3
  2
  ** chain 4
  1
  ** chain 5
  8
  ** chain 6
  1
  ** chain 7
  1
  ** chain 8
  1
  ** chain 9
  1
  ** chain 10
  1
  ** chain 11
  1
  ** chain 12
  1
  ** chain 13
  1
  *****
  !endofnuclides

```

```

**
**      ***>>> Parameter Sampling <<<***
**
**      5/25/1998 tpa3.2 new parameter; option to conduct
direct-release only calculation
**
iflag
DirectReleaseOnlyFlag (yes=1, no=0)
0
**
**      constant
**      Reflux2Thickness
100.0
**
**      constant
**      Reflux2Porosity
0.14
**
**      constant
**      Reflux2SatInit
0.9
**
**      constant
**      Reflux2SatResid
0.1
**
**      constant
**      Reflux2Period
100.0
**
**      constant
**      Reflux2LossI
0.1
**
**      constant
**      Reflux2LossD
0.1
**
**      constant
**      WPLength[m]
5.682
**
**      constant
**      WPDiameter[m]
1.802
**
**      constant
**      WPSpacingAlongEmplacementDrift[m]
19.0
**
**      6/4/98 tpa3.2: Next 4 new parameters specific to
reflux3 model
**
**      constant
**      WPUCellWidth[m]
22.5
**
**      logarithmic
**      FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
**      uniform
**      FractionOfCondensateTowardRepository[1/yr]
0.9, 1.0
**
**      logarithmic
**      FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
**      constant
**      DensityOfWaterAtBoiling [kg/m^3]
960.5
**
**      constant
**      EnthalpyOfPhaseChangeForWater [J/kg]
2.46e
**
**      uniform
**      TemperatureGradientInVicinityOfBoilingIsotherm[K/m]
1.9, 100.0
**
**      constant
**      AreaMassLoading [MTU/acre]
83.0
**
**      constant
**      WastePackagePayload [MTU]
9.76
**
**      constant
**      AgeOfWaste[yr]
66.0
**
**      constant
**      AmbientRepositoryTemperature[C]
20.0
**
**      constant
**      MassDensityOfYMRock[kg/m^3]
2580.0
**
**      constant
**      SpecificHeatOfYMRock[J/(kg-K)]
840.0
**
**      uniform
**      ThermalConductivityOfYMRock[W/(m-K)]
1.8, 2.2
**
**      constant
**      EmisivityOfDriftWall[-]
0.8
**
**      constant
**      EmisivityOfWastePackage[-]
0.7
**
**      constant
**      ThermalConductivityOfPflor[W/(m-C)]
0.6
**
**      constant
**      EffectiveThermalConductivityOfUnbackfilledDrift[W/(m-C)]
0.90
**
**      constant
**      TimeOfBackfillEmplaced[yr]
10001.0
**
**      constant
**      EffectiveThermalConductivityOfBackfill[W/(m-C)]
0.60
**
**      constant
**      ThermalConductivityOfInnerStainlessSteelWall[W/(m-C)]
15.0
**
**      constant
**      ThermalConductivityOfOuterCarbonSteelWall[W/(m-C)]
59.0
**
**      constant
**      EffectiveThermalConductivityOfBasket&SFInWP[W/(m-C)]
1.0
**
**      constant
**      ElevationOfRepositoryHorizon[m]
1072.0
**
**      constant
**      ElevationOfGroundSurface[m]
1400.0
**
**      ***>>> EBSFAIL <<<***
**
**      constant
**      OuterWpThickness[m]
20
**
**      ***>>> Parameter Sampling <<<***
**
**      5/25/1998 tpa3.2 4 new parameters; calculations at
two time periods
**
**      constant
**      DurationOfCompliancePeriod[yr]
1.0e4
**
**      constant
**      MaximumTime[yr]
2.0e4
**
**      ** Sum of pre- and post-compliance time steps must not
exceed 201
**
**      constant
**      NumberOfTimeStepsInCompliancePeriod
201
**
**      constant
**      RatioOfLastToFirstTimeStepInCompliancePeriod
100.0
**
**      ** Next two parameters ignored if MaximumTime[yr] =
DurationOfCompliancePeriod[yr]
**
**      constant
**      NumberOfTimeStepsAfterCompliancePeriod
200
**
**      constant
**      RatioOfLastToFirstTimeStepAfterCompliancePeriod
100.0
**
**      ****>>> Output Print Options <<<***
**
**      OutputMode (0=None, 1=All, 2=UserDefined)
0
**
**      constant
**      UserDefinedLowerRealizationAppended
1
**
**      constant
**      UserDefinedUpperRealizationAppended
1
**
**      5/25/1998 tpa3.2 new parameter
**
**      ** Select Append Files
**      0 = append all files
**      1 = uzflow.ech and uzflow.rlt only
**      2 = nfenv.ech and nfenv.rlt only
**      3 = ebsfail.ech and ebsfail.rlt only
**      4 = seisno.ech and seisno.rlt only
**      5 = faulto.ech and faulto.rlt only
**      6 = volcano.ech and volcano.rlt only
**      7 = ebsrel.ech and ebsrel.rlt only
**      8 = uzft.ech and uzft.rlt only
**      9 = usft.ech and usft.rlt only
**      10 = dcagw.ech and dcagw.rlt only
**      11 = ashpumo.ech and ashpumo.rlt only
**      12 = ashmovo.ech and ashmovo.rlt only
**      13 = dcage.ech and dcage.rlt only
**      14 = ashpumo.cum only
**      15 = fault.cum only
**      16 = nfenv.cum only
**      17 = releaset.cum only
**
**      constant
**      SelectAppendFiles
0
**
**      ****>>> UZFLOW <<<***
**
**      uniform
**      AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
1.0, 10.0
**
**      uniform
**      MeanAveragePrecipitationMultiplierAtGlacialMaximum
5.0, 2.5
**
**      uniform
**      MeanAverageTemperatureIncreaseAtGlacialMaximum[degC]
-10, -5
**
**      constant
**      TimeStepForClimate[yr]
500.0
**
**      constant
**      StandardDeviationOfMATAboutMeanInOneTimePeriod[mm/yr]
0.0
**
**      constant
**      StandardDeviationOfMATAboutMeanInOneTimePeriod[degC]
0.0
**
**      constant
**      CorrelationBetweenMATAndMAT
-0.8
**
**      constant
**      ClimatePerturbationSet
1
**
**      ****>>> NFENV <<<***
**
**      iflag
**      TabularTemperatureRHFlag (yes=1, no=0)
0
**
**      constant
**      newDefectPickTempRHDataSet
1
**
**      ** 6/2/98 tpa3.2 name change for UseReflux2
**
**      constant
**      SelectRefluxModel (1,2,3)
3
**
**      constant
**      LengthOfRefluxZone[m]
20

```

```

**
constant
InnerWfThickness[m]
0.02
**
constant
MetalGrainRadius[micrometer]
13.75
**
constant
GrainBoundaryThickness[micrometer]
7.0e-4
**
constant
DryOxidationConstant
0.00001
**
constant
CriticalRelativeHumidityHumidAirCorrosion
0.51
**
normal
CriticalRelativeHumidityAqueousCorrosion
0.75, 0.85
**
uniform
ThicknessOfWaterFilm[m]
0.001, 0.003
**
constant
BoilingPointOfWater[C]
97.0
**
constant
OuterOverpackExpIntercept
-620.3
**
constant
TempCoefOfOuterPackExpIntercept
0.47
**
constant
OuterOverpackExpSlope
-95.2
**
constant
TempCoefOfOuterPackExpSlope
0.88
**
uniform
InnerOverpackExpIntercept
48.5, 148.5 >>> 625 <<<
**
constant
TempCoefOfInnerPackExpIntercept
0.0
**
constant
InnerOverpackExpSlope
-160.8 >>> 625 <<<
**
constant
TempCoefOfInnerPackExpSlope
0.0
**
constant
OuterWfBetaKineticsParameterForOxygen
0.75
**
constant
OuterWfBetaKineticsParameterForWater
0.5
**
constant
InnerWfBetaKineticsParameterForOxygen
0.75
**
constant
InnerWfBetaKineticsParameterForWater
0.5
**
constant
OuterWfRateConstantForOxygenReduction[coulomb-m/mole/s]
3.8e12
**
constant
OuterWfRateConstantForWaterReduction[coulomb-m/m^2/yr]
1.6e-1
**
constant
OuterWfActivationEnergyForOxygenReduction[J/mole]
27300.0
**
constant
OuterWfActivationEnergyForWaterReduction[J/mole]
25000.0
**
constant
InnerWfRateConstantForOxygenReduction[coulomb-m/mole/s]
3.0e10
**
constant
InnerWfRateConstantForWaterReduction[coulomb-m/m^2/yr]
3.2
**
constant
InnerWfActivationEnergyForOxygenReduction[J/mole]
40000.0
**
constant
InnerWfActivationEnergyForWaterReduction[J/mole]
25000.0
**
constant
AA_1_1[C/m2/yr]
3.15e5
**
uniform
AA_2_1[C/m2/yr]
2.0e4, 3.3e4
**
constant
MeasuredGalvanicCouplePotential
-0.46
**
uniform
CoefForLocCorrOfOuterOverpack
8.66e-4, 8.66e-3
**
constant
ExponentForLocCorrOfOuterOverpack
0.45
**
constant
HumidAirCorrosionRate[m/yr]
1.16e-5
**
constant
LocalizedCorrRateOfInnerOverpack[m/yr]
2.5e-4
**
constant
FractionalCouplingStrength
0.0
**
constant
FactorForDefiningChoiceOfCritPotential
0.0
**
constant
CritChlorideConcForFirstLayer[mol/L]
3.0e-4
**
constant
CritChlorideConcForSecondLayer[mol/L]
3.0e-2 >>> 625 <<<
**
uniform
ChlorideSaltFactor
1.0, 30.0

```

```

constant Reference# 0.0
constant WSurfaceScaleThickness[m] 0.0
constant PorosityOfScaleonWP 1.0
constant PorosityOfScaleonWP 1.0
constant YieldStrength[MPa] 205.0
constant SafetyFactor 1.4
constant FractureToughness[MPa-m**0.5] 250.0
constant ***>>> SEISMO <<<***
hazardcurve
SeismicHazardCurveforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 2400.0
0.25 4400.0
0.30 7800.0
0.35 11000.0
0.40 20000.0
0.45 30000.0
0.50 44000.0
constant WeightPercentageOfRockFallThatHitsWPforSEISMO 1.0
constant WeightOfWPforSEISMO[N] 1.27D05
constant WSPifnessforSEISMO[Pa*m] 1.21D10
constant WPModulusOfElasticityforSEISMO[Pa] 2.07D11
normal RockModulusOfElasticityforSEISMO[Pa] 2.76D10, 4.14D10
constant WPPoissonRatioforSEISMO[] 0.2D0
normal RockPoissonRatioforSEISMO[] 0.15, 0.25
constant RockFallingDistanceforSEISMO[m] 2.0D0
constant WPFallingDistanceforSEISMO[m] 0.3D0
icconstant WPNumbertoSupportPairforSEISMO 2
constant WPSupportStiffnessforSEISMO[pa*m] 5.5D09
constant DistributionJointSpacing1forSEISMO 5.0D-03
constant DistributionJointSpacing2forSEISMO 5.0D-03
constant DistributionJointSpacing3forSEISMO 5.0D-03
constant DistributionJointSpacing4forSEISMO 0.629D0
constant DistributionJointSpacing5forSEISMO 0.356D0
normal SEISMOJointSpacing1[m] 0.466, 0.600
normal SEISMOJointSpacing2[m] 0.333, 0.466
normal SEISMOJointSpacing3[m] 0.20, 0.333
normal SEISMOJointSpacing4[m] 0.06, 0.20
normal SEISMOJointSpacing5[m] 0.03, 0.06
** 5/28/1998 tpa3.2 new value (asmh)
constant WPUltimateStrength[N/m^2] 4.50D8
constant GrainDensityforTSw2SEISMO[] 2.55
** 5/28/1998 tpa3.2 new values next 60 parameters(replacing seismo.dat)
constant FractionAreaForGroundMotion1 0.05
constant FractionAreaForGroundMotion2 0.12
constant FractionAreaForGroundMotion3 0.17
constant FractionAreaForGroundMotion4 0.23
constant FractionAreaForGroundMotion5 0.28
constant FractionAreaForGroundMotion6 0.34
constant FractionAreaForGroundMotion7 0.4
constant FractionAreaForGroundMotion8 0.46
constant FractionAreaForGroundMotion9 0.5
constant FractionAreaForGroundMotion10 0.54
** rwr 7/8/98 modify the VerticalExtentOfRockFall
names by adding "_"
constant VerticalExtentOfRockFall1_1[m] 0.0
constant VerticalExtentOfRockFall1_2[m] 0.0
constant VerticalExtentOfRockFall1_3[m] 0.0
constant VerticalExtentOfRockFall1_4[m] 0.0
constant VerticalExtentOfRockFall1_5[m] 0.0
constant VerticalExtentOfRockFall1_6[m] 0.0
constant VerticalExtentOfRockFall1_7[m] 0.0
constant VerticalExtentOfRockFall1_8[m] 0.0
constant VerticalExtentOfRockFall1_9[m] 0.0
constant VerticalExtentOfRockFall1_10[m] 0.0
uniform VerticalExtentOfRockFall12_1[m] 0.5 0.6
uniform VerticalExtentOfRockFall12_2[m] 0.5 1.0
uniform VerticalExtentOfRockFall12_3[m] 0.5 1.1
uniform VerticalExtentOfRockFall12_4[m] 0.5 1.2
uniform VerticalExtentOfRockFall12_5[m] 0.5 1.3
uniform VerticalExtentOfRockFall12_6[m] 0.5 1.4
uniform VerticalExtentOfRockFall12_7[m] 0.5 1.45
uniform VerticalExtentOfRockFall12_8[m] 0.5 1.5
uniform VerticalExtentOfRockFall12_9[m] 0.5 1.65
uniform VerticalExtentOfRockFall12_10[m] 0.5 1.8
uniform VerticalExtentOfRockFall3_1[m] 0.5 1.0
uniform VerticalExtentOfRockFall3_2[m] 0.5 2.0
uniform VerticalExtentOfRockFall3_3[m] 0.5 2.5
uniform VerticalExtentOfRockFall3_4[m] 0.5 3.0
uniform VerticalExtentOfRockFall3_5[m] 0.5 3.5
uniform VerticalExtentOfRockFall3_6[m] 0.5 4.0
uniform VerticalExtentOfRockFall3_7[m] 0.5 4.5
uniform VerticalExtentOfRockFall3_8[m] 0.5 5.0
uniform VerticalExtentOfRockFall3_9[m] 0.5 5.7
uniform VerticalExtentOfRockFall3_10[m] 0.5 6.5
uniform VerticalExtentOfRockFall4_1[m] 0.5 2.7
uniform VerticalExtentOfRockFall4_2[m] 0.5 5.5
uniform VerticalExtentOfRockFall4_3[m] 0.5 6.0
uniform VerticalExtentOfRockFall4_4[m] 0.5 6.5
uniform VerticalExtentOfRockFall4_5[m] 0.5 7.0
uniform VerticalExtentOfRockFall4_6[m] 0.5 7.5
uniform Uniform
VerticalExtentOfRockFall14_7[m] 0.5 8.0
uniform Uniform
VerticalExtentOfRockFall14_8[m] 0.5 8.5
uniform Uniform
VerticalExtentOfRockFall14_9[m] 0.5 9.3
uniform Uniform
VerticalExtentOfRockFall14_10[m] 0.5 10.0
uniform Uniform
VerticalExtentOfRockFall15_1[m] 0.5 4.7
uniform Uniform
VerticalExtentOfRockFall15_2[m] 0.5 9.33
uniform Uniform
VerticalExtentOfRockFall15_3[m] 0.5 9.7
uniform Uniform
VerticalExtentOfRockFall15_4[m] 0.5 10.0
uniform Uniform
VerticalExtentOfRockFall15_5[m] 0.5 10.7
uniform Uniform
VerticalExtentOfRockFall15_6[m] 0.5 11.33
uniform Uniform
VerticalExtentOfRockFall15_7[m] 0.5 12.0
uniform Uniform
VerticalExtentOfRockFall15_8[m] 0.5 12.66
uniform Uniform
VerticalExtentOfRockFall15_9[m] 0.5 13.3
uniform Uniform
VerticalExtentOfRockFall15_10[m] 0.5 14.9
** 5/28/1998 tpa3.2 two new parameters introduced
constant WPFailPoint() 0.002
constant WPPlasticElongation[] 0.02
**
***>>> EBSREL <<<***
** rwr 7/8/98 modify flow model flag
iflag
FlowModelFlag(0=BatchRun,1=FlowThrough) 0
lognormal FlowFactor 0.01, 3.0
lognormal FmultFactor 0.01, 0.2
constant SubbreakFracton 1.0
** 5/21/1998 tpa3.2: New parameter; nonzero initial failure times
constant InitialFailureTime[yr] 0.0
uniform DefectiveFractonOfWPs/cell 1.0e-4, 1.0e-2
** 6/2/1998 tpa3.2 5 new parameters; number of SEIS intervals not to exceed 4
icconstant NumberOfSEISOWPFailureIntervals 4
constant BeginningOfSEISOWPFailureInterval1[yr] 0.0
constant BeginningOfSEISOWPFailureInterval2[yr] 2000.0
constant BeginningOfSEISOWPFailureInterval3[yr] 5000.0
constant BeginningOfSEISOWPFailureInterval4[yr] 10000.0
constant WPInternalVolume[m3] 4.83
constant FlowOnsetTemperature[C] 399.
constant SPDensity[kg/m3] 10600.
icconstant SurfaceAreaModel 1
icconstant Model 2
constant OxygenPartialPressure[atm] 0.21
constant NegativeLog10CarbonateConcentration[mol/L] 3.71
constant UserLeachRate[kg/yr/m2] 2.5e-6
constant RD_Invert_Cm 6.00e3
constant RD_Invert_Pu 3.00e3
constant RD_Invert_U 0.01e2

```

[illegible]

[illegible]

```

1.0
**
constant
FractureRD_UCF_Se
1.0
**
constant
FractureRD_BFw_Se
1.0
**
constant
FractureRD_UP2_Se
1.0
**
constant
FractureRD_TSw_Nb
1.0
**
constant
FractureRD_ChvNb
1.0
**
constant
FractureRD_ChvNb
1.0
**
constant
FractureRD_PPw_Nb
1.0
**
constant
FractureRD_UCF_Nb
1.0
**
constant
FractureRD_BFw_Nb
1.0
**
constant
FractureRD_UP2_Nb
1.0
**
lognormal
MatrixPermeability_TSw_[m2]
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability_ChvN[m2]
0.2e-14, 0.2e-12
**
lognormal
MatrixPermeability_Chvz[m2]
0.5e-18, 0.5e-16
**
lognormal
MatrixPermeability_PPw_[m2]
0.1e-17, 0.1e-15
**
lognormal
MatrixPermeability_UCF_[m2]
0.3e-18, 0.3e-16
**
lognormal
MatrixPermeability_BFw_[m2]
0.2e-19, 0.2e-17
**
lognormal
MatrixPermeability_UP2_[m2]
1.8e-18, 2.1e-16
**
constant
MatrixPorosity_TSw_
0.33
**
constant
MatrixPorosity_ChvN
0.33
**
constant
MatrixPorosity_Chvz
0.32
**
constant
MatrixPorosity_PPw_
0.28
**
constant
MatrixPorosity_UCF_
0.28
**
constant
MatrixPorosity_BFw_
0.12
**
constant
MatrixPorosity_UP2_
0.12
**
constant
MatrixBeta_TSw_
1.3
**
constant
MatrixBeta_ChvN
1.3
**
constant
MatrixBeta_Chvz
2.3
**
constant
MatrixBeta_PPw_
1.4
**
constant
MatrixBeta_UCF_
1.4
**
constant
MatrixBeta_BFw_
2.3
**
constant
MatrixBeta_UP2_
2.3
**
constant
MatrixGrainDensity_TSw_[kg/m3]
2460.0
**
constant
MatrixGrainDensity_ChvN[kg/m3]
2260.0
**
constant
MatrixGrainDensity_Chvz[kg/m3]
2400.0
**
constant
MatrixGrainDensity_PPw_[kg/m3]
2420.0
**
constant
MatrixGrainDensity_UCF_[kg/m3]
2420.0
**
constant
MatrixGrainDensity_BFw_[kg/m3]
2570.0
**
constant
MatrixGrainDensity_UP2_[kg/m3]
2630.0
**
lognormal
FracturePermeability_TSw_[m2]
8.0e-15, 8.0e-11
**
lognormal
FracturePermeability_ChvN[m2]
1.0e-15, 8.0e-11
**

```

```

FracturePermeability_Chnz[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_PPw_[m2]
3.0e-15, 6.0e-11
**
lognormal
FracturePermeability_UCF_[m2]
6.0e-15, 6.0e-11
**
lognormal
FracturePermeability_BFw_[m2]
3.0e-15, 3.0e-11
**
lognormal
FracturePermeability_UPZ_[m2]
3.0e-13, 1.0e-11
**
loguniform
FracturePorosity_TSw_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_Chnv
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_Chnz
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_PPw_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UCF_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_BFw_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_UPZ_
1.0e-3, 1.0e-2
**
constant
FractureBeta_TSw_
3.0
**
constant
FractureBeta_Chnv
3.0
**
constant
FractureBeta_Chnz
3.0
**
constant
FractureBeta_PPw_
3.0
**
constant
FractureBeta_UCF_
3.0
**
constant
FractureBeta_BFw_
3.0
**
constant
FractureBeta_UPZ_
3.0
**
constant
InletArea_1SubArea[m2]
5.4e5
**
constant
InletArea_2SubArea[m2]
5.4e5
**
constant
InletArea_3SubArea[m2]
5.4e5
**
constant
InletArea_4SubArea[m2]
5.4e5
**
constant
InletArea_5SubArea[m2]
5.4e5
**
constant
InletArea_6SubArea[m2]
5.4e5
**
constant
InletArea_7SubArea[m2]
5.4e5
**
constant
TSw_Thickness_1SubArea[m]
33.0
**
constant
ChnvThickness_1SubArea[m]
0.0
**
constant
ChnzThickness_1SubArea[m]
33.0
**
constant
TSw_Thickness_1SubArea[m]
34.0
**
constant
UCF_Thickness_1SubArea[m]
67.0
**
constant
BFw_Thickness_1SubArea[m]
0.0
**
constant
UPZ_Thickness_1SubArea[m]
0.0
**
constant
TSw_Thickness_2SubArea[m]
15.0
**
constant
ChnvThickness_2SubArea[m]
0.0
**
constant
ChnzThickness_2SubArea[m]
15.0
**
constant
TSw_Thickness_2SubArea[m]
20.0
**
constant
BFw_Thickness_2SubArea[m]
0.0
**
constant
UPZ_Thickness_2SubArea[m]
0.0
**
constant
TSw_Thickness_3SubArea[m]
20.0

```

```

constant
  CHnThickness_3SubArea[m]
  0.0
**
constant
  BPw_Thickness_3SubArea[m]
  122.0
**
constant
  PPw_Thickness_3SubArea[m]
  40.0
**
constant
  UCF_Thickness_3SubArea[m]
  158.0
**
constant
  BPw_Thickness_3SubArea[m]
  0.0
**
constant
  UPF_Thickness_3SubArea[m]
  110.0
**
constant
  CHnThickness_4SubArea[m]
  0.0
**
constant
  CHnThickness_4SubArea[m]
  170.0
**
constant
  PPw_Thickness_4SubArea[m]
  34.0
**
constant
  UCF_Thickness_4SubArea[m]
  158.0
**
constant
  BPw_Thickness_4SubArea[m]
  0.0
**
constant
  UPF_Thickness_4SubArea[m]
  0.0
**
constant
  TSW_Thickness_5SubArea[m]
  2.0
**
constant
  CHnThickness_5SubArea[m]
  113.0
**
constant
  CHnThickness_5SubArea[m]
  113.0
**
constant
  BPw_Thickness_5SubArea[m]
  38.0
**
constant
  UCF_Thickness_5SubArea[m]
  158.0
**
constant
  BPw_Thickness_5SubArea[m]
  32.0
**
constant
  UPF_Thickness_5SubArea[m]
  0.0
**
constant
  TSW_Thickness_6SubArea[m]
  13.0
**
constant
  CHnThickness_6SubArea[m]
  125.0
**
constant
  CHnThickness_6SubArea[m]
  0.0
**
constant
  BPw_Thickness_6SubArea[m]
  26.0
**
constant
  UCF_Thickness_6SubArea[m]
  136.0
**
constant
  BPw_Thickness_6SubArea[m]
  0.0
**
constant
  UPF_Thickness_6SubArea[m]
  0.0
**
constant
  TSW_Thickness_7SubArea[m]
  13.0
**
constant
  CHnThickness_7SubArea[m]
  0.0
**
constant
  CHnThickness_7SubArea[m]
  114.0
**
constant
  BPw_Thickness_7SubArea[m]
  4.0
**
constant
  UCF_Thickness_7SubArea[m]
  63.0
**
constant
  BPw_Thickness_7SubArea[m]
  0.0
**
constant
  UPF_Thickness_7SubArea[m]
  0.0
**
**
***>>> SZPT <
**
constant
  MixingZoneDispersionFraction
  0.01
**
constant
  DispersionFraction_STFF
  0.01
**
constant
  DispersionFraction_SAV
  0.1
**
constant
  MinimumResidenceTime_STFF[yr]
  0.0
**
constant
  MinimumResidenceTime_SAV[yr]
  10.0
**
constant
  FractureED_STFF_Am
  0.0
**

```

```

** twr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Aa
7.5e4, 6.8e10
**
constant
FractureRD_STFF_Np
1.0
**
** twr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Np
1.0, 3.9e3
**
constant
FractureRD_STFF_I
1.0
**
loguniform
AlluviumMatrixRD_SAV_I
1.0, 4.0
**
constant
FractureRD_STFF_Tc
1.0
**
constant
AlluviumMatrixRD_SAV_Tc
1.6e4
**
constant
FractureRD_STFF_C1
1.0
**
constant
AlluviumMatrixRD_SAV_C1
1.0
**
constant
FractureRD_STFF_Cm
1.0
**
** twr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Cm
7.5e4
**
constant
FractureRD_STFF_U
1.0
**
** twr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_U
1.0, 1.9e4
**
constant
FractureRD_STFF_Pu
1.0
**
** twr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Pu
4.2e2, 3.9e5
**
constant
FractureRD_STFF_Th
1.0
**
** twr 7/8/98 use Kds from D. Turner with
** por = 0.125 and grain dens = 2470 kg/m3
lognormal
AlluviumMatrixRD_SAV_Th
1.9, 4.5e7
**
constant
FractureRD_STFF_Ra
1.0
**
loguniform
AlluviumMatrixRD_SAV_Ra
2.0e3, 8.0e3
**
constant
FractureRD_STFF_Pb
1.0
**
loguniform
AlluviumMatrixRD_SAV_Pb
2.0e3, 8.0e3
**
constant
FractureRD_STFF-Cs
1.0
**
loguniform
AlluviumMatrixRD_SAV-Cs
9.0e4, 1.0e5
**
constant
FractureRD_STFF_M1
1.0
**
loguniform
AlluviumMatrixRD_SAV_M1
1.0, 8.0e3
**
constant
FractureRD_STFF_C
1.0
**
constant
AlluviumMatrixRD_SAV_C
1.0
**
constant
FractureRD_STFF_Se
1.0
**
loguniform
AlluviumMatrixRD_SAV_Se
1.0, 500.0
**
constant
FractureRD_STFF_Nb
1.0
**
loguniform
AlluviumMatrixRD_SAV_Nb
2.0e3, 3.0e4
**
loguniform
FracturePorosity_STFF
1.e-3, 1.e-2
**
uniform
FracturePorosity_Porosity_SAV
1.e-1, 1.5e-1
**
constant
ImmobileRD_STFF_Aa
1.8e4
**
constant
ImmobileRD_STFF_Np
19.0
**
constant
ImmobileRD_STFF_I
1.0
**
constant
ImmobileRD_STFF_Tc
2.4e5
**
constant
ImmobileRD_STFF_C1
1.0
**
constant

```

```

ImmobileRD_STFF_Cm
1.8e4
**
constant
ImmobileRD_STFF_U
37.0
**
**
constant
ImmobileRD_STFF_Pu
1.8e3
**
**
constant
ImmobileRD_STFF_Th
1.8e4
**
**
constant
ImmobileRD_STFF_Ra
5.4e3
**
**
constant
ImmobileRD_STFF_Pb
5.4e3
**
**
constant
ImmobileRD_STFF-Cs
9.0e3
**
**
constant
ImmobileRD_STFF_Nl
1.8e3
**
**
constant
ImmobileRD_STFF_C
1.0
**
**
constant
ImmobileRD_STFF_Se
55.0
**
**
constant
ImmobileRD_STFF_Nb
1.8e4
**
**
constant
ImmobilePorosity_STFF
0.01
**
**
constant
DiffusionRate_STFF
0.0
**
**
**
***>>> DCAGW <<<***
**
constant
DistanceToReceptorGroup[km][should_be_10_or_2
20.0
**
uniform
WellPumpingRateAtReceptorGroup10km[gal/day]
1.0 64e5
**
uniform
WellPumpingRateAtReceptorGroup20km[gal/day]
4.5e6, 1.3e7
**
uniform
PlumeThickness5km[m]
10.0, 100.0
**
uniform
AquiferThickness5km[m]
300.0, 700.0
**
uniform
MixingZoneThickness20km[m]
50.0, 200.0
**
**
***>>> FAULTO <<<***
**
**
finiteexponential
TimeOfNextFaultingEventInRegionOfInterest[yr]
10000.0, 2.0e5
**
uniformdistribution
ThresholdDisplacementforFaultDisruptionOfNFW[m]
4
**
uniform
XLocationOfFaultingEventInRegionOfInterest[m]
547400.0, 548600.0
**
uniform
YLocationOfFaultingEventInRegionOfInterest[m]
4076200.0, 4079040.0
**
constant
FaultabilityForNFWOrientationOfFaults
0.05
**
uniform
RhtodetermineFaultOrientation
0.0, 1.0
**
**
constant
NFWFaultStrikeOrientationMeasuredfromNorthClock
-32.5
**
**
constant
NEFaultStrikeOrientationMeasuredfromNorthClock
ress)
10.0
**
**
constant
NFWFaultTraceLength[m]
4000.0
**
**
constant
NEFaultTraceLength[m]
4000.0
**
**
beta
NEFaultZoneWidth[m]
0.5, 275.0, 1.25, 15.0
**
**
beta
NEFaultZoneWidth[m]
0.5, 365.0, 1.25, 15.0
**
lognormal
NEAmountoflargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
lognormal
NEAmountoflargestCredibleDisplacement[m]
5.41e-2, 3.3e-1
**
constant
NECumulativeDisplacementRate[mm/yr]
0.00005
**
**
constant
NECumulativeDisplacementRate[mm/yr]
0.00005
**
**
***>>> VOLCANO <<<***
**
**
finiteexponential
TimeOfNextVolcanicEventInRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
**
uniform
XLocationInRegionOfInterest[m]
548000.0
**
constant

```

```

LocationInRegionOfInterest[m] 550.0
4078000.0
**
uniform
RtNoDeterminesIfExtrusiveOrIntrusiveVolcanicEvent
0.0, 1.0
**
constant
FractionOfTimeVolcanicEventIsExtrusive
0.999
**
uniform
AngleOfVolcanicDikeMeasuredFromNorthClockwise[degrees]
0.0, 15.0
**
uniform
LengthOfVolcanicDike[m]
2000.0, 11000.0
**
uniform
WidthOfVolcanicDike[m]
1.0, 10.0
**
uniform
DiameterOfVolcanicCone[m]
24.6, 77.9
**
**
***>>> ASHPLUM0 <<<***
**
constant
DensityOfAirAtSTP[g/cm3]
0.00129
**
constant
ViscosityOfAirAtSTP[g/cm-s]
0.00019
**
constant
ConstantRelatingFallTimeToBddyDiffusivity[cm2/s/5/2]
400.0
**
constant
MinimumParticleDiameterForParticleTransport[cm]
10.00
**
constant
MinimumFuelParticulateSize[cm]
0.0001
**
constant
ModeFuelParticulateSize[cm]
0.001
**
constant
MaximumFuelParticulateSize[cm]
0.01
**
constant
MinimumAshDensityForVariationWithSize[g/cm3]
1.2
**
constant
MaximumAshDensityForVariationWithSize[g/cm3]
2.0
**
constant
MinimumAshLogDiameterForDensityVariation
-2.0
**
constant
MaximumAshLogDiameterForDensityVariation
-1.0
**
constant
ParticleShapeParameter
0.5
**
constant
IncorporationRatio
0.3
**
constant
WindDirection[degrees]
-90.0
**
exponential
WindSpeed[cm/s]
0.00093
**
loguniform
VolcanicEventDuration[s]
6.13e4, 7.24e6
**
loguniform
VolcanicEventPower[W]
2.57e9, 3.55e11
**
constant
VolcanicColumnConstantBeta
10.0
**
logTriangular
AshMeanParticleLogDiameter[d_in_cm]
0.01, 0.1, 1.0
**
constant
AshParticleSizeDistributionStandardDeviation
1.0
**
**
***>>> ASHRM0V0 <<<***
**
constant
RelativeRateOfBlanketRemoval[1/yr]
0.001
**
constant
FractionOfPrecipitationLostToEvapotranspiration
0.68
**
constant
FractionOfIrrigationLostToEvapotranspiration
0.5
**
constant
AnnualPrecipitation[m/yr]
0.085
**
constant
AnnualIrrigation[m/yr]
1.92
**
constant
FractionOfYearSoilIsSaturatedDueToPrecipitation
0.0054
**
constant
FractionOfYearSoilIsSaturatedDueToIrrigation
0.2
**
constant
AshBulkDensity[g/cm3]
1.4
**
constant
AshVolumetricMoistureFractionAtSaturation
0.4
**
constant
DepthOfTheRootingZone[m]
0.15
**
constant
KdOfUraniumInVolcanicAsh[cm3/g]
35.0
**
constant
KdOfCuriumInVolcanicAsh[cm3/g]
4000.0
**
constant
KdOfPlutoniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfAmericiumInVolcanicAsh[cm3/g]
1900.0
**
constant
KdOfThoriumInVolcanicAsh[cm3/g]
3200.0
**
constant
KdOfRadiumInVolcanicAsh[cm3/g]
500.0
**
constant
KdOfLeadInVolcanicAsh[cm3/g]
270.0
**
constant
KdOfProtactiniumInVolcanicAsh[cm3/g]
550.0
**
constant
KdOfActiniumInVolcanicAsh[cm3/g]
450.0
**
constant
KdOfNeptuniumInVolcanicAsh[cm3/g]
5.0
**
constant
KdOfSamariumInVolcanicAsh[cm3/g]
245.0
**
constant
KdOfCesiumInVolcanicAsh[cm3/g]
280.0
**
constant
KdOfIodineInVolcanicAsh[cm3/g]
1.0
**
constant
KdOfTinInVolcanicAsh[cm3/g]
130.0
**
constant
KdOfSilverInVolcanicAsh[cm3/g]
55.0
**
constant
KdOfPalladiumInVolcanicAsh[cm3/g]
55.0
**
constant
KdOfTechnetiumInVolcanicAsh[cm3/g]
0.1
**
constant
KdOfMolybdenumInVolcanicAsh[cm3/g]
10.0
**
constant
KdOfIbodiumInVolcanicAsh[cm3/g]
160.0
**
constant
KdOfZirconiumInVolcanicAsh[cm3/g]
600.0
**
constant
KdOfStrontiumInVolcanicAsh[cm3/g]
15.0
**
constant
KdOfSeleniumInVolcanicAsh[cm3/g]
150.0
**
constant
KdOfNickelInVolcanicAsh[cm3/g]
400.0
**
constant
KdOfChlorineInVolcanicAsh[cm3/g]
0.0
**
constant
KdOfCarbonInVolcanicAsh[cm3/g]
5.0
**
constant
SolubilityOfUraniumInVolcanicAsh[moles/liter]
4.5e-5
**
constant
SolubilityOfCuriumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfPlutoniumInVolcanicAsh[moles/liter]
5.0e-6
**
constant
SolubilityOfAmericiumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfThoriumInVolcanicAsh[moles/liter]
3.2e-8
**
constant
SolubilityOfRadiumInVolcanicAsh[moles/liter]
1.0e-7
**
constant
SolubilityOfLeadInVolcanicAsh[moles/liter]
3.2e-7
**
constant
SolubilityOfProtactiniumInVolcanicAsh[moles/liter]
3.2e-8
**
constant
SolubilityOfActiniumInVolcanicAsh[moles/liter]
1.0e-6
**
constant
SolubilityOfNeptuniumInVolcanicAsh[moles/liter]
1.0e-4
**
constant
SolubilityOfSamariumInVolcanicAsh[moles/liter]
5.0e-6
**
constant
SolubilityOfCesiumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfIodineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfTinInVolcanicAsh[moles/liter]
5.0e-8
**
constant
SolubilityOfSilverInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfPalladiumInVolcanicAsh[moles/liter]
9.5e-4
**
constant
SolubilityOfTechnetiumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfMolybdenumInVolcanicAsh[moles/liter]
1.0
**
constant

```

```

SolubilityOfNiobiumInVolcanicAsh[moles/liter]
1.0e-8
**
constant
SolubilityOfZirconiumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfStrontiumInVolcanicAsh[moles/liter]
1.3e-4
**
constant
SolubilityOfSeleniumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfNickelInVolcanicAsh[moles/liter]
2.0e-3
**
constant
SolubilityOfChlorineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfCarbonInVolcanicAsh[moles/liter]
1.0
**
**
***** DCAGS <<<***
**
constant
DistanceCutoffForDoseConversionDualityInDCAGS[km]
19.99
**
loguniform
AirborneMassLoadForVolcanismDoseCalculation[g/m3]
0.0e-4, 1.0e-2
**
constant
OccurrenceFactorForVolcanismDoseCalculation[-]
0.24
**
constant
DepthOfResuspendableLayer[cm]
0.3
**
**
***** CORRELATED PARAMETERS <<<
**
correlateinputs
SubareaWetFraction
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
0.631
**
correlateinputs
SubareaWetFraction
MatrixPermeability_TSw_[m2]
-0.623
**
correlateinputs
PowFactor
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
**
correlateinputs
PowFactor
MatrixPermeability_TSw_[m2]
0.13
**
correlateinputs
PowFactor
SubareaWetFraction
-0.366
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Pu
0.964
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_U
0.346
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Np
0.837
**
correlateinputs
AlluviumMatrixRD_SAV_Am
AlluviumMatrixRD_SAV_Th
0.112
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Np
0.489
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Np
0.861
**
correlateinputs
AlluviumMatrixRD_SAV_Pu
AlluviumMatrixRD_SAV_Th
0.109
**
correlateinputs
AlluviumMatrixRD_SAV_Np
AlluviumMatrixRD_SAV_Th
0.260
**
correlateinputs
AlluviumMatrixRD_SAV_Np
AlluviumMatrixRD_SAV_U
0.610
**
correlateinputs
AlluviumMatrixRD_SAV_Th
AlluviumMatrixRD_SAV_U
0.165
**
endoffile

```

```

title
Input file tpa.imp as supplied with TPA Version 3.2.1
Code..
Base case data set Rev 3.2.1 2/22/99
**
** ***** GLOBAL PARAMETERS *****
**
** ***** Disruptive Scenario flags <<<***
**
iflag
DirectReleaseOnlyFlag(YES=1,NO=0)
0
**
VolcanismDisruptiveScenarioFlag(YES=1,NO=0)
0
**
iflag
PaulingDisruptiveScenarioFlag(YES=1,NO=0)
0
**
iflag
SeismicDisruptiveScenarioFlag(YES=1,NO=0)
0
**
** ***** Subarea Size <<<***
**
** Number and Location Of Subareas [n] Based On
Fig3.4-1 in TSPA95
+-----+
|Subarea|
+-----+
**ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
**
**S47405.0, 4076362.2
**S48469.3, 4076362.2
**S48469.3, 4079237.8
**S47405.7, 4079237.8
**S47405.7, 4076362.2
subarea
7
ZONE T="Subarea 1", I=5,F=POINT
547472.0, 4079323.7
548069.2, 4079136.5
547847.3, 4077816.2
547318.4, 4077934.0
547472.0, 4079323.7
ZONE T="Subarea 2", I=5,F=POINT
548069.2, 4079136.5
548009.7, 4078968.6
548547.9, 4077654.1
547847.3, 4077816.2
548069.2, 4079136.5
ZONE T="Subarea 3", I=5,F=POINT
547318.4, 4077934.0
548322.7, 4077192.2
547474.7, 4077281.6
547318.4, 4077934.0
ZONE T="Subarea 4", I=5,F=POINT
547847.3, 4077816.2
548547.9, 4077654.1
548504.8, 4077170.0
548322.7, 4077192.2
547847.3, 4077816.2
ZONE T="Subarea 5", I=5,F=POINT
547474.7, 4077281.6
547887.3, 4077238.1
547995.0, 4076338.9
547670.4, 4076435.5
547474.7, 4077281.6
ZONE T="Subarea 6", I=5,F=POINT
547887.3, 4077238.1
548322.7, 4077192.2
548504.8, 4077170.0
548473.1, 4076533.7
547995.0, 4076338.9
548322.7, 4077192.2
ZONE T="Subarea 7", I=5,F=POINT
548322.7, 4077192.2
548504.8, 4077170.0
548473.1, 4076533.7
547995.0, 4076338.9
548322.7, 4077192.2
**
icountant
StartAtSubarea
1
Select Append Files
**
0 = append all files
1 = uzflow.ech and uzflow.rlt only
2 = nfenv.ech and nfenv.rlt only
3 = ebsfail.ech and ebsfail.rlt only
4 = selmo.ech and selmo.rlt only
5 = faulto.ech and faulto.rlt only
6 = volcano.ech and volcano.rlt only
7 = eborel.ech and eborel.rlt only
8 = uztfc.ech and uztfc.rlt only
9 = sftc.ech and sftc.rlt only
10 = dcagw.ech and dcagw.rlt only
11 = ashplume.ech and ashplume.rlt only
12 = ashmove.ech and ashmove.rlt only
13 = dcags.ech and dcags.rlt only
14 = ashplume.cum only
15 = fallt.cum only
16 = nflufl.cum only
17 = releaset.cum only
icountant
SelectAppendFiles
0
**
***** UZFLOW <<<***
uniform
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
1.0, 10.0
**
uniform
MeanAveragePrecipitationMultiplierAtGlacialMaximum
1.5, 2.5
**
uniform
MeanAverageTemperatureIncreaseAtGlacialMaximum[degC]
-10, -5
**
constant
TimeStepPorClimate[yr]
500.0
**
constant
StandardDeviationOfMAPAboutMeanInOneTimePeriod[mm/yr]
0.0
**
constant
StandardDeviationOfMATAboutMeanInOneTimePeriod[degC]
0.0
**
constant
CorrelationBetweenMAPAndMAT
-0.8
**
icountant
ClimatePerturbationSet
1
**
***** NPFENV <<<***
iflag
TabularTemperatureRHFFlag(YES=1,NO=0)
0
**
icountant
nestUsedToPickTempRHDataSet
1
**
** 6/2/98 tpa3.2 name change for UseReflux2
icountant
SelectRefluxModel(1,2,3)
3
**
constant
LengthOfRefluxZone[m]
2

```

```

constant
MaximumPluxInRefluxZone[m/s]
1.0e-9
**
constant
PerchedBucketVolumePerSAarea[m3/m2]
0.5
**
constant
Reflux2Thickness
100.0
**
constant
Reflux2Porosity
0.14
**
constant
Reflux2SatInit
0.9
**
constant
Reflux2SatResid
0.1
**
constant
Reflux2Period
100.0
**
constant
Reflux2LossI
0.1
**
constant
Reflux2LossD
0.1
**
constant
WLength[m]
5.682
**
constant
WPDiameter[m]
1.802
**
constant
EmplacementDriftDiameter[m]
5.0
**
constant
WPSpacingAlongEmplacementDrift[m]
19.0
**
** 6/4/98 tpa3.2: Next 4 new parameters specific to
reflux3 model
**
constant
WPUnticellWidth[m]
22.5
**
loguniform
FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
uniform
FractionOfCondensateTowardRepository[1/yr]
0.0, 1.0
**
loguniform
FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
constant
DensityOfWaterAtBoiling[kg/m^3]
960.5
**
constant
EnthalpyOfPhaseChangeForWater[J/kg]
2.4e6
**
uniform
TemperatureGradientInVicinityOfBoilingIsotherm[K/m]
1.0, 100.0
**
constant
ArealMassLoading[MTU/acre]
83.0
**
constant
WastePackagePayload[MTU]
9.76
**
constant
AgeOfWaste[yr]
26.0
**
constant
AmbientRepositoryTemperature[C]
20.0
**
constant
MassDensityOfYMRock[kg/m^3]
2580.0
**
constant
SpecificHeatOfYMRock[J/(kg-K)]
840.0
**
uniform
ThermalConductivityOfYMRock[W/(m-K)]
1.8, 2.2
**
constant
EmissivityOfDriftWall[-]
0.8
**
constant
EmissivityOfWastePackage[-]
0.7
**
constant
ThermalConductivityOfFloor[W/(m-K)]
0.6
**
constant
EffectiveThermalConductivityOfUnbackfilledDrift[W/(m-C)]
0.90
**
constant
TimeOfBackfillEmplaced[yr]
100001.0
**
constant
EffectiveThermalConductivityOfBackfill[W/(m-C)]
0.60
**
constant
ThermalConductivityOfInnerStainlessSteelWall[W/(m-C)]
15.0
**
constant
ThermalConductivityOfOuterCarbonSteelWall[W/(m-C)]
50.0
**
constant
EffectiveThermalConductivityOfBasketSPinW[W/(m-C)]
1.0
**
constant
ElevationOfRepositoryHorizon[m]
1072.0
**
constant
ElevationOfGroundSurface[m]
1400.0
**
**
**
***** EBSFAIL *****
**
constant
OuterWPTHickness[m]

```

Enhanced Canister and Enhanced Solubility Tc cansoltc.xls

```

constant
ReferenceCell
9.0
**
constant
WpSurfaceScaleThickness[m]
0.0
**
constant
TortuosityOfScaleOnWP
1.0
**
constant
PorosityOfScaleOnWP
1.0
**
constant
YieldStrength[MPa]
205.0
**
constant
SafetyFactor
1.4
**
constant
FractureToughness[MPa-m**0.5]
250.0
**
***>>> SEISMO <<<***
hazardcurve
SeismicHazardCurveforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 2400.0
0.25 4400.0
0.30 7800.0
0.35 11000.0
0.40 20000.0
0.45 30000.0
0.50 44000.0
**
constant
WeightPercentageOfRockFallThatHitsWpforSEISMO
1.0
**
constant
WeightOfWpforSEISMO[N]
1.27D05
**
constant
WpStiffnessforSEISMO[Pa*m]
1.21D10
**
constant
WpModulusOfElasticityforSEISMO[Pa]
2.07D11
**
normal
RockModulusOfElasticityforSEISMO[Pa]
2.76D10, 4.14D10
**
constant
WpPoissonRatioforSEISMO[]
0.2D0
**
normal
RockPoissonRatioforSEISMO[]
0.15, 0.25
**
constant
RockFallingDistanceforSEISMO[m]
2.0D0
**
constant
WpFallingDistanceforSEISMO[m]
0.3D0
**
iconstant
WpNumberOfSupportPairsforSEISMO
2
**
constant
WpSupportStiffnessforSEISMO[pa*m]
5.5D09
**
constant
DistributionJointSpacing1forSEISMO
5.0D-03
**
constant
DistributionJointSpacing2forSEISMO
5.0D-03
**
constant
DistributionJointSpacing3forSEISMO
5.0D-03
**
constant
DistributionJointSpacing4forSEISMO
0.62D0
**
constant
DistributionJointSpacing5forSEISMO
0.356D0
**
normal
SEISMOJointSpacing1[m]
0.466, 0.600
**
normal
SEISMOJointSpacing2[m]
0.333, 0.466
**
normal
SEISMOJointSpacing3[m]
0.20, 0.333
**
normal
SEISMOJointSpacing4[m]
0.06, 0.20
**
normal
SEISMOJointSpacing5[m]
0.03, 0.06
**
** 5/28/1998 tpa3.2 new value (mmh)
constant
WpUltimateStrength[N/m^2]
4.5D08
**
constant
GrainDensityforTSW2SEISMO[]
2.55
**
** 5/28/1998 tpa3.2 new values next 60
parameters(replacing seismo.dat)
**
constant
FractionAreaForGroundMotion1
0.05
**
constant
FractionAreaForGroundMotion2
0.12
**
constant
FractionAreaForGroundMotion3
0.17
**
constant
FractionAreaForGroundMotion4
0.23
**
constant
FractionAreaForGroundMotion5
0.28
**
constant
FractionAreaForGroundMotion6
0.34
**
constant
FractionAreaForGroundMotion7
0.4
**
constant
FractionAreaForGroundMotion8
0.46
**
constant
FractionAreaForGroundMotion9
0.5
**
constant
FractionAreaForGroundMotion10
0.54
**
** rwr 7/8/98 modify the VerticalExtentOfRockFall
names by adding "-"
constant
VerticalExtentOfRockFall1_1[m]
0.0
**
constant
VerticalExtentOfRockFall1_2[m]
0.0
**
constant
VerticalExtentOfRockFall1_3[m]
0.0
**
constant
VerticalExtentOfRockFall1_4[m]
0.0
**
constant
VerticalExtentOfRockFall1_5[m]
0.0
**
constant
VerticalExtentOfRockFall1_6[m]
0.0
**
constant
VerticalExtentOfRockFall1_7[m]
0.0
**
constant
VerticalExtentOfRockFall1_8[m]
0.0
**
constant
VerticalExtentOfRockFall1_9[m]
0.0
**
constant
VerticalExtentOfRockFall1_10[m]
0.0
**
constant
VerticalExtentOfRockFall12_1[m]
0.5 0.6
**
constant
VerticalExtentOfRockFall12_2[m]
0.5 1.0
**
constant
VerticalExtentOfRockFall12_3[m]
0.5 1.1
**
constant
VerticalExtentOfRockFall12_4[m]
0.5 1.2
**
constant
VerticalExtentOfRockFall12_5[m]
0.5 1.3
**
constant
VerticalExtentOfRockFall12_6[m]
0.5 1.4
**
constant
VerticalExtentOfRockFall12_7[m]
0.5 1.45
**
constant
VerticalExtentOfRockFall12_8[m]
0.5 1.5
**
constant
VerticalExtentOfRockFall12_9[m]
0.5 1.65
**
constant
VerticalExtentOfRockFall12_10[m]
0.5 1.8
**
constant
VerticalExtentOfRockFall13_1[m]
0.5 1.0
**
constant
VerticalExtentOfRockFall13_2[m]
0.5 2.0
**
constant
VerticalExtentOfRockFall13_3[m]
0.5 2.5
**
constant
VerticalExtentOfRockFall13_4[m]
0.5 3.0
**
constant
VerticalExtentOfRockFall13_5[m]
0.5 3.5
**
constant
VerticalExtentOfRockFall13_6[m]
0.5 4.0
**
constant
VerticalExtentOfRockFall13_7[m]
0.5 4.5
**
constant
VerticalExtentOfRockFall13_8[m]
0.5 5.0
**
constant
VerticalExtentOfRockFall13_9[m]
0.5 5.7
**
constant
VerticalExtentOfRockFall13_10[m]
0.5 6.5
**
constant
VerticalExtentOfRockFall14_1[m]
0.5 2.7
**
constant
VerticalExtentOfRockFall14_2[m]
0.5 5.5
**
constant
VerticalExtentOfRockFall14_3[m]
0.5 6.0
**
constant
VerticalExtentOfRockFall14_4[m]
0.5 6.5
**
constant
VerticalExtentOfRockFall14_5[m]
0.5 7.0
**
constant
VerticalExtentOfRockFall14_6[m]
0.5 7.5

```

Enhanced Canister and Enhanced Solubility Tc cansoltc.xls

06/15/00

```

2.48e-5
**
constant
GapRainBoundaryInventoryPerKgSP[c]
3.0e3
**
constant
SolubilityAm[kg/m3]
6.2e-6
**
constant
SolubilityB[kg/m3]
2.4e-8, 2.4e-4
**
logtriangular
SolubilityC[kg/m3]
1.2e-3, 1.4e-2, 2.4e-1
**
constant
Solubility_I[kg/m3]
1.29e2
**
constant
SolubilityTc[kg/m3]
0.0
**
constant
SolubilityCl[kg/m3]
3.6e1
**
constant
Solubility_C[kg/m3]
1.4e1
**
constant
Solubility_U[kg/m3]
7.6e-3
**
constant
SolubilityCm[kg/m3]
2.4e-4
**
constant
SolubilityPu[kg/m3]
2.4e-6, 2.4e-4
**
constant
SolubilityTh[kg/m3]
2.3e-4
**
constant
SolubilityRa[kg/m3]
2.3e-5
**
constant
SolubilityPb[kg/m3]
6.6e-5
**
constant
SolubilityCa[kg/m3]
1.35e2
**
constant
SolubilityNi[kg/m3]
1.0e-1
**
constant
SolubilitySe[kg/m3]
7.9e1
**
constant
SolubilityMn[kg/m3]
9.3e-7
**
** 6/2/1998 tpa3.2 next parameter replaced with 44
new parameters
SFwWettedFraction_failurekind_subarea
**
uniform
SFwWettedFraction_initial_1
0.0, 1.0
**
uniform
SFwWettedFraction_initial_2
0.0, 1.0
**
uniform
SFwWettedFraction_initial_3
0.0, 1.0
**
uniform
SFwWettedFraction_initial_4
0.0, 1.0
**
uniform
SFwWettedFraction_initial_5
0.0, 1.0
**
uniform
SFwWettedFraction_initial_6
0.0, 1.0
**
uniform
SFwWettedFraction_initial_7
0.0, 1.0
**
uniform
SFwWettedFraction_PAULT0
0.0, 1.0
**
uniform
SFwWettedFraction_VOLCAN0
0.0, 1.0
**
lognormal
SFwWettedFraction_SEISMO1_1
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO1_2
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO1_3
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO1_4
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO1_5
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO1_6
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO1_7
0.0, 1.0
**
lognormal
SFwWettedFraction_SEISMO2_1
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO2_2
0.0, 1.0
**
lognormal
SFwWettedFraction_SEISMO2_3
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO2_4
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO2_5
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO2_6
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO2_7
0.0, 1.0
**
lognormal
SFwWettedFraction_SEISMO3_1
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO3_2
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO3_3
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO3_4
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO3_5
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO3_6
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO3_7
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO4_1
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO4_2
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO4_3
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO4_4
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO4_5
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO4_6
0.0, 1.0
**
uniform
SFwWettedFraction_SEISMO4_7
0.0, 1.0
**
uniform
SFwWettedFraction_Corrosion_1
0.0, 1.0
**
uniform
SFwWettedFraction_Corrosion_2
0.0, 1.0
**
uniform
SFwWettedFraction_Corrosion_3
0.0, 1.0
**
uniform
SFwWettedFraction_Corrosion_4
0.0, 1.0
**
uniform
SFwWettedFraction_Corrosion_5
0.0, 1.0
**
uniform
SFwWettedFraction_Corrosion_6
0.0, 1.0
**
uniform
SFwWettedFraction_Corrosion_7
0.0, 1.0
**
** 7/4/1998 tpa3.2 four new parameters for invert
iflag
InvertBypass(0=ehsfilt,1=bypass-ehsfilt)
0
**
constant
InvertRockPorosity
0.3
**
constant
InvertThickness[m]
0.75
**
constant
InvertDiffusionCoefficient[m^2/yr]
4.4e-5
**
lognormal
InvertMatrixPermeability[m^2]
2.0e-18, 2.0e-16
**
***>>> UZFT <<<***
constant
UnsaturatedZoneMinimumVelocityChangeFactor[Fraction]
0.4
**
constant
MatrixLongitudinalDispersivity[FractionOfLayer]
0.1
**
constant
FractureLongitudinalDispersivity[FractionOfLayer]
0.1
**
lognormal
MatrixKD_TSw_Am[m3/kg]
4.2e+00 3.8e+06
**
lognormal
MatrixKD_ChvAm[m3/kg]
1.3e+01 1.2e+07
**
lognormal
MatrixKD_ChvAm[m3/kg]
1.3e+01 1.1e+07
**
lognormal
MatrixKD_PPw_Am[m3/kg]
9.5e+00 8.7e+06
**
lognormal
MatrixKD_ChvNi[m3/kg]
2e+09 3.0e+00
**
lognormal
MatrixKD_UCF_Am[m3/kg]
0.0e+00 6.1e+06
**
lognormal
MatrixKD_PPw_U[m3/kg]
9.6e+10 2.5e+00
**
lognormal
MatrixKD_PPw_Cu[m3/kg]
5.0e-06 0.50
**
lognormal
MatrixKD_UCF_U[m3/kg]
4.1e+10 3.7e+06
**
lognormal
MatrixKD_PPw_Ni[m3/kg]
3.9e+00 3.5e+06
**
lognormal
MatrixKD_UCF_Ni[m3/kg]
4.1e+10 1.0e+00
**
lognormal
MatrixKD_PPw_Ni[m3/kg]
3.9e+10 1.0e+00
**
lognormal
MatrixKD_TSw_Pu[m3/kg]
2.3e-02 2.2e+01
**
lognormal
MatrixKD_ChvPu[m3/kg]
4.4e-06 6.0e-01

```

[illegible][illegible]

[illegible]

```

00000000 constant
00000001 RD_Invert_Am
00000002 3.00e3
00000003 **
00000004 constant
00000005 RD_Invert_Mp
00000006 1.20e3
00000007 **
00000008 constant
00000009 RD_Invert_Th
00000010 3.00e3
00000011 **
00000012 constant
00000013 RD_Invert_Ra
00000014 6.01e2
00000015 **
00000016 constant
00000017 RD_Invert_Pb
00000018 3.01e2
00000019 **
00000020 constant
00000021 RD_Invert-Cs
00000022 1.01e2
00000023 **
00000024 constant
00000025 RD_Invert_I
00000026 7.00e0
00000027 **
00000028 constant
00000029 RD_Invert_Tc
00000030 1.0
00000031 **
00000032 constant
00000033 RD_Invert_Ni
00000034 6.10e1
00000035 **
00000036 constant
00000037 RD_Invert_C1
00000038 1.0
00000039 **
00000040 constant
00000041 RD_Invert_C
00000042 6.10e1
00000043 **
00000044 constant
00000045 RD_Invert_Se
00000046 1.0
00000047 **
00000048 constant
00000049 RD_Invert_Nb
00000050 6.01e2
00000051 **
00000052 constant
00000053 GapFractionForCM246
00000054 0.0
00000055 **
00000056 constant
00000057 GapFractionForPU238
00000058 0.0
00000059 **
00000060 constant
00000061 GapFractionForCM245
00000062 0.0
00000063 **
00000064 constant
00000065 GapFractionForM241
00000066 0.0
00000067 **
00000068 constant
00000069 GapFractionForNP237
00000070 0.0
00000071 **
00000072 constant
00000073 GapFractionForAM243
00000074 0.0
00000075 **
00000076 constant
00000077 GapFractionForPU239
00000078 0.0
00000079 **
00000080 constant
00000081 GapFractionForPU240
00000082 0.0
00000083 **
00000084 constant
00000085 GapFractionForPU234
00000086 0.0
00000087 **
00000088 constant
00000089 GapFractionForTH230
00000090 0.0
00000091 **
00000092 constant
00000093 GapFractionForR226
00000094 0.0
00000095 **
00000096 constant
00000097 GapFractionForPB210
00000098 0.0
00000099 **
00000100 constant
00000101 GapFractionForCS135
00000102 0.06
00000103 **
00000104 constant
00000105 GapFractionForI129
00000106 0.06
00000107 **
00000108 constant
00000109 GapFractionForTC99
00000110 0.01
00000111 **
00000112 constant
00000113 GapFractionForNT59
00000114 0.0
00000115 **
00000116 constant
00000117 GapFractionForCl36
00000118 0.12
00000119 **
00000120 constant
00000121 GapFractionForC14
00000122 0.1
00000123 **
00000124 constant
00000125 GapFractionForSE79
00000126 0.06
00000127 **
00000128 constant
00000129 GapFractionForNB94
00000130 0.0
00000131 **
00000132 normal
00000133 InitialRadiusOfSFParticle[m]
00000134 7.0e-4, 3.0e-3
00000135 **
00000136 constant
00000137 RadiusOfSFGrain[m]
00000138 1.25e-5
00000139 **
00000140 constant
00000141 CladdingCorrectionFactor
00000142 1.0
00000143 **
00000144 normal
00000145 SubGrainFragmentRadiusAfterTransf
00000146 5.0e-7, 2.0e-6
00000147 **
00000148 constant
00000149 ThGrainSizeOfCladding[m]
00000150 6.1e-4
00000151 **
00000152 constant
00000153 SFC-14InventoryPerKgSF[c1]
00000154 7.2e-4
00000155 **
00000156 constant
00000157 Clad-14InventoryPerKgSF[c1]
00000158 4.89e-4
00000159 **
00000160 constant
00000161 ZrOxideAndCrude-14InventoryPerKgSF[c1]

```

```

2.4e-5
constant
GapAndGrainBoundaryInventoryPerKgSP[cl]
6.e-6
uniform
SolubilityAm[kg/m3]
2.4e-8, 2.4e-4
logtriangular
SolubilityAp[kg/m3]
1.2e-3, 3.4e-2, 2.4e-1
constant
Solubility_I[kg/m3]
1.29e2
constant
SolubilityTc[kg/m3]
9.93e1
**
constant
SolubilityCl[kg/m3]
3.6e1
**
constant
Solubility_C[kg/m3]
1.4e1
**
constant
Solubility_U[kg/m3]
7.4e-3
**
constant
SolubilityCm[kg/m3]
2.4e-4
**
uniform
SolubilityPu[kg/m3]
2.4e-6, 2.4e-4
**
constant
SolubilityTh[kg/m3]
2.3e-4
**
constant
SolubilityPa[kg/m3]
2.3e-5
**
constant
SolubilityPb[kg/m3]
6.6e-5
**
constant
SolubilityCs[kg/m3]
1.35e2
**
constant
SolubilityNi[kg/m3]
1.1e-1
**
constant
SolubilitySe[kg/m3]
7.9e1
**
constant
SolubilityNb[kg/m3]
9.9e-7
**
** 6/2/1998 tpa3.2 next parameter replaced with 44
new parameters
**          SFWettedFraction(failurekind)_subarea
**
uniform
SFWettedFraction_Initial_1
0.0, 1.0
**
uniform
SFWettedFraction_Initial_2
0.0, 1.0
**
uniform
SFWettedFraction_Initial_3
0.0, 1.0
**
uniform
SFWettedFraction_Initial_4
0.0, 1.0
**
uniform
SFWettedFraction_Initial_5
0.0, 1.0
**
uniform
SFWettedFraction_Initial_6
0.0, 1.0
**
uniform
SFWettedFraction_Initial_7
0.0, 1.0
**
uniform
SFWettedFraction_FAULTO
0.0, 1.0
**
uniform
SFWettedFraction_VOLCANO
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO1_1
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO1_2
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO1_3
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO1_4
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO1_5
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO1_6
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO1_7
0.0, 1.0
**
uniform
SFWettedFraction_SEISM2_1
0.0, 1.0
**
uniform
SFWettedFraction_SEISM2_2
0.0, 1.0
**
uniform
SFWettedFraction_SEISM2_3
0.0, 1.0
**
uniform
SFWettedFraction_SEISM2_4
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_5
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_6
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_7
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO3_1
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO3_2
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO3_3
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO3_4
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO3_5
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO3_6
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO3_7
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO4_1
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO4_2
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO4_3
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO4_4
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO4_5
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO4_6
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO4_7
0.0, 1.0
**
uniform
SFWettedFraction_Corrosion_1
0.0, 1.0
**
uniform
SFWettedFraction_Corrosion_2
0.0, 1.0
**
uniform
SFWettedFraction_Corrosion_3
0.0, 1.0
**
uniform
SFWettedFraction_Corrosion_4
0.0, 1.0
**
uniform
SFWettedFraction_Corrosion_5
0.0, 1.0
**
uniform
SFWettedFraction_Corrosion_6
0.0, 1.0
**
uniform
SFWettedFraction_Corrosion_7
0.0, 1.0
**
** 7/4/1998 tpa3.2 four new parameters for invert
iflag
InvertBypass(0=ehsfilter,1=bypass-ehsfilter)
0
**
constant
InvertRockPorosity
0.3
**
constant
InvertThickness[m]
0.75
**
constant
InvertDiffusionCoefficient[m^2/yr]
4.4e-5
**
lognormal
InvertMatrixPermeability[m^2]
2.0e-18, 2.0e-16
**
**          ****>>> UZPT <<<****
**
constant
UnsaturatedZoneMinimumVelocityChangeFactor[FractionOfLayer]
0.4
**
constant
MatrixLongitudinalDispersivity[FractionOfLayer]
0.1
**
constant
FractureLongitudinalDispersivity[FractionOfLayer]
0.1
**
lognormal
MatrixKD_TSW_Am[m3/kg]
4.2e+00 3.8e+06
**
lognormal
MatrixKD_ChvVAm[m3/kg]
1.3e+01 1.2e+07
**
lognormal
MatrixKD_ChnzAm[m3/kg]
1.2e+01 1.1e+07
**
lognormal
MatrixKD_PwVAm[m3/kg]
9.5e+00 8.7e+06
**
lognormal
MatrixKD_UCF_Am[m3/kg]
1.0e+01 9.1e+06
**
lognormal
MatrixKD_PwVAm[m3/kg]
4.1e+00 3.7e+06
**
lognormal
MatrixKD_UPZ_Am[m3/kg]
3.9e+00 3.5e+06
**
lognormal
MatrixKD_TSW_Ap[m3/kg]
1.6e+06 2.2e-01
**
lognormal
MatrixKD_ChvVAp[m3/kg]
4.8e-06 6.6e-01
**
lognormal
MatrixKD_ChnzAp[m3/kg]
4.4e+06 6.9e-01

```

[illegible]

```

MatrixKD_TSw_C[m3/kg]
0.0
**
constant
MatrixKD_ChnvC[m3/kg]
0.0
**
constant
MatrixKD_ChnzC[m3/kg]
0.0
**
constant
MatrixKD_PPw_C[m3/kg]
0.0
**
constant
MatrixKD_UCF_C[m3/kg]
0.0
**
constant
MatrixKD_BFw_C[m3/kg]
0.0
**
constant
MatrixKD_UFz_C[m3/kg]
0.0
**
loguniform
MatrixKD_TSw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_ChnvSe[m3/kg]
2.0e-7, 0.020
**
loguniform
MatrixKD_ChnzSe[m3/kg]
1.5e-7, 0.015
**
loguniform
MatrixKD_PPw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_UCF_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_BFw_Se[m3/kg]
3.0e-7, 0.030
**
loguniform
MatrixKD_UFz_Se[m3/kg]
3.0e-7, 0.030
**
constant
MatrixKD_TSw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_ChnvNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_ChnzNb[m3/kg]
0.10, 1.0
**
constant
MatrixKD_PPw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UCF_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_BFw_Nb[m3/kg]
0.10, 2.0
**
constant
MatrixKD_UFz_Nb[m3/kg]
0.10, 2.0
**
constant
FractureRD_TSw_Am
1.0
**
constant
FractureRD_ChnvAm
1.0
**
constant
FractureRD_ChnzAm
1.0
**
constant
FractureRD_PPw_Am
1.0
**
constant
FractureRD_UCF_Am
1.0
**
constant
FractureRD_BFw_Am
1.0
**
constant
FractureRD_UFz_Am
1.0
**
constant
FractureRD_TSw_Np
1.0
**
constant
FractureRD_ChnvNp
1.0
**
constant
FractureRD_ChnzNp
1.0
**
constant
FractureRD_PPw_Np
1.0
**
constant
FractureRD_UCF_Np
1.0
**
constant
FractureRD_BFw_Np
1.0
**
constant
FractureRD_UFz_Np
1.0
**
constant
FractureRD_TSw_I
1.0
**
constant
FractureRD_ChnvI
1.0
**
constant
FractureRD_ChnzI
1.0
**
constant
FractureRD_PPw_I
1.0
**
constant
FractureRD_UCF_I
1.0
**
constant
FractureRD_BFw_I
1.0
**
constant
FractureRD_UFz_I
1.0
**
constant
FractureRD_TSw_Th
1.0
**
constant
FractureRD_ChnvTh
1.0
**
constant
FractureRD_ChnzTh
1.0
**
constant
FractureRD_PPw_Th
1.0
**
constant
FractureRD_UCF_Th
1.0

```

[illegible]

```

SolubilityOfNiobiumInVolcanicAsh[moles/liter]
1.0e-8
**
constant
SolubilityOfZirconiumInVolcanicAsh[moles/liter]
1.2e-10
**
constant
SolubilityOfStrontiumInVolcanicAsh[moles/liter]
1.3e-4
**
constant
SolubilityOfSeleniumInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfNickelInVolcanicAsh[moles/liter]
2.0e-3
**
constant
SolubilityOfChlorineInVolcanicAsh[moles/liter]
1.0
**
constant
SolubilityOfCarbonInVolcanicAsh[moles/liter]
**
**
**
***>>> DCAGS <<<***
**
constant
DistanceCutoffForDoseConversionDualityInDCAGS[m]
19.99
**
loguniform
AlphaMeanLoadForVolcaniumDoseCalculation[g/m3]
1.0e-4, 1.0e-2
**
constant
OccupancyFactorForVolcanismDoseCalculation[-]
0.24
**
constant
DepthOfResuspendableLayer[cm]
0.3
**
**
***>>> CORRELATED PARAMETERS <<<
**
correlateinputs
SubAreaWetFraction
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
0.631
**
correlateinputs
SubAreaWetFraction
MatrixPermeability_TSW_m[2]
-0.623
**
correlateinputs
FowFactor
AreaAverageMeanAnnualInfiltrationAtStart[mm/yr]
-0.224
**
correlateinputs
FowFactor
MatrixPermeability_TSW_m[2]
0.13
**
correlateinputs
FowFactor
SubAreaWetFraction
-0.366
**
correlateinputs
AlluviumMatrixIRD_SAV_Am
AlluviumMatrixIRD_SAV_Pu
0.964
**
correlateinputs
AlluviumMatrixIRD_SAV_Am
AlluviumMatrixIRD_SAV_U
0.346
**
correlateinputs
AlluviumMatrixIRD_SAV_Am
AlluviumMatrixIRD_SAV_Np
0.837
**
correlateinputs
AlluviumMatrixIRD_SAV_Am
AlluviumMatrixIRD_SAV_Th
0.112
**
correlateinputs
AlluviumMatrixIRD_SAV_Pu
AlluviumMatrixIRD_SAV_U
0.489
**
correlateinputs
AlluviumMatrixIRD_SAV_Pu
AlluviumMatrixIRD_SAV_Np
0.881
**
correlateinputs
AlluviumMatrixIRD_SAV_Pu
AlluviumMatrixIRD_SAV_Th
0.109
**
correlateinputs
AlluviumMatrixIRD_SAV_Np
AlluviumMatrixIRD_SAV_U
0.260
**
correlateinputs
AlluviumMatrixIRD_SAV_Np
AlluviumMatrixIRD_SAV_Th
0.610
**
correlateinputs
AlluviumMatrixIRD_SAV_Th
AlluviumMatrixIRD_SAV_U
0.165
**
endoffile

```

06/15/00

```

title
  Input file tpa.inp as supplied with TPA Version 3.2.
Code.
Base case data set Rev 3.2.1 2/22/99
**
** ***** GLOBAL PARAMETERS *****
**
** ***** Disruptive Scenario flags *****
iflag
VolcanismDisruptiveScenarioFlag (yes=1,no=0)
0
**
iflag
FaultingDisruptiveScenarioFlag (yes=1,no=0)
0
**
iflag
SeismicDisruptiveScenarioFlag (yes=1,no=0)
0
**
** ***** Subarea Size *****
**
** Number and Location of Subareas[m] Based On
Fig3.4-1 in TSPA95
** subarea
**
** ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
** 547405.2 4076362.2
** 548469.3 4076362.2
** 548469.3 4079237.8
** 547405.7 4079237.8
** 547405.7 4076362.2
subarea
7
ZONE T="Subarea 1",I=5,F=POINT
547472.0, 4079237.3
548069.2, 4079136.5
547847.3, 4077816.2
547318.4, 4077934.0
547472.0, 4079237.3
ZONE T="Subarea 2",I=5,F=POINT
548069.2, 4079136.5
548547.9, 4077854.1
547847.3, 4077816.2
548069.2, 4079136.5
ZONE T="Subarea 3",I=5,F=POINT
547318.4, 4077934.0
547847.3, 4077816.2
548322.7, 4077192.2
547472.0, 4077281.6
547318.4, 4077934.0
ZONE T="Subarea 4",I=5,F=POINT
547847.3, 4077816.2
548547.9, 4077854.1
548504.8, 4077170.0
548322.7, 4077192.2
547847.3, 4077816.2
ZONE T="Subarea 5",I=5,F=POINT
547472.0, 4077281.6
547887.3, 4077238.1
547995.0, 4076338.9
547670.4, 4076435.5
547472.0, 4077281.6
ZONE T="Subarea 6",I=5,F=POINT
547887.3, 4077238.1
548322.7, 4077192.2
548318.5, 4076220.2
547995.0, 4076338.9
547887.3, 4077238.1
ZONE T="Subarea 7",I=5,F=POINT
548322.7, 4077192.2
548504.8, 4077170.0
548473.1, 4076533.7
548319.5, 4076220.2
548322.7, 4077192.2
!constant
StartAtSubarea
1
!constant
StopAtSubarea
7
**
** ***** Nuclides and Chains *****
**
** 5/25/1998 tpa3.2 new parameter section
**
** Nuclides can be eliminated from the basecase set.
** However, if additional nuclides (Pu242, Am242m,
Pu238, Cm243,
1 U235, Pu231, Ac227, Pu241, U233, Th229, Cm244,
U236, U232, Sm151,
1 Cs137, Sm126, Sn12m, Ag108m, Pd107, Mo93, Zr93,
Sr90, etc N46)
** are added to the basecase set, then corresponding
** solubilities, gap fractions, and correlations must
be added.
iflag
CheckNuclidesAndChains (yes=1,no=0)
0
aqueousnuclides
** number of nuclides, number of chains
20
13
**
** chain 1
2
Cm246
U238
** chain 2
3
Cm245
Am241
Mg237
** chain 3
2
Am243
Pu239
** chain 4
1
Pu240
** chain 5
4
U234
Th230
Ra226
Po210
** chain 6
3
Cm135
** chain 7
1
I129
** chain 8
1
Tc99
** chain 9
3
N159
** chain 10
1
C14
** chain 11
1
Se79
** chain 12
1
Nb94
** chain 13
1
Cl36
endofnuclides

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```

```

constant
MaximumFluxInfluxZone[m/s]
1.0e-9
**
constant
FetchedBucketVolumePerSAarea[m3/m2]
0.5
**
constant
Reflux2Thickness
100.0
**
constant
Reflux2Porosity
0.14
**
constant
Reflux2SatInit
0.9
**
constant
Reflux2SatResid
0.1
**
constant
Reflux2Period
100.0
**
constant
Reflux2LossI
0.1
**
constant
Reflux2LossD
0.1
**
constant
WPLength[m]
5.682
**
constant
WPDiameter[m]
1.992
**
constant
EmplacementDriftDiameter[m]
5.0
**
constant
WPSpacingAlongEmplacementDrift[m]
19.0
**
** 6/4/98 tpa3.2: Next 4 new parameters specific to
reflux3 model
**
constant
WUnitCellWidth[m]
22.5
**
loguniform
FractionOfCondensateRemoved[1/yr]
1.0e-8, 1.0
**
uniform
FractionOfCondensateTowardRepository[1/yr]
0.0, 1.0
**
loguniform
FractionOfCondensateTowardRepositoryRemoved[1/yr]
1.0e-8, 1.0
**
constant
DensityOfWaterAtBoiling[kg/m^3]
960.5
**
constant
EnthalpyOfPhaseChangeForWater[J/kg]
2.4e6
**
uniform
TemperatureGradientInVicinityOfBoilingIsotherm[K/m]
1.0, 100.0
**
constant
ArealMassLoading[MTU/acre]
93.0
**
constant
WastePackagePayload[MTU]
9.76
**
constant
AgeOfWaste[yr]
26.0
**
constant
AmbientRepositoryTemperature[C]
20.0
**
constant
MassDensityOfVYnRock[kg/m^3]
2580.0
**
constant
SpecificHeatOfVYnRock[J/(kg-K)]
846.0
**
uniform
ThermalConductivityOfVYnRock[W/(m-K)]
1.8, 2.2
**
constant
EmissivityOfDriftWall[-]
0.8
**
constant
EmissivityOfWastePackage[-]
0.7
**
constant
ThermalConductivityOfFloor[W/(m-C)]
0.6
**
constant
EffectiveThermalConductivityOfUnbackfilledDrift[W/(m-C)]
0.90
**
constant
TimeOfBackfillEmplaced[yr]
100001.0
**
constant
EffectiveThermalConductivityOfBackfill[W/(m-C)]
0.60
**
constant
ThermalConductivityOfInnerStainlessSteelWall[W/(m-C)]
15.0
**
constant
ThermalConductivityOfOuterCarbonSteelWall[W/(m-C)]
50.0
**
constant
EffectiveThermalConductivityOfBasket&SPinW[W/(m-C)]
1.0
**
constant
ElevationOfRepositoryHorizon[m]
1072.0
**
constant
ElevationOfGroundSurface[m]
1400.0
**
** ***** ERSFAIL <<<<<<
**
constant
OuterWPTHickness[m]

```

Michael J. Wiley
06/15/00

Enhanced Alluvium

tpa9.inp.wpd

06/15/00

```
ChlorideMultFactor 0.28
1.0, 30.0
constant
ReferenceCpH 0.34
0.0
constant
ReferenceScaleThickness[m] 0.4
0.0
constant
ReferenceScaleThickness[m] 0.4
0.0
constant
TortuosityOfScaleonWP 0.46
1.0
constant
PorosityOfScaleonWP 0.5
1.0
constant
YieldStrength[MPa] 205.0
205.0
constant
SafetyFactor 1.4
1.4
constant
FractureToughness[MPa-m**0.5] 250.0
250.0
***>>> SEISMO <<<***
hazardcurve
SeismicHazardCurveforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 2400.0
0.25 4400.0
0.30 7800.0
0.35 11000.0
0.40 20000.0
0.45 30000.0
0.50 44000.0
constant
WeightPercentageOfRockFallThatHitsWForSEISMO
1.0
1.0
constant
WeightOfWForSEISMO[N] 1.27D05
1.27D05
constant
WpStiffnessForSEISMO[Pa-m] 1.21D10
1.21D10
constant
WpModulusOfElasticityForSEISMO[Pa] 2.07D11
2.07D11
normal
RockModulusOfElasticityForSEISMO[Pa] 2.76D10, 4.14D10
2.76D10, 4.14D10
constant
WpPoissonRatioForSEISMO[] 0.2D0
0.2D0
normal
RockPoissonRatioForSEISMO[] 0.15, 0.25
0.15, 0.25
constant
RockFallingDistanceForSEISMO[m] 2.0D0
2.0D0
constant
WpFallingDistanceForSEISMO[m] 0.3D0
0.3D0
constant
WpNumberofSupportPairForSEISMO 2
2
constant
WpSupportStiffnessForSEISMO[pa-m] 5.3D09
5.3D09
constant
DistributionJointSpacing1forSEISMO 5.0D-03
5.0D-03
constant
DistributionJointSpacing2forSEISMO 5.0D-03
5.0D-03
constant
DistributionJointSpacing3forSEISMO 5.0D-03
5.0D-03
constant
DistributionJointSpacing4forSEISMO 0.62D0
0.62D0
constant
DistributionJointSpacing5forSEISMO 0.35D0
0.35D0
normal
SEISMOJointSpacing1[m] 0.466, 0.600
0.466, 0.600
normal
SEISMOJointSpacing2[m] 0.333, 0.466
0.333, 0.466
normal
SEISMOJointSpacing3[m] 0.20, 0.333
0.20, 0.333
normal
SEISMOJointSpacing4[m] 0.06, 0.20
0.06, 0.20
normal
SEISMOJointSpacing5[m] 0.03, 0.06
0.03, 0.06
** 5/28/1998 tpa3.2 new value (mmh)
constant
WpUltimateStrength[N/m**2] 4.50D8
4.50D8
constant
GrainDensityforTSwSEISMO[] 2.55
2.55
** 5/28/1998 tpa3.2 new values next 60
parameters(replacing seismo.dat)
constant
FractionAreaForGroundMotion1 0.09
0.09
constant
FractionAreaForGroundMotion2 0.12
0.12
constant
FractionAreaForGroundMotion3 0.17
0.17
constant
FractionAreaForGroundMotion4 0.23
0.23
constant
FractionAreaForGroundMotion5
```

Enhanced Alluvium

tpa9.inp.wpd

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```
4.89e-4
constant
RD_Invert_U 6.01e2
6.01e2
constant
RD_Invert_Am 3.00e3
3.00e3
constant
RD_Invert_Mp 1.20e3
1.20e3
constant
RD_Invert_Th 3.00e3
3.00e3
constant
RD_Invert_Ra 6.01e2
6.01e2
constant
RD_Invert_Pb 3.01e2
3.01e2
constant
RD_Invert_Cs 1.21e2
1.21e2
constant
RD_Invert_I 7.00e0
7.00e0
constant
RD_Invert_Tc 1.0
1.0
constant
RD_Invert_Ni 6.10e1
6.10e1
constant
RD_Invert_Cl 1.0
1.0
constant
RD_Invert_C 6.10e1
6.10e1
constant
RD_Invert_Se 1.0
1.0
constant
RD_Invert_Mb 6.01e2
6.01e2
constant
GapFractionForCM246 0.0
0.0
constant
GapFractionForU238 0.0
0.0
constant
GapFractionForCM245 0.0
0.0
constant
GapFractionForAM241 0.0
0.0
constant
GapFractionForNp237 0.0
0.0
constant
GapFractionForAM243 0.0
0.0
constant
GapFractionForPu239 0.0
0.0
constant
GapFractionForPu240 0.0
0.0
constant
GapFractionForU234 0.0
0.0
constant
GapFractionForTh230 0.0
0.0
constant
GapFractionForRa226 0.0
0.0
constant
GapFractionForPb210 0.0
0.0
constant
GapFractionForCs135 0.06
0.06
constant
GapFractionForI129 0.06
0.06
constant
GapFractionForTc99 0.01
0.01
constant
GapFractionForNi59 0.0
0.0
constant
GapFractionForCl36 0.12
0.12
constant
GapFractionForCl4 0.1
0.1
constant
GapFractionForSe79 0.06
0.06
constant
GapFractionForNb94 0.0
0.0
normal
InitialRadiusOfSPParticle[m] 7.0e-4, 3.0e-3
7.0e-4, 3.0e-3
constant
RadiusOfSPGrain[m] 1.25e-5
1.25e-5
constant
CladdingCorrectionFactor 1.0
1.0
normal
SubGrainFragmentRadiusAfterTransFrac[m] 5.0e-7, 2.0e-6
5.0e-7, 2.0e-6
constant
ThicknessOfCladding[m] 6.1e-4
6.1e-4
constant
SPC-14InventoryPerKgSP[ci] 7.2e-4
7.2e-4
constant
CladC-14InventoryPerKgSP[ci]
```



```

oxideMultFactor
1.0, 30.0
**
constant
ReferenceCpH
9.0
**
constant
WpSurfaceScaleThickness[m]
0.0
**
constant
TortuosityOfScaleonWP
1.0
**
constant
PorosityOfScaleonWP
1.0
**
**
constant
YieldStrength[MPa]
205.0
**
constant
SafetyFactor
1.4
**
**
constant
FractureToughness[MPa-m**0.5]
250.0
**
**
***>>> SEISMO <<<***
**
hazardCurve
SeismicHazardCurveforSEISMO
10
0.05 180.0
0.10 500.0
0.15 1200.0
0.20 2400.0
0.25 4400.0
0.30 7600.0
0.35 11000.0
0.40 20000.0
0.45 30000.0
0.50 44000.0
**
constant
WeightPercentageOfRockFallThatHitsWPforSEISMO
1.0
**
constant
WeightOfWPforSEISMO[N]
1.21D05
**
constant
WpSpecificInessforSEISMO[Pa*m]
1.21D10
**
constant
WpModulusOfElasticityforSEISMO[Pa]
2.07D11
**
normal
RockModulusOfElasticityforSEISMO[Pa]
2.76D10, 4.14D10
**
constant
WpPoissonRatioforSEISMO[]
0.2D0
**
normal
RockPoissonRatioforSEISMO[]
0.15, 0.25
**
constant
RockFallingDistanceforSEISMO[m]
2.0D0
**
constant
WpFallingDistanceforSEISMO[m]
0.3D0
**
icconstant
WpNumberofSupportPairforSEISMO
2
**
constant
WpSupportStiffnessforSEISMO[pa*m]
5.5D09
**
constant
DistributionJointSpacing1forSEISMO
5.0D-03
**
constant
DistributionJointSpacing2forSEISMO
5.0D-03
**
constant
DistributionJointSpacing3forSEISMO
5.0D-03
**
constant
DistributionJointSpacing4forSEISMO
0.629D0
**
constant
DistributionJointSpacing5forSEISMO
0.356D0
**
normal
SEISMOJointSpacing1[m]
0.466, 0.600
**
normal
SEISMOJointSpacing2[m]
0.333, 0.466
**
normal
SEISMOJointSpacing3[m]
0.20, 0.333
**
normal
SEISMOJointSpacing4[m]
0.06, 0.20
**
normal
SEISMOJointSpacing5[m]
0.03, 0.06
**
**
5/28/1998 tpa3.2 new value (smh)
**
constant
WpUltimateStrength[N/m^2]
4.5D08
**
constant
GrainDensityforTSw2SEISMO[]
2.55
**
5/28/1998 tpa3.2 new values next 60
parameters(replacing seismo.dat)
**
constant
FractionAreaForGroundMotion1
0.05
**
constant
FractionAreaForGroundMotion2
0.12
**
constant
FractionAreaForGroundMotion3
0.17
**
constant
FractionAreaForGroundMotion4
0.23
**
constant
FractionAreaForGroundMotion5
0.28
**
constant
FractionAreaForGroundMotion6
0.34
**
constant
FractionAreaForGroundMotion7
0.4
**
constant
FractionAreaForGroundMotion8
0.46
**
constant
FractionAreaForGroundMotion9
0.5
**
constant
FractionAreaForGroundMotion10
0.54
**
**
** twr 7/8/98 modify the VerticalExtentOfRockFall
names by adding *-
**
constant
VerticalExtentOfRockFall1_1[m]
0.0
**
constant
VerticalExtentOfRockFall1_2[m]
0.0
**
constant
VerticalExtentOfRockFall1_3[m]
0.0
**
constant
VerticalExtentOfRockFall1_4[m]
0.0
**
constant
VerticalExtentOfRockFall1_5[m]
0.0
**
constant
VerticalExtentOfRockFall1_6[m]
0.0
**
constant
VerticalExtentOfRockFall1_7[m]
0.0
**
constant
VerticalExtentOfRockFall1_8[m]
0.0
**
constant
VerticalExtentOfRockFall1_9[m]
0.0
**
constant
VerticalExtentOfRockFall1_10[m]
0.0
**
uniform
VerticalExtentOfRockFall2_1[m]
0.5 0.6
**
uniform
VerticalExtentOfRockFall2_2[m]
0.5 1.0
**
uniform
VerticalExtentOfRockFall2_3[m]
0.5 1.1
**
uniform
VerticalExtentOfRockFall2_4[m]
0.5 1.2
**
uniform
VerticalExtentOfRockFall2_5[m]
0.5 1.3
**
uniform
VerticalExtentOfRockFall2_6[m]
0.5 1.4
**
uniform
VerticalExtentOfRockFall2_7[m]
0.5 1.45
**
uniform
VerticalExtentOfRockFall2_8[m]
0.5 1.5
**
uniform
VerticalExtentOfRockFall2_9[m]
0.5 1.65
**
uniform
VerticalExtentOfRockFall2_10[m]
0.5 1.8
**
uniform
VerticalExtentOfRockFall3_1[m]
0.5 1.0
**
uniform
VerticalExtentOfRockFall3_2[m]
0.5 2.0
**
uniform
VerticalExtentOfRockFall3_3[m]
0.5 2.5
**
uniform
VerticalExtentOfRockFall3_4[m]
0.5 3.0
**
uniform
VerticalExtentOfRockFall3_5[m]
0.5 3.5
**
uniform
VerticalExtentOfRockFall3_6[m]
0.5 4.0
**
uniform
VerticalExtentOfRockFall3_7[m]
0.5 4.5
**
uniform
VerticalExtentOfRockFall3_8[m]
0.5 5.0
**
uniform
VerticalExtentOfRockFall3_9[m]
0.5 5.7
**
uniform
VerticalExtentOfRockFall3_10[m]
0.5 6.5
**
uniform
VerticalExtentOfRockFall4_1[m]
0.5 2.7
**
uniform
VerticalExtentOfRockFall4_2[m]
0.5 5.5
**
uniform
VerticalExtentOfRockFall4_3[m]
0.5 6.0
**
uniform
VerticalExtentOfRockFall4_4[m]
0.5 6.5
**
uniform
VerticalExtentOfRockFall4_5[m]
0.5 7.0
**
uniform
VerticalExtentOfRockFall4_6[m]
0.5 7.5
**
uniform
VerticalExtentOfRockFall4_7[m]
0.5 8.0
**
uniform
VerticalExtentOfRockFall4_8[m]
0.5 8.5
**
uniform
VerticalExtentOfRockFall4_9[m]
0.5 9.3
**
uniform
VerticalExtentOfRockFall4_10[m]
0.5 10.0
**
uniform
VerticalExtentOfRockFall5_1[m]
0.5 4.7
**
uniform
VerticalExtentOfRockFall5_2[m]
0.5 5.13
**
uniform
VerticalExtentOfRockFall5_3[m]
0.5 9.7
**
uniform
VerticalExtentOfRockFall5_4[m]
0.5 10.6
**
uniform
VerticalExtentOfRockFall5_5[m]
0.5 10.7
**
uniform
VerticalExtentOfRockFall5_6[m]
0.5 11.33
**
uniform
VerticalExtentOfRockFall5_7[m]
0.5 13.0
**
uniform
VerticalExtentOfRockFall5_8[m]
0.5 12.66
**
uniform
VerticalExtentOfRockFall5_9[m]
0.5 13.3
**
uniform
VerticalExtentOfRockFall5_10[m]
0.5 14.0
**
**
5/28/1998 tpa3.2 two new parameters introduced
**
constant
WpFidPoint[]
0.002
**
constant
WpPlasticElongation[]
0.02
**
**
***** EBSREL <<<***
**
** twr 7/8/98 modify flow model flag
iflag
FlowModelFlag(0=BothTub,1=FlowThrough)
0
**
lognormal
PorFactor
0.01, 3.0
**
lognormal
PeakFactor
0.01, 0.2
**
uniform
SubAreaWetFraction
0.0, 1.0
**
**
5/21/98 tpa3.2: New parameter; nonzero initial
failure times
**
constant
InitialFailureTime[yr]
0.0
**
uniform
DefectiveFractionOfWPs/cell
1.0e-4, 1.0e-2
**
**
6/2/1998 tpa3.2 5 new parameters; number of SEI
intervals not to exceed 4
**
icconstant
NumberOfSEISMONWPFailureIntervals
4
**
constant
BeginningOfSEISMONWPFailureInterval1[yr]
0.0
**
constant
BeginningOfSEISMONWPFailureInterval2[yr]
2000.0
**
constant
BeginningOfSEISMONWPFailureInterval3[yr]
5000.0
**
constant
BeginningOfSEISMONWPFailureInterval4[yr]
10000.0
**
constant
WpInternalVolume[m3]
4.83
**
constant
FlowOnsetTemperature[C]
399.
**
constant
SPDensity[kg/m3]
1600.
**
icconstant
SurfaceAreaModel
1.
**
icconstant
Imodel
2
**
constant
OxygenPartialPressure[atm]
0.21
**
constant
NegativeLog10CarbonateConcentration[mol/L]
3.71
**
constant
UserLeachRate[kg/yr/m2]
2.5e-6
**
constant
RD_Invert_Cm
6.00e3
**
constant
RD_Invert_Fu
3.00e3

```

```
MatrixKD_UF2_Nl[m3/kg]      constant      FractureRD_BPw_I       1.0          **
5.0e-6, 0.50               **                                constant      FractureRD_UCF_Th       1.0          **
constant                    constant      FractureRD_UF2_I       1.0          **
MatrixKD_TSw_C[m3/kg]      0.0           **                                constant      FractureRD_BPw_Th       1.0          **
0.0                         **                                constant      FractureRD_UCF_Th       1.0          **
constant                    constant      FractureRD_TSw_Tc       1.0          **
MatrixKD_ChmvC[m3/kg]      0.0           **                                constant      FractureRD_UCF_Th       1.0          **
0.0                         **                                constant      FractureRD_TSw_Ra       1.0          **
constant                    constant      FractureRD_ChmvTc       1.0          **
MatrixKD_PPw_C[m3/kg]      0.0             **                                constant      FractureRD_ChmvRa       1.0          **
0.0                         **                                constant      FractureRD_ChmvRa       1.0          **
constant                    constant      FractureRD_PPw_Tc       1.0          **
MatrixKD_BPw_C[m3/kg]      0.0             **                                constant      FractureRD_ChmvRa       1.0          **
0.0                         **                                constant      FractureRD_UCF_Pb       1.0          **
constant                    constant      FractureRD_UCF_Tc       1.0          **
MatrixKD_UF2_C[m3/kg]      0.0             **                                constant      FractureRD_PPw_Ra       1.0          **
0.0                         **                                constant      FractureRD_UCF_Ra       1.0          **
loguniform                  constant      FractureRD_UF2_Tc       1.0          **
MatrixKD_TSw_Se[m3/kg]     3.0e-7, 0.030 **                                constant      FractureRD_BPw_Ra       1.0          **
loguniform                  constant      FractureRD_TSw_Cl       1.0          **
MatrixKD_ChmvSe[m3/kg]     2.0e-7, 0.020 **                                constant      FractureRD_UCF_Ra       1.0          **
loguniform                  constant      FractureRD_ChmvCl       1.0          **
MatrixKD_ChmvSe[m3/kg]     1.5e-7, 0.015 **                                constant      FractureRD_ChmvPb       1.0          **
loguniform                  constant      FractureRD_ChmvCl       1.0          **
MatrixKD_PPw_Se[m3/kg]     3.0e-7, 0.030 **                                constant      FractureRD_ChmvPb       1.0          **
0.0                         **                                constant      FractureRD_UCF_Pb       1.0          **
constant                    constant      FractureRD_UCF_Cl       1.0          **
MatrixKD_BPw_Se[m3/kg]     3.0e-7, 0.030 **                                constant      FractureRD_PPw_Pb       1.0          **
0.0                         **                                constant      FractureRD_UCF_Pb       1.0          **
loguniform                  constant      FractureRD_BPw_Cl       1.0          **
MatrixKD_UF2_Se[m3/kg]     3.0e-7, 0.030 **                                constant      FractureRD_UCF_Pb       1.0          **
0.0                         **                                constant      FractureRD_BPw_Pb       1.0          **
constant                    constant      FractureRD_UF2_Cl       1.0          **
MatrixKD_TSw_Mb[m3/kg]     0.10, 2.0    **                                constant      FractureRD_BPw_Pb       1.0          **
0.10, 2.0                  **                                constant      FractureRD_UCF_Pb       1.0          **
constant                    constant      FractureRD_TSw_Cm       1.0          **
MatrixKD_ChmvMb[m3/kg]     0.10, 1.0    **                                constant      FractureRD_UF2_Pb       1.0          **
0.10, 1.0                  **                                constant      FractureRD_TSw-Cs       1.0          **
constant                    constant      FractureRD_ChmvCm       1.0          **
MatrixKD_ChmvMb[m3/kg]     0.10, 1.0    **                                constant      FractureRD_ChmvCs       1.0          **
0.10, 1.0                  **                                constant      FractureRD_ChmvCs       1.0          **
constant                    constant      FractureRD_PPw_Cm       1.0          **
MatrixKD_UCF_Mb[m3/kg]     0.10, 2.0    **                                constant      FractureRD_ChmvCs       1.0          **
0.10, 2.0                  **                                constant      FractureRD_UCF-Cs       1.0          **
constant                    constant      FractureRD_UCF_Cm       1.0          **
MatrixKD_BPw_Mb[m3/kg]     0.10, 2.0    **                                constant      FractureRD_PPw-Cs       1.0          **
0.10, 2.0                  **                                constant      FractureRD_UCF-Cs       1.0          **
constant                    constant      FractureRD_BPw_Cm       1.0          **
MatrixKD_UF2_Mb[m3/kg]     0.10, 2.0    **                                constant      FractureRD_UCF-Cs       1.0          **
0.10, 2.0                  **                                constant      FractureRD_BPw-Cs       1.0          **
constant                    constant      FractureRD_UF2_Cm       1.0          **
FractureRD_TSw_Aa         1.0            **                                constant      FractureRD_UCF-Cs       1.0          **
constant                    constant      FractureRD_TSw_U       1.0          **
FractureRD_ChmvAa         1.0            **                                constant      FractureRD_UCF-Cs       1.0          **
0.0                         **                                constant      FractureRD_TSw_Nl       1.0          **
constant                    constant      FractureRD_ChmvU       1.0          **
FractureRD_ChmvAa         1.0            **                                constant      FractureRD_ChmvNl       1.0          **
0.0                         **                                constant      FractureRD_ChmvNl       1.0          **
constant                    constant      FractureRD_PPw_U       1.0          **
FractureRD_UCF_Aa         1.0            **                                constant      FractureRD_ChmvNl       1.0          **
0.0                         **                                constant      FractureRD_UCF_Nl       1.0          **
constant                    constant      FractureRD_UCF_U       1.0          **
MatrixKD_BPw_Aa         1.0            **                                constant      FractureRD_UCF_Nl       1.0          **
0.0                         **                                constant      FractureRD_BPw_Nl       1.0          **
constant                    constant      FractureRD_BPw_U       1.0          **
FractureRD_UF2_Aa         1.0            **                                constant      FractureRD_UCF_Nl       1.0          **
0.0                         **                                constant      FractureRD_BPw_Nl       1.0          **
constant                    constant      FractureRD_UF2_U       1.0          **
FractureRD_TSw_Np         1.0            **                                constant      FractureRD_UCF_Nl       1.0          **
0.0                         **                                constant      FractureRD_BPw_Nl       1.0          **
constant                    constant      FractureRD_TSw_Pu       1.0          **
FractureRD_ChmvNp         1.0            **                                constant      FractureRD_UCF_Nl       1.0          **
0.0                         **                                constant      FractureRD_UCF_Nl       1.0          **
constant                    constant      FractureRD_ChmvPu       1.0          **
FractureRD_ChmvNp         1.0            **                                constant      FractureRD_TSw_C       1.0          **
0.0                         **                                constant      FractureRD_ChmvC       1.0          **
constant                    constant      FractureRD_ChmvPu       1.0          **
FractureRD_PPw_Np         1.0            **                                constant      FractureRD_ChmvC       1.0          **
0.0                         **                                constant      FractureRD_ChmvC       1.0          **
constant                    constant      FractureRD_UCF_Pu       1.0          **
FractureRD_UCF_Np         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_UCF_Pu       1.0          **
MatrixKD_BPw_Np         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_UCF_Pu       1.0          **
FractureRD_UF2_Np         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_BPw_Pu       1.0          **
FractureRD_TSw_I         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_UF2_Pu       1.0          **
FractureRD_ChmvI         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_TSw_Th       1.0          **
FractureRD_ChmvI         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_ChmvTh       1.0          **
FractureRD_ChmvI         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_ChmvTh       1.0          **
FractureRD_PPw_I         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **
constant                    constant      FractureRD_ChmvTh       1.0          **
FractureRD_UCF_I         1.0            **                                constant      FractureRD_UCF_C       1.0          **
0.0                         **                                constant      FractureRD_UCF_C       1.0          **

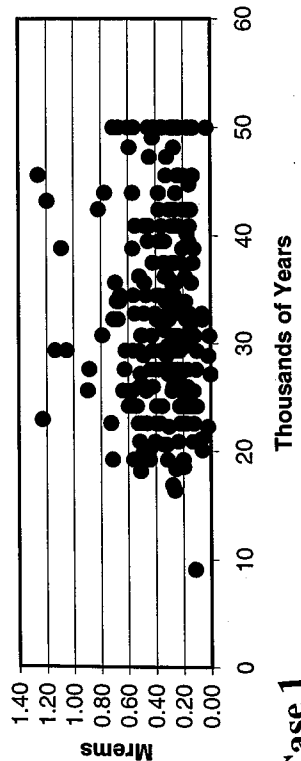
```

[illegible]

Michael J. Miller
06/15/00

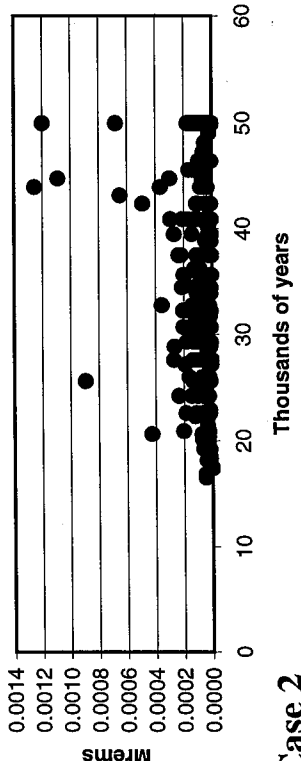
```
XLocationInRegionOfInterest[m] 4000.0
**
constant KdOfPlutoniumInVolcanicAsh[cm3/g] 550.0
**
YLocationInRegionOfInterest[m] 4078000.0
**
uniform KdOfAmericiumInVolcanicAsh[cm3/g] 1900.0
**
HNTodetermineIfExtrusiveOrIntrusiveVolcanicEvent 0.0, 1.0
**
constant KdOfThoriumInVolcanicAsh[cm3/g] 3200.0
**
FractionOfTimeVolcanicEventIsExtrusive 0.999
**
uniform KdOfRadiumInVolcanicAsh[cm3/g] 500.0
**
AngleOfVolcanicDikeMeasuredFromNorthClockwise[degrees] 0.0, 15.0
**
uniform KdOfLeadInVolcanicAsh[cm3/g] 270.0
**
LengthOfVolcanicDike[m] 2000.0, 11000.0
**
uniform KdOfProtactiniumInVolcanicAsh[cm3/g] 550.0
**
WidthOfVolcanicDike[m] 1.0, 10.0
**
uniform KdOfActiniumInVolcanicAsh[cm3/g] 450.0
**
DiameterOfVolcanicCone[m] 24.6, 77.9
**
****>>> ASHPJUMO <<<****
**
constant KdOfNeptuniumInVolcanicAsh[cm3/g] 5.0
**
constant KdOfSamariumInVolcanicAsh[cm3/g] 245.0
**
constant KdOfCesiumInVolcanicAsh[cm3/g] 280.0
**
constant KdOfIodineInVolcanicAsh[cm3/g] 1.0
**
constant KdOfStrontiumInVolcanicAsh[cm3/g] 130.0
**
constant KdOfSilverInVolcanicAsh[cm3/g] 55.0
**
correlateinputs KdOfPalladiumInVolcanicAsh[cm3/g] 55.0
**
constant KdOfTechnetiumInVolcanicAsh[cm3/g] 0.1
**
constant KdOfMolybdenumInVolcanicAsh[cm3/g] 1.0
**
constant KdOfNiobiumInVolcanicAsh[cm3/g] 160.0
**
constant KdOfZirconiumInVolcanicAsh[cm3/g] 500.0
**
constant KdOfSeleniumInVolcanicAsh[cm3/g] 150.0
**
constant KdOfNickelInVolcanicAsh[cm3/g] 400.0
**
constant KdOfChlorineInVolcanicAsh[cm3/g] 0.0
**
constant KdOfCarbonInVolcanicAsh[cm3/g] 5.0
**
constant SolubilityOfUraniumInVolcanicAsh[mol/L] 4.5e-5
**
constant SolubilityOfCuriumInVolcanicAsh[mol/L] 1.0e-6
**
constant SolubilityOfPlutoniumInVolcanicAsh[mol/L] 5.0e-6
**
constant SolubilityOfAmericiumInVolcanicAsh[mol/L] 1.0e-6
**
constant SolubilityOfThoriumInVolcanicAsh[mol/L] 3.2e-9
**
constant SolubilityOfRadiumInVolcanicAsh[mol/L] 1.0e-7
**
constant SolubilityOfLeadInVolcanicAsh[mol/L] 3.2e-7
**
constant SolubilityOfProtactiniumInVolcanicAsh[mol/L] 3.2e-8
**
constant SolubilityOfActiniumInVolcanicAsh[mol/L] 1.0e-6
**
constant SolubilityOfNeptuniumInVolcanicAsh[mol/L] 1.0e-4
**
constant SolubilityOfSamariumInVolcanicAsh[mol/L] 5.0e-6
**
constant SolubilityOfCesiumInVolcanicAsh[mol/L] 1.0
**
constant SolubilityOfIodineInVolcanicAsh[mol/L] 1.0
**
constant SolubilityOfTinInVolcanicAsh[mol/L] 5.0e-8
**
constant SolubilityOfSilverInVolcanicAsh[mol/L] 1.0
**
constant SolubilityOfPalladiumInVolcanicAsh[mol/L] 9.5e-4
**
constant KdOfUraniumInVolcanicAsh[cm3/g] 35.0
**
constant SolubilityOfTechnetiumInVolcanicAsh[mol/L] 1.0
**
constant KdOfCuriumInVolcanicAsh[cm3/g]
```

Peak Dose in Mrems of Technetium in 50,000 Years - Base Case



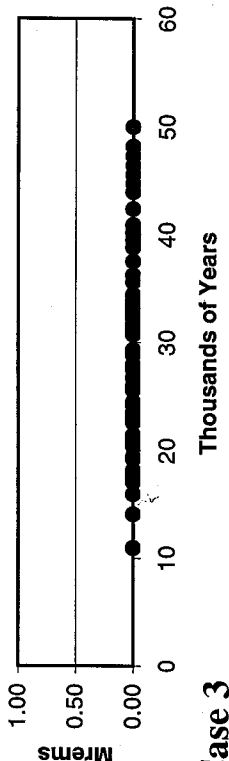
Case 1

Base Case in Mrems of Technetium in 50,000 Years - Base Case with SolubilityTc = 3X10-7



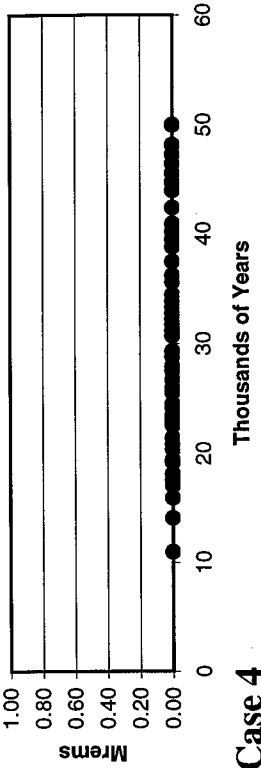
Case 2

Peak Dose in Mrems of Technetium in 50,000 Years - Base Case with Enhanced TcRD (ImmobiledRD_STFF_Tc = 2.4e5 & AlluviumMatrixRD_SAV_Tc = 1.6e4)



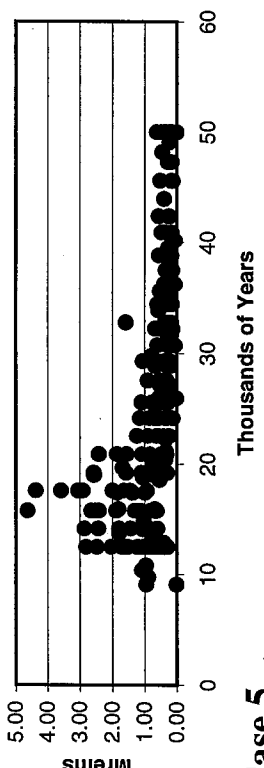
Case 3

Peak Dose in Mrems of Technetium in 50,000 Years - Base Case with Enhanced SolubilityTc and TcRD



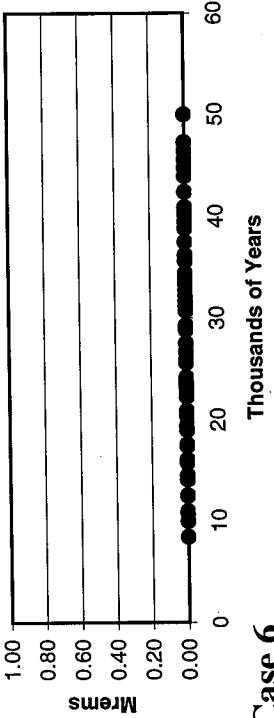
Case 4

Peak Dose in Mrems of Technetium in 50,000 Years - Base Case with Enhanced Canister Failure

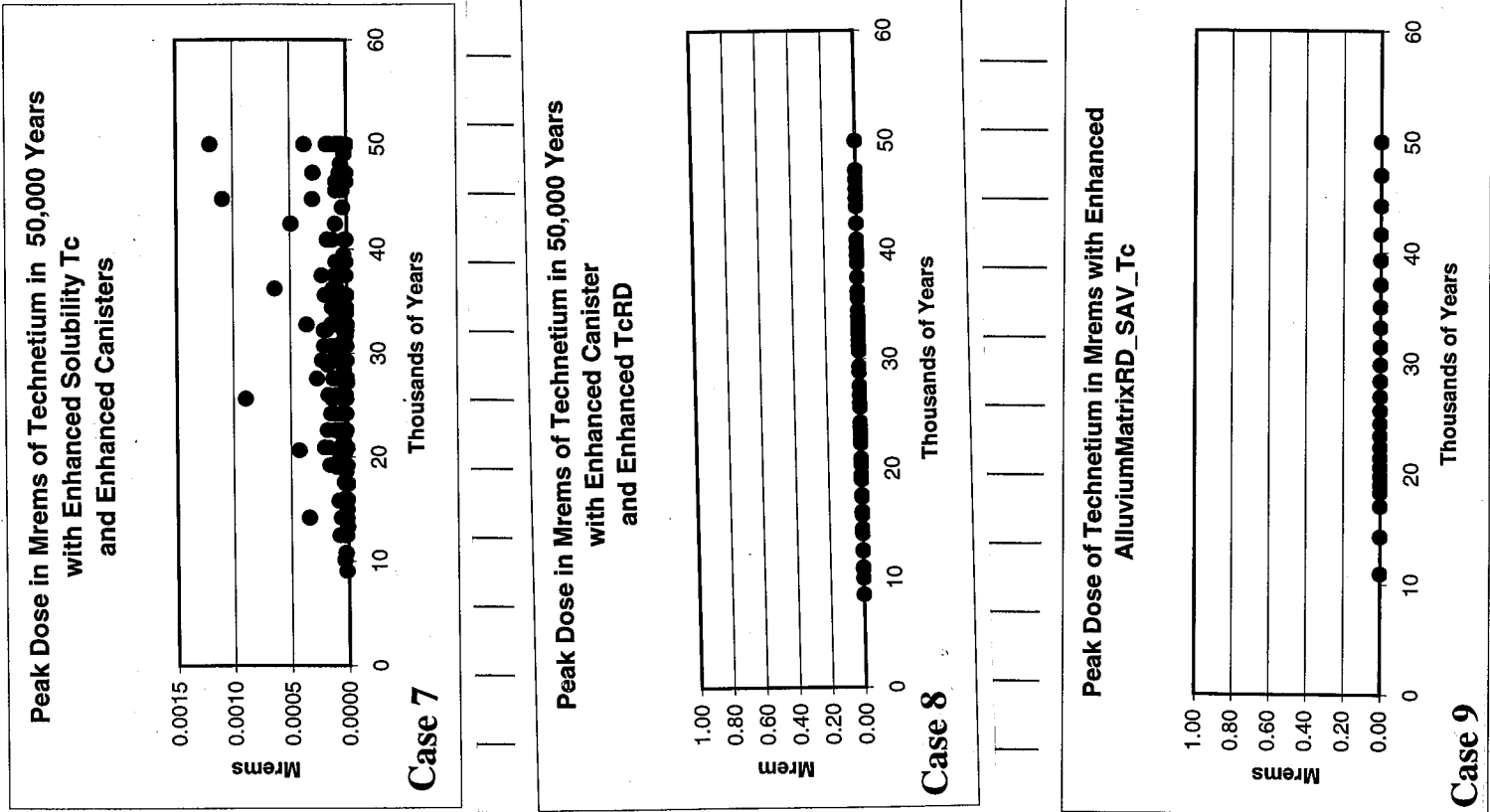
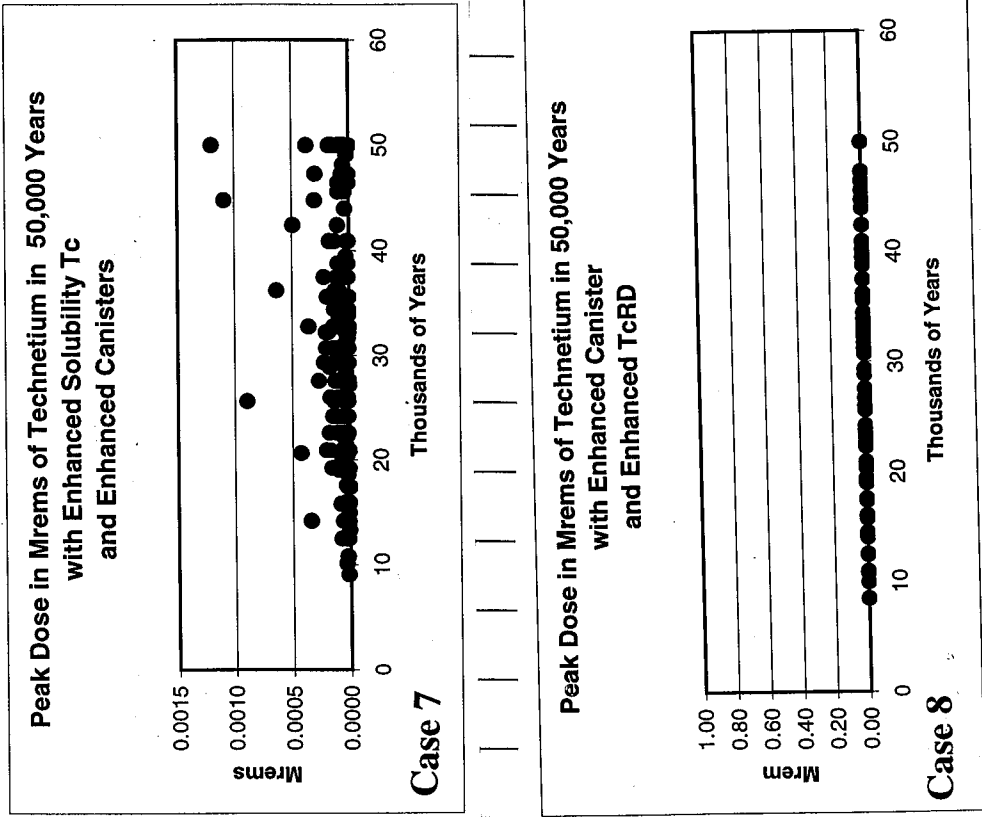
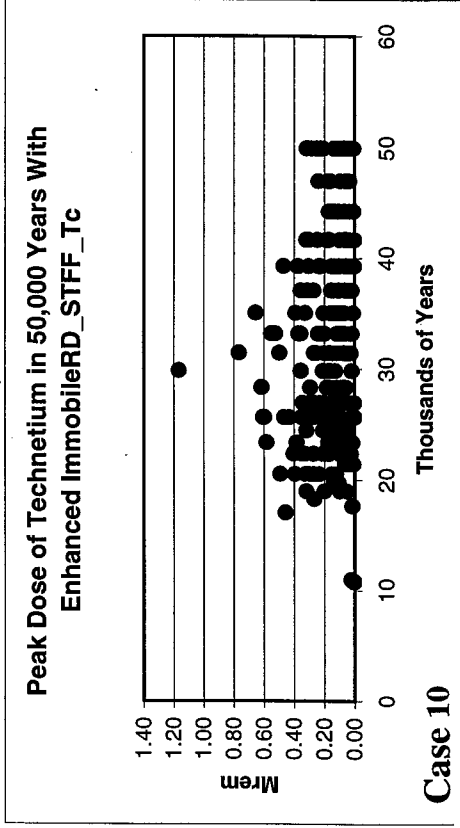
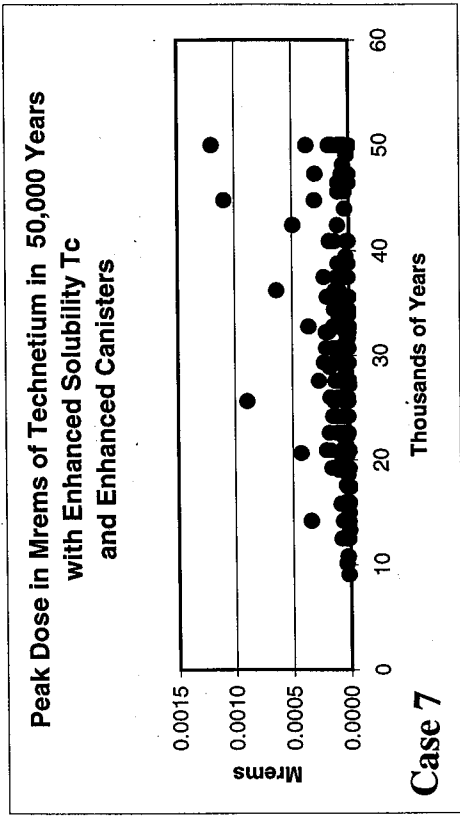


Case 5

Peak Dose in Mrems of Technetium in 50,000 Years - Base Case with Enhanced SolubilityTc, RD, and Canister Failure



Case 6



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Handwritten notes and signatures on the right side of page 65, including a signature and the date 4/3/01.

I have reviewed this scientific notebook and find it in agreement with QAP-001.
There is sufficient information regarding methods used for conducting tests,
acquiring and analyzing data so that another qualified individual could repeat
the activity.

E. C. Peew
4/3/2001

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