LSNReviews

From: David Esh [DWE@nrc.gov]
Sent: Thursday, October 26, 2000 1:40 PM
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Subject: TPA 4.0
Attachments: tpa.inp.isi.005.fix; tpa.inp.isi.005

Sitakanta,

The weird problem that I observed and referred to in my phone message was:

Problem 1 Spent nuclear fuel particle radius 0.02, 0.02001 Problem 2 Spent nuclear fuel particle radius 0.0007, 0.0007001 and otherwise everything else was the same

Out of the first 100 vectors, 18 give non-zero doses. Of these 16 are smaller in problem 2 but two are larger. It is the two that are larger that concern me. Why would this be when the problems are identical except for one parameter value?

Attached are the files.

Dave

```
title
 Input file tpa.inp as supplied with TPA Version 4.0 Code.
 Base case, ACM - ISI analysis files 06/27/00.
**
**          ***>>>  GLOBAL PARAMETERS   <<<***
**
**
**         ***>>>  Importance Analysis Flags  <<<***
**
iflag
ImportanceAnalysisFlag(yes=1,no=0)
0
**
iflag
InnerContainerPresenceFlag(yes=1,no=0)
1
**
iflag
OuterContainerPresenceFlag(yes=1,no=0)
1
**
iflag
CladdingPresenceFlag(yes=1,no=0)
1
**
iflag
SoilPresenceFlag(yes=1,no=0)
1
**
iflag
UpperUnsaturatedLayerPresenceFlag(yes=1,no=0)
1
**
iflag
TSwPresenceFlag(yes=1,no=0)
1
**
iflag
CHnvPresenceFlag(yes=1,no=0)
1
**
iflag
CHnzPresenceFlag(yes=1,no=0)
1
**
iflag
PPwPresenceFlag(yes=1,no=0)
1
**
iflag
UCFPresenceFlag(yes=1,no=0)
1
**
iflag
BFwPresenceFlag(yes=1,no=0)
1
**
iflag
STFFPresenceFlag(yes=1,no=0)
1
**
iflag
SAVPresenceFlag(yes=1,no=0)
```

```
1
**
iflag
PumpingWellPresenceFlag(yes=1,no=0)
1
**
**          ***>>>  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
**1
****ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
**        547500.0       4076000.0
**        547500.0       4079467.56
**        548500.0       4079467.56
**        548500.0       4076000.0
**        547500.0       4076000.0
**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
**548609.7, 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
**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
**
** Number and Location Of SubAreas[m] Based On EDA-II Design.
subarea
8
edaii 1-cw
547514.88,4079310.61
548069.2,4079136.5
547847.3,4077816.2
547370.95,4077922.04
547514.88,4079310.61
edaii 2-cw
548069.2,4079136.5
548569.32,4078981.
548504.06,4077664.24
547847.3,4077816.2
548069.2,4079136.5
edaii 3-cw
547370.95,4077922.04
547847.3,4077816.2
548322.7,4077192.2
547474.7,4077281.6
547370.95,4077922.04
edaii 4-cw
547847.3,4077816.2
548504.06,4077664.24
548479.71,4077173.06
548322.7,4077192.2
547847.3,4077816.2
edaii 5-cw
547474.7,4077282.6
547887.3,4077238.1
547897.79,4076045.46
547655.97,4076123.07
547474.7,4077282.6
edaii 6-c
547887.3,4077238.1
548322.7,4077192.2
548155.7,4075962.63
547897.79,4076045.46
547887.3,4077238.1
edaii 7-cw
548322.7,4077192.2
548479.71,4077173.06
548455,4076674.51
548155.7,4075962.63
548322.7,4077192.2
edaii 8-cw
547645.27,4079656.06
548588.98,4079377.55
```

```
548569.32,4078981
547514.88,4079310.61
547645.27,4079656.06
**edaii 9-cw
**547732.82,4081208.07
**548251.91,4081034.69
**548116.89,4079516.81
**547645.27,4079656.06
**547732.82,4081208.07
**edaii 10-cw
**548251.91,4081034.69
**548664.55,4080902.19
**548588.98,4079377.55
**548116.89,4079516.81
**548251.91,4081034.69
**
iconstant
StartAtSubarea
1
**
iconstant
StopAtSubarea
8
**
**
**          ***>>> 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,
**  U235, Pa231, Ac227, Pu241, U233, Th229, Cm244, U236, U232, Sm151,
**  Cs137, Sn126, Sn121m, Ag108m, Pd107, Mo93, Zr93, Sr90, or Ni63)
**  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
Pb210
**   chain 6
1
Cs135
**   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
Cl36
**
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
**
iconstant
LatinHypercubeSampling(yes=1,no=0)
1
**
iconstant
NsetLatinHypercubeSampling
1
**
iconstant
NumberOfRealizations
250
**
iconstant
StartAtRealization
1
**
iconstant
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]
1.0e4
**
** Sum of pre- and post-compliance time steps must not exceed 201
**
iconstant
NumberOfTimeStepsInCompliancePeriod
401
**
constant
RatioOfLastToFirstTimeStepInCompliancePeriod
1.0
**
**  Next two parameters ignored if MaximumTime[yr] = DurationOfCompliancePeriod[yr]
**
iconstant
NumberOfTimeStepsAfterCompliancePeriod
0
**
constant
RatioOfLastToFirstTimeStepAfterCompliancePeriod
1.0
**
**
**    ***>>>  Output Print Options  <<<***
**
iconstant
OutputMode(0=None,1=All,2=UserDefined)
0
**
iconstant
UserDefinedLowerRealizationAppended
1
**
iconstant
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 = 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 = uzft.ech and uzft.rlt only
**   9 = szft.ech and szft.rlt only
**   10 = dcagw.ech and dcagw.rlt only
```

```
**   11 = ashplumo.ech and ashplumo.rlt only
**   12 = ashrmovo.ech and ashrmovo.rlt only
**   13 = dcags.ech and dcags.rlt only
**   14 = ashplume.cum only
**   15 = failt.cum only
**   16 = nefiiuz.cum only
**   17 = releaset.cum only
**   18 = ggenii.cum only
**   19 = genv.cum only
**   20 = dcf.cum only (gw_cb_ad.dat and gw_pb_ad.dat)
**
iconstant
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
**
iconstant
ClimatePerturbationSet
1
**
**
**          ***>>> NFENV  <<<***
**
iflag
TabularTemperatureRHFlag(yes=1,no=0)
0
**
iconstant
nsetUsedToPickTempRHDataSet
1
**
constant
WPLength[m]
```

```
5.275
**
constant
WPDiameter[m]
1.579
**
**csm1/24/2000
constant
EmplacementDriftDiameter[m]
5.5
**
**csm1/24/2000
constant
CircumferentialFractionNotCoveredByFloor[]
0.75
**csm1/24/2000
**
constant
EmplacementBackfillThickness[m]
0.6
**
constant
DripShieldThickness[m]
0.02
**
**csm1/26/2000
constant
DripShieldEqvIntDia[m]
2.75
**csm1/26/2000
**
**  6/2/98 tpa3.2  name change for  UseReflux2
**
iconstant
SelectRefluxModel(1,2,3)
3
**
constant
LengthOfRefluxZone[m]
20
**
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
**
** 1-22-00 EDA II design ****
**
constant
EmplacementDriftSpacing[m]
81.
**
constant
WPSpacingAlongEmplacementDrift[m]
6.1392
**
constant
TotalWasteEmplacedInRepository[MTU]
68030.0
** The above value fills subarea 8 completely at 81x6.1392 spacing & 9.76 MTU/WP
**
**  6/4/98 tpa3.2: Next 4 new parameters specific to reflux3 model
**
** WPUnitCellWidth is replaced by EmplacementDriftSpacing
**constant
**WPUnitCellWidth[m]
**81.
**
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
EmissivityOfDripShield[-]
0.63
**
constant
EmissivityOfWastePackage[-]
0.87
**
constant
ThermalConductivityOfFloor[W/(m-C)]
0.6
**
**csm1/26/2000
constant
Cond_EqvForNaturalConvection[W/(m-C)]
0.90
**
**csm2/11/2000
constant
FactorForVentilationHeatlosses[]
0.3
**csm2/11/2000
**csm1/26/2000
**
constant
TimeOfBackfillEmplaced[yr]
50.0
**
**csm1/26/2000
**
iconstant
NumberOfWeightsForGaussLegendreIntegration[]
20
**
```

```
constant
ThermalConductivityOfDripShield[W/(m-C)]
20.77
**csm1/26/2000
**
constant
ThermalConductivityOfBackfill[W/(m-C)]
0.27
**
constant
ThermalConductivityOfInnerOverpack[W/m-C]
15.0
**
constant
ThermalConductivityOfOuterOverpack[W/m-C]
11.1
**
constant
EffectiveThermalConductivityOfBasket&SFinWP[W/(m-C)]
1.0
**
constant
ElevationOfRepositoryHorizon[m]
1072.0
**
constant
ElevationOfGroundSurface[m]
1400.0
**
**
**          ***>>>  EBSFAIL   <<<***
**
constant
OuterWPThickness[m]
0.02
**
constant
InnerWPThickness[m]
0.05
**
constant
MetalGrainRadius[micrometer]
13.75
**
constant
GrainBoundaryThickness[micrometer]
7.0e-4
**
constant
DryOxidationConstant
9999
**
constant
CriticalRelativeHumidityHumidAirCorrosion
0.55
**
normal
CriticalRelativeHumidityAqueousCorrosion
0.6, 0.65
**
uniform
ThicknessOfWaterFilm[m]
0.001, 0.003
```

```
**
constant
BoilingPointOfWater[C]
97.0
**
constant
OuterOverpackErpIntercept
2006.0
**
constant
TempCoefOfOuterPackErpIntercept
-15.2
**
constant
OuterOverpackErpSlope
-590.7
**
constant
TempCoefOfOuterPackErpSlope
4.3
**
constant
InnerOverpackErpIntercept
-10000.0
**48.5, 148.5  >>> 625 <<<
**
constant
TempCoefOfInnerPackErpIntercept
0.0
**
constant
InnerOverpackErpSlope
0.0
**-160.8   >>> 625 <<<
**
constant
TempCoefOfInnerPackErpSlope
0.0
**
constant
OuterWPBetaKineticsParameterforOxygen
0.75
**
constant
OuterWPBetaKineticsParameterforWater
0.5
**
constant
InnerWPBetaKineticsParameterforOxygen
0.75
**
constant
InnerWPBetaKineticsParameterforWater
0.5
**
constant
OuterWPRateConstantforOxygenReduction[coulomb-m/mole/yr]
3.0e10
**
constant
OuterWPRateConstantforWaterReduction[coulomb-m/m^2/yr]
3.2
**
```

```
constant
OuterWPActivationEnergyforOxygenReduction[J/mole]
40000.0
**
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
**
normal
AA_1_1[C/m2/yr]
1.6e3, 1.7e4
**
constant
AA_2_1[C/m2/yr]
1e10
**
constant
MeasuredGalvanicCouplePotential
0.0
**
constant
CoefForLocCorrOfOuterOverpack
2.5e-4
**
constant
ExponetForLocCorrOfOuterOverpack
1.0
**OPR
constant
CoefForLocCorrOfInnerOverpack
1.0
**
constant
ExponentForLocCorrOfInnerOverpack
1.0
**ENDOPR
constant
HumidAirCorrosionRate[m/yr]
1.0e-15
**
**OPR deleted parameter 1/10/2000
**constant
**LocalizedCorrRateOfInnerOverpack[m/yr]
**2.5e-4
**ENDOPR
**
constant
```

```
FractionalCouplingStrength
0.0
**
constant
FactorForDefiningChoiceOfCritPotential
0.0
**
constant
CritChlorideConcForFirstLayer[mol/L]
0.5
**
constant
CritChlorideConcForSecondLayer[mol/L]
1.0e-10
**3.0e-2  >>> 625 <<<
**
uniform
ChlorideMultFactor
1.0, 30.0
**
**OPR
constant

ChlorideMultFactorIntactDripShield
1.0
**
lognormal
DripShieldFailureTime[yr]
3700.0, 27300.0
**ENDOPR
constant
ReferencepH
9.0
**
constant
WPsurfaceScaleThickness[m]
0.0
**
constant
TortuosityOfScaleonWP
1.0
**
constant
PorosityOfScaleonWP
1.0
**
constant
YieldStrength[MPa]
370.0
**
constant
SafetyFactor
1.4
**
constant
FractureToughness[MPa-m**0.5]
1.0e7
**
**OPR
constant
DensityOuterOverpack[kg/m^3]
8690.0
**
```

```
constant
DensityInnerOverpack[kg/m^3]
7700.0
**
constant
EquivalentWeightOuterOverpack[kg/mol]
0.02597
**
constant
EquivalentWeightInnerOverpack[kg/mol]
0.02494
**
constant
DeltaPotentialDueToRadiolysis[V]
0.0
**
constant
DecayingConstantRadiolysis[1/yr]
7.0e-5
**ENDOPR
**
**          ***>>> SEISMO  <<<***
**
** mam 01/14/00 Seed only for random numbers used by samplehazardcurve().
**               It should be constant as it is used only once.
constant
SeedForRandomNumberForSEISMO
505187067.0
**
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
WPModulusOfElasticityforSEISMO[Pa]
1.76D11
**
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
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]
6.2D08
**
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[]
0.05
**
**
**          ***>>>  EBSREL  <<<***
**
** rwr 1/12/00 modified to allow for failure type-specific
**             water contact modes (added a flag for each of
**             the 8 failure types)
**  ** rwr 7/8/98 modify flow model flag
** iflag

** FlowModelFlag(0=BathTub,1=FlowThrough)
** 0
iflag
WaterContactMode_Initial(0=BathTub,1=FlowThrough)
1
**
iflag
WaterContactMode_Faulting(0=BathTub,1=FlowThrough)
1
**
iflag
WaterContactMode_Volcanic(0=BathTub,1=FlowThrough)
1
**
iflag
WaterContactMode_SeismicInterval1(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_SeismicInterval2(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_SeismicInterval3(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_SeismicInterval4(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_Corrosion(0=BathTub,1=FlowThrough)
1
**
** rwr 1/17/00 modified to allow for temporal variability
**             in FowFactor and FmultFactor as specified
**             in the new data file, wpflow.dat, and added
**             the waste package flow multiplication factor
** lognormal
** FowFactor
** 0.01, 3.0
**
** lognormal
** FmultFactor
** 0.01, 0.2
**
lognormal
```

```
WastePackageFlowMultiplicationFactor
3.15E-2, 1.05E3
**
uniform
SubAreaWetFraction
0.0, 1.0
**
**  5/21/98 tpa3.2: New  parameter; nonzero initial failure times
**
uniform
InitialFailureTime[yr]
0.0, 0.001
**
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
**
iconstant
NumberOfSEISMOWPFailureIntervals
4
**
constant
BeginningOfSEISMOWPFailureInterval1[yr]
0.0
**
constant
BeginningOfSEISMOWPFailureInterval2[yr]
2000.0
**
constant
BeginningOfSEISMOWPFailureInterval3[yr]
5000.0
**
constant
BeginningOfSEISMOWPFailureInterval4[yr]
10000.0
**
constant
WPInternalVolume[m3]
4.83
**
constant
FlowOnsetTemperature[C]
999.
**
constant
SFDensity[kg/m3]
10600.
**
iconstant
SurfaceAreaModel
1
**
iconstant
IModel
2
**
constant
OxygenPartialPressure[atm]
0.21
**
```

```
constant
NegativeLog10CarbonateConcentration[mol/L]
3.71
**
constant
UserLeachRate[kg/yr/m2]
2.5e-4
**
**csm1/20/2000
loguniform
Preexponential_SFDissolutionModel2
1.2e7, 1.201e7
**csm1/20/2000
**
constant
RD_Invert_Cm
6.00e3
**
constant
RD_Invert_Pu
3.00e3
**
constant
RD_Invert_U
6.01e2
**
constant
RD_Invert_Am
3.00e3
**
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
GapFractionForU234
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
GapFractionForNI59
0.0
**
constant
GapFractionForCL36
0.12
**
constant
GapFractionForC14
0.1
**
constant
GapFractionForSE79
0.06
**
constant
GapFractionForNB94
0.0
**
normal
InitialRadiusOfSFParticle[m]
7.0e-4,  7.001e-4
**
constant
RadiusOfSFGrain[m]
1.25e-4
**
constant
CladdingCorrectionFactor
1.0
**
normal
SubGrainFragmentRadiusAfterTransFrac[m]
2.0e-5,  2.001e-5
**
constant
ThicknessOfCladding[m]
6.1e-4
**
constant
SFC-14InventoryPerKgSF[ci]
7.2e-4
**
constant
CladC-14InventoryPerKgSF[ci]
4.89e-4
**
constant
ZyrOxideAndCrudC-14InvPerKgSF[ci]
```

```
2.48e-5
**
constant
GapAndGrainBoundaryInventoryPerKgSF[ci]
6.2e-6
**
uniform
SolubilityAm[kg/m3]
2.4e-3,  2.401e-3
**
uniform
SolubilityNp[kg/m3]
2.4e0, 2.401e0
**
constant
Solubility_I[kg/m3]
1.29e3
**
constant
SolubilityTc[kg/m3]
9.93e2
**
constant
SolubilityCl[kg/m3]
3.6e2
**
constant
Solubility_C[kg/m3]
1.4e2
**
constant
Solubility_U[kg/m3]
7.6e-2
**
constant
SolubilityCm[kg/m3]
2.4e-3
**
uniform
SolubilityPu[kg/m3]
2.4e-3, 2.401e-3
**
constant
SolubilityTh[kg/m3]
2.3e-3
**
constant
SolubilityRa[kg/m3]
2.3e-4
**
constant
SolubilityPb[kg/m3]
6.6e-4
**
constant
SolubilityCs[kg/m3]
1.35e3
**
constant
SolubilityNi[kg/m3]
1.1e-0
**
constant
```

```
SolubilitySe[kg/m3]
7.9e2
**
constant
SolubilityNb[kg/m3]
9.3e-6
**
**  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_Initial_8
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_SEISMO1_8
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_1
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_2
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_3
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_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_SEISMO2_8
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_SEISMO3_8
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_SEISMO4_8
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
**
uniform
SFWettedFraction_Corrosion_8
0.0, 1.0
**
**  7/4/1998 tpa3.2 four new parameters for invert
**
iflag
InvertBypass(0=ebsfilt,1=bypass-ebsfilt)
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_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_BFw_Am[m3/kg]
4.1e+00  3.7e+06
**
lognormal
MatrixKD_UFZ_Am[m3/kg]
3.9e+00  3.5e+06
**
lognormal
MatrixKD_TSw_Np[m3/kg]
1.6e-06  2.2e-01
**
lognormal
MatrixKD_CHnvNp[m3/kg]
4.8e-06  6.6e-01
**
lognormal
MatrixKD_CHnzNp[m3/kg]
4.4e-06  6.0e-01
**
lognormal
MatrixKD_PPw_Np[m3/kg]
3.6e-06  5.0e-01
**
lognormal
MatrixKD_UCF_Np[m3/kg]
3.8e-06  5.2e-01
**
lognormal
MatrixKD_BFw_Np[m3/kg]
1.5e-06  2.1e-01
**
lognormal
MatrixKD_UFZ_Np[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_BFw_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_BFw_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_BFw_Cl[m3/kg]
0.0
**
constant
MatrixKD_UFZ_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_BFw_Cm[m3/kg]
0.0
**
constant
MatrixKD_UFZ_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_BFw_U[m3/kg]
4.1e-10  1.0e+00
**
lognormal
MatrixKD_UFZ_U[m3/kg]
```

```
3.9e-10  1.0e+00
**
lognormal
MatrixKD_TSw_Pu[m3/kg]
2.3e-02  2.2e+01
**
lognormal
MatrixKD_CHnvPu[m3/kg]
7.1e-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_BFw_Pu[m3/kg]
2.3e-02  2.1e+01
**
lognormal
MatrixKD_UFZ_Pu[m3/kg]
2.2e-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  5.9e+03
**
lognormal
MatrixKD_BFw_Th[m3/kg]
4.7e-05  2.4e+03
**
lognormal
MatrixKD_UFZ_Th[m3/kg]
4.5e-05  2.3e+03
**
uniform
MatrixKD_TSw_Ra[m3/kg]
0.10, 0.50
**
uniform
```

```
MatrixKD_CHnvRa[m3/kg]
0.050, 0.10
**
uniform
MatrixKD_CHnzRa[m3/kg]
1.0, 5.0
**
uniform
MatrixKD_PPw_Ra[m3/kg]
0.1, 0.5
**
uniform
MatrixKD_UCF_Ra[m3/kg]
0.1, 0.5
**
uniform
MatrixKD_BFw_Ra[m3/kg]
0.1, 0.5
**
uniform
MatrixKD_UFZ_Ra[m3/kg]
0.1, 0.5
**
uniform
MatrixKD_TSw_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_CHnvPb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_CHnzPb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_PPw_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_UCF_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_BFw_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_UFZ_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_TSw_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_CHnvCs[m3/kg]
0.010, 0.10
**
uniform
MatrixKD_CHnzCs[m3/kg]
0.50, 5.0
**
```

```
uniform
MatrixKD_PPw_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_UCF_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_BFw_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_UFZ_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_TSw_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_CHnvNi[m3/kg]
1.0e-6, 0.10
**
uniform
MatrixKD_CHnzNi[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_PPw_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_UCF_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_BFw_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_UFZ_Ni[m3/kg]
5.0e-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_BFw_C[m3/kg]
0.0
**
constant
MatrixKD_UFZ_C[m3/kg]
0.0
**
uniform
MatrixKD_TSw_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_CHnvSe[m3/kg]
2.0e-7, 0.020
**
uniform
MatrixKD_CHnzSe[m3/kg]
1.5e-7, 0.015
**
uniform
MatrixKD_PPw_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_UCF_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_BFw_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_UFZ_Se[m3/kg]
3.0e-7, 0.030
**
constant
MatrixKD_TSw_Nb[m3/kg]
0.0
**
constant
MatrixKD_CHnvNb[m3/kg]
0.0
**
constant
MatrixKD_CHnzNb[m3/kg]
0.0
**
constant
MatrixKD_PPw_Nb[m3/kg]
0.0
**
constant
MatrixKD_UCF_Nb[m3/kg]
0.0
**
constant
MatrixKD_BFw_Nb[m3/kg]
0.0
**
constant
MatrixKD_UFZ_Nb[m3/kg]
```

```
0.0
**
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_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_BFw_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_BFw_Cl
1.0
**
constant
FractureRD_UFZ_Cl
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_BFw_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_BFw_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_BFw_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_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_BFw_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_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
**
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_BFw_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_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_[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_BFw_[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]
8.0e-15, 8.0e-11
**
lognormal
FracturePermeability_CHnz[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_UFZ_[m2]
1.0e-13, 1.0e-11
**
loguniform
FracturePorosity_TSw_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_CHnv
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_CHnz
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_PPw_
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_UCF_
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_BFw_
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_UFZ_
1.0e-3, 1.0e-2
**
constant
FractureBeta_TSw_
2.0
**
** FractureBeta is fitting parameter where lambda=1-(1/beta) and beta>1
constant
FractureBeta_CHnv
2.0
**
constant
FractureBeta_CHnz
```

```
2.0
**
constant
FractureBeta_PPw_
2.0
**
constant
FractureBeta_UCF_
2.0
**
constant
FractureBeta_BFw_
2.0
**
constant
FractureBeta_UFZ_
1.6
**
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
InletArea__8SubArea[m2]
5.4e5
**
constant
TSw_Thickness_1SubArea[m]
100.0
**
constant
CHnvThickness_1SubArea[m]
19.0
**
constant
CHnzThickness_1SubArea[m]
72.0
**
```

```
constant
PPw_Thickness_1SubArea[m]
50.0
**
constant
UCF_Thickness_1SubArea[m]
57.0
**
constant
BFw_Thickness_1SubArea[m]
22.0
**
constant
UFZ_Thickness_1SubArea[m]
0.0
**
constant
TSw_Thickness_2SubArea[m]
161.0
**
constant
CHnvThickness_2SubArea[m]
0.0
**
constant
CHnzThickness_2SubArea[m]
108.0
**
constant
PPw_Thickness_2SubArea[m]
50.0
**
constant
UCF_Thickness_2SubArea[m]
18.0
**
constant
BFw_Thickness_2SubArea[m]
0.0
**
constant
UFZ_Thickness_2SubArea[m]
0.0
**
constant
TSw_Thickness_3SubArea[m]
79.0
**
constant
CHnvThickness_3SubArea[m]
24.0
**
constant
CHnzThickness_3SubArea[m]
55.0
**
constant
PPw_Thickness_3SubArea[m]
52.0
**
constant
UCF_Thickness_3SubArea[m]
68.0
```

```
**
constant
BFw_Thickness_3SubArea[m]
81.0
**
constant
UFZ_Thickness_3SubArea[m]
0.0
**
constant
TSw_Thickness_4SubArea[m]
144.0
**
constant
CHnvThickness_4SubArea[m]
17.0
**
constant
CHnzThickness_4SubArea[m]
88.0
**
constant
PPw_Thickness_4SubArea[m]
56.0
**
constant
UCF_Thickness_4SubArea[m]
61.0
**
constant
BFw_Thickness_4SubArea[m]
0.0
**
constant
UFZ_Thickness_4SubArea[m]
0.0
**
constant
TSw_Thickness_5SubArea[m]
58.0
**
constant
CHnvThickness_5SubArea[m]
31.0
**
constant
CHnzThickness_5SubArea[m]
49.0
**
constant
PPw_Thickness_5SubArea[m]
65.0
**
constant
UCF_Thickness_5SubArea[m]
71.0
**
constant
BFw_Thickness_5SubArea[m]
101.0
**
constant
UFZ_Thickness_5SubArea[m]
```

```
0.0
**
constant
TSw_Thickness_6SubArea[m]
58.0
**
constant
CHnvThickness_6SubArea[m]
37.0
**
constant
CHnzThickness_6SubArea[m]
58.0
**
constant
PPw_Thickness_6SubArea[m]
66.0
**
constant
UCF_Thickness_6SubArea[m]
81.0
**
constant
BFw_Thickness_6SubArea[m]
51.0
**
constant
UFZ_Thickness_6SubArea[m]
0.0
**
constant
TSw_Thickness_7SubArea[m]
138.0
**
constant
CHnvThickness_7SubArea[m]
44.0
**
constant
CHnzThickness_7SubArea[m]
63.0
**
constant
PPw_Thickness_7SubArea[m]
66.0
**
constant
UCF_Thickness_7SubArea[m]
67.0
**
constant
BFw_Thickness_7SubArea[m]
0.0
**
constant
UFZ_Thickness_7SubArea[m]
0.0
**
constant
TSw_Thickness_8SubArea[m]
163.0
**
constant
```

```
CHnvThickness_8SubArea[m]
0.0
**
constant
CHnzThickness_8SubArea[m]
120.0
**
constant
PPw_Thickness_8SubArea[m]
25.0
**
constant
UCF_Thickness_8SubArea[m]
0.0
**
constant
BFw_Thickness_8SubArea[m]
0.0
**
constant
UFZ_Thickness_8SubArea[m]
0.0
**
**
**
**            ***>>>  SZFT  <<<***
**
loguniform
ImmobilePorosityPenetrationFraction_STFF
0.01, 0.1
**
constant
FracturesPerMeter_STFF[1/m]
0.05
**
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, 6.8e10
**
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
**
loguniform
AlluviumMatrixRD_SAV_Tc
1.0, 30.0
**
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
1.9, 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
1.0e-3, 1.0e-2
**
uniform
AlluviumMatrixPorosity_SAV
1.0e-1, 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
1.0
**
constant
ImmobileRD_STFF_Cl
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_Ni
1.8e3
```

```
**
constant
ImmobileRD_STFF_C
1.0
**
constant
ImmobileRD_STFF_Se
55.0
**
constant
ImmobileRD_STFF_Nb
1.8e4
**
constant
ImmobilePorosity_STFF
0.2
**
constant
DiffusionRate_STFF
0.00
**
uniform
DistanceToTuffAlluviumInterface[km]
5.0, 20.0
**
**          ***>>>   DCAGW   <<<***
**
constant
DistanceToReceptorGroup[km][should_be_10_or_20]
20.0
**
uniform
WellPumpingRateAtReceptorGroup10km[gal/day]
1.5e4, 2.64e5
**
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
**
iflag
PlumeCaptureModel
0
**
iflag
DilutionModel
0
**
constant
UserDefinedPlumeCaptureFraction
1.0d0
**
```

```
constant
UserDefinedDilutionVolume[gal/day]
10901787.249406d0
**
uniform
PluvialWellPumpingRateAtReceptorGroup20km[gal/day]
3.2e6, 9.23e6
**
constant
PluvialSwitchTime[yr]
13000.0
**
** --- gentpa  ---
** (icrp72 for 1-5) 1=infant,2=toddler,3=pre-teen,4=teen,5=adult,6=adult(fgr11)
iconstant
ReceptorAgeGroup(1=Nfnt,2Tod,3PTeen,4Teen,5Adlt,6AdltFGR11)
6
**
triangular
InterceptionFraction/Irrigate
0.06, 0.4, 1.0
**
constant
DepthOfSurfaceSoil[cm]
15.0
** See AirborneMassLoadAboveSoil[g/m3]
**constant
**MassLoadingFactor[g/m3]
**0.0001
**
iconstant
YearsOfIrrigationPriorToIntakePeriod[yr]
15
**
triangular
LeafyVegetableIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
OtherVegetableIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**

triangular
FruitIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
GrainIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
uniform
HomeIrrigationRatePB[in/yr]
18.0, 65.0
**
triangular
PoultryFeedIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
HenFeedIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
```

```
uniform
LeafyVegetableIrrigationTimePB[mo/yr]
3.0, 10.0
**
uniform
OtherVegetableIrrigationTimePB[mo/yr]
2.0, 10.0
**
uniform
FruitIrrigationTimePB[mo/yr]
2.0, 6.0
**
uniform
GrainIrrigationTimePB[mo/yr]
6.0, 8.0
**
uniform
HomeIrrigationTimePB[mo/yr]
9.0, 12.0
**
uniform
PoultryFeedIrrigationTimePB[mo/yr]
6.0, 8.0
**
uniform
HenFeedIrrigationTimePB[mo/yr]
6.0, 8.0
**
uniform
LeafyVegetableIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
OtherVegetableIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
FruitIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
GrainIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
HomeIrrigationRateCB[in/yr]
26.0, 91.0
**
uniform
PoultryFeedIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
HenFeedIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
LeafyVegetableIrrigationTimeCB[mo/yr]
3.0, 8.0
**
uniform
OtherVegetableIrrigationTimeCB[mo/yr]
2.0, 8.0
```

```
**
uniform
FruitIrrigationTimeCB[mo/yr]
2.0, 3.0
**
uniform
GrainIrrigationTimeCB[mo/yr]
6.0, 8.0
**
uniform
HomeIrrigationTimeCB[mo/yr]
6.0, 12.0
**
uniform
PoultryFeedIrrigationTimeCB[mo/yr]
6.0, 8.0
**
uniform
HenFeedIrrigationTimeCB[mo/yr]
6.0, 8.0
**
uniform
PoultryFeedGrowTime[day]
60.0, 90.0
**
uniform
HenFeedGrowTime[day]
60.0, 90.0
**
normal
BeefFreshForageDietFraction
0.12, 0.98
**
normal
MilkFreshForageDietFraction
0.12, 0.98
**
uniform
BeefFreshForageGrowTime[day]
30.0, 62.0
**
uniform
MilkFreshForageGrowTime[day]
30.0, 62.0
**
triangular
BeefFreshForageIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
MilkFreshForageIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
uniform
BeefFreshForageIrrigationTimePB[mo/yr]
3.0, 10.0
**
uniform
MilkFreshForageIrrigationTimePB[mo/yr]
3.0, 10.0
**
uniform
BeefFreshForageIrrigationRateCB[in/yr]
```

```
37.0, 53.0
**
uniform
MilkFreshForageIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
BeefFreshForageIrrigationTimeCB[mo/yr]
3.0, 8.0
**
uniform
MilkFreshForageIrrigationTimeCB[mo/yr]
3.0, 8.0
**
lognormal
DrinkingWaterConsumptionRate1[L/yr]
12.0, 670.0
**
constant
LeafyVegetableConsumptionRate1[kg/yr]
0.0
**
constant
OtherVegetableConsumptionRate1[kg/yr]
0.0
**
constant
FruitConsumptionRate1[kg/yr]
0.0
**
constant
GrainConsumptionRate1[kg/yr]
0.0
**
constant
BeefConsumptionRate1[kg/yr]
0.0
**
constant
PoultryConsumptionRate1[kg/yr]
0.0
**
constant
MilkConsumptionRate1[kg/yr]
226.0
**
constant
EggConsumptionRate1[kg/yr]
0.0
**
constant
InhalationExposureTime1[hr]
4563.0
**
constant
InhalationRate1[cm3/s]
52.0
**
constant
SoilContaminationExposureTime1[hr]
2770.0
**
lognormal
```

```
DrinkingWaterConsumptionRate2[L/yr]
50.0, 1240.0
**
constant
LeafyVegetableConsumptionRate2[kg/yr]
3.5
**
constant
OtherVegetableConsumptionRate2[kg/yr]
16.0
**
constant
FruitConsumptionRate2[kg/yr]
48.0
**
constant
GrainConsumptionRate2[kg/yr]
30.0
**
constant
BeefConsumptionRate2[kg/yr]
4.0
**
constant
PoultryConsumptionRate2[kg/yr]
3.0
**
constant
MilkConsumptionRate2[kg/yr]
127.0
**
constant
EggConsumptionRate2[kg/yr]
1.0
**
constant
InhalationExposureTime2[hr]
4790.0
**
constant
InhalationRate2[cm3/s]
88.0
**
constant
SoilContaminationExposureTime2[hr]
2620.0
**
lognormal
DrinkingWaterConsumptionRate3[L/yr]
50.0, 1240.0
**
constant
LeafyVegetableConsumptionRate3[kg/yr]
4.8
**
constant
OtherVegetableConsumptionRate3[kg/yr]
22.0
**
constant
FruitConsumptionRate3[kg/yr]
52.0
**
```

```
constant
GrainConsumptionRate3[kg/yr]
49.0
**
constant
BeefConsumptionRate3[kg/yr]
6.0
**
constant
PoultryConsumptionRate3[kg/yr]
5.0
**
constant
MilkConsumptionRate3[kg/yr]
160.0
**
constant
EggConsumptionRate3[kg/yr]
2.0
**
constant
InhalationExposureTime3[hr]
4840.0
**
constant
InhalationRate3[cm3/s]
139.0
**
constant
SoilContaminationExposureTime3[hr]
3500.0
**
lognormal
DrinkingWaterConsumptionRate4[L/yr]
55.0, 1850.0
**
constant
LeafyVegetableConsumptionRate4[kg/yr]
6.6
**
constant
OtherVegetableConsumptionRate4[kg/yr]
30.0
**
constant
FruitConsumptionRate4[kg/yr]
58.0
**
constant
GrainConsumptionRate4[kg/yr]
56.0
**
constant
BeefConsumptionRate4[kg/yr]
10.0
**
constant
PoultryConsumptionRate4[kg/yr]
5.0
**
constant
MilkConsumptionRate4[kg/yr]
143.0
```

```
**
constant
EggConsumptionRate4[kg/yr]
2.0
**
constant
InhalationExposureTime4[hr]
4690.0
**
constant
InhalationRate4[cm3/s]
185.0
**
constant
SoilContaminationExposureTime4[hr]
3310.0
**
lognormal
DrinkingWaterConsumptionRate5[L/yr]
95.0, 2380.0
**
constant
LeafyVegetableConsumptionRate5[kg/yr]
8.9
**
constant
OtherVegetableConsumptionRate5[kg/yr]
41.0
**
constant
FruitConsumptionRate5[kg/yr]

52.0
**
constant
GrainConsumptionRate5[kg/yr]
50.0
**
constant
BeefConsumptionRate5[kg/yr]
12.0
**
constant
PoultryConsumptionRate5[kg/yr]
6.0
**
constant
MilkConsumptionRate5[kg/yr]
74.0
**
constant
EggConsumptionRate5[kg/yr]
2.0
**
constant
InhalationExposureTime5[hr]
6910.0
**
constant
InhalationRate5[cm3/s]
176.0
**
constant
```

```
SoilContaminationExposureTime5[hr]
3830.0
**
constant
DrinkingWaterConsumptionRate6[L/yr]
730.0
**
lognormal
LeafyVegetableConsumptionRate6[kg/yr]
2.3, 52.0
**
lognormal
OtherVegetableConsumptionRate6[kg/yr]
3.8, 680.0
**
lognormal
FruitConsumptionRate6[kg/yr]
3.4, 620.0
**
lognormal
GrainConsumptionRate6[kg/yr]
5.1, 920.0
**
lognormal
BeefConsumptionRate6[kg/yr]
12.0, 280.0
**
lognormal
PoultryConsumptionRate6[kg/yr]
1.3, 28.0
**
lognormal
MilkConsumptionRate6[kg/yr]
7.5, 1340.0
**
constant
EggConsumptionRate6[kg/yr]
3.0
**
constant
InhalationExposureTime6[hr]
4200.0
**
constant
InhalationRate6[cm3/s]
270.0

**
constant
SoilContaminationExposureTime6[hr]
1800.0
**
lognormal
PlantUptakeScaleFactor
0.10, 9.8
**
lognormal
AnimalUptakeScaleFactor
0.10, 9.8
**
lognormal
KD_Soil_Cm[cm3/g]
1.5, 1.1e7
```

```
**
lognormal
KD_Soil_Pu[cm3/g]
2.0, 1.5e5
**
lognormal
KD_Soil_U[cm3/g]
9.3e-4, 1.3e6
**
lognormal
KD_Soil_Am[cm3/g]
3.7e-1, 9.9e6
**
lognormal
KD_Soil_Np[cm3/g]
1.9e-2, 1.3e3
**
lognormal
KD_Soil_Th[cm3/g]
3.2, 3.2e6
**
lognormal
KD_Soil_Ra[cm3/g]
1.3e-2, 1.9e7
**
lognormal
KD_Soil_Pb[cm3/g]
1.4e-1, 5.2e5
**
lognormal
KD_Soil_Cs[cm3/g]
7.5e-2, 1.0e6
**
lognormal
KD_Soil_I[cm3/g]
7.2e-4, 1.4e3
**
lognormal
KD_Soil_Tc[cm3/g]
2.7e-4, 3.7e1
**
lognormal
KD_Soil_Ni[cm3/g]
2.9, 5.6e4
**
constant
KD_Soil_Cl[cm3/g]
0.25
**
lognormal
KD_Soil_C[cm3/g]
3.6e-1, 7.0e1
**
lognormal
KD_Soil_Se[cm3/g]
1.5e1, 2.1e2
**
constant
KD_Soil_Nb[cm3/g]
160.0
**
constant
AnnualPrecipitation[m/yr]
```

```
0.085
**
constant
AnnualIrrigation[m/yr]
1.52
**
constant
SoilBulkDensity[g/cm3]
1.5
**
constant
SoilVolumetricWaterContent
0.35
**
constant
TotalAnnualEvapotranspiration[m/yr]
0.80
**
**        ***>>>  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]
547400.0, 548600.0
**
uniform
YLocationOfFaultingEventInRegionOfInterest[m]
4076000.0, 4079600.0
**
constant
ProbabilityForNWOrientationOfFaults
0.05
**
uniform
RNtoDetermineFaultOrientation
0.0, 1.0
**
constant
NWFaultStrikeOrientationMeasuredfromNorthClockwise[degrees]
-32.5
**
constant
NEFaultStrikeOrientationMeasuredfromNorthClockwise[degrees]
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]
0.00005
**
constant
NECumulativeDisplacementRate[mm/yr]
0.00005
**
**
**          ***>>> VOLCANO <<<***
**
iconstant
VolcanoModel(1=Geometric,2=Distribution)
2
**
finiteexponential
TimeOfNextVolcanicEventinRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
constant
XLocationInRegionOfInterest[m]
548000.0
**
constant
YLocationInRegionOfInterest[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
**
** For Distribution model only.
**
iconstant
SubareaOfVolcanicEvent[]
2
**
beta
NumberOfWPsEntrainedByEjecta[]
1.0, 150.0, 1.0, 2.0
**
loguniform
NumberOfMagmaInducedMechanicalFailuresRemainingInDrift[]
1.0, 1402.0
**
**
**          ***>>> 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.d0
**
constant
MinimumFuelParticulateSize[cm]
0.0001
**
constant
ModeFuelParticulateSize[cm]
0.001
**
constant
MaximumFuelParticulateSize[cm]
0.01
**
constant
MinimumAshDensityForVariationWithSize[g/cm3]
0.8
**
constant
MaximumAshDensityForVariationWithSize[g/cm3]
1.6
**
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]
1.8e5, 1.3e6
**
loguniform
VolcanicEventPower[W]
3.5e9, 5.3e11
**
constant
VolcanicColumnConstantBeta
10.0
**
logtriangular
AshMeanParticleLogDiameter[d_in_cm]
0.01, 0.1, 1.0
**
constant
AshParticleSizeDistributionStandardDeviation
1.0
**
**
**          ***>>> ASHRMOVO  <<<***
**
constant
RelativeRateOfBlanketRemoval[1/yr]
0.0007
**
constant
FractionOfPrecipitationLostToEvapotranspiration
0.68
**
constant
FractionOfIrrigationLostToEvapotranspiration
0.5
**
**constant
**AnnualPrecipitation[m/yr]
**0.12
**
**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
**
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
KdOfPaladiumInVolcanicAsh[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]
0.25
**
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
SolubilityOfPaladiumInVolcanicAsh[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
AirborneMassLoadAboveFreshAshBlanket[g/m3]
1.2e-3, 1.6e-2
**
constant
OccupancyFactorForVolcanismDoseCalculation[-]
0.485
**
constant
DepthOfResuspendableLayer[cm]
0.3
**
loguniform
AirborneMassLoadAboveSoil[g/m3]
5e-5, 3e-4
**
constant
RateOfReductionOfMassLoadingFactor[1/yr]
0.07
**
**
**          ***>>>  CORRELATED PARAMETERS  <<<***
**
correlateinputs
SubAreaWetFraction
ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]
```

```
0.631
**
correlateinputs
SubAreaWetFraction
MatrixPermeability_TSw_[m2]
-0.623
**
** rwr 1/17/00 modified to allow for temporla variability
**              in Fmult and Fow
** correlateinputs
** FowFactor
** ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]
** -0.224
**
** correlateinputs
** FowFactor
** MatrixPermeability_TSw_[m2]
** 0.13
**
** correlateinputs
** FowFactor
** 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_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
```

```
title
 Input file tpa.inp as supplied with TPA Version 4.0 Code.
 Base case, ACM - ISI analysis files 06/27/00
**
**           ***>>>  GLOBAL PARAMETERS   <<<***
**
**
**          ***>>>  Importance Analysis Flags  <<<***
**
iflag
ImportanceAnalysisFlag(yes=1,no=0)
0
**
iflag
InnerContainerPresenceFlag(yes=1,no=0)
1
**
iflag
OuterContainerPresenceFlag(yes=1,no=0)
1
**
iflag
CladdingPresenceFlag(yes=1,no=0)
1
**
iflag
SoilPresenceFlag(yes=1,no=0)
1
**
iflag
UpperUnsaturatedLayerPresenceFlag(yes=1,no=0)
1
**
iflag
TSwPresenceFlag(yes=1,no=0)
1
**
iflag
CHnvPresenceFlag(yes=1,no=0)
1
**
iflag
CHnzPresenceFlag(yes=1,no=0)
1
**
iflag
PPwPresenceFlag(yes=1,no=0)
1
**
iflag
UCFPresenceFlag(yes=1,no=0)
1
**
iflag
BFwPresenceFlag(yes=1,no=0)
1
**
iflag
STFFPresenceFlag(yes=1,no=0)
1
**
iflag
SAVPresenceFlag(yes=1,no=0)
```

```
1
**
iflag
PumpingWellPresenceFlag(yes=1,no=0)
1
**
**          ***>>>  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
**1
****ZONE T="ONE RECTANGULAR ZONE SUBAREA", F=POINT
**        547500.0        4076000.0
**        547500.0        4079467.56
**        548500.0        4079467.56
**        548500.0        4076000.0
**        547500.0        4076000.0
**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
**548609.7, 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
**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
**
** Number and Location Of SubAreas[m] Based On EDA-II Design.
subarea
8
edaii 1-cw
547514.88,4079310.61
548069.2,4079136.5
547847.3,4077816.2
547370.95,4077922.04
547514.88,4079310.61
edaii 2-cw
548069.2,4079136.5
548569.32,4078981.
548504.06,4077664.24
547847.3,4077816.2
548069.2,4079136.5
edaii 3-cw
547370.95,4077922.04
547847.3,4077816.2
548322.7,4077192.2
547474.7,4077281.6
547370.95,4077922.04
edaii 4-cw
547847.3,4077816.2
548504.06,4077664.24
548479.71,4077173.06
548322.7,4077192.2
547847.3,4077816.2
edaii 5-cw
547474.7,4077282.6
547887.3,4077238.1
547897.79,4076045.46
547655.97,4076123.07
547474.7,4077282.6
edaii 6-c
547887.3,4077238.1
548322.7,4077192.2
548155.7,4075962.63
547897.79,4076045.46
547887.3,4077238.1
edaii 7-cw
548322.7,4077192.2
548479.71,4077173.06
548455,4076674.51
548155.7,4075962.63
548322.7,4077192.2
edaii 8-cw
547645.27,4079656.06
548588.98,4079377.55
```

```
548569.32,4078981
547514.88,4079310.61
547645.27,4079656.06
**edaii 9-cw
**547732.82,4081208.07
**548251.91,4081034.69
**548116.89,4079516.81
**547645.27,4079656.06
**547732.82,4081208.07
**edaii 10-cw
**548251.91,4081034.69
**548664.55,4080902.19
**548588.98,4079377.55
**548116.89,4079516.81
**548251.91,4081034.69
**
iconstant
StartAtSubarea
1
**
iconstant
StopAtSubarea
8
**
**
**          ***>>> 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,
**  U235, Pa231, Ac227, Pu241, U233, Th229, Cm244, U236, U232, Sm151,
**  Cs137, Sn126, Sn121m, Ag108m, Pd107, Mo93, Zr93, Sr90, or Ni63)
**  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
Pb210
**   chain 6
1
Cs135
**   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
Cl36
**
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
**
iconstant
LatinHypercubeSampling(yes=1,no=0)
1
**
iconstant
NsetLatinHypercubeSampling
1
**
iconstant
NumberOfRealizations
250
**
iconstant
StartAtRealization
1
**
iconstant
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]
1.0e4
**
** Sum of pre- and post-compliance time steps must not exceed 201
**
iconstant
NumberOfTimeStepsInCompliancePeriod
401
**
constant
RatioOfLastToFirstTimeStepInCompliancePeriod
1.0
**
**  Next two parameters ignored if MaximumTime[yr] = DurationOfCompliancePeriod[yr]
**
iconstant
NumberOfTimeStepsAfterCompliancePeriod
0
**
constant
RatioOfLastToFirstTimeStepAfterCompliancePeriod
1.0
**
**
**    ***>>>  Output Print Options  <<<***
**
iconstant
OutputMode(0=None,1=All,2=UserDefined)
0
**
iconstant
UserDefinedLowerRealizationAppended
1
**
iconstant
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 = 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 = uzft.ech and uzft.rlt only
**   9 = szft.ech and szft.rlt only
**   10 = dcagw.ech and dcagw.rlt only
```

```
**    11 = ashplumo.ech and ashplumo.rlt only
**    12 = ashrmovo.ech and ashrmovo.rlt only
**    13 = dcags.ech and dcags.rlt only
**    14 = ashplume.cum only
**    15 = failt.cum only
**    16 = nefiiuz.cum only
**    17 = releaset.cum only
**    18 = ggenii.cum only
**    19 = genv.cum only
**    20 = dcf.cum only (gw_cb_ad.dat and gw_pb_ad.dat)
**
iconstant
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
**
iconstant
ClimatePerturbationSet
1
**
**
**          ***>>> NFENV  <<<***
**
iflag
TabularTemperatureRHFlag(yes=1,no=0)
0
**
iconstant
nsetUsedToPickTempRHDataSet
1
**
constant
WPLength[m]
```

```
5.275
**
constant
WPDiameter[m]
1.579
**
**csm1/24/2000
constant
EmplacementDriftDiameter[m]
5.5
**
**csm1/24/2000
constant
CircumferentialFractionNotCoveredByFloor[]
0.75
**csm1/24/2000
**
constant
EmplacementBackfillThickness[m]
0.6
**
constant
DripShieldThickness[m]
0.02
**
**csm1/26/2000
constant
DripShieldEqvIntDia[m]
2.75
**csm1/26/2000
**
**  6/2/98 tpa3.2  name change for  UseReflux2
**
iconstant
SelectRefluxModel(1,2,3)
3
**
constant
LengthOfRefluxZone[m]
20
**
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
**
** 1-22-00 EDA II design ****
**
constant
EmplacementDriftSpacing[m]
81.
**
constant
WPSpacingAlongEmplacementDrift[m]
6.1392
**
constant
TotalWasteEmplacedInRepository[MTU]
68030.0
** The above value fills subarea 8 completely at 81x6.1392 spacing & 9.76 MTU/WP
**
**  6/4/98 tpa3.2: Next 4 new parameters specific to reflux3 model
**
** WPUnitCellWidth is replaced by EmplacementDriftSpacing
**constant
**WPUnitCellWidth[m]
**81.
**
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
EmissivityOfDripShield[-]
0.63
**
constant
EmissivityOfWastePackage[-]
0.87
**
constant
ThermalConductivityOfFloor[W/(m-C)]
0.6
**
**csm1/26/2000
constant
Cond_EqvForNaturalConvection[W/(m-C)]
0.90
**
**csm2/11/2000
constant
FactorForVentilationHeatlosses[]
0.3
**csm2/11/2000
**csm1/26/2000
**
constant
TimeOfBackfillEmplaced[yr]
50.0
**
**csm1/26/2000
**
iconstant
NumberOfWeightsForGaussLegendreIntegration[]
20
**
```

```
constant
ThermalConductivityOfDripShield[W/(m-C)]
20.77
**csm1/26/2000
**
constant
ThermalConductivityOfBackfill[W/(m-C)]
0.27
**
constant
ThermalConductivityOfInnerOverpack[W/m-C]
15.0
**
constant
ThermalConductivityOfOuterOverpack[W/m-C]
11.1
**
constant
EffectiveThermalConductivityOfBasket&SFinWP[W/(m-C)]
1.0
**
constant
ElevationOfRepositoryHorizon[m]
1072.0
**
constant
ElevationOfGroundSurface[m]
1400.0
**
**
**          ***>>>  EBSFAIL   <<<***
**
constant
OuterWPThickness[m]
0.02
**
constant
InnerWPThickness[m]
0.05
**
constant
MetalGrainRadius[micrometer]
13.75
**
constant
GrainBoundaryThickness[micrometer]
7.0e-4
**
constant
DryOxidationConstant
9999
**
constant
CriticalRelativeHumidityHumidAirCorrosion
0.55
**
normal
CriticalRelativeHumidityAqueousCorrosion
0.6, 0.65
**
uniform
ThicknessOfWaterFilm[m]
0.001, 0.003
```

```
**
constant
BoilingPointOfWater[C]
97.0
**
constant
OuterOverpackErpIntercept
2006.0
**
constant
TempCoefOfOuterPackErpIntercept
-15.2
**
constant
OuterOverpackErpSlope
-590.7
**
constant
TempCoefOfOuterPackErpSlope
4.3
**
constant
InnerOverpackErpIntercept
-10000.0
**48.5, 148.5  >>> 625 <<<
**
constant
TempCoefOfInnerPackErpIntercept
0.0
**
constant
InnerOverpackErpSlope
0.0
**-160.8   >>> 625 <<<
**
constant
TempCoefOfInnerPackErpSlope
0.0
**
constant
OuterWPBetaKineticsParameterforOxygen
0.75
**
constant
OuterWPBetaKineticsParameterforWater
0.5
**
constant
InnerWPBetaKineticsParameterforOxygen
0.75
**
constant
InnerWPBetaKineticsParameterforWater
0.5
**
constant
OuterWPRateConstantforOxygenReduction[coulomb-m/mole/yr]
3.0e10
**
constant
OuterWPRateConstantforWaterReduction[coulomb-m/m^2/yr]
3.2
**
```

```
constant
OuterWPActivationEnergyforOxygenReduction[J/mole]
40000.0
**
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
**
normal
AA_1_1[C/m2/yr]
1.6e3, 1.7e4
**
constant
AA_2_1[C/m2/yr]
1e10
**
constant
MeasuredGalvanicCouplePotential
0.0
**
constant
CoefForLocCorrOfOuterOverpack
2.5e-4
**
constant
ExponetForLocCorrOfOuterOverpack
1.0
**OPR
constant
CoefForLocCorrOfInnerOverpack
1.0
**
constant
ExponentForLocCorrOfInnerOverpack
1.0
**ENDOPR
constant
HumidAirCorrosionRate[m/yr]
1.0e-15
**
**OPR deleted parameter 1/10/2000
**constant
**LocalizedCorrRateOfInnerOverpack[m/yr]
**2.5e-4
**ENDOPR
**
constant
```

```
FractionalCouplingStrength
0.0
**
constant
FactorForDefiningChoiceOfCritPotential
0.0
**
constant
CritChlorideConcForFirstLayer[mol/L]
0.5
**
constant
CritChlorideConcForSecondLayer[mol/L]
1.0e-10
**3.0e-2  >>> 625 <<<
**
uniform
ChlorideMultFactor
1.0, 30.0
**
**OPR
constant
ChlorideMultFactorIntactDripShield
1.0
**
lognormal
DripShieldFailureTime[yr]
3700.0, 27300.0
**ENDOPR
constant
ReferencepH
9.0
**
constant
WPsurfaceScaleThickness[m]
0.0
**
constant
TortuosityOfScaleonWP
1.0
**
constant
PorosityOfScaleonWP
1.0
**
constant
YieldStrength[MPa]
370.0
**
constant
SafetyFactor
1.4
**
constant
FractureToughness[MPa-m**0.5]
1.0e7
**
**OPR
constant
DensityOuterOverpack[kg/m^3]
8690.0
**
constant
```

```
DensityInnerOverpack[kg/m^3]
7700.0
**
constant
EquivalentWeightOuterOverpack[kg/mol]
0.02597
**
constant
EquivalentWeightInnerOverpack[kg/mol]
0.02494
**
constant
DeltaPotentialDueToRadiolysis[V]
0.0
**
constant
DecayingConstantRadiolysis[1/yr]
7.0e-5
**ENDOPR
**
**          ***>>> SEISMO  <<<***
**
** mam 01/14/00 Seed only for random numbers used by samplehazardcurve().
**               It should be constant as it is used only once.
constant
SeedForRandomNumberForSEISMO
505187067.0
**
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
WPModulusOfElasticityforSEISMO[Pa]
1.76D11
**
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
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]
```

```
6.2D08
**
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[]
0.05
**
**
**          ***>>>  EBSREL  <<<***
**
** rwr 1/12/00 modified to allow for failure type-specific
**             water contact modes (added a flag for each of
**             the 8 failure types)
**  ** rwr 7/8/98 modify flow model flag
** iflag
** FlowModelFlag(0=BathTub,1=FlowThrough)
** 0
iflag
WaterContactMode_Initial(0=BathTub,1=FlowThrough)
1
**
iflag
WaterContactMode_Faulting(0=BathTub,1=FlowThrough)
1
**
iflag
WaterContactMode_Volcanic(0=BathTub,1=FlowThrough)
1
**
iflag
WaterContactMode_SeismicInterval1(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_SeismicInterval2(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_SeismicInterval3(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_SeismicInterval4(0=BathTub,1=FlowThrough)
0
**
iflag
WaterContactMode_Corrosion(0=BathTub,1=FlowThrough)
1
**
** rwr 1/17/00 modified to allow for temporal variability
**             in FowFactor and FmultFactor as specified
**             in the new data file, wpflow.dat, and added
**             the waste package flow multiplication factor
** lognormal
** FowFactor
** 0.01, 3.0
**
** lognormal
** FmultFactor
** 0.01, 0.2
**
lognormal
WastePackageFlowMultiplicationFactor
```

```
3.15E-2, 1.05E3
**
uniform
SubAreaWetFraction
0.0, 1.0
**
**  5/21/98 tpa3.2: New  parameter; nonzero initial failure times
**
uniform
InitialFailureTime[yr]
0.0, 0.001
**
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
**
iconstant
NumberOfSEISMOWPFailureIntervals
4
**
constant
BeginningOfSEISMOWPFailureInterval1[yr]
0.0
**
constant
BeginningOfSEISMOWPFailureInterval2[yr]
2000.0
**
constant
BeginningOfSEISMOWPFailureInterval3[yr]
5000.0
**
constant
BeginningOfSEISMOWPFailureInterval4[yr]
10000.0
**
constant
WPInternalVolume[m3]
4.83
**
constant
FlowOnsetTemperature[C]
999.
**
constant
SFDensity[kg/m3]
10600.
**
iconstant
SurfaceAreaModel
1
**
iconstant
IModel
2
**
constant
OxygenPartialPressure[atm]
0.21
**
constant
```

```
NegativeLog10CarbonateConcentration[mol/L]
3.71
**
constant
UserLeachRate[kg/yr/m2]
2.5e-4
**
**csm1/20/2000
loguniform
Preexponential_SFDissolutionModel2
1.2e7, 1.201e7
**csm1/20/2000
**
constant
RD_Invert_Cm
6.00e3
**
constant
RD_Invert_Pu
3.00e3
**
constant
RD_Invert_U
6.01e2
**
constant
RD_Invert_Am
3.00e3
**
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
GapFractionForU234
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
GapFractionForNI59
0.0
**
constant
GapFractionForCL36
0.12
**
constant
GapFractionForC14
0.1
**
constant
GapFractionForSE79
0.06
**
constant
GapFractionForNB94
0.0
**
normal
InitialRadiusOfSFParticle[m]
3.0e-2,  3.001e-2
**
constant
RadiusOfSFGrain[m]
1.25e-4
**
constant
CladdingCorrectionFactor
1.0
**
normal
SubGrainFragmentRadiusAfterTransFrac[m]
2.0e-5,  2.001e-5
**
constant
ThicknessOfCladding[m]
6.1e-4
**
constant
SFC-14InventoryPerKgSF[ci]
7.2e-4
**
constant
CladC-14InventoryPerKgSF[ci]
4.89e-4
**
constant
ZyrOxideAndCrudC-14InvPerKgSF[ci]
2.48e-5
**
```

```
constant
GapAndGrainBoundaryInventoryPerKgSF[ci]
6.2e-6
**
uniform
SolubilityAm[kg/m3]
2.4e-3,  2.401e-3
**
uniform
SolubilityNp[kg/m3]
2.4e0, 2.401e0
**
constant
Solubility_I[kg/m3]
1.29e3
**
constant
SolubilityTc[kg/m3]
9.93e2
**
constant
SolubilityCl[kg/m3]
3.6e2
**
constant
Solubility_C[kg/m3]
1.4e2
**
constant
Solubility_U[kg/m3]
7.6e-2
**
constant
SolubilityCm[kg/m3]
2.4e-3
**
uniform
SolubilityPu[kg/m3]
2.4e-3, 2.401e-3
**
constant
SolubilityTh[kg/m3]
2.3e-3
**
constant
SolubilityRa[kg/m3]
2.3e-4
**
constant
SolubilityPb[kg/m3]
6.6e-4
**
constant
SolubilityCs[kg/m3]
1.35e3
**
constant
SolubilityNi[kg/m3]
1.1e-0
**
constant
SolubilitySe[kg/m3]
7.9e2
```

```
**
constant
SolubilityNb[kg/m3]
9.3e-6
**
**  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_Initial_8
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_SEISMO1_8
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_1
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_2
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_3
0.0, 1.0
**
uniform
SFWettedFraction_SEISMO2_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_SEISMO2_8
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_SEISMO3_8
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_SEISMO4_8
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
**
uniform
SFWettedFraction_Corrosion_8
0.0, 1.0
**
**  7/4/1998 tpa3.2 four new parameters for invert
**
iflag
InvertBypass(0=ebsfilt,1=bypass-ebsfilt)
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_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_BFw_Am[m3/kg]
4.1e+00  3.7e+06
**
lognormal
MatrixKD_UFZ_Am[m3/kg]
3.9e+00  3.5e+06
**
lognormal
MatrixKD_TSw_Np[m3/kg]
1.6e-06  2.2e-01
**
lognormal
MatrixKD_CHnvNp[m3/kg]
4.8e-06  6.6e-01
**
lognormal
MatrixKD_CHnzNp[m3/kg]
4.4e-06  6.0e-01
**
lognormal
MatrixKD_PPw_Np[m3/kg]
3.6e-06  5.0e-01
**
lognormal
MatrixKD_UCF_Np[m3/kg]
3.8e-06  5.2e-01
**
lognormal
MatrixKD_BFw_Np[m3/kg]
1.5e-06  2.1e-01
**
lognormal
MatrixKD_UFZ_Np[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_BFw_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_BFw_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_BFw_Cl[m3/kg]
0.0
**
constant
MatrixKD_UFZ_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_BFw_Cm[m3/kg]
0.0
**
constant
MatrixKD_UFZ_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_BFw_U[m3/kg]
4.1e-10  1.0e+00
**
lognormal
MatrixKD_UFZ_U[m3/kg]
3.9e-10  1.0e+00
```

```
**
lognormal
MatrixKD_TSw_Pu[m3/kg]
2.3e-02  2.2e+01
**
lognormal
MatrixKD_CHnvPu[m3/kg]
7.1e-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_BFw_Pu[m3/kg]
2.3e-02  2.1e+01
**
lognormal
MatrixKD_UFZ_Pu[m3/kg]
2.2e-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  5.9e+03
**
lognormal
MatrixKD_BFw_Th[m3/kg]
4.7e-05  2.4e+03
**
lognormal
MatrixKD_UFZ_Th[m3/kg]
4.5e-05  2.3e+03
**
uniform
MatrixKD_TSw_Ra[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_CHnvRa[m3/kg]
```

```
0.050, 0.10
**
uniform
MatrixKD_CHnzRa[m3/kg]
1.0, 5.0
**
uniform
MatrixKD_PPw_Ra[m3/kg]

0.1, 0.5
**
uniform
MatrixKD_UCF_Ra[m3/kg]
0.1, 0.5
**
uniform
MatrixKD_BFw_Ra[m3/kg]
0.1, 0.5
**
uniform
MatrixKD_UFZ_Ra[m3/kg]
0.1, 0.5
**
uniform
MatrixKD_TSw_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_CHnvPb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_CHnzPb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_PPw_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_UCF_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_BFw_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_UFZ_Pb[m3/kg]
0.10, 0.50
**
uniform
MatrixKD_TSw_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_CHnvCs[m3/kg]
0.010, 0.10
**
uniform
MatrixKD_CHnzCs[m3/kg]
0.50, 5.0
**
```

```
uniform
MatrixKD_PPw_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_UCF_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_BFw_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_UFZ_Cs[m3/kg]
0.020, 1.0
**
uniform
MatrixKD_TSw_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_CHnvNi[m3/kg]
1.0e-6, 0.10
**
uniform
MatrixKD_CHnzNi[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_PPw_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_UCF_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_BFw_Ni[m3/kg]
5.0e-6, 0.50
**
uniform
MatrixKD_UFZ_Ni[m3/kg]
5.0e-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_BFw_C[m3/kg]
0.0
**
constant
MatrixKD_UFZ_C[m3/kg]
0.0
**
uniform
MatrixKD_TSw_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_CHnvSe[m3/kg]
2.0e-7, 0.020
**
uniform
MatrixKD_CHnzSe[m3/kg]
1.5e-7, 0.015
**
uniform
MatrixKD_PPw_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_UCF_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_BFw_Se[m3/kg]
3.0e-7, 0.030
**
uniform
MatrixKD_UFZ_Se[m3/kg]
3.0e-7, 0.030
**
constant
MatrixKD_TSw_Nb[m3/kg]
0.0
**
constant
MatrixKD_CHnvNb[m3/kg]
0.0
**
constant
MatrixKD_CHnzNb[m3/kg]
0.0
**
constant
MatrixKD_PPw_Nb[m3/kg]
0.0
**
constant
MatrixKD_UCF_Nb[m3/kg]
0.0
**
constant
MatrixKD_BFw_Nb[m3/kg]
0.0
**
constant
MatrixKD_UFZ_Nb[m3/kg]
```

```
0.0
**
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_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_BFw_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_BFw_Cl
1.0
**
constant
FractureRD_UFZ_Cl
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_BFw_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_BFw_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_BFw_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_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_BFw_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_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
**
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_BFw_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_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_[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_BFw_[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]
8.0e-15, 8.0e-11
**
lognormal
FracturePermeability_CHnz[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_UFZ_[m2]
1.0e-13, 1.0e-11
**
loguniform
FracturePorosity_TSw_
1.0e-3, 1.0e-2
**
loguniform
FracturePorosity_CHnv
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_CHnz
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_PPw_
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_UCF_
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_BFw_
1.0e-4, 1.0e-3
**
loguniform
FracturePorosity_UFZ_
1.0e-3, 1.0e-2
**
constant
FractureBeta_TSw_
2.0
**
** FractureBeta is fitting parameter where lambda=1-(1/beta) and beta>1
constant
FractureBeta_CHnv
2.0
**
constant
FractureBeta_CHnz
2.0
```

```
**
constant
FractureBeta_PPw_
2.0
**
constant
FractureBeta_UCF_
2.0
**
constant
FractureBeta_BFW_
2.0
**
constant
FractureBeta_UFZ_
1.6
**
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
InletArea__8SubArea[m2]
5.4e5
**
constant
TSw_Thickness_1SubArea[m]
100.0
**
constant
CHnvThickness_1SubArea[m]
19.0
**
constant
CHnzThickness_1SubArea[m]
72.0
**
constant
PPw_Thickness_1SubArea[m]
```

```
50.0
**
constant
UCF_Thickness_1SubArea[m]
57.0
**
constant
BFw_Thickness_1SubArea[m]
22.0
**
constant
UFZ_Thickness_1SubArea[m]
0.0
**
constant
TSw_Thickness_2SubArea[m]
161.0
**
constant
CHnvThickness_2SubArea[m]
0.0
**
constant
CHnzThickness_2SubArea[m]
108.0
**
constant
PPw_Thickness_2SubArea[m]
50.0
**
constant
UCF_Thickness_2SubArea[m]
18.0
**
constant
BFw_Thickness_2SubArea[m]
0.0
**
constant
UFZ_Thickness_2SubArea[m]
0.0
**
constant
TSw_Thickness_3SubArea[m]
79.0
**
constant
CHnvThickness_3SubArea[m]
24.0
**
constant
CHnzThickness_3SubArea[m]
55.0
**
constant
PPw_Thickness_3SubArea[m]
52.0
**
constant
UCF_Thickness_3SubArea[m]
68.0
**
constant
```

```
BFw_Thickness_3SubArea[m]
81.0
**
constant
UFZ_Thickness_3SubArea[m]
0.0
**
constant
TSw_Thickness_4SubArea[m]
144.0
**
constant
CHnvThickness_4SubArea[m]
17.0
**
constant
CHnzThickness_4SubArea[m]
88.0
**
constant
PPw_Thickness_4SubArea[m]
56.0
**
constant
UCF_Thickness_4SubArea[m]
61.0
**
constant
BFw_Thickness_4SubArea[m]
0.0
**
constant
UFZ_Thickness_4SubArea[m]
0.0
**
constant
TSw_Thickness_5SubArea[m]
58.0
**
constant
CHnvThickness_5SubArea[m]
31.0
**
constant
CHnzThickness_5SubArea[m]
49.0
**
constant
PPw_Thickness_5SubArea[m]
65.0
**
constant
UCF_Thickness_5SubArea[m]
71.0
**
constant
BFw_Thickness_5SubArea[m]
101.0
**
constant
UFZ_Thickness_5SubArea[m]
0.0
**
```

```
constant
TSw_Thickness_6SubArea[m]
58.0
**
constant
CHnvThickness_6SubArea[m]
37.0
**
constant
CHnzThickness_6SubArea[m]
58.0
**
constant
PPw_Thickness_6SubArea[m]
66.0
**
constant
UCF_Thickness_6SubArea[m]
81.0
**
constant
BFw_Thickness_6SubArea[m]
51.0
**
constant
UFZ_Thickness_6SubArea[m]
0.0
**
constant
TSw_Thickness_7SubArea[m]
138.0
**
constant
CHnvThickness_7SubArea[m]
44.0
**
constant
CHnzThickness_7SubArea[m]
63.0
**
constant
PPw_Thickness_7SubArea[m]
66.0
**
constant
UCF_Thickness_7SubArea[m]
67.0
**
constant
BFw_Thickness_7SubArea[m]
0.0
**
constant
UFZ_Thickness_7SubArea[m]
0.0
**
constant
TSw_Thickness_8SubArea[m]
163.0
**
constant
CHnvThickness_8SubArea[m]
0.0
```

```
**
constant
CHnzThickness_8SubArea[m]
120.0
**
constant
PPw_Thickness_8SubArea[m]
25.0
**
constant
UCF_Thickness_8SubArea[m]
0.0
**
constant
BFw_Thickness_8SubArea[m]
0.0
**
constant
UFZ_Thickness_8SubArea[m]
0.0
**
**
**
**            ***>>>  SZFT  <<<***
**
loguniform
ImmobilePorosityPenetrationFraction_STFF
0.01, 0.1
**
constant
FracturesPerMeter_STFF[1/m]
0.05
**
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, 6.8e10
**
```

```
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
**
loguniform
AlluviumMatrixRD_SAV_Tc
1.0, 30.0
**
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
1.9, 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
1.0e-3, 1.0e-2
**
uniform
AlluviumMatrixPorosity_SAV
1.0e-1, 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
1.0
**
constant
ImmobileRD_STFF_Cl
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_Ni
1.8e3
**
constant
```

```
ImmobileRD_STFF_C
1.0
**
constant
ImmobileRD_STFF_Se
55.0
**
constant
ImmobileRD_STFF_Nb
1.8e4
**
constant
ImmobilePorosity_STFF
0.2
**
constant
DiffusionRate_STFF
0.00
**
uniform
DistanceToTuffAlluviumInterface[km]
5.0, 20.0
**
**          ***>>>   DCAGW   <<<***
**
constant
DistanceToReceptorGroup[km][should_be_10_or_20]
20.0
**
uniform
WellPumpingRateAtReceptorGroup10km[gal/day]
1.5e4, 2.64e5
**
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
**
iflag
PlumeCaptureModel
0
**
iflag
DilutionModel
0
**
constant
UserDefinedPlumeCaptureFraction
1.0d0
**
constant
UserDefinedDilutionVolume[gal/day]
```

```
10901787.249406d0
**
uniform
PluvialWellPumpingRateAtReceptorGroup20km[gal/day]
3.2e6, 9.23e6
**
constant
PluvialSwitchTime[yr]
13000.0
**
** --- gentpa  ---
** (icrp72 for 1-5) 1=infant,2=toddler,3=pre-teen,4=teen,5=adult,6=adult(fgr11)
iconstant
ReceptorAgeGroup(1=Nfnt,2Tod,3PTeen,4Teen,5Adlt,6AdltFGR11)
6
**
triangular
InterceptionFraction/Irrigate
0.06, 0.4, 1.0
**
constant
DepthOfSurfaceSoil[cm]
15.0
** See AirborneMassLoadAboveSoil[g/m3]
**constant
**MassLoadingFactor[g/m3]
**0.0001
**
iconstant
YearsOfIrrigationPriorToIntakePeriod[yr]
15
**
triangular
LeafyVegetableIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
OtherVegetableIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
FruitIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
GrainIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
uniform
HomeIrrigationRatePB[in/yr]
18.0, 65.0
**
triangular
PoultryFeedIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
HenFeedIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
uniform
LeafyVegetableIrrigationTimePB[mo/yr]
3.0, 10.0
```

```
**
uniform
OtherVegetableIrrigationTimePB[mo/yr]
2.0, 10.0
**
uniform
FruitIrrigationTimePB[mo/yr]
2.0, 6.0
**
uniform
GrainIrrigationTimePB[mo/yr]
6.0, 8.0
**
uniform
HomeIrrigationTimePB[mo/yr]
9.0, 12.0
**
uniform
PoultryFeedIrrigationTimePB[mo/yr]
6.0, 8.0
**
uniform
HenFeedIrrigationTimePB[mo/yr]
6.0, 8.0
**
uniform
LeafyVegetableIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
OtherVegetableIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
FruitIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
GrainIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
HomeIrrigationRateCB[in/yr]
26.0, 91.0
**
uniform
PoultryFeedIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
HenFeedIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
LeafyVegetableIrrigationTimeCB[mo/yr]
3.0, 8.0
**
uniform
OtherVegetableIrrigationTimeCB[mo/yr]
2.0, 8.0
**
uniform
FruitIrrigationTimeCB[mo/yr]
```

```
2.0, 3.0
**
uniform
GrainIrrigationTimeCB[mo/yr]
6.0, 8.0
**
uniform
HomeIrrigationTimeCB[mo/yr]
6.0, 12.0
**
uniform
PoultryFeedIrrigationTimeCB[mo/yr]
6.0, 8.0
**
uniform
HenFeedIrrigationTimeCB[mo/yr]
6.0, 8.0
**
uniform
PoultryFeedGrowTime[day]
60.0, 90.0
**
uniform
HenFeedGrowTime[day]
60.0, 90.0
**
normal
BeefFreshForageDietFraction
0.12, 0.98
**
normal
MilkFreshForageDietFraction
0.12, 0.98
**
uniform
BeefFreshForageGrowTime[day]
30.0, 62.0
**
uniform
MilkFreshForageGrowTime[day]
30.0, 62.0
**
triangular
BeefFreshForageIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
triangular
MilkFreshForageIrrigationRatePB[in/yr]
23.0, 43.0, 43.0
**
uniform
BeefFreshForageIrrigationTimePB[mo/yr]
3.0, 10.0
**
uniform
MilkFreshForageIrrigationTimePB[mo/yr]
3.0, 10.0
**
uniform
BeefFreshForageIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
```

```
MilkFreshForageIrrigationRateCB[in/yr]
37.0, 53.0
**
uniform
BeefFreshForageIrrigationTimeCB[mo/yr]
3.0, 8.0
**
uniform
MilkFreshForageIrrigationTimeCB[mo/yr]
3.0, 8.0
**
lognormal
DrinkingWaterConsumptionRate1[L/yr]
12.0, 670.0
**
constant
LeafyVegetableConsumptionRate1[kg/yr]
0.0
**
constant
OtherVegetableConsumptionRate1[kg/yr]
0.0
**
constant
FruitConsumptionRate1[kg/yr]
0.0
**
constant
GrainConsumptionRate1[kg/yr]
0.0
**
constant
BeefConsumptionRate1[kg/yr]
0.0
**
constant
PoultryConsumptionRate1[kg/yr]
0.0
**
constant
MilkConsumptionRate1[kg/yr]
226.0
**
constant
EggConsumptionRate1[kg/yr]
0.0
**
constant
InhalationExposureTime1[hr]
4563.0
**
constant
InhalationRate1[cm3/s]
52.0
**
constant
SoilContaminationExposureTime1[hr]
2770.0
**
lognormal
DrinkingWaterConsumptionRate2[L/yr]
50.0, 1240.0
```

```
**
constant
LeafyVegetableConsumptionRate2[kg/yr]
3.5
**
constant
OtherVegetableConsumptionRate2[kg/yr]
16.0
**
constant
FruitConsumptionRate2[kg/yr]
48.0
**
constant
GrainConsumptionRate2[kg/yr]
30.0
**
constant
BeefConsumptionRate2[kg/yr]
4.0
**
constant
PoultryConsumptionRate2[kg/yr]
3.0
**
constant
MilkConsumptionRate2[kg/yr]
127.0
**
constant
EggConsumptionRate2[kg/yr]
1.0
**
constant
InhalationExposureTime2[hr]
4790.0
**
constant
InhalationRate2[cm3/s]
88.0
**
constant
SoilContaminationExposureTime2[hr]
2620.0
**
lognormal
DrinkingWaterConsumptionRate3[L/yr]
50.0, 1240.0
**
constant
LeafyVegetableConsumptionRate3[kg/yr]
4.8
**
constant
OtherVegetableConsumptionRate3[kg/yr]
22.0
**
constant
FruitConsumptionRate3[kg/yr]
52.0
**
constant
GrainConsumptionRate3[kg/yr]
```

```
49.0
**
constant
BeefConsumptionRate3[kg/yr]
6.0
**
constant
PoultryConsumptionRate3[kg/yr]
5.0
**
constant
MilkConsumptionRate3[kg/yr]
160.0
**
constant
EggConsumptionRate3[kg/yr]
2.0
**
constant
InhalationExposureTime3[hr]
4840.0
**
constant
InhalationRate3[cm3/s]
139.0
**
constant
SoilContaminationExposureTime3[hr]
3500.0
**
lognormal
DrinkingWaterConsumptionRate4[L/yr]
55.0, 1850.0
**
constant
LeafyVegetableConsumptionRate4[kg/yr]
6.6
**
constant
OtherVegetableConsumptionRate4[kg/yr]
30.0
**
constant
FruitConsumptionRate4[kg/yr]
58.0
**
constant
GrainConsumptionRate4[kg/yr]
56.0
**
constant
BeefConsumptionRate4[kg/yr]
10.0
**
constant
PoultryConsumptionRate4[kg/yr]
5.0
**
constant
MilkConsumptionRate4[kg/yr]
143.0
**
constant
```

```
EggConsumptionRate4[kg/yr]
2.0
**
constant
InhalationExposureTime4[hr]
4690.0
**
constant
InhalationRate4[cm3/s]
185.0
**
constant
SoilContaminationExposureTime4[hr]
3310.0
**
lognormal
DrinkingWaterConsumptionRate5[L/yr]
95.0, 2380.0
**
constant
LeafyVegetableConsumptionRate5[kg/yr]
8.9
**
constant
OtherVegetableConsumptionRate5[kg/yr]
41.0
**
constant
FruitConsumptionRate5[kg/yr]
52.0
**
constant
GrainConsumptionRate5[kg/yr]
50.0
**
constant
BeefConsumptionRate5[kg/yr]
12.0
**
constant
PoultryConsumptionRate5[kg/yr]
6.0
**
constant
MilkConsumptionRate5[kg/yr]
74.0
**
constant
EggConsumptionRate5[kg/yr]
2.0
**
constant
InhalationExposureTime5[hr]
6910.0
**
constant
InhalationRate5[cm3/s]
176.0
**
constant
SoilContaminationExposureTime5[hr]
3830.0
**
```

```
constant
DrinkingWaterConsumptionRate6[L/yr]
730.0
**
lognormal
LeafyVegetableConsumptionRate6[kg/yr]
2.3, 52.0
**
lognormal
OtherVegetableConsumptionRate6[kg/yr]
3.8, 680.0
**
lognormal
FruitConsumptionRate6[kg/yr]
3.4, 620.0
**
lognormal
GrainConsumptionRate6[kg/yr]
5.1, 920.0
**
lognormal
BeefConsumptionRate6[kg/yr]
12.0, 280.0
**
lognormal
PoultryConsumptionRate6[kg/yr]
1.3, 28.0
**
lognormal
MilkConsumptionRate6[kg/yr]
7.5, 1340.0
**
constant
EggConsumptionRate6[kg/yr]
3.0
**
constant
InhalationExposureTime6[hr]
4200.0
**
constant
InhalationRate6[cm3/s]
270.0
**
constant
SoilContaminationExposureTime6[hr]
1800.0
**
lognormal
PlantUptakeScaleFactor
0.10, 9.8
**
lognormal
AnimalUptakeScaleFactor
0.10, 9.8
**
lognormal
KD_Soil_Cm[cm3/g]
1.5, 1.1e7
**
lognormal
KD_Soil_Pu[cm3/g]
2.0, 1.5e5
```

```
**
lognormal
KD_Soil_U[cm3/g]
9.3e-4, 1.3e6
**
lognormal
KD_Soil_Am[cm3/g]
3.7e-1, 9.9e6
**
lognormal
KD_Soil_Np[cm3/g]
1.9e-2, 1.3e3
**
lognormal
KD_Soil_Th[cm3/g]
3.2, 3.2e6
**
lognormal
KD_Soil_Ra[cm3/g]
1.3e-2, 1.9e7
**
lognormal
KD_Soil_Pb[cm3/g]
1.4e-1, 5.2e5
**
lognormal
KD_Soil_Cs[cm3/g]
7.5e-2, 1.0e6
**
lognormal
KD_Soil_I[cm3/g]
7.2e-4, 1.4e3
**
lognormal
KD_Soil_Tc[cm3/g]
2.7e-4, 3.7e1
**
lognormal
KD_Soil_Ni[cm3/g]
2.9, 5.6e4
**
constant
KD_Soil_Cl[cm3/g]
0.25
**
lognormal
KD_Soil_C[cm3/g]
3.6e-1, 7.0e1
**
lognormal
KD_Soil_Se[cm3/g]
1.5e1, 2.1e2
**
constant
KD_Soil_Nb[cm3/g]
160.0
**
constant
AnnualPrecipitation[m/yr]
0.085
**
constant
AnnualIrrigation[m/yr]
```

```
1.52
**
constant
SoilBulkDensity[g/cm3]
1.5
**
constant
SoilVolumetricWaterContent
0.35
**
constant
TotalAnnualEvapotranspiration[m/yr]
0.80
**
**        ***>>>  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]
547400.0, 548600.0
**
uniform
YLocationOfFaultingEventInRegionOfInterest[m]
4076000.0, 4079600.0
**
constant
ProbabilityForNWOrientationOfFaults
0.05
**
uniform
RNtoDetermineFaultOrientation
0.0, 1.0
**
constant
NWFaultStrikeOrientationMeasuredfromNorthClockwise[degrees]
-32.5
**
constant
NEFaultStrikeOrientationMeasuredfromNorthClockwise[degrees]
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]
0.00005
**
constant
NECumulativeDisplacementRate[mm/yr]
0.00005
**
**
**          ***>>> VOLCANO <<<***
**
iconstant
VolcanoModel(1=Geometric,2=Distribution)
2
**
finiteexponential
TimeOfNextVolcanicEventinRegionOfInterest[yr]
100.0, 10000.0, 1.0e-7
**
constant
XLocationInRegionOfInterest[m]
548000.0
**
constant
YLocationInRegionOfInterest[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
```

```
**
** For Distribution model only.
**
iconstant
SubareaOfVolcanicEvent[]
2
**
beta
NumberOfWPsEntrainedByEjecta[]
1.0, 150.0, 1.0, 2.0
**
loguniform
NumberOfMagmaInducedMechanicalFailuresRemainingInDrift[]
1.0, 1402.0
**
**
**          ***>>> 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.d0
**
constant
MinimumFuelParticulateSize[cm]
0.0001
**
constant
ModeFuelParticulateSize[cm]
0.001
**
constant
MaximumFuelParticulateSize[cm]
0.01
**
constant
MinimumAshDensityForVariationWithSize[g/cm3]
0.8
**
constant
MaximumAshDensityForVariationWithSize[g/cm3]
1.6
**
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]
1.8e5, 1.3e6
**
loguniform
VolcanicEventPower[W]
3.5e9, 5.3e11
**
constant
VolcanicColumnConstantBeta
10.0
**
logtriangular
AshMeanParticleLogDiameter[d_in_cm]
0.01, 0.1, 1.0
**
constant
AshParticleSizeDistributionStandardDeviation
1.0
**
**
**          ***>>> ASHRMOVO  <<<***
**
constant
RelativeRateOfBlanketRemoval[1/yr]
0.0007
**
constant
FractionOfPrecipitationLostToEvapotranspiration
0.68
**
constant
FractionOfIrrigationLostToEvapotranspiration
0.5
**
**constant
**AnnualPrecipitation[m/yr]
**0.12
**
**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
**
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
KdOfPaladiumInVolcanicAsh[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]
0.25
**
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
SolubilityOfPaladiumInVolcanicAsh[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
AirborneMassLoadAboveFreshAshBlanket[g/m3]
1.2e-3, 1.6e-2
**
constant
OccupancyFactorForVolcanismDoseCalculation[-]
0.485
**
constant
DepthOfResuspendableLayer[cm]
0.3
**
loguniform
AirborneMassLoadAboveSoil[g/m3]
5e-5, 3e-4
**
constant
RateOfReductionOfMassLoadingFactor[1/yr]
0.07
**
**
**          ***>>>  CORRELATED PARAMETERS  <<<***
**
correlateinputs
SubAreaWetFraction
ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]
0.631
**
correlateinputs
```

```
SubAreaWetFraction
MatrixPermeability_TSw_[m2]
-0.623
**
** rwr 1/17/00 modified to allow for temporla variability
**              in Fmult and Fow
** correlateinputs
** FowFactor
** ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]
** -0.224
**
** correlateinputs
** FowFactor
** MatrixPermeability_TSw_[m2]
** 0.13
**
** correlateinputs
** FowFactor
** 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_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
```