

APPENDIX B-1

RESRAD INPUT/ SUMMARY REPORT FOR NATURAL THORIUM

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Dose Conversion Factor (and Related) Parameter Summary
 File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	4.000E+01	1.000E+02	---	T(6)
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	3.000E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.200E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.210E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.400E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	8.827E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.200E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ

R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	3.210E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	1.450E+01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.200E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.210E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.298E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.302E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.302E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	5.512E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.830E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK

R019	Livestock fodder intake for meat (kg/day)	2.685E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	6.325E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DR00T
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CS0IL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	C02F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)

ST0R	Surface water	1.000E+00	1.000E+00	---	ST0R_T(8)
ST0R	Livestock fodder	4.500E+01	4.500E+01	---	ST0R_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH20CV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH20FL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

RESRAD, Version 6.3 T< Limit = 180 days 12/28/2006 11:50 Page 8
 Summary : Determination of Soil DCGL for Natural Thorium
 File : Soil DCGL for AOC - 10K.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 10000.00 square meters	Ra-228 1.000E+00
Thickness: 0.50 meters	Th-228 1.000E+00
Cover Depth: 0.00 meters	Th-232 1.000E+00

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	4.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	9.987E+00	9.981E+00	9.969E+00	9.926E+00	9.797E+00	9.731E+00	9.315E+00	7.309E+00	0.000E+00
M(t):	3.995E-01	3.993E-01	3.988E-01	3.970E-01	3.919E-01	3.892E-01	3.726E-01	2.924E-01	0.000E+00

Maximum TDOSE(t): 9.987E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.232E+00	0.3236	1.424E-03	0.0001	0.000E+00	0.0000	2.027E+00	0.2030	4.918E-02	0.0049	3.017E-01	0.0302	2.105E-02	0.0021
Th-228	3.804E+00	0.3808	7.087E-03	0.0007	0.000E+00	0.0000	2.514E-02	0.0025	1.137E-03	0.0001	2.115E-04	0.0000	9.622E-03	0.0010
Th-232	1.852E-01	0.0185	4.018E-02	0.0040	0.000E+00	0.0000	2.188E-01	0.0219	6.974E-03	0.0007	1.641E-02	0.0016	3.998E-02	0.0040
Total	7.221E+00	0.7230	4.869E-02	0.0049	0.000E+00	0.0000	2.271E+00	0.2274	5.729E-02	0.0057	3.183E-01	0.0319	7.065E-02	0.0071

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.633E+00	0.5640
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.847E+00	0.3852
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.075E-01	0.0508
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.987E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.950E+00	0.3957	3.284E-03	0.0003	0.000E+00	0.0000	1.802E+00	0.1806	4.394E-02	0.0044	2.671E-01	0.0268	2.140E-02	0.0021
Th-228	2.647E+00	0.2652	4.933E-03	0.0005	0.000E+00	0.0000	1.746E-02	0.0017	7.912E-04	0.0001	1.472E-04	0.0000	6.696E-03	0.0007
Th-232	6.231E-01	0.0624	4.047E-02	0.0041	0.000E+00	0.0000	4.476E-01	0.0448	1.247E-02	0.0012	5.009E-02	0.0050	4.255E-02	0.0043
Total	7.220E+00	0.7234	4.869E-02	0.0049	0.000E+00	0.0000	2.267E+00	0.2272	5.721E-02	0.0057	3.173E-01	0.0318	7.064E-02	0.0071

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.088E+00	0.6099
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.677E+00	0.2682
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.216E+00	0.1219
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.981E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.298E+00	0.4311	4.806E-03	0.0005	0.000E+00	0.0000	1.418E+00	0.1423	3.481E-02	0.0035	2.093E-01	0.0210	1.984E-02	0.0020
Th-228	1.282E+00	0.1286	2.389E-03	0.0002	0.000E+00	0.0000	8.425E-03	0.0008	3.832E-04	0.0000	7.126E-05	0.0000	3.244E-03	0.0003
Th-232	1.638E+00	0.1643	4.148E-02	0.0042	0.000E+00	0.0000	8.313E-01	0.0834	2.190E-02	0.0022	1.070E-01	0.0107	4.755E-02	0.0048
Total	7.219E+00	0.7241	4.868E-02	0.0049	0.000E+00	0.0000	2.258E+00	0.2265	5.709E-02	0.0057	3.163E-01	0.0317	7.063E-02	0.0071

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.985E+00	0.6003
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.297E+00	0.1301
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.688E+00	0.2696
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.969E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.521E+00	0.2540	3.321E-03	0.0003	0.000E+00	0.0000	6.053E-01	0.0610	1.505E-02	0.0015	8.905E-02	0.0090	1.023E-02	0.0010
Th-228	1.014E-01	0.0102	1.890E-04	0.0000	0.000E+00	0.0000	6.570E-04	0.0001	3.030E-05	0.0000	5.631E-06	0.0000	2.565E-04	0.0000
Th-232	4.590E+00	0.4625	4.512E-02	0.0045	0.000E+00	0.0000	1.618E+00	0.1631	4.157E-02	0.0042	2.238E-01	0.0225	6.008E-02	0.0061
Total	7.213E+00	0.7267	4.863E-02	0.0049	0.000E+00	0.0000	2.224E+00	0.2241	5.665E-02	0.0057	3.128E-01	0.0315	7.057E-02	0.0071

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.244E+00	0.3268
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.025E-01	0.0103
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.579E+00	0.6629
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.926E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.392E-01	0.0244	3.227E-04	0.0000	0.000E+00	0.0000	5.210E-02	0.0053	1.323E-03	0.0001	7.739E-03	0.0008	9.506E-04	0.0001
Th-228	7.200E-05	0.0000	1.343E-07	0.0000	0.000E+00	0.0000	4.480E-07	0.0000	2.151E-08	0.0000	3.993E-09	0.0000	1.824E-07	0.0000
Th-232	6.952E+00	0.7097	4.818E-02	0.0049	0.000E+00	0.0000	2.076E+00	0.2119	5.407E-02	0.0055	2.950E-01	0.0301	6.944E-02	0.0071
Total	7.192E+00	0.7341	4.851E-02	0.0050	0.000E+00	0.0000	2.128E+00	0.2172	5.539E-02	0.0057	3.028E-01	0.0309	7.039E-02	0.0072

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.016E-01	0.0308
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.279E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.495E+00	0.9692
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.797E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 4.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.158E-02	0.0074	9.664E-05	0.0000	0.000E+00	0.0000	1.526E-02	0.0016	3.918E-04	0.0000	2.281E-03	0.0002	2.846E-04	0.0000
Th-228	1.918E-06	0.0000	3.582E-09	0.0000	0.000E+00	0.0000	1.169E-08	0.0000	5.733E-10	0.0000	1.063E-10	0.0000	4.863E-09	0.0000
Th-232	7.108E+00	0.7304	4.835E-02	0.0050	0.000E+00	0.0000	2.065E+00	0.2122	5.437E-02	0.0056	2.954E-01	0.0304	7.001E-02	0.0072
Total	7.179E+00	0.7378	4.844E-02	0.0050	0.000E+00	0.0000	2.080E+00	0.2138	5.477E-02	0.0056	2.977E-01	0.0306	7.030E-02	0.0072

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 4.000E+01 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.989E-02	0.0092
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.939E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.641E+00	0.9908
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.731E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	5.114E-05	0.0000	6.947E-08	0.0000	0.000E+00	0.0000	9.538E-06	0.0000	2.631E-07	0.0000	1.485E-06	0.0000	2.046E-07	0.0000
Th-228	6.837E-16	0.0000	1.287E-18	0.0000	0.000E+00	0.0000	3.653E-18	0.0000	2.053E-19	0.0000	3.790E-20	0.0000	1.747E-18	0.0000
Th-232	7.084E+00	0.7605	4.807E-02	0.0052	0.000E+00	0.0000	1.795E+00	0.1926	5.103E-02	0.0055	2.678E-01	0.0288	6.975E-02	0.0075
Total	7.084E+00	0.7605	4.807E-02	0.0052	0.000E+00	0.0000	1.795E+00	0.1926	5.103E-02	0.0055	2.678E-01	0.0288	6.975E-02	0.0075

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.270E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.907E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.315E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.315E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.501E-15	0.0000	2.312E-18	0.0000	0.000E+00	0.0000	1.585E-16	0.0000	6.699E-18	0.0000	3.234E-17	0.0000	6.808E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	6.111E+00	0.8361	4.683E-02	0.0064	0.000E+00	0.0000	8.733E-01	0.1195	3.895E-02	0.0053	1.713E-01	0.0234	6.796E-02	0.0093
Total	6.111E+00	0.8361	4.683E-02	0.0064	0.000E+00	0.0000	8.733E-01	0.1195	3.895E-02	0.0053	1.713E-01	0.0234	6.796E-02	0.0093

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.708E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.309E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.309E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways												
Parent and Progeny Principal Radionuclide Contributions Indicated												
Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)									
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	4.000E+01	1.000E+02	3.000E+02	1.000E+03	
Ra-228+D	Ra-228+D	1.000E+00	4.912E+00	4.350E+00	3.411E+00	1.457E+00	1.281E-01	3.799E-02	2.572E-05	6.383E-16	0.000E+00	
Ra-228+D	Th-228+D	1.000E+00	7.208E-01	1.738E+00	2.574E+00	1.787E+00	1.735E-01	5.190E-02	3.698E-05	1.070E-15	0.000E+00	
Ra-228+D	-DSR(j)		5.633E+00	6.088E+00	5.985E+00	3.244E+00	3.016E-01	8.989E-02	6.270E-05	1.708E-15	0.000E+00	
Th-228+D	Th-228+D	1.000E+00	3.847E+00	2.677E+00	1.297E+00	1.025E-01	7.279E-05	1.939E-06	6.907E-16	0.000E+00	0.000E+00	
Th-232	Th-232	1.000E+00	1.857E-01	1.855E-01	1.850E-01	1.834E-01	1.789E-01	1.767E-01	1.633E-01	1.201E-01	0.000E+00	
Th-232	Ra-228+D	1.000E+00	2.914E-01	8.466E-01	1.775E+00	3.693E+00	4.915E+00	4.952E+00	4.664E+00	3.390E+00	0.000E+00	
Th-232	Th-228+D	1.000E+00	3.041E-02	1.842E-01	7.277E-01	2.703E+00	4.401E+00	4.513E+00	4.488E+00	3.799E+00	0.000E+00	
Th-232	-DSR(j)		5.075E-01	1.216E+00	2.688E+00	6.579E+00	9.495E+00	9.641E+00	9.315E+00	7.309E+00	0.000E+00	

The DSR includes contributions from associated (half-life $\leq$ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g										
Basic Radiation Dose Limit = 2.500E+01 mrem/yr										
Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	4.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	4.438E+00	4.106E+00	4.177E+00	7.707E+00	8.289E+01	2.781E+02	3.987E+05	*2.726E+14	*2.726E+14	
Th-228	6.499E+00	9.338E+00	1.928E+01	2.439E+02	3.435E+05	1.289E+07	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	4.926E+01	2.056E+01	9.302E+00	3.800E+00	2.633E+00	2.593E+00	2.684E+00	3.420E+00	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	1.717 ñ 0.003	6.167E+00	4.054E+00	5.633E+00	4.438E+00
Th-228	1.000E+00	0.000E+00	3.847E+00	6.499E+00	3.847E+00	6.499E+00
Th-232	1.000E+00	44.03 ñ 0.09	9.649E+00	2.591E+00	5.075E-01	4.926E+01

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 Summary : Determination of Soil DCGL for Natural Thorium
 File : Soil DCGL for AOC - 10K.RAD

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	Parent Nuclide and Branch Fraction Indicated									
			DOSE(j, t), mrem/yr									
			t =	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	4.000E+01	1.000E+02	3.000E+02	1.000E+03

Ra-228	Ra-228	1.000E+00	4.912E+00	4.350E+00	3.411E+00	1.457E+00	1.281E-01	3.799E-02	2.572E-05	6.383E-16	0.000E+00	0.000E+00
Ra-228	Th-232	1.000E+00	2.914E-01	8.466E-01	1.775E+00	3.693E+00	4.915E+00	4.952E+00	4.664E+00	3.390E+00	0.000E+00	0.000E+00
Ra-228	-DOSE(j)		5.204E+00	5.197E+00	5.186E+00	5.150E+00	5.043E+00	4.990E+00	4.664E+00	3.390E+00	0.000E+00	0.000E+00
Th-228	Ra-228	1.000E+00	7.208E-01	1.738E+00	2.574E+00	1.787E+00	1.735E-01	5.190E-02	3.698E-05	1.070E-15	0.000E+00	0.000E+00
Th-228	Th-228	1.000E+00	3.847E+00	2.677E+00	1.297E+00	1.025E-01	7.279E-05	1.939E-06	6.907E-16	0.000E+00	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	3.041E-02	1.842E-01	7.277E-01	2.703E+00	4.401E+00	4.513E+00	4.488E+00	3.799E+00	0.000E+00	0.000E+00
Th-228	-DOSE(j)		4.598E+00	4.599E+00	4.598E+00	4.593E+00	4.575E+00	4.565E+00	4.488E+00	3.799E+00	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.857E-01	1.855E-01	1.850E-01	1.834E-01	1.789E-01	1.767E-01	1.633E-01	1.201E-01	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	Parent Nuclide and Branch Fraction Parameters									
			t=	S(j,t), pCi/g								

Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	8.025E-03	5.769E-06	1.920E-16	0.000E+00	
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.034E-01	6.997E-01	9.697E-01	9.872E-01	9.874E-01	9.621E-01	8.783E-01	
Ra-228	-S(j):		1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.965E-01	9.952E-01	9.875E-01	9.621E-01	8.783E-01	
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.383E-01	4.085E-01	4.014E-02	1.202E-02	8.644E-06	2.877E-16	0.000E+00	
Th-228	Th-228	1.000E+00	1.000E+00	6.960E-01	3.371E-01	2.666E-02	1.896E-05	5.054E-07	1.816E-16	0.000E+00	0.000E+00	
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.638E-01	9.563E-01	9.832E-01	9.874E-01	9.621E-01	8.783E-01	
Th-228	-S(j):		1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.965E-01	9.952E-01	9.875E-01	9.621E-01	8.783E-01	
Th-232	Th-232	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.948E-01	9.871E-01	9.617E-01	8.779E-01	

THF(i) is the thread fraction of the parent nuclide.

RESCALC.EXE execution time = 3.86 seconds

APPENDIX B-2

RESRAD INPUT/ SUMMARY REPORT FOR NATURAL URANIUM

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Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(2)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(3)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(4)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
B-1	U-234	1.320E-01	1.320E-01	DCF2(6)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(7)
B-1	U-238	1.180E-01	1.180E-01	DCF2(8)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(2)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(3)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(4)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(5)
D-1	U-234	2.830E-04	2.830E-04	DCF3(6)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(7)
D-1	U-238	2.550E-04	2.550E-04	DCF3(8)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(2,3)
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(5,3)

D-34	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(6,1)
D-34	U-234	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(6,2)
D-34	U-234	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(6,3)
D-34	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(7,1)
D-34	U-235+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(7,2)
D-34	U-235+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(7,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34 U-238	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34 U-238	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34 U-238	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34 U-238+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34 U-238+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34 U-238+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5 Ac-227+D	, fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5 Ac-227+D	, crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5 Pa-231	, fish	1.000E+01	1.000E+01	BIOFAC(2,1)
D-5 Pa-231	, crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)
D-5				
D-5 Pb-210+D	, fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5 Pb-210+D	, crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5 Ra-226+D	, fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5 Ra-226+D	, crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5 Th-230	, fish	1.000E+02	1.000E+02	BIOFAC(5,1)
D-5 Th-230	, crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(5,2)
D-5				
D-5 U-234	, fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5 U-234	, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(6,2)
D-5				
D-5 U-235+D	, fish	1.000E+01	1.000E+01	BIOFAC(7,1)
D-5 U-235+D	, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(7,2)
D-5				
D-5 U-238	, fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5 U-238	, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5 U-238+D	, fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5 U-238+D	, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ac-227	4.700E-02	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Pa-231	4.700E-02	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Th-230	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	4.700E-02	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): Ac-227	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Pa-231	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.200E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.210E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.400E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR

R013	Precipitation (m/yr)	8.827E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.200E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	3.210E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	1.450E+01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.200E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.210E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ac-227				
R016	Contaminated zone (cm**3/g)	2.400E+03	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.400E+03	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.400E+03	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.146E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Pa-231				
R016	Contaminated zone (cm**3/g)	2.700E+03	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	2.700E+03	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	2.700E+03	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.796E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(4)

R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.298E-05	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Th-230				
R016	Contaminated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	5.800E+03	6.000E+04	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.302E-04	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.719E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.719E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	1.600E+03	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.719E-04	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	5.512E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)

R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.830E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.685E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.325E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR

R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	C02F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FL00R1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH20CV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH20FL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX

R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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 Summary : Determination of Soil DCGL for Natural Uranium
 File : Nat U DCGL for 10K sq m.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
-----	-----
Area: 10000.00 square meters	Ac-227 4.700E-02
Thickness: 0.50 meters	Pa-231 4.700E-02
Cover Depth: 0.00 meters	Pb-210 1.000E+00
	Ra-226 1.000E+00
	Th-230 1.000E+00
	U-234 1.000E+00
	U-235 4.700E-02
	U-238 1.000E+00

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

	-----	-----	-----	-----	-----	-----	-----
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	1.106E+01	1.105E+01	1.102E+01	1.091E+01	1.064E+01	9.784E+00	7.048E+00
M(t):	4.424E-01	4.418E-01	4.406E-01	4.365E-01	4.256E-01	3.914E-01	2.819E-01
Maximum TDOSE(t):	1.106E+01 mrem/yr	at t = 0.000E+00 years					

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	4.229E-02	0.0038	7.609E-03	0.0007	0.000E+00	0.0000	6.337E-02	0.0057	2.394E-04	0.0000	9.375E-04	0.0001	9.709E-03	0.0009
Pa-231	4.740E-03	0.0004	1.593E-03	0.0001	0.000E+00	0.0000	1.856E-01	0.0168	5.274E-02	0.0048	2.634E-04	0.0000	7.222E-03	0.0007
Pb-210	2.768E-03	0.0003	5.584E-04	0.0001	0.000E+00	0.0000	2.651E+00	0.2397	1.210E-01	0.0109	2.130E-01	0.0193	1.016E-01	0.0092
Ra-226	5.005E+00	0.4525	2.189E-04	0.0000	0.000E+00	0.0000	2.004E+00	0.1812	4.949E-02	0.0045	2.973E-01	0.0269	2.032E-02	0.0018
Th-230	1.641E-03	0.0001	7.975E-03	0.0007	0.000E+00	0.0000	2.072E-02	0.0019	9.270E-04	0.0001	2.251E-04	0.0000	7.778E-03	0.0007
U-234	1.860E-04	0.0000	3.229E-03	0.0003	0.000E+00	0.0000	2.620E-02	0.0024	1.683E-03	0.0002	1.163E-02	0.0011	4.014E-03	0.0004
U-235	1.628E-02	0.0015	1.414E-04	0.0000	0.000E+00	0.0000	1.165E-03	0.0001	7.519E-05	0.0000	5.163E-04	0.0000	1.783E-04	0.0000
U-238	6.847E-02	0.0062	2.887E-03	0.0003	0.000E+00	0.0000	2.488E-02	0.0022	1.598E-03	0.0001	1.104E-02	0.0010	3.811E-03	0.0003
Total	5.142E+00	0.4649	2.421E-02	0.0022	0.000E+00	0.0000	4.977E+00	0.4500	2.278E-01	0.0206	5.349E-01	0.0484	1.546E-01	0.0140

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.242E-01	0.0112
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.522E-01	0.0228
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.090E+00	0.2794
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.377E+00	0.6670
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.926E-02	0.0036
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.694E-02	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-02	0.0017
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-01	0.0102
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.106E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	4.095E-02	0.0037	7.368E-03	0.0007	0.000E+00	0.0000	6.125E-02	0.0055	2.318E-04	0.0000	9.076E-04	0.0001	9.402E-03	0.0009
Pa-231	6.063E-03	0.0005	1.831E-03	0.0002	0.000E+00	0.0000	1.872E-01	0.0169	5.272E-02	0.0048	2.927E-04	0.0000	7.524E-03	0.0007
Pb-210	2.679E-03	0.0002	5.406E-04	0.0000	0.000E+00	0.0000	2.561E+00	0.2319	1.171E-01	0.0106	2.061E-01	0.0187	9.832E-02	0.0089
Ra-226	5.003E+00	0.4529	2.359E-04	0.0000	0.000E+00	0.0000	2.081E+00	0.1884	5.319E-02	0.0048	3.034E-01	0.0275	2.342E-02	0.0021
Th-230	3.808E-03	0.0003	7.974E-03	0.0007	0.000E+00	0.0000	2.155E-02	0.0020	9.487E-04	0.0001	3.533E-04	0.0000	7.786E-03	0.0007
U-234	1.859E-04	0.0000	3.227E-03	0.0003	0.000E+00	0.0000	2.613E-02	0.0024	1.682E-03	0.0002	1.162E-02	0.0011	4.012E-03	0.0004
U-235	1.627E-02	0.0015	1.414E-04	0.0000	0.000E+00	0.0000	1.166E-03	0.0001	7.625E-05	0.0000	5.159E-04	0.0000	1.784E-04	0.0000
U-238	6.844E-02	0.0062	2.886E-03	0.0003	0.000E+00	0.0000	2.481E-02	0.0022	1.597E-03	0.0001	1.103E-02	0.0010	3.809E-03	0.0003
Total	5.141E+00	0.4654	2.420E-02	0.0022	0.000E+00	0.0000	4.964E+00	0.4494	2.276E-01	0.0206	5.342E-01	0.0484	1.545E-01	0.0140

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E-01	0.0109
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.556E-01	0.0231
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.986E+00	0.2703
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.464E+00	0.6757
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.243E-02	0.0038
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.686E-02	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-02	0.0017
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.126E-01	0.0102
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.105E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	3.841E-02	0.0035	6.909E-03	0.0006	0.000E+00	0.0000	5.720E-02	0.0052	2.173E-04	0.0000	8.506E-04	0.0001	8.816E-03	0.0008
Pa-231	8.586E-03	0.0008	2.284E-03	0.0002	0.000E+00	0.0000	1.901E-01	0.0173	5.266E-02	0.0048	3.480E-04	0.0000	8.099E-03	0.0007
Pb-210	2.511E-03	0.0002	5.066E-04	0.0000	0.000E+00	0.0000	2.391E+00	0.2170	1.097E-01	0.0100	1.928E-01	0.0175	9.214E-02	0.0084
Ra-226	4.998E+00	0.4537	2.682E-04	0.0000	0.000E+00	0.0000	2.224E+00	0.2019	6.007E-02	0.0055	3.146E-01	0.0286	2.931E-02	0.0027
Th-230	8.139E-03	0.0007	7.972E-03	0.0007	0.000E+00	0.0000	2.332E-02	0.0021	9.973E-04	0.0001	6.200E-04	0.0001	7.807E-03	0.0007
U-234	1.859E-04	0.0000	3.224E-03	0.0003	0.000E+00	0.0000	2.601E-02	0.0024	1.679E-03	0.0002	1.160E-02	0.0011	4.008E-03	0.0004
U-235	1.626E-02	0.0015	1.413E-04	0.0000	0.000E+00	0.0000	1.168E-03	0.0001	7.839E-05	0.0000	5.151E-04	0.0000	1.785E-04	0.0000
U-238	6.839E-02	0.0062	2.883E-03	0.0003	0.000E+00	0.0000	2.469E-02	0.0022	1.595E-03	0.0001	1.101E-02	0.0010	3.806E-03	0.0003
Total	5.141E+00	0.4667	2.419E-02	0.0022	0.000E+00	0.0000	4.937E+00	0.4482	2.269E-01	0.0206	5.323E-01	0.0483	1.542E-01	0.0140

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E-01	0.0102
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.621E-01	0.0238
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.788E+00	0.2531
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.626E+00	0.6923
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.886E-02	0.0044
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.670E-02	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.834E-02	0.0017
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E-01	0.0102
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.102E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	3.068E-02	0.0028	5.517E-03	0.0005	0.000E+00	0.0000	4.503E-02	0.0041	1.733E-04	0.0000	6.777E-04	0.0001	7.040E-03	0.0006
Pa-231	1.623E-02	0.0015	3.657E-03	0.0003	0.000E+00	0.0000	1.983E-01	0.0182	5.242E-02	0.0048	5.148E-04	0.0000	9.839E-03	0.0009
Pb-210	2.002E-03	0.0002	4.036E-04	0.0000	0.000E+00	0.0000	1.878E+00	0.1721	8.709E-02	0.0080	1.527E-01	0.0140	7.342E-02	0.0067
Ra-226	4.981E+00	0.4565	3.656E-04	0.0000	0.000E+00	0.0000	2.643E+00	0.2422	8.068E-02	0.0074	3.475E-01	0.0318	4.710E-02	0.0043
Th-230	2.326E-02	0.0021	7.965E-03	0.0007	0.000E+00	0.0000	3.033E-02	0.0028	1.209E-03	0.0001	1.616E-03	0.0001	7.916E-03	0.0007
U-234	1.863E-04	0.0000	3.214E-03	0.0003	0.000E+00	0.0000	2.556E-02	0.0023	1.672E-03	0.0002	1.154E-02	0.0011	3.995E-03	0.0004
U-235	1.621E-02	0.0015	1.413E-04	0.0000	0.000E+00	0.0000	1.177E-03	0.0001	8.580E-05	0.0000	5.124E-04	0.0000	1.793E-04	0.0000
U-238	6.819E-02	0.0062	2.874E-03	0.0003	0.000E+00	0.0000	2.426E-02	0.0022	1.588E-03	0.0001	1.096E-02	0.0010	3.793E-03	0.0003
Total	5.138E+00	0.4709	2.414E-02	0.0022	0.000E+00	0.0000	4.845E+00	0.4440	2.249E-01	0.0206	5.261E-01	0.0482	1.533E-01	0.0140

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.912E-02	0.0082
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.809E-01	0.0257
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.194E+00	0.2010
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.100E+00	0.7423
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.229E-02	0.0066
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.616E-02	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.831E-02	0.0017
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.117E-01	0.0102
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.091E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	1.615E-02	0.0015	2.900E-03	0.0003	0.000E+00	0.0000	2.271E-02	0.0021	9.088E-05	0.0000	3.542E-04	0.0000	3.701E-03	0.0003
Pa-231	3.054E-02	0.0029	6.217E-03	0.0006	0.000E+00	0.0000	2.092E-01	0.0197	5.171E-02	0.0049	8.213E-04	0.0001	1.308E-02	0.0012
Pb-210	1.047E-03	0.0001	2.109E-04	0.0000	0.000E+00	0.0000	9.412E-01	0.0885	4.508E-02	0.0042	7.847E-02	0.0074	3.836E-02	0.0036
Ra-226	4.932E+00	0.4636	5.454E-04	0.0001	0.000E+00	0.0000	3.328E+00	0.3128	1.177E-01	0.0111	4.027E-01	0.0379	8.000E-02	0.0075
Th-230	6.609E-02	0.0062	7.947E-03	0.0007	0.000E+00	0.0000	5.476E-02	0.0051	2.071E-03	0.0002	4.806E-03	0.0005	8.460E-03	0.0008
U-234	1.927E-04	0.0000	3.185E-03	0.0003	0.000E+00	0.0000	2.429E-02	0.0023	1.652E-03	0.0002	1.136E-02	0.0011	3.959E-03	0.0004
U-235	1.609E-02	0.0015	1.421E-04	0.0000	0.000E+00	0.0000	1.203E-03	0.0001	1.065E-04	0.0000	5.048E-04	0.0000	1.825E-04	0.0000
U-238	6.762E-02	0.0064	2.847E-03	0.0003	0.000E+00	0.0000	2.306E-02	0.0022	1.569E-03	0.0001	1.079E-02	0.0010	3.758E-03	0.0004
Total	5.130E+00	0.4822	2.400E-02	0.0023	0.000E+00	0.0000	4.604E+00	0.4328	2.200E-01	0.0207	5.098E-01	0.0479	1.515E-01	0.0142

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.591E-02	0.0043
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.116E-01	0.0293
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.104E+00	0.1038
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.861E+00	0.8328
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.441E-01	0.0135
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.464E-02	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.823E-02	0.0017
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.096E-01	0.0103
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	1.708E-03	0.0002	3.055E-04	0.0000	0.000E+00	0.0000	2.036E-03	0.0002	9.480E-06	0.0000	3.652E-05	0.0000	3.899E-04	0.0000
Pa-231	4.418E-02	0.0045	8.621E-03	0.0009	0.000E+00	0.0000	1.912E-01	0.0195	4.906E-02	0.0050	1.081E-03	0.0001	1.604E-02	0.0016
Pb-210	1.083E-04	0.0000	2.175E-05	0.0000	0.000E+00	0.0000	8.259E-02	0.0084	4.497E-03	0.0005	7.612E-03	0.0008	3.956E-03	0.0004
Ra-226	4.743E+00	0.4847	7.028E-04	0.0001	0.000E+00	0.0000	3.402E+00	0.3478	1.444E-01	0.0148	4.142E-01	0.0423	1.093E-01	0.0112
Th-230	2.110E-01	0.0216	7.890E-03	0.0008	0.000E+00	0.0000	1.439E-01	0.0147	6.048E-03	0.0006	1.641E-02	0.0017	1.141E-02	0.0012
U-234	2.731E-04	0.0000	3.086E-03	0.0003	0.000E+00	0.0000	2.005E-02	0.0020	1.585E-03	0.0002	1.076E-02	0.0011	3.836E-03	0.0004
U-235	1.569E-02	0.0016	1.490E-04	0.0000	0.000E+00	0.0000	1.264E-03	0.0001	1.735E-04	0.0000	4.795E-04	0.0000	1.986E-04	0.0000
U-238	6.552E-02	0.0067	2.755E-03	0.0003	0.000E+00	0.0000	1.899E-02	0.0019	1.503E-03	0.0002	1.022E-02	0.0010	3.636E-03	0.0004
Total	5.081E+00	0.5193	2.353E-02	0.0024	0.000E+00	0.0000	3.863E+00	0.3948	2.073E-01	0.0212	4.608E-01	0.0471	1.488E-01	0.0152

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.485E-03	0.0005
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.102E-01	0.0317
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.878E-02	0.0101
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.814E+00	0.9008
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.966E-01	0.0405
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.960E-02	0.0040
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.795E-02	0.0018
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.026E-01	0.0105
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.784E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	2.650E-06	0.0000	4.927E-07	0.0000	0.000E+00	0.0000	1.640E-06	0.0000	1.486E-08	0.0000	5.527E-08	0.0000	6.287E-07	0.0000
Pa-231	4.157E-02	0.0059	8.405E-03	0.0012	0.000E+00	0.0000	9.090E-02	0.0129	4.177E-02	0.0059	9.623E-04	0.0001	1.547E-02	0.0022
Pb-210	1.627E-07	0.0000	3.299E-08	0.0000	0.000E+00	0.0000	6.258E-05	0.0000	6.165E-06	0.0000	9.469E-06	0.0000	6.001E-06	0.0000
Ra-226	3.841E+00	0.5450	6.530E-04	0.0001	0.000E+00	0.0000	1.569E+00	0.2226	1.158E-01	0.0164	2.760E-01	0.0392	1.021E-01	0.0145
Th-230	5.300E-01	0.0752	7.732E-03	0.0011	0.000E+00	0.0000	2.106E-01	0.0299	1.550E-02	0.0022	3.616E-02	0.0051	2.023E-02	0.0029
U-234	8.687E-04	0.0001	2.820E-03	0.0004	0.000E+00	0.0000	9.359E-03	0.0013	1.419E-03	0.0002	9.226E-03	0.0013	3.516E-03	0.0005
U-235	1.418E-02	0.0020	1.703E-04	0.0000	0.000E+00	0.0000	9.520E-04	0.0001	3.208E-04	0.0000	4.134E-04	0.0001	2.448E-04	0.0000
U-238	5.590E-02	0.0079	2.508E-03	0.0004	0.000E+00	0.0000	8.639E-03	0.0012	1.330E-03	0.0002	8.732E-03	0.0012	3.311E-03	0.0005
Total	4.484E+00	0.6362	2.229E-02	0.0032	0.000E+00	0.0000	1.889E+00	0.2681	1.761E-01	0.0250	3.315E-01	0.0470	1.448E-01	0.0206

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.482E-06	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.991E-01	0.0282
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.441E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.905E+00	0.8378
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.202E-01	0.1164
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.721E-02	0.0039
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.628E-02	0.0023
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.042E-02	0.0114
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.048E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

		Dose/Source Ratios Summed Over All Pathways									
		Parent and Progeny Principal Radionuclide Contributions Indicated									
Parent (i)	Product (j)	Parent Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)								
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Ac-227+D	Ac-227+D	1.000E+00	2.642E+00	2.556E+00	2.392E+00	1.896E+00	9.767E-01	9.543E-02	1.166E-04	0.000E+00	
Pa-231	Pa-231	1.000E+00	5.317E+00	5.307E+00	5.287E+00	5.218E+00	5.021E+00	4.348E+00	2.561E+00	0.000E+00	
Pa-231	Ac-227+D	1.000E+00	4.825E-02	1.319E-01	2.888E-01	7.595E-01	1.609E+00	2.252E+00	1.675E+00	0.000E+00	
Pa-231	-DSR(j)		5.365E+00	5.439E+00	5.576E+00	5.977E+00	6.630E+00	6.600E+00	4.236E+00	0.000E+00	
Pb-210+D	Pb-210+D	1.000E+00	3.090E+00	2.986E+00	2.788E+00	2.194E+00	1.104E+00	9.878E-02	8.441E-05	0.000E+00	
Ra-226+D	Ra-226+D	1.000E+00	7.320E+00	7.312E+00	7.296E+00	7.240E+00	7.079E+00	6.521E+00	4.691E+00	0.000E+00	
Ra-226+D	Pb-210+D	1.000E+00	5.670E-02	1.523E-01	3.306E-01	8.601E-01	1.781E+00	2.293E+00	1.213E+00	0.000E+00	
Ra-226+D	-DSR(j)		7.377E+00	7.464E+00	7.626E+00	8.100E+00	8.861E+00	8.814E+00	5.905E+00	0.000E+00	
Th-230	Th-230	1.000E+00	3.771E-02	3.766E-02	3.757E-02	3.725E-02	3.633E-02	3.317E-02	2.446E-02	0.000E+00	
Th-230	Ra-226+D	1.000E+00	1.550E-03	4.712E-03	1.103E-02	3.296E-02	9.404E-02	2.893E-01	6.467E-01	0.000E+00	
Th-230	Pb-210+D	1.000E+00	8.854E-06	5.452E-05	2.641E-04	2.090E-03	1.376E-02	7.414E-02	1.491E-01	0.000E+00	
Th-230	-DSR(j)		3.926E-02	4.243E-02	4.886E-02	7.229E-02	1.441E-01	3.966E-01	8.202E-01	0.000E+00	
U-234	U-234	1.000E+00	4.694E-02	4.686E-02	4.670E-02	4.616E-02	4.461E-02	3.941E-02	2.610E-02	0.000E+00	
U-234	Th-230	1.000E+00	1.788E-07	5.190E-07	1.194E-06	3.525E-06	9.935E-06	2.952E-05	6.294E-05	0.000E+00	
U-234	Ra-226+D	1.000E+00	4.589E-09	3.273E-08	1.743E-07	1.556E-06	1.289E-05	1.302E-04	8.616E-04	0.000E+00	
U-234	Pb-210+D	1.000E+00	2.107E-11	2.755E-10	2.907E-09	6.837E-08	1.358E-06	2.688E-05	1.807E-04	0.000E+00	
U-234	-DSR(j)		4.694E-02	4.686E-02	4.670E-02	4.616E-02	4.464E-02	3.960E-02	2.721E-02	0.000E+00	
U-235+D	U-235+D	1.000E+00	3.905E-01	3.902E-01	3.898E-01	3.883E-01	3.840E-01	3.693E-01	3.211E-01	0.000E+00	
U-235+D	Pa-231	1.000E+00	5.304E-05	1.647E-04	3.877E-04	1.154E-03	3.228E-03	9.163E-03	1.587E-02	0.000E+00	
U-235+D	Ac-227+D	1.000E+00	3.649E-07	2.285E-06	1.120E-05	8.978E-05	6.027E-04	3.476E-03	9.321E-03	0.000E+00	
U-235+D	-DSR(j)		3.905E-01	3.904E-01	3.902E-01	3.895E-01	3.879E-01	3.819E-01	3.463E-01	0.000E+00	
U-238	U-238	5.400E-05	2.276E-06	2.272E-06	2.265E-06	2.238E-06	2.163E-06	1.911E-06	1.265E-06	0.000E+00	
U-238+D	U-238+D	9.999E-01	1.127E-01	1.126E-01	1.124E-01	1.117E-01	1.096E-01	1.026E-01	8.040E-02	0.000E+00	
U-238+D	U-234	9.999E-01	6.651E-08	1.992E-07	4.634E-07	1.374E-06	3.858E-06	1.123E-05	2.225E-05	0.000E+00	
U-238+D	Th-230	9.999E-01	1.747E-13	1.166E-12	6.012E-12	5.262E-11	4.292E-10	4.183E-09	2.637E-08	0.000E+00	
U-238+D	Ra-226+D	9.999E-01	3.216E-15	4.936E-14	5.820E-13	1.544E-11	3.710E-10	1.233E-08	2.429E-07	0.000E+00	
U-238+D	Pb-210+D	9.999E-01	1.250E-17	3.357E-16	7.567E-15	5.228E-13	3.076E-11	2.145E-09	4.677E-08	0.000E+00	
U-238+D	-DSR(j)		1.127E-01	1.126E-01	1.124E-01	1.117E-01	1.096E-01	1.026E-01	8.042E-02	0.000E+00	

The DSR includes contributions from associated (half-life $\leq$ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	9.464E+00	9.783E+00	1.045E+01	1.318E+01	2.560E+01	2.620E+02	2.143E+05	*7.232E+13
Pa-231	4.659E+00	4.596E+00	4.483E+00	4.182E+00	3.771E+00	3.788E+00	5.902E+00	*4.723E+10
Pb-210	8.091E+00	8.373E+00	8.966E+00	1.140E+01	2.264E+01	2.531E+02	2.962E+05	*7.634E+13
Ra-226	3.389E+00	3.349E+00	3.278E+00	3.087E+00	2.821E+00	2.836E+00	4.234E+00	*9.885E+11
Th-230	6.367E+02	5.893E+02	5.117E+02	3.458E+02	1.735E+02	6.303E+01	3.048E+01	*2.018E+10
U-234	5.326E+02	5.335E+02	5.353E+02	5.416E+02	5.601E+02	6.314E+02	9.188E+02	*6.247E+09
U-235	6.402E+01	6.404E+01	6.407E+01	6.418E+01	6.445E+01	6.545E+01	7.218E+01	*2.161E+06
U-238	2.219E+02	2.221E+02	2.225E+02	2.239E+02	2.280E+02	2.436E+02	3.109E+02	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i, tmin)	G(i, tmin) (pCi/g)	DSR(i, tmax)	G(i, tmax) (pCi/g)
Ac-227	4.700E-02	0.000E+00	2.642E+00	9.464E+00	2.642E+00	9.464E+00
Pa-231	4.700E-02	57.4 ± 0.1	6.853E+00	3.648E+00	5.365E+00	4.659E+00
Pb-210	1.000E+00	0.000E+00	3.090E+00	8.091E+00	3.090E+00	8.091E+00
Ra-226	1.000E+00	56.8 ± 0.1	9.112E+00	2.744E+00	7.377E+00	3.389E+00
Th-230	1.000E+00	324.8 ± 0.6	8.274E-01	3.022E+01	3.926E-02	6.367E+02
U-234	1.000E+00	0.000E+00	4.694E-02	5.326E+02	4.694E-02	5.326E+02
U-235	4.700E-02	0.000E+00	3.905E-01	6.402E+01	3.905E-01	6.402E+01
U-238	1.000E+00	0.000E+00	1.127E-01	2.219E+02	1.127E-01	2.219E+02

Individual Nuclide Dose Summed Over All Pathways										
Parent Nuclide and Branch Fraction Indicated										
Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
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Ac-227	Ac-227	1.000E+00	1.242E-01	1.201E-01	1.124E-01	8.912E-02	4.591E-02	4.485E-03	5.482E-06	0.000E+00
Ac-227	Pa-231	1.000E+00	2.268E-03	6.198E-03	1.357E-02	3.570E-02	7.564E-02	1.059E-01	7.873E-02	0.000E+00
Ac-227	U-235	1.000E+00	1.715E-08	1.074E-07	5.266E-07	4.220E-06	2.833E-05	1.634E-04	4.381E-04	0.000E+00
Ac-227	-DOSE(j)		1.264E-01	1.263E-01	1.260E-01	1.248E-01	1.216E-01	1.105E-01	7.917E-02	0.000E+00
Pa-231	Pa-231	1.000E+00	2.499E-01	2.494E-01	2.485E-01	2.452E-01	2.360E-01	2.043E-01	1.204E-01	0.000E+00
Pa-231	U-235	1.000E+00	2.493E-06	7.739E-06	1.822E-05	5.426E-05	1.517E-04	4.307E-04	7.458E-04	0.000E+00
Pa-231	-DOSE(j)		2.499E-01	2.494E-01	2.485E-01	2.453E-01	2.361E-01	2.048E-01	1.211E-01	0.000E+00
Pb-210	Pb-210	1.000E+00	3.090E+00	2.986E+00	2.788E+00	2.194E+00	1.104E+00	9.878E-02	8.441E-05	0.000E+00
Pb-210	Ra-226	1.000E+00	5.670E-02	1.523E-01	3.306E-01	8.601E-01	1.781E+00	2.293E+00	1.213E+00	0.000E+00
Pb-210	Th-230	1.000E+00	8.854E-06	5.452E-05	2.641E-04	2.090E-03	1.376E-02	7.414E-02	1.491E-01	0.000E+00
Pb-210	U-234	1.000E+00	2.107E-11	2.755E-10	2.907E-09	6.837E-08	1.358E-06	2.688E-05	1.807E-04	0.000E+00
Pb-210	U-238	9.999E-01	1.250E-17	3.357E-16	7.567E-15	5.228E-13	3.076E-11	2.145E-09	4.677E-08	0.000E+00
Pb-210	-DOSE(j)		3.147E+00	3.138E+00	3.119E+00	3.056E+00	2.899E+00	2.466E+00	1.363E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	7.320E+00	7.312E+00	7.296E+00	7.240E+00	7.079E+00	6.521E+00	4.691E+00	0.000E+00
Ra-226	Th-230	1.000E+00	1.550E-03	4.712E-03	1.103E-02	3.296E-02	9.404E-02	2.893E-01	6.467E-01	0.000E+00
Ra-226	U-234	1.000E+00	4.589E-09	3.273E-08	1.743E-07	1.556E-06	1.289E-05	1.302E-04	8.616E-04	0.000E+00
Ra-226	U-238	9.999E-01	3.216E-15	4.936E-14	5.820E-13	1.544E-11	3.710E-10	1.233E-08	2.429E-07	0.000E+00
Ra-226	-DOSE(j)		7.321E+00	7.317E+00	7.307E+00	7.272E+00	7.173E+00	6.810E+00	5.339E+00	0.000E+00
Th-230	Th-230	1.000E+00	3.771E-02	3.766E-02	3.757E-02	3.725E-02	3.633E-02	3.317E-02	2.446E-02	0.000E+00
Th-230	U-234	1.000E+00	1.788E-07	5.190E-07	1.194E-06	3.525E-06	9.935E-06	2.952E-05	6.294E-05	0.000E+00
Th-230	U-238	9.999E-01	1.747E-13	1.166E-12	6.012E-12	5.262E-11	4.292E-10	4.183E-09	2.637E-08	0.000E+00
Th-230	-DOSE(j)		3.771E-02	3.766E-02	3.757E-02	3.725E-02	3.634E-02	3.320E-02	2.452E-02	0.000E+00
U-234	U-234	1.000E+00	4.694E-02	4.686E-02	4.670E-02	4.616E-02	4.461E-02	3.941E-02	2.610E-02	0.000E+00
U-234	U-238	9.999E-01	6.651E-08	1.992E-07	4.634E-07	1.374E-06	3.858E-06	1.123E-05	2.225E-05	0.000E+00
U-234	-DOSE(j)		4.694E-02	4.686E-02	4.670E-02	4.616E-02	4.462E-02	3.942E-02	2.613E-02	0.000E+00
U-235	U-235	1.000E+00	1.835E-02	1.834E-02	1.832E-02	1.825E-02	1.805E-02	1.736E-02	1.509E-02	0.000E+00
U-238	U-238	5.400E-05	2.276E-06	2.272E-06	2.265E-06	2.238E-06	2.163E-06	1.911E-06	1.265E-06	0.000E+00
U-238	U-238	9.999E-01	1.127E-01	1.126E-01	1.124E-01	1.117E-01	1.096E-01	1.026E-01	8.040E-02	0.000E+00
U-238	-DOSE(j)		1.127E-01	1.126E-01	1.124E-01	1.117E-01	1.096E-01	1.026E-01	8.040E-02	0.000E+00
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THF(i) is the thread fraction of the parent nuclide.

		Individual Nuclide Soil Concentration Parent Nuclide and Branch Fraction Indicated								
0Nuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03

Ac-227	Ac-227	1.000E+00	4.700E-02	4.551E-02	4.268E-02	3.408E-02	1.792E-02	1.887E-03	3.043E-06	5.124E-16
Ac-227	Pa-231	1.000E+00	0.000E+00	1.472E-03	4.277E-03	1.278E-02	2.865E-02	4.370E-02	4.292E-02	3.478E-02
Ac-227	U-235	1.000E+00	0.000E+00	1.566E-08	1.379E-07	1.422E-06	1.050E-05	6.696E-05	2.384E-04	6.567E-04
Ac-227	-S(j):		4.700E-02	4.699E-02	4.696E-02	4.685E-02	4.658E-02	4.566E-02	4.316E-02	3.543E-02
Pa-231	Pa-231	1.000E+00	4.700E-02	4.699E-02	4.696E-02	4.686E-02	4.658E-02	4.561E-02	4.294E-02	3.479E-02
Pa-231	U-235	1.000E+00	0.000E+00	9.941E-07	2.980E-06	9.906E-06	2.949E-05	9.568E-05	2.657E-04	6.766E-04
Pa-231	-S(j):		4.700E-02	4.699E-02	4.696E-02	4.687E-02	4.661E-02	4.570E-02	4.321E-02	3.547E-02
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.072E-01	7.229E-01	3.777E-01	3.895E-02	5.909E-05	8.034E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.878E-02	2.647E-01	5.907E-01	8.863E-01	8.335E-01	5.808E-01
Pb-210	Th-230	1.000E+00	0.000E+00	6.659E-06	5.864E-05	6.046E-04	4.460E-03	2.845E-02	1.022E-01	2.943E-01
Pb-210	U-234	1.000E+00	0.000E+00	2.003E-11	5.320E-10	1.861E-08	4.310E-07	1.024E-05	1.236E-04	1.222E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.422E-17	1.136E-15	1.339E-13	9.565E-12	8.124E-10	3.193E-08	1.094E-06
Pb-210	-S(j):		1.000E+00	9.986E-01	9.961E-01	9.882E-01	9.728E-01	9.537E-01	9.359E-01	8.763E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.846E-01	9.497E-01	8.565E-01	5.968E-01
Ra-226	Th-230	1.000E+00	0.000E+00	4.331E-04	1.298E-03	4.318E-03	1.287E-02	4.193E-02	1.179E-01	3.140E-01
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.753E-08	1.943E-07	1.735E-06	1.878E-05	1.568E-04	1.343E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.969E-14	1.835E-12	4.915E-11	1.770E-09	4.413E-08	1.237E-06
Ra-226	-S(j):		1.000E+00	9.999E-01	9.998E-01	9.992E-01	9.975E-01	9.916E-01	9.746E-01	9.122E-01
Th-230	Th-230	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.986E-01	9.958E-01	9.862E-01	9.591E-01	8.701E-01
Th-230	U-234	1.000E+00	0.000E+00	8.999E-06	2.698E-05	8.974E-05	2.676E-04	8.730E-04	2.464E-03	6.654E-03
Th-230	U-238	9.999E-01	0.000E+00	1.275E-11	1.147E-10	1.271E-09	1.136E-08	1.231E-07	1.030E-06	8.913E-06
Th-230	-S(j):		1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.871E-01	9.616E-01	8.767E-01
U-234	U-234	1.000E+00	1.000E+00	9.995E-01	9.986E-01	9.953E-01	9.859E-01	9.536E-01	8.673E-01	6.221E-01
U-234	U-238	9.999E-01	0.000E+00	2.833E-06	8.492E-06	2.821E-05	8.385E-05	2.704E-04	7.379E-04	1.766E-03
U-234	-S(j):		1.000E+00	9.995E-01	9.986E-01	9.953E-01	9.859E-01	9.539E-01	8.680E-01	6.238E-01
U-235	U-235	1.000E+00	4.700E-02	4.698E-02	4.693E-02	4.678E-02	4.634E-02	4.483E-02	4.080E-02	2.932E-02
U-238	U-238	5.400E-05	5.400E-05	5.397E-05	5.392E-05	5.375E-05	5.324E-05	5.151E-05	4.687E-05	3.369E-05
U-238	U-238	9.999E-01	9.999E-01	9.995E-01	9.985E-01	9.952E-01	9.859E-01	9.539E-01	8.680E-01	6.238E-01
U-238	-S(j):		1.000E+00	9.995E-01	9.986E-01	9.953E-01	9.859E-01	9.539E-01	8.680E-01	6.238E-01

THF(i) is the thread fraction of the parent nuclide.
RESCALC.EXE execution time = 3.37 seconds

