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<p>Description:</p> <p>This calculation evaluates the control room dose to plant operators and the offsite radiological consequences at the Exclusion Area Boundary and Low Population Zone for a main steam line break event using the Alternative Source Term Methodology.</p> <p>Revision 1 was performed to incorporate a revision to the atmospheric dispersion factors driven by an update to the meteorological data. In addition, the fraction of primary-to-secondary leakage which flashes to vapor in the steam generators was modified to be consistent with similar changes to the steam generator tube rupture analysis.</p>		
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1 Purpose

This calculation evaluates the control room dose to plant operators and the offsite radiological consequences at the Exclusion Area Boundary (EAB) and Low Population Zone (LPZ) for a main steam line break (MSLB) event using the Alternative Source Term (AST) Methodology.

Revision 1 was performed to incorporate a revision to the atmospheric dispersion factors driven by an update to the meteorological data. In addition, the fraction of primary-to-secondary leakage which flashes to vapor in the steam generators was modified to be consistent with similar changes to the steam generator tube rupture analysis.

2 Methodology

Control room and offsite doses are calculated for the main steam line break event using the methodology outlined in Appendix E of Reg. Guide 1.183 (Reference [7.1]). Item G.2.1 of Reference [7.6] indicates that the MSLB event at Cook results in no fuel damage. Per Section 2 of Appendix E to Reference [7.1], when fuel damage is not postulated to occur, the activity release is to be based upon two different iodine spiking phenomena. In the first, an iodine spike is assumed to occur prior to the MSLB and results in an RCS iodine concentration that is equal to the maximum activity allowed by the Technical Specifications. In the second, iodine spiking occurs concurrently with the event and is produced at a rate that is 500 times greater than the appearance rate during normal operation.

Based upon the piping configuration shown in References [7.17] and [7.18], the steam released from breaks outside of containment which occur upstream of the MSIV on the faulted steam generator will enter the environment from the main steam enclosures. For breaks downstream of the MSIV, the steam can enter the atmosphere from either the main steam enclosures or from the turbine building. To conservatively address the broad spectrum of release locations, the analysis does not credit isolation of the faulted steam generator and applies the atmospheric dispersion factors from the most limiting release location.

For this event, the noble gases are assumed to be transported directly from the RCS to the environment without mitigation. The remaining isotopes are carried to the steam generators (SG) by primary-to-secondary leakage. In the faulted steam generator, all of the primary-to-secondary leakage is assumed to flash to vapor and be released to the environment with no mitigation. Reduction in the fission product activity within the intact steam generators is dependent upon the steam generator water level; and the quantity of nuclides released to the environment is dependent upon the amount of steaming necessary to cool the RCS to 212 °F. In addition, the analysis considers the dose contribution from the release of the iodine initially present in the steam generator secondary during normal plant operation. Inputs and assumptions consider the occurrence and timing of a loss of offsite power with the objective of maximizing the postulated radiological consequences.

This analysis calculates the dose contribution from each of the radionuclide release pathways separately, which are then combined to obtain the total dose for the event. The following cases are considered:



Pre-Accident Iodine Spike

- 1.) Noble Gas Release (Section 5.1)
- 2.) Pre-Accident Iodine Spike Release (5.3)
- 3.) Initial Steam Generator Iodine (5.6)

Concurrent Iodine Spike

- 1.) Noble Gas Release (Section 5.1)
- 2.) Concurrent Iodine Spike – Iodine Release (5.4)
- 3.) Concurrent Iodine Spike – RCS Activity Release (5.5)
- 4.) Initial Steam Generator Iodine (5.6)

The event acceptance criteria are discussed in Section 4.4 of Reference [7.1] and are based upon the requirements of 10CFR50.67. The dose limits for the main steam line break event are presented in Table 1, and the event is analyzed for 30 days.

Table 1: MSLB Dose Acceptance Criteria

Location	Limit (Rem TEDE)	Duration
EAB – Pre-accident Iodine Spike	25	Worst 2-hour period
LPZ – Pre-accident Iodine Spike	25	Until cold shutdown is established
EAB – Coincident Iodine Spike	2.5	Worst 2-hour period
LPZ – Coincident Iodine Spike	2.5	Until cold shutdown is established
Control Room	5	Duration of the accident

The release, transport, removal, and intake of radioisotopes are analyzed using RADTRAD 3.10 (References [7.2] through [7.5]), which is run on a computer (Red_Wolf_17) with an Intel® Core™ i7-4770 processor and 16GB of RAM running Windows 7 Professional. A review of all available RADTRAD software error notices confirmed that there are no open code errors that will adversely impact this project.

3 Inputs

- 3.1 The MSLB event is analyzed using the RCS source term from Table 16 of Reference [7.7], which is presented in Table 2. This source term represents the primary coolant activity with the iodine isotope activities set to the Technical Specification limit of 1.0 $\mu\text{Ci/gm}$ Dose Equivalent I-131 and the non-iodine isotope concentrations at the gross specific activity limit of 100/E-bar.



Table 2: RCS Source Term

Nuclide No.	Nuclide	Activity (μCi/gm)	Nuclide No.	Nuclide	Activity (μCi/gm)
1	Co-58	0.000E+00	51	Pr-143	6.713E-03
2	Co-60	0.000E+00	52	Nd-147	0.000E+00
3	Kr-85	2.385E+01	53	Np-239	0.000E+00
4	Kr-85m	5.204E-01	54	Pu-238	0.000E+00
5	Kr-87	3.299E-01	55	Pu-239	0.000E+00
6	Kr-88	9.148E-01	56	Pu-240	0.000E+00
7	Rb-86	8.797E-02	57	Pu-241	0.000E+00
8	Sr-89	1.335E-03	58	Am-241	0.000E+00
9	Sr-90	1.237E-04	59	Cm-242	0.000E+00
10	Sr-91	5.681E-04	60	Cm-244	0.000E+00
11	Sr-92	2.488E-04	61	Kr-83m	1.350E-01
12	Y-90	2.152E-04	62	Br-82	4.641E-03
13	Y-91	1.692E-02	63	Br-83	2.720E-02
14	Y-92	3.067E-04	64	Br-84	1.244E-02
15	Y-93	2.010E-04	65	Rb-89	2.530E-02
16	Zr-95	2.409E-02	66	Y-91m	3.314E-04
17	Zr-97	3.920E-04	67	Y-95	0.000E+00
18	Nb-95	3.478E-02	68	Nb-95m	1.867E-04
19	Mo-99	2.070E+00	69	Nb-97	4.900E-05
20	Tc-99m	1.980E+00	70	Rh-103m	1.988E-02
21	Ru-103	1.991E-02	71	Pd-109	0.000E+00
22	Ru-105	9.723E-05	72	Sb-124	0.000E+00
23	Ru-106	3.340E-02	73	Sb-125	0.000E+00
24	Rh-105	7.689E-04	74	Sb-126	0.000E+00
25	Sb-127	0.000E+00	75	Te-125m	2.449E-02
26	Sb-129	0.000E+00	76	Te-131	1.599E-02
27	Te-127	2.489E-01	77	Te-133	0.000E+00
28	Te-127m	2.465E-01	78	Te-133m	7.643E-03
29	Te-129	2.281E-01	79	Te-134	1.092E-02
30	Te-129m	3.463E-01	80	I-130	0.000E+00
31	Te-131m	5.787E-02	81	Xe-131m	1.600E+00
32	Te-132	9.639E-01	82	Xe-133m	1.423E+00
33	I-131	8.087E-01	83	Xe-135m	2.138E-01
34	I-132	6.411E-01	84	Xe-138	2.292E-01
35	I-133	1.0304E+00	85	Cs-134m	2.031E-02
36	I-134	1.231E-01	86	Cs-138	3.420E-01



Nuclide No.	Nuclide	Activity (μCi/gm)	Nuclide No.	Nuclide	Activity (μCi/gm)
37	I-135	5.365E-01	87	Ba-141	4.233E-05
38	Xe-133	1.037E+02	88	La-143	0.000E+00
39	Xe-135	3.361E+00	89	Pm-147	0.000E+00
40	Cs-134	3.327E+01	90	Pm-148	0.000E+00
41	Cs-136	2.188E+00	91	Pm-148m	0.000E+00
42	Cs-137	1.852E+01	92	Pm-149	0.000E+00
43	Ba-139	1.975E-04	93	Pm-151	0.000E+00
44	Ba-140	1.940E-03	94	Sm-153	0.000E+00
45	La-140	2.878E-03	95	Eu-154	0.000E+00
46	La-141	1.301E-04	96	Eu-155	0.000E+00
47	La-142	3.346E-05	97	Eu-156	0.000E+00
48	Ce-141	1.445E-02	98	Np-238	0.000E+00
49	Ce-143	6.911E-04	99	Pu-243	0.000E+00
50	Ce-144	4.229E-02	100	Am-242	0.000E+00

- 3.2 Prior to the event, the specific iodine activity in the steam generators secondary is at the Technical Specification limit of 0.1 μCi/gm Dose Equivalent I-131 from Item E.1 of Reference [7.6].
- 3.3 The maximum RCS iodine concentration allowed by the Technical Specifications during full power operation is 60 μCi/gm per Item B.14 of Reference [7.1].
- 3.4 The RADTRAD dose conversion factor file, **RWA-1205-004.inp**, is developed in Reference [7.8] and is used in this analysis to supply the inhalation, ingestion, and submersion dose conversion factors from FGR 11 and FGR 12 (References [7.14] and [7.15]) for the source term isotopes.
- 3.5 Item B.2 of Reference [7.6] gives the minimum RCS volume as 12144.3 ft³, which represents Unit 2 'cold' conditions and includes a full pressurizer volume. For conservatism, the larger Unit 1 pressurizer volume of 1834.4 ft³ is subtracted from this value to determine the minimum RCS volume, excluding the fluid in the pressurizer:

$$\text{Minimum RCS Volume} = 12,144.3 - 1,834.4 = 10,309.9 \text{ ft}^3$$

The nominal RCS operating temperature is 571 °F for Unit 1 and 574 °F for Unit 2, with a nominal pressure of 2250 psia for both units (Reference [7.6], Items B.3 and B.4). These values are used to obtain the fluid density for the RCS volume-to-mass units conversion. For the minimum RCS mass, the Unit 2 conditions are applied which yield a fluid density of 45.213 lbm/ft³. The corresponding minimum RCS mass is:

$$\text{Minimum RCS Mass} = 10,309.9 \text{ ft}^3 \times 45.213 \frac{\text{lbm}}{\text{ft}^3} = 466,141.5 \text{ lbm}$$



Conversely, Item B.2 of Reference [7.6] gives the maximum RCS volume as 12535.4 ft³, which represents Unit 1 'cold' conditions and includes a full pressurizer volume. This same reference identifies that the volume at hot conditions can be obtained by applying a 3% volume expansion factor. Based upon a no-load temperature of 547.0 °F and a pressure of 2250 psia from Items B.3 and B.4 of Reference [7.6], with a fluid density of 47.035 lbm/ft³, the maximum RCS mass is:

$$\text{Maximum RCS Mass} = (12,535.4 \text{ ft}^3) \times 1.03 \times \left(47.035 \frac{\text{lbm}}{\text{ft}^3}\right) = 607,290.6 \text{ lbm}$$

- 3.6 From Item E.2 of Reference [7.6], the primary-to-secondary leakage is limited to 0.25 gpm to any one steam generator and 1.0 gpm to all steam generators.
- 3.7 Item E.3 of Reference [7.6] gives the required fluid conditions for reported RCS leakage by the reactor coolant leak rate monitoring program as 70 °F. At atmospheric pressure, the corresponding fluid density is 62.30 lbm/ft³.
- 3.8 The maximum letdown flow rate is listed as 120 gpm in Item B.8 of Reference [7.6]. NSAL-00-004 (Reference [7.16]) recommends applying a 10% uncertainty to the letdown flow when calculating the iodine appearance rates. Therefore, conservative value for the maximum letdown flow rate is:

$$\text{Maximum Letdown Flow Rate} = 120 \text{ gpm} \times 1.1 = 132 \text{ gpm}$$

The letdown flow rate is based upon fluid conditions of 120 °F and 365 psia per Item B.9 of Reference [7.6], with a corresponding density of 61.78 lbm/ft³.

- 3.9 Item B.13 of Reference [7.6] lists the Tech. Spec. limits for identified and unidentified RCS leakage as 10 gpm and 1 gpm, respectively.
- 3.10 The minimum liquid mass on the secondary side of the steam generators at Hot Full Power (HFP) conditions is 97,515.7 lbm/SG and the maximum secondary mass at Hot Zero Power (HWP) conditions is 161,000 lbm/SG from Item E.4 of Reference [7.6].
- 3.11 The steam generator moisture carryover fraction during normal plant operation is 0.045% for Unit 1 and 0.15% for Unit 2 (Reference [7.6], Item E.6). A conservative value of 0.2% is applied in this analysis.
- 3.12 Item E.5 of Reference [7.6] gives the time to cool the RCS to 212 °F and terminate steam releases as 24 hours based upon a single train of RHR in service. Intact SG steam releases from Item G.2.3 of the same reference are provided which are based upon a cooldown to 212 °F in eight hours, with continued steaming for decay heat removal until 24 hours. These values are shown in Table 3. Note that the steam release values are conservatively high since no heat removal by the RHR system is credited in lowering the RCS temperature.



Table 3: Steam Release Rates

Time (hours)	Steam Release (lbm)
0 - 2	456,000
2 - 8	1,186,000
8 - 24	1,347,000

- 3.13 The control room volume is given as 50,616 ft³ in Item D.1 of Reference [7.6].
- 3.14 Item G.2.2 of Reference [7.6] indicates that a safety injection signal occurs within 1 second following the start of the MSLB event, which automatically places the control room ventilation into recirculation per Item D.3 and D.4 of the same reference. This signal is conservatively delayed until 10 seconds for design margin. With the 60 second response time described in Item D.4, the control room is in the pressurization mode within 70 seconds (0.0194 hours) of the start of the event. Items D.2 and D.5 of Reference [7.6] provide inputs related to the Control Room Ventilation system flow rates. During normal operation, a maximum unfiltered flow rate of 880 cfm enters the control room through the normal outdoor intake. When the control room ventilation system is placed into recirculation, the control room pressurization/cleanup fans circulate 5400 cfm of air through the control room filters, with 880 cfm of this flow supplied by fresh air from the emergency outdoor air intake.
- 3.15 A conservative control room unfiltered inleakage rate of 40 cfm is identified in Item D.6 of Reference [7.6]. This flow rate is applied throughout the duration of the event.
- 3.16 Items D.7 of Reference [7.6] lists the control room ventilation system filter efficiencies as 99% for particulates and 95% for organic and elemental iodine. These values do not include the 1% of the fan flow which bypasses the filters given in item D.8 of the same reference.
- 3.17 The fraction of the primary-to-secondary leakage which flashes to steam in the ruptured steam generator of a tube rupture event is calculated in Section 5.2.2.1 and presented in Table 20 of Reference [7.12] and shown in Table 4. These values are developed from RCS and secondary fluid properties immediately following the reactor trip and do not reflect any manual cooldown by the plant operators. Since these flashing fractions account for changes in thermodynamic conditions in the reactor and secondary coolant only between full load and no load conditions, they will conservatively represent the portion of the intact steam generator tube leakage which flashes during periods of tube bundle uncover in the MSLB event, which does involve a significant cooldown of the RCS.



Table 4: Primary-Secondary Leakage Flashing Fractions

Time After Rx Trip (sec)	Flashing Fraction
0.0	0.080
400.0	0.060
900.0	0.055
1400.0	0.055
1700.0	0.04

3.18 The occupancy rates for operators in the control room shown in Table 5 are taken from Section 4.2.6 of Reference [7.1].

Table 5: Control Room Occupancy

Time Period (hours)	Occupancy
$0.0 \leq t < 24.0$	1.0
$24.0 < t < 96.0$	0.6
$96.0 \leq t \leq 720.0$	0.4

3.19 Table 6 presents the offsite and control room breathing rates specified in Sections 4.1.3 and 4.2.6 of Reference [7.1].

Table 6: Breathing Rates

Time Period (hours)	Offsite (m^3/sec)	Control Room (m^3/sec)
$0.0 \leq t \leq 8.0$	3.5×10^{-4}	3.5×10^{-4}
$8.0 < t \leq 24.0$	1.8×10^{-4}	3.5×10^{-4}
$24.0 < t \leq 720.0$	2.3×10^{-4}	3.5×10^{-4}

3.20 The half lives of the isotopes used in the development of the iodine appearance rates are taken from Table A.1 of Reference [7.15] and listed in Table 7.

Table 7: Iodine Isotope Half Lives

Nuclide	Half-Life	Half-Life Units	Half-Life (sec)
I-131	8.04	days	694656
I-132	2.3	hours	8280
I-133	20.8	hours	74880
I-134	52.6	minutes	3156
I-135	6.61	hours	23796



4 Assumptions

The following major assumptions are applied in the analysis.

- 4.1 Uncovery of the tubes on the secondary side of the intact steam generators is assumed to occur following a reactor trip. Auxiliary feedwater is credited with recovering steam generator levels within 40 minutes per Item E.8 of Reference [7.6]. During the period of tube uncovery, a portion of the primary-to-secondary leakage is assumed to flash to vapor and be released to the environment without mitigation.
- 4.2 Radionuclide concentrations in the secondary side fluid of the intact steam generators assume operator action to maintain a constant secondary mass during periods of steam release.
- 4.3 As described in Section 5.5 of Reference [7.9], when the control room ventilation is aligned in the pressurization/cleanup mode, the control room envelope is at a positive pressure with respect to the surrounding areas and leakage is predominantly out of the control room. However, this flow configuration creates a negative pressure in the control room air conditioning intake ducting downstream of the isolated normal intake dampers. Therefore, in this analysis, the control room unfiltered inleakage is assumed to enter the control room at the location of the normal intakes.

5 Calculations

5.1 Noble Gas Release Model

Appendix E of Reference [7.1] provides guidance for evaluating the MSLB event. Per Section 5.4 of this reference, all of the noble gas radionuclides which escape from the primary system are assumed to be released to the environment without reduction or mitigation. Based upon this guidance, the RADTRAD model used to determine the noble gas dose contribution is comprised of the three compartments and four pathways described in Table 8 and shown in Figure 1.



Table 8: Noble Gas Release Model Compartments and Pathways

Compartment Number	Compartment Description
1	RCS
2	Environment
3	Control Room

Pathway Number	Pathway Description	Compartment Connections
1	Steam Generator Tube Leakage	1 to 2
2	Control Room Makeup	2 to 3
3	Control Room Unfiltered Inleakage	2 to 3
4	Control Room Exhaust	3 to 2

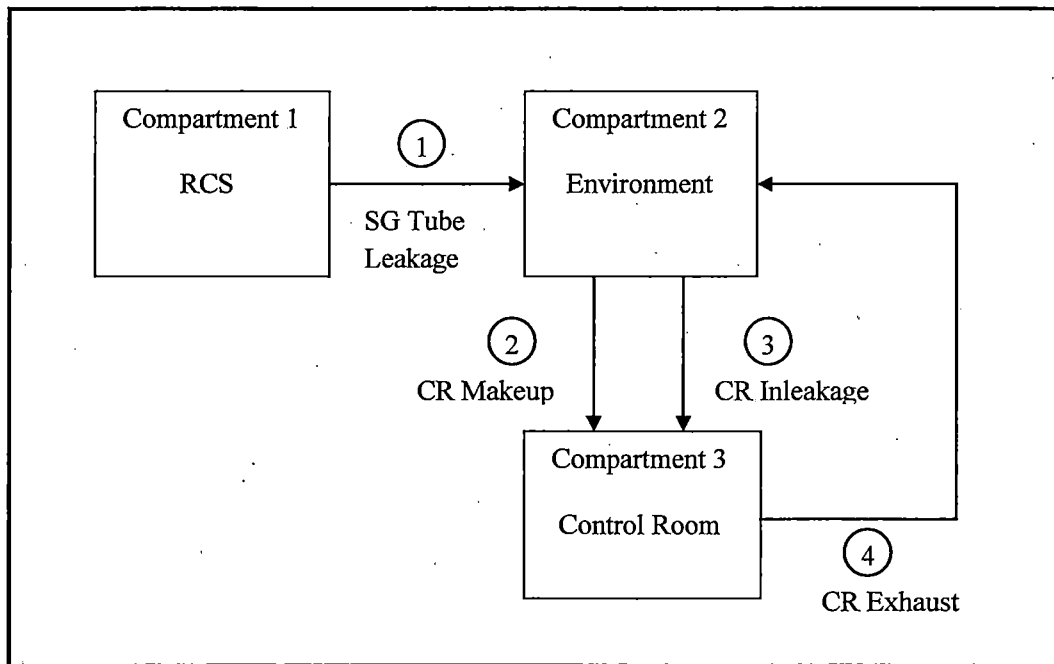


Figure 1: Noble Gas Release RADTRAD Model

5.1.1 Noble Gas Release Model Compartments

5.1.1.1 Compartment 1 – RCS

Section 3 of Appendix E to Reference [7.1] requires that the activity released from the fuel be instantaneously and homogeneously deposited into the primary coolant. As such, a source term multiplier of 1.0 is applied to the RCS compartment. Since this event does not result in fuel failures and the RCS activity is defined in terms



of a specific activity, the volume of the RCS compartment is somewhat arbitrary. For convenience, the minimum RCS mass of 466,141.5 lbm from Input 3.5 is applied.

Compartment #1 Summary	
Compartment Name	RCS
Compartment Volume	466,141.5 lbm
Compartment Type	Normal
Source Multiplier	1.0
Sprays	No
Recirculating Filters	No
Natural Deposition	No
Overlying Pool	No
Dose Location	No

5.1.1.2 Compartment 2 – Environment

Compartment 2 represents the environment. Default inputs for a RADTRAD environment compartment type are applied. The environment is identified as a dose location, with offsite breathing rates from Input 3.19 entered for both EAB and LPZ dose locations.

Table 9: EAB and LPZ Breathing Rates

Time (hours)	Breathing Rate (m³/sec)
0.0	3.5 x 10 ⁻⁴
8.0	1.8 x 10 ⁻⁴
24.0	2.3 x 10 ⁻⁴
720.0	2.3 x 10 ⁻⁴

Compartment #2 Summary	
Compartment Name	Environment
Compartment Volume	Default
Compartment Type	Environment
Source Multiplier	0.0
Sprays	N/A
Recirculating Filters	N/A
Natural Deposition	N/A
Overlying Pool	N/A
Dose Location	Yes



5.1.1.3 Compartment 3 – Control Room

Compartment 3 is designated as the Control Room. A volume of 50,616 ft³ from Input 3.13 is specified. The control room is designated as a dose location with a constant breathing rate of 3.5 x 10⁻⁴ m³/s from Input 3.19 and occupancy rates from Input 3.18.

Table 10: Control Room Occupancy Rate

Time (hours)	Occupancy Factor
0.0	1.0
24.0	0.6
96.0	0.4
720.0	0.4

Compartment #3 Summary	
Compartment Name	Control Room
Compartment Volume	50,616 ft ³
Compartment Type	Control Room
Source Multiplier	0.0
Sprays	No
Recirculating Filters	Yes
Natural Deposition	No
Overlying Pool	No
Dose Location	Yes

5.1.1.3.1 Control Room Recirculation Filters

Input 3.14 describes that the safety injection signal causes the control room ventilation system to automatically realign into the recirculation mode 70 seconds (0.0194 hours) after the initiation of the event. Once in recirculation, the control room pressurization/cleanup fan delivers a minimum of 5400 cfm through the control room filters, with a maximum of 880 cfm of this flow being supplied by outside air. The amount of control room air that is continuously filtered is therefore:

$$\text{Recirculation Flow Rate} = 5400 \text{ cfm} - 880 \text{ cfm} = 4520 \text{ cfm}$$

Input 3.16 lists the filter efficiencies as 99% for particulates and 95% for iodine. These values are adjusted to account for the 1% of the cleanup system flow which bypasses the filters:

$$\text{Effective Particulate Filter Efficiency} = 99\% \times 0.99 = 98.01\%$$

$$\text{Effective Iodine Filter Efficiency} = 95\% \times 0.99 = 94.05\%$$



The control room recirculation filter inputs are shown in Table 11. Note that the control room recirculation filters have no impact on the noble gas dose contribution.

Table 11: Control Room Recirculation Filters

Time (hours)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0	0.0	98.01	94.05	94.05
0.0194	4520.0	98.01	94.05	94.05
720.0	4520.0	98.01	94.05	94.05

5.1.2 Noble Gas Release Model Pathways

All pathways in the noble gas model are defined with the RADTRAD filter transfer mechanism option.

5.1.2.1 Pathway 1 – Steam Generator Tube Leakage

Pathway 1 is used to simulate the release of the noble gases from the primary coolant to the environment. Input 3.6 gives the total primary-to-secondary leakage to all steam generators as 1.0 gpm. Section 5.2 of Appendix E to Reference [7.1] provides the following guidance regarding this leak rate:

The density used in converting volumetric leak rates (e.g., gpm) to mass leak rates (e.g., lbm/hr) should be consistent with the basis of the parameter being converted. The ARC leak rate correlations are generally based on the collection of cooled liquid. Surveillance tests and facility instrumentation used to show compliance with leak rate technical specifications are typically based on cooled liquid. In most cases, the density should be assumed to be 1.0 gm/cc (62.4 lbm/ft³).

Per Input 3.7, the applicable density to be used in converting the RCS volumetric leak rate to mass leak rate is 62.3 lbm/ft³. This results in the following total steam generator tube leakage rate:

$$\text{Steam Generator Tube Leakage} = \frac{1.0 \text{ gpm} \times 62.3 \frac{\text{lbm}}{\text{ft}^3}}{7.4805 \text{ gal/ft}^3} = 8.328 \text{ lbm/min}$$

According to Section 5.3 of Appendix E to Reference [7.1], the primary-to-secondary leakage should be assumed to continue until the temperature of the leakage is less than 212 °F, and the release of radioactivity should be assumed to continue until shutdown cooling is in operation and releases from the steam generators have been terminated. Input 3.12 identifies that this condition is achieved after 24 hours.



Pathway #1 Summary				
Pathway Name:		Steam Generator Tube Leakage		
From Compartment: 1		To Compartment: 2		
		Decontamination Factor		
Time (hours)	Flow Rate (lbm/min)	Aerosol	Elemental	Organic
0.0	8.328	0.0	0.0	0.0
24.0	0.0	0.0	0.0	0.0
720.0	0.0	0.0	0.0	0.0

5.1.2.2 Pathway 2 – Control Room Makeup

Pathway 2 represents the outside air flow into the control room both before and after the ventilation system is aligned to the recirculation mode. Input 3.14 gives the makeup flow rate as 880 cfm in all modes and identifies that the system is realigned at 0.0194 hours. The same filters used by the control room recirculation fans described in Section 5.1.1.3.1 also filter the makeup flow following system realignment.

Pathway #2 Summary				
Pathway Name:		Control Room Makeup		
From Compartment: 2		To Compartment: 3		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (cfm)	Aerosol	Elemental	Organic
0.0	880.0	0.0	0.0	0.0
0.0194	880.0	98.01	94.05	94.05
720.0	880.0	98.01	94.05	94.05

5.1.2.3 Pathway 3 – Control Room Unfiltered Inleakage

Pathway 3 models the unfiltered inleakage to the control room. A constant flow rate of 40 cfm is applied throughout the event (Input 3.15).

Pathway #3 Summary				
Pathway Name:		Control Room Unfiltered Inleakage		
From Compartment: 2		To Compartment: 3		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (cfm)	Aerosol	Elemental	Organic
0.0	40.0	0.0	0.0	0.0
720.0	40.0	0.0	0.0	0.0



5.1.2.4 Pathway 4 – Control Room Exhaust

Pathway 4 accounts for the exhaust flow from the control room. The flow rate through this pathway is equal to the sum of the makeup and unfiltered inleakage flows.

Pathway #4 Summary				
Pathway Name:		Control Room Exhaust		
From Compartment: 3		To Compartment: 2		
Time (hours)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0	920.0	0.0	0.0	0.0
720.0	920.0	0.0	0.0	0.0

5.1.3 Noble Gas Source Term Inputs

5.1.3.1 Plant Power

The plant power input is used in combination with the nuclear inventory file (.nif) to release the source term activity with units of Curies. The RCS source term listed in Table 2 is given in units of $\mu\text{Ci}/\text{gm}$. This source term is converted to curies by using the plant power to multiply these specific activities by the mass of the RCS. The mass of the RCS should be consistent with the value entered for the RCS compartment in Section 5.1.1.1. The corresponding plant power is equal to:

$$\text{Plant Power} = \frac{466,141.5 \text{ lbm} \times 453.59 \text{ gm/lbm}}{1,000,000 \mu\text{Ci}/\text{Ci}} = 211.44 \frac{\text{Ci} - \text{gm}}{\mu\text{Ci}}$$

5.1.3.2 Decay Options

The source term controls are set with a release time at 0.0 seconds and no delay time. This allows all of the release timing to be entered through the release fraction and timing file (RFT). Options are selected to allow for radioactive decay and the production of daughter products.

5.1.3.3 Iodine Fractions

Since there are no iodine isotopes involved in the noble gas release, the iodine fractions are not used. Placeholder values are entered into the model.

5.1.3.4 Inventory File

Data shown in Table 2 is formatted into RADTRAD nuclear inventory file **Cook_RCS.nif** as discussed in Section 6 of Reference [7.7]. Note that the Power Level and Inventory Type flag in this file are both set to 1.0 as shown on page D2 of Reference [7.7], which allows the units to be controlled by the user with the plant power input.



5.1.3.5 Release File

As discussed in Section 5.1, 100% of the noble gases in the RCS liquid are released directly to the environment. This is accomplished by setting the noble gas release fraction to 1.0 in the release fraction and timing file and by setting the fractions of all other nuclide groups to zero. The RFT file shown in Table 12 is saved as file **MSLB_NG_R1.rft**.

Table 12: MSLB Noble Gas Release Fraction File

```
Release Fraction and Timing Name:
RWA-1313-010 - D. C. Cook MSLB Noble Gas
Duration (h):
  0.1000E-04  0.0000E+00  0.0000E+00  0.0000E+00
Noble Gases:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Iodine:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Cesium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Tellurium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Strontium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Barium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Ruthenium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Cerium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Lanthanum:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Non-Radioactive Aerosols (kg):
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
End of Release File
```

5.1.4 Noble Gas Release X/Q Inputs

This analysis addresses releases from either unit and must consider the dose impact on all receptor locations applicable to both units. As such, the X/Q values reflect the most limiting release-receptor pair combination without regard to the unit in which the event occurs. The release location for noble gases depends upon the source of the steam discharge. Based upon the piping configuration shown in References [7.17] and [7.18], releases from the faulted steam generator that occur outside of containment will enter the environment from the main steam enclosures for breaks upstream of the MSIV, and from either of the enclosures, or from the turbine building for breaks downstream of the MSIV. However, for releases from the intact steam generators during plant cooldown, the steam discharge occurs through the PORVs/MSSVs.



5.1.4.1 Offsite

For simplicity, the noble gas offsite dose is calculated using the most limiting set of X/Qs from all of the potential steam release locations. This approach precludes the need to consider the relative impact of isolating the faulted steam generator vs release location. As such, the set of X/Q values from any of the main steam enclosures or either end of the turbine building which produces the highest dose consequences are used. Tables 41 and 42 of Reference [7.11] summarize the maximum atmospheric dispersion factors at the EAB and LPZ, respectively, for all release locations. These tables show that the X/Q values from the Unit 1 turbine building to both the EAB and the LPZ exceed all other values for all time periods. Therefore, the Unit 1 turbine building X/Qs are applied in the model as shown in Table 13 and Table 14. The EAB dose acceptance criteria given in 10CFR50.67 apply to any 2-hour period. Consequently, the limiting EAB X/Q for any time period from Table 41 of Reference [7.11] is used throughout the event to ensure that the 2-hour EAB doses are consistently calculated by RADTRAD without regard to long term average atmospheric dispersion factor values.

Table 13: Noble Gas Release RADTRAD X/Q Table 1 - EAB

Time (hours)	X/Q (sec/m ³)	Release Location
0.0	8.62E-04	Unit 1 Turbine Bldg.
720.0	8.62E-04	Unit 1 Turbine Bldg.

Table 14: Noble Gas Release RADTRAD X/Q Table 2 - LPZ

Time (hours)	X/Q (sec/m ³)	Release Location
0.0	1.16E-04	Unit 1 Turbine Bldg.
2.0	5.45E-05	Unit 1 Turbine Bldg.
8.0	3.74E-05	Unit 1 Turbine Bldg.
24.0	1.74E-05	Unit 1 Turbine Bldg.
96.0	6.74E-06	Unit 1 Turbine Bldg.
720.0	6.74E-06	Unit 1 Turbine Bldg.

5.1.4.2 Onsite

5.1.4.2.1 Control Room Makeup

Makeup flow enters the control room through the normal intake until the ventilation system is aligned to the pressurization mode after 70 seconds (0.0194 hours) per Input 3.14. Once in recirculation, control room makeup flow enters through the emergency intake. The approach taken with the offsite X/Qs is also applied to the control room, where the limiting set of values for releases from any of the main steam enclosures, the turbine building, or the PORVs/MSSVs are used. X/Qs for onsite release receptor pairs are provided in Tables



11 through 14 of Reference [7.10]. An undocumented sensitivity confirmed that the limiting release point is from the turbine building. Note that Tables 13 and 14 of Reference [7.10] show that the X/Q values from both the Unit 1 and Unit 2 sides of the turbine building to the respective intakes are comparable for all time periods. The RADTRAD X/Q inputs for the control room makeup pathway presented in Table 15 reflect the realignment of the system at 0.0194 hours.

Table 15: Noble Gas Release RADTRAD X/Q Table 3 - CR Makeup

Time (hours)	X/Q (sec/m ³)	Release-Receptor Location
0.0	4.57E-02	Unit 2 Turbine Bldg. – U2 Normal Intake
0.0194	2.91E-02	Turbine Bldg. – Emergency Intake
2.0	2.02E-02	Turbine Bldg. – Emergency Intake
8.0	8.14E-03	Turbine Bldg. – Emergency Intake
24.0	5.34E-03	Turbine Bldg. – Emergency Intake
96.0	4.32E-03	Turbine Bldg. – Emergency Intake
720.0	4.32E-03	Turbine Bldg. – Emergency Intake

5.1.4.2.2 Control Room Unfiltered Inleakage

As discussed in Assumption 4.3, the unfiltered inleakage enters the control room envelope through the normal intakes throughout the event. From Tables 11 and 12 of Reference [7.10], it can be seen that the highest X/Qs from the main steam enclosures, turbine building, and PORVs/MSSVs to the normal intakes occur for releases from the Unit 2 turbine building to the Unit 2 intake. The corresponding RADTRAD X/Q input for the control room inleakage pathway is shown in Table 16.

Table 16: Noble Gas Release RADTRAD X/Q Table 4 - CR Inleakage

Time (hours)	X/Q (sec/m ³)	Release-Receptor Location
0.0	4.57E-02	U2 Turbine Bldg. – U2 Normal Intake
2.0	3.14E-02	U2 Turbine Bldg. – U2 Normal Intake
8.0	1.27E-02	U2 Turbine Bldg. – U2 Normal Intake
24.0	8.30E-03	U2 Turbine Bldg. – U2 Normal Intake
96.0	6.73E-03	U2 Turbine Bldg. – U2 Normal Intake
720.0	6.73E-03	U2 Turbine Bldg. – U2 Normal Intake

The onsite X/Q table matrix which reflects the combination of release and intake pathways as input into RADTRAD is shown in Table 17.

Table 17: Noble Gas Release Onsite X/Q Table Matrix

Release Path	(2) Control Room Makeup	(3) CR Unfiltered Inleakage
(1) SG Tube Leakage	X/Q Table 3	X/Q Table 4



5.1.5 Noble Gas Release Dose Results

The results of the noble gas dose contribution to the MSLB event are presented in Table 18. The corresponding RADTRAD output file, **MSLB_NG_R1.o0**, is provided in Attachment B.

Table 18: MSLB Noble Gas Release TEDE Dose Results

EAB (rem)	LPZ (rem)	Control Room (rem)
4.2923E-04	2.0284E-04	1.7912E-03

5.2 Non-Noble Gas Release Model

The non-noble gas release RADTRAD model evaluates the transport of iodines and particulates that are deposited into the RCS, carried into the steam generators via tube leakage, and released into the environment as a result of blowdown from the faulted steam generator and steam discharge from the intact steam generators during the plant cooldown. Sections 5.5 and 5.6 of Appendix E to Reference [7.1] provide guidance related to this process, including partitioning within the steam generators and the direct release of a portion of the primary-to-secondary leakage that flashes to vapor. The RADTRAD compartments, flow paths, and release locations developed in this section are used as a base model for the specific release processes and dose consequences evaluated in Sections 5.3 through 5.6. The non-noble gas release RADTRAD model is represented by five compartments and eight pathways as described in Table 19, and is illustrated in Figure 2.

Table 19: Non-Noble Gas Model Compartments and Pathways

Compartment Number	Compartment Description
1	RCS
2	Intact Steam Generators
3	Environment
4	Control Room
5	Faulted Steam Generator

Pathway Number	Pathway Description	Compartment Connections
1	Flashed Intact Steam Generator Tube Leakage	1 to 3
2	Control Room Makeup	3 to 4
3	Control Room Unfiltered Inleakage	3 to 4
4	Control Room Exhaust	4 to 3
5	Intact Steam Generator Steam Release	2 to 3
6	Unflashed Intact Steam Generator Tube Leakage	1 to 2
7	Faulted Steam Generator Tube Leakage	1 to 3
8	Faulted Steam Generator Steam Release	5 to 3

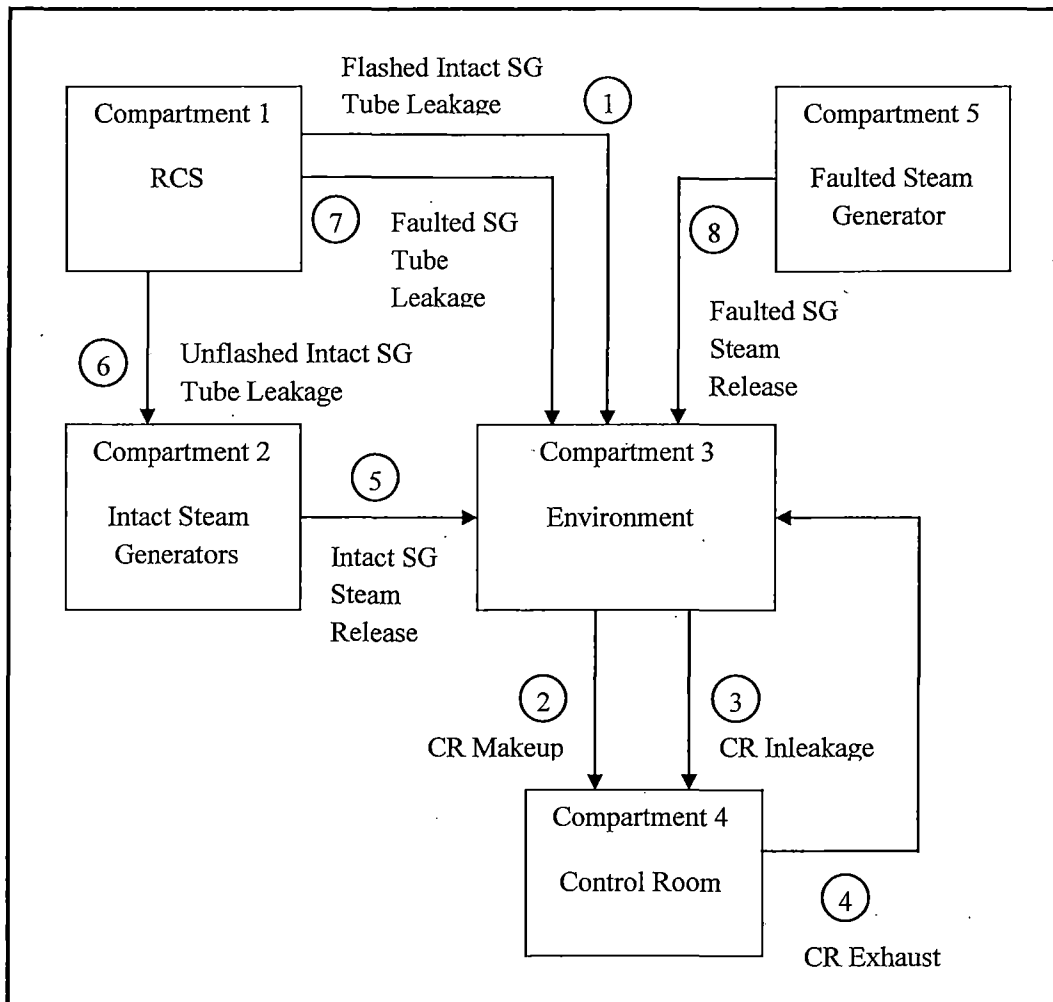


Figure 2: Non-Noble Gas Release RADTRAD Model

5.2.1 Non-Noble Gas Release Model Compartments

5.2.1.1 Compartment 1 – RCS

Compartment 1 represents the RCS. Inputs for this compartment are unchanged from those developed for the RCS volume described in Section 5.1.1.1.



Compartment #1 Summary	
Compartment Name	RCS
Compartment Volume	466,141.5 lbm
Compartment Type	Normal
Source Multiplier	1.0
Sprays	No
Recirculating Filters	No
Natural Deposition	No
Overlying Pool	No
Dose Location	No

5.2.1.2 Compartment 2 – Intact Steam Generators

Compartment 2 represents the mass of liquid in the three intact steam generators. Input 3.10 lists the minimum liquid mass of a single steam generator as 97,515.7 lbm. The compartment volume is therefore set to:

$$\text{Steam Generator Compartment Volume} = 3 \times 97,515.7 \text{ lbm} = 292,547.1 \text{ lbm}$$

Use of the minimum steam generator volume conservatively results in maximum nuclide concentrations on the steam generator secondary for a fixed primary-to-secondary leakage rate. The source multiplier is set to zero since the initial iodine activity in the steam generators is evaluated separately in Section 5.6.

Compartment #2 Summary	
Compartment Name	Intact Steam Generators
Compartment Volume	292,547.1 lbm
Compartment Type	Normal
Source Multiplier	0.0
Sprays	No
Recirculating Filters	No
Natural Deposition	No
Overlying Pool	No
Dose Location	No

5.2.1.3 Compartment 3 – Environment

Compartment 3 simulates the environment. Inputs for this compartment are documented in Section 5.1.1.2.



Compartment #3 Summary	
Compartment Name	Environment
Compartment Volume	Default
Compartment Type	Environment
Source Multiplier	0.0
Sprays	N/A
Recirculating Filters	N/A
Natural Deposition	N/A
Overlying Pool	N/A
Dose Location	Yes

5.2.1.4 Compartment 4 – Control Room

The control room compartment is documented Section 5.1.1.3. Control room recirculation filter inputs are unchanged from those provided in Table 11. The breathing rate of $3.5 \times 10^{-4} \text{ m}^3/\text{s}$ from Input 3.19 continues to apply, as well as the occupancy rates from Input 3.18 listed in Table 10.

Compartment #4 Summary	
Compartment Name	Control Room
Compartment Volume	50,616 ft ³
Compartment Type	Control Room
Source Multiplier	0.0
Sprays	No
Recirculating Filters	Yes
Natural Deposition	No
Overlying Pool	No
Dose Location	Yes

5.2.1.5 Compartment 5 – Faulted Steam Generator

The size of the faulted steam generator compartment is arbitrary for the iodine spike cases since the primary-to-secondary leakage is released directly to the environment. However, a maximum value of 161,000 lbm from Input 3.10 is used to maximize the iodine content in the evaluation of the initial iodine release in Section 5.6.



Compartment #5 Summary	
Compartment Name	Faulted Steam Generator
Compartment Volume	161,000 lbm
Compartment Type	Normal
Source Multiplier	0.0
Sprays	No
Recirculating Filters	No
Natural Deposition	No
Overlying Pool	No
Dose Location	No

5.2.2 Non-Noble Gas Release Model Pathways

The non-noble gas model pathways are defined using the RADTRAD filter transfer mechanism option.

5.2.2.1 Pathway 1 – Flashed Intact Steam Generator Tube Leakage

The behavior of iodines and particulates in the steam generators is modeled using the guidance provided in Section 5.5 and 5.6 of Appendix E to Reference [7.1]. Section 5.5.1 of this reference states:

A portion of the primary-to-secondary leakage will flash to vapor, based on the thermodynamic conditions in the reactor and secondary coolant.

- *During periods of steam generator dryout, all of the primary-to-secondary leakage is assumed to flash to vapor and be released to the environment with no mitigation.*
- *With regard to the unaffected steam generators used for plant cooldown, the primary-to-secondary leakage can be assumed to mix with the secondary water without flashing during periods of total tube submergence.*

In addition, Section 5.6 of the Appendix E to the Reg. Guide adds:

Operating experience and analyses have shown that for some steam generator designs, tube uncover may occur for a short period following any reactor trip (Ref. E-3). The potential impact of tube uncover on the transport model parameters (e.g., flash fraction, scrubbing credit) needs to be considered. The impact of emergency operating procedure restoration strategies on steam generator water levels should be evaluated.

As discussed in Assumption 4.1, the intact steam generator water levels are assumed to temporarily drop below the top of the tubes following a reactor trip, with tube bundle recovery occurring after 40 minutes. During the time of tube uncover, a portion of the primary-to-secondary leakage will flash to vapor and be released directly to the environment without mitigation. Therefore, this pathway represents the flashed portion of the primary-to secondary leakage in the intact steam generators. The portion of the tube leakage which flashes to steam is provided in Table 4 of Input 3.17.



Input 3.6 gives the steam generator tube leakage as 0.25 gpm per steam generator. Based upon a fluid density of 62.3 lbm/ft³ (Input 3.7), the individual generator tube leakage mass flow rate is:

$$\text{Single Steam Generator Tube Leakage} = \frac{0.25 \text{ gpm} \times 62.3 \frac{\text{lbm}}{\text{ft}^3}}{7.4805 \text{ gal/ft}^3} = 2.082 \text{ lbm/min}$$

By applying the flashing fractions from Table 4 to this value for the three intact steam generators, the flashed portion of the intact tube leakage is determined. The flashed break flow continues until the tube bundles are recovered after 40 minutes (0.667 hours).

$$\text{Flashed Tube Leakage}_{0-400 \text{ sec}} = 3 \times 2.082 \times (0.08) = 0.50 \text{ lbm/sec}$$

$$\text{Flashed Tube Leakage}_{400-900 \text{ sec}} = 3 \times 2.082 \times (0.06) = 0.375 \text{ lbm/sec}$$

$$\text{Flashed Tube Leakage}_{900-1700 \text{ sec}} = 3 \times 2.082 \times (0.055) = 0.344 \text{ lbm/sec}$$

$$\text{Flashed Tube Leakage}_{1700-2400 \text{ sec}} = 3 \times 2.082 \times (0.04) = 0.25 \text{ lbm/sec}$$

Pathway #1 Summary				
Pathway Name:		Flashed Intact SG Tube Leakage		
From Compartment: 1		To Compartment: 3		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (lbm/min)	Aerosol	Elemental	Organic
0.0	0.50	0.0	0.0	0.0
0.111	0.375	0.0	0.0	0.0
0.250	0.344	0.0	0.0	0.0
0.472	0.25	0.0	0.0	0.0
0.667	0.0	0.0	0.0	0.0
720.0	0.0	0.0	0.0	0.0

5.2.2.2 Pathway 2 – Control Room Makeup

Pathway 2 represents the outside air flow into the control room both before and after the ventilation system is aligned to the recirculation mode. Inputs for this pathway are documented in Section 5.1.2.2.



Pathway #2 Summary				
Pathway Name:		Control Room Makeup		
From Compartment: 3		To Compartment: 4		
Time (hours)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0	880.0	0.0	0.0	0.0
0.0194	880.0	98.01	94.05	94.05
720.0	880.0	98.01	94.05	94.05

5.2.2.3 Pathway 3 – Control Room Unfiltered Inleakage

Pathway 3 models the unfiltered inleakage to the control room. A constant flow rate of 40 cfm from Input 3.15 is applied throughout the event.

Pathway #3 Summary				
Pathway Name:		Control Room Unfiltered Inleakage		
From Compartment: 3		To Compartment: 4		
Time (hours)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0	40.0	0.0	0.0	0.0
720.0	40.0	0.0	0.0	0.0

5.2.2.4 Pathway 4 – Control Room Exhaust

Pathway 4 models the control room exhaust flow. The flow rate through this pathway is equal to the sum of the makeup and unfiltered inleakage flows.

Pathway #4 Summary				
Pathway Name:		Control Room Exhaust		
From Compartment: 4		To Compartment: 3		
Time (hours)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0	920.0	0.0	0.0	0.0
720.0	920.0	0.0	0.0	0.0



5.2.2.5 Pathway 5 – Intact SG Steam Release

The steam release from the intact steam generators to the environment is modeled using Pathway 5. The integrated steam flows from Input 3.12 are assumed to represent constant flow rates over each time period. In addition, an adjustment is made to the flow rates to account for partitioning (i.e., liquid/vapor proportion) of iodine and particulates by the water in the steam generators. This process is described in Section 5.5.4 of Appendix E to Reference [7.1], which states:

The radioactivity in the bulk water is assumed to become vapor at a rate that is the function of the steaming rate and the partition coefficient. A partition coefficient for iodine of 100 may be assumed. The retention of particulate radionuclides in the steam generators is limited by the moisture carryover from the steam generators.

To ensure that particulate iodine is removed at the same rate as the elemental and organic species, a partition factor of 100 is applied. This value can be adjusted to address removal of non-iodine particulates as necessary. This partition coefficient is implemented in RADTRAD by reducing the average steam flow rates by a factor of 100. Steam releases continue until the RCS is cooled to 212 °F at 24 hours from Input 3.12 as directed by Section 5.3 of Appendix E to Reference [7.1].

$$\text{Intact Steam Release}_{0-2 \text{ hr}} = \frac{456,000 \text{ lbm}}{(100)(2 \text{ hr})(60 \text{ min/hr})} = 38.0 \text{ lbm/min}$$

$$\text{Intact Steam Release}_{2-8 \text{ hr}} = \frac{1,186,000 \text{ lbm}}{(100)(6 \text{ hr})(60 \text{ min/hr})} = 32.94 \text{ lbm/min}$$

$$\text{Intact Steam Release}_{8-24 \text{ hr}} = \frac{1,347,000 \text{ lbm}}{(100)(16 \text{ hr})(60 \text{ min/hr})} = 14.03 \text{ lbm/min}$$

Pathway #5 Summary				
Pathway Name:		Intact SG Steam Release		
From Compartment: 2		To Compartment: 3		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (lbm/min)	Aerosol	Elemental	Organic
0.0	38.0	0.0	0.0	0.0
2.0	32.94	0.0	0.0	0.0
8.0	14.03	0.0	0.0	0.0
24.0	0.0	0.0	0.0	0.0
720.0	0.0	0.0	0.0	0.0



5.2.2.6 Pathway 6 – Unflashed Intact Steam Generator Tube Leakage

This pathway represents the primary-to-secondary tube leakage which does not flash and mixes with the secondary water in the intact steam generators. These flow rates are calculated using the individual steam generator tube leakage flow rate of 2.082 lbm/min from Section 5.2.2.1 and the flashing fractions from Table 4. Once the tube bundles are fully recovered after 40 minutes, 100% of the steam generator tube leakage is unflashed. Primary-to-secondary leakage continues until the RCS is cooled to 212 °F at 24 hours per Section 5.3 of Appendix E to Reference [7.1].

$$\text{Unflashed Tube Leakage}_{0-400 \text{ sec}} = 3 \times 2.082 \times (1 - 0.08) = 5.746 \text{ lbm/sec}$$

$$\text{Unflashed Tube Leakage}_{400-900 \text{ sec}} = 3 \times 2.082 \times (1 - 0.06) = 5.871 \text{ lbm/sec}$$

$$\text{Unflashed Tube Leakage}_{900-1700 \text{ sec}} = 3 \times 2.082 \times (1 - 0.055) = 5.902 \text{ lbm/sec}$$

$$\text{Unflashed Tube Leakage}_{1700-2400 \text{ sec}} = 3 \times 2.082 \times (1 - 0.04) = 5.996 \text{ lbm/sec}$$

$$\text{Unflashed Tube Leakage}_{>2400 \text{ sec}} = 3 \times 2.082 = 6.246 \text{ lbm/sec}$$

Pathway #6 Summary				
Pathway Name:		Unflashed Intact SG Tube Leakage		
From Compartment: 1		To Compartment: 2		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (lbm/min)	Aerosol	Elemental	Organic
0.0	5.746	0.0	0.0	0.0
0.111	5.871	0.0	0.0	0.0
0.250	5.902	0.0	0.0	0.0
0.472	5.996	0.0	0.0	0.0
0.667	6.246	0.0	0.0	0.0
24.0	0.0	0.0	0.0	0.0
720.0	0.0	0.0	0.0	0.0



5.2.2.7 Pathway 7 – Faulted SG Tube Leakage

The faulted steam generator tube leakage is set to the single steam generator leakage flow rate of 2.082 lbm/min from Section 5.2.2.1 and continues until the RCS is cooled to 212 °F after 24 hours.

Pathway #7 Summary				
Pathway Name:		Faulted SG Tube Leakage		
From Compartment: 1		To Compartment: 3		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (lbm/min)	Aerosol	Elemental	Organic
0.0	2.082	0.0	0.0	0.0
24.0	0.0	0.0	0.0	0.0
720.0	0.0	0.0	0.0	0.0

5.2.2.8 Pathway 8 – Faulted SG Steam Release

The entire contents of the faulted steam generator is released to the environment at the beginning of the event. This is modeled using a conservatively high flow rate of 1×10^6 lbm/min.

Pathway #8 Summary				
Pathway Name:		Faulted SG Steam Release		
From Compartment: 5		To Compartment: 3		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (lbm/min)	Aerosol	Elemental	Organic
0.0	1.0E+06	0.0	0.0	0.0
720.0	1.0E+06	0.0	0.0	0.0

5.2.3 Non-Noble Gas Release Model X/Q Inputs

5.2.3.1 Offsite

The offsite X/Qs for the non-noble gas release model are set to the same values developed in Section 5.1.4.1 and represent the most limiting X/Qs from all of the potential steam release locations. These atmospheric dispersion factors are presented in Table 20 and Table 21. Note that the EAB X/Q is the highest value for any time period from Table 41 of Reference [7.11] and is used throughout the event to ensure that the 2-hour EAB doses are consistently calculated by RADTRAD.



Table 20: Non-Noble Gas Release RADTRAD X/Q Table 1 - EAB

Time (hours)	X/Q (sec/m ³)	Release Location
0.0	8.62E-04	Unit 1 Turbine Bldg.
720.0	8.62E-04	Unit 1 Turbine Bldg.

Table 21: Non-Noble Gas Release RADTRAD X/Q Table 2 - LPZ

Time (hours)	X/Q (sec/m ³)	Release Location
0.0	1.16E-04	Unit 1 Turbine Bldg.
2.0	5.45E-05	Unit 1 Turbine Bldg.
8.0	3.74E-05	Unit 1 Turbine Bldg.
24.0	1.74E-05	Unit 1 Turbine Bldg.
96.0	6.74E-06	Unit 1 Turbine Bldg.
720.0	6.74E-06	Unit 1 Turbine Bldg.

5.2.3.2 Onsite

The onsite atmospheric dispersion factors will reflect the different release locations associated with this event. Therefore, separate X/Q tables are developed for releases from the intact and faulted steam generators. Similar to the approach taken with the noble gases in Section 5.1.4.2, the limiting set of values for releases from either of the main steam enclosures or the turbine building are applied to the faulted steam generator to address all possible break locations. Intact steam generator releases occur from the PORV/MSSVs.

5.2.3.2.1 Intact SG - Control Room Makeup

All steam releases from the intact steam generators are discharged to the atmosphere from the PORVs/MSSVs. Makeup flow enters the control room through the normal intake until the ventilation system is aligned to the pressurization mode after 70 seconds, after which time makeup flow enters through the emergency intakes. Tables 11 and 12 of Reference [7.10] show that the highest X/Q between the PORVs/MSSVs and the normal intakes during the first 70 seconds of the event is for a release from Unit 2 to the Unit 2 intake. Similarly, the limiting release-receptor pair for releases from the PORVs/MSSVs to the emergency intakes also occurs for a release from Unit 2 to the Unit 2 intake as shown in Tables 13 and 14 of Reference [7.10]. The RADTRAD X/Q inputs for the control room makeup pathway shown in Table 22 reflect the realignment of control room ventilation at 70 seconds.



Table 22: Non-Noble Gas Release RADTRAD X/Q Table 3 - Intact SG - CR Makeup

Time (hours)	X/Q (sec/m ³)	Release-Receptor Location
0.0	1.09E-02	U2 PORVs/MSSVs – U2 Normal Intake
0.0194	1.26E-02	U2 PORVs/MSSVs – U2 Emergency Intake
2.0	9.72E-03	U2 PORVs/MSSVs – U2 Emergency Intake
8.0	3.26E-03	U2 PORVs/MSSVs – U2 Emergency Intake
24.0	3.17E-03	U2 PORVs/MSSVs – U2 Emergency Intake
96.0	2.80E-03	U2 PORVs/MSSVs – U2 Emergency Intake
720.0	2.80E-03	U2 PORVs/MSSVs – U2 Emergency Intake

5.2.3.2.2 Intact SG - Control Room Unfiltered Inleakage

As discussed in Assumption 4.3, the unfiltered inleakage enters the control room envelope through the normal intakes throughout the event. From Tables 11 and 12 of Reference [7.10], that the higher X/Qs between the PORVs/MSSVs and the normal intakes occur for releases from Unit 2 to the Unit 2 intake for all time periods. The corresponding RADTRAD X/Q input for the control room inleakage pathway is shown in Table 23.

Table 23: Non-Noble Gas Release RADTRAD X/Q Table 4 - Intact SG - CR Inleakage

Time (hours)	X/Q (sec/m ³)	Release-Receptor Location
0.0	1.09E-02	U2 PORVs/MSSVs – U2 Normal Intake
2.0	8.61E-03	U2 PORVs/MSSVs – U2 Normal Intake
8.0	2.87E-03	U2 PORVs/MSSVs – U2 Normal Intake
24.0	2.78E-03	U2 PORVs/MSSVs – U2 Normal Intake
96.0	2.50E-03	U2 PORVs/MSSVs – U2 Normal Intake
720.0	2.50E-03	U2 PORVs/MSSVs – U2 Normal Intake

5.2.3.2.3 Faulted SG - Control Room Makeup

Steam from the faulted steam generator may be released from any of the main steam enclosures or from the turbine building. Tables 11 through 14 of Reference [7.10] provide the atmospheric dispersion factors from these release points to the normal and emergency intakes. Similar to the noble gas release discussed in Section 5.1.4.2.1, the X/Qs which produce the limiting dose consequences correspond to releases from the turbine building. The RADTRAD X/Q inputs for the control room makeup pathway presented in Table 24 reflect the realignment of the control room ventilation system at 70 seconds.



Table 24: Non-Noble Gas Release RADTRAD X/Q Table 5 - Faulted SG - CR Makeup

Time (hours)	X/Q (sec/m ³)	Release-Receptor Location
0.0	4.57E-02	Unit 2 Turbine Bldg. – U2 Normal Intake
0.0194	2.91E-02	Turbine Bldg. – Emergency Intake
2.0	2.02E-02	Turbine Bldg. – Emergency Intake
8.0	8.14E-03	Turbine Bldg. – Emergency Intake
24.0	5.34E-03	Turbine Bldg. – Emergency Intake
96.0	4.32E-03	Turbine Bldg. – Emergency Intake
720.0	4.32E-03	Turbine Bldg. – Emergency Intake

5.2.3.2.4 Faulted SG - Control Room Unfiltered Inleakage

Tables 11 and 12 of Reference [7.10] show that the highest X/Qs for releases from the main steam enclosure and turbine building locations to the normal intakes occur for releases from the Unit 2 turbine building to the Unit 2 normal intake for all time periods. The corresponding RADTRAD X/Q input for the control room inleakage pathway are listed in Table 25.

Table 25: Non-Noble Gas Release RADTRAD X/Q Table 6 - Faulted SG - CR Inleakage

Time (hours)	X/Q (sec/m ³)	Release-Receptor Location
0.0	4.57E-02	U2 Turbine Bldg. – U2 Normal Intake
2.0	3.14E-02	U2 Turbine Bldg. – U2 Normal Intake
8.0	1.27E-02	U2 Turbine Bldg. – U2 Normal Intake
24.0	8.30E-03	U2 Turbine Bldg. – U2 Normal Intake
96.0	6.73E-03	U2 Turbine Bldg. – U2 Normal Intake
720.0	6.73E-03	U2 Turbine Bldg. – U2 Normal Intake

The onsite X/Q matrix provided in Table 26 presents the combination of release and intake pathways for the non-noble gas release input into RADTRAD.

Table 26: Non-Noble Gas Release Onsite X/Q Table Matrix

Release Path	(2) Control Room Makeup	(3) CR Unfiltered Inleakage
(1) Flashed Intact SG Tube Leakage	X/Q Table 3	X/Q Table 4
(5) Intact SG Steam Release	X/Q Table 3	X/Q Table 4
(7) Faulted SG Tube Leakage	X/Q Table 5	X/Q Table 6
(8) Faulted SG Steam Release	X/Q Table 5	X/Q Table 6



5.3 Pre-Accident Iodine Spike Dose

Section 2.1 of Appendix E to Reference [7.1] defines the pre-accident iodine spike as a reactor transient that occurs prior to the event in which the primary coolant iodine concentration is raised to the maximum value permitted by the Technical Specifications. The evaluation of the pre-accident iodine spike uses the non-noble gas release RADTRAD model developed in Section 5.2. The applicable source term and X/Q table matrix are discussed below.

5.3.1 Pre-Accident Iodine Spike Source Term Inputs

5.3.1.1 Plant Power

As discussed in Section 5.1.3.1, the plant power input is used in combination with the nuclear inventory file to release the source term activity with units of Curies. The RCS source term from Table 2 serves as the source of the iodine activities in the pre-accident iodine spike case, which has units of $\mu\text{Ci}/\text{gm}$. This source term is converted to curies by using the plant power input to multiply these specific activities by the mass of the RCS. The RCS mass from Input 3.5 of 466,141.5 lbm results in the following plant power value:

$$\text{Plant Power} = \frac{466,141.5 \text{ lbm} \times 453.59 \text{ gm/lbm}}{1,000,000 \mu\text{Ci}/\text{Ci}} = 211.44 \frac{\text{Ci} - \text{gm}}{\mu\text{Ci}}$$

5.3.1.2 Decay Options

The source term controls are set with a release time of 0.0 seconds and no delay time. This allows all of the release timing to be entered through the release fraction and timing file. Options are selected to allow for radioactive decay and the production of daughter products.

5.3.1.3 Iodine Fractions

From Section 4 of Appendix E to Reference [7.1], the iodine that is released from the steam generators to the environment has evolved into a composition of 97% elemental and 3% organic.

5.3.1.4 Inventory File

The RCS source term from Table 2 is formatted into RADTRAD nuclear inventory file **Cook_RCS.nif** as discussed in Section 5.1.3.4. Since the Power Level and Inventory Type flag in this file are both set to 1.0 as shown on page D2 of Reference [7.7], the iodine spiking activity can be set using the plant power and the RFT file.

5.3.1.5 Release File

Input 3.1 identifies that the RCS source term is developed based upon an iodine content of $1.0 \mu\text{Ci}/\text{gm}$, and Input 3.3 gives the maximum RCS iodine concentration allowed by the Technical Specifications during full power operation as $60 \mu\text{Ci}/\text{gm}$. Consequently, the pre-accident iodine spike activity can be modeled by setting the release fraction of the iodine group in the release fraction and timing file to 60. The release duration is set to 0.00001 hours to simulate the full $60 \mu\text{Ci}/\text{gm}$ spike occurring prior to the event. Since the noble gas dose contribution is evaluated separately in Section 5.1, the release fraction of the noble gas group is set to zero. All



other group release fractions are set to 1.0 to include the normal equilibrium activities in the RCS compartment. This RFT file is shown in Table 27 and is saved as file **MSLB_Pre_I_R1.rft**.

Table 27: MSLB Pre-Accident Spike Release Fraction File

```

Release Fraction and Timing Name:
RWA-1313-010 - D. C. Cook MSLB Pre-Accident Iodine Spike
Duration (h):
  0.1000E-04  0.0000E+00  0.0000E+00  0.0000E+00
Noble Gases:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Iodine:
  0.6000E+02  0.0000E+00  0.0000E+00  0.0000E+00
Cesium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Tellurium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Strontium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Barium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Ruthenium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Cerium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Lanthanum:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Non-Radioactive Aerosols (kg):
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
End of Release File
  
```

5.3.2 Pre-Accident Iodine Spike Dose Results

The results of the pre-accident iodine spike dose contribution for a MSLB event are presented in Table 28. The corresponding RADTRAD output file, **MSLB_Pre_I_R1.o0**, is provided in Attachment C.

Table 28: MSLB Pre-Accident Iodine Spike TEDE Dose Results

EAB (rem)	LPZ (rem)	Control Room (rem)
1.6032E-01	7.8786E-02	4.7971E-01

5.4 Concurrent Iodine Spike Dose – Iodine Release

Section 2.2 of Appendix E to Reference [7.1] describes the concurrent iodine spike as a transient in which the iodine release rate from the fuel rods to the primary coolant increases to a value that is 500 times greater than the release corresponding to the iodine concentration at the equilibrium value. The transient duration is assumed to occur over an 8-hour period. The evaluation of the concurrent iodine spike uses the non-noble gas



release RADTRAD model developed in Section 5.2 and is performed in two parts. The first part assesses the dose contribution from the release of the iodine isotopes. The second part considers the dose contribution from the remainder of the RCS activity, which is evaluated in Section 5.5.

5.4.1 Concurrent Iodine Spike Iodine Appearance Rates

At equilibrium conditions, the appearance rate of iodine in the RCS is equal to the rate at which the iodine is being lost due to radioactive decay, removal by the purification system, and primary system leakage. This can be expressed as:

$$R = A \times \lambda_{total}$$

where: R = Appearance rate (Ci/min)

λ_{total} = Total removal coefficient (min^{-1})

A = Nuclide Activity (Ci)

The total iodine removal rate is equal to the sum of the individual removal rates by purification, RCS leakage, and radioactive decay:

$$\lambda_{total} = \lambda_{letdown} + \lambda_{leakage} + \lambda_{decay}$$

5.4.1.1 Letdown Removal

The iodine removal rate due to purification can be determined by a simple ratio:

$$\lambda_{Letdown} = \frac{\text{Letdown Flow Rate}}{\text{RCS Mass}}$$

Reference [7.16] describes that the appearance rates are conservatively derived using a maximum RCS inventory and a maximum letdown flow rate. Therefore, the RCS mass of 607,290.6 lbm from Input 3.5 is applied, which represents hot conditions with a full pressurizer. The maximum letdown flow rate of 132 gpm is given is Input 3.8 and is based upon a fluid density of 61.78 lbm/ft³. These inputs produce the following value for the letdown removal coefficient:

$$\text{Letdown Flow} = \frac{(132 \text{ gpm})(61.78 \text{ lbm/ft}^3)}{7.4805 \text{ gal/ft}^3} = 1090.16 \text{ lbm/min}$$

$$\lambda_{Letdown} = \frac{1090.16 \text{ lbm/min}}{607,290.6 \text{ lbm}} = 0.001795 \text{ min}^{-1}$$

5.4.1.2 Leakage Removal

Iodine removal by leakage from the RCS is similarly represented by:

$$\lambda_{Leakage} = \frac{\text{Leakage Flow Rate}}{\text{RCS Mass}}$$



The RCS leakage is based upon the maximum allowable identified and unidentified limits of 10 gpm and 1 gpm, respectively, from Input 3.9. These flow rates are assessed using a fluid density of 62.3 lbm/ft³ per Input 3.7. Using the maximum RCS mass of 607,290.6 lbm from Input 3.5, the leakage removal coefficient is:

$$Leakage = \frac{(11 \text{ gpm})(62.3 \text{ lbm/ft}^3)}{7.4805 \text{ gal/ft}^3} = 91.61 \text{ lbm/min}$$

$$\lambda_{Leakage} = \frac{91.61 \text{ lbm/min}}{607,290.6 \text{ lbm}} = 0.00015 \text{ min}^{-1}$$

5.4.1.3 Decay Removal

Equation 3.5 of Reference [7.19] expresses the decay constant in terms of the nuclide half-life ($t_{1/2}$):

$$\lambda_{decay} = \frac{\ln 2}{t_{1/2}}$$

The half lives of the iodine nuclides are given in Input 3.20, which yield the decay removal coefficients listed in Table 29.

Table 29: Iodine Decay Removal Coefficients

Nuclide	Half-life (sec)	λ_{decay} (sec ⁻¹)	λ_{decay} (min ⁻¹)
I-131	694656	9.978E-07	0.000060
I-132	8280	8.371E-05	0.005023
I-133	74880	9.257E-06	0.000555
I-134	3156	2.196E-04	0.013176
I-135	23796	2.913E-05	0.001748

5.4.1.4 Appearance Rates

The decay removal rates from Table 29 are combined with the letdown and leakage coefficients to give the total removal coefficients shown in Table 30.

Table 30: Total Iodine Removal Rate

Nuclide	λ_{decay} (min ⁻¹)	$\lambda_{Letdown}$ (min ⁻¹)	$\lambda_{Leakage}$ (min ⁻¹)	λ_{total} (min ⁻¹)
I-131	0.000060	0.001795	0.000151	0.002006
I-132	0.005023	0.001795	0.000151	0.006969
I-133	0.000555	0.001795	0.000151	0.002501
I-134	0.013176	0.001795	0.000151	0.015122
I-135	0.001748	0.001795	0.000151	0.003694

The equilibrium appearance rate for each iodine nuclide can then be calculated from the RCS equilibrium iodine concentration shown in Table 2 using the following equation from Section 5.4.1:



$$R = A \times \lambda_{total} = \text{Concentration} \times \text{RCS Mass} \times \lambda_{total}$$

The RCS mass is converted to units of grams and the equilibrium iodine appearance rates are presented in Table 31:

$$\text{RCS Mass} = 607290.6 \text{ lbm} \times 453.59 \frac{\text{gm}}{\text{lbm}} = 275,460,943 \text{ gm}$$

Table 31: Equilibrium Iodine Appearance Rate

Nuclide	Equilibrium Concentration (μCi/gm)	RCS Mass (gm)	Iodine Activity (Ci)	λ_{total} (min ⁻¹)	Equilibrium Appearance (Ci/min)
I-131	0.8087	275460943	222.77	0.002006	0.4469
I-132	0.6411	275460943	176.60	0.006969	1.2307
I-133	1.0304	275460943	283.83	0.002501	0.7099
I-134	0.1231	275460943	33.91	0.015122	0.5128
I-135	0.5365	275460943	147.78	0.003694	0.5459

Finally, the MSLB concurrent iodine spike appearance rates are found by multiplying the equilibrium appearance rates by a factor of 500 as described in Section 2.2 of Appendix E to Reference [7.1]. These rates are used to calculate the total amount of iodine produced over the 8-hour spike duration as shown in Table 32.

Table 32: MSLB Concurrent Iodine Appearance Rate

Nuclide	Equilibrium Appearance (Ci/min)	x 500	Iodine Spike Appearance (Ci/min)	8-hour Production (Ci)
I-131	0.4469	500	223.45	107256
I-132	1.2307	500	615.35	295368
I-133	0.7099	500	354.95	170376
I-134	0.5128	500	256.40	123072
I-135	0.5459	500	272.95	131016

5.4.2 Concurrent Iodine Spike Source Term Inputs (Iodine Release)

5.4.2.1 Plant Power

The plant power input is used in combination with the nuclear inventory file to release the source term activity with units of Curies. Since the total iodine production from Table 32 has units of Curies, the plant power has a value of 1.0.



5.4.2.2 Decay Options

The source term controls are set with a release time at 0.0 seconds and no delay time. This allows all of the release timing to be entered through the release fraction and timing file. Options are selected to allow for radioactive decay and the production of daughter products.

5.4.2.3 Iodine Fractions

From Section 4 of Appendix E to Reference [7.1], the iodine that is released from the steam generators to the environment has evolved into a composition of 97% elemental and 3% organic. These values are entered into the model; however, the iodines are released in this case as aerosols as discussed in Section 5.4.3

5.4.2.4 Inventory File

For the concurrent iodine release, a unique inventory file is created to release the iodine activities from Table 32. The generic .nif file, **RWA-1205-004.nif**, from Reference [7.8] is modified such that the activities of isotopes I-131 through I-135 are set to 1.0. The activities of all of the other nuclides remain at the default **RWA-1205-004.nif** value of zero. In addition, these five iodine nuclides are assigned release group numbers from 3 to 7, sequentially. This modified .nif file is saved as **MSLB_I_Spike.nif** and is listed in Attachment A.

5.4.2.5 Release File

The release fraction and timing file presented in Table 33 is designed to be used with .nif file **MSLB_I_Spike.nif** to release the concurrent iodine spike activities over an 8 hour period. Note that the release 'fractions' for groups 3 through 7 in the second time period correspond to the total iodine production values for the individual iodine isotopes in Table 32, and the duration of this period is set to 8 hours. Also note that since groups 3-7 are normally used to release aerosols, the control room filter efficiencies must be adjusted to simulate filtration of iodine released by these groups as discussed in Section 5.4.3. This RFT file is saved as file **MSLB_Spike_I_R1.rft**.



Table 33: MSLB Concurrent Spike Release Fraction File (Iodine Release)

```

Release Fraction and Timing Name:
RWA-1313-010 - D.C. Cook MSLB Concurrent Iodine Spike (Iodine)
Duration (h): Design Basis Accident
  0.1000E-04  0.8000E+01  0.0000E+00  0.0000E+00
Noble Gases:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Iodine:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
I-131:
  0.0000E+00  1.0726E+05  0.0000E+00  0.0000E+00
I-132:
  0.0000E+00  2.9537E+05  0.0000E+00  0.0000E+00
I-133:
  0.0000E+00  1.7038E+05  0.0000E+00  0.0000E+00
I-134:
  0.0000E+00  1.2310E+05  0.0000E+00  0.0000E+00
I-135:
  0.0000E+00  1.3102E+05  0.0000E+00  0.0000E+00
Cerium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Lanthanum:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Non-Radioactive Aerosols (kg):
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
End of Release File End of Release File
  
```

5.4.3 Concurrent Iodine Spike Filter Efficiency Adjustments (Iodine Release)

Since the iodine isotopes are being released in the aerosol groups by the RFT file, the control room filter aerosol efficiency must be changed to appropriately filter iodines. As discussed in Section 5.1.1.3.1, the effective control filter efficiency for both elemental and organic iodine is 94.05%. Therefore, the aerosol filter efficiency is set to this value in both the Recirculating Filter model in Compartment 3 and in Control Room Makeup Pathway 2.

5.4.3.1 Compartment 4 - Control Room

Time (hours)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0	0.0	94.05	94.05	94.05
0.0194	4520.0	94.05	94.05	94.05
720.0	4520.0	94.05	94.05	94.05



5.4.3.2 Pathway 2 – Control Room Makeup

Pathway #2 Summary				
Pathway Name:		Control Room Makeup		
From Compartment: 3		To Compartment: 4		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (cfm)	Aerosol	Elemental	Organic
0.0	880.0	0.0	0.0	0.0
0.0194	880.0	94.05	94.05	94.05
720.0	880.0	94.05	94.05	94.05

5.4.4 Concurrent Iodine Spike Dose Results (Iodine Release)

The results of the iodine dose contribution for a MSLB event with a concurrent iodine spike are presented in Table 34. The corresponding RADTRAD output file, **MSLB_Spike_I_R1.00**, is provided in Attachment D.

Table 34: MSLB Concurrent Iodine Spike TEDE Dose Results (Iodine Release)

EAB (rem)	LPZ (rem)	Control Room (rem)
6.7612E-01	2.3694E-01	1.8792E+00

5.5 Concurrent Iodine Spike – RCS Activity Release

Since the assessment of the concurrent iodine spike dose in Section 5.4 only addresses the release of iodine isotopes, a second case is required to determine the dose contribution from the remainder of the RCS activity. This case also uses the non-noble gas RADTRAD model developed in Section 5.2.

5.5.1 Pathway 5 – Intact SG Steam Release

For the non-iodine RCS activity release, a change is made to the intact steam generator steam release rate in Pathway 5 to account for a different partition coefficient for particulates as allowed by Section 5.5.4 of Appendix E to Reference [7.1]. As discussed in Section 5.2.2.5, the integrated steam flows from Input 3.12 are adjusted to account for partitioning of iodine and particulates by the water in the steam generators. Section 5.5.4 of Appendix E to Reference [7.1] permits the retention of particulates in the steam generators to be based upon the moisture carryover. From Input 3.11, a moisture carryover fraction of 0.2% is conservatively applied, which correlates to a partition coefficient of:

$$\text{Particulate Partition Coefficient} = \frac{1}{0.002} = 500$$

This partition coefficient is implemented in the RADTRAD model by reducing the average steam flow rates by a factor of 500. Steam releases continue until the RCS is cooled to 212 °F at 24 hours from Input 3.12 as directed by Section 5.3 of Appendix E to Reference [7.1].



$$\text{Intact Steam Release}_{0-2 \text{ hr}} = \frac{456,000 \text{ lbm}}{(500)(2 \text{ hr})(60 \text{ min/hr})} = 7.60 \text{ lbm/min}$$

$$\text{Intact Steam Release}_{2-8 \text{ hr}} = \frac{1,186,000 \text{ lbm}}{(500)(6 \text{ hr})(60 \text{ min/hr})} = 6.59 \text{ lbm/min}$$

$$\text{Intact Steam Release}_{8-24 \text{ hr}} = \frac{1,347,000 \text{ lbm}}{(500)(16 \text{ hr})(60 \text{ min/hr})} = 2.81 \text{ lbm/min}$$

Pathway #5 Summary				
Pathway Name:		Intact SG Steam Release		
From Compartment: 2		To Compartment: 3		
		Filter Efficiencies (%)		
Time (hours)	Flow Rate (lbm/min)	Aerosol	Elemental	Organic
0.0	7.60	0.0	0.0	0.0
2.0	6.59	0.0	0.0	0.0
8.0	2.81	0.0	0.0	0.0
24.0	0.0	0.0	0.0	0.0
720.0	0.0	0.0	0.0	0.0

5.5.2 Concurrent Iodine Spike Source Term Inputs (RCS Activity Release)

5.5.2.1 Plant Power

This case uses the RCS source term from Table 2, which has units of $\mu\text{Ci/gm}$. The plant power converts the source term to units of curies by multiplying the specific activities by the mass of the RCS. The RCS mass from Input 3.5 of 466,141.5 lbm results in the following plant power value:

$$\text{Plant Power} = \frac{466,141.5 \text{ lbm} \times 453.59 \text{ gm/lbm}}{1,000,000 \mu\text{Ci/Ci}} = 211.44 \frac{\text{Ci} - \text{gm}}{\mu\text{Ci}}$$

5.5.2.2 Decay Options

The source term release time is specified as 0.0 seconds with no delay time. This allows all of the release timing to be entered through the release fraction and timing file. Options are selected to allow for radioactive decay and the production of daughter products.

5.5.2.3 Iodine Fractions

There are no iodine isotopes involved in the RCS activity release case. As such, the iodine fractions are not used and placeholder values are entered into the model.



5.5.2.4 Inventory File

The RCS source term from Table 2 is formatted into RADTRAD nuclear inventory file **Cook_RCS.nif** as discussed in Section 5.1.3.4 and is applied in this case.

5.5.2.5 Release File

Since the noble gas dose is calculated in Section 5.1 and the iodine contribution to the concurrent iodine spike case is evaluated in Section 5.4, the release fractions for both of these groups are set to zero. All other group release fractions are set to 1.0 to simulate the normal equilibrium activities in the RCS. This RFT file is shown in Table 35 and is saved as file **MSLB_Spike_RCS_R1.rft**.

Table 35: MSLB Concurrent Spike Release Fraction File (RCS Activity)

```
Release Fraction and Timing Name:
RWA-1313-010 - D. C. Cook MSLB Concurrent Iodine Spike (RCS)
Duration (h):
  0.1000E-04  0.0000E+00  0.0000E+00  0.0000E+00
Noble Gases:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Iodine:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Cesium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Tellurium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Strontium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Barium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Ruthenium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Cerium:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Lanthanum:
  0.1000E+01  0.0000E+00  0.0000E+00  0.0000E+00
Non-Radioactive Aerosols (kg):
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
End of Release File
```

5.5.3 Concurrent Iodine Spike Dose Results (RCS Activity Release)

The results of the non-iodine RCS activity dose contribution for a MSLB event with a concurrent iodine spike are presented in Table 36. The corresponding RADTRAD output file, **MSLB_Spike_RCS_R1.o0**, is provided in Attachment E.



Table 36: MSLB Concurrent Iodine Spike TEDE Dose Results (RCS Activity Release)

EAB (rem)	LPZ (rem)	Control Room (rem)
8.1207E-02	3.9657E-02	2.0951E-01

5.6 Initial Steam Generator Iodine Release

In addition to the activity released to the environment as a result of primary-to-secondary leakage, there is also a small dose contribution from the iodine that is present in the steam generators during normal operation and released during the plant cooldown. To assess the dose impact of the initial iodine content in the steam generator secondary, the non-noble gas model developed in Section 5.2 is used. Changes to this model made to evaluate the steam generator iodine dose contribution are described below:

5.6.1 Initial SG Iodine Release - Compartments

The volume of the intact steam generator compartment (Compartment 2) is increased to maximize the nuclide inventory available for release. Input 3.10 lists the maximum liquid mass of a single steam generator as 161,000 lbm. The compartment volume is therefore changed to:

$$\text{Steam Generator Compartment Volume} = 3 \times 161,000 \text{ lbm} = 483,000 \text{ lbm}$$

5.6.2 Initial SG Iodine Release - Pathways

The addition of fluid into the steam generator secondary from primary-to-secondary leakage is conservatively ignored. Consequently, the tube leakage flow rates in Pathways 1, 6, and 7 are set to zero.

5.6.3 Initial SG Iodine Release Source Term Inputs

5.6.3.1 Plant Power

The specific activity of the iodine in the steam generators is 0.1 $\mu\text{Ci/gm}$ from Input 3.2. This value is one-tenth of the specific iodine concentration in the RCS source term as discussed in Input 3.1. The plant power input can therefore be used to reduce the RCS source term by a factor of ten. Table 2 shows that the RCS source term is developed in units of $\mu\text{Ci/gm}$. The plant power term also performs the units conversion by applying the liquid mass of a single steam generator:

$$\text{Plant Power} = \frac{\left(\frac{0.1}{1.0}\right) (161,000 \text{ lbm}) \left(453.59 \frac{\text{gm}}{\text{lbm}}\right)}{1,000,000 \mu\text{Ci}/\text{Ci}} = 7.3 \frac{\text{Ci} - \text{gm}}{\mu\text{Ci}}$$

In addition, since this case only involves the activity initially present on the secondary side of the steam generators prior to the event, the location of the source term is reassigned from the RCS compartment to the steam generator compartments. With the plant power calculated based upon the mass of a single steam generator, the source multiplier in the faulted steam generator (Compartment 5) is set to 1.0 and the source multiplier in the intact steam generator compartment (Compartment 2) is set to 3.0.



5.6.3.2 Inventory File

The RCS source term from Table 2 is formatted into RADTRAD nuclear inventory file **Cook_RCS.nif** as discussed in Section 5.1.3.4 and is applied in this case.

5.6.3.3 Release File

This case only involves the release of iodine nuclides in the steam generator secondary. Therefore, the iodine release fraction is set to 1.0 and the remaining nuclide group release fractions are set to zero. Note that bromine isotopes are conservatively included in the source term since these nuclides are assigned to the halogen group in the .nif file. All isotopes are instantaneously released into the steam generator compartment at the start of the event. The RFT file shown in Table 37 is saved as file **MSLB_SG_I_R1.rft**.

Table 37: MSLB SG Iodine Gas Release Fraction File

```
Release Fraction and Timing Name:
RWA-1313-010 - D. C. Cook MSLB Initial SG Iodine
Duration (h):
  0.1000E-04  0.0000E+00  0.0000E+00  0.0000E+00
Noble Gases:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Iodine:
  0.1000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Cesium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Tellurium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Strontium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Barium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Ruthenium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Cerium:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Lanthanum:
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Non-Radioactive Aerosols (kg):
  0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
End of Release File
```

5.6.4 Initial SG Iodine Gas Release Dose Results

The dose contribution from the release of the initial steam generator iodine during the main steam line break event are presented in Table 38. The corresponding RADTRAD output file, **MSLB_SG_I_R1.o0**, is provided in Attachment F:



Table 38: MSLB Initial SG Iodine Release TEDE Dose Results

EAB (rem)	LPZ (rem)	Control Room (rem)
8.0183E-02	1.1235E-02	7.5755E-01

5.7 Main Steam Line Break Dose Results

Table 39 and Table 40 present the total dose consequences for the main steam line break event. The contribution from control room shine shown in the summary table is developed in Reference [7.13] and conservatively reflects the dose from the control room ventilation filters during the LOCA event. Results for the EAB, LPZ, and control room are all within the regulatory dose limits.

Table 39: MSLB Pre-Accident Iodine Spike TEDE Dose Results

Release	EAB (rem)	LPZ (rem)	Control Room (rem)
Noble Gas	4.2923E-04	2.0284E-04	1.7912E-03
Pre-Accident Iodine Spike	1.6032E-01	7.8786E-02	4.7971E-01
Initial SG Secondary Iodine	8.0183E-02	1.1235E-02	7.5755E-01
Control Room Shine			0.139
Total	0.25	0.10	1.38
Acceptance Limit	25	25	5

Table 40: MSLB Concurrent Accident Iodine Spike TEDE Dose Results

Release	EAB (rem)	LPZ (rem)	Control Room (rem)
Noble Gas	4.2923E-04	2.0284E-04	1.7912E-03
Iodine Release	6.7612E-01	2.3694E-01	1.8792E+00
RCS Activity Release	8.1207E-02	3.9657E-02	2.0951E-01
Initial SG Secondary Iodine	8.0183E-02	1.1235E-02	7.5755E-01
Control Room Shine			0.139
Total	0.84	0.29	2.99
Acceptance Limit	2.5	2.5	5



6 Electronic Files

The RADTRAD input, output, and support files are electronically attached to this calculation and listed Table 41 along with a MD5 checksum for each file. The MD5 checksum is a 128-bit hash which is generated based on the content of a file which can be used for version integrity control since the possibility of getting two identical checksums for two files is negligibly small. It provides a more efficient and secure method of electronic file version control than simple file sizes and/or time/date stamps. A listing of the iodine spike .nif file is included in Attachment A, and copies of the RADTRAD output files are also provided in Attachments B through F.



Table 41: Electronic File Names and MD5 Checksums

Description	File Name	MD5 Checksum
Iodine Spike Source Term Nuclear Inventory File	MSLB_I_Spike.nif	c3d1f0354d4cd893012546c986221249
Noble Gas Release Fraction Timing File	MSLB_NG_R1.rft	bbe9eadca6caf3e19c20cc34ff71a7b0
Noble Gas Release Fraction Timing File	MSLB_Pre_I_R1.rft	a2df4ac841ff47b0f1fd0cd79a02f69b
Noble Gas Release Fraction Timing File	MSLB_Spike_I_R1.rft	0d8bca42943461ffdd2bfa7dd23ae3e9
Non-Noble Gas Release Fraction Timing File	MSLB_Spike_RCS_R1.rft	98d125a7c91f8356c9edf37b0b74dc11
Initial SG Iodine Release Fraction Timing File	MSLB_SG_I_R1.rft	100c8fe94a010d1c9d6d04ea3c9f8874
Noble Gas Release RADTRAD 3.10 Input File	MSLB_NG_R1.psf	57b1169b635cfe419ec9b5af2cc22e02
Noble Gas Release RADTRAD 3.10 Output File	MSLB_NG_R1.o0	728ac9c7e402629282b81b4094813ccf
Pre-Accident Spike RADTRAD 3.10 Input File	MSLB_Pre_I_R1.psf	4930720ae50c55895fce22eea5ced467
Pre-Accident Spike RADTRAD 3.10 Input File	MSLB_Pre_I_R1.o0	ecb3122fb4b82a20353aa20c3b505943
Concurrent-Accident Spike (Iodine) RADTRAD 3.10 Input File	MSLB_Spike_I_R1.psf	171538222befe6eebab5a1ec85c0451e
Concurrent-Accident Spike (Iodine) RADTRAD 3.10 Output File	MSLB_Spike_I_R1.o0	56e8e7138eb2a55ecc2c1c9c63a00f9e
Concurrent-Accident Spike (RCS) RADTRAD 3.10 Input File	MSLB_Spike_RCS_R1.psf	61d31c61034704c37aeb1a5e2914c06e
Concurrent-Accident Spike (RCS) RADTRAD 3.10 Output File	MSLB_Spike_RCS_R1.o0	f543ac4d4663a01cb9a49631a5b40a01
Initial SG Iodine Release RADTRAD 3.10 Input File	MSLB_SG_I_R1.psf	5bef35906727fad1f9633015ff2723b4
Initial SG Iodine Release RADTRAD 3.10 Output File	MSLB_SG_I_R1.o0	319f04ec709c626b99dd6ee42666086b



7 References

- 7.1 USNRC Regulatory Guide 1.183, Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors, July 2000.
- 7.2 ALION-UGM-RADTRRAD-2408-02, Alion RADTRAD 3.10 User's Manual, Revision 0.
- 7.3 NUREG/CR-6604, RADTRAD: A Simplified Model for Radionuclide Transport and Removal and Dose Estimation, December 1997.
- 7.4 NUREG/CR-6604, Supplement 1, RADTRAD: A Simplified Model for Radionuclide Transport and Removal and Dose Estimation, June 8, 1999.
- 7.5 NUREG/CR-6604, Supplement 2, RADTRAD: A Simplified Model for Radionuclide Transport and Removal and Dose Estimation, August 2002.
- 7.6 Calculation RWA-1313-001, Cook Nuclear Plant AST Radiological Analysis Input Parameter Development, Rev. 1.
- 7.7 Calculation RWA-1313-002, Cook Nuclear Plant AST Radiological Analysis Core and RCS Source Terms, Rev. 0.
- 7.8 Calculation RWA-1205-004, Development of RADTRAD 3.10 Nuclear Inventory and Dose Conversion Factor Files for AST Analyses, Rev. 0.
- 7.9 Calculation MD-12-HV-052-N, Control Room Ventilation Flow Rates and Charcoal Filter Efficiencies for Radiological Consequence Accident Analyses, Rev. 1.
- 7.10 Calculation RWA-1313-004, CNP On-Site Accident Atmospheric Dispersion Factor Analysis, Rev. 1.
- 7.11 Calculation RWA-1313-005, CNP Off-Site Accident Atmospheric Dispersion Factor Analysis, Rev. 1.
- 7.12 Calculation RWA-1313-011, Cook Nuclear Plant Steam Generator Tube Rupture AST Radiological Analysis, Rev. 1.
- 7.13 Calculation RWA-1313-014, Cook Nuclear Plant Control Room Shine Dose, Rev. 1.
- 7.14 EPA-520/1-88-020, Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion, Federal Guidance Report No. 11, September 1988.
- 7.15 EPA-402-R-93-081, External Exposure to Radionuclides in Air, Water, and Soil, Federal Guidance Report No. 12, September 1993.
- 7.16 NSAL-00-004, Nuclear Safety Advisory Letter, Subject: Nonconservatism in Iodine Spiking Calculations, March 7, 2000.
- 7.17 Drawing 1-5280-7, Main Steam Piping Plan, Containment to Col. "H", Unit No. 1, Sheet 1 of 6, Rev. 7.
- 7.18 Drawing 2-5280-4, Main Steam Piping Plan, Containment to Col. "H", Unit No. 2, Sheet 1 of 7, Rev. 4.
- 7.19 Connolly, Thomas L., Foundations of Nuclear Engineering, John Wiley & Sons, Inc., 1978.



Attachment A

Iodine Spike Inventory File

(MSLB_I_Spike.nif)



Radtrad 3.10 Nuclide Inventory Name:

RWA-1313-010 - D. C. Cook MSLB Iodine Spike

Power Level:

1.0000E+00

Inventory Type: 1=Specific Inventory, 2=Concentration, 3=Rate

1

Nuclides:

100

Nuclide 001:

Co-58

7

6.1171200000E+06

5.8000E+01

0.0000E+00

0.034

0.976

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 002:

Co-60

7

1.6622625600E+08

6.0000E+01

0.0000E+00

0.097

2.504

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 003:

Kr-85

1

3.3806592000E+08

8.5000E+01

0.0000E+00

0.251

0.002

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 004:

Kr-85m

1

1.6128000000E+04

8.5000E+01

0.0000E+00

0.255



0.158
Kr-85 2.1100E-01
none 0.0000E+00
none 0.0000E+00
Nuclide 005:
Kr-87
1
4.5780000000E+03
8.7000E+01
0.0000E+00
1.324
0.793
Rb-87 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 006:
Kr-88
1
1.0224000000E+04
8.8000E+01
0.0000E+00
0.364
1.955
Rb-88 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 007:
Rb-86
3
1.6122240000E+06
8.6000E+01
0.0000E+00
0.668
0.095
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 008:
Sr-89
5
4.3632000000E+06
8.9000E+01
0.0000E+00
0.583
0.000
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 009:



Sr-90
5
9.1832832000E+08
9.0000E+01
0.0000E+00
0.196
0.000
Y-90 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 010:
Sr-91
5
3.4200000000E+04
9.1000E+01
0.0000E+00
0.656
0.697
Y-91m 5.7800E-01
Y-91 4.2200E-01
none 0.0000E+00
Nuclide 011:
Sr-92
5
9.7560000000E+03
9.2000E+01
0.0000E+00
0.196
1.339
Y-92 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 012:
Y-90
9
2.3040000000E+05
9.0000E+01
0.0000E+00
0.935
0.000
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 013:
Y-91
9
5.0552640000E+06
9.1000E+01
0.0000E+00



0.602
0.004
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 014:
Y-92
9
1.2744000000E+04
9.2000E+01
0.0000E+00
1.446
0.252
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 015:
Y-93
9
3.6360000000E+04
9.3000E+01
0.0000E+00
1.174
0.089
Zr-93 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 016:
Zr-95
9
5.5278720000E+06
9.5000E+01
0.0000E+00
0.116
0.739
Nb-95m 7.0000E-03
Nb-95 9.9300E-01
none 0.0000E+00
Nuclide 017:
Zr-97
9
6.0840000000E+04
9.7000E+01
0.0000E+00
0.700
0.179
Nb-97m 9.4700E-01
Nb-97 5.3000E-02
none 0.0000E+00



Nuclide 018:

Nb-95
9
3.0369600000E+06
9.5000E+01
0.0000E+00
0.044
0.766
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 019:

Mo-99
7
2.3760000000E+05
9.9000E+01
0.0000E+00
0.392
0.150
Tc-99m 8.7600E-01
Tc-99 1.2400E-01
none 0.0000E+00

Nuclide 020:

Tc-99m
7
2.1672000000E+04
9.9000E+01
0.0000E+00
0.016
0.126
Tc-99 1.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 021:

Ru-103
7
3.3937920000E+06
1.0300E+02
0.0000E+00
0.075
0.469
Rh-103m 9.9700E-01
none 0.0000E+00
none 0.0000E+00

Nuclide 022:

Ru-105
7
1.5984000000E+04
1.0500E+02



0.0000E+00
0.400
0.784
Rh-105 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 023:
Ru-106
7
3.1812480000E+07
1.0600E+02
0.0000E+00
0.010
0.000
Rh-106 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 024:
Rh-105
7
1.2729600000E+05
1.0500E+02
0.0000E+00
0.154
0.078
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 025:
Sb-127
4
3.3264000000E+05
1.2700E+02
0.0000E+00
0.316
0.688
Te-127m 1.7600E-01
Te-127 8.2400E-01
none 0.0000E+00
Nuclide 026:
Sb-129
4
1.5552000000E+04
1.2900E+02
0.0000E+00
0.408
1.437
Te-129m 2.2500E-01
Te-129 7.7500E-01



none 0.0000E+00

Nuclide 027:

Te-127

4

3.3660000000E+04

1.2700E+02

0.0000E+00

0.223

0.005

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 028:

Te-127m

4

9.4176000000E+06

1.2700E+02

0.0000E+00

0.082

0.011

Te-127 9.7600E-01

none 0.0000E+00

none 0.0000E+00

Nuclide 029:

Te-129

4

4.1760000000E+03

1.2900E+02

0.0000E+00

0.544

0.059

I-129 1.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 030:

Te-129m

4

2.9030400000E+06

1.2900E+02

0.0000E+00

0.260

0.038

I-129 3.5000E-01

Te-129 6.5000E-01

none 0.0000E+00

Nuclide 031:

Te-131m

4

1.0800000000E+05



1.3100E+02
0.0000E+00
0.202
1.425
I-131 7.7800E-01
Te-131 2.2200E-01
none 0.0000E+00
Nuclide 032:
Te-132
4
2.8152000000E+05
1.3200E+02
0.0000E+00
0.102
0.234
I-132 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 033:
I-131
3
6.9465600000E+05
1.3100E+02
1.0000E+00
0.192
0.382
Xe-131m 1.1100E-02
none 0.0000E+00
none 0.0000E+00
Nuclide 034:
I-132
4
8.2800000000E+03
1.3200E+02
1.0000E+00
0.495
2.280
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 035:
I-133
5
7.4880000000E+04
1.3300E+02
1.0000E+00
0.411
0.607
Xe-133m 2.9000E-02



Xe-133 9.7100E-01
none 0.0000E+00

Nuclide 036:

I-134

6

3.1560000000E+03

1.3400E+02

1.0000E+00

0.622

2.625

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 037:

I-135

7

2.3796000000E+04

1.3500E+02

1.0000E+00

0.367

1.576

Xe-135m 1.5400E-01

Xe-135 8.4600E-01

none 0.0000E+00

Nuclide 038:

Xe-133

1

4.5316800000E+05

1.3300E+02

0.0000E+00

0.136

0.046

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 039:

Xe-135

1

3.2724000000E+04

1.3500E+02

0.0000E+00

0.317

0.249

Cs-135 1.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 040:

Cs-134

3



6.5027232000E+07
1.3400E+02
0.0000E+00
0.164
1.555
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 041:
Cs-136
3
1.1318400000E+06
1.3600E+02
0.0000E+00
0.139
2.166
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 042:
Cs-137
3
9.4608000000E+08
1.3700E+02
0.0000E+00
0.187
0.000
Ba-137m 9.4600E-01
none 0.0000E+00
none 0.0000E+00
Nuclide 043:
Ba-139
6
4.9620000000E+03
1.3900E+02
0.0000E+00
0.898
0.043
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 044:
Ba-140
6
1.1007360000E+06
1.4000E+02
0.0000E+00
0.313
0.183



La-140 1.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 045:

La-140
9
1.4497900000E+05
1.4000E+02
0.0000E+00
0.537
2.315
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 046:

La-141
9
1.4148000000E+04
1.4100E+02
0.0000E+00
0.948
0.043

Ce-141 1.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 047:

La-142
9
5.5500000000E+03
1.4200E+02
0.0000E+00
0.846
2.753
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 048:

Ce-141
8
2.8080860000E+06
1.4100E+02
0.0000E+00
0.171
0.076
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 049:

Ce-143



8
1.1880000000E+05
1.4300E+02
0.0000E+00
0.433
0.282
Pr-143 1.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 050:

Ce-144
8
2.4563520000E+07
1.4400E+02
0.0000E+00
0.092
0.021
Pr-144m 1.7800E-02
Pr-144 9.8220E-01
none 0.0000E+00

Nuclide 051:

Pr-143
9
1.1715840000E+06
1.4300E+02
0.0000E+00
0.314
0.000
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 052:

Nd-147
9
9.4867200000E+05
1.4700E+02
0.0000E+00
0.270
0.140
Pm-147 1.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 053:

Np-239
8
2.0347200000E+05
2.3900E+02
0.0000E+00
0.260



0.173
Pu-239 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 054:
Pu-238
8
2.7669686400E+09
2.3800E+02
0.0000E+00
0.011
0.002
U-234 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 055:
Pu-239
8
7.5891384000E+11
2.3900E+02
0.0000E+00
0.007
0.000
U-235 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 056:
Pu-240
8
2.0615083200E+11
2.4000E+02
0.0000E+00
0.011
0.002
U-236 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 057:
Pu-241
8
4.5411840000E+08
2.4100E+02
0.0000E+00
0.005
0.000
U-237 2.4500E-05
Am-241 1.0000E+00
none 0.0000E+00
Nuclide 058:



Am-241
9
1.3629859200E+10
2.4100E+02
0.0000E+00
0.052
0.033
Np-237 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 059:
Cm-242
9
1.4065920000E+07
2.4200E+02
0.0000E+00
0.010
0.002
Pu-238 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 060:
Cm-244
9
5.7111696000E+08
2.4400E+02
0.0000E+00
0.009
0.002
Pu-240 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 061:
Kr-83m
1
6.5880000000E+03
8.3000E+01
0.0000E+00
0.039
0.003
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 062:
Br-82
2
1.2708000000E+05
8.2000E+01
0.0000E+00



0.139
2.642
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 063:
Br-83
2
8.6040000000E+03
8.3000E+01
0.0000E+00
0.321
0.008
Kr-83m 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 064:
Br-84
2
1.9080000000E+03
8.4000E+01
0.0000E+00
1.229
1.788
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 065:
Rb-89
3
9.1200000000E+02
8.9000E+01
0.0000E+00
1.013
2.071
Sr-89 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 066:
Y-91m
9
2.9830000000E+03
9.1000E+01
0.0000E+00
0.027
0.530
Y-91 1.0000E+00
none 0.0000E+00
none 0.0000E+00



Nuclide 067:

Y-95

9

6.4200000000E+02

9.5000E+01

0.0000E+00

1.528

0.894

Zr-95 1.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 068:

Nb-95m

9

3.1176000000E+05

9.5000E+01

0.0000E+00

0.166

0.068

Nb-95 1.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 069:

Nb-97

9

4.3260000000E+03

9.7000E+01

0.0000E+00

0.468

0.655

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 070:

Rh-103m

7

3.3670000000E+03

1.0300E+02

0.0000E+00

0.038

0.002

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 071:

Pd-109

7

4.8337000000E+04

1.0900E+02



0.0000E+00
0.437
0.012
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 072:
Sb-124
4
5.2012800000E+06
1.2400E+02
0.0000E+00
0.387
1.817
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 073:
Sb-125
4
8.7354720000E+07
1.2500E+02
0.0000E+00
0.100
0.431
Te-125m 2.2800E-01
none 0.0000E+00
none 0.0000E+00
Nuclide 074:
Sb-126
4
1.0713600000E+06
1.2600E+02
0.0000E+00
0.283
2.834
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 075:
Te-125m
4
5.0112000000E+06
1.2500E+02
0.0000E+00
0.109
0.036
none 0.0000E+00
none 0.0000E+00



none 0.0000E+00
Nuclide 076:
Te-131
4
1.5000000000E+03
1.3100E+02
0.0000E+00
0.719
0.420
I-131 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 077:
Te-133
4
7.4700000000E+02
1.3300E+02
0.0000E+00
0.819
0.929
I-133 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 078:
Te-133m
4
3.3240000000E+03
1.3300E+02
0.0000E+00
0.705
2.313
I-133 8.7000E-01
Te-133 1.3000E-01
none 0.0000E+00
Nuclide 079:
Te-134
4
2.5080000000E+03
1.3400E+02
0.0000E+00
0.300
0.886
I-134 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 080:
I-130
2
4.4496000000E+04



1.3000E+02
0.0000E+00
0.297
2.139
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 081:
Xe-131m
1
1.0281600000E+06
1.3100E+02
0.0000E+00
0.144
0.020
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 082:
Xe-133m
1
1.8904300000E+05
1.3300E+02
0.0000E+00
0.192
0.041
Xe-133 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 083:
Xe-135m
1
9.1700000000E+02
1.3500E+02
0.0000E+00
0.098
0.429
Cs-135 4.5000E-05
Xe-135 9.9900E-01
none 0.0000E+00
Nuclide 084:
Xe-138
1
8.5000000000E+02
1.3800E+02
0.0000E+00
0.673
1.125
Cs-138 1.0000E+00



none 0.0000E+00
none 0.0000E+00
Nuclide 085:
Cs-134m
3
1.0440000000E+04
1.3400E+02
0.0000E+00
0.112
0.027
Cs-134 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 086:
Cs-138
3
1.9320000000E+03
1.3800E+02
0.0000E+00
1.207
2.361
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 087:
Ba-141
6
1.0960000000E+03
1.4100E+02
0.0000E+00
0.901
0.845
La-141 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 088:
La-143
9
8.5400000000E+02
1.4300E+02
0.0000E+00
1.324
0.094
Ce-143 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 089:
Pm-147
9



8.2731542000E+07
1.4700E+02
0.0000E+00
0.062
0.000
Sm-147 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 090:
Pm-148
9
4.6396800000E+05
1.4800E+02
0.0000E+00
0.724
0.575
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 091:
Pm-148m
9
3.5683200000E+06
1.4800E+02
0.0000E+00
0.170
2.000
Pm-148 4.6000E-02
none 0.0000E+00
none 0.0000E+00
Nuclide 092:
Pm-149
9
1.9108800000E+05
1.4900E+02
0.0000E+00
0.366
0.011
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 093:
Pm-151
9
1.0224000000E+05
1.5100E+02
0.0000E+00
0.306
0.321



Sm-151 1.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 094:

Sm-153
9
1.6812000000E+05
1.5300E+02
0.0000E+00
0.273
0.062
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 095:

Eu-154
9
2.7751680000E+08
1.5400E+02
0.0000E+00
0.292
1.242
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 096:

Eu-155
9
1.5641856000E+08
1.5500E+02
0.0000E+00
0.063
0.061
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 097:

Eu-156
9
1.3124160000E+06
1.5600E+02
0.0000E+00
0.423
1.329
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00

Nuclide 098:

Np-238



8
1.8290900000E+05
2.3800E+02
0.0000E+00
0.264
0.553
Pu-238 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 099:
Pu-243
8
1.7842000000E+04
2.4300E+02
0.0000E+00
0.173
0.026
Am-243 1.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 100:
Am-242
9
5.7672000000E+04
2.4200E+02
0.0000E+00
0.179
0.018
Cm-242 8.2700E-01
Pu-242 1.7300E-01
none 0.0000E+00
End of Nuclear Inventory File



Attachment B

Noble Gas Release RADTRAD Output

(MSLB_NG_R1.o0)

Note: The computer clock was set to 12/01/14 during model execution due to software date limitations



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:25:17

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#####

D. C. Cook - Main Steam Line Break Noble Gas Release

#####

File information

#####

Input File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_NG_R1.psf
Output File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_NG_R1.o0

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release file = c:\projects\1537-cook_dose\mslb\mslb_ng_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

```
#####      #####      #####      # #      # #####      # #      #####  
# # #      #      # ##      # #      # #      # #      #  
# # #      #      # # #      # #      # #      # #      #  
#####      #####      #####      # # #      # #####      # #      #  
#      # #      # #      # #      # #      # #      # #      #  
#      # #      # #      # #      ## #      # #      # #      #  
#      #####      #      # #      # #      #####      #
```



Radtrad 3.10 10/15/2013
D. C. Cook - Main Steam Line Break Noble Gas Release
Dose Conversion Factor File:
c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp
Release Fraction & Timing Files:
1
c:\projects\1537-cook_dose\mslb\mslb_ng_rl.rft
Nuclide Inventory Files:
1
1 c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Plant Power Level:
2.1144E+02
Number of Compartments:
3
Compartment 1:
RCS
3
4.661415E+05
0
0
0
0
0
0
Compartment 2:
Environment
2
0.00E+00
0
0
0
0
0



Compartment 3:

Control Room

1

5.0616E+04

0

0

1

0

0

Number of Pathways:

4

Pathway 1:

Steam Generator Tube Leakage

1

2

2

Pathway 2:

Control Room Makeup

2

3

2

Pathway 3:

CR Unfiltered Inleakage

2

3

2

Pathway 4:

Control Room Exhaust

3

2

2

End of Plant Model

Source Term Input:



1
1 1 1 1
0.00E+00
0.00E+00 7.2E+02
1
3 1.00E+00 0.00E+00 0.00E+00

Overlying Pool:

0
0.00E+00
0
0
0
0

Compartments:

3

Compartment 1:

1
1
0
0
0
0
0
0
0
0

Compartment 2:

2
1
0
0
0
0
0



0
0
Compartment 3:
1
1
0
0
0
0
1
3
0.00E+00 0.00E+00 9.801E+01 9.405E+01 9.405E+01
1.94E-02 4.52E+03 9.801E+01 9.405E+01 9.405E+01
7.2E+02 4.52E+03 9.801E+01 9.405E+01 9.405E+01
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
Pathways:
4
Pathway 1:
0
0
0
0
0
1
3
0.00E+00 8.328E+00 0.00E+00 0.00E+00 0.00E+00
2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
0



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 2:

0

0

0

0

0

1

3

0.00E+00 8.8E+02 0.00E+00 0.00E+00 0.00E+00

1.94E-02 8.8E+02 9.801E+01 9.405E+01 9.405E+01

7.2E+02 8.8E+02 9.801E+01 9.405E+01 9.405E+01

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 3:

0

0

0

0



0
1
2
0.00E+00 4.00E+01 0.00E+00 0.00E+00 0.00E+00
7.2E+02 4.00E+01 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0

Pathway 4:

0
0
0
0
0
1
2
0.00E+00 9.2E+02 0.00E+00 0.00E+00 0.00E+00
7.2E+02 9.2E+02 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0



Dose Locations:

3

Location 1:

Exclusion Area Boundary

2

1

4

0.00E+00 3.5E-04

8.00E+00 1.8E-04

2.4E+01 2.3E-04

7.2E+02 2.3E-04

0

Location 2:

Low Population Zone

2

1

4

0.00E+00 3.5E-04

8.00E+00 1.8E-04

2.4E+01 2.3E-04

7.2E+02 2.3E-04

0

Location 3:

Control Room

3

1

2

0.00E+00 3.5E-04

7.2E+02 3.5E-04

1

4

0.00E+00 1.00E+00

2.4E+01 6.00E-01



9.6E+01 4.00E-01
7.2E+02 4.00E-01

X/Q Tables:

4

Exclusion Area Boundary

2

0.00E+00 8.62E-04
7.2E+02 8.62E-04

Low Population Zone

6

0.00E+00 1.16E-04
2.00E+00 5.45E-05
8.00E+00 3.74E-05
2.4E+01 1.74E-05
9.6E+01 6.74E-06
7.2E+02 6.74E-06

Control Room Makeup

7

0.00E+00 4.57E-02
1.94E-02 2.91E-02
2.00E+00 2.02E-02
8.00E+00 8.14E-03
2.4E+01 5.34E-03
9.6E+01 4.32E-03
7.2E+02 4.32E-03

CR Unfiltered Inleakage

6

0.00E+00 4.57E-02
2.00E+00 3.14E-02
8.00E+00 1.27E-02
2.4E+01 8.3E-03
9.6E+01 6.73E-03
7.2E+02 6.73E-03



Inflow Pathways:

2 2 3

Exhaust Pathways:

2 1 4

X/Q table ID for Exhaust-Inflow paths:

3 4

-1 -1

Simulation Parameters:

0

Output Filename:

C:\Projects\1537-Cook_Dose\MSLB\MSLB_NG_R1.o0

1

1

0

0

1

End of Scenario File



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:25:17

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#####

D. C. Cook - Main Steam Line Break Noble Gas Release

Plant Description
#####

Number of Nuclides = 100

Inventory Power = 1.0000E+00 MWth
Plant Power Level = 2.1144E+02 MWth

Number of compartments = 3

Compartment information

Compartment number 1
Name: RCS
Compartment volume = 4.6614E+05 (Cubic feet)
Compartment type is Normal
Pathways into and out of compartment 1
Exit Pathway Number 1: Steam Generator Tube Leakage

Compartment number 2
Name: Environment
Compartment type is Environment
Pathways into and out of compartment 2



Inlet Pathway Number 1: Steam Generator Tube Leakage
Inlet Pathway Number 4: Control Room Exhaust
Exit Pathway Number 2: Control Room Makeup
Exit Pathway Number 3: CR Unfiltered Inleakage

Compartment number 3

Name: Control Room

Compartment volume = 5.0616E+04 (Cubic feet)

Compartment type is Control Room

Removal devices within compartment:

Filter(s)

Pathways into and out of compartment 3

Inlet Pathway Number 2: Control Room Makeup
Inlet Pathway Number 3: CR Unfiltered Inleakage
Exit Pathway Number 4: Control Room Exhaust

Total number of pathways = 4



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D. C. Cook - Main Steam Line Break Noble Gas Release

Scenario Description
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Power Ratio = 2.1144E+02
End Time = 7.2000E+02 (Hours)

Radioactive Decay is enabled
Calculation of Daughters is enabled

Source Number 1 is used in Compartment 1 RCS
Nuclide Distribution given in Ci/MWt
Fraction of Nuclide Distribution in this Compartment .1.00000

Iodine fractions for source number 1
Aerosol = 1.0000E+00
Elemental = 0.0000E+00
Organic = 0.0000E+00

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release from file = c:\projects\1537-cook_dose\mslb\mslb_ng_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Nuclide Name	Group	Specific Inventory (Ci/MWt)	half life (s)	Whole Body DCF (Sv-m3/Bq-s)	Inhaled Thyroid (Sv/Bq)	Inhaled Effective (Sv/Bq)
Kr-85	1	2.385E+01	3.381E+08	1.190E-16	0.000E+00	0.000E+00
Kr-85m	1	5.204E-01	1.613E+04	7.480E-15	0.000E+00	0.000E+00
Kr-87	1	3.299E-01	4.578E+03	4.120E-14	0.000E+00	0.000E+00
Kr-88	1	9.148E-01	1.022E+04	1.020E-13	0.000E+00	0.000E+00
I-131	2	8.087E-01	6.947E+05	1.820E-14	2.920E-07	8.890E-09
I-133	2	1.030E+00	7.488E+04	2.940E-14	4.860E-08	1.580E-09
I-135	2	5.365E-01	2.380E+04	7.980E-14	8.460E-09	3.320E-10
Xe-133	1	1.037E+02	4.532E+05	1.560E-15	0.000E+00	0.000E+00
Xe-135	1	3.361E+00	3.272E+04	1.190E-14	0.000E+00	0.000E+00
Kr-83m	1	1.350E-01	6.588E+03	1.500E-18	0.000E+00	0.000E+00
Br-83	2	2.720E-02	8.604E+03	3.820E-16	1.140E-12	2.410E-11
Xe-131m	1	1.600E+00	1.028E+06	3.890E-16	0.000E+00	0.000E+00
Xe-133m	1	1.423E+00	1.890E+05	1.370E-15	0.000E+00	0.000E+00
Xe-135m	1	2.138E-01	9.170E+02	2.040E-14	0.000E+00	0.000E+00
Xe-138	1	2.292E-01	8.500E+02	5.770E-14	0.000E+00	0.000E+00

Nuclide	Daughter	Fraction	Daughter	Fraction	Daughter	Fraction
Kr-85m	Kr-85	0.21	none	0.00	none	0.00
Kr-87	Rb-87	1.00	none	0.00	none	0.00
Kr-88	Rb-88	1.00	none	0.00	none	0.00
I-131	Xe-131m	0.01	none	0.00	none	0.00
I-133	Xe-133m	0.03	Xe-133	0.97	none	0.00
I-135	Xe-135m	0.15	Xe-135	0.85	none	0.00
Xe-135	Cs-135	1.00	none	0.00	none	0.00
Br-83	Kr-83m	1.00	none	0.00	none	0.00
Xe-133m	Xe-133	1.00	none	0.00	none	0.00
Xe-135m	Cs-135	0.00	Xe-135	1.00	none	0.00
Xe-138	Cs-138	1.00	none	0.00	none	0.00



Release Fractions and Timings

RWA-1313-010 - D. C. Cook MSLB Noble Gas

Duration (h):

	GAP	EARLY IN-VESSEL	LATE RELEASE	RELEASE MASS
	0.000010 hr	0.0000 hrs	0.0000 hrs	(Ci)
NOBLES	1.0000E+00	0.0000E+00	0.0000E+00	2.881E+04
IODINE	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
CESIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
TELLURIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
STRONTIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
BARIIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
RUTHENIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
CERIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
LANTHANUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
AEROSOL	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00

COMPARTMENT DATA

Compartment number 1: RCS

Compartment number 2: Environment

Compartment number 3: Control Room

Compartment Filter Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.8010E+01	9.4050E+01	9.4050E+01
1.9400E-02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01

PATHWAY DATA



Pathway number 1: Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	8.3280E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	8.8000E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9400E-02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01

Pathway number 3: CR Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 4: Control Room Exhaust

Pathway Filter: Removal Data



Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00

DOSE INFORMATION

Number_Dose_Locations = 3

Dose Location Name = Exclusion Area Boundary
Located in compartment 2 the Environment

Exclusion Area Boundary Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Low Population Zone
Located in compartment 2 the Environment

Low Population Zone Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Control Room
Located in compartment 3 the Control Room

Control Room Breathing Rate Data



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
7.2000E+02	3.5000E-04

Control Room Occupancy Factor Data

Time (hr)	Occupancy Factor
0.0000E+00	1.0000E+00
2.4000E+01	6.0000E-01
9.6000E+01	4.0000E-01
7.2000E+02	4.0000E-01

X/Q, ATMOSPHERIC DISPERSION INFORMATION

X/Q Table Name = Exclusion Area Boundary

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	8.6200E-04
7.2000E+02	8.6200E-04

X/Q Table Name = Low Population Zone

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.1600E-04
2.0000E+00	5.4500E-05
8.0000E+00	3.7400E-05
2.4000E+01	1.7400E-05
9.6000E+01	6.7400E-06
7.2000E+02	6.7400E-06

X/Q Table Name = Control Room Makeup



Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02
1.9400E-02	2.9100E-02
2.0000E+00	2.0200E-02
8.0000E+00	8.1400E-03
2.4000E+01	5.3400E-03
9.6000E+01	4.3200E-03
7.2000E+02	4.3200E-03

This X/Q Table is used for these connected pathways

Path 1 Steam Generator Tube Leakage and Path 2 Control Room Makeup

X/Q Table Name = CR Unfiltered Inleakage

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02
2.0000E+00	3.1400E-02
8.0000E+00	1.2700E-02
2.4000E+01	8.3000E-03
9.6000E+01	6.7300E-03
7.2000E+02	6.7300E-03

This X/Q Table is used for these connected pathways

Path 1 Steam Generator Tube Leakage and Path 3 CR Unfiltered Inleakage

EDIT EACH MAJOR TIME STEP

DO NOT EDIT SUPPLEMENTAL TIME STEPS

DO NOT EDIT MODEL DECONTAMINATION



Masses in Curies in detailed output



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D. C. Cook - Main Steam Line Break Noble Gas Release

Dose, Detailed model and Detailed Inventory Output
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Exclusion Area Boundary Doses:



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Time (h) = 0.0000 Whole Body Thyroid TEDE
Delta dose (rem) 1.2129E-09 0.0000E+00 1.2129E-09
Accumulated dose (rem) 1.2129E-09 0.0000E+00 1.2129E-09

Low Population Zone Doses:

Time (h) = 0.0000 Whole Body Thyroid TEDE
Delta dose (rem) 1.6321E-10 0.0000E+00 1.6321E-10
Accumulated dose (rem) 1.6321E-10 0.0000E+00 1.6321E-10

Control Room Doses:

Time (h) = 0.0000 Whole Body Thyroid TEDE Skin
Delta dose (rem) 1.1630E-14 0.0000E+00 1.1630E-14 1.2213E-12
Accumulated dose (rem) 1.1630E-14 0.0000E+00 1.1630E-14 1.2213E-12

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
Kr-85	5.0428E+03 Atmosphere	8.4580E-03	5.0428E-02	6.7171E+12
Kr-85m	1.1003E+02	1.1600E-02	1.1003E-03	1.4656E+11
Kr-87	6.9754E+01	4.0505E-02	6.9754E-04	9.2912E+10
Kr-88	1.9342E+02	2.7807E-01	1.9342E-03	2.5764E+11
Xe-133	2.1926E+04	4.8210E-01	2.1926E-01	2.9206E+13
Xe-135	7.1065E+02	1.1919E-01	7.1065E-03	9.4659E+11
Kr-83m	2.8544E+01	6.0347E-07	2.8544E-04	3.8021E+10
Xe-131m	3.3830E+02	1.8548E-03	3.3830E-03	4.5062E+11
Xe-133m	3.0088E+02	5.8098E-03	3.0088E-03	4.0077E+11
Xe-135m	4.5205E+01	1.2997E-02	4.5205E-04	6.0213E+10



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Xe-138	4.8461E+01	3.9410E-02	4.8461E-04	6.4551E+10
Cs-138	6.2592E-04	1.1520E-06	6.2592E-09	0.0000E+00
Total	2.8814E+04	1.0000E+00	0.0000E+00	0.0000E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.4456E-06

RCS Compartment Group Inventory Distribution:

Time (h) =	0.0000	Atmosphere	Sump
Noble gases (Ci)		2.8814E+04	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		6.2592E-04	0.0000E+00
All Aerosols (kg)		1.4792E-14	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
Xe-133	Atmosphere	4.8210E-01	2.3319E-11	3.1061E+03
Total		1.0000E+00	0.0000E+00	0.0000E+00

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.0000	Atmosphere	Sump
Noble gases (Ci)		3.0644E-06	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00



Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	6.6567E-14	0.0000E+00
All Aerosols (kg)	1.5731E-24	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 0.0000		
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

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Exclusion Area Boundary Doses:

Time (h) = 0.0194	Whole Body	Thyroid	TEDE
Delta dose (rem)	4.6991E-06	3.1597E-11	4.6994E-06
Accumulated dose (rem)	4.7003E-06	3.1597E-11	4.7006E-06

Low Population Zone Doses:

Time (h) = 0.0194	Whole Body	Thyroid	TEDE
Delta dose (rem)	6.3236E-07	4.2520E-12	6.3240E-07
Accumulated dose (rem)	6.3253E-07	4.2520E-12	6.3256E-07

Control Room Doses:



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Time (h) = 0.0194 Whole Body Thyroid TEDE Skin
 Delta dose (rem) 8.6725E-08 2.4413E-11 8.6912E-08 9.1127E-06
 Accumulated dose (rem) 8.6725E-08 2.4413E-11 8.6912E-08 9.1127E-06

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow
Kr-85	5.0427E+03	8.4735E-03	9.7830E+01	1.3031E+16	1.0484E-01
Kr-85m	1.0970E+02	1.1598E-02	2.1303E+00	2.8390E+14	2.2854E-03
Kr-87	6.9019E+01	4.0289E-02	1.3435E+00	1.7930E+14	1.4453E-03
Kr-88	1.9251E+02	2.7769E-01	3.7403E+00	4.9864E+14	4.0153E-03
Xe-133	2.1924E+04	4.8295E-01	4.2533E+02	5.6656E+16	4.5584E-01
Xe-135	7.0965E+02	1.1930E-01	1.3773E+01	1.8350E+15	1.4768E-02
Kr-83m	2.8335E+01	6.0156E-07	5.5099E-01	7.3490E+13	5.9205E-04
Xe-131m	3.3828E+02	1.8582E-03	6.5628E+00	8.7417E+14	7.0333E-03
Xe-133m	3.0080E+02	5.8194E-03	5.8360E+00	7.7739E+14	6.2548E-03
Xe-135m	4.2880E+01	1.2564E-02	8.4614E-01	1.1378E+14	9.2420E-04
Xe-138	4.5778E+01	3.7988E-02	9.0454E-01	1.2173E+14	9.8947E-04
Cs-138	1.1708E+00	1.4804E-03	1.5575E-02	9.8047E+11	7.9287E-06
Total	2.8804E+04	1.0000E+00	0.0000E+00	0.0000E+00	5.9900E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 3.4289E-06

RCS Compartment Group Inventory Distribution:

Time (h) = 0.0194 Atmosphere Sump



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Noble gases (Ci)	2.8803E+04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.1708E+00	0.0000E+00
All Aerosols (kg)	2.7670E-11	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow	
Kr-85	Atmosphere	2.0585E-03	8.4766E-03	2.7229E-05	3.6270E+09	1.9904E-03	9.0472E-05	2.1835E-05
Kr-85m		4.4781E-05	1.1597E-02	5.9269E-07	7.8993E+07	4.3388E-05	1.9722E-06	4.7581E-07
Kr-87		2.8174E-05	4.0246E-02	3.7341E-07	4.9844E+07	2.7439E-05	1.2472E-06	3.0062E-07
Kr-88		7.8583E-05	2.7761E-01	1.0404E-06	1.3871E+08	7.6229E-05	3.4649E-06	8.3577E-07
Xe-133		8.9494E-03	4.8311E-01	1.1838E-04	1.5769E+10	8.6539E-03	3.9336E-04	9.4936E-05
Xe-135		2.8968E-04	1.1932E-01	3.8329E-06	5.1067E+08	2.8037E-04	1.2744E-05	3.0752E-06
Kr-83m		1.1566E-05	6.0118E-07	1.5321E-07	2.0437E+07	1.1240E-05	5.1091E-07	1.2319E-07
Xe-131m		1.3809E-04	1.8588E-03	1.8266E-06	2.4331E+08	1.3353E-04	6.0693E-06	1.4648E-06
Xe-133m		1.2279E-04	5.8213E-03	1.6243E-06	2.1637E+08	1.1875E-04	5.3975E-06	1.3027E-06
Xe-135m		1.7504E-05	1.2478E-02	2.3383E-07	3.1476E+07	1.7546E-05	7.9753E-07	1.9122E-07
Xe-138		1.8687E-05	3.7709E-02	2.4982E-07	3.3657E+07	1.8785E-05	8.5385E-07	2.0461E-07
Total		1.1758E-02	1.0000E+00	0.0000E+00	0.0000E+00	1.1372E-02	5.1690E-04	1.2475E-04

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)	1.1758E-02	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
All Aerosols (Ci)	4.7794E-07	0.0000E+00	0.0000E+00
All Aerosols (kg)	1.1295E-17	0.0000E+00	0.0000E+00



	Deposition	Recirculating
Time (h) = 0.0194	Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

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Exclusion Area Boundary Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	4.2406E-04	6.1843E-08	4.2453E-04
Accumulated dose (rem)	4.2876E-04	6.1875E-08	4.2923E-04

Low Population Zone Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	5.7065E-05	8.3223E-09	5.7129E-05
Accumulated dose (rem)	5.7698E-05	8.3265E-09	5.7762E-05

Control Room Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	2.8265E-04	1.4761E-07	2.8379E-04	3.2118E-02
Accumulated dose (rem)	2.8274E-04	1.4763E-07	2.8387E-04	3.2127E-02



RCS Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow
Kr-85	5.0320E+03	9.5996E-03	1.0075E+04	1.3419E+18	1.0800E+01
Kr-85m	8.0576E+01	1.1285E-02	1.8842E+02	2.5185E+16	2.0340E-01
Kr-87	2.3399E+01	2.7661E-02	8.3848E+01	1.1305E+16	9.2094E-02
Kr-88	1.1846E+02	2.4837E-01	3.0410E+02	4.0730E+16	3.2960E-01
Xe-133	2.1643E+04	5.4415E-01	4.3562E+04	5.8032E+18	4.6709E+01
Xe-135	6.0993E+02	1.2544E-01	1.3165E+03	1.7566E+17	1.4161E+00
Kr-83m	1.3354E+01	4.7626E-07	3.9653E+01	5.3269E+15	4.3236E-02
Xe-131m	3.3594E+02	2.1000E-03	6.7419E+02	8.9807E+16	7.2280E-01
Xe-133m	2.9241E+02	6.5058E-03	5.9306E+02	7.9019E+16	6.3612E-01
Xe-135m	1.9529E-01	2.5527E-03	1.5628E+01	2.2023E+15	1.8734E-02
Xe-138	1.3632E-01	7.1564E-03	1.5489E+01	2.1918E+15	1.8719E-02
Cs-138	2.8014E+00	1.5178E-02	1.4516E+01	1.9013E+15	1.5526E-02
Total	2.8152E+04	1.0000E+00	0.0000E+00	0.0000E+00	6.1005E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.7105E-06

RCS Compartment Group Inventory Distribution:

Time (h) = 2.0000	Atmosphere	Sump
Noble gases (Ci)	2.8149E+04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00



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Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.8014E+00	0.0000E+00
All Aerosols (kg)	6.6203E-11	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Kr-85	5.6935E-02	9.9817E-03	7.7897E-02	1.0376E+13	0.0000E+00	1.3124E-01	9.3169E-03	8.3614E-02
Kr-85m	9.1169E-04	1.1331E-02	1.4068E-03	1.8807E+11	0.0000E+00	2.4739E-03	1.7547E-04	1.5191E-03
Kr-87	2.6475E-04	2.5252E-02	5.6920E-04	7.6783E+10	0.0000E+00	1.1230E-03	7.9450E-05	6.2337E-04
Kr-88	1.3404E-03	2.4422E-01	2.2235E-03	2.9787E+11	0.0000E+00	4.0110E-03	2.8435E-04	2.4089E-03
Xe-133	2.4488E-01	5.6513E-01	3.3642E-01	4.4817E+13	0.0000E+00	5.6764E-01	4.0296E-02	3.6119E-01
Xe-135	6.9012E-03	1.2826E-01	1.0009E-02	1.3356E+12	0.0000E+00	1.7216E-02	1.2217E-03	1.0776E-02
Kr-83m	1.5109E-04	4.5329E-07	2.8064E-04	3.7712E+10	0.0000E+00	5.2660E-04	3.7300E-05	3.0554E-04
Xe-131m	3.8011E-03	2.1824E-03	5.2101E-03	6.9402E+11	0.0000E+00	8.7838E-03	6.2356E-04	5.5930E-03
Xe-133m	3.3085E-03	6.7451E-03	4.5722E-03	6.0921E+11	0.0000E+00	7.7309E-03	5.4879E-04	4.9103E-03
Xe-135m	2.2096E-06	1.3356E-03	6.0800E-05	8.6027E+09	0.0000E+00	2.3278E-04	1.6162E-05	7.0961E-05
Xe-138	1.5424E-06	3.5727E-03	5.7502E-05	8.1734E+09	0.0000E+00	2.3305E-04	1.6149E-05	6.7491E-05
Cs-138	9.9491E-07	1.9830E-03	1.4101E-05	1.5818E+09	1.5031E-05	3.8826E-06	1.3394E-05	1.3748E-04
Total	3.1850E-01	1.0000E+00	0.0000E+00	0.0000E+00	1.5031E-05	7.4122E-01	5.2629E-02	4.7122E-01

Control Room Compartment Group Inventory Distribution:

Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)		3.1850E-01	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		9.9491E-07	0.0000E+00
All Aerosols (kg)		2.3512E-17	0.0000E+00

Deposition Recirculating



Time (h) =	2.0000	Surfaces	Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	1.5031E-05
All Aerosols (kg)		0.0000E+00	3.5522E-16

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Exclusion Area Boundary Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		9.6698E-04	9.7558E-09	9.6706E-04
Accumulated dose (rem)		1.3957E-03	7.1630E-08	1.3963E-03

Low Population Zone Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		6.1137E-05	6.1681E-10	6.1142E-05
Accumulated dose (rem)		1.1884E-04	8.9433E-09	1.1890E-04

Control Room Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		8.0658E-04	5.3807E-09	8.0662E-04	1.0405E-01
Accumulated dose (rem)		1.0893E-03	1.5301E-07	1.0905E-03	1.3618E-01



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RCS Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow
Kr-85	4.9995E+03	1.1744E-02	4.0168E+04	5.3504E+18	4.3059E+01
Kr-85m	3.1641E+01	9.2130E-03	5.0130E+02	6.7023E+16	5.4141E-01
Kr-87	8.8324E-01	1.2604E-02	1.2451E+02	1.6797E+16	1.3689E-01
Kr-88	2.7216E+01	1.6893E-01	6.7406E+02	9.0311E+16	7.3106E-01
Xe-133	2.0814E+04	6.5503E-01	1.7090E+05	2.2767E+19	1.8325E+02
Xe-135	3.8353E+02	1.2394E-01	4.2389E+03	5.6566E+17	4.5608E+00
Kr-83m	1.3672E+00	2.6134E-07	7.0910E+01	9.5301E+15	7.7384E-02
Xe-131m	3.2897E+02	2.5506E-03	2.6687E+03	3.5549E+17	2.8611E+00
Xe-133m	2.6842E+02	7.6542E-03	2.2739E+03	3.0298E+17	2.4392E+00
Xe-135m	1.5743E-08	7.8665E-04	1.5695E+01	2.2119E+15	1.8816E-02
Xe-138	3.0344E-09	2.2020E-03	1.5533E+01	2.1980E+15	1.8772E-02
Cs-138	1.2459E-03	5.3453E-03	1.6659E+01	2.1960E+15	1.7974E-02
Total	2.6856E+04	1.0000E+00	0.0000E+00	0.0000E+00	2.3771E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.9996E-06

RCS Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	2.6856E+04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2459E-03	0.0000E+00



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All Aerosols (kg) 2.9444E-14 0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure	Decays	Compartment	Pathway 2	Pathway 3	Pathway 4
	Atmosphere		(Ci-hr)	(Bq-s)	Recirc Filtr	Inflow	Inflow	Outflow
Kr-85	4.4201E-02	1.1948E-02	3.5495E-01	4.7280E+13	0.0000E+00	4.0187E-01	2.8439E-02	3.8611E-01
Kr-85m	2.7974E-04	9.1556E-03	4.3272E-03	5.7857E+11	0.0000E+00	5.3095E-03	3.7583E-04	4.7335E-03
Kr-87	7.8088E-06	1.1218E-02	9.6259E-04	1.2990E+11	0.0000E+00	1.4988E-03	1.0600E-04	1.0653E-03
Kr-88	2.4061E-04	1.6462E-01	5.7056E-03	7.6452E+11	0.0000E+00	7.3789E-03	5.2231E-04	6.2596E-03
Xe-133	1.8402E-01	6.6599E-01	1.5093E+00	2.0106E+14	0.0000E+00	1.7131E+00	1.2123E-01	1.6421E+00
Xe-135	3.3908E-03	1.2486E-01	3.7092E-02	4.9500E+12	0.0000E+00	4.3597E-02	3.0857E-03	4.0463E-02
Kr-83m	1.2087E-05	2.4548E-07	5.7857E-04	7.7775E+10	0.0000E+00	8.1307E-04	5.7541E-05	6.3734E-04
Xe-131m	2.9084E-03	2.5942E-03	2.3576E-02	3.1405E+12	0.0000E+00	2.6722E-02	1.8910E-03	2.5648E-02
Xe-133m	2.3731E-03	7.7754E-03	2.0064E-02	2.6734E+12	0.0000E+00	2.2857E-02	1.6175E-03	2.1836E-02
Xe-135m	1.3919E-13	3.5492E-04	6.1507E-05	8.7036E+09	0.0000E+00	2.3347E-04	1.6211E-05	7.1848E-05
Xe-138	2.6827E-14	9.4595E-04	5.7958E-05	8.2389E+09	0.0000E+00	2.3350E-04	1.6181E-05	6.8070E-05
Cs-138	1.6003E-10	5.3716E-04	1.4542E-05	1.6396E+09	1.2140E-08	4.2913E-06	1.4846E-05	6.5257E-04
Total	2.3744E-01	1.0000E+00	0.0000E+00	0.0000E+00	1.2140E-08	2.2236E+00	1.5737E-01	2.1296E+00

Control Room Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	2.3744E-01	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.6003E-10	0.0000E+00
All Aerosols (kg)	3.7818E-21	0.0000E+00

Time (h) = 8.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00



Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	1.2140E-08
All Aerosols (kg)	0.0000E+00	2.8690E-19

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Exclusion Area Boundary Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	1.9345E-03	2.1890E-12	1.9345E-03
Accumulated dose (rem)	3.3302E-03	7.1633E-08	3.3307E-03

Low Population Zone Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	8.3931E-05	9.4977E-14	8.3931E-05
Accumulated dose (rem)	2.0277E-04	8.9434E-09	2.0284E-04

Control Room Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	6.8127E-04	7.5134E-13	6.8127E-04	1.0168E-01
Accumulated dose (rem)	1.7706E-03	1.5301E-07	1.7718E-03	2.3786E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000



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Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow
Kr-85	4.9139E+03	1.4653E-02	1.1946E+05	1.5912E+19	1.2807E+02
Kr-85m	2.6163E+00	5.2740E-03	6.8403E+02	9.1835E+16	7.4499E-01
Kr-87	1.4161E-04	5.3549E-03	1.2609E+02	1.7012E+16	1.3867E-01
Kr-88	5.3880E-01	8.2049E-02	7.8039E+02	1.0480E+17	8.5046E-01
Xe-133	1.8755E+04	7.8277E-01	4.8680E+05	6.4886E+19	5.2261E+02
Xe-135	1.1130E+02	9.4666E-02	7.7177E+03	1.0345E+18	8.3793E+00
Kr-83m	3.1363E-03	1.1506E-07	7.4415E+01	1.0008E+16	8.1329E-02
Xe-131m	3.1106E+02	3.1212E-03	7.7842E+03	1.0372E+18	8.3507E+00
Xe-133m	2.1362E+02	8.6194E-03	6.1037E+03	8.1432E+17	6.5647E+00
Xe-135m	1.9094E-27	3.3002E-04	1.5695E+01	2.2119E+15	1.8816E-02
Xe-138	1.1896E-29	9.2380E-04	1.5533E+01	2.1980E+15	1.8772E-02
Cs-138	1.2979E-12	2.2426E-03	1.6660E+01	2.1962E+15	1.7975E-02
Total	2.4308E+04	1.0000E+00	0.0000E+00	0.0000E+00	6.7585E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.5373E-06

RCS Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	2.4308E+04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2979E-12	0.0000E+00
All Aerosols (kg)	3.0672E-23	0.0000E+00



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Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Kr-85	1.7504E-02	1.3725E-02	6.6089E-01	8.8031E+13	0.0000E+00	6.8921E-01	4.8816E-02	7.2059E-01
Kr-85m	9.3196E-06	6.6681E-03	5.1080E-03	6.8432E+11	0.0000E+00	5.9977E-03	4.2463E-04	5.6182E-03
Kr-87	5.0443E-10	6.9814E-03	9.7095E-04	1.3104E+11	0.0000E+00	1.5048E-03	1.0643E-04	1.0749E-03
Kr-88	1.9193E-06	1.1016E-01	6.1884E-03	8.3009E+11	0.0000E+00	7.7825E-03	5.5093E-04	6.8105E-03
Xe-133	6.6807E-02	7.4377E-01	2.7319E+00	3.6406E+14	0.0000E+00	2.8601E+00	2.0258E-01	2.9813E+00
Xe-135	3.9645E-04	1.0626E-01	5.1167E-02	6.8447E+12	0.0000E+00	5.6504E-02	4.0010E-03	5.6198E-02
Kr-83m	1.1172E-08	1.5597E-07	5.9578E-04	8.0115E+10	0.0000E+00	8.2641E-04	5.8487E-05	6.5705E-04
Xe-131m	1.1080E-03	2.9424E-03	4.3341E-02	5.7743E+12	0.0000E+00	4.5277E-02	3.2069E-03	4.7275E-02
Xe-133m	7.6093E-04	8.3570E-03	3.4953E-02	4.6609E+12	0.0000E+00	3.6801E-02	2.6064E-03	3.8188E-02
Xe-135m	6.8014E-33	2.1898E-04	6.1507E-05	8.7036E+09	0.0000E+00	2.3347E-04	1.6211E-05	7.1848E-05
Xe-138	4.2376E-35	5.8363E-04	5.7958E-05	8.2389E+09	0.0000E+00	2.3350E-04	1.6181E-05	6.8070E-05
Cs-138	6.7365E-20	3.3142E-04	1.4542E-05	1.6396E+09	1.8658E-17	4.2914E-06	1.4846E-05	2.0254E-03
Total	8.6588E-02	1.0000E+00	0.0000E+00	0.0000E+00	1.8658E-17	3.7045E+00	2.6239E-01	3.8599E+00

Control Room Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	8.6588E-02	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	6.7365E-20	0.0000E+00
All Aerosols (kg)	1.5920E-30	0.0000E+00

Time (h) = 24.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00



Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	1.8658E-17
All Aerosols (kg)	0.0000E+00	4.4095E-28

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Exclusion Area Boundary Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	3.3302E-03	7.1633E-08	3.3307E-03

Low Population Zone Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	2.0277E-04	8.9434E-09	2.0284E-04

Control Room Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	1.9479E-05	1.2501E-22	1.9479E-05	3.0763E-03
Accumulated dose (rem)	1.7901E-03	1.5301E-07	1.7912E-03	2.4093E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure	Decays	Pathway 1
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Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

	Atmosphere		(Ci-hr)	(Bq-s)	Outflow
Kr-85	4.9113E+03	2.0175E-02	4.7316E+05	6.3025E+19	1.2807E+02
Kr-85m	3.7993E-05	1.8769E-03	7.0030E+02	9.4087E+16	7.4499E-01
Kr-87	1.2800E-21	1.8614E-03	1.2609E+02	1.7012E+16	1.3867E-01
Kr-88	1.2580E-08	2.8597E-02	7.8247E+02	1.0510E+17	8.5046E-01
Xe-133	1.2660E+04	8.9549E-01	1.6021E+06	2.1364E+20	5.2261E+02
Xe-135	4.5929E-01	3.8987E-02	9.1437E+03	1.2281E+18	8.3793E+00
Kr-83m	4.4938E-15	3.9999E-08	7.4423E+01	1.0009E+16	8.1329E-02
Xe-131m	2.6118E+02	3.9473E-03	2.8320E+04	3.7742E+18	8.3507E+00
Xe-133m	8.2583E+01	7.8531E-03	1.5998E+04	2.1366E+18	6.5647E+00
Xe-135m	1.5542E-112	1.1472E-04	1.5695E+01	2.2119E+15	1.8816E-02
Xe-138	1.9010E-121	3.2112E-04	1.5533E+01	2.1980E+15	1.8772E-02
Cs-138	5.3284E-53	7.7955E-04	1.6660E+01	2.1962E+15	1.7975E-02
Total	1.7916E+04	1.0000E+00	0.0000E+00	0.0000E+00	6.7585E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	9.9821E-07

RCS Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	1.7916E+04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	5.3284E-53	0.0000E+00
All Aerosols (kg)	1.2593E-63	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Kr-85	1.3862E-36	1.3791E-02	6.7296E-01	8.9638E+13	0.0000E+00	6.8921E-01	4.8816E-02	7.3852E-01
Kr-85m	1.0724E-44	6.5866E-03	5.1134E-03	6.8507E+11	0.0000E+00	5.9977E-03	4.2463E-04	5.6268E-03
Kr-87	3.6127E-61	6.8889E-03	9.7095E-04	1.3104E+11	0.0000E+00	1.5048E-03	1.0643E-04	1.0749E-03
Kr-88	3.5507E-48	1.0872E-01	6.1894E-03	8.3023E+11	0.0000E+00	7.7825E-03	5.5093E-04	6.8122E-03
Xe-133	3.5733E-36	7.4621E-01	2.7777E+00	3.7017E+14	0.0000E+00	2.8601E+00	2.0258E-01	3.0495E+00
Xe-135	1.2963E-40	1.0537E-01	5.1417E-02	6.8786E+12	0.0000E+00	5.6504E-02	4.0010E-03	5.6585E-02
Kr-83m	1.2684E-54	1.5390E-07	5.9579E-04	8.0115E+10	0.0000E+00	8.2641E-04	5.8487E-05	6.5706E-04
Xe-131m	7.3719E-38	2.9544E-03	4.4103E-02	5.8758E+12	0.0000E+00	4.5277E-02	3.2069E-03	4.8409E-02
Xe-133m	2.3309E-38	8.3681E-03	3.5469E-02	4.7300E+12	0.0000E+00	3.6801E-02	2.6064E-03	3.8961E-02
Xe-135m	4.3866E-152	2.1608E-04	6.1507E-05	8.7036E+09	0.0000E+00	2.3347E-04	1.6211E-05	7.1848E-05
Xe-138	5.3655E-161	5.7590E-04	5.7958E-05	8.2389E+09	0.0000E+00	2.3350E-04	1.6181E-05	6.8070E-05
Cs-138	6.5046E-161	3.2703E-04	1.4542E-05	1.6396E+09	7.6997E-58	4.2914E-06	1.4846E-05	8.2031E-03
Total	5.0567E-36	1.0000E+00	0.0000E+00	0.0000E+00	7.6997E-58	3.7045E+00	2.6239E-01	3.9545E+00

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Exclusion Area Boundary Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	3.3302E-03	7.1633E-08	3.3307E-03

Low Population Zone Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	2.0277E-04	8.9434E-09	2.0284E-04



Control Room Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	6.6962E-40	9.0834-164	6.6962E-40	1.2779E-37
Accumulated dose (rem)	1.7901E-03	1.5301E-07	1.7912E-03	2.4093E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow
Kr-85	4.8887E+03	6.2976E-02	3.5308E+06	4.7030E+20	1.2807E+02
Kr-85m	4.4723E-47	7.8514E-04	7.0030E+02	9.4087E+16	7.4499E-01
Kr-87	2.4740-169	7.7867E-04	1.2609E+02	1.7012E+16	1.3867E-01
Kr-88	9.0756E-75	1.1963E-02	7.8247E+02	1.0510E+17	8.5046E-01
Xe-133	4.0946E+02	8.9556E-01	3.8301E+06	5.1082E+20	5.2261E+02
Xe-135	9.9384E-22	1.6320E-02	9.1496E+03	1.2289E+18	8.3793E+00
Kr-83m	1.0147-117	1.6733E-08	7.4423E+01	1.0009E+16	8.1329E-02
Xe-131m	5.7443E+01	6.5430E-03	1.1222E+05	1.4956E+19	8.3507E+00
Xe-133m	2.1865E-02	4.5653E-03	2.2232E+04	2.9697E+18	6.5647E+00
Xe-135m	0.0000E+00	4.7989E-05	1.5695E+01	2.2119E+15	1.8816E-02
Xe-138	0.0000E+00	1.3433E-04	1.5533E+01	2.1980E+15	1.8772E-02
Cs-138	0.0000E+00	3.2610E-04	1.6660E+01	2.1962E+15	1.7975E-02
Total	5.3556E+03	1.0000E+00	0.0000E+00	0.0000E+00	6.7585E+02

Dose Equivalent (Ci/cc)	I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc)	I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc)	I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)		0.0000E+00
Dose Equivalent (Ci/cc)	Xe-133 (EDE)	6.0359E-08



RCS Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	5.3556E+03	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Environment Integral Nuclide Release (Ci): at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract
	Atmosphere	Pathway 1
Kr-85	1.2807E+02	0.01344
Kr-85m	7.4499E-01	0.00677
Kr-87	1.3867E-01	0.00991
Kr-88	8.5046E-01	0.12016
Xe-133	5.2276E+02	0.72712
Xe-135	8.3832E+00	0.10386
Kr-83m	8.1329E-02	0.00000
Xe-131m	8.3507E+00	0.00288
Xe-133m	6.5647E+00	0.00816
Xe-135m	1.8816E-02	0.00081
Xe-138	1.8772E-02	0.00229
Cs-138	1.7975E-02	0.00461

Environment Compartment Group Inventory Distribution:

Time (h) = 720.0000	Total Release	Release Rate/s
Noble gases (Ci)	6.7599E+02	2.6080E-04
Elemental I (Ci)	0.0000E+00	0.0000E+00



Organic I (Ci) 0.0000E+00 0.0000E+00
Aerosol I (Ci) 0.0000E+00 0.0000E+00
All Aerosols (Ci) 1.7975E-02 6.9349E-09

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Kr-85	0.0000E+00	1.3791E-02	6.7296E-01	8.9638E+13	6.8921E-01	4.8816E-02	7.3852E-01
Kr-85m	0.0000E+00	6.5866E-03	5.1134E-03	6.8507E+11	5.9977E-03	4.2463E-04	5.6268E-03
Kr-87	0.0000E+00	6.8889E-03	9.7095E-04	1.3104E+11	1.5048E-03	1.0643E-04	1.0749E-03
Kr-88	0.0000E+00	1.0872E-01	6.1894E-03	8.3023E+11	7.7825E-03	5.5093E-04	6.8122E-03
Xe-133	0.0000E+00	7.4621E-01	2.7777E+00	3.7017E+14	2.8601E+00	2.0258E-01	3.0495E+00
Xe-135	0.0000E+00	1.0537E-01	5.1417E-02	6.8786E+12	5.6504E-02	4.0010E-03	5.6585E-02
Kr-83m	0.0000E+00	1.5390E-07	5.9579E-04	8.0115E+10	8.2641E-04	5.8487E-05	6.5706E-04
Xe-131m	0.0000E+00	2.9544E-03	4.4103E-02	5.8758E+12	4.5277E-02	3.2069E-03	4.8409E-02
Xe-133m	0.0000E+00	8.3681E-03	3.5469E-02	4.7300E+12	3.6801E-02	2.6064E-03	3.8961E-02
Xe-135m	0.0000E+00	2.1608E-04	6.1507E-05	8.7036E+09	2.3347E-04	1.6211E-05	7.1848E-05
Xe-138	0.0000E+00	5.7590E-04	5.7958E-05	8.2389E+09	2.3350E-04	1.6181E-05	6.8070E-05
Cs-138	0.0000E+00	3.2703E-04	1.4542E-05	1.6396E+09	4.2914E-06	1.4846E-05	6.1743E-02
Total	0.0000E+00	1.0000E+00	0.0000E+00	0.0000E+00	3.7045E+00	2.6239E-01	4.0081E+00

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I-131 Summary

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Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Time (hr)	RCS I-131 (Curies)	Environment I-131 (Curies)	Control Room I-131 (Curies)
0.000	0.0000E+00	0.0000E+00	0.0000E+00
0.019	0.0000E+00	0.0000E+00	0.0000E+00
0.226	0.0000E+00	0.0000E+00	0.0000E+00
0.439	0.0000E+00	0.0000E+00	0.0000E+00
0.650	0.0000E+00	0.0000E+00	0.0000E+00
0.873	0.0000E+00	0.0000E+00	0.0000E+00
1.084	0.0000E+00	0.0000E+00	0.0000E+00
1.284	0.0000E+00	0.0000E+00	0.0000E+00
1.484	0.0000E+00	0.0000E+00	0.0000E+00
1.684	0.0000E+00	0.0000E+00	0.0000E+00
1.884	0.0000E+00	0.0000E+00	0.0000E+00
2.000	0.0000E+00	0.0000E+00	0.0000E+00
2.200	0.0000E+00	0.0000E+00	0.0000E+00
2.400	0.0000E+00	0.0000E+00	0.0000E+00
2.600	0.0000E+00	0.0000E+00	0.0000E+00
2.800	0.0000E+00	0.0000E+00	0.0000E+00
3.000	0.0000E+00	0.0000E+00	0.0000E+00
3.200	0.0000E+00	0.0000E+00	0.0000E+00
3.400	0.0000E+00	0.0000E+00	0.0000E+00
3.600	0.0000E+00	0.0000E+00	0.0000E+00
3.800	0.0000E+00	0.0000E+00	0.0000E+00
4.000	0.0000E+00	0.0000E+00	0.0000E+00
4.200	0.0000E+00	0.0000E+00	0.0000E+00
4.400	0.0000E+00	0.0000E+00	0.0000E+00
4.600	0.0000E+00	0.0000E+00	0.0000E+00
4.800	0.0000E+00	0.0000E+00	0.0000E+00
5.000	0.0000E+00	0.0000E+00	0.0000E+00
5.200	0.0000E+00	0.0000E+00	0.0000E+00
5.400	0.0000E+00	0.0000E+00	0.0000E+00
5.600	0.0000E+00	0.0000E+00	0.0000E+00



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5.800	0.0000E+00	0.0000E+00	0.0000E+00
6.000	0.0000E+00	0.0000E+00	0.0000E+00
6.200	0.0000E+00	0.0000E+00	0.0000E+00
6.400	0.0000E+00	0.0000E+00	0.0000E+00
6.600	0.0000E+00	0.0000E+00	0.0000E+00
6.800	0.0000E+00	0.0000E+00	0.0000E+00
7.000	0.0000E+00	0.0000E+00	0.0000E+00
7.200	0.0000E+00	0.0000E+00	0.0000E+00
7.400	0.0000E+00	0.0000E+00	0.0000E+00
7.600	0.0000E+00	0.0000E+00	0.0000E+00
7.800	0.0000E+00	0.0000E+00	0.0000E+00
8.000	0.0000E+00	0.0000E+00	0.0000E+00
8.200	0.0000E+00	0.0000E+00	0.0000E+00
8.400	0.0000E+00	0.0000E+00	0.0000E+00
8.600	0.0000E+00	0.0000E+00	0.0000E+00
8.800	0.0000E+00	0.0000E+00	0.0000E+00
9.000	0.0000E+00	0.0000E+00	0.0000E+00
9.200	0.0000E+00	0.0000E+00	0.0000E+00
9.400	0.0000E+00	0.0000E+00	0.0000E+00
9.600	0.0000E+00	0.0000E+00	0.0000E+00
9.800	0.0000E+00	0.0000E+00	0.0000E+00
10.000	0.0000E+00	0.0000E+00	0.0000E+00
10.200	0.0000E+00	0.0000E+00	0.0000E+00
24.000	0.0000E+00	0.0000E+00	0.0000E+00
96.000	0.0000E+00	0.0000E+00	0.0000E+00
720.000	0.0000E+00	0.0000E+00	0.0000E+00

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Cumulative Dose Summary

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Time	Exclusion Area Bounda		Low Population Zone		Control Room	
	Thyroid	TEDE	Thyroid	TEDE	Thyroid	TEDE



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(hr)	(rem)	(rem)	(rem)	(rem)	(rem)	(rem)
0.000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.019	3.1597E-11	4.7006E-06	4.2520E-12	6.3256E-07	2.4413E-11	8.6912E-08
0.226	4.3665E-09	5.4202E-05	5.8760E-10	7.2940E-06	1.0661E-08	7.6725E-06
0.439	1.3617E-08	1.0359E-04	1.8325E-09	1.3941E-05	4.0777E-08	2.5237E-05
0.650	2.3754E-08	1.5112E-04	3.1966E-09	2.0337E-05	7.2872E-08	4.9725E-05
0.873	3.3678E-08	1.9998E-04	4.5321E-09	2.6911E-05	9.9922E-08	8.1183E-05
1.084	4.1679E-08	2.4497E-04	5.6088E-09	3.2966E-05	1.1802E-07	1.1478E-04
1.284	4.7964E-08	2.8667E-04	6.4546E-09	3.8578E-05	1.2962E-07	1.4918E-04
1.484	5.3057E-08	3.2749E-04	7.1400E-09	4.4071E-05	1.3744E-07	1.8539E-04
1.684	5.7124E-08	3.6749E-04	7.6872E-09	4.9454E-05	1.4266E-07	2.2288E-04
1.884	6.0338E-08	4.0674E-04	8.1197E-09	5.4736E-05	1.4615E-07	2.6127E-04
2.000	6.1875E-08	4.2923E-04	8.3265E-09	5.7762E-05	1.4763E-07	2.8387E-04
2.200	6.4061E-08	4.6740E-04	8.4648E-09	6.0175E-05	1.4937E-07	3.2174E-04
2.400	6.5766E-08	5.0494E-04	8.5726E-09	6.2549E-05	1.5044E-07	3.5756E-04
2.600	6.7092E-08	5.4190E-04	8.6564E-09	6.4885E-05	1.5115E-07	3.9168E-04
2.800	6.8121E-08	5.7830E-04	8.7214E-09	6.7187E-05	1.5164E-07	4.2440E-04
3.000	6.8918E-08	6.1418E-04	8.7718E-09	6.9456E-05	1.5198E-07	4.5593E-04
3.200	6.9535E-08	6.4957E-04	8.8108E-09	7.1693E-05	1.5223E-07	4.8647E-04
3.400	7.0012E-08	6.8449E-04	8.8410E-09	7.3901E-05	1.5242E-07	5.1615E-04
3.600	7.0381E-08	7.1897E-04	8.8643E-09	7.6081E-05	1.5256E-07	5.4510E-04
3.800	7.0666E-08	7.5302E-04	8.8824E-09	7.8233E-05	1.5267E-07	5.7340E-04
4.000	7.0887E-08	7.8667E-04	8.8963E-09	8.0361E-05	1.5275E-07	6.0114E-04
4.200	7.1057E-08	8.1993E-04	8.9071E-09	8.2464E-05	1.5281E-07	6.2839E-04
4.400	7.1189E-08	8.5283E-04	8.9154E-09	8.4544E-05	1.5286E-07	6.5519E-04
4.600	7.1290E-08	8.8537E-04	8.9218E-09	8.6601E-05	1.5289E-07	6.8159E-04
4.800	7.1369E-08	9.1758E-04	8.9268E-09	8.8638E-05	1.5292E-07	7.0763E-04
5.000	7.1429E-08	9.4946E-04	8.9306E-09	9.0653E-05	1.5294E-07	7.3333E-04
5.200	7.1476E-08	9.8103E-04	8.9336E-09	9.2649E-05	1.5296E-07	7.5872E-04
5.400	7.1512E-08	1.0123E-03	8.9358E-09	9.4627E-05	1.5297E-07	7.8383E-04
5.600	7.1540E-08	1.0433E-03	8.9376E-09	9.6586E-05	1.5298E-07	8.0867E-04
5.800	7.1562E-08	1.0740E-03	8.9390E-09	9.8527E-05	1.5299E-07	8.3326E-04
6.000	7.1578E-08	1.1044E-03	8.9400E-09	1.0045E-04	1.5299E-07	8.5762E-04



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6.200	7.1591E-08	1.1346E-03	8.9408E-09	1.0236E-04	1.5300E-07	8.8175E-04
6.400	7.1601E-08	1.1646E-03	8.9415E-09	1.0425E-04	1.5300E-07	9.0567E-04
6.600	7.1609E-08	1.1943E-03	8.9419E-09	1.0613E-04	1.5300E-07	9.2939E-04
6.800	7.1615E-08	1.2238E-03	8.9423E-09	1.0800E-04	1.5301E-07	9.5292E-04
7.000	7.1619E-08	1.2530E-03	8.9426E-09	1.0985E-04	1.5301E-07	9.7627E-04
7.200	7.1623E-08	1.2821E-03	8.9428E-09	1.1168E-04	1.5301E-07	9.9944E-04
7.400	7.1625E-08	1.3109E-03	8.9430E-09	1.1351E-04	1.5301E-07	1.0224E-03
7.600	7.1628E-08	1.3396E-03	8.9431E-09	1.1532E-04	1.5301E-07	1.0453E-03
7.800	7.1629E-08	1.3680E-03	8.9432E-09	1.1712E-04	1.5301E-07	1.0680E-03
8.000	7.1630E-08	1.3963E-03	8.9433E-09	1.1890E-04	1.5301E-07	1.0905E-03
8.200	7.1631E-08	1.4244E-03	8.9433E-09	1.2012E-04	1.5301E-07	1.1115E-03
8.400	7.1631E-08	1.4523E-03	8.9434E-09	1.2133E-04	1.5301E-07	1.1301E-03
8.600	7.1632E-08	1.4800E-03	8.9434E-09	1.2254E-04	1.5301E-07	1.1467E-03
8.800	7.1632E-08	1.5076E-03	8.9434E-09	1.2373E-04	1.5301E-07	1.1617E-03
9.000	7.1632E-08	1.5350E-03	8.9434E-09	1.2492E-04	1.5301E-07	1.1754E-03
9.200	7.1632E-08	1.5623E-03	8.9434E-09	1.2611E-04	1.5301E-07	1.1881E-03
9.400	7.1632E-08	1.5894E-03	8.9434E-09	1.2728E-04	1.5301E-07	1.1999E-03
9.600	7.1632E-08	1.6164E-03	8.9434E-09	1.2845E-04	1.5301E-07	1.2111E-03
9.800	7.1632E-08	1.6432E-03	8.9434E-09	1.2962E-04	1.5301E-07	1.2217E-03
10.000	7.1632E-08	1.6699E-03	8.9434E-09	1.3078E-04	1.5301E-07	1.2319E-03
10.200	7.1632E-08	1.6965E-03	8.9434E-09	1.3193E-04	1.5301E-07	1.2417E-03
24.000	7.1633E-08	3.3307E-03	8.9434E-09	2.0284E-04	1.5301E-07	1.7718E-03
96.000	7.1633E-08	3.3307E-03	8.9434E-09	2.0284E-04	1.5301E-07	1.7912E-03
720.000	7.1633E-08	3.3307E-03	8.9434E-09	2.0284E-04	1.5301E-07	1.7912E-03



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:25:22

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#####

D. C. Cook - Main Steam Line Break Noble Gas Release

Worst Two-Hour Doses
#####

Exclusion Area Boundary

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
0.0	4.2876E-04	6.1875E-08	4.2923E-04

Final Doses
#####

Low Population Zone

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	2.0277E-04	8.9434E-09	2.0284E-04

Control Room

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	1.7901E-03	1.5301E-07	1.7912E-03



Attachment C

Pre-Accident Iodine Spike RADTRAD Output

(MSLB_Pre_I_R1.o0)

Note: The computer clock was set to 12/01/14 during model execution due to software date limitations



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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#####

D. C. Cook - MSLB Pre-Accident Iodine Spike,

#####

File information

#####

Input File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_Pre_I_R1.psf
Output File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_Pre_I_R1.o0

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release file = c:\projects\1537-cook_dose\mslb\mslb_pre_i_rl.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

```
#####      #####      #####      # #      # #####      # #      #####  
# #      #      #      # ##      # #      # #      #  
# #      #      #      # # #      # #      # #      #  
#####      #####      #####      # #      # #      #####      # #      #  
#      #      #      # #      # #      #      #      #      #  
#      #      #      # #      ##      #      #      #      #  
#      #####      #      # #      # #      #####      #
```



Radtrad 3.10 10/15/2013
D. C. Cook - MSLB Pre-Accident Iodine Spike,
Dose Conversion Factor File:
c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp
Release Fraction & Timing Files:
1
c:\projects\1537-cook_dose\mslb\mslb_pre_i_r1.rft
Nuclide Inventory Files:
1
1 c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Plant Power Level:
2.1144E+02
Number of Compartments:
5
Compartment 1:
RCS
3
4.661415E+05
0
0
0
0
0
0
Compartment 2:
Intact Steam Generators
3
2.925471E+05
0
0
0
0
0



Compartment 3:

Environment

2

0.00E+00

0

0

0

0

0

Compartment 4:

Control Room

1

5.0616E+04

0

0

1

0

0

Compartment 5:

Faulted Steam Generator

3

1.61E+05

0

0

0

0

0

Number of Pathways:

8

Pathway 1:

Flashed Intact Steam Generator Tube Leakage

1

3



2

Pathway 2:

Control Room Makeup

3

4

2

Pathway 3:

Control Room Unfiltered Inleakage

3

4

2

Pathway 4:

Control Room Exhaust

4

3

2

Pathway 5:

Steam Release

2

3

2

Pathway 6:

Unflashed Intact Steam Generator Tube Leakage

1

2

2

Pathway 7:

Faulted SG Tube Leakage

1

3

2

Pathway 8:

Faulted Steam Generator Steam Release



```
5
3
2
End of Plant Model
Source Term Input:
1
1 1 1 1
0.00E+00
0.00E+00 7.2E+02
1
3 0.00E+00 9.7E-01 3.00E-02
Overlying Pool:
0
0.00E+00
0
0
0
0
Compartments:
5
Compartment 1:
1
1
0
0
0
0
0
0
0
0
Compartment 2:
1
1
```



0
0
0
0
0
0
0
0

Compartment 3:

2
1
0
0
0
0
0
0
0
0

Compartment 4:

1
1
0
0
0
0
1
1
3

0.00E+00	0.00E+00	9.801E+01	9.405E+01	9.405E+01
1.94E-02	4.52E+03	9.801E+01	9.405E+01	9.405E+01
7.2E+02	4.52E+03	9.801E+01	9.405E+01	9.405E+01
0				
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2E+02				
0				



0
Compartment 5:

1
1
0
0
0
0
0
0
0
0

Pathways:

8

Pathway 1:

0
0
0
0
0
1
6

0.00E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00
1.11E-01	3.75E-01	0.00E+00	0.00E+00	0.00E+00
2.5E-01	3.44E-01	0.00E+00	0.00E+00	0.00E+00
4.72E-01	2.5E-01	0.00E+00	0.00E+00	0.00E+00
6.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0				
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2E+02				
0				
0				
0				



0
0
0

Pathway 2:

0
0
0
0
0

1
3

0.00E+00	8.8E+02	0.00E+00	0.00E+00	0.00E+00
1.94E-02	8.8E+02	9.801E+01	9.405E+01	9.405E+01
7.2E+02	8.8E+02	9.801E+01	9.405E+01	9.405E+01

0

7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
---------	----------	----------	----------	----------

7.2E+02

0.
0
0
0
0
0

Pathway 3:

0
0
0
0
0

1
2

0.00E+00	4.00E+01	0.00E+00	0.00E+00	0.00E+00
7.2E+02	4.00E+01	0.00E+00	0.00E+00	0.00E+00



0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 4:

0

0

0

0

0

1

2

0.00E+00 9.2E+02 0.00E+00 0.00E+00 0.00E+00

7.2E+02 9.2E+02 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 5:

0

0

0

0



0
1
5
0.00E+00 3.8E+01 0.00E+00 0.00E+00 0.00E+00
2.00E+00 3.294E+01 0.00E+00 0.00E+00 0.00E+00
8.00E+00 1.403E+01 0.00E+00 0.00E+00 0.00E+00
2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0
0
Pathway 6:
0
0
0
0
0
1
7
0.00E+00 5.746E+00 0.00E+00 0.00E+00 0.00E+00
1.11E-01 5.871E+00 0.00E+00 0.00E+00 0.00E+00
2.5E-01 5.902E+00 0.00E+00 0.00E+00 0.00E+00
4.72E-01 5.996E+00 0.00E+00 0.00E+00 0.00E+00
6.67E-01 6.246E+00 0.00E+00 0.00E+00 0.00E+00
2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
0



7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 7:

0

0

0

0

0

1

3

0.00E+00 2.082E+00 0.00E+00 0.00E+00 0.00E+00

2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 8:

0

0

0

0



0
1
2
0.00E+00 1.00E+06 0.00E+00 0.00E+00 0.00E+00
7.2E+02 1.00E+06 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0

Dose Locations:

3

Location 1:

Exclusion Area Boundary

3

1

4

0.00E+00 3.5E-04

8.00E+00 1.8E-04

2.4E+01 2.3E-04

7.2E+02 2.3E-04

0

Location 2:

Low Population Zone

3

1

4

0.00E+00 3.5E-04

8.00E+00 1.8E-04



2.4E+01 2.3E-04
7.2E+02 2.3E-04
0

Location 3:

Control Room

4

1

2

0.00E+00 3.5E-04

7.2E+02 3.5E-04

1

4

0.00E+00 1.00E+00

2.4E+01 6.00E-01

9.6E+01 4.00E-01

7.2E+02 4.00E-01

X/Q Tables:

6

Exclusion Area Boundary

2

0.00E+00 8.62E-04

7.2E+02 8.62E-04

Low Population Zone

6

0.00E+00 1.16E-04

2.00E+00 5.45E-05

8.00E+00 3.74E-05

2.4E+01 1.74E-05

9.6E+01 6.74E-06

7.2E+02 6.74E-06

Intact SG CR Makeup

7

0.00E+00 1.09E-02



1.94E-02 1.26E-02
2.00E+00 9.72E-03
8.00E+00 3.26E-03
2.4E+01 3.17E-03
9.6E+01 2.8E-03
7.2E+02 2.8E-03

Intact SG CR Inleakage

6

0.00E+00 1.09E-02
2.00E+00 8.61E-03
8.00E+00 2.87E-03
2.4E+01 2.78E-03
9.6E+01 2.5E-03
7.2E+02 2.5E-03

Faulted CR Makeup

7

0.00E+00 4.57E-02
1.94E-02 2.91E-02
2.00E+00 2.02E-02
8.00E+00 8.14E-03
2.4E+01 5.34E-03
9.6E+01 4.32E-03
7.2E+02 4.32E-03

Faulted CR Inleakage

6

0.00E+00 4.57E-02
2.00E+00 3.14E-02
8.00E+00 1.27E-02
2.4E+01 8.3E-03
9.6E+01 6.73E-03
7.2E+02 6.73E-03

Inflow Pathways:

2 2 3



Exhaust Pathways:

5 1 4 5 7 8

X/Q table ID for Exhaust-Inflow paths:

3 4

-1 -1

3 4

5 6

5 6

Simulation Parameters:

1

0.00E+00 0.00E+00

Output Filename:

C:\Projects\1537-Cook_Dose\MSLB\MSLB_Pre_I_R1.o0

1

1

0

0

1

End of Scenario File



#####

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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#####

D. C. Cook - MSLB Pre-Accident Iodine Spike,

#####

Plant Description

#####

Number of Nuclides = 100

Inventory Power = 1.0000E+00 MWth

Plant Power Level = 2.1144E+02 MWth

Number of compartments = 5

Compartment information

Compartment number 1

Name: RCS

Compartment volume = 4.6614E+05 (Cubic feet)

Compartment type is Normal

Pathways into and out of compartment 1

Exit Pathway Number 1: Flashed Intact Steam Generator Tube Leakage

Exit Pathway Number 6: Unflashed Intact Steam Generator Tube Leakage

Exit Pathway Number 7: Faulted SG Tube Leakage

Compartment number 2

Name: Intact Steam Generators



Compartment volume = 2.9255E+05 (Cubic feet)
Compartment type is Normal
Pathways into and out of compartment 2
Inlet Pathway Number 6: Unflashed Intact Steam Generator Tube Leakage
Exit Pathway Number 5: Steam Release

Compartment number 3
Name: Environment
Compartment type is Environment
Pathways into and out of compartment 3
Inlet Pathway Number 1: Flashed Intact Steam Generator Tube Leakage
Inlet Pathway Number 4: Control Room Exhaust
Inlet Pathway Number 5: Steam Release
Inlet Pathway Number 7: Faulted SG Tube Leakage
Inlet Pathway Number 8: Faulted Steam Generator Steam Release
Exit Pathway Number 2: Control Room Makeup
Exit Pathway Number 3: Control Room Unfiltered Inleakage

Compartment number 4
Name: Control Room
Compartment volume = 5.0616E+04 (Cubic feet)
Compartment type is Control Room
Removal devices within compartment:
Filter(s)
Pathways into and out of compartment 4
Inlet Pathway Number 2: Control Room Makeup
Inlet Pathway Number 3: Control Room Unfiltered Inleakage
Exit Pathway Number 4: Control Room Exhaust

Compartment number 5
Name: Faulted Steam Generator
Compartment volume = 1.6100E+05 (Cubic feet)
Compartment type is Normal



Pathways into and out of compartment 5

Exit Pathway Number 8: Faulted Steam Generator Steam Release

Total number of pathways = 8



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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#####

D. C. Cook - MSLB Pre-Accident Iodine Spike,

Scenario Description
#####

Power Ratio = 2.1144E+02

End Time = 7.2000E+02 (Hours)

Radioactive Decay is enabled
Calculation of Daughters is enabled

Source Number 1 is used in Compartment 1 RCS
Nuclide Distribution given in Ci/MWt
Fraction of Nuclide Distribution in this Compartment 1.00000

Iodine fractions for source number 1
Aerosol = 0.0000E+00
Elemental = 9.7000E-01
Organic = 3.0000E-02

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release from file = c:\projects\1537-cook_dose\mslb\mslb_pre_i_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Nuclide Name	Group	Specific Inventory (Ci/MWt)	half life (s)	Whole Body DCF (Sv-m3/Bq-s)	Inhaled Thyroid (Sv/Bq)	Inhaled Effective (Sv/Bq)
Rb-86	3	8.797E-02	1.612E+06	4.810E-15	1.330E-09	1.790E-09
Sr-89	5	1.335E-03	4.363E+06	7.730E-17	7.960E-12	1.120E-08
Sr-90	5	1.237E-04	9.183E+08	7.530E-18	2.690E-10	3.510E-07
Sr-91	5	5.681E-04	3.420E+04	3.450E-14	9.640E-12	4.490E-10
Sr-92	5	2.488E-04	9.756E+03	6.790E-14	3.920E-12	2.180E-10
Y-90	9	2.152E-04	2.304E+05	1.900E-16	5.170E-13	2.280E-09
Y-91	9	1.692E-02	5.055E+06	2.600E-16	8.500E-12	1.320E-08
Y-92	9	3.067E-04	1.274E+04	1.300E-14	1.050E-12	2.110E-10
Y-93	9	2.010E-04	3.636E+04	4.800E-15	9.260E-13	5.820E-10
Zr-95	9	2.409E-02	5.528E+06	3.600E-14	1.440E-09	6.390E-09
Zr-97	9	3.920E-04	6.084E+04	9.020E-15	2.310E-11	1.170E-09
Nb-95	9	3.478E-02	3.037E+06	3.740E-14	3.580E-10	1.570E-09
Mo-99	7	2.070E+00	2.376E+05	7.280E-15	1.520E-11	1.070E-09
Tc-99m	7	1.980E+00	2.167E+04	5.890E-15	5.010E-11	8.800E-12
Ru-103	7	1.991E-02	3.394E+06	2.250E-14	2.570E-10	2.420E-09
Ru-105	7	9.723E-05	1.598E+04	3.810E-14	4.150E-12	1.230E-10
Ru-106	7	3.340E-02	3.181E+07	0.000E+00	1.720E-09	1.290E-07
Rh-105	7	7.689E-04	1.273E+05	3.720E-15	2.880E-12	2.580E-10
Te-127	4	2.489E-01	3.366E+04	2.420E-16	1.840E-12	8.600E-11
Te-127m	4	2.465E-01	9.418E+06	1.470E-16	9.660E-11	5.810E-09
Te-129	4	2.281E-01	4.176E+03	2.750E-15	1.630E-12	2.420E-11
Te-129m	4	3.463E-01	2.903E+06	1.550E-15	1.560E-10	6.470E-09
Te-131m	4	5.787E-02	1.080E+05	7.010E-14	3.610E-08	1.730E-09
Te-132	4	9.639E-01	2.815E+05	1.030E-14	6.280E-08	2.550E-09
I-131	2	8.087E-01	6.947E+05	1.820E-14	2.920E-07	8.890E-09
I-132	2	6.411E-01	8.280E+03	1.120E-13	1.740E-09	1.030E-10
I-133	2	1.030E+00	7.488E+04	2.940E-14	4.860E-08	1.580E-09
I-134	2	1.231E-01	3.156E+03	1.300E-13	2.880E-10	3.550E-11
I-135	2	5.365E-01	2.380E+04	7.980E-14	8.460E-09	3.320E-10



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Cs-134	3	3.327E+01	6.503E+07	7.570E-14	1.110E-08	1.250E-08
Cs-136	3	2.188E+00	1.132E+06	1.060E-13	1.730E-09	1.980E-09
Cs-137	3	1.852E+01	9.461E+08	7.740E-18	7.930E-09	8.630E-09
Ba-139	6	1.975E-04	4.962E+03	2.170E-15	2.400E-12	4.640E-11
Ba-140	6	1.940E-03	1.101E+06	8.580E-15	2.560E-10	1.010E-09
La-140	9	2.878E-03	1.450E+05	1.170E-13	6.870E-11	1.310E-09
La-141	9	1.301E-04	1.415E+04	2.390E-15	9.400E-12	1.570E-10
La-142	9	3.346E-05	5.550E+03	1.440E-13	8.740E-12	6.840E-11
Ce-141	8	1.445E-02	2.808E+06	3.430E-15	2.550E-11	2.420E-09
Ce-143	8	6.911E-04	1.188E+05	1.290E-14	6.230E-12	9.160E-10
Ce-144	8	4.229E-02	2.456E+07	8.530E-16	2.920E-10	1.010E-07
Pr-143	9	6.713E-03	1.172E+06	2.100E-17	1.680E-18	2.190E-09
Br-82	2	4.641E-03	1.271E+05	1.300E-13	2.060E-10	4.130E-10
Br-83	2	2.720E-02	8.604E+03	3.820E-16	1.140E-12	2.410E-11
Br-84	2	1.244E-02	1.908E+03	9.410E-14	3.120E-12	2.610E-11
Rb-89	3	2.530E-02	9.120E+02	1.060E-13	1.610E-12	1.160E-11
Y-91m	9	3.314E-04	2.983E+03	2.550E-14	5.020E-13	9.820E-12
Nb-95m	9	1.867E-04	3.118E+05	2.930E-15	3.860E-11	6.590E-10
Nb-97	9	4.900E-05	4.326E+03	3.180E-14	9.200E-13	2.240E-11
Rh-103m	7	1.988E-02	3.367E+03	8.800E-18	8.490E-14	1.380E-12
Te-125m	4	2.449E-02	5.011E+06	4.530E-16	3.870E-11	1.970E-09
Te-131	4	1.599E-02	1.500E+03	2.040E-14	2.630E-09	1.290E-10
Te-133m	4	7.643E-03	3.324E+03	1.140E-13	2.610E-09	1.170E-10
Te-134	4	1.092E-02	2.508E+03	4.240E-14	5.540E-10	3.440E-11
Xe-138	1	2.292E-01	8.500E+02	5.770E-14	0.000E+00	0.000E+00
Cs-134m	3	2.031E-02	1.044E+04	9.050E-16	3.340E-12	1.180E-11
Cs-138	3	3.420E-01	1.932E+03	1.210E-13	3.570E-12	2.740E-11
Ba-141	6	4.233E-05	1.096E+03	4.160E-14	1.330E-12	2.180E-11

Nuclide	Daughter	Fraction	Daughter	Fraction	Daughter	Fraction
Sr-90	Y-90	1.00	none	0.00	none	0.00
Sr-91	Y-91m	0.58	Y-91	0.42	none	0.00
Sr-92	Y-92	1.00	none	0.00	none	0.00



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Y-93	Zr-93	1.00	none	0.00	none	0.00
Zr-95	Nb-95m	0.01	Nb-95	0.99	none	0.00
Zr-97	Nb-97m	0.95	Nb-97	0.05	none	0.00
Mo-99	Tc-99m	0.88	Tc-99	0.12	none	0.00
Tc-99m	Tc-99	1.00	none	0.00	none	0.00
Ru-103	Rh-103m	1.00	none	0.00	none	0.00
Ru-105	Rh-105	1.00	none	0.00	none	0.00
Ru-106	Rh-106	1.00	none	0.00	none	0.00
Te-127m	Te-127	0.98	none	0.00	none	0.00
Te-129	I-129	1.00	none	0.00	none	0.00
Te-129m	I-129	0.35	Te-129	0.65	none	0.00
Te-131m	I-131	0.78	Te-131	0.22	none	0.00
Te-132	I-132	1.00	none	0.00	none	0.00
I-131	Xe-131m	0.01	none	0.00	none	0.00
I-133	Xe-133m	0.03	Xe-133	0.97	none	0.00
I-135	Xe-135m	0.15	Xe-135	0.85	none	0.00
Cs-137	Ba-137m	0.95	none	0.00	none	0.00
Ba-140	La-140	1.00	none	0.00	none	0.00
La-141	Ce-141	1.00	none	0.00	none	0.00
Ce-143	Pr-143	1.00	none	0.00	none	0.00
Ce-144	Pr-144m	0.02	Pr-144	0.98	none	0.00
Br-83	Kr-83m	1.00	none	0.00	none	0.00
Rb-89	Sr-89	1.00	none	0.00	none	0.00
Y-91m	Y-91	1.00	none	0.00	none	0.00
Nb-95m	Nb-95	1.00	none	0.00	none	0.00
Te-131	I-131	1.00	none	0.00	none	0.00
Te-133m	I-133	0.87	Te-133	0.13	none	0.00
Te-134	I-134	1.00	none	0.00	none	0.00
Xe-138	Cs-138	1.00	none	0.00	none	0.00
Cs-134m	Cs-134	1.00	none	0.00	none	0.00
Ba-141	La-141	1.00	none	0.00	none	0.00

Release Fractions and Timings



RWA-1313-010 - D. C. Cook MSLB Pre-Accident Iodine Spike

Duration (h):

	GAP	EARLY IN-VESSEL	LATE RELEASE	RELEASE MASS
	0.000010 hr	0.0000 hrs	0.0000 hrs	(Ci)
NOBLES	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
IODINE	6.0000E+01	0.0000E+00	0.0000E+00	4.039E+04
CESIUM	1.0000E+00	0.0000E+00	0.0000E+00	1.151E+04
TELLURIUM	1.0000E+00	0.0000E+00	0.0000E+00	4.547E+02
STRONTIUM	1.0000E+00	0.0000E+00	0.0000E+00	4.812E-01
BARIUM	1.0000E+00	0.0000E+00	0.0000E+00	4.609E-01
RUTHENIUM	1.0000E+00	0.0000E+00	0.0000E+00	8.720E+02
CERIUM	1.0000E+00	0.0000E+00	0.0000E+00	1.214E+01
LANTHANUM	1.0000E+00	0.0000E+00	0.0000E+00	1.844E+01
AEROSOL	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

COMPARTMENT DATA

Compartment number 1: RCS

Compartment number 2: Intact Steam Generators

Compartment number 3: Environment

Compartment number 4: Control Room

Compartment Filter Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.8010E+01	9.4050E+01	9.4050E+01
1.9400E-02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01



Compartment number 5: Faulted Steam Generator

PATHWAY DATA

Pathway number 1: Flashed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	5.0000E-01	0.0000E+00	0.0000E+00	0.0000E+00
1.1100E-01	3.7500E-01	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	3.4400E-01	0.0000E+00	0.0000E+00	0.0000E+00
4.7200E-01	2.5000E-01	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	8.8000E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9400E-02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01

Pathway number 3: Control Room Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic



0.0000E+00	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 4: Control Room Exhaust

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 5: Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	3.8000E+01	0.0000E+00	0.0000E+00	0.0000E+00
2.0000E+00	3.2940E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0000E+00	1.4030E+01	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 6: Unflashed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	5.7460E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1100E-01	5.8710E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	5.9020E+00	0.0000E+00	0.0000E+00	0.0000E+00



4.7200E-01	5.9960E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	6.2460E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 7: Faulted SG Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	2.0820E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 8: Faulted Steam Generator Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00

DOSE INFORMATION

Number_Dose_Locations = 3

Dose Location Name = Exclusion Area Boundary

Located in compartment 3 the Environment

Exclusion Area Boundary Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04



8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Low Population Zone
Located in compartment 3 the Environment

Low Population Zone Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Control Room
Located in compartment 4 the Control Room

Control Room Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
7.2000E+02	3.5000E-04

Control Room Occupancy Factor Data

Time (hr)	Occupancy Factor
0.0000E+00	1.0000E+00
2.4000E+01	6.0000E-01
9.6000E+01	4.0000E-01
7.2000E+02	4.0000E-01

X/Q, ATMOSPHERIC DISPERSION INFORMATION

X/Q Table Name = Exclusion Area Boundary



Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	8.6200E-04
7.2000E+02	8.6200E-04

X/Q Table Name = Low Population Zone

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.1600E-04
2.0000E+00	5.4500E-05
8.0000E+00	3.7400E-05
2.4000E+01	1.7400E-05
9.6000E+01	6.7400E-06
7.2000E+02	6.7400E-06

X/Q Table Name = Intact SG CR Makeup

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
1.9400E-02	1.2600E-02
2.0000E+00	9.7200E-03
8.0000E+00	3.2600E-03
2.4000E+01	3.1700E-03
9.6000E+01	2.8000E-03
7.2000E+02	2.8000E-03

This X/Q Table is used for these connected pathways

- Path 1 Flashed Intact Steam Generator Tube Leakage and Path 2 Control Room Makeup
- Path 5 Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Intact SG CR Inleakage



Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
2.0000E+00	8.6100E-03
8.0000E+00	2.8700E-03
2.4000E+01	2.7800E-03
9.6000E+01	2.5000E-03
7.2000E+02	2.5000E-03

This X/Q Table is used for these connected pathways

- Path 1 Flashed Intact Steam Generator Tube Leakage and Path 3 Control Room Unfiltered Inleakage
- Path 5 Steam Release and Path 3 Control Room Unfiltered Inleakage

X/Q Table Name = Faulted CR Makeup

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02
1.9400E-02	2.9100E-02
2.0000E+00	2.0200E-02
8.0000E+00	8.1400E-03
2.4000E+01	5.3400E-03
9.6000E+01	4.3200E-03
7.2000E+02	4.3200E-03

This X/Q Table is used for these connected pathways

- Path 7 Faulted SG Tube Leakage and Path 2 Control Room Makeup
- Path 8 Faulted Steam Generator Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Faulted CR Inleakage

Location X/Q Data



Time (hr)	X/Q (s * m^-3)
0.0000E+00	4.5700E-02
2.0000E+00	3.1400E-02
8.0000E+00	1.2700E-02
2.4000E+01	8.3000E-03
9.6000E+01	6.7300E-03
7.2000E+02	6.7300E-03

This X/Q Table is used for these connected pathways

Path 7 Faulted SG Tube Leakage and Path 3 Control Room Unfiltered Inleakage

Path 8 Faulted Steam Generator Steam Release and Path 3 Control Room Unfiltered Inleakage

USER SPECIFIED TIME STEP DATA - SUPPLEMENTAL TIME STEPS

Time (hr)	Time step (hr)
0.0000E+00	0.0000E+00

EDIT EACH MAJOR TIME STEP

DO NOT EDIT SUPPLEMENTAL TIME STEPS

DO NOT EDIT MODEL DECONTAMINATION

Masses in Curies in detailed output



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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D. C. Cook - MSLB Pre-Accident Iodine Spike,

Dose, Detailed model and Detailed Inventory Output
#####

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Exclusion Area Boundary Doses:



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Time (h) = 0.0000 Whole Body Thyroid TEDE
Delta dose (rem) 1.5114E-08 7.0981E-06 4.6304E-07
Accumulated dose (rem) 1.5114E-08 7.0981E-06 4.6304E-07

Low Population Zone Doses:

Time (h) = 0.0000 Whole Body Thyroid TEDE
Delta dose (rem) 2.0338E-09 9.5520E-07 6.2312E-08
Accumulated dose (rem) 2.0338E-09 9.5520E-07 6.2312E-08

Control Room Doses:

Time (h) = 0.0000 Whole Body Thyroid TEDE Skin
Delta dose (rem) 1.2355E-13 1.7494E-09 1.1052E-10 5.5453E-12
Accumulated dose (rem) 1.2355E-13 1.7494E-09 1.1052E-10 5.5453E-12

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
Rb-86	1.8600E+01 Atmosphere	1.3440E-04	1.8600E-04	2.4776E+10
Sr-89	2.8227E-01	1.2665E-05	2.8227E-06	3.7599E+08
Sr-90	2.6155E-02	3.6777E-05	2.6155E-07	3.4839E+07
Sr-91	1.2012E-01	2.6349E-07	1.2012E-06	1.6000E+08
Sr-92	5.2606E-02	8.6826E-08	5.2606E-07	7.0071E+07
Y-90	4.5502E-02	4.1570E-07	4.5502E-07	6.0609E+07
Y-91	3.5776E+00	1.8919E-04	3.5776E-05	4.7653E+09
Y-92	6.4849E-02	6.4464E-08	6.4849E-07	8.6378E+07
Y-93	4.2499E-02	1.0142E-07	4.2499E-07	5.6609E+07
Zr-95	5.0936E+00	1.3249E-04	5.0936E-05	6.7847E+09



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Zr-97	8.2884E-02	3.9704E-07	8.2884E-07	1.1040E+08
Nb-95	7.3539E+00	4.9400E-05	7.3539E-05	9.7954E+09
Mo-99	4.3768E+02	1.9126E-03	4.3768E-03	5.8299E+11
Tc-99m	4.1865E+02	4.2983E-05	4.1865E-03	5.5764E+11
Ru-103	4.2098E+00	4.1896E-05	4.2098E-05	5.6074E+09
Ru-105	2.0558E-02	1.9095E-08	2.0558E-07	2.7384E+07
Ru-106	7.0621E+00	3.6496E-03	7.0621E-05	9.4067E+09
Rh-105	1.6258E-01	1.7495E-07	1.6258E-06	2.1655E+08
Te-127	5.2627E+01	1.8277E-05	5.2627E-04	7.0100E+10
Te-127m	5.2120E+01	1.2132E-03	5.2120E-04	6.9424E+10
Te-129	4.8229E+01	6.1938E-06	4.8229E-04	6.4241E+10
Te-129m	7.3222E+01	1.8991E-03	7.3222E-04	9.7531E+10
Te-131m	1.2236E+01	9.4619E-05	1.2236E-04	1.6298E+10
Te-132	2.0381E+02	2.1060E-03	2.0381E-03	2.7147E+11
I-131	1.0259E+04	3.6752E-01	1.0259E-01	1.3666E+13
I-132	8.1332E+03	1.3782E-02	8.1332E-02	1.0833E+13
I-133	1.3072E+04	8.7139E-02	1.3072E-01	1.7412E+13
I-134	1.5617E+03	2.5458E-03	1.5617E-02	2.0802E+12
I-135	6.8062E+03	1.5269E-02	6.8062E-02	9.0659E+12
Xe-133	6.9893E-04	1.2480E-11	6.9893E-09	0.0000E+00
Xe-135	4.3908E-03	5.9805E-10	4.3908E-08	0.0000E+00
Cs-134	7.0346E+03	3.5836E-01	7.0346E-02	9.3701E+12
Cs-136	4.6263E+02	4.2309E-03	4.6263E-03	6.1622E+11
Cs-137	3.9159E+03	1.3538E-01	3.9159E-02	5.2159E+12
Ba-139	4.1759E-02	8.7994E-09	4.1759E-07	5.5623E+07
Ba-140	4.1019E-01	1.7000E-06	4.1019E-06	5.4638E+08
La-140	6.0852E-01	4.0084E-06	6.0852E-06	8.1055E+08
La-141	2.7508E-02	1.8054E-08	2.7508E-07	3.6641E+07
La-142	7.0748E-03	1.3599E-08	7.0748E-08	9.4236E+06
Ce-141	3.0553E+00	2.9740E-05	3.0553E-05	4.0697E+09
Ce-143	1.4613E-01	5.5779E-07	1.4613E-06	1.9464E+08
Ce-144	8.9418E+00	3.6180E-03	8.9418E-05	1.1910E+10
Pr-143	1.4194E+00	1.2453E-05	1.4194E-05	1.8906E+09



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Kr-83m	1.3070E-03	2.2440E-14	1.3070E-08	0.0000E+00
Br-82	5.8878E+01	1.8502E-04	5.8878E-04	7.8425E+10
Br-83	3.4507E+02	3.4824E-05	3.4507E-03	4.5963E+11
Br-84	1.5782E+02	1.8648E-04	1.5782E-03	2.1021E+11
Rb-89	5.3493E+00	6.7387E-06	5.3493E-05	7.1253E+09
Y-91m	7.0071E-02	2.3208E-08	7.0071E-07	9.3334E+07
Nb-95m	3.9476E-02	1.0554E-07	3.9476E-07	5.2582E+07
Nb-97	1.0361E-02	4.7007E-09	1.0361E-07	1.3800E+07
Rh-103m	4.2034E+00	2.3661E-08	4.2034E-05	5.5989E+09
Te-125m	5.1782E+00	4.0893E-05	5.1782E-05	6.8973E+09
Te-131	3.3809E+00	2.5366E-06	3.3809E-05	4.5034E+09
Te-133	7.0178E-06	4.3950E-12	7.0178E-11	0.0000E+00
Te-133m	1.6160E+00	2.8661E-06	1.6160E-05	2.1526E+09
Te-134	2.3089E+00	1.4387E-06	2.3089E-05	3.0755E+09
Xe-131m	2.7639E-06	1.2306E-14	2.7639E-11	0.0000E+00
Xe-133m	5.0039E-05	7.8466E-13	5.0039E-10	0.0000E+00
Xe-135m	2.8522E-02	6.6599E-09	2.8522E-07	0.0000E+00
Cs-134m	4.2943E+00	2.4748E-07	4.2943E-05	5.7201E+09
Cs-138	7.2312E+01	1.0809E-04	7.2312E-04	9.6320E+10
Ba-141	8.9501E-03	5.0432E-09	8.9501E-08	1.1922E+07
Total	5.3266E+04	1.0000E+00	0.0000E+00	0.0000E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.6081E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.8013E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.1091E-06
Total I (Ci)	3.9833E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.0851E-11

RCS Compartment Group Inventory Distribution:

Time (h) =	0.0000	Atmosphere	Sump
Noble gases (Ci)		3.4972E-02	0.0000E+00
Elemental I (Ci)		3.9183E+04	0.0000E+00



Organic I (Ci)	1.2118E+03	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2872E+04	0.0000E+00
All Aerosols (kg)	5.0444E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
	Atmosphere			
Mo-99	1.6186E-06	1.9126E-03	1.6186E-11	2.1559E+03
Tc-99m	1.5482E-06	4.2983E-05	1.5482E-11	2.0622E+03
I-131	3.7940E-05	3.6752E-01	3.7940E-10	5.0536E+04
I-132	3.0077E-05	1.3782E-02	3.0077E-10	4.0062E+04
I-133	4.8341E-05	8.7139E-02	4.8341E-10	6.4390E+04
I-134	5.7751E-06	2.5458E-03	5.7751E-11	7.6925E+03
I-135	2.5170E-05	1.5269E-02	2.5170E-10	3.3526E+04
Cs-134	2.6014E-05	3.5836E-01	2.6014E-10	3.4651E+04
Cs-136	1.7108E-06	4.2309E-03	1.7108E-11	2.2788E+03
Cs-137	1.4481E-05	1.3538E-01	1.4481E-10	1.9289E+04
Br-83	1.2761E-06	3.4824E-05	1.2761E-11	1.6997E+03
Total	1.9698E-04	1.0000E+00	0.0000E+00	0.0000E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	5.6615E-15
Dose Equivalent (Ci/cc) I-131 (CEDE)	5.7753E-15
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	6.5352E-15
Total I (Ci)	1.4730E-04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.8179E-19

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 0.0000	Atmosphere	Sump
Noble gases (Ci)	1.2933E-10	0.0000E+00
Elemental I (Ci)	1.4490E-04	0.0000E+00



Organic I (Ci)	4.4814E-06	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	4.7601E-05	0.0000E+00
All Aerosols (kg)	1.8654E-10	0.0000E+00

Control Room Compartment Group Inventory Distribution:

Time (h) = 0.0000	Atmosphere	Sump
Noble gases (Ci)	9.8308E-13	0.0000E+00
Elemental I (Ci)	1.1014E-06	0.0000E+00
Organic I (Ci)	3.4065E-08	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	3.6184E-07	0.0000E+00
All Aerosols (kg)	1.4180E-12	0.0000E+00

Time (h) = 0.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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Exclusion Area Boundary Doses:

Time (h) = 0.0194	Whole Body	Thyroid	TEDE
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Delta dose (rem) 5.8560E-05 2.7529E-02 1.7958E-03
Accumulated dose (rem) 5.8575E-05 2.7536E-02 1.7963E-03

Low Population Zone Doses:

Time (h) = 0.0194 Whole Body Thyroid TEDE
Delta dose (rem) 7.8805E-06 3.7046E-03 2.4167E-04
Accumulated dose (rem) 7.8825E-06 3.7056E-03 2.4173E-04

Control Room Doses:

Time (h) = 0.0194 Whole Body Thyroid TEDE Skin
Delta dose (rem) 9.2123E-07 1.3061E-02 8.2519E-04 4.1349E-05
Accumulated dose (rem) 9.2123E-07 1.3061E-02 8.2519E-04 4.1349E-05

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8599E+01	1.3442E-04	3.6083E-01	4.8063E+13	2.3217E-05	2.6681E-04	9.6676E-05
Sr-89	2.8232E-01	1.2669E-05	5.4767E-03	7.2945E+11	3.5236E-07	4.0493E-06	1.4672E-06
Sr-90	2.6155E-02	3.6783E-05	5.0740E-04	6.7586E+10	3.2647E-08	3.7518E-07	1.3594E-07
Sr-91	1.1995E-01	2.6328E-07	2.3280E-03	3.1017E+11	1.4987E-07	1.7223E-06	6.2404E-07
Sr-92	5.2345E-02	8.6547E-08	1.0171E-03	1.3560E+11	6.5560E-08	7.5341E-07	2.7299E-07
Y-90	4.5497E-02	4.1574E-07	8.8267E-04	1.1757E+11	5.6794E-08	6.5268E-07	2.3649E-07
Y-91	3.5775E+00	1.8922E-04	6.9403E-02	9.2445E+12	4.4656E-06	5.1318E-05	1.8595E-05
Y-92	6.4801E-02	6.4443E-08	1.2574E-03	1.6742E+11	8.0926E-08	9.3001E-07	3.3698E-07
Y-93	4.2442E-02	1.0135E-07	8.2373E-04	1.0975E+11	5.3026E-08	6.0937E-07	2.2080E-07
Zr-95	5.0934E+00	1.3251E-04	9.8814E-02	1.3162E+13	6.3579E-06	7.3065E-05	2.6474E-05
Zr-97	8.2817E-02	3.9689E-07	1.6071E-03	2.1409E+11	1.0343E-07	1.1886E-06	4.3069E-07
Nb-95	7.3537E+00	4.9408E-05	1.4266E-01	1.9003E+13	9.1792E-06	1.0549E-04	3.8222E-05



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Mo-99	4.3758E+02	1.9126E-03	8.4897E+00	1.1309E+15	5.4628E-04	6.2779E-03	2.2747E-03
Tc-99m	4.1856E+02	4.2984E-05	8.1207E+00	1.0813E+15	5.2253E-04	6.0050E-03	2.1758E-03
Ru-103	4.2096E+00	4.1902E-05	8.1668E-02	1.0878E+13	5.2547E-06	6.0387E-05	2.1880E-05
Ru-105	2.0496E-02	1.9059E-08	3.9800E-04	5.3043E+10	2.5636E-08	2.9461E-07	1.0675E-07
Ru-106	7.0619E+00	3.6501E-03	1.3700E-01	1.8249E+13	8.8150E-06	1.0130E-04	3.6706E-05
Rh-105	1.6252E-01	1.7494E-07	3.1532E-03	4.2003E+11	2.0291E-07	2.3318E-06	8.4491E-07
Te-127	5.2624E+01	1.8279E-05	1.0209E+00	1.3595E+14	6.5689E-05	7.5490E-04	2.7353E-04
Te-127m	5.2119E+01	1.2134E-03	1.0111E+00	1.3468E+14	6.5057E-05	7.4763E-04	2.7090E-04
Te-129	4.8222E+01	6.1942E-06	9.3556E-01	1.2436E+14	6.0198E-05	6.9180E-04	2.5066E-04
Te-129m	7.3219E+01	1.8994E-03	1.4205E+00	1.8921E+14	9.1396E-05	1.0503E-03	3.8057E-04
Te-131m	1.2230E+01	9.4605E-05	2.3730E-01	3.1611E+13	1.5271E-05	1.7549E-04	6.3588E-05
Te-132	2.0377E+02	2.1061E-03	3.9533E+00	5.2660E+14	2.5438E-04	2.9233E-03	1.0592E-03
I-131	1.0259E+04	3.6756E-01	1.9902E+02	2.6510E+16	1.2806E-02	1.4716E-01	5.3323E-02
I-132	8.0869E+03	1.3731E-02	1.5717E+02	2.0956E+16	1.0134E-02	1.1646E-01	4.2196E-02
I-133	1.3063E+04	8.7114E-02	2.5348E+02	3.3768E+16	1.6313E-02	1.8747E-01	6.7929E-02
I-134	1.5379E+03	2.5199E-03	2.9983E+01	4.0047E+15	1.9398E-03	2.2292E-02	8.0774E-03
I-135	6.7923E+03	1.5250E-02	1.3186E+02	1.7570E+16	8.4901E-03	9.7569E-02	3.5353E-02
Xe-133	1.3554E+00	1.6476E-08	1.7898E-02	1.1189E+12	5.4061E-07	6.2127E-06	2.2511E-06
Xe-135	8.5309E+00	7.9058E-07	1.1258E-01	7.0308E+12	3.3981E-06	3.9051E-05	1.4150E-05
Cs-134	7.0345E+03	3.5841E-01	1.3647E+02	1.8178E+16	8.7807E-03	1.0091E-01	3.6563E-02
Cs-136	4.6260E+02	4.2314E-03	8.9746E+00	1.1954E+15	5.7745E-04	6.6361E-03	2.4045E-03
Cs-137	3.9158E+03	1.3540E-01	7.5967E+01	1.0119E+16	4.8878E-03	5.6171E-02	2.0353E-02
Ba-139	4.1353E-02	8.7426E-09	8.0476E-04	1.0738E+11	5.1963E-08	5.9715E-07	2.1637E-07
Ba-140	4.1017E-01	1.7002E-06	7.9574E-03	1.0599E+12	5.1200E-07	5.8839E-06	2.1320E-06
La-140	6.0845E-01	4.0087E-06	1.1804E-02	1.5723E+12	7.5954E-07	8.7287E-06	3.1627E-06
La-141	2.7444E-02	1.8028E-08	5.3281E-04	7.0986E+10	3.4311E-08	3.9430E-07	1.4287E-07
La-142	7.0132E-03	1.3521E-08	1.3644E-04	1.8202E+10	8.8063E-09	1.0120E-07	3.6669E-08
Ce-141	3.0552E+00	2.9744E-05	5.9271E-02	7.8950E+12	3.8137E-06	4.3827E-05	1.5880E-05
Ce-143	1.4606E-01	5.5772E-07	2.8340E-03	3.7752E+11	1.8237E-07	2.0958E-06	7.5940E-07
Ce-144	8.9416E+00	3.6186E-03	1.7347E-01	2.3106E+13	1.1161E-05	1.2827E-04	4.6475E-05
Pr-143	1.4193E+00	1.2455E-05	2.7535E-02	3.6677E+12	1.7717E-06	2.0360E-05	7.3773E-06
Kr-83m	2.5225E+00	2.9515E-11	3.3345E-02	2.0851E+12	1.0089E-06	1.1594E-05	4.2010E-06
Br-82	5.8854E+01	1.8500E-04	1.1419E+00	1.5211E+14	7.3483E-05	8.4446E-04	3.0598E-04



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Br-83	3.4313E+02	3.4696E-05	6.6687E+00	8.8917E+14	4.2995E-04	4.9410E-03	1.7903E-03
Br-84	1.5386E+02	1.8332E-04	3.0093E+00	4.0268E+14	1.9540E-04	2.2456E-03	8.1367E-04
Rb-89	5.0728E+00	6.5016E-06	1.0011E-01	1.3463E+13	6.5655E-06	7.5451E-05	2.7339E-05
Y-91m	7.0062E-02	2.3210E-08	1.3593E-03	1.8053E+11	8.7461E-08	1.0051E-06	3.6419E-07
Nb-95m	3.9474E-02	1.0555E-07	7.6581E-04	1.0200E+11	4.9274E-08	5.6626E-07	2.0518E-07
Nb-97	1.0294E-02	4.6810E-09	2.0012E-04	2.6663E+10	1.2906E-08	1.4831E-07	5.3739E-08
Rh-103m	4.2034E+00	2.3665E-08	8.1546E-02	1.0834E+13	5.2468E-06	6.0296E-05	2.1848E-05
Te-125m	5.1780E+00	4.0899E-05	1.0045E-01	1.3381E+13	6.4634E-06	7.4278E-05	2.6914E-05
Te-131	3.3602E+00	2.5265E-06	6.5316E-02	8.6686E+12	4.2118E-06	4.8402E-05	1.7538E-05
Te-133	1.3240E-02	5.6839E-09	1.7604E-04	1.0978E+10	5.3708E-09	6.1722E-08	2.2364E-08
Te-133m	1.5926E+00	2.8383E-06	3.1042E-02	4.1456E+12	2.0078E-06	2.3074E-05	8.3605E-06
Te-134	2.2647E+00	1.4202E-06	4.4209E-02	5.9091E+12	2.8643E-06	3.2917E-05	1.1927E-05
Xe-131m	5.3615E-03	1.6250E-11	7.0793E-05	4.4252E+09	2.1381E-09	2.4571E-08	8.9032E-09
Xe-133m	9.7035E-02	1.0359E-09	1.2813E-03	8.0100E+10	3.8704E-08	4.4479E-07	1.6116E-07
Xe-135m	5.4359E+01	8.6811E-06	7.2115E-01	4.4922E+13	2.1927E-05	2.5198E-04	9.1302E-05
Cs-134m	4.2744E+00	2.4674E-07	8.3047E-02	1.1071E+13	5.3523E-06	6.1509E-05	2.2287E-05
Cs-138	7.0522E+01	1.0628E-04	1.3792E+00	1.8454E+14	8.9543E-05	1.0290E-03	3.7286E-04
Ba-141	8.5634E-03	4.8951E-09	1.6851E-04	2.2625E+10	1.1016E-08	1.2659E-07	4.5870E-08
Total	5.3231E+04	1.0000E+00	0.0000E+00	0.0000E+00	6.6474E-02	7.6392E-01	2.7680E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.6058E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.7986E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.1086E-06
Total I (Ci)	3.9739E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	5.8892E-08

RCS Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		6.6870E+01	0.0000E+00
Elemental I (Ci)		3.9086E+04	0.0000E+00
Organic I (Ci)		1.2088E+03	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00



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All Aerosols (Ci) 1.2869E+04 0.0000E+00
All Aerosols (kg) 5.0443E-02 0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	2.6678E-04	1.3443E-04	3.5222E-06	4.6916E+08	2.0164E-08	2.6681E-04
Sr-89	4.0495E-06	1.2670E-05	5.3461E-08	7.1205E+06	3.0603E-10	4.0493E-06
Sr-91	1.7205E-06	2.6324E-07	2.2720E-08	3.0272E+06	1.3014E-10	1.7223E-06
Sr-92	7.5082E-07	8.6492E-08	9.9216E-09	1.3229E+06	5.6904E-11	7.5341E-07
Y-90	6.5259E-07	4.1575E-07	8.6159E-09	1.1476E+06	4.9326E-11	6.5268E-07
Y-91	5.1314E-05	1.8923E-04	6.7747E-07	9.0239E+07	3.8783E-09	5.1318E-05
Y-92	9.2948E-07	6.4438E-08	1.2273E-08	1.6340E+06	7.0279E-11	9.3001E-07
Y-93	6.0877E-07	1.0133E-07	8.0392E-09	1.0711E+06	4.6045E-11	6.0937E-07
Zr-95	7.3059E-05	1.3251E-04	9.6455E-07	1.2848E+08	5.5218E-09	7.3065E-05
Zr-97	1.1879E-06	3.9686E-07	1.5685E-08	2.0896E+06	8.9822E-11	1.1886E-06
Nb-95	1.0548E-04	4.9409E-05	1.3926E-06	1.8549E+08	7.9722E-09	1.0549E-04
Mo-99	6.2765E-03	1.9126E-03	8.2868E-05	1.1038E+10	4.7444E-07	6.2779E-03
Tc-99m	6.0037E-03	4.2984E-05	7.9266E-05	1.0554E+10	4.5381E-07	6.0050E-03
Ru-103	6.0381E-05	4.1904E-05	7.9718E-07	1.0618E+08	4.5637E-09	6.0387E-05
Ru-106	1.0129E-04	3.6502E-03	1.3373E-06	1.7813E+08	7.6559E-09	1.0130E-04
Rh-105	2.3311E-06	1.7494E-07	3.0778E-08	4.0999E+06	1.7622E-10	2.3318E-06
Te-127	7.5482E-04	1.8280E-05	9.9655E-06	1.3270E+09	5.7051E-08	7.5490E-04
Te-127m	7.4757E-04	1.2134E-03	9.8697E-06	1.3146E+09	5.6502E-08	7.4763E-04
Te-129	6.9168E-04	6.1942E-06	9.1321E-06	1.2136E+09	5.2282E-08	6.9180E-04
Te-129m	1.0502E-03	1.8995E-03	1.3866E-05	1.8469E+09	7.9378E-08	1.0503E-03
Te-131m	1.7543E-04	9.4602E-05	2.3162E-06	3.0855E+08	1.3262E-08	1.7549E-04
Te-132	2.9228E-03	2.1061E-03	3.8589E-05	5.1402E+09	2.2093E-07	2.9233E-03
I-131	1.4715E-01	3.6756E-01	1.9427E-03	2.5877E+11	1.1122E-05	1.4716E-01
I-132	1.1600E-01	1.3721E-02	1.5330E-03	2.0442E+11	8.7948E-06	1.1646E-01
I-133	1.8738E-01	8.7109E-02	2.4741E-03	3.2959E+11	1.4167E-05	1.8747E-01
I-134	2.2060E-02	2.5147E-03	2.9206E-04	3.9022E+10	1.6815E-06	2.2292E-02



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I-135	9.7426E-02	1.5247E-02	1.2867E-03	1.7146E+11	7.3718E-06	9.7569E-02
Xe-133	1.9442E-05	1.9747E-08	2.0939E-07	1.4266E+07	6.5385E-10	6.2127E-06
Xe-135	1.2236E-04	9.4769E-07	1.3173E-06	8.9653E+07	4.1101E-09	3.9051E-05
Cs-134	1.0090E-01	3.5842E-01	1.3321E-03	1.7744E+11	7.6261E-06	1.0091E-01
Cs-136	6.6354E-03	4.2315E-03	8.7604E-05	1.1669E+10	5.0152E-07	6.6361E-03
Cs-137	5.6167E-02	1.3541E-01	7.4153E-04	9.8772E+10	4.2451E-06	5.6171E-02
Ba-139	5.9316E-07	8.7314E-09	7.8452E-09	1.0470E+06	4.5075E-11	5.9715E-07
Ba-140	5.8833E-06	1.7002E-06	7.7674E-08	1.0346E+07	4.4467E-10	5.8839E-06
La-140	8.7273E-06	4.0088E-06	1.1522E-07	1.5347E+07	6.5966E-10	8.7287E-06
Ce-141	4.3823E-05	2.9745E-05	5.7856E-07	7.7065E+07	3.3122E-09	4.3827E-05
Ce-143	2.0951E-06	5.5771E-07	2.7662E-08	3.6849E+06	1.5838E-10	2.0958E-06
Ce-144	1.2826E-04	3.6187E-03	1.6933E-06	2.2554E+08	9.6936E-09	1.2827E-04
Pr-143	2.0358E-05	1.2455E-05	2.6878E-07	3.5801E+07	1.5387E-09	2.0360E-05
Kr-83m	3.6182E-05	3.5364E-11	3.8998E-07	2.6582E+07	1.2199E-09	1.1594E-05
Br-82	8.4418E-04	1.8500E-04	1.1146E-05	1.4848E+09	6.3817E-08	8.4446E-04
Br-83	4.9217E-03	3.4671E-05	6.5045E-05	8.6738E+09	3.7315E-07	4.9410E-03
Br-84	2.2069E-03	1.8270E-04	2.9274E-05	3.9191E+09	1.6917E-07	2.2456E-03
Rb-89	7.2762E-05	6.4549E-06	9.7014E-07	1.3060E+08	5.6643E-09	7.5451E-05
Y-91m	1.0049E-06	2.3210E-08	1.3268E-08	1.7617E+06	7.5959E-11	1.0051E-06
Nb-95m	5.6621E-07	1.0556E-07	7.4753E-09	9.9569E+05	4.2795E-11	5.6626E-07
Rh-103m	6.0292E-05	2.3666E-08	7.9600E-07	1.0572E+08	4.5569E-09	6.0296E-05
Te-125m	7.4272E-05	4.0900E-05	9.8056E-07	1.3061E+08	5.6135E-09	7.4278E-05
Te-131	4.8198E-05	2.5244E-06	6.3704E-07	8.4515E+07	3.6552E-09	4.8402E-05
Te-133m	2.2844E-05	2.8328E-06	3.0241E-07	4.0398E+07	1.7406E-09	2.3074E-05
Te-134	3.2485E-05	1.4165E-06	4.3041E-07	5.7551E+07	2.4817E-09	3.2917E-05
Xe-133m	1.3918E-06	1.2415E-09	1.4990E-08	1.0213E+06	4.6811E-11	4.4479E-07
Xe-135m	7.7970E-04	1.0391E-05	8.4254E-06	5.7253E+08	2.6501E-08	2.5198E-04
Cs-134m	6.1310E-05	2.4659E-07	8.1013E-07	1.0801E+08	4.6458E-09	6.1509E-05
Cs-138	1.0115E-03	1.0592E-04	1.3417E-05	1.7961E+09	7.7525E-08	1.0290E-03
Total	7.6353E-01	1.0000E+00	0.0000E+00	0.0000E+00	5.7729E-05	7.6392E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid) 2.1954E-11
Dose Equivalent (Ci/cc) I-131 (CEDE) 2.2395E-11



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Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 2.5337E-11
 Total I (Ci) 5.7000E-01
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 1.3460E-12

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		9.5916E-04	0.0000E+00
Elemental I (Ci)		5.6064E-01	0.0000E+00
Organic I (Ci)		1.7339E-02	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.8459E-01	0.0000E+00
All Aerosols (kg)		7.2354E-07	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	2.0069E-06	1.3443E-04	2.6547E-08	3.5361E+06	1.9406E-06	8.8209E-08	2.1289E-08
Mo-99	4.7216E-05	1.9126E-03	6.2459E-07	8.3199E+07	4.5661E-05	2.0755E-06	5.0090E-07
Tc-99m	4.5164E-05	4.2984E-05	5.9744E-07	7.9550E+07	4.3676E-05	1.9853E-06	4.7967E-07
Te-127	5.6782E-06	1.8280E-05	7.5111E-08	1.0002E+07	5.4907E-06	2.4958E-07	6.0279E-08
Te-127m	5.6237E-06	1.2134E-03	7.4389E-08	9.9087E+06	5.4378E-06	2.4717E-07	5.9653E-08
Te-129	5.2033E-06	6.1942E-06	6.8830E-08	9.1474E+06	5.0317E-06	2.2871E-07	5.5548E-08
Te-129m	7.9005E-06	1.8995E-03	1.0451E-07	1.3920E+07	7.6394E-06	3.4724E-07	8.3805E-08
Te-131m	1.3197E-06	9.4602E-05	1.7458E-08	2.3256E+06	1.2764E-06	5.8020E-08	1.4002E-08
Te-132	2.1987E-05	2.1061E-03	2.9085E-07	3.8742E+07	2.1263E-05	9.6648E-07	2.3325E-07
I-131	1.1069E-03	3.6756E-01	1.4642E-05	1.9504E+09	1.0704E-03	4.8653E-05	1.1742E-05
I-132	8.7259E-04	1.3721E-02	1.1555E-05	1.5408E+09	8.4702E-04	3.8501E-05	9.2860E-06
I-133	1.4096E-03	8.7109E-02	1.8648E-05	2.4842E+09	1.3636E-03	6.1980E-05	1.4957E-05
I-134	1.6595E-04	2.5147E-03	2.2013E-06	2.9411E+08	1.6214E-04	7.3701E-06	1.7753E-06
I-135	7.3290E-04	1.5247E-02	9.6983E-06	1.2923E+09	7.0965E-04	3.2257E-05	7.7830E-06
Cs-134	7.5904E-04	3.5842E-01	1.0040E-05	1.3374E+09	7.3394E-04	3.3361E-05	8.0514E-06



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Cs-136	4.9916E-05	4.2315E-03	6.6028E-07	8.7950E+07	4.8267E-05	2.1939E-06	5.2949E-07
Cs-137	4.2252E-04	1.3541E-01	5.5890E-06	7.4446E+08	4.0855E-04	1.8571E-05	4.4819E-06
Ce-144	9.6482E-07	3.6187E-03	1.2762E-08	1.7000E+06	9.3292E-07	4.2405E-08	1.0234E-08
Br-82	6.3505E-06	1.8500E-04	8.4009E-08	1.1191E+07	6.1421E-06	2.7919E-07	6.7376E-08
Br-83	3.7024E-05	3.4671E-05	4.9026E-07	6.5376E+07	3.5937E-05	1.6335E-06	3.9396E-07
Br-84	1.6602E-05	1.8270E-04	2.2064E-07	2.9539E+07	1.6333E-05	7.4241E-07	1.7861E-07
Xe-135m	5.8654E-06	1.0385E-05	6.3465E-08	4.3100E+06	1.8323E-06	8.3287E-08	2.7953E-08
Cs-138	7.6095E-06	1.0592E-04	1.0112E-07	1.3537E+07	7.4845E-06	3.4021E-07	8.1849E-08
Total	5.7438E-03	1.0000E+00	0.0000E+00	0.0000E+00	5.5563E-03	2.5256E-04	6.0950E-05

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		7.2154E-06	0.0000E+00
Elemental I (Ci)		4.2175E-03	0.0000E+00
Organic I (Ci)		1.3044E-04	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.3886E-03	0.0000E+00
All Aerosols (kg)		5.4430E-09	0.0000E+00

		Deposition Surfaces	Recirculating Filter
Time (h) =	0.0194		
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30



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Exclusion Area Boundary Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)		2.7501E-04	1.3011E-01	8.4872E-03
Accumulated dose (rem)		3.3359E-04	1.5764E-01	1.0283E-02

Low Population Zone Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)		3.7008E-05	1.7509E-02	1.1421E-03
Accumulated dose (rem)		4.4891E-05	2.1214E-02	1.3839E-03

Control Room Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		7.9189E-06	1.1394E-01	6.9826E-03	3.5603E-04
Accumulated dose (rem)		8.8402E-06	1.2700E-01	7.8078E-03	3.9738E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8595E+01 Atmosphere	1.3450E-04	2.0643E+00	2.7497E+14	1.3285E-04	1.5268E-03	5.5321E-04
Sr-89	2.8251E-01	1.2684E-05	3.1350E-02	4.1749E+12	2.0170E-06	2.3180E-05	8.3990E-06
Sr-90	2.6152E-02	3.6807E-05	2.9030E-03	3.8668E+11	1.8683E-07	2.1470E-06	7.7794E-07
Sr-91	1.1914E-01	2.6236E-07	1.3264E-02	1.7687E+12	8.5547E-07	9.8310E-06	3.5622E-06
Sr-92	5.1128E-02	8.5352E-08	5.7351E-03	7.6680E+11	3.7188E-07	4.2737E-06	1.5485E-06
Y-90	4.5473E-02	4.1591E-07	5.0487E-03	6.7249E+11	3.2496E-07	3.7344E-06	1.3531E-06
Y-91	3.5769E+00	1.8934E-04	3.9707E-01	5.2890E+13	2.5554E-05	2.9367E-04	1.0641E-04



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Y-92	6.4564E-02	6.4344E-08	7.1784E-03	9.5516E+11	4.6250E-07	5.3151E-06	1.9259E-06
Y-93	4.2172E-02	1.0102E-07	4.6944E-03	6.2593E+11	3.0273E-07	3.4789E-06	1.2606E-06
Zr-95	5.0927E+00	1.3259E-04	5.6533E-01	7.5302E+13	3.6383E-05	4.1811E-04	1.5150E-04
Zr-97	8.2498E-02	3.9622E-07	9.1730E-03	1.2226E+12	5.9106E-07	6.7924E-06	2.4612E-06
Nb-95	7.3528E+00	4.9440E-05	8.1621E-01	1.0872E+14	5.2528E-05	6.0366E-04	2.1873E-04
Mo-99	4.3712E+02	1.9127E-03	4.8543E+01	6.4669E+15	3.1250E-03	3.5913E-02	1.3013E-02
Tc-99m	4.1816E+02	4.2989E-05	4.6436E+01	6.1794E+15	2.9893E-03	3.4353E-02	1.2447E-02
Ru-103	4.2089E+00	4.1928E-05	4.6723E-01	6.2235E+13	3.0070E-05	3.4556E-04	1.2521E-04
Ru-105	2.0203E-02	1.8902E-08	2.2569E-03	3.0132E+11	1.4592E-07	1.6769E-06	6.0761E-07
Ru-106	7.0612E+00	3.6525E-03	7.8383E-01	1.0441E+14	5.0444E-05	5.7971E-04	2.1005E-04
Rh-105	1.6225E-01	1.7489E-07	1.8023E-02	2.4012E+12	1.1605E-06	1.3336E-05	4.8322E-06
Te-127	5.2607E+01	1.8289E-05	5.8402E+00	7.7737E+14	3.7588E-04	4.3196E-03	1.5652E-03
Te-127m	5.2112E+01	1.2142E-03	5.7848E+00	7.7053E+14	3.7229E-04	4.2783E-03	1.5502E-03
Te-129	4.8202E+01	6.1970E-06	5.3515E+00	7.0851E+14	3.4444E-04	3.9583E-03	1.4342E-03
Te-129m	7.3206E+01	1.9006E-03	8.1265E+00	1.0825E+15	5.2300E-04	6.0104E-03	2.1778E-03
Te-131m	1.2203E+01	9.4542E-05	1.3559E+00	1.8067E+14	8.7320E-05	1.0035E-03	3.6360E-04
Te-132	2.0358E+02	2.1064E-03	2.2607E+01	3.0116E+15	1.4553E-03	1.6724E-02	6.0597E-03
I-131	1.0254E+04	3.6772E-01	1.1384E+03	1.5165E+17	7.3273E-02	8.4205E-01	3.0511E-01
I-132	7.8715E+03	1.3512E-02	8.8432E+02	1.1829E+17	5.7407E-02	6.5972E-01	2.3904E-01
I-133	1.3022E+04	8.7006E-02	1.4475E+03	1.9290E+17	9.3247E-02	1.0716E+00	3.8828E-01
I-134	1.4305E+03	2.4113E-03	1.6404E+02	2.2105E+16	1.0805E-02	1.2417E-01	4.4992E-02
I-135	6.7267E+03	1.5169E-02	7.4989E+02	1.0004E+17	4.8410E-02	5.5633E-01	2.0158E-01
Xe-133	7.7411E+00	8.7641E-08	5.4434E-01	4.6636E+13	2.0305E-05	2.3334E-04	8.4549E-05
Xe-135	4.9272E+01	4.2408E-06	3.4530E+00	2.9477E+14	1.2833E-04	1.4748E-03	5.3437E-04
Cs-134	7.0337E+03	3.5865E-01	7.8078E+02	1.0400E+17	5.0248E-02	5.7745E-01	2.0923E-01
Cs-136	4.6246E+02	4.2337E-03	5.1340E+01	6.8387E+15	3.3043E-03	3.7973E-02	1.3759E-02
Cs-137	3.9154E+03	1.3549E-01	4.3463E+02	5.7893E+16	2.7971E-02	3.2144E-01	1.1647E-01
Ba-139	3.9488E-02	8.5021E-09	4.4747E-03	6.0046E+11	2.9227E-07	3.3588E-06	1.2170E-06
Ba-140	4.1004E-01	1.7011E-06	4.5521E-02	6.0636E+12	2.9297E-06	3.3669E-05	1.2199E-05
La-140	6.0807E-01	4.0101E-06	6.7515E-02	8.9926E+12	4.3457E-06	4.9941E-05	1.8096E-05
La-141	2.7125E-02	1.7912E-08	3.0267E-03	4.0370E+11	1.9552E-07	2.2469E-06	8.1413E-07
La-142	6.7296E-03	1.3189E-08	7.6091E-04	1.0203E+11	4.9623E-08	5.7026E-07	2.0663E-07
Ce-141	3.0546E+00	2.9762E-05	3.3909E-01	4.5168E+13	2.1823E-05	2.5079E-04	9.0872E-05



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Ce-143	1.4577E-01	5.5742E-07	1.6195E-02	2.1578E+12	1.0429E-06	1.1985E-05	4.3426E-06
Ce-144	8.9406E+00	3.6210E-03	9.9246E-01	1.3220E+14	6.3871E-05	7.3401E-04	2.6596E-04
Pr-143	1.4189E+00	1.2462E-05	1.5752E-01	2.0982E+13	1.0138E-05	1.1651E-04	4.2215E-05
Kr-83m	1.4032E+01	1.5391E-10	9.9419E-01	8.5377E+13	3.7386E-05	4.2963E-04	1.5567E-04
Br-82	5.8742E+01	1.8492E-04	6.5259E+00	8.6950E+14	4.2023E-04	4.8292E-03	1.7498E-03
Br-83	3.3410E+02	3.4151E-05	3.7529E+01	5.0203E+15	2.4360E-03	2.7994E-02	1.0143E-02
Br-84	1.3648E+02	1.7042E-04	1.5994E+01	2.1718E+15	1.0696E-03	1.2291E-02	4.4537E-03
Rb-89	3.9478E+00	5.5894E-06	4.9207E-01	6.8206E+13	3.4283E-05	3.9398E-04	1.4276E-04
Y-91m	7.0034E-02	2.3222E-08	7.7756E-03	1.0269E+12	5.0046E-07	5.7513E-06	2.0839E-06
Nb-95m	3.9468E-02	1.0562E-07	4.3813E-03	5.8355E+11	2.8197E-07	3.2404E-06	1.1741E-06
Nb-97	9.9902E-03	4.5977E-09	1.1238E-03	1.5003E+11	7.3025E-08	8.3920E-07	3.0407E-07
Rh-103m	4.2050E+00	2.3688E-08	4.6669E-01	6.1683E+13	3.0030E-05	3.4510E-04	1.2504E-04
Te-125m	5.1773E+00	4.0924E-05	5.7471E-01	7.6552E+13	3.6987E-05	4.2505E-04	1.5401E-04
Te-131	3.2758E+00	2.4879E-06	3.6775E-01	4.8492E+13	2.3862E-05	2.7423E-04	9.9363E-05
Te-133	6.4474E-02	2.6863E-08	4.7571E-03	4.0904E+11	1.8657E-07	2.1441E-06	7.7688E-07
Te-133m	1.4867E+00	2.7219E-06	1.7020E-01	2.2923E+13	1.1198E-05	1.2869E-04	4.6630E-05
Te-134	2.0673E+00	1.3434E-06	2.3910E-01	3.2318E+13	1.5844E-05	1.8208E-04	6.5975E-05
Xe-131m	3.0666E-02	8.6540E-11	2.1555E-03	1.8462E+11	8.0370E-08	9.2361E-07	3.3466E-07
Xe-133m	5.5401E-01	5.5089E-09	3.8961E-02	3.3380E+12	1.4535E-06	1.6703E-05	6.0522E-06
Xe-135m	2.7931E+02	4.2714E-05	2.0287E+01	1.7336E+15	7.8270E-04	8.9948E-03	3.2592E-03
Cs-134m	4.1814E+00	2.4357E-07	4.6871E-01	6.2653E+13	3.0378E-05	3.4911E-04	1.2649E-04
Cs-138	6.2647E+01	9.8885E-05	7.3368E+00	9.9598E+14	4.9039E-04	5.6356E-03	2.0420E-03
Ba-141	6.9507E-03	4.3143E-09	8.4913E-04	1.1693E+11	5.8391E-08	6.7102E-07	2.4314E-07
Total	5.3043E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.7995E-01	4.3664E+00	1.5821E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.5948E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.7857E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.1063E-06
Total I (Ci)	3.9305E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.0581E-07

RCS Compartment Group Inventory Distribution:



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Time (h) =	0.1110	Atmosphere	Sump
Noble gases (Ci)	3.5094E+02	0.0000E+00	
Elemental I (Ci)	3.8639E+04	0.0000E+00	
Organic I (Ci)	1.1950E+03	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	1.2857E+04	0.0000E+00	
All Aerosols (kg)	5.0438E-02	0.0000E+00	

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	1.5259E-03 Atmosphere	1.3452E-04	1.0726E-04	1.4288E+10	6.6016E-07	1.5268E-03
Sr-89	2.3184E-05	1.2688E-05	1.6293E-06	2.1697E+08	1.0024E-08	2.3180E-05
Sr-90	2.1461E-06	3.6814E-05	1.5085E-07	2.0093E+07	9.2837E-10	2.1470E-06
Sr-91	9.7765E-06	2.6209E-07	6.8840E-07	9.1807E+07	4.2463E-09	9.8310E-06
Sr-92	4.1956E-06	8.5002E-08	2.9673E-07	3.9695E+07	1.8408E-09	4.2737E-06
Y-90	3.7316E-06	4.1596E-07	2.6233E-07	3.4942E+07	1.6147E-09	3.7344E-06
Y-91	2.9353E-04	1.8937E-04	2.0633E-05	2.7483E+09	1.2698E-07	2.9367E-04
Y-92	5.2982E-06	6.4315E-08	3.7277E-07	4.9600E+07	2.2969E-09	5.3151E-06
Y-93	3.4607E-06	1.0092E-07	2.4365E-07	3.2492E+07	1.5027E-09	3.4789E-06
Zr-95	4.1792E-04	1.3262E-04	2.9376E-05	3.9129E+09	1.8079E-07	4.1811E-04
Zr-97	6.7699E-06	3.9603E-07	4.7633E-07	6.3491E+07	2.9352E-09	6.7924E-06
Nb-95	6.0338E-04	4.9449E-05	4.2412E-05	5.6493E+09	2.6102E-07	6.0366E-04
Mo-99	3.5871E-02	1.9128E-03	2.5220E-03	3.3599E+11	1.5526E-05	3.5913E-02
Tc-99m	3.4315E-02	4.2990E-05	2.4125E-03	3.2103E+11	1.4852E-05	3.4353E-02
Ru-103	3.4539E-04	4.1936E-05	2.4278E-05	3.2339E+09	1.4942E-07	3.4556E-04
Ru-105	1.6579E-06	1.8857E-08	1.1697E-07	1.5621E+07	7.2338E-10	1.6769E-06
Ru-106	5.7945E-04	3.6532E-03	4.0730E-05	5.4253E+09	2.5067E-07	5.7971E-04
Rh-105	1.3314E-05	1.7487E-07	9.3625E-07	1.2474E+08	5.7651E-09	1.3336E-05
Te-127	4.3170E-03	1.8292E-05	3.0346E-04	4.0391E+10	1.8678E-06	4.3196E-03
Te-127m	4.2764E-03	1.2144E-03	3.0059E-04	4.0039E+10	1.8500E-06	4.2783E-03
Te-129	3.9555E-03	6.1978E-06	2.7806E-04	3.6800E+10	1.7115E-06	3.9583E-03



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Te-129m	6.0074E-03	1.9009E-03	4.2227E-04	5.6247E+10	2.5989E-06	6.0104E-03
Te-131m	1.0014E-03	9.4524E-05	7.0429E-05	9.3848E+09	4.3376E-07	1.0035E-03
Te-132	1.6706E-02	2.1065E-03	1.1745E-03	1.5647E+11	7.2305E-06	1.6724E-02
I-131	8.4148E-01	3.6777E-01	5.9153E-02	7.8796E+12	3.6409E-04	8.4205E-01
I-132	6.4595E-01	1.3448E-02	4.5725E-02	6.1204E+12	2.8400E-04	6.5972E-01
I-133	1.0686E+00	8.6974E-02	7.5174E-02	1.0019E+13	4.6313E-04	1.0716E+00
I-134	1.1739E-01	2.3796E-03	8.4104E-03	1.1353E+12	5.3052E-05	1.2417E-01
I-135	5.5200E-01	1.5146E-02	3.8898E-02	5.1904E+12	2.4018E-04	5.5633E-01
Xe-133	6.3524E-04	1.0855E-07	3.5026E-05	3.1759E+09	1.3846E-07	2.3334E-04
Xe-135	4.0433E-03	5.2574E-06	2.2239E-04	2.0087E+10	8.7601E-07	1.4748E-03
Cs-134	5.7720E-01	3.5872E-01	4.0572E-02	5.4042E+12	2.4969E-04	5.7745E-01
Cs-136	3.7950E-02	4.2343E-03	2.6677E-03	3.5535E+11	1.6419E-05	3.7973E-02
Cs-137	3.2130E-01	1.3552E-01	2.2585E-02	3.0083E+12	1.3899E-04	3.2144E-01
Ba-139	3.2404E-06	8.4317E-09	2.3055E-07	3.0971E+07	1.4413E-09	3.3588E-06
Ba-140	3.3649E-05	1.7013E-06	2.3653E-06	3.1507E+08	1.4558E-08	3.3669E-05
La-140	4.9900E-05	4.0105E-06	3.5079E-06	4.6724E+08	2.1593E-08	4.9941E-05
La-141	2.2260E-06	1.7878E-08	1.5695E-07	2.0939E+07	9.6973E-10	2.2469E-06
La-142	5.5224E-07	1.3091E-08	3.9240E-08	5.2666E+06	2.4491E-10	5.7026E-07
Ce-141	2.5067E-04	2.9768E-05	1.7620E-05	2.3470E+09	1.0844E-07	2.5079E-04
Ce-143	1.1962E-05	5.5733E-07	8.4124E-07	1.1209E+08	5.1807E-09	1.1985E-05
Ce-144	7.3368E-04	3.6216E-03	5.1571E-05	6.8693E+09	3.1739E-07	7.3401E-04
Pr-143	1.1644E-04	1.2464E-05	8.1850E-06	1.0903E+09	5.0376E-08	1.1651E-04
Kr-83m	1.1515E-03	1.9022E-10	6.3836E-05	5.8057E+09	2.5432E-07	4.2963E-04
Br-82	4.8205E-03	1.8489E-04	3.3899E-04	4.5169E+10	2.0876E-06	4.8292E-03
Br-83	2.7417E-02	3.3991E-05	1.9406E-03	2.5976E+11	1.2052E-05	2.7994E-02
Br-84	1.1200E-02	1.6667E-04	8.1270E-04	1.1068E+11	5.2102E-06	1.2291E-02
Rb-89	3.2396E-04	5.3284E-06	2.4371E-05	3.4007E+09	1.6339E-07	3.9398E-04
Y-91m	5.7471E-06	2.3225E-08	4.0402E-07	5.3331E+07	2.4868E-09	5.7513E-06
Nb-95m	3.2388E-06	1.0564E-07	2.2766E-07	3.0322E+07	1.4011E-09	3.2404E-06
Nb-97	8.1982E-07	4.5734E-09	5.8077E-08	7.7571E+06	3.6107E-10	8.3920E-07
Rh-103m	3.4507E-04	2.3694E-08	2.4252E-05	3.2039E+09	1.4924E-07	3.4510E-04
Te-125m	4.2486E-04	4.0932E-05	2.9864E-05	3.9779E+09	1.8379E-07	4.2505E-04
Te-131	2.6882E-04	2.4767E-06	1.9020E-05	2.5070E+09	1.1807E-07	2.7423E-04



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Te-133	5.2908E-06	3.2826E-08	3.0200E-07	2.7614E+07	1.2537E-09	2.1441E-06
Te-133m	1.2200E-04	2.6880E-06	8.7324E-06	1.1780E+09	5.5016E-08	1.2869E-04
Te-134	1.6964E-04	1.3211E-06	1.2216E-05	1.6547E+09	7.7550E-08	1.8208E-04
Xe-131m	2.5165E-06	1.0719E-10	1.3871E-07	1.2573E+07	5.4813E-10	9.2361E-07
Xe-133m	4.5463E-05	6.8227E-09	2.5069E-06	2.2731E+08	9.9110E-09	1.6703E-05
Xe-135m	2.2921E-02	5.2429E-05	1.2937E-03	1.1740E+11	5.2858E-06	8.9948E-03
Cs-134m	3.4313E-04	2.4264E-07	2.4258E-05	3.2442E+09	1.5041E-07	3.4911E-04
Cs-138	5.1409E-03	9.6740E-05	3.7290E-04	5.0768E+10	2.3894E-06	5.6356E-03
Ba-141	5.7039E-07	4.1474E-09	4.2408E-08	5.8713E+06	2.8025E-10	6.7102E-07
Total	4.3528E+00	1.0000E+00	0.0000E+00	0.0000E+00	1.8870E-03	4.3664E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.2546E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.2795E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.4466E-10
Total I (Ci)	3.2254E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.9987E-11

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 0.1110	Atmosphere	Sump
Noble gases (Ci)	2.8799E-02	0.0000E+00
Elemental I (Ci)	3.1708E+00	0.0000E+00
Organic I (Ci)	9.8066E-02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.0551E+00	0.0000E+00
All Aerosols (kg)	4.1391E-06	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2	Pathway 3	Pathway 4
						Inflow	Inflow	Outflow
Rb-86	1.5304E-06	1.2952E-04	1.7856E-07	2.3785E+07	8.4136E-07	2.0619E-06	5.0479E-07	1.9603E-07
Mo-99	3.5975E-05	1.8419E-03	4.1991E-06	5.5941E+08	1.9778E-05	4.8514E-05	1.1874E-05	4.6111E-06



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Tc-99m	3.4415E-05	4.1397E-05	4.0168E-06	5.3451E+08	1.8920E-05	4.6405E-05	1.1358E-05	4.4428E-06
Te-127	4.3296E-06	1.7612E-05	5.0519E-07	6.7243E+07	2.3803E-06	5.8338E-06	1.4282E-06	5.5737E-07
Te-127m	4.2889E-06	1.1692E-03	5.0040E-07	6.6654E+07	2.3579E-06	5.7777E-06	1.4145E-06	5.4934E-07
Te-129	3.9670E-06	5.9676E-06	4.6292E-07	6.1274E+07	2.1810E-06	5.3462E-06	1.3087E-06	5.2887E-07
Te-129m	6.0249E-06	1.8302E-03	7.0297E-07	9.3636E+07	3.3123E-06	8.1169E-06	1.9872E-06	7.7173E-07
Te-131m	1.0043E-06	9.1042E-05	1.1729E-07	1.5628E+07	5.5216E-07	1.3561E-06	3.3178E-07	1.2884E-07
Te-132	1.6755E-05	2.0284E-03	1.9555E-06	2.6051E+08	9.2115E-06	2.2591E-05	5.5294E-06	2.1473E-06
I-131	9.5989E-04	3.8202E-01	1.0624E-04	1.4152E+10	4.7426E-04	1.2704E-03	2.7840E-04	1.1440E-04
I-132	7.3681E-04	1.4028E-02	8.2470E-05	1.1034E+10	3.6405E-04	1.0034E-03	2.1812E-04	8.9611E-05
I-133	1.2190E-03	9.0383E-02	1.3507E-04	1.8001E+10	6.0228E-04	1.6181E-03	3.5430E-04	1.4558E-04
I-134	1.3391E-04	2.5006E-03	1.5281E-05	2.0601E+09	6.6160E-05	1.9147E-04	4.1054E-05	1.6839E-05
I-135	6.2969E-04	1.5756E-02	6.9964E-05	9.3342E+09	3.1111E-04	8.4170E-04	1.8394E-04	7.5565E-05
Xe-133	3.3946E-06	3.4476E-07	1.9235E-07	1.7225E+07	0.0000E+00	2.4972E-06	7.7153E-08	1.0752E-07
Xe-135	2.1602E-05	1.6694E-05	1.2210E-06	1.0893E+08	0.0000E+00	1.5686E-05	4.8762E-07	6.8013E-07
Cs-134	5.7888E-04	3.4537E-01	6.7540E-05	8.9963E+09	3.1825E-04	7.7982E-04	1.9092E-04	7.4144E-05
Cs-136	3.8061E-05	4.0770E-03	4.4411E-06	5.9157E+08	2.0925E-05	5.1284E-05	1.2555E-05	4.8757E-06
Cs-137	3.2224E-04	1.3048E-01	3.7597E-05	5.0079E+09	1.7716E-04	4.3409E-04	1.0628E-04	4.1273E-05
Ce-144	7.3582E-07	3.4869E-03	8.5851E-08	1.1435E+07	4.0454E-07	9.9124E-07	2.4268E-07	9.4246E-08
Kr-83m	6.1537E-06	6.0435E-10	3.5067E-07	3.1494E+07	0.0000E+00	4.5896E-06	1.4206E-07	1.9755E-07
Br-82	5.4989E-06	1.9210E-04	6.0897E-07	8.1140E+07	2.7168E-06	7.2891E-06	1.5967E-06	6.5608E-07
Br-83	3.1275E-05	3.5456E-05	3.5000E-06	4.6827E+08	1.5452E-05	4.2573E-05	9.2556E-06	3.8007E-06
Br-84	1.2776E-05	1.7652E-04	1.4882E-06	2.0222E+08	6.3121E-06	1.9225E-05	4.0638E-06	1.6645E-06
Xe-135m	1.2262E-04	1.6684E-04	7.1180E-06	6.3744E+08	0.0000E+00	9.9060E-05	2.9741E-06	4.1111E-06
Cs-138	5.1559E-06	9.5122E-05	6.3397E-07	8.6106E+07	2.8346E-06	7.9280E-06	1.8633E-06	7.2220E-07
Total	4.9411E-03	1.0000E+00	0.0000E+00	0.0000E+00	2.4241E-03	6.5429E-03	1.4436E-03	5.8890E-04

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.1110	Atmosphere	Sump
Noble gases (Ci)		1.5403E-04	0.0000E+00
Elemental I (Ci)		3.6170E-03	0.0000E+00
Organic I (Ci)		1.1187E-04	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00



All Aerosols (Ci)	1.0582E-03	0.0000E+00
All Aerosols (kg)	4.1511E-09	0.0000E+00
	Deposition	Recirculating
Time (h) = 0.1110	Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	1.7871E-03
Organic I (Ci)	0.0000E+00	5.5270E-05
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	5.8176E-04
All Aerosols (kg)	0.0000E+00	2.2822E-09

 ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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Exclusion Area Boundary Doses:

Time (h) = 0.2500	Whole Body	Thyroid	TEDE
Delta dose (rem)	3.9075E-04	1.8803E-01	1.2265E-02
Accumulated dose (rem)	7.2434E-04	3.4567E-01	2.2548E-02

Low Population Zone Doses:

Time (h) = 0.2500	Whole Body	Thyroid	TEDE
Delta dose (rem)	5.2584E-05	2.5303E-02	1.6505E-03
Accumulated dose (rem)	9.7475E-05	4.6517E-02	3.0344E-03

Control Room Doses:

Time (h) = 0.2500	Whole Body	Thyroid	TEDE	Skin
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Delta dose (rem) 1.0178E-05 1.4943E-01 8.6006E-03 4.5966E-04
 Accumulated dose (rem) 1.9018E-05 2.7643E-01 1.6408E-02 8.5705E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8588E+01	1.3459E-04	4.6484E+00	6.1918E+14	2.5760E-04	3.4797E-03	1.2458E-03
Sr-89	2.8271E-01	1.2700E-05	7.0638E-02	9.4071E+12	3.9130E-06	5.2863E-05	1.8925E-05
Sr-90	2.6148E-02	3.6838E-05	6.5378E-03	8.7083E+11	3.6228E-07	4.8938E-06	1.7520E-06
Sr-91	1.1792E-01	2.6119E-07	2.9714E-02	3.9631E+12	1.6519E-06	2.2299E-05	7.9838E-06
Sr-92	4.9335E-02	8.3865E-08	1.2680E-02	1.6967E+12	7.1061E-07	9.5768E-06	3.4291E-06
Y-90	4.5437E-02	4.1611E-07	1.1366E-02	1.5140E+12	6.2996E-07	8.5096E-06	3.0465E-06
Y-91	3.5762E+00	1.8949E-04	8.9419E-01	1.1911E+14	4.9551E-05	6.6936E-04	2.3964E-04
Y-92	6.4172E-02	6.4205E-08	1.6118E-02	2.1451E+12	8.9476E-07	1.2083E-05	4.3258E-06
Y-93	4.1765E-02	1.0060E-07	1.0520E-02	1.4029E+12	5.8470E-07	7.8935E-06	2.8261E-06
Zr-95	5.0917E+00	1.3270E-04	1.2731E+00	1.6958E+14	7.0548E-05	9.5301E-04	3.4119E-04
Zr-97	8.2017E-02	3.9537E-07	2.0597E-02	2.7455E+12	1.1434E-06	1.5440E-05	5.5278E-06
Nb-95	7.3514E+00	4.9479E-05	1.8381E+00	2.4484E+14	1.0186E-04	1.3759E-03	4.9260E-04
Mo-99	4.3642E+02	1.9128E-03	1.0924E+02	1.4553E+16	6.0561E-03	8.1801E-02	2.9286E-02
Tc-99m	4.1754E+02	4.2994E-05	1.0450E+02	1.3907E+16	5.7933E-03	7.8252E-02	2.8015E-02
Ru-103	4.2079E+00	4.1961E-05	1.0522E+00	1.4015E+14	5.8305E-05	7.8762E-04	2.8198E-04
Ru-105	1.9766E-02	1.8706E-08	5.0258E-03	6.7130E+11	2.8042E-07	3.7826E-06	1.3544E-06
Ru-106	7.0601E+00	3.6555E-03	1.7652E+00	2.3513E+14	9.7817E-05	1.3214E-03	4.7306E-04
Rh-105	1.6184E-01	1.7481E-07	4.0538E-02	5.4012E+12	2.2480E-06	3.0363E-05	1.0870E-05
Te-127	5.2582E+01	1.8301E-05	1.3150E+01	1.7504E+15	7.2877E-04	9.8445E-03	3.5244E-03
Te-127m	5.2103E+01	1.2151E-03	1.3028E+01	1.7353E+15	7.2190E-04	9.7518E-03	3.4912E-03
Te-129	4.8168E+01	6.2003E-06	1.2049E+01	1.5952E+15	6.6775E-04	9.0201E-03	3.2293E-03
Te-129m	7.3186E+01	1.9020E-03	1.8300E+01	2.4376E+15	1.0141E-03	1.3699E-02	4.9044E-03
Te-131m	1.2162E+01	9.4462E-05	3.0485E+00	4.0622E+14	1.6910E-04	2.2838E-03	8.1762E-04
Te-132	2.0330E+02	2.1068E-03	5.0880E+01	6.7782E+15	2.8205E-03	3.8098E-02	1.3639E-02



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I-131	1.0248E+04	3.6793E-01	2.5632E+03	3.4144E+17	1.4205E-01	1.9189E+00	6.8698E-01
I-132	7.5558E+03	1.3241E-02	1.9500E+03	2.6108E+17	1.0946E-01	1.4747E+00	5.2804E-01
I-133	1.2960E+04	8.6868E-02	3.2520E+03	4.3343E+17	1.8047E-01	2.4371E+00	8.7253E-01
I-134	1.2816E+03	2.2821E-03	3.4935E+02	4.7186E+16	2.0040E-02	2.6876E-01	9.6265E-02
I-135	6.6284E+03	1.5067E-02	1.6761E+03	2.2367E+17	9.3306E-02	1.2592E+00	4.5084E-01
Xe-133	1.7386E+01	1.7787E-07	2.4860E+00	2.6607E+14	9.5221E-05	1.4062E-03	5.0049E-04
Xe-135	1.1236E+02	8.7050E-06	1.5949E+01	1.7017E+15	6.0854E-04	8.9929E-03	3.2005E-03
Cs-134	7.0327E+03	3.5894E-01	1.7584E+03	2.3422E+17	9.7436E-02	1.3162E+00	4.7122E-01
Cs-136	4.6225E+02	4.2365E-03	1.1560E+02	1.5399E+16	6.4065E-03	8.6542E-02	3.0983E-02
Cs-137	3.9148E+03	1.3560E-01	9.7882E+02	1.3038E+17	5.4239E-02	7.3269E-01	2.6231E-01
Ba-139	3.6816E-02	8.2089E-09	9.7218E-03	1.3065E+12	5.5075E-07	7.4055E-06	2.6521E-06
Ba-140	4.0985E-01	1.7022E-06	1.0250E-01	1.3653E+13	5.6803E-06	7.6732E-05	2.7471E-05
La-140	6.0751E-01	4.0118E-06	1.5199E-01	2.0244E+13	8.4240E-06	1.1379E-04	4.0738E-05
La-141	2.6609E-02	1.7755E-08	6.7512E-03	9.0098E+11	3.7629E-07	5.0771E-06	1.8178E-06
La-142	6.3209E-03	1.2782E-08	1.6594E-03	2.2280E+11	9.3787E-08	1.2617E-06	4.5183E-07
Ce-141	3.0538E+00	2.9785E-05	7.6361E-01	1.0171E+14	4.2316E-05	5.7162E-04	2.0465E-04
Ce-143	1.4532E-01	5.5703E-07	3.6417E-02	4.8525E+12	2.0198E-06	2.7280E-05	9.7665E-06
Ce-144	8.9392E+00	3.6239E-03	2.2351E+00	2.9771E+14	1.2385E-04	1.6731E-03	5.9897E-04
Pr-143	1.4183E+00	1.2470E-05	3.5470E-01	4.7247E+13	1.9656E-05	2.6553E-04	9.5061E-05
Kr-83m	3.0165E+01	3.0331E-10	4.4087E+00	4.7319E+14	1.7069E-04	2.5167E-03	8.9580E-04
Br-82	5.8574E+01	1.8481E-04	1.4676E+01	1.9555E+15	8.1394E-04	1.0993E-02	3.9357E-03
Br-83	3.2085E+02	3.3474E-05	8.2775E+01	1.1082E+16	4.6457E-03	6.2590E-02	2.2412E-02
Br-84	1.1378E+02	1.5570E-04	3.2884E+01	4.4820E+15	1.9291E-03	2.5749E-02	9.2261E-03
Rb-89	2.6985E+00	4.6624E-06	9.2362E-01	1.2900E+14	5.7562E-05	7.5843E-04	2.7200E-04
Y-91m	6.9921E-02	2.3228E-08	1.7501E-02	2.3117E+12	9.7009E-07	1.3104E-05	4.6913E-06
Nb-95m	3.9458E-02	1.0570E-07	9.8664E-03	1.3141E+12	5.4674E-07	7.3856E-06	2.6441E-06
Nb-97	9.5570E-03	4.4966E-09	2.4733E-03	3.3045E+11	1.3900E-07	1.8722E-06	6.7039E-07
Rh-103m	4.2066E+00	2.3715E-08	1.0513E+00	1.3896E+14	5.8246E-05	7.8685E-04	2.8170E-04
Te-125m	5.1761E+00	4.0957E-05	1.2943E+00	1.7240E+14	7.1719E-05	9.6883E-04	3.4685E-04
Te-131	3.1670E+00	2.4446E-06	8.1310E-01	1.0724E+14	4.5570E-05	6.1409E-04	2.1989E-04
Te-133	1.1077E-01	4.5692E-08	1.8207E-02	1.9601E+12	7.4454E-07	1.0880E-05	3.8747E-06
Te-133m	1.3391E+00	2.5830E-06	3.6345E-01	4.9059E+13	2.0814E-05	2.7923E-04	1.0002E-04
Te-134	1.8000E+00	1.2536E-06	5.0208E-01	6.8061E+13	2.9059E-05	3.8898E-04	1.3935E-04



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Xe-131m	6.9028E-02	1.7591E-10	9.8594E-03	1.0549E+12	3.7743E-07	5.5744E-06	1.9840E-06
Xe-133m	1.2436E+00	1.1176E-08	1.7787E-01	1.9036E+13	6.8138E-06	1.0062E-04	3.5813E-05
Xe-135m	5.2414E+02	7.6869E-05	8.2156E+01	8.7852E+15	3.2882E-03	4.8222E-02	1.7170E-02
Cs-134m	4.0442E+00	2.3961E-07	1.0376E+00	1.3879E+14	5.8103E-05	7.8317E-04	2.8042E-04
Cs-138	5.2344E+01	9.0446E-05	1.5101E+01	2.0576E+15	8.8526E-04	1.1818E-02	4.2343E-03
Ba-141	5.0643E-03	3.7022E-09	1.6396E-03	2.2723E+11	1.0024E-07	1.3262E-06	4.7548E-07
Total	5.2694E+04	1.0000E+00	0.0000E+00	0.0000E+00	7.3502E-01	9.9254E+00	3.5535E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.5782E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.7663E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.1029E-06
Total I (Ci)	3.8673E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	5.8561E-07

RCS Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)		6.8537E+02	0.0000E+00
Elemental I (Ci)		3.7992E+04	0.0000E+00
Organic I (Ci)		1.1750E+03	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2842E+04	0.0000E+00
All Aerosols (kg)		5.0431E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure	Decays	Pathway 5	Pathway 6	
	Atmosphere		(Ci-hr)	(Bq-s)	Outflow	Inflow	
Rb-86		3.4756E-03	1.3465E-04	4.9427E-04	6.5839E+10	3.3696E-06	3.4797E-03
Sr-89		5.2860E-05	1.2709E-05	7.5136E-06	1.0006E+09	5.1209E-08	5.2863E-05
Sr-90		4.8891E-06	3.6854E-05	6.9522E-07	9.2603E+07	4.7393E-09	4.8938E-06
Sr-91		2.2048E-05	2.6057E-07	3.1509E-06	4.2029E+08	2.1534E-08	2.2299E-05
Sr-92		9.2244E-06	8.3069E-08	1.3350E-06	1.7871E+08	9.1823E-09	9.5768E-06



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Y-90	8.4958E-06	4.1622E-07	1.2085E-06	1.6097E+08	8.2394E-09	8.5096E-06
Y-91	6.6866E-04	1.8957E-04	9.5086E-05	1.2666E+10	6.4821E-07	6.6936E-04
Y-92	1.1999E-05	6.4131E-08	1.7112E-06	2.2776E+08	1.1683E-08	1.2083E-05
Y-93	7.8092E-06	1.0038E-07	1.1157E-06	1.4881E+08	7.6238E-09	7.8935E-06
Zr-95	9.5202E-04	1.3275E-04	1.3538E-04	1.8033E+10	9.2290E-07	9.5301E-04
Zr-97	1.5335E-05	3.9492E-07	2.1868E-06	2.9151E+08	1.4929E-08	1.5440E-05
Nb-95	1.3746E-03	4.9501E-05	1.9546E-04	2.6036E+10	1.3325E-06	1.3759E-03
Mo-99	8.1600E-02	1.9129E-03	1.1612E-02	1.5470E+12	7.9186E-05	8.1801E-02
Tc-99m	7.8070E-02	4.2997E-05	1.1109E-02	1.4783E+12	7.5753E-05	7.8252E-02
Ru-103	7.8678E-04	4.1978E-05	1.1188E-04	1.4903E+10	7.6273E-07	7.8762E-04
Ru-105	3.6958E-06	1.8601E-08	5.3121E-07	7.0971E+07	3.6410E-09	3.7826E-06
Ru-106	1.3201E-03	3.6571E-03	1.8771E-04	2.5003E+10	1.2796E-06	1.3214E-03
Rh-105	3.0260E-05	1.7477E-07	4.3080E-06	5.7400E+08	2.9385E-08	3.0363E-05
Te-127	9.8316E-03	1.8307E-05	1.3983E-03	1.8612E+11	9.5327E-06	9.8445E-03
Te-127m	9.7420E-03	1.2157E-03	1.3853E-03	1.8453E+11	9.4438E-06	9.7518E-03
Te-129	9.0064E-03	6.2021E-06	1.2810E-03	1.6959E+11	8.7340E-06	9.0201E-03
Te-129m	1.3684E-02	1.9028E-03	1.9460E-03	2.5921E+11	1.3266E-05	1.3699E-02
Te-131m	2.2741E-03	9.4419E-05	3.2388E-04	4.3160E+10	2.2097E-06	2.2838E-03
Te-132	3.8013E-02	2.1070E-03	5.4086E-03	7.2055E+11	3.6882E-05	3.8098E-02
I-131	1.9161E+00	3.6804E-01	2.7253E-01	3.6303E+13	1.8580E-03	1.9189E+00
I-132	1.4128E+00	1.3096E-02	2.0500E-01	2.7459E+13	1.4118E-03	1.4747E+00
I-133	2.4233E+00	8.6794E-02	3.4537E-01	4.6033E+13	2.3571E-03	2.4371E+00
I-134	2.3963E-01	2.2130E-03	3.6009E-02	4.8704E+12	2.5231E-04	2.6876E-01
I-135	1.2394E+00	1.5013E-02	1.7751E-01	2.3692E+13	1.2145E-03	1.2592E+00
Xe-133	3.2507E-03	2.2617E-07	3.3599E-04	3.7421E+10	1.8516E-06	1.4062E-03
Xe-135	2.1009E-02	1.1094E-05	2.1606E-03	2.3983E+11	1.1867E-05	8.9929E-03
Cs-134	1.3149E+00	3.5910E-01	1.8698E-01	2.4906E+13	1.2747E-03	1.3162E+00
Cs-136	8.6431E-02	4.2380E-03	1.2292E-02	1.6374E+12	8.3802E-05	8.6542E-02
Cs-137	7.3198E-01	1.3566E-01	1.0409E-01	1.3864E+13	7.0955E-04	7.3269E-01
Ba-139	6.8838E-06	8.0521E-09	1.0136E-06	1.3634E+08	7.0318E-09	7.4055E-06
Ba-140	7.6633E-05	1.7028E-06	1.0899E-05	1.4518E+09	7.4302E-08	7.6732E-05
La-140	1.1359E-04	4.0127E-06	1.6159E-05	2.1523E+09	1.1017E-07	1.1379E-04
La-141	4.9753E-06	1.7671E-08	7.1421E-07	9.5342E+07	4.8918E-09	5.0771E-06



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La-142	1.1819E-06	1.2564E-08	1.7338E-07	2.3296E+07	1.2006E-09	1.2617E-06
Ce-141	5.7099E-04	2.9797E-05	8.1199E-05	1.0816E+10	5.5355E-07	5.7162E-04
Ce-143	2.7172E-05	5.5683E-07	3.8694E-06	5.1561E+08	2.6397E-08	2.7280E-05
Ce-144	1.6714E-03	3.6255E-03	2.3767E-04	3.1658E+10	1.6202E-06	1.6731E-03
Pr-143	2.6520E-04	1.2475E-05	3.7715E-05	5.0239E+09	2.5712E-07	2.6553E-04
Kr-83m	5.6402E-03	3.8320E-10	5.9203E-04	6.6208E+10	3.2951E-06	2.5167E-03
Br-82	1.0952E-02	1.8475E-04	1.5594E-03	2.0780E+11	1.0638E-05	1.0993E-02
Br-83	5.9992E-02	3.3112E-05	8.7031E-03	1.1658E+12	5.9931E-05	6.2590E-02
Br-84	2.1273E-02	1.4784E-04	3.3188E-03	4.5343E+11	2.3675E-05	2.5749E-02
Rb-89	5.0456E-04	4.1674E-06	8.7750E-05	1.2327E+10	6.5741E-07	7.5843E-04
Y-91m	1.3074E-05	2.3231E-08	1.8605E-06	2.4573E+08	1.2687E-08	1.3104E-05
Nb-95m	7.3777E-06	1.0574E-07	1.0491E-06	1.3974E+08	7.1522E-09	7.3856E-06
Nb-97	1.7869E-06	4.4426E-09	2.5973E-07	3.4717E+07	1.7903E-09	1.8722E-06
Rh-103m	7.8654E-04	2.3729E-08	1.1182E-04	1.4777E+10	7.6213E-07	7.8685E-04
Te-125m	9.6782E-04	4.0974E-05	1.3763E-04	1.8332E+10	9.3821E-07	9.6883E-04
Te-131	5.9216E-04	2.4214E-06	8.5608E-05	1.1290E+10	5.8860E-07	6.1409E-04
Te-133	2.0711E-05	5.5748E-08	2.3612E-06	2.6667E+08	1.3818E-08	1.0880E-05
Te-133m	2.5039E-04	2.5087E-06	3.7521E-05	5.0711E+09	2.6255E-07	2.7923E-04
Te-134	3.3656E-04	1.2057E-06	5.1324E-05	6.9696E+09	3.6218E-07	3.8898E-04
Xe-131m	1.2907E-05	2.2374E-10	1.3330E-06	1.4840E+08	7.3420E-09	5.5744E-06
Xe-133m	2.3252E-04	1.4210E-08	2.4037E-05	2.6772E+09	1.3248E-07	1.0062E-04
Xe-135m	9.8003E-02	9.5116E-05	1.0805E-02	1.2088E+12	6.1994E-05	4.8222E-02
Cs-134m	7.5617E-04	2.3749E-07	1.0931E-04	1.4628E+10	7.5140E-07	7.8317E-04
Cs-138	9.7871E-03	8.5936E-05	1.5250E-03	2.0829E+11	1.0873E-05	1.1818E-02
Ba-141	9.4692E-07	3.3753E-09	1.5889E-07	2.2122E+07	1.1718E-09	1.3262E-06
Total	9.8525E+00	1.0000E+00	0.0000E+00	0.0000E+00	9.5966E-03	9.9254E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	2.8536E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.9096E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	3.2857E-10
Total I (Ci)	7.2311E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.7447E-10



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Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)		1.2815E-01	0.0000E+00
Elemental I (Ci)		7.1036E+00	0.0000E+00
Organic I (Ci)		2.1970E-01	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		2.4011E+00	0.0000E+00
All Aerosols (kg)		9.4294E-06	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	1.1676E-06	1.2466E-04	3.5535E-07	4.7333E+07	1.8083E-06	2.2418E-06	1.1285E-06	3.9690E-07
Nb-95	4.6179E-07	4.5825E-05	1.4051E-07	1.8717E+07	7.1516E-07	8.8633E-07	4.4625E-07	1.5695E-07
Mo-99	2.7414E-05	1.7717E-03	8.3515E-06	1.1126E+09	4.2455E-05	5.2741E-05	2.6530E-05	9.3310E-06
Tc-99m	2.6228E-05	3.9822E-05	7.9894E-06	1.0632E+09	4.0618E-05	5.0449E-05	2.5379E-05	9.0669E-06
Ru-106	4.4349E-07	3.3855E-03	1.3494E-07	1.7974E+07	6.8681E-07	8.5117E-07	4.2855E-07	1.5072E-07
Te-127	3.3030E-06	1.6949E-05	1.0053E-06	1.3381E+08	5.1152E-06	6.3427E-06	3.1928E-06	1.1349E-06
Te-127m	3.2729E-06	1.1254E-03	9.9588E-07	1.3265E+08	5.0686E-06	6.2818E-06	3.1627E-06	1.1123E-06
Te-129	3.0258E-06	5.7426E-06	9.2108E-07	1.2193E+08	4.6859E-06	5.8123E-06	2.9254E-06	1.1196E-06
Te-129m	4.5973E-06	1.7616E-03	1.3990E-06	1.8635E+08	7.1196E-06	8.8250E-06	4.4429E-06	1.5625E-06
Te-131m	7.6400E-07	8.7503E-05	2.3308E-07	3.1060E+07	1.1832E-06	1.4741E-06	7.4069E-07	2.6053E-07
Te-132	1.2771E-05	1.9513E-03	3.8898E-06	5.1820E+08	1.9777E-05	2.4560E-05	1.2356E-05	4.3457E-06
I-131	8.4013E-04	3.9622E-01	2.2783E-04	3.0349E+10	1.0989E-03	1.5669E-03	6.2234E-04	2.4968E-04
I-132	6.1932E-04	1.4268E-02	1.7344E-04	2.3222E+10	8.1015E-04	1.2278E-03	4.7841E-04	1.9217E-04
I-133	1.0625E-03	9.3554E-02	2.8908E-04	3.8529E+10	1.3898E-03	1.9941E-03	7.9044E-04	3.1713E-04
I-134	1.0507E-04	2.4622E-03	3.1111E-05	4.2027E+09	1.3743E-04	2.3128E-04	8.7233E-05	3.5027E-05
I-135	5.4342E-04	1.6230E-02	1.4902E-04	1.9887E+10	7.1080E-04	1.0353E-03	4.0844E-04	1.6388E-04
Xe-133	1.5495E-05	1.4404E-06	1.6617E-06	1.8270E+08	0.0000E+00	1.3749E-05	4.5179E-07	1.2824E-06
Xe-135	1.0004E-04	7.0591E-05	1.0675E-05	1.1700E+09	0.0000E+00	8.6576E-05	2.8890E-06	8.2129E-06
Cs-134	4.4177E-04	3.3243E-01	1.3442E-04	1.7905E+10	6.8414E-04	8.4786E-04	4.2688E-04	1.5013E-04



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Cs-136	2.9037E-05	3.9237E-03	8.8374E-06	1.1772E+09	4.4968E-05	5.5757E-05	2.8067E-05	9.8711E-06
Cs-137	2.4592E-04	1.2559E-01	7.4825E-05	9.9667E+09	3.8084E-04	4.7197E-04	2.3763E-04	8.3571E-05
Ce-144	5.6153E-07	3.3563E-03	1.7086E-07	2.2759E+07	8.6961E-07	1.0777E-06	5.4261E-07	1.9083E-07
Kr-83m	2.6892E-05	2.4427E-09	2.9306E-06	3.2348E+08	0.0000E+00	2.4626E-05	8.0869E-07	2.2838E-06
Br-82	4.8021E-06	1.9902E-04	1.3046E-06	1.7383E+08	6.2812E-06	8.9865E-06	3.5654E-06	1.4305E-06
Br-83	2.6305E-05	3.6073E-05	7.3628E-06	9.8583E+08	3.4407E-05	5.2100E-05	2.0305E-05	8.1486E-06
Br-84	9.3277E-06	1.6819E-04	2.9319E-06	3.9971E+08	1.2201E-05	2.2930E-05	8.3621E-06	3.3583E-06
Xe-133m	1.1083E-06	9.0502E-08	1.1888E-07	1.3071E+07	0.0000E+00	9.8410E-07	3.2328E-08	9.1756E-08
Xe-135m	4.7051E-04	6.1049E-04	5.3855E-05	5.9358E+09	0.0000E+00	5.1507E-04	1.5503E-05	4.3181E-05
Cs-138	3.2881E-06	8.4672E-05	1.1668E-06	1.5897E+08	5.0921E-06	8.4974E-06	3.8378E-06	1.3605E-06
Total	4.6317E-03	1.0000E+00	0.0000E+00	0.0000E+00	5.4492E-03	8.3315E-03	3.2192E-03	1.3006E-03

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)		6.1411E-04	0.0000E+00
Elemental I (Ci)		3.1146E-03	0.0000E+00
Organic I (Ci)		9.6327E-05	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		8.0667E-04	0.0000E+00
All Aerosols (kg)		3.1679E-09	0.0000E+00

Time (h) =	0.2500	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	4.0740E-03
Organic I (Ci)		0.0000E+00	1.2600E-04
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	1.2492E-03
All Aerosols (kg)		0.0000E+00	4.9059E-09



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Exclusion Area Boundary Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE
Delta dose (rem)		6.0086E-04	2.9689E-01	1.9366E-02
Accumulated dose (rem)		1.3252E-03	6.4256E-01	4.1914E-02

Low Population Zone Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE
Delta dose (rem)		8.0858E-05	3.9953E-02	2.6061E-03
Accumulated dose (rem)		1.7833E-04	8.6470E-02	5.6404E-03

Control Room Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.4697E-05	2.1264E-01	1.1608E-02	6.6903E-04
Accumulated dose (rem)		3.3715E-05	4.8907E-01	2.8017E-02	1.5261E-03

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow	
Rb-86	Atmosphere	1.8577E+01	1.3474E-04	8.7735E+00	1.1687E+15	4.4027E-04	6.6138E-03	2.3514E-03
Sr-89		2.8286E-01	1.2724E-05	1.3342E-01	1.7769E+13	6.6926E-06	1.0055E-04	3.5749E-05
Sr-90		2.6142E-02	3.6884E-05	1.2342E-02	1.6439E+12	6.1928E-07	9.3032E-06	3.3075E-06
Sr-91		1.1599E-01	2.5938E-07	5.5635E-02	7.4214E+12	2.8033E-06	4.2055E-05	1.4953E-05
Sr-92		4.6600E-02	8.1614E-08	2.3266E-02	3.1147E+12	1.1847E-06	1.7710E-05	6.2983E-06



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Y-90	4.5380E-02	4.1642E-07	2.1446E-02	2.8566E+12	1.0764E-06	1.6169E-05	5.7483E-06
Y-91	3.5749E+00	1.8972E-04	1.6879E+00	2.2484E+14	8.4698E-05	1.2724E-03	4.5236E-04
Y-92	6.3472E-02	6.3959E-08	3.0273E-02	4.0294E+12	1.5229E-06	2.2859E-05	8.1272E-06
Y-93	4.1124E-02	9.9952E-08	1.9706E-02	2.6284E+12	9.9270E-07	1.4894E-05	5.2954E-06
Zr-95	5.0899E+00	1.3286E-04	2.4032E+00	3.2011E+14	1.2059E-04	1.8116E-03	6.4406E-04
Zr-97	8.1254E-02	3.9405E-07	3.8703E-02	5.1595E+12	1.9466E-06	2.9220E-05	1.0389E-05
Nb-95	7.3493E+00	4.9540E-05	3.4699E+00	4.6218E+14	1.7411E-04	2.6156E-03	9.2990E-04
Mo-99	4.3530E+02	1.9130E-03	2.0597E+02	2.7442E+16	1.0341E-02	1.5533E-01	5.5222E-02
Tc-99m	4.1655E+02	4.3002E-05	1.9707E+02	2.6225E+16	9.8936E-03	1.4860E-01	5.2832E-02
Ru-103	4.2062E+00	4.2010E-05	1.9861E+00	2.6455E+14	9.9660E-05	1.4971E-03	5.3227E-04
Ru-105	1.9088E-02	1.8405E-08	9.3233E-03	1.2457E+12	4.7203E-07	7.0700E-06	2.5140E-06
Ru-106	7.0583E+00	3.6601E-03	3.3323E+00	4.4387E+14	1.6721E-04	2.5119E-03	8.9303E-04
Rh-105	1.6118E-01	1.7469E-07	7.6379E-02	1.0177E+13	3.8362E-06	5.7612E-05	2.0483E-05
Te-127	5.2542E+01	1.8319E-05	2.4818E+01	3.3034E+15	1.2455E-03	1.8709E-02	6.6516E-03
Te-127m	5.2087E+01	1.2166E-03	2.4592E+01	3.2757E+15	1.2340E-03	1.8538E-02	6.5905E-03
Te-129	4.8121E+01	6.2056E-06	2.2736E+01	3.0095E+15	1.1410E-03	1.7140E-02	6.0938E-03
Te-129m	7.3155E+01	1.9042E-03	3.4544E+01	4.6013E+15	1.7334E-03	2.6040E-02	9.2576E-03
Te-131m	1.2097E+01	9.4335E-05	5.7398E+00	7.6490E+14	2.8839E-04	4.3305E-03	1.5396E-03
Te-132	2.0285E+02	2.1073E-03	9.5953E+01	1.2783E+16	4.8171E-03	7.2353E-02	2.5723E-02
I-131	1.0237E+04	3.6824E-01	4.8367E+03	6.4430E+17	2.4274E-01	3.6464E+00	1.2964E+00
I-132	7.0783E+03	1.2833E-02	3.5632E+03	4.7734E+17	1.8183E-01	2.7163E+00	9.6603E-01
I-133	1.2862E+04	8.6651E-02	6.1160E+03	8.1519E+17	3.0747E-01	4.6161E+00	1.6412E+00
I-134	1.0753E+03	2.0988E-03	6.0576E+02	8.1944E+16	3.1798E-02	4.7048E-01	1.6743E-01
I-135	6.4743E+03	1.4910E-02	3.1270E+03	4.1738E+17	1.5785E-01	2.3666E+00	8.4149E-01
Xe-133	3.2677E+01	3.1817E-07	8.3839E+00	9.8398E+14	3.2639E-04	5.3724E-03	1.8996E-03
Xe-135	2.1400E+02	1.5756E-05	5.4426E+01	6.3733E+15	2.1130E-03	3.4804E-02	1.2306E-02
Cs-134	7.0309E+03	3.5939E-01	3.3194E+03	4.4214E+17	1.6656E-01	2.5021E+00	8.8957E-01
Cs-136	4.6192E+02	4.2408E-03	2.1818E+02	2.9063E+16	1.0949E-02	1.6448E-01	5.8475E-02
Cs-137	3.9139E+03	1.3577E-01	1.8478E+03	2.4612E+17	9.2716E-02	1.3928E+00	4.9519E-01
Ba-139	3.2919E-02	7.7785E-09	1.7368E-02	2.3365E+12	8.9696E-07	1.3345E-05	4.7475E-06
Ba-140	4.0955E-01	1.7039E-06	1.9345E-01	2.5768E+13	9.7078E-06	1.4583E-04	5.1846E-05
La-140	6.0661E-01	4.0143E-06	2.8673E-01	3.8192E+13	1.4392E-05	2.1618E-04	7.6859E-05
La-141	2.5734E-02	1.7496E-08	1.2543E-02	1.6747E+12	6.3444E-07	9.5061E-06	3.3802E-06



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La-142	5.7191E-03	1.2180E-08	2.9814E-03	4.0066E+11	1.5350E-07	2.2863E-06	8.1326E-07
Ce-141	3.0525E+00	2.9820E-05	1.4414E+00	1.9200E+14	7.2328E-05	1.0865E-03	3.8629E-04
Ce-143	1.4461E-01	5.5641E-07	6.8583E-02	9.1391E+12	3.4455E-06	5.1740E-05	1.8395E-05
Ce-144	8.9368E+00	3.6284E-03	4.2193E+00	5.6201E+14	2.1171E-04	3.1805E-03	1.1307E-03
Pr-143	1.4174E+00	1.2483E-05	6.6944E-01	8.9173E+13	3.3594E-05	5.0466E-04	1.7942E-04
Kr-83m	5.2874E+01	5.1789E-10	1.4193E+01	1.6712E+15	5.5940E-04	9.1857E-03	3.2484E-03
Br-82	5.8305E+01	1.8463E-04	2.7643E+01	3.6835E+15	1.3886E-03	2.0853E-02	7.4140E-03
Br-83	3.0077E+02	3.2454E-05	1.5131E+02	2.0270E+16	7.7195E-03	1.1533E-01	4.1016E-02
Br-84	8.5085E+01	1.3605E-04	5.4175E+01	7.4016E+15	2.9281E-03	4.2887E-02	1.5272E-02
Rb-89	1.4697E+00	3.6036E-06	1.3459E+00	1.8880E+14	7.8667E-05	1.1205E-03	3.9973E-04
Y-91m	6.9615E-02	2.3220E-08	3.2985E-02	4.3565E+12	1.6563E-06	2.4877E-05	8.8445E-06
Nb-95m	3.9441E-02	1.0582E-07	1.8624E-02	2.4805E+12	9.3453E-07	1.4039E-05	4.9911E-06
Nb-97	8.9296E-03	4.3491E-09	4.5100E-03	6.0277E+11	2.3042E-07	3.4405E-06	1.2237E-06
Rh-103m	4.2091E+00	2.3755E-08	1.9855E+00	2.6236E+14	9.9605E-05	1.4965E-03	5.3202E-04
Te-125m	5.1743E+00	4.1006E-05	2.4431E+00	3.2543E+14	1.2259E-04	1.8416E-03	6.5474E-04
Te-131	3.0353E+00	2.3885E-06	1.4979E+00	1.9735E+14	7.6148E-05	1.1387E-03	4.0495E-04
Te-133	1.3897E-01	6.2930E-08	4.7279E-02	5.5756E+12	1.9766E-06	3.2018E-05	1.1332E-05
Te-133m	1.1333E+00	2.3850E-06	6.3273E-01	8.5529E+13	3.3140E-05	4.9071E-04	1.7462E-04
Te-134	1.4429E+00	1.1293E-06	8.5274E-01	1.1581E+14	4.5285E-05	6.6737E-04	2.3755E-04
Xe-131m	1.3021E-01	3.1541E-10	3.3331E-02	3.9105E+12	1.2968E-06	2.1347E-05	7.5480E-06
Xe-133m	2.3352E+00	1.9979E-08	5.9949E-01	7.0360E+13	2.3342E-05	3.8420E-04	1.3585E-04
Xe-135m	7.5719E+02	1.1527E-04	2.3228E+02	2.7202E+16	9.4789E-03	1.5444E-01	5.4638E-02
Cs-134m	3.8343E+00	2.3361E-07	1.9072E+00	2.5525E+14	9.7021E-05	1.4509E-03	5.1597E-04
Cs-138	3.9286E+01	7.9154E-05	2.4916E+01	3.4031E+15	1.3455E-03	1.9713E-02	7.0195E-03
Ba-141	3.0543E-03	2.9681E-09	2.4783E-03	3.4477E+11	1.4131E-07	2.0309E-06	7.2408E-07
Total	5.2050E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.2505E+00	1.8769E+01	6.6733E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.5521E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.7358E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.0975E-06
Total I (Ci)	3.7726E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	8.7646E-07



RCS Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)		1.0592E+03	0.0000E+00
Elemental I (Ci)		3.7025E+04	0.0000E+00
Organic I (Ci)		1.1451E+03	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2821E+04	0.0000E+00
All Aerosols (kg)		5.0419E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	6.5991E-03	1.3484E-04	1.6819E-03	2.2403E+11	1.2087E-05	6.6138E-03
Sr-89	1.0048E-04	1.2739E-05	2.5590E-05	3.4080E+09	1.8386E-07	1.0055E-04
Sr-90	9.2862E-06	3.6915E-05	2.3662E-06	3.1517E+08	1.7003E-08	9.3032E-06
Sr-91	4.1204E-05	2.5817E-07	1.0608E-05	1.4151E+09	7.6439E-08	4.2055E-05
Sr-92	1.6553E-05	8.0106E-08	4.3744E-06	5.8585E+08	3.1741E-08	1.7710E-05
Y-90	1.6120E-05	4.1663E-07	4.1101E-06	5.4749E+08	2.9541E-08	1.6169E-05
Y-91	1.2699E-03	1.8987E-04	3.2360E-04	4.3104E+10	2.3254E-06	1.2724E-03
Y-92	2.2547E-05	6.3796E-08	5.7841E-06	7.6997E+08	4.1640E-08	2.2859E-05
Y-93	1.4608E-05	9.9518E-08	3.7585E-06	5.0136E+08	2.7079E-08	1.4894E-05
Zr-95	1.8081E-03	1.3296E-04	4.6073E-04	6.1370E+10	3.3109E-06	1.8116E-03
Zr-97	2.8863E-05	3.9316E-07	7.3972E-06	9.8617E+08	5.3240E-08	2.9220E-05
Nb-95	2.6106E-03	4.9581E-05	6.6523E-04	8.8608E+10	4.7804E-06	2.6156E-03
Mo-99	1.5463E-01	1.9131E-03	3.9458E-02	5.2570E+12	2.8366E-04	1.5533E-01
Tc-99m	1.4797E-01	4.3007E-05	3.7754E-02	5.0241E+12	2.7140E-04	1.4860E-01
Ru-103	1.4941E-03	4.2043E-05	3.8075E-04	5.0717E+10	2.7362E-06	1.4971E-03
Ru-105	6.7806E-06	1.8204E-08	1.7664E-06	2.3607E+08	1.2769E-08	7.0700E-06
Ru-106	2.5073E-03	3.6631E-03	6.3887E-04	8.5097E+10	4.5910E-06	2.5119E-03
Rh-105	5.7255E-05	1.7461E-07	1.4624E-05	1.9486E+09	1.0516E-07	5.7612E-05
Te-127	1.8664E-02	1.8331E-05	4.7573E-03	6.3320E+11	3.4189E-05	1.8709E-02



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Te-127m	1.8503E-02	1.2176E-03	4.7147E-03	6.2800E+11	3.3881E-05	1.8538E-02
Te-129	1.7094E-02	6.2091E-06	4.3577E-03	5.7674E+11	3.1318E-05	1.7140E-02
Te-129m	2.5986E-02	1.9057E-03	6.6222E-03	8.8210E+11	4.7589E-05	2.6040E-02
Te-131m	4.2972E-03	9.4250E-05	1.0985E-03	1.4639E+11	7.9010E-06	4.3305E-03
Te-132	7.2058E-02	2.1077E-03	1.8384E-02	2.4492E+12	1.3215E-04	7.2353E-02
I-131	3.6364E+00	3.6846E-01	9.2704E-01	1.2349E+14	6.6627E-03	3.6464E+00
I-132	2.5144E+00	1.2560E-02	6.6802E-01	8.9531E+13	4.8540E-03	2.7163E+00
I-133	4.5687E+00	8.6506E-02	1.1696E+00	1.5590E+14	8.4156E-03	4.6161E+00
I-134	3.8197E-01	1.9755E-03	1.0922E-01	1.4795E+13	8.0851E-04	4.7048E-01
I-135	2.2998E+00	1.4804E-02	5.9476E-01	7.9400E+13	4.2910E-03	2.3666E+00
Xe-133	1.1608E-02	4.1203E-07	2.0798E-03	2.5020E+11	1.3239E-05	5.3724E-03
Xe-135	7.6019E-02	2.0467E-05	1.3543E-02	1.6252E+12	8.6023E-05	3.4804E-02
Cs-134	2.4975E+00	3.5970E-01	6.3639E-01	8.4767E+13	4.5731E-03	2.5021E+00
Cs-136	1.6408E-01	4.2436E-03	4.1822E-02	5.5710E+12	3.0056E-04	1.6448E-01
Cs-137	1.3903E+00	1.3589E-01	3.5426E-01	4.7187E+13	2.5457E-03	1.3928E+00
Ba-139	1.1694E-05	7.4896E-09	3.2035E-06	4.3130E+08	2.3462E-08	1.3345E-05
Ba-140	1.4548E-04	1.7051E-06	3.7081E-05	4.9394E+09	2.6649E-07	1.4583E-04
La-140	2.1548E-04	4.0160E-06	5.4949E-05	7.3192E+09	3.9495E-07	2.1618E-04
La-141	9.1412E-06	1.7323E-08	2.3789E-06	3.1776E+08	1.7191E-08	9.5061E-06
La-142	2.0316E-06	1.1777E-08	5.5220E-07	7.4262E+07	4.0362E-09	2.2863E-06
Ce-141	1.0843E-03	2.9843E-05	2.7632E-04	3.6807E+10	1.9857E-06	1.0865E-03
Ce-143	5.1369E-05	5.5600E-07	1.3128E-05	1.7494E+09	9.4414E-08	5.1740E-05
Ce-144	3.1746E-03	3.6315E-03	8.0891E-04	1.0775E+11	5.8129E-06	3.1805E-03
Pr-143	5.0349E-04	1.2492E-05	1.2833E-04	1.7094E+10	9.2223E-07	5.0466E-04
Kr-83m	1.8782E-02	6.6212E-10	3.4759E-03	4.2019E+11	2.2381E-05	9.1857E-03
Br-82	2.0711E-02	1.8451E-04	5.2919E-03	7.0518E+11	3.8057E-05	2.0853E-02
Br-83	1.0684E-01	3.1770E-05	2.8374E-02	3.8028E+12	2.0615E-04	1.1533E-01
Br-84	3.0224E-02	1.2277E-04	9.3648E-03	1.2825E+12	7.0659E-05	4.2887E-02
Rb-89	5.2206E-04	2.8776E-06	2.0588E-04	2.9055E+10	1.6344E-06	1.1205E-03
Y-91m	2.4729E-05	2.3215E-08	6.3174E-06	8.3430E+08	4.5427E-08	2.4877E-05
Nb-95m	1.4011E-05	1.0591E-07	3.5703E-06	4.7554E+08	2.5657E-08	1.4039E-05
Nb-97	3.1720E-06	4.2500E-09	8.4425E-07	1.1287E+08	6.1379E-09	3.4405E-06
Rh-103m	1.4952E-03	2.3782E-08	3.8078E-04	5.0306E+10	2.7359E-06	1.4965E-03



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Te-125m	1.8380E-03	4.1039E-05	4.6837E-04	6.2388E+10	3.3658E-06	1.8416E-03
Te-131	1.0782E-03	2.3506E-06	2.8237E-04	3.7182E+10	2.0446E-06	1.1387E-03
Te-133	4.9365E-05	7.5058E-08	1.0802E-05	1.3189E+09	7.3353E-08	3.2018E-05
Te-133m	4.0258E-04	2.2519E-06	1.1444E-04	1.5489E+10	8.4591E-07	4.9071E-04
Te-134	5.1255E-04	1.0455E-06	1.5123E-04	2.0575E+10	1.1280E-06	6.6737E-04
Xe-131m	4.6252E-05	4.0873E-10	8.2737E-06	9.9490E+08	5.2635E-08	2.1347E-05
Xe-133m	8.2952E-04	2.5870E-08	1.4869E-04	1.7888E+10	9.4663E-07	3.8420E-04
Xe-135m	2.6897E-01	1.4165E-04	5.4675E-02	6.6033E+12	3.6316E-04	1.5444E-01
Cs-134m	1.3620E-03	2.2959E-07	3.5906E-04	4.8071E+10	2.6037E-06	1.4509E-03
Cs-138	1.3955E-02	7.1525E-05	4.3129E-03	5.9046E+11	3.2522E-05	1.9713E-02
Ba-141	1.0850E-06	2.4673E-09	3.9465E-07	5.5162E+07	3.0830E-09	2.0309E-06
Total	1.8489E+01	1.0000E+00	0.0000E+00	0.0000E+00	3.4181E-02	1.8769E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	5.4066E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	5.5105E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	6.2121E-10
Total I (Ci)	1.3401E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	4.9608E-10

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)		3.7626E-01	0.0000E+00
Elemental I (Ci)		1.3152E+01	0.0000E+00
Organic I (Ci)		4.0677E-01	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		4.5542E+00	0.0000E+00
All Aerosols (kg)		1.7910E-05	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
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Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Rb-86	9.7171E-07	1.1972E-04	5.8373E-07	7.7755E+07	3.0295E-06	2.5276E-06	2.1218E-06	6.5070E-07
Zr-95	2.6623E-07	1.1805E-04	1.5989E-07	2.1298E+07	8.3004E-07	6.9222E-07	5.8119E-07	1.7823E-07
Nb-95	3.8441E-07	4.4017E-05	2.3085E-07	3.0750E+07	1.1985E-06	9.9941E-07	8.3912E-07	2.5737E-07
Mo-99	2.2769E-05	1.7002E-03	1.3707E-05	1.8262E+09	7.0986E-05	5.9447E-05	4.9832E-05	1.5285E-05
Tc-99m	2.1788E-05	3.8217E-05	1.3114E-05	1.7452E+09	6.7929E-05	5.6865E-05	4.7675E-05	1.5055E-05
Ru-106	3.6919E-07	3.2520E-03	2.2170E-07	2.9531E+07	1.1510E-06	9.5976E-07	8.0586E-07	2.4712E-07
Te-127	2.7483E-06	1.6277E-05	1.6513E-06	2.1979E+08	8.5682E-06	7.1513E-06	6.0023E-06	1.8777E-06
Te-127m	2.7245E-06	1.0810E-03	1.6362E-06	2.1794E+08	8.4941E-06	7.0832E-06	5.9472E-06	1.8238E-06
Te-129	2.5170E-06	5.5142E-06	1.5128E-06	2.0024E+08	7.8473E-06	6.5530E-06	5.4989E-06	1.9648E-06
Te-129m	3.8265E-06	1.6920E-03	2.2983E-06	3.0613E+08	1.1930E-05	9.9506E-06	8.3540E-06	2.5619E-06
Te-131m	6.3276E-07	8.3866E-05	3.8210E-07	5.0918E+07	1.9727E-06	1.6608E-06	1.3894E-06	4.2629E-07
Te-132	1.0610E-05	1.8728E-03	6.3853E-06	8.5066E+08	3.3080E-05	2.7684E-05	2.3213E-05	7.1198E-06
I-131	7.7161E-04	4.1038E-01	4.0361E-04	5.3764E+10	1.9911E-03	2.0381E-03	1.1698E-03	4.4304E-04
I-132	5.3331E-04	1.4341E-02	2.9817E-04	3.9944E+10	1.3762E-03	1.5664E-03	8.7190E-04	3.3157E-04
I-133	9.6944E-04	9.6595E-02	5.1052E-04	6.8046E+10	2.5015E-03	2.5884E-03	1.4810E-03	5.6104E-04
I-134	8.1046E-05	2.3577E-03	5.0954E-05	6.8925E+09	2.0913E-04	2.8630E-04	1.5116E-04	5.7641E-05
I-135	4.8800E-04	1.6633E-02	2.6121E-04	3.4865E+10	1.2592E-03	1.3373E-03	7.5940E-04	2.8785E-04
Xe-133	4.9881E-05	4.7545E-06	9.3813E-06	1.1135E+09	0.0000E+00	5.0338E-05	1.7088E-06	8.3385E-06
Xe-135	3.2578E-04	2.3564E-04	6.0950E-05	7.2189E+09	0.0000E+00	3.1750E-04	1.1070E-05	5.4080E-05
Cs-134	3.6776E-04	3.1932E-01	2.2084E-04	2.9416E+10	1.1466E-03	9.5603E-04	8.0273E-04	2.4616E-04
Cs-136	2.4161E-05	3.7682E-03	1.4516E-05	1.9337E+09	7.5326E-05	6.2866E-05	5.2767E-05	1.6182E-05
Cs-137	2.0472E-04	1.2064E-01	1.2293E-04	1.6375E+10	6.3825E-04	5.3218E-04	4.4685E-04	1.3703E-04
Ce-144	4.6745E-07	3.2239E-03	2.8071E-07	3.7391E+07	1.4574E-06	1.2152E-06	1.0203E-06	3.1290E-07
Kr-83m	8.0806E-05	7.6579E-09	1.5714E-05	1.8737E+09	0.0000E+00	8.6491E-05	2.9224E-06	1.4124E-05
Br-82	4.3947E-06	2.0579E-04	2.3071E-06	3.0743E+08	1.1340E-05	1.1676E-05	6.6903E-06	2.5341E-06
Br-83	2.2671E-05	3.6273E-05	1.2663E-05	1.6964E+09	5.8499E-05	6.6483E-05	3.7019E-05	1.4054E-05
Br-84	6.4132E-06	1.5363E-04	4.5807E-06	6.2581E+08	1.6549E-05	2.7604E-05	1.3794E-05	5.2803E-06
Te-125m	2.7065E-07	3.6435E-05	1.6254E-07	2.1651E+07	8.4380E-07	7.0371E-07	5.9083E-07	1.8118E-07
Xe-133m	3.5649E-06	2.9854E-07	6.7074E-07	7.9613E+07	0.0000E+00	3.6019E-06	1.2221E-07	5.9626E-07
Xe-135m	1.1869E-03	1.6716E-03	2.5223E-04	2.9940E+10	0.0000E+00	1.7334E-03	4.9167E-05	2.3290E-04
Cs-138	2.0549E-06	7.2644E-05	1.7123E-06	2.3374E+08	6.4065E-06	9.2175E-06	6.3400E-06	2.0025E-06
Total	5.1946E-03	1.0000E+00	0.0000E+00	0.0000E+00	9.5142E-03	1.1862E-02	6.0221E-03	2.4636E-03



Control Room Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)		1.6471E-03	0.0000E+00
Elemental I (Ci)		2.7906E-03	0.0000E+00
Organic I (Ci)		8.6306E-05	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		6.7060E-04	0.0000E+00
All Aerosols (kg)		2.6372E-09	0.0000E+00

Time (h) =	0.4720	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	7.2008E-03
Organic I (Ci)		0.0000E+00	2.2270E-04
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	2.0907E-03
All Aerosols (kg)		0.0000E+00	8.2220E-09

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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Exclusion Area Boundary Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE
Delta dose (rem)		4.9305E-04	2.5114E-01	1.6382E-02
Accumulated dose (rem)		1.8182E-03	8.9371E-01	5.8296E-02

Low Population Zone Doses:



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Time (h) = 0.6670 Whole Body Thyroid TEDE
Delta dose (rem) 6.6350E-05 3.3797E-02 2.2045E-03
Accumulated dose (rem) 2.4468E-04 1.2027E-01 7.8449E-03

Control Room Doses:

Time (h) = 0.6670 Whole Body Thyroid TEDE Skin
Delta dose (rem) 1.2818E-05 1.7669E-01 9.4311E-03 5.8975E-04
Accumulated dose (rem) 4.6533E-05 6.6575E-01 3.7448E-02 2.1158E-03

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8568E+01	1.3486E-04	1.2395E+01	1.6511E+15	5.5681E-04	9.4090E-03	3.3219E-03
Sr-89	2.8290E-01	1.2741E-05	1.8859E-01	2.5116E+13	8.4677E-06	1.4313E-04	5.0531E-05
Sr-90	2.6136E-02	3.6923E-05	1.7439E-02	2.3229E+12	7.8330E-07	1.3237E-05	4.6735E-06
Sr-91	1.1433E-01	2.5783E-07	7.8060E-02	1.0412E+13	3.5270E-06	5.9411E-05	2.0979E-05
Sr-92	4.4324E-02	7.9739E-08	3.2085E-02	4.2953E+12	1.4713E-06	2.4585E-05	8.6853E-06
Y-90	4.5330E-02	4.1667E-07	3.0289E-02	4.0346E+12	1.3610E-06	2.2995E-05	8.1187E-06
Y-91	3.5739E+00	1.8991E-04	2.3849E+00	3.1768E+14	1.0713E-04	1.8103E-03	6.3915E-04
Y-92	6.2787E-02	6.3721E-08	4.2570E-02	5.6665E+12	1.9194E-06	3.2370E-05	1.1430E-05
Y-93	4.0569E-02	9.9396E-08	2.7660E-02	3.6893E+12	1.2493E-06	2.1049E-05	7.4328E-06
Zr-95	5.0884E+00	1.3299E-04	3.3956E+00	4.5230E+14	1.5252E-04	2.5775E-03	9.1001E-04
Zr-97	8.0590E-02	3.9290E-07	5.4470E-02	7.2613E+12	2.4548E-06	4.1408E-05	1.4621E-05
Nb-95	7.3474E+00	4.9592E-05	4.9027E+00	6.5305E+14	2.2022E-04	3.7215E-03	1.3139E-03
Mo-99	4.3431E+02	1.9130E-03	2.9074E+02	3.8735E+16	1.3070E-02	2.2078E-01	7.7949E-02
Tc-99m	4.1568E+02	4.3007E-05	2.7819E+02	3.7019E+16	1.2505E-02	2.1124E-01	7.4581E-02
Ru-103	4.2047E+00	4.2051E-05	2.8061E+00	3.7378E+14	1.2605E-04	2.1301E-03	7.5204E-04
Ru-105	1.8512E-02	1.8151E-08	1.2978E-02	1.7340E+12	5.9034E-07	9.9077E-06	3.4994E-06
Ru-106	7.0567E+00	3.6639E-03	4.7085E+00	6.2717E+14	2.1149E-04	3.5740E-03	1.2618E-03



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Rh-105	1.6060E-01	1.7458E-07	1.0774E-01	1.4356E+13	4.8462E-06	8.1834E-05	2.8893E-05
Te-127	5.2507E+01	1.8334E-05	3.5060E+01	4.6665E+15	1.5751E-03	2.6615E-02	9.3965E-03
Te-127m	5.2074E+01	1.2179E-03	3.4748E+01	4.6284E+15	1.5608E-03	2.6376E-02	9.3121E-03
Te-129	4.8085E+01	6.2101E-06	3.2115E+01	4.2502E+15	1.4429E-03	2.4380E-02	8.6076E-03
Te-129m	7.3127E+01	1.9061E-03	4.8806E+01	6.5010E+15	2.1923E-03	3.7047E-02	1.3080E-02
Te-131m	1.2040E+01	9.4223E-05	8.0921E+00	1.0784E+15	3.6415E-04	6.1476E-03	2.1706E-03
Te-132	2.0246E+02	2.1077E-03	1.3546E+02	1.8047E+16	6.0890E-03	1.0286E-01	3.6316E-02
I-131	1.0228E+04	3.6851E-01	6.8318E+03	9.1006E+17	3.0695E-01	5.1864E+00	1.8311E+00
I-132	6.6845E+03	1.2496E-02	4.8971E+03	6.5601E+17	2.2524E-01	3.7575E+00	1.3276E+00
I-133	1.2776E+04	8.6463E-02	8.6140E+03	1.1481E+18	3.8796E-01	6.5465E+00	2.3115E+00
I-134	9.2166E+02	1.9567E-03	7.9713E+02	1.0783E+17	3.8146E-02	6.2275E-01	2.2030E-01
I-135	6.3419E+03	1.4775E-02	4.3740E+03	5.8382E+17	1.9814E-01	3.3329E+00	1.1770E+00
Xe-133	4.5995E+01	4.3862E-07	1.6314E+01	1.9850E+15	5.6497E-04	1.1094E-02	3.8865E-03
Xe-135	3.0244E+02	2.1846E-05	1.0652E+02	1.2940E+16	3.6790E-03	7.2364E-02	2.5348E-02
Cs-134	7.0294E+03	3.5977E-01	4.6902E+03	6.2474E+17	2.1067E-01	3.5602E+00	1.2569E+00
Cs-136	4.6162E+02	4.2443E-03	3.0822E+02	4.1056E+16	1.3847E-02	2.3397E-01	8.2607E-02
Cs-137	3.9131E+03	1.3592E-01	2.6109E+03	3.4777E+17	1.1727E-01	1.9818E+00	6.9970E-01
Ba-139	2.9838E-02	7.4319E-09	2.3423E-02	3.1508E+12	1.0956E-06	1.8110E-05	6.4019E-06
Ba-140	4.0928E-01	1.7053E-06	2.7328E-01	3.6402E+13	1.2277E-05	2.0745E-04	7.3242E-05
La-140	6.0582E-01	4.0163E-06	4.0493E-01	5.3936E+13	1.8196E-05	3.0743E-04	1.0854E-04
La-141	2.4942E-02	1.7263E-08	1.7468E-02	2.3327E+12	7.9393E-07	1.3331E-05	4.7084E-06
La-142	5.2380E-03	1.1693E-08	4.0398E-03	5.4287E+11	1.8816E-07	3.1174E-06	1.1019E-06
Ce-141	3.0513E+00	2.9849E-05	2.0365E+00	2.7126E+14	9.1479E-05	1.5459E-03	5.4578E-04
Ce-143	1.4399E-01	5.5587E-07	9.6710E-02	1.2887E+13	4.3513E-06	7.3465E-05	2.5939E-05
Ce-144	8.9348E+00	3.6322E-03	5.9617E+00	7.9410E+14	2.6778E-04	4.5253E-03	1.5977E-03
Pr-143	1.4166E+00	1.2494E-05	9.4574E-01	1.2598E+14	4.2486E-05	7.1792E-04	2.5347E-04
Kr-83m	7.0001E+01	6.8616E-10	2.6542E+01	3.2385E+15	9.3549E-04	1.8206E-02	6.3805E-03
Br-82	5.8070E+01	1.8447E-04	3.8985E+01	5.1949E+15	1.7539E-03	2.9614E-02	1.0456E-02
Br-83	2.8417E+02	3.1608E-05	2.0800E+02	2.7864E+16	9.5646E-03	1.5958E-01	5.6381E-02
Br-84	6.5918E+01	1.2179E-04	6.8452E+01	9.3521E+15	3.4112E-03	5.4476E-02	1.9296E-02
Rb-89	8.6182E-01	2.9527E-06	1.5566E+00	2.1838E+14	8.6193E-05	1.3010E-03	4.6241E-04
Y-91m	6.9240E-02	2.3199E-08	4.6517E-02	6.1428E+12	2.0922E-06	3.5332E-05	1.2475E-05
Nb-95m	3.9427E-02	1.0593E-07	2.6313E-02	3.5047E+12	1.1820E-06	1.9974E-05	7.0519E-06



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Nb-97	8.4372E-03	4.2309E-09	6.1930E-03	8.2743E+11	2.8518E-07	4.7540E-06	1.6797E-06
Rh-103m	4.2110E+00	2.3788E-08	2.8065E+00	3.7076E+14	1.2602E-04	2.1300E-03	7.5200E-04
Te-125m	5.1727E+00	4.1047E-05	3.4519E+00	4.5980E+14	1.5506E-04	2.6203E-03	9.2510E-04
Te-131	2.9508E+00	2.3491E-06	2.0794E+00	2.7366E+14	9.4964E-05	1.5900E-03	5.6165E-04
Te-133	1.4016E-01	7.0441E-08	7.4699E-02	9.0862E+12	2.8579E-06	5.3155E-05	1.8671E-05
Te-133m	9.7877E-01	2.2307E-06	8.3532E-01	1.1291E+14	3.9851E-05	6.5167E-04	2.3051E-04
Te-134	1.1882E+00	1.0354E-06	1.1036E+00	1.4987E+14	5.3673E-05	8.6854E-04	3.0741E-04
Xe-131m	1.8385E-01	4.3572E-10	6.4992E-02	7.9053E+12	2.2487E-06	4.4178E-05	1.5476E-05
Xe-133m	3.2844E+00	2.7529E-08	1.1659E+00	1.4187E+14	4.0386E-05	7.9298E-04	2.7779E-04
Xe-135m	8.6467E+02	1.3830E-04	3.9336E+02	4.7564E+16	1.4530E-02	2.7559E-01	9.6705E-02
Cs-134m	3.6589E+00	2.2860E-07	2.6343E+00	3.5254E+14	1.2064E-04	2.0172E-03	7.1262E-04
Cs-138	3.0533E+01	7.0943E-05	3.1521E+01	4.3051E+15	1.5688E-03	2.5070E-02	8.8797E-03
Ba-141	1.9589E-03	2.4933E-09	2.9386E-03	4.0882E+11	1.5747E-07	2.4185E-06	8.5865E-07
Total	5.1452E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.5756E+00	2.6567E+01	9.3808E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.5294E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.7095E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.0930E-06
Total I (Ci)	3.6951E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.0351E-06

RCS Compartment Group Inventory Distribution:

Time (h) = 0.6670	Atmosphere	Sump
Noble gases (Ci)	1.2866E+03	0.0000E+00
Elemental I (Ci)	3.6239E+04	0.0000E+00
Organic I (Ci)	1.1208E+03	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2806E+04	0.0000E+00
All Aerosols (kg)	5.0408E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670



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Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow	
Rb-86	Atmosphere	9.3797E-03	1.3500E-04	3.2937E-03	4.3874E+11	2.4230E-05	9.4090E-03
Sr-89		1.4291E-04	1.2761E-05	5.0143E-05	6.6784E+09	3.6881E-07	1.4313E-04
Sr-90		1.3203E-05	3.6966E-05	4.6348E-06	6.1736E+08	3.4093E-08	1.3237E-05
Sr-91		5.7755E-05	2.5612E-07	2.0584E-05	2.7459E+09	1.5181E-07	5.9411E-05
Sr-92		2.2390E-05	7.7649E-08	8.2942E-06	1.1106E+09	6.1565E-08	2.4585E-05
Y-90		2.2899E-05	4.1696E-07	8.0461E-06	1.0718E+09	5.9196E-08	2.2995E-05
Y-91		1.8054E-03	1.9012E-04	6.3382E-04	8.4426E+10	4.6624E-06	1.8103E-03
Y-92		3.1717E-05	6.3468E-08	1.1256E-05	1.4984E+09	8.2949E-08	3.2370E-05
Y-93		2.0494E-05	9.8782E-08	7.2975E-06	9.7339E+08	5.3810E-08	2.1049E-05
Zr-95		2.5704E-03	1.3314E-04	9.0242E-04	1.2020E+11	6.6382E-06	2.5775E-03
Zr-97		4.0711E-05	3.9163E-07	1.4413E-05	1.9215E+09	1.0618E-07	4.1408E-05
Nb-95		3.7116E-03	4.9648E-05	1.3030E-03	1.7356E+11	9.5848E-06	3.7215E-03
Mo-99		2.1940E-01	1.9131E-03	7.7186E-02	1.0283E+13	5.6798E-04	2.2078E-01
Tc-99m		2.0999E-01	4.3013E-05	7.3861E-02	9.8284E+12	5.4350E-04	2.1124E-01
Ru-103		2.1240E-03	4.2097E-05	7.4574E-04	9.9334E+10	5.4857E-06	2.1301E-03
Ru-105		9.3515E-06	1.7869E-08	3.3916E-06	4.5321E+08	2.5086E-08	9.9077E-06
Ru-106		3.5647E-03	3.6682E-03	1.2514E-03	1.6669E+11	9.2052E-06	3.5740E-03
Rh-105		8.1130E-05	1.7447E-07	2.8582E-05	3.8084E+09	2.1038E-07	8.1834E-05
Te-127		2.6524E-02	1.8351E-05	9.3157E-03	1.2399E+12	6.8531E-05	2.6615E-02
Te-127m		2.6305E-02	1.2193E-03	9.2348E-03	1.2301E+12	6.7931E-05	2.6376E-02
Te-129		2.4290E-02	6.2151E-06	8.5322E-03	1.1289E+12	6.2768E-05	2.4380E-02
Te-129m		3.6941E-02	1.9081E-03	1.2970E-02	1.7277E+12	9.5410E-05	3.7047E-02
Te-131m		6.0822E-03	9.4100E-05	2.1454E-03	2.8590E+11	1.5794E-05	6.1476E-03
Te-132		1.0227E-01	2.1082E-03	3.5969E-02	4.7919E+12	2.6467E-04	1.0286E-01
I-131		5.1666E+00	3.6880E-01	1.8150E+00	2.4178E+14	1.3353E-02	5.1864E+00
I-132		3.3767E+00	1.2118E-02	1.2608E+00	1.6893E+14	9.3704E-03	3.7575E+00
I-133		6.4537E+00	8.6256E-02	2.2812E+00	3.0407E+14	1.6800E-02	6.5465E+00
I-134		4.6558E-01	1.7940E-03	1.9402E-01	2.6266E+13	1.4673E-03	6.2275E-01
I-135		3.2037E+00	1.4627E-02	1.1495E+00	1.5344E+14	8.4867E-03	3.3329E+00
Xe-133		2.3235E-02	5.7148E-07	5.6426E-03	6.9987E+11	3.8333E-05	1.1094E-02
Xe-135		1.5278E-01	2.8546E-05	3.6949E-02	4.5752E+12	2.5076E-04	7.2364E-02



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Cs-134	3.5509E+00	3.6019E-01	1.2465E+00	1.6604E+14	9.1695E-03	3.5602E+00
Cs-136	2.3319E-01	4.2483E-03	8.1898E-02	1.0909E+13	6.0248E-04	2.3397E-01
Cs-137	1.9767E+00	1.3608E-01	6.9391E-01	9.2429E+13	5.1043E-03	1.9818E+00
Ba-139	1.5073E-05	7.0408E-09	5.8907E-06	7.9278E+08	4.4106E-08	1.8110E-05
Ba-140	2.0675E-04	1.7069E-06	7.2613E-05	9.6725E+09	5.3417E-07	2.0745E-04
La-140	3.0604E-04	4.0186E-06	1.0756E-04	1.4326E+10	7.9133E-07	3.0743E-04
La-141	1.2600E-05	1.7010E-08	4.5693E-06	6.1038E+08	3.3794E-08	1.3331E-05
La-142	2.6460E-06	1.1144E-08	1.0221E-06	1.3740E+08	7.6384E-09	3.1174E-06
Ce-141	1.5414E-03	2.9881E-05	5.4120E-04	7.2089E+10	3.9811E-06	1.5459E-03
Ce-143	7.2738E-05	5.5527E-07	2.5645E-05	3.4174E+09	1.8879E-07	7.3465E-05
Ce-144	4.5135E-03	3.6365E-03	1.5845E-03	2.1105E+11	1.1655E-05	4.5253E-03
Pr-143	7.1559E-04	1.2506E-05	2.5130E-04	3.3475E+10	1.8487E-06	7.1792E-04
Kr-83m	3.5361E-02	8.7788E-10	9.0146E-03	1.1231E+12	6.1873E-05	1.8206E-02
Br-82	2.9334E-02	1.8430E-04	1.0340E-02	1.3778E+12	7.6110E-05	2.9614E-02
Br-83	1.4355E-01	3.0664E-05	5.3568E-02	7.1778E+12	3.9810E-04	1.5958E-01
Br-84	3.3299E-02	1.0505E-04	1.5673E-02	2.1446E+12	1.2066E-04	5.4476E-02
Rb-89	4.3535E-04	2.1308E-06	2.9821E-04	4.2027E+10	2.4075E-06	1.3010E-03
Y-91m	3.4977E-05	2.3182E-08	1.2339E-05	1.6292E+09	9.0837E-08	3.5332E-05
Nb-95m	1.9917E-05	1.0604E-07	6.9928E-06	9.3138E+08	5.1440E-08	1.9974E-05
Nb-97	4.2621E-06	4.0973E-09	1.5921E-06	2.1270E+08	1.1835E-08	4.7540E-06
Rh-103m	2.1272E-03	2.3825E-08	7.4619E-04	9.8546E+10	5.4881E-06	2.1300E-03
Te-125m	2.6130E-03	4.1093E-05	9.1739E-04	1.2220E+11	6.7483E-06	2.6203E-03
Te-131	1.4906E-03	2.3023E-06	5.4099E-04	7.1106E+10	4.0036E-06	1.5900E-03
Te-133	7.0804E-05	8.1727E-08	2.3007E-05	2.8811E+09	1.6521E-07	5.3155E-05
Te-133m	4.9443E-04	2.0545E-06	2.0423E-04	2.7626E+10	1.5424E-06	6.5167E-04
Te-134	6.0022E-04	9.2693E-07	2.6226E-04	3.5654E+10	1.9974E-06	8.6854E-04
Xe-131m	9.2875E-05	5.6823E-10	2.2500E-05	2.7895E+09	1.5277E-07	4.4178E-05
Xe-133m	1.6591E-03	3.5860E-08	4.0317E-04	5.0008E+10	2.7393E-06	7.9298E-04
Xe-135m	4.3679E-01	1.6771E-04	1.2663E-01	1.5695E+13	8.9144E-04	2.7559E-01
Cs-134m	1.8483E-03	2.2301E-07	6.8224E-04	9.1320E+10	5.0610E-06	2.0172E-03
Cs-138	1.5424E-02	6.1307E-05	7.2311E-03	9.8911E+11	5.5637E-05	2.5070E-02
Ba-141	9.8954E-07	1.9077E-09	5.9687E-07	8.3322E+07	4.7468E-09	2.4185E-06
Total	2.5991E+01	1.0000E+00	0.0000E+00	0.0000E+00	6.8044E-02	2.6567E+01



Dose Equivalent (Ci/cc) I-131 (Thyroid)	7.6703E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	7.8153E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	8.7975E-10
Total I (Ci)	1.8666E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	8.3318E-10

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)	6.4992E-01	0.0000E+00	
Elemental I (Ci)	1.8306E+01	0.0000E+00	
Organic I (Ci)	5.6617E-01	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	6.4688E+00	0.0000E+00	
All Aerosols (kg)	2.5464E-05	0.0000E+00	

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	9.1934E-07	1.1714E-04	7.6614E-07	1.0205E+08	3.9914E-06	2.7745E-06	2.9857E-06	8.5069E-07
Zr-95	2.5194E-07	1.1551E-04	2.0987E-07	2.7956E+07	1.0938E-06	7.5987E-07	8.1790E-07	2.3303E-07
Nb-95	3.6378E-07	4.3072E-05	3.0303E-07	4.0363E+07	1.5794E-06	1.0971E-06	1.1809E-06	3.3653E-07
Mo-99	2.1504E-05	1.6622E-03	1.7977E-05	2.3950E+09	9.3362E-05	6.5228E-05	7.0060E-05	1.9968E-05
Tc-99m	2.0581E-05	3.7367E-05	1.7200E-05	2.2889E+09	8.9357E-05	6.2397E-05	6.7033E-05	1.9892E-05
Ru-103	2.0818E-07	3.6524E-05	1.7344E-07	2.3103E+07	9.0386E-07	6.2800E-07	6.7592E-07	1.9258E-07
Ru-106	3.4939E-07	3.1822E-03	2.9102E-07	3.8764E+07	1.5169E-06	1.0536E-06	1.1341E-06	3.2312E-07
Te-127	2.5997E-06	1.5925E-05	2.1671E-06	2.8845E+08	1.1287E-05	7.8495E-06	8.4455E-06	2.4738E-06
Te-127m	2.5783E-06	1.0578E-03	2.1477E-06	2.8607E+08	1.1194E-05	7.7755E-06	8.3696E-06	2.3846E-06
Te-129	2.3808E-06	5.3944E-06	1.9852E-06	2.6273E+08	1.0337E-05	7.1924E-06	7.7364E-06	2.7128E-06
Te-129m	3.6207E-06	1.6556E-03	3.0166E-06	4.0182E+08	1.5720E-05	1.0923E-05	1.1756E-05	3.3494E-06
Te-131m	5.9614E-07	8.1907E-05	5.0058E-07	6.6707E+07	2.5882E-06	1.8212E-06	1.9510E-06	5.5630E-07



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Te-132	1.0024E-05	1.8313E-03	8.3753E-06	1.1158E+09	4.3522E-05	3.0378E-05	3.2640E-05	9.3024E-06
I-131	7.4809E-04	4.1757E-01	5.5090E-04	7.3386E+10	2.7339E-03	2.4447E-03	1.6458E-03	6.0417E-04
I-132	4.8869E-04	1.4221E-02	3.9662E-04	5.3132E+10	1.7856E-03	1.8414E-03	1.1937E-03	4.4098E-04
I-133	9.3445E-04	9.8022E-02	6.9494E-04	9.2627E+10	3.4149E-03	3.0981E-03	2.0776E-03	7.6301E-04
I-134	6.7410E-05	2.2451E-03	6.5087E-05	8.8040E+09	2.4634E-04	3.2650E-04	1.9822E-04	7.3588E-05
I-135	4.6387E-04	1.6770E-02	3.5328E-04	4.7153E+10	1.6952E-03	1.5925E-03	1.0581E-03	3.8896E-04
Xe-133	9.1843E-05	9.0150E-06	2.3861E-05	2.9202E+09	0.0000E+00	1.0071E-04	3.4774E-06	2.2617E-05
Xe-135	6.0129E-04	4.4877E-04	1.5571E-04	1.9032E+10	0.0000E+00	6.3481E-04	2.2678E-05	1.4750E-04
Cs-134	3.4804E-04	3.1248E-01	2.8989E-04	3.8613E+10	1.5111E-03	1.0495E-03	1.1297E-03	3.2186E-04
Cs-136	2.2856E-05	3.6867E-03	1.9052E-05	2.5378E+09	9.9232E-05	6.9004E-05	7.4246E-05	2.1155E-05
Cs-137	1.9374E-04	1.1805E-01	1.6137E-04	2.1495E+10	8.4117E-04	5.8420E-04	6.2888E-04	1.7917E-04
Ce-144	4.4238E-07	3.1547E-03	3.6848E-07	4.9081E+07	1.9207E-06	1.3340E-06	1.4360E-06	4.0912E-07
Kr-83m	1.4010E-04	1.3905E-08	3.8275E-05	4.7033E+09	0.0000E+00	1.6684E-04	5.7103E-06	3.6639E-05
Br-82	4.2474E-06	2.0909E-04	3.1445E-06	4.1901E+08	1.5522E-05	1.3989E-05	9.3978E-06	3.4507E-06
Br-83	2.0786E-05	3.5980E-05	1.6850E-05	2.2572E+09	7.5960E-05	7.8168E-05	5.0696E-05	1.8684E-05
Br-84	4.8215E-06	1.4090E-04	5.6355E-06	7.6989E+08	1.7620E-05	3.0664E-05	1.7375E-05	6.4934E-06
Rh-103m	2.0850E-07	2.0658E-08	1.7344E-07	2.2912E+07	9.0522E-07	6.2734E-07	6.7588E-07	2.4815E-07
Te-125m	2.5611E-07	3.5652E-05	2.1336E-07	2.8419E+07	1.1120E-06	7.7248E-07	8.3147E-07	2.3689E-07
Xe-133m	6.5593E-06	5.6576E-07	1.7051E-06	2.0868E+08	0.0000E+00	7.2046E-06	2.4855E-07	1.6164E-06
Xe-135m	1.8177E-03	2.7543E-03	5.5748E-04	6.7835E+10	0.0000E+00	3.2495E-03	8.6610E-05	5.4463E-04
Cs-134m	1.8116E-07	2.0033E-07	1.6429E-07	2.1984E+07	7.8653E-07	6.2597E-07	6.4072E-07	1.8413E-07
Cs-138	1.5117E-06	6.4687E-05	2.0453E-06	2.7922E+08	6.5634E-06	9.6907E-06	7.9957E-06	2.3862E-06
Total	6.0243E-03	1.0000E+00	0.0000E+00	0.0000E+00	1.2738E-02	1.5504E-02	8.4319E-03	3.6416E-03

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		2.6579E-03	0.0000E+00
Elemental I (Ci)		2.6504E-03	0.0000E+00
Organic I (Ci)		8.1971E-05	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		6.3403E-04	0.0000E+00
All Aerosols (kg)		2.4958E-09	0.0000E+00



	Deposition	Recirculating
Time (h) = 0.6670	Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	9.6855E-03
Organic I (Ci)	0.0000E+00	2.9955E-04
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	2.7527E-03
All Aerosols (kg)	0.0000E+00	1.0836E-08

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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Exclusion Area Boundary Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	2.7622E-03	1.5477E+00	1.0103E-01
Accumulated dose (rem)	4.5805E-03	2.4415E+00	1.5932E-01

Low Population Zone Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	3.7172E-04	2.0828E-01	1.3595E-02
Accumulated dose (rem)	6.1640E-04	3.2855E-01	2.1440E-02

Control Room Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	9.9198E-05	1.1350E+00	6.0388E-02	4.7806E-03
Accumulated dose (rem)	1.4573E-04	1.8008E+00	9.7835E-02	6.8965E-03



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RCS Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8503E+01 Atmosphere	1.3562E-04	3.7101E+01	4.9421E+15	5.5681E-04	2.9274E-02	9.9436E-03
Sr-89	2.8246E-01	1.2834E-05	5.6544E-01	7.5314E+13	8.4677E-06	4.4611E-04	1.5153E-04
Sr-90	2.6099E-02	3.7168E-05	5.2253E-02	6.9601E+12	7.8330E-07	4.1227E-05	1.4003E-05
Sr-91	1.0359E-01	2.4738E-07	2.2293E-01	2.9743E+13	3.5270E-06	1.7629E-04	5.9938E-05
Sr-92	3.1473E-02	6.8308E-08	8.1814E-02	1.0959E+13	1.4713E-06	6.5051E-05	2.2174E-05
Y-90	4.4991E-02	4.1815E-07	9.0479E-02	1.2052E+13	1.3610E-06	7.1397E-05	2.4253E-05
Y-91	3.5665E+00	1.9111E-04	7.1438E+00	9.5157E+14	1.0713E-04	5.6365E-03	1.9145E-03
Y-92	5.6862E-02	6.1538E-08	1.2238E-01	1.6303E+13	1.9194E-06	9.6756E-05	3.2892E-05
Y-93	3.6969E-02	9.5632E-08	7.9217E-02	1.0568E+13	1.2493E-06	6.2635E-05	2.1295E-05
Zr-95	5.0781E+00	1.3383E-04	1.0171E+01	1.3548E+15	1.5252E-04	8.0252E-03	2.7259E-03
Zr-97	7.6193E-02	3.8489E-07	1.5883E-01	2.1176E+13	2.4548E-06	1.2548E-04	4.2645E-05
Nb-95	7.3344E+00	4.9912E-05	1.4688E+01	1.9564E+15	2.2022E-04	1.1589E-02	3.9363E-03
Mo-99	4.2767E+02	1.9123E-03	8.6508E+02	1.1526E+17	1.3070E-02	6.8277E-01	2.3195E-01
Tc-99m	4.0976E+02	4.3014E-05	8.2821E+02	1.1023E+17	1.2505E-02	6.5365E-01	2.2205E-01
Ru-103	4.1946E+00	4.2309E-05	8.4040E+00	1.1194E+15	1.2605E-04	6.6308E-03	2.2523E-03
Ru-105	1.5013E-02	1.6519E-08	3.5158E-02	4.6993E+12	5.9034E-07	2.7872E-05	9.4875E-06
Ru-106	7.0459E+00	3.6880E-03	1.4108E+01	1.8791E+15	2.1149E-04	1.1131E-02	3.7808E-03
Rh-105	1.5667E-01	1.7371E-07	3.1911E-01	4.2521E+13	4.8462E-06	2.5191E-04	8.5585E-05
Te-127	5.2276E+01	1.8427E-05	1.0489E+02	1.3962E+16	1.5751E-03	8.2763E-02	2.8113E-02
Te-127m	5.1981E+01	1.2257E-03	1.0410E+02	1.3866E+16	1.5608E-03	8.2132E-02	2.7898E-02
Te-129	4.7839E+01	6.2393E-06	9.6043E+01	1.2718E+16	1.4429E-03	7.5784E-02	2.5742E-02
Te-129m	7.2939E+01	1.9176E-03	1.4615E+02	1.9468E+16	2.1923E-03	1.1532E-01	3.9170E-02
Te-131m	1.1658E+01	9.3400E-05	2.3877E+01	3.1820E+15	3.6415E-04	1.8852E-02	6.4055E-03
Te-132	1.9980E+02	2.1092E-03	4.0350E+02	5.3757E+16	6.0890E-03	3.1845E-01	1.0818E-01
I-131	1.0164E+04	3.7006E-01	2.0422E+04	2.7204E+18	3.0695E-01	1.6114E+01	5.4737E+00
I-132	4.5333E+03	1.0481E-02	1.2227E+04	1.6390E+18	2.2524E-01	9.7320E+00	3.3191E+00



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I-133	1.2203E+04	8.5131E-02	2.5246E+04	3.3652E+18	3.8796E-01	1.9939E+01	6.7758E+00
I-134	3.2118E+02	1.2720E-03	1.5425E+03	2.0896E+17	3.8146E-02	1.2445E+00	4.2756E-01
I-135	5.5067E+03	1.3888E-02	1.2238E+04	1.6339E+18	1.9814E-01	9.6871E+00	3.2951E+00
Xe-133	1.3425E+02	1.2561E-06	1.3907E+02	1.7945E+16	5.6497E-04	1.0642E-01	3.5663E-02
Xe-135	8.4290E+02	6.1780E-05	8.9665E+02	1.1572E+17	3.6790E-03	6.8706E-01	2.3025E-01
Cs-134	7.0190E+03	3.6215E-01	1.4053E+04	1.8719E+18	2.1067E-01	1.1088E+01	3.7662E+00
Cs-136	4.5961E+02	4.2662E-03	9.2217E+02	1.2284E+17	1.3847E-02	7.2763E-01	2.4716E-01
Cs-137	3.9075E+03	1.3682E-01	7.8231E+03	1.0420E+18	1.1727E-01	6.1724E+00	2.0965E+00
Ba-139	1.5241E-02	5.5478E-09	5.2046E-02	7.0088E+12	1.0956E-06	4.1672E-05	1.4256E-05
Ba-140	4.0746E-01	1.7140E-06	8.1759E-01	1.0891E+14	1.2277E-05	6.4512E-04	2.1913E-04
La-140	6.0050E-01	4.0279E-06	1.2088E+00	1.6101E+14	1.8196E-05	9.5390E-04	3.2403E-04
La-141	1.9810E-02	1.5631E-08	4.7082E-02	6.2931E+12	7.9393E-07	3.7334E-05	1.2709E-05
La-142	2.8725E-03	8.9781E-09	9.2331E-03	1.2420E+12	1.8816E-07	7.3819E-06	2.5233E-06
Ce-141	3.0434E+00	3.0029E-05	6.0984E+00	8.1233E+14	9.1479E-05	4.8117E-03	1.6344E-03
Ce-143	1.3981E-01	5.5178E-07	2.8575E-01	3.8080E+13	4.3513E-06	2.2560E-04	7.6652E-05
Ce-144	8.9208E+00	3.6561E-03	1.7862E+01	2.3792E+15	2.6778E-04	1.4093E-02	4.7870E-03
Pr-143	1.4109E+00	1.2561E-05	2.8301E+00	3.7699E+14	4.2486E-05	2.2331E-03	7.5852E-04
Kr-83m	1.3432E+02	1.5018E-09	1.7292E+02	2.2386E+16	9.3549E-04	1.3348E-01	4.4806E-02
Br-82	5.6489E+01	1.8328E-04	1.1530E+02	1.5364E+16	1.7539E-03	9.1024E-02	3.0926E-02
Br-83	1.9278E+02	2.6537E-05	5.1982E+02	6.9683E+16	9.5646E-03	4.1372E-01	1.4110E-01
Br-84	1.1515E+01	6.5019E-05	1.0878E+02	1.4888E+16	3.4112E-03	8.8909E-02	3.0773E-02
Rb-89	2.2430E-02	1.1757E-06	1.8449E+00	2.5922E+14	8.6193E-05	1.5630E-03	5.4972E-04
Y-91m	6.4879E-02	2.2796E-08	1.3606E-01	1.7995E+13	2.0922E-06	1.0749E-04	3.6527E-05
Nb-95m	3.9331E-02	1.0658E-07	7.8803E-02	1.0496E+13	1.1820E-06	6.2176E-05	2.1119E-05
Nb-97	6.1360E-03	3.5984E-09	1.5678E-02	2.0939E+12	2.8518E-07	1.2466E-05	4.2505E-06
Rh-103m	4.2094E+00	2.3979E-08	8.4211E+00	1.1134E+15	1.2602E-04	6.6439E-03	2.2566E-03
Te-125m	5.1619E+00	4.1305E-05	1.0340E+01	1.3773E+15	1.5506E-04	8.1581E-03	2.7710E-03
Te-131	2.6847E+00	2.1985E-06	5.7926E+00	7.6166E+14	9.4964E-05	4.5851E-03	1.5600E-03
Te-133	6.1644E-02	6.5577E-08	2.0700E-01	2.6479E+13	2.8579E-06	1.6253E-04	5.5128E-05
Te-133m	3.5931E-01	1.4758E-06	1.6450E+00	2.2266E+14	3.9851E-05	1.3258E-03	4.5522E-04
Te-134	3.1498E-01	6.1787E-07	1.9602E+00	2.6665E+14	5.3673E-05	1.5898E-03	5.4782E-04
Xe-131m	5.4829E-01	1.2659E-09	5.6204E-01	7.2500E+13	2.2487E-06	4.2990E-04	1.4405E-04
Xe-133m	9.5343E+00	7.8555E-08	9.9032E+00	1.2779E+15	4.0386E-05	7.5794E-03	2.5399E-03



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Xe-135m	8.9789E+02	1.9217E-04	1.6270E+03	2.0759E+17	1.4530E-02	1.2665E+00	4.2701E-01
Cs-134m	2.6568E+00	1.9779E-07	6.7845E+00	9.0848E+14	1.2064E-04	5.3918E-03	1.8375E-03
Cs-138	5.4504E+00	3.8072E-05	5.0352E+01	6.8896E+15	1.5688E-03	4.1139E-02	1.4236E-02
Ba-141	9.4045E-05	1.0592E-09	3.7160E-03	5.1787E+11	1.5747E-07	3.1111E-06	1.0895E-06
Total	4.7751E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.5756E+00	7.9697E+01	2.7091E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.3807E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.5401E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.0647E-06
Total I (Ci)	3.2729E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.3875E-06

RCS Compartment Group Inventory Distribution:

Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)		2.0194E+03	0.0000E+00
Elemental I (Ci)		3.2000E+04	0.0000E+00
Organic I (Ci)		9.8968E+02	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2742E+04	0.0000E+00
All Aerosols (kg)		5.0336E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5	Pathway 6	
					Outflow	Inflow	
Rb-86	Atmosphere	2.9005E-02	1.3599E-04	2.9377E-02	3.9131E+12	2.2389E-04	2.9274E-02
Sr-89		4.4276E-04	1.2879E-05	4.4806E-04	5.9681E+10	3.4147E-06	4.4611E-04
Sr-90		4.0911E-05	3.7288E-05	4.1395E-05	5.5138E+09	3.1547E-07	4.1227E-05
Sr-91		1.6238E-04	2.4213E-07	1.7230E-04	2.2990E+10	1.3170E-06	1.7629E-04
Sr-92		4.9336E-05	6.2698E-08	5.9297E-05	7.9459E+09	4.5660E-07	6.5051E-05
Y-90		7.0525E-05	4.1887E-07	7.1568E-05	9.5334E+09	5.4553E-07	7.1397E-05
Y-91		5.5906E-03	1.9170E-04	5.6584E-03	7.5371E+11	4.3124E-05	5.6365E-03



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Y-92	8.9134E-05	6.0386E-08	9.4823E-05	1.2638E+10	7.2486E-07	9.6756E-05
Y-93	5.7951E-05	9.3743E-08	6.1317E-05	8.1806E+09	4.6861E-07	6.2635E-05
Zr-95	7.9601E-03	1.3425E-04	8.0565E-03	1.0731E+12	6.1400E-05	8.0252E-03
Zr-97	1.1944E-04	3.8085E-07	1.2410E-04	1.6547E+10	9.4740E-07	1.2548E-04
Nb-95	1.1497E-02	5.0070E-05	1.1635E-02	1.5498E+12	8.8670E-05	1.1589E-02
Mo-99	6.7038E-01	1.9118E-03	6.8292E-01	9.0987E+13	5.2068E-03	6.8277E-01
Tc-99m	6.4231E-01	4.3015E-05	6.5399E-01	8.7046E+13	4.9861E-03	6.5365E-01
Ru-103	6.5752E-03	4.2436E-05	6.6560E-03	8.8660E+11	5.0727E-05	6.6308E-03
Ru-105	2.3533E-05	1.5710E-08	2.6401E-05	3.5296E+09	2.0249E-07	2.7872E-05
Ru-106	1.1045E-02	3.6999E-03	1.1176E-02	1.4886E+12	8.5171E-05	1.1131E-02
Rh-105	2.4558E-04	1.7326E-07	2.5132E-04	3.3489E+10	1.9167E-06	2.5191E-04
Te-127	8.1945E-02	1.8473E-05	8.3032E-02	1.1053E+13	6.3284E-04	8.2763E-02
Te-127m	8.1482E-02	1.2296E-03	8.2459E-02	1.0984E+13	6.2843E-04	8.2132E-02
Te-129	7.4990E-02	6.2536E-06	7.6012E-02	1.0070E+13	5.7936E-04	7.5784E-02
Te-129m	1.1434E-01	1.9233E-03	1.1575E-01	1.5418E+13	8.8217E-04	1.1532E-01
Te-131m	1.8275E-02	9.2980E-05	1.8769E-02	2.5014E+12	1.4318E-04	1.8852E-02
Te-132	3.1319E-01	2.1098E-03	3.1871E-01	4.2461E+13	2.4298E-03	3.1845E-01
I-131	1.5933E+01	3.7082E-01	1.6159E+01	2.1525E+15	1.2316E-01	1.6114E+01
I-132	7.1062E+00	9.4978E-03	8.7490E+00	1.1732E+15	6.7460E-02	9.7320E+00
I-133	1.9129E+01	8.4457E-02	1.9777E+01	2.6364E+15	1.5093E-01	1.9939E+01
I-134	5.0346E-01	9.5295E-04	9.1249E-01	1.2378E+14	7.1688E-03	1.2445E+00
I-135	8.6320E+00	1.3446E-02	9.3556E+00	1.2493E+15	7.1606E-02	9.6871E+00
Xe-133	2.1044E-01	1.6670E-06	1.4573E-01	1.8949E+13	1.0777E-03	1.0642E-01
Xe-135	1.3213E+00	8.1604E-05	9.3522E-01	1.2168E+14	6.9284E-03	6.8706E-01
Cs-134	1.1003E+01	3.6332E-01	1.1133E+01	1.4829E+15	8.4844E-02	1.1088E+01
Cs-136	7.2046E-01	4.2769E-03	7.3001E-01	9.7242E+13	5.5639E-03	7.2763E-01
Cs-137	6.1251E+00	1.3726E-01	6.1975E+00	8.2551E+14	4.7231E-02	6.1724E+00
Ba-139	2.3891E-05	4.6463E-09	3.4419E-05	4.6387E+09	2.6758E-07	4.1672E-05
Ba-140	6.3872E-04	1.7183E-06	6.4721E-04	8.6213E+10	4.9328E-06	6.4512E-04
La-140	9.4130E-04	4.0335E-06	9.5584E-04	1.2732E+11	7.2861E-06	9.5390E-04
La-141	3.1054E-05	1.4814E-08	3.5234E-05	4.7117E+09	2.7039E-07	3.7334E-05
La-142	4.5027E-06	7.6723E-09	6.2304E-06	8.3865E+08	4.8338E-08	7.3819E-06
Ce-141	4.7707E-03	3.0117E-05	4.8298E-03	6.4334E+11	3.6809E-05	4.8117E-03



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Ce-143	2.1917E-04	5.4969E-07	2.2478E-04	2.9956E+10	1.7146E-06	2.2560E-04
Ce-144	1.3984E-02	3.6678E-03	1.4150E-02	1.8848E+12	1.0784E-04	1.4093E-02
Pr-143	2.2117E-03	1.2593E-05	2.2406E-03	2.9846E+11	1.7077E-05	2.2331E-03
Kr-83m	2.1055E-01	1.8803E-09	1.7095E-01	2.2353E+13	1.2801E-03	1.3348E-01
Br-82	8.8549E-02	1.8267E-04	9.0739E-02	1.2092E+13	6.9208E-04	9.1024E-02
Br-83	3.0220E-01	2.4057E-05	3.7211E-01	4.9904E+13	2.8692E-03	4.1372E-01
Br-84	1.8050E-02	3.9578E-05	5.2285E-02	7.1743E+12	4.1796E-04	8.8909E-02
Rb-89	3.5160E-05	4.2348E-07	5.2475E-04	7.4165E+10	4.3624E-06	1.5630E-03
Y-91m	1.0170E-04	2.2570E-08	1.0637E-04	1.4080E+10	8.1227E-07	1.0749E-04
Nb-95m	6.1652E-05	1.0689E-07	6.2412E-05	8.3128E+09	4.7566E-07	6.2176E-05
Nb-97	9.6185E-06	3.2964E-09	1.1341E-05	1.5144E+09	8.7260E-08	1.2466E-05
Rh-103m	6.5983E-03	2.4071E-08	6.6749E-03	8.8298E+11	5.0869E-05	6.6439E-03
Te-125m	8.0916E-03	4.1433E-05	8.1898E-03	1.0909E+12	6.2416E-05	8.1581E-03
Te-131	4.2084E-03	2.1304E-06	4.4323E-03	5.8277E+11	3.3876E-05	4.5851E-03
Te-133	9.6630E-05	6.1294E-08	1.5278E-04	1.9991E+10	1.1878E-06	1.6253E-04
Te-133m	5.6323E-04	1.1227E-06	9.8817E-04	1.3393E+11	7.7525E-06	1.3258E-03
Te-134	4.9374E-04	4.2650E-07	1.0684E-03	1.4560E+11	8.4539E-06	1.5898E-03
Xe-131m	8.5948E-04	1.6846E-09	5.9059E-04	7.6761E+10	4.3647E-06	4.2990E-04
Xe-133m	1.4946E-02	1.0417E-07	1.0370E-02	1.3485E+12	7.6700E-05	7.5794E-03
Xe-135m	1.4075E+00	2.1367E-04	1.4284E+00	1.8495E+14	1.0863E-02	1.2665E+00
Cs-134m	4.1647E-03	1.8264E-07	4.9470E-03	6.6266E+11	3.8068E-05	5.3918E-03
Cs-138	8.5438E-03	2.3327E-05	2.4361E-02	3.3415E+12	1.9464E-04	4.1139E-02
Ba-141	1.4742E-07	4.4544E-10	1.2340E-06	1.7279E+08	1.0140E-08	3.1111E-06
Total	7.4852E+01	1.0000E+00	0.0000E+00	0.0000E+00	5.9881E-01	7.9697E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	2.3430E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.3828E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	2.6592E-09
Total I (Ci)	5.1304E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.4655E-09

Intact Steam Generators Compartment Group Inventory Distribution:



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Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)		3.1656E+00	0.0000E+00
Elemental I (Ci)		5.0161E+01	0.0000E+00
Organic I (Ci)		1.5514E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.9974E+01	0.0000E+00
All Aerosols (kg)		7.8903E-05	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	8.7291E-07	1.1165E-04	1.9338E-06	2.5760E+08	1.0114E-05	4.3882E-06	8.7400E-06	2.1253E-06
Y-91	1.6825E-07	1.5733E-04	3.7233E-07	4.9595E+07	1.9495E-06	8.4451E-07	1.6828E-06	4.0917E-07
Zr-95	2.3956E-07	1.1017E-04	5.3012E-07	7.0612E+07	2.7757E-06	1.2024E-06	2.3959E-06	5.8256E-07
Nb-95	3.4601E-07	4.1088E-05	7.6550E-07	1.0197E+08	4.0091E-06	1.7361E-06	3.4598E-06	8.4175E-07
Mo-99	2.0176E-05	1.5755E-03	4.5123E-05	6.0117E+09	2.3377E-04	1.0276E-04	2.0388E-04	4.9611E-05
Tc-99m	1.9331E-05	3.5436E-05	4.3197E-05	5.7489E+09	2.2398E-04	9.8335E-05	1.9519E-04	5.3039E-05
Ru-103	1.9788E-07	3.4831E-05	4.3802E-07	5.8345E+07	2.2928E-06	9.9360E-07	1.9797E-06	4.8135E-07
Ru-106	3.3240E-07	3.0360E-03	7.3525E-07	9.7936E+07	3.8513E-06	1.6674E-06	3.3231E-06	8.0797E-07
Te-127	2.4662E-06	1.5172E-05	5.4676E-06	7.2779E+08	2.8575E-05	1.2411E-05	2.4710E-05	6.4858E-06
Te-127m	2.4523E-06	1.0090E-03	5.4254E-06	7.2266E+08	2.8413E-05	1.2305E-05	2.4521E-05	5.9620E-06
Te-129	2.2569E-06	5.1374E-06	5.0067E-06	6.6296E+08	2.6149E-05	1.1368E-05	2.2627E-05	9.0969E-06
Te-129m	3.4410E-06	1.5787E-03	7.6177E-06	1.0147E+09	3.9869E-05	1.7281E-05	3.4429E-05	8.3714E-06
Te-131m	5.5000E-07	7.7027E-05	1.2467E-06	1.6614E+08	6.3726E-06	2.8532E-06	5.6311E-06	1.3715E-06
Te-132	9.4257E-06	1.7375E-03	2.1044E-05	2.8036E+09	1.0921E-04	4.7891E-05	9.5090E-05	2.3135E-05
I-131	7.1266E-04	4.3065E-01	1.5046E-03	2.0043E+11	7.5188E-03	5.0988E-03	4.8113E-03	1.6451E-03
I-132	3.1760E-04	1.2334E-02	9.1097E-04	1.2212E+11	3.3428E-03	3.2919E-03	2.9240E-03	1.0168E-03
I-133	8.5561E-04	9.9185E-02	1.8622E-03	2.4822E+11	9.0270E-03	6.3508E-03	5.9571E-03	2.0389E-03
I-134	2.2518E-05	1.5302E-03	1.1748E-04	1.5913E+10	2.3752E-04	4.7735E-04	3.7822E-04	1.3305E-04
I-135	3.8610E-04	1.6227E-02	9.0527E-04	1.2086E+11	4.0735E-03	3.1355E-03	2.8985E-03	9.9438E-04
Xe-133	5.2236E-04	6.0378E-05	4.2320E-04	5.4231E+10	0.0000E+00	8.6709E-04	3.1109E-05	4.3576E-04
Xe-135	3.2404E-03	2.9334E-03	2.6954E-03	3.4572E+11	0.0000E+00	5.2833E-03	2.0084E-04	2.7811E-03



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Cs-134	3.3113E-04	2.9812E-01	7.3242E-04	9.7558E+10	3.8367E-03	1.6610E-03	3.3103E-03	8.0485E-04
Cs-136	2.1683E-05	3.5125E-03	4.8069E-05	6.4031E+09	2.5123E-04	1.0910E-04	2.1724E-04	5.2829E-05
Cs-137	1.8434E-04	1.1263E-01	4.0772E-04	5.4308E+10	2.1359E-03	9.2461E-04	1.8428E-03	4.4804E-04
Ce-141	1.4358E-07	2.4721E-05	3.1785E-07	4.2339E+07	1.6635E-06	7.2107E-07	1.4366E-06	3.4931E-07
Ce-144	4.2085E-07	3.0097E-03	9.3093E-07	1.2400E+08	4.8762E-06	2.1112E-06	4.2075E-06	1.0230E-06
Kr-83m	5.3222E-04	7.0096E-08	5.1097E-04	6.5773E+10	0.0000E+00	1.1272E-03	3.9115E-05	5.3208E-04
Br-82	3.9607E-06	2.1342E-04	8.4999E-06	1.1327E+09	4.1786E-05	2.8904E-05	2.7186E-05	9.3007E-06
Br-83	1.3517E-05	3.1241E-05	3.8744E-05	5.1934E+09	1.4261E-04	1.3987E-04	1.2430E-04	4.2909E-05
Br-84	8.0737E-07	7.9999E-05	8.4733E-06	1.1595E+09	8.5180E-06	3.9012E-05	2.7339E-05	9.7847E-06
Rh-103m	1.9858E-07	1.9736E-08	4.3880E-07	5.8011E+07	2.3009E-06	9.9401E-07	1.9834E-06	8.7531E-07
Te-125m	2.4352E-07	3.4004E-05	5.3890E-07	7.1782E+07	2.8216E-06	1.2223E-06	2.4356E-06	5.9221E-07
Te-131	1.2666E-07	1.8287E-06	3.0504E-07	4.0117E+07	1.4675E-06	7.3607E-07	1.3725E-06	9.0102E-07
Xe-131m	2.1424E-06	6.1117E-08	1.7179E-06	2.2002E+08	0.0000E+00	3.5338E-06	1.2565E-07	1.7675E-06
Xe-133m	3.7144E-05	3.7769E-06	3.0144E-05	3.8628E+09	0.0000E+00	6.1914E-05	2.2156E-06	3.1042E-05
Xe-135m	4.8430E-03	9.7971E-03	5.2512E-03	6.6242E+11	0.0000E+00	2.1175E-02	3.7365E-04	5.4910E-03
Cs-134m	1.2534E-07	1.6602E-07	3.6054E-07	4.8274E+07	1.4522E-06	8.9999E-07	1.6180E-06	4.0078E-07
Cs-138	2.5713E-07	3.5092E-05	2.9382E-06	4.0177E+08	2.9793E-06	1.0994E-05	1.2646E-05	3.4212E-06
Total	1.2091E-02	1.0000E+00	0.0000E+00	0.0000E+00	3.1357E-02	5.0110E-02	2.3822E-02	1.6639E-02

Control Room Compartment Group Inventory Distribution:

Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)		9.1772E-03	0.0000E+00
Elemental I (Ci)		2.2434E-03	0.0000E+00
Organic I (Ci)		6.9383E-05	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		6.0112E-04	0.0000E+00
All Aerosols (kg)		2.3746E-09	0.0000E+00
Time (h) =	2.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	2.3661E-02



Organic I (Ci)	0.0000E+00	7.3177E-04
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	6.9650E-03
All Aerosols (kg)	0.0000E+00	2.7514E-08

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:30

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Exclusion Area Boundary Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		9.6380E-03	7.1444E+00	4.7074E-01
Accumulated dose (rem)		1.4218E-02	9.5858E+00	6.3006E-01

Low Population Zone Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		6.0936E-04	4.5170E-01	2.9762E-02
Accumulated dose (rem)		1.2258E-03	7.8025E-01	5.1202E-02

Control Room Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		5.2580E-04	3.4993E+00	1.8826E-01	2.8411E-02
Accumulated dose (rem)		6.7153E-04	5.3001E+00	2.8610E-01	3.5307E-02

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000



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Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8215E+01	1.3794E-04	1.4725E+02	1.9614E+16	5.5681E-04	1.1783E-01	3.9464E-02
Sr-89	2.7969E-01	1.3099E-05	2.2518E+00	2.9994E+14	8.4677E-06	1.8020E-03	6.0348E-04
Sr-90	2.5931E-02	3.7980E-05	2.0834E-01	2.7751E+13	7.8330E-07	1.6672E-04	5.5834E-05
Sr-91	6.6434E-02	2.0586E-07	7.2384E-01	9.6586E+13	3.5270E-06	5.8048E-04	1.9467E-04
Sr-92	6.7401E-03	3.7981E-08	1.7749E-01	2.3786E+13	1.4713E-06	1.4296E-04	4.8145E-05
Y-90	4.3522E-02	4.2159E-07	3.5593E-01	4.7413E+13	1.3610E-06	2.8487E-04	9.5409E-05
Y-91	3.5334E+00	1.9501E-04	2.8443E+01	3.7886E+15	1.0713E-04	2.2761E-02	7.6226E-03
Y-92	2.6997E-02	4.7590E-08	3.6926E-01	4.9265E+13	1.9194E-06	2.9643E-04	9.9451E-05
Y-93	2.4334E-02	8.0499E-08	2.6018E-01	3.4713E+13	1.2493E-06	2.0862E-04	6.9958E-05
Zr-95	5.0319E+00	1.3657E-04	4.0500E+01	5.3946E+15	1.5252E-04	3.2409E-02	1.0854E-02
Zr-97	5.9190E-02	3.4929E-07	5.6242E-01	7.4988E+13	2.4548E-06	4.5062E-04	1.5102E-04
Nb-95	7.2764E+00	5.0965E-05	5.8519E+01	7.7947E+15	2.2022E-04	4.6828E-02	1.5683E-02
Mo-99	3.9897E+02	1.8941E-03	3.3433E+03	4.4544E+17	1.3070E-02	2.6762E+00	8.9644E-01
Tc-99m	3.8352E+02	4.2687E-05	3.2069E+03	4.2687E+17	1.2505E-02	2.5670E+00	8.5985E-01
Ru-103	4.1493E+00	4.3140E-05	3.3434E+01	4.4535E+15	1.2605E-04	2.6756E-02	8.9605E-03
Ru-105	5.8461E-03	1.1229E-08	9.3246E-02	1.2467E+13	5.9034E-07	7.4939E-05	2.5177E-05
Ru-106	6.9974E+00	3.7678E-03	5.6236E+01	7.4907E+15	2.1149E-04	4.5001E-02	1.5071E-02
Rh-105	1.3946E-01	1.6833E-07	1.2065E+00	1.6078E+14	4.8462E-06	9.6602E-04	3.2362E-04
Te-127	5.1386E+01	1.8719E-05	4.1575E+02	5.5345E+16	1.5751E-03	3.3271E-01	1.1143E-01
Te-127m	5.1565E+01	1.2515E-03	4.1472E+02	5.5242E+16	1.5608E-03	3.3187E-01	1.1115E-01
Te-129	4.7169E+01	6.3414E-06	3.8087E+02	5.0471E+16	1.4429E-03	3.0480E-01	1.0208E-01
Te-129m	7.2099E+01	1.9545E-03	5.8124E+02	7.7423E+16	2.1923E-03	4.6514E-01	1.5578E-01
Te-131m	1.0084E+01	8.9177E-05	8.8951E+01	1.1855E+16	3.6415E-04	7.1231E-02	2.3865E-02
Te-132	1.8823E+02	2.0992E-03	1.5670E+03	2.0876E+17	6.0890E-03	1.2543E+00	4.2012E-01
I-131	9.8840E+03	3.7412E-01	8.0556E+04	1.0731E+19	3.0695E-01	6.4470E+01	2.1592E+01
I-132	8.9927E+02	5.5617E-03	2.5315E+04	3.3939E+18	2.2524E-01	2.0400E+01	6.8750E+00
I-133	9.9275E+03	7.8945E-02	9.1346E+04	1.2177E+19	3.8796E-01	7.3172E+01	2.4520E+01
I-134	2.7851E+00	4.0941E-04	1.9371E+03	2.6257E+17	3.8146E-02	1.5745E+00	5.3755E-01
I-135	2.9164E+03	1.0652E-02	3.6625E+04	4.8908E+18	1.9814E-01	2.9397E+01	9.8650E+00
Xe-133	4.7638E+02	4.6816E-06	2.0223E+03	2.6726E+17	5.6497E-04	1.6067E+00	5.3577E-01
Xe-135	1.9955E+03	1.8178E-04	1.0294E+04	1.3616E+18	3.6790E-03	8.1960E+00	2.7332E+00



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Cs-134	6.9724E+03	3.7003E-01	5.6026E+04	7.4627E+18	2.1067E-01	4.4833E+01	1.5015E+01
Cs-136	4.5066E+02	4.3308E-03	3.6527E+03	4.8656E+17	1.3847E-02	2.9231E+00	9.7900E-01
Cs-137	3.8823E+03	1.3981E-01	3.1192E+04	4.1548E+18	1.1727E-01	2.4960E+01	8.3592E+00
Ba-139	7.4100E-04	2.1981E-09	8.0459E-02	1.0841E+13	1.0956E-06	6.5095E-05	2.2064E-05
Ba-140	3.9938E-01	1.7397E-06	3.2378E+00	4.3130E+14	1.2277E-05	2.5912E-03	8.6782E-04
La-140	5.7756E-01	4.0493E-06	4.7416E+00	6.3159E+14	1.8196E-05	3.7949E-03	1.2710E-03
La-141	6.8342E-03	1.0204E-08	1.1993E-01	1.6039E+13	7.9393E-07	9.6418E-05	3.2404E-05
La-142	1.9226E-04	3.7665E-09	1.5114E-02	2.0341E+12	1.8816E-07	1.2217E-05	4.1350E-06
Ce-141	3.0079E+00	3.0604E-05	2.4251E+01	3.2303E+15	9.1479E-05	1.9407E-02	6.4994E-03
Ce-143	1.2247E-01	5.3004E-07	1.0710E+00	1.4273E+14	4.3513E-06	8.5761E-04	2.8732E-04
Ce-144	8.8582E+00	3.7349E-03	7.1198E+01	9.4835E+15	2.6778E-04	5.6974E-02	1.9081E-02
Pr-143	1.3858E+00	1.2762E-05	1.1219E+01	1.4945E+15	4.2486E-05	8.9786E-03	3.0070E-03
Kr-83m	7.3172E+01	1.9573E-09	8.7934E+02	1.1645E+17	9.3549E-04	7.0386E-01	2.3493E-01
Br-82	4.9889E+01	1.7676E-04	4.3386E+02	5.7817E+16	1.7539E-03	3.4739E-01	1.1638E-01
Br-83	3.3616E+01	1.3903E-05	1.0626E+03	1.4251E+17	9.5646E-03	8.5651E-01	2.8869E-01
Br-84	4.4729E-03	1.7968E-05	1.1729E+02	1.6060E+16	3.4112E-03	9.6211E-02	3.3208E-02
Rb-89	1.6534E-09	3.0257E-07	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	4.2353E-02	1.9500E-08	4.5411E-01	6.0162E+13	2.0922E-06	3.6409E-04	1.2206E-04
Nb-95m	3.8900E-02	1.0866E-07	3.1348E-01	4.1754E+13	1.1820E-06	2.5086E-04	8.4014E-05
Nb-97	3.4486E-03	2.4551E-09	4.1737E-02	5.5601E+12	2.8518E-07	3.3524E-05	1.1270E-05
Rh-103m	4.1665E+00	2.4487E-08	3.3553E+01	4.4403E+15	1.2602E-04	2.6850E-02	8.9919E-03
Te-125m	5.1135E+00	4.2146E-05	4.1165E+01	5.4832E+15	1.5506E-04	3.2941E-02	1.1032E-02
Te-131	2.3016E+00	2.0097E-06	2.0661E+01	2.7164E+15	9.4964E-05	1.6554E-02	5.5495E-03
Te-133	6.8069E-04	2.3295E-08	2.8691E-01	3.7092E+13	2.8579E-06	2.2921E-04	7.7357E-05
Te-133m	3.9493E-03	4.8490E-07	2.1089E+00	2.8562E+14	3.9851E-05	1.7130E-03	5.8428E-04
Te-134	7.9962E-04	1.8321E-07	2.2679E+00	3.0866E+14	5.3673E-05	1.8497E-03	6.3446E-04
Xe-131m	2.1401E+00	5.0258E-09	8.7064E+00	1.1502E+15	2.2487E-06	6.9136E-03	2.3053E-03
Xe-133m	3.2990E+01	2.8802E-07	1.4167E+02	1.8723E+16	4.0386E-05	1.1257E-01	3.7538E-02
Xe-135m	4.7770E+02	1.7017E-04	5.6212E+03	7.2951E+17	1.4530E-02	4.4945E+00	1.5030E+00
Cs-134m	6.2914E-01	1.1342E-07	1.5180E+01	2.0334E+15	1.2064E-04	1.2222E-02	4.1143E-03
Cs-138	2.3339E-03	1.0548E-05	5.4433E+01	7.4510E+15	1.5688E-03	4.4638E-02	1.5402E-02
Ba-141	1.0910E-10	2.7432E-10	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	3.9352E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.5756E+00	2.8668E+02	9.6086E+01



Dose Equivalent (Ci/cc) I-131 (Thyroid)	8.8080E-07
Dose Equivalent (Ci/cc) I-131 (CEDE)	8.9152E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	9.7069E-07
Total I (Ci)	2.3630E+04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.6648E-06

RCS Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	3.0579E+03	0.0000E+00
Elemental I (Ci)	2.3002E+04	0.0000E+00
Organic I (Ci)	7.1141E+02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2581E+04	0.0000E+00
All Aerosols (kg)	5.0011E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	1.1398E-01	1.3891E-04	4.6325E-01	6.1708E+13	3.1409E-03	1.1783E-01
Sr-89	1.7501E-03	1.3210E-05	7.0948E-03	9.4504E+11	4.8099E-05	1.8020E-03
Sr-90	1.6226E-04	3.8326E-05	6.5681E-04	8.7487E+10	4.4527E-06	1.6672E-04
Sr-91	4.1570E-04	1.8769E-07	2.0619E-03	2.7514E+11	1.4063E-05	5.8048E-04
Sr-92	4.2175E-05	2.6115E-08	3.8128E-04	5.1110E+10	2.6471E-06	1.4296E-04
Y-90	2.7233E-04	4.2289E-07	1.1154E-03	1.4858E+11	7.5644E-06	2.8487E-04
Y-91	2.2110E-02	1.9666E-04	8.9611E-02	1.1936E+13	6.0752E-04	2.2761E-02
Y-92	1.6893E-04	4.1155E-08	9.9764E-04	1.3320E+11	6.8299E-06	2.9643E-04
Y-93	1.5227E-04	7.3858E-08	7.4578E-04	9.9507E+10	5.0847E-06	2.0862E-04
Zr-95	3.1487E-02	1.3774E-04	1.2760E-01	1.6997E+13	8.6509E-04	3.2409E-02
Zr-97	3.7038E-04	3.3329E-07	1.6766E-03	2.2355E+11	1.1404E-05	4.5062E-04
Nb-95	4.5531E-02	5.1412E-05	1.8442E-01	2.4565E+13	1.2503E-03	4.6828E-02



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Mo-99	2.4966E+00	1.8847E-03	1.0393E+01	1.3847E+15	7.0516E-02	2.6762E+00
Tc-99m	2.3998E+00	4.2509E-05	9.9772E+00	1.3281E+15	6.7692E-02	2.5670E+00
Ru-103	2.5964E-02	4.3490E-05	1.0530E-01	1.4027E+13	7.1391E-04	2.6756E-02
Ru-105	3.6582E-05	9.0377E-09	2.3447E-04	3.1353E+10	1.6115E-06	7.4939E-05
Ru-106	4.3786E-02	3.8017E-03	1.7727E-01	2.3613E+13	1.2018E-03	4.5001E-02
Rh-105	8.7263E-04	1.6577E-07	3.7120E-03	4.9466E+11	2.5202E-05	9.6602E-04
Te-127	3.2155E-01	1.8842E-05	1.3074E+00	1.7404E+14	8.8643E-03	3.3271E-01
Te-127m	3.2267E-01	1.2625E-03	1.3070E+00	1.7409E+14	8.8607E-03	3.3187E-01
Te-129	2.9516E-01	6.3858E-06	1.1982E+00	1.5881E+14	8.1240E-03	3.0480E-01
Te-129m	4.5115E-01	1.9701E-03	1.8303E+00	2.4381E+14	1.2409E-02	4.6514E-01
Te-131m	6.3101E-02	8.7228E-05	2.7182E-01	3.6227E+13	1.8462E-03	7.1231E-02
Te-132	1.1779E+00	2.0934E-03	4.8818E+00	6.5040E+14	3.3119E-02	1.2543E+00
I-131	6.1849E+01	3.7573E-01	2.5275E+02	3.3669E+16	1.7139E+00	6.4470E+01
I-132	5.6271E+00	3.6813E-03	5.2350E+01	7.0186E+15	3.6427E-01	2.0400E+01
I-133	6.2121E+01	7.6140E-02	2.7524E+02	3.6692E+16	1.8710E+00	7.3172E+01
I-134	1.7428E-02	1.2964E-04	1.9164E+00	2.6017E+14	1.4169E-02	1.5745E+00
I-135	1.8249E+01	9.2680E-03	9.9552E+01	1.3295E+16	6.8094E-01	2.9397E+01
Xe-133	2.9809E+00	6.2068E-06	8.3765E+00	1.1094E+15	5.5993E-02	1.6067E+00
Xe-135	1.2487E+01	2.2971E-04	4.0640E+01	5.3896E+15	2.7262E-01	8.1960E+00
Cs-134	4.3629E+01	3.7338E-01	1.7662E+02	2.3526E+16	1.1973E+00	4.4833E+01
Cs-136	2.8200E+00	4.3575E-03	1.1482E+01	1.5294E+15	7.7851E-02	2.9231E+00
Cs-137	2.4294E+01	1.4108E-01	9.8336E+01	1.3098E+16	6.6664E-01	2.4960E+01
Ba-139	4.6368E-06	1.0240E-09	1.1711E-04	1.5792E+10	8.3655E-07	6.5095E-05
Ba-140	2.4991E-03	1.7503E-06	1.0177E-02	1.3556E+12	6.9004E-05	2.5912E-03
La-140	3.6140E-03	4.0566E-06	1.4840E-02	1.9767E+12	1.0065E-04	3.7949E-03
La-141	4.2764E-05	7.9766E-09	2.9287E-04	3.9181E+10	2.0167E-06	9.6418E-05
La-142	1.2030E-06	1.9029E-09	2.3855E-05	3.2128E+09	1.6931E-07	1.2217E-05
Ce-141	1.8822E-02	3.0847E-05	7.6365E-02	1.0172E+13	5.1773E-04	1.9407E-02
Ce-143	7.6634E-04	5.1994E-07	3.2823E-03	4.3743E+11	2.2289E-05	8.5761E-04
Ce-144	5.5430E-02	3.7684E-03	2.2443E-01	2.9894E+13	1.5215E-03	5.6974E-02
Pr-143	8.6713E-03	1.2845E-05	3.5280E-02	4.6995E+12	2.3921E-04	8.9786E-03
Kr-83m	4.5787E-01	1.9784E-09	2.7768E+00	3.6971E+14	1.8895E-02	7.0386E-01
Br-82	3.1218E-01	1.7371E-04	1.3321E+00	1.7752E+14	9.0449E-03	3.4739E-01



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Br-83	2.1035E-01	9.0481E-06	2.1605E+00	2.8985E+14	1.5055E-02	8.5651E-01
Br-84	2.7989E-05	3.4779E-06	7.0927E-02	9.7400E+12	5.5117E-04	9.6211E-02
Rb-89	1.0346E-11	2.8184E-08	5.3912E-04	7.6214E+10	4.4724E-06	1.5700E-03
Y-91m	2.6502E-04	1.7976E-08	1.3079E-03	1.7339E+11	8.9163E-06	3.6409E-04
Nb-95m	2.4341E-04	1.0954E-07	9.8728E-04	1.3150E+11	6.6934E-06	2.5086E-04
Nb-97	2.1579E-05	2.0434E-09	1.0853E-04	1.4435E+10	7.4324E-07	3.3524E-05
Rh-103m	2.6072E-02	2.4697E-08	1.0572E-01	1.3996E+13	7.1676E-04	2.6850E-02
Te-125m	3.1998E-02	4.2502E-05	1.2969E-01	1.7275E+13	8.7924E-04	3.2941E-02
Te-131	1.4402E-02	1.9374E-06	6.2224E-02	8.1809E+12	4.2282E-04	1.6554E-02
Te-133	4.2594E-06	9.3408E-09	3.5941E-04	4.7436E+10	2.6260E-06	2.2921E-04
Te-133m	2.4713E-05	1.6099E-07	2.1874E-03	2.9670E+11	1.6100E-05	1.7130E-03
Te-134	5.0035E-06	4.6477E-08	1.7974E-03	2.4514E+11	1.3586E-05	1.8497E-03
Xe-131m	1.3392E-02	6.7356E-09	3.6454E-02	4.8258E+12	2.4348E-04	6.9136E-03
Xe-133m	2.0643E-01	3.8075E-07	5.8511E-01	7.7495E+13	3.9120E-03	1.1257E-01
Xe-135m	2.9892E+00	1.5701E-04	1.6203E+01	2.1157E+15	1.1067E-01	4.4945E+00
Cs-134m	3.9368E-03	8.0105E-08	3.3495E-02	4.4880E+12	2.3213E-04	1.2222E-02
Cs-138	1.4604E-05	2.0673E-06	3.3329E-02	4.5753E+12	2.5867E-04	4.4638E-02
Ba-141	6.8270E-13	3.0620E-11	1.3095E-06	1.8344E+08	1.0705E-08	3.1462E-06
Total	2.4625E+02	1.0000E+00	0.0000E+00	0.0000E+00	7.2975E+00	2.8668E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	8.7820E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	8.8890E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	9.6783E-09
Total I (Ci)	1.4786E+02
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.6599E-08

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	8.0000	Atmosphere	Sump
Noble gases (Ci)	1.9135E+01	0.0000E+00	
Elemental I (Ci)	1.4393E+02	0.0000E+00	
Organic I (Ci)	4.4516E+00	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	



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All Aerosols (Ci) 7.8725E+01 0.0000E+00
All Aerosols (kg) 3.1294E-04 0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	6.1376E-07	1.0800E-04	5.6157E-06	7.4805E+08	2.9298E-05	9.5519E-06	2.6715E-05	6.1476E-06
Y-91	1.1906E-07	1.5261E-04	1.0843E-06	1.4443E+08	5.6835E-06	1.8430E-06	5.1584E-06	1.1871E-06
Zr-95	1.6955E-07	1.0688E-04	1.5439E-06	2.0565E+08	8.0938E-06	2.6242E-06	7.3451E-06	1.6900E-06
Nb-95	2.4518E-07	3.9881E-05	2.2307E-06	2.9712E+08	1.1704E-05	3.7909E-06	1.0612E-05	2.4479E-06
Mo-99	1.3444E-05	1.4883E-03	1.2797E-04	1.7050E+10	6.4175E-04	2.1896E-04	6.0843E-04	1.4016E-04
Tc-99m	1.2923E-05	3.3533E-05	1.2272E-04	1.6335E+10	6.1689E-04	2.0987E-04	5.8348E-04	1.9806E-04
Ru-103	1.3982E-07	3.3764E-05	1.2747E-06	1.6980E+08	6.6742E-06	2.1670E-06	6.0643E-06	1.3954E-06
Ru-106	2.3578E-07	2.9481E-03	2.1435E-06	2.8552E+08	1.1255E-05	3.6424E-06	1.0198E-05	2.3463E-06
Te-127	1.7315E-06	1.4658E-05	1.5859E-05	2.1111E+09	8.2655E-05	2.6984E-05	7.5440E-05	2.2924E-05
Te-127m	1.7376E-06	9.7936E-04	1.5809E-05	2.1058E+09	8.2943E-05	2.6867E-05	7.5210E-05	1.7305E-05
Te-129	1.5894E-06	4.9655E-06	1.4528E-05	1.9249E+09	7.5871E-05	2.4721E-05	6.9108E-05	5.7802E-05
Te-129m	2.4294E-06	1.5298E-03	2.2162E-05	2.9520E+09	1.1597E-04	3.7678E-05	1.0543E-04	2.4260E-05
Te-131m	3.3980E-07	7.0436E-05	3.4225E-06	4.5613E+08	1.6220E-05	5.9055E-06	1.6259E-05	3.7513E-06
Te-132	6.3428E-06	1.6484E-03	5.9939E-05	7.9856E+09	3.0277E-04	1.0244E-04	2.8500E-04	6.5644E-05
I-131	4.9884E-04	4.2982E-01	4.5083E-03	6.0056E+11	2.2358E-02	1.3528E-02	1.4625E-02	4.9270E-03
I-132	4.5214E-05	7.0650E-03	1.5665E-03	2.1004E+11	1.9515E-03	5.1385E-03	5.0802E-03	1.8253E-03
I-133	5.0103E-04	9.1631E-02	5.1648E-03	6.8850E+11	2.2456E-02	1.5623E-02	1.6756E-02	5.6531E-03
I-134	1.4056E-07	5.9696E-04	1.3759E-04	1.8645E+10	6.2964E-06	5.3394E-04	4.4456E-04	1.5667E-04
I-135	1.4719E-04	1.2686E-02	2.1248E-03	2.8372E+11	6.5970E-03	6.5620E-03	6.8924E-03	2.3342E-03
Xe-133	2.0089E-03	3.8637E-04	8.1304E-03	1.0586E+12	0.0000E+00	9.7732E-03	3.3651E-04	8.6646E-03
Xe-135	8.2466E-03	1.4618E-02	4.0326E-02	5.2587E+12	0.0000E+00	4.6626E-02	1.7279E-03	4.3092E-02
Cs-134	2.3494E-04	2.8953E-01	2.1355E-03	2.8444E+11	1.1215E-02	3.6286E-03	1.0160E-02	2.3375E-03
Cs-136	1.5186E-05	3.3916E-03	1.3935E-04	1.8562E+10	7.2489E-04	2.3712E-04	6.6285E-04	1.5255E-04
Cs-137	1.3082E-04	1.0939E-01	1.1889E-03	1.5836E+11	6.2447E-03	2.0201E-03	5.6562E-03	1.3014E-03
La-140	1.9461E-08	3.1753E-06	1.8112E-07	2.4126E+07	9.2900E-07	3.0888E-07	8.6141E-07	2.0869E-07
Ce-141	1.0135E-07	2.3954E-05	9.2466E-07	1.2317E+08	4.8381E-06	1.5721E-06	4.3989E-06	1.0122E-06



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Ce-144	2.9849E-07	2.9224E-03	2.7138E-06	3.6148E+08	1.4248E-05	4.6116E-06	1.2911E-05	2.9706E-06
Pr-143	4.6694E-08	9.9930E-06	4.2796E-07	5.7007E+07	2.2290E-06	7.2810E-07	2.0358E-06	4.6894E-07
Kr-83m	3.6719E-04	1.6560E-07	3.6241E-03	4.7291E+11	0.0000E+00	5.0856E-03	1.5469E-04	3.8931E-03
Br-82	2.5178E-06	2.0419E-04	2.4414E-05	3.2535E+09	1.1285E-04	7.3575E-05	7.9205E-05	2.6703E-05
Br-83	1.6966E-06	1.7722E-05	6.5981E-05	8.8479E+09	7.6040E-05	2.1649E-04	2.1378E-04	7.3148E-05
Br-84	2.2574E-10	2.8037E-05	8.9155E-06	1.2204E+09	1.0118E-08	4.0260E-05	2.8804E-05	1.0305E-05
Rh-103m	1.4040E-07	1.9160E-08	1.2789E-06	1.6922E+08	6.7018E-06	2.1722E-06	6.0846E-06	5.9838E-06
Te-125m	1.7231E-07	3.2983E-05	1.5693E-06	2.0903E+08	8.2251E-06	2.6674E-06	7.4658E-06	1.7178E-06
Te-131	7.7556E-08	1.6018E-06	8.0219E-07	1.0548E+08	3.7022E-06	1.4335E-06	3.8008E-06	7.2194E-06
Xe-131m	9.3940E-06	4.2587E-07	3.5938E-05	4.6747E+09	0.0000E+00	4.3513E-05	1.4458E-06	3.8255E-05
Xe-133m	1.4079E-04	2.3930E-05	5.7340E-04	7.4652E+10	0.0000E+00	6.9239E-04	2.3587E-05	6.1107E-04
Xe-135m	7.6844E-03	2.8404E-02	4.5708E-02	5.7781E+12	0.0000E+00	1.5577E-01	1.0278E-03	4.8559E-02
Cs-134m	2.1199E-08	9.8508E-08	6.4225E-07	8.6021E+07	1.0120E-06	1.2958E-06	2.9993E-06	7.1264E-07
Cs-138	7.8644E-11	1.2253E-05	3.0801E-06	4.2129E+08	3.7541E-09	1.1193E-05	1.3347E-05	3.5880E-06
Total	2.0078E-02	1.0000E+00	0.0000E+00	0.0000E+00	7.3794E-02	2.6629E-01	6.5813E-02	1.2423E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 8,0000	Atmosphere	Sump
Noble gases (Ci)	1.8457E-02	0.0000E+00
Elemental I (Ci)	1.1607E-03	0.0000E+00
Organic I (Ci)	3.5899E-05	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	4.2393E-04	0.0000E+00
All Aerosols (kg)	1.6852E-09	0.0000E+00

Time (h) = 8.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	5.1951E-02
Organic I (Ci)	0.0000E+00	1.6067E-03
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	2.0236E-02



All Aerosols (kg) 0.0000E+00 8.0442E-08

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ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:31

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Exclusion Area Boundary Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	1.7935E-02	9.1664E+00	6.3574E-01
Accumulated dose (rem)	3.2154E-02	1.8752E+01	1.2658E+00

Low Population Zone Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	7.7817E-04	3.9771E-01	2.7583E-02
Accumulated dose (rem)	2.0039E-03	1.1780E+00	7.8786E-02

Control Room Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	8.2562E-04	3.4459E+00	1.9215E-01	4.6470E-02
Accumulated dose (rem)	1.4972E-03	8.7459E+00	4.7825E-01	8.1777E-02

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.7467E+01 Atmosphere	1.4142E-04	4.3258E+02	5.7627E+16	5.5681E-04	3.4733E-01	1.1596E-01



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Sr-89	2.7243E-01	1.3536E-05	6.6678E+00	8.8818E+14	8.4677E-06	5.3530E-03	1.7872E-03
Sr-90	2.5489E-02	3.9421E-05	6.1965E-01	8.2537E+13	7.8330E-07	4.9743E-04	1.6607E-04
Sr-91	2.0321E-02	1.3326E-07	1.3428E+00	1.7954E+14	3.5270E-06	1.0844E-03	3.6263E-04
Sr-92	1.1064E-04	1.5154E-08	2.0293E-01	2.7223E+13	1.4713E-06	1.6402E-04	5.5165E-05
Y-90	4.0031E-02	4.2295E-07	1.0232E+00	1.3633E+14	1.3610E-06	8.2183E-04	2.7440E-04
Y-91	3.4463E+00	2.0163E-04	8.4270E+01	1.1225E+16	1.0713E-04	6.7652E-02	2.2587E-02
Y-92	1.7396E-03	2.3452E-08	5.2143E-01	6.9770E+13	1.9194E-06	4.2172E-04	1.4121E-04
Y-93	7.9780E-03	5.3278E-08	4.9344E-01	6.5968E+13	1.2493E-06	3.9841E-04	1.3322E-04
Zr-95	4.9107E+00	1.4125E-04	1.2003E+02	1.5988E+16	1.5252E-04	9.6357E-02	3.2170E-02
Zr-97	3.0186E-02	2.7069E-07	1.2489E+00	1.6678E+14	2.4548E-06	1.0067E-03	3.3640E-04
Nb-95	7.1236E+00	5.2793E-05	1.7370E+02	2.3137E+16	2.2022E-04	1.3944E-01	4.6555E-02
Mo-99	3.3153E+02	1.8118E-03	9.1642E+03	1.2216E+18	1.3070E-02	7.3659E+00	2.4597E+00
Tc-99m	3.1965E+02	4.0937E-05	8.8129E+03	1.1737E+18	1.2505E-02	7.0835E+00	2.3653E+00
Ru-103	4.0311E+00	4.4515E-05	9.8862E+01	1.3169E+16	1.2605E-04	7.9370E-02	2.6499E-02
Ru-105	4.7274E-04	5.3390E-09	1.2705E-01	1.7020E+13	5.9034E-07	1.0273E-04	3.4441E-05
Ru-106	6.8698E+00	3.9084E-03	1.6716E+02	2.2266E+16	2.1149E-04	1.3419E-01	4.4800E-02
Rh-105	1.0071E-01	1.5138E-07	3.1091E+00	4.1467E+14	4.8462E-06	2.5014E-03	8.3542E-04
Te-127	4.9724E+01	1.9225E-05	1.2235E+03	1.6288E+17	1.5751E-03	9.8231E-01	3.2796E-01
Te-127m	5.0474E+01	1.2963E-03	1.2309E+03	1.6396E+17	1.5608E-03	9.8815E-01	3.2991E-01
Te-129	4.5731E+01	6.5300E-06	1.1239E+03	1.4895E+17	1.4429E-03	9.0229E-01	3.0124E-01
Te-129m	6.9905E+01	2.0148E-03	1.7170E+03	2.2871E+17	2.1923E-03	1.3785E+00	4.6022E-01
Te-131m	6.8493E+00	7.7828E-05	2.2245E+02	2.9676E+16	3.6415E-04	1.7904E-01	5.9801E-02
Te-132	1.6057E+02	2.0332E-03	4.3489E+03	5.7963E+17	6.0890E-03	3.4948E+00	1.1670E+00
I-131	9.1738E+03	3.7743E-01	2.3288E+05	3.1027E+19	3.0695E-01	1.8703E+02	6.2446E+01
I-132	1.7143E+02	2.3357E-03	3.0465E+04	4.0840E+18	2.2524E-01	2.4602E+01	8.2758E+00
I-133	5.7257E+03	6.4276E-02	2.1312E+05	2.8447E+19	3.8796E-01	1.7168E+02	5.7357E+01
I-134	8.7857E-06	1.4313E-04	1.9406E+03	2.6304E+17	3.8146E-02	1.5774E+00	5.3851E-01
I-135	5.3547E+02	5.9794E-03	5.8911E+04	7.8843E+18	1.9814E-01	4.7619E+01	1.5939E+01
Xe-133	1.0503E+03	1.1989E-05	1.4840E+04	1.9668E+18	5.6497E-04	1.1827E+01	3.9426E+00
Xe-135	1.4132E+03	2.4686E-04	4.0058E+04	5.3346E+18	3.6790E-03	3.2252E+01	1.0752E+01
Cs-134	6.8496E+03	3.8395E-01	1.6659E+05	2.2190E+19	2.1067E-01	1.3373E+02	4.4647E+01
Cs-136	4.2764E+02	4.4171E-03	1.0675E+04	1.4222E+18	1.3847E-02	8.5721E+00	2.8620E+00
Cs-137	3.8162E+03	1.4511E-01	9.2772E+04	1.2357E+19	1.1727E-01	7.4474E+01	2.4864E+01



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Ba-139	2.3332E-07	7.8083E-10	8.1902E-02	1.1037E+13	1.0956E-06	6.6299E-05	2.2465E-05
Ba-140	3.7861E-01	1.7735E-06	9.4582E+00	1.2600E+15	1.2277E-05	7.5949E-03	2.5357E-03
La-140	5.2382E-01	4.0335E-06	1.3534E+01	1.8032E+15	1.8196E-05	1.0871E-02	3.6299E-03
La-141	3.9964E-04	4.6249E-09	1.5575E-01	2.0869E+13	7.9393E-07	1.2593E-04	4.2240E-05
La-142	1.4198E-07	1.3508E-09	1.5532E-02	2.0909E+12	1.8816E-07	1.2566E-05	4.2513E-06
Ce-141	2.9150E+00	3.1542E-05	7.1621E+01	9.5406E+15	9.1479E-05	5.7501E-02	1.9198E-02
Ce-143	8.6025E-02	4.6948E-07	2.7184E+00	3.6260E+14	4.3513E-06	2.1874E-03	7.3060E-04
Ce-144	8.6935E+00	3.8735E-03	2.1159E+02	2.8184E+16	2.6778E-04	1.6986E-01	5.6709E-02
Pr-143	1.3200E+00	1.3042E-05	3.2856E+01	4.3770E+15	4.2486E-05	2.6382E-02	8.8082E-03
Kr-83m	1.2036E+00	9.1570E-10	1.1788E+03	1.5688E+17	9.3549E-04	9.5176E-01	3.1757E-01
Br-82	3.5819E+01	1.5810E-04	1.1120E+03	1.4831E+17	1.7539E-03	8.9466E-01	2.9881E-01
Br-83	3.1904E-01	5.3662E-06	1.1753E+03	1.5775E+17	9.5646E-03	9.4991E-01	3.1982E-01
Br-84	3.5928E-12	6.2704E-06	1.1729E+02	1.6060E+16	3.4112E-03	9.6214E-02	3.3208E-02
Rb-89	1.5794E-28	1.0559E-07	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	1.2958E-02	1.2719E-08	8.4877E-01	1.1272E+14	2.0922E-06	6.8539E-04	2.2916E-04
Nb-95m	3.7789E-02	1.1211E-07	9.2681E-01	1.2345E+14	1.1820E-06	7.4408E-04	2.4842E-04
Nb-97	1.7306E-03	1.6667E-09	8.1191E-02	1.0812E+13	2.8518E-07	6.5487E-05	2.1924E-05
Rh-103m	4.0479E+00	2.5278E-08	9.9253E+01	1.3138E+16	1.2602E-04	7.9684E-02	2.6603E-02
Te-125m	4.9867E+00	4.3572E-05	1.2195E+02	1.6244E+16	1.5506E-04	9.7903E-02	3.2686E-02
Te-131	1.5634E+00	1.7358E-06	5.1134E+01	6.7291E+15	9.4964E-05	4.1162E-02	1.3752E-02
Te-133	4.0665E-09	8.1546E-09	2.8780E-01	3.7210E+13	2.8579E-06	2.2996E-04	7.7605E-05
Te-133m	2.3587E-08	1.6963E-07	2.1140E+00	2.8632E+14	3.9851E-05	1.7173E-03	5.8572E-04
Te-134	9.5902E-11	6.3958E-08	2.2687E+00	3.0877E+14	5.3673E-05	1.8504E-03	6.3468E-04
Xe-131m	6.0149E+00	1.5112E-08	7.5017E+01	9.9275E+15	2.2487E-06	5.9619E-02	1.9874E-02
Xe-133m	6.7632E+01	7.0540E-07	9.9427E+02	1.3182E+17	4.0386E-05	7.9305E-01	2.6436E-01
Xe-135m	8.7728E+01	9.7957E-05	9.2724E+03	1.2094E+18	1.4530E-02	7.4800E+00	2.4982E+00
Cs-134m	1.3503E-02	4.6170E-08	1.7707E+01	2.3749E+15	1.2064E-04	1.4313E-02	4.8113E-03
Cs-138	2.4312E-12	3.6812E-06	5.4435E+01	7.4512E+15	1.5688E-03	4.4639E-02	1.5403E-02
Ba-141	1.6212E-26	9.5730E-11	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	3.0465E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.5756E+00	7.2840E+02	2.4333E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid) 7.6845E-07
 Dose Equivalent (Ci/cc) I-131 (CEDE) 7.7376E-07



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Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 8.1480E-07
 Total I (Ci) 1.5606E+04
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 9.8781E-07

RCS Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	2.6261E+03	0.0000E+00
Elemental I (Ci)	1.5173E+04	0.0000E+00
Organic I (Ci)	4.6928E+02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2197E+04	0.0000E+00
All Aerosols (kg)	4.9155E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	3.2766E-01	1.4315E-04	4.0499E+00	5.3953E+14	1.3404E-02	3.4733E-01
Sr-89	5.1104E-03	1.3756E-05	6.2676E-02	8.3489E+12	2.0711E-04	5.3530E-03
Sr-90	4.7814E-04	4.0152E-05	5.8377E-03	7.7758E+11	1.9272E-05	4.9743E-04
Sr-91	3.8119E-04	9.7753E-08	9.1103E-03	1.2207E+12	3.4517E-05	1.0844E-03
Sr-92	2.0755E-06	4.9538E-09	6.1360E-04	8.2600E+10	3.3360E-06	1.6402E-04
Y-90	7.5092E-04	4.2337E-07	9.4739E-03	1.2624E+12	3.1495E-05	8.2183E-04
Y-91	6.4648E-02	2.0496E-04	7.9235E-01	1.0555E+14	2.6179E-03	6.7652E-02
Y-92	3.2632E-05	1.2281E-08	2.5257E-03	3.3958E+11	1.1328E-05	4.2172E-04
Y-93	1.4966E-04	3.9903E-08	3.4183E-03	4.5789E+11	1.2834E-05	3.9841E-04
Zr-95	9.2118E-02	1.4361E-04	1.1287E+00	1.5035E+14	3.7290E-03	9.6357E-02
Zr-97	5.6624E-04	2.3083E-07	9.8512E-03	1.3170E+12	3.4985E-05	1.0067E-03
Nb-95	1.3363E-01	5.3716E-05	1.6348E+00	2.1775E+14	5.3991E-03	1.3944E-01
Mo-99	6.2190E+00	1.7673E-03	8.2681E+01	1.1024E+16	2.7775E-01	7.3659E+00
Tc-99m	5.9962E+00	3.9982E-05	7.9613E+01	1.0606E+16	2.6732E-01	7.0835E+00
Ru-103	7.5618E-02	4.5206E-05	9.2862E-01	1.2370E+14	3.0693E-03	7.9370E-02



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Ru-105	8.8680E-06	2.6305E-09	5.7897E-04	7.7848E+10	2.6237E-06	1.0273E-04
Ru-106	1.2887E-01	3.9796E-03	1.5743E+00	2.0970E+14	5.1980E-03	1.3419E-01
Rh-105	1.8893E-03	1.4243E-07	2.7058E-02	3.6107E+12	9.2256E-05	2.5014E-03
Te-127	9.3276E-01	1.9483E-05	1.1469E+01	1.5269E+15	3.7936E-02	9.8231E-01
Te-127m	9.4683E-01	1.3189E-03	1.1584E+01	1.5430E+15	3.8259E-02	9.8815E-01
Te-129	8.5784E-01	6.6248E-06	1.0546E+01	1.3979E+15	3.4868E-02	9.0229E-01
Te-129m	1.3113E+00	2.0451E-03	1.6120E+01	2.1473E+15	5.3290E-02	1.3785E+00
Te-131m	1.2848E-01	7.1918E-05	1.9014E+00	2.5381E+14	6.5301E-03	1.7904E-01
Te-132	3.0120E+00	1.9968E-03	3.9506E+01	5.2667E+15	1.3235E-01	3.4948E+00
I-131	1.7209E+02	3.7886E-01	2.1622E+03	2.8810E+17	7.1800E+00	1.8703E+02
I-132	3.2158E+00	8.9597E-04	1.0809E+02	1.4487E+16	5.2617E-01	2.4602E+01
I-133	1.0741E+02	5.6761E-02	1.7408E+03	2.3257E+17	6.0921E+00	1.7168E+02
I-134	1.6481E-07	1.5481E-05	1.9414E+00	2.6358E+14	1.4244E-02	1.5774E+00
I-135	1.0045E+01	3.7577E-03	3.4244E+02	4.5963E+16	1.3895E+00	4.7619E+01
Xe-133	1.9701E+01	1.5692E-05	1.7967E+02	2.3822E+16	5.4187E-01	1.1827E+01
Xe-135	2.6510E+01	2.6931E-04	4.0422E+02	5.3955E+16	1.3193E+00	3.2252E+01
Cs-134	1.2849E+02	3.9101E-01	1.5692E+03	2.0902E+17	5.1808E+00	1.3373E+02
Cs-136	8.0220E+00	4.4589E-03	9.9677E+01	1.3280E+16	3.3025E-01	8.5721E+00
Cs-137	7.1586E+01	1.4780E-01	8.7400E+02	1.1642E+17	2.8854E+00	7.4474E+01
Ba-139	4.3767E-09	1.3235E-10	1.2840E-04	1.7329E+10	8.7033E-07	6.6299E-05
Ba-140	7.1021E-03	1.7898E-06	8.8291E-02	1.1763E+13	2.9256E-04	7.5949E-03
La-140	9.8261E-03	4.0225E-06	1.2484E-01	1.6636E+13	4.1564E-04	1.0871E-02
La-141	7.4967E-06	2.0837E-09	6.4907E-04	8.7308E+10	3.0657E-06	1.2593E-04
La-142	2.6634E-09	2.5583E-10	2.7209E-05	3.6688E+09	1.7933E-07	1.2566E-05
Ce-141	5.4682E-02	3.2012E-05	6.7233E-01	8.9563E+13	2.2228E-03	5.7501E-02
Ce-143	1.6137E-03	4.3783E-07	2.3449E-02	3.1295E+12	8.0231E-05	2.1874E-03
Ce-144	1.6308E-01	3.9437E-03	1.9926E+00	2.6542E+14	6.5793E-03	1.6986E-01
Pr-143	2.4761E-02	1.3179E-05	3.0710E-01	4.0913E+13	1.0171E-03	2.6382E-02
Kr-83m	2.2578E-02	4.6441E-10	5.5300E+00	7.4250E+14	2.7059E-02	9.5176E-01
Br-82	6.7191E-01	1.4832E-04	9.6491E+00	1.2876E+15	3.2934E-02	8.9466E-01
Br-83	5.9847E-03	1.5591E-06	3.1585E+00	4.2525E+14	1.8020E-02	9.4991E-01
Br-84	6.7397E-14	4.1008E-07	7.0950E-02	9.7431E+12	5.5124E-04	9.6214E-02
Rb-89	2.9628E-30	3.3220E-09	5.3912E-04	7.6214E+10	4.4724E-06	1.5700E-03



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Y-91m	2.4307E-04	9.4004E-09	5.8024E-03	7.7250E+11	2.1959E-05	6.8539E-04
Nb-95m	7.0887E-04	1.1384E-07	8.7052E-03	1.1595E+12	2.8774E-05	7.4408E-04
Nb-97	3.2464E-05	1.2826E-09	5.7791E-04	7.6941E+10	2.0973E-06	6.5487E-05
Rh-103m	7.5933E-02	2.5675E-08	9.3248E-01	1.2345E+14	3.0820E-03	7.9684E-02
Te-125m	9.3543E-02	4.4291E-05	1.1466E+00	1.5273E+14	3.7883E-03	9.7903E-02
Te-131	2.9328E-02	1.5935E-06	4.3419E-01	5.7173E+13	1.4920E-03	4.1162E-02
Te-133	7.6282E-11	1.1209E-09	3.6590E-04	4.8302E+10	2.6455E-06	2.2996E-04
Te-133m	4.4246E-10	1.9303E-08	2.2251E-03	3.0183E+11	1.6213E-05	1.7173E-03
Te-134	1.7990E-12	5.4951E-09	1.8029E-03	2.4590E+11	1.3603E-05	1.8504E-03
Xe-131m	1.1283E-01	2.0436E-08	9.3836E-01	1.2420E+14	2.7932E-03	5.9619E-02
Xe-133m	1.2687E+00	9.1408E-07	1.1917E+01	1.5808E+15	3.6089E-02	7.9305E-01
Xe-135m	1.6457E+00	6.3956E-05	5.5997E+01	7.3527E+15	2.2676E-01	7.4800E+00
Cs-134m	2.5330E-04	1.6057E-08	5.6963E-02	7.6673E+12	3.0164E-04	1.4313E-02
Cs-138	4.5607E-14	2.4377E-07	3.3341E-02	4.5769E+12	2.5871E-04	4.4639E-02
Ba-141	3.0411E-28	3.6092E-12	1.3095E-06	1.8344E+08	1.0705E-08	3.1462E-06
Total	5.7149E+02	1.0000E+00	0.0000E+00	0.0000E+00	2.6706E+01	7.2840E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	2.2969E-08
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.3128E-08
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	2.4354E-08
Total I (Ci)	2.9275E+02
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.9526E-08

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	4.9261E+01	0.0000E+00
Elemental I (Ci)	2.8463E+02	0.0000E+00
Organic I (Ci)	8.8030E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.2880E+02	0.0000E+00
All Aerosols (kg)	9.2207E-04	0.0000E+00



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Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	2.3863E-07	1.0674E-04	9.4996E-06	1.2655E+09	4.8769E-05	1.4976E-05	4.5612E-05	1.0394E-05
Y-91	4.7084E-08	1.5165E-04	1.8441E-06	2.4565E+08	9.6223E-06	2.9041E-06	8.8552E-06	2.0195E-06
Zr-95	6.7091E-08	1.0623E-04	2.6263E-06	3.4984E+08	1.3711E-05	4.1357E-06	1.2611E-05	2.8731E-06
Nb-95	9.7323E-08	3.9676E-05	3.7983E-06	5.0594E+08	1.9890E-05	5.9801E-06	1.8239E-05	4.1915E-06
Mo-99	4.5293E-06	1.4082E-03	2.0725E-04	2.7620E+10	9.2564E-04	3.2973E-04	9.9447E-04	2.2699E-04
Tc-99m	4.3671E-06	3.1780E-05	1.9906E-04	2.6505E+10	8.9248E-04	3.1655E-04	9.5526E-04	5.8158E-04
Ru-103	5.5073E-08	3.3508E-05	2.1653E-06	2.8842E+08	1.1255E-05	3.4106E-06	1.0397E-05	2.3688E-06
Ru-106	9.3855E-08	2.9357E-03	3.6532E-06	4.8661E+08	1.9181E-05	5.7505E-06	1.7542E-05	3.9962E-06
Te-127	6.7933E-07	1.4502E-05	2.6854E-05	3.5749E+09	1.3883E-04	4.2338E-05	1.2893E-04	6.2177E-05
Te-127m	6.8958E-07	9.7429E-04	2.6918E-05	3.5855E+09	1.4093E-04	4.2379E-05	1.2925E-04	2.9446E-05
Te-129	6.2477E-07	4.9206E-06	2.4641E-05	3.2654E+09	1.2768E-04	3.8843E-05	1.1831E-04	2.7350E-04
Te-129m	9.5504E-07	1.5173E-03	3.7620E-05	5.0112E+09	1.9518E-04	5.9265E-05	1.8064E-04	4.1157E-05
Te-131m	9.3575E-08	6.3033E-05	5.2421E-06	6.9902E+08	1.9123E-05	8.4498E-06	2.5128E-05	5.7493E-06
Te-132	2.1937E-06	1.5718E-03	9.7821E-05	1.3036E+10	4.4831E-04	1.5537E-04	4.6945E-04	1.0712E-04
I-131	1.8767E-04	4.2376E-01	7.6075E-03	1.0135E+12	3.6315E-02	2.2188E-02	2.4717E-02	8.3178E-03
I-132	3.4222E-06	4.4044E-03	1.6715E-03	2.2419E+11	5.0140E-04	5.4334E-03	5.4249E-03	2.3640E-03
I-133	1.1714E-04	7.9267E-02	7.6471E-03	1.0201E+12	2.2666E-02	2.2570E-02	2.4858E-02	8.3845E-03
I-134	1.7974E-13	3.4898E-04	1.3767E-04	1.8655E+10	3.4760E-11	5.3414E-04	4.4480E-04	1.5852E-04
I-135	1.0955E-05	9.0072E-03	2.5820E-03	3.4514E+11	2.1197E-03	7.8411E-03	8.3871E-03	2.8434E-03
Xe-133	2.2024E-03	1.0933E-03	3.9375E-02	4.9505E+12	0.0000E+00	3.9167E-02	1.1797E-03	4.0643E-02
Xe-135	2.8846E-03	2.4092E-02	1.1375E-01	1.4522E+13	0.0000E+00	1.1144E-01	3.7072E-03	1.1974E-01
Cs-134	9.3580E-05	2.8836E-01	3.6403E-03	4.8488E+11	1.9125E-02	5.7299E-03	1.7480E-02	3.9820E-03
Cs-136	5.8425E-06	3.3410E-03	2.3494E-04	3.1297E+10	1.1940E-03	3.7062E-04	1.1280E-03	2.5706E-04
Cs-137	5.2137E-05	1.0897E-01	2.0270E-03	2.7000E+11	1.0655E-02	3.1905E-03	9.7336E-03	2.2173E-03
Ba-140	5.1725E-09	1.3417E-06	2.0820E-07	2.7735E+07	1.0571E-06	3.2846E-07	9.9960E-07	2.2781E-07
La-140	7.1564E-09	3.0814E-06	3.0083E-07	4.0077E+07	1.4625E-06	4.7609E-07	1.4440E-06	3.9002E-07
Ce-141	3.9825E-08	2.3755E-05	1.5694E-06	2.0906E+08	8.1389E-06	2.4725E-06	7.5359E-06	1.7171E-06
Ce-144	1.1877E-07	2.9097E-03	4.6246E-06	6.1600E+08	2.4273E-05	7.2798E-06	2.2207E-05	5.0589E-06
Pr-143	1.8034E-08	9.8565E-06	7.2248E-07	9.6244E+07	3.6854E-06	1.1394E-06	3.4689E-06	7.9293E-07



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Kr-83m	5.4259E-06	1.2961E-07	4.8550E-03	6.3071E+11	0.0000E+00	6.3572E-03	1.7495E-04	5.2149E-03
Br-82	7.3277E-07	1.8678E-04	3.8225E-05	5.0965E+09	1.4179E-04	1.1220E-04	1.2424E-04	4.1857E-05
Br-83	6.5268E-09	1.0726E-05	6.8353E-05	9.1686E+09	1.2629E-06	2.2299E-04	2.2140E-04	7.5839E-05
Br-84	7.3502E-20	1.6381E-05	8.9155E-06	1.2204E+09	1.4223E-17	4.0260E-05	2.8804E-05	1.0305E-05
Rh-103m	5.5302E-08	1.9022E-08	2.1731E-06	2.8761E+08	1.1302E-05	3.4210E-06	1.0435E-05	2.9361E-05
Te-125m	6.8128E-08	3.2773E-05	2.6689E-06	3.5550E+08	1.3923E-05	4.2029E-06	1.2815E-05	2.9196E-06
Te-131	2.1360E-08	1.4205E-06	1.2175E-06	1.6017E+08	4.3652E-06	2.0143E-06	5.8255E-06	3.6248E-05
Te-133	5.5557E-17	1.2967E-08	1.3315E-08	1.7034E+06	1.1354E-14	1.7970E-08	6.1870E-08	1.2257E-06
Xe-131m	1.5183E-05	1.5160E-06	2.1896E-04	2.7239E+10	0.0000E+00	2.1700E-04	5.7962E-06	2.2330E-04
Xe-133m	1.4981E-04	6.6758E-05	2.7378E-03	3.4385E+11	0.0000E+00	2.7355E-03	7.9716E-05	2.8239E-03
Xe-135m	2.6310E-03	4.5086E-02	1.2418E-01	1.5219E+13	0.0000E+00	3.9501E-01	1.2727E-03	1.2800E-01
Cs-134m	1.8448E-10	6.0720E-08	6.7758E-07	9.0793E+07	3.7702E-08	1.3445E-06	3.1702E-06	7.5257E-07
Cs-138	3.3216E-20	7.1591E-06	3.0802E-06	4.2129E+08	6.7882E-18	1.1194E-05	1.3348E-05	3.5880E-06
Total	8.3750E-03	1.0000E+00	0.0000E+00	0.0000E+00	9.5800E-02	6.2423E-01	1.0217E-01	3.2674E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	7.8884E-03	0.0000E+00
Elemental I (Ci)	3.1033E-04	0.0000E+00
Organic I (Ci)	9.5978E-06	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.6663E-04	0.0000E+00
All Aerosols (kg)	6.7155E-10	0.0000E+00

Time (h) = 24.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	5.9893E-02
Organic I (Ci)	0.0000E+00	1.8524E-03
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	3.4054E-02
All Aerosols (kg)	0.0000E+00	1.3724E-07



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ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:31

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Exclusion Area Boundary Doses:

Time (h) =	96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)		3.2154E-02	1.8752E+01	1.2658E+00

Low Population Zone Doses:

Time (h) =	96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)		2.0039E-03	1.1780E+00	7.8786E-02

Control Room Doses:

Time (h) =	96.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.2880E-04	2.3510E-02	1.4519E-03	7.4023E-03
Accumulated dose (rem)		1.6260E-03	8.7694E+00	4.7971E-01	8.9180E-02

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	Atmosphere	1.4693E-04	1.6223E+03	2.1614E+17	5.5681E-04	3.4733E-01	1.1596E-01
Sr-89		1.4555E-05	2.5882E+01	3.4478E+15	8.4677E-06	5.3530E-03	1.7872E-03



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Sr-90	2.5484E-02	4.3260E-05	2.4547E+00	3.2696E+14	7.8330E-07	4.9743E-04	1.6607E-04
Sr-91	1.0628E-04	4.4445E-08	1.6166E+00	2.1645E+14	3.5270E-06	1.0844E-03	3.6263E-04
Sr-92	1.1119E-12	4.2064E-09	2.0335E-01	2.7281E+13	1.4713E-06	1.6402E-04	5.5165E-05
Y-90	3.2156E-02	4.1040E-07	3.5842E+00	4.7760E+14	1.3610E-06	8.2183E-04	2.7440E-04
Y-91	3.3261E+00	2.1742E-04	3.2803E+02	4.3697E+16	1.0713E-04	6.7652E-02	2.2587E-02
Y-92	1.5808E-09	6.6095E-09	5.3050E-01	7.1011E+13	1.9194E-06	4.2172E-04	1.4121E-04
Y-93	5.7008E-05	1.8173E-08	6.0759E-01	8.1342E+13	1.2493E-06	3.9841E-04	1.3322E-04
Zr-95	4.7537E+00	1.5253E-04	4.6789E+02	6.2327E+16	1.5252E-04	9.6357E-02	3.2170E-02
Zr-97	1.5751E-03	1.1658E-07	1.9418E+00	2.5969E+14	2.4548E-06	1.0067E-03	3.3640E-04
Nb-95	6.9921E+00	5.7407E-05	6.8185E+02	9.0826E+16	2.2022E-04	1.3944E-01	4.6555E-02
Mo-99	1.5564E+02	1.4175E-03	2.5882E+04	3.4523E+18	1.3070E-02	7.3659E+00	2.4597E+00
Tc-99m	1.5017E+02	3.2093E-05	2.4941E+04	3.3239E+18	1.2505E-02	7.0835E+00	2.3653E+00
Ru-103	3.8232E+00	4.7587E-05	3.8152E+02	5.0823E+16	1.2605E-04	7.9370E-02	2.6499E-02
Ru-105	6.2095E-09	1.5134E-09	1.3001E-01	1.7423E+13	5.9034E-07	1.0273E-04	3.4441E-05
Ru-106	6.8311E+00	4.2772E-03	6.6038E+02	8.7964E+16	2.1149E-04	1.3419E-01	4.4800E-02
Rh-105	2.4571E-02	9.4192E-08	6.9837E+00	9.3246E+14	4.8462E-06	2.5014E-03	8.3542E-04
Te-127	4.8536E+01	2.0696E-05	4.7548E+03	6.3299E+17	1.5751E-03	9.8231E-01	3.2796E-01
Te-127m	4.9520E+01	1.4092E-03	4.8304E+03	6.4344E+17	1.5608E-03	9.8815E-01	3.2991E-01
Te-129	4.2986E+01	6.9471E-06	4.3162E+03	5.7212E+17	1.4429E-03	9.0229E-01	3.0124E-01
Te-129m	6.5710E+01	2.1444E-03	6.5968E+03	8.7881E+17	2.1923E-03	1.3785E+00	4.6022E-01
Te-131m	1.2977E+00	4.4756E-05	4.6180E+02	6.1681E+16	3.6415E-04	1.7904E-01	5.9801E-02
Te-132	8.4819E+01	1.6683E-03	1.2882E+04	1.7179E+18	6.0890E-03	3.4948E+00	1.1670E+00
I-131	7.0838E+03	3.6571E-01	8.1456E+05	1.0856E+20	3.0695E-01	1.8703E+02	6.2446E+01
I-132	8.7609E+01	8.3458E-04	3.9296E+04	5.2593E+18	2.2524E-01	2.4602E+01	8.2758E+00
I-133	5.1976E+02	3.0785E-02	3.6847E+05	4.9256E+19	3.8796E-01	1.7168E+02	5.7357E+01
I-134	1.6612E-30	3.9648E-05	1.9406E+03	2.6304E+17	3.8146E-02	1.5774E+00	5.3851E-01
I-135	2.8167E-01	1.7976E-03	6.3932E+04	8.5641E+18	1.9814E-01	4.7619E+01	1.5939E+01
Xe-133	1.3705E+03	2.5434E-05	1.1365E+05	1.5121E+19	5.6497E-04	1.1827E+01	3.9426E+00
Xe-135	1.1006E+01	1.0816E-04	6.3357E+04	8.4680E+18	3.6790E-03	3.2252E+01	1.0752E+01
Cs-134	6.8307E+03	4.2080E-01	6.5908E+05	8.7790E+19	2.1067E-01	1.3373E+02	4.4647E+01
Cs-136	3.6487E+02	4.4857E-03	3.9135E+04	5.2145E+18	1.3847E-02	8.5721E+00	2.8620E+00
Cs-137	3.8154E+03	1.5924E-01	3.6751E+05	4.8952E+19	1.1727E-01	7.4474E+01	2.4864E+01
Ba-139	4.3958E-23	2.1630E-10	8.1902E-02	1.1037E+13	1.0956E-06	6.6299E-05	2.2465E-05



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Ba-140	3.2159E-01	1.7972E-06	3.4600E+01	4.6102E+15	1.2277E-05	7.5949E-03	2.5357E-03
La-140	3.9583E-01	3.8062E-06	4.6103E+01	6.1439E+15	1.8196E-05	1.0871E-02	3.6299E-03
La-141	1.2207E-09	1.2993E-09	1.5796E-01	2.1171E+13	7.9393E-07	1.2593E-04	4.2240E-05
La-142	1.2397E-21	3.7420E-10	1.5533E-02	2.0909E+12	1.8816E-07	1.2566E-05	4.2513E-06
Ce-141	2.7343E+00	3.3537E-05	2.7490E+02	3.6621E+16	9.1479E-05	5.7501E-02	1.9198E-02
Ce-143	1.8960E-02	2.8227E-07	5.9000E+00	7.8790E+14	4.3513E-06	2.1874E-03	7.3060E-04
Ce-144	8.6301E+00	4.2356E-03	8.3523E+02	1.1125E+17	2.6778E-04	1.6986E-01	5.6709E-02
Pr-143	1.1385E+00	1.3330E-05	1.2122E+02	1.6152E+16	4.2486E-05	2.6382E-02	8.8082E-03
Kr-83m	1.1659E-09	2.5455E-10	1.1829E+03	1.5745E+17	9.3549E-04	9.5176E-01	3.1757E-01
Br-82	8.7119E+00	9.7986E-05	2.4879E+03	3.3219E+17	1.7539E-03	8.9466E-01	2.9881E-01
Br-83	2.7237E-10	1.4879E-06	1.1763E+03	1.5790E+17	9.5646E-03	9.4991E-01	3.1982E-01
Br-84	4.5793E-53	1.7370E-06	1.1729E+02	1.6060E+16	3.4112E-03	9.6214E-02	3.3208E-02
Rb-89	4.3915E-114	2.9249E-08	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	6.7770E-05	4.2482E-09	1.0234E+00	1.3611E+14	2.0922E-06	6.8539E-04	2.2916E-04
Nb-95m	3.6030E-02	1.2002E-07	3.5817E+00	4.7710E+14	1.1820E-06	7.4408E-04	2.4842E-04
Nb-97	9.0303E-05	6.8757E-10	1.2091E-01	1.6115E+13	2.8518E-07	6.5487E-05	2.1924E-05
Rh-103m	3.8392E+00	2.7027E-08	3.8308E+02	5.0717E+16	1.2602E-04	7.9684E-02	2.6603E-02
Te-125m	4.8111E+00	4.6974E-05	4.7460E+02	6.3222E+16	1.5506E-04	9.7903E-02	3.2686E-02
Te-131	2.9621E-01	9.9457E-07	1.0577E+02	1.3936E+16	9.4964E-05	4.1162E-02	1.3752E-02
Te-133	1.3658E-32	2.2589E-09	2.8780E-01	3.7210E+13	2.8579E-06	2.2996E-04	7.7605E-05
Te-133m	7.9223E-32	4.6990E-08	2.1140E+00	2.8632E+14	3.9851E-05	1.7173E-03	5.8572E-04
Te-134	7.4232E-42	1.7717E-08	2.2687E+00	3.0877E+14	5.3673E-05	1.8504E-03	6.3468E-04
Xe-131m	1.9383E+01	5.7472E-08	1.0299E+03	1.3680E+17	2.2487E-06	5.9619E-02	1.9874E-02
Xe-133m	5.8367E+01	1.2234E-06	6.2252E+03	8.2876E+17	4.0386E-05	7.9305E-01	2.6436E-01
Xe-135m	4.6147E-02	2.9543E-05	1.0095E+04	1.3184E+18	1.4530E-02	7.4800E+00	2.4982E+00
Cs-134m	4.5352E-10	1.2829E-08	1.7762E+01	2.3824E+15	1.2064E-04	1.4313E-02	4.8113E-03
Cs-138	9.9815E-53	1.0198E-06	5.4435E+01	7.4512E+15	1.5688E-03	4.4639E-02	1.5403E-02
Ba-141	1.0407E-97	2.6518E-11	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	2.0833E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.5756E+00	7.2840E+02	2.4333E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid) 5.4326E-07
Dose Equivalent (Ci/cc) I-131 (CEDE) 5.4374E-07
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 5.4743E-07



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Total I (Ci) 7.6915E+03
Dose Equivalent (Ci/cc) Xe-133 (EDE) 1.1449E-07

RCS Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	1.4593E+03	0.0000E+00
Elemental I (Ci)	7.4692E+03	0.0000E+00
Organic I (Ci)	2.3101E+02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.1674E+04	0.0000E+00
All Aerosols (kg)	4.9130E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	2.9310E-01	1.4810E-04	2.6368E+01	3.5131E+15	1.3404E-02	3.4733E-01
Sr-89	4.9042E-03	1.4756E-05	4.2312E-01	5.6364E+13	2.0711E-04	5.3530E-03
Sr-90	4.7805E-04	4.4003E-05	4.0260E-02	5.3627E+12	1.9272E-05	4.9743E-04
Sr-91	1.9937E-06	2.4292E-08	1.4247E-02	1.9130E+12	3.4517E-05	1.0844E-03
Sr-92	2.0858E-14	7.9723E-10	6.2143E-04	8.3681E+10	3.3360E-06	1.6402E-04
Y-90	6.0321E-04	4.0841E-07	5.7514E-02	7.6642E+12	3.1495E-05	8.2183E-04
Y-91	6.2394E-02	2.2053E-04	5.3650E+00	7.1468E+14	2.6179E-03	6.7652E-02
Y-92	2.9653E-11	2.0830E-09	2.6958E-03	3.6286E+11	1.1328E-05	4.2172E-04
Y-93	1.0694E-06	1.0313E-08	5.5596E-03	7.4628E+11	1.2834E-05	3.9841E-04
Zr-95	8.9173E-02	1.5475E-04	7.6541E+00	1.0196E+15	3.7290E-03	9.6357E-02
Zr-97	2.9547E-05	8.5073E-08	2.2848E-02	3.0600E+12	3.4985E-05	1.0067E-03
Nb-95	1.3116E-01	5.8308E-05	1.1167E+01	1.4875E+15	5.3991E-03	1.3944E-01
Mo-99	2.9196E+00	1.3460E-03	3.9628E+02	5.2870E+16	2.7775E-01	7.3659E+00
Tc-99m	2.8170E+00	3.0497E-05	3.8215E+02	5.0941E+16	2.6732E-01	7.0835E+00
Ru-103	7.1719E-02	4.8199E-05	6.2308E+00	8.3004E+14	3.0693E-03	7.9370E-02
Ru-105	1.1648E-10	4.5807E-10	6.3448E-04	8.5414E+10	2.6237E-06	1.0273E-04



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Ru-106	1.2814E-01	4.3488E-03	1.0827E+01	1.4421E+15	5.1980E-03	1.3419E-01
Rh-105	4.6092E-04	8.3427E-08	9.9739E-02	1.3324E+13	9.2256E-05	2.5014E-03
Te-127	9.1048E-01	2.0977E-05	7.7711E+01	1.0345E+16	3.7936E-02	9.8231E-01
Te-127m	9.2893E-01	1.4312E-03	7.9106E+01	1.0537E+16	3.8259E-02	9.8815E-01
Te-129	8.0636E-01	7.0303E-06	7.0429E+01	9.3360E+15	3.4868E-02	9.0229E-01
Te-129m	1.2326E+00	2.1704E-03	1.0766E+02	1.4342E+16	5.3290E-02	1.3785E+00
Te-131m	2.4343E-02	3.8414E-05	6.3911E+00	8.5417E+14	6.5301E-03	1.7904E-01
Te-132	1.5911E+00	1.6029E-03	1.9957E+02	2.6620E+16	1.3235E-01	3.4948E+00
I-131	1.3288E+02	3.6402E-01	1.3074E+04	1.7424E+18	7.1800E+00	1.8703E+02
I-132	1.6434E+00	3.6058E-04	2.7376E+02	3.6535E+16	5.2617E-01	2.4602E+01
I-133	9.7500E+00	2.4120E-02	4.6550E+03	6.2291E+17	6.0921E+00	1.7168E+02
I-134	3.1162E-32	2.4600E-06	1.9414E+00	2.6358E+14	1.4244E-02	1.5774E+00
I-135	5.2837E-03	7.6137E-04	4.3663E+02	5.8715E+16	1.3895E+00	4.7619E+01
Xe-133	2.5710E+01	2.8219E-05	2.0333E+03	2.7058E+17	5.4187E-01	1.1827E+01
Xe-135	2.0645E-01	8.9065E-05	8.4127E+02	1.1273E+17	1.3193E+00	3.2252E+01
Cs-134	1.2814E+02	4.2794E-01	1.0808E+04	1.4396E+18	5.1808E+00	1.3373E+02
Cs-136	6.8445E+00	4.5035E-03	6.3355E+02	8.4419E+16	3.3025E-01	8.5721E+00
Cs-137	7.1572E+01	1.6198E-01	6.0277E+03	8.0289E+17	2.8854E+00	7.4474E+01
Ba-139	8.2460E-25	2.1032E-11	1.2841E-04	1.7330E+10	8.7033E-07	6.6299E-05
Ba-140	6.0326E-03	1.8036E-06	5.5991E-01	7.4607E+13	2.9256E-04	7.5949E-03
La-140	7.4252E-03	3.7673E-06	7.3580E-01	9.8060E+13	4.1564E-04	1.0871E-02
La-141	2.2899E-11	3.5224E-10	6.9049E-04	9.2970E+10	3.0657E-06	1.2593E-04
La-142	2.3255E-23	4.0661E-11	2.7214E-05	3.6696E+09	1.7933E-07	1.2566E-05
Ce-141	5.1293E-02	3.3937E-05	4.4855E+00	5.9756E+14	2.2228E-03	5.7501E-02
Ce-143	3.5566E-04	2.4665E-07	8.3132E-02	1.1107E+13	8.0231E-05	2.1874E-03
Ce-144	1.6189E-01	4.3059E-03	1.3691E+01	1.8237E+15	6.5793E-03	1.6986E-01
Pr-143	2.1357E-02	1.3398E-05	1.9647E+00	2.6179E+14	1.0171E-03	2.6382E-02
Kr-83m	2.1870E-11	7.4828E-11	5.6072E+00	7.5318E+14	2.7059E-02	9.5176E-01
Br-82	1.6342E-01	8.6611E-05	3.5459E+01	4.7369E+15	3.2934E-02	8.9466E-01
Br-83	5.1092E-12	2.4931E-07	3.1783E+00	4.2800E+14	1.8020E-02	9.4991E-01
Br-84	8.5901E-55	6.5163E-08	7.0950E-02	9.7431E+12	5.5124E-04	9.6214E-02
Rb-89	8.2378E-116	5.2789E-10	5.3912E-04	7.6214E+10	4.4724E-06	1.5700E-03
Y-91m	1.2713E-06	2.3370E-09	9.0779E-03	1.2111E+12	2.1959E-05	6.8539E-04



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Nb-95m	6.7587E-04	1.2158E-07	5.8507E-02	7.7935E+12	2.8774E-05	7.4408E-04
Nb-97	1.6940E-06	4.6659E-10	1.3231E-03	1.7642E+11	2.0973E-06	6.5487E-05
Rh-103m	7.2017E-02	2.7376E-08	6.2568E+00	8.2838E+14	3.0820E-03	7.9684E-02
Te-125m	9.0249E-02	4.7644E-05	7.7619E+00	1.0340E+15	3.7883E-03	9.7903E-02
Te-131	5.5566E-03	8.5087E-07	1.4590E+00	1.9236E+14	1.4920E-03	4.1162E-02
Te-133	2.5621E-34	1.7811E-10	3.6590E-04	4.8302E+10	2.6455E-06	2.2996E-04
Te-133m	1.4861E-33	3.0673E-09	2.2251E-03	3.0183E+11	1.6213E-05	1.7173E-03
Te-134	1.3925E-43	8.7320E-10	1.8029E-03	2.4590E+11	1.3603E-05	1.8504E-03
Xe-131m	3.6360E-01	6.5238E-08	1.8851E+01	2.5041E+15	2.7932E-03	5.9619E-02
Xe-133m	1.0949E+00	1.3412E-06	1.1004E+02	1.4655E+16	3.6089E-02	7.9305E-01
Xe-135m	8.6565E-04	1.2964E-05	7.1429E+01	9.3971E+15	2.2676E-01	7.4800E+00
Cs-134m	8.5073E-12	2.5975E-09	5.7987E-02	7.8085E+12	3.0164E-04	1.4313E-02
Cs-138	1.8724E-54	3.8736E-08	3.3341E-02	4.5769E+12	2.5871E-04	4.4639E-02
Ba-141	1.9523E-99	5.7352E-13	1.3095E-06	1.8344E+08	1.0705E-08	3.1462E-06
Total	3.9080E+02	1.0000E+00	0.0000E+00	0.0000E+00	2.6706E+01	7.2840E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.6238E-08
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.6252E-08
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.6363E-08
Total I (Ci)	1.4428E+02
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.4220E-09

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	2.7375E+01	0.0000E+00
Elemental I (Ci)	1.4011E+02	0.0000E+00
Organic I (Ci)	4.3333E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.1898E+02	0.0000E+00
All Aerosols (kg)	9.2161E-04	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000



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Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	1.0526-205	1.0529E-04	9.5150E-06	1.2675E+09	4.3838E-05	1.4976E-05	4.5612E-05	1.0443E-05
Y-91	2.2406-206	1.4959E-04	1.8472E-06	2.4605E+08	9.3319E-06	2.9041E-06	8.8552E-06	2.0684E-06
Zr-95	3.2023-206	1.0479E-04	2.6307E-06	3.5041E+08	1.3337E-05	4.1357E-06	1.2611E-05	2.8869E-06
Nb-95	4.7102-206	3.9139E-05	3.8046E-06	5.0678E+08	1.9617E-05	5.9801E-06	1.8239E-05	4.3830E-06
Mo-99	1.0485-204	1.3888E-03	2.0754E-04	2.7659E+10	4.3667E-04	3.2973E-04	9.9447E-04	2.2792E-04
Tc-99m	1.0116-204	3.1342E-05	1.9934E-04	2.6542E+10	4.2132E-04	3.1655E-04	9.5526E-04	2.2375E-03
Ru-103	2.5755-206	3.3054E-05	2.1688E-06	2.8890E+08	1.0727E-05	3.4106E-06	1.0397E-05	2.3801E-06
Ru-106	4.6017-206	2.8959E-03	3.6592E-06	4.8741E+08	1.9166E-05	5.7505E-06	1.7542E-05	4.0156E-06
Te-127	3.2696-205	1.4305E-05	2.6898E-05	3.5807E+09	1.3618E-04	4.2338E-05	1.2893E-04	2.1646E-04
Te-127m	3.3359-205	9.6109E-04	2.6962E-05	3.5914E+09	1.3894E-04	4.2379E-05	1.2925E-04	2.9588E-05
Te-129	2.8957-205	4.8539E-06	2.4681E-05	3.2707E+09	1.2060E-04	3.8843E-05	1.1831E-04	1.4301E-03
Te-129m	4.4265-205	1.4967E-03	3.7682E-05	5.0194E+09	1.8436E-04	5.9265E-05	1.8064E-04	4.1354E-05
Te-131m	8.7417-207	6.2147E-05	5.2481E-06	6.9982E+08	3.6409E-06	8.4498E-06	2.5128E-05	5.7686E-06
Te-132	5.7138-205	1.5502E-03	9.7962E-05	1.3055E+10	2.3797E-04	1.5537E-04	4.6945E-04	1.0757E-04
I-131	3.0802-196	4.1804E-01	7.6204E-03	1.0152E+12	2.8183E-02	2.2188E-02	2.4717E-02	8.3874E-03
I-132	2.0685-204	4.3382E-03	1.6717E-03	2.2422E+11	2.4580E-04	5.4334E-03	5.4249E-03	4.6987E-03
I-133	2.2603-197	7.8146E-02	7.6550E-03	1.0212E+12	2.0679E-03	2.2570E-02	2.4858E-02	8.4168E-03
I-134	7.2237-230	3.4368E-04	1.3767E-04	1.8655E+10	6.6056E-36	5.3414E-04	4.4480E-04	1.6645E-04
I-135	1.2249-200	8.8731E-03	2.5828E-03	3.4524E+11	1.1207E-06	7.8411E-03	8.3871E-03	2.8457E-03
Xe-133	1.1921E-04	2.0761E-03	7.5927E-02	9.0767E+12	0.0000E+00	6.7943E-02	1.1797E-03	7.5041E-02
Xe-135	8.8551E-07	2.7182E-02	1.3032E-01	1.6441E+13	0.0000E+00	1.2279E-01	3.7072E-03	1.3602E-01
Cs-134	4.6014-203	2.8446E-01	3.6463E-03	4.8569E+11	1.9165E-02	5.7299E-03	1.7480E-02	4.0014E-03
Cs-136	2.4579-204	3.2956E-03	2.3531E-04	3.1347E+10	1.0237E-03	3.7062E-04	1.1280E-03	2.5827E-04
Cs-137	2.5702-203	1.0750E-01	2.0304E-03	2.7045E+11	1.0705E-02	3.1905E-03	9.7336E-03	2.2281E-03
Ba-140	2.1663-207	1.3234E-06	2.0853E-07	2.7779E+07	9.0226E-07	3.2846E-07	9.9960E-07	2.2887E-07
La-140	2.6664-207	3.0393E-06	3.0129E-07	4.0139E+07	1.1106E-06	4.7609E-07	1.4440E-06	6.7512E-07
Ce-141	1.8420-206	2.3433E-05	1.5720E-06	2.0940E+08	7.6716E-06	2.4725E-06	7.5359E-06	1.7259E-06
Ce-144	5.8136-206	2.8703E-03	4.6323E-06	6.1702E+08	2.4213E-05	7.2798E-06	2.2207E-05	5.0834E-06
Pr-143	7.6694-207	9.7226E-06	7.2364E-07	9.6398E+07	3.1942E-06	1.1394E-06	3.4689E-06	8.0739E-07
Kr-83m	3.9884E-15	1.2806E-07	4.8706E-03	6.3259E+11	0.0000E+00	6.3716E-03	1.7495E-04	5.2311E-03



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Br-82	3.7885-199	1.8419E-04	3.8275E-05	5.1031E+09	3.4661E-05	1.1220E-04	1.2424E-04	4.2011E-05
Br-83	1.1844-209	1.0564E-05	6.8354E-05	9.1687E+09	1.0836E-15	2.2299E-04	2.2140E-04	7.5841E-05
Br-84	1.9914-252	1.6133E-05	8.9155E-06	1.2204E+09	1.8219E-58	4.0260E-05	2.8804E-05	1.0305E-05
Y-91m	4.5653-211	1.1748E-08	2.3161E-08	3.0715E+06	1.9014E-10	3.8794E-08	1.1052E-07	1.8012E-06
Rh-103m	2.5862-206	1.8764E-08	2.1767E-06	2.8808E+08	1.0771E-05	3.4210E-06	1.0435E-05	1.5599E-04
Te-125m	3.2409-206	3.2329E-05	2.6732E-06	3.5609E+08	1.3498E-05	4.2029E-06	1.2815E-05	2.9337E-06
Te-131	1.9954-207	1.4005E-06	1.2189E-06	1.6035E+08	8.3107E-07	2.0143E-06	5.8255E-06	1.8961E-04
Te-133	9.2008-239	1.2770E-08	1.3315E-08	1.7034E+06	3.8321E-38	1.7970E-08	6.1870E-08	5.0220E-06
Xe-131m	7.9778E-06	6.0350E-06	8.8510E-04	1.0162E+11	0.0000E+00	7.5720E-04	5.7962E-06	8.3878E-04
Xe-133m	8.4693E-06	1.2797E-04	5.3293E-03	6.3627E+11	0.0000E+00	4.7957E-03	7.9716E-05	5.2609E-03
Xe-135m	1.4150E-06	5.3584E-02	1.4986E-01	1.8171E+13	0.0000E+00	4.6869E-01	1.2727E-03	1.5276E-01
Cs-134m	3.0551-216	5.9800E-08	6.7759E-07	9.0795E+07	1.2724E-15	1.3445E-06	3.1702E-06	7.5261E-07
Cs-138	6.7239-259	7.0505E-06	3.0802E-06	4.2129E+08	2.8005E-58	1.1194E-05	1.3348E-05	3.5880E-06
Total	1.3796E-04	1.0000E+00	0.0000E+00	0.0000E+00	6.3284E-02	7.4064E-01	1.0217E-01	4.1098E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	1.3796E-04	0.0000E+00
Elemental I (Ci)	3.2109-196	0.0000E+00
Organic I (Ci)	9.9305-198	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	7.8638-203	0.0000E+00
All Aerosols (kg)	3.3096-208	0.0000E+00

Time (h) = 96.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	2.9616E-02
Organic I (Ci)	0.0000E+00	9.1597E-04
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	3.2752E-02
All Aerosols (kg)	0.0000E+00	1.3784E-07



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:38

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Exclusion Area Boundary Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	3.2154E-02	1.8752E+01	1.2658E+00

Low Population Zone Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	2.0039E-03	1.1780E+00	7.8786E-02

Control Room Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	7.5006E-07	2.6218-194	7.5006E-07	9.7891E-05
Accumulated dose (rem)	1.6267E-03	8.7694E+00	4.7971E-01	8.9277E-02

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	5.9481E+00 Atmosphere	1.2721E-04	7.8724E+03	1.0489E+18	5.5681E-04	3.4733E-01	1.1596E-01
Sr-89	1.8297E-01	1.6362E-05	1.6307E+02	2.1723E+16	8.4677E-06	5.3530E-03	1.7872E-03



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Sr-90	2.5441E-02	5.7680E-05	1.8343E+01	2.4433E+15	7.8330E-07	4.9743E-04	1.6607E-04
Sr-91	1.7928E-24	7.9373E-09	1.6180E+00	2.1664E+14	3.5270E-06	1.0844E-03	3.6263E-04
Sr-92	5.3879E-82	7.5054E-10	2.0335E-01	2.7281E+13	1.4713E-06	1.6402E-04	5.5165E-05
Y-90	2.5457E-02	4.1048E-07	2.0092E+01	2.6764E+15	1.3610E-06	8.2183E-04	2.7440E-04
Y-91	2.4444E+00	2.5002E-04	2.1141E+03	2.8163E+17	1.0713E-04	6.7652E-02	2.2587E-02
Y-92	1.3707E-62	1.1793E-09	5.3050E-01	7.1011E+13	1.9194E-06	4.2172E-04	1.4121E-04
Y-93	1.4376E-23	3.2470E-09	6.0841E-01	8.1452E+13	1.2493E-06	3.9841E-04	1.3322E-04
Zr-95	3.5867E+00	1.7757E-04	3.0528E+03	4.0667E+17	1.5252E-04	9.6357E-02	3.2170E-02
Zr-97	1.2088E-14	2.1210E-08	1.9799E+00	2.6481E+14	2.4548E-06	1.0067E-03	3.3640E-04
Nb-95	5.8301E+00	7.0337E-05	4.6822E+03	6.2370E+17	2.2022E-04	1.3944E-01	4.6555E-02
Mo-99	2.2183E-01	3.9725E-04	4.0652E+04	5.4235E+18	1.3070E-02	7.3659E+00	2.4597E+00
Tc-99m	2.1403E-01	8.9983E-06	3.9192E+04	5.2241E+18	1.2505E-02	7.0835E+00	2.3653E+00
Ru-103	2.4164E+00	5.1067E-05	2.2945E+03	3.0568E+17	1.2605E-04	7.9370E-02	2.6499E-02
Ru-105	3.0629E-51	2.7004E-10	1.3001E-01	1.7423E+13	5.9034E-07	1.0273E-04	3.4441E-05
Ru-106	6.5048E+00	5.5706E-03	4.8203E+03	6.4207E+17	2.1149E-04	1.3419E-01	4.4800E-02
Rh-105	1.1971E-07	1.9813E-08	8.2328E+00	1.0994E+15	4.8462E-06	2.5014E-03	8.3542E-04
Te-127	4.1139E+01	2.5371E-05	3.2668E+04	4.3489E+18	1.5751E-03	9.8231E-01	3.2796E-01
Te-127m	4.1974E+01	1.7339E-03	3.3310E+04	4.4372E+18	1.5608E-03	9.8815E-01	3.2991E-01
Te-129	2.5141E+01	7.2006E-06	2.5073E+04	3.3237E+18	1.4429E-03	9.0229E-01	3.0124E-01
Te-129m	3.8432E+01	2.2230E-03	3.8326E+04	5.1059E+18	2.1923E-03	1.3785E+00	4.6022E-01
Te-131m	7.1080E-07	8.9530E-06	5.1773E+02	6.9162E+16	3.6415E-04	1.7904E-01	5.9801E-02
Te-132	3.3606E-01	5.1756E-04	2.2397E+04	2.9875E+18	6.0890E-03	3.4948E+00	1.1670E+00
I-131	7.5301E+02	2.0633E-01	2.5757E+06	3.4331E+20	3.0695E-01	1.8703E+02	6.2446E+01
I-132	3.4711E-01	1.8616E-04	4.9124E+04	6.5675E+18	2.2524E-01	2.4602E+01	8.2758E+00
I-133	4.8407E-07	5.7241E-03	3.8398E+05	5.1333E+19	3.8796E-01	1.7168E+02	5.7357E+01
I-134	8.9363-245	7.0744E-06	1.9406E+03	2.6304E+17	3.8146E-02	1.5774E+00	5.3851E-01
I-135	1.0759E-29	3.2075E-04	6.3935E+04	8.5645E+18	1.9814E-01	4.7619E+01	1.5939E+01
Xe-133	4.8835E+01	1.4911E-05	3.7344E+05	4.9760E+19	5.6497E-04	1.1827E+01	3.9426E+00
Xe-135	2.5451E-20	1.9342E-05	6.3502E+04	8.4875E+18	3.6790E-03	3.2252E+01	1.0752E+01
Cs-134	6.6691E+03	5.5488E-01	4.8708E+06	6.4879E+20	2.1067E-01	1.3373E+02	4.4647E+01
Cs-136	9.2189E+01	3.3287E-03	1.6276E+05	2.1689E+19	1.3847E-02	8.5721E+00	2.8620E+00
Cs-137	3.8092E+03	2.1233E-01	2.7464E+06	3.6582E+20	1.1727E-01	7.4474E+01	2.4864E+01
Ba-139	2.2937-159	3.8594E-11	8.1902E-02	1.1037E+13	1.0956E-06	6.6299E-05	2.2465E-05



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Ba-140	7.8155E-02	1.3154E-06	1.4193E+02	1.8914E+16	1.2277E-05	7.5949E-03	2.5357E-03
La-140	9.0023E-02	2.5219E-06	1.7120E+02	2.2814E+16	1.8196E-05	1.0871E-02	3.6299E-03
La-141	1.9475E-57	2.3183E-10	1.5796E-01	2.1171E+13	7.9393E-07	1.2593E-04	4.2240E-05
La-142	1.7758E-143	6.6769E-11	1.5533E-02	2.0909E+12	1.8816E-07	1.2566E-05	4.2513E-06
Ce-141	1.5705E+00	3.4488E-05	1.5844E+03	2.1108E+17	9.1479E-05	5.7501E-02	1.9198E-02
Ce-143	3.8515E-08	5.8041E-08	6.7993E+00	9.0813E+14	4.3513E-06	2.1874E-03	7.3060E-04
Ce-144	8.1000E+00	5.4772E-03	6.0532E+03	8.0630E+17	2.6778E-04	1.6986E-01	5.6709E-02
Pr-143	3.0196E-01	1.0099E-05	5.1471E+02	6.8588E+16	4.2486E-05	2.6382E-02	8.8082E-03
Kr-83m	2.9611E-88	4.5418E-11	1.1829E+03	1.5745E+17	9.3549E-04	9.5176E-01	3.1757E-01
Br-82	4.1571E-05	2.0590E-05	2.9300E+03	3.9129E+17	1.7539E-03	8.9466E-01	2.9881E-01
Br-83	6.9163E-89	2.6548E-07	1.1763E+03	1.5790E+17	9.5646E-03	9.4991E-01	3.1982E-01
Br-84	0.0000E+00	3.0993E-07	1.1729E+02	1.6060E+16	3.4112E-03	9.6214E-02	3.3208E-02
Rb-89	0.0000E+00	5.2189E-09	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	1.1432E-24	7.5867E-10	1.0243E+00	1.3623E+14	2.0922E-06	6.8539E-04	2.2916E-04
Nb-95m	2.6615E-02	1.3663E-07	2.2853E+01	3.0442E+15	1.1820E-06	7.4408E-04	2.4842E-04
Nb-97	6.9302E-16	1.2490E-10	1.2310E-01	1.6407E+13	2.8518E-07	6.5487E-05	2.1924E-05
Rh-103m	2.4265E+00	2.9004E-08	2.3041E+03	3.0506E+17	1.2602E-04	7.9684E-02	2.6603E-02
Te-125m	3.5261E+00	5.3948E-05	3.0548E+03	4.0694E+17	1.5506E-04	9.7903E-02	3.2686E-02
Te-131	1.6225E-07	1.9888E-07	1.1854E+02	1.5620E+16	9.4964E-05	4.1162E-02	1.3752E-02
Te-133	4.9618E-236	4.0306E-10	2.8780E-01	3.7210E+13	2.8579E-06	2.2996E-04	7.7605E-05
Te-133m	2.8780E-235	8.3844E-09	2.1140E+00	2.8632E+14	3.9851E-05	1.7173E-03	5.8572E-04
Te-134	1.7374E-311	3.1613E-09	2.2687E+00	3.0877E+14	5.3673E-05	1.8504E-03	6.3468E-04
Xe-131m	2.2875E+01	1.9072E-07	1.9155E+04	2.5510E+18	2.2487E-06	5.9619E-02	1.9874E-02
Xe-133m	1.8071E-02	3.8880E-07	1.1087E+04	1.4778E+18	4.0386E-05	7.9305E-01	2.6436E-01
Xe-135m	1.7627E-30	5.2715E-06	1.0096E+04	1.3184E+18	1.4530E-02	7.4800E+00	2.4982E+00
Cs-134m	7.6426E-75	2.2891E-09	1.7762E+01	2.3824E+15	1.2064E-04	1.4313E-02	4.8113E-03
Cs-138	0.0000E+00	1.8195E-07	5.4435E+01	7.4512E+15	1.5688E-03	4.4639E-02	1.5403E-02
Ba-141	0.0000E+00	4.7316E-12	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	1.1586E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.5756E+00	7.2840E+02	2.4333E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	5.7048E-08
Dose Equivalent (Ci/cc) I-131 (CEDE)	5.7048E-08
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	5.7049E-08



Total I (Ci) 7.5336E+02
Dose Equivalent (Ci/cc) Xe-133 (EDE) 4.1331E-09

RCS Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	7.1728E+01	0.0000E+00
Elemental I (Ci)	7.3076E+02	0.0000E+00
Organic I (Ci)	2.2601E+01	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.0761E+04	0.0000E+00
All Aerosols (kg)	4.8926E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	1.1158E-01	1.2689E-04	1.4361E+02	1.9135E+16	1.3404E-02	3.4733E-01
Sr-89	3.4323E-03	1.6440E-05	2.9965E+00	3.9919E+14	2.0711E-04	5.3530E-03
Sr-90	4.7724E-04	5.8168E-05	3.3831E-01	4.5063E+13	1.9272E-05	4.9743E-04
Sr-91	3.3631E-26	3.8287E-09	1.4274E-02	1.9166E+12	3.4517E-05	1.0844E-03
Sr-92	1.0107E-83	1.2542E-10	6.2143E-04	8.3681E+10	3.3360E-06	1.6402E-04
Y-90	4.7755E-04	4.1017E-07	3.6717E-01	4.8910E+13	3.1495E-05	8.2183E-04
Y-91	4.5853E-02	2.5135E-04	3.8870E+01	5.1780E+15	2.6179E-03	6.7652E-02
Y-92	2.5713E-64	3.2768E-10	2.6958E-03	3.6286E+11	1.1328E-05	4.2172E-04
Y-93	2.6968E-25	1.6268E-09	5.5750E-03	7.4836E+11	1.2834E-05	3.9841E-04
Zr-95	6.7282E-02	1.7856E-04	5.6143E+01	7.4790E+15	3.7290E-03	9.6357E-02
Zr-97	2.2675E-16	1.3802E-08	2.3563E-02	3.1559E+12	3.4985E-05	1.0067E-03
Nb-95	1.0936E-01	7.0811E-05	8.6207E+01	1.1483E+16	5.3991E-03	1.3944E-01
Mo-99	4.1612E-03	3.5978E-04	6.7334E+02	8.9847E+16	2.7775E-01	7.3659E+00
Tc-99m	4.0149E-03	8.1536E-06	6.4948E+02	8.6586E+16	2.6732E-01	7.0835E+00
Ru-103	4.5329E-02	5.1252E-05	4.2116E+01	5.6108E+15	3.0693E-03	7.9370E-02
Ru-105	5.7457E-53	7.2061E-11	6.3448E-04	8.5415E+10	2.6237E-06	1.0273E-04



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Ru-106	1.2202E-01	5.6151E-03	8.8860E+01	1.1836E+16	5.1980E-03	1.3419E-01
Rh-105	2.2456E-09	1.6208E-08	1.2317E-01	1.6456E+13	9.2256E-05	2.5014E-03
Te-127	7.7171E-01	2.5536E-05	6.0132E+02	8.0052E+16	3.7936E-02	9.8231E-01
Te-127m	7.8737E-01	1.7457E-03	6.1335E+02	8.1702E+16	3.8259E-02	9.8815E-01
Te-129	4.7162E-01	7.2202E-06	4.5979E+02	6.0952E+16	3.4868E-02	9.0229E-01
Te-129m	7.2093E-01	2.2291E-03	7.0285E+02	9.3637E+16	5.3290E-02	1.3785E+00
Te-131m	1.3334E-08	7.0353E-06	7.4404E+00	9.9451E+14	6.5301E-03	1.7904E-01
Te-132	6.3040E-03	4.7770E-04	3.7807E+02	5.0435E+16	1.3235E-01	3.4948E+00
I-131	1.4125E+01	2.0197E-01	4.6110E+04	6.1461E+18	7.1800E+00	1.8703E+02
I-132	6.5113E-03	9.4926E-05	4.5812E+02	6.1073E+16	5.2617E-01	2.4602E+01
I-133	9.0804E-09	4.0314E-03	4.9459E+03	6.6189E+17	6.0921E+00	1.7168E+02
I-134	1.6763E-24	3.8699E-07	1.9414E+00	2.6358E+14	1.4244E-02	1.5774E+00
I-135	2.0183E-31	1.1979E-04	4.3668E+02	5.8722E+16	1.3895E+00	4.7619E+01
Xe-133	9.1608E-01	1.5079E-05	6.9064E+03	9.2035E+17	5.4187E-01	1.1827E+01
Xe-135	4.7742E-22	1.4057E-05	8.4399E+02	1.1310E+17	1.3193E+00	3.2252E+01
Cs-134	1.2510E+02	5.5945E-01	8.9813E+04	1.1963E+19	5.1808E+00	1.3373E+02
Cs-136	1.7293E+00	3.3018E-03	2.9526E+03	3.9347E+17	3.3025E-01	8.5721E+00
Cs-137	7.1455E+01	2.1413E-01	5.0652E+04	6.7469E+18	2.8854E+00	7.4474E+01
Ba-139	4.3027E-16	3.3087E-12	1.2841E-04	1.7330E+10	8.7033E-07	6.6299E-05
Ba-140	1.4661E-03	1.3040E-06	2.5733E+00	3.4292E+14	2.9256E-04	7.5949E-03
La-140	1.6887E-03	2.4828E-06	3.0825E+00	4.1077E+14	4.1564E-04	1.0871E-02
La-141	3.6533E-59	5.5413E-11	6.9049E-04	9.2970E+10	3.0657E-06	1.2593E-04
La-142	3.3312E-14	6.3965E-12	2.7214E-05	3.6696E+09	1.7933E-07	1.2566E-05
Ce-141	2.9460E-02	3.4575E-05	2.9049E+01	3.8701E+15	2.2228E-03	5.7501E-02
Ce-143	7.2248E-10	4.6676E-08	1.0000E-01	1.3363E+13	8.0231E-05	2.1874E-03
Ce-144	1.5195E-01	5.5201E-03	1.1157E+02	1.4862E+16	6.5793E-03	1.6986E-01
Pr-143	5.6644E-03	1.0026E-05	9.3460E+00	1.2454E+15	1.0171E-03	2.6382E-02
Kr-83m	5.5546E-90	1.1771E-11	5.6072E+00	7.5318E+14	2.7059E-02	9.5176E-01
Br-82	7.7981E-07	1.6812E-05	4.3753E+01	5.8455E+15	3.2934E-02	8.9466E-01
Br-83	1.2974E-90	3.9220E-08	3.1783E+00	4.2800E+14	1.8020E-02	9.4991E-01
Br-84	0.0000E+00	1.0251E-08	7.0950E-02	9.7431E+12	5.5124E-04	9.6214E-02
Rb-89	0.0000E+00	8.3044E-11	5.3912E-04	7.6214E+10	4.4724E-06	1.5700E-03
Y-91m	2.1445E-26	3.6834E-10	9.0951E-03	1.2134E+12	2.1959E-05	6.8539E-04



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Nb-95m	4.9925E-04	1.3731E-07	4.2001E-01	5.5948E+13	2.8774E-05	7.4408E-04
Nb-97	1.3000E-17	7.5676E-11	1.3641E-03	1.8190E+11	2.0973E-06	6.5487E-05
Rh-103m	4.5518E-02	2.9110E-08	4.2292E+01	5.5995E+15	3.0820E-03	7.9684E-02
Te-125m	6.6145E-02	5.4233E-05	5.6163E+01	7.4817E+15	3.7883E-03	9.7903E-02
Te-131	3.0436E-09	1.5583E-07	1.6985E+00	2.2396E+14	1.4920E-03	4.1162E-02
Te-133	9.3076E-238	2.8020E-11	3.6590E-04	4.8302E+10	2.6455E-06	2.2996E-04
Te-133m	5.3987E-237	4.8253E-10	2.2251E-03	3.0183E+11	1.6213E-05	1.7173E-03
Te-134	3.2591E-313	1.3737E-10	1.8029E-03	2.4590E+11	1.3603E-05	1.8504E-03
Xe-131m	4.2910E-01	1.9537E-07	3.5884E+02	4.7791E+16	2.7932E-03	5.9619E-02
Xe-133m	3.3899E-04	3.8588E-07	2.0125E+02	2.6830E+16	3.6089E-02	7.9305E-01
Xe-135m	3.3066E-32	2.0396E-06	7.1437E+01	9.3982E+15	2.2676E-01	7.4800E+00
Cs-134m	1.4337E-76	4.0863E-10	5.7987E-02	7.8085E+12	3.0164E-04	1.4313E-02
Cs-138	0.0000E+00	6.0937E-09	3.3341E-02	4.5769E+12	2.5871E-04	4.4639E-02
Ba-141	0.0000E+00	9.0223E-14	1.3095E-06	1.8344E+08	1.0705E-08	3.1462E-06
Total	2.1734E+02	1.0000E+00	0.0000E+00	0.0000E+00	2.6706E+01	7.2840E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.7052E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.7052E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.7052E-09
Total I (Ci)	1.4132E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.2354E-10

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	1.3455E+00	0.0000E+00
Elemental I (Ci)	1.3708E+01	0.0000E+00
Organic I (Ci)	4.2396E-01	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.0186E+02	0.0000E+00
All Aerosols (kg)	9.1779E-04	0.0000E+00

Environment Integral Nuclide Release (Ci): at Time (h) = 720.0000



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Nuclide	Compartment	Dose Fract Pathway 1	Dose Fract Pathway 5	Dose Fract Pathway 7	Dose Fract Pathway 8
Rb-86	1.2992E-01	0.00000	0.00001	0.00013	0.00000
Sr-89	2.0027E-03	0.00000	0.00000	0.00001	0.00000
Sr-90	1.8613E-04	0.00000	0.00000	0.00004	0.00000
Sr-91	4.0068E-04	0.00000	0.00000	0.00000	0.00000
Sr-92	5.9972E-05	0.00000	0.00000	0.00000	0.00000
Y-90	3.0725E-04	0.00000	0.00000	0.00000	0.00000
Y-91	2.5312E-02	0.00000	0.00002	0.00018	0.00000
Y-92	1.5446E-04	0.00000	0.00000	0.00000	0.00000
Y-93	1.4730E-04	0.00000	0.00000	0.00000	0.00000
Zr-95	3.6051E-02	0.00000	0.00001	0.00013	0.00000
Zr-97	3.7384E-04	0.00000	0.00000	0.00000	0.00000
Nb-95	5.2174E-02	0.00000	0.00000	0.00005	0.00000
Mo-99	2.7505E+00	0.00002	0.00016	0.00165	0.00000
Tc-99m	2.6451E+00	0.00000	0.00000	0.00004	0.00000
Ru-103	2.9694E-02	0.00000	0.00000	0.00004	0.00000
Ru-105	3.7655E-05	0.00000	0.00000	0.00000	0.00000
Ru-106	5.0210E-02	0.00004	0.00035	0.00348	0.00000
Rh-105	9.3253E-04	0.00000	0.00000	0.00000	0.00000
Te-127	3.6747E-01	0.00000	0.00000	0.00002	0.00000
Te-127m	3.6973E-01	0.00001	0.00012	0.00115	0.00000
Te-129	3.3755E-01	0.00000	0.00000	0.00001	0.00000
Te-129m	5.1570E-01	0.00002	0.00018	0.00179	0.00000
Te-131m	6.6695E-02	0.00000	0.00001	0.00007	0.00000
Te-132	1.3054E+00	0.00002	0.00018	0.00184	0.00000
I-131	6.9933E+01	0.00396	0.03397	0.33831	0.00000
I-132	9.0272E+00	0.00014	0.00016	0.00332	0.00000
I-133	6.3838E+01	0.00093	0.00557	0.06171	0.00000
I-134	5.9090E-01	0.00002	0.00001	0.00028	0.00000
I-135	1.7527E+01	0.00016	0.00047	0.00674	0.00000
Xe-133	4.5384E+00	0.00000	0.00000	0.00001	0.00000



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Xe-135	2.0234E+01	0.00000	0.00002	0.00020	0.00000
Cs-134	5.0039E+01	0.00387	0.03471	0.34140	0.00000
Cs-136	3.2061E+00	0.00005	0.00040	0.00395	0.00000
Cs-137	2.7866E+01	0.00146	0.01312	0.12902	0.00000
Ba-139	2.4431E-05	0.00000	0.00000	0.00000	0.00000
Ba-140	2.8405E-03	0.00000	0.00000	0.00000	0.00000
La-140	4.0637E-03	0.00000	0.00000	0.00000	0.00000
La-141	4.6100E-05	0.00000	0.00000	0.00000	0.00000
La-142	4.6188E-06	0.00000	0.00000	0.00000	0.00000
Ce-141	2.1512E-02	0.00000	0.00000	0.00003	0.00000
Ce-143	8.1518E-04	0.00000	0.00000	0.00000	0.00000
Ce-144	6.3556E-02	0.00004	0.00035	0.00344	0.00000
Pr-143	9.8677E-03	0.00000	0.00000	0.00001	0.00000
Kr-83m	3.6612E-01	0.00000	0.00000	0.00000	0.00000
Br-82	3.3349E-01	0.00000	0.00001	0.00015	0.00000
Br-83	3.4741E-01	0.00000	0.00000	0.00001	0.00000
Br-84	3.7171E-02	0.00000	0.00000	0.00001	0.00000
Rb-89	6.4273E-04	0.00000	0.00000	0.00000	0.00000
Y-91m	2.5321E-04	0.00000	0.00000	0.00000	0.00000
Nb-95m	2.7838E-04	0.00000	0.00000	0.00000	0.00000
Nb-97	2.4306E-05	0.00000	0.00000	0.00000	0.00000
Rh-103m	2.9811E-02	0.00000	0.00000	0.00000	0.00000
Te-125m	3.6629E-02	0.00000	0.00000	0.00004	0.00000
Te-131	1.5339E-02	0.00000	0.00000	0.00000	0.00000
Te-133	8.3108E-05	0.00000	0.00000	0.00000	0.00000
Te-133m	6.4178E-04	0.00000	0.00000	0.00000	0.00000
Te-134	7.0196E-04	0.00000	0.00000	0.00000	0.00000
Xe-131m	2.2842E-02	0.00000	0.00000	0.00000	0.00000
Xe-133m	3.0283E-01	0.00000	0.00000	0.00000	0.00000
Xe-135m	3.5914E+00	0.00000	0.00001	0.00011	0.00000
Cs-134m	5.2336E-03	0.00000	0.00000	0.00000	0.00000
Cs-138	1.7230E-02	0.00000	0.00000	0.00001	0.00000
Ba-141	1.2694E-06	0.00000	0.00000	0.00000	0.00000



Environment Compartment Group Inventory Distribution:

	Total Release	Release Rate/s
Time (h) = 720.0000		
Noble gases (Ci)	2.9056E+01	1.1210E-05
Elemental I (Ci)	1.5678E+02	6.0488E-05
Organic I (Ci)	4.8490E+00	1.8708E-06
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	9.0007E+01	3.4725E-05

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	0.0000E+00	1.0528E-04	9.5150E-06	1.2675E+09	1.6688E-05	1.4976E-05	4.5612E-05	1.0443E-05
Y-91	0.0000E+00	1.4957E-04	1.8472E-06	2.4605E+08	6.8581E-06	2.9041E-06	8.8552E-06	4.5019E-06
Y-92	0.0000E+00	2.5536E-08	1.6776E-08	2.2404E+06	3.8458E-68	2.9398E-08	7.9630E-08	1.2528E-06
Zr-95	0.0000E+00	1.0477E-04	2.6307E-06	3.5041E+08	1.0063E-05	4.1357E-06	1.2611E-05	2.8869E-06
Nb-95	0.0000E+00	3.9134E-05	3.8046E-06	5.0678E+08	1.6357E-05	5.9801E-06	1.8239E-05	5.8973E-06
Mo-99	0.0000E+00	1.3886E-03	2.0754E-04	2.7659E+10	6.2238E-07	3.2973E-04	9.9447E-04	2.2792E-04
Tc-99m	0.0000E+00	3.1339E-05	1.9934E-04	2.6542E+10	6.0050E-07	3.1655E-04	9.5526E-04	1.6582E-02
Ru-103	0.0000E+00	3.3050E-05	2.1688E-06	2.8890E+08	6.7796E-06	3.4106E-06	1.0397E-05	2.3801E-06
Ru-106	0.0000E+00	2.8955E-03	3.6592E-06	4.8741E+08	1.8250E-05	5.7505E-06	1.7542E-05	4.0156E-06
Te-127	0.0000E+00	1.4303E-05	2.6898E-05	3.5807E+09	1.1542E-04	4.2338E-05	1.2893E-04	1.5523E-03
Te-127m	0.0000E+00	9.6097E-04	2.6962E-05	3.5914E+09	1.1776E-04	4.2379E-05	1.2925E-04	2.9588E-05
Te-129	0.0000E+00	4.8533E-06	2.4681E-05	3.2707E+09	7.0538E-05	3.8843E-05	1.1831E-04	1.1453E-02
Te-129m	0.0000E+00	1.4965E-03	3.7682E-05	5.0194E+09	1.0783E-04	5.9265E-05	1.8064E-04	4.1354E-05
Te-131m	0.0000E+00	6.2140E-05	5.2481E-06	6.9982E+08	1.9943E-12	8.4498E-06	2.5128E-05	5.7686E-06
Te-132	0.0000E+00	1.5500E-03	9.7962E-05	1.3055E+10	9.4286E-07	1.5537E-04	4.6945E-04	1.0757E-04
I-131	0.0000E+00	4.1798E-01	7.6204E-03	1.0152E+12	2.9958E-03	2.2188E-02	2.4717E-02	1.0286E-02
I-132	0.0000E+00	4.3377E-03	1.6717E-03	2.2422E+11	9.7387E-07	5.4334E-03	5.4249E-03	2.4927E-02
I-133	0.0000E+00	7.8136E-02	7.6550E-03	1.0212E+12	1.9259E-12	2.2570E-02	2.4858E-02	8.8533E-03



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

I-134	0.0000E+00	3.4364E-04	1.3767E-04	1.8655E+10	3.5535-250	5.3414E-04	4.4480E-04	2.3513E-04
I-135	0.0000E+00	8.8720E-03	2.5828E-03	3.4524E+11	4.2807E-35	7.8411E-03	8.3871E-03	2.8457E-03
Xe-133	1.1925E-13	2.1745E-03	7.9535E-02	9.4795E+12	0.0000E+00	7.0816E-02	1.1797E-03	7.8390E-02
Xe-135	3.6390E-35	2.7181E-02	1.3033E-01	1.6442E+13	0.0000E+00	1.2279E-01	3.7072E-03	1.3603E-01
Cs-134	0.0000E+00	2.8442E-01	3.6463E-03	4.8569E+11	1.8711E-02	5.7299E-03	1.7480E-02	4.0014E-03
Cs-136	0.0000E+00	3.2951E-03	2.3531E-04	3.1347E+10	2.5865E-04	3.7062E-04	1.1280E-03	2.5827E-04
Cs-137	0.0000E+00	1.0748E-01	2.0304E-03	2.7045E+11	1.0687E-02	3.1905E-03	9.7336E-03	2.2281E-03
Ba-140	0.0000E+00	1.3233E-06	2.0853E-07	2.7779E+07	2.1927E-07	3.2846E-07	9.9960E-07	2.2887E-07
La-140	0.0000E+00	3.0389E-06	3.0129E-07	4.0139E+07	2.5257E-07	4.7609E-07	1.4440E-06	3.1332E-06
Ce-141	0.0000E+00	2.3430E-05	1.5720E-06	2.0940E+08	4.4063E-06	2.4725E-06	7.5359E-06	1.7403E-06
Ce-144	0.0000E+00	2.8700E-03	4.6323E-06	6.1702E+08	2.2726E-05	7.2798E-06	2.2207E-05	5.0834E-06
Pr-143	0.0000E+00	9.7213E-06	7.2364E-07	9.6398E+07	8.4720E-07	1.1394E-06	3.4689E-06	9.0041E-07
Kr-83m	1.0859E-93	1.2804E-07	4.8706E-03	6.3259E+11	0.0000E+00	6.3716E-03	1.7495E-04	5.2311E-03
Br-82	0.0000E+00	1.8417E-04	3.8275E-05	5.1031E+09	1.6539E-10	1.1220E-04	1.2424E-04	4.2011E-05
Br-83	0.0000E+00	1.0562E-05	6.8354E-05	9.1687E+09	2.7517E-94	2.2299E-04	2.2140E-04	7.5841E-05
Br-84	0.0000E+00	1.6131E-05	8.9155E-06	1.2204E+09	0.0000E+00	4.0260E-05	2.8804E-05	1.0305E-05
Y-91m	0.0000E+00	1.1746E-08	2.3161E-08	3.0715E+06	3.2074E-30	3.8794E-08	1.1052E-07	1.4076E-05
Rh-103m	0.0000E+00	1.8762E-08	2.1767E-06	2.8808E+08	6.8079E-06	3.4210E-06	1.0435E-05	1.2534E-03
Te-125m	0.0000E+00	3.2325E-05	2.6732E-06	3.5609E+08	9.8930E-06	4.2029E-06	1.2815E-05	2.9337E-06
Te-131	0.0000E+00	1.4003E-06	1.2189E-06	1.6035E+08	4.5521E-13	2.0143E-06	5.8255E-06	1.5187E-03
Te-133	0.0000E+00	1.2768E-08	1.3315E-08	1.7034E+06	1.3921-241	1.7970E-08	6.1870E-08	3.7923E-05
Xe-131m	9.1054E-07	2.0238E-05	2.9686E-03	3.2659E+11	0.0000E+00	2.3929E-03	5.7962E-06	2.6987E-03
Xe-133m	8.4713E-15	1.3411E-04	5.5856E-03	6.6490E+11	0.0000E+00	5.0014E-03	7.9716E-05	5.4988E-03
Xe-135m	5.6054E-35	5.3583E-02	1.4987E-01	1.8172E+13	0.0000E+00	4.6873E-01	1.2727E-03	1.5278E-01
Cs-134m	0.0000E+00	5.9793E-08	6.7759E-07	9.0795E+07	2.1442E-80	1.3445E-06	3.1702E-06	7.5261E-07
Cs-138	0.0000E+00	7.0496E-06	3.0802E-06	4.2129E+08	0.0000E+00	1.1194E-05	1.3348E-05	3.5880E-06
Total	9.1054E-07	1.0000E+00	0.0000E+00	0.0000E+00	3.3188E-02	7.4540E-01	1.0217E-01	4.6726E-01

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ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:26:38



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I-131 Summary

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Time (hr)	RCS I-131 (Curies)	Intact Steam Generato I-131 (Curies)	Environment I-131 (Curies)
0.000	1.0259E+04	3.7940E-05	1.7048E-05
0.019	1.0259E+04	1.4715E-01	6.6140E-02
0.111	1.0254E+04	8.4148E-01	3.7875E-01
0.250	1.0248E+04	1.9161E+00	8.3090E-01
0.472	1.0237E+04	3.6338E+00	1.5447E+00
0.472	1.0237E+04	3.6364E+00	1.5458E+00
0.667	1.0228E+04	5.1666E+00	2.1514E+00
0.878	1.0218E+04	6.8889E+00	2.7404E+00
1.089	1.0208E+04	8.6014E+00	3.3302E+00
1.289	1.0198E+04	1.0221E+01	3.8917E+00
1.489	1.0189E+04	1.1834E+01	4.4553E+00
1.689	1.0179E+04	1.3443E+01	5.0209E+00
1.889	1.0170E+04	1.5047E+01	5.5884E+00
2.000	1.0164E+04	1.5933E+01	5.9038E+00
2.243	1.0153E+04	1.7878E+01	6.5941E+00
2.443	1.0143E+04	1.9471E+01	7.1633E+00
2.643	1.0134E+04	2.1059E+01	7.7342E+00
2.843	1.0124E+04	2.2643E+01	8.3066E+00
3.043	1.0115E+04	2.4221E+01	8.8807E+00
3.243	1.0106E+04	2.5795E+01	9.4565E+00
3.443	1.0096E+04	2.7364E+01	1.0034E+01
3.643	1.0087E+04	2.8929E+01	1.0613E+01
3.843	1.0077E+04	3.0489E+01	1.1193E+01
4.043	1.0068E+04	3.2043E+01	1.1776E+01



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

4.243	1.0059E+04	3.3594E+01	1.2359E+01
4.443	1.0049E+04	3.5139E+01	1.2945E+01
4.643	1.0040E+04	3.6680E+01	1.3532E+01
4.843	1.0031E+04	3.8216E+01	1.4120E+01
5.043	1.0021E+04	3.9747E+01	1.4710E+01
5.243	1.0012E+04	4.1274E+01	1.5302E+01
5.443	1.0003E+04	4.2796E+01	1.5895E+01
5.643	9.9932E+03	4.4314E+01	1.6490E+01
5.843	9.9839E+03	4.5827E+01	1.7086E+01
6.043	9.9746E+03	4.7335E+01	1.7684E+01
6.243	9.9653E+03	4.8839E+01	1.8283E+01
6.443	9.9560E+03	5.0338E+01	1.8884E+01
6.643	9.9467E+03	5.1832E+01	1.9487E+01
6.843	9.9375E+03	5.3322E+01	2.0091E+01
7.043	9.9282E+03	5.4807E+01	2.0696E+01
7.243	9.9190E+03	5.6288E+01	2.1303E+01
7.443	9.9097E+03	5.7764E+01	2.1912E+01
7.643	9.9005E+03	5.9236E+01	2.2522E+01
7.843	9.8913E+03	6.0703E+01	2.3133E+01
8.000	9.8840E+03	6.1849E+01	2.3613E+01
8.227	9.8736E+03	6.3557E+01	2.4254E+01
8.427	9.8644E+03	6.5061E+01	2.4820E+01
8.627	9.8552E+03	6.6561E+01	2.5387E+01
8.827	9.8460E+03	6.8058E+01	2.5953E+01
9.027	9.8369E+03	6.9551E+01	2.6520E+01
9.227	9.8277E+03	7.1041E+01	2.7088E+01
9.427	9.8185E+03	7.2528E+01	2.7656E+01
9.627	9.8094E+03	7.4011E+01	2.8224E+01
9.827	9.8003E+03	7.5491E+01	2.8793E+01
10.027	9.7911E+03	7.6968E+01	2.9362E+01
10.227	9.7820E+03	7.8441E+01	2.9931E+01
24.000	9.1738E+03	1.7209E+02	6.9933E+01
96.000	7.0838E+03	1.3288E+02	6.9933E+01



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

720.000 7.5301E+02 1.4125E+01 6.9933E+01

Time (hr)	Control Room I-131 (Curies)	Faulted Steam Generat I-131 (Curies)
0.000	2.8840E-07	0.0000E+00
0.019	1.1069E-03	0.0000E+00
0.111	9.5989E-04	0.0000E+00
0.250	8.4013E-04	0.0000E+00
0.472	7.7165E-04	0.0000E+00
0.472	7.7161E-04	0.0000E+00
0.667	7.4809E-04	0.0000E+00
0.878	7.2082E-04	0.0000E+00
1.089	7.1368E-04	0.0000E+00
1.289	7.1206E-04	0.0000E+00
1.489	7.1187E-04	0.0000E+00
1.689	7.1210E-04	0.0000E+00
1.889	7.1245E-04	0.0000E+00
2.000	7.1266E-04	0.0000E+00
2.243	5.4177E-04	0.0000E+00
2.443	5.0693E-04	0.0000E+00
2.643	4.9690E-04	0.0000E+00
2.843	4.9413E-04	0.0000E+00
3.043	4.9350E-04	0.0000E+00
3.243	4.9349E-04	0.0000E+00
3.443	4.9366E-04	0.0000E+00
3.643	4.9389E-04	0.0000E+00
3.843	4.9412E-04	0.0000E+00
4.043	4.9437E-04	0.0000E+00
4.243	4.9461E-04	0.0000E+00
4.443	4.9485E-04	0.0000E+00
4.643	4.9508E-04	0.0000E+00
4.843	4.9532E-04	0.0000E+00
5.043	4.9556E-04	0.0000E+00



5.243	4.9579E-04	0.0000E+00
5.443	4.9602E-04	0.0000E+00
5.643	4.9625E-04	0.0000E+00
5.843	4.9648E-04	0.0000E+00
6.043	4.9670E-04	0.0000E+00
6.243	4.9693E-04	0.0000E+00
6.443	4.9715E-04	0.0000E+00
6.643	4.9738E-04	0.0000E+00
6.843	4.9760E-04	0.0000E+00
7.043	4.9781E-04	0.0000E+00
7.243	4.9803E-04	0.0000E+00
7.443	4.9825E-04	0.0000E+00
7.643	4.9846E-04	0.0000E+00
7.843	4.9867E-04	0.0000E+00
8.000	4.9884E-04	0.0000E+00
8.227	2.7011E-04	0.0000E+00
8.427	2.1645E-04	0.0000E+00
8.627	2.0065E-04	0.0000E+00
8.827	1.9596E-04	0.0000E+00
9.027	1.9453E-04	0.0000E+00
9.227	1.9405E-04	0.0000E+00
9.427	1.9385E-04	0.0000E+00
9.627	1.9373E-04	0.0000E+00
9.827	1.9364E-04	0.0000E+00
10.027	1.9355E-04	0.0000E+00
10.227	1.9347E-04	0.0000E+00
24.000	1.8767E-04	0.0000E+00
96.000	3.0802-196	0.0000E+00
720.000	0.0000E+00	0.0000E+00

Cumulative Dose Summary
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Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Time (hr)	Exclusion Area Bounda		Low Population Zone		Control Room	
	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)
0.000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.019	2.7536E-02	1.7963E-03	3.7056E-03	2.4173E-04	1.3061E-02	8.2519E-04
0.111	1.5764E-01	1.0283E-02	2.1214E-02	1.3839E-03	1.2700E-01	7.8078E-03
0.250	3.4567E-01	2.2548E-02	4.6517E-02	3.0344E-03	2.7643E-01	1.6408E-02
0.472	6.4212E-01	4.1885E-02	8.6410E-02	5.6365E-03	4.8876E-01	2.8000E-02
0.472	6.4256E-01	4.1914E-02	8.6470E-02	5.6404E-03	4.8907E-01	2.8017E-02
0.667	8.9371E-01	5.8296E-02	1.2027E-01	7.8449E-03	6.6575E-01	3.7448E-02
0.878	1.1376E+00	7.4204E-02	1.5308E-01	9.9857E-03	8.5036E-01	4.7258E-02
1.089	1.3814E+00	9.0114E-02	1.8590E-01	1.2127E-02	1.0304E+00	5.6826E-02
1.289	1.6133E+00	1.0524E-01	2.1710E-01	1.4163E-02	1.2001E+00	6.5848E-02
1.489	1.8456E+00	1.2041E-01	2.4837E-01	1.6204E-02	1.3693E+00	7.4853E-02
1.689	2.0785E+00	1.3562E-01	2.7971E-01	1.8250E-02	1.5384E+00	8.3852E-02
1.889	2.3119E+00	1.5086E-01	3.1111E-01	2.0301E-02	1.7072E+00	9.2850E-02
2.000	2.4415E+00	1.5932E-01	3.2855E-01	2.1440E-02	1.8008E+00	9.7835E-02
2.243	2.7247E+00	1.7783E-01	3.4646E-01	2.2610E-02	1.9756E+00	1.0715E-01
2.443	2.9579E+00	1.9308E-01	3.6120E-01	2.3574E-02	2.0987E+00	1.1370E-01
2.643	3.1915E+00	2.0836E-01	3.7597E-01	2.4541E-02	2.2168E+00	1.2001E-01
2.843	3.4255E+00	2.2367E-01	3.9076E-01	2.5509E-02	2.3335E+00	1.2624E-01
3.043	3.6598E+00	2.3901E-01	4.0558E-01	2.6479E-02	2.4497E+00	1.3245E-01
3.243	3.8945E+00	2.5439E-01	4.2042E-01	2.7451E-02	2.5657E+00	1.3865E-01
3.443	4.1296E+00	2.6980E-01	4.3528E-01	2.8425E-02	2.6815E+00	1.4485E-01
3.643	4.3651E+00	2.8524E-01	4.5017E-01	2.9401E-02	2.7973E+00	1.5105E-01
3.843	4.6009E+00	3.0071E-01	4.6508E-01	3.0380E-02	2.9129E+00	1.5726E-01
4.043	4.8371E+00	3.1622E-01	4.8001E-01	3.1360E-02	3.0285E+00	1.6345E-01
4.243	5.0737E+00	3.3176E-01	4.9497E-01	3.2343E-02	3.1440E+00	1.6965E-01
4.443	5.3107E+00	3.4734E-01	5.0995E-01	3.3327E-02	3.2595E+00	1.7585E-01
4.643	5.5480E+00	3.6295E-01	5.2496E-01	3.4314E-02	3.3748E+00	1.8205E-01
4.843	5.7857E+00	3.7859E-01	5.3999E-01	3.5303E-02	3.4901E+00	1.8825E-01
5.043	6.0238E+00	3.9427E-01	5.5504E-01	3.6295E-02	3.6053E+00	1.9445E-01



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

5.243	6.2622E+00	4.0998E-01	5.7012E-01	3.7288E-02	3.7204E+00	2.0065E-01
5.443	6.5010E+00	4.2572E-01	5.8522E-01	3.8283E-02	3.8355E+00	2.0685E-01
5.643	6.7402E+00	4.4150E-01	6.0034E-01	3.9281E-02	3.9505E+00	2.1305E-01
5.843	6.9798E+00	4.5732E-01	6.1548E-01	4.0281E-02	4.0654E+00	2.1925E-01
6.043	7.2197E+00	4.7317E-01	6.3065E-01	4.1283E-02	4.1802E+00	2.2545E-01
6.243	7.4599E+00	4.8905E-01	6.4584E-01	4.2287E-02	4.2950E+00	2.3165E-01
6.443	7.7006E+00	5.0497E-01	6.6106E-01	4.3294E-02	4.4097E+00	2.3784E-01
6.643	7.9416E+00	5.2092E-01	6.7629E-01	4.4302E-02	4.5243E+00	2.4404E-01
6.843	8.1829E+00	5.3691E-01	6.9155E-01	4.5313E-02	4.6388E+00	2.5024E-01
7.043	8.4247E+00	5.5293E-01	7.0684E-01	4.6326E-02	4.7533E+00	2.5644E-01
7.243	8.6667E+00	5.6899E-01	7.2214E-01	4.7342E-02	4.8678E+00	2.6264E-01
7.443	8.9092E+00	5.8508E-01	7.3747E-01	4.8359E-02	4.9821E+00	2.6884E-01
7.643	9.1520E+00	6.0121E-01	7.5282E-01	4.9379E-02	5.0964E+00	2.7504E-01
7.843	9.3951E+00	6.1737E-01	7.6819E-01	5.0400E-02	5.2106E+00	2.8124E-01
8.000	9.5858E+00	6.3006E-01	7.8025E-01	5.1202E-02	5.3001E+00	2.8610E-01
8.227	9.7167E+00	6.3891E-01	7.8593E-01	5.1586E-02	5.3933E+00	2.9116E-01
8.427	9.8321E+00	6.4672E-01	7.9094E-01	5.1926E-02	5.4477E+00	2.9411E-01
8.627	9.9475E+00	6.5454E-01	7.9594E-01	5.2265E-02	5.4950E+00	2.9669E-01
8.827	1.0063E+01	6.6236E-01	8.0095E-01	5.2604E-02	5.5401E+00	2.9916E-01
9.027	1.0178E+01	6.7018E-01	8.0595E-01	5.2943E-02	5.5846E+00	3.0159E-01
9.227	1.0294E+01	6.7800E-01	8.1096E-01	5.3283E-02	5.6288E+00	3.0402E-01
9.427	1.0409E+01	6.8583E-01	8.1596E-01	5.3622E-02	5.6729E+00	3.0643E-01
9.627	1.0524E+01	6.9366E-01	8.2096E-01	5.3962E-02	5.7169E+00	3.0885E-01
9.827	1.0639E+01	7.0149E-01	8.2596E-01	5.4302E-02	5.7609E+00	3.1126E-01
10.027	1.0754E+01	7.0932E-01	8.3095E-01	5.4642E-02	5.8048E+00	3.1367E-01
10.227	1.0870E+01	7.1716E-01	8.3595E-01	5.4982E-02	5.8486E+00	3.1608E-01
24.000	1.8752E+01	1.2658E+00	1.1780E+00	7.8786E-02	8.7459E+00	4.7825E-01
96.000	1.8752E+01	1.2658E+00	1.1780E+00	7.8786E-02	8.7694E+00	4.7971E-01
720.000	1.8752E+01	1.2658E+00	1.1780E+00	7.8786E-02	8.7694E+00	4.7971E-01



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#####

D. C. Cook - MSLB Pre-Accident Iodine Spike,

Worst Two-Hour Doses
#####

Exclusion Area Boundary

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
6.0	2.9209E-03	2.4182E+00	1.6032E-01

Final Doses
#####

Low Population Zone

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	2.0039E-03	1.1780E+00	7.8786E-02

Control Room

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	1.6267E-03	8.7694E+00	4.7971E-01



Attachment D

Concurrent Accident Iodine Spike RADTRAD Output – Iodine Release

(MSLB_Spike_I_R1.o0)

Note: The computer clock was set to 12/01/14 during model execution due to software date limitations



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#####

D. C. Cook - MSLB Concurrent Iodine Spike, Iodine Release

#####

File information

#####

Input File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_Spike_I_R1.psf
Output File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_Spike_I_R1.o0

Inventory file = c:\projects\1537-cook_dose\source_term\mslb_i_spike.nif
Release file = c:\projects\1537-cook_dose\mslb\mslb_spike_i_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

```
#####      #####      #####      # #      # #####      # #      #####  
# # #      # # #      # # #      # # #      # # #      # # #      # # #  
# # #      # # #      # # #      # # #      # # #      # # #      # # #  
#####      #####      #####      # # #      # # #      # # #      # # #  
# # #      # # #      # # #      # # #      # # #      # # #      # # #  
# # #      # # #      # # #      # # #      # # #      # # #      # # #  
# # #      # # #      # # #      # # #      # # #      # # #      # # #
```

Radtrad 3.10 10/15/2013
D. C. Cook - MSLB Concurrent Iodine Spike, Iodine Release
Dose Conversion Factor File:
c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp



Release Fraction & Timing Files:

1

c:\projects\1537-cook_dose\mslb\mslb_spike_i_r1.rft

Nuclide Inventory Files:

1

1 c:\projects\1537-cook_dose\source_term\mslb_i_spike.nif

Plant Power Level:

1.00E+00

Number of Compartments:

5

Compartment 1:

RCS

3

4.661415E+05

0

0

0

0

0

Compartment 2:

Intact Steam Generators

3

2.925471E+05

0

0

0

0

0

Compartment 3:

Environment

2

0.00E+00

0

0

0

0

0

Compartment 4:



Control Room

1
5.0616E+04
0
0
1
0
0

Compartment 5:

Faulted Steam Generator

3
1.61E+05
0
0
0
0
0

Number of Pathways:

8

Pathway 1:

Flashed Intact Steam Generator Tube Leakage

1
3
2

Pathway 2:

Control Room Makeup

3
4
2

Pathway 3:

Control Room Unfiltered Inleakage

3
4
2

Pathway 4:

Control Room Exhaust

4
3



2
Pathway 5:
 Steam Release
 2
 3
 2
Pathway 6:
 Unflashed Intact Steam Generator Tube Leakage
 1
 2
 2
Pathway 7:
 Faulted SG Tube Leakage
 1
 3
 2
Pathway 8:
 Faulted Steam Generator Steam Release
 5
 3
 2
 End of Plant Model
Source Term Input:
 1
 1 1 1 1
 0.00E+00
 0.00E+00 7.2E+02
 1
 3 0.00E+00 9.7E-01 3.00E-02
Overlying Pool:
 0
 0.00E+00
 0
 0
 0
 0
Compartments:
 5



Compartment 1:

1
1
0
0
0
0
0
0
0

Compartment 2:

1
1
0
0
0
0
0
0
0

Compartment 3:

2
1
0
0
0
0
0
0
0

Compartment 4:

1
1
0
0
0
0
1



```
3
0.00E+00  0.00E+00  9.405E+01  9.405E+01  9.405E+01
1.94E-02  4.52E+03  9.405E+01  9.405E+01  9.405E+01
7.2E+02  4.52E+03  9.405E+01  9.405E+01  9.405E+01
0
7.2E+02  0.00E+00  0.00E+00  0.00E+00  0.00E+00
7.2E+02
0
0
Compartment 5:
1
1
0
0
0
0
0
0
0
0
Pathways:
8
Pathway 1:
0
0
0
0
0
1
6
0.00E+00  5.00E-01  0.00E+00  0.00E+00  0.00E+00
1.11E-01  3.75E-01  0.00E+00  0.00E+00  0.00E+00
2.5E-01  3.44E-01  0.00E+00  0.00E+00  0.00E+00
4.72E-01  2.5E-01  0.00E+00  0.00E+00  0.00E+00
6.67E-01  0.00E+00  0.00E+00  0.00E+00  0.00E+00
7.2E+02  0.00E+00  0.00E+00  0.00E+00  0.00E+00
0
7.2E+02  0.00E+00  0.00E+00  0.00E+00  0.00E+00
7.2E+02
```



0
0
0
0
0
0
0
Pathway 2:
0
0
0
0
0
1
3
0.00E+00 8.8E+02 0.00E+00 0.00E+00 0.00E+00
1.94E-02 8.8E+02 9.405E+01 9.405E+01 9.405E+01
7.2E+02 8.8E+02 9.405E+01 9.405E+01 9.405E+01
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0
0
Pathway 3:
0
0
0
0
0
1
2
0.00E+00 4.00E+01 0.00E+00 0.00E+00 0.00E+00
7.2E+02 4.00E+01 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00



7.2E+02

0
0
0
0
0
0

Pathway 4:

0
0
0
0
0
1
2

0.00E+00	9.2E+02	0.00E+00	0.00E+00	0.00E+00
7.2E+02	9.2E+02	0.00E+00	0.00E+00	0.00E+00
0				
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2E+02				

0
0
0
0
0
0

Pathway 5:

0
0
0
0
0
1
5

0.00E+00	3.8E+01	0.00E+00	0.00E+00	0.00E+00
2.00E+00	3.294E+01	0.00E+00	0.00E+00	0.00E+00
8.00E+00	1.403E+01	0.00E+00	0.00E+00	0.00E+00
2.4E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 6:

0

0

0

0

0

1

7

0.00E+00 5.746E+00 0.00E+00 0.00E+00 0.00E+00

1.11E-01 5.871E+00 0.00E+00 0.00E+00 0.00E+00

2.5E-01 5.902E+00 0.00E+00 0.00E+00 0.00E+00

4.72E-01 5.996E+00 0.00E+00 0.00E+00 0.00E+00

6.67E-01 6.246E+00 0.00E+00 0.00E+00 0.00E+00

2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 7:

0

0

0



0
0
1
3
0.00E+00 2.082E+00 0.00E+00 0.00E+00 0.00E+00
2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0
Pathway 8:
0
0
0
0
0
1
2
0.00E+00 1.00E+06 0.00E+00 0.00E+00 0.00E+00
7.2E+02 1.00E+06 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
Dose Locations:
3
Location 1:



Exclusion Area Boundary

3
1
4
0.00E+00 3.5E-04
8.00E+00 1.8E-04
2.4E+01 2.3E-04
7.2E+02 2.3E-04
0

Location 2:

Low Population Zone

3
1
4
0.00E+00 3.5E-04
8.00E+00 1.8E-04
2.4E+01 2.3E-04
7.2E+02 2.3E-04
0

Location 3:

Control Room

4
1
2
0.00E+00 3.5E-04
7.2E+02 3.5E-04
1
4
0.00E+00 1.00E+00
2.4E+01 6.00E-01
9.6E+01 4.00E-01
7.2E+02 4.00E-01

X/Q Tables:

6
Exclusion Area Boundary
2
0.00E+00 8.62E-04
7.2E+02 8.62E-04



Low Population Zone

6

0.00E+00	1.16E-04
2.00E+00	5.45E-05
8.00E+00	3.74E-05
2.4E+01	1.74E-05
9.6E+01	6.74E-06
7.2E+02	6.74E-06

Intact SG CR Makeup

7

0.00E+00	1.09E-02
1.94E-02	1.26E-02
2.00E+00	9.72E-03
8.00E+00	3.26E-03
2.4E+01	3.17E-03
9.6E+01	2.8E-03
7.2E+02	2.8E-03

Intact SG CR Inleakage

6

0.00E+00	1.09E-02
2.00E+00	8.61E-03
8.00E+00	2.87E-03
2.4E+01	2.78E-03
9.6E+01	2.5E-03
7.2E+02	2.5E-03

Faulted CR Makeup

7

0.00E+00	4.57E-02
1.94E-02	2.91E-02
2.00E+00	2.02E-02
8.00E+00	8.14E-03
2.4E+01	5.34E-03
9.6E+01	4.32E-03
7.2E+02	4.32E-03

Faulted CR Inleakage

6

0.00E+00	4.57E-02
2.00E+00	3.14E-02



8.00E+00 1.27E-02
2.4E+01 8.3E-03
9.6E+01 6.73E-03
7.2E+02 6.73E-03

Inflow Pathways:

2 2 3

Exhaust Pathways:

5 1 4 5 7 8

X/Q table ID for Exhaust-Inflow paths:

3 4

-1 -1

3 4

5 6

5 6

Simulation Parameters:

1

0.00E+00 0.00E+00

Output Filename:

C:\Projects\1537-Cook_Dose\MSLB\MSLB_Spike_I_R1.o0

1

1

0

0

1

End of Scenario File



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#####

D. C. Cook - MSLB Concurrent Iodine Spike, Iodine Release

Plant Description
#####

Number of Nuclides = 100

Inventory Power = 1.0000E+00 MWth
Plant Power Level = 1.0000E+00 MWth

Number of compartments = 5

Compartment information

Compartment number 1

Name: RCS

Compartment volume = 4.6614E+05 (Cubic feet)

Compartment type is Normal

Pathways into and out of compartment 1

- Exit Pathway Number 1: Flashed Intact Steam Generator Tube Leakage
- Exit Pathway Number 6: Unflashed Intact Steam Generator Tube Leakage
- Exit Pathway Number 7: Faulted SG Tube Leakage

Compartment number 2

Name: Intact Steam Generators

Compartment volume = 2.9255E+05 (Cubic feet)

Compartment type is Normal

Pathways into and out of compartment 2

- Inlet Pathway Number 6: Unflashed Intact Steam Generator Tube Leakage
- Exit Pathway Number 5: Steam Release



Compartment number 3

Name: Environment

Compartment type is Environment

Pathways into and out of compartment 3

Inlet Pathway Number 1: Flashed Intact Steam Generator Tube Leakage

Inlet Pathway Number 4: Control Room Exhaust

Inlet Pathway Number 5: Steam Release

Inlet Pathway Number 7: Faulted SG Tube Leakage

Inlet Pathway Number 8: Faulted Steam Generator Steam Release

Exit Pathway Number 2: Control Room Makeup

Exit Pathway Number 3: Control Room Unfiltered Inleakage

Compartment number 4

Name: Control Room

Compartment volume = 5.0616E+04 (Cubic feet)

Compartment type is Control Room

Removal devices within compartment:

Filter(s)

Pathways into and out of compartment 4

Inlet Pathway Number 2: Control Room Makeup

Inlet Pathway Number 3: Control Room Unfiltered Inleakage

Exit Pathway Number 4: Control Room Exhaust

Compartment number 5

Name: Faulted Steam Generator

Compartment volume = 1.6100E+05 (Cubic feet)

Compartment type is Normal

Pathways into and out of compartment 5

Exit Pathway Number 8: Faulted Steam Generator Steam Release

Total number of pathways = 8



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#####

D. C. Cook - MSLB Concurrent Iodine Spike, Iodine Release

Scenario Description
#####

Power Ratio = 1.0000E+00
End Time = 7.2000E+02 (Hours)

Radioactive Decay is enabled
Calculation of Daughters is enabled

Source Number 1 is used in Compartment 1 RCS
Nuclide Distribution given in Ci/MWt
Fraction of Nuclide Distribution in this Compartment 1.00000

Iodine fractions for source number 1
Aerosol = 0.0000E+00
Elemental = 9.7000E-01
Organic = 3.0000E-02

Inventory file = c:\projects\1537-cook_dose\source_term\mslb_i_spike.nif
Release from file = c:\projects\1537-cook_dose\mslb\mslb_spike_i_rl.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

Nuclide Name	Group	Specific Inventory (Ci/MWt)	half life (s)	Whole Body DCF (Sv-m3/Bq-s)	Inhaled Thyroid (Sv/Bq)	Inhaled Effective (Sv/Bq)
I-131	3	1.000E+00	6.947E+05	1.820E-14	2.920E-07	8.890E-09



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

I-132	4	1.000E+00	8.280E+03	1.120E-13	1.740E-09	1.030E-10
I-133	5	1.000E+00	7.488E+04	2.940E-14	4.860E-08	1.580E-09
I-134	6	1.000E+00	3.156E+03	1.300E-13	2.880E-10	3.550E-11
I-135	7	1.000E+00	2.380E+04	7.980E-14	8.460E-09	3.320E-10

Nuclide	Daughter	Fraction	Daughter	Fraction	Daughter	Fraction
I-131	Xe-131m	0.01	none	0.00	none	0.00
I-133	Xe-133m	0.03	Xe-133	0.97	none	0.00
I-135	Xe-135m	0.15	Xe-135	0.85	none	0.00

Release Fractions and Timings

RWA-1313-010 - D.C. Cook MSLB Concurrent Iodine Spike (Iodi
Duration (h): Design Basis Accident

	GAP	EARLY IN-VESSEL	LATE RELEASE	RELEASE MASS
	0.000010 hr	8.0000 hrs	0.0000 hrs	(Ci)
NOBLES	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
IODINE	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
CESIUM	0.0000E+00	1.0726E+05	0.0000E+00	1.073E+05
TELLURIUM	0.0000E+00	2.9537E+05	0.0000E+00	2.954E+05
STRONTIUM	0.0000E+00	1.7038E+05	0.0000E+00	1.704E+05
BARIUM	0.0000E+00	1.2310E+05	0.0000E+00	1.231E+05
RUTHENIUM	0.0000E+00	1.3102E+05	0.0000E+00	1.310E+05
CERIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
LANTHANUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
AEROSOL	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00

COMPARTMENT DATA

Compartment number 1: RCS

Compartment number 2: Intact Steam Generators

Compartment number 3: Environment

Compartment number 4: Control Room

Compartment Filter Data



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Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.4050E+01	9.4050E+01	9.4050E+01
1.9400E-02	4.5200E+03	9.4050E+01	9.4050E+01	9.4050E+01
7.2000E+02	4.5200E+03	9.4050E+01	9.4050E+01	9.4050E+01

Compartment number 5: Faulted Steam Generator

PATHWAY DATA

Pathway number 1: Flashed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	5.0000E-01	0.0000E+00	0.0000E+00	0.0000E+00
1.1100E-01	3.7500E-01	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	3.4400E-01	0.0000E+00	0.0000E+00	0.0000E+00
4.7200E-01	2.5000E-01	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	8.8000E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9400E-02	8.8000E+02	9.4050E+01	9.4050E+01	9.4050E+01
7.2000E+02	8.8000E+02	9.4050E+01	9.4050E+01	9.4050E+01

Pathway number 3: Control Room Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate	Filter Efficiencies (%)		
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	(cfm)	Aerosol	Elemental	Organic
0.0000E+00	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 4: Control Room Exhaust

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 5: Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	3.8000E+01	0.0000E+00	0.0000E+00	0.0000E+00
2.0000E+00	3.2940E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0000E+00	1.4030E+01	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 6: Unflushed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	5.7460E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1100E-01	5.8710E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	5.9020E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7200E-01	5.9960E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	6.2460E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00



Pathway number 7: Faulted SG Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	2.0820E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 8: Faulted Steam Generator Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00

DOSE INFORMATION

Number_Dose_Locations = 3

Dose Location Name = Exclusion Area Boundary
Located in compartment 3 the Environment

Exclusion Area Boundary Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Low Population Zone
Located in compartment 3 the Environment

Low Population Zone Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
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0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Control Room
Located in compartment 4 the Control Room

Control Room Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
7.2000E+02	3.5000E-04

Control Room Occupancy Factor Data

Time (hr)	Occupancy Factor
0.0000E+00	1.0000E+00
2.4000E+01	6.0000E-01
9.6000E+01	4.0000E-01
7.2000E+02	4.0000E-01

X/Q, ATMOSPHERIC DISPERSION INFORMATION

X/Q Table Name = Exclusion Area Boundary

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	8.6200E-04
7.2000E+02	8.6200E-04

X/Q Table Name = Low Population Zone

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.1600E-04
2.0000E+00	5.4500E-05
8.0000E+00	3.7400E-05
2.4000E+01	1.7400E-05
9.6000E+01	6.7400E-06



7.2000E+02 6.7400E-06

X/Q Table Name = Intact SG CR Makeup

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
1.9400E-02	1.2600E-02
2.0000E+00	9.7200E-03
8.0000E+00	3.2600E-03
2.4000E+01	3.1700E-03
9.6000E+01	2.8000E-03
7.2000E+02	2.8000E-03

This X/Q Table is used for these connected pathways

- Path 1 Flashed Intact Steam Generator Tube Leakage and Path 2 Control Room Makeup
- Path 5 Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Intact SG CR Inleakage

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
2.0000E+00	8.6100E-03
8.0000E+00	2.8700E-03
2.4000E+01	2.7800E-03
9.6000E+01	2.5000E-03
7.2000E+02	2.5000E-03

This X/Q Table is used for these connected pathways

- Path 1 Flashed Intact Steam Generator Tube Leakage and Path 3 Control Room Unfiltered Inleakage
- Path 5 Steam Release and Path 3 Control Room Unfiltered Inleakage

X/Q Table Name = Faulted CR Makeup

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02



1.9400E-02	2.9100E-02
2.0000E+00	2.0200E-02
8.0000E+00	8.1400E-03
2.4000E+01	5.3400E-03
9.6000E+01	4.3200E-03
7.2000E+02	4.3200E-03

This X/Q Table is used for these connected pathways

- Path 7 Faulted SG Tube Leakage and Path 2 Control Room Makeup
- Path 8 Faulted Steam Generator Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Faulted CR Inleakage

Location X/Q Data

Time (hr)	X/Q (s * m^-3)
0.0000E+00	4.5700E-02
2.0000E+00	3.1400E-02
8.0000E+00	1.2700E-02
2.4000E+01	8.3000E-03
9.6000E+01	6.7300E-03
7.2000E+02	6.7300E-03

This X/Q Table is used for these connected pathways

- Path 7 Faulted SG Tube Leakage and Path 3 Control Room Unfiltered Inleakage
- Path 8 Faulted Steam Generator Steam Release and Path 3 Control Room Unfiltered Inleakage

USER SPECIFIED TIME STEP DATA - SUPPLEMENTAL TIME STEPS

Time (hr)	Time step (hr)
0.0000E+00	0.0000E+00

EDIT EACH MAJOR TIME STEP

DO NOT EDIT SUPPLEMENTAL TIME STEPS

DO NOT EDIT MODEL DECONTAMINATION

Masses in Curies in detailed output



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D. C. Cook - MSLB Concurrent Iodine Spike, Iodine Release

Dose, Detailed model and Detailed Inventory Output
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Exclusion Area Boundary Doses:

Time (h) =	0.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00



Low Population Zone Doses:

Time (h) =	0.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00

Control Room Doses:

Time (h) =	0.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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Exclusion Area Boundary Doses:

Time (h) =	0.0194	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.6516E-06	3.5966E-04	1.2993E-05
Accumulated dose (rem)		1.6516E-06	3.5966E-04	1.2993E-05

Low Population Zone Doses:

Time (h) =	0.0194	Whole Body	Thyroid	TEDE
Delta dose (rem)		2.2226E-07	4.8400E-05	1.7484E-06
Accumulated dose (rem)		2.2226E-07	4.8400E-05	1.7484E-06

Control Room Doses:

Time (h) =	0.0194	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.8633E-08	1.2238E-04	3.8774E-06	8.2252E-07
Accumulated dose (rem)		1.8633E-08	1.2238E-04	3.8774E-06	8.2252E-07



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	2.5995E+02	6.4387E-01	3.4315E+00	4.5709E+14	1.6220E-04	1.8640E-03	6.7542E-04
I-132	7.1172E+02	8.3481E-02	9.4053E+00	1.2542E+15	4.4553E-04	5.1200E-03	1.8552E-03
I-133	4.1269E+02	1.9024E-01	5.4484E+00	7.2581E+14	2.5759E-04	2.9602E-03	1.0726E-03
I-134	2.9382E+02	3.3212E-02	3.8896E+00	5.1968E+14	1.8490E-04	2.1248E-03	7.6992E-04
I-135	3.1691E+02	4.9176E-02	4.1850E+00	5.5766E+14	1.9796E-04	2.2750E-03	8.2431E-04
Xe-133	2.9134E-02	3.0806E-08	3.2938E-04	1.3871E+10	6.7022E-09	7.7022E-08	2.7908E-08
Xe-135	2.7048E-01	2.1810E-06	3.0570E-03	1.2863E+11	6.2170E-08	7.1446E-07	2.5887E-07
Xe-131m	9.2444E-05	2.4373E-11	1.0451E-06	4.4007E+07	2.1263E-11	2.4436E-10	8.8540E-11
Xe-133m	2.0858E-03	1.9369E-09	2.3581E-05	9.9305E+08	4.7984E-10	5.5143E-09	1.9980E-09
Xe-135m	1.7376E+00	2.4099E-05	1.9705E-02	8.2601E+11	4.0308E-07	4.6322E-06	1.6784E-06
Total	1.9971E+03	1.0000E+00	0.0000E+00	0.0000E+00	1.2487E-03	1.4350E-02	5.1994E-03

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 1.8801E-09

RCS Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)	2.0394E+00	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.9951E+03	0.0000E+00	0.0000E+00
All Aerosols (kg)	2.6313E-06	0.0000E+00	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
	Atmosphere					



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

I-131	1.8639E-03	6.4391E-01	2.0070E-05	2.6733E+09	1.0086E-07	1.8640E-03
I-132	5.1031E-03	8.3458E-02	5.4989E-05	7.3331E+09	2.7694E-07	5.1200E-03
I-133	2.9590E-03	1.9024E-01	3.1864E-05	4.2448E+09	1.6017E-07	2.9602E-03
I-134	2.1067E-03	3.3185E-02	2.2728E-05	3.0367E+09	1.1487E-07	2.1248E-03
I-135	2.2723E-03	4.9174E-02	2.4473E-05	3.2612E+09	1.2308E-07	2.2750E-03
Xe-135	2.2978E-06	2.6502E-06	2.1725E-08	1.2694E+06	5.3987E-11	7.1446E-07
Xe-135m	1.4725E-05	2.9188E-05	1.3957E-07	8.1466E+06	3.4973E-10	4.6322E-06
Total	1.4322E-02	1.0000E+00	0.0000E+00	0.0000E+00	7.7633E-07	1.4350E-02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.5393E-14

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		1.7289E-05	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.4305E-02	0.0000E+00
All Aerosols (kg)		1.8867E-11	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	Atmosphere	1.4070E-05	6.4391E-01	1.5164E-07	2.0198E+07	1.8455E-05	8.3886E-07
I-132		3.8523E-05	8.3458E-02	4.1547E-07	5.5405E+07	5.0699E-05	2.3045E-06
I-133		2.2337E-05	1.9024E-01	2.4075E-07	3.2072E+07	2.9308E-05	1.3322E-06
I-134		1.5903E-05	3.3185E-02	1.7173E-07	2.2944E+07	2.1046E-05	9.5664E-07
I-135		1.7153E-05	4.9174E-02	1.8491E-07	2.4640E+07	2.2525E-05	1.0238E-06
Total		1.0812E-04	1.0000E+00	0.0000E+00	0.0000E+00	1.4207E-04	6.4578E-06

Control Room Compartment Group Inventory Distribution:



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		1.3045E-07	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.0799E-04	0.0000E+00
All Aerosols (kg)		1.4242E-13	0.0000E+00

Time (h) =	0.0194	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

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Exclusion Area Boundary Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)		5.1612E-05	1.1421E-02	4.1165E-04
Accumulated dose (rem)		5.3263E-05	1.1781E-02	4.2464E-04

Low Population Zone Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)		6.9455E-06	1.5370E-03	5.5396E-05
Accumulated dose (rem)		7.1677E-06	1.5854E-03	5.7144E-05

Control Room Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE	Skin
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Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Delta dose (rem) 4.0207E-07 2.6681E-03 8.4509E-05 1.7761E-05
 Accumulated dose (rem) 4.2070E-07 2.7904E-03 8.8386E-05 1.8584E-05

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	1.4874E+03 Atmosphere	6.4659E-01	1.0455E+02	1.3927E+16	5.3135E-03	6.1063E-02	2.2126E-02
I-132	3.9628E+03	8.2076E-02	2.8054E+02	3.7559E+16	1.4391E-02	1.6538E-01	5.9925E-02
I-133	2.3549E+03	1.9064E-01	1.6564E+02	2.2076E+16	8.4264E-03	9.6836E-02	3.5088E-02
I-134	1.5643E+03	3.1540E-02	1.1206E+02	1.5128E+16	5.8371E-03	6.7080E-02	2.4306E-02
I-135	1.7966E+03	4.9029E-02	1.2659E+02	1.6891E+16	6.4540E-03	7.4169E-02	2.6874E-02
Xe-133	8.8598E-01	1.5757E-07	5.1114E-02	3.5259E+12	1.3671E-06	1.5710E-05	5.6925E-06
Xe-135	8.2748E+00	1.1204E-05	4.7646E-01	3.2775E+13	1.2716E-05	1.4613E-04	5.2949E-05
Xe-131m	2.8164E-03	1.2486E-10	1.6242E-04	1.1201E+10	4.3423E-09	4.9902E-08	1.8081E-08
Xe-133m	6.3416E-02	9.9053E-09	3.6588E-03	2.5239E+11	9.7863E-08	1.1246E-06	4.0750E-07
Xe-135m	4.9098E+01	1.1650E-04	2.8898E+00	1.9786E+14	7.9037E-05	9.0830E-04	3.2911E-04
Total	1.1224E+04	1.0000E+00	0.0000E+00	0.0000E+00	4.0516E-02	4.6560E-01	1.6871E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 5.3495E-08

RCS Compartment Group Inventory Distribution:

Time (h) = 0.1110	Atmosphere	Sump
Noble gases (Ci)	5.8325E+01	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.1166E+04	0.0000E+00
All Aerosols (kg)	1.5031E-05	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110



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Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	Atmosphere	6.4684E-01	3.3641E-03	4.4813E+11	1.8371E-05	6.1063E-02
I-132		8.1938E-02	9.0086E-03	1.2061E+12	4.9644E-05	1.6538E-01
I-133		1.9067E-01	5.3289E-03	7.1022E+11	2.9127E-05	9.6836E-02
I-134		3.1378E-02	3.5861E-03	4.8418E+11	2.0060E-05	6.7080E-02
I-135		4.9014E-02	4.0704E-03	5.4315E+11	2.2297E-05	7.4169E-02
Xe-133		1.9841E-07	2.0702E-06	1.7021E+08	6.7930E-09	1.5710E-05
Xe-135		1.4140E-05	1.9341E-05	1.5844E+09	6.3282E-08	1.4613E-04
Xe-133m		1.2472E-08	1.4818E-07	1.2184E+07	4.8627E-10	1.1246E-06
Xe-135m		1.4453E-04	1.1532E-04	9.4743E+09	3.8867E-07	9.0830E-04
Total		1.0000E+00	0.0000E+00	0.0000E+00	1.3996E-04	4.6560E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 4.2117E-12

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	Atmosphere	Sump
0.1110		
Noble gases (Ci)	2.8843E-03	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	4.5818E-01	0.0000E+00
All Aerosols (kg)	6.1676E-10	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	Atmosphere	6.4579E-01	2.6899E-06	3.5832E+08	1.0751E-05	3.9978E-05	2.5564E-05	2.4339E-06
I-132		8.2028E-02	7.2227E-06	9.6683E+08	2.8645E-05	1.0901E-04	6.9291E-05	6.5976E-06
I-133		1.9041E-01	4.2621E-06	5.6802E+08	1.7022E-05	6.3441E-05	4.0544E-05	3.8602E-06
I-134		3.1555E-02	2.8882E-06	3.8974E+08	1.1307E-05	4.4708E-05	2.8139E-05	2.6797E-06



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I-135	4.5726E-05	4.8979E-02	3.2577E-06	4.3467E+08	1.2986E-05	4.8670E-05	3.1059E-05	2.9572E-06
Xe-135	2.4808E-06	1.0949E-04	1.1995E-07	9.3523E+06	0.0000E+00	2.2016E-06	4.8313E-08	5.3260E-08
Xe-135m	1.4601E-05	1.1256E-03	7.1929E-07	5.6109E+07	0.0000E+00	1.4103E-05	3.0029E-07	3.2815E-07
Total	3.0156E-04	1.0000E+00	0.0000E+00	0.0000E+00	8.0711E-05	3.2237E-04	1.9495E-04	1.8916E-05

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.1110	Atmosphere	Sump
Noble gases (Ci)		1.7367E-05	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		2.8419E-04	0.0000E+00
All Aerosols (kg)		3.8255E-13	0.0000E+00

Time (h) =	0.1110	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	8.0711E-05
All Aerosols (kg)		0.0000E+00	1.0865E-13

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Exclusion Area Boundary Doses:

Time (h) =	0.2500	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.9884E-04	4.5626E-02	1.6362E-03
Accumulated dose (rem)		2.5210E-04	5.7407E-02	2.0608E-03

Low Population Zone Doses:



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Time (h) = 0.2500 Whole Body Thyroid TEDE
 Delta dose (rem) 2.6758E-05 6.1399E-03 2.2018E-04
 Accumulated dose (rem) 3.3925E-05 7.7253E-03 2.7733E-04

Control Room Doses:

Time (h) = 0.2500 Whole Body Thyroid TEDE Skin
 Delta dose (rem) 1.9803E-06 1.3411E-02 4.2444E-04 8.7692E-05
 Accumulated dose (rem) 2.4010E-06 1.6201E-02 5.1283E-04 1.0628E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	3.3483E+03	6.5010E-01	4.7823E+02	6.3705E+16	2.1538E-02	3.1507E-01	1.1220E-01
I-132	8.5589E+03	8.0249E-02	1.2479E+03	1.6720E+17	5.6884E-02	8.3065E-01	2.9585E-01
I-133	5.2793E+03	1.9113E-01	7.5557E+02	1.0071E+17	3.4070E-02	4.9831E-01	1.7746E-01
I-134	3.1564E+03	2.9472E-02	4.7641E+02	6.4439E+16	2.2151E-02	3.2248E-01	1.1488E-01
I-135	3.9877E+03	4.8828E-02	5.7355E+02	7.6552E+16	2.5937E-02	3.7920E-01	1.3504E-01
Xe-133	4.0405E+00	2.9450E-07	4.3463E-01	4.1848E+13	1.3766E-05	2.0983E-04	7.4533E-05
Xe-135	3.8066E+01	2.1096E-05	4.0815E+00	3.9214E+14	1.2903E-04	1.9672E-03	6.9874E-04
Xe-131m	1.2881E-02	2.3386E-10	1.3841E-03	1.3322E+11	4.3812E-08	6.6784E-07	2.3722E-07
Xe-133m	2.8910E-01	1.8507E-08	3.1102E-02	2.9946E+12	9.8520E-07	1.5017E-05	5.3340E-06
Xe-135m	1.9732E+02	1.9741E-04	2.2279E+01	2.1296E+15	7.2578E-04	1.1034E-02	3.9198E-03
Total	2.4570E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.6145E-01	2.3589E+00	8.4013E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 2.1781E-07

RCS Compartment Group Inventory Distribution:

Time (h) = 0.2500 Atmosphere Sump
 Noble gases (Ci) 2.3973E+02 0.0000E+00



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Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.4331E+04	0.0000E+00
All Aerosols (kg)	3.3751E-05	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	3.1475E-01	6.5082E-01	3.2482E-02	4.3269E+12	2.0589E-04	3.1507E-01
I-132	8.0458E-01	7.9850E-02	8.4247E-02	1.1288E+13	5.3963E-04	8.3065E-01
I-133	4.9628E-01	1.9123E-01	5.1289E-02	6.8362E+12	3.2543E-04	4.9831E-01
I-134	2.9671E-01	2.9026E-02	3.1834E-02	4.3068E+12	2.0746E-04	3.2248E-01
I-135	3.7487E-01	4.8781E-02	3.8876E-02	5.1890E+12	2.4730E-04	3.7920E-01
Xe-133	4.8387E-04	4.0686E-07	4.0738E-05	4.3334E+09	2.0284E-07	2.0983E-04
Xe-135	4.5777E-03	2.9283E-05	3.8437E-04	4.0756E+10	1.9085E-06	1.9672E-03
Xe-131m	1.5421E-06	3.2309E-10	1.2974E-07	1.3795E+07	6.4559E-10	6.6784E-07
Xe-133m	3.4618E-05	2.5565E-08	2.9149E-06	3.1007E+08	1.4515E-08	1.5017E-05
Xe-135m	2.2969E-02	2.6258E-04	2.0105E-03	2.1439E+11	1.0365E-05	1.1034E-02
Total	2.3153E+00	1.0000E+00	0.0000E+00	0.0000E+00	1.5382E-03	2.3589E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	4.0535E-11

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)	2.8066E-02	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.2872E+00	0.0000E+00	0.0000E+00
All Aerosols (kg)	3.1728E-09	0.0000E+00	0.0000E+00



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Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	1.2321E-04	6.4833E-01	1.5145E-05	2.0174E+09	6.4864E-05	1.1769E-04	1.1573E-04	1.4149E-05
I-132	3.1496E-04	7.9858E-02	3.9434E-05	5.2834E+09	1.6581E-04	3.1260E-04	3.0552E-04	3.7246E-05
I-133	1.9427E-04	1.9057E-01	2.3923E-05	3.1886E+09	1.0227E-04	1.8627E-04	1.8306E-04	2.2374E-05
I-134	1.1615E-04	2.9223E-02	1.5001E-05	2.0289E+09	6.1146E-05	1.2291E-04	1.1888E-04	1.4424E-05
I-135	1.4674E-04	4.8659E-02	1.8150E-05	2.4225E+09	7.7252E-05	1.4200E-04	1.3935E-04	1.7020E-05
Xe-133	2.4879E-06	4.6273E-06	2.1686E-07	2.2519E+07	0.0000E+00	2.3905E-06	6.7181E-08	1.4986E-07
Xe-135	2.3505E-05	3.3259E-04	2.0433E-06	2.1158E+08	0.0000E+00	2.2106E-05	6.2981E-07	1.4087E-06
Xe-135m	1.1918E-04	3.0161E-03	1.0809E-05	1.1220E+09	0.0000E+00	1.3552E-04	3.5334E-06	7.7121E-06
Total	1.0407E-03	1.0000E+00	0.0000E+00	0.0000E+00	4.7134E-04	1.0417E-03	8.6677E-04	1.1450E-04

Control Room Compartment Group Inventory Distribution:

Time (h) = 0.2500	Atmosphere	Sump
Noble gases (Ci)	1.4536E-04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	8.9534E-04	0.0000E+00
All Aerosols (kg)	1.2420E-12	0.0000E+00

Time (h) = 0.2500	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	4.7134E-04
All Aerosols (kg)	0.0000E+00	6.5384E-13

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Exclusion Area Boundary Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE
Delta dose (rem)		5.9134E-04	1.4372E-01	5.1145E-03
Accumulated dose (rem)		8.4344E-04	2.0113E-01	7.1753E-03

Low Population Zone Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE
Delta dose (rem)		7.9578E-05	1.9341E-02	6.8826E-04
Accumulated dose (rem)		1.1350E-04	2.7066E-02	9.6559E-04

Control Room Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		8.5133E-06	5.9273E-02	1.8739E-03	3.7867E-04
Accumulated dose (rem)		1.0914E-05	7.5474E-02	2.3867E-03	4.8494E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	6.3159E+03	6.5542E-01	1.6167E+03	2.1537E+17	6.9045E-02	1.1301E+00	3.9973E-01
I-132	1.5112E+04	7.7418E-02	4.0370E+03	5.4119E+17	1.7479E-01	2.8535E+00	1.0094E+00
I-133	9.8928E+03	1.9184E-01	2.5430E+03	3.3897E+17	1.0875E-01	1.7796E+00	6.2946E-01
I-134	4.9994E+03	2.6496E-02	1.4362E+03	1.9455E+17	6.3602E-02	1.0337E+00	3.6575E-01
I-135	7.3549E+03	4.8490E-02	1.9100E+03	2.5498E+17	8.1949E-02	1.3402E+00	4.7405E-01
Xe-133	1.3594E+01	5.0650E-07	2.5066E+00	2.7552E+14	8.6762E-05	1.4622E-03	5.1633E-04
Xe-135	1.2894E+02	3.6532E-05	2.3700E+01	2.6010E+15	8.1941E-04	1.3812E-02	4.8771E-03
Xe-131m	4.3535E-02	4.0361E-10	8.0101E-03	8.8004E+11	2.7704E-07	4.6694E-06	1.6488E-06
Xe-133m	9.7205E-01	3.1816E-08	1.7929E-01	1.9707E+13	6.2064E-06	1.0460E-04	3.6935E-05
Xe-135m	5.5358E+02	2.9497E-04	1.1163E+02	1.2165E+16	3.9830E-03	6.6918E-02	2.3634E-02
Total	4.4372E+04	1.0000E+00	0.0000E+00	0.0000E+00	5.0303E-01	8.2195E+00	2.9075E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00



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Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 6.2404E-07

RCS Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)		6.9712E+02	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		4.3675E+04	0.0000E+00
All Aerosols (kg)		6.3424E-05	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	1.1280E+00 Atmosphere	6.5680E-01	2.0180E-01	2.6882E+13	1.3851E-03	1.1301E+00
I-132	2.6991E+00	7.6645E-02	4.9781E-01	6.6745E+13	3.4574E-03	2.8535E+00
I-133	1.7669E+00	1.9202E-01	3.1704E-01	4.2260E+13	2.1787E-03	1.7796E+00
I-134	8.9291E-01	2.5692E-02	1.7346E-01	2.3506E+13	1.2280E-03	1.0337E+00
I-135	1.3136E+00	4.8394E-02	2.3743E-01	3.1697E+13	1.6362E-03	1.3402E+00
Xe-133	3.1539E-03	7.2750E-07	4.4843E-04	5.2345E+10	2.6735E-06	1.4622E-03
Xe-135	3.0103E-02	5.2822E-05	4.2683E-03	4.9699E+11	2.5400E-05	1.3812E-02
Xe-131m	1.0095E-05	5.7975E-10	1.4331E-06	1.6720E+08	8.5381E-09	4.6694E-06
Xe-133m	2.2548E-04	4.5688E-08	3.2068E-05	3.7433E+09	1.9121E-07	1.0460E-04
Xe-135m	1.2189E-01	3.9614E-04	1.8673E-02	2.1847E+12	1.1568E-04	6.6918E-02
Total	7.9559E+00	1.0000E+00	0.0000E+00	0.0000E+00	1.0029E-02	8.2195E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 2.2054E-10

Intact Steam Generators Compartment Group Inventory Distribution:



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Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)	1.5539E-01	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
All Aerosols (Ci)	7.8005E+00	0.0000E+00	0.0000E+00
All Aerosols (kg)	1.1328E-08	0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure	Decays	Compartment	Pathway 2	Pathway 3	Pathway 4
	Atmosphere		(Ci-hr)	(Bq-s)	Recirc Filtr	Inflow	Inflow	Outflow
I-131	3.1149E-04	6.5205E-01	6.6899E-05	8.9116E+09	3.0452E-04	3.5323E-04	3.8964E-04	6.6048E-05
I-132	7.4529E-04	7.6561E-02	1.6605E-04	2.2262E+10	7.2862E-04	8.9729E-04	9.8544E-04	1.6587E-04
I-133	4.8789E-04	1.9075E-01	1.0517E-04	1.4018E+10	4.7698E-04	5.5656E-04	6.1366E-04	1.0395E-04
I-134	2.4656E-04	2.5938E-02	5.8478E-05	7.9228E+09	2.4104E-04	3.2853E-04	3.5799E-04	5.9537E-05
I-135	3.6273E-04	4.8144E-02	7.8873E-05	1.0530E+10	3.5461E-04	4.1973E-04	4.6231E-04	7.8181E-05
Xe-133	1.4534E-05	1.0420E-05	2.1447E-06	2.4588E+08	0.0000E+00	1.4888E-05	4.6389E-07	1.7787E-06
Xe-135	1.3835E-04	7.5476E-04	2.0366E-05	2.3298E+09	0.0000E+00	1.3740E-04	4.3818E-06	1.6865E-05
Xe-133m	1.0392E-06	6.5442E-07	1.5338E-07	1.7584E+07	0.0000E+00	1.0655E-06	3.3183E-08	1.2722E-07
Xe-135m	5.7489E-04	5.7939E-03	9.1198E-05	1.0438E+10	0.0000E+00	7.8802E-04	2.1234E-05	7.8254E-05
Total	2.8828E-03	1.0000E+00	0.0000E+00	0.0000E+00	2.1058E-03	3.4968E-03	2.8352E-03	5.7061E-04

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)	7.2886E-04	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.1539E-03	0.0000E+00	0.0000E+00
All Aerosols (kg)	3.1279E-12	0.0000E+00	0.0000E+00

Time (h) =	0.4720	Deposition	Recirculating
		Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00



Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	2.1058E-03
All Aerosols (kg)	0.0000E+00	3.0580E-12

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Exclusion Area Boundary Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE
Delta dose (rem)		7.3848E-04	1.9121E-01	6.7498E-03
Accumulated dose (rem)		1.5819E-03	3.9234E-01	1.3925E-02

Low Population Zone Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE
Delta dose (rem)		9.9377E-05	2.5731E-02	9.0832E-04
Accumulated dose (rem)		2.1288E-04	5.2797E-02	1.8739E-03

Control Room Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.3562E-05	9.6802E-02	3.0568E-03	6.0686E-04
Accumulated dose (rem)		2.4477E-05	1.7228E-01	5.4435E-03	1.0918E-03

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	8.9181E+03	6.5977E-01	3.1525E+03	4.1995E+17	1.1685E-01	2.2766E+00	7.9782E-01
I-132	2.0135E+04	7.5050E-02	7.5807E+03	1.0160E+18	2.8637E-01	5.5298E+00	1.9387E+00
I-133	1.3888E+04	1.9238E-01	4.9399E+03	6.5844E+17	1.8344E-01	3.5710E+00	1.2515E+00



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I-134	6.0548E+03	2.4204E-02	2.5413E+03	3.4405E+17	9.9070E-02	1.8843E+00	6.6113E-01
I-135	1.0182E+04	4.8185E-02	3.6764E+03	4.9075E+17	1.3715E-01	2.6641E+00	9.3374E-01
Xe-133	2.6395E+01	6.8739E-07	6.5894E+00	7.6565E+14	2.0203E-04	4.2267E-03	1.4762E-03
Xe-135	2.5069E+02	4.9715E-05	6.2475E+01	7.2510E+15	1.9139E-03	4.0062E-02	1.3992E-02
Xe-131m	8.4870E-02	5.4937E-10	2.1120E-02	2.4528E+12	6.4685E-07	1.3539E-05	4.7286E-06
Xe-133m	1.8864E+00	4.3161E-08	4.7113E-01	5.4742E+13	1.4447E-05	3.0223E-04	1.0556E-04
Xe-135m	9.2843E+02	3.5811E-04	2.6251E+02	3.0117E+16	8.3672E-03	1.7207E-01	6.0145E-02
Total	6.0385E+04	1.0000E+00	0.0000E+00	0.0000E+00	8.3338E-01	1.6142E+01	5.6586E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.0668E-06

RCS Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		1.2075E+03	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		5.9177E+04	0.0000E+00
All Aerosols (kg)		8.9271E-05	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	2.2707E+00	6.6166E-01	5.4943E-01	7.3190E+13	3.9208E-03	2.2766E+00
I-132	5.1267E+00	7.3981E-02	1.2987E+00	1.7405E+14	9.3673E-03	5.5298E+00
I-133	3.5362E+00	1.9261E-01	8.5949E-01	1.1456E+14	6.1400E-03	3.5710E+00
I-134	1.5417E+00	2.3157E-02	4.2255E-01	5.7205E+13	3.1017E-03	1.8843E+00
I-135	2.5926E+00	4.8045E-02	6.3705E-01	8.5037E+13	4.5627E-03	2.6641E+00
Xe-133	8.8067E-03	1.0007E-06	1.6670E-03	2.0238E+11	1.0861E-05	4.2267E-03
Xe-135	8.4247E-02	7.2905E-05	1.5922E-02	1.9294E+12	1.0364E-04	4.0062E-02
Xe-131m	2.8295E-05	7.9983E-10	5.3436E-06	6.4841E+08	3.4792E-08	1.3539E-05
Xe-133m	6.2925E-04	6.2813E-08	1.1916E-04	1.4466E+10	7.7639E-07	3.0223E-04



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Xe-135m	2.8888E-01	4.7695E-04	6.0761E-02	7.3581E+12	4.0871E-04	1.7207E-01
Total	1.5450E+01	1.0000E+00	0.0000E+00	0.0000E+00	2.7617E-02	1.6142E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	5.3472E-10

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		3.8259E-01	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.5068E+01	0.0000E+00
All Aerosols (kg)		2.2730E-08	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	4.8939E-04	6.5482E-01	1.4826E-04	1.9750E+10	6.9677E-04	6.6546E-04	7.5549E-04	1.5102E-04
I-132	1.1049E-03	7.3898E-02	3.5369E-04	4.7404E+10	1.5731E-03	1.6262E-03	1.8395E-03	3.6412E-04
I-133	7.6212E-04	1.9079E-01	2.3214E-04	3.0942E+10	1.0851E-03	1.0444E-03	1.1853E-03	2.3671E-04
I-134	3.3226E-04	2.3506E-02	1.1695E-04	1.5833E+10	4.7306E-04	5.6021E-04	6.2946E-04	1.2251E-04
I-135	5.5875E-04	4.7696E-02	1.7244E-04	2.3018E+10	7.9552E-04	7.8028E-04	8.8477E-04	1.7628E-04
Xe-133	3.7378E-05	1.6391E-05	7.4455E-06	8.8960E+08	0.0000E+00	4.0346E-05	1.3175E-06	6.7543E-06
Xe-135	3.5615E-04	1.1903E-03	7.0877E-05	8.4564E+09	0.0000E+00	3.7129E-04	1.2487E-05	6.4265E-05
Xe-133m	2.6711E-06	1.0290E-06	5.3224E-07	6.3593E+07	0.0000E+00	2.8868E-06	9.4207E-08	4.8288E-07
Xe-135m	1.2753E-03	8.0799E-03	2.8066E-04	3.3297E+10	0.0000E+00	2.0176E-03	5.3699E-05	2.6164E-04
Total	4.9190E-03	1.0000E+00	0.0000E+00	0.0000E+00	4.6235E-03	7.1088E-03	5.3621E-03	1.3838E-03

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		1.6716E-03	0.0000E+00



Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	3.2474E-03	0.0000E+00
All Aerosols (kg)	4.8988E-12	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 0.6670		
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	4.6235E-03
All Aerosols (kg)	0.0000E+00	6.9748E-12

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Exclusion Area Boundary Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	8.3332E-03	2.7254E+00	9.3707E-02
Accumulated dose (rem)	9.9151E-03	3.1177E+00	1.0763E-01

Low Population Zone Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	1.1214E-03	3.6676E-01	1.2610E-02
Accumulated dose (rem)	1.3343E-03	4.1956E-01	1.4484E-02

Control Room Doses:

Time (h) = 2.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	2.3691E-04	1.7823E+00	5.6064E-02	1.0980E-02
Accumulated dose (rem)	2.6139E-04	1.9545E+00	6.1507E-02	1.2072E-02



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RCS Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	2.6594E+04	6.8525E-01	2.7262E+04	3.6316E+18	1.1685E-01	2.1325E+01	7.1472E+00
I-132	4.0371E+04	6.0342E-02	5.0748E+04	6.8076E+18	2.8637E-01	4.0107E+01	1.3465E+01
I-133	3.9806E+04	1.9461E-01	4.1606E+04	5.5462E+18	1.8344E-01	3.2579E+01	1.0921E+01
I-134	6.3237E+03	1.3331E-02	1.1654E+04	1.5809E+18	9.9070E-02	9.3481E+00	3.1490E+00
I-135	2.6529E+04	4.5777E-02	2.9081E+04	3.8831E+18	1.3715E-01	2.2829E+01	7.6555E+00
Xe-133	2.2171E+02	1.9580E-06	1.5628E+02	1.9843E+16	2.0203E-04	1.1703E-01	3.9078E-02
Xe-135	2.0157E+03	1.3859E-04	1.4501E+03	1.8418E+17	1.9139E-03	1.0875E+00	3.6315E-01
Xe-131m	7.3279E-01	1.5976E-09	5.1136E-01	6.4896E+13	6.4685E-07	3.8265E-04	1.2777E-04
Xe-133m	1.5788E+01	1.2261E-07	1.1143E+01	1.4149E+15	1.4447E-05	8.3457E-03	2.7867E-03
Xe-135m	3.5711E+03	5.5234E-04	3.3712E+03	4.2303E+17	8.3672E-03	2.5708E+00	8.5971E-01
Total	1.4545E+05	1.0000E+00	0.0000E+00	0.0000E+00	8.3338E-01	1.2997E+02	4.3602E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	4.7207E-06

RCS Compartment Group Inventory Distribution:

Time (h) = 2.0000	Atmosphere	Sump
Noble gases (Ci)	5.8250E+03	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.3962E+05	0.0000E+00
All Aerosols (kg)	2.6136E-04	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure	Decays	Pathway 5	Pathway 6
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	Atmosphere		(Ci-hr)	(Bq-s)	Outflow	Inflow
I-131	2.1163E+01	6.8993E-01	1.4552E+01	1.9385E+15	1.0952E-01	2.1325E+01
I-132	3.2126E+01	5.7524E-02	2.5648E+01	3.4411E+15	1.9551E-01	4.0107E+01
I-133	3.1676E+01	1.9493E-01	2.2094E+01	2.9453E+15	1.6651E-01	3.2579E+01
I-134	5.0322E+00	1.1447E-02	5.3054E+00	7.2013E+14	4.1259E-02	9.3481E+00
I-135	2.1111E+01	4.5276E-02	1.5249E+01	2.0362E+15	1.1527E-01	2.2829E+01
Xe-133	2.3375E-01	2.9216E-06	1.2362E-01	1.5950E+13	8.9758E-04	1.1703E-01
Xe-135	2.1407E+00	2.0762E-04	1.1517E+00	1.4865E+14	8.3754E-03	1.0875E+00
Xe-131m	7.7082E-04	2.3846E-09	4.0465E-04	5.2182E+10	2.9356E-06	3.8265E-04
Xe-133m	1.6633E-02	1.8279E-07	8.8074E-03	1.1364E+12	6.3956E-05	8.3457E-03
Xe-135m	3.2284E+00	6.7347E-04	2.1792E+00	2.8060E+14	1.6266E-02	2.5708E+00
Total	1.1673E+02	1.0000E+00	0.0000E+00	0.0000E+00	6.5368E-01	1.2997E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	7.0974E-09

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)		5.6202E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.1111E+02	0.0000E+00
All Aerosols (kg)		2.0798E-07	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure	Decays	Compartment	Pathway 2	Pathway 3	Pathway 4
	Atmosphere		(Ci-hr)	(Bq-s)	Recirc Filtr	Inflow	Inflow	Outflow
I-131	1.7011E-03	6.6820E-01	1.6258E-03	2.1657E+11	7.9798E-03	5.3463E-03	6.3530E-03	1.7311E-03
I-132	2.5823E-03	5.8089E-02	2.9877E-03	4.0080E+11	1.2114E-02	1.0126E-02	1.2004E-02	3.2199E-03
I-133	2.5462E-03	1.8954E-01	2.4782E-03	3.3036E+11	1.1944E-02	8.1731E-03	9.7100E-03	2.6420E-03
I-134	4.0449E-04	1.2509E-02	6.6881E-04	9.0740E+10	1.8975E-03	2.3958E-03	2.8250E-03	7.3423E-04
I-135	1.6969E-03	4.4453E-02	1.7270E-03	2.3061E+11	7.9603E-03	5.7362E-03	6.8113E-03	1.8466E-03



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Xe-133	6.5801E-04	7.8678E-05	3.8405E-04	4.8812E+10	0.0000E+00	9.5823E-04	3.3943E-05	3.8766E-04
Xe-135	5.9602E-03	5.5468E-03	3.5493E-03	4.5145E+11	0.0000E+00	8.4520E-03	3.1545E-04	3.5898E-03
Xe-131m	2.1767E-06	6.4314E-08	1.2590E-06	1.5991E+08	0.0000E+00	3.1547E-06	1.1097E-07	1.2696E-06
Xe-133m	4.6867E-05	4.9262E-06	2.7381E-05	3.4801E+09	0.0000E+00	6.8469E-05	2.4205E-06	2.7641E-05
Xe-135m	1.1364E-02	2.1578E-02	8.0544E-03	1.0121E+12	0.0000E+00	3.6559E-02	7.4684E-04	8.2740E-03
Total	2.6962E-02	1.0000E+00	0.0000E+00	0.0000E+00	4.1895E-02	7.7818E-02	3.8802E-02	2.2454E-02

Control Room Compartment Group Inventory Distribution:

Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)		1.8031E-02	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		8.9310E-03	0.0000E+00
All Aerosols (kg)		1.6717E-11	0.0000E+00

Time (h) =	2.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	4.1895E-02
All Aerosols (kg)		0.0000E+00	7.8421E-11

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Exclusion Area Boundary Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		6.6727E-02	4.5249E+01	1.4714E+00
Accumulated dose (rem)		7.6642E-02	4.8367E+01	1.5790E+00



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Low Population Zone Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		4.2188E-03	2.8609E+00	9.3029E-02
Accumulated dose (rem)		5.5531E-03	3.2804E+00	1.0751E-01

Control Room Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		3.2153E-03	2.2056E+01	6.8790E-01	1.7004E-01
Accumulated dose (rem)		3.4767E-03	2.4010E+01	7.4941E-01	1.8211E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	1.0378E+05 Atmosphere	7.4990E-01	4.2223E+05	5.6246E+19	1.1685E-01	3.3734E+02	1.1249E+02
I-132	2.6390E+04	2.3691E-02	2.8198E+05	3.7840E+19	2.8637E-01	2.2770E+02	7.5995E+01
I-133	1.2995E+05	1.8945E-01	5.7323E+05	7.6417E+19	1.8344E-01	4.5853E+02	1.5290E+02
I-134	2.1946E+02	1.9579E-03	2.4224E+04	3.2887E+18	9.9070E-02	1.9780E+01	6.6263E+00
I-135	5.6382E+04	3.4060E-02	3.0622E+05	4.0895E+19	1.3715E-01	2.4562E+02	8.1921E+01
Xe-133	3.0152E+03	7.5672E-06	8.5479E+03	1.1251E+18	2.0203E-04	6.7513E+00	2.2505E+00
Xe-135	1.8517E+04	4.0985E-04	6.0692E+04	7.9968E+18	1.9139E-03	4.8052E+01	1.6018E+01
Xe-131m	1.1270E+01	6.7674E-09	3.0657E+01	4.0333E+15	6.4685E-07	2.4195E-02	8.0652E-03
Xe-133m	2.1112E+02	4.6803E-07	6.0201E+02	7.9241E+16	1.4447E-05	4.7553E-01	1.5851E-01
Xe-135m	8.8200E+03	5.2468E-04	4.5322E+04	5.8637E+18	8.3672E-03	3.6086E+01	1.2032E+01
Total	3.4729E+05	1.0000E+00	0.0000E+00	0.0000E+00	8.3338E-01	1.3804E+03	4.6040E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.9682E-05

RCS Compartment Group Inventory Distribution:



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Time (h) =	Atmosphere	Sump
8.0000		
Noble gases (Ci)	3.0575E+04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	3.1672E+05	0.0000E+00
All Aerosols (kg)	9.7041E-04	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	Atmosphere	7.5929E-01	8.9353E+02	1.1903E+17	5.9965E+00	3.3734E+02
I-132		1.8677E-02	4.6462E+02	6.2354E+16	3.1750E+00	2.2770E+02
I-133		1.8794E-01	1.1885E+03	1.5844E+17	7.9894E+00	4.5853E+02
I-134		9.0735E-04	2.3464E+01	3.1872E+15	1.6713E-01	1.9780E+01
I-135		3.2031E-02	6.0189E+02	8.0382E+16	4.0624E+00	2.4562E+02
Xe-133		1.1439E-05	2.7007E+01	3.5696E+15	1.7937E-01	6.7513E+00
Xe-135		6.0400E-04	1.8694E+02	2.4743E+16	1.2454E+00	4.8052E+01
Xe-131m		1.0243E-08	9.6976E-02	1.2811E+13	6.4355E-04	2.4195E-02
Xe-133m		7.0515E-07	1.8957E+00	2.5057E+14	1.2592E-02	4.7553E-01
Xe-135m		5.3857E-04	9.7235E+01	1.2690E+16	6.5527E-01	3.6086E+01
Total		1.0000E+00	0.0000E+00	0.0000E+00	2.3484E+01	1.3804E+03

Dose Equivalent (Ci/cc)	I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc)	I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc)	I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)		0.0000E+00
Dose Equivalent (Ci/cc)	Xe-133 (EDE)	1.2013E-07

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	Atmosphere	Sump
8.0000		
Noble gases (Ci)	1.2164E+02	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.0015E+03	0.0000E+00



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All Aerosols (kg) 3.0684E-06 0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	4.9933E-03	6.8958E-01	2.0311E-02	2.7056E+12	1.0075E-01	5.9617E-02	7.0072E-02	2.2020E-02
I-132	1.2698E-03	2.2297E-02	1.3883E-02	1.8630E+12	2.5621E-02	4.2249E-02	4.9782E-02	1.5227E-02
I-133	6.2528E-03	1.7448E-01	2.7616E-02	3.6815E+12	1.2616E-01	8.1302E-02	9.5584E-02	2.9978E-02
I-134	1.0560E-05	1.9488E-03	1.2613E-03	1.7124E+11	2.1306E-04	4.1756E-03	4.9229E-03	1.4040E-03
I-135	2.7129E-03	3.1505E-02	1.4817E-02	1.9788E+12	5.4738E-02	4.3961E-02	5.1714E-02	1.6132E-02
Xe-133	1.0985E-02	4.9238E-04	2.9095E-02	3.7835E+12	0.0000E+00	3.8496E-02	1.3740E-03	3.0869E-02
Xe-135	6.6397E-02	2.6119E-02	2.0233E-01	2.6353E+13	0.0000E+00	2.5634E-01	9.7971E-03	2.1529E-01
Xe-131m	4.1898E-05	4.4725E-07	1.0599E-04	1.3769E+10	0.0000E+00	1.4150E-04	4.9206E-06	1.1231E-04
Xe-133m	7.7384E-04	3.0566E-05	2.0567E-03	2.6742E+11	0.0000E+00	2.7331E-03	9.6777E-05	2.1820E-03
Xe-135m	6.8389E-02	5.3554E-02	2.4200E-01	3.0617E+13	0.0000E+00	8.5739E-01	7.4737E-03	2.5635E-01
Total	1.6183E-01	1.0000E+00	0.0000E+00	0.0000E+00	3.0748E-01	1.3864E+00	2.9082E-01	5.8957E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	1.4659E-01	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.5239E-02	0.0000E+00
All Aerosols (kg)	4.6693E-11	0.0000E+00

Time (h) = 8.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	3.0748E-01
All Aerosols (kg)	0.0000E+00	9.4210E-10

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Exclusion Area Boundary Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.2020E-07	5.9081E-05	1.9485E-06
Accumulated dose (rem)		7.6642E-02	4.8367E+01	1.5790E+00

Low Population Zone Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		5.2150E-09	2.5634E-06	8.4539E-08
Accumulated dose (rem)		5.5531E-03	3.2805E+00	1.0751E-01

Control Room Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		8.7489E-09	5.8128E-05	1.8075E-06	4.8164E-07
Accumulated dose (rem)		3.4767E-03	2.4010E+01	7.4941E-01	1.8211E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	1.0378E+05 Atmosphere	7.4990E-01	4.2223E+05	5.6246E+19	1.1685E-01	3.3734E+02	1.1249E+02
I-132	2.6390E+04	2.3691E-02	2.8198E+05	3.7840E+19	2.8637E-01	2.2770E+02	7.5995E+01
I-133	1.2995E+05	1.8945E-01	5.7323E+05	7.6417E+19	1.8344E-01	4.5853E+02	1.5290E+02
I-134	2.1946E+02	1.9579E-03	2.4224E+04	3.2887E+18	9.9070E-02	1.9780E+01	6.6263E+00
I-135	5.6382E+04	3.4060E-02	3.0622E+05	4.0895E+19	1.3715E-01	2.4562E+02	8.1921E+01
Xe-133	3.0152E+03	7.5672E-06	8.5480E+03	1.1251E+18	2.0203E-04	6.7514E+00	2.2505E+00
Xe-135	1.8517E+04	4.0985E-04	6.0692E+04	7.9968E+18	1.9139E-03	4.8052E+01	1.6018E+01
Xe-131m	1.1270E+01	6.7675E-09	3.0657E+01	4.0333E+15	6.4685E-07	2.4195E-02	8.0652E-03
Xe-133m	2.1112E+02	4.6803E-07	6.0201E+02	7.9241E+16	1.4447E-05	4.7553E-01	1.5852E-01



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Xe-135m	8.8200E+03	5.2468E-04	4.5322E+04	5.8637E+18	8.3672E-03	3.6086E+01	1.2032E+01
Total	3.4729E+05	1.0000E+00	0.0000E+00	0.0000E+00	8.3338E-01	1.3804E+03	4.6040E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.9682E-05

RCS Compartment Group Inventory Distribution:

Time (h) =	8.0000	Atmosphere	Sump
Noble gases (Ci)	3.0575E+04	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00	0.0000E+00
All Aerosols (Ci)	3.1672E+05	0.0000E+00	0.0000E+00
All Aerosols (kg)	9.7041E-04	0.0000E+00	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	Atmosphere	7.5929E-01	8.9353E+02	1.1903E+17	5.9965E+00	3.3734E+02
I-132		1.8677E-02	4.6462E+02	6.2354E+16	3.1750E+00	2.2770E+02
I-133		1.8794E-01	1.1885E+03	1.5845E+17	7.9894E+00	4.5853E+02
I-134		9.0735E-04	2.3464E+01	3.1872E+15	1.6713E-01	1.9780E+01
I-135		3.2031E-02	6.0189E+02	8.0382E+16	4.0624E+00	2.4562E+02
Xe-133		1.1439E-05	2.7007E+01	3.5697E+15	1.7937E-01	6.7514E+00
Xe-135		6.0400E-04	1.8694E+02	2.4743E+16	1.2454E+00	4.8052E+01
Xe-131m		1.0243E-08	9.6977E-02	1.2811E+13	6.4355E-04	2.4195E-02
Xe-133m		7.0515E-07	1.8957E+00	2.5057E+14	1.2593E-02	4.7553E-01
Xe-135m		5.3857E-04	9.7235E+01	1.2690E+16	6.5527E-01	3.6086E+01
Total		1.0000E+00	0.0000E+00	0.0000E+00	2.3484E+01	1.3804E+03

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00



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Total I (Ci) 0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE) 1.2013E-07

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	1.2164E+02	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.0015E+03	0.0000E+00
All Aerosols (kg)	3.0684E-06	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	4.9932E-03	6.8958E-01	2.0311E-02	2.7056E+12	1.0075E-01	5.9617E-02	7.0072E-02	2.2020E-02
I-132	1.2698E-03	2.2297E-02	1.3883E-02	1.8630E+12	2.5621E-02	4.2249E-02	4.9782E-02	1.5227E-02
I-133	6.2525E-03	1.7448E-01	2.7616E-02	3.6815E+12	1.2616E-01	8.1302E-02	9.5584E-02	2.9978E-02
I-134	1.0559E-05	1.9488E-03	1.2613E-03	1.7124E+11	2.1306E-04	4.1756E-03	4.9229E-03	1.4040E-03
I-135	2.7128E-03	3.1505E-02	1.4817E-02	1.9788E+12	5.4738E-02	4.3961E-02	5.1714E-02	1.6132E-02
Xe-133	1.0985E-02	4.9238E-04	2.9095E-02	3.7835E+12	0.0000E+00	3.8496E-02	1.3740E-03	3.0869E-02
Xe-135	6.6396E-02	2.6119E-02	2.0233E-01	2.6353E+13	0.0000E+00	2.5634E-01	9.7972E-03	2.1529E-01
Xe-131m	4.1898E-05	4.4725E-07	1.0599E-04	1.3769E+10	0.0000E+00	1.4150E-04	4.9206E-06	1.1231E-04
Xe-133m	7.7384E-04	3.0566E-05	2.0567E-03	2.6742E+11	0.0000E+00	2.7332E-03	9.6777E-05	2.1820E-03
Xe-135m	6.8389E-02	5.3554E-02	2.4200E-01	3.0617E+13	0.0000E+00	8.5739E-01	7.4737E-03	2.5635E-01
Total	1.6182E-01	1.0000E+00	0.0000E+00	0.0000E+00	3.0748E-01	1.3864E+00	2.9082E-01	5.8957E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	1.4659E-01	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.5239E-02	0.0000E+00
All Aerosols (kg)	4.6691E-11	0.0000E+00



	Deposition	Recirculating
Time (h) = 8.0000	Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	3.0748E-01
All Aerosols (kg)	0.0000E+00	9.4211E-10

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Exclusion Area Boundary Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	1.1908E-01	9.2977E+01	2.9831E+00
Accumulated dose (rem)	1.9572E-01	1.4134E+02	4.5621E+00

Low Population Zone Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	5.1666E-03	4.0340E+00	1.2943E-01
Accumulated dose (rem)	1.0720E-02	7.3145E+00	2.3694E-01

Control Room Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	8.8311E-03	3.6054E+01	1.1196E+00	5.0304E-01
Accumulated dose (rem)	1.2308E-02	6.0064E+01	1.8690E+00	6.8515E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000



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Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	9.6313E+04	8.1132E-01	2.0212E+06	2.6933E+20	1.1685E-01	1.6243E+03	5.4146E+02
I-132	2.0887E+02	6.9668E-03	3.6690E+05	4.9370E+19	2.8637E-01	2.9865E+02	9.9644E+01
I-133	7.4949E+04	1.6175E-01	2.1655E+06	2.8938E+20	1.8344E-01	1.7494E+03	5.8320E+02
I-134	6.9155E-04	4.4744E-04	2.4495E+04	3.3256E+18	9.9070E-02	2.0008E+01	6.7023E+00
I-135	1.0352E+04	1.8499E-02	7.3589E+05	9.8765E+19	1.3715E-01	5.9885E+02	1.9966E+02
Xe-133	1.0832E+04	2.5520E-05	1.2755E+05	1.6838E+19	2.0203E-04	1.0088E+02	3.3627E+01
Xe-135	2.1496E+04	6.9112E-04	4.5282E+05	6.0263E+19	1.9139E-03	3.6419E+02	1.2140E+02
Xe-131m	5.2561E+01	2.7643E-08	5.5406E+02	7.2974E+16	6.4685E-07	4.3626E-01	1.4542E-01
Xe-133m	7.0964E+02	1.5154E-06	8.6244E+03	1.1391E+18	1.4447E-05	6.8291E+00	2.2764E+00
Xe-135m	1.6960E+03	3.0238E-04	1.1557E+05	1.5121E+19	8.3672E-03	9.3825E+01	3.1278E+01
Total	2.1661E+05	1.0000E+00	0.0000E+00	0.0000E+00	8.3338E-01	4.8574E+03	1.6194E+03

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
Total I (Ci) 0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE) 1.4972E-05

RCS Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	3.4787E+04	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.8182E+05	0.0000E+00
All Aerosols (kg)	8.4601E-04	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	1.5171E+03	8.3402E-01	1.6101E+04	2.1458E+18	4.9337E+01	1.6243E+03
I-132	3.2900E+00	2.3241E-03	9.4848E+02	1.2850E+17	4.6286E+00	2.9865E+02
I-133	1.1805E+03	1.4963E-01	1.5523E+04	2.0772E+18	4.9198E+01	1.7494E+03
I-134	1.0893E-05	5.7976E-05	2.4595E+01	3.3419E+15	1.7055E-01	2.0008E+01



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I-135	1.6306E+02	1.2892E-02	3.9743E+03	5.3585E+17	1.3935E+01	5.9885E+02
Xe-133	1.7349E+02	3.4855E-05	1.3500E+03	1.7835E+17	3.8890E+00	1.0088E+02
Xe-135	3.4432E+02	8.1426E-04	4.1343E+03	5.5172E+17	1.2549E+01	3.6419E+02
Xe-131m	8.3870E-01	3.8658E-08	6.0045E+00	7.9128E+14	1.7127E-02	4.3626E-01
Xe-133m	1.1352E+01	2.0508E-06	9.0447E+01	1.1957E+16	2.6123E-01	6.8291E+00
Xe-135m	2.6715E+01	2.1934E-04	6.4965E+02	8.5695E+16	2.2724E+00	9.3825E+01
Total	3.4207E+03	1.0000E+00	0.0000E+00	0.0000E+00	1.3626E+02	4.8574E+03

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.8141E-07

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	5.5672E+02	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.8640E+03	0.0000E+00
All Aerosols (kg)	1.3326E-05	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	1.9520E-03	6.7836E-01	5.2509E-02	6.9965E+12	2.5307E-01	1.4942E-01	1.7528E-01	5.7233E-02
I-132	4.2333E-06	9.5654E-03	1.5652E-02	2.1030E+12	5.4883E-04	4.7124E-02	5.5531E-02	1.7246E-02
I-133	1.5190E-03	1.4360E-01	5.9733E-02	7.9770E+12	1.9694E-01	1.7120E-01	2.0099E-01	6.5374E-02
I-134	1.4016E-11	7.4511E-04	1.2674E-03	1.7206E+11	1.8171E-09	4.1911E-03	4.9413E-03	1.4110E-03
I-135	2.0981E-04	1.9042E-02	2.3536E-02	3.1529E+12	2.7201E-02	6.8445E-02	8.0480E-02	2.5887E-02
Xe-133	2.1181E-02	1.8463E-03	2.8672E-01	3.5221E+13	0.0000E+00	2.8292E-01	9.0983E-03	2.8787E-01
Xe-135	4.1011E-02	5.1712E-02	1.0527E+00	1.3189E+14	0.0000E+00	1.0284E+00	3.5677E-02	1.0868E+00
Xe-131m	1.1875E-04	2.1693E-06	1.3510E-03	1.6385E+11	0.0000E+00	1.3251E-03	3.8748E-05	1.3354E-03
Xe-133m	1.4482E-03	1.1286E-04	1.9957E-02	2.4482E+12	0.0000E+00	1.9775E-02	6.1806E-04	2.0018E-02
Xe-135m	3.5508E-02	9.5011E-02	1.1283E+00	1.3515E+14	0.0000E+00	3.5258E+00	1.2176E-02	1.1270E+00



Total 1.0295E-01 1.0000E+00 0.0000E+00 0.0000E+00 4.7776E-01 5.2987E+00 5.7483E-01 2.6901E+00

Control Room Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	9.9268E-02	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	3.6851E-03	0.0000E+00
All Aerosols (kg)	1.7146E-11	0.0000E+00

Time (h) = 24.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	4.7776E-01
All Aerosols (kg)	0.0000E+00	2.2230E-09

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Exclusion Area Boundary Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	1.9572E-01	1.4134E+02	4.5621E+00

Low Population Zone Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	1.0720E-02	7.3145E+00	2.3694E-01



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Control Room Doses:

Time (h) =	96.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.6541E-03	2.7884E-01	1.0216E-02	9.3346E-02
Accumulated dose (rem)		1.3962E-02	6.0343E+01	1.8792E+00	7.7850E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	Atmosphere	9.0466E-01	8.1277E+06	1.0832E+21	1.1685E-01	1.6243E+03	5.4146E+02
I-132		1.9353E-03	3.6756E+05	4.9463E+19	2.8637E-01	2.9865E+02	9.9644E+01
I-133		8.6961E-02	4.1985E+06	5.6176E+20	1.8344E-01	1.7494E+03	5.8320E+02
I-134		1.2407E-04	2.4495E+04	3.3256E+18	9.9070E-02	2.0008E+01	6.7023E+00
I-135		5.8048E-03	8.3276E+05	1.1191E+20	1.3715E-01	5.9885E+02	1.9966E+02
Xe-133		6.9146E-05	1.2463E+06	1.6573E+20	2.0203E-04	1.0088E+02	3.3627E+01
Xe-135		3.5037E-04	8.2787E+05	1.1071E+20	1.9139E-03	3.6419E+02	1.2140E+02
Xe-131m		1.3669E-07	9.8804E+03	1.3117E+18	6.4685E-07	4.3626E-01	1.4542E-01
Xe-133m		3.3597E-06	6.8956E+04	9.1748E+18	1.4447E-05	6.8291E+00	2.2764E+00
Xe-135m		9.5362E-05	1.3144E+05	1.7228E+19	8.3672E-03	9.3825E+01	3.1278E+01
Total		1.0000E+00	0.0000E+00	0.0000E+00	8.3338E-01	4.8574E+03	1.6194E+03

Dose Equivalent (Ci/cc) I-131 (Thyroid)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (CEDE)	0.0000E+00
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	0.0000E+00
Total I (Ci)	0.0000E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.3678E-06

RCS Compartment Group Inventory Distribution:

Time (h) =	96.0000	Atmosphere	Sump
Noble gases (Ci)		1.7024E+04	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00



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All Aerosols (Ci) 8.1173E+04 0.0000E+00
 All Aerosols (kg) 6.0584E-04 0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	1.1713E+03	9.2356E-01	1.1229E+05	1.4966E+19	4.9337E+01	1.6243E+03
I-132	1.2406E-09	3.7307E-04	9.5884E+02	1.2995E+17	4.6286E+00	2.9865E+02
I-133	1.0717E+02	7.2773E-02	4.7546E+04	6.3676E+18	4.9198E+01	1.7494E+03
I-134	2.0595E-30	9.2060E-06	2.4595E+01	3.3419E+15	1.7055E-01	2.0008E+01
I-135	8.5773E-02	2.8331E-03	5.5001E+03	7.4287E+17	1.3935E+01	5.9885E+02
Xe-133	2.5309E+02	7.8486E-05	1.9144E+04	2.5465E+18	3.8890E+00	1.0088E+02
Xe-135	2.9964E+00	3.1635E-04	1.0116E+04	1.3562E+18	1.2549E+01	3.6419E+02
Xe-131m	3.0743E+00	1.5705E-07	1.5362E+02	2.0399E+16	1.7127E-02	4.3626E-01
Xe-133m	1.1032E+01	3.7763E-06	1.0488E+03	1.3961E+17	2.6123E-01	6.8291E+00
Xe-135m	1.4052E-02	4.8231E-05	8.9963E+02	1.1888E+17	2.2724E+00	9.3825E+01
Total	1.5488E+03	1.0000E+00	0.0000E+00	0.0000E+00	1.3626E+02	4.8574E+03

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 3.4595E-08

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	2.7021E+02	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2786E+03	0.0000E+00
All Aerosols (kg)	9.5427E-06	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure	Decays	Compartment	Pathway 2	Pathway 3	Pathway 4
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	Atmosphere		(Ci-hr)	(Bq-s)	Recirc, Filtr	Inflow	Inflow	Outflow
I-131	3.2038-195	6.5132E-01	5.2600E-02	7.0085E+12	1.9708E-01	1.4942E-01	1.7528E-01	5.7704E-02
I-132	3.3933-207	9.1683E-03	1.5652E-02	2.1031E+12	2.0874E-13	4.7124E-02	5.5531E-02	1.7247E-02
I-133	2.9311-196	1.3780E-01	5.9802E-02	7.9863E+12	1.8031E-02	1.7120E-01	2.0099E-01	6.5740E-02
I-134	5.6331-228	7.1417E-04	1.2674E-03	1.7206E+11	3.4652E-34	4.1911E-03	4.9413E-03	1.4110E-03
I-135	2.3460-199	1.8259E-02	2.3545E-02	3.1542E+12	1.4432E-05	6.8445E-02	8.0480E-02	2.5938E-02
Xe-133	1.0631E-03	3.7969E-03	6.1516E-01	7.2048E+13	0.0000E+00	5.3939E-01	9.0983E-03	5.9571E-01
Xe-135	1.1659E-05	6.0048E-02	1.2754E+00	1.5729E+14	0.0000E+00	1.1777E+00	3.5677E-02	1.3042E+00
Xe-131m	5.7063E-05	9.4291E-06	6.1265E-03	6.9535E+11	0.0000E+00	5.1864E-03	3.8748E-05	5.7376E-03
Xe-133m	7.5533E-05	2.3441E-04	4.3247E-02	5.0588E+12	0.0000E+00	3.8136E-02	6.1806E-04	4.1830E-02
Xe-135m	1.8791E-05	1.1865E-01	1.4701E+00	1.7401E+14	0.0000E+00	4.4957E+00	1.2176E-02	1.4520E+00
Total	1.2262E-03	1.0000E+00	0.0000E+00	0.0000E+00	2.1513E-01	6.6966E+00	5.7483E-01	3.5675E+00

Control Room Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	1.2262E-03	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	3.4971-195	0.0000E+00
All Aerosols (kg)	2.6101-203	0.0000E+00

Time (h) = 96.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	2.1513E-01
All Aerosols (kg)	0.0000E+00	1.6056E-09

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Exclusion Area Boundary Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	1.9572E-01	1.4134E+02	4.5621E+00

Low Population Zone Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	1.0720E-02	7.3145E+00	2.3694E-01

Control Room Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	6.6992E-06	2.7351-193	6.6992E-06	8.2579E-04
Accumulated dose (rem)	1.3969E-02	6.0343E+01	1.8792E+00	7.7932E-01

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
I-131	7.9046E+03	9.6743E-01	2.6615E+07	3.5476E+21	1.1685E-01	1.6243E+03	5.4146E+02
I-132	1.6810E-89	6.3201E-04	3.6756E+05	4.9463E+19	2.8637E-01	2.9865E+02	9.9644E+01
I-133	6.3364E-06	2.9772E-02	4.4014E+06	5.8896E+20	1.8344E-01	1.7494E+03	5.8320E+02
I-134	7.0338-243	4.0519E-05	2.4495E+04	3.3256E+18	9.9070E-02	2.0008E+01	6.7023E+00
I-135	2.0801E-28	1.8958E-03	8.3281E+05	1.1191E+20	1.3715E-01	5.9885E+02	1.9966E+02
Xe-133	5.7340E+02	7.7753E-05	4.2914E+06	5.7174E+20	2.0203E-04	1.0088E+02	3.3627E+01
Xe-135	4.4002E-19	1.1476E-04	8.3037E+05	1.1104E+20	1.9139E-03	3.6419E+02	1.2140E+02
Xe-131m	2.3818E+02	8.9135E-07	1.9729E+05	2.6274E+19	6.4685E-07	4.3626E-01	1.4542E-01
Xe-133m	2.1857E-01	2.0283E-06	1.2747E+05	1.6986E+19	1.4447E-05	6.8291E+00	2.2764E+00
Xe-135m	3.4078E-29	3.1144E-05	1.3145E+05	1.7229E+19	8.3672E-03	9.3825E+01	3.1278E+01
Total	8.7164E+03	1.0000E+00	0.0000E+00	0.0000E+00	8.3338E-01	4.8574E+03	1.6194E+03

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00



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Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 4.7955E-08

RCS Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	8.1180E+02	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	7.9046E+03	0.0000E+00
All Aerosols (kg)	6.3760E-05	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
I-131	1.2451E+02	9.7602E-01	4.0349E+05	5.3782E+19	4.9337E+01	1.6243E+03
I-132	2.6479E-91	1.0972E-04	9.5884E+02	1.2995E+17	4.6286E+00	2.9865E+02
I-133	9.9806E-08	2.2841E-02	5.0743E+04	6.7959E+18	4.9198E+01	1.7494E+03
I-134	1.1079E-244	2.7074E-06	2.4595E+01	3.3419E+15	1.7055E-01	2.0008E+01
I-135	3.2764E-30	8.3332E-04	5.5009E+03	7.4298E+17	1.3935E+01	5.9885E+02
Xe-133	9.0967E+00	8.1336E-05	6.7458E+04	8.9883E+18	3.8890E+00	1.0088E+02
Xe-135	6.9820E-21	9.3403E-05	1.0155E+04	1.3616E+18	1.2549E+01	3.6419E+02
Xe-131m	3.7536E+00	9.3460E-07	3.1085E+03	4.1398E+17	1.7127E-02	4.3626E-01
Xe-133m	3.4607E-03	2.0920E-06	1.9757E+03	2.6332E+17	2.6123E-01	6.8291E+00
Xe-135m	5.3677E-31	1.4187E-05	8.9976E+02	1.1890E+17	2.2724E+00	9.3825E+01
Total	1.3736E+02	1.0000E+00	0.0000E+00	0.0000E+00	1.3626E+02	4.8574E+03

Dose Equivalent (Ci/cc) I-131 (Thyroid) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (CEDE) 0.0000E+00
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 0.0000E+00
 Total I (Ci) 0.0000E+00
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 1.2115E-09

Intact Steam Generators Compartment Group Inventory Distribution:



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Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	1.2854E+01	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2451E+02	0.0000E+00
All Aerosols (kg)	1.0043E-06	0.0000E+00

Environment Integral Nuclide Release (Ci): at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract Pathway 1	Dose Fract Pathway 5	Dose Fract Pathway 7	Dose Fract Pathway 8
I-131	5.9091E+02	0.00044	0.06388	0.73910	0.00000
I-132	1.0456E+02	0.00005	0.00037	0.00905	0.00000
I-133	6.3258E+02	0.00013	0.01208	0.15265	0.00000
I-134	6.9719E+00	0.00002	0.00002	0.00083	0.00000
I-135	2.1373E+02	0.00003	0.00122	0.01912	0.00000
Xe-133	3.7931E+01	0.00000	0.00000	0.00002	0.00000
Xe-135	2.1112E+02	0.00000	0.00006	0.00060	0.00000
Xe-131m	1.6365E-01	0.00000	0.00000	0.00000	0.00000
Xe-133m	2.5555E+00	0.00000	0.00000	0.00000	0.00000
Xe-135m	4.1289E+01	0.00000	0.00002	0.00030	0.00000

Environment Compartment Group Inventory Distribution:

Time (h) = 720.0000	Total Release	Release Rate/s
Noble gases (Ci)	2.9306E+02	1.1306E-04
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.5488E+03	5.9752E-04

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	0.0000E+00	6.5115E-01	5.2600E-02	7.0085E+12	2.0949E-02	1.4942E-01	1.7528E-01	5.7704E-02



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I-132	0.0000E+00	9.1660E-03	1.5652E-02	2.1031E+12	4.4551E-95	4.7124E-02	5.5531E-02	1.7247E-02
I-133	0.0000E+00	1.3776E-01	5.9802E-02	7.9863E+12	1.6793E-11	1.7120E-01	2.0099E-01	6.5740E-02
I-134	0.0000E+00	7.1399E-04	1.2674E-03	1.7206E+11	1.8641-248	4.1911E-03	4.9413E-03	1.4110E-03
I-135	0.0000E+00	1.8254E-02	2.3545E-02	3.1542E+12	5.5126E-34	6.8445E-02	8.0480E-02	2.5938E-02
Xe-133	1.0506E-12	3.9939E-03	6.4725E-01	7.5630E+13	0.0000E+00	5.6499E-01	9.0983E-03	6.2549E-01
Xe-135	4.7343E-34	6.0038E-02	1.2755E+00	1.5731E+14	0.0000E+00	1.1778E+00	3.5677E-02	1.3043E+00
Xe-131m	6.4324E-06	3.2194E-05	2.0923E-02	2.2987E+12	0.0000E+00	1.6878E-02	3.8748E-05	1.8993E-02
Xe-133m	7.4631E-14	2.4671E-04	4.5527E-02	5.3133E+12	0.0000E+00	3.9970E-02	6.1806E-04	4.3946E-02
Xe-135m	7.3185E-34	1.1864E-01	1.4703E+00	1.7403E+14	0.0000E+00	4.4962E+00	1.2176E-02	1.4521E+00
Total	6.4324E-06	1.0000E+00	0.0000E+00	0.0000E+00	2.0949E-02	6.7363E+00	5.7483E-01	3.6129E+00

Control Room Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	6.4324E-06	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Time (h) = 720.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	2.0949E-02
All Aerosols (kg)	0.0000E+00	1.6898E-10

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I-131 Summary
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Time (hr)	RCS I-131 (Curies)	Intact Steam Generato I-131 (Curies)	Environment I-131 (Curies)
0.000	0.0000E+00	0.0000E+00	0.0000E+00
0.019	2.5995E+02	1.8639E-03	8.3771E-04
0.111	1.4874E+03	6.1034E-02	2.7457E-02
0.250	3.3483E+03	3.1475E-01	1.3395E-01
0.472	6.3114E+03	1.1264E+00	4.6950E-01
0.472	6.3159E+03	1.1280E+00	4.7016E-01
0.667	8.9181E+03	2.2707E+00	9.1858E-01
0.878	1.1733E+04	4.0177E+00	1.5086E+00
1.089	1.4537E+04	6.2321E+00	2.2592E+00
1.289	1.7193E+04	8.7661E+00	3.1212E+00
1.489	1.9844E+04	1.1720E+01	4.1298E+00
1.689	2.2490E+04	1.5094E+01	5.2852E+00
1.889	2.5132E+04	1.8884E+01	6.5880E+00
2.000	2.6594E+04	2.1163E+01	7.3735E+00
2.243	2.9800E+04	2.6619E+01	9.2517E+00
2.443	3.2430E+04	3.1562E+01	1.0959E+01
2.643	3.5056E+04	3.6917E+01	1.2814E+01
2.843	3.7677E+04	4.2682E+01	1.4817E+01
3.043	4.0294E+04	4.8856E+01	1.6968E+01
3.243	4.2907E+04	5.5438E+01	1.9269E+01
3.443	4.5515E+04	6.2424E+01	2.1718E+01
3.643	4.8119E+04	6.9815E+01	2.4317E+01
3.843	5.0718E+04	7.7609E+01	2.7065E+01
4.043	5.3314E+04	8.5804E+01	2.9964E+01
4.243	5.5904E+04	9.4398E+01	3.3013E+01
4.443	5.8491E+04	1.0339E+02	3.6212E+01
4.643	6.1073E+04	1.1278E+02	3.9563E+01
4.843	6.3651E+04	1.2256E+02	4.3065E+01
5.043	6.6225E+04	1.3274E+02	4.6718E+01
5.243	6.8795E+04	1.4331E+02	5.0523E+01
5.443	7.1360E+04	1.5427E+02	5.4480E+01
5.643	7.3921E+04	1.6562E+02	5.8590E+01



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5.843	7.6477E+04	1.7736E+02	6.2853E+01
6.043	7.9030E+04	1.8948E+02	6.7268E+01
6.243	8.1578E+04	2.0199E+02	7.1837E+01
6.443	8.4121E+04	2.1488E+02	7.6560E+01
6.643	8.6661E+04	2.2815E+02	8.1436E+01
6.843	8.9196E+04	2.4180E+02	8.6467E+01
7.043	9.1727E+04	2.5583E+02	9.1652E+01
7.243	9.4254E+04	2.7024E+02	9.6992E+01
7.443	9.6777E+04	2.8502E+02	1.0249E+02
7.643	9.9295E+04	3.0018E+02	1.0814E+02
7.843	1.0181E+05	3.1571E+02	1.1394E+02
8.000	1.0378E+05	3.2814E+02	1.1860E+02
8.000	1.0378E+05	3.2814E+02	1.1860E+02
8.200	1.0368E+05	3.4438E+02	1.2435E+02
8.400	1.0358E+05	3.6059E+02	1.3011E+02
8.600	1.0349E+05	3.7676E+02	1.3587E+02
8.800	1.0339E+05	3.9289E+02	1.4164E+02
9.000	1.0329E+05	4.0899E+02	1.4741E+02
9.200	1.0320E+05	4.2505E+02	1.5318E+02
9.400	1.0310E+05	4.4108E+02	1.5896E+02
9.600	1.0300E+05	4.5707E+02	1.6474E+02
9.800	1.0291E+05	4.7302E+02	1.7053E+02
10.000	1.0281E+05	4.8894E+02	1.7632E+02
10.200	1.0272E+05	5.0482E+02	1.8212E+02
24.000	9.6313E+04	1.5171E+03	5.9091E+02
96.000	7.4364E+04	1.1713E+03	5.9091E+02
720.000	7.9046E+03	1.2451E+02	5.9091E+02

Time (hr)	Control Room I-131 (Curies)	Faulted Steam Generat I-131 (Curies)
0.000	0.0000E+00	0.0000E+00
0.019	1.4070E-05	0.0000E+00
0.111	3.7857E-05	0.0000E+00
0.250	1.2321E-04	0.0000E+00
0.472	3.1118E-04	0.0000E+00
0.472	3.1149E-04	0.0000E+00
0.667	4.8939E-04	0.0000E+00
0.878	6.6876E-04	0.0000E+00



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1.089	8.5955E-04	0.0000E+00
1.289	1.0436E-03	0.0000E+00
1.489	1.2284E-03	0.0000E+00
1.689	1.4134E-03	0.0000E+00
1.889	1.5985E-03	0.0000E+00
2.000	1.7011E-03	0.0000E+00
2.243	1.4480E-03	0.0000E+00
2.443	1.4919E-03	0.0000E+00
2.643	1.5950E-03	0.0000E+00
2.843	1.7155E-03	0.0000E+00
3.043	1.8410E-03	0.0000E+00
3.243	1.9679E-03	0.0000E+00
3.443	2.0953E-03	0.0000E+00
3.643	2.2228E-03	0.0000E+00
3.843	2.3503E-03	0.0000E+00
4.043	2.4778E-03	0.0000E+00
4.243	2.6052E-03	0.0000E+00
4.443	2.7326E-03	0.0000E+00
4.643	2.8600E-03	0.0000E+00
4.843	2.9874E-03	0.0000E+00
5.043	3.1147E-03	0.0000E+00
5.243	3.2420E-03	0.0000E+00
5.443	3.3693E-03	0.0000E+00
5.643	3.4965E-03	0.0000E+00
5.843	3.6237E-03	0.0000E+00
6.043	3.7509E-03	0.0000E+00
6.243	3.8781E-03	0.0000E+00
6.443	4.0052E-03	0.0000E+00
6.643	4.1322E-03	0.0000E+00
6.843	4.2593E-03	0.0000E+00
7.043	4.3863E-03	0.0000E+00
7.243	4.5133E-03	0.0000E+00
7.443	4.6402E-03	0.0000E+00
7.643	4.7671E-03	0.0000E+00
7.843	4.8940E-03	0.0000E+00
8.000	4.9933E-03	0.0000E+00
8.000	4.9932E-03	0.0000E+00
8.200	2.8916E-03	0.0000E+00



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8.400	2.2746E-03	0.0000E+00
8.600	2.0931E-03	0.0000E+00
8.800	2.0392E-03	0.0000E+00
9.000	2.0229E-03	0.0000E+00
9.200	2.0175E-03	0.0000E+00
9.400	2.0153E-03	0.0000E+00
9.600	2.0141E-03	0.0000E+00
9.800	2.0131E-03	0.0000E+00
10.000	2.0122E-03	0.0000E+00
10.200	2.0114E-03	0.0000E+00
24.000	1.9520E-03	0.0000E+00
96.000	3.2038E-03	0.0000E+00
720.000	0.0000E+00	0.0000E+00

Cumulative Dose Summary
#####

Time (hr)	Exclusion Area Bounda		Low Population Zone		Control Room	
	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)
0.000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.019	3.5966E-04	1.2993E-05	4.8400E-05	1.7484E-06	1.2238E-04	3.8774E-06
0.111	1.1781E-02	4.2464E-04	1.5854E-03	5.7144E-05	2.7904E-03	8.8386E-05
0.250	5.7407E-02	2.0608E-03	7.7253E-03	2.7733E-04	1.6201E-02	5.1283E-04
0.472	2.0085E-01	7.1653E-03	2.7028E-02	9.6424E-04	7.5345E-02	2.3826E-03
0.472	2.0113E-01	7.1753E-03	2.7066E-02	9.6559E-04	7.5474E-02	2.3867E-03
0.667	3.9234E-01	1.3925E-02	5.2797E-02	1.8739E-03	1.7228E-01	5.4435E-03
0.878	6.4330E-01	2.2721E-02	8.6570E-02	3.0576E-03	3.2354E-01	1.0215E-02
1.089	9.6181E-01	3.3807E-02	1.2943E-01	4.5495E-03	5.2264E-01	1.6490E-02
1.289	1.3268E+00	4.6434E-02	1.7855E-01	6.2487E-03	7.5741E-01	2.3882E-02
1.489	1.7528E+00	6.1092E-02	2.3588E-01	8.2212E-03	1.0371E+00	3.2681E-02
1.689	2.2399E+00	7.7764E-02	3.0142E-01	1.0465E-02	1.3616E+00	4.2883E-02
1.889	2.7879E+00	9.6433E-02	3.7516E-01	1.2977E-02	1.7308E+00	5.4481E-02
2.000	3.1177E+00	1.0763E-01	4.1956E-01	1.4484E-02	1.9545E+00	6.1507E-02
2.243	3.9050E+00	1.3426E-01	4.6933E-01	1.6168E-02	2.4086E+00	7.5760E-02
2.443	4.6190E+00	1.5831E-01	5.1448E-01	1.7688E-02	2.7650E+00	8.6943E-02
2.643	5.3933E+00	1.8430E-01	5.6343E-01	1.9331E-02	3.1399E+00	9.8701E-02



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2.843	6.2279E+00	2.1221E-01	6.1619E-01	2.1096E-02	3.5417E+00	1.1129E-01
3.043	7.1225E+00	2.4204E-01	6.7276E-01	2.2982E-02	3.9726E+00	1.2479E-01
3.243	8.0773E+00	2.7378E-01	7.3313E-01	2.4989E-02	4.4333E+00	1.3922E-01
3.443	9.0921E+00	3.0743E-01	7.9728E-01	2.7116E-02	4.9238E+00	1.5457E-01
3.643	1.0167E+01	3.4297E-01	8.6523E-01	2.9363E-02	5.4442E+00	1.7085E-01
3.843	1.1301E+01	3.8040E-01	9.3697E-01	3.1730E-02	5.9943E+00	1.8805E-01
4.043	1.2496E+01	4.1971E-01	1.0125E+00	3.4215E-02	6.5741E+00	2.0617E-01
4.243	1.3750E+01	4.6090E-01	1.0918E+00	3.6820E-02	7.1835E+00	2.2521E-01
4.443	1.5064E+01	5.0397E-01	1.1749E+00	3.9542E-02	7.8223E+00	2.4517E-01
4.643	1.6438E+01	5.4890E-01	1.2617E+00	4.2383E-02	8.4905E+00	2.6603E-01
4.843	1.7871E+01	5.9570E-01	1.3524E+00	4.5342E-02	9.1880E+00	2.8781E-01
5.043	1.9364E+01	6.4436E-01	1.4467E+00	4.8419E-02	9.9147E+00	3.1048E-01
5.243	2.0917E+01	6.9488E-01	1.5449E+00	5.1613E-02	1.0670E+01	3.3406E-01
5.443	2.2529E+01	7.4725E-01	1.6468E+00	5.4924E-02	1.1455E+01	3.5854E-01
5.643	2.4200E+01	8.0147E-01	1.7525E+00	5.8352E-02	1.2269E+01	3.8391E-01
5.843	2.5931E+01	8.5755E-01	1.8620E+00	6.1897E-02	1.3112E+01	4.1017E-01
6.043	2.7722E+01	9.1546E-01	1.9752E+00	6.5559E-02	1.3983E+01	4.3733E-01
6.243	2.9572E+01	9.7523E-01	2.0921E+00	6.9338E-02	1.4883E+01	4.6537E-01
6.443	3.1481E+01	1.0368E+00	2.2128E+00	7.3233E-02	1.5812E+01	4.9430E-01
6.643	3.3450E+01	1.1003E+00	2.3373E+00	7.7244E-02	1.6769E+01	5.2411E-01
6.843	3.5477E+01	1.1656E+00	2.4655E+00	8.1371E-02	1.7755E+01	5.5480E-01
7.043	3.7564E+01	1.2327E+00	2.5975E+00	8.5614E-02	1.8769E+01	5.8637E-01
7.243	3.9711E+01	1.3016E+00	2.7332E+00	8.9974E-02	1.9811E+01	6.1881E-01
7.443	4.1916E+01	1.3724E+00	2.8726E+00	9.4449E-02	2.0882E+01	6.5212E-01
7.643	4.4181E+01	1.4450E+00	3.0158E+00	9.9040E-02	2.1981E+01	6.8630E-01
7.843	4.6505E+01	1.5194E+00	3.1627E+00	1.0375E-01	2.3108E+01	7.2135E-01
8.000	4.8367E+01	1.5790E+00	3.2804E+00	1.0751E-01	2.4010E+01	7.4941E-01
8.000	4.8367E+01	1.5790E+00	3.2805E+00	1.0751E-01	2.4010E+01	7.4941E-01
8.200	4.9549E+01	1.6180E+00	3.3317E+00	1.0920E-01	2.4881E+01	7.7653E-01
8.400	5.0729E+01	1.6568E+00	3.3829E+00	1.1089E-01	2.5468E+01	7.9483E-01
8.600	5.1910E+01	1.6956E+00	3.4341E+00	1.1257E-01	2.5971E+01	8.1054E-01
8.800	5.3089E+01	1.7344E+00	3.4853E+00	1.1425E-01	2.6449E+01	8.2545E-01
9.000	5.4268E+01	1.7730E+00	3.5365E+00	1.1593E-01	2.6919E+01	8.4012E-01
9.200	5.5446E+01	1.8116E+00	3.5876E+00	1.1760E-01	2.7386E+01	8.5470E-01
9.400	5.6623E+01	1.8501E+00	3.6387E+00	1.1928E-01	2.7852E+01	8.6923E-01
9.600	5.7800E+01	1.8886E+00	3.6897E+00	1.2094E-01	2.8316E+01	8.8372E-01
9.800	5.8976E+01	1.9270E+00	3.7407E+00	1.2261E-01	2.8780E+01	8.9819E-01
10.000	6.0152E+01	1.9653E+00	3.7917E+00	1.2427E-01	2.9243E+01	9.1263E-01



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10.200	6.1326E+01	2.0036E+00	3.8427E+00	1.2594E-01	2.9705E+01	9.2704E-01
24.000	1.4134E+02	4.5621E+00	7.3145E+00	2.3694E-01	6.0064E+01	1.8690E+00
96.000	1.4134E+02	4.5621E+00	7.3145E+00	2.3694E-01	6.0343E+01	1.8792E+00
720.000	1.4134E+02	4.5621E+00	7.3145E+00	2.3694E-01	6.0343E+01	1.8792E+00



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#####

D. C. Cook - MSLB Concurrent Iodine Spike, Iodine Release

Worst Two-Hour Doses
#####

Exclusion Area Boundary

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
6.0	2.4581E-02	2.1033E+01	6.7612E-01

Final Doses
#####

Low Population Zone

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	1.0720E-02	7.3145E+00	2.3694E-01

Control Room

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	1.3969E-02	6.0343E+01	1.8792E+00



Attachment E

Concurrent Accident Iodine Spike RADTRAD Output – RCS Release

(MSLB_Spike_RCS_R1.o0)

Note: The computer clock was set to 12/01/14 during model execution due to software date limitations



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#####

D. C. Cook - MSLB Concurrent Iodine Spike, RCS Activity Release

#####

File information

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Input File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_Spike_RCS_R1.psf
Output File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_Spike_RCS_R1.o0

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release file = c:\projects\1537-cook_dose\mslb\mslb_spike_rcs_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

```
#####      #####      #####      # #      # #####      # #      #####  
# # #      #      # ##      # #      # #      # #      #  
# # #      #      # # #      # #      # #      # #      #  
#####      #####      #####      # # #      # #####      # #      #  
#      # #      #      # #      # #      # #      # #      #  
#      # #      #      # #      ## #      # #      # #      #  
#      #####      #      # #      # #      #####      #
```

Radtrad 3.10 10/15/2013
D. C. Cook - MSLB Concurrent Iodine Spike, RCS Activity Release
Dose Conversion Factor File:
c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp



Release Fraction & Timing Files:

1

c:\projects\1537-cook_dose\mslb\mslb_spike_rcs_r1.rft

Nuclide Inventory Files:

1

1 c:\projects\1537-cook_dose\source_term\cook_rcs.nif

Plant Power Level:

2.1144E+02

Number of Compartments:

5

Compartment 1:

RCS

3

4.661415E+05

0

0

0

0

0

Compartment 2:

Intact Steam Generators

3

2.925471E+05

0

0

0

0

0

Compartment 3:

Environment

2

0.00E+00

0

0

0

0

0

Compartment 4:



Control Room

1
5.0616E+04
0
0
1
0
0

Compartment 5:

Faulted Steam Generator

3
1.61E+05
0
0
0
0
0

Number of Pathways:

8

Pathway 1:

Flashed Intact Steam Generator Tube Leakage

1
3
2

Pathway 2:

Control Room Makeup

3
4
2

Pathway 3:

Control Room Unfiltered Inleakage

3
4
2

Pathway 4:

Control Room Exhaust

4
3



```
2
Pathway 5:
  Steam Release
  2
  3
  2
Pathway 6:
  Unflashed Intact Steam Generator Tube Leakage
  1
  2
  2
Pathway 7:
  Faulted SG Tube Leakage
  1
  3
  2
Pathway 8:
  Faulted Steam Generator Steam Release
  5
  3
  2
End of Plant Model
Source Term Input:
  1
  1 1 1 1
  0.00E+00
  0.00E+00 7.2E+02
  1
  3 0.00E+00 9.7E-01 3.00E-02
Overlying Pool:
  0
  0.00E+00
  0
  0
  0
  0
Compartments:
  5
```



Compartment 1:

1
1
0
0
0
0
0
0
0

Compartment 2:

1
1
0
0
0
0
0
0
0

Compartment 3:

2
1
0
0
0
0
0
0
0

Compartment 4:

1
1
0
0
0
0
1



3
0.00E+00 0.00E+00 9.801E+01 9.405E+01 9.405E+01
1.94E-02 4.52E+03 9.801E+01 9.405E+01 9.405E+01
7.2E+02 4.52E+03 9.801E+01 9.405E+01 9.405E+01

0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0

Compartment 5:

1
1
0
0
0
0
0
0
0
0

Pathways:

8

Pathway 1:

0
0
0
0
0
1
6
0.00E+00 5.00E-01 0.00E+00 0.00E+00 0.00E+00
1.11E-01 3.75E-01 0.00E+00 0.00E+00 0.00E+00
2.5E-01 3.44E-01 0.00E+00 0.00E+00 0.00E+00
4.72E-01 2.5E-01 0.00E+00 0.00E+00 0.00E+00
6.67E-01 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02



0
0
0
0
0
0
0
Pathway 2:
0
0
0
0
0
1
3
0.00E+00 8.8E+02 0.00E+00 0.00E+00 0.00E+00
1.94E-02 8.8E+02 9.801E+01 9.405E+01 9.405E+01
7.2E+02 8.8E+02 9.801E+01 9.405E+01 9.405E+01
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0
0
Pathway 3:
0
0
0
0
0
1
2
0.00E+00 4.00E+01 0.00E+00 0.00E+00 0.00E+00
7.2E+02 4.00E+01 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00



7.2E+02
0
0
0
0
0
0
0
Pathway 4:
0
0
0
0
0
1
2
0.00E+00 9.2E+02 0.00E+00 0.00E+00 0.00E+00
7.2E+02 9.2E+02 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0
Pathway 5:
0
0
0
0
0
1
5
0.00E+00 7.6E+00 0.00E+00 0.00E+00 0.00E+00
2.00E+00 6.59E+00 0.00E+00 0.00E+00 0.00E+00
8.00E+00 2.81E+00 0.00E+00 0.00E+00 0.00E+00
2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 6:

0

0

0

0

0

1

7

0.00E+00 5.746E+00 0.00E+00 0.00E+00 0.00E+00

1.11E-01 5.871E+00 0.00E+00 0.00E+00 0.00E+00

2.5E-01 5.902E+00 0.00E+00 0.00E+00 0.00E+00

4.72E-01 5.996E+00 0.00E+00 0.00E+00 0.00E+00

6.67E-01 6.246E+00 0.00E+00 0.00E+00 0.00E+00

2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 7:

0

0

0



Exclusion Area Boundary

3
1
4
0.00E+00 3.5E-04
8.00E+00 1.8E-04
2.4E+01 2.3E-04
7.2E+02 2.3E-04
0

Location 2:

Low Population Zone

3
1
4
0.00E+00 3.5E-04
8.00E+00 1.8E-04
2.4E+01 2.3E-04
7.2E+02 2.3E-04
0

Location 3:

Control Room

4
1
2
0.00E+00 3.5E-04
7.2E+02 3.5E-04
1
4
0.00E+00 1.00E+00
2.4E+01 6.00E-01
9.6E+01 4.00E-01
7.2E+02 4.00E-01

X/Q Tables:

6
Exclusion Area Boundary
2
0.00E+00 8.62E-04
7.2E+02 8.62E-04



Low Population Zone

6
0.00E+00 1.16E-04
2.00E+00 5.45E-05
8.00E+00 3.74E-05
2.4E+01 1.74E-05
9.6E+01 6.74E-06
7.2E+02 6.74E-06

Intact SG CR Makeup

7
0.00E+00 1.09E-02
1.94E-02 1.26E-02
2.00E+00 9.72E-03
8.00E+00 3.26E-03
2.4E+01 3.17E-03
9.6E+01 2.8E-03
7.2E+02 2.8E-03

Intact SG CR Inleakage

6
0.00E+00 1.09E-02
2.00E+00 8.61E-03
8.00E+00 2.87E-03
2.4E+01 2.78E-03
9.6E+01 2.5E-03
7.2E+02 2.5E-03

Faulted CR Makeup

7
0.00E+00 4.57E-02
1.94E-02 2.91E-02
2.00E+00 2.02E-02
8.00E+00 8.14E-03
2.4E+01 5.34E-03
9.6E+01 4.32E-03
7.2E+02 4.32E-03

Faulted CR Inleakage

6
0.00E+00 4.57E-02
2.00E+00 3.14E-02



8.00E+00 1.27E-02
2.4E+01 8.3E-03
9.6E+01 6.73E-03
7.2E+02 6.73E-03

Inflow Pathways:

2 2 3

Exhaust Pathways:

5 1 4 5 7 8

X/Q table ID for Exhaust-Inflow paths:

3 4

-1 -1

3 4

5 6

5 6

Simulation Parameters:

1

0.00E+00 0.00E+00

Output Filename:

C:\Projects\1537-Cook_Dose\MSLB\MSLB_Spike_RCS_R1.o0

1

1

0

0

1

End of Scenario File



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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#####

D. C. Cook - MSLB Concurrent Iodine Spike, RCS Activity Release

Plant Description
#####

Number of Nuclides = 100

Inventory Power = 1.0000E+00 MWth
Plant Power Level = 2.1144E+02 MWth

Number of compartments = 5

Compartment information

Compartment number 1

Name: RCS

Compartment volume = 4.6614E+05 (Cubic feet)

Compartment type is Normal

Pathways into and out of compartment 1

- Exit Pathway Number 1: Flashed Intact Steam Generator Tube Leakage
- Exit Pathway Number 6: Unflashed Intact Steam Generator Tube Leakage
- Exit Pathway Number 7: Faulted SG Tube Leakage

Compartment number 2

Name: Intact Steam Generators

Compartment volume = 2.9255E+05 (Cubic feet)

Compartment type is Normal

Pathways into and out of compartment 2

- Inlet Pathway Number 6: Unflashed Intact Steam Generator Tube Leakage
- Exit Pathway Number 5: Steam Release



Compartment number 3
Name: Environment
Compartment type is Environment
Pathways into and out of compartment 3
Inlet Pathway Number 1: Flashed Intact Steam Generator Tube Leakage
Inlet Pathway Number 4: Control Room Exhaust
Inlet Pathway Number 5: Steam Release
Inlet Pathway Number 7: Faulted SG Tube Leakage
Inlet Pathway Number 8: Faulted Steam Generator Steam Release
Exit Pathway Number 2: Control Room Makeup
Exit Pathway Number 3: Control Room Unfiltered Inleakage

Compartment number 4
Name: Control Room
Compartment volume = 5.0616E+04 (Cubic feet)
Compartment type is Control Room
Removal devices within compartment:
Filter(s)
Pathways into and out of compartment 4
Inlet Pathway Number 2: Control Room Makeup
Inlet Pathway Number 3: Control Room Unfiltered Inleakage
Exit Pathway Number 4: Control Room Exhaust

Compartment number 5
Name: Faulted Steam Generator
Compartment volume = 1.6100E+05 (Cubic feet)
Compartment type is Normal
Pathways into and out of compartment 5
Exit Pathway Number 8: Faulted Steam Generator Steam Release

Total number of pathways = 8



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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#####

D. C. Cook - MSLB Concurrent Iodine Spike, RCS Activity Release

#####

Scenario Description

#####

Power Ratio = 2.1144E+02

End Time = 7.2000E+02 (Hours)

Radioactive Decay is enabled
Calculation of Daughters is enabled

Source Number 1 is used in Compartment 1 RCS
Nuclide Distribution given in Ci/MWt
Fraction of Nuclide Distribution in this Compartment 1.00000

Iodine fractions for source number 1
Aerosol = 0.0000E+00
Elemental = 9.7000E-01
Organic = 3.0000E-02

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release from file = c:\projects\1537-cook_dose\mslb\mslb_spike_rcs_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

Nuclide Name	Group	Specific Inventory (Ci/MWt)	half life (s)	Whole Body DCF (Sv-m3/Bq-s)	Inhaled Thyroid (Sv/Bq)	Inhaled Effective (Sv/Bq)
Rb-86	3	8.797E-02	1.612E+06	4.810E-15	1.330E-09	1.790E-09



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Sr-89	5	1.335E-03	4.363E+06	7.730E-17	7.960E-12	1.120E-08
Sr-90	5	1.237E-04	9.183E+08	7.530E-18	2.690E-10	3.510E-07
Sr-91	5	5.681E-04	3.420E+04	3.450E-14	9.640E-12	4.490E-10
Sr-92	5	2.488E-04	9.756E+03	6.790E-14	3.920E-12	2.180E-10
Y-90	9	2.152E-04	2.304E+05	1.900E-16	5.170E-13	2.280E-09
Y-91	9	1.692E-02	5.055E+06	2.600E-16	8.500E-12	1.320E-08
Y-92	9	3.067E-04	1.274E+04	1.300E-14	1.050E-12	2.110E-10
Y-93	9	2.010E-04	3.636E+04	4.800E-15	9.260E-13	5.820E-10
Zr-95	9	2.409E-02	5.528E+06	3.600E-14	1.440E-09	6.390E-09
Zr-97	9	3.920E-04	6.084E+04	9.020E-15	2.310E-11	1.170E-09
Nb-95	9	3.478E-02	3.037E+06	3.740E-14	3.580E-10	1.570E-09
Mo-99	7	2.070E+00	2.376E+05	7.280E-15	1.520E-11	1.070E-09
Tc-99m	7	1.980E+00	2.167E+04	5.890E-15	5.010E-11	8.800E-12
Ru-103	7	1.991E-02	3.394E+06	2.250E-14	2.570E-10	2.420E-09
Ru-105	7	9.723E-05	1.598E+04	3.810E-14	4.150E-12	1.230E-10
Ru-106	7	3.340E-02	3.181E+07	0.000E+00	1.720E-09	1.290E-07
Rh-105	7	7.689E-04	1.273E+05	3.720E-15	2.880E-12	2.580E-10
Te-127	4	2.489E-01	3.366E+04	2.420E-16	1.840E-12	8.600E-11
Te-127m	4	2.465E-01	9.418E+06	1.470E-16	9.660E-11	5.810E-09
Te-129	4	2.281E-01	4.176E+03	2.750E-15	1.630E-12	2.420E-11
Te-129m	4	3.463E-01	2.903E+06	1.550E-15	1.560E-10	6.470E-09
Te-131m	4	5.787E-02	1.080E+05	7.010E-14	3.610E-08	1.730E-09
Te-132	4	9.639E-01	2.815E+05	1.030E-14	6.280E-08	2.550E-09
Cs-134	3	3.327E+01	6.503E+07	7.570E-14	1.110E-08	1.250E-08
Cs-136	3	2.188E+00	1.132E+06	1.060E-13	1.730E-09	1.980E-09
Cs-137	3	1.852E+01	9.461E+08	7.740E-18	7.930E-09	8.630E-09
Ba-139	6	1.975E-04	4.962E+03	2.170E-15	2.400E-12	4.640E-11
Ba-140	6	1.940E-03	1.101E+06	8.580E-15	2.560E-10	1.010E-09
La-140	9	2.878E-03	1.450E+05	1.170E-13	6.870E-11	1.310E-09
La-141	9	1.301E-04	1.415E+04	2.390E-15	9.400E-12	1.570E-10
La-142	9	3.346E-05	5.550E+03	1.440E-13	8.740E-12	6.840E-11
Ce-141	8	1.445E-02	2.808E+06	3.430E-15	2.550E-11	2.420E-09
Ce-143	8	6.911E-04	1.188E+05	1.290E-14	6.230E-12	9.160E-10
Ce-144	8	4.229E-02	2.456E+07	8.530E-16	2.920E-10	1.010E-07
Pr-143	9	6.713E-03	1.172E+06	2.100E-17	1.680E-18	2.190E-09
Rb-89	3	2.530E-02	9.120E+02	1.060E-13	1.610E-12	1.160E-11
Y-91m	9	3.314E-04	2.983E+03	2.550E-14	5.020E-13	9.820E-12
Nb-95m	9	1.867E-04	3.118E+05	2.930E-15	3.860E-11	6.590E-10



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Nb-97	9	4.900E-05	4.326E+03	3.180E-14	9.200E-13	2.240E-11
Rh-103m	7	1.988E-02	3.367E+03	8.800E-18	8.490E-14	1.380E-12
Te-125m	4	2.449E-02	5.011E+06	4.530E-16	3.870E-11	1.970E-09
Te-131	4	1.599E-02	1.500E+03	2.040E-14	2.630E-09	1.290E-10
Te-133m	4	7.643E-03	3.324E+03	1.140E-13	2.610E-09	1.170E-10
Te-134	4	1.092E-02	2.508E+03	4.240E-14	5.540E-10	3.440E-11
Xe-138	1	2.292E-01	8.500E+02	5.770E-14	0.000E+00	0.000E+00
Cs-134m	3	2.031E-02	1.044E+04	9.050E-16	3.340E-12	1.180E-11
Cs-138	3	3.420E-01	1.932E+03	1.210E-13	3.570E-12	2.740E-11
Ba-141	6	4.233E-05	1.096E+03	4.160E-14	1.330E-12	2.180E-11

Nuclide	Daughter	Fraction	Daughter	Fraction	Daughter	Fraction
Sr-90	Y-90	1.00	none	0.00	none	0.00
Sr-91	Y-91m	0.58	Y-91	0.42	none	0.00
Sr-92	Y-92	1.00	none	0.00	none	0.00
Y-93	Zr-93	1.00	none	0.00	none	0.00
Zr-95	Nb-95m	0.01	Nb-95	0.99	none	0.00
Zr-97	Nb-97m	0.95	Nb-97	0.05	none	0.00
Mo-99	Tc-99m	0.88	Tc-99	0.12	none	0.00
Tc-99m	Tc-99	1.00	none	0.00	none	0.00
Ru-103	Rh-103m	1.00	none	0.00	none	0.00
Ru-105	Rh-105	1.00	none	0.00	none	0.00
Ru-106	Rh-106	1.00	none	0.00	none	0.00
Te-127m	Te-127	0.98	none	0.00	none	0.00
Te-129	I-129	1.00	none	0.00	none	0.00
Te-129m	I-129	0.35	Te-129	0.65	none	0.00
Te-131m	I-131	0.78	Te-131	0.22	none	0.00
Te-132	I-132	1.00	none	0.00	none	0.00
Cs-137	Ba-137m	0.95	none	0.00	none	0.00
Ba-140	La-140	1.00	none	0.00	none	0.00
La-141	Ce-141	1.00	none	0.00	none	0.00
Ce-143	Pr-143	1.00	none	0.00	none	0.00
Ce-144	Pr-144m	0.02	Pr-144	0.98	none	0.00
Rb-89	Sr-89	1.00	none	0.00	none	0.00
Y-91m	Y-91	1.00	none	0.00	none	0.00
Nb-95m	Nb-95	1.00	none	0.00	none	0.00
Te-131	I-131	1.00	none	0.00	none	0.00
Te-133m	I-133	0.87	Te-133	0.13	none	0.00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Te-134	I-134	1.00	none	0.00	none	0.00
Xe-138	Cs-138	1.00	none	0.00	none	0.00
Cs-134m	Cs-134	1.00	none	0.00	none	0.00
Ba-141	La-141	1.00	none	0.00	none	0.00

Release Fractions and Timings

RWA-1313-010 - D.C. Cook MSLB Concurrent Iodine Spike - RCS

Duration (h):

	GAP	EARLY IN-VESSEL	LATE RELEASE	RELEASE MASS
	0.000010 hr	0.0000 hrs	0.0000 hrs	(Ci)
NOBLES	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
IODINE	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
CESIUM	1.0000E+00	0.0000E+00	0.0000E+00	1.151E+04
TELLURIUM	1.0000E+00	0.0000E+00	0.0000E+00	4.547E+02
STRONTIUM	1.0000E+00	0.0000E+00	0.0000E+00	4.812E-01
BARIUM	1.0000E+00	0.0000E+00	0.0000E+00	4.609E-01
RUTHENIUM	1.0000E+00	0.0000E+00	0.0000E+00	8.720E+02
CERIUM	1.0000E+00	0.0000E+00	0.0000E+00	1.214E+01
LANTHANUM	1.0000E+00	0.0000E+00	0.0000E+00	1.844E+01
AEROSOL	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00

COMPARTMENT DATA

Compartment number 1: RCS

Compartment number 2: Intact Steam Generators

Compartment number 3: Environment

Compartment number 4: Control Room

Compartment Filter Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.8010E+01	9.4050E+01	9.4050E+01
1.9400E-02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01



Compartment number 5: Faulted Steam Generator

PATHWAY DATA

Pathway number 1: Flashed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	5.0000E-01	0.0000E+00	0.0000E+00	0.0000E+00
1.1100E-01	3.7500E-01	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	3.4400E-01	0.0000E+00	0.0000E+00	0.0000E+00
4.7200E-01	2.5000E-01	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	8.8000E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9400E-02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01

Pathway number 3: Control Room Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 4: Control Room Exhaust



Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 5: Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	7.6000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.0000E+00	6.5900E+00	0.0000E+00	0.0000E+00	0.0000E+00
8.0000E+00	2.8100E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 6: Unflushed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	5.7460E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1100E-01	5.8710E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	5.9020E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7200E-01	5.9960E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	6.2460E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 7: Faulted SG Tube Leakage

Pathway Filter: Removal Data



Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	2.0820E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 8: Faulted Steam Generator Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00

DOSE INFORMATION

Number_Dose_Locations = 3

Dose Location Name = Exclusion Area Boundary
Located in compartment 3 the Environment

Exclusion Area Boundary Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Low Population Zone
Located in compartment 3 the Environment

Low Population Zone Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04



Dose Location Name = Control Room
Located in compartment 4 the Control Room

Control Room Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
7.2000E+02	3.5000E-04

Control Room Occupancy Factor Data

Time (hr)	Occupancy Factor
0.0000E+00	1.0000E+00
2.4000E+01	6.0000E-01
9.6000E+01	4.0000E-01
7.2000E+02	4.0000E-01

X/Q, ATMOSPHERIC DISPERSION INFORMATION

X/Q Table Name = Exclusion Area Boundary

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	8.6200E-04
7.2000E+02	8.6200E-04

X/Q Table Name = Low Population Zone

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.1600E-04
2.0000E+00	5.4500E-05
8.0000E+00	3.7400E-05
2.4000E+01	1.7400E-05
9.6000E+01	6.7400E-06
7.2000E+02	6.7400E-06

X/Q Table Name = Intact SG CR Makeup

Location X/Q Data



Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
1.9400E-02	1.2600E-02
2.0000E+00	9.7200E-03
8.0000E+00	3.2600E-03
2.4000E+01	3.1700E-03
9.6000E+01	2.8000E-03
7.2000E+02	2.8000E-03

This X/Q Table is used for these connected pathways

Path 1 Flashed Intact Steam Generator Tube Leakage and Path 2 Control Room Makeup
Path 5 Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Intact SG CR Inleakage

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
2.0000E+00	8.6100E-03
8.0000E+00	2.8700E-03
2.4000E+01	2.7800E-03
9.6000E+01	2.5000E-03
7.2000E+02	2.5000E-03

This X/Q Table is used for these connected pathways

Path 1 Flashed Intact Steam Generator Tube Leakage and Path 3 Control Room Unfiltered Inleakage
Path 5 Steam Release and Path 3 Control Room Unfiltered Inleakage

X/Q Table Name = Faulted CR Makeup

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02
1.9400E-02	2.9100E-02
2.0000E+00	2.0200E-02
8.0000E+00	8.1400E-03
2.4000E+01	5.3400E-03
9.6000E+01	4.3200E-03



7.2000E+02

4.3200E-03

This X/Q Table is used for these connected pathways

Path 7 Faulted SG Tube Leakage and Path 2 Control Room Makeup

Path 8 Faulted Steam Generator Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Faulted CR Inleakage

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02
2.0000E+00	3.1400E-02
8.0000E+00	1.2700E-02
2.4000E+01	8.3000E-03
9.6000E+01	6.7300E-03
7.2000E+02	6.7300E-03

This X/Q Table is used for these connected pathways

Path 7 Faulted SG Tube Leakage and Path 3 Control Room Unfiltered Inleakage

Path 8 Faulted Steam Generator Steam Release and Path 3 Control Room Unfiltered Inleakage

USER SPECIFIED TIME STEP DATA - SUPPLEMENTAL TIME STEPS

Time (hr)	Time step (hr)
0.0000E+00	0.0000E+00

EDIT EACH MAJOR TIME STEP

DO NOT EDIT SUPPLEMENTAL TIME STEPS

DO NOT EDIT MODEL DECONTAMINATION

Masses in Curies in detailed output



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D. C. Cook - MSLB Concurrent Iodine Spike, RCS Activity Release

Dose, Detailed model and Detailed Inventory Output
#####

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Exclusion Area Boundary Doses:

Time (h) =	0.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		3.1847E-09	2.2870E-07	2.3770E-07
Accumulated dose (rem)		3.1847E-09	2.2870E-07	2.3770E-07



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Low Population Zone Doses:

Time (h) =	0.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		4.2856E-10	3.0776E-08	3.1987E-08
Accumulated dose (rem)		4.2856E-10	3.0776E-08	3.1987E-08

Control Room Doses:

Time (h) =	0.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		2.6034E-14	5.6364E-11	5.7824E-11	1.0447E-12
Accumulated dose (rem)		2.6034E-14	5.6364E-11	5.7824E-11	1.0447E-12

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
Rb-86	1.8600E+01 Atmosphere	2.6182E-04	1.8600E-04	2.4776E+10
Sr-89	2.8227E-01	2.4672E-05	2.8227E-06	3.7599E+08
Sr-90	2.6155E-02	7.1643E-05	2.6155E-07	3.4839E+07
Sr-91	1.2012E-01	5.1329E-07	1.2012E-06	1.6000E+08
Sr-92	5.2606E-02	1.6914E-07	5.2606E-07	7.0071E+07
Y-90	4.5502E-02	8.0980E-07	4.5502E-07	6.0609E+07
Y-91	3.5776E+00	3.6855E-04	3.5776E-05	4.7653E+09
Y-92	6.4849E-02	1.2558E-07	6.4849E-07	8.6378E+07
Y-93	4.2499E-02	1.9758E-07	4.2499E-07	5.6609E+07
Zr-95	5.0936E+00	2.5809E-04	5.0936E-05	6.7847E+09
Zr-97	8.2884E-02	7.7345E-07	8.2884E-07	1.1040E+08
Nb-95	7.3539E+00	9.6233E-05	7.3539E-05	9.7954E+09
Mo-99	4.3768E+02	3.7258E-03	4.3768E-03	5.8299E+11
Tc-99m	4.1865E+02	8.3731E-05	4.1865E-03	5.5764E+11
Ru-103	4.2098E+00	8.1615E-05	4.2098E-05	5.6074E+09
Ru-105	2.0558E-02	3.7198E-08	2.0558E-07	2.7384E+07
Ru-106	7.0621E+00	7.1094E-03	7.0621E-05	9.4067E+09
Rh-105	1.6258E-01	3.4082E-07	1.6258E-06	2.1655E+08
Te-127	5.2627E+01	3.5604E-05	5.2627E-04	7.0100E+10
Te-127m	5.2120E+01	2.3633E-03	5.2120E-04	6.9424E+10



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Te-129	4.8229E+01	1.2066E-05	4.8229E-04	6.4241E+10
Te-129m	7.3222E+01	3.6996E-03	7.3222E-04	9.7531E+10
Te-131m	1.2236E+01	1.8432E-04	1.2236E-04	1.6298E+10
Te-132	2.0381E+02	4.1026E-03	2.0381E-03	2.7147E+11
I-132	6.1421E-04	2.0275E-09	6.1421E-09	0.0000E+00
I-134	1.8256E-05	5.7973E-11	1.8256E-10	0.0000E+00
Cs-134	7.0346E+03	6.9809E-01	7.0346E-02	9.3701E+12
Cs-136	4.6263E+02	8.2419E-03	4.6263E-03	6.1622E+11
Cs-137	3.9159E+03	2.6373E-01	3.9159E-02	5.2159E+12
Ba-139	4.1759E-02	1.7142E-08	4.1759E-07	5.5623E+07
Ba-140	4.1019E-01	3.3116E-06	4.1019E-06	5.4638E+08
La-140	6.0852E-01	7.8085E-06	6.0852E-06	8.1055E+08
La-141	2.7508E-02	3.5169E-08	2.7508E-07	3.6641E+07
La-142	7.0748E-03	2.6492E-08	7.0748E-08	9.4236E+06
Ce-141	3.0553E+00	5.7935E-05	3.0553E-05	4.0697E+09
Ce-143	1.4613E-01	1.0866E-06	1.4613E-06	1.9464E+08
Ce-144	8.9418E+00	7.0480E-03	8.9418E-05	1.1910E+10
Pr-143	1.4194E+00	2.4259E-05	1.4194E-05	1.8906E+09
Rb-89	5.3493E+00	1.3127E-05	5.3493E-05	7.1253E+09
Y-91m	7.0071E-02	4.5210E-08	7.0071E-07	9.3334E+07
Nb-95m	3.9476E-02	2.0559E-07	3.9476E-07	5.2582E+07
Nb-97	1.0361E-02	9.1571E-09	1.0361E-07	1.3800E+07
Rh-103m	4.2034E+00	4.6093E-08	4.2034E-05	5.5989E+09
Te-125m	5.1782E+00	7.9660E-05	5.1782E-05	6.8973E+09
Te-131	3.3809E+00	4.9414E-06	3.3809E-05	4.5034E+09
Te-133	7.0178E-06	8.5615E-12	7.0178E-11	0.0000E+00
Te-133m	1.6160E+00	5.5832E-06	1.6160E-05	2.1526E+09
Te-134	2.3089E+00	2.8026E-06	2.3089E-05	3.0755E+09
Cs-134m	4.2943E+00	4.8210E-07	4.2943E-05	5.7201E+09
Cs-138	7.2312E+01	2.1055E-04	7.2312E-04	9.6320E+10
Ba-141	8.9501E-03	9.8242E-09	8.9501E-08	1.1922E+07
Total	1.2872E+04	1.0000E+00	0.0000E+00	0.0000E+00

Dose Equivalent (Ci/cc)	I-131 (Thyroid)	3.1966E-16
Dose Equivalent (Ci/cc)	I-131 (CEDE)	5.8606E-16
Dose Equivalent (Ci/cc)	I-131 (ICRP2 Thyroid)	1.7457E-15
Total I (Ci)		6.3340E-04



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

RCS Compartment Group Inventory Distribution:

Time (h) =	0.0000	Atmosphere	Sump
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		6.1440E-04	0.0000E+00
Organic I (Ci)		1.9002E-05	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2872E+04	0.0000E+00
All Aerosols (kg)		5.0444E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
Mo-99	Atmosphere	3.7258E-03	1.6186E-11	2.1559E+03
Tc-99m		8.3731E-05	1.5482E-11	2.0622E+03
Cs-134		6.9809E-01	2.6014E-10	3.4651E+04
Cs-136		8.2419E-03	1.7108E-11	2.2788E+03
Cs-137		2.6373E-01	1.4481E-10	1.9289E+04
Total		1.0000E+00	0.0000E+00	0.0000E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.8836E-24
Dose Equivalent (Ci/cc) I-131 (CEDE)	3.4533E-24
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.0286E-23
Total I (Ci)	2.3423E-12

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.0000	Atmosphere	Sump
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	0.0000E+00
Organic I (Ci)		0.0000E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		4.7601E-05	0.0000E+00
All Aerosols (kg)		1.8654E-10	0.0000E+00

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Exclusion Area Boundary Doses:

Time (h) =	0.0194	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.2350E-05	8.8690E-04	9.2181E-04
Accumulated dose (rem)		1.2353E-05	8.8713E-04	9.2205E-04

Low Population Zone Doses:

Time (h) =	0.0194	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.6619E-06	1.1935E-04	1.2405E-04
Accumulated dose (rem)		1.6623E-06	1.1938E-04	1.2408E-04

Control Room Doses:

Time (h) =	0.0194	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.9437E-07	4.2085E-04	4.3175E-04	7.7997E-06
Accumulated dose (rem)		1.9437E-07	4.2085E-04	4.3175E-04	7.7997E-06

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8599E+01	2.6182E-04	3.6083E-01	4.8063E+13	2.3217E-05	2.6681E-04	9.6676E-05
Sr-89	2.8232E-01	2.4675E-05	5.4767E-03	7.2945E+11	3.5236E-07	4.0493E-06	1.4672E-06
Sr-90	2.6155E-02	7.1644E-05	5.0740E-04	6.7586E+10	3.2647E-08	3.7518E-07	1.3594E-07
Sr-91	1.1995E-01	5.1280E-07	2.3280E-03	3.1017E+11	1.4987E-07	1.7223E-06	6.2404E-07
Sr-92	5.2345E-02	1.6857E-07	1.0171E-03	1.3560E+11	6.5560E-08	7.5341E-07	2.7299E-07
Y-90	4.5497E-02	8.0976E-07	8.8267E-04	1.1757E+11	5.6794E-08	6.5268E-07	2.3649E-07
Y-91	3.5775E+00	3.6855E-04	6.9403E-02	9.2445E+12	4.4656E-06	5.1318E-05	1.8595E-05
Y-92	6.4801E-02	1.2552E-07	1.2574E-03	1.6742E+11	8.0926E-08	9.3001E-07	3.3698E-07
Y-93	4.2442E-02	1.9740E-07	8.2373E-04	1.0975E+11	5.3026E-08	6.0937E-07	2.2080E-07
Zr-95	5.0934E+00	2.5809E-04	9.8814E-02	1.3162E+13	6.3579E-06	7.3065E-05	2.6474E-05



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Zr-97	8.2817E-02	7.7304E-07	1.6071E-03	2.1409E+11	1.0343E-07	1.1886E-06	4.3069E-07
Nb-95	7.3537E+00	9.6233E-05	1.4266E-01	1.9003E+13	9.1792E-06	1.0549E-04	3.8222E-05
Mo-99	4.3758E+02	3.7253E-03	8.4897E+00	1.1309E+15	5.4628E-04	6.2779E-03	2.2747E-03
Tc-99m	4.1856E+02	8.3721E-05	8.1207E+00	1.0813E+15	5.2253E-04	6.0050E-03	2.1758E-03
Ru-103	4.2096E+00	8.1615E-05	8.1668E-02	1.0878E+13	5.2547E-06	6.0387E-05	2.1880E-05
Ru-105	2.0496E-02	3.7122E-08	3.9800E-04	5.3043E+10	2.5636E-08	2.9461E-07	1.0675E-07
Ru-106	7.0619E+00	7.1094E-03	1.3700E-01	1.8249E+13	8.8150E-06	1.0130E-04	3.6706E-05
Rh-105	1.6252E-01	3.4074E-07	3.1532E-03	4.2003E+11	2.0291E-07	2.3318E-06	8.4491E-07
Te-127	5.2624E+01	3.5603E-05	1.0209E+00	1.3595E+14	6.5689E-05	7.5490E-04	2.7353E-04
Te-127m	5.2119E+01	2.3633E-03	1.0111E+00	1.3468E+14	6.5057E-05	7.4763E-04	2.7090E-04
Te-129	4.8222E+01	1.2065E-05	9.3556E-01	1.2436E+14	6.0198E-05	6.9180E-04	2.5066E-04
Te-129m	7.3219E+01	3.6996E-03	1.4205E+00	1.8921E+14	9.1396E-05	1.0503E-03	3.8057E-04
Te-131m	1.2230E+01	1.8426E-04	2.3730E-01	3.1611E+13	1.5271E-05	1.7549E-04	6.3588E-05
Te-132	2.0377E+02	4.1021E-03	3.9533E+00	5.2660E+14	2.5438E-04	2.9233E-03	1.0592E-03
I-131	8.9700E-04	4.2613E-08	1.1846E-05	7.4889E+08	3.5798E-10	4.1139E-09	1.4906E-09
I-132	1.1892E+00	2.6733E-06	1.5710E-02	9.8165E+11	4.7484E-07	5.4568E-06	1.9772E-06
I-133	9.0489E-04	8.0023E-09	1.1955E-05	7.4807E+08	3.6149E-10	4.1543E-09	1.5053E-09
I-134	3.4904E-02	7.5677E-08	4.6230E-04	2.8953E+10	1.4031E-08	1.6124E-07	5.8424E-08
Cs-134	7.0345E+03	6.9809E-01	1.3647E+02	1.8178E+16	8.7807E-03	1.0091E-01	3.6563E-02
Cs-136	4.6260E+02	8.2416E-03	8.9746E+00	1.1954E+15	5.7745E-04	6.6361E-03	2.4045E-03
Cs-137	3.9158E+03	2.6373E-01	7.5967E+01	1.0119E+16	4.8878E-03	5.6171E-02	2.0353E-02
Ba-139	4.1353E-02	1.7028E-08	8.0476E-04	1.0738E+11	5.1963E-08	5.9715E-07	2.1637E-07
Ba-140	4.1017E-01	3.3115E-06	7.9574E-03	1.0599E+12	5.1200E-07	5.8839E-06	2.1320E-06
La-140	6.0845E-01	7.8079E-06	1.1804E-02	1.5723E+12	7.5954E-07	8.7287E-06	3.1627E-06
La-141	2.7444E-02	3.5114E-08	5.3281E-04	7.0986E+10	3.4311E-08	3.9430E-07	1.4287E-07
La-142	7.0132E-03	2.6335E-08	1.3644E-04	1.8202E+10	8.8063E-09	1.0120E-07	3.6669E-08
Ce-141	3.0552E+00	5.7934E-05	5.9271E-02	7.8950E+12	3.8137E-06	4.3827E-05	1.5880E-05
Ce-143	1.4606E-01	1.0863E-06	2.8340E-03	3.7752E+11	1.8237E-07	2.0958E-06	7.5940E-07
Ce-144	8.9416E+00	7.0481E-03	1.7347E-01	2.3106E+13	1.1161E-05	1.2827E-04	4.6475E-05
Pr-143	1.4193E+00	2.4258E-05	2.7535E-02	3.6677E+12	1.7717E-06	2.0360E-05	7.3773E-06
Rb-89	5.0728E+00	1.2663E-05	1.0011E-01	1.3463E+13	6.5655E-06	7.5451E-05	2.7339E-05
Y-91m	7.0062E-02	4.5207E-08	1.3593E-03	1.8053E+11	8.7461E-08	1.0051E-06	3.6419E-07
Nb-95m	3.9474E-02	2.0559E-07	7.6581E-04	1.0200E+11	4.9274E-08	5.6626E-07	2.0518E-07
Nb-97	1.0294E-02	9.1172E-09	2.0012E-04	2.6663E+10	1.2906E-08	1.4831E-07	5.3739E-08
Rh-103m	4.2034E+00	4.6094E-08	8.1546E-02	1.0834E+13	5.2468E-06	6.0296E-05	2.1848E-05
Te-125m	5.1780E+00	7.9660E-05	1.0045E-01	1.3381E+13	6.4634E-06	7.4278E-05	2.6914E-05
Te-131	3.3602E+00	4.9209E-06	6.5316E-02	8.6686E+12	4.2118E-06	4.8402E-05	1.7538E-05
Te-133	1.3240E-02	1.1071E-08	1.7604E-04	1.0978E+10	5.3708E-09	6.1722E-08	2.2364E-08



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Te-133m	1.5926E+00	5.5282E-06	3.1042E-02	4.1456E+12	2.0078E-06	2.3074E-05	8.3605E-06
Te-134	2.2647E+00	2.7661E-06	4.4209E-02	5.9091E+12	2.8643E-06	3.2917E-05	1.1927E-05
Cs-134m	4.2744E+00	4.8059E-07	8.3047E-02	1.1071E+13	5.3523E-06	6.1509E-05	2.2287E-05
Cs-138	7.0522E+01	2.0700E-04	1.3792E+00	1.8454E+14	8.9543E-05	1.0290E-03	3.7286E-04
Ba-141	8.5634E-03	9.5344E-09	1.6851E-04	2.2625E+10	1.1016E-08	1.2659E-07	4.5870E-08
Total	1.2870E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.6066E-02	1.8464E-01	6.6901E-02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	6.1884E-13
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.1345E-12
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	3.3793E-12
Total I (Ci)	1.2259E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.4207E-18

RCS Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		3.2327E-08	0.0000E+00
Elemental I (Ci)		1.1891E+00	0.0000E+00
Organic I (Ci)		3.6778E-02	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2869E+04	0.0000E+00
All Aerosols (kg)		5.0443E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	Atmosphere	2.6680E-04	2.6182E-04	3.5224E-06	4.6918E+08	4.0330E-09
Sr-89		4.0498E-06	2.4676E-05	5.3464E-08	7.1208E+06	6.1209E-11
Sr-91		1.7206E-06	5.1270E-07	2.2721E-08	3.0273E+06	2.6028E-11
Sr-92		7.5086E-07	1.6846E-07	9.9221E-09	1.3229E+06	1.1381E-11
Y-90		6.5263E-07	8.0975E-07	8.6163E-09	1.1477E+06	9.8656E-12
Y-91		5.1317E-05	3.6855E-04	6.7750E-07	9.0243E+07	7.7570E-10
Y-92		9.2953E-07	1.2550E-07	1.2274E-08	1.6341E+06	1.4056E-11
Y-93		6.0881E-07	1.9736E-07	8.0396E-09	1.0712E+06	9.2095E-12
Zr-95		7.3063E-05	2.5809E-04	9.6460E-07	1.2848E+08	1.1044E-09
Zr-97		1.1880E-06	7.7295E-07	1.5686E-08	2.0897E+06	1.7965E-11
Nb-95		1.0549E-04	9.6233E-05	1.3926E-06	1.8550E+08	1.5945E-09



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Mo-99	6.2769E-03	3.7252E-03	8.2872E-05	1.1039E+10	9.4892E-08	6.2779E-03
Tc-99m	6.0041E-03	8.3719E-05	7.9270E-05	1.0555E+10	9.0767E-08	6.0050E-03
Ru-103	6.0385E-05	8.1615E-05	7.9722E-07	1.0619E+08	9.1278E-10	6.0387E-05
Ru-106	1.0130E-04	7.1095E-03	1.3374E-06	1.7814E+08	1.5312E-09	1.0130E-04
Rh-105	2.3313E-06	3.4073E-07	3.0780E-08	4.1001E+06	3.5245E-11	2.3318E-06
Te-127	7.5486E-04	3.5603E-05	9.9660E-06	1.3271E+09	1.1411E-08	7.5490E-04
Te-127m	7.4762E-04	2.3633E-03	9.8702E-06	1.3147E+09	1.1301E-08	7.4763E-04
Te-129	6.9173E-04	1.2064E-05	9.1325E-06	1.2137E+09	1.0457E-08	6.9180E-04
Te-129m	1.0503E-03	3.6995E-03	1.3866E-05	1.8470E+09	1.5876E-08	1.0503E-03
Te-131m	1.7544E-04	1.8425E-04	2.3164E-06	3.0857E+08	2.6526E-09	1.7549E-04
Te-132	2.9230E-03	4.1020E-03	3.8591E-05	5.1405E+09	4.4187E-08	2.9233E-03
I-132	1.7059E-05	3.2035E-06	1.8378E-07	1.2517E+07	1.1486E-10	5.4568E-06
Cs-134	1.0091E-01	6.9809E-01	1.3322E-03	1.7745E+11	1.5253E-06	1.0091E-01
Cs-136	6.6358E-03	8.2416E-03	8.7608E-05	1.1669E+10	1.0031E-07	6.6361E-03
Cs-137	5.6170E-02	2.6373E-01	7.4157E-04	9.8777E+10	8.4906E-07	5.6171E-02
Ba-139	5.9319E-07	1.7006E-08	7.8455E-09	1.0471E+06	9.0153E-12	5.9715E-07
Ba-140	5.8837E-06	3.3115E-06	7.7678E-08	1.0347E+07	8.8939E-11	5.8839E-06
La-140	8.7279E-06	7.8078E-06	1.1523E-07	1.5348E+07	1.3194E-10	8.7287E-06
Ce-141	4.3825E-05	5.7934E-05	5.7859E-07	7.7069E+07	6.6246E-10	4.3827E-05
Ce-143	2.0952E-06	1.0862E-06	2.7664E-08	3.6851E+06	3.1678E-11	2.0958E-06
Ce-144	1.2826E-04	7.0481E-03	1.6934E-06	2.2556E+08	1.9388E-09	1.2827E-04
Pr-143	2.0359E-05	2.4258E-05	2.6879E-07	3.5803E+07	3.0776E-10	2.0360E-05
Rb-89	7.2767E-05	1.2572E-05	9.7019E-07	1.3061E+08	1.1329E-09	7.5451E-05
Y-91m	1.0050E-06	4.5206E-08	1.3269E-08	1.7617E+06	1.5192E-11	1.0051E-06
Nb-95m	5.6624E-07	2.0559E-07	7.4757E-09	9.9573E+05	8.5593E-12	5.6626E-07
Rh-103m	6.0296E-05	4.6094E-08	7.9604E-07	1.0573E+08	9.1141E-10	6.0296E-05
Te-125m	7.4276E-05	7.9659E-05	9.8061E-07	1.3062E+08	1.1228E-09	7.4278E-05
Te-131	4.8201E-05	4.9168E-06	6.3707E-07	8.4519E+07	7.3106E-10	4.8402E-05
Te-133m	2.2846E-05	5.5174E-06	3.0243E-07	4.0400E+07	3.4814E-10	2.3074E-05
Te-134	3.2487E-05	2.7589E-06	4.3043E-07	5.7554E+07	4.9636E-10	3.2917E-05
Cs-134m	6.1314E-05	4.8029E-07	8.1017E-07	1.0802E+08	9.2920E-10	6.1509E-05
Cs-138	1.0116E-03	2.0630E-04	1.3417E-05	1.7961E+09	1.5506E-08	1.0290E-03
Total	1.8462E-01	1.0000E+00	0.0000E+00	0.0000E+00	2.7908E-06	1.8464E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.4144E-17
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.5932E-17
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	7.7238E-17
Total I (Ci)	1.7585E-05



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Dose Equivalent (Ci/cc) Xe-133 (EDE) 5.5330E-23

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		4.6372E-13	0.0000E+00
Elemental I (Ci)		1.7058E-05	0.0000E+00
Organic I (Ci)		5.2756E-07	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.8460E-01	0.0000E+00
All Aerosols (kg)		7.2359E-07	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 2	Pathway 3	Pathway 4
					Inflow	Inflow	Outflow
Rb-86	2.0068E-06	2.6182E-04	2.6546E-08	3.5360E+06	1.9405E-06	8.8205E-08	2.1288E-08
Mo-99	4.7214E-05	3.7252E-03	6.2457E-07	8.3196E+07	4.5659E-05	2.0754E-06	5.0088E-07
Tc-99m	4.5162E-05	8.3719E-05	5.9742E-07	7.9547E+07	4.3674E-05	1.9852E-06	4.7965E-07
Te-127	5.6780E-06	3.5603E-05	7.5109E-08	1.0002E+07	5.4904E-06	2.4956E-07	6.0278E-08
Te-127m	5.6235E-06	2.3633E-03	7.4387E-08	9.9084E+06	5.4375E-06	2.4716E-07	5.9652E-08
Te-129	5.2031E-06	1.2064E-05	6.8828E-08	9.1472E+06	5.0314E-06	2.2870E-07	5.5547E-08
Te-129m	7.9002E-06	3.6995E-03	1.0450E-07	1.3920E+07	7.6390E-06	3.4723E-07	8.3802E-08
Te-131m	1.3196E-06	1.8425E-04	1.7457E-08	2.3255E+06	1.2764E-06	5.8017E-08	1.4001E-08
Te-132	2.1986E-05	4.1020E-03	2.9084E-07	3.8741E+07	2.1261E-05	9.6643E-07	2.3324E-07
Cs-134	7.5901E-04	6.9809E-01	1.0040E-05	1.3373E+09	7.3390E-04	3.3359E-05	8.0512E-06
Cs-136	4.9914E-05	8.2416E-03	6.6026E-07	8.7947E+07	4.8264E-05	2.1938E-06	5.2948E-07
Cs-137	4.2251E-04	2.6373E-01	5.5889E-06	7.4444E+08	4.0853E-04	1.8570E-05	4.4818E-06
Ce-144	9.6478E-07	7.0481E-03	1.2762E-08	1.6999E+06	9.3287E-07	4.2403E-08	1.0234E-08
Cs-138	7.6092E-06	2.0630E-04	1.0112E-07	1.3537E+07	7.4842E-06	3.4019E-07	8.1847E-08
Total	1.3887E-03	1.0000E+00	0.0000E+00	0.0000E+00	1.3429E-03	6.1039E-05	1.4733E-05

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)		3.4881E-15	0.0000E+00
Elemental I (Ci)		1.2831E-07	0.0000E+00
Organic I (Ci)		3.9683E-09	0.0000E+00



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Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.3886E-03	0.0000E+00
All Aerosols (kg)	5.4428E-09	0.0000E+00

	Deposition	Recirculating
Time (h) = 0.0194	Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

 ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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Exclusion Area Boundary Doses:

Time (h) = 0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)	5.8326E-05	4.1903E-03	4.3553E-03
Accumulated dose (rem)	7.0679E-05	5.0775E-03	5.2773E-03

Low Population Zone Doses:

Time (h) = 0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)	7.8490E-06	5.6390E-04	5.8609E-04
Accumulated dose (rem)	9.5113E-06	6.8328E-04	7.1017E-04

Control Room Doses:

Time (h) = 0.1110	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	1.5950E-06	3.4546E-03	3.5441E-03	6.3988E-05
Accumulated dose (rem)	1.7894E-06	3.8754E-03	3.9758E-03	7.1788E-05



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RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8595E+01	2.6180E-04	2.0643E+00	2.7497E+14	1.3285E-04	1.5268E-03	5.5321E-04
Sr-89	2.8251E-01	2.4688E-05	3.1350E-02	4.1749E+12	2.0170E-06	2.3180E-05	8.3990E-06
Sr-90	2.6152E-02	7.1644E-05	2.9030E-03	3.8668E+11	1.8683E-07	2.1470E-06	7.7794E-07
Sr-91	1.1914E-01	5.1068E-07	1.3264E-02	1.7687E+12	8.5547E-07	9.8310E-06	3.5622E-06
Sr-92	5.1128E-02	1.6614E-07	5.7351E-03	7.6680E+11	3.7188E-07	4.2737E-06	1.5485E-06
Y-90	4.5473E-02	8.0955E-07	5.0487E-03	6.7249E+11	3.2496E-07	3.7344E-06	1.3531E-06
Y-91	3.5769E+00	3.6854E-04	3.9707E-01	5.2890E+13	2.5554E-05	2.9367E-04	1.0641E-04
Y-92	6.4564E-02	1.2524E-07	7.1784E-03	9.5516E+11	4.6250E-07	5.3151E-06	1.9259E-06
Y-93	4.2172E-02	1.9663E-07	4.6944E-03	6.2593E+11	3.0273E-07	3.4789E-06	1.2606E-06
Zr-95	5.0927E+00	2.5809E-04	5.6533E-01	7.5302E+13	3.6383E-05	4.1811E-04	1.5150E-04
Zr-97	8.2498E-02	7.7124E-07	9.1730E-03	1.2226E+12	5.9106E-07	6.7924E-06	2.4612E-06
Nb-95	7.3528E+00	9.6233E-05	8.1621E-01	1.0872E+14	5.2528E-05	6.0366E-04	2.1873E-04
Mo-99	4.3712E+02	3.7231E-03	4.8543E+01	6.4669E+15	3.1250E-03	3.5913E-02	1.3013E-02
Tc-99m	4.1816E+02	8.3676E-05	4.6436E+01	6.1794E+15	2.9893E-03	3.4353E-02	1.2447E-02
Ru-103	4.2089E+00	8.1612E-05	4.6723E-01	6.2235E+13	3.0070E-05	3.4556E-04	1.2521E-04
Ru-105	2.0203E-02	3.6793E-08	2.2569E-03	3.0132E+11	1.4592E-07	1.6769E-06	6.0761E-07
Ru-106	7.0612E+00	7.1095E-03	7.8383E-01	1.0441E+14	5.0444E-05	5.7971E-04	2.1005E-04
Rh-105	1.6225E-01	3.4041E-07	1.8023E-02	2.4012E+12	1.1605E-06	1.3336E-05	4.8322E-06
Te-127	5.2607E+01	3.5599E-05	5.8402E+00	7.7737E+14	3.7588E-04	4.3196E-03	1.5652E-03
Te-127m	5.2112E+01	2.3633E-03	5.7848E+00	7.7053E+14	3.7229E-04	4.2783E-03	1.5502E-03
Te-129	4.8202E+01	1.2062E-05	5.3515E+00	7.0851E+14	3.4444E-04	3.9583E-03	1.4342E-03
Te-129m	7.3206E+01	3.6994E-03	8.1265E+00	1.0825E+15	5.2300E-04	6.0104E-03	2.1778E-03
Te-131m	1.2203E+01	1.8402E-04	1.3559E+00	1.8067E+14	8.7320E-05	1.0035E-03	3.6360E-04
Te-132	2.0358E+02	4.1001E-03	2.2607E+01	3.0116E+15	1.4553E-03	1.6724E-02	6.0597E-03
I-131	5.0973E-03	2.2552E-07	3.5870E-04	3.0758E+10	1.3394E-08	1.5393E-07	5.5775E-08
I-132	6.7217E+00	1.4103E-05	4.7418E-01	4.0603E+13	1.7747E-05	2.0395E-04	7.3897E-05
I-133	5.0839E-03	4.1984E-08	3.5884E-04	3.0841E+10	1.3444E-08	1.5450E-07	5.5980E-08
I-134	1.8501E-01	3.8013E-07	1.3286E-02	1.1490E+12	5.0693E-07	5.8257E-06	2.1109E-06
Xe-133	1.2378E-06	2.0186E-14	6.4412E-08	3.9168E+06	1.5122E-12	1.7378E-11	6.2968E-12
Cs-134	7.0337E+03	6.9810E-01	7.8078E+02	1.0400E+17	5.0248E-02	5.7745E-01	2.0923E-01
Cs-136	4.6246E+02	8.2407E-03	5.1340E+01	6.8387E+15	3.3043E-03	3.7973E-02	1.3759E-02
Cs-137	3.9154E+03	2.6373E-01	4.3463E+02	5.7893E+16	2.7971E-02	3.2144E-01	1.1647E-01
Ba-139	3.9488E-02	1.6549E-08	4.4747E-03	6.0046E+11	2.9227E-07	3.3588E-06	1.2170E-06



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Ba-140	4.1004E-01	3.3111E-06	4.5521E-02	6.0636E+12	2.9297E-06	3.3669E-05	1.2199E-05
La-140	6.0807E-01	7.8055E-06	6.7515E-02	8.9926E+12	4.3457E-06	4.9941E-05	1.8096E-05
La-141	2.7125E-02	3.4865E-08	3.0267E-03	4.0370E+11	1.9552E-07	2.2469E-06	8.1413E-07
La-142	6.7296E-03	2.5671E-08	7.6091E-04	1.0203E+11	4.9623E-08	5.7026E-07	2.0663E-07
Ce-141	3.0546E+00	5.7932E-05	3.3909E-01	4.5168E+13	2.1823E-05	2.5079E-04	9.0872E-05
Ce-143	1.4577E-01	1.0850E-06	1.6195E-02	2.1578E+12	1.0429E-06	1.1985E-05	4.3426E-06
Ce-144	8.9406E+00	7.0481E-03	9.9246E-01	1.3220E+14	6.3871E-05	7.3401E-04	2.6596E-04
Pr-143	1.4189E+00	2.4256E-05	1.5752E-01	2.0982E+13	1.0138E-05	1.1651E-04	4.2215E-05
Rb-89	3.9478E+00	1.0880E-05	4.9207E-01	6.8206E+13	3.4283E-05	3.9398E-04	1.4276E-04
Y-91m	7.0034E-02	4.5201E-08	7.7756E-03	1.0269E+12	5.0046E-07	5.7513E-06	2.0839E-06
Nb-95m	3.9468E-02	2.0559E-07	4.3813E-03	5.8355E+11	2.8197E-07	3.2404E-06	1.1741E-06
Nb-97	9.9902E-03	8.9494E-09	1.1238E-03	1.5003E+11	7.3025E-08	8.3920E-07	3.0407E-07
Rh-103m	4.2050E+00	4.6108E-08	4.6669E-01	6.1683E+13	3.0030E-05	3.4510E-04	1.2504E-04
Te-125m	5.1773E+00	7.9658E-05	5.7471E-01	7.6552E+13	3.6987E-05	4.2505E-04	1.5401E-04
Te-131	3.2758E+00	4.8427E-06	3.6775E-01	4.8492E+13	2.3862E-05	2.7423E-04	9.9363E-05
Te-133	6.4474E-02	5.2289E-08	4.7571E-03	4.0904E+11	1.8657E-07	2.1441E-06	7.7688E-07
Te-133m	1.4867E+00	5.2981E-06	1.7020E-01	2.2923E+13	1.1198E-05	1.2869E-04	4.6630E-05
Te-134	2.0673E+00	2.6150E-06	2.3910E-01	3.2318E+13	1.5844E-05	1.8208E-04	6.5975E-05
Cs-134m	4.1814E+00	4.7410E-07	4.6871E-01	6.2653E+13	3.0378E-05	3.4911E-04	1.2649E-04
Cs-138	6.2647E+01	1.9248E-04	7.3368E+00	9.9598E+14	4.9039E-04	5.6356E-03	2.0420E-03
Ba-141	6.9507E-03	8.3978E-09	8.4913E-04	1.1693E+11	5.8391E-08	6.7102E-07	2.4314E-07
Total	1.2864E+04	1.0000E+00	0.0000E+00	0.0000E+00	9.1927E-02	1.0564E+00	3.8279E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	3.4986E-12
Dose Equivalent (Ci/cc) I-131 (CEDE)	6.4106E-12
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.9086E-11
Total I (Ci)	6.9169E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	9.9788E-17

RCS Compartment Group Inventory Distribution:

Time (h) =	0.1110	Atmosphere	Sump
Noble gases (Ci)		1.3326E-06	0.0000E+00
Elemental I (Ci)		6.7094E+00	0.0000E+00
Organic I (Ci)		2.0751E-01	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2857E+04	0.0000E+00
All Aerosols (kg)		5.0438E-02	0.0000E+00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	1.5265E-03	2.6179E-04	1.0729E-04	1.4292E+10	1.3206E-07	1.5268E-03
Sr-89	2.3192E-05	2.4692E-05	1.6297E-06	2.1703E+08	2.0054E-09	2.3180E-05
Sr-90	2.1468E-06	7.1645E-05	1.5089E-07	2.0098E+07	1.8572E-10	2.1470E-06
Sr-91	9.7799E-06	5.1005E-07	6.8858E-07	9.1832E+07	8.4946E-10	9.8310E-06
Sr-92	4.1971E-06	1.6542E-07	2.9681E-07	3.9706E+07	3.6825E-10	4.2737E-06
Y-90	3.7329E-06	8.0949E-07	2.6240E-07	3.4952E+07	3.2301E-10	3.7344E-06
Y-91	2.9363E-04	3.6854E-04	2.0638E-05	2.7490E+09	2.5403E-08	2.9367E-04
Y-92	5.3001E-06	1.2516E-07	3.7287E-07	4.9614E+07	4.5950E-10	5.3151E-06
Y-93	3.4619E-06	1.9640E-07	2.4372E-07	3.2501E+07	3.0062E-10	3.4789E-06
Zr-95	4.1806E-04	2.5808E-04	2.9384E-05	3.9140E+09	3.6167E-08	4.1811E-04
Zr-97	6.7723E-06	7.7071E-07	4.7646E-07	6.3508E+07	5.8719E-10	6.7924E-06
Nb-95	6.0359E-04	9.6233E-05	4.2424E-05	5.6508E+09	5.2217E-08	6.0366E-04
Mo-99	3.5883E-02	3.7224E-03	2.5227E-03	3.3608E+11	3.1060E-06	3.5913E-02
Tc-99m	3.4327E-02	8.3663E-05	2.4132E-03	3.2112E+11	2.9711E-06	3.4353E-02
Ru-103	3.4551E-04	8.1612E-05	2.4285E-05	3.2348E+09	2.9891E-08	3.4556E-04
Ru-105	1.6584E-06	3.6697E-08	1.1700E-07	1.5626E+07	1.4471E-10	1.6769E-06
Ru-106	5.7965E-04	7.1095E-03	4.0741E-05	5.4267E+09	5.0146E-08	5.7971E-04
Rh-105	1.3319E-05	3.4032E-07	9.3651E-07	1.2478E+08	1.1533E-09	1.3336E-05
Te-127	4.3185E-03	3.5597E-05	3.0355E-04	4.0402E+10	3.7364E-07	4.3196E-03
Te-127m	4.2779E-03	2.3633E-03	3.0067E-04	4.0050E+10	3.7008E-07	4.2783E-03
Te-129	3.9569E-03	1.2062E-05	2.7814E-04	3.6810E+10	3.4238E-07	3.9583E-03
Te-129m	6.0095E-03	3.6994E-03	4.2239E-04	5.6263E+10	5.1990E-07	6.0104E-03
Te-131m	1.0018E-03	1.8395E-04	7.0448E-05	9.3874E+09	8.6772E-08	1.0035E-03
Te-132	1.6712E-02	4.0995E-03	1.1749E-03	1.5651E+11	1.4465E-06	1.6724E-02
I-132	5.5179E-04	1.7449E-05	3.0493E-05	2.7644E+09	2.4187E-08	2.0395E-04
I-134	1.5187E-05	4.6793E-07	8.5005E-07	7.7937E+07	6.8681E-10	5.8257E-06
Cs-134	5.7740E-01	6.9810E-01	4.0583E-02	5.4056E+12	4.9951E-05	5.7745E-01
Cs-136	3.7964E-02	8.2404E-03	2.6684E-03	3.5545E+11	3.2846E-06	3.7973E-02
Cs-137	3.2142E-01	2.6373E-01	2.2591E-02	3.0091E+12	2.7805E-05	3.2144E-01
Ba-139	3.2415E-06	1.6409E-08	2.3061E-07	3.0979E+07	2.8833E-10	3.3588E-06
Ba-140	3.3660E-05	3.3110E-06	2.3660E-06	3.1516E+08	2.9123E-09	3.3669E-05
La-140	4.9917E-05	7.8048E-06	3.5089E-06	4.6737E+08	4.3196E-09	4.9941E-05
La-141	2.2267E-06	3.4792E-08	1.5699E-07	2.0944E+07	1.9399E-10	2.2469E-06



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La-142	5.5243E-07	2.5477E-08	3.9251E-08	5.2680E+06	4.8993E-11	5.7026E-07
Ce-141	2.5076E-04	5.7931E-05	1.7625E-05	2.3477E+09	2.1694E-08	2.5079E-04
Ce-143	1.1966E-05	1.0846E-06	8.4147E-07	1.1212E+08	1.0364E-09	1.1985E-05
Ce-144	7.3394E-04	7.0481E-03	5.1585E-05	6.8711E+09	6.3493E-08	7.3401E-04
Pr-143	1.1648E-04	2.4255E-05	8.1872E-06	1.0906E+09	1.0078E-08	1.1651E-04
Rb-89	3.2408E-04	1.0370E-05	2.4377E-05	3.4016E+09	3.2686E-08	3.9398E-04
Y-91m	5.7491E-06	4.5198E-08	4.0413E-07	5.3346E+07	4.9748E-10	5.7513E-06
Nb-95m	3.2399E-06	2.0558E-07	2.2772E-07	3.0331E+07	2.8029E-10	3.2404E-06
Nb-97	8.2010E-07	8.9003E-09	5.8093E-08	7.7592E+06	7.2232E-11	8.3920E-07
Rh-103m	3.4519E-04	4.6112E-08	2.4259E-05	3.2048E+09	2.9854E-08	3.4510E-04
Te-125m	4.2500E-04	7.9658E-05	2.9872E-05	3.9789E+09	3.6768E-08	4.2505E-04
Te-131	2.6891E-04	4.8200E-06	1.9025E-05	2.5077E+09	2.3619E-08	2.7423E-04
Te-133	5.2927E-06	6.3884E-08	3.0209E-07	2.7623E+07	2.5081E-10	2.1441E-06
Te-133m	1.2204E-04	5.2311E-06	8.7347E-06	1.1783E+09	1.1006E-08	1.2869E-04
Te-134	1.6970E-04	2.5710E-06	1.2219E-05	1.6552E+09	1.5514E-08	1.8208E-04
Cs-134m	3.4325E-04	4.7219E-07	2.4265E-05	3.2451E+09	3.0089E-08	3.4911E-04
Cs-138	5.1427E-03	1.8827E-04	3.7300E-04	5.0782E+10	4.7800E-07	5.6356E-03
Ba-141	5.7058E-07	8.0713E-09	4.2419E-08	5.8729E+06	5.6064E-11	6.7102E-07
Total	1.0560E+00	1.0000E+00	0.0000E+00	0.0000E+00	9.1377E-05	1.0564E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	4.5762E-16
Dose Equivalent (Ci/cc) I-131 (CEDE)	8.3852E-16
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	2.4965E-15
Total I (Ci)	5.6781E-04
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.3052E-20

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.1110	Atmosphere	Sump
Noble gases (Ci)		1.0940E-10	0.0000E+00
Elemental I (Ci)		5.5077E-04	0.0000E+00
Organic I (Ci)		1.7034E-05	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.0555E+00	0.0000E+00
All Aerosols (kg)		4.1405E-06	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	1.5302E-06	2.6180E-04	1.7855E-07	2.3784E+07	8.4131E-07	2.0617E-06	5.0465E-07	1.9602E-07
Mo-99	3.5971E-05	3.7230E-03	4.1988E-06	5.5937E+08	1.9777E-05	4.8510E-05	1.1870E-05	4.6108E-06
Tc-99m	3.4411E-05	8.3676E-05	4.0165E-06	5.3447E+08	1.8919E-05	4.6402E-05	1.1355E-05	4.4425E-06
Te-127	4.3291E-06	3.5599E-05	5.0516E-07	6.7238E+07	2.3802E-06	5.8334E-06	1.4278E-06	5.5734E-07
Te-127m	4.2884E-06	2.3633E-03	5.0036E-07	6.6649E+07	2.3578E-06	5.7772E-06	1.4141E-06	5.4930E-07
Te-129	3.9666E-06	1.2062E-05	4.6289E-07	6.1270E+07	2.1808E-06	5.3457E-06	1.3084E-06	5.2884E-07
Te-129m	6.0242E-06	3.6994E-03	7.0292E-07	9.3630E+07	3.3121E-06	8.1162E-06	1.9866E-06	7.7168E-07
Te-131m	1.0042E-06	1.8402E-04	1.1728E-07	1.5627E+07	5.5212E-07	1.3560E-06	3.3169E-07	1.2883E-07
Te-132	1.6753E-05	4.1000E-03	1.9554E-06	2.6049E+08	9.2109E-06	2.2589E-05	5.5278E-06	2.1472E-06
Cs-134	5.7882E-04	6.9810E-01	6.7535E-05	8.9957E+09	3.1823E-04	7.7975E-04	1.9087E-04	7.4140E-05
Cs-136	3.8057E-05	8.2407E-03	4.4408E-06	5.9153E+08	2.0924E-05	5.1279E-05	1.2551E-05	4.8754E-06
Cs-137	3.2221E-04	2.6373E-01	3.7594E-05	5.0075E+09	1.7715E-04	4.3406E-04	1.0625E-04	4.1271E-05
Ce-144	7.3574E-07	7.0481E-03	8.5844E-08	1.1434E+07	4.0451E-07	9.9116E-07	2.4261E-07	9.4240E-08
Cs-138	5.1553E-06	1.9227E-04	6.3393E-07	8.6100E+07	2.8344E-06	7.9274E-06	1.8628E-06	7.2216E-07
Total	1.0587E-03	1.0000E+00	0.0000E+00	0.0000E+00	5.8203E-04	1.4268E-03	3.4919E-04	1.3574E-04

Control Room Compartment Group Inventory Distribution:

Time (h) = 0.1110	Atmosphere	Sump
Noble gases (Ci)	5.8993E-13	0.0000E+00
Elemental I (Ci)	5.8713E-07	0.0000E+00
Organic I (Ci)	1.8159E-08	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.0581E-03	0.0000E+00
All Aerosols (kg)	4.1507E-09	0.0000E+00

Time (h) = 0.1110	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	3.0449E-07
Organic I (Ci)	0.0000E+00	9.4172E-09
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	5.8172E-04
All Aerosols (kg)	0.0000E+00	2.2820E-09

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Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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Exclusion Area Boundary Doses:

Time (h) =	0.2500	Whole Body	Thyroid	TEDE
Delta dose (rem)		8.4177E-05	6.0527E-03	6.2908E-03
Accumulated dose (rem)		1.5486E-04	1.1130E-02	1.1568E-02

Low Population Zone Doses:

Time (h) =	0.2500	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.1328E-05	8.1451E-04	8.4656E-04
Accumulated dose (rem)		2.0839E-05	1.4978E-03	1.5567E-03

Control Room Doses:

Time (h) =	0.2500	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.8322E-06	3.9709E-03	4.0737E-03	7.3458E-05
Accumulated dose (rem)		3.6216E-06	7.8464E-03	8.0495E-03	1.4525E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8588E+01 Atmosphere	2.6177E-04	4.6484E+00	6.1918E+14	2.5760E-04	3.4797E-03	1.2458E-03
Sr-89	2.8271E-01	2.4701E-05	7.0638E-02	9.4071E+12	3.9130E-06	5.2863E-05	1.8925E-05
Sr-90	2.6148E-02	7.1645E-05	6.5378E-03	8.7083E+11	3.6228E-07	4.8938E-06	1.7520E-06
Sr-91	1.1792E-01	5.0799E-07	2.9714E-02	3.9631E+12	1.6519E-06	2.2299E-05	7.9838E-06
Sr-92	4.9335E-02	1.6311E-07	1.2680E-02	1.6967E+12	7.1061E-07	9.5768E-06	3.4291E-06
Y-90	4.5437E-02	8.0929E-07	1.1366E-02	1.5140E+12	6.2996E-07	8.5096E-06	3.0465E-06
Y-91	3.5762E+00	3.6854E-04	8.9419E-01	1.1911E+14	4.9551E-05	6.6936E-04	2.3964E-04
Y-92	6.4172E-02	1.2487E-07	1.6118E-02	2.1451E+12	8.9476E-07	1.2083E-05	4.3258E-06
Y-93	4.1765E-02	1.9566E-07	1.0520E-02	1.4029E+12	5.8470E-07	7.8935E-06	2.8261E-06



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Zr-95	5.0917E+00	2.5808E-04	1.2731E+00	1.6958E+14	7.0548E-05	9.5301E-04	3.4119E-04
Zr-97	8.2017E-02	7.6896E-07	2.0597E-02	2.7455E+12	1.1434E-06	1.5440E-05	5.5278E-06
Nb-95	7.3514E+00	9.6232E-05	1.8381E+00	2.4484E+14	1.0186E-04	1.3759E-03	4.9260E-04
Mo-99	4.3642E+02	3.7203E-03	1.0924E+02	1.4553E+16	6.0561E-03	8.1801E-02	2.9286E-02
Tc-99m	4.1754E+02	8.3619E-05	1.0450E+02	1.3907E+16	5.7933E-03	7.8252E-02	2.8015E-02
Ru-103	4.2079E+00	8.1609E-05	1.0522E+00	1.4015E+14	5.8305E-05	7.8762E-04	2.8198E-04
Ru-105	1.9766E-02	3.6382E-08	5.0258E-03	6.7130E+11	2.8042E-07	3.7826E-06	1.3544E-06
Ru-106	7.0601E+00	7.1096E-03	1.7652E+00	2.3513E+14	9.7817E-05	1.3214E-03	4.7306E-04
Rh-105	1.6184E-01	3.3999E-07	4.0538E-02	5.4012E+12	2.2480E-06	3.0363E-05	1.0870E-05
Te-127	5.2582E+01	3.5593E-05	1.3150E+01	1.7504E+15	7.2877E-04	9.8445E-03	3.5244E-03
Te-127m	5.2103E+01	2.3633E-03	1.3028E+01	1.7353E+15	7.2190E-04	9.7518E-03	3.4912E-03
Te-129	4.8168E+01	1.2059E-05	1.2049E+01	1.5952E+15	6.6775E-04	9.0201E-03	3.2293E-03
Te-129m	7.3186E+01	3.6992E-03	1.8300E+01	2.4376E+15	1.0141E-03	1.3699E-02	4.9044E-03
Te-131m	1.2162E+01	1.8372E-04	3.0485E+00	4.0622E+14	1.6910E-04	2.2838E-03	8.1762E-04
Te-132	2.0330E+02	4.0975E-03	5.0880E+01	6.7782E+15	2.8205E-03	3.8098E-02	1.3639E-02
I-131	1.1409E-02	4.5621E-07	1.6341E-03	1.7500E+11	6.2651E-08	9.2509E-07	3.2925E-07
I-132	1.4816E+01	2.8241E-05	2.1384E+00	2.2882E+14	8.2283E-05	1.2143E-03	4.3220E-04
I-133	1.1124E-02	8.3728E-08	1.6116E-03	1.7314E+11	6.2127E-08	9.1668E-07	3.2627E-07
I-134	3.6803E-01	7.1097E-07	5.5960E-02	6.0521E+12	2.2084E-06	3.2464E-05	1.1557E-05
Xe-133	6.9471E-06	9.7282E-14	6.9908E-07	6.5061E+07	2.1176E-11	3.2523E-10	1.1547E-10
Cs-134	7.0327E+03	6.9811E-01	1.7584E+03	2.3422E+17	9.7436E-02	1.3162E+00	4.7122E-01
Cs-136	4.6225E+02	8.2395E-03	1.1560E+02	1.5399E+16	6.4065E-03	8.6542E-02	3.0983E-02
Cs-137	3.9148E+03	2.6373E-01	9.7882E+02	1.3038E+17	5.4239E-02	7.3269E-01	2.6231E-01
Ba-139	3.6816E-02	1.5965E-08	9.7218E-03	1.3065E+12	5.5075E-07	7.4055E-06	2.6521E-06
Ba-140	4.0985E-01	3.3106E-06	1.0250E-01	1.3653E+13	5.6803E-06	7.6732E-05	2.7471E-05
La-140	6.0751E-01	7.8025E-06	1.5199E-01	2.0244E+13	8.4240E-06	1.1379E-04	4.0738E-05
La-141	2.6609E-02	3.4532E-08	6.7512E-03	9.0098E+11	3.7629E-07	5.0771E-06	1.8178E-06
La-142	6.3209E-03	2.4859E-08	1.6594E-03	2.2280E+11	9.3787E-08	1.2617E-06	4.5183E-07
Ce-141	3.0538E+00	5.7929E-05	7.6361E-01	1.0171E+14	4.2316E-05	5.7162E-04	2.0465E-04
Ce-143	1.4532E-01	1.0834E-06	3.6417E-02	4.8525E+12	2.0198E-06	2.7280E-05	9.7665E-06
Ce-144	8.9392E+00	7.0481E-03	2.2351E+00	2.9771E+14	1.2385E-04	1.6731E-03	5.9897E-04
Pr-143	1.4183E+00	2.4253E-05	3.5470E-01	4.7247E+13	1.9656E-05	2.6553E-04	9.5061E-05
Rb-89	2.6985E+00	9.0679E-06	9.2362E-01	1.2900E+14	5.7562E-05	7.5843E-04	2.7200E-04
Y-91m	6.9921E-02	4.5175E-08	1.7501E-02	2.3117E+12	9.7009E-07	1.3104E-05	4.6913E-06
Nb-95m	3.9458E-02	2.0558E-07	9.8664E-03	1.3141E+12	5.4674E-07	7.3856E-06	2.6441E-06
Nb-97	9.5570E-03	8.7455E-09	2.4733E-03	3.3045E+11	1.3900E-07	1.8722E-06	6.7039E-07
Rh-103m	4.2066E+00	4.6122E-08	1.0513E+00	1.3896E+14	5.8246E-05	7.8685E-04	2.8170E-04
Te-125m	5.1761E+00	7.9656E-05	1.2943E+00	1.7240E+14	7.1719E-05	9.6883E-04	3.4685E-04



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Te-131	3.1670E+00	4.7544E-06	8.1310E-01	1.0724E+14	4.5570E-05	6.1409E-04	2.1989E-04
Te-133	1.1077E-01	8.8866E-08	1.8207E-02	1.9601E+12	7.4454E-07	1.0880E-05	3.8747E-06
Te-133m	1.3391E+00	5.0237E-06	3.6345E-01	4.9059E+13	2.0814E-05	2.7923E-04	1.0002E-04
Te-134	1.8000E+00	2.4382E-06	5.0208E-01	6.8061E+13	2.9059E-05	3.8898E-04	1.3935E-04
Cs-134m	4.0442E+00	4.6601E-07	1.0376E+00	1.3879E+14	5.8103E-05	7.8317E-04	2.8042E-04
Cs-138	5.2344E+01	1.7591E-04	1.5101E+01	2.0576E+15	8.8526E-04	1.1818E-02	4.2343E-03
Ba-141	5.0643E-03	7.2004E-09	1.6396E-03	2.2723E+11	1.0024E-07	1.3262E-06	4.7548E-07
Total	1.2857E+04	1.0000E+00	0.0000E+00	0.0000E+00	1.7822E-01	2.4074E+00	8.6187E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	7.7209E-12
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.4131E-11
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	4.2030E-11
Total I (Ci)	1.5207E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	5.6005E-16

RCS Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)		7.4796E-06	0.0000E+00
Elemental I (Ci)		1.4751E+01	0.0000E+00
Organic I (Ci)		4.5621E-01	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2842E+04	0.0000E+00
All Aerosols (kg)		5.0431E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5	Pathway 6
					Outflow	Inflow
Rb-86	3.4783E-03	2.6176E-04	4.9455E-04	6.5876E+10	6.7428E-07	3.4797E-03
Sr-89	5.2901E-05	2.4708E-05	7.5178E-06	1.0012E+09	1.0247E-08	5.2863E-05
Sr-90	4.8929E-06	7.1646E-05	6.9561E-07	9.2656E+07	9.4836E-10	4.8938E-06
Sr-91	2.2065E-05	5.0656E-07	3.1526E-06	4.2053E+08	4.3091E-09	2.2299E-05
Sr-92	9.2316E-06	1.6149E-07	1.3358E-06	1.7881E+08	1.8374E-09	9.5768E-06
Y-90	8.5024E-06	8.0916E-07	1.2091E-06	1.6106E+08	1.6487E-09	8.5096E-06
Y-91	6.6918E-04	3.6853E-04	9.5139E-05	1.2673E+10	1.2971E-07	6.6936E-04
Y-92	1.2008E-05	1.2467E-07	1.7122E-06	2.2789E+08	2.3378E-09	1.2083E-05
Y-93	7.8152E-06	1.9514E-07	1.1163E-06	1.4889E+08	1.5256E-09	7.8935E-06



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Zr-95	9.5276E-04	2.5808E-04	1.3546E-04	1.8043E+10	1.8468E-07	9.5301E-04
Zr-97	1.5347E-05	7.6774E-07	2.1880E-06	2.9168E+08	2.9873E-09	1.5440E-05
Nb-95	1.3756E-03	9.6232E-05	1.9557E-04	2.6050E+10	2.6663E-07	1.3759E-03
Mo-99	8.1663E-02	3.7188E-03	1.1618E-02	1.5479E+12	1.5845E-05	8.1801E-02
Tc-99m	7.8131E-02	8.3589E-05	1.1115E-02	1.4792E+12	1.5159E-05	7.8252E-02
Ru-103	7.8739E-04	8.1607E-05	1.1195E-04	1.4912E+10	1.5263E-07	7.8762E-04
Ru-105	3.6987E-06	3.6161E-08	5.3151E-07	7.1011E+07	7.2858E-10	3.7826E-06
Ru-106	1.3211E-03	7.1096E-03	1.8782E-04	2.5017E+10	2.5606E-07	1.3214E-03
Rh-105	3.0283E-05	3.3977E-07	4.3104E-06	5.7432E+08	5.8800E-09	3.0363E-05
Te-127	9.8392E-03	3.5590E-05	1.3990E-03	1.8622E+11	1.9075E-06	9.8445E-03
Te-127m	9.7496E-03	2.3633E-03	1.3861E-03	1.8463E+11	1.8897E-06	9.7518E-03
Te-129	9.0134E-03	1.2057E-05	1.2818E-03	1.6969E+11	1.7477E-06	9.0201E-03
Te-129m	1.3695E-02	3.6991E-03	1.9471E-03	2.5935E+11	2.6546E-06	1.3699E-02
Te-131m	2.2758E-03	1.8356E-04	3.2406E-04	4.3185E+10	4.4217E-07	2.2838E-03
Te-132	3.8042E-02	4.0961E-03	5.4117E-03	7.2096E+11	7.3802E-06	3.8098E-02
I-131	2.1349E-06	5.7956E-07	2.2087E-07	2.4617E+07	2.4363E-10	9.2509E-07
I-132	2.7725E-03	3.5798E-05	2.8841E-04	3.2133E+10	3.1921E-07	1.2143E-03
I-133	2.0815E-06	1.0603E-07	2.1714E-07	2.4295E+07	2.4078E-10	9.1668E-07
I-134	6.8867E-05	8.8747E-07	7.4323E-06	8.3933E+08	8.4194E-09	3.2464E-05
Cs-134	1.3160E+00	6.9811E-01	1.8709E-01	2.4920E+13	2.5507E-04	1.3162E+00
Cs-136	8.6498E-02	8.2389E-03	1.2299E-02	1.6383E+12	1.6769E-05	8.6542E-02
Cs-137	7.3255E-01	2.6373E-01	1.0415E-01	1.3872E+13	1.4199E-04	7.3269E-01
Ba-139	6.8891E-06	1.5654E-08	1.0142E-06	1.3641E+08	1.4071E-09	7.4055E-06
Ba-140	7.6692E-05	3.3104E-06	1.0905E-05	1.4526E+09	1.4868E-08	7.6732E-05
La-140	1.1368E-04	7.8008E-06	1.6168E-05	2.1535E+09	2.2046E-08	1.1379E-04
La-141	4.9791E-06	3.4354E-08	7.1461E-07	9.5396E+07	9.7888E-10	5.0771E-06
La-142	1.1828E-06	2.4425E-08	1.7347E-07	2.3309E+07	2.4024E-10	1.2617E-06
Ce-141	5.7144E-04	5.7927E-05	8.1245E-05	1.0822E+10	1.1077E-07	5.7162E-04
Ce-143	2.7193E-05	1.0825E-06	3.8715E-06	5.1590E+08	5.2821E-09	2.7280E-05
Ce-144	1.6727E-03	7.0482E-03	2.3781E-04	3.1676E+10	3.2422E-07	1.6731E-03
Pr-143	2.6540E-04	2.4251E-05	3.7737E-05	5.0267E+09	5.1451E-08	2.6553E-04
Rb-89	5.0495E-04	8.1014E-06	8.7797E-05	1.2334E+10	1.3155E-07	7.5843E-04
Y-91m	1.3084E-05	4.5161E-08	1.8615E-06	2.4587E+08	2.5387E-09	1.3104E-05
Nb-95m	7.3834E-06	2.0557E-07	1.0497E-06	1.3982E+08	1.4312E-09	7.3856E-06
Nb-97	1.7883E-06	8.6366E-09	2.5987E-07	3.4736E+07	3.5825E-10	1.8722E-06
Rh-103m	7.8715E-04	4.6130E-08	1.1188E-04	1.4786E+10	1.5251E-07	7.8685E-04
Te-125m	9.6857E-04	7.9655E-05	1.3770E-04	1.8342E+10	1.8774E-07	9.6883E-04
Te-131	5.9262E-04	4.7074E-06	8.5656E-05	1.1296E+10	1.1778E-07	6.1409E-04



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Te-133	2.0727E-05	1.0838E-07	2.3627E-06	2.6683E+08	2.7652E-09	1.0880E-05
Te-133m	2.5058E-04	4.8771E-06	3.7542E-05	5.0740E+09	5.2537E-08	2.7923E-04
Te-134	3.3682E-04	2.3438E-06	5.1352E-05	6.9735E+09	7.2474E-08	3.8898E-04
Cs-134m	7.5676E-04	4.6169E-07	1.0937E-04	1.4636E+10	1.5036E-07	7.8317E-04
Cs-138	9.7947E-03	1.6706E-04	1.5259E-03	2.0841E+11	2.1757E-06	1.1818E-02
Ba-141	9.4765E-07	6.5615E-09	1.5897E-07	2.2134E+07	2.3449E-10	1.3262E-06
Total	2.4058E+00	1.0000E+00	0.0000E+00	0.0000E+00	4.6645E-04	2.4074E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	2.3021E-15
Dose Equivalent (Ci/cc) I-131 (CEDE)	4.2132E-15
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.2532E-14
Total I (Ci)	2.8456E-03
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.6698E-19

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)		1.3996E-09	0.0000E+00
Elemental I (Ci)		2.7602E-03	0.0000E+00
Organic I (Ci)		8.5367E-05	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		2.4030E+00	0.0000E+00
All Aerosols (kg)		9.4367E-06	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	1.1671E-06	2.6178E-04	3.5528E-07	4.7324E+07	1.8080E-06	2.2413E-06	1.1279E-06	3.9684E-07
Nb-95	4.6158E-07	9.6232E-05	1.4049E-07	1.8713E+07	7.1504E-07	8.8617E-07	4.4600E-07	1.5693E-07
Mo-99	2.7401E-05	3.7206E-03	8.3499E-06	1.1124E+09	4.2448E-05	5.2731E-05	2.6515E-05	9.3295E-06
Tc-99m	2.6216E-05	8.3626E-05	7.9879E-06	1.0630E+09	4.0612E-05	5.0439E-05	2.5365E-05	9.0654E-06
Ru-106	4.4328E-07	7.1095E-03	1.3492E-07	1.7971E+07	6.8669E-07	8.5101E-07	4.2831E-07	1.5069E-07
Te-127	3.3015E-06	3.5593E-05	1.0051E-06	1.3378E+08	5.1143E-06	6.3415E-06	3.1910E-06	1.1347E-06
Te-127m	3.2714E-06	2.3633E-03	9.9569E-07	1.3263E+08	5.0677E-06	6.2806E-06	3.1610E-06	1.1121E-06
Te-129	3.0244E-06	1.2059E-05	9.2090E-07	1.2191E+08	4.6851E-06	5.8113E-06	2.9238E-06	1.1194E-06
Te-129m	4.5952E-06	3.6992E-03	1.3987E-06	1.8631E+08	7.1184E-06	8.8234E-06	4.4404E-06	1.5623E-06
Te-131m	7.6364E-07	1.8375E-04	2.3304E-07	3.1054E+07	1.1830E-06	1.4738E-06	7.4028E-07	2.6049E-07



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Te-132	1.2765E-05	4.0978E-03	3.8890E-06	5.1810E+08	1.9774E-05	2.4555E-05	1.2349E-05	4.3450E-06
I-132	1.0868E-06	2.9496E-05	1.7070E-07	1.8449E+07	1.4853E-06	3.7463E-07	3.8987E-07	3.4019E-07
Cs-134	4.4156E-04	6.9810E-01	1.3439E-04	1.7901E+10	6.8403E-04	8.4770E-04	4.2664E-04	1.5011E-04
Cs-136	2.9024E-05	8.2396E-03	8.8357E-06	1.1770E+09	4.4961E-05	5.5746E-05	2.8052E-05	9.8696E-06
Cs-137	2.4580E-04	2.6373E-01	7.4811E-05	9.9648E+09	3.8077E-04	4.7188E-04	2.3749E-04	8.3558E-05
Ce-144	5.6127E-07	7.0481E-03	1.7083E-07	2.2754E+07	8.6946E-07	1.0775E-06	5.4231E-07	1.9080E-07
Cs-138	3.2865E-06	1.7781E-04	1.1666E-06	1.5895E+08	5.0912E-06	8.4960E-06	3.8357E-06	1.3602E-06
Total	8.0741E-04	1.0000E+00	0.0000E+00	0.0000E+00	1.2506E-03	1.5512E-03	7.8033E-04	2.7504E-04

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)		6.8239E-12	0.0000E+00
Elemental I (Ci)		1.0821E-06	0.0000E+00
Organic I (Ci)		3.3467E-08	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		8.0629E-04	0.0000E+00
All Aerosols (kg)		3.1664E-09	0.0000E+00

		Deposition	Recirculating
Time (h) =	0.2500	Surfaces	Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	1.4788E-06
Organic I (Ci)		0.0000E+00	4.5736E-08
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	1.2490E-03
All Aerosols (kg)		0.0000E+00	4.9051E-09

#####

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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Exclusion Area Boundary Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.3270E-04	9.5494E-03	9.9251E-03



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Accumulated dose (rem) 2.8755E-04 2.0680E-02 2.1493E-02

Low Population Zone Doses:

Time (h) = 0.4720 Whole Body Thyroid TEDE
 Delta dose (rem) 1.7857E-05 1.2851E-03 1.3356E-03
 Accumulated dose (rem) 3.8696E-05 2.7829E-03 2.8924E-03

Control Room Doses:

Time (h) = 0.4720 Whole Body Thyroid TEDE Skin
 Delta dose (rem) 2.3138E-06 5.0156E-03 5.1451E-03 9.2693E-05
 Accumulated dose (rem) 5.9354E-06 1.2862E-02 1.3195E-02 2.3794E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8577E+01	2.6173E-04	8.7735E+00	1.1687E+15	4.4027E-04	6.6138E-03	2.3514E-03
Sr-89	2.8286E-01	2.4715E-05	1.3342E-01	1.7769E+13	6.6926E-06	1.0055E-04	3.5749E-05
Sr-90	2.6142E-02	7.1647E-05	1.2342E-02	1.6439E+12	6.1928E-07	9.3032E-06	3.3075E-06
Sr-91	1.1599E-01	5.0385E-07	5.5635E-02	7.4214E+12	2.8033E-06	4.2055E-05	1.4953E-05
Sr-92	4.6600E-02	1.5853E-07	2.3266E-02	3.1147E+12	1.1847E-06	1.7710E-05	6.2983E-06
Y-90	4.5380E-02	8.0889E-07	2.1446E-02	2.8566E+12	1.0764E-06	1.6169E-05	5.7483E-06
Y-91	3.5749E+00	3.6852E-04	1.6879E+00	2.2484E+14	8.4698E-05	1.2724E-03	4.5236E-04
Y-92	6.3472E-02	1.2424E-07	3.0273E-02	4.0294E+12	1.5229E-06	2.2859E-05	8.1272E-06
Y-93	4.1124E-02	1.9415E-07	1.9706E-02	2.6284E+12	9.9270E-07	1.4894E-05	5.2954E-06
Zr-95	5.0899E+00	2.5807E-04	2.4032E+00	3.2011E+14	1.2059E-04	1.8116E-03	6.4406E-04
Zr-97	8.1254E-02	7.6543E-07	3.8703E-02	5.1595E+12	1.9466E-06	2.9220E-05	1.0389E-05
Nb-95	7.3493E+00	9.6231E-05	3.4699E+00	4.6218E+14	1.7411E-04	2.6156E-03	9.2990E-04
Mo-99	4.3530E+02	3.7159E-03	2.0597E+02	2.7442E+16	1.0341E-02	1.5533E-01	5.5222E-02
Tc-99m	4.1655E+02	8.3530E-05	1.9707E+02	2.6225E+16	9.8936E-03	1.4860E-01	5.2832E-02
Ru-103	4.2062E+00	8.1604E-05	1.9861E+00	2.6455E+14	9.9660E-05	1.4971E-03	5.3227E-04
Ru-105	1.9088E-02	3.5752E-08	9.3233E-03	1.2457E+12	4.7203E-07	7.0700E-06	2.5140E-06
Ru-106	7.0583E+00	7.1096E-03	3.3323E+00	4.4387E+14	1.6721E-04	2.5119E-03	8.9303E-04
Rh-105	1.6118E-01	3.3934E-07	7.6379E-02	1.0177E+13	3.8362E-06	5.7612E-05	2.0483E-05



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Te-127	5.2542E+01	3.5584E-05	2.4818E+01	3.3034E+15	1.2455E-03	1.8709E-02	6.6516E-03
Te-127m	5.2087E+01	2.3633E-03	2.4592E+01	3.2757E+15	1.2340E-03	1.8538E-02	6.5905E-03
Te-129	4.8121E+01	1.2054E-05	2.2736E+01	3.0095E+15	1.1410E-03	1.7140E-02	6.0938E-03
Te-129m	7.3155E+01	3.6989E-03	3.4544E+01	4.6013E+15	1.7334E-03	2.6040E-02	9.2576E-03
Te-131m	1.2097E+01	1.8324E-04	5.7398E+00	7.6490E+14	2.8839E-04	4.3305E-03	1.5396E-03
Te-132	2.0285E+02	4.0935E-03	9.5953E+01	1.2783E+16	4.8171E-03	7.2353E-02	2.5723E-02
I-131	2.1348E-02	8.1237E-07	5.4930E-03	6.4502E+11	2.1403E-07	3.5223E-06	1.2454E-06
I-132	2.7039E+01	4.9461E-05	7.0699E+00	8.2968E+14	2.7668E-04	4.5496E-03	1.6088E-03
I-133	1.9851E-02	1.4487E-07	5.2639E-03	6.2094E+11	2.0674E-07	3.3978E-06	1.2015E-06
I-134	5.7009E-01	1.1193E-06	1.6631E-01	1.9744E+13	6.6987E-06	1.0950E-04	3.8734E-05
Xe-133	2.4903E-05	3.2787E-13	4.4476E-06	4.8408E+08	1.5192E-10	2.5685E-09	9.0680E-10
Cs-134	7.0309E+03	6.9812E-01	3.3194E+03	4.4214E+17	1.6656E-01	2.5021E+00	8.8957E-01
Cs-136	4.6192E+02	8.2376E-03	2.1818E+02	2.9063E+16	1.0949E-02	1.6448E-01	5.8475E-02
Cs-137	3.9139E+03	2.6374E-01	1.8478E+03	2.4612E+17	9.2716E-02	1.3928E+00	4.9519E-01
Ba-139	3.2919E-02	1.5110E-08	1.7368E-02	2.3365E+12	8.9696E-07	1.3345E-05	4.7475E-06
Ba-140	4.0955E-01	3.3098E-06	1.9345E-01	2.5768E+13	9.7078E-06	1.4583E-04	5.1846E-05
La-140	6.0661E-01	7.7977E-06	2.8673E-01	3.8192E+13	1.4392E-05	2.1618E-04	7.6859E-05
La-141	2.5734E-02	3.3985E-08	1.2543E-02	1.6747E+12	6.3444E-07	9.5061E-06	3.3802E-06
La-142	5.7191E-03	2.3660E-08	2.9814E-03	4.0066E+11	1.5350E-07	2.2863E-06	8.1326E-07
Ce-141	3.0525E+00	5.7924E-05	1.4414E+00	1.9200E+14	7.2328E-05	1.0865E-03	3.8629E-04
Ce-143	1.4461E-01	1.0808E-06	6.8583E-02	9.1391E+12	3.4455E-06	5.1740E-05	1.8395E-05
Ce-144	8.9368E+00	7.0482E-03	4.2193E+00	5.6201E+14	2.1171E-04	3.1805E-03	1.1307E-03
Pr-143	1.4174E+00	2.4248E-05	6.6944E-01	8.9173E+13	3.3594E-05	5.0466E-04	1.7942E-04
Rb-89	1.4697E+00	6.9999E-06	1.3459E+00	1.8880E+14	7.8667E-05	1.1205E-03	3.9973E-04
Y-91m	6.9615E-02	4.5104E-08	3.2985E-02	4.3565E+12	1.6563E-06	2.4877E-05	8.8445E-06
Nb-95m	3.9441E-02	2.0556E-07	1.8624E-02	2.4805E+12	9.3453E-07	1.4039E-05	4.9911E-06
Nb-97	8.9296E-03	8.4480E-09	4.5100E-03	6.0277E+11	2.3042E-07	3.4405E-06	1.2237E-06
Rh-103m	4.2091E+00	4.6143E-08	1.9855E+00	2.6236E+14	9.9605E-05	1.4965E-03	5.3202E-04
Te-125m	5.1743E+00	7.9653E-05	2.4431E+00	3.2543E+14	1.2259E-04	1.8416E-03	6.5474E-04
Te-131	3.0353E+00	4.6397E-06	1.4979E+00	1.9735E+14	7.6148E-05	1.1387E-03	4.0495E-04
Te-133	1.3897E-01	1.2224E-07	4.7279E-02	5.5756E+12	1.9766E-06	3.2018E-05	1.1332E-05
Te-133m	1.1333E+00	4.6329E-06	6.3273E-01	8.5529E+13	3.3140E-05	4.9071E-04	1.7462E-04
Te-134	1.4429E+00	2.1937E-06	8.5274E-01	1.1581E+14	4.5285E-05	6.6737E-04	2.3755E-04
Xe-133m	1.7808E-06	2.0596E-14	3.1814E-07	3.4626E+07	1.0868E-11	1.8374E-10	6.4869E-11
Cs-134m	3.8343E+00	4.5378E-07	1.9072E+00	2.5525E+14	9.7021E-05	1.4509E-03	5.1597E-04
Cs-138	3.9286E+01	1.5376E-04	2.4916E+01	3.4031E+15	1.3455E-03	1.9713E-02	7.0195E-03
Ba-141	3.0543E-03	5.7654E-09	2.4783E-03	3.4477E+11	1.4131E-07	2.0309E-06	7.2408E-07
Total	1.2848E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.0456E-01	4.5750E+00	1.6265E+00



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Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.4117E-11
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.5790E-11
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	7.6601E-11
Total I (Ci)	2.7650E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.0076E-15

RCS Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)	2.6814E-05	0.0000E+00	
Elemental I (Ci)	2.6820E+01	0.0000E+00	
Organic I (Ci)	8.2950E-01	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	1.2821E+04	0.0000E+00	
All Aerosols (kg)	5.0419E-02	0.0000E+00	

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	6.6088E-03	2.6170E-04	1.6836E-03	2.2426E+11	2.4197E-06	6.6138E-03
Sr-89	1.0063E-04	2.4725E-05	2.5616E-05	3.4115E+09	3.6808E-08	1.0055E-04
Sr-90	9.2998E-06	7.1647E-05	2.3686E-06	3.1550E+08	3.4040E-09	9.3032E-06
Sr-91	4.1264E-05	5.0108E-07	1.0619E-05	1.4166E+09	1.5303E-08	4.2055E-05
Sr-92	1.6578E-05	1.5547E-07	4.3788E-06	5.8645E+08	6.3543E-09	1.7710E-05
Y-90	1.6144E-05	8.0862E-07	4.1144E-06	5.4805E+08	5.9140E-09	1.6169E-05
Y-91	1.2718E-03	3.6851E-04	3.2393E-04	4.3148E+10	4.6555E-07	1.2724E-03
Y-92	2.2580E-05	1.2382E-07	5.7901E-06	7.7076E+08	8.3361E-09	2.2859E-05
Y-93	1.4630E-05	1.9315E-07	3.7623E-06	5.0188E+08	5.4211E-09	1.4894E-05
Zr-95	1.8107E-03	2.5807E-04	4.6120E-04	6.1433E+10	6.6283E-07	1.8116E-03
Zr-97	2.8906E-05	7.6307E-07	7.4048E-06	9.8718E+08	1.0658E-08	2.9220E-05
Nb-95	2.6145E-03	9.6231E-05	6.6591E-04	8.8699E+10	9.5702E-07	2.6156E-03
Mo-99	1.5485E-01	3.7130E-03	3.9499E-02	5.2624E+12	5.6788E-05	1.5533E-01
Tc-99m	1.4818E-01	8.3471E-05	3.7793E-02	5.0292E+12	5.4334E-05	1.4860E-01
Ru-103	1.4963E-03	8.1600E-05	3.8114E-04	5.0769E+10	5.4777E-07	1.4971E-03
Ru-105	6.7905E-06	3.5331E-08	1.7682E-06	2.3631E+08	2.5563E-09	7.0700E-06
Ru-106	2.5109E-03	7.1097E-03	6.3952E-04	8.5185E+10	9.1909E-07	2.5119E-03



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Rh-105	5.7339E-05	3.3890E-07	1.4639E-05	1.9506E+09	2.1053E-08	5.7612E-05
Te-127	1.8691E-02	3.5578E-05	4.7621E-03	6.3385E+11	6.8445E-06	1.8709E-02
Te-127m	1.8530E-02	2.3633E-03	4.7196E-03	6.2865E+11	6.7828E-06	1.8538E-02
Te-129	1.7119E-02	1.2051E-05	4.3621E-03	5.7734E+11	6.2698E-06	1.7140E-02
Te-129m	2.6024E-02	3.6987E-03	6.6290E-03	8.8300E+11	9.5272E-06	2.6040E-02
Te-131m	4.3035E-03	1.8293E-04	1.0996E-03	1.4654E+11	1.5817E-06	4.3305E-03
Te-132	7.2164E-02	4.0908E-03	1.8403E-02	2.4517E+12	2.6456E-05	7.2353E-02
I-131	7.5946E-06	1.0504E-06	1.3630E-06	1.6407E+08	1.7365E-09	3.5223E-06
I-132	9.6188E-03	6.3663E-05	1.7464E-03	2.1021E+11	2.2341E-06	4.5496E-03
I-133	7.0618E-06	1.8582E-07	1.2958E-06	1.5688E+08	1.6638E-09	3.3978E-06
I-134	2.0281E-04	1.3964E-06	3.9818E-05	4.8678E+09	5.2310E-08	1.0950E-04
Cs-134	2.5012E+00	6.9812E-01	6.3704E-01	8.4854E+13	9.1553E-04	2.5021E+00
Cs-136	1.6432E-01	8.2363E-03	4.1865E-02	5.5767E+12	6.0171E-05	1.6448E-01
Cs-137	1.3923E+00	2.6374E-01	3.5462E-01	4.7235E+13	5.0964E-04	1.3928E+00
Ba-139	1.1711E-05	1.4536E-08	3.2067E-06	4.3174E+08	4.6968E-09	1.3345E-05
Ba-140	1.4569E-04	3.3093E-06	3.7119E-05	4.9445E+09	5.3350E-08	1.4583E-04
Ia-140	2.1580E-04	7.7945E-06	5.5006E-05	7.3267E+09	7.9068E-08	2.1618E-04
La-141	9.1546E-06	3.3621E-08	2.3813E-06	3.1808E+08	3.4415E-09	9.5061E-06
La-142	2.0345E-06	2.2857E-08	5.5276E-07	7.4337E+07	8.0801E-10	2.2863E-06
Ce-141	1.0859E-03	5.7921E-05	2.7661E-04	3.6845E+10	3.9754E-07	1.0865E-03
Ce-143	5.1444E-05	1.0791E-06	1.3141E-05	1.7512E+09	1.8901E-08	5.1740E-05
Ce-144	3.1792E-03	7.0482E-03	8.0974E-04	1.0786E+11	1.1637E-06	3.1805E-03
Pr-143	5.0423E-04	2.4245E-05	1.2846E-04	1.7111E+10	1.8463E-07	5.0466E-04
Rb-89	5.2283E-04	5.5845E-06	2.0607E-04	2.9082E+10	3.2717E-07	1.1205E-03
Y-91m	2.4765E-05	4.5058E-08	6.3239E-06	8.3516E+08	9.0942E-09	2.4877E-05
Nb-95m	1.4031E-05	2.0555E-07	3.5740E-06	4.7603E+08	5.1365E-09	1.4039E-05
Nb-97	3.1766E-06	8.2486E-09	8.4511E-07	1.1298E+08	1.2288E-09	3.4405E-06
Rh-103m	1.4973E-03	4.6157E-08	3.8117E-04	5.0358E+10	5.4772E-07	1.4965E-03
Te-125m	1.8407E-03	7.9651E-05	4.6886E-04	6.2452E+10	6.7383E-07	1.8416E-03
Te-131	1.0798E-03	4.5621E-06	2.8266E-04	3.7219E+10	4.0933E-07	1.1387E-03
Te-133	4.9437E-05	1.4569E-07	1.0814E-05	1.3204E+09	1.4686E-08	3.2018E-05
Te-133m	4.0317E-04	4.3705E-06	1.1455E-04	1.5504E+10	1.6934E-07	4.9071E-04
Te-134	5.1330E-04	2.0292E-06	1.5138E-04	2.0595E+10	2.2582E-07	6.6737E-04
Cs-134m	1.3640E-03	4.4559E-07	3.5942E-04	4.8120E+10	5.2124E-07	1.4509E-03
Cs-138	1.3976E-02	1.3881E-04	4.3171E-03	5.9104E+11	6.5104E-06	1.9713E-02
Ba-141	1.0865E-06	4.7882E-09	3.9501E-07	5.5214E+07	6.1716E-10	2.0309E-06
Total	4.5707E+00	1.0000E+00	0.0000E+00	0.0000E+00	1.6736E-03	4.5750E+00



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Dose Equivalent (Ci/cc) I-131 (Thyroid)	8.0018E-15
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.4619E-14
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	4.3420E-14
Total I (Ci)	9.8363E-03
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.1380E-18

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)	9.5389E-09	0.0000E+00	
Elemental I (Ci)	9.5412E-03	0.0000E+00	
Organic I (Ci)	2.9509E-04	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	4.5608E+00	0.0000E+00	
All Aerosols (kg)	1.7936E-05	0.0000E+00	

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	9.7034E-07	2.6174E-04	5.8344E-07	7.7716E+07	3.0281E-06	2.5265E-06	2.1197E-06	6.5040E-07
Zr-95	2.6586E-07	2.5807E-04	1.5981E-07	2.1287E+07	8.2965E-07	6.9190E-07	5.8060E-07	1.7815E-07
Nb-95	3.8387E-07	9.6231E-05	2.3074E-07	3.0734E+07	1.1979E-06	9.9894E-07	8.3827E-07	2.5725E-07
Mo-99	2.2737E-05	3.7169E-03	1.3700E-05	1.8253E+09	7.0953E-05	5.9419E-05	4.9781E-05	1.5278E-05
Tc-99m	2.1757E-05	8.3550E-05	1.3108E-05	1.7443E+09	6.7897E-05	5.6839E-05	4.7626E-05	1.5048E-05
Ru-106	3.6867E-07	7.1095E-03	2.2159E-07	2.9516E+07	1.1505E-06	9.5931E-07	8.0504E-07	2.4701E-07
Te-127	2.7444E-06	3.5586E-05	1.6504E-06	2.1968E+08	8.5642E-06	7.1479E-06	5.9962E-06	1.8768E-06
Te-127m	2.7206E-06	2.3633E-03	1.6353E-06	2.1783E+08	8.4901E-06	7.0799E-06	5.9412E-06	1.8229E-06
Te-129	2.5135E-06	1.2055E-05	1.5120E-06	2.0013E+08	7.8437E-06	6.5500E-06	5.4934E-06	1.9640E-06
Te-129m	3.8211E-06	3.6990E-03	2.2971E-06	3.0598E+08	1.1924E-05	9.9460E-06	8.3455E-06	2.5607E-06
Te-131m	6.3186E-07	1.8335E-04	3.8191E-07	5.0893E+07	1.9718E-06	1.6600E-06	1.3879E-06	4.2609E-07
Te-132	1.0596E-05	4.0943E-03	6.3820E-06	8.5023E+08	3.3065E-05	2.7671E-05	2.3189E-05	7.1166E-06
I-132	1.8198E-06	5.3556E-05	5.0906E-07	6.0480E+07	4.7022E-06	1.2818E-06	1.4453E-06	1.0803E-06
Cs-134	3.6724E-04	6.9811E-01	2.2073E-04	2.9401E+10	1.1460E-03	9.5558E-04	8.0191E-04	2.4605E-04
Cs-136	2.4127E-05	8.2379E-03	1.4509E-05	1.9327E+09	7.5292E-05	6.2836E-05	5.2713E-05	1.6175E-05
Cs-137	2.0443E-04	2.6373E-01	1.2287E-04	1.6367E+10	6.3796E-04	5.3193E-04	4.4640E-04	1.3697E-04
Ce-144	4.6679E-07	7.0481E-03	2.8057E-07	3.7372E+07	1.4567E-06	1.2146E-06	1.0193E-06	3.1276E-07
Te-125m	2.7027E-07	7.9653E-05	1.6246E-07	2.1640E+07	8.4341E-07	7.0338E-07	5.9023E-07	1.8110E-07



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Cs-138	2.0520E-06	1.5883E-04	1.7115E-06	2.3364E+08	6.4035E-06	9.2142E-06	6.3342E-06	2.0017E-06
Total	6.7151E-04	1.0000E+00	0.0000E+00	0.0000E+00	2.0946E-03	1.7490E-03	1.4663E-03	4.5146E-04

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)		4.2670E-11	0.0000E+00
Elemental I (Ci)		1.8053E-06	0.0000E+00
Organic I (Ci)		5.5836E-08	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		6.6965E-04	0.0000E+00
All Aerosols (kg)		2.6335E-09	0.0000E+00

		Deposition Surfaces	Recirculating Filter
Time (h) =	0.4720		
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	4.6646E-06
Organic I (Ci)		0.0000E+00	1.4427E-07
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	2.0897E-03
All Aerosols (kg)		0.0000E+00	8.2182E-09

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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Exclusion Area Boundary Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.1207E-04	8.0679E-03	8.3855E-03
Accumulated dose (rem)		3.9963E-04	2.8747E-02	2.9879E-02

Low Population Zone Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.5081E-05	1.0857E-03	1.1284E-03



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Accumulated dose (rem) 5.3778E-05 3.8686E-03 4.0208E-03

Control Room Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		1.8232E-06	3.9499E-03	4.0517E-03	7.2989E-05
Accumulated dose (rem)		7.7586E-06	1.6812E-02	1.7246E-02	3.1093E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8568E+01	2.6170E-04	1.2395E+01	1.6511E+15	5.5681E-04	9.4090E-03	3.3219E-03
Sr-89	2.8290E-01	2.4724E-05	1.8859E-01	2.5116E+13	8.4677E-06	1.4313E-04	5.0531E-05
Sr-90	2.6136E-02	7.1648E-05	1.7439E-02	2.3229E+12	7.8330E-07	1.3237E-05	4.6735E-06
Sr-91	1.1433E-01	5.0031E-07	7.8060E-02	1.0412E+13	3.5270E-06	5.9411E-05	2.0979E-05
Sr-92	4.4324E-02	1.5473E-07	3.2085E-02	4.2953E+12	1.4713E-06	2.4585E-05	8.6853E-06
Y-90	4.5330E-02	8.0854E-07	3.0289E-02	4.0346E+12	1.3610E-06	2.2995E-05	8.1187E-06
Y-91	3.5739E+00	3.6851E-04	2.3849E+00	3.1768E+14	1.0713E-04	1.8103E-03	6.3915E-04
Y-92	6.2787E-02	1.2365E-07	4.2570E-02	5.6665E+12	1.9194E-06	3.2370E-05	1.1430E-05
Y-93	4.0569E-02	1.9287E-07	2.7660E-02	3.6893E+12	1.2493E-06	2.1049E-05	7.4328E-06
Zr-95	5.0884E+00	2.5806E-04	3.3956E+00	4.5230E+14	1.5252E-04	2.5775E-03	9.1001E-04
Zr-97	8.0590E-02	7.6240E-07	5.4470E-02	7.2613E+12	2.4548E-06	4.1408E-05	1.4621E-05
Nb-95	7.3474E+00	9.6230E-05	4.9027E+00	6.5305E+14	2.2022E-04	3.7215E-03	1.3139E-03
Mo-99	4.3431E+02	3.7122E-03	2.9074E+02	3.8735E+16	1.3070E-02	2.2078E-01	7.7949E-02
Tc-99m	4.1568E+02	8.3454E-05	2.7819E+02	3.7019E+16	1.2505E-02	2.1124E-01	7.4581E-02
Ru-103	4.2047E+00	8.1599E-05	2.8061E+00	3.7378E+14	1.2605E-04	2.1301E-03	7.5204E-04
Ru-105	1.8512E-02	3.5221E-08	1.2978E-02	1.7340E+12	5.9034E-07	9.9077E-06	3.4994E-06
Ru-106	7.0567E+00	7.1097E-03	4.7085E+00	6.2717E+14	2.1149E-04	3.5740E-03	1.2618E-03
Rh-105	1.6060E-01	3.3877E-07	1.0774E-01	1.4356E+13	4.8462E-06	8.1834E-05	2.8893E-05
Te-127	5.2507E+01	3.5576E-05	3.5060E+01	4.6665E+15	1.5751E-03	2.6615E-02	9.3965E-03
Te-127m	5.2074E+01	2.3632E-03	3.4748E+01	4.6284E+15	1.5608E-03	2.6376E-02	9.3121E-03
Te-129	4.8085E+01	1.2050E-05	3.2115E+01	4.2502E+15	1.4429E-03	2.4380E-02	8.6076E-03
Te-129m	7.3127E+01	3.6987E-03	4.8806E+01	6.5010E+15	2.1923E-03	3.7047E-02	1.3080E-02
Te-131m	1.2040E+01	1.8284E-04	8.0921E+00	1.0784E+15	3.6415E-04	6.1476E-03	2.1706E-03
Te-132	2.0246E+02	4.0900E-03	1.3546E+02	1.8047E+16	6.0890E-03	1.0286E-01	3.6316E-02



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I-131	2.9960E-02	1.1162E-06	1.0664E-02	1.2981E+12	3.6970E-07	7.2559E-06	2.5419E-06
I-132	3.7096E+01	6.6975E-05	1.3527E+01	1.6452E+15	4.7193E-04	9.2326E-03	3.2348E-03
I-133	2.6535E-02	1.9341E-07	9.9301E-03	1.2147E+12	3.4858E-07	6.7997E-06	2.3828E-06
I-134	6.7717E-01	1.3852E-06	2.9082E-01	3.5746E+13	1.0574E-05	2.0244E-04	7.1004E-05
Xe-133	4.8695E-05	6.2515E-13	1.1983E-05	1.3878E+09	3.6452E-10	7.6674E-09	2.6773E-09
Cs-134	7.0294E+03	6.9812E-01	4.6902E+03	6.2474E+17	2.1067E-01	3.5602E+00	1.2569E+00
Cs-136	4.6162E+02	8.2359E-03	3.0822E+02	4.1056E+16	1.3847E-02	2.3397E-01	8.2607E-02
Cs-137	3.9131E+03	2.6374E-01	2.6109E+03	3.4777E+17	1.1727E-01	1.9818E+00	6.9970E-01
Ba-139	2.9838E-02	1.4421E-08	2.3423E-02	3.1508E+12	1.0956E-06	1.8110E-05	6.4019E-06
Ba-140	4.0928E-01	3.3091E-06	2.7328E-01	3.6402E+13	1.2277E-05	2.0745E-04	7.3242E-05
La-140	6.0582E-01	7.7935E-06	4.0493E-01	5.3936E+13	1.8196E-05	3.0743E-04	1.0854E-04
La-141	2.4942E-02	3.3498E-08	1.7468E-02	2.3327E+12	7.9393E-07	1.3331E-05	4.7084E-06
La-142	5.2380E-03	2.2689E-08	4.0398E-03	5.4287E+11	1.8816E-07	3.1174E-06	1.1019E-06
Ce-141	3.0513E+00	5.7920E-05	2.0365E+00	2.7126E+14	9.1479E-05	1.5459E-03	5.4578E-04
Ce-143	1.4399E-01	1.0786E-06	9.6710E-02	1.2887E+13	4.3513E-06	7.3465E-05	2.5939E-05
Ce-144	8.9348E+00	7.0482E-03	5.9617E+00	7.9410E+14	2.6778E-04	4.5253E-03	1.5977E-03
Pr-143	1.4166E+00	2.4244E-05	9.4574E-01	1.2598E+14	4.2486E-05	7.1792E-04	2.5347E-04
Rb-89	8.6182E-01	5.7296E-06	1.5566E+00	2.1838E+14	8.6193E-05	1.3010E-03	4.6241E-04
Y-91m	6.9240E-02	4.5017E-08	4.6517E-02	6.1428E+12	2.0922E-06	3.5332E-05	1.2475E-05
Nb-95m	3.9427E-02	2.0555E-07	2.6313E-02	3.5047E+12	1.1820E-06	1.9974E-05	7.0519E-06
Nb-97	8.4372E-03	8.2099E-09	6.1930E-03	8.2743E+11	2.8518E-07	4.7540E-06	1.6797E-06
Rh-103m	4.2110E+00	4.6159E-08	2.8065E+00	3.7076E+14	1.2602E-04	2.1300E-03	7.5200E-04
Te-125m	5.1727E+00	7.9651E-05	3.4519E+00	4.5980E+14	1.5506E-04	2.6203E-03	9.2510E-04
Te-131	2.9508E+00	4.5584E-06	2.0794E+00	2.7366E+14	9.4964E-05	1.5900E-03	5.6165E-04
Te-133	1.4016E-01	1.3669E-07	7.4699E-02	9.0862E+12	2.8579E-06	5.3155E-05	1.8671E-05
Te-133m	9.7877E-01	4.3287E-06	8.3532E-01	1.1291E+14	3.9851E-05	6.5167E-04	2.3051E-04
Te-134	1.1882E+00	2.0092E-06	1.1036E+00	1.4987E+14	5.3673E-05	8.6854E-04	3.0741E-04
Xe-133m	3.4803E-06	3.9254E-14	8.5676E-07	9.9226E+07	2.6067E-11	5.4827E-10	1.9145E-10
Cs-134m	3.6589E+00	4.4358E-07	2.6343E+00	3.5254E+14	1.2064E-04	2.0172E-03	7.1262E-04
Cs-138	3.0533E+01	1.3766E-04	3.1521E+01	4.3051E+15	1.5688E-03	2.5070E-02	8.8797E-03
Ba-141	1.9589E-03	4.8382E-09	2.9386E-03	4.0882E+11	1.5747E-07	2.4185E-06	8.5865E-07
Total	1.2843E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.8517E-01	6.5083E+00	2.2978E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.9402E-11
Dose Equivalent (Ci/cc) I-131 (CEDE)	3.5393E-11
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.0499E-10
Total I (Ci)	3.7830E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.9256E-15



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RCS Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		5.2438E-05	0.0000E+00
Elemental I (Ci)		3.6695E+01	0.0000E+00
Organic I (Ci)		1.1349E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2806E+04	0.0000E+00
All Aerosols (kg)		5.0408E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	9.3991E-03	2.6166E-04	3.2984E-03	4.3937E+11	4.8526E-06	9.4090E-03
Sr-89	1.4320E-04	2.4734E-05	5.0214E-05	6.6879E+09	7.3864E-08	1.4313E-04
Sr-90	1.3230E-05	7.1649E-05	4.6414E-06	6.1824E+08	6.8281E-09	1.3237E-05
Sr-91	5.7875E-05	4.9642E-07	2.0614E-05	2.7498E+09	3.0404E-08	5.9411E-05
Sr-92	2.2437E-05	1.5050E-07	8.3058E-06	1.1121E+09	1.2330E-08	2.4585E-05
Y-90	2.2946E-05	8.0815E-07	8.0576E-06	1.0733E+09	1.1856E-08	2.2995E-05
Y-91	1.8091E-03	3.6850E-04	6.3473E-04	8.4547E+10	9.3377E-07	1.8103E-03
Y-92	3.1783E-05	1.2301E-07	1.1272E-05	1.5005E+09	1.6613E-08	3.2370E-05
Y-93	2.0536E-05	1.9146E-07	7.3079E-06	9.7477E+08	1.0777E-08	2.1049E-05
Zr-95	2.5758E-03	2.5806E-04	9.0371E-04	1.2038E+11	1.3295E-06	2.5775E-03
Zr-97	4.0795E-05	7.5906E-07	1.4434E-05	1.9242E+09	2.1265E-08	4.1408E-05
Nb-95	3.7192E-03	9.6229E-05	1.3049E-03	1.7381E+11	1.9196E-06	3.7215E-03
Mo-99	2.1985E-01	3.7081E-03	7.7296E-02	1.0298E+13	1.1375E-04	2.2078E-01
Tc-99m	2.1042E-01	8.3369E-05	7.3966E-02	9.8424E+12	1.0885E-04	2.1124E-01
Ru-103	2.1284E-03	8.1594E-05	7.4681E-04	9.9476E+10	1.0987E-06	2.1301E-03
Ru-105	9.3708E-06	3.4633E-08	3.3964E-06	4.5385E+08	5.0242E-09	9.9077E-06
Ru-106	3.5721E-03	7.1097E-03	1.2532E-03	1.6692E+11	1.8436E-06	3.5740E-03
Rh-105	8.1297E-05	3.3815E-07	2.8623E-05	3.8138E+09	4.2133E-08	8.1834E-05
Te-127	2.6579E-02	3.5568E-05	9.3289E-03	1.2417E+12	1.3725E-05	2.6615E-02
Te-127m	2.6360E-02	2.3632E-03	9.2480E-03	1.2318E+12	1.3605E-05	2.6376E-02
Te-129	2.4341E-02	1.2046E-05	8.5443E-03	1.1305E+12	1.2571E-05	2.4380E-02
Te-129m	3.7017E-02	3.6984E-03	1.2989E-02	1.7301E+12	1.9108E-05	3.7047E-02
Te-131m	6.0948E-03	1.8239E-04	2.1484E-03	2.8631E+11	3.1632E-06	6.1476E-03



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Te-132	1.0249E-01	4.0862E-03	3.6020E-02	4.7987E+12	5.3006E-05	1.0286E-01
I-131	1.5166E-05	1.4513E-06	3.6905E-06	4.5797E+08	5.0168E-09	7.2559E-06
I-132	1.8778E-02	8.6517E-05	4.6507E-03	5.7698E+11	6.3460E-06	9.2326E-03
I-133	1.3432E-05	2.4831E-07	3.3931E-06	4.2374E+08	4.6488E-09	6.7997E-06
I-134	3.4278E-04	1.7109E-06	9.5597E-05	1.2036E+10	1.3360E-07	2.0244E-04
Cs-134	3.5583E+00	6.9813E-01	1.2483E+00	1.6628E+14	1.8364E-03	3.5602E+00
Cs-136	2.3367E-01	8.2341E-03	8.2014E-02	1.0925E+13	1.2066E-04	2.3397E-01
Cs-137	1.9808E+00	2.6374E-01	6.9490E-01	9.2561E+13	1.0223E-03	1.9818E+00
Ba-139	1.5104E-05	1.3646E-08	5.8989E-06	7.9388E+08	8.8330E-09	1.8110E-05
Ba-140	2.0718E-04	3.3084E-06	7.2716E-05	9.6863E+09	1.0698E-07	2.0745E-04
La-140	3.0667E-04	7.7890E-06	1.0771E-04	1.4347E+10	1.5848E-07	3.0743E-04
La-141	1.2626E-05	3.2969E-08	4.5758E-06	6.1124E+08	6.7681E-09	1.3331E-05
La-142	2.6515E-06	2.1599E-08	1.0235E-06	1.3759E+08	1.5297E-09	3.1174E-06
Ce-141	1.5446E-03	5.7915E-05	5.4197E-04	7.2192E+10	7.9732E-07	1.5459E-03
Ce-143	7.2888E-05	1.0762E-06	2.5682E-05	3.4223E+09	3.7809E-08	7.3465E-05
Ce-144	4.5228E-03	7.0482E-03	1.5867E-03	2.1135E+11	2.3343E-06	4.5253E-03
Pr-143	7.1707E-04	2.4239E-05	2.5166E-04	3.3523E+10	3.7025E-07	7.1792E-04
Rb-89	4.3625E-04	4.1290E-06	2.9856E-04	4.2077E+10	4.8205E-07	1.3010E-03
Y-91m	3.5049E-05	4.4931E-08	1.2357E-05	1.6315E+09	1.8193E-08	3.5332E-05
Nb-95m	1.9958E-05	2.0554E-07	7.0028E-06	9.3271E+08	1.0302E-08	1.9974E-05
Nb-97	4.2709E-06	7.9413E-09	1.5943E-06	2.1300E+08	2.3703E-09	4.7540E-06
Rh-103m	2.1316E-03	4.6178E-08	7.4725E-04	9.8686E+10	1.0991E-06	2.1300E-03
Te-125m	2.6184E-03	7.9647E-05	9.1870E-04	1.2237E+11	1.3515E-06	2.6203E-03
Te-131	1.4937E-03	4.4622E-06	5.4175E-04	7.1206E+10	8.0182E-07	1.5900E-03
Te-133	7.0950E-05	1.5841E-07	2.3041E-05	2.8854E+09	3.3091E-08	5.3155E-05
Te-133m	4.9545E-04	3.9819E-06	2.0451E-04	2.7664E+10	3.0889E-07	6.5167E-04
Te-134	6.0146E-04	1.7964E-06	2.6261E-04	3.5702E+10	4.0001E-07	8.6854E-04
Cs-134m	1.8521E-03	4.3224E-07	6.8319E-04	9.1448E+10	1.0136E-06	2.0172E-03
Cs-138	1.5456E-02	1.1881E-04	7.2407E-03	9.9041E+11	1.1142E-05	2.5070E-02
Ba-141	9.9158E-07	3.6968E-09	5.9760E-07	8.3425E+07	9.5050E-10	2.4185E-06
Total	6.5013E+00	1.0000E+00	0.0000E+00	0.0000E+00	3.3563E-03	6.5083E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.5649E-14
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.8547E-14
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	8.4686E-14
Total I (Ci)	1.9149E-02
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.1663E-18



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Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		2.6544E-08	0.0000E+00
Elemental I (Ci)		1.8575E-02	0.0000E+00
Organic I (Ci)		5.7448E-04	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		6.4822E+00	0.0000E+00
All Aerosols (kg)		2.5517E-05	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	9.1715E-07	2.6171E-04	7.6548E-07	1.0197E+08	3.9882E-06	2.7723E-06	2.9815E-06	8.5002E-07
Zr-95	2.5134E-07	2.5806E-04	2.0969E-07	2.7932E+07	1.0929E-06	7.5925E-07	8.1674E-07	2.3284E-07
Nb-95	3.6292E-07	9.6229E-05	3.0277E-07	4.0328E+07	1.5781E-06	1.0962E-06	1.1792E-06	3.3626E-07
Mo-99	2.1453E-05	3.7136E-03	1.7962E-05	2.3930E+09	9.3287E-05	6.5175E-05	6.9961E-05	1.9952E-05
Tc-99m	2.0532E-05	8.3482E-05	1.7186E-05	2.2869E+09	8.9285E-05	6.2347E-05	6.6939E-05	1.9877E-05
Ru-103	2.0769E-07	8.1600E-05	1.7329E-07	2.3083E+07	9.0313E-07	6.2749E-07	6.7497E-07	1.9243E-07
Ru-106	3.4856E-07	7.1095E-03	2.9077E-07	3.8730E+07	1.5157E-06	1.0527E-06	1.1325E-06	3.2286E-07
Te-127	2.5935E-06	3.5579E-05	2.1653E-06	2.8820E+08	1.1278E-05	7.8432E-06	8.4336E-06	2.4719E-06
Te-127m	2.5721E-06	2.3632E-03	2.1458E-06	2.8582E+08	1.1185E-05	7.7692E-06	8.3578E-06	2.3827E-06
Te-129	2.3751E-06	1.2052E-05	1.9835E-06	2.6250E+08	1.0328E-05	7.1866E-06	7.7254E-06	2.7109E-06
Te-129m	3.6121E-06	3.6987E-03	3.0140E-06	4.0147E+08	1.5707E-05	1.0914E-05	1.1739E-05	3.3468E-06
Te-131m	5.9472E-07	1.8299E-04	5.0015E-07	6.6650E+07	2.5861E-06	1.8198E-06	1.9482E-06	5.5586E-07
Te-132	1.0000E-05	4.0913E-03	8.3682E-06	1.1148E+09	4.3487E-05	3.0354E-05	3.2594E-05	9.2950E-06
I-132	2.4649E-06	7.5287E-05	9.3903E-07	1.1560E+08	8.6811E-06	2.5132E-06	2.8892E-06	2.0211E-06
Cs-134	3.4721E-04	6.9811E-01	2.8964E-04	3.8580E+10	1.5098E-03	1.0486E-03	1.1281E-03	3.2161E-04
Cs-136	2.2801E-05	8.2364E-03	1.9035E-05	2.5356E+09	9.9152E-05	6.8948E-05	7.4141E-05	2.1138E-05
Cs-137	1.9328E-04	2.6374E-01	1.6123E-04	2.1476E+10	8.4049E-04	5.8373E-04	6.2799E-04	1.7903E-04
Ce-144	4.4133E-07	7.0481E-03	3.6816E-07	4.9039E+07	1.9191E-06	1.3329E-06	1.4340E-06	4.0880E-07
Rh-103m	2.0800E-07	4.6152E-08	1.7329E-07	2.2893E+07	9.0448E-07	6.2683E-07	6.7493E-07	2.4797E-07
Te-125m	2.5550E-07	7.9650E-05	2.1317E-07	2.8395E+07	1.1111E-06	7.7186E-07	8.3029E-07	2.3671E-07
Cs-134m	1.8073E-07	4.4759E-07	1.6415E-07	2.1966E+07	7.8590E-07	6.2550E-07	6.3983E-07	1.8399E-07
Cs-138	1.5081E-06	1.4454E-04	2.0439E-06	2.7903E+08	6.5581E-06	9.6853E-06	7.9859E-06	2.3847E-06
Total	6.3504E-04	1.0000E+00	0.0000E+00	0.0000E+00	2.7594E-03	1.9199E-03	2.0623E-03	5.9082E-04



Control Room Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		1.1058E-10	0.0000E+00
Elemental I (Ci)		2.4387E-06	0.0000E+00
Organic I (Ci)		7.5423E-08	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		6.3252E-04	0.0000E+00
All Aerosols (kg)		2.4899E-09	0.0000E+00

Time (h) =	0.6670	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	8.5883E-06
Organic I (Ci)		0.0000E+00	2.6562E-07
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	2.7505E-03
All Aerosols (kg)		0.0000E+00	1.0827E-08

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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Exclusion Area Boundary Doses:

Time (h) =	2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		6.8716E-04	4.9375E-02	5.1328E-02
Accumulated dose (rem)		1.0868E-03	7.8122E-02	8.1207E-02

Low Population Zone Doses:

Time (h) =	2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		9.2471E-05	6.6444E-03	6.9072E-03
Accumulated dose (rem)		1.4625E-04	1.0513E-02	1.0928E-02

Control Room Doses:



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Time (h) = 2.0000 Whole Body Thyroid TEDE Skin
 Delta dose (rem) 1.1642E-05 2.5103E-02 2.5747E-02 4.6557E-04
 Accumulated dose (rem) 1.9400E-05 4.1915E-02 4.2994E-02 7.7650E-04

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract:	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8503E+01	2.6144E-04	3.7101E+01	4.9421E+15	5.5681E-04	2.9274E-02	9.9436E-03
Sr-89	2.8246E-01	2.4741E-05	5.6544E-01	7.5314E+13	8.4677E-06	4.4611E-04	1.5153E-04
Sr-90	2.6099E-02	7.1651E-05	5.2253E-02	6.9601E+12	7.8330E-07	4.1227E-05	1.4003E-05
Sr-91	1.0359E-01	4.7689E-07	2.2293E-01	2.9743E+13	3.5270E-06	1.7629E-04	5.9938E-05
Sr-92	3.1473E-02	1.3168E-07	8.1814E-02	1.0959E+13	1.4713E-06	6.5051E-05	2.2174E-05
Y-90	4.4991E-02	8.0611E-07	9.0479E-02	1.2052E+13	1.3610E-06	7.1397E-05	2.4253E-05
Y-91	3.5665E+00	3.6841E-04	7.1438E+00	9.5157E+14	1.0713E-04	5.6365E-03	1.9145E-03
Y-92	5.6862E-02	1.1863E-07	1.2238E-01	1.6303E+13	1.9194E-06	9.6756E-05	3.2892E-05
Y-93	3.6969E-02	1.8436E-07	7.9217E-02	1.0568E+13	1.2493E-06	6.2635E-05	2.1295E-05
Zr-95	5.0781E+00	2.5800E-04	1.0171E+01	1.3548E+15	1.5252E-04	8.0252E-03	2.7259E-03
Zr-97	7.6193E-02	7.4199E-07	1.5883E-01	2.1176E+13	2.4548E-06	1.2548E-04	4.2645E-05
Nb-95	7.3344E+00	9.6219E-05	1.4688E+01	1.9564E+15	2.2022E-04	1.1589E-02	3.9363E-03
Mo-99	4.2767E+02	3.6865E-03	8.6508E+02	1.1526E+17	1.3070E-02	6.8277E-01	2.3195E-01
Tc-99m	4.0976E+02	8.2922E-05	8.2821E+02	1.1023E+17	1.2505E-02	6.5365E-01	2.2205E-01
Ru-103	4.1946E+00	8.1563E-05	8.4040E+00	1.1194E+15	1.2605E-04	6.6308E-03	2.2523E-03
Ru-105	1.5013E-02	3.1846E-08	3.5158E-02	4.6993E+12	5.9034E-07	2.7872E-05	9.4875E-06
Ru-106	7.0459E+00	7.1097E-03	1.4108E+01	1.8791E+15	2.1149E-04	1.1131E-02	3.7808E-03
Rh-105	1.5667E-01	3.3488E-07	3.1911E-01	4.2521E+13	4.8462E-06	2.5191E-04	8.5585E-05
Te-127	5.2276E+01	3.5524E-05	1.0489E+02	1.3962E+16	1.5751E-03	8.2763E-02	2.8113E-02
Te-127m	5.1981E+01	2.3629E-03	1.0410E+02	1.3866E+16	1.5608E-03	8.2132E-02	2.7898E-02
Te-129	4.7839E+01	1.2028E-05	9.6043E+01	1.2718E+16	1.4429E-03	7.5784E-02	2.5742E-02
Te-129m	7.2939E+01	3.6967E-03	1.4615E+02	1.9468E+16	2.1923E-03	1.1532E-01	3.9170E-02
Te-131m	1.1658E+01	1.8006E-04	2.3877E+01	3.1820E+15	3.6415E-04	1.8852E-02	6.4055E-03
Te-132	1.9980E+02	4.0661E-03	4.0350E+02	5.3757E+16	6.0890E-03	3.1845E-01	1.0818E-01
I-131	8.6898E-02	3.1517E-06	9.0220E-02	1.1643E+13	3.6970E-07	6.9046E-05	2.3139E-05
I-132	9.1440E+01	1.7026E-04	1.0303E+02	1.3295E+16	4.7193E-04	7.9132E-02	2.6535E-02
I-133	5.2858E-02	4.3294E-07	6.6599E-02	8.6443E+12	3.4858E-07	5.1371E-05	1.7240E-05



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I-134	6.2017E-01	1.9769E-06	1.2435E+00	1.6195E+14	1.0574E-05	9.7107E-04	3.2722E-04
Xe-133	3.4545E-04	4.5502E-12	2.6132E-04	3.3286E+10	3.6452E-10	1.9671E-07	6.5690E-08
Cs-134	7.0190E+03	6.9814E-01	1.4053E+04	1.8719E+18	2.1067E-01	1.1088E+01	3.7662E+00
Cs-136	4.5961E+02	8.2242E-03	9.2217E+02	1.2284E+17	1.3847E-02	7.2763E-01	2.4716E-01
Cs-137	3.9075E+03	2.6375E-01	7.8231E+03	1.0420E+18	1.1727E-01	6.1724E+00	2.0965E+00
Ba-139	1.5241E-02	1.0695E-08	5.2046E-02	7.0088E+12	1.0956E-06	4.1672E-05	1.4256E-05
Ba-140	4.0746E-01	3.3043E-06	8.1759E-01	1.0891E+14	1.2277E-05	6.4512E-04	2.1913E-04
La-140	6.0050E-01	7.7650E-06	1.2088E+00	1.6101E+14	1.8196E-05	9.5390E-04	3.2403E-04
La-141	1.9810E-02	3.0134E-08	4.7082E-02	6.2931E+12	7.9393E-07	3.7334E-05	1.2709E-05
La-142	2.8725E-03	1.7308E-08	9.2331E-03	1.2420E+12	1.8816E-07	7.3819E-06	2.5233E-06
Ce-141	3.0434E+00	5.7889E-05	6.0984E+00	8.1233E+14	9.1479E-05	4.8117E-03	1.6344E-03
Ce-143	1.3981E-01	1.0637E-06	2.8575E-01	3.8080E+13	4.3513E-06	2.2560E-04	7.6652E-05
Ce-144	8.9208E+00	7.0481E-03	1.7862E+01	2.3792E+15	2.6778E-04	1.4093E-02	4.7870E-03
Pr-143	1.4109E+00	2.4214E-05	2.8301E+00	3.7699E+14	4.2486E-05	2.2331E-03	7.5852E-04
Rb-89	2.2430E-02	2.2665E-06	1.8449E+00	2.5922E+14	8.6193E-05	1.5630E-03	5.4972E-04
Y-91m	6.4879E-02	4.3947E-08	1.3606E-01	1.7995E+13	2.0922E-06	1.0749E-04	3.6527E-05
Nb-95m	3.9331E-02	2.0545E-07	7.8803E-02	1.0496E+13	1.1820E-06	6.2176E-05	2.1119E-05
Nb-97	6.1360E-03	6.9369E-09	1.5678E-02	2.0939E+12	2.8518E-07	1.2466E-05	4.2505E-06
Rh-103m	4.2094E+00	4.6227E-08	8.4211E+00	1.1134E+15	1.2602E-04	6.6439E-03	2.2566E-03
Te-125m	5.1619E+00	7.9628E-05	1.0340E+01	1.3773E+15	1.5506E-04	8.1581E-03	2.7710E-03
Te-131	2.6847E+00	4.2382E-06	5.7926E+00	7.6166E+14	9.4964E-05	4.5851E-03	1.5600E-03
Te-133	6.1644E-02	1.2642E-07	2.0700E-01	2.6479E+13	2.8579E-06	1.6253E-04	5.5128E-05
Te-133m	3.5931E-01	2.8450E-06	1.6450E+00	2.2266E+14	3.9851E-05	1.3258E-03	4.5522E-04
Te-134	3.1498E-01	1.1911E-06	1.9602E+00	2.6665E+14	5.3673E-05	1.5898E-03	5.4782E-04
Xe-131m	2.3494E-06	7.0662E-15	1.6274E-06	2.0641E+08	1.9094E-12	1.2172E-09	4.0638E-10
Xe-133m	2.4588E-05	2.8489E-13	1.8630E-05	2.3730E+09	2.6067E-11	1.4025E-08	4.6838E-09
Cs-134m	2.6568E+00	3.8129E-07	6.7845E+00	9.0848E+14	1.2064E-04	5.3918E-03	1.8375E-03
Cs-138	5.4504E+00	7.3395E-05	5.0352E+01	6.8896E+15	1.5688E-03	4.1139E-02	1.4236E-02
Ba-141	9.4045E-05	2.0419E-09	3.7160E-03	5.1787E+11	1.5747E-07	3.1111E-06	1.0895E-06
Total	1.2834E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.8517E-01	2.0265E+01	6.8835E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	4.8576E-11
Dose Equivalent (Ci/cc) I-131 (CEDE)	8.7745E-11
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	2.5818E-10
Total I (Ci)	9.2200E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.7851E-14

RCS Compartment Group Inventory Distribution:



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	Atmosphere	Sump
Time (h) = 2.0000		
Noble gases (Ci)	3.7239E-04	0.0000E+00
Elemental I (Ci)	8.9434E+01	0.0000E+00
Organic I (Ci)	2.7660E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2742E+04	0.0000E+00
All Aerosols (kg)	5.0336E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	2.9183E-02	2.6131E-04	2.9499E-02	3.9294E+12	4.4963E-05	2.9274E-02
Sr-89	4.4549E-04	2.4748E-05	4.4993E-04	5.9930E+10	6.8574E-07	4.4611E-04
Sr-90	4.1163E-05	7.1653E-05	4.1567E-05	5.5368E+09	6.3354E-08	4.1227E-05
Sr-91	1.6338E-04	4.6525E-07	1.7301E-04	2.3085E+10	2.6448E-07	1.7629E-04
Sr-92	4.9640E-05	1.2046E-07	5.9534E-05	7.9777E+09	9.1680E-08	6.5051E-05
Y-90	7.0960E-05	8.0489E-07	7.1867E-05	9.5731E+09	1.0955E-07	7.1397E-05
Y-91	5.6251E-03	3.6836E-04	5.6820E-03	7.5686E+11	8.6603E-06	5.6365E-03
Y-92	8.9684E-05	1.1603E-07	9.5214E-05	1.2690E+10	1.4556E-07	9.6756E-05
Y-93	5.8308E-05	1.8013E-07	6.1570E-05	8.2144E+09	9.4105E-08	6.2635E-05
Zr-95	8.0092E-03	2.5797E-04	8.0901E-03	1.0776E+12	1.2331E-05	8.0252E-03
Zr-97	1.2017E-04	7.3182E-07	1.2462E-04	1.6615E+10	1.9025E-07	1.2548E-04
Nb-95	1.1568E-02	9.6213E-05	1.1683E-02	1.5562E+12	1.7807E-05	1.1589E-02
Mo-99	6.7452E-01	3.6736E-03	6.8576E-01	9.1366E+13	1.0456E-03	6.8277E-01
Tc-99m	6.4627E-01	8.2656E-05	6.5671E-01	8.7409E+13	1.0013E-03	6.5365E-01
Ru-103	6.6157E-03	8.1545E-05	6.6838E-03	8.9030E+11	1.0187E-05	6.6308E-03
Ru-105	2.3678E-05	3.0184E-08	2.6509E-05	3.5440E+09	4.0660E-08	2.7872E-05
Ru-106	1.1113E-02	7.1096E-03	1.1222E-02	1.4948E+12	1.7104E-05	1.1131E-02
Rh-105	2.4710E-04	3.3294E-07	2.5237E-04	3.3629E+10	3.8492E-07	2.5191E-04
Te-127	8.2450E-02	3.5498E-05	8.3378E-02	1.1099E+13	1.2709E-04	8.2763E-02
Te-127m	8.1984E-02	2.3628E-03	8.2803E-02	1.1029E+13	1.2620E-04	8.2132E-02
Te-129	7.5452E-02	1.2017E-05	7.6329E-02	1.0112E+13	1.1635E-04	7.5784E-02
Te-129m	1.1504E-01	3.6958E-03	1.1623E-01	1.5483E+13	1.7716E-04	1.1532E-01
Te-131m	1.8388E-02	1.7867E-04	1.8847E-02	2.5118E+12	2.8753E-05	1.8852E-02
Te-132	3.1512E-01	4.0541E-03	3.2004E-01	4.2638E+13	4.8795E-04	3.1845E-01
I-131	1.3706E-04	4.1666E-06	9.4879E-05	1.2339E+10	1.4034E-07	6.9046E-05



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I-132	1.4422E-01	2.2026E-04	1.0603E-01	1.3800E+13	1.5760E-04	7.9132E-02
I-133	8.3367E-05	5.4382E-07	6.6547E-05	8.7214E+09	9.9546E-08	5.1371E-05
I-134	9.7813E-04	2.1859E-06	1.0938E-03	1.4463E+11	1.6718E-06	9.7107E-04
Cs-134	1.1070E+01	6.9815E-01	1.1179E+01	1.4891E+15	1.7039E-02	1.1088E+01
Cs-136	7.2490E-01	8.2184E-03	7.3305E-01	9.7647E+13	1.1174E-03	7.2763E-01
Cs-137	6.1629E+00	2.6376E-01	6.2234E+00	8.2895E+14	9.4852E-03	6.1724E+00
Ba-139	2.4039E-05	8.9249E-09	3.4550E-05	4.6563E+09	5.3716E-08	4.1672E-05
Ba-140	6.4265E-04	3.3019E-06	6.4991E-04	8.6572E+10	9.9063E-07	6.4512E-04
La-140	9.4710E-04	7.7507E-06	9.5982E-04	1.2785E+11	1.4632E-06	9.5390E-04
La-141	3.1245E-05	2.8463E-08	3.5376E-05	4.7308E+09	5.4295E-08	3.7334E-05
La-142	4.5305E-06	1.4738E-08	6.2543E-06	8.4187E+08	9.7043E-09	7.3819E-06
Ce-141	4.8001E-03	5.7873E-05	4.8499E-03	6.4602E+11	7.3921E-06	4.8117E-03
Ce-143	2.2052E-04	1.0563E-06	2.2572E-04	3.0081E+10	3.4432E-07	2.2560E-04
Ce-144	1.4070E-02	7.0480E-03	1.4209E-02	1.8926E+12	2.1656E-05	1.4093E-02
Pr-143	2.2253E-03	2.4199E-05	2.2500E-03	2.9971E+11	3.4295E-06	2.2331E-03
Rb-89	3.5376E-05	8.1211E-07	5.2588E-04	7.4324E+10	8.7434E-07	1.5630E-03
Y-91m	1.0233E-04	4.3368E-08	1.0681E-04	1.4139E+10	1.6312E-07	1.0749E-04
Nb-95m	6.2032E-05	2.0541E-07	6.2672E-05	8.3475E+09	9.5523E-08	6.2176E-05
Nb-97	9.6778E-06	6.3333E-09	1.1386E-05	1.5205E+09	1.7521E-08	1.2466E-05
Rh-103m	6.6390E-03	4.6254E-08	6.7028E-03	8.8667E+11	1.0216E-05	6.6439E-03
Te-125m	8.1414E-03	7.9617E-05	8.2240E-03	1.0954E+12	1.2535E-05	8.1581E-03
Te-131	4.2344E-03	4.0935E-06	4.4506E-03	5.8516E+11	6.8027E-06	4.5851E-03
Te-133	9.7225E-05	1.1774E-07	1.5336E-04	2.0068E+10	2.3847E-07	1.6253E-04
Te-133m	5.6671E-04	2.1562E-06	9.9174E-04	1.3442E+11	1.5560E-06	1.3258E-03
Te-134	4.9678E-04	8.1893E-07	1.0721E-03	1.4610E+11	1.6965E-06	1.5898E-03
Cs-134m	4.1903E-03	3.5090E-07	4.9668E-03	6.6531E+11	7.6437E-06	5.3918E-03
Cs-138	8.5965E-03	4.4780E-05	2.4438E-02	3.3521E+12	3.9050E-05	4.1139E-02
Ba-141	1.4833E-07	8.5446E-10	1.2370E-06	1.7321E+08	2.0330E-09	3.1111E-06
Total	2.0242E+01	1.0000E+00	0.0000E+00	0.0000E+00	3.1141E-02	2.0265E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.2208E-13
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.2051E-13
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	6.4884E-13
Total I (Ci)	1.4542E-01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	6.9993E-17

Intact Steam Generators Compartment Group Inventory Distribution:



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	Atmosphere	Sump
Time (h) = 2.0000		
Noble gases (Ci)	5.8733E-07	0.0000E+00
Elemental I (Ci)	1.4106E-01	0.0000E+00
Organic I (Ci)	4.3625E-03	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.0097E+01	0.0000E+00
All Aerosols (kg)	7.9390E-05	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	8.6479E-07	2.6145E-04	1.9262E-06	2.5658E+08	1.0075E-05	4.3690E-06	8.7024E-06	2.1171E-06
Y-91	1.6669E-07	3.6840E-04	3.7085E-07	4.9398E+07	1.9419E-06	8.4082E-07	1.6755E-06	4.0760E-07
Zr-95	2.3734E-07	2.5799E-04	5.2802E-07	7.0333E+07	2.7650E-06	1.1971E-06	2.3856E-06	5.8032E-07
Nb-95	3.4279E-07	9.6214E-05	7.6247E-07	1.0156E+08	3.9935E-06	1.7286E-06	3.4449E-06	8.3852E-07
Mo-99	1.9988E-05	3.6893E-03	4.4945E-05	5.9880E+09	2.3286E-04	1.0231E-04	2.0301E-04	4.9421E-05
Tc-99m	1.9151E-05	8.2981E-05	4.3026E-05	5.7262E+09	2.2311E-04	9.7908E-05	1.9435E-04	5.2845E-05
Ru-103	1.9604E-07	8.1562E-05	4.3628E-07	5.8114E+07	2.2839E-06	9.8926E-07	1.9711E-06	4.7951E-07
Ru-106	3.2930E-07	7.1092E-03	7.3234E-07	9.7547E+07	3.8364E-06	1.6601E-06	3.3088E-06	8.0487E-07
Te-127	2.4432E-06	3.5528E-05	5.4459E-06	7.2491E+08	2.8464E-05	1.2356E-05	2.4604E-05	6.4616E-06
Te-127m	2.4294E-06	2.3628E-03	5.4039E-06	7.1980E+08	2.8303E-05	1.2251E-05	2.4415E-05	5.9391E-06
Te-129	2.2359E-06	1.2030E-05	4.9869E-06	6.6033E+08	2.6048E-05	1.1319E-05	2.2529E-05	9.0678E-06
Te-129m	3.4090E-06	3.6967E-03	7.5875E-06	1.0107E+09	3.9715E-05	1.7205E-05	3.4280E-05	8.3393E-06
Te-131m	5.4488E-07	1.8038E-04	1.2418E-06	1.6549E+08	6.3479E-06	2.8410E-06	5.6070E-06	1.3663E-06
Te-132	9.3380E-06	4.0687E-03	2.0961E-05	2.7925E+09	1.0879E-04	4.7683E-05	9.4681E-05	2.3047E-05
I-132	6.0973E-06	2.1763E-04	6.8370E-06	8.9006E+08	5.6702E-05	1.9315E-05	2.3021E-05	1.4921E-05
Cs-134	3.2805E-04	6.9810E-01	7.2951E-04	9.7171E+10	3.8218E-03	1.6537E-03	3.2960E-03	8.0176E-04
Cs-136	2.1481E-05	8.2251E-03	4.7879E-05	6.3778E+09	2.5025E-04	1.0863E-04	2.1631E-04	5.2626E-05
Cs-137	1.8262E-04	2.6374E-01	4.0610E-04	5.4093E+10	2.1276E-03	9.2057E-04	1.8348E-03	4.4632E-04
Ce-141	1.4224E-07	5.7889E-05	3.1660E-07	4.2171E+07	1.6571E-06	7.1792E-07	1.4304E-06	3.4797E-07
Ce-144	4.1694E-07	7.0477E-03	9.2724E-07	1.2351E+08	4.8573E-06	2.1020E-06	4.1894E-06	1.0191E-06
Rh-103m	1.9673E-07	4.6215E-08	4.3706E-07	5.7781E+07	2.2920E-06	9.8966E-07	1.9749E-06	8.7258E-07
Te-125m	2.4125E-07	7.9626E-05	5.3676E-07	7.1497E+07	2.8106E-06	1.2170E-06	2.4251E-06	5.8993E-07
Te-131	1.2548E-07	4.2829E-06	3.0389E-07	3.9966E+07	1.4618E-06	7.3317E-07	1.3668E-06	8.9855E-07
Cs-134m	1.2417E-07	3.8893E-07	3.5927E-07	4.8103E+07	1.4466E-06	8.9673E-07	1.6116E-06	3.9941E-07
Cs-138	2.5474E-07	8.2334E-05	2.9323E-06	4.0096E+08	2.9677E-06	1.0976E-05	1.2613E-05	3.4146E-06
Total	6.0168E-04	1.0000E+00	0.0000E+00	0.0000E+00	6.9952E-03	3.0370E-03	6.0242E-03	1.4860E-03



Control Room Compartment Group Inventory Distribution:

Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)		1.6145E-09	0.0000E+00
Elemental I (Ci)		5.9642E-06	0.0000E+00
Organic I (Ci)		1.8446E-07	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		5.9553E-04	0.0000E+00
All Aerosols (kg)		2.3525E-09	0.0000E+00

Time (h) =	2.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	5.5470E-05
Organic I (Ci)		0.0000E+00	1.7156E-06
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	6.9380E-03
All Aerosols (kg)		0.0000E+00	2.7407E-08

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:02

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Exclusion Area Boundary Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		3.1577E-03	2.2396E-01	2.3328E-01
Accumulated dose (rem)		4.2445E-03	3.0208E-01	3.1449E-01

Low Population Zone Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.9965E-04	1.4160E-02	1.4749E-02
Accumulated dose (rem)		3.4590E-04	2.4673E-02	2.5677E-02



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Control Room Doses:

Time (h) =	8.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		3.6951E-05	7.8143E-02	8.0237E-02	1.4777E-03
Accumulated dose (rem)		5.6351E-05	1.2006E-01	1.2323E-01	2.2542E-03

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.8215E+01	2.6028E-04	1.4725E+02	1.9614E+16	5.5681E-04	1.1783E-01	3.9464E-02
Sr-89	2.7969E-01	2.4717E-05	2.2518E+00	2.9994E+14	8.4677E-06	1.8020E-03	6.0348E-04
Sr-90	2.5931E-02	7.1665E-05	2.0834E-01	2.7751E+13	7.8330E-07	1.6672E-04	5.5834E-05
Sr-91	6.6434E-02	3.8843E-07	7.2384E-01	9.6586E+13	3.5270E-06	5.8048E-04	1.9467E-04
Sr-92	6.7401E-03	7.1666E-08	1.7749E-01	2.3786E+13	1.4713E-06	1.4296E-04	4.8145E-05
Y-90	4.3522E-02	7.9549E-07	3.5593E-01	4.7413E+13	1.3610E-06	2.8487E-04	9.5409E-05
Y-91	3.5334E+00	3.6796E-04	2.8443E+01	3.7886E+15	1.0713E-04	2.2761E-02	7.6226E-03
Y-92	2.6997E-02	8.9797E-08	3.6926E-01	4.9265E+13	1.9194E-06	2.9643E-04	9.9451E-05
Y-93	2.4334E-02	1.5189E-07	2.6018E-01	3.4713E+13	1.2493E-06	2.0862E-04	6.9958E-05
Zr-95	5.0319E+00	2.5770E-04	4.0500E+01	5.3946E+15	1.5252E-04	3.2409E-02	1.0854E-02
Zr-97	5.9190E-02	6.5908E-07	5.6242E-01	7.4988E+13	2.4548E-06	4.5062E-04	1.5102E-04
Nb-95	7.2764E+00	9.6166E-05	5.8519E+01	7.7947E+15	2.2022E-04	4.6828E-02	1.5683E-02
Mo-99	3.9897E+02	3.5740E-03	3.3433E+03	4.4544E+17	1.3070E-02	2.6762E+00	8.9644E-01
Tc-99m	3.8352E+02	8.0546E-05	3.2069E+03	4.2687E+17	1.2505E-02	2.5670E+00	8.5985E-01
Ru-103	4.1493E+00	8.1400E-05	3.3434E+01	4.4535E+15	1.2605E-04	2.6756E-02	8.9605E-03
Ru-105	5.8461E-03	2.1188E-08	9.3246E-02	1.2467E+13	5.9034E-07	7.4939E-05	2.5177E-05
Ru-106	6.9974E+00	7.1094E-03	5.6236E+01	7.4907E+15	2.1149E-04	4.5001E-02	1.5071E-02
Rh-105	1.3946E-01	3.1762E-07	1.2065E+00	1.6078E+14	4.8462E-06	9.6602E-04	3.2362E-04
Te-127	5.1386E+01	3.5321E-05	4.1575E+02	5.5345E+16	1.5751E-03	3.3271E-01	1.1143E-01
Te-127m	5.1565E+01	2.3615E-03	4.1472E+02	5.5242E+16	1.5608E-03	3.3187E-01	1.1115E-01
Te-129	4.7169E+01	1.1966E-05	3.8087E+02	5.0471E+16	1.4429E-03	3.0480E-01	1.0208E-01
Te-129m	7.2099E+01	3.6880E-03	5.8124E+02	7.7423E+16	2.1923E-03	4.6514E-01	1.5578E-01
Te-131m	1.0084E+01	1.6827E-04	8.8951E+01	1.1855E+16	3.6415E-04	7.1231E-02	2.3865E-02
Te-132	1.8823E+02	3.9611E-03	1.5670E+03	2.0876E+17	6.0890E-03	1.2543E+00	4.2012E-01
I-131	3.1587E-01	1.1607E-05	1.3246E+00	1.7503E+14	3.6970E-07	1.0522E-03	3.5086E-04
I-132	1.7570E+02	4.1001E-04	9.8906E+02	1.3064E+17	4.7193E-04	7.8806E-01	2.6285E-01



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I-133	5.6917E-02	6.9216E-07	4.2445E-01	5.6277E+13	3.4858E-07	3.3890E-04	1.1308E-04
I-134	1.2861E-02	9.2225E-07	2.3126E+00	3.0608E+14	1.0574E-05	1.8549E-03	6.2183E-04
Xe-133	2.2099E-03	3.4970E-11	8.0058E-03	1.0565E+12	3.6452E-10	6.3480E-06	2.1161E-06
Cs-134	6.9724E+03	6.9820E-01	5.6026E+04	7.4627E+18	2.1067E-01	4.4833E+01	1.5015E+01
Cs-136	4.5066E+02	8.1718E-03	3.6527E+03	4.8656E+17	1.3847E-02	2.9231E+00	9.7900E-01
Cs-137	3.8823E+03	2.6380E-01	3.1192E+04	4.1548E+18	1.1727E-01	2.4960E+01	8.3592E+00
Ba-139	7.4100E-04	4.1475E-09	8.0459E-02	1.0841E+13	1.0956E-06	6.5095E-05	2.2064E-05
Ba-140	3.9938E-01	3.2826E-06	3.2378E+00	4.3130E+14	1.2277E-05	2.5912E-03	8.6782E-04
La-140	5.7756E-01	7.6406E-06	4.7416E+00	6.3159E+14	1.8196E-05	3.7949E-03	1.2710E-03
La-141	6.8342E-03	1.9255E-08	1.1993E-01	1.6039E+13	7.9393E-07	9.6418E-05	3.2404E-05
La-142	1.9226E-04	7.1070E-09	1.5114E-02	2.0341E+12	1.8816E-07	1.2217E-05	4.1350E-06
Ce-141	3.0079E+00	5.7747E-05	2.4251E+01	3.2303E+15	9.1479E-05	1.9407E-02	6.4994E-03
Ce-143	1.2247E-01	1.0001E-06	1.0710E+00	1.4273E+14	4.3513E-06	8.5761E-04	2.8732E-04
Ce-144	8.8582E+00	7.0474E-03	7.1198E+01	9.4835E+15	2.6778E-04	5.6974E-02	1.9081E-02
Pr-143	1.3858E+00	2.4080E-05	1.1219E+01	1.4945E+15	4.2486E-05	8.9786E-03	3.0070E-03
Rb-89	1.6534E-09	5.7091E-07	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	4.2353E-02	3.6794E-08	4.5411E-01	6.0162E+13	2.0922E-06	3.6409E-04	1.2206E-04
Nb-95m	3.8900E-02	2.0502E-07	3.1348E-01	4.1754E+13	1.1820E-06	2.5086E-04	8.4014E-05
Nb-97	3.4486E-03	4.6326E-09	4.1737E-02	5.5601E+12	2.8518E-07	3.3524E-05	1.1270E-05
Rh-103m	4.1665E+00	4.6204E-08	3.3553E+01	4.4403E+15	1.2602E-04	2.6850E-02	8.9919E-03
Te-125m	5.1135E+00	7.9525E-05	4.1165E+01	5.4832E+15	1.5506E-04	3.2941E-02	1.1032E-02
Te-131	2.3016E+00	3.7921E-06	2.0661E+01	2.7164E+15	9.4964E-05	1.6554E-02	5.5495E-03
Te-133	6.8069E-04	4.3956E-08	2.8691E-01	3.7092E+13	2.8579E-06	2.2921E-04	7.7357E-05
Te-133m	3.9493E-03	9.1496E-07	2.1089E+00	2.8562E+14	3.9851E-05	1.7130E-03	5.8428E-04
Te-134	7.9962E-04	3.4570E-07	2.2679E+00	3.0866E+14	5.3673E-05	1.8497E-03	6.3446E-04
Xe-131m	3.5067E-05	1.0515E-13	9.6539E-05	1.2703E+10	1.9094E-12	7.6208E-08	2.5403E-08
Xe-133m	1.5378E-04	2.1572E-12	5.6234E-04	7.4212E+10	2.6067E-11	4.4595E-07	1.4866E-07
Cs-134m	6.2914E-01	2.1400E-07	1.5180E+01	2.0334E+15	1.2064E-04	1.2222E-02	4.1143E-03
Cs-138	2.3339E-03	1.9904E-05	5.4433E+01	7.4510E+15	1.5688E-03	4.4638E-02	1.5402E-02
Ba-141	1.0910E-10	5.1761E-10	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	1.2757E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.8517E-01	8.2040E+01	2.7475E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.0397E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.7893E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	5.0495E-10
Total I (Ci)	1.7609E+02
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.7832E-13



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RCS Compartment Group Inventory Distribution:

Time (h) =	8.0000	Atmosphere	Sump
Noble gases (Ci)		2.3988E-03	0.0000E+00
Elemental I (Ci)		1.7081E+02	0.0000E+00
Organic I (Ci)		5.2827E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		1.2581E+04	0.0000E+00
All Aerosols (kg)		5.0011E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	1.1647E-01	2.5977E-04	4.7009E-01	6.2618E+13	6.3754E-04	1.1783E-01
Sr-89	1.7884E-03	2.4704E-05	7.1996E-03	9.5900E+11	9.7633E-06	1.8020E-03
Sr-90	1.6581E-04	7.1672E-05	6.6651E-04	8.8780E+10	9.0381E-07	1.6672E-04
Sr-91	4.2480E-04	3.5075E-07	2.0909E-03	2.7901E+11	2.8525E-06	5.8048E-04
Sr-92	4.3098E-05	4.8709E-08	3.8590E-04	5.1729E+10	5.3585E-07	1.4296E-04
Y-90	2.7829E-04	7.9079E-07	1.1319E-03	1.5077E+11	1.5354E-06	2.8487E-04
Y-91	2.2594E-02	3.6776E-04	9.0935E-02	1.2113E+13	1.2332E-04	2.2761E-02
Y-92	1.7262E-04	7.6872E-08	1.0112E-03	1.3501E+11	1.3847E-06	2.9643E-04
Y-93	1.5560E-04	1.3803E-07	7.5629E-04	1.0091E+11	1.0314E-06	2.0862E-04
Zr-95	3.2175E-02	2.5757E-04	1.2949E-01	1.7248E+13	1.7560E-04	3.2409E-02
Zr-97	3.7848E-04	6.2302E-07	1.7007E-03	2.2676E+11	2.3139E-06	4.5062E-04
Nb-95	4.6527E-02	9.6143E-05	1.8715E-01	2.4928E+13	2.5379E-04	4.6828E-02
Mo-99	2.5512E+00	3.5241E-03	1.0546E+01	1.4050E+15	1.4312E-02	2.6762E+00
Tc-99m	2.4523E+00	7.9487E-05	1.0124E+01	1.3476E+15	1.3739E-02	2.5670E+00
Ru-103	2.6532E-02	8.1328E-05	1.0686E-01	1.4234E+13	1.4491E-04	2.6756E-02
Ru-105	3.7382E-05	1.6875E-08	2.3756E-04	3.1766E+10	3.2657E-07	7.4939E-05
Ru-106	4.4743E-02	7.1094E-03	1.7989E-01	2.3962E+13	2.4394E-04	4.5001E-02
Rh-105	8.9172E-04	3.0995E-07	3.7662E-03	5.0189E+11	5.1146E-06	9.6602E-04
Te-127	3.2858E-01	3.5235E-05	1.3267E+00	1.7661E+14	1.7993E-03	3.3271E-01
Te-127m	3.2972E-01	2.3609E-03	1.3263E+00	1.7667E+14	1.7986E-03	3.3187E-01
Te-129	3.0161E-01	1.1942E-05	1.2159E+00	1.6116E+14	1.6490E-03	3.0480E-01
Te-129m	4.6102E-01	3.6841E-03	1.8574E+00	2.4741E+14	2.5188E-03	4.6514E-01
Te-131m	6.4481E-02	1.6308E-04	2.7578E-01	3.6755E+13	3.7466E-04	7.1231E-02
Te-132	1.2036E+00	3.9145E-03	4.9535E+00	6.5996E+14	6.7219E-03	1.2543E+00



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I-131	2.0197E-03	1.5316E-05	5.5910E-03	7.4037E+11	7.4746E-06	1.0522E-03
I-132	1.1235E+00	4.9832E-04	3.8454E+00	5.0941E+14	5.1693E-03	7.8806E-01
I-133	3.6394E-04	7.6467E-07	1.5000E-03	1.9963E+11	2.0277E-06	3.3890E-04
I-134	8.2236E-05	5.0550E-07	4.0548E-03	5.4425E+11	5.7640E-06	1.8549E-03
Xe-133	1.4131E-05	4.9004E-11	3.5887E-05	4.7453E+09	4.7824E-08	6.3480E-06
Cs-134	4.4584E+01	6.9823E-01	1.7923E+02	2.3873E+16	2.4304E-01	4.4833E+01
Cs-136	2.8817E+00	8.1485E-03	1.1651E+01	1.5520E+15	1.5802E-02	2.9231E+00
Cs-137	2.4825E+01	2.6383E-01	9.9789E+01	1.3292E+16	1.3532E-01	2.4960E+01
Ba-139	4.7382E-06	1.9050E-09	1.1822E-04	1.5942E+10	1.6889E-07	6.5095E-05
Ba-140	2.5538E-03	3.2730E-06	1.0327E-02	1.3756E+12	1.4006E-05	2.5912E-03
La-140	3.6931E-03	7.5856E-06	1.5058E-02	2.0059E+12	2.0429E-05	3.7949E-03
La-141	4.3700E-05	1.4890E-08	2.9668E-04	3.9689E+10	4.0860E-07	9.6418E-05
La-142	1.2294E-06	3.5418E-09	2.4094E-05	3.2450E+09	3.4201E-08	1.2217E-05
Ce-141	1.9233E-02	5.7685E-05	7.7492E-02	1.0322E+13	1.0509E-04	1.9407E-02
Ce-143	7.8310E-04	9.7212E-07	3.3301E-03	4.4380E+11	4.5234E-06	8.5761E-04
Ce-144	5.6642E-02	7.0471E-03	2.2774E-01	3.0336E+13	3.0883E-04	5.6974E-02
Pr-143	8.8609E-03	2.4020E-05	3.5801E-02	4.7689E+12	4.8554E-05	8.9786E-03
Rb-89	1.0572E-11	5.2055E-08	5.4035E-04	7.6388E+10	8.9650E-07	1.5700E-03
Y-91m	2.7082E-04	3.3594E-08	1.3263E-03	1.7583E+11	1.8086E-06	3.6409E-04
Nb-95m	2.4874E-04	2.0484E-07	1.0019E-03	1.3344E+11	1.3586E-06	2.5086E-04
Nb-97	2.2051E-05	3.8173E-09	1.1002E-04	1.4633E+10	1.5070E-07	3.3524E-05
Rh-103m	2.6642E-02	4.6184E-08	1.0729E-01	1.4202E+13	1.4549E-04	2.6850E-02
Te-125m	3.2697E-02	7.9480E-05	1.3161E-01	1.7530E+13	1.7847E-04	3.2941E-02
Te-131	1.4717E-02	3.6220E-06	6.3127E-02	8.2997E+12	8.5803E-05	1.6554E-02
Te-133	4.3525E-06	1.7345E-08	3.6216E-04	4.7800E+10	5.2918E-07	2.2921E-04
Te-133m	2.5253E-05	2.9887E-07	2.2035E-03	2.9889E+11	3.2434E-06	1.7130E-03
Te-134	5.1130E-06	8.6150E-08	1.8079E-03	2.4658E+11	2.7329E-06	1.8497E-03
Xe-133m	9.8332E-07	3.0168E-12	2.5157E-06	3.3266E+08	3.3531E-09	4.4595E-07
Cs-134m	4.0229E-03	1.4943E-07	3.3907E-02	4.5432E+12	4.6999E-05	1.2222E-02
Cs-138	1.4924E-05	3.8274E-06	3.3484E-02	4.5966E+12	5.1971E-05	4.4638E-02
Ba-141	6.9763E-13	5.6581E-11	1.3130E-06	1.8394E+08	2.1469E-09	3.1462E-06
Total	8.1572E+01	1.0000E+00	0.0000E+00	0.0000E+00	4.4488E-01	8.2040E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.0593E-12
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.8230E-12
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	5.1448E-12
Total I (Ci)	1.1260E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.8168E-15



Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	8.0000	Atmosphere	Sump
Noble gases (Ci)		1.5338E-05	0.0000E+00
Elemental I (Ci)		1.0922E+00	0.0000E+00
Organic I (Ci)		3.3779E-02	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		8.0446E+01	0.0000E+00
All Aerosols (kg)		3.1978E-04	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	5.9075E-07	2.6040E-04	5.5211E-06	7.3543E+08	2.8806E-05	9.3451E-06	2.6297E-05	6.0449E-06
Y-91	1.1460E-07	3.6796E-04	1.0660E-06	1.4199E+08	5.5880E-06	1.8030E-06	5.0777E-06	1.1672E-06
Zr-95	1.6320E-07	2.5770E-04	1.5179E-06	2.0218E+08	7.9578E-06	2.5672E-06	7.2302E-06	1.6618E-06
Nb-95	2.3599E-07	9.6157E-05	2.1930E-06	2.9210E+08	1.1507E-05	3.7086E-06	1.0446E-05	2.4070E-06
Mo-99	1.2940E-05	3.5895E-03	1.2585E-04	1.6767E+10	6.3097E-04	2.1431E-04	5.9906E-04	1.3786E-04
Tc-99m	1.2439E-05	8.0873E-05	1.2068E-04	1.6063E+10	6.0652E-04	2.0541E-04	5.7448E-04	1.9520E-04
Ru-103	1.3457E-07	8.1409E-05	1.2532E-06	1.6693E+08	6.5621E-06	2.1200E-06	5.9695E-06	1.3721E-06
Ru-106	2.2694E-07	7.1082E-03	2.1073E-06	2.8069E+08	1.1066E-05	3.5633E-06	1.0038E-05	2.3070E-06
Te-127	1.6666E-06	3.5344E-05	1.5592E-05	2.0756E+09	8.1266E-05	2.6400E-05	7.4262E-05	2.2577E-05
Te-127m	1.6724E-06	2.3613E-03	1.5542E-05	2.0702E+09	8.1549E-05	2.6284E-05	7.4033E-05	1.7015E-05
Te-129	1.5298E-06	1.1973E-05	1.4283E-05	1.8925E+09	7.4596E-05	2.4186E-05	6.8029E-05	5.7101E-05
Te-129m	2.3384E-06	3.6886E-03	2.1788E-05	2.9022E+09	1.1402E-04	3.6861E-05	1.0378E-04	2.3854E-05
Te-131m	3.2706E-07	1.6994E-04	3.3668E-06	4.4871E+08	1.5948E-05	5.7837E-06	1.6013E-05	3.6909E-06
Te-132	6.1049E-06	3.9755E-03	5.8941E-05	7.8526E+09	2.9769E-04	1.0026E-04	2.8060E-04	6.4561E-05
I-132	8.3248E-06	5.3903E-04	4.8733E-05	6.4617E+09	3.0871E-04	1.3848E-04	1.6391E-04	1.4085E-04
I-134	6.1924E-10	1.4478E-06	1.3607E-07	1.8053E+07	2.5064E-08	3.8829E-07	4.6012E-07	9.4147E-07
Cs-134	2.2613E-04	6.9807E-01	2.0994E-03	2.7964E+11	1.1027E-02	3.5498E-03	1.0001E-02	2.2984E-03
Cs-136	1.4616E-05	8.1779E-03	1.3700E-04	1.8249E+10	7.1271E-04	2.3199E-04	6.5251E-04	1.5000E-04
Cs-137	1.2592E-04	2.6375E-01	1.1688E-03	1.5568E+11	6.1398E-03	1.9762E-03	5.5676E-03	1.2796E-03
La-140	1.8732E-08	7.6572E-06	1.7809E-07	2.3722E+07	9.1339E-07	3.0225E-07	8.4804E-07	2.0530E-07
Ce-141	9.7553E-08	5.7758E-05	9.0905E-07	1.2109E+08	4.7569E-06	1.5380E-06	4.3301E-06	9.9530E-07
Ce-144	2.8730E-07	7.0463E-03	2.6679E-06	3.5537E+08	1.4009E-05	4.5114E-06	1.2709E-05	2.9208E-06
Pr-143	4.4944E-08	2.4095E-05	4.2075E-07	5.6046E+07	2.1915E-06	7.1235E-07	2.0040E-06	4.6112E-07



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Rh-103m	1.3513E-07	4.6196E-08	1.2573E-06	1.6636E+08	6.5892E-06	2.1250E-06	5.9893E-06	5.9127E-06
Te-125m	1.6585E-07	7.9527E-05	1.5428E-06	2.0550E+08	8.0869E-06	2.6095E-06	7.3490E-06	1.6891E-06
Te-131	7.4648E-08	3.8662E-06	7.8945E-07	1.0380E+08	3.6400E-06	1.4056E-06	3.7445E-06	7.1421E-06
Cs-134m	2.0405E-08	2.3896E-07	6.3525E-07	8.5084E+07	9.9496E-07	1.2800E-06	2.9676E-06	7.0498E-07
Cs-138	7.5695E-11	2.9976E-05	3.0724E-06	4.2023E+08	3.6910E-09	1.1172E-05	1.3306E-05	3.5793E-06
Total	4.1639E-04	1.0000E+00	0.0000E+00	0.0000E+00	2.0206E-02	6.5876E-03	1.8297E-02	4.4319E-03

Control Room Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	1.0816E-08	0.0000E+00
Elemental I (Ci)	8.0930E-06	0.0000E+00
Organic I (Ci)	2.5030E-07	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	4.0804E-04	0.0000E+00
All Aerosols (kg)	1.6220E-09	0.0000E+00

Time (h) = 8.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	3.0016E-04
Organic I (Ci)	0.0000E+00	9.2833E-06
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	1.9896E-02
All Aerosols (kg)	0.0000E+00	7.9091E-08

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:03

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Exclusion Area Boundary Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	8.3978E-03	3.0304E-01	3.2221E-01
Accumulated dose (rem)	1.2642E-02	6.0512E-01	6.3670E-01



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Low Population Zone Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	3.6436E-04	1.3148E-02	1.3980E-02
Accumulated dose (rem)	7.1026E-04	3.7821E-02	3.9657E-02

Control Room Doses:

Time (h) = 24.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	3.9691E-05	8.2856E-02	8.5684E-02	1.5864E-03
Accumulated dose (rem)	9.6041E-05	2.0291E-01	2.0891E-01	3.8406E-03

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.7467E+01	2.5732E-04	4.3258E+02	5.7627E+16	5.5681E-04	3.4733E-01	1.1596E-01
Sr-89	2.7243E-01	2.4628E-05	6.6678E+00	8.8818E+14	8.4677E-06	5.3530E-03	1.7872E-03
Sr-90	2.5489E-02	7.1726E-05	6.1965E-01	8.2537E+13	7.8330E-07	4.9743E-04	1.6607E-04
Sr-91	2.0321E-02	2.4247E-07	1.3428E+00	1.7954E+14	3.5270E-06	1.0844E-03	3.6263E-04
Sr-92	1.1064E-04	2.7571E-08	2.0293E-01	2.7223E+13	1.4713E-06	1.6402E-04	5.5165E-05
Y-90	4.0031E-02	7.6954E-07	1.0232E+00	1.3633E+14	1.3610E-06	8.2183E-04	2.7440E-04
Y-91	3.4463E+00	3.6685E-04	8.4270E+01	1.1225E+16	1.0713E-04	6.7652E-02	2.2587E-02
Y-92	1.7396E-03	4.2670E-08	5.2143E-01	6.9770E+13	1.9194E-06	4.2172E-04	1.4121E-04
Y-93	7.9780E-03	9.6937E-08	4.9344E-01	6.5968E+13	1.2493E-06	3.9841E-04	1.3322E-04
Zr-95	4.9107E+00	2.5700E-04	1.2003E+02	1.5988E+16	1.5252E-04	9.6357E-02	3.2170E-02
Zr-97	3.0186E-02	4.9251E-07	1.2489E+00	1.6678E+14	2.4548E-06	1.0067E-03	3.3640E-04
Nb-95	7.1236E+00	9.6054E-05	1.7370E+02	2.3137E+16	2.2022E-04	1.3944E-01	4.6555E-02
Mo-99	3.3153E+02	3.2966E-03	9.1642E+03	1.2216E+18	1.3070E-02	7.3659E+00	2.4597E+00
Tc-99m	3.1965E+02	7.4484E-05	8.8129E+03	1.1737E+18	1.2505E-02	7.0835E+00	2.3653E+00
Ru-103	4.0311E+00	8.0994E-05	9.8862E+01	1.3169E+16	1.2605E-04	7.9370E-02	2.6499E-02
Ru-105	4.7274E-04	9.7142E-09	1.2705E-01	1.7020E+13	5.9034E-07	1.0273E-04	3.4441E-05
Ru-106	6.8698E+00	7.1111E-03	1.6716E+02	2.2266E+16	2.1149E-04	1.3419E-01	4.4800E-02
Rh-105	1.0071E-01	2.7543E-07	3.1091E+00	4.1467E+14	4.8462E-06	2.5014E-03	8.3542E-04
Te-127	4.9724E+01	3.4979E-05	1.2235E+03	1.6288E+17	1.5751E-03	9.8231E-01	3.2796E-01
Te-127m	5.0474E+01	2.3586E-03	1.2309E+03	1.6396E+17	1.5608E-03	9.8815E-01	3.2991E-01



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Te-129	4.5731E+01	1.1881E-05	1.1239E+03	1.4895E+17	1.4429E-03	9.0229E-01	3.0124E-01
Te-129m	6.9905E+01	3.6659E-03	1.7170E+03	2.2871E+17	2.1923E-03	1.3785E+00	4.6022E-01
Te-131m	6.8493E+00	1.4160E-04	2.2245E+02	2.9676E+16	3.6415E-04	1.7904E-01	5.9801E-02
Te-132	1.6057E+02	3.6993E-03	4.3489E+03	5.7963E+17	6.0890E-03	3.4948E+00	1.1670E+00
I-131	7.5667E-01	3.0189E-05	1.0238E+01	1.3561E+15	3.6970E-07	8.1513E-03	2.7172E-03
I-132	1.6570E+02	5.3037E-04	3.8020E+03	5.0459E+17	4.7193E-04	3.0522E+00	1.0176E+00
I-133	3.2937E-02	6.1717E-07	1.1247E+00	1.4983E+14	3.4858E-07	9.0538E-04	3.0191E-04
I-134	4.9970E-08	3.1258E-07	2.3293E+00	3.0835E+14	1.0574E-05	1.8689E-03	6.2650E-04
Xe-133	5.5601E-03	1.0825E-10	7.3647E-02	9.7543E+12	3.6452E-10	5.8627E-05	1.9542E-05
Cs-134	6.8496E+03	6.9859E-01	1.6659E+05	2.2190E+19	2.1067E-01	1.3373E+02	4.4647E+01
Cs-136	4.2764E+02	8.0367E-03	1.0675E+04	1.4222E+18	1.3847E-02	8.5721E+00	2.8620E+00
Cs-137	3.8162E+03	2.6403E-01	9.2772E+04	1.2357E+19	1.1727E-01	7.4474E+01	2.4864E+01
Ba-139	2.3332E-07	1.4207E-09	8.1902E-02	1.1037E+13	1.0956E-06	6.6299E-05	2.2465E-05
Ba-140	3.7861E-01	3.2268E-06	9.4582E+00	1.2600E+15	1.2277E-05	7.5949E-03	2.5357E-03
La-140	5.2382E-01	7.3389E-06	1.3534E+01	1.8032E+15	1.8196E-05	1.0871E-02	3.6299E-03
La-141	3.9964E-04	8.4148E-09	1.5575E-01	2.0869E+13	7.9393E-07	1.2593E-04	4.2240E-05
La-142	1.4198E-07	2.4578E-09	1.5532E-02	2.0909E+12	1.8816E-07	1.2566E-05	4.2513E-06
Ce-141	2.9150E+00	5.7390E-05	7.1621E+01	9.5406E+15	9.1479E-05	5.7501E-02	1.9198E-02
Ce-143	8.6025E-02	8.5421E-07	2.7184E+00	3.6260E+14	4.3513E-06	2.1874E-03	7.3060E-04
Ce-144	8.6935E+00	7.0477E-03	2.1159E+02	2.8184E+16	2.6778E-04	1.6986E-01	5.6709E-02
Pr-143	1.3200E+00	2.3730E-05	3.2856E+01	4.3770E+15	4.2486E-05	2.6382E-02	8.8082E-03
Rb-89	1.5794E-28	1.9211E-07	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	1.2958E-02	2.3142E-08	8.4877E-01	1.1272E+14	2.0922E-06	6.8539E-04	2.2916E-04
Nb-95m	3.7789E-02	2.0398E-07	9.2681E-01	1.2345E+14	1.1820E-06	7.4408E-04	2.4842E-04
Nb-97	1.7306E-03	3.0325E-09	8.1191E-02	1.0812E+13	2.8518E-07	6.5487E-05	2.1924E-05
Rh-103m	4.0479E+00	4.5992E-08	9.9253E+01	1.3138E+16	1.2602E-04	7.9684E-02	2.6603E-02
Te-125m	4.9867E+00	7.9278E-05	1.2195E+02	1.6244E+16	1.5506E-04	9.7903E-02	3.2686E-02
Te-131	1.5634E+00	3.1582E-06	5.1134E+01	6.7291E+15	9.4964E-05	4.1162E-02	1.3752E-02
Te-133	4.0665E-09	1.4837E-08	2.8780E-01	3.7210E+13	2.8579E-06	2.2996E-04	7.7605E-05
Te-133m	2.3587E-08	3.0864E-07	2.1140E+00	2.8632E+14	3.9851E-05	1.7173E-03	5.8572E-04
Te-134	9.5902E-11	1.1637E-07	2.2687E+00	3.0877E+14	5.3673E-05	1.8504E-03	6.3468E-04
Xe-131m	2.6636E-04	8.4197E-13	2.2972E-03	3.0228E+11	1.9094E-12	1.8061E-06	6.0202E-07
Xe-133m	3.6033E-04	6.3915E-12	4.9514E-03	6.5605E+11	2.6067E-11	3.9449E-06	1.3150E-06
Cs-134m	1.3503E-02	8.4005E-08	1.7707E+01	2.3749E+15	1.2064E-04	1.4313E-02	4.8113E-03
Cs-138	2.4312E-12	6.6979E-06	5.4435E+01	7.4512E+15	1.5688E-03	4.4639E-02	1.5403E-02
Ba-141	1.6212E-26	1.7418E-10	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	1.2363E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.8517E-01	2.4365E+02	8.1345E+01



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Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.3255E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	2.0321E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	5.1053E-10
Total I (Ci)	1.6649E+02
Dose Equivalent (Ci/cc) Xe-133 (EDE)	4.5024E-13

RCS Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	6.1868E-03	0.0000E+00
Elemental I (Ci)	1.6150E+02	0.0000E+00
Organic I (Ci)	4.9947E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.2197E+04	0.0000E+00
All Aerosols (kg)	4.9155E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	3.3815E-01	2.5581E-04	4.1514E+00	5.5306E+14	2.7471E-03	3.4733E-01
Sr-89	5.2741E-03	2.4583E-05	6.4249E-02	8.5584E+12	4.2448E-05	5.3530E-03
Sr-90	4.9346E-04	7.1757E-05	5.9843E-03	7.9710E+11	3.9501E-06	4.9743E-04
Sr-91	3.9341E-04	1.7430E-07	9.3180E-03	1.2485E+12	7.0526E-06	1.0844E-03
Sr-92	2.1420E-06	8.7772E-09	6.2361E-04	8.3950E+10	6.7702E-07	1.6402E-04
Y-90	7.7498E-04	7.5654E-07	9.7107E-03	1.2939E+12	6.4541E-06	8.2183E-04
Y-91	6.6720E-02	3.6629E-04	8.1224E-01	1.0820E+14	5.3656E-04	6.7652E-02
Y-92	3.3677E-05	2.1837E-08	2.5760E-03	3.4635E+11	2.3073E-06	4.2172E-04
Y-93	1.5445E-04	7.1161E-08	3.4967E-03	4.6840E+11	2.6228E-06	3.9841E-04
Zr-95	9.5070E-02	2.5664E-04	1.1570E+00	1.5412E+14	7.6429E-04	9.6357E-02
Zr-97	5.8439E-04	4.1203E-07	1.0086E-02	1.3484E+12	7.1584E-06	1.0067E-03
Nb-95	1.3791E-01	9.5998E-05	1.6758E+00	2.2322E+14	1.1066E-03	1.3944E-01
Mo-99	6.4183E+00	3.1575E-03	8.4732E+01	1.1298E+16	5.6905E-02	7.3659E+00
Tc-99m	6.1883E+00	7.1433E-05	8.1589E+01	1.0869E+16	5.4769E-02	7.0835E+00
Ru-103	7.8041E-02	8.0788E-05	9.5192E-01	1.2680E+14	6.2909E-04	7.9370E-02
Ru-105	9.1522E-06	4.6765E-09	5.9041E-04	7.9388E+10	5.3420E-07	1.0273E-04
Ru-106	1.3300E-01	7.1120E-03	1.6138E+00	2.1496E+14	1.0654E-03	1.3419E-01
Rh-105	1.9498E-03	2.5441E-07	2.7723E-02	3.6994E+12	1.8894E-05	2.5014E-03



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Te-127	9.6265E-01	3.4818E-05	1.1757E+01	1.5652E+15	7.7752E-03	9.8231E-01
Te-127m	9.7717E-01	2.3571E-03	1.1875E+01	1.5818E+15	7.8417E-03	9.8815E-01
Te-129	8.8533E-01	1.1839E-05	1.0811E+01	1.4329E+15	7.1464E-03	9.0229E-01
Te-129m	1.3533E+00	3.6548E-03	1.6524E+01	2.2012E+15	1.0922E-02	1.3785E+00
Te-131m	1.3260E-01	1.2844E-04	1.9478E+00	2.6001E+14	1.3372E-03	1.7904E-01
Te-132	3.1085E+00	3.5678E-03	4.0488E+01	5.3976E+15	2.7117E-02	3.4948E+00
I-131	1.4649E-02	3.9309E-05	1.2868E-01	1.7052E+13	7.7316E-05	8.1513E-03
I-132	3.2079E+00	5.7811E-04	4.0006E+01	5.3173E+15	2.5912E-02	3.0522E+00
I-133	6.3765E-04	5.7682E-07	1.0147E-02	1.3554E+12	7.0156E-06	9.0538E-04
I-134	9.6740E-10	5.8099E-08	4.1793E-03	5.6122E+11	5.8390E-06	1.8689E-03
Xe-133	1.0764E-04	1.4373E-10	9.4396E-04	1.2508E+11	5.6310E-07	5.8627E-05
Cs-134	1.3261E+02	6.9880E-01	1.6086E+03	2.1426E+17	1.0619E+00	1.3373E+02
Cs-136	8.2791E+00	7.9683E-03	1.0217E+02	1.3612E+16	6.7683E-02	8.5721E+00
Cs-137	7.3880E+01	2.6414E-01	8.9595E+02	1.1934E+17	5.9140E-01	7.4474E+01
Ba-139	4.5170E-09	2.3318E-10	1.2977E-04	1.7513E+10	1.7581E-07	6.6299E-05
Ba-140	7.3297E-03	3.1985E-06	9.0503E-02	1.2058E+13	5.9958E-05	7.5949E-03
La-140	1.0141E-02	7.1879E-06	1.2796E-01	1.7051E+13	8.5174E-05	1.0871E-02
La-141	7.7369E-06	3.7018E-09	6.6141E-04	8.8971E+10	6.2373E-07	1.2593E-04
La-142	2.7487E-09	4.5115E-10	2.7522E-05	3.7112E+09	3.6252E-08	1.2566E-05
Ce-141	5.6434E-02	5.7208E-05	6.8920E-01	9.1809E+13	4.5558E-04	5.7501E-02
Ce-143	1.6654E-03	7.8200E-07	2.4023E-02	3.2062E+12	1.6430E-05	2.1874E-03
Ce-144	1.6830E-01	7.0480E-03	2.0426E+00	2.7208E+14	1.3485E-03	1.6986E-01
Pr-143	2.5554E-02	2.3552E-05	3.1479E-01	4.1938E+13	2.0844E-04	2.6382E-02
Rb-89	3.0578E-30	5.8047E-09	5.4035E-04	7.6388E+10	8.9650E-07	1.5700E-03
Y-91m	2.5086E-04	1.6762E-08	5.9347E-03	7.9013E+11	4.4868E-06	6.8539E-04
Nb-95m	7.3158E-04	2.0345E-07	8.9236E-03	1.1886E+12	5.8974E-06	7.4408E-04
Nb-97	3.3504E-05	2.2886E-09	5.9151E-04	7.8752E+10	4.2888E-07	6.5487E-05
Rh-103m	7.8366E-02	4.5884E-08	9.5587E-01	1.2655E+14	6.3168E-04	7.9684E-02
Te-125m	9.6541E-02	7.9153E-05	1.1754E+00	1.5657E+14	7.7646E-04	9.7903E-02
Te-131	3.0268E-02	2.8458E-06	4.4479E-01	5.8569E+13	3.0551E-04	4.1162E-02
Te-133	7.8726E-11	1.9695E-09	3.6879E-04	4.8685E+10	5.3317E-07	2.2996E-04
Te-133m	4.5664E-10	3.3908E-08	2.2420E-03	3.0413E+11	3.2665E-06	1.7173E-03
Te-134	1.8566E-12	9.6366E-09	1.8135E-03	2.4735E+11	2.7363E-06	1.8504E-03
Xe-131m	5.1566E-06	1.2550E-12	3.3054E-05	4.3500E+09	1.8865E-08	1.8061E-06
Xe-133m	6.9758E-06	8.4131E-12	6.2916E-05	8.3406E+09	3.7661E-08	3.9449E-06
Cs-134m	2.6142E-04	2.8466E-08	5.7922E-02	7.7968E+12	6.1245E-05	1.4313E-02
Cs-138	4.7068E-14	4.2696E-07	3.3496E-02	4.5983E+12	5.1978E-05	4.4639E-02
Ba-141	3.1386E-28	6.3093E-12	1.3130E-06	1.8394E+08	2.1469E-09	3.1462E-06



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Total	2.3935E+02	1.0000E+00	0.0000E+00	0.0000E+00	1.9317E+00	2.4365E+02
Dose Equivalent (Ci/cc) I-131 (Thyroid)					4.0887E-12	
Dose Equivalent (Ci/cc) I-131 (CEDE)					6.2686E-12	
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)					1.5749E-11	
Total I (Ci)					3.2232E+00	
Dose Equivalent (Ci/cc) Xe-133 (EDE)					1.3889E-14	

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	1.1978E-04	0.0000E+00
Elemental I (Ci)	3.1265E+00	0.0000E+00
Organic I (Ci)	9.6696E-02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.3613E+02	0.0000E+00
All Aerosols (kg)	9.5162E-04	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	2.2913E-07	2.5850E-04	9.2984E-06	1.2387E+09	4.7736E-05	1.4548E-05	4.4751E-05	1.0175E-05
Y-91	4.5208E-08	3.6724E-04	1.8050E-06	2.4043E+08	9.4185E-06	2.8208E-06	8.6875E-06	1.9769E-06
Zr-95	6.4418E-08	2.5724E-04	2.5705E-06	3.4240E+08	1.3421E-05	4.0171E-06	1.2372E-05	2.8124E-06
Nb-95	9.3446E-08	9.6081E-05	3.7176E-06	4.9519E+08	1.9468E-05	5.8084E-06	1.7893E-05	4.1031E-06
Mo-99	4.3489E-06	3.4123E-03	2.0297E-04	2.7050E+10	9.0604E-04	3.2062E-04	9.7612E-04	2.2233E-04
Tc-99m	4.1931E-06	7.7007E-05	1.9495E-04	2.5957E+10	8.7358E-04	3.0779E-04	9.3762E-04	5.7101E-04
Ru-103	5.2879E-08	8.1147E-05	2.1193E-06	2.8230E+08	1.1017E-05	3.3129E-06	1.0200E-05	2.3188E-06
Ru-106	9.0116E-08	7.1089E-03	3.5755E-06	4.7626E+08	1.8775E-05	5.5854E-06	1.7210E-05	3.9118E-06
Te-127	6.5227E-07	3.5120E-05	2.6285E-05	3.4991E+09	1.3589E-04	4.1128E-05	1.2650E-04	6.0996E-05
Te-127m	6.6211E-07	2.3593E-03	2.6345E-05	3.5092E+09	1.3794E-04	4.1163E-05	1.2680E-04	2.8824E-05
Te-129	5.9988E-07	1.1917E-05	2.4118E-05	3.1961E+09	1.2498E-04	3.7733E-05	1.1607E-04	2.6871E-04
Te-129m	9.1699E-07	3.6744E-03	3.6822E-05	4.9049E+09	1.9104E-04	5.7568E-05	1.7722E-04	4.0289E-05
Te-131m	8.9847E-08	1.5285E-04	5.1378E-06	6.8511E+08	1.8718E-05	8.2271E-06	2.4680E-05	5.6356E-06
Te-132	2.1063E-06	3.8083E-03	9.5793E-05	1.2765E+10	4.3882E-04	1.5106E-04	4.6075E-04	1.0491E-04
I-131	1.4729E-08	3.2915E-05	2.3883E-07	3.1682E+07	2.4079E-06	6.6378E-07	7.8660E-07	1.7574E-06
I-132	3.1550E-06	6.6946E-04	1.0268E-04	1.3704E+10	4.6810E-04	2.9195E-04	3.4597E-04	6.1403E-04



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I-134	9.7540E-16	8.5569E-07	1.3643E-07	1.8104E+07	1.7441E-13	3.8923E-07	4.6124E-07	2.6972E-06
Cs-134	8.9852E-05	6.9828E-01	3.5628E-03	4.7457E+11	1.8719E-02	5.5653E-03	1.7149E-02	3.8979E-03
Cs-136	5.6097E-06	8.0915E-03	2.2997E-04	3.0636E+10	1.1687E-03	3.6006E-04	1.1067E-03	2.5167E-04
Cs-137	5.0060E-05	2.6388E-01	1.9839E-03	2.6425E+11	1.0429E-02	3.0988E-03	9.5490E-03	2.1704E-03
Ba-140	4.9665E-09	3.2494E-06	2.0380E-07	2.7149E+07	1.0347E-06	3.1910E-07	9.8076E-07	2.2302E-07
La-140	6.8713E-09	7.4642E-06	2.9453E-07	3.9237E+07	1.4316E-06	4.6268E-07	1.4170E-06	3.8213E-07
Ce-141	3.8238E-08	5.7527E-05	1.5361E-06	2.0462E+08	7.9665E-06	2.4017E-06	7.3932E-06	1.6809E-06
Ce-144	1.1404E-07	7.0461E-03	4.5263E-06	6.0290E+08	2.3759E-05	7.0708E-06	2.1786E-05	4.9520E-06
Pr-143	1.7315E-08	2.3871E-05	7.0719E-07	9.4207E+07	3.6074E-06	1.1069E-06	3.4034E-06	7.7627E-07
Rh-103m	5.3099E-08	4.6064E-08	2.1270E-06	2.8150E+08	1.1063E-05	3.3228E-06	1.0238E-05	2.8848E-05
Te-125m	6.5414E-08	7.9365E-05	2.6122E-06	3.4795E+08	1.3628E-05	4.0823E-06	1.2573E-05	2.8580E-06
Te-131	2.0509E-08	3.4457E-06	1.1937E-06	1.5703E+08	4.2727E-06	1.9633E-06	5.7229E-06	3.5654E-05
Te-133	5.3343E-17	3.1887E-08	1.3234E-08	1.6927E+06	1.1113E-14	1.7775E-08	6.1481E-08	1.2206E-06
Cs-134m	1.7713E-10	1.4851E-07	6.6981E-07	8.9752E+07	3.6904E-08	1.3273E-06	3.1355E-06	7.4403E-07
Cs-138	3.1892E-20	1.7669E-05	3.0724E-06	4.2023E+08	6.6444E-18	1.1172E-05	1.3306E-05	3.5793E-06
Total	1.6318E-04	1.0000E+00	0.0000E+00	0.0000E+00	3.3803E-02	1.0354E-02	3.1292E-02	8.3495E-03

Control Room Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	1.3480E-08	0.0000E+00
Elemental I (Ci)	3.0753E-06	0.0000E+00
Organic I (Ci)	9.5111E-08	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.5999E-04	0.0000E+00
All Aerosols (kg)	6.4480E-10	0.0000E+00

Time (h) = 24.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	4.5652E-04
Organic I (Ci)	0.0000E+00	1.4119E-05
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	3.3333E-02
All Aerosols (kg)	0.0000E+00	1.3434E-07

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Exclusion Area Boundary Doses:

Time (h) =	96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)		1.2642E-02	6.0512E-01	6.3670E-01

Low Population Zone Doses:

Time (h) =	96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)		7.1026E-04	3.7821E-02	3.9657E-02

Control Room Doses:

Time (h) =	96.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		2.7517E-07	5.7319E-04	5.9616E-04	1.0995E-05
Accumulated dose (rem)		9.6317E-05	2.0349E-01	2.0951E-01	3.8516E-03

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	1.5625E+01 Atmosphere	2.4450E-04	1.6222E+03	2.1614E+17	5.5681E-04	3.4733E-01	1.1596E-01
Sr-89	2.6144E-01	2.4222E-05	2.5882E+01	3.4478E+15	8.4677E-06	5.3530E-03	1.7872E-03
Sr-90	2.5484E-02	7.1994E-05	2.4547E+00	3.2696E+14	7.8330E-07	4.9743E-04	1.6607E-04
Sr-91	1.0628E-04	7.3919E-08	1.6156E+00	2.1645E+14	3.5270E-06	1.0844E-03	3.6263E-04
Sr-92	1.1119E-12	7.0004E-09	2.0334E-01	2.7281E+13	1.4713E-06	1.6402E-04	5.5165E-05
Y-90	3.2156E-02	6.8290E-07	3.5836E+00	4.7760E+14	1.3610E-06	8.2183E-04	2.7440E-04
Y-91	3.3261E+00	3.6183E-04	3.2803E+02	4.3697E+16	1.0713E-04	6.7652E-02	2.2587E-02
Y-92	1.5808E-09	1.0999E-08	5.3045E-01	7.1011E+13	1.9194E-06	4.2172E-04	1.4121E-04
Y-93	5.7008E-05	3.0224E-08	6.0717E-01	8.1342E+13	1.2493E-06	3.9841E-04	1.3322E-04
Zr-95	4.7537E+00	2.5384E-04	4.6788E+02	6.2327E+16	1.5252E-04	9.6357E-02	3.2170E-02



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Zr-97	1.5751E-03	1.9385E-07	1.9401E+00	2.5969E+14	2.4548E-06	1.0067E-03	3.3640E-04
Nb-95	6.9921E+00	9.5538E-05	6.8184E+02	9.0826E+16	2.2022E-04	1.3944E-01	4.6555E-02
Mo-99	1.5564E+02	2.3580E-03	2.5870E+04	3.4523E+18	1.3070E-02	7.3659E+00	2.4597E+00
Tc-99m	1.5017E+02	5.3387E-05	2.4929E+04	3.3239E+18	1.2505E-02	7.0835E+00	2.3653E+00
Ru-103	3.8232E+00	7.9194E-05	3.8150E+02	5.0823E+16	1.2605E-04	7.9370E-02	2.6499E-02
Ru-105	6.2095E-09	2.5184E-09	1.2999E-01	1.7423E+13	5.9034E-07	1.0273E-04	3.4441E-05
Ru-106	6.8311E+00	7.1183E-03	6.6038E+02	8.7964E+16	2.1149E-04	1.3419E-01	4.4800E-02
Rh-105	2.4571E-02	1.5665E-07	6.9787E+00	9.3246E+14	4.8462E-06	2.5014E-03	8.3542E-04
Te-127	4.8536E+01	3.4443E-05	4.7547E+03	6.3299E+17	1.5751E-03	9.8231E-01	3.2796E-01
Te-127m	4.9520E+01	2.3452E-03	4.8304E+03	6.4344E+17	1.5608E-03	9.8815E-01	3.2991E-01
Te-129	4.2986E+01	1.1561E-05	4.3160E+03	5.7212E+17	1.4429E-03	9.0229E-01	3.0124E-01
Te-129m	6.5710E+01	3.5687E-03	6.5965E+03	8.7881E+17	2.1923E-03	1.3785E+00	4.6022E-01
Te-131m	1.2977E+00	7.4427E-05	4.6144E+02	6.1681E+16	3.6415E-04	1.7904E-01	5.9801E-02
Te-132	8.4819E+01	2.7754E-03	1.2877E+04	1.7179E+18	6.0890E-03	3.4948E+00	1.1670E+00
I-131	1.3212E+00	7.0420E-05	9.4247E+01	1.2528E+16	3.6970E-07	8.1513E-03	2.7172E-03
I-132	8.7609E+01	4.4570E-04	1.2610E+04	1.6774E+18	4.7193E-04	3.0522E+00	1.0176E+00
I-133	2.9899E-03	2.8038E-07	2.0165E+00	2.6953E+14	3.4858E-07	9.0538E-04	3.0191E-04
I-134	9.5184E-33	7.9202E-08	2.3293E+00	3.0835E+14	1.0574E-05	1.8689E-03	6.2650E-04
Xe-133	7.5543E-03	2.2842E-10	6.1331E-01	8.1577E+13	3.6452E-10	5.8627E-05	1.9542E-05
Cs-134	6.8307E+03	7.0031E-01	6.5908E+05	8.7790E+19	2.1067E-01	1.3373E+02	4.4647E+01
Cs-136	3.6487E+02	7.4644E-03	3.9131E+04	5.2145E+18	1.3847E-02	8.5721E+00	2.8620E+00
Cs-137	3.8154E+03	2.6502E-01	3.6751E+05	4.8952E+19	1.1727E-01	7.4474E+01	2.4864E+01
Ba-139	4.3958E-23	3.5998E-10	8.1902E-02	1.1037E+13	1.0956E-06	6.6299E-05	2.2465E-05
Ba-140	3.2159E-01	2.9906E-06	3.4596E+01	4.6102E+15	1.2277E-05	7.5949E-03	2.5357E-03
La-140	3.9583E-01	6.3332E-06	4.6095E+01	6.1439E+15	1.8196E-05	1.0871E-02	3.6299E-03
La-141	1.2207E-09	2.1622E-09	1.5795E-01	2.1171E+13	7.9393E-07	1.2593E-04	4.2240E-05
La-142	1.2397E-21	6.2277E-10	1.5533E-02	2.0909E+12	1.8816E-07	1.2566E-05	4.2513E-06
Ce-141	2.7343E+00	5.5811E-05	2.7489E+02	3.6621E+16	9.1479E-05	5.7501E-02	1.9198E-02
Ce-143	1.8960E-02	4.6941E-07	5.8957E+00	7.8790E+14	4.3513E-06	2.1874E-03	7.3060E-04
Ce-144	8.6301E+00	7.0490E-03	8.3522E+02	1.1125E+17	2.6778E-04	1.6986E-01	5.6709E-02
Pr-143	1.1385E+00	2.2181E-05	1.2121E+02	1.6152E+16	4.2486E-05	2.6382E-02	8.8082E-03
Rb-89	4.3915E-114	4.8678E-08	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	6.7770E-05	7.0654E-09	1.0227E+00	1.3611E+14	2.0922E-06	6.8539E-04	2.2916E-04
Nb-95m	3.6030E-02	1.9973E-07	3.5816E+00	4.7710E+14	1.1820E-06	7.4408E-04	2.4842E-04
Nb-97	9.0303E-05	1.1434E-09	1.2082E-01	1.6115E+13	2.8518E-07	6.5487E-05	2.1924E-05
Rh-103m	3.8392E+00	4.4977E-08	3.8307E+02	5.0717E+16	1.2602E-04	7.9684E-02	2.6603E-02
Te-125m	4.8111E+00	7.8174E-05	4.7459E+02	6.3222E+16	1.5506E-04	9.7903E-02	3.2686E-02
Te-131	2.9621E-01	1.6539E-06	1.0569E+02	1.3936E+16	9.4964E-05	4.1162E-02	1.3752E-02



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Te-133	1.3658E-32	3.7594E-09	2.8780E-01	3.7210E+13	2.8579E-06	2.2996E-04	7.7605E-05
Te-133m	7.9223E-32	7.8203E-08	2.1140E+00	2.8632E+14	3.9851E-05	1.7173E-03	5.8572E-04
Te-134	7.4232E-42	2.9486E-08	2.2687E+00	3.0877E+14	5.3673E-05	1.8504E-03	6.3468E-04
Xe-131m	2.3102E-03	8.5147E-12	9.1684E-02	1.2140E+13	1.9094E-12	1.8061E-06	6.0202E-07
Xe-133m	3.2465E-04	1.1024E-11	3.3705E-02	4.4874E+12	2.6067E-11	3.9449E-06	1.3150E-06
Cs-134m	4.5352E-10	2.1351E-08	1.7762E+01	2.3824E+15	1.2064E-04	1.4313E-02	4.8113E-03
Cs-138	9.9815E-53	1.6971E-06	5.4435E+01	7.4512E+15	1.5688E-03	4.4639E-02	1.5403E-02
Ba-141	1.0407E-97	4.4133E-11	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	1.1763E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.8517E-01	2.4365E+02	8.1345E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.3968E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.7704E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	3.3942E-10
Total I (Ci)	8.8934E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	6.3755E-13

RCS Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	1.0189E-02	0.0000E+00
Elemental I (Ci)	8.6266E+01	0.0000E+00
Organic I (Ci)	2.6680E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.1674E+04	0.0000E+00
All Aerosols (kg)	4.9130E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5	Pathway 6
					Outflow	Inflow
Rb-86	3.0250E-01	2.4242E-04	2.7182E+01	3.6219E+15	2.7471E-03	3.4733E-01
Sr-89	5.0614E-03	2.4157E-05	4.3622E-01	5.8112E+13	4.2448E-05	5.3530E-03
Sr-90	4.9337E-04	7.2038E-05	4.1510E-02	5.5292E+12	3.9501E-06	4.9743E-04
Sr-91	2.0576E-06	3.9525E-08	1.4599E-02	1.9630E+12	7.0526E-06	1.0844E-03
Sr-92	2.1526E-14	1.2867E-09	6.3165E-04	8.5066E+10	6.7702E-07	1.6402E-04
Y-90	6.2253E-04	6.6841E-07	5.9279E-02	7.9009E+12	6.4541E-06	8.2183E-04
Y-91	6.4393E-02	3.6102E-04	5.5313E+00	7.3685E+14	5.3656E-04	6.7652E-02
Y-92	3.0603E-11	3.3746E-09	2.7506E-03	3.7038E+11	2.3073E-06	4.2172E-04



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Y-93	1.1037E-06	1.6784E-08	5.6986E-03	7.6603E+11	2.6228E-06	3.9841E-04
Zr-95	9.2030E-02	2.5333E-04	7.8913E+00	1.0512E+15	7.6429E-04	9.6357E-02
Zr-97	3.0493E-05	1.3874E-07	2.3467E-02	3.1473E+12	7.1584E-06	1.0067E-03
Nb-95	1.3537E-01	9.5455E-05	1.1513E+01	1.5337E+15	1.1066E-03	1.3944E-01
Mo-99	3.0132E+00	2.2012E-03	4.0815E+02	5.4485E+16	5.6905E-02	7.3659E+00
Tc-99m	2.9072E+00	4.9875E-05	3.9360E+02	5.2497E+16	5.4769E-02	7.0835E+00
Ru-103	7.4017E-02	7.8902E-05	6.4237E+00	8.5578E+14	6.2909E-04	7.9370E-02
Ru-105	1.2021E-10	7.4214E-10	6.4738E-04	8.7197E+10	5.3420E-07	1.0273E-04
Ru-106	1.3225E-01	7.1195E-03	1.1162E+01	1.4869E+15	1.0654E-03	1.3419E-01
Rh-105	4.7569E-04	1.3632E-07	1.0264E-01	1.3724E+13	1.8894E-05	2.5014E-03
Te-127	9.3965E-01	3.4341E-05	8.0120E+01	1.0666E+16	7.7752E-03	9.8231E-01
Te-127m	9.5870E-01	2.3431E-03	8.1559E+01	1.0864E+16	7.8417E-03	9.8815E-01
Te-129	8.3220E-01	1.1508E-05	7.2609E+01	9.6254E+15	7.1464E-03	9.0229E-01
Te-129m	1.2721E+00	3.5529E-03	1.1099E+02	1.4787E+16	1.0922E-02	1.3785E+00
Te-131m	2.5123E-02	6.2746E-05	6.5745E+00	8.7961E+14	1.3372E-03	1.7904E-01
Te-132	1.6421E+00	2.6219E-03	2.0558E+02	2.7435E+16	2.7117E-02	3.4948E+00
I-131	2.5579E-02	7.7594E-05	1.7551E+00	2.3334E+14	7.7316E-05	8.1513E-03
I-132	1.6961E+00	4.4029E-04	2.1052E+02	2.8023E+16	2.5912E-02	3.0522E+00
I-133	5.7883E-05	2.2553E-07	2.7412E-02	3.6727E+12	7.0156E-06	9.0538E-04
I-134	1.8427E-34	8.4087E-09	4.1793E-03	5.6122E+11	5.8390E-06	1.8689E-03
Xe-133	1.4625E-04	2.5104E-10	1.1392E-02	1.5155E+12	5.6310E-07	5.8627E-05
Cs-134	1.3224E+02	7.0059E-01	1.1143E+04	1.4843E+18	1.0619E+00	1.3373E+02
Cs-136	7.0639E+00	7.3712E-03	6.5307E+02	8.7031E+16	6.7683E-02	8.5721E+00
Cs-137	7.3866E+01	2.6518E-01	6.2148E+03	8.2781E+17	5.9140E-01	7.4474E+01
Ba-139	8.5102E-25	3.3750E-11	1.2977E-04	1.7514E+10	1.7581E-07	6.6299E-05
Ba-140	6.2259E-03	2.9521E-06	5.7716E-01	7.6915E+13	5.9958E-05	7.5949E-03
La-140	7.6631E-03	6.1650E-06	7.5833E-01	1.0108E+14	8.5174E-05	1.0871E-02
La-141	2.3633E-11	5.7019E-10	7.0393E-04	9.4814E+10	6.2373E-07	1.2593E-04
La-142	2.4000E-23	6.5307E-11	2.7528E-05	3.7120E+09	3.6252E-08	1.2566E-05
Ce-141	5.2936E-02	5.5555E-05	4.6243E+00	6.1608E+14	4.5558E-04	5.7501E-02
Ce-143	3.6705E-04	4.0296E-07	8.5534E-02	1.1440E+13	1.6430E-05	2.1874E-03
Ce-144	1.6708E-01	7.0492E-03	1.4116E+01	1.8803E+15	1.3485E-03	1.6986E-01
Pr-143	2.2041E-02	2.1930E-05	2.0253E+00	2.6989E+14	2.0844E-04	2.6382E-02
Rb-89	8.5018-116	8.4011E-10	5.4035E-04	7.6388E+10	8.9650E-07	1.5700E-03
Y-91m	1.3120E-06	3.8026E-09	9.3024E-03	1.2428E+12	4.4868E-06	6.8539E-04
Nb-95m	6.9752E-04	1.9903E-07	6.0319E-02	8.0352E+12	5.8974E-06	7.4408E-04
Nb-97	1.7482E-06	7.6079E-10	1.3586E-03	1.8142E+11	4.2888E-07	6.5487E-05
Rh-103m	7.4325E-02	4.4814E-08	6.4505E+00	8.5406E+14	6.3168E-04	7.9684E-02



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Te-125m	9.3141E-02	7.7996E-05	8.0024E+00	1.0660E+15	7.7646E-04	9.7903E-02
Te-131	5.7346E-03	1.3898E-06	1.5009E+00	1.9809E+14	3.0551E-04	4.1162E-02
Te-133	2.6442E-34	2.8505E-10	3.6879E-04	4.8685E+10	5.3317E-07	2.2996E-04
Te-133m	1.5337E-33	4.9075E-09	2.2420E-03	3.0413E+11	3.2665E-06	1.7173E-03
Te-134	1.4371E-43	1.3947E-09	1.8135E-03	2.4735E+11	2.7363E-06	1.8504E-03
Xe-131m	4.4725E-05	9.6911E-12	1.7636E-03	2.3352E+11	1.8865E-08	1.8061E-06
Xe-133m	6.2851E-06	1.1991E-11	6.1957E-04	8.2514E+10	3.7661E-08	3.9449E-06
Cs-134m	8.7800E-12	4.1946E-09	5.8974E-02	7.9425E+12	6.1245E-05	1.4313E-02
Cs-138	1.9324E-54	6.1793E-08	3.3496E-02	4.5983E+12	5.1978E-05	4.4639E-02
Ba-141	2.0148E-99	9.1314E-13	1.3130E-06	1.8394E+08	2.1469E-09	3.1462E-06
Total	2.2772E+02	1.0000E+00	0.0000E+00	0.0000E+00	1.9317E+00	2.4365E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	4.3089E-12
Dose Equivalent (Ci/cc) I-131 (CEDE)	5.4611E-12
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.0470E-11
Total I (Ci)	1.7217E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.9667E-14

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	1.9726E-04	0.0000E+00
Elemental I (Ci)	1.6701E+00	0.0000E+00
Organic I (Ci)	5.1652E-02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.2600E+02	0.0000E+00
All Aerosols (kg)	9.5114E-04	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	1.0106-205	2.5849E-04	9.3132E-06	1.2406E+09	4.2906E-05	1.4548E-05	4.4751E-05	1.0222E-05
Y-91	2.1513-206	3.6723E-04	1.8079E-06	2.4081E+08	9.1334E-06	2.8208E-06	8.6875E-06	2.0248E-06
Zr-95	3.0747-206	2.5724E-04	2.5747E-06	3.4295E+08	1.3053E-05	4.0171E-06	1.2372E-05	2.8257E-06
Nb-95	4.5225-206	9.6080E-05	3.7236E-06	4.9599E+08	1.9200E-05	5.8084E-06	1.7893E-05	4.2902E-06
Mo-99	1.0067-204	3.4115E-03	2.0325E-04	2.7087E+10	4.2738E-04	3.2062E-04	9.7612E-04	2.2323E-04
Tc-99m	9.7129-205	7.6988E-05	1.9522E-04	2.5993E+10	4.1236E-04	3.0779E-04	9.3762E-04	2.1929E-03



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Ru-103	2.4729-206	8.1145E-05	2.1227E-06	2.8275E+08	1.0498E-05	3.3129E-06	1.0200E-05	2.3297E-06
Ru-106	4.4184-206	7.1089E-03	3.5813E-06	4.7703E+08	1.8758E-05	5.5854E-06	1.7210E-05	3.9304E-06
Te-127	3.1393-205	3.5120E-05	2.6327E-05	3.5047E+09	1.3328E-04	4.1128E-05	1.2650E-04	2.1200E-04
Te-127m	3.2030-205	2.3593E-03	2.6388E-05	3.5149E+09	1.3598E-04	4.1163E-05	1.2680E-04	2.8961E-05
Te-129	2.7803-205	1.1916E-05	2.4157E-05	3.2012E+09	1.1804E-04	3.7733E-05	1.1607E-04	1.4008E-03
Te-129m	4.2501-205	3.6743E-03	3.6881E-05	4.9127E+09	1.8044E-04	5.7568E-05	1.7722E-04	4.0478E-05
Te-131m	8.3935-207	1.5278E-04	5.1435E-06	6.8587E+08	3.5634E-06	8.2271E-06	2.4680E-05	5.6541E-06
Te-132	5.4861-205	3.8075E-03	9.5928E-05	1.2783E+10	2.3291E-04	1.5106E-04	4.6075E-04	1.0535E-04
I-131	2.6388-200	3.3002E-05	2.3985E-07	3.1817E+07	3.8941E-06	6.6378E-07	7.8660E-07	3.1161E-05
I-132	1.9550-204	6.6974E-04	1.0289E-04	1.3732E+10	2.4057E-04	2.9195E-04	3.4597E-04	2.9004E-03
I-133	1.2408-202	9.1424E-07	3.5705E-08	4.7489E+06	1.1167E-08	9.9254E-08	1.1763E-07	8.0900E-06
I-134	3.9295-232	8.5431E-07	1.3643E-07	1.8104E+07	3.3350E-38	3.8923E-07	4.6124E-07	1.0596E-05
Cs-134	4.4181-203	6.9828E-01	3.5686E-03	4.7534E+11	1.8757E-02	5.5653E-03	1.7149E-02	3.9164E-03
Cs-136	2.3600-204	8.0911E-03	2.3033E-04	3.0684E+10	1.0019E-03	3.6006E-04	1.1067E-03	2.5282E-04
Cs-137	2.4678-203	2.6388E-01	1.9871E-03	2.6468E+11	1.0477E-02	3.0988E-03	9.5490E-03	2.1808E-03
Ba-140	2.0800-207	3.2493E-06	2.0411E-07	2.7191E+07	8.8307E-07	3.1910E-07	9.8076E-07	2.2405E-07
La-140	2.5602-207	7.4632E-06	2.9497E-07	3.9296E+07	1.0869E-06	4.6268E-07	1.4170E-06	6.6119E-07
Ce-141	1.7686-206	5.7526E-05	1.5386E-06	2.0495E+08	7.5084E-06	2.4017E-06	7.3932E-06	1.6893E-06
Ce-144	5.5820-206	7.0461E-03	4.5336E-06	6.0388E+08	2.3698E-05	7.0708E-06	2.1786E-05	4.9755E-06
Pr-143	7.3638-207	2.3870E-05	7.0830E-07	9.4356E+07	3.1263E-06	1.1069E-06	3.4034E-06	7.9037E-07
Y-91m	4.3834-211	2.8951E-08	2.2756E-08	3.0176E+06	1.8609E-10	3.7922E-08	1.0877E-07	1.7711E-06
Rh-103m	2.4832-206	4.6063E-08	2.1304E-06	2.8195E+08	1.0542E-05	3.3228E-06	1.0238E-05	1.5280E-04
Te-125m	3.1118-206	7.9364E-05	2.6164E-06	3.4851E+08	1.3211E-05	4.0823E-06	1.2573E-05	2.8715E-06
Te-131	1.9159-207	3.4439E-06	1.1950E-06	1.5721E+08	8.1339E-07	1.9633E-06	5.7229E-06	1.8597E-04
Te-133	8.8343-239	3.1835E-08	1.3234E-08	1.6927E+06	3.7506E-38	1.7775E-08	6.1481E-08	4.9999E-06
Cs-134m	2.9333-216	1.4827E-07	6.6982E-07	8.9753E+07	1.2453E-15	1.3273E-06	3.1355E-06	7.4407E-07
Cs-138	6.4560-259	1.7640E-05	3.0724E-06	4.2023E+08	2.7409E-58	1.1172E-05	1.3306E-05	3.5793E-06
Total	2.3596E-09	1.0000E+00	0.0000E+00	0.0000E+00	3.2300E-02	1.0355E-02	3.1292E-02	1.3898E-02

ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:10

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Exclusion Area Boundary Doses:

Time (h) = 720.0000 Whole Body Thyroid TEDE



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Delta dose (rem) 0.0000E+00 0.0000E+00 0.0000E+00
 Accumulated dose (rem) 1.2642E-02 6.0512E-01 6.3670E-01

Low Population Zone Doses:

Time (h) = 720.0000 Whole Body Thyroid TEDE
 Delta dose (rem) 0.0000E+00 0.0000E+00 0.0000E+00
 Accumulated dose (rem) 7.1026E-04 3.7821E-02 3.9657E-02

Control Room Doses:

Time (h) = 720.0000 Whole Body Thyroid TEDE Skin
 Delta dose (rem) 2.0748E-11 2.7538E-198 2.0748E-11 6.7926E-09
 Accumulated dose (rem) 9.6317E-05 2.0349E-01 2.0951E-01 3.8516E-03

RCS Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 1 Outflow	Pathway 6 Outflow	Pathway 7 Outflow
Rb-86	5.9481E+00	1.6153E-04	7.8720E+03	1.0489E+18	5.5681E-04	3.4733E-01	1.1596E-01
Sr-89	1.8297E-01	2.0777E-05	1.6306E+02	2.1723E+16	8.4677E-06	5.3530E-03	1.7872E-03
Sr-90	2.5441E-02	7.3246E-05	1.8343E+01	2.4433E+15	7.8330E-07	4.9743E-04	1.6607E-04
Sr-91	1.7928E-24	1.0073E-08	1.6170E+00	2.1664E+14	3.5270E-06	1.0844E-03	3.6263E-04
Sr-92	5.3879E-82	9.5307E-10	2.0334E-01	2.7281E+13	1.4713E-06	1.6402E-04	5.5165E-05
Y-90	2.5457E-02	5.2123E-07	2.0091E+01	2.6764E+15	1.3610E-06	8.2183E-04	2.7440E-04
Y-91	2.4444E+00	3.1748E-04	2.1141E+03	2.8163E+17	1.0713E-04	6.7652E-02	2.2587E-02
Y-92	1.3707E-62	1.4974E-09	5.3045E-01	7.1011E+13	1.9194E-06	4.2172E-04	1.4121E-04
Y-93	1.4376E-23	4.1203E-09	6.0799E-01	8.1452E+13	1.2493E-06	3.9841E-04	1.3322E-04
Zr-95	3.5867E+00	2.2549E-04	3.0527E+03	4.0667E+17	1.5252E-04	9.6357E-02	3.2170E-02
Zr-97	1.2088E-14	2.6909E-08	1.9781E+00	2.6481E+14	2.4548E-06	1.0067E-03	3.3640E-04
Nb-95	5.8301E+00	8.9318E-05	4.6821E+03	6.2370E+17	2.2022E-04	1.3944E-01	4.6555E-02
Mo-99	2.2183E-01	5.0418E-04	4.0630E+04	5.4235E+18	1.3070E-02	7.3659E+00	2.4597E+00
Tc-99m	2.1403E-01	1.1420E-05	3.9170E+04	5.2241E+18	1.2505E-02	7.0835E+00	2.3653E+00
Ru-103	2.4164E+00	6.4846E-05	2.2945E+03	3.0568E+17	1.2605E-04	7.9370E-02	2.6499E-02
Ru-105	3.0629E-51	3.4287E-10	1.2999E-01	1.7423E+13	5.9034E-07	1.0273E-04	3.4441E-05
Ru-106	6.5048E+00	7.0739E-03	4.8203E+03	6.4207E+17	2.1149E-04	1.3419E-01	4.4800E-02



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Rh-105	1.1971E-07	2.5138E-08	8.2260E+00	1.0994E+15	4.8462E-06	2.5014E-03	8.3542E-04
Te-127	4.1139E+01	3.2217E-05	3.2668E+04	4.3489E+18	1.5751E-03	9.8231E-01	3.2796E-01
Te-127m	4.1974E+01	2.2018E-03	3.3310E+04	4.4372E+18	1.5608E-03	9.8815E-01	3.2991E-01
Te-129	2.5141E+01	9.1435E-06	2.5072E+04	3.3237E+18	1.4429E-03	9.0229E-01	3.0124E-01
Te-129m	3.8432E+01	2.8228E-03	3.8325E+04	5.1059E+18	2.1923E-03	1.3785E+00	4.6022E-01
Te-131m	7.1080E-07	1.1359E-05	5.1728E+02	6.9162E+16	3.6415E-04	1.7904E-01	5.9801E-02
Te-132	3.3606E-01	6.5692E-04	2.2387E+04	2.9875E+18	6.0890E-03	3.4948E+00	1.1670E+00
I-131	1.6592E-01	4.8007E-05	4.7192E+02	6.2873E+16	3.6970E-07	8.1513E-03	2.7172E-03
I-132	3.4711E-01	1.0795E-04	2.2433E+04	2.9856E+18	4.7193E-04	3.0522E+00	1.0176E+00
I-133	2.7845E-12	3.9856E-08	2.1055E+00	2.8148E+14	3.4858E-07	9.0538E-04	3.0191E-04
I-134	5.1204-247	1.0783E-08	2.3293E+00	3.0835E+14	1.0574E-05	1.8689E-03	6.2650E-04
Xe-133	2.7005E-04	1.0388E-10	2.0487E+00	2.7301E+14	3.6452E-10	5.8627E-05	1.9542E-05
Cs-134	6.6691E+03	7.0462E-01	4.8708E+06	6.4879E+20	2.1067E-01	1.3373E+02	4.4647E+01
Cs-136	9.2189E+01	4.2266E-03	1.6275E+05	2.1689E+19	1.3847E-02	8.5721E+00	2.8620E+00
Cs-137	3.8092E+03	2.6963E-01	2.7464E+06	3.6582E+20	1.1727E-01	7.4474E+01	2.4864E+01
Ba-139	2.2937-159	4.9009E-11	8.1902E-02	1.1037E+13	1.0956E-06	6.6299E-05	2.2465E-05
Ba-140	7.8155E-02	1.6702E-06	1.4192E+02	1.8914E+16	1.2277E-05	7.5949E-03	2.5357E-03
La-140	9.0023E-02	3.2021E-06	1.7118E+02	2.2814E+16	1.8196E-05	1.0871E-02	3.6299E-03
La-141	1.9475E-57	2.9437E-10	1.5795E-01	2.1171E+13	7.9393E-07	1.2593E-04	4.2240E-05
La-142	1.7758-143	8.4787E-11	1.5533E-02	2.0909E+12	1.8816E-07	1.2566E-05	4.2513E-06
Ce-141	1.5705E+00	4.3794E-05	1.5843E+03	2.1108E+17	9.1479E-05	5.7501E-02	1.9198E-02
Ce-143	3.8515E-08	7.3642E-08	6.7936E+00	9.0813E+14	4.3513E-06	2.1874E-03	7.3060E-04
Ce-144	8.1000E+00	6.9552E-03	6.0531E+03	8.0630E+17	2.6778E-04	1.6986E-01	5.6709E-02
Pr-143	3.0196E-01	1.2823E-05	5.1467E+02	6.8588E+16	4.2486E-05	2.6382E-02	8.8082E-03
Rb-89	0.0000E+00	6.6273E-09	1.8526E+00	2.6032E+14	8.6193E-05	1.5700E-03	5.5207E-04
Y-91m	1.1432E-24	9.6278E-10	1.0236E+00	1.3623E+14	2.0922E-06	6.8539E-04	2.2916E-04
Nb-95m	2.6615E-02	1.7350E-07	2.2853E+01	3.0442E+15	1.1820E-06	7.4408E-04	2.4842E-04
Nb-97	6.9302E-16	1.5847E-10	1.2299E-01	1.6407E+13	2.8518E-07	6.5487E-05	2.1924E-05
Rh-103m	2.4265E+00	3.6830E-08	2.3040E+03	3.0506E+17	1.2602E-04	7.9684E-02	2.6603E-02
Te-125m	3.5261E+00	6.8505E-05	3.0547E+03	4.0694E+17	1.5506E-04	9.7903E-02	3.2686E-02
Te-131	1.6225E-07	2.5233E-07	1.1843E+02	1.5620E+16	9.4964E-05	4.1162E-02	1.3752E-02
Te-133	4.9618-236	5.1182E-10	2.8780E-01	3.7210E+13	2.8579E-06	2.2996E-04	7.7605E-05
Te-133m	2.8780-235	1.0647E-08	2.1140E+00	2.8632E+14	3.9851E-05	1.7173E-03	5.8572E-04
Te-134	1.7374-311	4.0144E-09	2.2687E+00	3.0877E+14	5.3673E-05	1.8504E-03	6.3468E-04
Xe-131m	4.5404E-03	4.2595E-11	3.3688E+00	4.4857E+14	1.9094E-12	1.8061E-06	6.0202E-07
Xe-133m	1.0101E-07	2.7080E-12	6.0813E-02	8.1090E+12	2.6067E-11	3.9449E-06	1.3150E-06
Cs-134m	7.6426E-75	2.9068E-09	1.7762E+01	2.3824E+15	1.2064E-04	1.4313E-02	4.8113E-03
Cs-138	0.0000E+00	2.3105E-07	5.4435E+01	7.4512E+15	1.5688E-03	4.4639E-02	1.5403E-02



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Ba-141	0.0000E+00	6.0085E-12	3.7550E-03	5.2337E+11	1.5747E-07	3.1462E-06	1.1012E-06
Total	1.0762E+04	1.0000E+00	0.0000E+00	0.0000E+00	3.8517E-01	2.4365E+02	8.1345E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.2727E-11
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.2875E-11
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.3518E-11
Total I (Ci)	5.1303E-01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.0624E-13

RCS Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	4.8105E-03	0.0000E+00
Elemental I (Ci)	4.9764E-01	0.0000E+00
Organic I (Ci)	1.5391E-02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	1.0761E+04	0.0000E+00
All Aerosols (kg)	4.8926E-02	0.0000E+00

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow	Pathway 6 Inflow
Rb-86	1.1515E-01	1.5982E-04	1.4818E+02	1.9745E+16	2.7471E-03	3.4733E-01
Sr-89	3.5423E-03	2.0708E-05	3.0920E+00	4.1192E+14	4.2448E-05	5.3530E-03
Sr-90	4.9253E-04	7.3273E-05	3.4911E-01	4.6501E+13	3.9501E-06	4.9743E-04
Sr-91	3.4708E-26	4.7893E-09	1.4627E-02	1.9667E+12	7.0526E-06	1.0844E-03
Sr-92	1.0431E-83	1.5561E-10	6.3165E-04	8.5066E+10	6.7702E-07	1.6402E-04
Y-90	4.9285E-04	5.1663E-07	3.7885E-01	5.0468E+13	6.4541E-06	8.2183E-04
Y-91	4.7323E-02	3.1661E-04	4.0109E+01	5.3432E+15	5.3656E-04	6.7652E-02
Y-92	2.6537E-64	4.0813E-10	2.7506E-03	3.7038E+11	2.3073E-06	4.2172E-04
Y-93	2.7832E-25	2.0356E-09	5.7144E-03	7.6817E+11	2.6228E-06	3.9841E-04
Zr-95	6.9438E-02	2.2493E-04	5.7933E+01	7.7176E+15	7.6429E-04	9.6357E-02
Zr-97	2.3402E-16	1.7305E-08	2.4202E-02	3.2463E+12	7.1584E-06	1.0067E-03
Nb-95	1.1287E-01	8.9198E-05	8.8958E+01	1.1850E+16	1.1066E-03	1.3944E-01
Mo-99	4.2946E-03	4.5260E-04	6.9390E+02	9.2646E+16	5.6905E-02	7.3659E+00
Tc-99m	4.1436E-03	1.0257E-05	6.6930E+02	8.9284E+16	5.4769E-02	7.0835E+00
Ru-103	4.6781E-02	6.4558E-05	4.3458E+01	5.7897E+15	6.2909E-04	7.9370E-02



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Ru-105	5.9298E-53	8.9755E-11	6.4738E-04	8.7197E+10	5.3420E-07	1.0273E-04
Ru-106	1.2593E-01	7.0732E-03	9.1697E+01	1.2214E+16	1.0654E-03	1.3419E-01
Rh-105	2.3176E-09	2.0365E-08	1.2678E-01	1.6956E+13	1.8894E-05	2.5014E-03
Te-127	7.9644E-01	3.2166E-05	6.2051E+02	8.2606E+16	7.7752E-03	9.8231E-01
Te-127m	8.1260E-01	2.1990E-03	6.3291E+02	8.4310E+16	7.8417E-03	9.8815E-01
Te-129	4.8673E-01	9.0946E-06	4.7444E+02	6.2895E+16	7.1464E-03	9.0229E-01
Te-129m	7.4403E-01	2.8077E-03	7.2524E+02	9.6622E+16	1.0922E-02	1.3785E+00
Te-131m	1.3761E-08	8.8364E-06	7.6556E+00	1.0244E+15	1.3372E-03	1.7904E-01
Te-132	6.5060E-03	6.0107E-04	3.8970E+02	5.2013E+16	2.7117E-02	3.4948E+00
I-131	3.2121E-03	4.8480E-05	9.0668E+00	1.2080E+15	7.7316E-05	8.1513E-03
I-132	6.7200E-03	1.0135E-04	4.0069E+02	5.3348E+16	2.5912E-02	3.0522E+00
I-133	5.3908E-14	2.8990E-08	2.9135E-02	3.9041E+12	7.0156E-06	9.0538E-04
I-134	9.9130-249	1.0170E-09	4.1793E-03	5.6122E+11	5.8390E-06	1.8689E-03
Xe-133	5.2282E-06	1.0442E-10	3.9180E-02	5.2216E+12	5.6310E-07	5.8627E-05
Cs-134	1.2911E+02	7.0473E-01	9.2681E+04	1.2345E+19	1.0619E+00	1.3373E+02
Cs-136	1.7848E+00	4.1584E-03	3.0463E+03	4.0598E+17	6.7683E-02	8.5721E+00
Cs-137	7.3744E+01	2.6973E-01	5.2269E+04	6.9623E+18	5.9140E-01	7.4474E+01
Ba-139	4.4406-161	4.0818E-12	1.2977E-04	1.7514E+10	1.7581E-07	6.6299E-05
Ba-140	1.5130E-03	1.6423E-06	2.6549E+00	3.5383E+14	5.9958E-05	7.5949E-03
La-140	1.7428E-03	3.1267E-06	3.1800E+00	4.2381E+14	8.5174E-05	1.0871E-02
La-141	3.7704E-59	6.8959E-11	7.0393E-04	9.4814E+10	6.2373E-07	1.2593E-04
La-142	3.4379-145	7.8983E-12	2.7528E-05	3.7120E+09	3.6252E-08	1.2566E-05
Ce-141	3.0404E-02	4.3551E-05	2.9975E+01	3.9935E+15	4.5558E-04	5.7501E-02
Ce-143	7.4564E-10	5.8640E-08	1.0292E-01	1.3767E+13	1.6430E-05	2.1874E-03
Ce-144	1.5681E-01	6.9536E-03	1.1513E+02	1.5336E+16	1.3485E-03	1.6986E-01
Pr-143	5.8459E-03	1.2628E-05	9.6425E+00	1.2850E+15	2.0844E-04	2.6382E-02
Rb-89	0.0000E+00	1.0160E-10	5.4035E-04	7.6388E+10	8.9650E-07	1.5700E-03
Y-91m	2.2132E-26	4.6076E-10	9.3200E-03	1.2452E+12	4.4868E-06	6.8539E-04
Nb-95m	5.1525E-04	1.7296E-07	4.3340E-01	5.7733E+13	5.8974E-06	7.4408E-04
Nb-97	1.3417E-17	9.4869E-11	1.4008E-03	1.8708E+11	4.2888E-07	6.5487E-05
Rh-103m	4.6976E-02	3.6667E-08	4.3639E+01	5.7781E+15	6.3168E-04	7.9684E-02
Te-125m	6.8265E-02	6.8314E-05	5.7954E+01	7.7204E+15	7.7646E-04	9.7903E-02
Te-131	3.1411E-09	1.9572E-07	1.7477E+00	2.3070E+14	3.0551E-04	4.1162E-02
Te-133	9.6058-238	3.4474E-11	3.6879E-04	4.8685E+10	5.3317E-07	2.2996E-04
Te-133m	5.5717-237	5.9352E-10	2.2420E-03	3.0413E+11	3.2665E-06	1.7173E-03
Te-134	3.3635-313	1.6868E-10	1.8135E-03	2.4735E+11	2.7363E-06	1.8504E-03
Xe-131m	8.7900E-05	4.3337E-11	6.5208E-02	8.6826E+12	1.8865E-08	1.8061E-06
Xe-133m	1.9556E-09	2.6785E-12	1.1444E-03	1.5263E+11	3.7661E-08	3.9449E-06



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Cs-134m	1.4796E-76	5.0730E-10	5.8974E-02	7.9425E+12	6.1245E-05	1.4313E-02
Cs-138	0.0000E+00	7.4733E-09	3.3496E-02	4.5983E+12	5.1978E-05	4.4639E-02
Ba-141	0.0000E+00	1.1044E-13	1.3130E-06	1.8394E+08	2.1469E-09	3.1462E-06
Total	2.0834E+02	1.0000E+00	0.0000E+00	0.0000E+00	1.9317E+00	2.4365E+02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	3.9258E-13
Dose Equivalent (Ci/cc) I-131 (CEDE)	3.9715E-13
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	4.1699E-13
Total I (Ci)	9.9321E-03
Dose Equivalent (Ci/cc) Xe-133 (EDE)	3.2772E-15

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	9.3130E-05	0.0000E+00
Elemental I (Ci)	9.6342E-03	0.0000E+00
Organic I (Ci)	2.9796E-04	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	2.0833E+02	0.0000E+00
All Aerosols (kg)	9.4720E-04	0.0000E+00

Environment Integral Nuclide Release (Ci): at Time (h) = 720.0000

Nuclide	Compartment Atmosphere	Dose Fract Pathway 1	Dose Fract Pathway 5	Dose Fract Pathway 7	Dose Fract Pathway 8
Rb-86	1.1927E-01	0.00000	0.00001	0.00025	0.00000
Sr-89	1.8381E-03	0.00000	0.00000	0.00002	0.00000
Sr-90	1.7080E-04	0.00000	0.00000	0.00007	0.00000
Sr-91	3.7321E-04	0.00000	0.00000	0.00000	0.00000
Sr-92	5.7313E-05	0.00000	0.00000	0.00000	0.00000
Y-90	2.8221E-04	0.00000	0.00000	0.00000	0.00000
Y-91	2.3230E-02	0.00000	0.00001	0.00036	0.00000
Y-92	1.4544E-04	0.00000	0.00000	0.00000	0.00000
Y-93	1.3709E-04	0.00000	0.00000	0.00000	0.00000
Zr-95	3.3087E-02	0.00000	0.00001	0.00025	0.00000
Zr-97	3.4601E-04	0.00000	0.00000	0.00000	0.00000
Nb-95	4.7882E-02	0.00000	0.00000	0.00009	0.00000
Mo-99	2.5296E+00	0.00004	0.00007	0.00327	0.00000



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Tc-99m	2.4326E+00	0.00000	0.00000	0.00007	0.00000
Ru-103	2.7254E-02	0.00000	0.00000	0.00008	0.00000
Ru-105	3.5565E-05	0.00000	0.00000	0.00000	0.00000
Ru-106	4.6077E-02	0.00008	0.00014	0.00689	0.00000
Rh-105	8.5916E-04	0.00000	0.00000	0.00000	0.00000
Te-127	3.3731E-01	0.00000	0.00000	0.00003	0.00000
Te-127m	3.3931E-01	0.00003	0.00005	0.00229	0.00000
Te-129	3.0983E-01	0.00000	0.00000	0.00001	0.00000
Te-129m	4.7333E-01	0.00004	0.00007	0.00356	0.00000
Te-131m	6.1502E-02	0.00000	0.00000	0.00014	0.00000
Te-132	1.2002E+00	0.00004	0.00007	0.00366	0.00000
I-131	2.7949E-03	0.00000	0.00000	0.00002	0.00000
I-132	1.0439E+00	0.00000	0.00001	0.00046	0.00000
I-133	3.0927E-04	0.00000	0.00000	0.00000	0.00000
I-134	6.4291E-04	0.00000	0.00000	0.00000	0.00000
Xe-133	5.8916E-04	0.00000	0.00000	0.00000	0.00000
Cs-134	4.5920E+01	0.00766	0.01408	0.67674	0.00000
Cs-136	2.9435E+00	0.00009	0.00016	0.00782	0.00000
Cs-137	2.5572E+01	0.00289	0.00532	0.25575	0.00000
Ba-139	2.3736E-05	0.00000	0.00000	0.00000	0.00000
Ba-140	2.6080E-03	0.00000	0.00000	0.00000	0.00000
La-140	3.7332E-03	0.00000	0.00000	0.00001	0.00000
La-141	4.3658E-05	0.00000	0.00000	0.00000	0.00000
La-142	4.4757E-06	0.00000	0.00000	0.00000	0.00000
Ce-141	1.9745E-02	0.00000	0.00000	0.00006	0.00000
Ce-143	7.5138E-04	0.00000	0.00000	0.00000	0.00000
Ce-144	5.8325E-02	0.00008	0.00014	0.00683	0.00000
Pr-143	9.0591E-03	0.00000	0.00000	0.00002	0.00000
Rb-89	6.3916E-04	0.00000	0.00000	0.00000	0.00000
Y-91m	2.3574E-04	0.00000	0.00000	0.00000	0.00000
Nb-95m	2.5550E-04	0.00000	0.00000	0.00000	0.00000
Nb-97	2.2638E-05	0.00000	0.00000	0.00000	0.00000
Rh-103m	2.7361E-02	0.00000	0.00000	0.00000	0.00000
Te-125m	3.3617E-02	0.00000	0.00000	0.00008	0.00000
Te-131	1.4153E-02	0.00000	0.00000	0.00000	0.00000
Te-133	8.0996E-05	0.00000	0.00000	0.00000	0.00000
Te-133m	6.2884E-04	0.00000	0.00000	0.00000	0.00000
Te-134	6.9109E-04	0.00000	0.00000	0.00000	0.00000



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Xe-131m	1.2777E-05	0.00000	0.00000	0.00000	0.00000
Xe-133m	4.2086E-05	0.00000	0.00000	0.00000	0.00000
Cs-134m	4.9932E-03	0.00000	0.00000	0.00000	0.00000
Cs-138	1.7023E-02	0.00000	0.00000	0.00002	0.00000
Ba-141	1.2608E-06	0.00000	0.00000	0.00000	0.00000

Environment Compartment Group Inventory Distribution:

	Total Release	Release Rate/s
Time (h) = 720.0000		
Noble gases (Ci)	6.4402E-04	2.4847E-10
Elemental I (Ci)	1.0163E+00	3.9207E-07
Organic I (Ci)	3.1431E-02	1.2126E-08
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	8.2614E+01	3.1873E-05

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
Rb-86	0.0000E+00	2.5849E-04	9.3132E-06	1.2406E+09	1.6333E-05	1.4548E-05	4.4751E-05	1.0222E-05
Y-91	0.0000E+00	3.6723E-04	1.8079E-06	2.4081E+08	6.7122E-06	2.8208E-06	8.6875E-06	4.4168E-06
Y-92	0.0000E+00	6.3089E-08	1.6523E-08	2.2065E+06	3.7640E-68	2.8846E-08	7.8519E-08	1.2391E-06
Zr-95	0.0000E+00	2.5724E-04	2.5747E-06	3.4295E+08	9.8490E-06	4.0171E-06	1.2372E-05	2.8257E-06
Nb-95	0.0000E+00	9.6080E-05	3.7236E-06	4.9599E+08	1.6009E-05	5.8084E-06	1.7893E-05	5.7724E-06
Mo-99	0.0000E+00	3.4115E-03	2.0325E-04	2.7087E+10	6.0914E-07	3.2062E-04	9.7612E-04	2.2323E-04
Tc-99m	0.0000E+00	7.6988E-05	1.9522E-04	2.5993E+10	5.8773E-07	3.0779E-04	9.3762E-04	1.6242E-02
Ru-103	0.0000E+00	8.1145E-05	2.1227E-06	2.8275E+08	6.6354E-06	3.3129E-06	1.0200E-05	2.3297E-06
Ru-106	0.0000E+00	7.1089E-03	3.5813E-06	4.7703E+08	1.7862E-05	5.5854E-06	1.7210E-05	3.9304E-06
Te-127	0.0000E+00	3.5120E-05	2.6327E-05	3.5047E+09	1.1297E-04	4.1128E-05	1.2650E-04	1.5195E-03
Te-127m	0.0000E+00	2.3593E-03	2.6388E-05	3.5149E+09	1.1526E-04	4.1163E-05	1.2680E-04	2.8961E-05
Te-129	0.0000E+00	1.1916E-05	2.4157E-05	3.2012E+09	6.9037E-05	3.7733E-05	1.1607E-04	1.1211E-02
Te-129m	0.0000E+00	3.6743E-03	3.6881E-05	4.9127E+09	1.0553E-04	5.7568E-05	1.7722E-04	4.0478E-05
Te-131m	0.0000E+00	1.5278E-04	5.1435E-06	6.8587E+08	1.9518E-12	8.2271E-06	2.4680E-05	5.6541E-06
Te-132	0.0000E+00	3.8075E-03	9.5928E-05	1.2783E+10	9.2280E-07	1.5106E-04	4.6075E-04	1.0535E-04
I-131	0.0000E+00	3.3002E-05	2.3985E-07	3.1817E+07	4.8388E-07	6.6378E-07	7.8660E-07	1.8921E-03
I-132	0.0000E+00	6.6974E-04	1.0289E-04	1.3732E+10	9.5316E-07	2.9195E-04	3.4597E-04	2.2710E-02
I-133	0.0000E+00	9.1424E-07	3.5705E-08	4.7489E+06	1.0400E-17	9.9254E-08	1.1763E-07	4.4264E-04



I-134	0.0000E+00	8.5431E-07	1.3643E-07	1.8104E+07	1.7941-252	3.8923E-07	4.6124E-07	7.9052E-05
Cs-134	0.0000E+00	6.9828E-01	3.5686E-03	4.7534E+11	1.8313E-02	5.5653E-03	1.7149E-02	3.9165E-03
Cs-136	0.0000E+00	8.0911E-03	2.3033E-04	3.0684E+10	2.5315E-04	3.6006E-04	1.1067E-03	2.5282E-04
Cs-137	0.0000E+00	2.6388E-01	1.9871E-03	2.6468E+11	1.0460E-02	3.0988E-03	9.5490E-03	2.1808E-03
Ba-140	0.0000E+00	3.2493E-06	2.0411E-07	2.7191E+07	2.1461E-07	3.1910E-07	9.8076E-07	2.2405E-07
La-140	0.0000E+00	7.4632E-06	2.9497E-07	3.9296E+07	2.4720E-07	4.6268E-07	1.4170E-06	3.0674E-06
Ce-141	0.0000E+00	5.7526E-05	1.5386E-06	2.0495E+08	4.3125E-06	2.4017E-06	7.3932E-06	1.7038E-06
Ce-144	0.0000E+00	7.0461E-03	4.5336E-06	6.0388E+08	2.2242E-05	7.0708E-06	2.1786E-05	4.9755E-06
Pr-143	0.0000E+00	2.3870E-05	7.0830E-07	9.4356E+07	8.2918E-07	1.1069E-06	3.4034E-06	8.8154E-07
Y-91m	0.0000E+00	2.8951E-08	2.2756E-08	3.0176E+06	3.1392E-30	3.7922E-08	1.0877E-07	1.3835E-05
Rh-103m	0.0000E+00	4.6063E-08	2.1304E-06	2.8195E+08	6.6631E-06	3.3228E-06	1.0238E-05	1.2269E-03
Te-125m	0.0000E+00	7.9364E-05	2.6164E-06	3.4851E+08	9.6826E-06	4.0823E-06	1.2573E-05	2.8715E-06
Te-131	0.0000E+00	3.4439E-06	1.1950E-06	1.5721E+08	4.4553E-13	1.9633E-06	5.7229E-06	1.4887E-03
Te-133	0.0000E+00	3.1835E-08	1.3234E-08	1.6927E+06	1.3625-241	1.7775E-08	6.1481E-08	3.7754E-05
Cs-134m	0.0000E+00	1.4827E-07	6.6982E-07	8.9753E+07	2.0986E-80	1.3273E-06	3.1355E-06	7.4407E-07
Cs-138	0.0000E+00	1.7640E-05	3.0724E-06	4.2023E+08	0.0000E+00	1.1172E-05	1.3306E-05	3.5793E-06
Total	1.9921E-10	1.0000E+00	0.0000E+00	0.0000E+00	2.9551E-02	1.0355E-02	3.1292E-02	6.3669E-02

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ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:10

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I-131 Summary

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Time (hr)	RCS	Intact Steam Generato	Environment
	I-131 (Curies)	I-131 (Curies)	I-131 (Curies)
0.000	4.6341E-07	1.7137E-15	0.0000E+00
0.019	8.9700E-04	1.2867E-08	1.8487E-09
0.111	5.0973E-03	4.1844E-07	6.9187E-08
0.250	1.1409E-02	2.1349E-06	3.9214E-07
0.472	2.1334E-02	7.5839E-06	1.4590E-06
0.472	2.1348E-02	7.5946E-06	1.4612E-06



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0.667	2.9960E-02	1.5166E-05	2.9166E-06
0.878	3.9192E-02	2.6496E-05	4.8288E-06
1.089	4.8311E-02	4.0845E-05	7.2597E-06
1.289	5.6897E-02	5.7248E-05	1.0037E-05
1.489	6.5415E-02	7.6330E-05	1.3278E-05
1.689	7.3871E-02	9.8065E-05	1.6981E-05
1.889	8.2268E-02	1.2243E-04	2.1143E-05
2.000	8.6898E-02	1.3706E-04	2.3649E-05
2.243	9.7002E-02	1.7196E-04	2.9629E-05
2.443	1.0525E-01	2.0349E-04	3.5044E-05
2.643	1.1345E-01	2.3757E-04	4.0909E-05
2.843	1.2160E-01	2.7417E-04	4.7222E-05
3.043	1.2970E-01	3.1327E-04	5.3981E-05
3.243	1.3775E-01	3.5485E-04	6.1184E-05
3.443	1.4575E-01	3.9888E-04	6.8829E-05
3.643	1.5371E-01	4.4535E-04	7.6914E-05
3.843	1.6162E-01	4.9423E-04	8.5437E-05
4.043	1.6948E-01	5.4550E-04	9.4397E-05
4.243	1.7730E-01	5.9913E-04	1.0379E-04
4.443	1.8507E-01	6.5511E-04	1.1362E-04
4.643	1.9280E-01	7.1342E-04	1.2388E-04
4.843	2.0048E-01	7.7403E-04	1.3457E-04
5.043	2.0811E-01	8.3693E-04	1.4568E-04
5.243	2.1570E-01	9.0209E-04	1.5722E-04
5.443	2.2325E-01	9.6949E-04	1.6919E-04
5.643	2.3075E-01	1.0391E-03	1.8157E-04
5.843	2.3821E-01	1.1109E-03	1.9438E-04
6.043	2.4562E-01	1.1849E-03	2.0760E-04
6.243	2.5299E-01	1.2611E-03	2.2125E-04
6.443	2.6031E-01	1.3394E-03	2.3530E-04
6.643	2.6760E-01	1.4198E-03	2.4977E-04
6.843	2.7483E-01	1.5023E-03	2.6465E-04
7.043	2.8203E-01	1.5869E-03	2.7994E-04
7.243	2.8918E-01	1.6736E-03	2.9564E-04
7.443	2.9630E-01	1.7623E-03	3.1175E-04
7.643	3.0337E-01	1.8530E-03	3.2826E-04
7.843	3.1039E-01	1.9457E-03	3.4517E-04
8.000	3.1587E-01	2.0197E-03	3.5870E-04



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8.227	3.2374E-01	2.1293E-03	3.7835E-04
8.427	3.3065E-01	2.2281E-03	3.9609E-04
8.627	3.3751E-01	2.3289E-03	4.1421E-04
8.827	3.4434E-01	2.4316E-03	4.3271E-04
9.027	3.5112E-01	2.5362E-03	4.5159E-04
9.227	3.5786E-01	2.6427E-03	4.7084E-04
9.427	3.6456E-01	2.7511E-03	4.9046E-04
9.627	3.7123E-01	2.8613E-03	5.1046E-04
9.827	3.7785E-01	2.9734E-03	5.3082E-04
10.027	3.8443E-01	3.0873E-03	5.5156E-04
10.227	3.9097E-01	3.2030E-03	5.7265E-04
24.000	7.5667E-01	1.4649E-02	2.7949E-03
96.000	1.3212E+00	2.5579E-02	2.7949E-03
720.000	1.6592E-01	3.2121E-03	2.7949E-03

Time (hr)	Control Room I-131 (Curies)	Faulted Steam Generat I-131 (Curies)
0.000	1.3027E-17	0.0000E+00
0.019	9.6785E-11	0.0000E+00
0.111	4.4630E-10	0.0000E+00
0.250	8.3876E-10	0.0000E+00
0.472	1.4429E-09	0.0000E+00
0.472	1.4439E-09	0.0000E+00
0.667	2.0035E-09	0.0000E+00
0.878	2.5677E-09	0.0000E+00
1.089	3.1759E-09	0.0000E+00
1.289	3.7622E-09	0.0000E+00
1.489	4.3514E-09	0.0000E+00
1.689	4.9390E-09	0.0000E+00
1.889	5.5235E-09	0.0000E+00
2.000	5.8473E-09	0.0000E+00
2.243	4.9610E-09	0.0000E+00
2.443	5.0545E-09	0.0000E+00
2.643	5.3551E-09	0.0000E+00
2.843	5.7187E-09	0.0000E+00
3.043	6.1004E-09	0.0000E+00
3.243	6.4863E-09	0.0000E+00
3.443	6.8720E-09	0.0000E+00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

3.643	7.2562E-09	0.0000E+00
3.843	7.6386E-09	0.0000E+00
4.043	8.0190E-09	0.0000E+00
4.243	8.3974E-09	0.0000E+00
4.443	8.7739E-09	0.0000E+00
4.643	9.1484E-09	0.0000E+00
4.843	9.5209E-09	0.0000E+00
5.043	9.8915E-09	0.0000E+00
5.243	1.0260E-08	0.0000E+00
5.443	1.0627E-08	0.0000E+00
5.643	1.0992E-08	0.0000E+00
5.843	1.1354E-08	0.0000E+00
6.043	1.1715E-08	0.0000E+00
6.243	1.2074E-08	0.0000E+00
6.443	1.2432E-08	0.0000E+00
6.643	1.2787E-08	0.0000E+00
6.843	1.3140E-08	0.0000E+00
7.043	1.3492E-08	0.0000E+00
7.243	1.3841E-08	0.0000E+00
7.443	1.4189E-08	0.0000E+00
7.643	1.4535E-08	0.0000E+00
7.843	1.4879E-08	0.0000E+00
8.000	1.5148E-08	0.0000E+00
8.227	8.5235E-09	0.0000E+00
8.427	7.0427E-09	0.0000E+00
8.627	6.6960E-09	0.0000E+00
8.827	6.6861E-09	0.0000E+00
9.027	6.7760E-09	0.0000E+00
9.227	6.8949E-09	0.0000E+00
9.427	7.0219E-09	0.0000E+00
9.627	7.1509E-09	0.0000E+00
9.827	7.2798E-09	0.0000E+00
10.027	7.4082E-09	0.0000E+00
10.227	7.5360E-09	0.0000E+00
24.000	1.4729E-08	0.0000E+00
96.000	2.6388E-08	0.0000E+00
720.000	0.0000E+00	0.0000E+00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Cumulative Dose Summary
#####

Time (hr)	Exclusion Area Bounda		Low Population Zone		Control Room	
	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)
0.000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.019	8.8713E-04	9.2205E-04	1.1938E-04	1.2408E-04	4.2085E-04	4.3175E-04
0.111	5.0775E-03	5.2773E-03	6.8328E-04	7.1017E-04	3.8754E-03	3.9758E-03
0.250	1.1130E-02	1.1568E-02	1.4978E-03	1.5567E-03	7.8464E-03	8.0495E-03
0.472	2.0665E-02	2.1478E-02	2.7809E-03	2.8904E-03	1.2855E-02	1.3187E-02
0.472	2.0680E-02	2.1493E-02	2.7829E-03	2.8924E-03	1.2862E-02	1.3195E-02
0.667	2.8747E-02	2.9879E-02	3.8686E-03	4.0208E-03	1.6812E-02	1.7246E-02
0.878	3.6561E-02	3.8000E-02	4.9200E-03	5.1137E-03	2.0892E-02	2.1432E-02
1.089	4.4362E-02	4.6108E-02	5.9698E-03	6.2049E-03	2.4868E-02	2.5510E-02
1.289	5.1766E-02	5.3806E-02	6.9662E-03	7.2407E-03	2.8617E-02	2.9355E-02
1.489	5.9176E-02	6.1508E-02	7.9633E-03	8.2772E-03	3.2360E-02	3.3194E-02
1.689	6.6590E-02	6.9216E-02	8.9611E-03	9.3145E-03	3.6101E-02	3.7031E-02
1.889	7.4009E-02	7.6930E-02	9.9594E-03	1.0352E-02	3.9842E-02	4.0868E-02
2.000	7.8122E-02	8.1207E-02	1.0513E-02	1.0928E-02	4.1915E-02	4.2994E-02
2.243	8.7146E-02	9.0590E-02	1.1083E-02	1.1521E-02	4.5776E-02	4.6955E-02
2.443	9.4567E-02	9.8308E-02	1.1553E-02	1.2009E-02	4.8495E-02	4.9743E-02
2.643	1.0199E-01	1.0603E-01	1.2022E-02	1.2497E-02	5.1110E-02	5.2426E-02
2.843	1.0942E-01	1.1376E-01	1.2492E-02	1.2986E-02	5.3697E-02	5.5080E-02
3.043	1.1685E-01	1.2149E-01	1.2962E-02	1.3475E-02	5.6276E-02	5.7725E-02
3.243	1.2429E-01	1.2922E-01	1.3432E-02	1.3964E-02	5.8853E-02	6.0368E-02
3.443	1.3173E-01	1.3696E-01	1.3902E-02	1.4453E-02	6.1429E-02	6.3011E-02
3.643	1.3917E-01	1.4471E-01	1.4373E-02	1.4943E-02	6.4004E-02	6.5654E-02
3.843	1.4661E-01	1.5246E-01	1.4843E-02	1.5433E-02	6.6579E-02	6.8296E-02
4.043	1.5406E-01	1.6021E-01	1.5314E-02	1.5923E-02	6.9155E-02	7.0939E-02
4.243	1.6151E-01	1.6797E-01	1.5785E-02	1.6413E-02	7.1730E-02	7.3582E-02
4.443	1.6897E-01	1.7573E-01	1.6257E-02	1.6904E-02	7.4305E-02	7.6224E-02
4.643	1.7643E-01	1.8349E-01	1.6728E-02	1.7395E-02	7.6879E-02	7.8867E-02
4.843	1.8389E-01	1.9126E-01	1.7200E-02	1.7886E-02	7.9454E-02	8.1510E-02
5.043	1.9135E-01	1.9904E-01	1.7672E-02	1.8378E-02	8.2028E-02	8.4153E-02
5.243	1.9882E-01	2.0682E-01	1.8144E-02	1.8870E-02	8.4602E-02	8.6796E-02
5.443	2.0630E-01	2.1460E-01	1.8617E-02	1.9362E-02	8.7176E-02	8.9439E-02



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

5.643	2.1377E-01	2.2239E-01	1.9089E-02	1.9854E-02	8.9750E-02	9.2082E-02
5.843	2.2125E-01	2.3018E-01	1.9562E-02	2.0347E-02	9.2323E-02	9.4725E-02
6.043	2.2873E-01	2.3798E-01	2.0035E-02	2.0840E-02	9.4896E-02	9.7369E-02
6.243	2.3621E-01	2.4578E-01	2.0508E-02	2.1333E-02	9.7469E-02	1.0001E-01
6.443	2.4370E-01	2.5359E-01	2.0982E-02	2.1827E-02	1.0004E-01	1.0266E-01
6.643	2.5119E-01	2.6140E-01	2.1455E-02	2.2321E-02	1.0261E-01	1.0530E-01
6.843	2.5869E-01	2.6921E-01	2.1929E-02	2.2815E-02	1.0519E-01	1.0794E-01
7.043	2.6618E-01	2.7703E-01	2.2403E-02	2.3309E-02	1.0776E-01	1.1059E-01
7.243	2.7368E-01	2.8485E-01	2.2877E-02	2.3804E-02	1.1033E-01	1.1323E-01
7.443	2.8118E-01	2.9268E-01	2.3352E-02	2.4298E-02	1.1290E-01	1.1587E-01
7.643	2.8869E-01	3.0051E-01	2.3826E-02	2.4794E-02	1.1547E-01	1.1852E-01
7.843	2.9620E-01	3.0835E-01	2.4301E-02	2.5289E-02	1.1804E-01	1.2116E-01
8.000	3.0208E-01	3.1449E-01	2.4673E-02	2.5677E-02	1.2006E-01	1.2323E-01
8.227	3.0638E-01	3.1903E-01	2.4860E-02	2.5875E-02	1.2216E-01	1.2539E-01
8.427	3.1018E-01	3.2305E-01	2.5024E-02	2.6049E-02	1.2340E-01	1.2667E-01
8.627	3.1397E-01	3.2706E-01	2.5189E-02	2.6223E-02	1.2449E-01	1.2779E-01
8.827	3.1777E-01	3.3107E-01	2.5353E-02	2.6397E-02	1.2554E-01	1.2887E-01
9.027	3.2156E-01	3.3508E-01	2.5518E-02	2.6571E-02	1.2657E-01	1.2993E-01
9.227	3.2535E-01	3.3910E-01	2.5683E-02	2.6745E-02	1.2760E-01	1.3099E-01
9.427	3.2915E-01	3.4311E-01	2.5847E-02	2.6919E-02	1.2863E-01	1.3206E-01
9.627	3.3294E-01	3.4713E-01	2.6012E-02	2.7093E-02	1.2966E-01	1.3312E-01
9.827	3.3673E-01	3.5114E-01	2.6176E-02	2.7268E-02	1.3069E-01	1.3418E-01
10.027	3.4053E-01	3.5516E-01	2.6341E-02	2.7442E-02	1.3172E-01	1.3524E-01
10.227	3.4432E-01	3.5917E-01	2.6505E-02	2.7616E-02	1.3275E-01	1.3630E-01
24.000	6.0512E-01	6.3670E-01	3.7821E-02	3.9657E-02	2.0291E-01	2.0891E-01
96.000	6.0512E-01	6.3670E-01	3.7821E-02	3.9657E-02	2.0349E-01	2.0951E-01
720.000	6.0512E-01	6.3670E-01	3.7821E-02	3.9657E-02	2.0349E-01	2.0951E-01



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:31:10

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#####

D. C. Cook - MSLB Concurrent Iodine Spike, RCS Activity Release

#####

Worst Two-Hour Doses

#####

Exclusion Area Boundary

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
0.0	1.0868E-03	7.8122E-02	8.1207E-02

#####

Final Doses

#####

Low Population Zone

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	7.1026E-04	3.7821E-02	3.9657E-02

Control Room

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	9.6317E-05	2.0349E-01	2.0951E-01



Attachment F

Steam Generator Iodine Release RADTRAD Output

(MSLB_SG_I_R1.o0)

Note: The computer clock was set to 12/01/14 during model execution due to software date limitations



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:28:03

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#####

D. C. Cook - MSLB Initial SG Iodine

#####

File information

#####

Input File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_SG_I_R1.psf
Output File Name = C:\Projects\1537-Cook_Dose\MSLB\MSLB_SG_I_R1.o0

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release file = c:\projects\1537-cook_dose\mslb\mslb_sg_i_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

```
#####      #####      #####      # #      # #####      # #      #####  
# # #      #      # ##      # #      # #      # #  
# # #      #      # # #      # #      # #      # #  
#####      #####      #####      # # #      # #####      # #      #  
#      # #      #      # #      # #      # #      # #  
#      # #      #      # #      ## #      # #      #  
#      #####      #      # #      # #      #####      #
```



Radtrad 3.10 10/15/2013
D. C. Cook - MSLB Initial SG Iodine
Dose Conversion Factor File:
c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp
Release Fraction & Timing Files:
1
c:\projects\1537-cook_dose\mslb\mslb_sg_i_r1.rft
Nuclide Inventory Files:
1
1 c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Plant Power Level:
7.3E+00
Number of Compartments:
5
Compartment 1:
RCS
3
4.661415E+05
0
0
0
0
0
0
Compartment 2:
Intact Steam Generators
3
4.83E+05
0
0
0
0
0
0



Compartment 3:

Environment

2

0.00E+00

0

0

0

0

0

Compartment 4:

Control Room

1

5.0616E+04

0

0

1

0

0

Compartment 5:

Faulted Steam Generator

3

1.61E+05

0

0

0

0

0

Number of Pathways:

8

Pathway 1:

Flashed Intact Steam Generator Tube Leakage

1

3



2

Pathway 2:

Control Room Makeup

3

4

2

Pathway 3:

Control Room Unfiltered Inleakage

3

4

2

Pathway 4:

Control Room Exhaust

4

3

2

Pathway 5:

Steam Release

2

3

2

Pathway 6:

Unflushed Intact Steam Generator Tube Leakage

1

2

2

Pathway 7:

Faulted SG Tube Leakage

1

3

2

Pathway 8:

Faulted Steam Generator Steam Release



5
3
2
End of Plant Model
Source Term Input:
2
2 1 1 3
5 1 1 1
0.00E+00
0.00E+00 7.2E+02
1
3 0.00E+00 9.7E-01 3.00E-02
3 0.00E+00 9.7E-01 3.00E-02
Overlying Pool:
0
0.00E+00
0
0
0
0
0
Compartments:
5
Compartment 1:
1
1
0
0
0
0
0
0
0
0
0
Compartment 2:



1
1
0
0
0
0
0
0
0
0

Compartment 3:

2
1
0
0
0
0
0
0
0

Compartment 4:

1
1
0
0
0
0
1
3

0.00E+00	0.00E+00	9.801E+01	9.405E+01	9.405E+01
1.94E-02	4.52E+03	9.801E+01	9.405E+01	9.405E+01
7.2E+02	4.52E+03	9.801E+01	9.405E+01	9.405E+01
0				
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00



7.2E+02

0

0

Compartment 5:

1

1

0

0

0

0

0

0

0

Pathways:

8

Pathway 1:

0

0

0

0

0

1

6

0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00

1.11E-01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

2.5E-01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

4.72E-01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

6.67E-01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0



0
0
0
0
0
0

Pathway 2:

0
0
0
0
0
0
1
3

0.00E+00	8.8E+02	0.00E+00	0.00E+00	0.00E+00
1.94E-02	8.8E+02	9.801E+01	9.405E+01	9.405E+01
7.2E+02	8.8E+02	9.801E+01	9.405E+01	9.405E+01
0				
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2E+02				

0
0
0
0
0
0

Pathway 3:

0
0
0
0
0
0
1
2



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

0.00E+00 4.00E+01 0.00E+00 0.00E+00 0.00E+00
7.2E+02 4.00E+01 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0
0

Pathway 4:

0
0
0
0
0
1
2
0.00E+00 9.2E+02 0.00E+00 0.00E+00 0.00E+00
7.2E+02 9.2E+02 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0

Pathway 5:

0
0



0				
0				
0				
1				
5				
0.00E+00	3.8E+01	0.00E+00	0.00E+00	0.00E+00
2.00E+00	3.294E+01	0.00E+00	0.00E+00	0.00E+00
8.00E+00	1.403E+01	0.00E+00	0.00E+00	0.00E+00
2.4E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0				
7.2E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2E+02				
0				
0				
0				
0				
0				
0				
0				
Pathway 6:				
0				
0				
0				
0				
0				
0				
1				
7				
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.11E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.5E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.72E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.4E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 7:

0

0

0

0

0

1

3

0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00

2.4E+01 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

0

7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00

7.2E+02

0

0

0

0

0

0

Pathway 8:

0

0



0
0
0
1
2
0.00E+00 1.00E+06 0.00E+00 0.00E+00 0.00E+00
7.2E+02 1.00E+06 0.00E+00 0.00E+00 0.00E+00
0
7.2E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00
7.2E+02
0
0
0
0
0
0

Dose Locations:

3

Location 1:

Exclusion Area Boundary

3

1

4

0.00E+00 3.5E-04
8.00E+00 1.8E-04
2.4E+01 2.3E-04
7.2E+02 2.3E-04

0

Location 2:

Low Population Zone

3

1

4



0.00E+00 3.5E-04
8.00E+00 1.8E-04
2.4E+01 2.3E-04
7.2E+02 2.3E-04
0

Location 3:

Control Room

4

1

2

0.00E+00 3.5E-04

7.2E+02 3.5E-04

1

4

0.00E+00 1.00E+00

2.4E+01 6.00E-01

9.6E+01 4.00E-01

7.2E+02 4.00E-01

X/Q Tables:

6

Exclusion Area Boundary

2

0.00E+00 8.62E-04

7.2E+02 8.62E-04

Low Population Zone

6

0.00E+00 1.16E-04

2.00E+00 5.45E-05

8.00E+00 3.74E-05

2.4E+01 1.74E-05

9.6E+01 6.74E-06

7.2E+02 6.74E-06

Intact SG CR Makeup



7
0.00E+00 1.09E-02
1.94E-02 1.26E-02
2.00E+00 9.72E-03
8.00E+00 3.26E-03
2.4E+01 3.17E-03
9.6E+01 2.8E-03
7.2E+02 2.8E-03

Intact SG CR Inleakage

6
0.00E+00 1.09E-02
2.00E+00 8.61E-03
8.00E+00 2.87E-03
2.4E+01 2.78E-03
9.6E+01 2.5E-03
7.2E+02 2.5E-03

Faulted CR Makeup

7
0.00E+00 4.57E-02
1.94E-02 2.91E-02
2.00E+00 2.02E-02
8.00E+00 8.14E-03
2.4E+01 5.34E-03
9.6E+01 4.32E-03
7.2E+02 4.32E-03

Faulted CR Inleakage

6
0.00E+00 4.57E-02
2.00E+00 3.14E-02
8.00E+00 1.27E-02
2.4E+01 8.3E-03
9.6E+01 6.73E-03
7.2E+02 6.73E-03



Inflow Pathways:

2 2 3

Exhaust Pathways:

5 1 4 5 7 8

X/Q table ID for Exhaust-Inflow paths:

3 4

-1 -1

3 4

5 6

5 6

Simulation Parameters:

1

0.00E+00 0.00E+00

Output Filename:

C:\Projects\1537-Cook_Dose\MSLB\MSLB_SG_I_R1.o0

1

1

0

0

1

End of Scenario File



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#####

D. C. Cook - MSLB Initial SG Iodine

Plant Description
#####

Number of Nuclides = 100

Inventory Power = 1.0000E+00 MWth
Plant Power Level = 7.3000E+00 MWth

Number of compartments = 5

Compartment information

Compartment number 1

Name: RCS

Compartment volume = 4.6614E+05 (Cubic feet)

Compartment type is Normal

Pathways into and out of compartment 1

Exit Pathway Number 1: Flashed Intact Steam Generator Tube Leakage

Exit Pathway Number 6: Unflashed Intact Steam Generator Tube Leakage

Exit Pathway Number 7: Faulted SG Tube Leakage

Compartment number 2

Name: Intact Steam Generators



Compartment volume = 4.8300E+05 (Cubic feet)
Compartment type is Normal
Pathways into and out of compartment 2
Inlet Pathway Number 6: Unflushed Intact Steam Generator Tube Leakage
Exit Pathway Number 5: Steam Release

Compartment number 3
Name: Environment
Compartment type is Environment
Pathways into and out of compartment 3
Inlet Pathway Number 1: Flashed Intact Steam Generator Tube Leakage
Inlet Pathway Number 4: Control Room Exhaust
Inlet Pathway Number 5: Steam Release
Inlet Pathway Number 7: Faulted SG Tube Leakage
Inlet Pathway Number 8: Faulted Steam Generator Steam Release
Exit Pathway Number 2: Control Room Makeup
Exit Pathway Number 3: Control Room Unfiltered Inleakage

Compartment number 4
Name: Control Room
Compartment volume = 5.0616E+04 (Cubic feet)
Compartment type is Control Room
Removal devices within compartment:
Filter(s)
Pathways into and out of compartment 4
Inlet Pathway Number 2: Control Room Makeup
Inlet Pathway Number 3: Control Room Unfiltered Inleakage
Exit Pathway Number 4: Control Room Exhaust

Compartment number 5
Name: Faulted Steam Generator
Compartment volume = 1.6100E+05 (Cubic feet)
Compartment type is Normal



Pathways into and out of compartment 5

Exit Pathway Number 8: Faulted Steam Generator Steam Release

Total number of pathways = 8



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#####

D. C. Cook - MSLB Initial SG Iodine

Scenario Description
#####

Power Ratio = 7.3000E+00
End Time = 7.2000E+02 (Hours)

Radioactive Decay is enabled
Calculation of Daughters is enabled

Source Number 1 is used in Compartment 2 Intact Steam Generators
Nuclide Distribution given in Ci/MWt
Fraction of Nuclide Distribution in this Compartment 3.00

Iodine fractions for source number 1
Aerosol = 0.0000E+00
Elemental = 9.7000E-01
Organic = 3.0000E-02

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif
Release from file = c:\projects\1537-cook_dose\mslb\mslb_sg_i_r1.rft
Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Nuclide Name	Group	Specific Inventory (Ci/MWt)	half life (s)	Whole Body DCF (Sv-m3/Bq-s)	Inhaled Thyroid (Sv/Bq)	Inhaled Effective (Sv/Bq)
Te-131m	4	5.787E-02	1.080E+05	7.010E-14	3.610E-08	1.730E-09
Te-132	4	9.639E-01	2.815E+05	1.030E-14	6.280E-08	2.550E-09
I-131	2	8.087E-01	6.947E+05	1.820E-14	2.920E-07	8.890E-09
I-132	2	6.411E-01	8.280E+03	1.120E-13	1.740E-09	1.030E-10
I-133	2	1.030E+00	7.488E+04	2.940E-14	4.860E-08	1.580E-09
I-134	2	1.231E-01	3.156E+03	1.300E-13	2.880E-10	3.550E-11
I-135	2	5.365E-01	2.380E+04	7.980E-14	8.460E-09	3.320E-10
Br-82	2	4.641E-03	1.271E+05	1.300E-13	2.060E-10	4.130E-10
Br-83	2	2.720E-02	8.604E+03	3.820E-16	1.140E-12	2.410E-11
Br-84	2	1.244E-02	1.908E+03	9.410E-14	3.120E-12	2.610E-11
Te-131	4	1.599E-02	1.500E+03	2.040E-14	2.630E-09	1.290E-10
Te-133m	4	7.643E-03	3.324E+03	1.140E-13	2.610E-09	1.170E-10
Te-134	4	1.092E-02	2.508E+03	4.240E-14	5.540E-10	3.440E-11

Nuclide	Daughter	Fraction	Daughter	Fraction	Daughter	Fraction
Te-131m	I-131	0.78	Te-131	0.22	none	0.00
Te-132	I-132	1.00	none	0.00	none	0.00
I-131	Xe-131m	0.01	none	0.00	none	0.00
I-133	Xe-133m	0.03	Xe-133	0.97	none	0.00
I-135	Xe-135m	0.15	Xe-135	0.85	none	0.00
Br-83	Kr-83m	1.00	none	0.00	none	0.00
Te-131	I-131	1.00	none	0.00	none	0.00
Te-133m	I-133	0.87	Te-133	0.13	none	0.00
Te-134	I-134	1.00	none	0.00	none	0.00

Release Fractions and Timings

RWA-1313-010 - D. C. Cook MSLB Initial SG Iodine

Duration (h):

GAP EARLY IN-VESSEL LATE RELEASE RELEASE MASS



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

	0.000010 hr	0.0000 hrs	0.0000 hrs	(Ci)
NOBLES	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
IODINE	1.0000E+00	0.0000E+00	0.0000E+00	6.973E+01
CESIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
TELLURIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
STRONTIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
BARIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
RUTHENIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
CERIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
LANTHANUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
AEROSOL	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00

Source Number 2 is used in Compartment 5 Faulted Steam Generator

Nuclide Distribution given in Ci/MWt

Fraction of Nuclide Distribution in this Compartment 1.00000

Iodine fractions for source number 2

Aerosol = 0.0000E+00
 Elemental = 9.7000E-01
 Organic = 3.0000E-02

Inventory file = c:\projects\1537-cook_dose\source_term\cook_rcs.nif

Release from file = c:\projects\1537-cook_dose\mslb\mslb_sg_i_rl.rft.

Dose Conversion file = c:\projects\1537-cook_dose\source_term\rwa-1205-004.inp

Nuclide Name	Group	Specific Inventory (Ci/MWt)	half life (s)	Whole Body DCF (Sv-m3/Bq-s)	Inhaled Thyroid (Sv/Bq)	Inhaled Effective (Sv/Bq)
Te-131m	4	5.787E-02	1.080E+05	7.010E-14	3.610E-08	1.730E-09
Te-132	4	9.639E-01	2.815E+05	1.030E-14	6.280E-08	2.550E-09
I-131	2	8.087E-01	6.947E+05	1.820E-14	2.920E-07	8.890E-09
I-132	2	6.411E-01	8.280E+03	1.120E-13	1.740E-09	1.030E-10



I-133	2	1.030E+00	7.488E+04	2.940E-14	4.860E-08	1.580E-09
I-134	2	1.231E-01	3.156E+03	1.300E-13	2.880E-10	3.550E-11
I-135	2	5.365E-01	2.380E+04	7.980E-14	8.460E-09	3.320E-10
Br-82	2	4.641E-03	1.271E+05	1.300E-13	2.060E-10	4.130E-10
Br-83	2	2.720E-02	8.604E+03	3.820E-16	1.140E-12	2.410E-11
Br-84	2	1.244E-02	1.908E+03	9.410E-14	3.120E-12	2.610E-11
Te-131	4	1.599E-02	1.500E+03	2.040E-14	2.630E-09	1.290E-10
Te-133m	4	7.643E-03	3.324E+03	1.140E-13	2.610E-09	1.170E-10
Te-134	4	1.092E-02	2.508E+03	4.240E-14	5.540E-10	3.440E-11

Nuclide	Daughter	Fraction	Daughter	Fraction	Daughter	Fraction
Te-131m	I-131	0.78	Te-131	0.22	none	0.00
Te-132	I-132	1.00	none	0.00	none	0.00
I-131	Xe-131m	0.01	none	0.00	none	0.00
I-133	Xe-133m	0.03	Xe-133	0.97	none	0.00
I-135	Xe-135m	0.15	Xe-135	0.85	none	0.00
Br-83	Kr-83m	1.00	none	0.00	none	0.00
Te-131	I-131	1.00	none	0.00	none	0.00
Te-133m	I-133	0.87	Te-133	0.13	none	0.00
Te-134	I-134	1.00	none	0.00	none	0.00

Release Fractions and Timings

RWA-1313-010 - D. C. Cook MSLB Initial SG Iodine

Duration (h):

	GAP	EARLY IN-VESSEL	LATE RELEASE	RELEASE MASS
	0.000010 hr	0.0000 hrs	0.0000 hrs	(Ci)
NOBLES	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
IODINE	1.0000E+00	0.0000E+00	0.0000E+00	2.324E+01
CESIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
TELLURIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
STRONTIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
BARIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
RUTHENIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

CERIUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
LANTHANUM	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00
AEROSOL	0.0000E+00	0.0000E+00	0.0000E+00	0.000E+00

COMPARTMENT DATA

- Compartment number 1: RCS
- Compartment number 2: Intact Steam Generators
- Compartment number 3: Environment
- Compartment number 4: Control Room

Compartment Filter Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.8010E+01	9.4050E+01	9.4050E+01
1.9400E-02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	4.5200E+03	9.8010E+01	9.4050E+01	9.4050E+01

- Compartment number 5: Faulted Steam Generator

PATHWAY DATA

- Pathway number 1: Flashed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00



1.1100E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7200E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	8.8000E+02	0.0000E+00	0.0000E+00	0.0000E+00
1.9400E-02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01
7.2000E+02	8.8000E+02	9.8010E+01	9.4050E+01	9.4050E+01

Pathway number 3: Control Room Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	4.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 4: Control Room Exhaust

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	9.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00



Pathway number 5: Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	3.8000E+01	0.0000E+00	0.0000E+00	0.0000E+00
2.0000E+00	3.2940E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0000E+00	1.4030E+01	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 6: Unflashed Intact Steam Generator Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.1100E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.5000E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.7200E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.6700E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 7: Faulted SG Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic



0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
2.4000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 8: Faulted Steam Generator Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.0000E+06	0.0000E+00	0.0000E+00	0.0000E+00

DOSE INFORMATION

Number_Dose_Locations = 3

Dose Location Name = Exclusion Area Boundary
Located in compartment 3 the Environment

Exclusion Area Boundary Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04
2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Low Population Zone
Located in compartment 3 the Environment

Low Population Zone Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
8.0000E+00	1.8000E-04



2.4000E+01	2.3000E-04
7.2000E+02	2.3000E-04

Dose Location Name = Control Room
Located in compartment 4 the Control Room

Control Room Breathing Rate Data

Time (hr)	Breathing Rate (m ³ * sec ⁻¹)
0.0000E+00	3.5000E-04
7.2000E+02	3.5000E-04

Control Room Occupancy Factor Data

Time (hr)	Occupancy Factor
0.0000E+00	1.0000E+00
2.4000E+01	6.0000E-01
9.6000E+01	4.0000E-01
7.2000E+02	4.0000E-01

X/Q, ATMOSPHERIC DISPERSION INFORMATION

X/Q Table Name = Exclusion Area Boundary

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	8.6200E-04
7.2000E+02	8.6200E-04

X/Q Table Name = Low Population Zone

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.1600E-04
2.0000E+00	5.4500E-05



8.0000E+00	3.7400E-05
2.4000E+01	1.7400E-05
9.6000E+01	6.7400E-06
7.2000E+02	6.7400E-06

X/Q Table Name = Intact SG CR Makeup

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
1.9400E-02	1.2600E-02
2.0000E+00	9.7200E-03
8.0000E+00	3.2600E-03
2.4000E+01	3.1700E-03
9.6000E+01	2.8000E-03
7.2000E+02	2.8000E-03

This X/Q Table is used for these connected pathways

Path 1 Flashed Intact Steam Generator Tube Leakage and Path 2 Control Room Makeup
Path 5 Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Intact SG CR Inleakage

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	1.0900E-02
2.0000E+00	8.6100E-03
8.0000E+00	2.8700E-03
2.4000E+01	2.7800E-03
9.6000E+01	2.5000E-03
7.2000E+02	2.5000E-03

This X/Q Table is used for these connected pathways



Path 1 Flashed Intact Steam Generator Tube Leakage and Path 3 Control Room Unfiltered Inleakage
Path 5 Steam Release and Path 3 Control Room Unfiltered Inleakage

X/Q Table Name = Faulted CR Makeup

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02
1.9400E-02	2.9100E-02
2.0000E+00	2.0200E-02
8.0000E+00	8.1400E-03
2.4000E+01	5.3400E-03
9.6000E+01	4.3200E-03
7.2000E+02	4.3200E-03

This X/Q Table is used for these connected pathways

Path 7 Faulted SG Tube Leakage and Path 2 Control Room Makeup
Path 8 Faulted Steam Generator Steam Release and Path 2 Control Room Makeup

X/Q Table Name = Faulted CR Inleakage

Location X/Q Data

Time (hr)	X/Q (s * m ⁻³)
0.0000E+00	4.5700E-02
2.0000E+00	3.1400E-02
8.0000E+00	1.2700E-02
2.4000E+01	8.3000E-03
9.6000E+01	6.7300E-03
7.2000E+02	6.7300E-03

This X/Q Table is used for these connected pathways

Path 7 Faulted SG Tube Leakage and Path 3 Control Room Unfiltered Inleakage
Path 8 Faulted Steam Generator Steam Release and Path 3 Control Room Unfiltered Inleakage



USER SPECIFIED TIME STEP DATA - SUPPLEMENTAL TIME STEPS

Time (hr)	Time step (hr)
0.0000E+00	0.0000E+00

EDIT EACH MAJOR TIME STEP

DO NOT EDIT SUPPLEMENTAL TIME STEPS

DO NOT EDIT MODEL DECONTAMINATION

Masses in Curies in detailed output



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```

D. C. Cook - MSLB Initial SG Iodine

#####

Dose, Detailed model and Detailed Inventory Output

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#####

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#####

Exclusion Area Boundary Doses:



Cook Nuclear Plant Main Steam Line Break AST Radiological Analysis

Time (h) = 0.0000 Whole Body Thyroid TEDE
Delta dose (rem) 7.6877E-06 4.4271E-03 1.4523E-04
Accumulated dose (rem) 7.6877E-06 4.4271E-03 1.4523E-04

Low Population Zone Doses:

Time (h) = 0.0000 Whole Body Thyroid TEDE
Delta dose (rem) 1.0345E-06 5.9576E-04 1.9543E-05
Accumulated dose (rem) 1.0345E-06 5.9576E-04 1.9543E-05

Control Room Doses:

Time (h) = 0.0000 Whole Body Thyroid TEDE Skin
Delta dose (rem) 7.3713E-11 1.2798E-06 3.9833E-08 3.4020E-09
Accumulated dose (rem) 7.3713E-11 1.2798E-06 3.9833E-08 3.4020E-09

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
I-131	1.7711E+01 Atmosphere	7.5518E-01	1.7711E-04	2.3590E+10
I-132	1.4040E+01	2.8320E-02	1.4040E-04	1.8701E+10
I-133	2.2566E+01	1.7906E-01	2.2566E-04	3.0058E+10
I-134	2.6959E+00	5.2312E-03	2.6959E-05	3.5909E+09
I-135	1.1749E+01	3.1375E-02	1.1749E-04	1.5650E+10
Xe-133	1.2065E-06	2.5644E-11	1.2065E-11	0.0000E+00
Xe-135	7.5796E-06	1.2289E-09	7.5796E-11	0.0000E+00
Kr-83m	2.2562E-06	4.6110E-14	2.2562E-11	0.0000E+00
Br-82	1.0164E-01	3.8018E-04	1.0164E-06	1.3538E+08
Br-83	5.9568E-01	7.1557E-05	5.9568E-06	7.9344E+08



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Br-84	2.7243E-01	3.8318E-04	2.7243E-06	3.6288E+08
Xe-135m	4.9237E-05	1.3685E-08	4.9237E-10	0.0000E+00
Total	6.9731E+01	1.0000E+00	0.0000E+00	0.0000E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.6007E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.6329E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.8478E-09
Total I (Ci)	6.8762E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	5.1398E-14

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.0000	Atmosphere	Sump
Noble gases (Ci)		6.0371E-05	0.0000E+00
Elemental I (Ci)		6.7639E+01	0.0000E+00
Organic I (Ci)		2.0919E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	
I-131	Atmosphere	2.1800E-04	7.5518E-01	2.1800E-09	2.9038E+05
I-132		1.7282E-04	2.8320E-02	1.7282E-09	2.3020E+05
I-133		2.7777E-04	1.7906E-01	2.7777E-09	3.6999E+05
I-134		3.3184E-05	5.2312E-03	3.3184E-10	4.4202E+04
I-135		1.4463E-04	3.1375E-02	1.4463E-09	1.9264E+05
Br-82		1.2511E-06	3.8018E-04	1.2511E-11	1.6665E+03
Br-83		7.3324E-06	7.1557E-05	7.3324E-11	9.7668E+03
Br-84		3.3535E-06	3.8318E-04	3.3535E-11	4.4668E+03
Total		8.5835E-04	1.0000E+00	0.0000E+00	0.0000E+00



Control Room Compartment Group Inventory Distribution:

Time (h) = 0.0000	Atmosphere	Sump
Noble gases (Ci)	7.4312E-10	0.0000E+00
Elemental I (Ci)	8.3260E-04	0.0000E+00
Organic I (Ci)	2.5750E-05	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Time (h) = 0.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 0.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)
I-131	5.8925E+00	7.5518E-01	5.8925E-05	7.8488E+09
I-132	4.6713E+00	2.8320E-02	4.6713E-05	6.2222E+09
I-133	7.5079E+00	1.7906E-01	7.5079E-05	1.0001E+10
I-134	8.9695E-01	5.2312E-03	8.9695E-06	1.1947E+09
I-135	3.9092E+00	3.1375E-02	3.9092E-05	5.2070E+09
Xe-135	2.5218E-06	1.2289E-09	2.5218E-11	0.0000E+00
Br-82	3.3816E-02	3.8018E-04	3.3816E-07	4.5043E+07
Br-83	1.9819E-01	7.1557E-05	1.9819E-06	2.6399E+08
Br-84	9.0642E-02	3.8318E-04	9.0642E-07	1.2074E+08



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Xe-135m	1.6382E-05	1.3685E-08	1.6382E-10	0.0000E+00
Total	2.3201E+01	1.0000E+00	0.0000E+00	0.0000E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.5977E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.6299E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.8443E-09
Total I (Ci)	2.2878E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	5.1302E-14

Faulted Steam Generator Compartment Group Inventory Distribution:

Time (h) =	0.0000	Atmosphere	Sump
Noble gases (Ci)	2.0086E-05	0.0000E+00	
Elemental I (Ci)	2.2504E+01	0.0000E+00	
Organic I (Ci)	6.9602E-01	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (kg)	0.0000E+00	0.0000E+00	

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Exclusion Area Boundary Doses:

Time (h) =	0.0194	Whole Body	Thyroid	TEDE
Delta dose (rem)	4.1198E-03	2.3732E+00	7.7848E-02	
Accumulated dose (rem)	4.1275E-03	2.3776E+00	7.7993E-02	

Low Population Zone Doses:



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Time (h) = 0.0194 Whole Body Thyroid TEDE
 Delta dose (rem) 5.5441E-04 3.1936E-01 1.0476E-02
 Accumulated dose (rem) 5.5544E-04 3.1996E-01 1.0496E-02

Control Room Doses:

Time (h) = 0.0194 Whole Body Thyroid TEDE Skin
 Delta dose (rem) 1.2578E-04 2.1868E+00 6.8062E-02 5.8056E-03
 Accumulated dose (rem) 1.2578E-04 2.1868E+00 6.8062E-02 5.8056E-03

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.7708E+01 Atmosphere	7.5538E-01	3.4355E-01	4.5761E+13	1.6214E-03
I-132	1.3957E+01	2.8217E-02	2.7128E-01	3.6173E+13	1.2830E-03
I-133	2.2549E+01	1.7903E-01	4.3756E-01	5.8289E+13	2.0655E-03
I-134	2.6546E+00	5.1786E-03	5.1754E-02	6.9128E+12	2.4560E-04
I-135	1.1724E+01	3.1342E-02	2.2761E-01	3.0329E+13	1.0750E-03
Xe-133	2.3396E-03	3.3860E-08	3.0894E-05	1.9313E+09	6.8447E-08
Xe-135	1.4726E-02	1.6247E-06	1.9434E-04	1.2136E+10	4.3023E-07
Kr-83m	4.3542E-03	6.0657E-11	5.7559E-05	3.5992E+09	1.2773E-07
Br-82	1.0159E-01	3.8020E-04	1.9711E-03	2.6257E+11	9.3038E-06
Br-83	5.9228E-01	7.1306E-05	1.1511E-02	1.5349E+12	5.4437E-05
Br-84	2.6559E-01	3.7675E-04	5.1946E-03	6.9510E+11	2.4741E-05
Xe-131m	9.2547E-06	3.3396E-11	1.2220E-07	7.6385E+06	2.7071E-10
Xe-133m	1.6749E-04	2.1288E-09	2.2118E-06	1.3826E+08	4.9003E-09
Xe-135m	9.3830E-02	1.7841E-05	1.2448E-03	7.7543E+10	2.7761E-06
Total	6.9668E+01	1.0000E+00	0.0000E+00	0.0000E+00	6.3822E-03

Dose Equivalent (Ci/cc) I-131 (Thyroid) 1.6002E-09



Dose Equivalent (Ci/cc) I-131 (CEDE)	1.6323E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.8468E-09
Total I (Ci)	6.8593E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	9.8108E-11

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)	1.1543E-01	0.0000E+00	
Elemental I (Ci)	6.7466E+01	0.0000E+00	
Organic I (Ci)	2.0866E+00	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (kg)	0.0000E+00	0.0000E+00	

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	1.1494E-01	7.5540E-01	2.0627E-03	2.7475E+11	6.5409E-02	2.9732E-03	2.0313E-03
I-132	9.0594E-02	2.8209E-02	1.6283E-03	2.1714E+11	5.1841E-02	2.3564E-03	1.6070E-03
I-133	1.4637E-01	1.7903E-01	2.6270E-03	3.4996E+11	8.3339E-02	3.7881E-03	2.5877E-03
I-134	1.7231E-02	5.1750E-03	3.1051E-04	4.1482E+10	9.9501E-03	4.5228E-04	3.0749E-04
I-135	7.6103E-02	3.1339E-02	1.3664E-03	1.8208E+11	4.3390E-02	1.9723E-03	1.3466E-03
Xe-133	1.5186E-05	3.6185E-08	1.9822E-07	1.2436E+07	3.7164E-07	1.6893E-08	9.7837E-08
Xe-135	9.5583E-05	1.7363E-06	1.2469E-06	7.8145E+07	2.3350E-06	1.0614E-07	6.1498E-07
Kr-83m	2.8263E-05	6.4820E-11	3.6930E-07	2.3174E+07	6.9466E-07	3.1576E-08	1.8257E-07
Br-82	6.5942E-04	3.8021E-04	1.1835E-05	1.5765E+09	3.7537E-04	1.7062E-05	1.1656E-05
Br-83	3.8445E-03	7.1289E-05	6.9096E-05	9.2136E+09	2.1995E-03	9.9976E-05	6.8184E-05
Br-84	1.7239E-03	3.7631E-04	3.1151E-05	4.1697E+09	1.0051E-03	4.5685E-05	3.0961E-05
Xe-133m	1.0872E-06	2.2750E-09	1.4191E-08	8.9028E+05	2.6607E-08	1.2094E-09	7.0045E-09
Xe-135m	6.0905E-04	1.9064E-05	7.9860E-06	4.9924E+08	1.5145E-05	6.8841E-07	3.9674E-06
Total	4.5221E-01	1.0000E+00	0.0000E+00	0.0000E+00	2.5753E-01	1.1706E-02	7.9957E-03



Control Room Compartment Group Inventory Distribution:

Time (h) = 0.0194	Atmosphere	Sump
Noble gases (Ci)	7.4923E-04	0.0000E+00
Elemental I (Ci)	4.3792E-01	0.0000E+00
Organic I (Ci)	1.3544E-02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

	Deposition	Recirculating
	Surfaces	Filter
Time (h) = 0.0194		
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	0.0000E+00
Organic I (Ci)	0.0000E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 0.0194

Nuclide	Compartment	Dose Fract	Exposure	Decays	Pathway 8
	Atmosphere		(Ci-hr)	(Bq-s)	Outflow
I-131	4.2857E-03	7.5522E-01	9.2464E-03	1.2316E+12	7.3423E+00
I-132	3.3779E-03	2.8300E-02	7.3244E-03	9.7587E+11	5.8173E+00
I-133	5.4574E-03	1.7905E-01	1.1780E-02	1.5692E+12	9.3546E+00
I-134	6.4248E-04	5.2209E-03	1.4046E-03	1.8722E+11	1.1160E+00
I-135	2.8376E-03	3.1369E-02	6.1325E-03	8.1693E+11	4.8700E+00
Xe-133	5.6624E-07	6.6296E-09	1.6284E-07	6.9926E+06	9.5128E-05
Xe-135	3.5639E-06	3.1782E-07	1.0234E-06	4.3929E+07	5.9774E-04
Kr-83m	1.0538E-06	1.1906E-11	3.0413E-07	1.3061E+07	1.7776E-04
Br-82	2.4587E-05	3.8019E-04	5.3061E-05	7.0679E+09	4.2135E-02



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Br-83	1.4335E-04	7.1508E-05	3.1076E-04	4.1404E+10	2.4682E-01
Br-84	6.4278E-05	3.8192E-04	1.4176E-04	1.8904E+10	1.1266E-01
Xe-133m	4.0538E-08	4.1683E-10	1.1658E-08	5.0062E+05	6.8105E-06
Xe-135m	2.2709E-05	3.5241E-06	6.6194E-06	2.8351E+08	3.8727E-03
Total	1.6861E-02	1.0000E+00	0.0000E+00	0.0000E+00	2.8907E+01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.1619E-12
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.1852E-12
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.3409E-12
Total I (Ci)	1.6601E-02
Dose Equivalent (Ci/cc) Xe-133 (EDE)	7.1233E-14

Faulted Steam Generator Compartment Group Inventory Distribution:

Time (h) =	0.0194	Atmosphere	Sump
Noble gases (Ci)	2.7936E-05	0.0000E+00	
Elemental I (Ci)	1.6328E-02	0.0000E+00	
Organic I (Ci)	5.0500E-04	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (kg)	0.0000E+00	0.0000E+00	

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Exclusion Area Boundary Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)		8.2914E-06	4.8096E-03	1.5770E-04
Accumulated dose (rem)		4.1358E-03	2.3824E+00	7.8151E-02



Low Population Zone Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.1158E-06	6.4723E-04	2.1222E-05
Accumulated dose (rem)		5.5656E-04	3.2061E-01	1.0517E-02

Control Room Doses:

Time (h) =	0.1110	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		5.4235E-04	9.4933E+00	2.9545E-01	2.5044E-02
Accumulated dose (rem)		6.6813E-04	1.1680E+01	3.6351E-01	3.0850E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.7694E+01	7.5624E-01	1.9647E+00	2.6171E+14	9.2757E-03
I-132	1.3571E+01	2.7774E-02	1.5254E+00	2.0408E+14	7.2650E-03
I-133	2.2471E+01	1.7893E-01	2.4981E+00	3.3291E+14	1.1804E-02
I-134	2.4681E+00	4.9585E-03	2.8308E-01	3.8148E+13	1.3678E-03
I-135	1.1607E+01	3.1197E-02	1.2942E+00	1.7265E+14	6.1283E-03
Xe-133	1.3358E-02	1.8023E-07	9.3938E-04	8.0479E+10	2.5702E-06
Xe-135	8.5022E-02	8.7209E-06	5.9588E-03	5.0868E+11	1.6244E-05
Kr-83m	2.4214E-02	3.1651E-10	1.7157E-03	1.4733E+11	4.7323E-06
Br-82	1.0136E-01	3.8029E-04	1.1263E-02	1.5006E+12	5.3197E-05
Br-83	5.7651E-01	7.0233E-05	6.4768E-02	8.6641E+12	3.0837E-04
Br-84	2.3550E-01	3.5047E-04	2.7604E-02	3.7481E+12	1.3540E-04
Xe-131m	5.2916E-05	1.7796E-10	3.7198E-06	3.1859E+08	1.0173E-08
Xe-133m	9.5598E-04	1.1329E-08	6.7236E-05	5.7602E+09	1.8398E-07
Xe-135m	4.8197E-01	8.7837E-05	3.5010E-02	2.9917E+12	9.9075E-05



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Total 6.9330E+01 1.0000E+00 0.0000E+00 0.0000E+00 3.6461E-02

Dose Equivalent (Ci/cc) I-131 (Thyroid) 1.5978E-09
 Dose Equivalent (Ci/cc) I-131 (CEDE) 1.6296E-09
 Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid) 1.8423E-09
 Total I (Ci) 6.7811E+01
 Dose Equivalent (Ci/cc) Xe-133 (EDE) 5.0928E-10

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.1110	Atmosphere	Sump
Noble gases (Ci)		6.0557E-01	0.0000E+00
Elemental I (Ci)		6.6663E+01	0.0000E+00
Organic I (Ci)		2.0617E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2	Pathway 3	Pathway 4
						Inflow	Inflow	Outflow
I-131	6.5543E-02	7.5612E-01	9.2994E-03	1.2387E+12	4.0750E-02	6.5412E-02	2.9747E-03	1.0852E-02
I-132	5.0270E-02	2.7819E-02	7.2326E-03	9.6748E+11	3.1254E-02	5.1843E-02	2.3576E-03	8.5083E-03
I-133	8.3236E-02	1.7894E-01	1.1826E-02	1.5760E+12	5.1750E-02	8.3342E-02	3.7901E-03	1.3812E-02
I-134	9.1422E-03	4.9810E-03	1.3461E-03	1.8131E+11	5.6840E-03	9.9504E-03	4.5251E-04	1.6044E-03
I-135	4.2996E-02	3.1211E-02	6.1293E-03	8.1763E+11	2.6732E-02	4.3391E-02	1.9733E-03	7.1724E-03
Xe-133	7.9345E-05	2.3131E-07	5.7073E-06	4.8528E+08	0.0000E+00	4.0086E-07	1.7408E-08	3.6350E-06
Xe-135	5.0498E-04	1.1191E-05	3.6198E-05	3.0670E+09	0.0000E+00	2.5186E-06	1.0939E-07	2.2972E-05
Kr-83m	1.4383E-04	4.0629E-10	1.0426E-05	8.8853E+08	0.0000E+00	7.4836E-07	3.2523E-08	6.6939E-06
Br-82	3.7547E-04	3.8027E-04	5.3313E-05	7.1032E+09	2.3344E-04	3.7538E-04	1.7071E-05	6.2243E-05
Br-83	2.1355E-03	7.0341E-05	3.0708E-04	4.1071E+10	1.3277E-03	2.1995E-03	1.0003E-04	3.6114E-04
Br-84	8.7234E-04	3.5314E-04	1.3167E-04	1.7862E+10	5.4236E-04	1.0051E-03	4.5708E-05	1.5909E-04



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Xe-133m	5.6786E-06	1.4539E-08	4.0850E-07	3.4734E+07	0.0000E+00	2.8699E-08	1.2463E-09	2.6020E-07
Xe-135m	2.8647E-03	1.1286E-04	2.1294E-04	1.8052E+10	0.0000E+00	1.6304E-05	7.0823E-07	1.4023E-04
Total	2.5817E-01	1.0000E+00	0.0000E+00	0.0000E+00	1.5827E-01	2.5754E-01	1.1712E-02	4.2706E-02

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.1110	Atmosphere	Sump
Noble gases (Ci)		3.5989E-03	0.0000E+00
Elemental I (Ci)		2.4693E-01	0.0000E+00
Organic I (Ci)		7.6371E-03	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Time (h) =	0.1110	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	1.5353E-01
Organic I (Ci)		0.0000E+00	4.7482E-03
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 0.1110

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 8 Outflow
I-131	6.4048E-18	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00
I-132	4.9123E-18	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	8.1337E-18	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	8.9337E-19	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	4.2015E-18	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	4.8351E-21	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05



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Xe-135	3.0775E-20	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	8.7646E-21	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	3.6690E-20	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	2.0868E-19	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01
Br-84	8.5244E-20	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	3.4604E-22	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	1.7446E-19	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03
Total	2.5095E-17	1.0000E+00	0.0000E+00	0.0000E+00	2.8997E+01

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Exclusion Area Boundary Doses:

Time (h) =	0.2500	Whole Body	Thyroid	TEDE
Delta dose (rem)		7.8624E-06	4.6699E-03	1.5290E-04
Accumulated dose (rem)		4.1437E-03	2.3871E+00	7.8304E-02

Low Population Zone Doses:

Time (h) =	0.2500	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.0580E-06	6.2843E-04	2.0575E-05
Accumulated dose (rem)		5.5762E-04	3.2123E-01	1.0537E-02

Control Room Doses:

Time (h) =	0.2500	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		4.0637E-04	7.2286E+00	2.2491E-01	1.8792E-02
Accumulated dose (rem)		1.0745E-03	1.8909E+01	5.8842E-01	4.9642E-02



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Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.7674E+01	7.5732E-01	4.4224E+00	5.8910E+14	2.0880E-02
I-132	1.3006E+01	2.7225E-02	3.3608E+00	4.5006E+14	1.6036E-02
I-133	2.2352E+01	1.7880E-01	5.6109E+00	7.4781E+14	2.6519E-02
I-134	2.2098E+00	4.6966E-03	6.0266E-01	8.1404E+13	2.9255E-03
I-135	1.1432E+01	3.1013E-02	2.8918E+00	3.8591E+14	1.3703E-02
Xe-133	2.9985E-02	3.6607E-07	4.2886E-03	4.5898E+11	1.5209E-05
Xe-135	1.9379E-01	1.7915E-05	2.7514E-02	2.9356E+12	9.7258E-05
Kr-83m	5.2025E-02	6.2422E-10	7.6055E-03	8.1630E+11	2.7222E-05
Br-82	1.0102E-01	3.8039E-04	2.5321E-02	3.3740E+12	1.1962E-04
Br-83	5.5337E-01	6.8900E-05	1.4282E-01	1.9121E+13	6.8118E-04
Br-84	1.9623E-01	3.2049E-04	5.6738E-02	7.7333E+12	2.8042E-04
Xe-131m	1.1905E-04	3.6202E-10	1.7009E-05	1.8197E+09	6.0289E-08
Xe-133m	2.1448E-03	2.3001E-08	3.0684E-04	3.2839E+10	1.0883E-06
Xe-135m	9.0398E-01	1.5820E-04	1.4173E-01	1.5155E+13	5.2178E-04
Total	6.8706E+01	1.0000E+00	0.0000E+00	0.0000E+00	8.1807E-02

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.5943E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.6256E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.8356E-09
Total I (Ci)	6.6673E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	9.7474E-10

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)		1.1820E+00	0.0000E+00
Elemental I (Ci)		6.5498E+01	0.0000E+00



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Organic I (Ci)	2.0257E+00	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	2.7947E-02	7.5673E-01	1.4696E-02	1.9577E+12	7.1780E-02	6.5415E-02	2.9771E-03	1.7575E-02
I-132	2.0566E-02	2.7460E-02	1.1273E-02	1.5090E+12	5.2822E-02	5.1845E-02	2.3594E-03	1.3603E-02
I-133	3.5345E-02	1.7883E-01	1.8663E-02	2.4873E+12	9.0781E-02	8.3346E-02	3.7932E-03	2.2339E-02
I-134	3.4942E-03	4.8100E-03	2.0527E-03	2.7695E+11	8.9747E-03	9.9509E-03	4.5283E-04	2.5133E-03
I-135	1.8077E-02	3.1088E-02	9.6407E-03	1.2863E+12	4.6429E-02	4.3394E-02	1.9749E-03	1.1564E-02
Xe-133	1.5898E-04	6.1797E-07	2.4078E-05	2.5431E+09	0.0000E+00	5.3716E-07	2.0008E-08	1.9799E-05
Xe-135	1.0265E-03	3.0217E-05	1.5434E-04	1.6254E+10	0.0000E+00	3.3773E-06	1.2606E-07	1.2653E-04
Kr-83m	2.7592E-04	1.0550E-09	4.2748E-05	4.5273E+09	0.0000E+00	9.9105E-07	3.7150E-08	3.5472E-05
Br-82	1.5974E-04	3.8028E-04	8.4190E-05	1.1218E+10	4.1029E-04	3.7540E-04	1.7085E-05	1.0073E-04
Br-83	8.7502E-04	6.9469E-05	4.7890E-04	6.4092E+10	2.2474E-03	2.1997E-03	1.0010E-04	5.7766E-04
Br-84	3.1029E-04	3.3353E-04	1.9637E-04	2.6713E+10	7.9696E-04	1.0052E-03	4.5738E-05	2.4409E-04
Xe-133m	1.1371E-05	3.8830E-08	1.7227E-06	1.8196E+08	0.0000E+00	3.8454E-08	1.4323E-09	1.4168E-06
Xe-135m	4.8266E-03	2.6908E-04	8.0171E-04	8.4486E+10	0.0000E+00	2.1340E-05	7.9520E-07	6.8312E-04
Total	1.1307E-01	1.0000E+00	0.0000E+00	0.0000E+00	2.7424E-01	2.5756E-01	1.1721E-02	6.9383E-02

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.2500	Atmosphere	Sump
Noble gases (Ci)	6.3000E-03	0.0000E+00	
Elemental I (Ci)	1.0357E-01	0.0000E+00	
Organic I (Ci)	3.2032E-03	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (kg)	0.0000E+00	0.0000E+00	



	Deposition	Recirculating
Time (h) = 0.2500	Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	2.6602E-01
Organic I (Ci)	0.0000E+00	8.2273E-03
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 0.2500

Nuclide	Compartment	Dose Fract	Exposure	Decays	Pathway 8
	Atmosphere		(Ci-hr)	(Bq-s)	Outflow
I-131	2.0384E-40	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00
I-132	1.5000E-40	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	2.5780E-40	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	2.5486E-41	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	1.3185E-40	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	3.4583E-43	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05
Xe-135	2.2351E-42	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	6.0003E-43	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	1.1651E-42	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	6.3822E-42	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01
Br-84	2.2631E-42	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	2.4736E-44	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	1.0426E-41	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03
Total	7.9241E-40	1.0000E+00	0.0000E+00	0.0000E+00	2.8997E+01

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Exclusion Area Boundary Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.2101E-05	7.4369E-03	2.4299E-04
Accumulated dose (rem)		4.1558E-03	2.3945E+00	7.8547E-02

Low Population Zone Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.6284E-06	1.0008E-03	3.2700E-05
Accumulated dose (rem)		5.5924E-04	3.2223E-01	1.0570E-02

Control Room Doses:

Time (h) =	0.4720	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		2.2363E-04	3.9945E+00	1.2425E-01	1.0376E-02
Accumulated dose (rem)		1.2981E-03	2.2903E+01	7.1266E-01	6.0018E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.7641E+01	7.5896E-01	8.3416E+00	1.1112E+15	3.9385E-02
I-132	1.2151E+01	2.6398E-02	6.1333E+00	8.2183E+14	2.9301E-02
I-133	2.2164E+01	1.7859E-01	1.0548E+01	1.4059E+15	4.9862E-02
I-134	1.8521E+00	4.3247E-03	1.0445E+00	1.4130E+14	5.0857E-03
I-135	1.1157E+01	3.0729E-02	5.3930E+00	7.1984E+14	2.5566E-02
Xe-133	5.6312E-02	6.5557E-07	1.4455E-02	1.6965E+12	5.7694E-05
Xe-135	3.6879E-01	3.2464E-05	9.3840E-02	1.0988E+13	3.7375E-04



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Kr-83m	9.1118E-02	1.0671E-09	2.4471E-02	2.8814E+12	9.8661E-05
Br-82	1.0048E-01	3.8052E-04	4.7675E-02	6.3528E+12	2.2525E-04
Br-83	5.1832E-01	6.6889E-05	2.6096E-01	3.4959E+13	1.2461E-03
Br-84	1.4663E-01	2.8043E-04	9.3440E-02	1.2766E+13	4.6402E-04
Xe-131m	2.2438E-04	6.4989E-10	5.7468E-05	6.7422E+09	2.2925E-07
Xe-133m	4.0242E-03	4.1167E-08	1.0336E-03	1.2131E+11	4.1260E-06
Xe-135m	1.3049E+00	2.3753E-04	4.0051E-01	4.6902E+13	1.6596E-03
Total	6.7557E+01	1.0000E+00	0.0000E+00	0.0000E+00	1.5333E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.5886E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.6192E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.8252E-09
Total I (Ci)	6.4966E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.4577E-09

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)		1.8253E+00	0.0000E+00
Elemental I (Ci)		6.3759E+01	0.0000E+00
Organic I (Ci)		1.9719E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720

Nuclide	Compartment	Dose Fract	Exposure	Decays	Compartment	Pathway 2	Pathway 3	Pathway 4	
	Atmosphere		(Ci-hr)	(Bq-s)	Recirc Filtr	Inflow	Inflow	Outflow	
I-131		7.1666E-03	7.5709E-01	1.7648E-02	2.3508E+12	8.8900E-02	6.5421E-02	2.9809E-03	2.1294E-02
I-132		4.9364E-03	2.7145E-02	1.3376E-02	1.7910E+12	6.1235E-02	5.1849E-02	2.3622E-03	1.6288E-02
I-133		9.0041E-03	1.7870E-01	2.2384E-02	2.9833E+12	1.1169E-01	8.3354E-02	3.7980E-03	2.7034E-02
I-134		7.5240E-04	4.6691E-03	2.3916E-03	3.2289E+11	9.3333E-03	9.9516E-03	4.5327E-04	2.9554E-03



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I-135	4.5325E-03	3.0974E-02	1.1529E-02	1.5384E+12	5.6225E-02	4.3397E-02	1.9773E-03	1.3954E-02
Xe-133	2.5716E-04	1.5601E-06	7.2960E-05	8.4111E+09	0.0000E+00	9.8279E-07	2.8749E-08	6.7231E-05
Xe-135	1.6777E-03	7.7047E-05	4.7234E-04	5.4345E+10	0.0000E+00	6.1903E-06	1.8295E-07	4.3450E-04
Kr-83m	4.1680E-04	2.5494E-09	1.2399E-04	1.4336E+10	0.0000E+00	1.7445E-06	5.1849E-08	1.1536E-04
Br-82	4.0818E-05	3.8021E-04	1.0103E-04	1.3462E+10	5.0634E-04	3.7544E-04	1.7107E-05	1.2197E-04
Br-83	2.1056E-04	6.8703E-05	5.6847E-04	7.6099E+10	2.6120E-03	2.1998E-03	1.0022E-04	6.9197E-04
Br-84	5.9566E-05	3.1820E-04	2.2486E-04	3.0620E+10	7.3890E-04	1.0052E-03	4.5776E-05	2.8212E-04
Xe-131m	1.0251E-06	1.5467E-09	2.9006E-07	3.3427E+07	0.0000E+00	3.9037E-09	1.1391E-10	2.6714E-07
Xe-133m	1.8380E-05	9.7979E-08	5.2175E-06	6.0149E+08	0.0000E+00	7.0338E-08	2.0573E-09	4.8083E-06
Xe-135m	6.1823E-03	5.8144E-04	2.0793E-03	2.3841E+11	0.0000E+00	3.6169E-05	1.0293E-06	1.9800E-03
Total	3.5256E-02	1.0000E+00	0.0000E+00	0.0000E+00	3.3124E-01	2.5760E-01	1.1736E-02	8.5224E-02

Control Room Compartment Group Inventory Distribution:

Time (h) =	0.4720	Atmosphere	Sump
Noble gases (Ci)		8.5533E-03	0.0000E+00
Elemental I (Ci)		2.5902E-02	0.0000E+00
Organic I (Ci)		8.0109E-04	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Time (h) =	0.4720	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)		0.0000E+00	0.0000E+00
Elemental I (Ci)		0.0000E+00	3.2131E-01
Organic I (Ci)		0.0000E+00	9.9373E-03
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 0.4720



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Nuclide	Compartment	Dose Fract	Exposure	Decays	Pathway 8
	Atmosphere		(Ci-hr)	(Bq-s)	Outflow
I-131	2.3904E-76	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00
I-132	1.6465E-76	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	3.0033E-76	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	2.5096E-77	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	1.5118E-76	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	7.6304E-79	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05
Xe-135	4.9972E-78	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	1.2347E-78	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	1.3615E-78	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	7.0233E-78	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01
Br-84	1.9868E-78	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	5.4529E-80	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	1.7681E-77	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03
Total	9.1541E-76	1.0000E+00	0.0000E+00	0.0000E+00	2.8997E+01

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Exclusion Area Boundary Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.0181E-05	6.5105E-03	2.1224E-04
Accumulated dose (rem)		4.1659E-03	2.4010E+00	7.8759E-02

Low Population Zone Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE
Delta dose (rem)		1.3700E-06	8.7613E-04	2.8561E-05



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Accumulated dose (rem) 5.6061E-04 3.2311E-01 1.0599E-02

Control Room Doses:

Time (h) =	0.6670	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		5.8373E-05	9.5837E-01	2.9802E-02	2.7357E-03
Accumulated dose (rem)		1.3565E-03	2.3861E+01	7.4247E-01	6.2754E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.7613E+01 Atmosphere	7.6034E-01	1.1778E+01	1.5690E+15	5.5612E-02
I-132	1.1447E+01	2.5712E-02	8.4199E+00	1.1282E+15	4.0222E-02
I-133	2.2000E+01	1.7840E-01	1.4851E+01	1.9794E+15	7.0202E-02
I-134	1.5860E+00	4.0362E-03	1.3739E+00	1.8585E+14	6.6891E-03
I-135	1.0921E+01	3.0486E-02	7.5410E+00	1.0065E+15	3.5747E-02
Xe-133	7.9206E-02	9.0466E-07	2.8115E-02	3.4208E+12	1.1798E-04
Xe-135	5.2083E-01	4.5057E-05	1.8357E-01	2.2299E+13	7.6948E-04
Kr-83m	1.2055E-01	1.4152E-09	4.5742E-02	5.5811E+12	1.9370E-04
Br-82	1.0000E-01	3.8062E-04	6.7213E-02	8.9562E+12	3.1755E-04
Br-83	4.8937E-01	6.5219E-05	3.5862E-01	4.8041E+13	1.7124E-03
Br-84	1.1352E-01	2.5134E-04	1.1804E-01	1.6126E+13	5.8612E-04
Xe-131m	3.1661E-04	8.9868E-10	1.1200E-04	1.3623E+10	4.6980E-07
Xe-133m	5.6559E-03	5.6779E-08	2.0093E-03	2.4448E+11	8.4330E-06
Xe-135m	1.4890E+00	2.8528E-04	6.7798E-01	8.1977E+13	2.9360E-03
Total	6.6486E+01	1.0000E+00	0.0000E+00	0.0000E+00	2.1511E-01

Dose Equivalent (Ci/cc)	I-131 (Thyroid)	1.5837E-09
Dose Equivalent (Ci/cc)	I-131 (CEDE)	1.6136E-09
Dose Equivalent (Ci/cc)	I-131 (ICRP2 Thyroid)	1.8163E-09



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Total I (Ci) 6.3567E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE) 1.7203E-09

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	0.6670	Atmosphere	Sump
Noble gases (Ci)		2.2156E+00	0.0000E+00
Elemental I (Ci)		6.2342E+01	0.0000E+00
Organic I (Ci)		1.9281E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	2.1721E-03	7.5705E-01	1.8374E-02	2.4476E+12	9.2966E-02	6.5426E-02	2.9843E-03	2.2188E-02
I-132	1.4118E-03	2.7018E-02	1.3862E-02	1.8561E+12	6.0424E-02	5.1853E-02	2.3644E-03	1.6893E-02
I-133	2.7132E-03	1.7860E-01	2.3294E-02	3.1046E+12	1.1613E-01	8.3360E-02	3.8021E-03	2.8155E-02
I-134	1.9559E-04	4.6169E-03	2.4624E-03	3.3245E+11	8.3715E-03	9.9521E-03	4.5360E-04	3.0450E-03
I-135	1.3469E-03	3.0922E-02	1.1984E-02	1.5992E+12	5.7646E-02	4.3400E-02	1.9794E-03	1.4516E-02
Xe-133	3.2288E-04	2.6906E-06	1.3102E-04	1.5628E+10	0.0000E+00	1.6032E-06	4.1154E-08	1.2653E-04
Xe-135	2.1083E-03	1.3340E-04	8.5150E-04	1.0143E+11	0.0000E+00	1.0099E-05	2.6437E-07	8.2173E-04
Kr-83m	4.9328E-04	4.2399E-09	2.1471E-04	2.5670E+10	0.0000E+00	2.7338E-06	7.1403E-08	2.0911E-04
Br-82	1.2333E-05	3.8009E-04	1.0516E-04	1.4012E+10	5.2784E-04	3.7546E-04	1.7126E-05	1.2705E-04
Br-83	6.0352E-05	6.8394E-05	5.8923E-04	7.8880E+10	2.5831E-03	2.2000E-03	1.0032E-04	7.1779E-04
Br-84	1.3999E-05	3.1285E-04	2.3020E-04	3.1348E+10	5.9918E-04	1.0053E-03	4.5801E-05	2.8900E-04
Xe-131m	1.2918E-06	2.6732E-09	5.2200E-07	6.2242E+07	0.0000E+00	6.3889E-09	1.6341E-10	5.0386E-07
Xe-133m	2.3062E-05	1.6890E-07	9.3651E-06	1.1171E+09	0.0000E+00	1.1470E-07	2.9435E-09	9.0452E-06
Xe-135m	6.5840E-03	8.9609E-04	3.3367E-03	3.9383E+11	0.0000E+00	5.4790E-05	1.2919E-06	3.3065E-03
Total	1.7459E-02	1.0000E+00	0.0000E+00	0.0000E+00	3.3924E-01	2.5764E-01	1.1749E-02	9.0404E-02



Control Room Compartment Group Inventory Distribution:

Time (h) = 0.6670	Atmosphere	Sump
Noble gases (Ci)	9.5328E-03	0.0000E+00
Elemental I (Ci)	7.6884E-03	0.0000E+00
Organic I (Ci)	2.3779E-04	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

	Deposition	Recirculating
	Surfaces	Filter
Time (h) = 0.6670		
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	3.2907E-01
Organic I (Ci)	0.0000E+00	1.0177E-02
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 0.6670

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 8 Outflow
I-131	6.5710-108	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00
I-132	4.2708-108	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	8.2080-108	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	5.9171-109	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	4.0745-108	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	2.9551-110	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05
Xe-135	1.9431-109	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	4.4974-110	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	3.7308-110	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	1.8257-109	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01



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Br-84	4.2351-110	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	2.1101-111	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	5.5552-109	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03
Total	2.4805-107	1.0000E+00	0.0000E+00	0.0000E+00	2.8997E+01

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Exclusion Area Boundary Doses:

Time (h) =	2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		6.0510E-05	4.3980E-02	1.4238E-03
Accumulated dose (rem)		4.2265E-03	2.4450E+00	8.0183E-02

Low Population Zone Doses:

Time (h) =	2.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		8.1429E-06	5.9184E-03	1.9161E-04
Accumulated dose (rem)		5.6876E-04	3.2903E-01	1.0790E-02

Control Room Doses:

Time (h) =	2.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		8.7635E-05	4.2499E-01	1.3271E-02	4.3957E-03
Accumulated dose (rem)		1.4441E-03	2.4286E+01	7.5574E-01	6.7150E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000



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Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.7419E+01	7.6890E-01	3.5122E+01	4.6786E+15	1.6584E-01
I-132	7.6121E+00	2.1603E-02	2.0860E+01	2.7970E+15	9.9790E-02
I-133	2.0912E+01	1.7689E-01	4.3420E+01	5.7879E+15	2.0529E-01
I-134	5.4934E-01	2.6434E-03	2.6532E+00	3.5944E+14	1.2956E-02
I-135	9.4369E+00	2.8861E-02	2.1051E+01	2.8105E+15	9.9843E-02
Xe-133	2.3007E-01	2.6069E-06	2.3890E-01	3.0825E+13	1.0792E-03
Xe-135	1.4445E+00	1.2822E-04	1.5403E+00	1.9879E+14	6.9673E-03
Kr-83m	2.3018E-01	3.1177E-09	2.9713E-01	3.8463E+13	1.3562E-03
Br-82	9.6805E-02	3.8083E-04	1.9830E-01	2.6425E+13	9.3697E-04
Br-83	3.3037E-01	5.5158E-05	8.9432E-01	1.1989E+14	4.2762E-03
Br-84	1.9733E-02	1.3529E-04	1.8735E-01	2.5642E+13	9.3367E-04
Xe-131m	9.3961E-04	2.6271E-09	9.6546E-04	1.2453E+11	4.3588E-06
Xe-133m	1.6339E-02	1.6303E-07	1.7012E-02	2.1951E+12	7.6857E-05
Xe-135m	1.5387E+00	3.9914E-04	2.7971E+00	3.5686E+14	1.2931E-02
Total	5.9837E+01	1.0000E+00	0.0000E+00	0.0000E+00	6.1228E-01

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.5514E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.5777E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.7604E-09
Total I (Ci)	5.5929E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.2947E-09

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	2.0000	Atmosphere	Sump
Noble gases (Ci)	3.4607E+00	0.0000E+00	
Elemental I (Ci)	5.4685E+01	0.0000E+00	
Organic I (Ci)	1.6913E+00	0.0000E+00	
Aerosol I (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (Ci)	0.0000E+00	0.0000E+00	
All Aerosols (kg)	0.0000E+00	0.0000E+00	



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Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	7.5513E-06	7.5505E-01	1.8693E-02	2.4900E+12	9.4350E-02	6.5460E-02	3.0069E-03	2.2585E-02
I-132	3.3000E-06	2.6861E-02	1.4058E-02	1.8823E+12	4.1232E-02	5.1871E-02	2.3767E-03	1.7139E-02
I-133	9.0660E-06	1.7807E-01	2.3690E-02	3.1573E+12	1.1328E-01	8.3402E-02	3.8299E-03	2.8649E-02
I-134	2.3815E-07	4.5719E-03	2.4872E-03	3.3581E+11	2.9756E-03	9.9540E-03	4.5489E-04	3.0769E-03
I-135	4.0911E-06	3.0804E-02	1.2177E-02	1.6250E+12	5.1117E-02	4.3420E-02	1.9926E-03	1.4759E-02
Xe-133	5.2413E-04	1.4788E-05	7.3449E-04	9.2353E+10	0.0000E+00	1.1379E-05	2.3891E-07	7.5821E-04
Xe-135	3.2149E-03	7.1861E-04	4.6789E-03	5.8843E+11	0.0000E+00	6.9441E-05	1.5395E-06	4.8369E-03
Kr-83m	5.4472E-04	1.8632E-08	9.6243E-04	1.2123E+11	0.0000E+00	1.4979E-05	3.1058E-07	1.0020E-03
Br-82	4.1967E-08	3.7902E-04	1.0696E-04	1.4252E+10	5.2436E-04	3.7566E-04	1.7253E-05	1.2930E-04
Br-83	1.4322E-07	6.8004E-05	5.9760E-04	8.0001E+10	1.7895E-03	2.2008E-03	1.0084E-04	7.2836E-04
Br-84	8.5549E-09	3.0888E-04	2.3183E-04	3.1571E+10	1.0689E-04	1.0054E-03	4.5872E-05	2.9115E-04
Xe-131m	2.1598E-06	1.4935E-08	2.9747E-06	3.7388E+08	0.0000E+00	4.6331E-08	9.6355E-10	3.0686E-06
Xe-133m	3.7323E-05	9.2632E-07	5.2389E-05	6.5870E+09	0.0000E+00	8.1259E-07	1.7021E-08	5.4084E-05
Xe-135m	6.1168E-03	3.1519E-03	1.1971E-02	1.4779E+12	0.0000E+00	2.8191E-04	3.3484E-06	1.2513E-02
Total	1.0464E-02	1.0000E+00	0.0000E+00	0.0000E+00	3.0537E-01	2.5807E-01	1.1830E-02	1.0652E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 2.0000	Atmosphere	Sump
Noble gases (Ci)	1.0440E-02	0.0000E+00
Elemental I (Ci)	2.3707E-05	0.0000E+00
Organic I (Ci)	7.3321E-07	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Time (h) = 2.0000	Deposition Surfaces	Recirculating Filter



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Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	2.9621E-01
Organic I (Ci)	0.0000E+00	9.1611E-03
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 2.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 8 Outflow
I-131	9.8813-324	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00
I-132	4.9407-324	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	1.4822-323	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	0.0000E+00	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	4.9407-324	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	0.0000E+00	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05
Xe-135	0.0000E+00	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	0.0000E+00	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	0.0000E+00	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	0.0000E+00	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01
Br-84	0.0000E+00	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	0.0000E+00	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	0.0000E+00	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03
Total	3.4585-323	1.0000E+00	0.0000E+00	0.0000E+00	2.8997E+01

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Exclusion Area Boundary Doses:



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Time (h) = 8.0000 Whole Body Thyroid TEDE
Delta dose (rem) 1.4813E-04 1.6299E-01 5.1822E-03
Accumulated dose (rem) 4.3746E-03 2.6080E+00 8.5365E-02

Low Population Zone Doses:

Time (h) = 8.0000 Whole Body Thyroid TEDE
Delta dose (rem) 9.3653E-06 1.0305E-02 3.2765E-04
Accumulated dose (rem) 5.7812E-04 3.3933E-01 1.1118E-02

Control Room Doses:

Time (h) = 8.0000 Whole Body Thyroid TEDE Skin
Delta dose (rem) 2.2913E-04 3.1768E-02 1.2104E-03 1.2192E-02
Accumulated dose (rem) 1.6733E-03 2.4318E+01 7.5695E-01 7.9341E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.6634E+01	7.9579E-01	1.3724E+02	1.8282E+16	5.8382E-01
I-132	1.2177E+00	1.1420E-02	4.1634E+01	5.5850E+15	1.8609E-01
I-133	1.6707E+01	1.6801E-01	1.5570E+02	2.0756E+16	6.6556E-01
I-134	4.6655E-03	8.7742E-04	3.3251E+00	4.5072E+14	1.5815E-02
I-135	4.9082E+00	2.2697E-02	6.2503E+01	8.3464E+15	2.7037E-01
Xe-133	8.0171E-01	9.9185E-06	3.4317E+00	4.5349E+14	1.4026E-02
Xe-135	3.3583E+00	3.8543E-04	1.7482E+01	2.3121E+15	7.1801E-02
Kr-83m	1.2314E-01	4.1629E-09	1.4979E+00	1.9836E+14	6.2911E-03
Br-82	8.3960E-02	3.7609E-04	7.3936E-01	9.8529E+13	3.1534E-03
Br-83	5.6574E-02	2.9705E-05	1.8184E+00	2.4387E+14	8.1132E-03



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Br-84	7.5275E-06	3.8617E-05	2.0190E-01	2.7645E+13	9.9721E-04
Xe-131m	3.6017E-03	1.0646E-08	1.4771E-02	1.9514E+12	6.0302E-05
Xe-133m	5.5519E-02	6.1024E-07	2.4042E-01	3.1772E+13	9.8292E-04
Xe-135m	8.0393E-01	3.6232E-04	9.5862E+00	1.2440E+15	4.0859E-02
Total	4.4758E+01	1.0000E+00	0.0000E+00	0.0000E+00	1.8679E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.4304E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.4477E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.5758E-09
Total I (Ci)	3.9472E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	2.7040E-09

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) =	8.0000	Atmosphere	Sump
Noble gases (Ci)		5.1462E+00	0.0000E+00
Elemental I (Ci)		3.8424E+01	0.0000E+00
Organic I (Ci)		1.1884E+00	0.0000E+00
Aerosol I (Ci)		0.0000E+00	0.0000E+00
All Aerosols (Ci)		0.0000E+00	0.0000E+00
All Aerosols (kg)		0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure	Decays	Compartment	Pathway 2	Pathway 3	Pathway 4
	Atmosphere		(Ci-hr)	(Bq-s)	Recirc Filtr	Inflow	Inflow	Outflow
I-131	4.4748E-06	7.4783E-01	1.8721E-02	2.4937E+12	9.2478E-02	6.5561E-02	3.0749E-03	2.2616E-02
I-132	3.2759E-07	2.6576E-02	1.4063E-02	1.8831E+12	6.7701E-03	5.1892E-02	2.3907E-03	1.7146E-02
I-133	4.4947E-06	1.7633E-01	2.3720E-02	3.1614E+12	9.2887E-02	8.3513E-02	3.9047E-03	2.8682E-02
I-134	1.2551E-09	4.5217E-03	2.4873E-03	3.3583E+11	2.5939E-05	9.9547E-03	4.5536E-04	3.0772E-03
I-135	1.3204E-06	3.0493E-02	1.2189E-02	1.6265E+12	2.7288E-02	4.3461E-02	2.0203E-03	1.4771E-02
Xe-133	5.0244E-04	7.8584E-05	3.9466E-03	5.0540E+11	0.0000E+00	1.1915E-04	2.3430E-06	4.1711E-03
Xe-135	2.0207E-03	3.1604E-03	2.0807E-02	2.6657E+12	0.0000E+00	5.6980E-04	1.2076E-05	2.2031E-02



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Kr-83m	1.0815E-04	5.0453E-08	2.6352E-03	3.3743E+11	0.0000E+00	6.3395E-05	1.1126E-06	2.8016E-03
Br-82	2.2587E-08	3.7535E-04	1.0711E-04	1.4272E+10	4.6679E-04	3.7619E-04	1.7613E-05	1.2946E-04
Br-83	1.5220E-08	6.7282E-05	5.9786E-04	8.0036E+10	3.1453E-04	2.2017E-03	1.0147E-04	7.2864E-04
Br-84	2.0251E-12	3.0548E-04	2.3183E-04	3.1571E+10	4.1851E-08	1.0054E-03	4.5883E-05	2.9115E-04
Xe-131m	2.4529E-06	8.6225E-08	1.7366E-05	2.2228E+09	0.0000E+00	5.3025E-07	1.0055E-08	1.8338E-05
Xe-133m	3.5680E-05	4.9082E-06	2.8069E-04	3.5942E+10	0.0000E+00	8.4444E-06	1.6428E-07	2.9665E-04
Xe-135m	3.3212E-03	1.0258E-02	3.9397E-02	4.9369E+12	0.0000E+00	1.9450E-03	7.8873E-06	4.1781E-02
Total	6.0012E-03	1.0000E+00	0.0000E+00	0.0000E+00	2.2023E-01	2.6067E-01	1.2035E-02	1.5854E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 8.0000	Atmosphere	Sump
Noble gases (Ci)	5.9906E-03	0.0000E+00
Elemental I (Ci)	1.0337E-05	0.0000E+00
Organic I (Ci)	3.1970E-07	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Time (h) = 8.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	2.1362E-01
Organic I (Ci)	0.0000E+00	6.6069E-03
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 8.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 8 Outflow	
I-131	Atmosphere	0.0000E+00	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00



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I-132	0.0000E+00	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	0.0000E+00	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	0.0000E+00	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	0.0000E+00	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	0.0000E+00	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05
Xe-135	0.0000E+00	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	0.0000E+00	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	0.0000E+00	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	0.0000E+00	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01
Br-84	0.0000E+00	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	0.0000E+00	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	0.0000E+00	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03
Total	0.0000E+00	1.0000E+00	0.0000E+00	0.0000E+00	2.8997E+01

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Exclusion Area Boundary Doses:

Time (h) =	24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		8.3872E-05	8.4885E-02	2.6923E-03
Accumulated dose (rem)		4.4585E-03	2.6929E+00	8.8058E-02

Low Population Zone Doses:

Time (h) =	24.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)		3.6390E-06	3.6829E-03	1.1681E-04
Accumulated dose (rem)		5.8176E-04	3.4302E-01	1.1235E-02

Control Room Doses:



Time (h) =	24.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)		2.1695E-04	1.1278E-02	5.6357E-04	1.1670E-02
Accumulated dose (rem)		1.8902E-03	2.4330E+01	7.5751E-01	9.1012E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.5273E+01 Atmosphere	8.3770E-01	3.9216E+02	5.2253E+16	1.0286E+00
I-132	9.5349E-03	4.6021E-03	4.5544E+01	6.1159E+15	1.9318E-01
I-133	9.5331E+00	1.4286E-01	3.5940E+02	4.8001E+16	1.0236E+00
I-134	1.4545E-08	3.2379E-04	3.3309E+00	4.5150E+14	1.5826E-02
I-135	8.9154E-01	1.3345E-02	9.9757E+01	1.3364E+16	3.3677E-01
Xe-133	1.7486E+00	2.6514E-05	2.4902E+01	3.2961E+15	5.1036E-02
Xe-135	2.3530E+00	5.4632E-04	6.7263E+01	8.9640E+15	1.5922E-01
Kr-83m	2.0040E-03	2.0463E-09	1.9987E+00	2.6622E+14	7.1968E-03
Br-82	5.9637E-02	3.5116E-04	1.8740E+00	2.5004E+14	5.1412E-03
Br-83	5.3118E-04	1.2077E-05	2.0069E+00	2.6946E+14	8.4544E-03
Br-84	5.9820E-15	1.4226E-05	2.0190E-01	2.7646E+13	9.9722E-04
Xe-131m	1.0014E-02	3.3423E-08	1.2589E-01	1.6629E+13	2.5100E-04
Xe-133m	1.1260E-01	1.5600E-06	1.6684E+00	2.2095E+14	3.4476E-03
Xe-135m	1.4606E-01	2.1846E-04	1.5690E+01	2.0484E+15	5.1738E-02
Total	3.0139E+01	1.0000E+00	0.0000E+00	0.0000E+00	2.8855E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	1.2346E-09
Dose Equivalent (Ci/cc) I-131 (CEDE)	1.2430E-09
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	1.3084E-09
Total I (Ci)	2.5707E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.5873E-09



Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
Noble gases (Ci)	4.3723E+00	0.0000E+00
Elemental I (Ci)	2.4994E+01	0.0000E+00
Organic I (Ci)	7.7301E-01	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	5.8526E-07	7.4062E-01	1.8731E-02	2.4951E+12	8.7363E-02	6.5597E-02	3.0990E-03	2.2627E-02
I-132	3.6538E-10	2.6305E-02	1.4064E-02	1.8831E+12	5.4541E-05	5.1893E-02	2.3911E-03	1.7146E-02
I-133	3.6531E-07	1.7459E-01	2.3729E-02	3.1625E+12	5.4531E-02	8.3541E-02	3.9241E-03	2.8692E-02
I-134	5.5736E-16	4.4757E-03	2.4873E-03	3.3583E+11	8.3198E-11	9.9547E-03	4.5536E-04	3.0772E-03
I-135	3.4164E-08	3.0186E-02	1.2190E-02	1.6267E+12	5.0998E-03	4.3467E-02	2.0239E-03	1.4773E-02
Xe-133	3.3949E-04	2.1171E-04	1.0742E-02	1.2989E+12	0.0000E+00	3.4433E-04	4.3477E-06	1.0743E-02
Xe-135	4.3544E-04	5.6256E-03	3.7418E-02	4.6514E+12	0.0000E+00	1.0684E-03	1.6811E-05	3.8609E-02
Kr-83m	1.1983E-06	5.7013E-08	3.0084E-03	3.8425E+11	0.0000E+00	7.5534E-05	1.1617E-06	3.1958E-03
Br-82	2.2853E-09	3.7169E-04	1.0716E-04	1.4278E+10	3.4114E-04	3.7635E-04	1.7721E-05	1.2951E-04
Br-83	2.0355E-11	6.6598E-05	5.9786E-04	8.0037E+10	3.0385E-06	2.2017E-03	1.0149E-04	7.2865E-04
Br-84	2.2923E-22	3.0237E-04	2.3183E-04	3.1571E+10	3.4218E-17	1.0054E-03	4.5883E-05	2.9115E-04
Xe-131m	2.6623E-06	2.9237E-07	5.9491E-05	7.0908E+09	0.0000E+00	1.8993E-06	2.0385E-08	5.8507E-05
Xe-133m	2.4093E-05	1.3212E-05	7.6332E-04	9.2295E+10	0.0000E+00	2.4316E-05	2.9778E-07	7.6341E-04
Xe-135m	6.8784E-04	1.7224E-02	6.6830E-02	8.1974E+12	0.0000E+00	4.4300E-03	8.4766E-06	6.9169E-02
Total	1.4917E-03	1.0000E+00	0.0000E+00	0.0000E+00	1.4739E-01	2.6398E-01	1.2090E-02	2.1000E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 24.0000	Atmosphere	Sump
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Noble gases (Ci)	1.4907E-03	0.0000E+00
Elemental I (Ci)	9.5779E-07	0.0000E+00
Organic I (Ci)	2.9622E-08	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Time (h) = 24.0000	Deposition	Recirculating
	Surfaces	Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	1.4297E-01
Organic I (Ci)	0.0000E+00	4.4218E-03
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 24.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 8 Outflow
I-131	0.0000E+00	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00
I-132	0.0000E+00	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	0.0000E+00	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	0.0000E+00	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	0.0000E+00	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	0.0000E+00	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05
Xe-135	0.0000E+00	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	0.0000E+00	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	0.0000E+00	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	0.0000E+00	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01
Br-84	0.0000E+00	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	0.0000E+00	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	0.0000E+00	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03



Total 0.0000E+00 1.0000E+00 0.0000E+00 0.0000E+00 2.8997E+01

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Exclusion Area Boundary Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	4.4585E-03	2.6929E+00	8.8058E-02

Low Population Zone Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00
Accumulated dose (rem)	5.8176E-04	3.4302E-01	1.1235E-02

Control Room Doses:

Time (h) = 96.0000	Whole Body	Thyroid	TEDE	Skin
Delta dose (rem)	3.2152E-05	8.1608E-05	3.4654E-05	1.8349E-03
Accumulated dose (rem)	1.9224E-03	2.4330E+01	7.5755E-01	9.2847E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure	Decays	Pathway 5
	Atmosphere		(Ci-hr)	(Bq-s)	Outflow
I-131	1.1792E+01	9.1581E-01	1.3605E+03	1.8132E+17	1.0286E+00



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I-132	3.5956E-12	1.4512E-03	4.5574E+01	6.1201E+15	1.9318E-01
I-133	8.6538E-01	7.7412E-02	6.1799E+02	8.2647E+16	1.0236E+00
I-134	2.7500E-33	1.0204E-04	3.3309E+00	4.5150E+14	1.5826E-02
I-135	4.6897E-04	4.5571E-03	1.0810E+02	1.4496E+16	3.3677E-01
Xe-133	2.2819E+00	6.3560E-05	1.8943E+02	2.5198E+16	5.1036E-02
Xe-135	1.8324E-02	2.7138E-04	1.0603E+02	1.4181E+16	1.5922E-01
Kr-83m	1.9411E-12	6.4703E-10	2.0055E+00	2.6717E+14	7.1968E-03
Br-82	1.4505E-02	2.4592E-04	4.1645E+00	5.5619E+14	5.1412E-03
Br-83	4.5348E-13	3.8091E-06	2.0086E+00	2.6970E+14	8.4544E-03
Br-84	7.6244E-56	4.4831E-06	2.0190E-01	2.7646E+13	9.9722E-04
Xe-131m	3.2268E-02	1.4355E-07	1.7157E+00	2.2784E+14	2.5100E-04
Xe-133m	9.7178E-02	3.0580E-06	1.0378E+01	1.3813E+15	3.4476E-03
Xe-135m	7.6833E-05	7.4840E-05	1.7057E+01	2.2298E+15	5.1738E-02
Total	1.5102E+01	1.0000E+00	0.0000E+00	0.0000E+00	2.8855E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	8.7272E-10
Dose Equivalent (Ci/cc) I-131 (CEDE)	8.7343E-10
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	8.7910E-10
Total I (Ci)	1.2658E+01
Dose Equivalent (Ci/cc) Xe-133 (EDE)	1.8396E-10

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	2.4297E+00	0.0000E+00
Elemental I (Ci)	1.2292E+01	0.0000E+00
Organic I (Ci)	3.8017E-01	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000



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Nuclide	Compartment Atmosphere	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	9.6055-199	7.3876E-01	1.8731E-02	2.4951E+12	6.7454E-02	6.5597E-02	3.0990E-03	2.2627E-02
I-132	2.9288-211	2.6239E-02	1.4064E-02	1.8831E+12	2.0567E-14	5.1893E-02	2.3911E-03	1.7146E-02
I-133	7.0492-200	1.7415E-01	2.3729E-02	3.1625E+12	4.9502E-03	8.3541E-02	3.9241E-03	2.8692E-02
I-134	2.2400-232	4.4644E-03	2.4873E-03	3.3583E+11	1.5730E-35	9.9547E-03	4.5536E-04	3.0772E-03
I-135	3.8201-203	3.0110E-02	1.2190E-02	1.6267E+12	2.6826E-06	4.3467E-02	2.0239E-03	1.4773E-02
Xe-133	3.0570E-05	3.9288E-04	1.9984E-02	2.3309E+12	0.0000E+00	5.9708E-04	4.3477E-06	1.9323E-02
Xe-135	2.2699E-07	6.2237E-03	4.1501E-02	5.1121E+12	0.0000E+00	1.1680E-03	1.6811E-05	4.2495E-02
Kr-83m	1.0231E-15	5.6944E-08	3.0124E-03	3.8471E+11	0.0000E+00	7.5660E-05	1.1617E-06	3.1998E-03
Br-82	1.1815-201	3.7075E-04	1.0716E-04	1.4278E+10	8.2972E-05	3.7635E-04	1.7721E-05	1.2951E-04
Br-83	3.6939-212	6.6430E-05	5.9786E-04	8.0037E+10	2.5940E-15	2.2017E-03	1.0149E-04	7.2865E-04
Br-84	6.2106-255	3.0161E-04	2.3183E-04	3.1571E+10	4.3613E-58	1.0054E-03	4.5883E-05	2.9115E-04
Xe-131m	2.0456E-06	1.1250E-06	2.2949E-04	2.5984E+10	0.0000E+00	6.6432E-06	2.0385E-08	2.1470E-04
Xe-133m	2.1719E-06	2.4516E-05	1.4200E-03	1.6562E+11	0.0000E+00	4.2411E-05	2.9778E-07	1.3730E-03
Xe-135m	3.6584E-07	1.8891E-02	7.3484E-02	8.9538E+12	0.0000E+00	5.0772E-03	8.4766E-06	7.5495E-02
Total	3.5380E-05	1.0000E+00	0.0000E+00	0.0000E+00	7.2490E-02	2.6500E-01	1.2090E-02	2.2957E-01

Control Room Compartment Group Inventory Distribution:

Time (h) = 96.0000	Atmosphere	Sump
Noble gases (Ci)	3.5380E-05	0.0000E+00
Elemental I (Ci)	1.0013-198	0.0000E+00
Organic I (Ci)	3.0968-200	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Time (h) = 96.0000	Deposition Surfaces	Recirculating Filter
Noble gases (Ci)	0.0000E+00	0.0000E+00
Elemental I (Ci)	0.0000E+00	7.0315E-02
Organic I (Ci)	0.0000E+00	2.1747E-03



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Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 96.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 8 Outflow
I-131	0.0000E+00	7.5522E-01	9.2464E-03	1.2316E+12	7.3652E+00
I-132	0.0000E+00	2.8300E-02	7.3244E-03	9.7587E+11	5.8354E+00
I-133	0.0000E+00	1.7905E-01	1.1780E-02	1.5692E+12	9.3838E+00
I-134	0.0000E+00	5.2209E-03	1.4046E-03	1.8722E+11	1.1194E+00
I-135	0.0000E+00	3.1369E-02	6.1325E-03	8.1693E+11	4.8852E+00
Xe-133	0.0000E+00	6.6297E-09	1.6284E-07	6.9927E+06	9.8153E-05
Xe-135	0.0000E+00	3.1782E-07	1.0234E-06	4.3929E+07	6.1679E-04
Kr-83m	0.0000E+00	1.1906E-11	3.0413E-07	1.3061E+07	1.8339E-04
Br-82	0.0000E+00	3.8019E-04	5.3061E-05	7.0679E+09	4.2266E-02
Br-83	0.0000E+00	7.1508E-05	3.1076E-04	4.1404E+10	2.4758E-01
Br-84	0.0000E+00	3.8192E-04	1.4176E-04	1.8904E+10	1.1301E-01
Xe-133m	0.0000E+00	4.1683E-10	1.1658E-08	5.0063E+05	7.0271E-06
Xe-135m	0.0000E+00	3.5241E-06	6.6194E-06	2.8351E+08	3.9940E-03
Total	0.0000E+00	1.0000E+00	0.0000E+00	0.0000E+00	2.8997E+01

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Exclusion Area Boundary Doses:

Time (h) = 720.0000	Whole Body	Thyroid	TEDE
Delta dose (rem)	0.0000E+00	0.0000E+00	0.0000E+00



Accumulated dose (rem) 4.4585E-03 2.6929E+00 8.8058E-02

Low Population Zone Doses:

Time (h) = 720.0000 Whole Body Thyroid TEDE
 Delta dose (rem) 0.0000E+00 0.0000E+00 0.0000E+00
 Accumulated dose (rem) 5.8176E-04 3.4302E-01 1.1235E-02

Control Room Doses:

Time (h) = 720.0000 Whole Body Thyroid TEDE Skin
 Delta dose (rem) 1.9187E-07 8.1761-197 1.9187E-07 2.5047E-05
 Accumulated dose (rem) 1.9226E-03 2.4330E+01 7.5755E-01 9.2872E-02

Intact Steam Generators Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Pathway 5 Outflow
I-131	1.2535E+00	9.7057E-01	4.2920E+03	5.7210E+17	1.0286E+00
I-132	7.6740E-94	4.8752E-04	4.5574E+01	6.1201E+15	1.9318E-01
I-133	8.0595E-10	2.7092E-02	6.4380E+02	8.6106E+16	1.0236E+00
I-134	1.4793-247	3.4278E-05	3.3309E+00	4.5150E+14	1.5826E-02
I-135	1.7914E-32	1.5310E-03	1.0810E+02	1.4497E+16	3.3677E-01
Xe-133	8.1309E-02	7.0103E-05	6.2193E+02	8.2869E+16	5.1036E-02
Xe-135	4.2375E-23	9.1374E-05	1.0627E+02	1.4214E+16	1.5922E-01
Kr-83m	4.9301E-91	2.1736E-10	2.0055E+00	2.6717E+14	7.1968E-03
Br-82	6.9214E-08	9.7216E-05	4.9006E+00	6.5458E+14	5.1412E-03
Br-83	1.1515E-91	1.2796E-06	2.0086E+00	2.6970E+14	8.4544E-03
Br-84	0.0000E+00	1.5060E-06	2.0190E-01	2.7646E+13	9.9722E-04
Xe-131m	3.8078E-02	8.9626E-07	3.1887E+01	4.2466E+15	2.5100E-04
Xe-133m	3.0088E-05	1.8286E-06	1.8473E+01	2.4620E+15	3.4476E-03



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Xe-135m	2.9349E-33	2.5143E-05	1.7057E+01	2.2299E+15	5.1738E-02
Total	1.3729E+00	1.0000E+00	0.0000E+00	0.0000E+00	2.8855E+00

Dose Equivalent (Ci/cc) I-131 (Thyroid)	9.1647E-11
Dose Equivalent (Ci/cc) I-131 (CEDE)	9.1647E-11
Dose Equivalent (Ci/cc) I-131 (ICRP2 Thyroid)	9.1647E-11
Total I (Ci)	1.2535E+00
Dose Equivalent (Ci/cc) Xe-133 (EDE)	6.6411E-12

Intact Steam Generators Compartment Group Inventory Distribution:

Time (h) = 720.0000	Atmosphere	Sump
Noble gases (Ci)	1.1942E-01	0.0000E+00
Elemental I (Ci)	1.2159E+00	0.0000E+00
Organic I (Ci)	3.7604E-02	0.0000E+00
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00
All Aerosols (kg)	0.0000E+00	0.0000E+00

Environment Integral Nuclide Release (Ci): at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract Pathway 1	Dose Fract Pathway 5	Dose Fract Pathway 7	Dose Fract Pathway 8
I-131	6.9321E+00	0.00000	0.04872	0.00000	0.70964
I-132	4.8710E+00	0.00000	0.00065	0.00000	0.02660
I-133	8.5451E+00	0.00000	0.00963	0.00000	0.16825
I-134	9.1334E-01	0.00000	0.00006	0.00000	0.00491
I-135	4.2526E+00	0.00000	0.00122	0.00000	0.02948
Xe-133	1.6694E-01	0.00000	0.00000	0.00000	0.00000
Xe-135	4.8385E+00	0.00000	0.00002	0.00000	0.00000
Kr-83m	2.0551E-01	0.00000	0.00000	0.00000	0.00000
Br-82	3.9019E-02	0.00000	0.00002	0.00000	0.00036
Br-83	2.0692E-01	0.00000	0.00000	0.00000	0.00007



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Br-84	9.1624E-02	0.00000	0.00000	0.00000	0.00036
Xe-131m	6.9002E-04	0.00000	0.00000	0.00000	0.00000
Xe-133m	1.1356E-02	0.00000	0.00000	0.00000	0.00000
Xe-135m	4.5069E+00	0.00000	0.00002	0.00000	0.00000

Environment Compartment Group Inventory Distribution:

	Total Release	Release Rate/s
Time (h) = 720.0000		
Noble gases (Ci)	9.7298E+00	3.7538E-06
Elemental I (Ci)	2.5076E+01	9.6744E-06
Organic I (Ci)	7.7555E-01	2.9921E-07
Aerosol I (Ci)	0.0000E+00	0.0000E+00
All Aerosols (Ci)	0.0000E+00	0.0000E+00

Control Room Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Nuclide	Compartment	Dose Fract	Exposure (Ci-hr)	Decays (Bq-s)	Compartment Recirc Filtr	Pathway 2 Inflow	Pathway 3 Inflow	Pathway 4 Outflow
I-131	0.0000E+00	7.3874E-01	1.8731E-02	2.4951E+12	7.1701E-03	6.5597E-02	3.0990E-03	2.2627E-02
I-132	0.0000E+00	2.6238E-02	1.4064E-02	1.8831E+12	4.3897E-06	5.1893E-02	2.3911E-03	1.7146E-02
I-133	0.0000E+00	1.7415E-01	2.3729E-02	3.1625E+12	4.6102E-12	8.3541E-02	3.9241E-03	2.8692E-02
I-134	0.0000E+00	4.4643E-03	2.4873E-03	3.3583E+11	8.4622E-250	9.9547E-03	4.5536E-04	3.0772E-03
I-135	0.0000E+00	3.0109E-02	1.2190E-02	1.6267E+12	1.0247E-34	4.3467E-02	2.0239E-03	1.4773E-02
Xe-133	3.1078E-14	4.1102E-04	2.0908E-02	2.4340E+12	0.0000E+00	6.2231E-04	4.3477E-06	2.0179E-02
Xe-135	9.4726E-36	6.2239E-03	4.1503E-02	5.1123E+12	0.0000E+00	1.1681E-03	1.6811E-05	4.2497E-02
Kr-83m	2.8351E-94	5.6943E-08	3.0124E-03	3.8471E+11	0.0000E+00	7.5660E-05	1.1617E-06	3.1998E-03
Br-82	0.0000E+00	3.7075E-04	1.0716E-04	1.4278E+10	3.9592E-10	3.7635E-04	1.7721E-05	1.2951E-04
Br-83	0.0000E+00	6.6429E-05	5.9786E-04	8.0037E+10	6.5871E-94	2.2017E-03	1.0149E-04	7.2865E-04
Br-84	0.0000E+00	3.0160E-04	2.3183E-04	3.1571E+10	0.0000E+00	1.0054E-03	4.5883E-05	2.9115E-04
Xe-131m	2.3734E-07	3.7632E-06	7.6766E-04	8.3595E+10	0.0000E+00	2.1007E-05	2.0385E-08	6.9100E-04
Xe-133m	2.2080E-15	2.5648E-05	1.4856E-03	1.7294E+11	0.0000E+00	4.4217E-05	2.9778E-07	1.4338E-03
Xe-135m	1.4988E-35	1.8892E-02	7.3487E-02	8.9542E+12	0.0000E+00	5.0775E-03	8.4766E-06	7.5498E-02



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Total 2.3734E-07 1.0000E+00 0.0000E+00 0.0000E+00 7.1701E-03 2.6504E-01 1.2090E-02 2.3096E-01

Faulted Steam Generator Compartment Nuclide Inventory (Ci) at Time (h) = 720.0000

Table with 7 columns: Nuclide, Compartment, Dose Fract, Exposure (Ci-hr), Decays (Bq-s), Pathway, and 8 Outflow. Rows include I-131, I-132, I-133, I-134, I-135, Xe-133, Xe-135, Kr-83m, Br-82, Br-83, Br-84, Xe-133m, Xe-135m, and Total.

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I-131 Summary

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Time (hr)	RCS	Intact Steam Generato	Environment
	I-131 (Curies)	I-131 (Curies)	I-131 (Curies)
0.000	0.0000E+00	1.7711E+01	1.0987E-02
0.019	0.0000E+00	1.7708E+01	5.9008E+00
0.111	0.0000E+00	1.7694E+01	5.9128E+00
0.250	0.0000E+00	1.7674E+01	5.9244E+00
0.472	0.0000E+00	1.7641E+01	5.9428E+00
0.472	0.0000E+00	1.7641E+01	5.9429E+00
0.667	0.0000E+00	1.7613E+01	5.9591E+00
0.878	0.0000E+00	1.7582E+01	5.9766E+00
1.089	0.0000E+00	1.7551E+01	5.9941E+00
1.289	0.0000E+00	1.7522E+01	6.0107E+00
1.489	0.0000E+00	1.7493E+01	6.0272E+00
1.689	0.0000E+00	1.7464E+01	6.0437E+00
1.889	0.0000E+00	1.7435E+01	6.0602E+00
2.000	0.0000E+00	1.7419E+01	6.0693E+00
2.243	0.0000E+00	1.7386E+01	6.0866E+00
2.443	0.0000E+00	1.7359E+01	6.1009E+00
2.643	0.0000E+00	1.7333E+01	6.1151E+00
2.843	0.0000E+00	1.7306E+01	6.1292E+00
3.043	0.0000E+00	1.7279E+01	6.1434E+00
3.243	0.0000E+00	1.7253E+01	6.1575E+00
3.443	0.0000E+00	1.7226E+01	6.1716E+00
3.643	0.0000E+00	1.7200E+01	6.1857E+00
3.843	0.0000E+00	1.7174E+01	6.1998E+00
4.043	0.0000E+00	1.7147E+01	6.2138E+00
4.243	0.0000E+00	1.7121E+01	6.2279E+00
4.443	0.0000E+00	1.7095E+01	6.2419E+00
4.643	0.0000E+00	1.7068E+01	6.2558E+00
4.843	0.0000E+00	1.7042E+01	6.2698E+00
5.043	0.0000E+00	1.7016E+01	6.2837E+00
5.243	0.0000E+00	1.6990E+01	6.2976E+00
5.443	0.0000E+00	1.6964E+01	6.3115E+00



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5.643	0.0000E+00	1.6938E+01	6.3254E+00
5.843	0.0000E+00	1.6912E+01	6.3393E+00
6.043	0.0000E+00	1.6886E+01	6.3531E+00
6.243	0.0000E+00	1.6860E+01	6.3669E+00
6.443	0.0000E+00	1.6834E+01	6.3807E+00
6.643	0.0000E+00	1.6808E+01	6.3945E+00
6.843	0.0000E+00	1.6782E+01	6.4082E+00
7.043	0.0000E+00	1.6756E+01	6.4219E+00
7.243	0.0000E+00	1.6731E+01	6.4356E+00
7.443	0.0000E+00	1.6705E+01	6.4493E+00
7.643	0.0000E+00	1.6679E+01	6.4630E+00
7.843	0.0000E+00	1.6654E+01	6.4766E+00
8.000	0.0000E+00	1.6634E+01	6.4873E+00
8.227	0.0000E+00	1.6614E+01	6.4939E+00
8.427	0.0000E+00	1.6596E+01	6.4996E+00
8.627	0.0000E+00	1.6578E+01	6.5054E+00
8.827	0.0000E+00	1.6560E+01	6.5112E+00
9.027	0.0000E+00	1.6543E+01	6.5170E+00
9.227	0.0000E+00	1.6525E+01	6.5227E+00
9.427	0.0000E+00	1.6508E+01	6.5285E+00
9.627	0.0000E+00	1.6490E+01	6.5343E+00
9.827	0.0000E+00	1.6472E+01	6.5400E+00
10.027	0.0000E+00	1.6455E+01	6.5457E+00
10.227	0.0000E+00	1.6437E+01	6.5515E+00
24.000	0.0000E+00	1.5273E+01	6.9321E+00
96.000	0.0000E+00	1.1792E+01	6.9321E+00
720.000	0.0000E+00	1.2535E+00	6.9321E+00

Time (hr)	Control Room I-131 (Curies)	Faulted Steam Generat I-131 (Curies)
0.000	2.1800E-04	5.8925E+00
0.019	1.1494E-01	4.2857E-03
0.111	6.5543E-02	6.4048E-18



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0.250	2.7947E-02	2.0384E-40
0.472	7.1813E-03	2.7066E-76
0.472	7.1666E-03	2.3904E-76
0.667	2.1721E-03	6.5710-108
0.878	5.9932E-04	4.1042-142
1.089	1.6953E-04	3.0885-176
1.289	5.4651E-05	1.3171-208
1.489	2.0951E-05	5.6171-241
1.689	1.1060E-05	2.3955-273
1.889	8.1508E-06	1.0216-305
2.000	7.5513E-06	9.8813-324
2.243	5.3214E-06	0.0000E+00
2.443	4.8590E-06	0.0000E+00
2.643	4.7183E-06	0.0000E+00
2.843	4.6720E-06	0.0000E+00
3.043	4.6533E-06	0.0000E+00
3.243	4.6428E-06	0.0000E+00
3.443	4.6347E-06	0.0000E+00
3.643	4.6273E-06	0.0000E+00
3.843	4.6201E-06	0.0000E+00
4.043	4.6130E-06	0.0000E+00
4.243	4.6059E-06	0.0000E+00
4.443	4.5988E-06	0.0000E+00
4.643	4.5918E-06	0.0000E+00
4.843	4.5847E-06	0.0000E+00
5.043	4.5777E-06	0.0000E+00
5.243	4.5706E-06	0.0000E+00
5.443	4.5636E-06	0.0000E+00
5.643	4.5566E-06	0.0000E+00
5.843	4.5496E-06	0.0000E+00
6.043	4.5426E-06	0.0000E+00
6.243	4.5357E-06	0.0000E+00
6.443	4.5287E-06	0.0000E+00



6.643	4.5217E-06	0.0000E+00
6.843	4.5148E-06	0.0000E+00
7.043	4.5079E-06	0.0000E+00
7.243	4.5009E-06	0.0000E+00
7.443	4.4940E-06	0.0000E+00
7.643	4.4871E-06	0.0000E+00
7.843	4.4802E-06	0.0000E+00
8.000	4.4748E-06	0.0000E+00
8.227	1.5922E-06	0.0000E+00
8.427	9.1621E-07	0.0000E+00
8.627	7.1747E-07	0.0000E+00
8.827	6.5871E-07	0.0000E+00
9.027	6.4100E-07	0.0000E+00
9.227	6.3533E-07	0.0000E+00
9.427	6.3319E-07	0.0000E+00
9.627	6.3208E-07	0.0000E+00
9.827	6.3128E-07	0.0000E+00
10.027	6.3057E-07	0.0000E+00
10.227	6.2989E-07	0.0000E+00
24.000	5.8526E-07	0.0000E+00
96.000	9.6055-199	0.0000E+00
720.000	0.0000E+00	0.0000E+00

Cumulative Dose Summary
#####

Time (hr)	Exclusion Area Bounda		Low Population Zone		Control Room	
	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)
0.000	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
0.019	2.3776E+00	7.7993E-02	3.1996E-01	1.0496E-02	2.1868E+00	6.8062E-02
0.111	2.3824E+00	7.8151E-02	3.2061E-01	1.0517E-02	1.1680E+01	3.6351E-01



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0.250	2.3871E+00	7.8304E-02	3.2123E-01	1.0537E-02	1.8909E+01	5.8842E-01
0.472	2.3945E+00	7.8547E-02	3.2223E-01	1.0570E-02	2.2900E+01	7.1258E-01
0.472	2.3945E+00	7.8547E-02	3.2223E-01	1.0570E-02	2.2903E+01	7.1266E-01
0.667	2.4010E+00	7.8759E-02	3.2311E-01	1.0599E-02	2.3861E+01	7.4247E-01
0.878	2.4081E+00	7.8988E-02	3.2406E-01	1.0629E-02	2.4164E+01	7.5188E-01
1.089	2.4151E+00	7.9215E-02	3.2500E-01	1.0660E-02	2.4248E+01	7.5450E-01
1.289	2.4217E+00	7.9429E-02	3.2589E-01	1.0689E-02	2.4272E+01	7.5524E-01
1.489	2.4283E+00	7.9643E-02	3.2678E-01	1.0718E-02	2.4280E+01	7.5550E-01
1.689	2.4349E+00	7.9855E-02	3.2766E-01	1.0746E-02	2.4283E+01	7.5562E-01
1.889	2.4414E+00	8.0066E-02	3.2854E-01	1.0775E-02	2.4285E+01	7.5570E-01
2.000	2.4450E+00	8.0183E-02	3.2903E-01	1.0790E-02	2.4286E+01	7.5574E-01
2.243	2.4519E+00	8.0404E-02	3.2946E-01	1.0804E-02	2.4288E+01	7.5580E-01
2.443	2.4575E+00	8.0585E-02	3.2982E-01	1.0816E-02	2.4289E+01	7.5585E-01
2.643	2.4632E+00	8.0766E-02	3.3018E-01	1.0827E-02	2.4290E+01	7.5589E-01
2.843	2.4688E+00	8.0945E-02	3.3053E-01	1.0838E-02	2.4292E+01	7.5593E-01
3.043	2.4743E+00	8.1124E-02	3.3088E-01	1.0850E-02	2.4293E+01	7.5598E-01
3.243	2.4799E+00	8.1302E-02	3.3124E-01	1.0861E-02	2.4294E+01	7.5602E-01
3.443	2.4855E+00	8.1480E-02	3.3159E-01	1.0872E-02	2.4295E+01	7.5606E-01
3.643	2.4910E+00	8.1657E-02	3.3194E-01	1.0883E-02	2.4296E+01	7.5610E-01
3.843	2.4965E+00	8.1833E-02	3.3229E-01	1.0895E-02	2.4297E+01	7.5614E-01
4.043	2.5020E+00	8.2009E-02	3.3263E-01	1.0906E-02	2.4298E+01	7.5618E-01
4.243	2.5075E+00	8.2184E-02	3.3298E-01	1.0917E-02	2.4299E+01	7.5623E-01
4.443	2.5130E+00	8.2358E-02	3.3333E-01	1.0928E-02	2.4300E+01	7.5627E-01
4.643	2.5185E+00	8.2532E-02	3.3367E-01	1.0939E-02	2.4301E+01	7.5631E-01
4.843	2.5239E+00	8.2705E-02	3.3402E-01	1.0950E-02	2.4302E+01	7.5635E-01
5.043	2.5294E+00	8.2877E-02	3.3436E-01	1.0961E-02	2.4303E+01	7.5639E-01
5.243	2.5348E+00	8.3049E-02	3.3470E-01	1.0972E-02	2.4304E+01	7.5643E-01
5.443	2.5402E+00	8.3221E-02	3.3505E-01	1.0982E-02	2.4305E+01	7.5646E-01
5.643	2.5456E+00	8.3392E-02	3.3539E-01	1.0993E-02	2.4306E+01	7.5650E-01
5.843	2.5509E+00	8.3562E-02	3.3573E-01	1.1004E-02	2.4307E+01	7.5654E-01
6.043	2.5563E+00	8.3732E-02	3.3606E-01	1.1015E-02	2.4308E+01	7.5658E-01
6.243	2.5617E+00	8.3901E-02	3.3640E-01	1.1025E-02	2.4309E+01	7.5662E-01
6.443	2.5670E+00	8.4070E-02	3.3674E-01	1.1036E-02	2.4310E+01	7.5666E-01



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6.643	2.5723E+00	8.4238E-02	3.3708E-01	1.1047E-02	2.4311E+01	7.5670E-01
6.843	2.5776E+00	8.4406E-02	3.3741E-01	1.1057E-02	2.4312E+01	7.5673E-01
7.043	2.5829E+00	8.4573E-02	3.3775E-01	1.1068E-02	2.4313E+01	7.5677E-01
7.243	2.5882E+00	8.4739E-02	3.3808E-01	1.1078E-02	2.4314E+01	7.5681E-01
7.443	2.5934E+00	8.4906E-02	3.3841E-01	1.1089E-02	2.4315E+01	7.5684E-01
7.643	2.5987E+00	8.5071E-02	3.3874E-01	1.1099E-02	2.4316E+01	7.5688E-01
7.843	2.6039E+00	8.5236E-02	3.3908E-01	1.1110E-02	2.4317E+01	7.5692E-01
8.000	2.6080E+00	8.5365E-02	3.3933E-01	1.1118E-02	2.4318E+01	7.5695E-01
8.227	2.6093E+00	8.5407E-02	3.3939E-01	1.1120E-02	2.4319E+01	7.5697E-01
8.427	2.6105E+00	8.5444E-02	3.3944E-01	1.1121E-02	2.4319E+01	7.5699E-01
8.627	2.6116E+00	8.5480E-02	3.3949E-01	1.1123E-02	2.4319E+01	7.5700E-01
8.827	2.6127E+00	8.5517E-02	3.3954E-01	1.1125E-02	2.4320E+01	7.5701E-01
9.027	2.6139E+00	8.5553E-02	3.3959E-01	1.1126E-02	2.4320E+01	7.5702E-01
9.227	2.6150E+00	8.5589E-02	3.3964E-01	1.1128E-02	2.4320E+01	7.5703E-01
9.427	2.6161E+00	8.5625E-02	3.3969E-01	1.1129E-02	2.4320E+01	7.5704E-01
9.627	2.6172E+00	8.5661E-02	3.3973E-01	1.1131E-02	2.4320E+01	7.5705E-01
9.827	2.6184E+00	8.5697E-02	3.3978E-01	1.1132E-02	2.4320E+01	7.5705E-01
10.027	2.6195E+00	8.5733E-02	3.3983E-01	1.1134E-02	2.4320E+01	7.5706E-01
10.227	2.6206E+00	8.5769E-02	3.3988E-01	1.1135E-02	2.4320E+01	7.5707E-01
24.000	2.6929E+00	8.8058E-02	3.4302E-01	1.1235E-02	2.4330E+01	7.5751E-01
96.000	2.6929E+00	8.8058E-02	3.4302E-01	1.1235E-02	2.4330E+01	7.5755E-01
720.000	2.6929E+00	8.8058E-02	3.4302E-01	1.1235E-02	2.4330E+01	7.5755E-01



ALION RADTRAD Version 3.10 Rev 2 run on 12/01/2014 at 16:28:11

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#####

D. C. Cook - MSLB Initial SG Iodine

Worst Two-Hour Doses
#####

Exclusion Area Boundary

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
0.0	4.2265E-03	2.4450E+00	8.0183E-02

Final Doses
#####

Low Population Zone

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	5.8176E-04	3.4302E-01	1.1235E-02

Control Room

Time (hr)	Whole Body (rem)	Thyroid (rem)	TEDE (rem)
720.0	1.9226E-03	2.4330E+01	7.5755E-01



Attachment G

Owner's Review Comments



Revision 0

AEP Comments for RWA-1313-010			RWA Response	AEP Acceptance/Additional Comments
Comment No.	Document Location	Description		
1	Page 9, Section 3	Item 3.6 - Note that this input requires a Tech Spec change.	The need for a license change to use the single SG primary-to-secondary leakage rate is identified in the comment section of the input document where the value of Input 3.6 is defined.	Acceptable. JJW - 07/14/2014
2	Page 9, Section 3	Item 3.11 - How is the moisture carryover used? Is there any reason to believe that the MCO during SLB accident conditions would be different?	The moisture carryover is used to determine the partition of particulate radionuclides between the liquid and vapor phases of the intact steam generators as directed by Section 5.5.4 of Appendix E to Reg. Guide 1.183. Since it is only applicable to the intact steam generators, the MSLB conditions will not impact this parameter.	Acceptable. JJW - 07/14/2014
3	Page 10, Section 3	Item 3.14 - Note that the value of 880 cfm is conservatively high.	The value of 880 cfm includes the 10% flow measurement uncertainty that is consistent with industry flow balancing practices. As indicated in Item D.2 of Reference 7.6, the maximum value of 880 cfm is conservative for this analysis. The text of input 3.14 has been revised to indicate that the 880 cfm is a maximum value.	Acceptable. Text has been added regarding direction of conservatism. JJW - 07/16/2014
4	Page 16, Section 5.1.2.1 and other locations	How does the value of 62.3 lb/ft ³ impact the results compared to the value of 62.4 lb/ft ³ provided in the guidance.	The impact would be small since the density is a direct multiplier in the volumetric leak rate limit. However, in this case, the value of 62.3 lbm/ft ³ is consistent with the guidance since the Cook leak rate monitoring program is based upon a fluid temperature of 70 °F.	Acceptable. JJW - 07/14/2014
5	Page 31, Section 5.2.2.8	State that the value is conservatively high or similar wording rather than arbitrary.	Text has been changed to 'conservatively high'	Acceptable. JJW - 07/14/2014
6	Page 43, Section 5.5.2.1	Change "multiply" to "multiplying" in the second sentence.	Text corrected.	Acceptable. JJW - 07/14/2014
7	Page 47, Section 5.7	The results of the accident seem low when compared to the limits. Are results of this magnitude common?	The results are low because there this event does not result in any fuel failures for Cook. Consequently, the activity available for release is limited to the nuclides initially in the RCS, plus the iodine spike.	Acceptable. JJW - 07/14/2014
8	Page 50, Section 7	Add a period at the end of Reference 7.17.	Text corrected.	Acceptable. JJW - 07/14/2014



Revision 1

AEP Comments for RWA-1313-010_R1			RWA Response	AEP Acceptance/Additional Comments
Comment No.	Document Location*	Description		
1	GENERAL	It is noted that slight modifications to the text have been made throughout the document for editorial purposes. No response required.	RWA agrees with the AEP comment and conclusion.	Response accepted. -JJW 03/11/16
2	Page 18, Section 5.1.3.1	There was a slight computational error in the calculation of plant power in Revision 0 of this document that has been corrected (due to typo in conversion factor). Plant power has been appropriately revised in the remainder of the calculation. No response required.	RWA agrees with the AEP comment and conclusion. The typographical error in the calculation did translate into a small technical error in the RADTRAD model, which was corrected in Revision 1.	Response accepted. As this error appears in other calculations as well, it is recommended that the issue be placed in RWA's corrective actions program. -JJW 03/11/16
3	Page 41, Section 5.4.1.4	It is noted that there was a computational error for the calculation of the 8-hour production value for I-134 that appears in Table 32 (from 123096 Ci to 123072 Ci). As the value is rounded up to 1.231E+05 Ci in the Release Fraction File (see Table 33) this is simply an editorial change (no modification was made to the file). No response required.	This change corrected a typographical error in the text of the Rev. 0 calculation. The I-134 production of 123072 Ci was originally derived in the development of the iodine appearance rates. As stated, since the value applied in the RFT file was rounded up, there was no impact on the dose consequences.	Response accepted. -JJW 03/11/16