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10 CFR 52.3  
10 CFR 2.390

September 30, 2008

UN#08-039

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016  
Submittal of Updated Response to Calvert Cliffs Nuclear Power Plant, Unit 3  
Environmental RAI

Reference: Letter UN#08-018, G. Vanderheyden (UniStar Nuclear Energy) to Document  
Control Desk (U.S. Nuclear Regulatory Commission), "Submittal of  
Response to Requests for Additional Information for the Calvert Cliffs  
Nuclear Power Plant, Unit 3 and Request for Withholding of Documents,"  
dated June 12, 2008

The referenced letter provided UniStar Nuclear Energy's responses to Requests for  
Additional Information (RAIs) on the Calvert Cliffs Nuclear Power Plant (CCNPP), Unit 3  
Environmental Report (ER). In response to RAI Item Number 147, the following was  
provided as part of the response:

"The ER will be updated to include radionuclides released to the atmosphere from  
DBAs. Table 7.1-15 through Table 7.1-24 will be included to tabulate the released  
radionuclides (activity) as a function of time following the X/Q time intervals...ER  
Tables 7.1-15 through 7.1-24 will be added to the ER in a future revision to the ER."

ER Tables 7.1-15 through 7.1-24 were not processed in time to permit incorporation into  
Revision 3 of the CCNPP, Unit 3 Combined License Application (COLA). These tables will  
be included in the Revision 4 of the CCNPP, Unit 3 COLA. As the information in the tables

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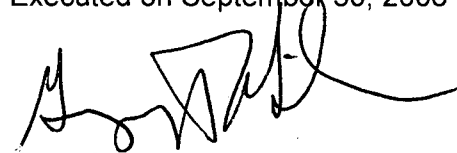
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will be useful for the review of ER Chapter 7, please find enclosed copies of ER Tables 7.1-15 through 7.1-24.

If you have any questions, please call me or Mr. George Wrobel at (585) 771-3535.

*I declare under penalty of perjury that the foregoing is true and correct.*

Executed on September 30, 2008



Greg Gibson

Enclosure: Revised ER Tables 7.1-15 through 7.1-24

cc: U.S. NRC Region I  
U.S. NRC Resident Inspector, Calvert Cliffs Nuclear Power Plant, Units 1 and 2  
NRC Environmental Project Manager, U.S. EPR Combined License Application  
NRC Project Manager, U.S. EPR Combined License Application  
NRC Project Manager, U.S. EPR Design Certification Application (w/o enclosures)

**Enclosure**

**Revised ER Tables 7.1-15 through 7.1-24**

**(19 pages follow)**

**Table 7.1-15—Radionuclide Releases to Atmosphere for Main Steam Line Break with Pre-Accident Iodine Spike  
(Page 1 of 2)**

Nuclide	Releases to Atmosphere (Ci) During Specified Time Intervals (hrs)							
	0 to 2		2 to 8		8 to 24		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	2.167E-02	8.018E+08	2.145E-02	7.937E+08	3.182E-04	1.177E+07	4.344E-02	1.607E+09
Kr-85m	1.115E-01	4.126E+09	1.858E-01	6.875E+09	4.350E-03	1.610E+08	3.016E-01	1.116E+10
Kr-85	1.205E+00	4.459E+10	3.613E+00	1.337E+11	1.505E-01	5.569E+09	4.969E+00	1.839E+11
Kr-87	4.505E-02	1.667E+09	2.194E-02	8.118E+08	9.099E-05	3.367E+06	6.709E-02	2.482E+09
Kr-88	1.849E-01	6.841E+09	2.258E-01	8.355E+09	3.674E-03	1.359E+08	4.144E-01	1.533E+10
Kr-89	2.093E-04	7.744E+06	8.419E-16	3.115E-05	1.370E-50	5.069E-40	2.093E-04	7.744E+06
Xe-131m	2.446E-01	9.050E+09	7.271E-01	2.690E+10	3.027E-02	1.120E+09	1.002E+00	3.707E+10
Xe-133m	3.042E-01	1.126E+10	8.850E-01	3.275E+10	3.985E-02	1.474E+09	1.229E+00	4.547E+10
Xe-133	2.140E+01	7.918E+11	6.307E+01	2.334E+12	2.646E+00	9.790E+10	8.711E+01	3.223E+12
Xe-135m	3.843E-01	1.422E+10	8.821E-01	3.264E+10	8.834E-02	3.269E+09	1.355E+00	5.014E+10
Xe-135	9.137E-01	3.381E+10	3.733E+00	1.381E+11	4.540E-01	1.680E+10	5.100E+00	1.887E+11
Xe-137	4.777E-04	1.767E+07	1.767E-13	6.538E-03	2.237E-42	8.277E-32	4.777E-04	1.767E+07
Xe-138	6.324E-03	2.340E+08	1.790E-05	6.623E+05	9.525E-14	3.524E-03	6.341E-03	2.346E+08
Br-83	2.522E-01	9.331E+09	4.130E-03	1.528E+08	7.641E-05	2.827E+06	2.564E-01	9.487E+09
Br-84	4.771E-02	1.765E+09	4.524E-05	1.674E+06	7.550E-09	2.794E+02	4.775E-02	1.767E+09
Br-85	6.133E-04	2.269E+07	1.092E-18	4.040E-08	1.546E-56	5.720E-46	6.133E-04	2.269E+07
I-129	7.539E-07	2.789E+04	3.757E-08	1.390E+03	1.301E-09	4.814E+01	7.928E-07	2.933E+04
I-130	6.787E-01	2.511E+10	2.685E-02	9.935E+08	8.749E-04	3.237E+07	7.064E-01	2.614E+10
I-131	1.516E+01	5.609E+11	8.621E+00	3.190E+11	1.226E+00	4.536E+10	2.501E+01	9.254E+11
I-132	4.788E+00	1.772E+11	1.069E+00	3.955E+10	4.889E-02	1.809E+09	5.906E+00	2.185E+11

**Table 7.1-15—Radionuclide Releases to Atmosphere for Main Steam Line Break with Pre-Accident Iodine Spike  
(Page 2 of 2)**

Nuclide	Releases to Atmosphere (Ci) During Specified Time Intervals (hrs)							
	0 to 2		2 to 8		8 to 24		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
I-133	2.350E+01	8.695E+11	1.244E+01	4.603E+11	1.602E+00	5.927E+10	3.754E+01	1.389E+12
I-134	1.620E+00	5.994E+10	1.135E-01	4.200E+09	5.052E-04	1.869E+07	1.734E+00	6.416E+10
I-135	1.246E+01	4.610E+11	5.510E+00	2.039E+11	5.515E-01	2.041E+10	1.852E+01	6.852E+11
Rb-86m	1.353E-09	5.006E+01	1.255E-45	4.644E-35	0.000E+00	0.000E+00	1.353E-09	5.006E+01
Rb-86	1.398E-03	5.173E+07	7.207E-04	2.667E+07	1.024E-04	3.789E+06	2.221E-03	8.218E+07
Rb-88	1.915E-01	7.086E+09	2.517E-01	9.313E+09	4.103E-03	1.518E+08	4.474E-01	1.655E+10
Rb-89	1.838E-03	6.801E+07	3.266E-06	1.208E+05	1.619E-13	5.990E-03	1.841E-03	6.812E+07
Cs-134	1.609E-01	5.953E+09	8.300E-02	3.071E+09	1.185E-02	4.385E+08	2.557E-01	9.461E+09
Cs-136	3.808E-02	1.409E+09	1.963E-02	7.263E+08	2.782E-03	1.029E+08	6.048E-02	2.238E+09
Cs-137	6.160E-02	2.279E+09	3.177E-02	1.175E+09	4.536E-03	1.678E+08	9.791E-02	3.623E+09
Cs-138	2.051E-02	7.589E+08	1.254E-03	4.640E+07	1.886E-07	6.978E+03	2.177E-02	8.055E+08
Sr-89	7.189E-07	2.660E+04	2.557E-06	9.461E+04	3.082E-07	1.140E+04	3.584E-06	1.326E+05
Ba-137m	5.786E-02	2.141E+09	3.006E-02	1.112E+09	4.291E-03	1.588E+08	9.220E-02	3.411E+09
Total	8.386E+01	3.103E+12	1.016E+02	3.759E+12	6.875E+00	2.544E+11	1.923E+02	7.115E+12

CCNPP Unit 3

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ER Section 7

Impacts of Postulated Accidents Involving Radioactive Materials

ER Section 7

**Table 7.1-16—Radionuclide Releases to Atmosphere for Main Steam Line Break with Accident-Induced (Coincident) Iodine Spike  
(Page 1 of 2)**

Nuclide	Releases to Atmosphere (Ci) During Specified Time Intervals (hrs)							
	0 to 2		2 to 8		8 to 24		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	2.167E-02	8.018E+08	2.145E-02	7.937E+08	3.182E-04	1.177E+07	4.344E-02	1.607E+09
Kr-85m	1.115E-01	4.126E+09	1.858E-01	6.875E+09	4.350E-03	1.610E+08	3.016E-01	1.116E+10
Kr-85	1.205E+00	4.459E+10	3.613E+00	1.337E+11	1.505E-01	5.569E+09	4.969E+00	1.839E+11
Kr-87	4.505E-02	1.667E+09	2.194E-02	8.118E+08	9.099E-05	3.367E+06	6.709E-02	2.482E+09
Kr-88	1.849E-01	6.841E+09	2.258E-01	8.355E+09	3.674E-03	1.359E+08	4.144E-01	1.533E+10
Kr-89	2.093E-04	7.744E+06	8.419E-16	3.115E-05	1.370E-50	5.069E-40	2.093E-04	7.744E+06
Xe-131m	2.446E-01	9.050E+09	7.308E-01	2.704E+10	3.188E-02	1.180E+09	1.007E+00	3.726E+10
Xe-133m	3.045E-01	1.127E+10	9.837E-01	3.640E+10	8.092E-02	2.994E+09	1.369E+00	5.065E+10
Xe-133	2.140E+01	7.918E+11	6.448E+01	2.386E+12	3.237E+00	1.198E+11	8.912E+01	3.297E+12
Xe-135m	7.205E-01	2.666E+10	1.136E+01	4.203E+11	2.616E+00	9.679E+10	1.470E+01	5.439E+11
Xe-135	1.023E+00	3.785E+10	1.721E+01	6.368E+11	5.434E+00	2.011E+11	2.367E+01	8.758E+11
Xe-137	4.777E-04	1.767E+07	1.767E-13	6.538E-03	2.237E-42	8.277E-32	4.777E-04	1.767E+07
Xe-138	6.324E-03	2.340E+08	1.790E-05	6.623E+05	9.525E-14	3.524E-03	6.341E-03	2.346E+08
Br-83	2.522E-01	9.331E+09	4.130E-03	1.528E+08	7.641E-05	2.827E+06	2.564E-01	9.487E+09
Br-84	4.771E-02	1.765E+09	4.524E-05	1.674E+06	7.550E-09	2.794E+02	4.775E-02	1.767E+09
Br-85	6.133E-04	2.269E+07	1.092E-18	4.040E-08	1.546E-56	5.720E-46	6.133E-04	2.269E+07
I-129	7.539E-07	2.789E+04	3.757E-08	1.390E+03	1.301E-09	4.814E+01	7.928E-07	2.933E+04
I-130	6.787E-01	2.511E+10	2.685E-02	9.935E+08	8.749E-04	3.237E+07	7.064E-01	2.614E+10
I-131	1.627E+01	6.020E+11	6.254E+01	2.314E+12	1.557E+01	5.761E+11	9.438E+01	3.492E+12
I-132	8.145E+00	3.014E+11	3.962E+01	1.466E+12	6.683E+00	2.473E+11	5.445E+01	2.015E+12

**Table 7.1-16—Radionuclide Releases to Atmosphere for Main Steam Line Break with Accident-Induced (Coincident) Iodine Spike  
(Page 2 of 2)**

Nuclide	Releases to Atmosphere (Ci) During Specified Time Intervals (hrs)							
	0 to 2		2 to 8		8 to 24		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
I-133	2.653E+01	9.816E+11	1.129E+02	4.177E+12	2.685E+01	9.935E+11	1.663E+02	6.153E+12
I-134	5.642E+00	2.088E+11	2.468E+01	9.132E+11	2.899E+00	1.073E+11	3.322E+01	1.229E+12
I-135	1.595E+01	5.902E+11	7.814E+01	2.891E+12	1.675E+01	6.198E+11	1.108E+02	4.100E+12
Rb-86m	1.353E-09	5.006E+01	1.255E-45	4.644E-35	0.000E+00	0.000E+00	1.353E-09	5.006E+01
Rb-86	1.398E-03	5.173E+07	7.207E-04	2.667E+07	1.024E-04	3.789E+06	2.221E-03	8.218E+07
Rb-88	1.915E-01	7.086E+09	2.517E-01	9.313E+09	4.103E-03	1.518E+08	4.474E-01	1.655E+10
Rb-89	1.838E-03	6.801E+07	3.266E-06	1.208E+05	1.619E-13	5.990E-03	1.841E-03	6.812E+07
Cs-134	1.609E-01	5.953E+09	8.300E-02	3.071E+09	1.185E-02	4.385E+08	2.557E-01	9.461E+09
Cs-136	3.808E-02	1.409E+09	1.963E-02	7.263E+08	2.782E-03	1.029E+08	6.048E-02	2.238E+09
Cs-137	6.160E-02	2.279E+09	3.177E-02	1.175E+09	4.536E-03	1.678E+08	9.791E-02	3.623E+09
Cs-138	2.051E-02	7.589E+08	1.254E-03	4.640E+07	1.886E-07	6.978E+03	2.177E-02	8.055E+08
Sr-89	7.189E-07	2.660E+04	2.557E-06	9.461E+04	3.082E-07	1.140E+04	3.584E-06	1.326E+05
Ba-137m	5.786E-02	2.141E+09	3.006E-02	1.112E+09	4.291E-03	1.588E+08	9.220E-02	3.411E+09
Total	9.932E+01	3.675E+12	4.172E+02	1.544E+13	8.034E+01	2.973E+12	5.968E+02	2.208E+13

**Table 7.1-17—Radionuclide Releases to Atmosphere for Main Steam Line Break with Accident-Induced 1.24% Clad Failure  
(Page 1 of 2)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)							
	0 to 2		2 to 8		8 to 24		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	1.23E+01	4.566E+11	1.339E+01	4.954E+11	4.654E-01	1.722E+10	2.619E+01	9.690E+11
Kr-85m	3.18E+01	1.177E+12	5.299E+01	1.961E+12	1.250E+00	4.625E+10	8.604E+01	3.183E+12
Kr-85	4.63E+00	1.712E+11	1.388E+01	5.136E+11	5.781E-01	2.139E+10	1.908E+01	7.060E+11
Kr-87	4.48E+01	1.659E+12	2.183E+01	8.077E+11	9.054E-02	3.350E+09	6.675E+01	2.470E+12
Kr-88	8.29E+01	3.066E+12	1.011E+02	3.741E+12	1.647E+00	6.094E+10	1.857E+02	6.871E+12
Kr-89	5.01E+00	1.853E+11	2.014E-11	7.452E-01	3.276E-46	1.212E-35	5.007E+00	1.853E+11
Xe-131m	1.50E+00	5.546E+10	4.467E+00	1.653E+11	1.887E-01	6.982E+09	6.154E+00	2.277E+11
Xe-133m	7.50E+00	2.775E+11	2.160E+01	7.992E+11	9.244E-01	3.420E+10	3.002E+01	1.111E+12
Xe-133	2.56E+02	9.483E+12	7.562E+02	2.798E+13	3.187E+01	1.179E+12	1.044E+03	3.863E+13
Xe-135m	1.56E+01	5.776E+11	1.737E+01	6.427E+11	1.804E+00	6.675E+10	3.479E+01	1.287E+12
Xe-135	7.55E+01	2.795E+12	2.021E+02	7.478E+12	1.331E+01	4.925E+11	2.910E+02	1.077E+13
Xe-137	9.45E+00	3.497E+11	3.495E-09	1.293E+02	4.426E-38	1.638E-27	9.450E+00	3.497E+11
Xe-138	3.39E+01	1.254E+12	9.589E-02	3.548E+09	5.105E-10	1.889E+01	3.398E+01	1.257E+12
Br-83	4.27E+00	1.579E+11	3.443E+00	1.274E+11	1.707E-01	6.316E+09	7.881E+00	2.916E+11
Br-84	4.05E+00	1.497E+11	2.171E-01	8.033E+09	5.883E-05	2.177E+06	4.262E+00	1.577E+11
Br-85	6.25E-01	2.313E+10	8.120E-14	3.004E-03	1.228E-51	4.544E-41	6.252E-01	2.313E+10
I-129	2.90E-06	1.074E+05	5.616E-06	2.078E+05	8.492E-07	3.142E+04	9.369E-06	3.467E+05
I-130	3.92E+00	1.452E+11	6.706E+00	2.481E+11	8.338E-01	3.085E+10	1.146E+01	4.240E+11
I-131	6.93E+01	2.563E+12	1.468E+02	5.432E+12	2.198E+01	8.133E+11	2.380E+02	8.806E+12
I-132	4.43E+01	1.640E+12	3.363E+01	1.244E+12	1.588E+00	5.876E+10	7.955E+01	2.943E+12



**Table 7.1-17—Radionuclide Releases to Atmosphere for Main Steam Line Break with Accident-Induced 1.24% Clad Failure  
(Page 2 of 2)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)							
	0 to 2		2 to 8		8 to 24		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
I-133	9.13E+01	3.377E+12	1.655E+02	6.124E+12	2.231E+01	8.255E+11	2.791E+02	1.033E+13
I-134	4.73E+01	1.751E+12	8.856E+00	3.277E+11	4.002E-02	1.481E+09	5.623E+01	2.081E+12
I-135	7.31E+01	2.704E+12	1.083E+02	4.007E+12	1.126E+01	4.166E+11	1.926E+02	7.126E+12
Rb-86m	6.63E-04	2.453E+07	1.126E-39	4.166E-29	0.000E+00	0.000E+00	6.630E-04	2.453E+07
Rb-86	3.59E-01	1.329E+10	9.232E-01	3.416E+10	1.396E-01	5.165E+09	1.422E+00	5.261E+10
Rb-88	9.05E+01	3.350E+12	1.129E+02	4.177E+12	1.838E+00	6.801E+10	2.052E+02	7.592E+12
Rb-89	3.11E+01	1.150E+12	9.210E-02	3.408E+09	4.812E-09	1.780E+02	3.116E+01	1.153E+12
Cs-134	4.03E+01	1.490E+12	1.041E+02	3.852E+12	1.582E+01	5.853E+11	1.602E+02	5.927E+12
Cs-136	9.98E+00	3.693E+11	2.558E+01	9.465E+11	3.858E+00	1.427E+11	3.942E+01	1.459E+12
Cs-137	1.54E+01	5.687E+11	3.975E+01	1.471E+12	6.041E+00	2.235E+11	6.116E+01	2.263E+12
Cs-138	1.01E+02	3.748E+12	8.553E+00	3.165E+11	1.560E-03	5.772E+07	1.099E+02	4.066E+12
Sr-89	2.07E-02	7.644E+08	7.312E-02	2.705E+09	9.210E-03	3.408E+08	1.030E-01	3.811E+09
Ba-137m	1.45E+01	5.380E+11	3.760E+01	1.391E+12	5.714E+00	2.114E+11	5.785E+01	2.140E+12
Total	1.22E+03	4.525E+13	2.008E+03	7.430E+13	1.437E+02	5.317E+12	3.375E+03	1.249E+14

**Table 7.1-18—Radionuclide Releases to Atmosphere for Pump Locked Rotor Accident (LRA) with Accident-Induced 8.0% Clad Failure**  
(Page 1 of 2)

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)					
	0 to 2		2 to 8		Total	
	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	5.781E+01	2.139E+12	4.552E+01	1.684E+12	1.033E+02	3.822E+12
Kr-85m	1.604E+02	5.935E+12	2.552E+02	9.442E+12	4.156E+02	1.538E+13
Kr-85	1.822E+01	6.741E+11	5.241E+01	1.939E+12	7.063E+01	2.613E+12
Kr-87	2.309E+02	8.543E+12	1.056E+02	3.907E+12	3.365E+02	1.245E+13
Kr-88	4.212E+02	1.558E+13	4.890E+02	1.809E+13	9.102E+02	3.368E+13
Kr-89	3.203E+01	1.185E+12	9.752E-11	3.608E+00	3.203E+01	1.185E+12
Xe-131m	6.515E+00	2.411E+11	1.857E+01	6.871E+11	2.509E+01	9.283E+11
Xe-133m	3.645E+01	1.349E+12	9.966E+01	3.687E+12	1.361E+02	5.036E+12
Xe-133	1.201E+03	4.444E+13	3.385E+03	1.252E+14	4.585E+03	1.696E+14
Xe-135m	4.917E+01	1.819E+12	9.850E+00	3.645E+11	5.902E+01	2.184E+12
Xe-135	3.604E+02	1.333E+13	7.953E+02	2.943E+13	1.156E+03	4.277E+13
Xe-137	6.002E+01	2.221E+12	1.694E-08	6.268E+02	6.002E+01	2.221E+12
Xe-138	1.927E+02	7.130E+12	4.645E-01	1.719E+10	1.931E+02	7.145E+12
Br-83	3.612E+00	1.336E+11	1.721E+00	6.368E+10	5.333E+00	1.973E+11
Br-84	5.315E+00	1.967E+11	7.391E-02	2.735E+09	5.389E+00	1.994E+11
Br-85	1.964E+00	7.267E+10	2.103E-14	7.781E-04	1.964E+00	7.267E+10
I-129	1.995E-06	7.382E+04	3.356E-06	1.242E+05	5.352E-06	1.980E+05
I-130	2.843E+00	1.052E+11	3.859E+00	1.428E+11	6.702E+00	2.480E+11
I-131	4.887E+01	1.808E+12	8.686E+01	3.214E+12	1.357E+02	5.021E+12
I-132	3.739E+01	1.383E+12	1.672E+01	6.186E+11	5.410E+01	2.002E+12
I-133	6.484E+01	2.399E+12	9.667E+01	3.577E+12	1.615E+02	5.976E+12
I-134	5.113E+01	1.892E+12	3.473E+00	1.285E+11	5.460E+01	2.020E+12
I-135	5.503E+01	2.036E+12	6.044E+01	2.236E+12	1.155E+02	4.274E+12
Rb-86m	2.139E-03	7.914E+07	2.855E-40	1.056E-29	2.139E-03	7.914E+07
Rb-86	2.655E-01	9.824E+09	5.398E-01	1.997E+10	8.053E-01	2.980E+10
Rb-88	3.718E+02	1.376E+13	5.449E+02	2.016E+13	9.167E+02	3.392E+13
Rb-89	7.557E+01	2.796E+12	1.480E-01	5.476E+09	7.572E+01	2.802E+12
Cs-134	2.971E+01	1.099E+12	6.089E+01	2.253E+12	9.061E+01	3.353E+12
Cs-136	7.377E+00	2.729E+11	1.495E+01	5.532E+11	2.232E+01	8.258E+11
Cs-137	1.134E+01	4.196E+11	2.325E+01	8.603E+11	3.460E+01	1.280E+12

**Table 7.1-18—Radionuclide Releases to Atmosphere for Pump Locked Rotor Accident  
(LRA) with Accident-Induced 8.0% Clad Failure  
(Page 2 of 2)**

<b>Nuclide</b>	<b>Releases to Atmosphere During Specified Time Intervals (hrs)</b>					
	<b>0 to 2</b>		<b>2 to 8</b>		<b>Total</b>	
	<b>Ci</b>	<b>Bq</b>	<b>Ci</b>	<b>Bq</b>	<b>Ci</b>	<b>Bq</b>
Cs-138	<u>2.418E+02</u>	<u>8.947E+12</u>	<u>2.320E+01</u>	<u>8.584E+11</u>	<u>2.650E+02</u>	<u>9.805E+12</u>
Sr-89	<u>2.770E-02</u>	<u>1.025E+09</u>	<u>1.157E-01</u>	<u>4.281E+09</u>	<u>1.434E-01</u>	<u>5.306E+09</u>
Ba-137m	<u>8.491E+00</u>	<u>3.142E+11</u>	<u>2.200E+01</u>	<u>8.140E+11</u>	<u>3.049E+01</u>	<u>1.128E+12</u>
<b>Total</b>	<u>3.844E+03</u>	<u>1.422E+14</u>	<u>6.216E+03</u>	<u>2.300E+14</u>	<u>1.006E+04</u>	<u>3.722E+14</u>

**Table 7.1-19—Radionuclide Releases to Atmosphere for Design-Basis Small Line Break**  
 [Rupture of 1/4" NSS sampling line outside primary containment]  
 (Page 1 of 2)

Nuclide	Total Release to Atmosphere (Ci) [0 - 2 hr]	
	Ci	Bq
Kr-83m	1.653E+00	6.116E+10
Kr-85m	7.066E+00	2.614E+11
Kr-85	6.827E+01	2.526E+12
Kr-87	3.672E+00	1.359E+11
Kr-88	1.247E+01	4.614E+11
Kr-89	4.810E-02	1.780E+09
Xe-131m	1.389E+01	5.139E+11
Xe-133m	1.750E+01	6.475E+11
Xe-133	1.219E+03	4.510E+13
Xe-135m	1.652E+02	6.112E+12
Xe-135	6.941E+01	2.568E+12
Xe-137	1.093E-01	4.044E+09
Xe-138	1.111E+00	4.111E+10
Br-83	1.514E-01	5.602E+09
Br-84	6.319E-02	2.338E+09
Br-85	1.447E-03	5.354E+07
I-129	2.360E-07	8.732E+03
I-130	2.521E-01	9.328E+09
I-131	9.400E+01	3.478E+12
I-132	1.132E+02	4.188E+12
I-133	1.828E+02	6.764E+12
I-134	1.347E+02	4.984E+12
I-135	1.502E+02	5.557E+12
Rb-86	1.881E-02	6.960E+08
Rb-88	5.174E+00	1.914E+11
Rb-89	1.458E-01	5.395E+09
Cs-134	2.150E+00	7.955E+10
Cs-136	5.140E-01	1.902E+10
Cs-137	8.228E-01	3.044E+10
Cs-138	1.032E+00	3.818E+10

**Table 7.1-19—Radionuclide Releases to Atmosphere for Design-Basis Small Line Break**  
[Rupture of 1/4" NSS sampling line outside primary containment]  
(Page 2 of 2)

<b>Nuclide</b>	<b>Total Release to Atmosphere (Ci)</b> <b>[0 - 2 hr]</b>	
	<b>Ci</b>	<b>Bq</b>
Sr-89	<u>2.485E-05</u>	<u>9.195E+05</u>
Ba-137m	<u>7.775E-01</u>	<u>2.877E+10</u>
<b>Total</b>	<b><u>2.27E+03</u></b>	<b><u>8.399E+13</u></b>

**Table 7.1-20—Radionuclide Releases to Atmosphere for SGTR with Pre-Accident Spike  
(Page 1 of 2)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)											
	0 to 2		2 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	5.579E+01	2.064E+12	5.208E+01	1.927E+12	1.113E+01	4.118E+11	1.110E-01	4.107E+09	1.024E-10	3.789E+00	1.191E+02	4.407E+12
Kr-85m	2.745E+01	1.016E+12	9.737E-02	3.603E+09	5.647E-02	2.089E+09	5.168E-03	1.912E+08	7.391E-08	2.735E+03	2.761E+01	1.022E+12
Kr-85	2.693E+02	9.964E+12	1.875E+00	6.938E+10	4.878E+00	1.805E+11	2.172E+01	8.036E+11	1.734E+02	6.416E+12	4.711E+02	1.743E+13
Kr-87	1.365E+01	5.051E+11	1.170E-02	4.329E+08	4.390E-04	1.624E+07	7.132E-08	2.639E+03	6.326E-25	2.341E-14	1.366E+01	5.054E+11
Kr-88	4.786E+01	1.771E+12	1.186E-01	4.388E+09	3.368E-02	1.246E+09	6.881E-04	2.546E+07	1.565E-11	5.791E-01	4.801E+01	1.776E+12
Kr-89	1.260E-01	4.662E+09	4.744E-16	1.755E-05	2.768E-50	1.024E-39	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.260E-01	4.662E+09
Xe-131m	5.483E+01	2.029E+12	7.018E-01	2.597E+10	1.810E+00	6.697E+10	7.458E+00	2.759E+11	3.116E+01	1.153E+12	9.596E+01	3.551E+12
Xe-133m	7.072E+01	2.617E+12	7.102E+00	2.628E+11	1.379E+01	5.102E+11	2.108E+01	7.800E+11	4.983E+00	1.844E+11	1.177E+02	4.355E+12
Xe-133	4.829E+03	1.787E+14	1.262E+02	4.669E+12	2.600E+02	9.620E+12	5.499E+02	2.035E+13	6.459E+02	2.390E+13	6.411E+03	2.372E+14
Xe-135m	1.530E+03	5.661E+13	3.263E+03	1.207E+14	3.062E+03	1.133E+14	7.187E+02	2.659E+13	4.064E-01	1.504E+10	8.574E+03	3.172E+14
Xe-135	4.299E+02	1.591E+13	5.069E+02	1.876E+13	4.845E+02	1.793E+13	1.206E+02	4.462E+12	1.232E-01	4.558E+09	1.542E+03	5.705E+13
Xe-137	2.887E-01	1.068E+10	9.932E-14	3.675E-03	4.492E-42	1.662E-31	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.887E-01	1.068E+10
Xe-138	3.434E+00	1.271E+11	9.959E-06	3.685E+05	2.041E-13	7.552E-03	8.199E-34	3.034E-23	0.000E+00	0.000E+00	3.434E+00	1.271E+11
Br-83	2.004E+00	7.415E+10	2.840E-03	1.051E+08	7.849E-04	2.904E+07	1.620E-05	5.994E+05	4.395E-14	1.626E-03	2.008E+00	7.430E+10
Br-84	5.904E-01	2.184E+10	4.270E-05	1.580E+06	1.939E-08	7.174E+02	4.027E-17	1.490E-06	1.788E-57	6.616E-47	5.904E-01	2.184E+10
Br-85	6.852E-04	2.535E+07	1.190E-18	4.403E-08	2.448E-56	9.058E-46	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.852E-04	2.535E+07
I-129	3.454E-06	1.278E+05	1.964E-08	7.267E+02	8.140E-08	3.012E+03	1.077E-06	3.985E+04	4.192E-05	1.551E+06	4.655E-05	1.722E+06
I-130	3.616E+00	1.338E+11	1.503E-02	5.561E+08	3.374E-02	1.248E+09	5.191E-02	1.921E+09	2.304E-03	8.525E+07	3.719E+00	1.376E+11
I-131	5.578E+01	2.064E+12	3.103E-01	1.148E+10	1.236E+00	4.573E+10	1.376E+01	5.091E+11	1.542E+02	5.705E+12	2.253E+02	8.336E+12
I-132	2.339E+01	8.654E+11	3.417E-02	1.264E+09	8.312E-03	3.075E+08	1.407E-04	5.206E+06	1.667E-13	6.168E-03	2.343E+01	8.669E+11
I-133	9.220E+01	3.411E+12	4.337E-01	1.605E+10	1.242E+00	4.595E+10	3.997E+00	1.479E+11	9.448E-01	3.496E+10	9.882E+01	3.656E+12
I-134	1.140E+01	4.218E+11	3.079E-03	1.139E+08	3.155E-05	1.167E+06	2.442E-10	9.035E+00	1.584E-34	5.861E-24	1.140E+01	4.218E+11
I-135	5.584E+01	2.066E+12	1.805E-01	6.679E+09	2.463E-01	9.113E+09	1.167E-01	4.318E+09	1.685E-04	6.235E+06	5.639E+01	2.086E+12
Rb-86	4.589E-03	1.698E+08	2.766E-05	1.023E+06	1.086E-04	4.018E+06	1.305E-03	4.829E+07	2.814E-02	1.041E+09	3.417E-02	1.264E+09
Rb-88	1.105E+00	4.089E+10	1.286E-03	4.758E+07	6.410E-04	2.372E+07	2.976E-05	1.101E+06	2.261E-12	8.366E-02	1.107E+00	4.096E+10
Rb-89	1.257E-02	4.651E+08	4.677E-08	1.730E+03	4.331E-15	1.602E-04	1.140E-33	4.218E-23	0.000E+00	0.000E+00	1.257E-02	4.651E+08
Cs-134	5.246E-01	1.941E+10	3.196E-03	1.183E+08	1.275E-02	4.718E+08	1.648E-01	6.098E+09	6.259E+00	2.316E+11	6.964E+00	2.577E+11
Cs-136	1.253E-01	4.636E+09	7.520E-04	2.782E+07	2.931E-03	1.084E+08	3.415E-02	1.264E+09	5.875E-01	2.174E+10	7.507E-01	2.778E+10
Cs-137	2.008E-01	7.430E+09	1.224E-03	4.529E+07	4.884E-03	1.807E+08	6.322E-02	2.339E+09	2.436E+00	9.013E+10	2.706E+00	1.001E+11

CCNPP Unit 3

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ER Section 7

Impacts of Postulated Accidents Involving Radioactive Materials

**Table 7.1-20—Radionuclide Releases to Atmosphere for SGTR with Pre-Accident Spike  
(Page 2 of 2)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)											
	0 to 2		2 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Cs-138	1.397E-01	5.169E+09	9.813E-06	3.631E+05	5.129E-09	1.898E+02	1.405E-17	5.199E-07	2.046E-57	7.570E-47	1.397E-01	5.169E+09
Ba-137m	1.883E-01	6.967E+09	1.148E-03	4.248E+07	4.579E-03	1.694E+08	5.927E-02	2.193E+09	2.284E+00	8.451E+10	2.537E+00	9.387E+10
Total	7.580E+03	2.805E+14	3.959E+03	1.465E+14	3.841E+03	1.421E+14	1.458E+03	5.395E+13	1.023E+03	3.785E+13	1.786E+04	6.608E+14

**Table 7.1-21—Radionuclide Releases to Atmosphere for SGTR with Accident-Induced (Coincident) Iodine Spike  
(Page 1 of 2)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)											
	0 to 2		2 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	5.286E+01	1.956E+12	6.506E+01	2.407E+12	2.614E+01	9.672E+11	5.395E-01	1.996E+10	1.229E-09	4.547E+01	1.446E+02	5.350E+12
Kr-85m	2.938E+01	1.087E+12	2.475E-01	9.158E+09	2.560E-01	9.472E+09	2.342E-02	8.665E+08	3.350E-07	1.240E+04	2.990E+01	1.106E+12
Kr-85	2.693E+02	9.964E+12	1.875E+00	6.938E+10	4.878E+00	1.805E+11	2.172E+01	8.036E+11	1.734E+02	6.416E+12	4.711E+02	1.743E+13
Kr-87	1.365E+01	5.051E+11	1.170E-02	4.329E+08	4.390E-04	1.624E+07	7.132E-08	2.639E+03	6.326E-25	2.341E-14	1.366E+01	5.054E+11
Kr-88	4.786E+01	1.771E+12	1.186E-01	4.388E+09	3.368E-02	1.246E+09	6.881E-04	2.546E+07	1.565E-11	5.791E-01	4.801E+01	1.776E+12
Kr-89	1.260E-01	4.662E+09	4.744E-16	1.755E-05	2.768E-50	1.024E-39	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.260E-01	4.662E+09
Xe-131m	5.476E+01	2.026E+12	5.269E-01	1.950E+10	1.550E+00	5.735E+10	9.473E+00	3.505E+11	8.667E+01	3.207E+12	1.530E+02	5.661E+12
Xe-133m	6.924E+01	2.562E+12	4.025E+00	1.489E+11	1.188E+01	4.396E+11	4.107E+01	1.520E+12	2.417E+01	8.943E+11	1.504E+02	5.565E+12
Xe-133	4.808E+03	1.779E+14	8.294E+01	3.069E+12	2.349E+02	8.691E+12	9.134E+02	3.380E+13	1.558E+03	5.765E+13	7.597E+03	2.811E+14
Xe-135m	9.009E+02	3.333E+13	2.273E+03	8.410E+13	2.859E+03	1.058E+14	1.054E+03	3.900E+13	1.262E+00	4.669E+10	7.088E+03	2.623E+14
Xe-135	3.154E+02	1.167E+13	3.712E+02	1.373E+13	6.204E+02	2.295E+13	3.471E+02	1.284E+13	1.427E+00	5.280E+10	1.655E+03	6.124E+13
Xe-137	2.887E-01	1.068E+10	9.932E-14	3.675E-03	4.492E-42	1.662E-31	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.887E-01	1.068E+10
Xe-138	3.434E+00	1.271E+11	9.959E-06	3.685E+05	2.041E-13	7.552E-03	8.199E-34	3.034E-23	0.000E+00	0.000E+00	3.434E+00	1.271E+11
Br-83	3.105E+00	1.149E+11	2.064E-02	7.637E+08	3.304E-02	1.222E+09	1.187E-03	4.392E+07	4.062E-12	1.503E-01	3.159E+00	1.169E+11
Br-84	3.844E+00	1.422E+11	4.306E-03	1.593E+08	7.921E-04	2.931E+07	7.298E-12	2.700E-01	4.404E-52	1.629E-41	3.849E+00	1.424E+11
Br-85	7.119E-01	2.634E+10	4.381E-05	1.621E+06	6.904E-07	2.554E+04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.120E-01	2.634E+10
I-129	1.942E-06	7.185E+04	3.838E-08	1.420E+03	4.662E-07	1.725E+04	9.049E-06	3.348E+05	3.973E-04	1.470E+07	4.088E-04	1.513E+07
I-130	2.679E+00	9.912E+10	3.998E-02	1.479E+09	3.041E-01	1.125E+10	6.765E-01	2.503E+10	3.436E-02	1.271E+09	3.734E+00	1.382E+11
I-131	3.199E+01	1.184E+12	6.194E-01	2.292E+10	7.305E+00	2.703E+11	1.192E+02	4.410E+12	1.500E+03	5.550E+13	1.659E+03	6.138E+13
I-132	3.721E+01	1.377E+12	2.421E-01	8.958E+09	3.626E-01	1.342E+10	1.103E-02	4.081E+08	1.671E-11	6.183E-01	3.782E+01	1.399E+12
I-133	6.155E+01	2.277E+12	1.022E+00	3.781E+10	9.383E+00	3.472E+11	4.389E+01	1.624E+12	1.163E+01	4.303E+11	1.275E+02	4.718E+12
I-134	4.170E+01	1.543E+12	9.438E-02	3.492E+09	3.336E-02	1.234E+09	7.756E-07	2.870E+04	6.711E-31	2.483E-20	4.183E+01	1.548E+12
I-135	5.032E+01	1.862E+12	6.126E-01	2.267E+10	3.161E+00	1.170E+11	2.185E+00	8.085E+10	3.747E-03	1.386E+08	5.629E+01	2.083E+12
Rb-86	4.589E-03	1.698E+08	2.766E-05	1.023E+06	1.086E-04	4.018E+06	1.305E-03	4.829E+07	2.814E-02	1.041E+09	3.417E-02	1.264E+09
Rb-88	1.105E+00	4.089E+10	1.286E-03	4.758E+07	6.410E-04	2.372E+07	2.976E-05	1.101E+06	2.261E-12	8.366E-02	1.107E+00	4.096E+10
Rb-89	1.257E-02	4.651E+08	4.677E-08	1.730E+03	4.331E-15	1.602E-04	1.140E-33	4.218E-23	0.000E+00	0.000E+00	1.257E-02	4.651E+08
Cs-134	5.246E-01	1.941E+10	3.196E-03	1.183E+08	1.275E-02	4.718E+08	1.648E-01	6.098E+09	6.259E+00	2.316E+11	6.964E+00	2.577E+11
Cs-136	1.253E-01	4.636E+09	7.520E-04	2.782E+07	2.931E-03	1.084E+08	3.415E-02	1.264E+09	5.875E-01	2.174E+10	7.507E-01	2.778E+10
Cs-137	2.008E-01	7.430E+09	1.224E-03	4.529E+07	4.884E-03	1.807E+08	6.322E-02	2.339E+09	2.436E+00	9.013E+10	2.706E+00	1.001E+11



**Table 7.1-21—Radionuclide Releases to Atmosphere for SGTR with Accident-Induced (Coincident) Iodine Spike  
(Page 2 of 2)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)											
	0 to 2		2 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Cs-138	1.397E-01	5.169E+09	9.813E-06	3.631E+05	5.129E-09	1.898E+02	1.405E-17	5.199E-07	2.046E-57	7.570E-47	1.397E-01	5.169E+09
Ba-137m	1.883E-01	6.967E+09	1.148E-03	4.248E+07	4.579E-03	1.694E+08	5.927E-02	2.193E+09	2.284E+00	8.451E+10	2.537E+00	9.387E+10
Total	6.801E+03	1.956E+12	2.802E+03	1.037E+14	3.780E+03	1.399E+14	2.554E+03	9.450E+13	3.368E+03	1.246E+14	1.930E+04	7.141E+14

**Table 7.1-22—Radionuclide Releases to Atmosphere for Design Basis LOCA  
(Page 1 of 3)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)													
	0 to 1.5		1.5 to 3.5		3.5 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	7.297E+02	2.700E+13	2.751E+03	1.018E+14	4.641E+03	1.717E+14	4.187E+03	1.549E+14	1.072E+02	3.966E+12	3.150E-07	1.166E+04	1.242E+04	4.595E+14
Kr-85m	1.709E+03	6.323E+13	6.303E+03	2.332E+14	8.876E+03	3.284E+14	8.074E+03	2.987E+14	3.703E+02	1.370E+13	5.366E-03	1.985E+08	2.533E+04	9.372E+14
Kr-85	1.126E+02	4.166E+12	4.307E+02	1.594E+13	9.847E+02	3.643E+13	3.497E+03	1.294E+14	7.845E+03	2.903E+14	6.661E+04	2.465E+15	7.948E+04	2.941E+15
Kr-87	2.224E+03	8.229E+13	4.925E+03	1.822E+14	2.337E+03	8.647E+13	2.199E+02	8.136E+12	1.791E-02	6.627E+08	1.613E-19	5.968E-09	9.706E+03	3.591E+14
Kr-88	4.382E+03	1.621E+14	1.434E+04	5.306E+14	1.548E+04	5.728E+14	7.580E+03	2.805E+14	7.766E+01	2.873E+12	1.794E-06	6.638E+04	4.186E+04	1.549E+15
Kr-89	9.523E+00	3.524E+11	3.044E-06	1.126E+05	1.461E-17	5.406E-07	3.346E-43	1.238E-32	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.523E+00	3.524E+11
Xe-131m	7.277E+01	2.692E+12	3.151E+02	1.166E+13	7.225E+02	2.673E+13	2.650E+03	9.805E+13	8.448E+03	3.126E+14	8.304E+04	3.072E+15	9.525E+04	3.524E+15
Xe-133m	4.023E+02	1.489E+13	1.806E+03	6.682E+13	4.148E+03	1.535E+14	1.551E+04	5.739E+14	3.840E+04	1.421E+15	2.689E+04	9.949E+14	8.716E+04	3.225E+15
Xe-133	1.326E+04	4.906E+14	5.898E+04	2.182E+15	1.353E+05	5.006E+15	4.923E+05	1.822E+16	1.172E+06	4.336E+16	2.331E+06	8.625E+16	4.202E+06	1.555E+17
Xe-135m	1.676E+03	6.201E+13	1.283E+04	4.747E+14	5.187E+04	1.919E+15	1.495E+05	5.532E+15	6.371E+04	2.357E+15	8.257E+01	3.055E+12	2.797E+05	1.035E+16
Xe-135	4.390E+03	1.624E+14	2.130E+04	7.881E+14	5.958E+04	2.204E+15	2.402E+05	8.887E+15	1.708E+05	6.320E+15	9.095E+02	3.365E+13	4.971E+05	1.839E+16
Xe-137	2.238E+01	8.281E+11	1.730E-04	6.401E+06	7.545E-14	2.792E-03	4.529E-35	1.676E-24	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.238E+01	8.281E+11
Xe-138	6.229E+02	2.305E+13	9.854E+01	3.646E+12	3.005E-01	1.112E+10	5.518E-07	2.042E+04	1.111E-27	4.111E-17	0.000E+00	0.000E+00	7.217E+02	2.670E+13
Br-83	3.714E+00	1.374E+11	7.476E+00	2.766E+11	5.922E+00	2.191E+11	1.578E+00	5.839E+10	9.943E-03	3.679E+08	7.939E-12	2.937E-01	1.870E+01	6.919E+11
Br-84	3.206E+00	1.186E+11	1.399E+00	5.176E+10	1.010E-01	3.737E+09	2.106E-04	7.792E+06	1.010E-13	3.737E-03	1.200E-54	4.440E-44	4.706E+00	1.741E+11
Br-85	7.005E-01	2.592E+10	3.783E-10	1.400E+01	1.011E-22	3.741E-12	3.330E-51	1.232E-40	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.005E-01	2.592E+10
I-129	2.143E-06	7.929E+04	6.460E-06	2.390E+05	1.204E-05	4.455E+05	2.778E-05	1.028E+06	8.971E-05	3.319E+06	6.739E-04	2.493E+07	8.120E-04	3.004E+07
I-130	3.160E+00	1.169E+11	8.910E+00	3.297E+11	1.395E+01	5.162E+11	1.919E+01	7.100E+11	9.181E+00	3.397E+11	1.557E-01	5.761E+09	5.455E+01	2.018E+12
I-131	3.558E+01	1.316E+12	1.070E+02	3.959E+12	1.971E+02	7.293E+12	4.395E+02	1.626E+13	1.216E+03	4.499E+13	3.310E+03	1.225E+14	5.305E+03	1.963E+14
I-132	3.928E+01	1.453E+12	8.453E+01	3.128E+12	8.515E+01	3.151E+12	8.672E+01	3.209E+12	1.646E+02	6.090E+12	1.700E+02	6.290E+12	6.303E+02	2.332E+13
I-133	7.134E+01	2.640E+12	2.071E+02	7.663E+12	3.479E+02	1.287E+13	5.859E+02	2.168E+13	5.389E+02	1.994E+13	5.089E+01	1.883E+12	1.802E+03	6.667E+13
I-134	4.192E+01	1.551E+12	4.308E+01	1.594E+12	1.043E+01	3.859E+11	2.466E-01	9.124E+09	4.949E-07	1.831E+04	8.736E-32	3.232E-21	9.568E+01	3.540E+12
I-135	6.120E+01	2.264E+12	1.615E+02	5.976E+12	2.183E+02	8.077E+12	2.005E+02	7.419E+12	3.195E+01	1.182E+12	1.584E-02	5.861E+08	6.735E+02	2.492E+13
Rb-86m	2.457E-04	9.091E+06	8.331E-31	3.082E-20	2.805E-66	1.038E-55	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.457E-04	9.091E+06
Rb-86	1.268E-01	4.692E+09	3.249E-01	1.202E+10	5.175E-01	1.915E+10	6.158E-01	2.278E+10	1.784E-01	6.601E+09	3.473E-02	1.285E+09	1.798E+00	6.653E+10
Rb-88	6.288E+01	2.327E+12	1.545E+02	5.717E+12	1.636E+02	6.053E+12	8.009E+01	2.963E+12	8.460E-01	3.130E+10	1.980E-08	7.326E+02	4.619E+02	1.709E+13
Rb-89	1.126E+01	4.166E+11	5.235E-01	1.937E+10	1.960E-03	7.252E+07	4.966E-09	1.837E+02	5.198E-29	1.923E-18	0.000E+00	0.000E+00	1.178E+01	4.359E+11
Cs-134	1.418E+01	5.247E+11	3.636E+01	1.345E+12	5.818E+01	2.153E+12	7.012E+01	2.594E+12	2.128E+01	7.874E+11	5.202E+00	1.925E+11	2.053E+02	7.596E+12
Cs-136	3.511E+00	1.299E+11	9.004E+00	3.331E+11	1.431E+01	5.295E+11	1.694E+01	6.268E+11	4.810E+00	1.780E+11	8.548E-01	3.163E+10	4.943E+01	1.829E+12
Cs-137	5.419E+00	2.005E+11	1.389E+01	5.139E+11	2.223E+01	8.225E+11	2.679E+01	9.912E+11	8.142E+00	3.013E+11	2.002E+00	7.407E+10	7.848E+01	2.904E+12
Cs-138	4.511E+01	1.669E+12	2.603E+01	9.631E+11	1.839E+00	6.804E+10	3.106E-03	1.149E+08	3.645E-13	1.349E-02	3.186E-55	1.179E-44	7.298E+01	2.700E+12
Sb-125	7.674E-02	2.839E+09	3.605E-01	1.334E+10	5.787E-01	2.141E+10	6.973E-01	2.580E+10	2.117E-01	7.833E+09	5.185E-02	1.918E+09	1.977E+00	7.315E+10
Sb-127	3.566E-01	1.319E+10	1.658E+00	6.135E+10	2.602E+00	9.627E+10	2.947E+00	1.090E+11	7.152E-01	2.646E+10	6.814E-02	2.521E+09	8.347E+00	3.088E+11

**Table 7.1-22—Radionuclide Releases to Atmosphere for Design Basis LOCA  
(Page 2 of 3)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)													
	0 to 1.5		1.5 to 3.5		3.5 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Sb-129	8.062E-01	2.983E+10	3.074E+00	1.137E+11	3.076E+00	1.138E+11	1.172E+00	4.336E+10	1.262E-02	4.669E+08	9.903E-09	3.664E+02	8.142E+00	3.013E+11
Te-127m	5.087E-02	1.882E+09	2.290E-01	8.473E+09	3.677E-01	1.360E+10	4.432E-01	1.640E+10	1.345E-01	4.977E+09	3.221E-02	1.192E+09	1.257E+00	4.651E+10
Te-127	3.679E-01	1.361E+10	1.678E+00	6.209E+10	2.678E+00	9.909E+10	3.139E+00	1.161E+11	8.103E-01	2.998E+10	9.679E-02	3.581E+09	8.769E+00	3.245E+11
Te-129m	1.475E-01	5.458E+09	6.643E-01	2.458E+10	1.065E+00	3.941E+10	1.276E+00	4.721E+10	3.779E-01	1.398E+10	8.132E-02	3.009E+09	3.612E+00	1.336E+11
Te-129	9.137E-01	3.381E+10	3.758E+00	1.390E+11	4.244E+00	1.570E+11	2.219E+00	8.210E+10	2.610E-01	9.657E+09	5.294E-02	1.959E+09	1.145E+01	4.237E+11
Te-131m	4.117E-01	1.523E+10	1.808E+00	6.690E+10	2.706E+00	1.001E+11	2.700E+00	9.990E+10	4.296E-01	1.590E+10	9.844E-03	3.642E+08	8.066E+00	2.984E+11
Te-131	4.731E-01	1.750E+10	6.764E-01	2.503E+10	6.180E-01	2.287E+10	6.079E-01	2.249E+10	9.670E-02	3.578E+09	2.216E-03	8.199E+07	2.474E+00	9.154E+10
Te-132	4.076E+00	1.508E+11	1.819E+01	6.730E+11	2.841E+01	1.051E+12	3.181E+01	1.177E+12	7.423E+00	2.747E+11	6.147E-01	2.274E+10	9.053E+01	3.350E+12
Te-134	1.637E+00	6.057E+10	2.306E+00	8.532E+10	2.992E-01	1.107E+10	1.926E-03	7.126E+07	2.642E-11	9.775E-01	1.491E-43	5.517E-33	4.244E+00	1.570E+11
Sr-89	1.295E+00	4.792E+10	6.070E+00	2.246E+11	9.727E+00	3.599E+11	1.167E+01	4.318E+11	3.484E+00	1.289E+11	7.831E-01	2.897E+10	3.303E+01	1.222E+12
Sr-90	1.352E-01	5.002E+09	6.346E-01	2.348E+10	1.019E+00	3.770E+10	1.228E+00	4.544E+10	3.731E-01	1.380E+10	9.176E-02	3.395E+09	3.481E+00	1.288E+11
Sr-91	1.523E+00	5.635E+10	6.489E+00	2.401E+11	8.369E+00	3.097E+11	5.720E+00	2.116E+11	3.029E-01	1.121E+10	1.462E-04	5.409E+06	2.240E+01	8.288E+11
Sr-92	1.273E+00	4.710E+10	4.299E+00	1.591E+11	3.300E+00	1.221E+11	7.207E-01	2.667E+10	1.556E-03	5.757E+07	1.220E-12	4.514E-02	9.594E+00	3.550E+11
Ba-137m	4.246E+00	1.571E+11	1.310E+01	4.847E+11	2.103E+01	7.781E+11	2.535E+01	9.380E+11	7.702E+00	2.850E+11	1.894E+00	7.008E+10	7.332E+01	2.713E+12
Ba-139	1.252E+00	4.632E+10	2.933E+00	1.085E+11	1.185E+00	4.385E+10	7.377E-02	2.729E+09	2.809E-06	1.039E+05	3.953E-23	1.463E-12	5.444E+00	2.014E+11
Ba-140	2.011E+00	7.441E+10	9.409E+00	3.481E+11	1.500E+01	5.550E+11	1.775E+01	6.568E+11	5.031E+00	1.861E+11	8.876E-01	3.284E+10	5.008E+01	1.853E+12
Mo-99	6.680E-01	2.472E+10	1.185E+00	4.385E+10	1.843E+00	6.819E+10	2.036E+00	7.533E+10	4.535E-01	1.678E+10	3.193E-02	1.181E+09	6.218E+00	2.301E+11
Tc-99m	4.054E-01	1.500E+10	1.062E+00	3.929E+10	1.685E+00	6.235E+10	1.916E+00	7.089E+10	4.358E-01	1.612E+10	3.075E-02	1.138E+09	5.535E+00	2.048E+11
Ru-103	2.419E-01	8.950E+09	1.134E+00	4.196E+10	1.816E+00	6.719E+10	2.175E+00	8.048E+10	6.463E-01	2.391E+10	1.417E-01	5.243E+09	6.155E+00	2.277E+11
Ru-105	1.639E-01	6.064E+09	6.263E-01	2.317E+10	6.347E-01	2.348E+10	2.485E-01	9.195E+09	2.881E-03	1.066E+08	3.096E-09	1.146E+02	1.676E+00	6.201E+10
Ru-106	1.433E-01	5.302E+09	6.720E-01	2.486E+10	1.079E+00	3.992E+10	1.299E+00	4.806E+10	3.939E-01	1.457E+10	9.568E-02	3.540E+09	3.683E+00	1.363E+11
Rh-103m	2.180E-01	8.066E+09	1.022E+00	3.781E+10	1.637E+00	6.057E+10	1.961E+00	7.256E+10	5.827E-01	2.156E+10	1.277E-01	4.725E+09	5.549E+00	2.053E+11
Rh-105	1.753E-01	6.486E+09	8.191E-01	3.031E+10	1.284E+00	4.751E+10	1.375E+00	5.088E+10	2.453E-01	9.076E+09	7.574E-03	2.802E+08	3.907E+00	1.446E+11
Rh-106	1.433E-01	5.302E+09	6.720E-01	2.486E+10	1.079E+00	3.992E+10	1.299E+00	4.806E+10	3.939E-01	1.457E+10	9.568E-02	3.540E+09	3.683E+00	1.363E+11
Ce-141	4.504E-02	1.666E+09	2.100E-01	7.770E+09	3.363E-01	1.244E+10	4.027E-01	1.490E+10	1.191E-01	4.407E+09	2.551E-02	9.439E+08	1.139E+00	4.214E+10
Ce-143	4.473E-02	1.655E+09	2.032E-01	7.518E+09	3.060E-01	1.132E+10	3.105E-01	1.149E+10	5.212E-02	1.928E+09	1.426E-03	5.276E+07	9.179E-01	3.396E+10
Ce-144	3.421E-02	1.266E+09	1.595E-01	5.902E+09	2.560E-01	9.472E+09	3.085E-01	1.141E+10	9.342E-02	3.457E+09	2.261E-02	8.366E+08	8.743E-01	3.235E+10
Np-239	7.573E-01	2.802E+10	3.479E+00	1.287E+11	5.379E+00	1.990E+11	5.860E+00	2.168E+11	1.242E+00	4.595E+10	7.389E-02	2.734E+09	1.679E+01	6.212E+11
Pu-238	2.937E-04	1.087E+07	1.371E-03	5.073E+07	2.200E-03	8.140E+07	2.652E-03	9.812E+07	8.060E-04	2.982E+07	1.984E-04	7.341E+06	7.522E-03	2.783E+08
Pu-239	1.236E-05	4.573E+05	5.767E-05	2.134E+06	9.263E-05	3.427E+06	1.118E-04	4.137E+06	3.413E-05	1.263E+06	8.458E-06	3.129E+05	3.171E-04	1.173E+07
Pu-240	2.817E-05	1.042E+06	1.315E-04	4.866E+06	2.110E-04	7.807E+06	2.543E-04	9.409E+06	7.729E-05	2.860E+06	1.901E-05	7.034E+05	7.212E-04	2.668E+07
Pu-241	5.110E-03	1.891E+08	2.385E-02	8.825E+08	3.828E-02	1.416E+09	4.613E-02	1.707E+09	1.402E-02	5.187E+08	3.446E-03	1.275E+08	1.308E-01	4.840E+09
Y-90	3.140E-03	1.162E+08	2.339E-02	8.654E+08	6.936E-02	2.566E+09	1.818E-01	6.727E+09	1.423E-01	5.265E+09	7.603E-02	2.813E+09	4.961E-01	1.836E+10
Y-91m	5.663E-01	2.095E+10	3.441E+00	1.273E+11	5.191E+00	1.921E+11	3.634E+00	1.345E+11	1.924E-01	7.119E+09	9.288E-05	3.437E+06	1.302E+01	4.817E+11

CCNPP Unit 3

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ER Section 7

Impacts of Postulated Accidents Involving Radioactive Materials

**Table 7.1-22—Radionuclide Releases to Atmosphere for Design Basis LOCA  
(Page 3 of 3)**

Nuclide	Releases to Atmosphere During Specified Time Intervals (hrs)													
	0 to 1.5		1.5 to 3.5		3.5 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Y-91	1.652E-02	6.112E+08	8.019E-02	2.967E+09	1.426E-01	5.276E+09	2.021E-01	7.478E+09	7.064E-02	2.614E+09	1.656E-02	6.127E+08	5.286E-01	1.956E+10
Y-92	3.112E-01	1.151E+10	2.236E+00	8.273E+10	3.968E+00	1.468E+11	2.181E+00	8.070E+10	2.160E-02	7.992E+08	1.599E-09	5.916E+01	8.719E+00	3.226E+11
Y-93	1.749E-02	6.471E+08	7.414E-02	2.743E+09	9.685E-02	3.583E+09	6.832E-02	2.528E+09	3.943E-03	1.459E+08	2.631E-06	9.735E+04	2.607E-01	9.646E+09
Zr-95	1.861E-02	6.886E+08	8.589E-02	3.178E+09	1.377E-01	5.095E+09	1.654E-01	6.120E+09	4.955E-02	1.833E+09	1.135E-02	4.200E+08	4.685E-01	1.733E+10
Zr-97	1.877E-02	6.945E+08	8.243E-02	3.050E+09	1.169E-01	4.325E+09	1.014E-01	3.752E+09	1.051E-02	3.889E+08	5.726E-05	2.119E+06	3.300E-01	1.221E+10
Nb-95	1.862E-02	6.889E+08	8.599E-02	3.182E+09	1.380E-01	5.106E+09	1.664E-01	6.157E+09	5.053E-02	1.870E+09	1.232E-02	4.558E+08	4.719E-01	1.746E+10
La-140	6.044E-02	2.236E+09	4.868E-01	1.801E+10	1.509E+00	5.583E+10	3.941E+00	1.458E+11	2.736E+00	1.012E+11	9.057E-01	3.351E+10	9.639E+00	3.566E+11
La-141	1.590E-02	5.883E+08	5.866E-02	2.170E+09	5.613E-02	2.077E+09	1.940E-02	7.178E+08	1.590E-04	5.883E+06	3.935E-11	1.456E+00	1.502E-01	5.557E+09
La-142	1.132E-02	4.188E+08	2.986E-02	1.105E+09	1.382E-02	5.113E+08	1.118E-03	4.137E+07	1.026E-07	3.796E+03	7.220E-23	2.671E-12	5.612E-02	2.076E+09
Pr-143	1.844E-02	6.823E+08	8.551E-02	3.164E+09	1.384E-01	5.121E+09	1.698E-01	6.283E+09	5.241E-02	1.939E+09	1.030E-02	3.811E+08	4.748E-01	1.757E+10
Pr-144	3.272E-02	1.211E+09	1.590E-01	5.883E+09	2.560E-01	9.472E+09	3.085E-01	1.141E+10	9.343E-02	3.457E+09	2.261E-02	8.366E+08	8.722E-01	3.227E+10
Nd-147	7.658E-03	2.833E+08	3.525E-02	1.304E+09	5.615E-02	2.078E+09	6.621E-02	2.450E+09	1.857E-02	6.871E+08	3.127E-03	1.157E+08	1.870E-01	6.919E+09
Am-241	2.343E-06	8.669E+04	1.083E-05	4.007E+05	1.740E-05	6.438E+05	2.105E-05	7.789E+05	6.475E-06	2.396E+05	1.695E-06	6.272E+04	5.978E-05	2.212E+06
Cm-242	1.065E-03	3.941E+07	4.917E-03	1.819E+08	7.889E-03	2.919E+08	9.495E-03	3.513E+08	2.870E-03	1.062E+08	6.862E-04	2.539E+07	2.692E-02	9.960E+08
Cm-244	5.651E-04	2.091E+07	2.610E-03	9.657E+07	4.190E-03	1.550E+08	5.049E-03	1.868E+08	1.534E-03	5.676E+07	3.772E-04	1.396E+07	1.432E-02	5.298E+08
Total	3.005E+04	1.112E+15	1.250E+05	4.625E+15	2.852E+05	1.055E+16	9.254E+05	3.424E+16	1.463E+06	5.413E+16	2.512E+06	9.294E+16	5.341E+06	1.976E+17

**Table 7.1-23—Radionuclide Releases to Atmosphere for Fuel Handling Accident**

Nuclide	Releases to Atmosphere (Ci) During Specified Time Intervals (hrs)											
	0 to 2		2 to 8		8 to 24		24 to 96		96 to 720		Total	
	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	1.437E+00	5.317E+10	2.129E-01	7.877E+09	4.404E-02	1.629E+09	4.294E-04	1.589E+07	3.665E-13	1.356E-02	1.694E+00	6.268E+10
Kr-85m	7.810E+01	2.890E+12	3.881E-01	1.436E+10	4.693E-08	1.736E+03	1.678E-26	6.209E-16	0.000E+00	0.000E+00	7.849E+01	2.904E+12
Kr-85	1.471E+03	5.443E+13	9.977E+00	3.691E+11	3.052E-06	1.129E+05	1.296E-23	4.795E-13	0.000E+00	0.000E+00	1.481E+03	5.480E+13
Kr-87	2.330E-04	8.621E+06	5.290E-07	1.957E+04	6.148E-15	2.275E-04	4.260E-36	1.576E-25	0.000E+00	0.000E+00	2.335E-04	8.640E+06
Kr-88	1.016E+01	3.759E+11	4.220E-02	1.561E+09	2.983E-09	1.104E+02	2.549E-28	9.431E-18	0.000E+00	0.000E+00	1.020E+01	3.774E+11
Xe-131m	5.637E+02	2.086E+13	1.475E+01	5.458E+11	2.813E+01	1.041E+12	1.084E+02	4.011E+12	3.282E+02	1.214E+13	1.043E+03	3.859E+13
Xe-133m	2.609E+03	9.653E+13	8.098E+01	2.996E+12	1.193E+02	4.414E+12	1.540E+02	5.698E+12	1.538E+01	5.691E+11	2.979E+03	1.102E+14
Xe-133	9.442E+04	3.494E+15	1.533E+03	5.672E+13	1.684E+03	6.231E+13	2.174E+03	8.044E+13	2.171E+02	8.033E+12	1.000E+05	3.700E+15
Xe-135m	1.089E+03	4.029E+13	1.975E+03	7.308E+13	1.834E+03	6.786E+13	4.211E+02	1.558E+13	2.219E-01	8.210E+09	5.319E+03	1.968E+14
Xe-135	1.407E+04	5.206E+14	7.705E+02	2.851E+13	6.412E+02	2.372E+13	1.472E+02	5.446E+12	7.759E-02	2.871E+09	1.563E+04	5.783E+14
Xe-138	1.825E-39	6.753E-29	3.471E-44	1.284E-33	2.388E-58	8.836E-48	4.092E-96	1.514E-85	0.000E+00	0.000E+00	1.825E-39	6.753E-29
Br-83	1.610E-03	5.957E+07	6.097E-06	2.256E+05	3.273E-13	1.211E-02	1.343E-32	4.969E-22	0.000E+00	0.000E+00	1.616E-03	5.979E+07
Br-84	2.046E-18	7.570E-08	1.009E-21	3.733E-11	1.206E-31	4.462E-21	4.188E-58	1.550E-47	0.000E+00	0.000E+00	2.047E-18	7.574E-08
I-129	1.459E-05	5.398E+05	9.898E-08	3.662E+03	3.028E-14	1.120E-03	1.286E-31	4.758E-21	0.000E+00	0.000E+00	1.469E-05	5.435E+05
I-130	3.363E+00	1.244E+11	2.038E-02	7.541E+08	4.453E-09	1.648E+02	7.713E-27	2.854E-16	0.000E+00	0.000E+00	3.383E+00	1.252E+11
I-131	3.443E+02	1.274E+13	2.319E+00	8.580E+10	6.942E-07	2.569E+04	2.784E-24	1.030E-13	0.000E+00	0.000E+00	3.466E+02	1.282E+13
I-132	1.118E-02	4.137E+08	4.139E-05	1.531E+06	2.076E-12	7.681E-02	7.100E-32	2.627E-21	0.000E+00	0.000E+00	1.122E-02	4.151E+08
I-133	1.615E+02	5.976E+12	1.025E+00	3.793E+10	2.567E-07	9.498E+03	6.398E-25	2.367E-14	0.000E+00	0.000E+00	1.625E+02	6.013E+12
I-134	8.997E-10	3.329E+01	1.249E-12	4.621E-02	3.325E-21	1.230E-10	4.528E-44	1.675E-33	0.000E+00	0.000E+00	9.009E-10	3.333E+01
I-135	1.282E+01	4.743E+11	7.041E-02	2.605E+09	1.148E-08	4.248E+02	9.113E-27	3.372E-16	0.000E+00	0.000E+00	1.289E+01	4.769E+11
Rb-88	4.884E+00	1.807E+11	4.672E-02	1.729E+09	3.332E-09	1.233E+02	2.846E-28	1.053E-17	0.000E+00	0.000E+00	4.931E+00	1.824E+11
Cs-138	6.206E-40	2.296E-29	1.019E-42	3.770E-32	1.379E-52	5.102E-42	6.210E-79	2.298E-68	0.000E+00	0.000E+00	6.216E-40	2.300E-29
Total	1.148E+05	4.248E+15	4.388E+03	1.624E+14	4.307E+03	1.594E+14	3.005E+03	1.112E+14	5.610E+02	2.076E+13	1.271E+05	4.703E+15

**Table 7.1-24—Radionuclide Releases to Atmosphere for Rod Ejection Accident (REA)  
with Accident-Induced 26% Clad Failure**  
[Secondary-side releases without SG tube uncover]

Nuclide	Releases to Atmosphere (Ci) During Specified Time Intervals (hrs)					
	0 to 2		2 to 8		Total	
	Ci	Bq	Ci	Bq	Ci	Bq
Kr-83m	4.713E+02	1.744E+13	3.879E+02	1.435E+13	8.592E+02	3.179E+13
Kr-85m	1.326E+03	4.906E+13	2.209E+03	8.173E+13	3.535E+03	1.308E+14
Kr-85	7.302E+01	2.702E+12	2.188E+02	8.096E+12	2.918E+02	1.080E+13
Kr-87	1.878E+03	6.949E+13	9.137E+02	3.381E+13	2.791E+03	1.033E+14
Kr-88	3.466E+03	1.282E+14	4.228E+03	1.564E+14	7.695E+03	2.847E+14
Kr-89	2.102E+02	7.777E+12	8.446E-10	3.125E+01	2.102E+02	7.777E+12
Xe-131m	5.278E+01	1.953E+12	1.566E+02	5.794E+12	2.094E+02	7.748E+12
Xe-133m	3.008E+02	1.113E+13	8.563E+02	3.168E+13	1.157E+03	4.281E+13
Xe-133	9.847E+03	3.643E+14	2.890E+04	1.069E+15	3.875E+04	1.434E+15
Xe-135m	3.493E+02	1.292E+13	6.359E+01	2.353E+12	4.129E+02	1.528E+13
Xe-135	2.976E+03	1.101E+14	6.805E+03	2.518E+14	9.781E+03	3.619E+14
Xe-137	3.971E+02	1.469E+13	1.468E-07	5.432E+03	3.971E+02	1.469E+13
Xe-138	1.423E+03	5.265E+13	4.026E+00	1.490E+11	1.427E+03	5.280E+13
Br-83	2.318E+00	8.577E+10	1.109E+01	4.103E+11	1.341E+01	4.962E+11
Br-84	1.340E+00	4.958E+10	4.784E-01	1.770E+10	1.818E+00	6.727E+10
Br-85	1.816E-02	6.719E+08	1.358E-13	5.025E-03	1.816E-02	6.719E+08
I-129	1.451E-06	5.369E+04	2.134E-05	7.896E+05	2.279E-05	8.432E+05
I-130	2.119E+00	7.840E+10	2.472E+01	9.146E+11	2.684E+01	9.931E+11
I-131	2.406E+01	8.902E+11	3.485E+02	1.289E+13	3.726E+02	1.379E+13
I-132	2.343E+01	8.669E+11	1.077E+02	3.985E+12	1.311E+02	4.851E+12
I-133	4.811E+01	1.780E+12	6.162E+02	2.280E+13	6.643E+02	2.458E+13
I-134	2.052E+01	7.592E+11	2.249E+01	8.321E+11	4.300E+01	1.591E+12
I-135	4.045E+01	1.497E+12	3.877E+02	1.434E+13	4.282E+02	1.584E+13
Rb-86m	3.435E-06	1.271E+05	9.253E-04	3.424E-29	3.435E-06	1.271E+05
Rb-86	1.192E-01	4.410E+09	1.756E+00	6.497E+10	1.876E+00	6.941E+10
Rb-88	2.836E+03	1.049E+14	4.711E+03	1.743E+14	7.548E+03	2.793E+14
Rb-89	2.112E+02	7.814E+12	1.177E+00	4.355E+10	2.124E+02	7.859E+12
Cs-134	1.337E+01	4.947E+11	1.981E+02	7.330E+12	2.114E+02	7.822E+12
Cs-136	3.309E+00	1.224E+11	4.861E+01	1.799E+12	5.192E+01	1.921E+12
Cs-137	5.096E+00	1.886E+11	7.554E+01	2.795E+12	8.064E+01	2.984E+12
Cs-138	1.250E+03	4.625E+13	1.935E+02	7.160E+12	1.443E+03	5.339E+13
Sr-89	1.940E-01	7.178E+09	8.238E-01	3.048E+10	1.018E+00	3.767E+10
Ba-137m	4.812E+00	1.780E+11	7.146E+01	2.644E+12	7.627E+01	2.822E+12
Total	2.726E+04	1.009E+15	5.156E+04	1.908E+15	7.882E+04	2.916E+15