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Verification and Validation of RADTRAN 5.5

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ABSTRACT

This document contains a description of the verification and validation process used for the RADTRAN 5.5 code. The verification and validation process ensured the proper calculational models and mathematical and numerical methods were used in the RADTRAN 5.5 code for the determination of risk and consequence assessments. The differences between RADTRAN 5 and RADTRAN 5.5 are the addition of tables, an expanded isotope library, and the additional User-Defined meteorological option for accident dispersion.

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1. INTRODUCTION

RADTRAN© (Copyright: Sandia National Laboratories, 2003) is the national standard for transportation risk assessment computer codes. The international version, INTERTRAN, is based on RADTRAN. RADTRAN combines user-determined meteorologic, packaging, demographic, transportation, and material data with health physics data to calculate the expected radiological consequences and accident risk of transporting radioactive material.

RADTRAN was initially developed for the Environmental Impact Statement (EIS) for the Transportation of Radioactive Materials by Air and Other Means (NUREG-0170) in 1977. RADTRAN 5, the current version, allows complete user input and contains several improved utilities. RADCAT© (Copyright: Sandia National Laboratories, 2004) is a graphical user interface (GUI). It is coupled with a downloadable PC version of RADTRAN 5 and acts as the input file generator.

RADTRAN 5.5, which will be launched in the first quarter of 2005, will have the same capabilities as RADTRAN 5 plus a fully functional user-defined atmospheric dispersion model. The radionuclide library will be expanded from 60 nuclides presently available to 148 nuclides. Additional tables that have been added to the output file, and the ingestion dose model, COMIDA, has been updated to reflect the addition of the extra nuclides.

2. TEST CASE OVERVIEW

This report provides the verification and validation of the RADTRAN 5.5 computer code. The verification of RADTRAN 5.5 was performed to confirm that dosimetric models in the code have been correctly coded and that the code correctly performs the operations specified in the numerical models. Table 1 shows the test cases and provides a brief description of each case.

Table 1: Test Cases

Test Case No.	Description
1a	Verify that a standardized truck route run with RADTRAN 5 on TRANSNET with the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator.
1b	Verify that a standardized truck route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator with the average weather dispersion model produces the same results as those run with RADTRAN 5 on TRANSNET.
1c	Verify that a standardized truck route run with RADTRAN 5.5 PC-Version with the average weather dispersion model produces the same results as those run with RADTRAN 5 using the RADCAT 1.0 input file generator with the exception of those results affected by the new expanded radioisotope library and the updated COMIDA file.
1d	Verify that a standardized truck route run with RADTRAN 5.5 with the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator with the exception of those results affected the updated COMIDA file.
1e	Verify that a standardized truck route run with RADTRAN 5.5 with the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator with the exception of those results affected by the new expanded radioisotope library.
2a	Verify that a standardized truck route run with RADTRAN 5 on TRANSNET with the Pasquill dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator.
2b	Verify that a standardized truck route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator with the Pasquill dispersion model produces the same results as those run with RADTRAN 5 on TRANSNET.
2c	Verify that a standardized truck route run with RADTRAN 5.5 with the Pasquill dispersion model using the old radionuclide library and COMIDA files from RADTRAN 5 produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator.

Table 1: Test Cases

Test Case No.	Description
3a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator using the Pasquill dispersion model with Test Case 3b.
3b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the old radionuclide library and COMIDA files from RADTRAN 5 and the new User-Defined Pasquill dispersion model with Test Case 3a.
4a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Pasquill dispersion model for an elevated release in a suburban/urban population zone with Test Case 4b.
4b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Pasquill dispersion model for an elevated release in a suburban/urban population zone with Test Case 4a.
5a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Pasquill dispersion model for an elevated release in a rural population zone with Test Case 5b.
5b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Pasquill dispersion model for an elevated release in a rural population zone with Test Case 5a.
6a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Briggs dispersion model for an elevated release in a suburban/urban population zone with Test Case 6b.
6b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Briggs dispersion model for an elevated release in a suburban/urban population zone with Test Case 6a.

Table 1: Test Cases

Test Case No.	Description
7a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Briggs dispersion model for an elevated release in a rural population zone with Test Case 7b.
7b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Briggs dispersion model for an elevated release in a rural population zone with Test Case 7a.
8a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Pasquill dispersion model for a ground-level release in a suburban/urban population zone with Test Case 8b.
8b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Pasquill dispersion model for a ground-level release in a suburban/urban population zone with Test Case 8a.
9a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Pasquill dispersion model for a ground level release in a rural population zone with Test Case 9b.
9b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Pasquill dispersion model for a ground-level release in a rural population zone with Test Case 9a.
10a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Briggs dispersion model for a ground-level release in a suburban/urban population zone with Test Case 10b.
10b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Briggs dispersion model for a ground-level release in a suburban/urban population zone with Test Case 10a.

Table 1: Test Cases

Test Case No.	Description
11a	Compare the dilution factors (Chi/Q) for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Briggs dispersion model for a ground-level release in a rural population zone with Test Case 11b.
11b	Compare the dilution factors (Chi/Q) for a simplified truck route run with RISKIND 2.0 using the Briggs dispersion model for a ground-level release in a rural population zone with Test Case 11a.
12a	Verify that a standardized rail route run with RADTRAN 5 on TRANSNET using the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator.
12b	Verify that a standardized rail route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator and the average weather dispersion model produces the same results as those run with RADAN 5 on TRANSNET.
12c	Verify that a standardized rail route run with RADTRAN 5.5 using the average weather dispersion model using the old radionuclide library and COMIDA files from RADTRAN 5 produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator.
13a	Verify that a standardized barge route run with RADTRAN 5 on TRANSNET using the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator.
13b	Verify that a standardized barge route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator and the average weather dispersion model produces the same results as those run with RADTRAN 5 on TRANSNET.
13c	Verify that a standardized barge route run with RADTRAN 5.5 with the average weather dispersion model using the old radionuclide library and COMIDA files from RADTRAN 5 produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator.

Table 1: Test Cases

Test Case No.	Description
14a	Verify that a standardized truck route run with RADTRAN 5 on TRANSNET using the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator when the DEFINE statement is used.
14b	Verify that a standardized truck route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator and the average weather dispersion model produces the same results as those run with RADTRAN 5 on TRANSNET when the DEFINE statement is used.
14c	Verify that a standardized truck route run with RADTRAN 5.5 using the average weather dispersion model and the old radionuclide library and COMIDA files from RADTRAN 5 produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator when the DEFINE statement is used.
15a	Verify that a standardized rail route run with RADTRAN 5 on TRANSNET using the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator when 21 different severity categories are used.
15b	Verify that a standardized rail route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator and the average weather dispersion model produces the same results as those run with RADTRAN 5 on TRANSNET when 21 different severity categories are used.
15c	Verify that a standardized rail route run with RADTRAN 5.5 using the average weather dispersion model and the old radionuclide library and COMIDA files from RADTRAN 5 produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator when 21 different severity categories are used.
16a	Verify that a standardized truck route run with RADTRAN 5 on TRANSNET using the average weather dispersion model produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator when neutron dose is calculated.

Table 1: Test Cases

Test Case No.	Description
16b	Verify that a standardized truck route run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator and the average weather dispersion model produces the same results as those run with RADTRAN 5 on TRANSNET when neutron dose is calculated.
16c	Verify that a standardized truck route run with RADTRAN 5.5 using the average weather dispersion model and the old radionuclide library and COMIDA files from RADTRAN 5 produces the same results as those run with RADTRAN 5 PC-Version using the RADCAT 1.0 input file generator when neutron dose is calculated.
17	Verify that the RADTRAN 5.5 User-Defined atmospheric dispersion model can calculate a series of different deposition velocities from various physical chemical groups.
18	Verify that all 148 radionuclides in the RADTRAN 5.5 isotope library provide the correct output .
19	Verify that the Backyard Farmer Dose provides zero-results in areas that have been interdicted.
20a	Compare the dilution factors (Chi/Q) and the ground deposition for each isopleth for a simplified truck route run with RADTRAN 5.5 using the new User-Defined Briggs dispersion model for an elevated release in a rural population zone which has rainfall with Test Cases 20b and 20c.
20b	Compare the dilution factors (Chi/Q) and the ground deposition of each isopleth for a simplified truck route run with RISKIND 2.0 using the new User-Defined Briggs dispersion model for an elevated release in a rural population zone that has rainfall with Test Cases 20a and 20c.
20c	Compare the dilution factors (Chi/Q) and the ground deposition of each isopleth for a simplified truck route run with HOTSPOT 2.05 using the new User-Defined Briggs dispersion model for an elevated release in a rural population zone that has rainfall with Test Cases 20a and 20b.
21	Verify that the Societal Ingestion Dose will provide a correct output for the new User-Defined atmospheric dispersion model using a rainfall scenario.

3. TEST CASES

This section will discuss the test cases according to the area of the code that was tested. Along with a brief description of each test case, the results are discussed with respect to differences between each case and any errors in the results, if applicable.

3.1 GENERAL COMPARISON

Some of the files used for comparison between RADTRAN 5 and RADTRAN 5.5 were the same as those used to validate RADTRAN 5 with RADTRAN 4. These files tested the various functions of RADTRAN. The test cases include:

1a. A standardized RADTRAN 5 truck route run with RADTRAN 5 on TRANSNET.

1b. The same standardized RADTRAN 5 truck route run with RADTRAN 5 coupled with the input file generator RADCAT 1.0.

1c. The same standardized RADTRAN 5 truck route run with RADTRAN 5.5 using the expanded isotope library and the updated COMIDA file.

1d. The same standardized RADTRAN 5 truck route run with RADTRAN 5.5 using the older RADTRAN 5 isotope file and the updated COMIDA file.

1e. The same standardized RADTRAN 5 truck route run with RADTRAN 5.5 using the expanded isotope library and the older RADTRAN 5 COMIDA file.

These test files compared the incident-free, accident, and ingestion exposures, as well as defaulted input echo values. These test files used the defaulted time integrated concentrations (Chi/Q) values versus downwind distances within specified isopleth areas. The numerical differences in the compared results between RADTRAN 5 and RADTRAN 5.5 can be attributed to the changed dose conversion factors in the isotope file, RT5ISO.DAT, and the COMIDA file, R5INGEST.BIN. The RT5ISO.DAT and R5INGEST.BIN files are available upon request.

The incident-free results for RADTRAN 5 and RADTRAN 5.5 were the same. The defaulted input echo values also provided the same results for RADTRAN 5 and RADTRAN 5.5. The accident results differed, but only due to the changes that were made in the dose conversion factors can be found in Federal Guidance Report (FGR) 12 for cloudshine and groundshine and in the International Commission on Radiological Protection (ICRP) Publication 72 CD version 2.01 for the 50-year inhalation effective and inhalation gonad dose, and the one-year inhalation lung and red marrow dose. Other changes made to the RT5ISO.DAT file were slight adjustments to the isotope half-lives and photon energies, which are referenced in ICRP Publication 38. The A1 and A2 activity limits were also updated in the

RT5ISO.DAT file to reflect the changes and updates in Appendix A of Part 71 of Title 10 of the Code of Federal Regulations (10CFR71-Appendix A) as of January 1, 2004. The ingestion exposures differed between RADTRAN 5 and RADTRAN 5.5 due to updates made in the dose conversion factors for COMIDA. The COMIDA2 and FGRDCF files were updated as of July 2003. These updates are reflected in the R5INGEST.BIN file.

The only differences that cannot be attributed to dose conversion factors result from the addition of new tables in the RADTRAN 5.5 output and the "Dilution Factors – Chi Values after Depletion (Ci-sec/m^3/Ci-released)" table. In the "Dilution Factors – Chi Values after Depletion (Ci-sec/m^3/Ci-released)" table, the RADTRAN 5 output has the isopleth areas listed for each isopleth, while the RADTRAN 5.5 output has the downwind distance listed for each isopleth. These isopleth areas were compared with the downwind distances for each isopleth and were found to be same for each isopleth. The new tables added to the RADTRAN 5.5 output were Release Fractions, Deposition Velocities, Deposition Factors – Chi Deposited (Ci/m^2/Ci-released), and Expected Values of Population Risk in Person-REM which lists each radionuclide in each package for each link. The Release Fraction table echos the release fractions listed for each severity category in every physical/chemical group listed in the input. The Deposition Velocities table echos the deposition velocities for each physical/chemical group listed in the input. The Deposition Factors – Chi Deposited (Ci/m^2/Ci-released) is calculated by taking the Dilution Factors – Chi Values after Depletion (Ci-sec/m^3/Ci-released) table and multiplying it by the deposition velocity (m/sec). The Expected Values of Population Risk in Person-REM tables are calculated using the equations listed in Section 5.3 of the RADTRAN 5 Technical Manual (Neuhauser, 2000) for each isotope. An example of the differences in the output can be seen in Appendices A and B. These tables were verified and validated using hand calculations. The calculations are available upon request.

3.2 GROUND-LEVEL PASQUILL DISPERSION COMPARISON

Another set of test cases compared the Pasquill atmospheric dispersion model between RADTRAN 5 and RADTRAN 5.5. The test cases included:

2a. A standard RADTRAN 5 truck route with a Pasquill atmospheric dispersion model run with RADTRAN 5 on TRANSNET.

2b. A standard RADTRAN 5 truck route with a Pasquill atmospheric dispersion model run with RADTRAN 5 and coupled to the input file generator RADCAT 1.0.

2c. A standard RADTRAN 5 truck route with a Pasquill atmospheric dispersion model run with RADTRAN 5.5, the RADTRAN 5 isotope file, RT5ISO.DAT, and the RADTRAN 5 COMIDA file, R5INGEST.BIN.

These test files compared the incident-free, accident, and ingestion exposures, as well as defaulted input echo values. The incident-free, accident, and ingestion exposures, as well as the defaulted input echo values, were the same between RADTRAN 5 and RADTRAN 5.5. Differences between RADTRAN 5 and RADTRAN 5.5 can be attributed to new tables added to RADTRAN 5.5 and use of centerline distances instead of areas for each isopleth in certain tables. In the tables Dilution Factors for Pasquill Category ***X*** – Chi Values after Depletion (Ci-sec/m^3/Ci-released), (where "***X***" is the Pasquill Category A, B, C, D, E, or F), RADTRAN 5 uses the isopleth areas while RADTRAN 5.5 uses the downwind centerline distances. The new tables that have been added are the same as those already described, with the exception of the Release Fractions and Deposition Velocities tables listed for each Pasquill dispersion category. The Deposition Factors Chi Deposited (Ci/m^2/Ci-released) table is also listed in each Pasquill dispersion category. The Release Fractions and Deposition Velocities tables are the same echos described previously. The Deposition Factors Chi Deposited (Ci/m^2/Ci-released) tables are the same as described above. An example of the differences in the output can be seen in Appendices C and D. These tables were verified and validated using hand calculations. The calculations are available upon request.

A comparison of the Pasquill atmospheric dispersion model and the new User-Defined atmospheric dispersion model was conducted with RADTRAN 5 and RADTRAN 5.5, respectively, for a ground-level release. The Pasquill model used class D wind stability with a preset wind speed of 4 m/sec. The User-Defined model used a release height of 2.6 meters with a class D wind stability and a wind speed of 4 m/sec. All other parameters in the User-Defined model were set to simulate the effective conditions used for the Pasquill model. Table 2 lists the input parameters used in RADTRAN 5.5 for the Pasquill dispersion model. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

3a. A simplified RADTRAN 5 truck route using a Pasquill atmospheric dispersion model run with RADTRAN 5 coupled with the input file generator RADCAT 1.0.

3b. A simplified RADTRAN 5 truck route using the User-Defined atmospheric dispersion model run with RADTRAN 5.5, the RADTRAN 5 isotope file, RT5ISO.DAT, and the RADTRAN 5 COMIDA file, R5INGEST.BIN.

Table 2: Input Parameters for RADTRAN 5.5 with a Ground-Level Release using a Pasquill Dispersion Model

Release Height (m)	2.6
Heat Flux (Cal/sec)	0
Source Width (m)	0.5
Source Height (m)	1
Wind Speed (m/sec)	4
Dispersion Type	Pasquill
Wind Stability Class	D
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Rural

The downwind distances for each output were chosen to make the best relative comparison of the dilution factors. Since the downwind distances for each output were not exactly the same, the distances that were closest to each other were used for the dilution factor comparison. As shown in Figure 1, the results when the downwind distances were adjusted provide a maximum difference of 60.3% and a minimum difference of 8.6% between the two models at the selected data points.

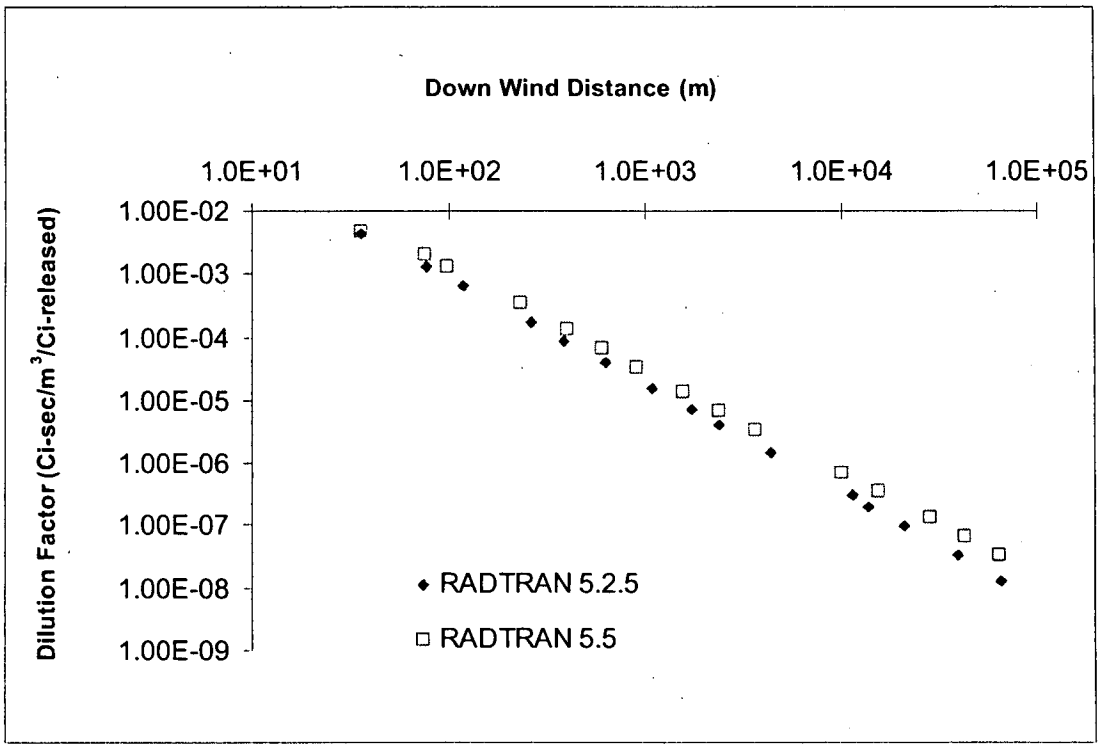

Figure 1: Atmospheric Comparison with RADTRAN 5 and RADTRAN 5.5

These results show that the User-Defined atmospheric model will provide results within the uncertainty limits of RADTRAN calculations when used for ground-level releases under conditions mimicking the Pasquill dispersion. The User-Defined model incorporates wet deposition as well as dry deposition. The use of wet deposition and elevated release cannot be compared with RADTRAN 5.2.5, since it was not previously defined and there are no models to simulate this type of phenomenon in RADTRAN. Equation (1) provides the general equation for a Gaussian puff dispersion from a ground-level point source with an effective release height H above ground level used in the User-Defined atmospheric model. Using Equation (1) and Section 3.3.1 of the RISKIND Manual (Chen, 1995), these phenomena can be calculated. Thus, hand calculations, as well as comparisons with the RISKIND 2.0 model, were used to verify and validate these cases. The hand calculations are available upon request.

$$\frac{X}{Q} = \frac{1}{2\pi u \sigma_y \sigma_z} e^{\left[\frac{-y^2}{2\sigma_y^2}\right]} e^{\left[\frac{-H^2}{2\sigma_z^2}\right]} \qquad \text{Equation 1}$$

3.3 USER-DEFINED WEATHER OPTION

This section discusses the test cases according to the area of the code that deals with the new user-defined option for meteorological conditions for elevated and ground-level releases. Along with a brief description of each test case, the results are discussed with respect to differences between each case and any errors in the results.

3.3.1 ELEVATED RELEASES

The RADTRAN 5.5 User-Defined atmospheric dispersion model was compared to the RISKIND 2.0 code with respect to their dilution factors (Ci-sec/m^3/Ci-released) for an elevated release. The inputs for each model were set to simulate the same effective conditions. Both RADTRAN 5.5 and RISKIND 2.0 models use location-dependant dispersion coefficients. These coefficients are dependent upon whether the dispersion is in a rural or suburban/urban area. Therefore, comparisons for both the Pasquill and Briggs dispersion models were conducted in rural and suburban/urban zones for an elevated release. It should be noted that the Briggs dispersion model is better suited for elevated releases, but a comparison of the Pasquill dispersion model was also made. Table 3 lists the atmospheric input parameters that were the same in the Pasquill dispersion model for the RADTRAN 5.5 and RISKIND 2.0 models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

4a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for an elevated release using the Pasquill dispersion model in a suburban/urban population zone.

4b. A simplified RISKIND 2.0 truck route with an elevated release using the Pasquill dispersion model in a suburban/urban population zone.

Table 3: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with an Elevated Release in a Suburban/Urban Population Zone with a Pasquill Dispersion Model

Release Height (m)	150
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	4
Dispersion Type	Pasquill
Wind Stability Class	D
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Suburban/Urban

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances for each output was not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 2, the results when the downwind distances were adjusted provide a maximum difference of 49.9% and a minimum difference of 0.3% between the two models at the data points.

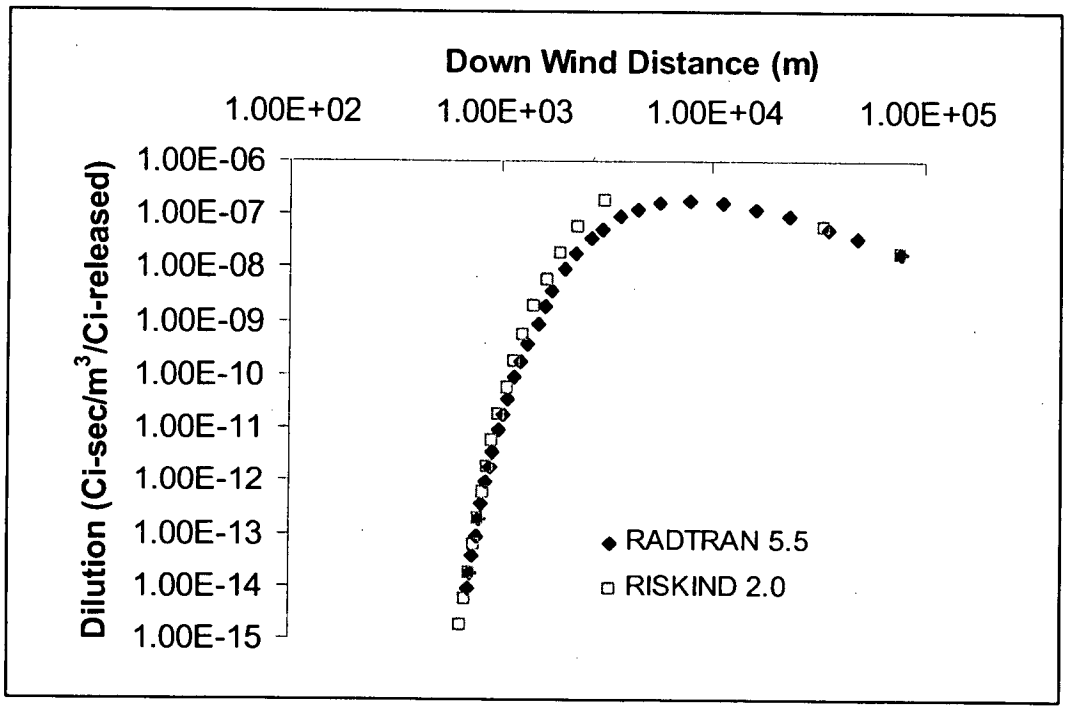

Figure 2: Elevated Release in a Suburban/Urban Population Zone with a Pasquill Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

A comparison of the RADTRAN 5.5 User-Defined atmospheric model and the RISKIND 2.0 model was conducted for an elevated release using a Pasquill dispersion model in a rural population zone. The inputs for each model were set to simulate the same effective conditions. Table 4 lists the atmospheric input parameters that were the same for both models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

5a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for an elevated release using the Pasquill dispersion model in a rural population zone.

5b. A simplified RISKIND 2.0 truck route with an elevated release using the Pasquill dispersion model in a rural population zone.

Table 4: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with an Elevated Release in a Rural Population Zone with a Pasquill Dispersion Model

Release Height (m)	150
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	4
Dispersion Type	Pasquill
Wind Stability Class	D
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Rural

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances for each output were not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 3, the results when the downwind distances were adjusted provide a maximum difference of 50.0% and a minimum difference of 0.0% between the two models at the data points.

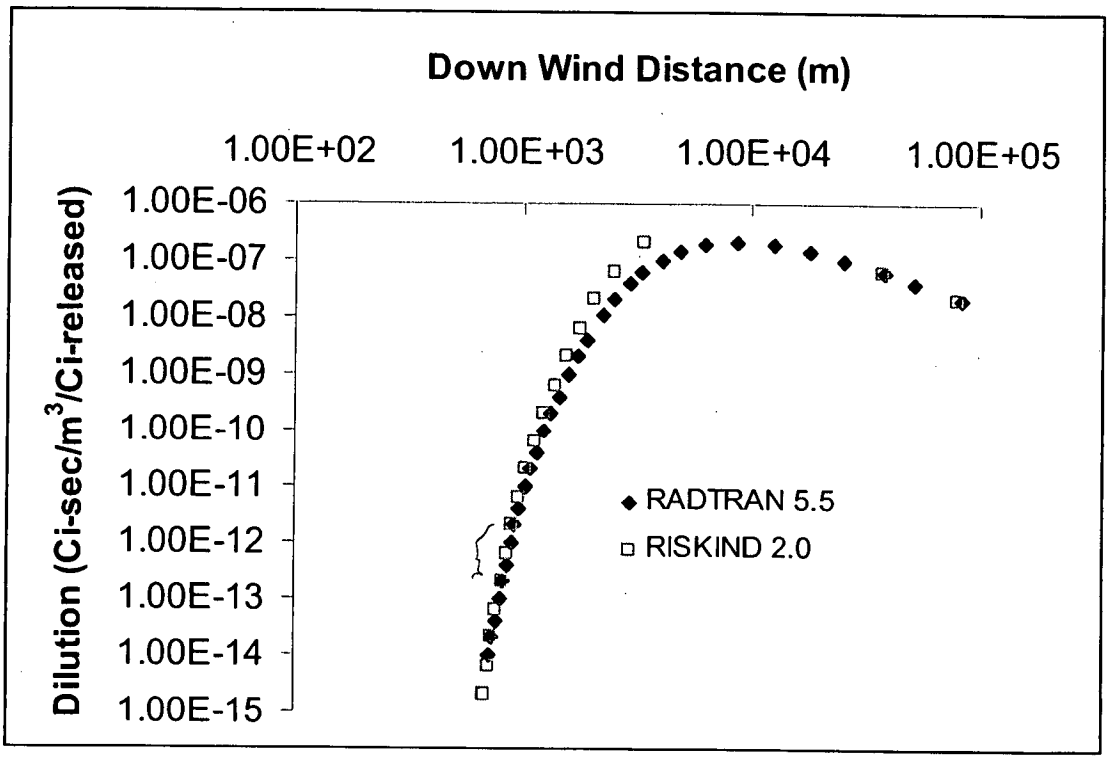

Figure 3: Elevated Release in a Rural Population Zone with a Pasquill Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

A comparison of the RADTRAN 5.5 User-Defined atmospheric model and the RISKIND 2.0 model was conducted for an elevated release using a Briggs dispersion model in a suburban/urban population zone. The inputs for each model were set to simulate the same effective conditions. Table 5 lists the atmospheric input parameters that were the same for both models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

6a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for an elevated release using the Briggs dispersion model in a suburban/urban population zone.

6b. A simplified RISKIND 2.0 truck route with an elevated release using the Briggs dispersion model in a suburban/urban population zone.

Table 5: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with an Elevated Release in a Suburban/Urban Population Zone with a Briggs Dispersion Model

Release Height (m)	150
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	4
Dispersion Type	Briggs
Wind Stability Class	D
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Suburban/Urban

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances for each output were not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 4, the results when the downwind distances were adjusted provide a maximum difference of 49.5% and a minimum difference of 1.2% between the two models at the data points.

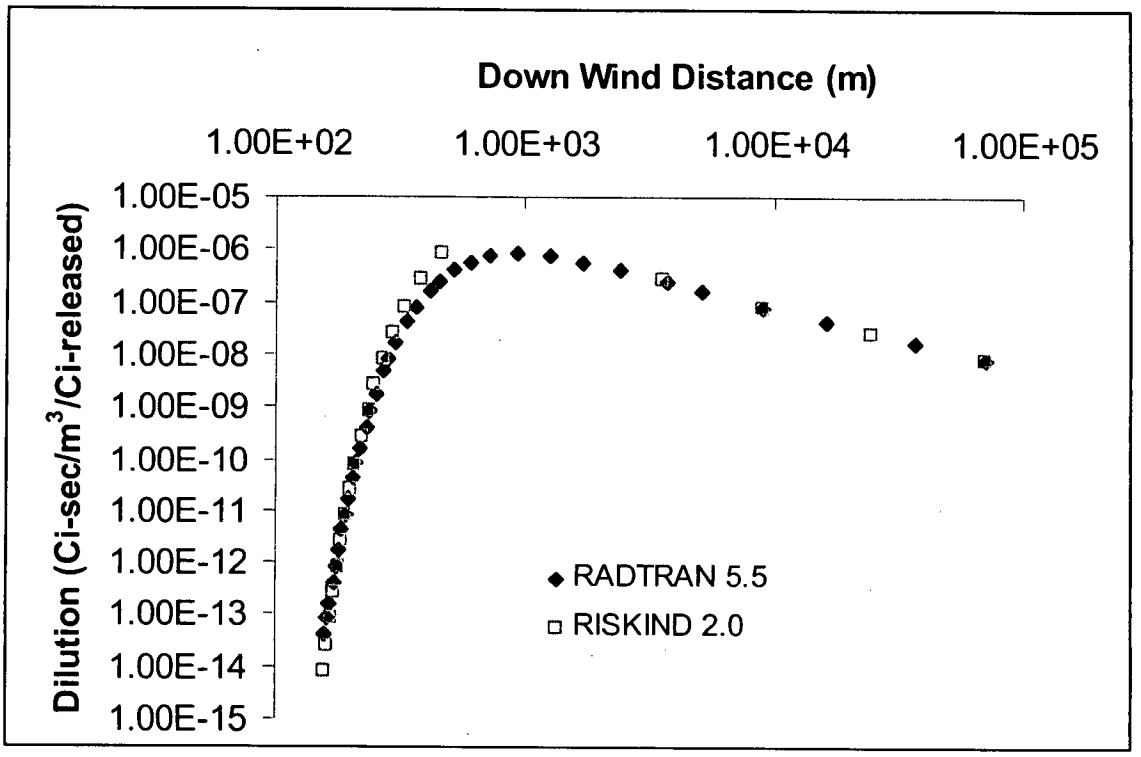

Figure 4: Elevated Release in a Suburban/Urban Population Zone with a Briggs Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

A comparison of the RADTRAN 5.5 User-Defined atmospheric model and the RISKIND 2.0 model was conducted for an elevated release using a Briggs dispersion model in a rural population zone. The inputs for each model were set to simulate the same effective conditions. Table 6 lists the atmospheric input parameters that were the same for both models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

20a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for an elevated release using the Briggs dispersion model in a rural population zone.

20b. A simplified RISKIND 2.0 truck route with an elevated release using the Briggs dispersion model in a rural population zone.

Table 6: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with an Elevated Release in a Rural Population Zone with a Briggs Dispersion Model

Release Height (m)	150
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	4
Dispersion Type	Briggs
Wind Stability Class	D
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Rural

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances of the output were not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 5, the results when the downwind distances were adjusted provide a maximum difference of 49.8% and a minimum difference of 0.4% between the two models at the data points.

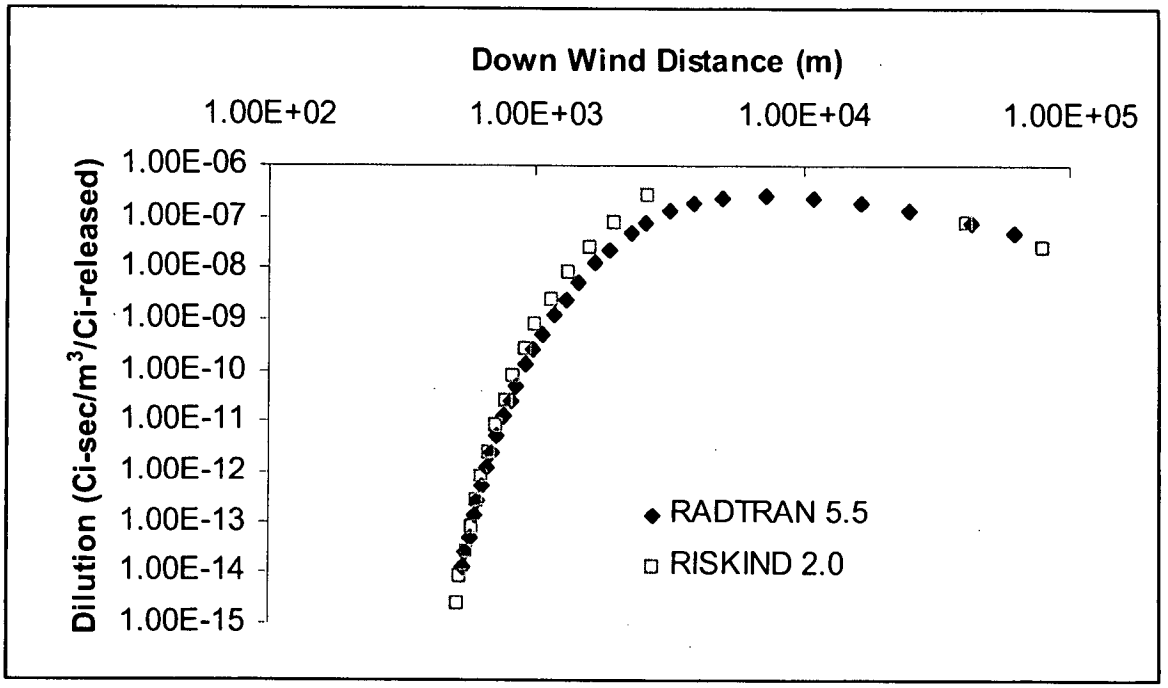

Figure 5: Elevated Release in a Rural Population Zone with a Briggs Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

3.3.2 GROUND-LEVEL RELEASES

The RADTRAN 5.5 User-Defined atmospheric dispersion model was compared to the RISKIND 2.0 code with respect to their dilution factors (Ci-sec/m^3/Ci-released) for a ground-level release. The inputs for each model were set to simulate the same effective conditions. Both RADTRAN 5.5 and RISKIND 2.0 models use location-dependent dispersion coefficients. These coefficients are dependent upon whether the dispersion is in a rural or suburban/urban area. Comparisons of both the Pasquill and Briggs dispersion models were conducted in rural and suburban/urban zones for a ground-level release. It should be noted that the Pasquill dispersion model is better suited for ground-level releases, but a comparison of the Briggs dispersion model was also made. Table 7 lists the atmospheric input parameters that were the same in a Pasquill dispersion model for the RADTRAN 5.5 and RISKIND 2.0 models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

8a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for a ground-level release using the Pasquill dispersion model in a suburban/urban population zone.

8b. A simplified RISKIND 2.0 truck route with a ground-level release using the Pasquill dispersion model in a suburban/urban population zone.

Table 7: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with a Ground-Level Release in a Suburban/Urban Population Zone with a Pasquill Dispersion Model

Release Height (m)	2
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	3
Dispersion Type	Pasquill
Wind Stability Class	C
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Suburban/Urban

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances for each output were not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 6, the results when the downwind distances were adjusted provide a maximum difference of 34.3% and a minimum difference of 6.2% between the two models at the data points.

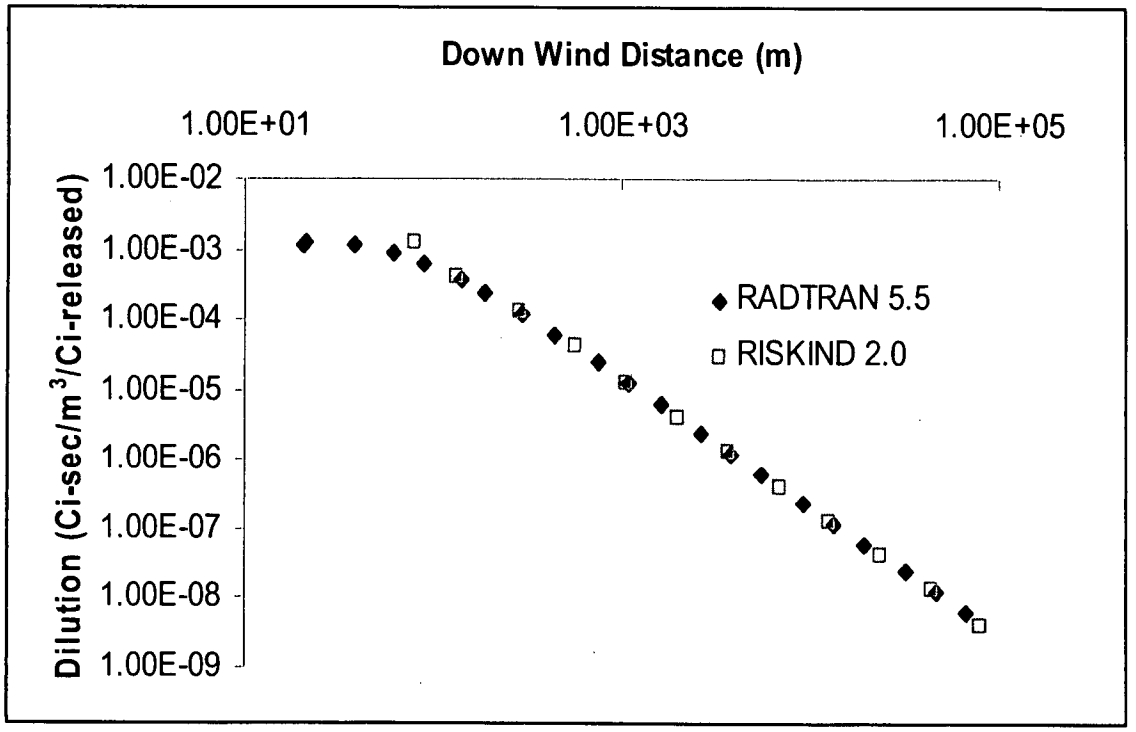

Figure 6: Ground-Level Release in a Suburban/Urban Population Zone with a Pasquill Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

A comparison of the RADTRAN 5.5 User-Defined atmospheric model and the RISKIND 2.0 model was conducted for a ground-level release using a Pasquill dispersion model in a rural population zone. The inputs for each model were set to simulate the same effective conditions. Table 8 lists atmospheric the input parameters that were the same for both models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

9a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for a ground-level release using the Pasquill dispersion model in a rural population zone.

9b. A simplified RISKIND 2.0 truck route with a ground-level release using the Pasquill dispersion model in a rural population zone.

Table 8: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with a Ground-Level Release in a Rural Population Zone with a Pasquill Dispersion Model

Release Height (m)	2
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	3
Dispersion Type	Pasquill
Wind Stability Class	C
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Rural

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances for each output were not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 7, the results when the downwind distances were adjusted provide a maximum difference of 34.3% and a minimum difference of 6.2% between the two models at the data points.

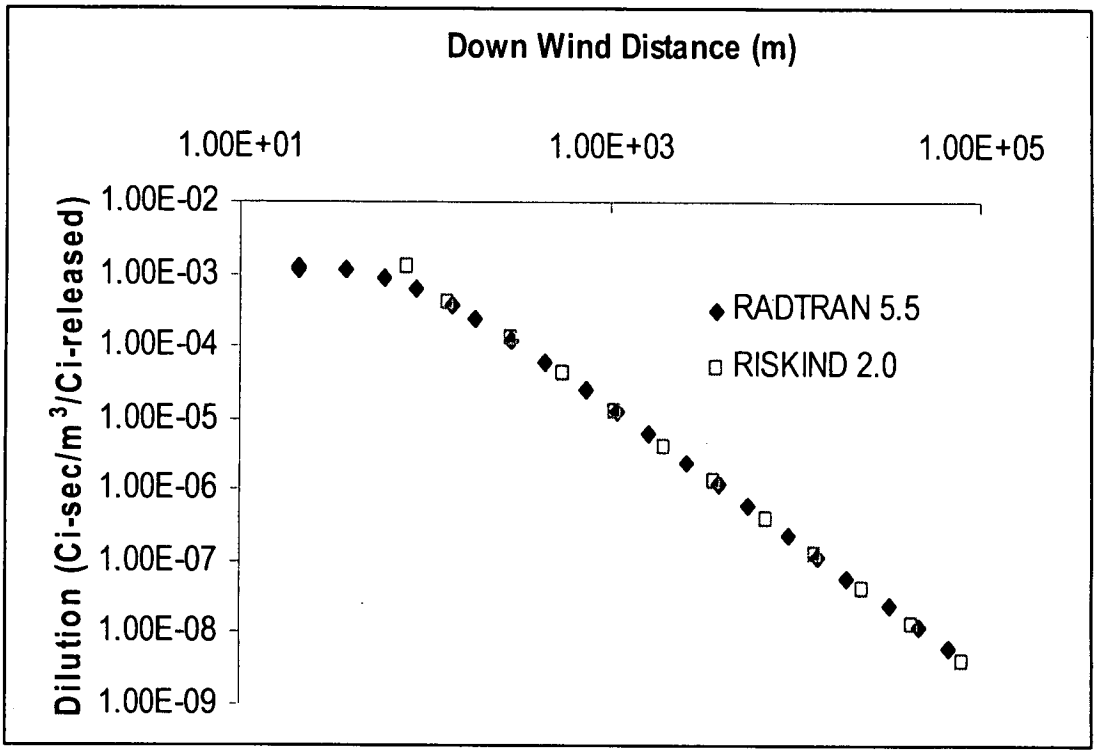

Figure 7: Ground-Level Release in a Rural Population Zone with a Pasquill Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

A comparison of the RADTRAN 5.5 User-Defined atmospheric model and the RISKIND 2.0 model was conducted for a ground-level release using a Briggs dispersion model in a suburban/urban population zone. The inputs for each model were set to simulate the same effective conditions. Table 9 lists the atmospheric input parameters that were the same for both models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

10a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for a ground-level release using the Briggs dispersion model in a suburban/urban population zone.

10b. A simplified RISKIND 2.0 truck route with a ground-level release using the Briggs dispersion model in a suburban/urban population zone.

Table 9: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with a Ground-Level Release in a Suburban/Urban Population Zone with a Briggs Dispersion Model

Release Height (m)	2
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	3
Dispersion Type	Briggs
Wind Stability Class	C
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Suburban/Urban

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances for each output were not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 8, the results when the downwind distances were adjusted provide a maximum difference of 11.8% and a minimum difference of 2.1% between the two models at the data points.

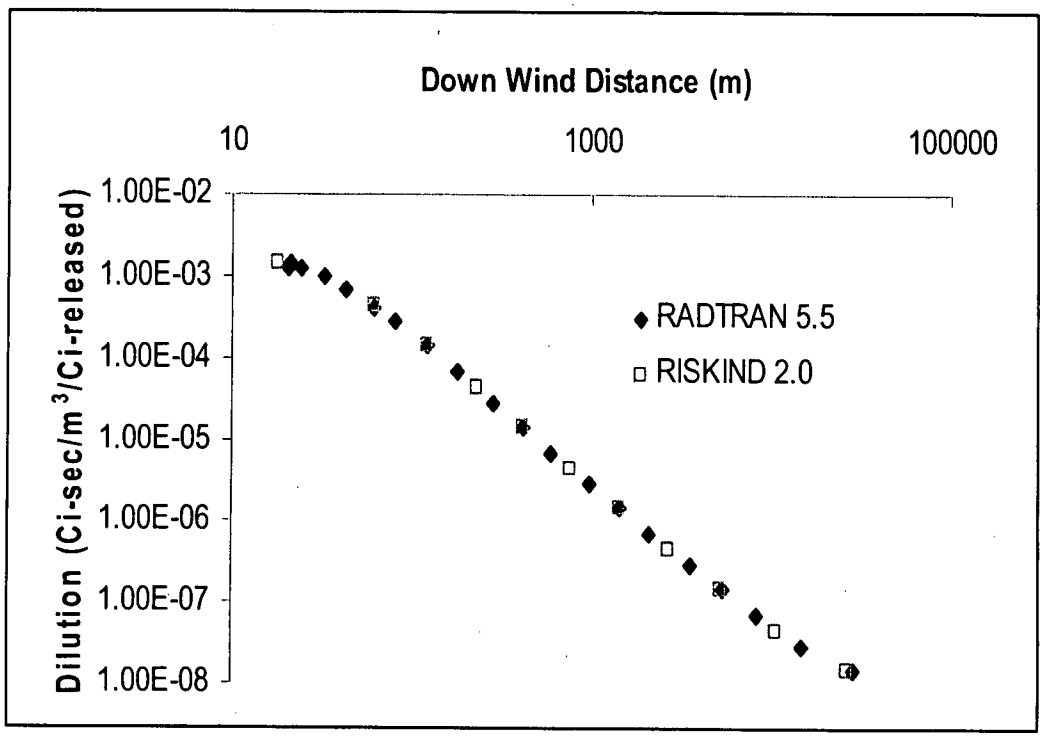

Figure 8: Ground-Level Release in a Suburban/Urban Population Zone with a Briggs Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

A comparison of the RADTRAN 5.5 User-Defined atmospheric model and the RISKIND 2.0 model was conducted for a ground-level release using a Briggs dispersion model in a rural population zone. The inputs for each model were set to simulate the same effective conditions. Table 10 lists the atmospheric input parameters that were the same for both models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) were compared for the following cases:

11a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for a ground-level release using the Briggs dispersion model in a rural population zone.

11b. A simplified RISKIND 2.0 truck route with a ground-level release using the Briggs dispersion model in a rural population zone.

Table 10: Input Parameters for RADTRAN 5.5 and RISKIND 2.0 with a Ground-Level Release in a Rural Population Zone with a Briggs Dispersion Model

Release Height (m)	2
Heat Flux (Cal/sec)	100000
Source Width (m)	1.5
Source Height (m)	3
Wind Speed (m/sec)	3
Dispersion Type	Briggs
Wind Stability Class	C
Rainfall Rate (mm/h)	0
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	298
Atmospheric Mixing Height (m)	5000
Population Zone	Rural

The downwind distances for each output were selected to make the best relative comparison of the dilution factors. Since the downwind distances for each output were not exactly the same, the distances closest to each other were used for the dilution factor comparison. As shown in Figure 9, the results when the downwind distances were adjusted provide a maximum difference of 31.4% and a minimum difference of 7.5% between the two models at the data points.

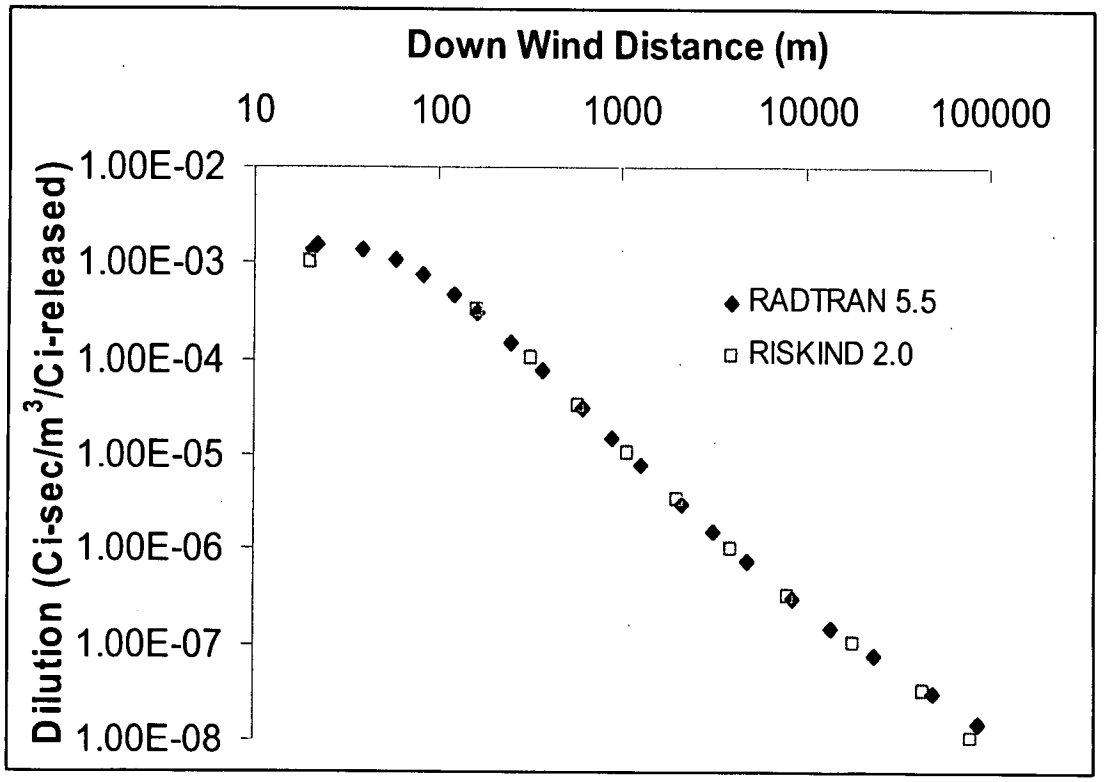

Figure 9: Ground Level Release in a Rural Population Zone with a Briggs Dispersion Model Comparison of RADTRAN 5.5 and RISKIND 2.0

3.4 RAIL AND BARGE COMPARISON

A rail route comparison was conducted for RADTRAN 5 and RADTRAN 5.5 in which the incident-free, accident, and ingestion doses were examined. The following files were used to conduct the comparison:

12a. A standardized RADTRAN 5 rail route run with RADTRAN 5 on TRANSNET.

12b. A standardized RADTRAN 5 rail route run with RADTRAN 5 using the input file generator, RADCAT 1.0.

12c. A standardized RADTRAN 5 rail route run with RADTRAN 5.5, the RADTRAN 5 isotope file, RT5ISO.DAT, and the RADTRAN 5 COMIDA file, R5INGEST.BIN.

These test files compared the incident-free, accident, and ingestion exposures, as well as the default input echo values. The incident-free, accident, and ingestion exposures, as well as the default input echo values, were the same for the RADTRAN 5 and RADTRAN 5.5 models. The new tables added in RADTRAN 5.5 are the same as those previously described, and thus, no hand calculations were required to verify and validate these tables.

A barge route comparison was conducted for RADTRAN 5 and RADTRAN 5.5 in which the incident-free, accident, and ingestion doses were examined. The following files were used to conduct the comparison:

13a. A standardized RADTRAN 5 barge route run with RADTRAN 5 on TRANSNET.

13b. A standardized RADTRAN 5 barge route run with RADTRAN 5 using the input file generator, RADCAT 1.0.

13c. A standardized RADTRAN 5 barge route run with RADTRAN 5.5, the RADTRAN 5 isotope file, RT5ISO.DAT, the RADTRAN 5 COMIDA file, and R5INGEST.BIN.

These test files compared the incident-free, accident, and ingestion exposures, as well as the defaulted input echo values. The incident-free, accident, and ingestion exposures, as well as the defaulted input echo values were the same for the RADTRAN 5 and RADTRAN 5.5 models. The new tables added in RADTRAN 5.5 are the same as those previously described, and thus, no hand calculations were required to verify and validate these tables.

3.5 DEFINE STATEMENT COMPARISON

Adding a radionuclide using the DEFINE statement for a truck route was compared between RADTRAN 5 and RADTRAN 5.5 the incident-free and accident doses. When using the radionuclide DEFINE statement, one cannot compare ingestion dose since the COMIDA file does not recognize user-defined radionuclides. The radionuclide modeled was Ag-111. The input data was taken from sources used to add it to the RADTRAN 5.5 isotope library. The following files were used to conduct the comparison:

14a. A standardized RADTRAN 5 truck route run with RADTRAN 5 on TRANSNET.

14b. A standardized RADTRAN 5 truck route run with RADTRAN 5 using the input file generator, RADCAT 1.0.

14c. A standardized RADTRAN 5 truck route run with RADTRAN 5.5, and the RADTRAN 5 isotope file, RT5ISO.DAT.

These test files compared the incident-free and accident exposures, as well as the defaulted input echo values. The incident-free and accident exposures, as well as the defaulted input echo values were the same for the RADTRAN 5 and RADTRAN 5.5 codes. The new tables added in RADTRAN 5.5 are the same as those already described, and thus, no hand calculations were required to verify and validate these tables.

3.6 SEVERITY CATEGORY COMPARISON

A comparison of RADTRAN 5 and RADTRAN 5.5 rail routes was conducted in which 21 different severity categories were used to compare the incident-free, accident, and ingestion dose. The following files were used to conduct the comparison:

15a. A standardized RADTRAN 5 rail route run with RADTRAN 5 on TRANSNET.

15b. A standardized RADTRAN 5 rail route run with RADTRAN 5 using the input file generator, RADCAT 1.0.

15c. A standardized RADTRAN 5 rail route run with RADTRAN 5.5, the RADTRAN 5 isotope file, RT5ISO.DAT, the RADTRAN 5 COMIDA file, and R5INGEST.BIN.

These test files compared the incident-free, accident, and ingestion exposures, as well as the defaulted input echo values. The incident-free, accident, and ingestion exposures, as well as the defaulted input echo values were the same for RADTRAN 5 and RADTRAN 5.5 codes. The new tables added in RADTRAN 5.5 are the same as those already described, and thus, no hand calculations were required to verify and validate these tables.

3.7 NEUTRON DOSE

A comparison of RADTRAN 5 and RADTRAN 5.5 truck routes was conducted in which the neutron dose calculations compared the incident-free, accident, and ingestion dose. The following files were used to conduct the comparison:

16a. A standardized RADTRAN 5 truck route run with RADTRAN 5 on TRANSNET.

16b. A standardized RADTRAN 5 truck route run with RADTRAN 5 using input file generator, RADCAT 1.0.

16c. A standardized RADTRAN 5 truck route run with RADTRAN 5.5, the RADTRAN 5 isotope file, RT5ISO.DAT, the RADTRAN 5 COMIDA file, and R5INGEST.BIN.

These test files compared the incident-free, accident, and ingestion exposures, as well as the defaulted input echo values. The incident-free, accident, and ingestion exposures, as well as the defaulted input echo values were the same for the RADTRAN 5 and RADTRAN 5.5 codes. The new tables added in RADTRAN 5.5 are the same as those already described, and thus, no hand calculations were required to verify and validate these tables.

3.8 DEPOSITION VELOCITES AND RADIONUCLIDE VERIFICATION

A test file was prepared in which the RADTRAN 5.5 User-Defined atmospheric dispersion model could be verified with a series of different deposition velocities. This test case used different deposition velocities for different physical chemical groups. The results indicated that RADTRAN 5.5 will independently calculate the physical chemical groups and provide each with a dilution fraction (Chi/Q) versus downwind distance. These results were verified and validated using hand calculations, which are available upon request.

A test file was prepared in which the entire RADTRAN 5.5 isotope library was used. The results indicated that all 148 radionuclides provided the correct output with respect to the dose conversion factors, half-lives, and photon energies. The Expected Values of Population Risk in Person-REM table was also verified to have all 148 radionuclides.

3.9 BACKYARD FARMER DOSE

A test file was prepared to validate the RADTRAN 5.5 Backyard Farmer Dose would be zero when an isopleth area was interdicted. This was accomplished by comparing the zero output of the Backyard Farmer Dose with the zero output of the Societal Ingestion Dose. Both of these were then compared with the output chart that determines areas marked by an "X" as being interdicted and would thus have no 50-year groundshine dose or ingestion dose. This output was verified to be correct.

3.10 WET DEPOSITION VERIFICATION

A comparison of the RADTRAN 5.5 User-Defined atmospheric model with the RISKIND 2.0 and HOTSPOT 2.05 models were conducted for an elevated level release using a Briggs dispersion model in a rural population zone with rainfall. The inputs for each model were set to simulate the same effective conditions. Table 11 lists the atmospheric input parameters that were the same for the models. The downwind distances (in meters) and the resulting dilution factors (Ci-sec/m^3/Ci-released) and ground deposition (Ci/m^2/Ci-released) were compared for the following cases:

20a. A simplified RADTRAN 5.5 truck route with the User-Defined atmospheric dispersion model for an elevated release using the Briggs dispersion model in a rural population zone and rainfall.

20b. A simplified RISKIND 2.0 truck route with an elevated release using the Briggs dispersion model in a rural population zone and rainfall.

20c. A simplified HOTSPOT 2.05 general plume with an elevated release using the Briggs dispersion model with standard terrain (rural population zone) and rainfall.

Table 11: Input Parameters for RADTRAN 5.5, RISKIND 2.0, and HOTSPOT 2.05 with an Elevated Release in a Rural Population Zone with a Briggs Dispersion Model and Rainfall

Release Height (m)	25
Heat Flux (Cal/sec)	100000
Source Width (m)	3.45
Source Height (m)	2.87
Wind Speed (m/sec)	4
Dispersion Type	Briggs
Wind Stability Class	D
Rainfall Rate (mm/h)	1.00
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	270
Atmospheric Mixing Height (m)	5000
Population Zone	Rural

The downwind distances used for each output were selected to make the best relative comparison of the dilution factors and the ground deposition. Since the downwind distances for each output were not exactly the same, the distances closest to each other were used for the dilution factor and ground deposition comparisons. As shown in Figure 10, the results when the downwind distances were adjusted provide a minimum difference of 14.8% and the maximum difference is a few orders of magnitude between the RADTRAN 5.5 and RISKIND 2.0 model dilution factors. Figure 10 also shows the results when the downwind distances were adjusted provide a minimum difference of 86.7% and the maximum difference is a few orders of magnitude between the RADTRAN 5.5 and HOTSPOT 2.05 model dilution factors. Figure 11 shows the results when the downwind distances are adjusted to provide a minimum difference of 11.6% and the maximum difference is a few orders of magnitude between the RADTRAN 5.5 and RISKIND 2.0 models for the ground deposition. Figure 11 also shows the results when the downwind distances are adjusted to provide a minimum difference of 11.6% and a maximum difference is a few orders of magnitude between the RADTRAN 5.5 and HOTSPOT 2.05 models for the ground deposition. The variances between RADTRAN 5.5 and HOTSPOT 2.05 can be attributed to the differences between the washout coefficients. The variances between RADTRAN 5.5 and HOTSPOT 2.05 can be attributed to the differences between the calculational models. An example of the RADTRAN 5.5 output can be seen in Appendix E.

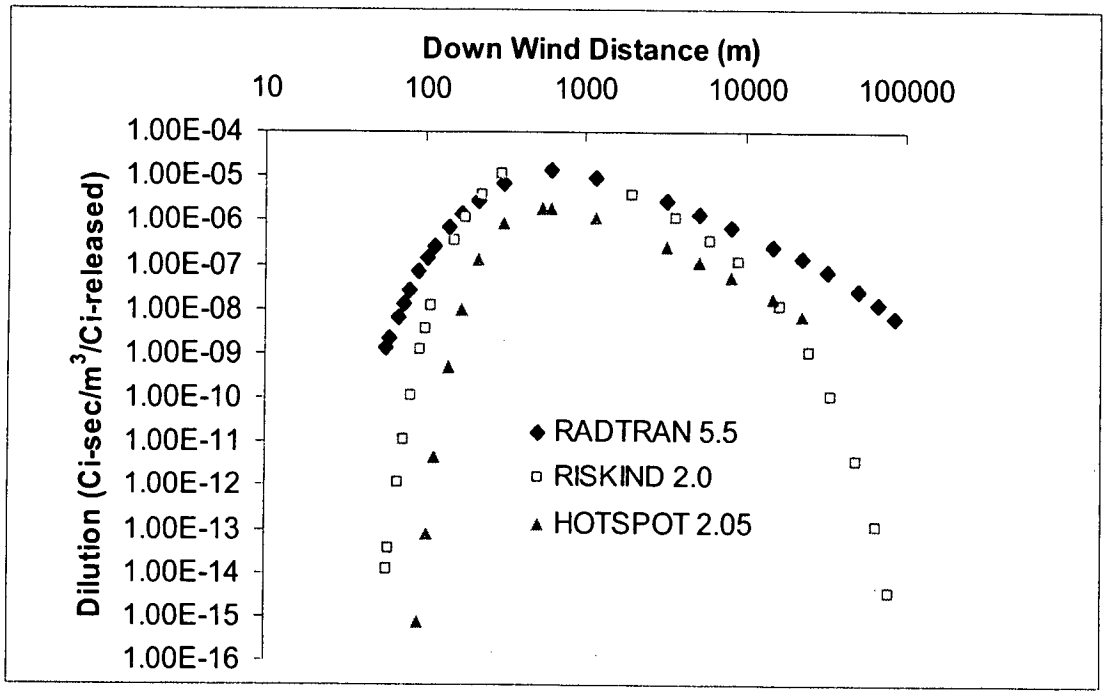

Figure 10: Dilution Factor with Rainfall Comparison of RADTRAN 5.5, RISKIND 2.0, and HOTSPOT 2.05 Computer Codes

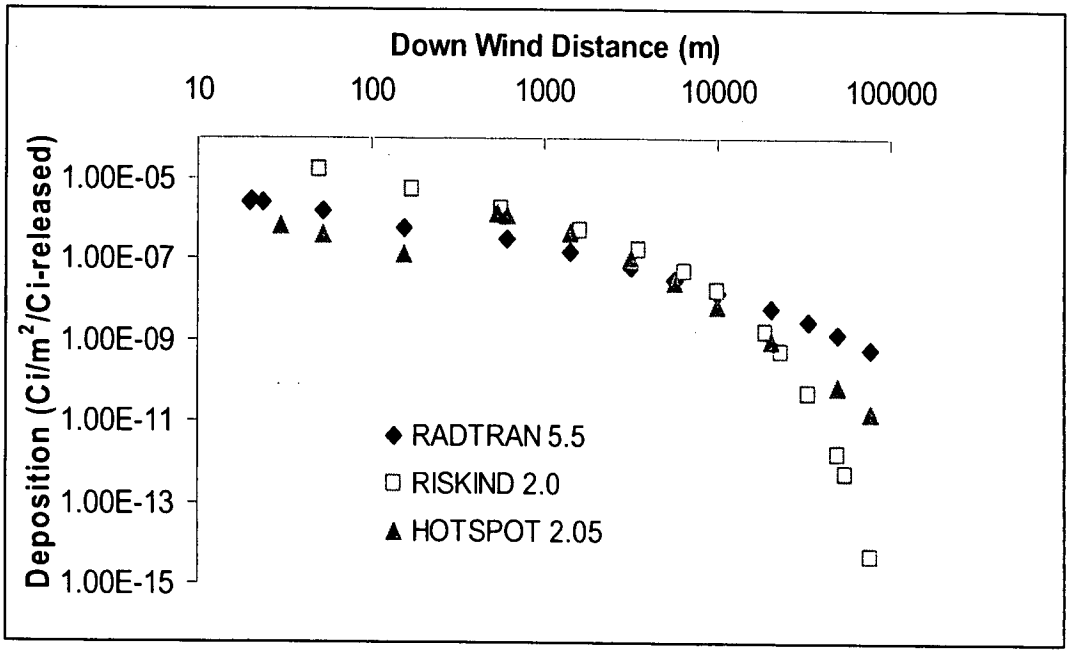

Figure 11: Ground Deposition with Rainfall Comparison of the RADTRAN 5.5, RISKIND 2.0, and HOTSPOT 2.05 Computer Codes

3.11 SOCIETAL INGESTION DOSE

A test file verified the RADTRAN 5.5 Societal Ingestion Dose using the User-Defined atmospheric model. Table 12 lists the atmospheric input parameters that were used. The results were verified and validated with hand calculations. This output was verified to be correct.

Table 12: Input Parameters for RADTRAN 5.5 with an Elevated Release in a Rural Population Zone with a Briggs Dispersion Model and Rainfall

Release Height (m)	25
Heat Flux (Cal/sec)	100000
Source Width (m)	3.45
Source Height (m)	2.87
Wind Speed (m/sec)	4
Dispersion Type	Briggs
Wind Stability Class	D
Rainfall Rate (mm/h)	1.00
Deposition Velocity (m/s)	0.01
Anemometer Height (m)	10
Ambient Temperature (K)	270
Atmospheric Mixing Height (m)	5000
Population Zone	Rural

4. OVERVIEW OF TEST CASES

Table 13 provides an overview of the test cases with respect to the RADTRAN Version used, type of atmospheric dispersion, release height, and percent error, when applicable.

Table 13: Overview of Test Cases

Test Case No.	RADTRAN Version	Dispersion Model	Release Height	Percent Error
1a	RADTRAN 5.2.5 on TRANSNET	Average Weather	Ground	N/A
1b	RADTRAN 5.2.5 PC-Version with RADCAT 1.0 file input generator	Average Weather	Ground	N/A
1c	RADTRAN 5.5	Average Weather	Ground	N/A
1d	RADTRAN 5.5	Average Weather	Ground	N/A
1e	RADTRAN 5.5	Average Weather	Ground	N/A
2a	RADTRAN 5.2.5 on TRANSNET	Pasquill	Ground	N/A
2b	RADTRAN 5.2.5 PC-Version with RADCAT 1.0 file input generator	Pasquill	Ground	N/A
2c	RADTRAN 5.5	Pasquill	Ground	N/A
3a	RADTRAN 5.2.5 PC-Version with RADCAT 1.0 file input generator	Pasquill	Ground	8.6% to 60.3%
3b	RADTRAN 5.5	User-Defined Pasquill Dispersion Rural Population Zone	Ground	
4a	RADTRAN 5.5	User-Defined Pasquill Dispersion Suburban/Urban Population Zone	Elevated	1.2% to 4.4%
4b	RISKIND 2.0	User-Defined Pasquill Dispersion Suburban/Urban Population Zone	Elevated	

Table 13: Overview of Test Cases

Test Case No.	RADTRAN Version	Dispersion Model	Release Height	Percent Error
5a	RADTRAN 5.5	User-Defined Pasquill Dispersion Rural Population Zone	Elevated	1.7% to 3.6%
5b	RISKIND 2.0	User-Defined Pasquill Dispersion Rural Population Zone	Elevated	
6a	RADTRAN 5.5	User-Defined Briggs Dispersion Suburban/Urban Population Zone	Elevated	1.5% to 3.5%
6b	RISKIND 2.0	User-Defined Briggs Dispersion Suburban/Urban Population Zone	Elevated	
7a	RADTRAN 5.5	User-Defined Briggs Dispersion Rural Population Zone	Elevated	1.3% to 3.7%
7b	RISKIND 2.0	User-Defined Briggs Dispersion Rural Population Zone	Elevated	
8a	RADTRAN 5.5	User-Defined Pasquill Dispersion Suburban/Urban Population Zone	Ground	6.2% to 11.8%
8b	RISKIND 2.0	User-Defined Pasquill Dispersion Suburban/Urban Population Zone	Ground	
9a	RADTRAN 5.5	User-Defined Pasquill Dispersion Rural Population Zone	Ground	6.2% to 11.8%
9b	RISKIND 2.0	User-Defined Pasquill Dispersion Rural Population Zone	Ground	

Table 13: Overview of Test Cases

Test Case No.	RADTRAN Version	Dispersion Model	Release Height	Percent Error
10a	RADTRAN 5.5	User-Defined Briggs Dispersion Suburban/Urban Population Zone	Ground	0.7% to 5.5%
10b	RISKIND 2.0	User-Defined Briggs Dispersion Suburban/Urban Population Zone	Ground	
11a	RADTRAN 5.5	User-Defined Briggs Dispersion Rural Population Zone	Ground	3.5% to 8.8%
11b	RISKIND 2.0	User-Defined Briggs Dispersion Rural Population Zone	Ground	
12a	RADTRAN 5.2.5 on TRANSNET	Average Weather	Ground	N/A
12b	RADTRAN 5.2.5 PC-Version with RADCAT 1.0 file input generator	Average Weather	Ground	N/A
12c	RADTRAN 5.5	Average Weather	Ground	N/A
13a	RADTRAN 5.2.5 on TRANSNET	Average Weather	Ground	N/A
13b	RADTRAN 5.2.5 with RADCAT 1.0 file input generator	Average Weather	Ground	N/A
13c	RADTRAN 5.5	Average Weather	Ground	N/A
14a	RADTRAN 5.2.5 on TRANSNET	Average Weather	Ground	N/A
14b	RADTRAN 5.2.5 PC-Version with RADCAT 1.0 file input generator	Average Weather	Ground	N/A
14c	RADTRAN 5.5	Average Weather	Ground	N/A
15a	RADTRAN 5.2.5 on TRANSNET	Average Weather	Ground	N/A
15b	RADTRAN 5.2.5 PC-Version with RADCAT 1.0 file input generator	Average Weather	Ground	N/A
15c	RADTRAN 5.5	Average Weather	Ground	N/A

Table 13: Overview of Test Cases

Test Case No.	RADTRAN Version	Dispersion Model	Release Height	Percent Error
16a	RADTRAN 5.2.5 on TRANSNET	Average Weather	Ground	N/A
16b	RADTRAN 5.2.5 PC-Version with RADCAT 1.0 file input generator	Average Weather	Ground	N/A
16c	RADTRAN 5.5	Average Weather	Ground	N/A
17	RADTRAN 5.5	User-Defined Pasquill Dispersion Rural Population Zone	Ground	N/A
18	RADTRAN 5.5	Average Weather	Ground	N/A
19	RADTRAN 5.5	Average Weather	Ground	N/A
20a	RADTRAN 5.5	User-Defined Briggs Dispersion Rural Population Zone	Elevated	Dilution 14.8% to >100% --- Ground Deposition 11.6% to >100%
20b	RISKIND 2.0	User-Defined Briggs Dispersion Rural Population Zone Rainfall	Elevated	
20a	RADTRAN 5.5	User-Defined Briggs Dispersion Rural Population Zone Rainfall	Elevated	Dilution 86.7% to >100% --- Ground Deposition 11.6% to >100%
20c	HOTSPOT 2.05	User-Defined Briggs Dispersion Standard Terrain Rainfall	Elevated	
21	RADTRAN 5.5	User-Defined Briggs Dispersion Rural Population Zone Rainfall	Elevated	N/A

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Appendix A
RADTRAN 5 PC-Version Output Using the RADCAT 1.0 Input File Generator

```
                    RUN DATE: [ 09/08/04  AT 08:18:13 ]            PAGE    1

 RRRR     AAA    DDDD    TTTTT  RRRR     AAA    N    N  55555
 R   R   A   A   D   D     T    R   R   A   A   NN   N  5
 R   R   A   A   D   D     T    R   R   A   A   N N  N  5
 RRRR    A   A   D   D     T    RRRR    A   A   N  NN  5555
 R R     AAAAA   D   D     T    R R     AAAAA   N   N      5
 R  R    A   A   D   D     T    R  R    A   A   N   N  5   5
 R   R   A   A   DDDD      T    R   R   A   A   N   N  5555

                    RADTRAN 5.2.5   December 29, 2002   PC-version

                              INPUT ECHO
                              ----------


 TITLE CRYSTAL RIVER TO HANFORD; SPENT FUEL
 INPUT STANDARD
STD: 0 10 18                                  && DIMEN=NSEV NRAD NAREAS
STD: 1 3 3 0                                  && PARM=IRNKC IANA ISEN IPSQSB
STD: .TRUE. .FALSE.                           && FORM = UNIT, SI-UNITS?
STD: 2.3E12                                   && NEVAL FOR CF252
STD: 9.25E5 5.77E6 1.27E6                     && RPCTHY FOR I125, I129, I131
STD: 0.0 0.0 0.0 0.0 0.0                      && TRANSFER GAMMA
STD: 7.42E-3 2.02E-2 6.17E-5 3.17E-8 0.0      && TRANSFER NEUTRON
STD: 30  24                                   && MITDDIST  MITDVEL
STD: 1  2   .0018                             && ITRAIN FMINCL DDRWEF
STD:    33    68    105   244   369                    && CENTER LINE
STD:   561  1018   1628  2308  4269                    && DISTANCES
STD:  5468 11136  13097 21334 40502                    && FOR AVERAGE
STD: 69986 89860 120878 0 0 0 0 0 0 0 0 0 0 0 0       && US CLOUD
STD: 4.59E+02 1.53E+03 3.94E+03 1.25E+04 3.04E+04 6.85E+04 1.76E+05 4.45E+05
STD: 8.59E+05 2.55E+06 4.45E+06 1.03E+07 2.16E+07 5.52E+07 1.77E+08 4.89E+08
STD: 8.12E+08 1.35E+09 0 0 0 0 0 0 0 0 0 0 0 0 0        && AREADA
STD: 3.42E-03 1.72E-03 8.58E-04 3.42E-04 1.72E-04 8.58E-05 3.42E-05 1.72E-05
STD:  8.58E-06 3.42E-06 1.72E-06 8.58E-07 3.42E-07 1.72E-07 8.58E-08 5.42E-08
STD:  4.30E-08 3.42E-08 0 0 0 0 0 0 0 0 0 0 0 0        && DFLEV
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0 0 && RADIST
STD: 0.5                                  && SMLPKG
STD: 1.0  0.87  0.018                     && SHIELDING FACTORS RR  RS  RU
STD:  30  30  800                         && OFFLINK (FREEWAY)
STD:  27  30  800                         && OFFLINK (NON-FREEWAY)
STD:   5   8  800                         && OFFLINK (CITY STREETS)
STD:  30  30  800                         && OFFLINK (RAILWAY)
STD: 200 200 1000                         && OFFLINK (WATERWAY)
STD: 15  3  3  3  4                       && ONLINK (FWAY NONFWY STREET RAIL ADJ)
STD: 6.0  4  40.0                         && RPD FNOATT INTERDICT
STD: 0.05   0.2   3.3E-4                  && BDF CULVL BRATE
STD: 0.9   0.1                            && UBF USWF
STD: 1.0  10.0 1.0                        && EVACUATION SURVEY CAMPAIGN
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

```
STD: 0.0  0.0     1.5E-8  5.3E-8      && HIGHWAY - RURAL - NONRAD
STD: 0.0  0.0     3.7E-9  1.3E-8      && HIGHWAY - SUBURBAN - NONRAD
STD: 0.0  0.0     2.1E-9  7.5E-9      && HIGHWAY - URBAN - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - R - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - S - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - U - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - R - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - S - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - U - NONRAD
STD: 0.0 0.0 0.0 0.0 0.0 0.0          && PSPROB
STD: 0.67  0.67  0.42                 && TIMENDE NON-DISPERSAL EVAC TIME (LCF&EA
STD: 2 2 1                            && FLAGS=IUOPT IACC REGCHECK
STD: 5E-4, 4E-4, 1.3E-4               && LCFCON(1), LCFCON(2), GECON
STD: R5INGEST.BIN                     && INGESTION FILE
 FORM UNIT
 DIMEN 6 10 18
 PARM 1 3 4 0
 SEVERITY
    NPOP=1
      NMODE=1

        6.03E-01  3.94E-01  3.00E-03  3.00E-06  5.00E-06  7.00E-06
    NPOP=2
      NMODE=1
        6.02E-01  3.94E-01  4.00E-03  4.00E-06  3.00E-06  2.00E-06
    NPOP=3
      NMODE=1
        6.04E-01  3.95E-01  3.80E-04  3.80E-07  2.50E-07  1.30E-07
 RELEASE
    GROUP=PKG1_B
       RFRAC
        0.00E+00  0.00E+00  1.20E-02  1.20E-02  1.20E-02  1.20E-02
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.010000
    GROUP=PKG2_C
       RFRAC
        0.00E+00  0.00E+00  0.00E+00  1.00E-02  1.00E-01  1.10E-01
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.000000
    GROUP=PKG4_E
       RFRAC
```

```
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
   GROUP=PKG5_E
     RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  1.00E-06  4.20E-05
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
   GROUP=PKG3_D
     RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  2.00E-04  2.80E-04
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
   GROUP=PKG4_D
     RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
PACKAGE      SFUEL  1.368E+01 1.000 0.000    5.20
       CO60         9.220E+01 PKG1_B
       KR85         6.100E+03 PKG2_C
       SR90         5.960E+04 PKG4_E
       RU106        1.620E+04 PKG5_E
       CS134        2.740E+04 PKG3_D
       CS137        8.760E+04 PKG3_D
       CE144        1.220E+04 PKG4_D
       EU154        7.000E+03 PKG4_D
       PU238        2.960E+03 PKG4_E
       PU239        4.100E+02 PKG4_E
       PU240        4.680E+02 PKG4_E
       PU241        1.260E+05 PKG4_E
       AM241        1.290E+03 PKG4_E
       AM243        1.990E+01 PKG4_E
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

```
        CM244        1.790E+03 PKG4_E
        END
VEHICLE  -1 TRUCK       1.368E+01 1.000 0.000    5.20  676.00
                          2.00   10.00 1.000    5.20
        SFUEL         1.00
FLAGS
   IUOPT 2
EOF
LINK RUR_NR_FW  TRUCK      2623.81  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_NR_NF  TRUCK       874.60  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK RUR_RH_FW  TRUCK       291.53  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_RH_NF  TRUCK        97.18  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK SUB_NR_FW  TRUCK       623.03  88.6  2.0  719.00  780.00 3.00E-06 S 1 0.00
LINK SUB_NR_NF  TRUCK       207.68  40.3  2.0  719.00  780.00 3.00E-06 S 2 0.00
LINK SUB_RH_FW  TRUCK        69.23  44.3  2.0  719.00 1560.00 3.00E-06 S 1 0.00
LINK SUB_RH_NF  TRUCK        23.08  20.2  2.0  719.00 1560.00 3.00E-06 S 2 0.00
LINK URB_NR_FW  TRUCK         6.18  88.6  2.0 3861.00 2800.00 1.60E-05 U 1 0.00
LINK URB_NR_NF  TRUCK         0.33  24.2  2.0 3861.00 2800.00 1.60E-05 U 2 0.00
LINK URB_RH_FW  TRUCK         0.69  44.3  2.0 3861.00 5600.00 1.60E-05 U 1 0.00
LINK URB_RH_NF  TRUCK         0.04  12.1  2.0 3861.00 5600.00 1.60E-05 U 2 0.00
STOP STOP_      TRUCK        50.00  20.00   20.00 1.000  52.991
EOF
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PACKAGE AND MATERIAL CHARACTERISTICS

MATERIAL	DIMENSION (METERS)	EFFECTIVE DIMENSION	K(0) METERS SQ.	FRACTION GAMMA	FRACTION NEUTRON	DOSE RATE (MREM/HR)
SFUEL	5.200E+00	4.677E+00	1.115E+01	1.000E+00	0.000E+00	1.368E+01

K(0) IS DOSE RATE CONVERSION FACTOR

VEHICLE CHARACTERISTICS

VEHICLE NAME	TRUCK
MODE TYPE	HIGHWAY
EXCLUSIVE USE	YES
DOSE RATE (MREM/HR)	1.37E+01
K(0) (SQ. METERS)	1.11E+01
VEHICLE SIZE (M)	5.20E+00
EFFECTIVE SIZE (M)	4.68E+00
NUMBER OF SHIPMENTS	6.76E+02
NUMBER OF CREW	2.00E+00
CREW DISTANCE (M)	1.00E+01
CREW DOSE ADJUSTMENT FACT	1.00E+00
CREW EXPOSER WIDTH (M)	5.20E+00
EFFECTIVE EXPOSER WIDTH	4.68E+00
K(0) (SQ M) CREW EXPOSURE	1.11E+01

VEHICLE	MATERIAL	NO.PACKAGES
TRUCK		
	SFUEL	1.00E+00

TRANSFER COEFFICIENTS:

	MU	A(1)	A(2)	A(3)	A(4)
GAMMA	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NEUTRON	7.420E-03	2.020E-02	6.170E-05	3.170E-08	0.000E+00

DISTANCES (METERS)	FREEWAY	SECONDARY	STREET	RAIL	WATER	ADJACENT
OFFLINK:						
MINIMUM DISTANCE	3.00E+01	2.70E+01	5.00E+00	3.00E+01	2.00E+02	
SIDEWALK + MINIMUM	3.00E+01	3.00E+01	8.00E+00	3.00E+01	2.00E+02	
MAXIMUM DISTANCE	8.00E+02	8.00E+02	8.00E+02	8.00E+02	1.00E+03	
ONLINK:						
OPPOSITE DIRECTION	1.50E+01	3.00E+00	3.00E+00	3.00E+00		
ADJACENT VEHICLE						4.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP RELATED DATA

	STOP_
VEHICLE	TRUCK
PERSONS	5.00E+01
MINIMUM DISTANCE(M)	2.00E+01
MAXIMUM DISTANCE(M)	2.00E+01
SHIELDING FACTOR	1.00E+00
TIME (HR)	5.30E+01

HANDLING RELATED DATA

CRYSTAL RIVER TO HANFORD; SPENT FUEL

LINK RELATED DATA

	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.62E+03	8.75E+02	2.92E+02	9.72E+01	6.23E+02
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	8.86E+01	8.86E+01	8.86E+01	8.86E+01	8.86E+01
POPULATION DENSITY	6.00E+00	6.00E+00	6.00E+00	6.00E+00	7.19E+02
VEHICLE DENSITY	4.70E+02	4.70E+02	4.70E+02	4.70E+02	7.80E+02
ACCIDENT RATE/KM	1.37E-07	1.37E-07	1.37E-07	1.37E-07	3.00E-06
ZONE	RURAL	RURAL	RURAL	RURAL	SUBURBAN
ROAD TYPE	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY
FARMING FRACTION	5.00E-01	5.00E-01	5.00E-01	5.00E-01	0.00E+00

	SUB_NR_NF	SUB_RH_FW	SUB_RH_NF	URB_NR_FW	URB_NR_NF
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.08E+02	6.92E+01	2.31E+01	6.18E+00	3.30E-01
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	4.03E+01	4.43E+01	2.02E+01	8.86E+01	2.42E+01
POPULATION DENSITY	7.19E+02	7.19E+02	7.19E+02	3.86E+03	3.86E+03
VEHICLE DENSITY	7.80E+02	1.56E+03	1.56E+03	2.80E+03	2.80E+03
ACCIDENT RATE/KM	3.00E-06	3.00E-06	3.00E-06	1.60E-05	1.60E-05
ZONE	SUBURBAN	SUBURBAN	SUBURBAN	URBAN	URBAN
ROAD TYPE	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	URB_RH_FW	URB_RH_NF
VEHICLE	TRUCK	TRUCK
DISTANCE (KM)	6.90E-01	4.00E-02
PERSONS PER VEHICLE	2.00E+00	2.00E+00
SPEED (KM/HR)	4.43E+01	1.21E+01
POPULATION DENSITY	3.86E+03	3.86E+03
VEHICLE DENSITY	5.60E+03	5.60E+03
ACCIDENT RATE/KM	1.60E-05	1.60E-05
ZONE	URBAN	URBAN
ROAD TYPE	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE SFUEL	CURIES PER PKG	RELEASE GROUP	RESUSPENSION FACTOR	50YR INHALATION (REM/CI) EFFECTIVE
CO60	9.22E+01	PKG1_B	4.83E+00	2.80E+05
KR85	6.10E+03	PKG2_C	1.00E+00	0.00E+00
SR90	5.96E+04	PKG4_E	5.41E+00	2.40E+06
RU106	1.62E+04	PKG5_E	3.28E+00	8.00E+05
CS134	2.74E+04	PKG3_D	4.07E+00	4.60E+04
CS137	8.76E+04	PKG3_D	5.41E+00	3.20E+04
CE144	1.22E+04	PKG4_D	2.99E+00	6.30E+05
EU154	7.00E+03	PKG4_D	5.09E+00	3.10E+05
PU238	2.96E+03	PKG4_E	5.51E+00	5.30E+08
PU239	4.10E+02	PKG4_E	5.57E+00	5.70E+08
PU240	4.68E+02	PKG4_E	5.56E+00	5.70E+08
PU241	1.26E+05	PKG4_E	5.26E+00	9.90E+06
AM241	1.29E+03	PKG4_E	5.55E+00	5.90E+08
AM243	1.99E+01	PKG4_E	5.56E+00	5.90E+08
CM244	1.79E+03	PKG4_E	5.32E+00	3.10E+08

NUCLIDE SFUEL	HALF LIFE	GAMMA ENERGY	CLOUD FACTOR	GROUND FACTOR	INGESTION NUCLIDE	NEUTRON EMISSION neutrons/sec/Ci
CO60	1.93E+03	2.50E+00	4.66E-01	7.51E-04	Co-60	N/A
KR85	3.92E+03	2.21E-03	4.40E-04	8.44E-07	NONE	N/A
SR90	1.06E+04	0.00E+00	2.79E-05	9.08E-08	Sr-90	N/A
RU106	3.68E+02	2.01E-01	0.00E+00	6.78E-05	Ru-106	N/A
CS134	7.53E+02	1.55E+00	2.80E-01	4.86E-04	Cs-134	N/A
CS137	1.10E+04	5.96E-01	2.86E-05	1.77E-04	Cs-137	N/A
CE144	2.84E+02	5.25E-02	3.16E-03	1.84E-05	Ce-144	N/A
EU154	3.21E+03	1.22E+00	2.27E-01	3.80E-04	Eu-154	N/A
PU238	3.21E+04	1.81E-03	1.81E-05	2.68E-07	Pu-238	N/A
PU239	8.79E+06	7.96E-04	1.57E-05	1.17E-07	Pu-239	N/A
PU240	2.39E+06	1.73E-03	1.76E-05	2.57E-07	Pu-240	N/A
PU241	5.26E+03	2.54E-06	2.68E-07	6.17E-10	Pu-241	N/A
AM241	1.58E+05	3.24E-02	3.03E-03	8.79E-06	Am-241	N/A
AM243	2.70E+06	5.59E-02	8.07E-03	1.71E-05	Am-243	N/A
CM244	6.62E+03	1.70E-03	1.82E-05	2.81E-07	Cm-244	N/A

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE	1-YR INHALATION (REM/CI)		
	LUNG	MARROW	THYROID
SFUEL			
CO60	7.90E+05	3.80E+04	0.00E+00
KR85	0.00E+00	0.00E+00	0.00E+00
SR90	4.50E+06	3.80E+03	0.00E+00
RU106	4.30E+06	4.50E+03	0.00E+00
CS134	4.10E+04	3.90E+04	0.00E+00
CS137	3.10E+04	2.60E+04	0.00E+00
CE144	3.60E+06	4.20E+03	0.00E+00
EU154	0.00E+00	0.00E+00	0.00E+00
PU238	4.50E+08	1.10E+06	0.00E+00
PU239	4.20E+08	1.10E+06	0.00E+00
PU240	4.20E+08	1.10E+06	0.00E+00
PU241	3.60E+05	1.30E+03	0.00E+00
AM241	1.20E+08	1.70E+07	0.00E+00
AM243	1.10E+08	1.60E+07	0.00E+00
CM244	1.20E+08	1.70E+07	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RELEASE RELATED DATA
****

RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	0.00E+00	0.00E+00	1.20E-02	1.20E-02	1.20E-02	1.20E-02
PKG2_C	0.00E+00	0.00E+00	0.00E+00	1.00E-02	1.00E-01	1.10E-01
PKG4_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08
PKG5_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	1.00E-06	4.20E-05
PKG3_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	2.00E-04	2.80E-04
PKG4_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08

DEPOSITION VELOCITIES

GROUP	M/SEC
PKG1_B	1.00E-02
PKG2_C	0.00E+00
PKG4_E	1.00E-02
PKG5_E	1.00E-02
PKG3_D	1.00E-02
PKG4_D	1.00E-02

ACCIDENT SEVERITY FRACTIONS
FOR HIGHWAY

ZONE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RURAL	6.03E-01	3.94E-01	3.00E-03	3.00E-06	5.00E-06	7.00E-06
SUBURBAN	6.02E-01	3.94E-01	4.00E-03	4.00E-06	3.00E-06	2.00E-06
URBAN	6.04E-01	3.95E-01	3.80E-04	3.80E-07	2.50E-07	1.30E-07

CRYSTAL RIVER TO HANFORD; SPENT FUEL

AEROSOLIZED FRACTION OF RELEASED MATERIAL

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG5_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG3_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00

RESPIRABLE FRACTION OF AEROSOLS (BELOW 10 MICRONS AED)

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG5_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG3_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00
PKG4_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL DATA (FATALITIES/KM)
****

HIGHWAY

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RURAL	0.00E+00	0.00E+00	1.50E-08	5.30E-08
SUBURBAN	0.00E+00	0.00E+00	3.70E-09	1.30E-08
URBAN	0.00E+00	0.00E+00	2.10E-09	7.50E-09

CRYSTAL RIVER TO HANFORD; SPENT FUEL

HEALTH RELATED DATA
****

EARLY MORBIDITY THRESHOLD VALUE FOR LUNG 5.000E+02 REM
EARLY MORBIDITY THRESHOLD VALUE FOR MARROW/WHOLE BODY 5.000E+01 REM
EARLY MORBIDITY THRESHOLD VALUE FOR THYROID 2.000E+02 REM

EARLY FATALITY PROBABILITIES (EF)

DOSE(REM)	EF MARROW	DOSE(REM)	EF LUNG
680.00	1.00000	1525.00	1.00000
670.00	0.99999	1500.00	0.99999
660.00	0.99998	1475.00	0.99997
650.00	0.99996	1450.00	0.99991
640.00	0.99992	1425.00	0.99974
630.00	0.99983	1400.00	0.99933
620.00	0.99967	1375.00	0.99840
610.00	0.99938	1350.00	0.99653
600.00	0.99889	1325.00	0.99306
590.00	0.99808	1300.00	0.98709
580.00	0.99679	1275.00	0.97755
570.00	0.99482	1250.00	0.96331
560.00	0.99192	1225.00	0.94326
550.00	0.98776	1200.00	0.91656
540.00	0.98199	1175.00	0.88274
530.00	0.97423	1150.00	0.84178
520.00	0.96406	1125.00	0.79420
510.00	0.95111	1100.00	0.74095
500.00	0.93502	1075.00	0.68335
490.00	0.91551	1050.00	0.62293
480.00	0.89237	1025.00	0.56130
470.00	0.86552	1000.00	0.50000
460.00	0.83499	975.00	0.44042
450.00	0.80096	950.00	0.38372
440.00	0.76371	925.00	0.33077
430.00	0.72363	900.00	0.28218
420.00	0.68123	875.00	0.23830
410.00	0.63706	850.00	0.19925
400.00	0.59172	825.00	0.16498
390.00	0.54583	800.00	0.13529
380.00	0.50000	775.00	0.10988
370.00	0.45481	750.00	0.08837
360.00	0.41078	725.00	0.07038
350.00	0.36838	700.00	0.05548
340.00	0.32798	675.00	0.04329
330.00	0.28990	650.00	0.03341
320.00	0.25438	625.00	0.02549
310.00	0.22155	600.00	0.01922
300.00	0.19150	575.00	0.01430
290.00	0.16425	550.00	0.01050
280.00	0.13977	525.00	0.00759
270.00	0.11797	500.00	0.00000
260.00	0.09872		
250.00	0.08188		
240.00	0.06729		
230.00	0.05475		
220.00	0.04408		
210.00	0.03510		
200.00	0.02761		
190.00	0.02143		
180.00	0.01639		
170.00	0.01234		
160.00	0.00913		

150.00 0.00000

CRYSTAL RIVER TO HANFORD; SPENT FUEL

DISPERSAL ACCIDENT INPUT

AREADA (M SQ)	CENTER LINE(M)	DILUTION FACTOR*
4.590E+02	3.300E+01	3.420E-03
1.530E+03	6.800E+01	1.720E-03
3.940E+03	1.050E+02	8.580E-04
1.250E+04	2.440E+02	3.420E-04
3.040E+04	3.690E+02	1.720E-04
6.850E+04	5.610E+02	8.580E-05
1.760E+05	1.018E+03	3.420E-05
4.450E+05	1.628E+03	1.720E-05
8.590E+05	2.308E+03	8.580E-06
2.550E+06	4.269E+03	3.420E-06
4.450E+06	5.468E+03	1.720E-06
1.030E+07	1.114E+04	8.580E-07
2.160E+07	1.310E+04	3.420E-07
5.520E+07	2.133E+04	1.720E-07
1.770E+08	4.050E+04	8.580E-08
4.890E+08	6.999E+04	5.420E-08
8.120E+08	8.986E+04	4.300E-08
1.350E+09	1.209E+05	3.420E-08

* DILUTION FACTOR UNITS ARE (CI-SEC/M**3/CI-RELEASED)

BUILDING DOSE FACTOR (BDF) = 5.000E-02
CONTAMINATION CLEAN UP LEVEL (UCI/M**2) (CULVL) = 2.000E-01
BREATHING RATE (M**3/SEC) (BRATE) = 3.300E-04
INTERDICTION THRESHOLD (INTERDICT) = 4.000E+01
EVACUATION TIME (DAYS) (EVACUATION) = 1.000E+00
SURVEY INTERVAL (DAYS) (SURVEY) = 1.000E+01
CAMPAIGN LENGTH (YEARS) (CAMPAIGN) = 1.000E+00
FRACTION OF URBAN AREAS WITH BUILDINGS (UBF) = 9.000E-01
FRACTION OF URBAN AREAS WITH SIDEWALKS (USWF) = 1.000E-01
RATIO OF SIDEWALK PEDESTRIAN DENSITY (RPD) = 6.000E+00
MAXIMUM IN-TRANSIT DOSE DISTANCE (M) (MITDDIST) = 3.000E+01
MAXIMUM IN-TRANSIT DOSE VELOCITY (KM/H) (MITDVEL) = 2.400E+01
IACC VALUE: 1=NON-DISPERSAL, 2=DISPERSAL = 2
REGULATORY CHECK, 1=DO CHECKS, 0=NO CHECKS = 1
BUILDING SHIELDING OPTION (IUOPT) = 2
RURAL SHIELDING FACTOR = 1.000E+00
SUBURBAN SHIELDING FACTOR = 8.700E-01
URBAN SHIELDING FACTOR = 1.800E-02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INGESTION RELATED DATA

COMIDA INGESTION FILE USED: R5INGEST.BIN

COMIDA FILE HEADER
COMIDA2 02/17/03 16:17:38 Ver. 1.11a, 1/28/96: avoiding use of UNIT 6 for HP

DOSE CONVERSION FILE USED IN COMIDA
FGRDCF 05/08/95 16:43:45 beta-test version 1.10, minor FORTRAN fixes 5/4/95
Implicit daughter halflives (m) less than 90 and less than 0.100 of parent

NO INGESTION WILL BE CALCULATED FOR THE FOLLOWING ISOTOPES
INGESTION NUCLIDES ARE NOT IN INGESTION FILE

ISOTOPE	INGESTION NUCLIDE
KR85	NONE

CRYSTAL RIVER TO HANFORD; SPENT FUEL

BACKYARD FARMER INGESTION DOSE (REM/CI DEPOSITED)

NUCLIDE	EFFECTIVE	THYROID
Co-60	4.308E+04	1.225E+04
Sr-90	2.541E+05	9.964E+03
Ru-106	2.107E+04	4.014E+03
Cs-134	6.012E+05	5.344E+05
Cs-137	4.870E+05	4.545E+05
Ce-144	1.202E+04	1.085E+01
Eu-154	1.439E+04	3.185E+02
Pu-238	3.858E+04	2.301E-01
Pu-239	4.049E+04	2.169E-01
Pu-240	4.049E+04	2.172E-01
Pu-241	3.231E+03	3.837E-02
Am-241	2.846E+06	3.818E+01
Am-243	2.834E+06	1.968E+02
Cm-244	2.534E+06	3.924E+01

SOCIETAL INGESTION DOSE (PERSON-REM/CI DEPOSITED)

NUCLIDE	GONADS	BREAST	LUNGS	RED MAR	BONE SU	THYROID	REMAIND	EFFECTI
Co-60	8.2E+00	2.8E+00	2.3E+00	3.4E+00	2.4E+00	2.0E+00	1.3E+01	7.1E+00
Sr-90	1.8E+00	1.8E+00	1.8E+00	2.3E+02	4.9E+02	1.8E+00	7.3E+00	4.5E+01
Ru-106	5.5E-01	4.8E-01	4.8E-01	4.9E-01	4.8E-01	4.7E-01	7.1E+00	2.5E+00
Cs-134	8.9E+01	7.5E+01	7.6E+01	8.1E+01	7.5E+01	7.6E+01	9.6E+01	8.6E+01
Cs-137	8.2E+01	7.4E+01	7.5E+01	7.8E+01	7.5E+01	7.5E+01	8.6E+01	8.0E+01
Ce-144	1.7E-02	2.9E-03	1.6E-03	2.1E-02	3.0E-02	1.2E-03	4.5E+00	1.4E+00
Eu-154	1.1E+00	2.3E-01	1.8E-01	9.6E-01	3.7E+00	4.8E-02	5.3E+00	2.2E+00
Pu-238	8.1E-01	6.2E-05	3.0E-05	4.4E+00	5.5E+01	2.8E-05	7.5E+00	4.6E+00
Pu-239	9.2E-01	4.2E-05	2.7E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-240	9.2E-01	6.0E-05	2.9E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-241	1.4E-01	1.3E-05	1.7E-05	7.7E-01	9.6E+00	6.5E-06	3.7E-01	5.3E-01
Am-241	9.4E+01	9.1E-03	1.2E-02	5.0E+02	6.3E+03	4.6E-03	2.3E+02	3.4E+02
Am-243	9.4E+01	4.9E-02	6.8E-02	5.0E+02	6.3E+03	2.4E-02	2.3E+02	3.4E+02
Cm-244	7.6E+01	5.1E-03	5.1E-03	4.5E+02	5.6E+03	4.8E-03	2.4E+02	3.1E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL RISK (FATALITIES)
****

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RUR_NR_FW	0.00E+00	0.00E+00	5.32E-02	1.88E-01
RUR_NR_NF	0.00E+00	0.00E+00	1.77E-02	6.27E-02
RUR_RH_FW	0.00E+00	0.00E+00	5.91E-03	2.09E-02
RUR_RH_NF	0.00E+00	0.00E+00	1.97E-03	6.96E-03
SUB_NR_FW	0.00E+00	0.00E+00	3.12E-03	1.10E-02
SUB_NR_NF	0.00E+00	0.00E+00	1.04E-03	3.65E-03
SUB_RH_FW	0.00E+00	0.00E+00	3.46E-04	1.22E-03
SUB_RH_NF	0.00E+00	0.00E+00	1.15E-04	4.06E-04
URB_NR_FW	0.00E+00	0.00E+00	1.75E-05	6.27E-05
URB_NR_NF	0.00E+00	0.00E+00	9.37E-07	3.35E-06
URB_RH_FW	0.00E+00	0.00E+00	1.96E-06	7.00E-06
URB_RH_NF	0.00E+00	0.00E+00	1.13E-07	4.06E-07
TOTALS:	0.00E+00	0.00E+00	8.35E-02	2.95E-01

CRYSTAL RIVER TO HANFORD; SPENT FUEL

REGULATORY CHECKS

FOR TRUCK THE DOSE RATE AT 2 METERS COULD EXCEED 10 MREM/HR
THE VEHICLE DOSE RATE HAS BEEN RESET TO EQUAL 13.00 MREM/HR

CRYSTAL RIVER TO HANFORD; SPENT FUEL

CALCULATIONAL INFORMATION

FOR TRUCK AREAS WITH TOTAL CONTAMINATION RATIO GREATER THAN 40.000
(THE AREAS MARKED WITH AN 'X' ARE INTERDICTED AND HAVE
NO 50 YEAR GROUNDSHINE DOSE AND NO INGESTION DOSE.)

AREA/SEVERITY	1	2	3	4	5	6
1	-	-	X	X	X	X
2	-	-	X	X	X	X
3	-	-	X	X	X	X
4	-	-	-	-	X	X
5	-	-	-	-	X	X
6	-	-	-	-	X	X
7	-	-	-	-	-	X
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-	-	-	-	-
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-

CRYSTAL RIVER TO HANFORD; SPENT FUEL

DILUTION FACTORS
CHI VALUES AFTER DEPLETION (CI-SEC/M**3/CI-RELEASED)

AREA	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
4.59E+02	3.42E-03	3.42E-03	3.42E-03	3.42E-03	3.42E-03	3.42E-03
1.53E+03	1.72E-03	1.72E-03	1.72E-03	1.72E-03	1.72E-03	1.72E-03
3.94E+03	8.34E-04	8.58E-04	8.34E-04	8.34E-04	8.34E-04	8.34E-04
1.25E+04	3.23E-04	3.42E-04	3.23E-04	3.23E-04	3.23E-04	3.23E-04
3.04E+04	1.55E-04	1.72E-04	1.55E-04	1.55E-04	1.55E-04	1.55E-04
6.85E+04	7.38E-05	8.58E-05	7.38E-05	7.38E-05	7.38E-05	7.38E-05
1.76E+05	2.80E-05	3.42E-05	2.80E-05	2.80E-05	2.80E-05	2.80E-05
4.45E+05	1.33E-05	1.72E-05	1.33E-05	1.33E-05	1.33E-05	1.33E-05
8.59E+05	6.16E-06	8.58E-06	6.16E-06	6.16E-06	6.16E-06	6.16E-06
2.55E+06	2.33E-06	3.42E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06
4.45E+06	1.06E-06	1.72E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06
1.03E+07	5.04E-07	8.58E-07	5.04E-07	5.04E-07	5.04E-07	5.04E-07
2.16E+07	1.86E-07	3.42E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07
5.52E+07	8.77E-08	1.72E-07	8.77E-08	8.77E-08	8.77E-08	8.77E-08
1.77E+08	4.01E-08	8.58E-08	4.01E-08	4.01E-08	4.01E-08	4.01E-08
4.89E+08	2.14E-08	5.42E-08	2.14E-08	2.14E-08	2.14E-08	2.14E-08
8.12E+08	1.31E-08	4.30E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08
1.35E+09	8.54E-09	3.42E-08	8.54E-09	8.54E-09	8.54E-09	8.54E-09

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

1-YEAR DOSE TO LUNG, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	4.93E-02	5.07E-02	9.29E-01	1.44E+00
6.80E+01	0.00E+00	0.00E+00	2.48E-02	2.55E-02	4.66E-01	7.21E-01
1.05E+02	0.00E+00	0.00E+00	1.20E-02	1.24E-02	2.27E-01	3.51E-01
2.44E+02	0.00E+00	0.00E+00	4.65E-03	4.79E-03	8.77E-02	1.36E-01
3.69E+02	0.00E+00	0.00E+00	2.23E-03	2.30E-03	4.20E-02	6.50E-02
5.61E+02	0.00E+00	0.00E+00	1.06E-03	1.09E-03	2.00E-02	3.10E-02
1.02E+03	0.00E+00	0.00E+00	4.04E-04	4.15E-04	7.60E-03	1.18E-02
1.63E+03	0.00E+00	0.00E+00	1.91E-04	1.97E-04	3.60E-03	5.57E-03
2.31E+03	0.00E+00	0.00E+00	8.89E-05	9.15E-05	1.67E-03	2.59E-03
4.27E+03	0.00E+00	0.00E+00	3.36E-05	3.45E-05	6.33E-04	9.78E-04
5.47E+03	0.00E+00	0.00E+00	1.53E-05	1.57E-05	2.88E-04	4.46E-04
1.11E+04	0.00E+00	0.00E+00	7.26E-06	7.47E-06	1.37E-04	2.12E-04
1.31E+04	0.00E+00	0.00E+00	2.68E-06	2.76E-06	5.06E-05	7.82E-05
2.13E+04	0.00E+00	0.00E+00	1.27E-06	1.30E-06	2.38E-05	3.69E-05
4.05E+04	0.00E+00	0.00E+00	5.78E-07	5.95E-07	1.09E-05	1.68E-05
7.00E+04	0.00E+00	0.00E+00	3.09E-07	3.18E-07	5.82E-06	8.99E-06
8.99E+04	0.00E+00	0.00E+00	1.88E-07	1.94E-07	3.55E-06	5.49E-06
1.21E+05	0.00E+00	0.00E+00	1.23E-07	1.27E-07	2.32E-06	3.59E-06

1-YEAR DOSE TO MARROW/WHOLE BODY, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	4.14E-03	4.26E-03	7.66E-01	1.07E+00
6.80E+01	0.00E+00	0.00E+00	2.08E-03	2.14E-03	3.85E-01	5.37E-01
1.05E+02	0.00E+00	0.00E+00	1.01E-03	1.04E-03	1.87E-01	2.61E-01
2.44E+02	0.00E+00	0.00E+00	3.90E-04	4.03E-04	7.23E-02	1.01E-01
3.69E+02	0.00E+00	0.00E+00	1.87E-04	1.93E-04	3.47E-02	4.84E-02
5.61E+02	0.00E+00	0.00E+00	8.92E-05	9.22E-05	1.65E-02	2.31E-02
1.02E+03	0.00E+00	0.00E+00	3.39E-05	3.51E-05	6.27E-03	8.76E-03
1.63E+03	0.00E+00	0.00E+00	1.60E-05	1.66E-05	2.97E-03	4.15E-03
2.31E+03	0.00E+00	0.00E+00	7.46E-06	7.75E-06	1.38E-03	1.93E-03
4.27E+03	0.00E+00	0.00E+00	2.82E-06	2.93E-06	5.22E-04	7.29E-04
5.47E+03	0.00E+00	0.00E+00	1.28E-06	1.34E-06	2.38E-04	3.32E-04
1.11E+04	0.00E+00	0.00E+00	6.09E-07	6.37E-07	1.13E-04	1.58E-04
1.31E+04	0.00E+00	0.00E+00	2.25E-07	2.36E-07	4.17E-05	5.83E-05
2.13E+04	0.00E+00	0.00E+00	1.06E-07	1.12E-07	1.97E-05	2.75E-05
4.05E+04	0.00E+00	0.00E+00	4.85E-08	5.12E-08	8.99E-06	1.26E-05
7.00E+04	0.00E+00	0.00E+00	2.59E-08	2.76E-08	4.80E-06	6.71E-06
8.99E+04	0.00E+00	0.00E+00	1.58E-08	1.71E-08	2.93E-06	4.10E-06
1.21E+05	0.00E+00	0.00E+00	1.03E-08	1.13E-08	1.92E-06	2.68E-06

1-YEAR DOSE TO THYROID, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.80E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.05E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.44E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.69E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.61E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.02E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.63E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.31E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.27E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.47E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.11E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.31E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.13E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.05E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.00E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

8.99E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.21E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

GROUND SURFACE CONTAMINATION TABLE (MICRO CI/M**2)
BEFORE CLEANUP

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	3.78E+01	3.80E+01	8.25E+02	1.16E+03
6.80E+01	0.00E+00	0.00E+00	1.90E+01	1.91E+01	4.14E+02	5.84E+02
1.05E+02	0.00E+00	0.00E+00	9.23E+00	9.26E+00	2.01E+02	2.84E+02
2.44E+02	0.00E+00	0.00E+00	3.57E+00	3.58E+00	7.79E+01	1.10E+02
3.69E+02	0.00E+00	0.00E+00	1.71E+00	1.72E+00	3.73E+01	5.26E+01
5.61E+02	0.00E+00	0.00E+00	8.16E-01	8.19E-01	1.78E+01	2.51E+01
1.02E+03	0.00E+00	0.00E+00	3.10E-01	3.11E-01	6.76E+00	9.52E+00
1.63E+03	0.00E+00	0.00E+00	1.47E-01	1.47E-01	3.20E+00	4.50E+00
2.31E+03	0.00E+00	0.00E+00	6.82E-02	6.84E-02	1.49E+00	2.10E+00
4.27E+03	0.00E+00	0.00E+00	2.58E-02	2.58E-02	5.62E-01	7.92E-01
5.47E+03	0.00E+00	0.00E+00	1.17E-02	1.18E-02	2.56E-01	3.61E-01
1.11E+04	0.00E+00	0.00E+00	5.57E-03	5.59E-03	1.22E-01	1.71E-01
1.31E+04	0.00E+00	0.00E+00	2.06E-03	2.07E-03	4.49E-02	6.33E-02
2.13E+04	0.00E+00	0.00E+00	9.71E-04	9.74E-04	2.12E-02	2.98E-02
4.05E+04	0.00E+00	0.00E+00	4.44E-04	4.45E-04	9.67E-03	1.36E-02
7.00E+04	0.00E+00	0.00E+00	2.37E-04	2.38E-04	5.17E-03	7.28E-03
8.99E+04	0.00E+00	0.00E+00	1.44E-04	1.45E-04	3.15E-03	4.44E-03
1.21E+05	0.00E+00	0.00E+00	9.45E-05	9.48E-05	2.06E-03	2.90E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

MAXIMUM INDIVIDUAL CONSEQUENCE (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	8.18E-02	8.34E-02	1.92E+00	2.81E+00
6.80E+01	0.00E+00	0.00E+00	4.11E-02	4.19E-02	9.64E-01	1.41E+00
1.05E+02	0.00E+00	0.00E+00	2.00E-02	2.03E-02	4.68E-01	6.86E-01
2.44E+02	0.00E+00	0.00E+00	7.72E-03	7.87E-03	1.81E-01	2.65E-01
3.69E+02	0.00E+00	0.00E+00	3.70E-03	3.77E-03	8.69E-02	1.27E-01
5.61E+02	0.00E+00	0.00E+00	1.76E-03	1.80E-03	4.14E-02	6.07E-02
1.02E+03	0.00E+00	0.00E+00	6.70E-04	6.83E-04	1.57E-02	2.30E-02
1.63E+03	0.00E+00	0.00E+00	3.17E-04	3.23E-04	7.44E-03	1.09E-02
2.31E+03	0.00E+00	0.00E+00	1.48E-04	1.50E-04	3.46E-03	5.07E-03
4.27E+03	0.00E+00	0.00E+00	5.57E-05	5.68E-05	1.31E-03	1.92E-03
5.47E+03	0.00E+00	0.00E+00	2.54E-05	2.59E-05	5.96E-04	8.73E-04
1.11E+04	0.00E+00	0.00E+00	1.21E-05	1.23E-05	2.83E-04	4.14E-04
1.31E+04	0.00E+00	0.00E+00	4.45E-06	4.54E-06	1.05E-04	1.53E-04
2.13E+04	0.00E+00	0.00E+00	2.10E-06	2.14E-06	4.93E-05	7.22E-05
4.05E+04	0.00E+00	0.00E+00	9.59E-07	9.79E-07	2.25E-05	3.30E-05
7.00E+04	0.00E+00	0.00E+00	5.12E-07	5.23E-07	1.20E-05	1.76E-05
8.99E+04	0.00E+00	0.00E+00	3.12E-07	3.19E-07	7.34E-06	1.07E-05
1.21E+05	0.00E+00	0.00E+00	2.04E-07	2.09E-07	4.80E-06	7.03E-06

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

BACKYARD FARMER DOSE - EFFECTIVE
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	1.63E+00	1.66E+00	4.06E+02	5.68E+02
6.80E+01	0.00E+00	0.00E+00	8.18E-01	8.33E-01	2.04E+02	2.85E+02
1.05E+02	0.00E+00	0.00E+00	3.98E-01	4.05E-01	9.91E+01	1.39E+02
2.44E+02	0.00E+00	0.00E+00	1.54E-01	1.57E-01	3.83E+01	5.36E+01
3.69E+02	0.00E+00	0.00E+00	7.38E-02	7.51E-02	1.84E+01	2.57E+01
5.61E+02	0.00E+00	0.00E+00	3.51E-02	3.58E-02	8.76E+00	1.23E+01
1.02E+03	0.00E+00	0.00E+00	1.33E-02	1.36E-02	3.32E+00	4.65E+00
1.63E+03	0.00E+00	0.00E+00	6.32E-03	6.43E-03	1.57E+00	2.20E+00
2.31E+03	0.00E+00	0.00E+00	2.94E-03	2.99E-03	7.32E-01	1.02E+00
4.27E+03	0.00E+00	0.00E+00	1.11E-03	1.13E-03	2.77E-01	3.87E-01
5.47E+03	0.00E+00	0.00E+00	5.06E-04	5.15E-04	1.26E-01	1.76E-01
1.11E+04	0.00E+00	0.00E+00	2.40E-04	2.44E-04	5.98E-02	8.37E-02
1.31E+04	0.00E+00	0.00E+00	8.87E-05	9.03E-05	2.21E-02	3.09E-02
2.13E+04	0.00E+00	0.00E+00	4.18E-05	4.26E-05	1.04E-02	1.46E-02
4.05E+04	0.00E+00	0.00E+00	1.91E-05	1.94E-05	4.76E-03	6.66E-03
7.00E+04	0.00E+00	0.00E+00	1.02E-05	1.04E-05	2.54E-03	3.56E-03
8.99E+04	0.00E+00	0.00E+00	6.22E-06	6.33E-06	1.55E-03	2.17E-03
1.21E+05	0.00E+00	0.00E+00	4.07E-06	4.14E-06	1.01E-03	1.42E-03

BACKYARD FARMER DOSE - THYROID
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	4.64E-01	4.83E-01	3.73E+02	5.22E+02
6.80E+01	0.00E+00	0.00E+00	2.33E-01	2.42E-01	1.87E+02	2.62E+02
1.05E+02	0.00E+00	0.00E+00	1.13E-01	1.18E-01	9.10E+01	1.27E+02
2.44E+02	0.00E+00	0.00E+00	4.38E-02	4.55E-02	3.52E+01	4.93E+01
3.69E+02	0.00E+00	0.00E+00	2.10E-02	2.18E-02	1.69E+01	2.36E+01
5.61E+02	0.00E+00	0.00E+00	1.00E-02	1.04E-02	8.04E+00	1.13E+01
1.02E+03	0.00E+00	0.00E+00	3.80E-03	3.95E-03	3.05E+00	4.27E+00
1.63E+03	0.00E+00	0.00E+00	1.80E-03	1.87E-03	1.44E+00	2.02E+00
2.31E+03	0.00E+00	0.00E+00	8.36E-04	8.70E-04	6.72E-01	9.41E-01
4.27E+03	0.00E+00	0.00E+00	3.16E-04	3.29E-04	2.54E-01	3.55E-01
5.47E+03	0.00E+00	0.00E+00	1.44E-04	1.50E-04	1.16E-01	1.62E-01
1.11E+04	0.00E+00	0.00E+00	6.83E-05	7.11E-05	5.49E-02	7.69E-02
1.31E+04	0.00E+00	0.00E+00	2.52E-05	2.63E-05	2.03E-02	2.84E-02
2.13E+04	0.00E+00	0.00E+00	1.19E-05	1.24E-05	9.57E-03	1.34E-02
4.05E+04	0.00E+00	0.00E+00	5.43E-06	5.66E-06	4.37E-03	6.12E-03
7.00E+04	0.00E+00	0.00E+00	2.90E-06	3.02E-06	2.33E-03	3.27E-03
8.99E+04	0.00E+00	0.00E+00	1.77E-06	1.84E-06	1.42E-03	1.99E-03
1.21E+05	0.00E+00	0.00E+00	1.16E-06	1.20E-06	9.31E-04	1.30E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE SUMMARY
******** **** *******

IN-TRANSIT POPULATION EXPOSURE IN PERSON-REM
*INPUT DATA WERE ALTERED WITH REGULATORY CHECKS

	PASSENGER	CREW	OFF LINK	ON LINK	TOTALS
RUR_NR_FW	0.00E+00	6.15E+01	3.62E-01	1.47E+01	7.66E+01
RUR_NR_NF	0.00E+00	2.05E+01	1.44E-01	1.35E+01	3.41E+01
RUR_RH_FW	0.00E+00	6.84E+00	4.02E-02	1.64E+00	8.51E+00
RUR_RH_NF	0.00E+00	2.28E+00	1.60E-02	1.50E+00	3.79E+00
SUB_NR_FW	0.00E+00	1.46E+01	8.96E+00	5.80E+00	2.94E+01
SUB_NR_NF	0.00E+00	1.07E+01	8.02E+00	2.62E+01	4.49E+01
SUB_RH_FW	0.00E+00	3.25E+00	1.99E+00	5.38E+00	1.06E+01
SUB_RH_NF	0.00E+00	2.37E+00	1.78E+00	2.39E+01	2.81E+01
URB_NR_FW	0.00E+00	1.45E-01	9.87E-03	2.07E-01	3.61E-01
URB_NR_NF	0.00E+00	2.83E-02	9.48E-02	4.23E-01	5.46E-01
URB_RH_FW	0.00E+00	3.24E-02	2.20E-03	1.92E-01	2.27E-01
URB_RH_NF	0.00E+00	6.87E-03	2.30E-02	4.32E-01	4.62E-01
RURAL	0.00E+00	9.12E+01	5.62E-01	3.13E+01	1.23E+02
SUBURB	0.00E+00	3.09E+01	2.07E+01	6.12E+01	1.13E+02
URBAN	0.00E+00	2.13E-01	1.30E-01	1.25E+00	1.60E+00
TOTALS:	0.00E+00	1.22E+02	2.14E+01	9.38E+01	2.38E+02

MAXIMUM INDIVIDUAL IN-TRANSIT DOSE

TRUCK 3.94E-04 REM

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CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP EXPOSURE IN PERSON-REM

POINT-SOURCE	STOP_	6.49E+02
	TOTAL:	6.49E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_NR_FW			
	NUMBER OF SHIPMENTS	7.663E-01	1.0000 %
	DISTANCE TRAVELED	7.663E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	7.663E-01	1.0000 %
	NUMBER OF CREW MEMBERS	6.154E-01	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.154E-01	0.8031 %
	K ZERO FOR CREW DOSE	6.154E-01	0.8031 %
	K ZERO FOR VEHICLE	1.509E-01	0.1969 %
	NUMBER OF PEOPLE PER VEHICLE	1.473E-01	0.1922 %
	TRAFFIC COUNT	1.473E-01	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	3.618E-03	0.0047 %
	POPULATION DENSITY	3.618E-03	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-9.135E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.231E+00	-1.6061 %
RUR_NR_NF			
	DISTANCE TRAVELED	3.414E-01	1.0000 %
	NUMBER OF SHIPMENTS	3.414E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.414E-01	1.0000 %
	NUMBER OF CREW MEMBERS	2.051E-01	0.6009 %
	K ZERO FOR CREW DOSE	2.051E-01	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.051E-01	0.6009 %
	K ZERO FOR VEHICLE	1.363E-01	0.3991 %
	TRAFFIC COUNT	1.348E-01	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.348E-01	0.3949 %
	POPULATION DENSITY	1.438E-03	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.206E-03	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.322E-04	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.102E-01	-1.2017 %
	VELOCITY	-4.762E-01	-1.3949 %
RUR_RH_FW			
	DOSE RATE FOR VEHICLE (TI)	8.514E-02	1.0000 %
	NUMBER OF SHIPMENTS	8.514E-02	1.0000 %
	DISTANCE TRAVELED	8.514E-02	1.0000 %
	NUMBER OF CREW MEMBERS	6.837E-02	0.8031 %
	K ZERO FOR CREW DOSE	6.837E-02	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.837E-02	0.8031 %
	K ZERO FOR VEHICLE	1.677E-02	0.1969 %
	NUMBER OF PEOPLE PER VEHICLE	1.636E-02	0.1922 %
	TRAFFIC COUNT	1.636E-02	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	4.020E-04	0.0047 %
	POPULATION DENSITY	4.020E-04	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-1.015E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.367E-01	-1.6061 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_RH_NF			
	DISTANCE TRAVELED	3.793E-02	1.0000 %
	NUMBER OF SHIPMENTS	3.793E-02	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.793E-02	1.0000 %
	NUMBER OF CREW MEMBERS	2.279E-02	0.6009 %
	K ZERO FOR CREW DOSE	2.279E-02	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.279E-02	0.6009 %
	K ZERO FOR VEHICLE	1.514E-02	0.3991 %
	TRAFFIC COUNT	1.498E-02	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.498E-02	0.3949 %
	POPULATION DENSITY	1.598E-04	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.340E-04	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.580E-05	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.558E-02	-1.2017 %
	VELOCITY	-5.291E-02	-1.3949 %
SUB_NR_FW			
	DISTANCE TRAVELED	2.937E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.937E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.937E-01	1.0000 %
	K ZERO FOR VEHICLE	1.476E-01	0.5025 %
	CREW DOSE ADJUSTMENT FACTOR	1.461E-01	0.4975 %
	NUMBER OF CREW MEMBERS	1.461E-01	0.4975 %
	K ZERO FOR CREW DOSE	1.461E-01	0.4975 %
	SHIELDING FACTOR (RR,RS,RU)	8.956E-02	0.3049 %
	POPULATION DENSITY	8.956E-02	0.3049 %
	NUMBER OF PEOPLE PER VEHICLE	5.804E-02	0.1976 %
	TRAFFIC COUNT	5.804E-02	0.1976 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.922E-01	-0.9949 %
	VELOCITY	-3.518E-01	-1.1976 %
SUB_NR_NF			
	DISTANCE TRAVELED	4.488E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.488E-01	1.0000 %
	NUMBER OF SHIPMENTS	4.488E-01	1.0000 %
	K ZERO FOR VEHICLE	3.417E-01	0.7614 %
	NUMBER OF PEOPLE PER VEHICLE	2.616E-01	0.5828 %
	TRAFFIC COUNT	2.616E-01	0.5828 %
	NUMBER OF CREW MEMBERS	1.071E-01	0.2386 %
	CREW DOSE ADJUSTMENT FACTOR	1.071E-01	0.2386 %
	K ZERO FOR CREW DOSE	1.071E-01	0.2386 %
	POPULATION DENSITY	8.016E-02	0.1786 %
	SHIELDING FACTOR (RR,RS,RU)	6.564E-02	0.1463 %
	RATIO OF PEDESTRIAN DENSITY (RPD	1.453E-02	0.0324 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.142E-01	-0.4772 %
	VELOCITY	-7.103E-01	-1.5828 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
SUB_RH_FW			
	DISTANCE TRAVELED	1.062E-01	1.0000 %
	NUMBER OF SHIPMENTS	1.062E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	1.062E-01	1.0000 %
	K ZERO FOR VEHICLE	7.368E-02	0.6941 %
	NUMBER OF PEOPLE PER VEHICLE	5.378E-02	0.5066 %
	TRAFFIC COUNT	5.378E-02	0.5066 %
	CREW DOSE ADJUSTMENT FACTOR	3.247E-02	0.3059 %
	NUMBER OF CREW MEMBERS	3.247E-02	0.3059 %
	K ZERO FOR CREW DOSE	3.247E-02	0.3059 %
	POPULATION DENSITY	1.990E-02	0.1875 %
	SHIELDING FACTOR (RR,RS,RU)	1.990E-02	0.1875 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.495E-02	-0.6118 %
	VELOCITY	-1.599E-01	-1.5066 %
SUB_RH_NF			
	DISTANCE TRAVELED	2.806E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.806E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.806E-01	1.0000 %
	K ZERO FOR VEHICLE	2.568E-01	0.9154 %
	TRAFFIC COUNT	2.390E-01	0.8520 %
	NUMBER OF PEOPLE PER VEHICLE	2.390E-01	0.8520 %
	NUMBER OF CREW MEMBERS	2.374E-02	0.0846 %
	CREW DOSE ADJUSTMENT FACTOR	2.374E-02	0.0846 %
	K ZERO FOR CREW DOSE	2.374E-02	0.0846 %
	POPULATION DENSITY	1.777E-02	0.0633 %
	SHIELDING FACTOR (RR,RS,RU)	1.455E-02	0.0519 %
	RATIO OF PEDESTRIAN DENSITY (RPD	3.221E-03	0.0115 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.748E-02	-0.1692 %
	VELOCITY	-5.196E-01	-1.8520 %
URB_NR_FW			
	DISTANCE TRAVELED	3.615E-03	1.0000 %
	NUMBER OF SHIPMENTS	3.615E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.615E-03	1.0000 %
	K ZERO FOR VEHICLE	2.165E-03	0.5990 %
	NUMBER OF PEOPLE PER VEHICLE	2.067E-03	0.5717 %
	TRAFFIC COUNT	2.067E-03	0.5717 %
	CREW DOSE ADJUSTMENT FACTOR	1.449E-03	0.4010 %
	K ZERO FOR CREW DOSE	1.449E-03	0.4010 %
	NUMBER OF CREW MEMBERS	1.449E-03	0.4010 %
	POPULATION DENSITY	9.870E-05	0.0273 %
	SHIELDING FACTOR (RR,RS,RU)	9.870E-05	0.0273 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.899E-03	-0.8019 %
	VELOCITY	-5.681E-03	-1.5717 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
URB_NR_NF			
	NUMBER OF SHIPMENTS	5.460E-03	1.0000 %
	DISTANCE TRAVELED	5.460E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	5.460E-03	1.0000 %
	K ZERO FOR VEHICLE	5.177E-03	0.9481 %
	TRAFFIC COUNT	4.229E-03	0.7745 %
	NUMBER OF PEOPLE PER VEHICLE	4.229E-03	0.7745 %
	POPULATION DENSITY	9.478E-04	0.1736 %
	RATIO OF PEDESTRIAN DENSITY (RPD	9.207E-04	0.1686 %
	NUMBER OF CREW MEMBERS	2.834E-04	0.0519 %
	CREW DOSE ADJUSTMENT FACTOR	2.834E-04	0.0519 %
	K ZERO FOR CREW DOSE	2.834E-04	0.0519 %
	SHIELDING FACTOR (RR,RS,RU)	2.706E-05	0.0050 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-5.667E-04	-0.1038 %
	VELOCITY	-9.689E-03	-1.7745 %
URB_RH_FW			
	DISTANCE TRAVELED	2.270E-03	1.0000 %
	NUMBER OF SHIPMENTS	2.270E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.270E-03	1.0000 %
	K ZERO FOR VEHICLE	1.946E-03	0.8574 %
	NUMBER OF PEOPLE PER VEHICLE	1.924E-03	0.8477 %
	TRAFFIC COUNT	1.924E-03	0.8477 %
	CREW DOSE ADJUSTMENT FACTOR	3.237E-04	0.1426 %
	K ZERO FOR CREW DOSE	3.237E-04	0.1426 %
	NUMBER OF CREW MEMBERS	3.237E-04	0.1426 %
	POPULATION DENSITY	2.204E-05	0.0097 %
	SHIELDING FACTOR (RR,RS,RU)	2.204E-05	0.0097 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.473E-04	-0.2852 %
	VELOCITY	-4.194E-03	-1.8477 %
URB_RH_NF			
	DISTANCE TRAVELED	4.622E-03	1.0000 %
	NUMBER OF SHIPMENTS	4.622E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.622E-03	1.0000 %
	K ZERO FOR VEHICLE	4.553E-03	0.9851 %
	TRAFFIC COUNT	4.323E-03	0.9354 %
	NUMBER OF PEOPLE PER VEHICLE	4.323E-03	0.9354 %
	POPULATION DENSITY	2.298E-04	0.0497 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.232E-04	0.0483 %
	NUMBER OF CREW MEMBERS	6.869E-05	0.0149 %
	CREW DOSE ADJUSTMENT FACTOR	6.869E-05	0.0149 %
	K ZERO FOR CREW DOSE	6.869E-05	0.0149 %
	SHIELDING FACTOR (RR,RS,RU)	6.561E-06	0.0014 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-1.374E-04	-0.0297 %
	VELOCITY	-8.945E-03	-1.9354 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

STOP STOP_	PARAMETER	IMPORTANCE	CHANGE
	K ZERO FOR VEHICLE	6.486E+00	1.0000 %
	STOP TIME	6.486E+00	1.0000 %
	POPULATION/POPULATION DENSITY	6.486E+00	1.0000 %
	NUMBER OF SHIPMENTS	6.486E+00	1.0000 %
	DOSE RATE FOR VEHICLE	6.486E+00	1.0000 %
	MAXIMUM DISTANCE AT STOP	0.000E+00	0.0000 %
	MINIMUM DISTANCE AT STOP	-1.297E+01	-2.0000 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ACCIDENT SUMMARY
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NUMBER OF EXPECTED ACCIDENTS

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	1.47E-01	4.88E-02	1.63E-02	5.43E-03	7.61E-01	2.54E-01	8.45E-02
2	9.57E-02	3.19E-02	1.06E-02	3.55E-03	4.98E-01	1.66E-01	5.53E-02
3	7.29E-04	2.43E-04	8.10E-05	2.70E-05	5.05E-03	1.68E-03	5.62E-04
4	7.29E-07	2.43E-07	8.10E-08	2.70E-08	5.05E-06	1.68E-06	5.62E-07
5	1.21E-06	4.05E-07	1.35E-07	4.50E-08	3.79E-06	1.26E-06	4.21E-07
6	1.70E-06	5.67E-07	1.89E-07	6.30E-08	2.53E-06	8.42E-07	2.81E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	2.82E-02	4.04E-02	2.16E-03	4.51E-03	2.61E-04
2	1.84E-02	2.64E-02	1.41E-03	2.95E-03	1.71E-04
3	1.87E-04	2.54E-05	1.36E-06	2.84E-06	1.64E-07
4	1.87E-07	2.54E-08	1.36E-09	2.84E-09	1.64E-10
5	1.40E-07	1.67E-08	8.92E-10	1.87E-09	1.08E-10
6	9.36E-08	8.69E-09	4.64E-10	9.70E-10	5.62E-11

EARLY FATALITY CONSEQUENCES

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RADIOLOGICAL CONSEQUENCES
50 YEAR POPULATION DOSE IN PERSON-REM

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.99E+02	2.99E+02	2.99E+02
4	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.99E+02	2.99E+02	2.99E+02
5	2.64E+01	2.64E+01	2.64E+01	2.64E+01	3.17E+03	3.17E+03	3.17E+03
6	3.51E+01	3.51E+01	3.51E+01	3.51E+01	4.20E+03	4.20E+03	4.20E+03

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	2.99E+02	1.03E+03	1.03E+03	1.03E+03	1.03E+03
4	2.99E+02	1.03E+03	1.03E+03	1.03E+03	1.03E+03
5	3.17E+03	1.10E+04	1.10E+04	1.10E+04	1.10E+04
6	4.20E+03	1.46E+04	1.46E+04	1.46E+04	1.46E+04

MAXIMUM RISK FOR INDIVIDUAL IN NEAREST ISOPLETH (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	5.97E-05	1.99E-05	6.63E-06	2.21E-06	4.14E-04	1.38E-04	4.60E-05
4	6.08E-08	2.03E-08	6.75E-09	2.25E-09	4.21E-07	1.40E-07	4.68E-08
5	2.33E-06	7.78E-07	2.59E-07	8.64E-08	7.28E-06	2.43E-06	8.09E-07
6	4.78E-06	1.59E-06	5.32E-07	1.77E-07	7.11E-06	2.37E-06	7.90E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.53E-05	2.08E-06	1.11E-07	2.32E-07	1.35E-08
4	1.56E-08	2.12E-09	1.13E-10	2.36E-10	1.37E-11
5	2.70E-07	3.21E-08	1.71E-09	3.58E-09	2.08E-10
6	2.63E-07	2.44E-08	1.31E-09	2.73E-09	1.58E-10

RADIOLOGICAL CONSEQUENCES IN PERSON REM
50 YEAR SOCIETAL INGESTION DOSE - EFFECTIVE

LINK	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RUR_NR_FW	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02
RUR_NR_NF	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02
RUR_RH_FW	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02
RUR_RH_NF	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

	GROUND	INHALED	RESUSPD	CLOUDSH	TOTAL
RUR_NR_FW	1.91E-03	1.96E-06	5.51E-07	1.59E-07	1.91E-03
RUR_NR_NF	6.36E-04	6.54E-07	1.84E-07	5.31E-08	6.37E-04
RUR_RH_FW	2.12E-04	2.18E-07	6.12E-08	1.77E-08	2.12E-04
RUR_RH_NF	7.06E-05	7.27E-08	2.04E-08	5.90E-09	7.07E-05
SUB_NR_FW	1.53E+00	1.39E-03	4.53E-04	1.30E-04	1.53E+00
SUB_NR_NF	5.10E-01	4.62E-04	1.51E-04	4.35E-05	5.11E-01
SUB_RH_FW	1.70E-01	1.54E-04	5.04E-05	1.45E-05	1.70E-01
SUB_RH_NF	5.67E-02	5.13E-05	1.68E-05	4.83E-06	5.68E-02
URB_NR_FW	2.66E-02	2.37E-05	7.88E-06	2.27E-06	2.66E-02
URB_NR_NF	1.42E-03	1.27E-06	4.21E-07	1.21E-07	1.42E-03
URB_RH_FW	2.97E-03	2.65E-06	8.80E-07	2.53E-07	2.97E-03
URB_RH_NF	1.72E-04	1.54E-07	5.10E-08	1.47E-08	1.72E-04
RURAL	2.83E-03	2.91E-06	8.16E-07	2.36E-07	2.83E-03
SUBURB	2.27E+00	2.05E-03	6.71E-04	1.93E-04	2.27E+00
URBAN	3.11E-02	2.78E-05	9.23E-06	2.65E-06	3.12E-02
TOTALS:	2.30E+00	2.08E-03	6.81E-04	1.96E-04	2.31E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

SOCIETAL INGESTION RISK - PERSON-REM

LINK	GONADS	EFFECTIVE
RUR_NR_FW	2.54E-03	2.31E-03
RUR_NR_NF	8.46E-04	7.71E-04
RUR_RH_FW	2.82E-04	2.57E-04
RUR_RH_NF	9.40E-05	8.57E-05
TOTAL	3.76E-03	3.43E-03

SOCIETAL INGESTION RISK BY ORGAN - PERSON-REM

LINK	BREAST	LUNGS	RED MARR	BONE SUR	THYROID	REMAINDER
RUR_NR_FW	1.45E-03	1.38E-03	1.62E-03	1.40E-03	1.33E-03	3.40E-03
RUR_NR_NF	4.85E-04	4.59E-04	5.41E-04	4.66E-04	4.43E-04	1.13E-03
RUR_RH_FW	1.62E-04	1.53E-04	1.80E-04	1.55E-04	1.48E-04	3.78E-04
RUR_RH_NF	5.39E-05	5.10E-05	6.01E-05	5.17E-05	4.93E-05	1.26E-04
TOTAL	2.16E-03	2.04E-03	2.40E-03	2.07E-03	1.97E-03	5.04E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED RISK VALUES - OTHER

LINK	EARLY FATALITY	EARLY MORBIDITY
RUR_NR_FW	0.00E+00	0.00E+00
RUR_NR_NF	0.00E+00	0.00E+00
RUR_RH_FW	0.00E+00	0.00E+00
RUR_RH_NF	0.00E+00	0.00E+00
SUB_NR_FW	0.00E+00	0.00E+00
SUB_NR_NF	0.00E+00	0.00E+00
SUB_RH_FW	0.00E+00	0.00E+00
SUB_RH_NF	0.00E+00	0.00E+00
URB_NR_FW	0.00E+00	0.00E+00
URB_NR_NF	0.00E+00	0.00E+00
URB_RH_FW	0.00E+00	0.00E+00
URB_RH_NF	0.00E+00	0.00E+00
TOTAL	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

TOTAL EXPOSED POPULATION: INCIDENT-FREE

RUR_NR_FW	3.54E+04	PERSONS
RUR_NR_NF	1.18E+04	PERSONS
RUR_RH_FW	3.93E+03	PERSONS
RUR_RH_NF	1.31E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	3.35E+05	PERSONS
SUB_RH_FW	1.12E+05	PERSONS
SUB_RH_NF	3.73E+04	PERSONS
URB_NR_FW	5.36E+04	PERSONS
URB_NR_NF	2.86E+03	PERSONS
URB_RH_FW	5.98E+03	PERSONS
URB_RH_NF	3.47E+02	PERSONS
TOTAL	1.61E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	8.10E+03	PERSONS
RUR_NR_NF	8.10E+03	PERSONS
RUR_RH_FW	8.10E+03	PERSONS
RUR_RH_NF	8.10E+03	PERSONS
SUB_NR_FW	9.71E+05	PERSONS
SUB_NR_NF	9.71E+05	PERSONS
SUB_RH_FW	9.71E+05	PERSONS
SUB_RH_NF	9.71E+05	PERSONS
URB_NR_FW	5.21E+06	PERSONS
URB_NR_NF	5.21E+06	PERSONS
URB_RH_FW	5.21E+06	PERSONS
URB_RH_NF	5.21E+06	PERSONS

EOI
END OF RUN
SUCCESSFUL COMPLETION

Appendix B
RADTRAN 5.5 Output with the RADTRAN 5 Isotope Library and COMIDA Files

```
                    RUN DATE: [ 05-OCT-04 AT 12:27:30 ]          PAGE    1

 RRRR    AAA   DDDD   TTTTT  RRRR    AAA   N   N  55555
 R   R  A   A  D   D    T    R   R  A   A  NN  N  5
 R   R  A   A  D   D    T    R   R  A   A  N N N  5
 RRRR   A   A  D   D    T    RRRR   A   A  N  NN  5555
 R R    AAAAA  D   D    T    R R    AAAAA  N   N      5
 R  R   A   A  D   D    T    R  R   A   A  N   N  5   5
 R   R  A   A  DDDD     T    R   R  A   A  N   N  5555

                    RADTRAN 5.5    May 18, 2004

                            INPUT ECHO
                            ----------

 TITLE CRYSTAL RIVER TO HANFORD; SPENT FUEL
 INPUT STANDARD
STD: 0 10 18                                  && DIMEN=NSEV NRAD NAREAS
STD: 1 3 3 0                                  && PARM=IRNKC IANA ISEN IPSQSB
STD: .TRUE. .FALSE.                           && FORM = UNIT, SI-UNITS?
STD: 2.3E12                                   && NEVAL FOR CF252
STD: 9.25E5 5.77E6 1.27E6                     && RPCTHY FOR I125, I129, I131
STD: 0.0 0.0 0.0 0.0 0.0                      && TRANSFER GAMMA
STD: 7.42E-3 2.02E-2 6.17E-5 3.17E-8 0.0      && TRANSFER NEUTRON
STD: 30  24                                   && MITDDIST  MITDVEL
STD: 1  2   .0018                             && ITRAIN FMINCL DDRWEF
STD:    33    68    105   244   369                    && CENTER LINE
STD:   561  1018   1628  2308  4269                    && DISTANCES
STD:  5468 11136  13097 21334 40502                    && FOR AVERAGE
STD: 69986 89860 120878 0 0 0 0 0 0 0 0 0 0 0 0       && US CLOUD
STD: 4.59E+02 1.53E+03 3.94E+03 1.25E+04 3.04E+04 6.85E+04 1.76E+05 4.45E+05
STD: 8.59E+05 2.55E+06 4.45E+06 1.03E+07 2.16E+07 5.52E+07 1.77E+08 4.89E+08
STD: 8.12E+08 1.35E+09 0 0 0 0 0 0 0 0 0 0 0 0          && AREADA
STD: 3.42E-03 1.72E-03 8.58E-04 3.42E-04 1.72E-04 8.58E-05 3.42E-05 1.72E-05
STD:  8.58E-06 3.42E-06 1.72E-06 8.58E-07 3.42E-07 1.72E-07 8.58E-08 5.42E-08
STD:  4.30E-08 3.42E-08 0 0 0 0 0 0 0 0 0 0 0 0          && DFLEV
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0 0 && RADIST
STD: 0.5                                      && SMLPKG
STD: 1.0  0.87  0.018                         && SHIELDING FACTORS RR  RS  RU
STD:  30  30  800                             && OFFLINK (FREEWAY)
STD:  27  30  800                             && OFFLINK (NON-FREEWAY)
STD:   5   8  800                             && OFFLINK (CITY STREETS)
STD:  30  30  800                             && OFFLINK (RAILWAY)
STD: 200 200 1000                             && OFFLINK (WATERWAY)
STD: 15  3  3  3  4                           && ONLINK (FWAY NONFWY STREET RAIL ADJ)
STD: 6.0  4  40.0                             && RPD FNOATT INTERDICT
STD: 0.05   0.2   3.3E-4                      && BDF CULVL BRATE
STD: 0.9   0.1                                && UBF USWF
STD: 1.0  10.0 1.0                            && EVACUATION SURVEY CAMPAIGN
```

```
STD: 0.0  0.0      1.5E-8  5.3E-8      && HIGHWAY - RURAL - NONRAD
STD: 0.0  0.0      3.7E-9  1.3E-8      && HIGHWAY - SUBURBAN - NONRAD
STD: 0.0  0.0      2.1E-9  7.5E-9      && HIGHWAY - URBAN - NONRAD
STD: 0.0  0.0     1.81E-9  2.64E-8     && GENERAL FREIGHT - R - NONRAD
STD: 0.0  0.0     1.81E-9  2.64E-8     && GENERAL FREIGHT - S - NONRAD
STD: 0.0  0.0     1.81E-9  2.64E-8     && GENERAL FREIGHT - U - NONRAD
STD: 0.0  0.0     1.27E-7  1.85E-6     && DEDICATED RAIL - R - NONRAD
STD: 0.0  0.0     1.27E-7  1.85E-6     && DEDICATED RAIL - S - NONRAD
STD: 0.0  0.0     1.27E-7  1.85E-6     && DEDICATED RAIL - U - NONRAD
STD: 0.0 0.0 0.0 0.0 0.0 0.0           && PSPROB
STD: 0.67  0.67  0.42                  && TIMENDE NON-DISPERSAL EVAC TIME (LCF&EA
STD: 2 2 1                             && FLAGS=IUOPT IACC REGCHECK
STD: 5E-4, 4E-4, 1.3E-4                && LCFCON(1), LCFCON(2), GECON
STD: R5INGEST.BIN                      && INGESTION FILE
 FORM UNIT
 DIMEN 6 10 18
 PARM 1 3 4 0
 SEVERITY
    NPOP=1
      NMODE=1
        6.03E-01  3.94E-01  3.00E-03  3.00E-06  5.00E-06  7.00E-06
    NPOP=2
      NMODE=1
        6.02E-01  3.94E-01  4.00E-03  4.00E-06  3.00E-06  2.00E-06
    NPOP=3
      NMODE=1
        6.04E-01  3.95E-01  3.80E-04  3.80E-07  2.50E-07  1.30E-07
 RELEASE
    GROUP=PKG1_B
       RFRAC
        0.00E+00  0.00E+00  1.20E-02  1.20E-02  1.20E-02  1.20E-02
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.010000
    GROUP=PKG2_C
       RFRAC
        0.00E+00  0.00E+00  0.00E+00  1.00E-02  1.00E-01  1.10E-01
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.000000
    GROUP=PKG4_E
       RFRAC
```

```
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
  GROUP=PKG5_E
    RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  1.00E-06  4.20E-05
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
  GROUP=PKG3_D
    RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  2.00E-04  2.80E-04
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
  GROUP=PKG4_D
    RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
PACKAGE      SFUEL  1.368E+01 1.000 0.000    5.20
       CO60         9.220E+01 PKG1_B
       KR85         6.100E+03 PKG2_C
       SR90         5.960E+04 PKG4_E
       RU106        1.620E+04 PKG5_E
       CS134        2.740E+04 PKG3_D
       CS137        8.760E+04 PKG3_D
       CE144        1.220E+04 PKG4_D
       EU154        7.000E+03 PKG4_D
       PU238        2.960E+03 PKG4_E
       PU239        4.100E+02 PKG4_E
       PU240        4.680E+02 PKG4_E
       PU241        1.260E+05 PKG4_E
       AM241        1.290E+03 PKG4_E
       AM243        1.990E+01 PKG4_E
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

```
        CM244       1.790E+03 PKG4_E
        END
VEHICLE  -1 TRUCK       1.368E+01 1.000 0.000    5.20  676.00
                          2.00   10.00 1.000    5.20
        SFUEL         1.00
FLAGS
   IUOPT 2
EOF
LINK RUR_NR_FW  TRUCK      2623.81  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_NR_NF  TRUCK       874.60  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK RUR_RH_FW  TRUCK       291.53  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_RH_NF  TRUCK        97.18  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK SUB_NR_FW  TRUCK       623.03  88.6  2.0  719.00  780.00 3.00E-06 S 1 0.00
LINK SUB_NR_NF  TRUCK       207.68  40.3  2.0  719.00  780.00 3.00E-06 S 2 0.00
LINK SUB_RH_FW  TRUCK        69.23  44.3  2.0  719.00 1560.00 3.00E-06 S 1 0.00
LINK SUB_RH_NF  TRUCK        23.08  20.2  2.0  719.00 1560.00 3.00E-06 S 2 0.00
LINK URB_NR_FW  TRUCK         6.18  88.6  2.0 3861.00 2800.00 1.60E-05 U 1 0.00
LINK URB_NR_NF  TRUCK         0.33  24.2  2.0 3861.00 2800.00 1.60E-05 U 2 0.00
LINK URB_RH_FW  TRUCK         0.69  44.3  2.0 3861.00 5600.00 1.60E-05 U 1 0.00
LINK URB_RH_NF  TRUCK         0.04  12.1  2.0 3861.00 5600.00 1.60E-05 U 2 0.00
STOP STOP_      TRUCK        50.00  20.00   20.00 1.000  52.991
EOF
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PACKAGE AND MATERIAL CHARACTERISTICS

MATERIAL	DIMENSION (METERS)	EFFECTIVE DIMENSION	K(0) METERS SQ.	FRACTION GAMMA	FRACTION NEUTRON	DOSE RATE (MREM/HR)
SFUEL	5.200E+00	4.677E+00	1.115E+01	1.000E+00	0.000E+00	1.368E+01

K(0) IS DOSE RATE CONVERSION FACTOR

VEHICLE CHARACTERISTICS

VEHICLE NAME	TRUCK
MODE TYPE	HIGHWAY
EXCLUSIVE USE	YES
DOSE RATE (MREM/HR)	1.37E+01
K(0) (SQ. METERS)	1.11E+01
VEHICLE SIZE (M)	5.20E+00
EFFECTIVE SIZE (M)	4.68E+00
NUMBER OF SHIPMENTS	6.76E+02
NUMBER OF CREW	2.00E+00
CREW DISTANCE (M)	1.00E+01
CREW DOSE ADJUSTMENT FACT	1.00E+00
CREW EXPOSER WIDTH (M)	5.20E+00
EFFECTIVE EXPOSER WIDTH	4.68E+00
K(0) (SQ M) CREW EXPOSURE	1.11E+01

VEHICLE	MATERIAL	NO.PACKAGES
TRUCK		
	SFUEL	1.00E+00

TRANSFER COEFFICIENTS:

	MU	A(1)	A(2)	A(3)	A(4)
GAMMA	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NEUTRON	7.420E-03	2.020E-02	6.170E-05	3.170E-08	0.000E+00

DISTANCES (METERS)	FREEWAY	SECONDARY	STREET	RAIL	WATER	ADJACENT
OFFLINK:						
MINIMUM DISTANCE	3.00E+01	2.70E+01	5.00E+00	3.00E+01	2.00E+02	
SIDEWALK + MINIMUM	3.00E+01	3.00E+01	8.00E+00	3.00E+01	2.00E+02	
MAXIMUM DISTANCE	8.00E+02	8.00E+02	8.00E+02	8.00E+02	1.00E+03	
ONLINK:						
OPPOSITE DIRECTION	1.50E+01	3.00E+00	3.00E+00	3.00E+00		
ADJACENT VEHICLE						4.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP RELATED DATA

	STOP_
VEHICLE	TRUCK
PERSONS	5.00E+01
MINIMUM DISTANCE(M)	2.00E+01
MAXIMUM DISTANCE(M)	2.00E+01
SHIELDING FACTOR	1.00E+00
TIME (HR)	5.30E+01

HANDLING RELATED DATA

CRYSTAL RIVER TO HANFORD; SPENT FUEL

LINK RELATED DATA

	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.62E+03	8.75E+02	2.92E+02	9.72E+01	6.23E+02
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	8.86E+01	8.86E+01	8.86E+01	8.86E+01	8.86E+01
POPULATION DENSITY	6.00E+00	6.00E+00	6.00E+00	6.00E+00	7.19E+02
VEHICLE DENSITY	4.70E+02	4.70E+02	4.70E+02	4.70E+02	7.80E+02
ACCIDENT RATE/KM	1.37E-07	1.37E-07	1.37E-07	1.37E-07	3.00E-06
ZONE	RURAL	RURAL	RURAL	RURAL	SUBURBAN
ROAD TYPE	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY
FARMING FRACTION	5.00E-01	5.00E-01	5.00E-01	5.00E-01	0.00E+00

	SUB_NR_NF	SUB_RH_FW	SUB_RH_NF	URB_NR_FW	URB_NR_NF
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.08E+02	6.92E+01	2.31E+01	6.18E+00	3.30E-01
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	4.03E+01	4.43E+01	2.02E+01	8.86E+01	2.42E+01
POPULATION DENSITY	7.19E+02	7.19E+02	7.19E+02	3.86E+03	3.86E+03
VEHICLE DENSITY	7.80E+02	1.56E+03	1.56E+03	2.80E+03	2.80E+03
ACCIDENT RATE/KM	3.00E-06	3.00E-06	3.00E-06	1.60E-05	1.60E-05
ZONE	SUBURBAN	SUBURBAN	SUBURBAN	URBAN	URBAN
ROAD TYPE	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	URB_RH_FW	URB_RH_NF
VEHICLE	TRUCK	TRUCK
DISTANCE (KM)	6.90E-01	4.00E-02
PERSONS PER VEHICLE	2.00E+00	2.00E+00
SPEED (KM/HR)	4.43E+01	1.21E+01
POPULATION DENSITY	3.86E+03	3.86E+03
VEHICLE DENSITY	5.60E+03	5.60E+03
ACCIDENT RATE/KM	1.60E-05	1.60E-05
ZONE	URBAN	URBAN
ROAD TYPE	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE SFUEL	CURIES PER PKG	RELEASE GROUP	RESUSPENSION FACTOR	50YR INHALATION (REM/CI) EFFECTIVE
CO60	9.22E+01	PKG1_B	4.83E+00	2.80E+05
KR85	6.10E+03	PKG2_C	1.00E+00	0.00E+00
SR90	5.96E+04	PKG4_E	5.41E+00	2.40E+06
RU106	1.62E+04	PKG5_E	3.28E+00	8.00E+05
CS134	2.74E+04	PKG3_D	4.07E+00	4.60E+04
CS137	8.76E+04	PKG3_D	5.41E+00	3.20E+04
CE144	1.22E+04	PKG4_D	2.99E+00	6.30E+05
EU154	7.00E+03	PKG4_D	5.09E+00	3.10E+05
PU238	2.96E+03	PKG4_E	5.51E+00	5.30E+08
PU239	4.10E+02	PKG4_E	5.57E+00	5.70E+08
PU240	4.68E+02	PKG4_E	5.56E+00	5.70E+08
PU241	1.26E+05	PKG4_E	5.26E+00	9.90E+06
AM241	1.29E+03	PKG4_E	5.55E+00	5.90E+08
AM243	1.99E+01	PKG4_E	5.56E+00	5.90E+08
CM244	1.79E+03	PKG4_E	5.32E+00	3.10E+08

NUCLIDE SFUEL	HALF LIFE	GAMMA ENERGY	CLOUD FACTOR	GROUND FACTOR	INGESTION NUCLIDE	NEUTRON EMISSION neutrons/sec/Ci
CO60	1.93E+03	2.50E+00	4.66E-01	7.51E-04	Co-60	N/A
KR85	3.92E+03	2.21E-03	4.40E-04	8.44E-07	NONE	N/A
SR90	1.06E+04	0.00E+00	2.79E-05	9.08E-08	Sr-90	N/A
RU106	3.68E+02	2.01E-01	0.00E+00	6.78E-05	Ru-106	N/A
CS134	7.53E+02	1.55E+00	2.80E-01	4.86E-04	Cs-134	N/A
CS137	1.10E+04	5.96E-01	2.86E-05	1.77E-04	Cs-137	N/A
CE144	2.84E+02	5.25E-02	3.16E-03	1.84E-05	Ce-144	N/A
EU154	3.21E+03	1.22E+00	2.27E-01	3.80E-04	Eu-154	N/A
PU238	3.21E+04	1.81E-03	1.81E-05	2.68E-07	Pu-238	N/A
PU239	8.79E+06	7.96E-04	1.57E-05	1.17E-07	Pu-239	N/A
PU240	2.39E+06	1.73E-03	1.76E-05	2.57E-07	Pu-240	N/A
PU241	5.26E+03	2.54E-06	2.68E-07	6.17E-10	Pu-241	N/A
AM241	1.58E+05	3.24E-02	3.03E-03	8.79E-06	Am-241	N/A
AM243	2.70E+06	5.59E-02	8.07E-03	1.71E-05	Am-243	N/A
CM244	6.62E+03	1.70E-03	1.82E-05	2.81E-07	Cm-244	N/A

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE	1-YR INHALATION (REM/CI)		
	LUNG	MARROW	THYROID
SFUEL			
CO60	7.90E+05	3.80E+04	0.00E+00
KR85	0.00E+00	0.00E+00	0.00E+00
SR90	4.50E+06	3.80E+03	0.00E+00
RU106	4.30E+06	4.50E+03	0.00E+00
CS134	4.10E+04	3.90E+04	0.00E+00
CS137	3.10E+04	2.60E+04	0.00E+00
CE144	3.60E+06	4.20E+03	0.00E+00
EU154	0.00E+00	0.00E+00	0.00E+00
PU238	4.50E+08	1.10E+06	0.00E+00
PU239	4.20E+08	1.10E+06	0.00E+00
PU240	4.20E+08	1.10E+06	0.00E+00
PU241	3.60E+05	1.30E+03	0.00E+00
AM241	1.20E+08	1.70E+07	0.00E+00
AM243	1.10E+08	1.60E+07	0.00E+00
CM244	1.20E+08	1.70E+07	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RELEASE RELATED DATA
****

RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	0.00E+00	0.00E+00	1.20E-02	1.20E-02	1.20E-02	1.20E-02
PKG2_C	0.00E+00	0.00E+00	0.00E+00	1.00E-02	1.00E-01	1.10E-01
PKG4_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08
PKG5_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	1.00E-06	4.20E-05
PKG3_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	2.00E-04	2.80E-04
PKG4_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08

DEPOSITION VELOCITIES

GROUP	M/SEC
PKG1_B	1.00E-02
PKG2_C	0.00E+00
PKG4_E	1.00E-02
PKG5_E	1.00E-02
PKG3_D	1.00E-02
PKG4_D	1.00E-02

ACCIDENT SEVERITY FRACTIONS
FOR HIGHWAY

ZONE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RURAL	6.03E-01	3.94E-01	3.00E-03	3.00E-06	5.00E-06	7.00E-06
SUBURBAN	6.02E-01	3.94E-01	4.00E-03	4.00E-06	3.00E-06	2.00E-06
URBAN	6.04E-01	3.95E-01	3.80E-04	3.80E-07	2.50E-07	1.30E-07

CRYSTAL RIVER TO HANFORD; SPENT FUEL

AEROSOLIZED FRACTION OF RELEASED MATERIAL

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG5_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG3_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00

RESPIRABLE FRACTION OF AEROSOLS (BELOW 10 MICRONS AED)

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG5_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG3_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00
PKG4_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL DATA (FATALITIES/KM)
****

HIGHWAY

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RURAL	0.00E+00	0.00E+00	1.50E-08	5.30E-08
SUBURBAN	0.00E+00	0.00E+00	3.70E-09	1.30E-08
URBAN	0.00E+00	0.00E+00	2.10E-09	7.50E-09

CRYSTAL RIVER TO HANFORD; SPENT FUEL

HEALTH RELATED DATA
****

EARLY MORBIDITY THRESHOLD VALUE FOR LUNG 5.000E+02 REM
EARLY MORBIDITY THRESHOLD VALUE FOR MARROW/WHOLE BODY 5.000E+01 REM
EARLY MORBIDITY THRESHOLD VALUE FOR THYROID 2.000E+02 REM

EARLY FATALITY PROBABILITIES (EF)

DOSE(REM)	EF MARROW	DOSE(REM)	EF LUNG
680.00	1.00000	1525.00	1.00000
670.00	0.99999	1500.00	0.99999
660.00	0.99998	1475.00	0.99997
650.00	0.99996	1450.00	0.99991
640.00	0.99992	1425.00	0.99974
630.00	0.99983	1400.00	0.99933
620.00	0.99967	1375.00	0.99840
610.00	0.99938	1350.00	0.99653
600.00	0.99889	1325.00	0.99306
590.00	0.99808	1300.00	0.98709
580.00	0.99679	1275.00	0.97755
570.00	0.99482	1250.00	0.96331
560.00	0.99192	1225.00	0.94326
550.00	0.98776	1200.00	0.91656
540.00	0.98199	1175.00	0.88274
530.00	0.97423	1150.00	0.84178
520.00	0.96406	1125.00	0.79420
510.00	0.95111	1100.00	0.74095
500.00	0.93502	1075.00	0.68335
490.00	0.91551	1050.00	0.62293
480.00	0.89237	1025.00	0.56130
470.00	0.86552	1000.00	0.50000
460.00	0.83499	975.00	0.44042
450.00	0.80096	950.00	0.38372
440.00	0.76371	925.00	0.33077
430.00	0.72363	900.00	0.28218
420.00	0.68123	875.00	0.23830
410.00	0.63706	850.00	0.19925
400.00	0.59172	825.00	0.16498
390.00	0.54583	800.00	0.13529
380.00	0.50000	775.00	0.10988
370.00	0.45481	750.00	0.08837
360.00	0.41078	725.00	0.07038
350.00	0.36838	700.00	0.05548
340.00	0.32798	675.00	0.04329
330.00	0.28990	650.00	0.03341
320.00	0.25438	625.00	0.02549
310.00	0.22155	600.00	0.01922
300.00	0.19150	575.00	0.01430
290.00	0.16425	550.00	0.01050
280.00	0.13977	525.00	0.00759
270.00	0.11797	500.00	0.00000
260.00	0.09872		
250.00	0.08188		
240.00	0.06729		
230.00	0.05475		
220.00	0.04408		
210.00	0.03510		
200.00	0.02761		
190.00	0.02143		
180.00	0.01639		
170.00	0.01234		
160.00	0.00913		
150.00	0.00000		

CRYSTAL RIVER TO HANFORD; SPENT FUEL

DISPERSAL ACCIDENT INPUT

AREADA (M SQ)	CENTER LINE (M)	DILUTION FACTOR*
4.590E+02	3.300E+01	3.420E-03
1.530E+03	6.800E+01	1.720E-03
3.940E+03	1.050E+02	8.580E-04
1.250E+04	2.440E+02	3.420E-04
3.040E+04	3.690E+02	1.720E-04
6.850E+04	5.610E+02	8.580E-05
1.760E+05	1.018E+03	3.420E-05
4.450E+05	1.628E+03	1.720E-05
8.590E+05	2.308E+03	8.580E-06
2.550E+06	4.269E+03	3.420E-06
4.450E+06	5.468E+03	1.720E-06
1.030E+07	1.114E+04	8.580E-07
2.160E+07	1.310E+04	3.420E-07
5.520E+07	2.133E+04	1.720E-07
1.770E+08	4.050E+04	8.580E-08
4.890E+08	6.999E+04	5.420E-08
8.120E+08	8.986E+04	4.300E-08
1.350E+09	1.209E+05	3.420E-08

* DILUTION FACTOR UNITS ARE (CI-SEC/M**3/CI-RELEASED)

CRYSTAL RIVER TO HANFORD; SPENT FUEL

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BUILDING DOSE FACTOR (BDF)                          = 5.000E-02
CONTAMINATION CLEAN UP LEVEL (UCI/M**2) (CULVL)     = 2.000E-01
BREATHING RATE (M**3/SEC) (BRATE)                   = 3.300E-04
INTERDICTION THRESHOLD (INTERDICT)                  = 4.000E+01
EVACUATION TIME (DAYS) (EVACUATION)                 = 1.000E+00
SURVEY INTERVAL (DAYS) (SURVEY)                     = 1.000E+01
CAMPAIGN LENGTH (YEARS) (CAMPAIGN)                  = 1.000E+00
FRACTION OF URBAN AREAS WITH BUILDINGS (UBF)        = 9.000E-01
FRACTION OF URBAN AREAS WITH SIDEWALKS (USWF)       = 1.000E-01
RATIO OF SIDEWALK PEDESTRIAN DENSITY (RPD)          = 6.000E+00
MAXIMUM IN-TRANSIT DOSE DISTANCE (M) (MITDDIST)     = 3.000E+01
MAXIMUM IN-TRANSIT DOSE VELOCITY (KM/H) (MITDVEL)   = 2.400E+01
IACC VALUE: 1=NON-DISPERSAL, 2=DISPERSAL            = 2
REGULATORY CHECK, 1=DO CHECKS, 0=NO CHECKS          = 1
BUILDING SHIELDING OPTION (IUOPT)                   = 2
       RURAL SHIELDING FACTOR     = 1.000E+00
       SUBURBAN SHIELDING FACTOR  = 8.700E-01
       URBAN SHIELDING FACTOR     = 1.800E-02
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CRYSTAL RIVER TO HANFORD; SPENT FUEL

INGESTION RELATED DATA

COMIDA INGESTION FILE USED: R5INGEST.BIN

COMIDA FILE HEADER
COMIDA2 02/17/03 16:17:38 Ver. 1.11a, 1/28/96: avoiding use of UNIT 6 for HP

DOSE CONVERSION FILE USED IN COMIDA
FGRDCF 05/08/95 16:43:45 beta-test version 1.10, minor FORTRAN fixes 5/4/95
Implicit daughter halflives (m) less than 90 and less than 0.100 of parent

NO INGESTION WILL BE CALCULATED FOR THE FOLLOWING ISOTOPES
INGESTION NUCLIDES ARE NOT IN INGESTION FILE

ISOTOPE	INGESTION NUCLIDE
KR85	NONE

CRYSTAL RIVER TO HANFORD; SPENT FUEL

BACKYARD FARMER INGESTION DOSE (REM/CI DEPOSITED)

NUCLIDE	EFFECTIVE	THYROID
Co-60	4.308E+04	1.225E+04
Sr-90	2.541E+05	9.964E+03
Ru-106	2.107E+04	4.014E+03
Cs-134	6.012E+05	5.344E+05
Cs-137	4.870E+05	4.545E+05
Ce-144	1.202E+04	1.085E+01
Eu-154	1.439E+04	3.185E+02
Pu-238	3.858E+04	2.301E-01
Pu-239	4.049E+04	2.169E-01
Pu-240	4.049E+04	2.172E-01
Pu-241	3.231E+03	3.837E-02
Am-241	2.846E+06	3.818E+01
Am-243	2.834E+06	1.968E+02
Cm-244	2.534E+06	3.924E+01

SOCIETAL INGESTION DOSE (PERSON-REM/CI DEPOSITED)

NUCLIDE	GONADS	BREAST	LUNGS	RED MAR	BONE SU	THYROID	REMAIND	EFFECTI
Co-60	8.2E+00	2.8E+00	2.3E+00	3.4E+00	2.4E+00	2.0E+00	1.3E+01	7.1E+00
Sr-90	1.8E+00	1.8E+00	1.8E+00	2.3E+02	4.9E+02	1.8E+00	7.3E+00	4.5E+01
Ru-106	5.5E-01	4.8E-01	4.8E-01	4.9E-01	4.8E-01	4.7E-01	7.1E+00	2.5E+00
Cs-134	8.9E+01	7.5E+01	7.6E+01	8.1E+01	7.5E+01	7.6E+01	9.6E+01	8.6E+01
Cs-137	8.2E+01	7.4E+01	7.5E+01	7.8E+01	7.5E+01	7.5E+01	8.6E+01	8.0E+01
Ce-144	1.7E-02	2.9E-03	1.6E-03	2.1E-02	3.0E-02	1.2E-03	4.5E+00	1.4E+00
Eu-154	1.1E+00	2.3E-01	1.8E-01	9.6E-01	3.7E+00	4.8E-02	5.3E+00	2.2E+00
Pu-238	8.1E-01	6.2E-05	3.0E-05	4.4E+00	5.5E+01	2.8E-05	7.5E+00	4.6E+00
Pu-239	9.2E-01	4.2E-05	2.7E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-240	9.2E-01	6.0E-05	2.9E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-241	1.4E-01	1.3E-05	1.7E-05	7.7E-01	9.6E+00	6.5E-06	3.7E-01	5.3E-01
Am-241	9.4E+01	9.1E-03	1.2E-02	5.0E+02	6.3E+03	4.6E-03	2.3E+02	3.4E+02
Am-243	9.4E+01	4.9E-02	6.8E-02	5.0E+02	6.3E+03	2.4E-02	2.3E+02	3.4E+02
Cm-244	7.6E+01	5.1E-03	5.1E-03	4.5E+02	5.6E+03	4.8E-03	2.4E+02	3.1E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL RISK (FATALITIES)
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	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RUR_NR_FW	0.00E+00	0.00E+00	5.32E-02	1.88E-01
RUR_NR_NF	0.00E+00	0.00E+00	1.77E-02	6.27E-02
RUR_RH_FW	0.00E+00	0.00E+00	5.91E-03	2.09E-02
RUR_RH_NF	0.00E+00	0.00E+00	1.97E-03	6.96E-03
SUB_NR_FW	0.00E+00	0.00E+00	3.12E-03	1.10E-02
SUB_NR_NF	0.00E+00	0.00E+00	1.04E-03	3.65E-03
SUB_RH_FW	0.00E+00	0.00E+00	3.46E-04	1.22E-03
SUB_RH_NF	0.00E+00	0.00E+00	1.15E-04	4.06E-04
URB_NR_FW	0.00E+00	0.00E+00	1.75E-05	6.27E-05
URB_NR_NF	0.00E+00	0.00E+00	9.37E-07	3.35E-06
URB_RH_FW	0.00E+00	0.00E+00	1.96E-06	7.00E-06
URB_RH_NF	0.00E+00	0.00E+00	1.14E-07	4.06E-07
TOTALS:	0.00E+00	0.00E+00	8.35E-02	2.95E-01

CRYSTAL RIVER TO HANFORD; SPENT FUEL

REGULATORY CHECKS

FOR TRUCK THE DOSE RATE AT 2 METERS COULD EXCEED 10 MREM/HR
THE VEHICLE DOSE RATE HAS BEEN RESET TO EQUAL 13.00 MREM/HR

CRYSTAL RIVER TO HANFORD; SPENT FUEL

CALCULATIONAL INFORMATION

FOR TRUCK AREAS WITH TOTAL CONTAMINATION RATIO GREATER THAN 40.000
(THE AREAS MARKED WITH AN 'X' ARE INTERDICTED AND HAVE
NO 50 YEAR GROUNDSHINE DOSE AND NO INGESTION DOSE.)

AREA/SEVERITY	1	2	3	4	5	6
1	-	-	X	X	X	X
2	-	-	X	X	X	X
3	-	-	X	X	X	X
4	-	-	-	-	X	X
5	-	-	-	-	X	X
6	-	-	-	-	X	X
7	-	-	-	-	-	X
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-	-	-	-	-
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG2_C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG4_E	2.24E-44	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG5_E	1.40E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG3_D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG4_D	9.81E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DEPOSITION VELOCITIES

GROUP	M/SEC
PKG1_B	1.00E-02
PKG2_C	0.00E+00
PKG4_E	1.00E-02
PKG5_E	1.00E-02
PKG3_D	1.00E-02
PKG4_D	1.00E-02

DILUTION FACTORS
CHI VALUES AFTER DEPLETION (CI-SEC/M**3/CI-RELEASED)

DISTANCE	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
3.30E+01	3.42E-03	3.42E-03	3.42E-03	3.42E-03	3.42E-03	3.42E-03
6.80E+01	1.72E-03	1.72E-03	1.72E-03	1.72E-03	1.72E-03	1.72E-03
1.05E+02	8.34E-04	8.58E-04	8.34E-04	8.34E-04	8.34E-04	8.34E-04
2.44E+02	3.23E-04	3.42E-04	3.23E-04	3.23E-04	3.23E-04	3.23E-04
3.69E+02	1.55E-04	1.72E-04	1.55E-04	1.55E-04	1.55E-04	1.55E-04
5.61E+02	7.38E-05	8.58E-05	7.38E-05	7.38E-05	7.38E-05	7.38E-05
1.02E+03	2.80E-05	3.42E-05	2.80E-05	2.80E-05	2.80E-05	2.80E-05
1.63E+03	1.33E-05	1.72E-05	1.33E-05	1.33E-05	1.33E-05	1.33E-05
2.31E+03	6.16E-06	8.58E-06	6.16E-06	6.16E-06	6.16E-06	6.16E-06
4.27E+03	2.33E-06	3.42E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06
5.47E+03	1.06E-06	1.72E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06
1.11E+04	5.04E-07	8.58E-07	5.04E-07	5.04E-07	5.04E-07	5.04E-07
1.31E+04	1.86E-07	3.42E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07
2.13E+04	8.77E-08	1.72E-07	8.77E-08	8.77E-08	8.77E-08	8.77E-08
4.05E+04	4.01E-08	8.58E-08	4.01E-08	4.01E-08	4.01E-08	4.01E-08
7.00E+04	2.14E-08	5.42E-08	2.14E-08	2.14E-08	2.14E-08	2.14E-08
8.99E+04	1.31E-08	4.30E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08
1.21E+05	8.54E-09	3.42E-08	8.54E-09	8.54E-09	8.54E-09	8.54E-09

CRYSTAL RIVER TO HANFORD; SPENT FUEL

DEPOSITION FACTORS
CHI DEPOSITED (CI/M**2/CI-RELEASED)

DISTANCE	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
3.30E+01	3.42E-05	0.00E+00	3.42E-05	3.42E-05	3.42E-05	3.42E-05
6.80E+01	1.72E-05	0.00E+00	1.72E-05	1.72E-05	1.72E-05	1.72E-05
1.05E+02	8.34E-06	0.00E+00	8.34E-06	8.34E-06	8.34E-06	8.34E-06
2.44E+02	3.23E-06	0.00E+00	3.23E-06	3.23E-06	3.23E-06	3.23E-06
3.69E+02	1.55E-06	0.00E+00	1.55E-06	1.55E-06	1.55E-06	1.55E-06
5.61E+02	7.38E-07	0.00E+00	7.38E-07	7.38E-07	7.38E-07	7.38E-07
1.02E+03	2.80E-07	0.00E+00	2.80E-07	2.80E-07	2.80E-07	2.80E-07
1.63E+03	1.33E-07	0.00E+00	1.33E-07	1.33E-07	1.33E-07	1.33E-07
2.31E+03	6.16E-08	0.00E+00	6.16E-08	6.16E-08	6.16E-08	6.16E-08
4.27E+03	2.33E-08	0.00E+00	2.33E-08	2.33E-08	2.33E-08	2.33E-08
5.47E+03	1.06E-08	0.00E+00	1.06E-08	1.06E-08	1.06E-08	1.06E-08
1.11E+04	5.04E-09	0.00E+00	5.04E-09	5.04E-09	5.04E-09	5.04E-09
1.31E+04	1.86E-09	0.00E+00	1.86E-09	1.86E-09	1.86E-09	1.86E-09
2.13E+04	8.77E-10	0.00E+00	8.77E-10	8.77E-10	8.77E-10	8.77E-10
4.05E+04	4.01E-10	0.00E+00	4.01E-10	4.01E-10	4.01E-10	4.01E-10
7.00E+04	2.14E-10	0.00E+00	2.14E-10	2.14E-10	2.14E-10	2.14E-10
8.99E+04	1.31E-10	0.00E+00	1.31E-10	1.31E-10	1.31E-10	1.31E-10
1.21E+05	8.54E-11	0.00E+00	8.54E-11	8.54E-11	8.54E-11	8.54E-11

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

1-YEAR DOSE TO LUNG, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	4.93E-02	5.07E-02	9.29E-01	1.44E+00
6.80E+01	0.00E+00	0.00E+00	2.48E-02	2.55E-02	4.66E-01	7.21E-01
1.05E+02	0.00E+00	0.00E+00	1.20E-02	1.24E-02	2.27E-01	3.51E-01
2.44E+02	0.00E+00	0.00E+00	4.65E-03	4.79E-03	8.77E-02	1.36E-01
3.69E+02	0.00E+00	0.00E+00	2.23E-03	2.30E-03	4.20E-02	6.50E-02
5.61E+02	0.00E+00	0.00E+00	1.06E-03	1.09E-03	2.00E-02	3.10E-02
1.02E+03	0.00E+00	0.00E+00	4.04E-04	4.15E-04	7.60E-03	1.18E-02
1.63E+03	0.00E+00	0.00E+00	1.91E-04	1.97E-04	3.60E-03	5.57E-03
2.31E+03	0.00E+00	0.00E+00	8.89E-05	9.15E-05	1.67E-03	2.59E-03
4.27E+03	0.00E+00	0.00E+00	3.36E-05	3.45E-05	6.33E-04	9.78E-04
5.47E+03	0.00E+00	0.00E+00	1.53E-05	1.57E-05	2.88E-04	4.46E-04
1.11E+04	0.00E+00	0.00E+00	7.26E-06	7.47E-06	1.37E-04	2.12E-04
1.31E+04	0.00E+00	0.00E+00	2.68E-06	2.76E-06	5.06E-05	7.82E-05
2.13E+04	0.00E+00	0.00E+00	1.27E-06	1.30E-06	2.38E-05	3.69E-05
4.05E+04	0.00E+00	0.00E+00	5.78E-07	5.95E-07	1.09E-05	1.68E-05
7.00E+04	0.00E+00	0.00E+00	3.09E-07	3.18E-07	5.82E-06	8.99E-06
8.99E+04	0.00E+00	0.00E+00	1.88E-07	1.94E-07	3.55E-06	5.49E-06
1.21E+05	0.00E+00	0.00E+00	1.23E-07	1.27E-07	2.32E-06	3.59E-06

1-YEAR DOSE TO MARROW/WHOLE BODY, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	4.14E-03	4.26E-03	7.66E-01	1.07E+00
6.80E+01	0.00E+00	0.00E+00	2.08E-03	2.14E-03	3.85E-01	5.37E-01
1.05E+02	0.00E+00	0.00E+00	1.01E-03	1.04E-03	1.87E-01	2.61E-01
2.44E+02	0.00E+00	0.00E+00	3.90E-04	4.03E-04	7.23E-02	1.01E-01
3.69E+02	0.00E+00	0.00E+00	1.87E-04	1.93E-04	3.47E-02	4.84E-02
5.61E+02	0.00E+00	0.00E+00	8.92E-05	9.22E-05	1.65E-02	2.31E-02
1.02E+03	0.00E+00	0.00E+00	3.39E-05	3.51E-05	6.27E-03	8.76E-03
1.63E+03	0.00E+00	0.00E+00	1.60E-05	1.66E-05	2.97E-03	4.15E-03
2.31E+03	0.00E+00	0.00E+00	7.46E-06	7.75E-06	1.38E-03	1.93E-03
4.27E+03	0.00E+00	0.00E+00	2.82E-06	2.93E-06	5.22E-04	7.29E-04
5.47E+03	0.00E+00	0.00E+00	1.28E-06	1.34E-06	2.38E-04	3.32E-04
1.11E+04	0.00E+00	0.00E+00	6.09E-07	6.37E-07	1.13E-04	1.58E-04
1.31E+04	0.00E+00	0.00E+00	2.25E-07	2.36E-07	4.17E-05	5.83E-05
2.13E+04	0.00E+00	0.00E+00	1.06E-07	1.12E-07	1.97E-05	2.75E-05
4.05E+04	0.00E+00	0.00E+00	4.85E-08	5.12E-08	8.99E-06	1.26E-05
7.00E+04	0.00E+00	0.00E+00	2.59E-08	2.76E-08	4.80E-06	6.71E-06
8.99E+04	0.00E+00	0.00E+00	1.58E-08	1.71E-08	2.93E-06	4.10E-06
1.21E+05	0.00E+00	0.00E+00	1.03E-08	1.13E-08	1.92E-06	2.68E-06

1-YEAR DOSE TO THYROID, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.80E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.05E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.44E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.69E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.61E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.02E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.63E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.31E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.27E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.47E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.11E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.31E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.13E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.05E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.00E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.99E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.21E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

GROUND SURFACE CONTAMINATION TABLE (MICRO CI/M**2)
BEFORE CLEANUP

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	3.78E+01	3.80E+01	8.25E+02	1.16E+03
6.80E+01	0.00E+00	0.00E+00	1.90E+01	1.91E+01	4.14E+02	5.84E+02
1.05E+02	0.00E+00	0.00E+00	9.23E+00	9.26E+00	2.01E+02	2.84E+02
2.44E+02	0.00E+00	0.00E+00	3.57E+00	3.58E+00	7.79E+01	1.10E+02
3.69E+02	0.00E+00	0.00E+00	1.71E+00	1.72E+00	3.73E+01	5.26E+01
5.61E+02	0.00E+00	0.00E+00	8.16E-01	8.19E-01	1.78E+01	2.51E+01
1.02E+03	0.00E+00	0.00E+00	3.10E-01	3.11E-01	6.76E+00	9.52E+00
1.63E+03	0.00E+00	0.00E+00	1.47E-01	1.47E-01	3.20E+00	4.50E+00
2.31E+03	0.00E+00	0.00E+00	6.82E-02	6.84E-02	1.49E+00	2.10E+00
4.27E+03	0.00E+00	0.00E+00	2.58E-02	2.58E-02	5.62E-01	7.92E-01
5.47E+03	0.00E+00	0.00E+00	1.17E-02	1.18E-02	2.56E-01	3.61E-01
1.11E+04	0.00E+00	0.00E+00	5.57E-03	5.59E-03	1.22E-01	1.71E-01
1.31E+04	0.00E+00	0.00E+00	2.06E-03	2.07E-03	4.49E-02	6.33E-02
2.13E+04	0.00E+00	0.00E+00	9.71E-04	9.74E-04	2.12E-02	2.98E-02
4.05E+04	0.00E+00	0.00E+00	4.44E-04	4.45E-04	9.67E-03	1.36E-02
7.00E+04	0.00E+00	0.00E+00	2.37E-04	2.38E-04	5.17E-03	7.28E-03
8.99E+04	0.00E+00	0.00E+00	1.44E-04	1.45E-04	3.15E-03	4.44E-03
1.21E+05	0.00E+00	0.00E+00	9.45E-05	9.48E-05	2.06E-03	2.90E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

MAXIMUM INDIVIDUAL CONSEQUENCE (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	8.18E-02	8.34E-02	1.92E+00	2.81E+00
6.80E+01	0.00E+00	0.00E+00	4.11E-02	4.19E-02	9.64E-01	1.41E+00
1.05E+02	0.00E+00	0.00E+00	2.00E-02	2.03E-02	4.68E-01	6.86E-01
2.44E+02	0.00E+00	0.00E+00	7.72E-03	7.87E-03	1.81E-01	2.65E-01
3.69E+02	0.00E+00	0.00E+00	3.70E-03	3.77E-03	8.69E-02	1.27E-01
5.61E+02	0.00E+00	0.00E+00	1.76E-03	1.80E-03	4.14E-02	6.07E-02
1.02E+03	0.00E+00	0.00E+00	6.70E-04	6.83E-04	1.57E-02	2.30E-02
1.63E+03	0.00E+00	0.00E+00	3.17E-04	3.23E-04	7.44E-03	1.09E-02
2.31E+03	0.00E+00	0.00E+00	1.48E-04	1.50E-04	3.46E-03	5.07E-03
4.27E+03	0.00E+00	0.00E+00	5.57E-05	5.68E-05	1.31E-03	1.92E-03
5.47E+03	0.00E+00	0.00E+00	2.54E-05	2.59E-05	5.96E-04	8.73E-04
1.11E+04	0.00E+00	0.00E+00	1.21E-05	1.23E-05	2.83E-04	4.14E-04
1.31E+04	0.00E+00	0.00E+00	4.45E-06	4.54E-06	1.05E-04	1.53E-04
2.13E+04	0.00E+00	0.00E+00	2.10E-06	2.14E-06	4.93E-05	7.22E-05
4.05E+04	0.00E+00	0.00E+00	9.59E-07	9.79E-07	2.25E-05	3.30E-05
7.00E+04	0.00E+00	0.00E+00	5.12E-07	5.23E-07	1.20E-05	1.76E-05
8.99E+04	0.00E+00	0.00E+00	3.12E-07	3.19E-07	7.34E-06	1.07E-05
1.21E+05	0.00E+00	0.00E+00	2.04E-07	2.09E-07	4.80E-06	7.03E-06

CRYSTAL RIVER TO HANFORD; SPENT FUEL

VEHICLE TRUCK

BACKYARD FARMER DOSE - EFFECTIVE
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	1.63E+00	1.66E+00	4.06E+02	5.68E+02
6.80E+01	0.00E+00	0.00E+00	8.18E-01	8.33E-01	2.04E+02	2.85E+02
1.05E+02	0.00E+00	0.00E+00	3.98E-01	4.05E-01	9.91E+01	1.39E+02
2.44E+02	0.00E+00	0.00E+00	1.54E-01	1.57E-01	3.83E+01	5.36E+01
3.69E+02	0.00E+00	0.00E+00	7.38E-02	7.51E-02	1.84E+01	2.57E+01
5.61E+02	0.00E+00	0.00E+00	3.51E-02	3.58E-02	8.76E+00	1.23E+01
1.02E+03	0.00E+00	0.00E+00	1.33E-02	1.36E-02	3.32E+00	4.65E+00
1.63E+03	0.00E+00	0.00E+00	6.32E-03	6.43E-03	1.57E+00	2.20E+00
2.31E+03	0.00E+00	0.00E+00	2.94E-03	2.99E-03	7.32E-01	1.02E+00
4.27E+03	0.00E+00	0.00E+00	1.11E-03	1.13E-03	2.77E-01	3.87E-01
5.47E+03	0.00E+00	0.00E+00	5.06E-04	5.15E-04	1.26E-01	1.76E-01
1.11E+04	0.00E+00	0.00E+00	2.40E-04	2.44E-04	5.98E-02	8.37E-02
1.31E+04	0.00E+00	0.00E+00	8.87E-05	9.03E-05	2.21E-02	3.09E-02
2.13E+04	0.00E+00	0.00E+00	4.18E-05	4.26E-05	1.04E-02	1.46E-02
4.05E+04	0.00E+00	0.00E+00	1.91E-05	1.94E-05	4.76E-03	6.66E-03
7.00E+04	0.00E+00	0.00E+00	1.02E-05	1.04E-05	2.54E-03	3.56E-03
8.99E+04	0.00E+00	0.00E+00	6.22E-06	6.33E-06	1.55E-03	2.17E-03
1.21E+05	0.00E+00	0.00E+00	4.07E-06	4.14E-06	1.01E-03	1.42E-03

BACKYARD FARMER DOSE - THYROID
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.30E+01	0.00E+00	0.00E+00	4.64E-01	4.83E-01	3.73E+02	5.22E+02
6.80E+01	0.00E+00	0.00E+00	2.33E-01	2.42E-01	1.87E+02	2.62E+02
1.05E+02	0.00E+00	0.00E+00	1.13E-01	1.18E-01	9.10E+01	1.27E+02
2.44E+02	0.00E+00	0.00E+00	4.38E-02	4.55E-02	3.52E+01	4.93E+01
3.69E+02	0.00E+00	0.00E+00	2.10E-02	2.18E-02	1.69E+01	2.36E+01
5.61E+02	0.00E+00	0.00E+00	1.00E-02	1.04E-02	8.04E+00	1.13E+01
1.02E+03	0.00E+00	0.00E+00	3.80E-03	3.95E-03	3.05E+00	4.27E+00
1.63E+03	0.00E+00	0.00E+00	1.80E-03	1.87E-03	1.44E+00	2.02E+00
2.31E+03	0.00E+00	0.00E+00	8.36E-04	8.70E-04	6.72E-01	9.41E-01
4.27E+03	0.00E+00	0.00E+00	3.16E-04	3.29E-04	2.54E-01	3.55E-01
5.47E+03	0.00E+00	0.00E+00	1.44E-04	1.50E-04	1.16E-01	1.62E-01
1.11E+04	0.00E+00	0.00E+00	6.83E-05	7.11E-05	5.49E-02	7.69E-02
1.31E+04	0.00E+00	0.00E+00	2.52E-05	2.63E-05	2.03E-02	2.84E-02
2.13E+04	0.00E+00	0.00E+00	1.19E-05	1.24E-05	9.57E-03	1.34E-02
4.05E+04	0.00E+00	0.00E+00	5.43E-06	5.66E-06	4.37E-03	6.12E-03
7.00E+04	0.00E+00	0.00E+00	2.90E-06	3.02E-06	2.33E-03	3.27E-03
8.99E+04	0.00E+00	0.00E+00	1.77E-06	1.84E-06	1.42E-03	1.99E-03
1.21E+05	0.00E+00	0.00E+00	1.16E-06	1.20E-06	9.31E-04	1.30E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE SUMMARY
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IN-TRANSIT POPULATION EXPOSURE IN PERSON-REM
*INPUT DATA WERE ALTERED WITH REGULATORY CHECKS

	PASSENGER	CREW	OFF LINK	ON LINK	TOTALS
RUR_NR_FW	0.00E+00	6.15E+01	3.62E-01	1.47E+01	7.66E+01
RUR_NR_NF	0.00E+00	2.05E+01	1.44E-01	1.35E+01	3.41E+01
RUR_RH_FW	0.00E+00	6.84E+00	4.02E-02	1.64E+00	8.51E+00
RUR_RH_NF	0.00E+00	2.28E+00	1.60E-02	1.50E+00	3.79E+00
SUB_NR_FW	0.00E+00	1.46E+01	8.96E+00	5.80E+00	2.94E+01
SUB_NR_NF	0.00E+00	1.07E+01	8.02E+00	2.62E+01	4.49E+01
SUB_RH_FW	0.00E+00	3.25E+00	1.99E+00	5.38E+00	1.06E+01
SUB_RH_NF	0.00E+00	2.37E+00	1.78E+00	2.39E+01	2.81E+01
URB_NR_FW	0.00E+00	1.45E-01	9.87E-03	2.07E-01	3.61E-01
URB_NR_NF	0.00E+00	2.83E-02	9.48E-02	4.23E-01	5.46E-01
URB_RH_FW	0.00E+00	3.24E-02	2.20E-03	1.92E-01	2.27E-01
URB_RH_NF	0.00E+00	6.87E-03	2.30E-02	4.32E-01	4.62E-01
RURAL	0.00E+00	9.12E+01	5.62E-01	3.13E+01	1.23E+02
SUBURB	0.00E+00	3.09E+01	2.07E+01	6.12E+01	1.13E+02
URBAN	0.00E+00	2.13E-01	1.30E-01	1.25E+00	1.60E+00
TOTALS:	0.00E+00	1.22E+02	2.14E+01	9.38E+01	2.38E+02

MAXIMUM INDIVIDUAL IN-TRANSIT DOSE

TRUCK 3.94E-04 REM

CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP EXPOSURE IN PERSON-REM

POINT-SOURCE	STOP_	6.49E+02
	TOTAL:	6.49E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_NR_FW			
	DISTANCE TRAVELED	7.663E-01	1.0000 %
	NUMBER OF SHIPMENTS	7.663E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	7.663E-01	1.0000 %
	K ZERO FOR CREW DOSE	6.154E-01	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.154E-01	0.8031 %
	NUMBER OF CREW MEMBERS	6.154E-01	0.8031 %
	K ZERO FOR VEHICLE	1.509E-01	0.1969 %
	TRAFFIC COUNT	1.473E-01	0.1922 %
	NUMBER OF PEOPLE PER VEHICLE	1.473E-01	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	3.618E-03	0.0047 %
	POPULATION DENSITY	3.618E-03	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-9.135E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.231E+00	-1.6061 %
RUR_NR_NF			
	DISTANCE TRAVELED	3.414E-01	1.0000 %
	NUMBER OF SHIPMENTS	3.414E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.414E-01	1.0000 %
	NUMBER OF CREW MEMBERS	2.051E-01	0.6009 %
	K ZERO FOR CREW DOSE	2.051E-01	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.051E-01	0.6009 %
	K ZERO FOR VEHICLE	1.363E-01	0.3991 %
	TRAFFIC COUNT	1.348E-01	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.348E-01	0.3949 %
	POPULATION DENSITY	1.438E-03	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.206E-03	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.322E-04	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.102E-01	-1.2017 %
	VELOCITY	-4.762E-01	-1.3949 %
RUR_RH_FW			
	DISTANCE TRAVELED	8.514E-02	1.0000 %
	NUMBER OF SHIPMENTS	8.514E-02	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	8.514E-02	1.0000 %
	NUMBER OF CREW MEMBERS	6.837E-02	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.837E-02	0.8031 %
	K ZERO FOR CREW DOSE	6.837E-02	0.8031 %
	K ZERO FOR VEHICLE	1.677E-02	0.1969 %
	NUMBER OF PEOPLE PER VEHICLE	1.636E-02	0.1922 %
	TRAFFIC COUNT	1.636E-02	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	4.020E-04	0.0047 %
	POPULATION DENSITY	4.020E-04	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-1.015E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.367E-01	-1.6061 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_RH_NF			
	DISTANCE TRAVELED	3.793E-02	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.793E-02	1.0000 %
	NUMBER OF SHIPMENTS	3.793E-02	1.0000 %
	K ZERO FOR CREW DOSE	2.279E-02	0.6009 %
	NUMBER OF CREW MEMBERS	2.279E-02	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.279E-02	0.6009 %
	K ZERO FOR VEHICLE	1.514E-02	0.3991 %
	TRAFFIC COUNT	1.498E-02	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.498E-02	0.3949 %
	POPULATION DENSITY	1.598E-04	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.340E-04	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.580E-05	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.558E-02	-1.2017 %
	VELOCITY	-5.291E-02	-1.3949 %
SUB_NR_FW			
	DOSE RATE FOR VEHICLE (TI)	2.937E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.937E-01	1.0000 %
	DISTANCE TRAVELED	2.937E-01	1.0000 %
	K ZERO FOR VEHICLE	1.476E-01	0.5025 %
	CREW DOSE ADJUSTMENT FACTOR	1.461E-01	0.4975 %
	NUMBER OF CREW MEMBERS	1.461E-01	0.4975 %
	K ZERO FOR CREW DOSE	1.461E-01	0.4975 %
	SHIELDING FACTOR (RR,RS,RU)	8.956E-02	0.3049 %
	POPULATION DENSITY	8.956E-02	0.3049 %
	NUMBER OF PEOPLE PER VEHICLE	5.804E-02	0.1976 %
	TRAFFIC COUNT	5.804E-02	0.1976 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.922E-01	-0.9949 %
	VELOCITY	-3.518E-01	-1.1976 %
SUB_NR_NF			
	DISTANCE TRAVELED	4.488E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.488E-01	1.0000 %
	NUMBER OF SHIPMENTS	4.488E-01	1.0000 %
	K ZERO FOR VEHICLE	3.417E-01	0.7614 %
	NUMBER OF PEOPLE PER VEHICLE	2.616E-01	0.5828 %
	TRAFFIC COUNT	2.616E-01	0.5828 %
	NUMBER OF CREW MEMBERS	1.071E-01	0.2386 %
	CREW DOSE ADJUSTMENT FACTOR	1.071E-01	0.2386 %
	K ZERO FOR CREW DOSE	1.071E-01	0.2386 %
	POPULATION DENSITY	8.016E-02	0.1786 %
	SHIELDING FACTOR (RR,RS,RU)	6.564E-02	0.1463 %
	RATIO OF PEDESTRIAN DENSITY (RPD	1.453E-02	0.0324 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.142E-01	-0.4772 %
	VELOCITY	-7.103E-01	-1.5828 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
SUB_RH_FW			
	DISTANCE TRAVELED	1.062E-01	1.0000 %
	NUMBER OF SHIPMENTS	1.062E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	1.062E-01	1.0000 %
	K ZERO FOR VEHICLE	7.368E-02	0.6941 %
	NUMBER OF PEOPLE PER VEHICLE	5.378E-02	0.5066 %
	TRAFFIC COUNT	5.378E-02	0.5066 %
	CREW DOSE ADJUSTMENT FACTOR	3.247E-02	0.3059 %
	K ZERO FOR CREW DOSE	3.247E-02	0.3059 %
	NUMBER OF CREW MEMBERS	3.247E-02	0.3059 %
	POPULATION DENSITY	1.990E-02	0.1875 %
	SHIELDING FACTOR (RR,RS,RU)	1.990E-02	0.1875 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.495E-02	-0.6118 %
	VELOCITY	-1.599E-01	-1.5066 %
SUB_RH_NF			
	DOSE RATE FOR VEHICLE (TI)	2.806E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.806E-01	1.0000 %
	DISTANCE TRAVELED	2.806E-01	1.0000 %
	K ZERO FOR VEHICLE	2.568E-01	0.9154 %
	TRAFFIC COUNT	2.390E-01	0.8520 %
	NUMBER OF PEOPLE PER VEHICLE	2.390E-01	0.8520 %
	NUMBER OF CREW MEMBERS	2.374E-02	0.0846 %
	CREW DOSE ADJUSTMENT FACTOR	2.374E-02	0.0846 %
	K ZERO FOR CREW DOSE	2.374E-02	0.0846 %
	POPULATION DENSITY	1.777E-02	0.0633 %
	SHIELDING FACTOR (RR,RS,RU)	1.455E-02	0.0519 %
	RATIO OF PEDESTRIAN DENSITY (RPD	3.221E-03	0.0115 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.748E-02	-0.1692 %
	VELOCITY	-5.196E-01	-1.8520 %
URB_NR_FW			
	NUMBER OF SHIPMENTS	3.615E-03	1.0000 %
	DISTANCE TRAVELED	3.615E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.615E-03	1.0000 %
	K ZERO FOR VEHICLE	2.165E-03	0.5990 %
	NUMBER OF PEOPLE PER VEHICLE	2.067E-03	0.5717 %
	TRAFFIC COUNT	2.067E-03	0.5717 %
	CREW DOSE ADJUSTMENT FACTOR	1.449E-03	0.4010 %
	K ZERO FOR CREW DOSE	1.449E-03	0.4010 %
	NUMBER OF CREW MEMBERS	1.449E-03	0.4010 %
	POPULATION DENSITY	9.870E-05	0.0273 %
	SHIELDING FACTOR (RR,RS,RU)	9.870E-05	0.0273 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.899E-03	-0.8019 %
	VELOCITY	-5.681E-03	-1.5717 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
URB_NR_NF			
	DISTANCE TRAVELED	5.460E-03	1.0000 %
	NUMBER OF SHIPMENTS	5.460E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	5.460E-03	1.0000 %
	K ZERO FOR VEHICLE	5.177E-03	0.9481 %
	TRAFFIC COUNT	4.229E-03	0.7745 %
	NUMBER OF PEOPLE PER VEHICLE	4.229E-03	0.7745 %
	POPULATION DENSITY	9.478E-04	0.1736 %
	RATIO OF PEDESTRIAN DENSITY (RPD	9.207E-04	0.1686 %
	NUMBER OF CREW MEMBERS	2.834E-04	0.0519 %
	CREW DOSE ADJUSTMENT FACTOR	2.834E-04	0.0519 %
	K ZERO FOR CREW DOSE	2.834E-04	0.0519 %
	SHIELDING FACTOR (RR,RS,RU)	2.706E-05	0.0050 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-5.667E-04	-0.1038 %
	VELOCITY	-9.689E-03	-1.7745 %
URB_RH_FW			
	DISTANCE TRAVELED	2.270E-03	1.0000 %
	NUMBER OF SHIPMENTS	2.270E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.270E-03	1.0000 %
	K ZERO FOR VEHICLE	1.946E-03	0.8574 %
	NUMBER OF PEOPLE PER VEHICLE	1.924E-03	0.8477 %
	TRAFFIC COUNT	1.924E-03	0.8477 %
	CREW DOSE ADJUSTMENT FACTOR	3.237E-04	0.1426 %
	K ZERO FOR CREW DOSE	3.237E-04	0.1426 %
	NUMBER OF CREW MEMBERS	3.237E-04	0.1426 %
	POPULATION DENSITY	2.204E-05	0.0097 %
	SHIELDING FACTOR (RR,RS,RU)	2.204E-05	0.0097 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.473E-04	-0.2852 %
	VELOCITY	-4.194E-03	-1.8477 %
URB_RH_NF			
	DISTANCE TRAVELED	4.622E-03	1.0000 %
	NUMBER OF SHIPMENTS	4.622E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.622E-03	1.0000 %
	K ZERO FOR VEHICLE	4.553E-03	0.9851 %
	TRAFFIC COUNT	4.323E-03	0.9354 %
	NUMBER OF PEOPLE PER VEHICLE	4.323E-03	0.9354 %
	POPULATION DENSITY	2.298E-04	0.0497 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.232E-04	0.0483 %
	NUMBER OF CREW MEMBERS	6.869E-05	0.0149 %
	CREW DOSE ADJUSTMENT FACTOR	6.869E-05	0.0149 %
	K ZERO FOR CREW DOSE	6.869E-05	0.0149 %
	SHIELDING FACTOR (RR,RS,RU)	6.561E-06	0.0014 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-1.374E-04	-0.0297 %
	VELOCITY	-8.945E-03	-1.9354 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

STOP STOP_	PARAMETER	IMPORTANCE	CHANGE
	K ZERO FOR VEHICLE	6.486E+00	1.0000 %
	STOP TIME	6.486E+00	1.0000 %
	POPULATION/POPULATION DENSITY	6.486E+00	1.0000 %
	NUMBER OF SHIPMENTS	6.486E+00	1.0000 %
	DOSE RATE FOR VEHICLE	6.486E+00	1.0000 %
	MAXIMUM DISTANCE AT STOP	0.000E+00	0.0000 %
	MINIMUM DISTANCE AT STOP	-1.297E+01	-2.0000 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ACCIDENT SUMMARY
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NUMBER OF EXPECTED ACCIDENTS

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	1.47E-01	4.88E-02	1.63E-02	5.43E-03	7.61E-01	2.54E-01	8.45E-02
2	9.57E-02	3.19E-02	1.06E-02	3.55E-03	4.98E-01	1.66E-01	5.53E-02
3	7.29E-04	2.43E-04	8.10E-05	2.70E-05	5.05E-03	1.68E-03	5.62E-04
4	7.29E-07	2.43E-07	8.10E-08	2.70E-08	5.05E-06	1.68E-06	5.62E-07
5	1.21E-06	4.05E-07	1.35E-07	4.50E-08	3.79E-06	1.26E-06	4.21E-07
6	1.70E-06	5.67E-07	1.89E-07	6.30E-08	2.53E-06	8.42E-07	2.81E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	2.82E-02	4.04E-02	2.16E-03	4.51E-03	2.61E-04
2	1.84E-02	2.64E-02	1.41E-03	2.95E-03	1.71E-04
3	1.87E-04	2.54E-05	1.36E-06	2.84E-06	1.64E-07
4	1.87E-07	2.54E-08	1.36E-09	2.84E-09	1.64E-10
5	1.40E-07	1.67E-08	8.92E-10	1.87E-09	1.08E-10
6	9.36E-08	8.69E-09	4.64E-10	9.70E-10	5.62E-11

EARLY FATALITY CONSEQUENCES

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RADIOLOGICAL CONSEQUENCES
50 YEAR POPULATION DOSE IN PERSON-REM

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.99E+02	2.99E+02	2.99E+02
4	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.99E+02	2.99E+02	2.99E+02
5	2.64E+01	2.64E+01	2.64E+01	2.64E+01	3.17E+03	3.17E+03	3.17E+03
6	3.51E+01	3.51E+01	3.51E+01	3.51E+01	4.20E+03	4.20E+03	4.20E+03

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	2.99E+02	1.03E+03	1.03E+03	1.03E+03	1.03E+03
4	2.99E+02	1.03E+03	1.03E+03	1.03E+03	1.03E+03
5	3.17E+03	1.10E+04	1.10E+04	1.10E+04	1.10E+04
6	4.20E+03	1.46E+04	1.46E+04	1.46E+04	1.46E+04

MAXIMUM RISK FOR INDIVIDUAL IN NEAREST ISOPLETH (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	5.97E-05	1.99E-05	6.63E-06	2.21E-06	4.14E-04	1.38E-04	4.60E-05
4	6.08E-08	2.03E-08	6.75E-09	2.25E-09	4.21E-07	1.40E-07	4.68E-08
5	2.33E-06	7.78E-07	2.59E-07	8.64E-08	7.28E-06	2.43E-06	8.09E-07
6	4.78E-06	1.59E-06	5.32E-07	1.77E-07	7.11E-06	2.37E-06	7.90E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.53E-05	2.08E-06	1.11E-07	2.32E-07	1.35E-08
4	1.56E-08	2.12E-09	1.13E-10	2.36E-10	1.37E-11
5	2.70E-07	3.21E-08	1.71E-09	3.58E-09	2.08E-10
6	2.63E-07	2.44E-08	1.31E-09	2.73E-09	1.58E-10

RADIOLOGICAL CONSEQUENCES IN PERSON REM
50 YEAR SOCIETAL INGESTION DOSE - EFFECTIVE

LINK	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RUR_NR_FW	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02
RUR_NR_NF	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02
RUR_RH_FW	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02
RUR_RH_NF	0.00E+00	0.00E+00	1.72E+00	1.75E+00	3.01E+02	4.07E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

	GROUND	INHALED	RESUSPD	CLOUDSH	TOTAL
RUR_NR_FW	1.91E-03	1.96E-06	5.51E-07	1.59E-07	1.91E-03
RUR_NR_NF	6.36E-04	6.54E-07	1.84E-07	5.31E-08	6.37E-04
RUR_RH_FW	2.12E-04	2.18E-07	6.12E-08	1.77E-08	2.12E-04
RUR_RH_NF	7.06E-05	7.27E-08	2.04E-08	5.90E-09	7.07E-05
SUB_NR_FW	1.53E+00	1.39E-03	4.53E-04	1.30E-04	1.53E+00
SUB_NR_NF	5.10E-01	4.62E-04	1.51E-04	4.35E-05	5.11E-01
SUB_RH_FW	1.70E-01	1.54E-04	5.04E-05	1.45E-05	1.70E-01
SUB_RH_NF	5.67E-02	5.13E-05	1.68E-05	4.83E-06	5.68E-02
URB_NR_FW	2.66E-02	2.37E-05	7.88E-06	2.27E-06	2.66E-02
URB_NR_NF	1.42E-03	1.27E-06	4.21E-07	1.21E-07	1.42E-03
URB_RH_FW	2.97E-03	2.65E-06	8.80E-07	2.53E-07	2.97E-03
URB_RH_NF	1.72E-04	1.54E-07	5.10E-08	1.47E-08	1.72E-04
RURAL	2.83E-03	2.91E-06	8.16E-07	2.36E-07	2.83E-03
SUBURB	2.27E+00	2.05E-03	6.71E-04	1.93E-04	2.27E+00
URBAN	3.11E-02	2.78E-05	9.23E-06	2.65E-06	3.12E-02
TOTALS:	2.30E+00	2.08E-03	6.81E-04	1.96E-04	2.31E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

SOCIETAL INGESTION RISK - PERSON-REM

LINK	GONADS	EFFECTIVE
RUR_NR_FW	2.54E-03	2.31E-03
RUR_NR_NF	8.46E-04	7.71E-04
RUR_RH_FW	2.82E-04	2.57E-04
RUR_RH_NF	9.40E-05	8.57E-05
TOTAL	3.76E-03	3.43E-03

SOCIETAL INGESTION RISK BY ORGAN - PERSON-REM

LINK	BREAST	LUNGS	RED MARR	BONE SUR	THYROID	REMAINDER
RUR_NR_FW	1.45E-03	1.38E-03	1.62E-03	1.40E-03	1.33E-03	3.40E-03
RUR_NR_NF	4.85E-04	4.59E-04	5.41E-04	4.66E-04	4.43E-04	1.13E-03
RUR_RH_FW	1.62E-04	1.53E-04	1.80E-04	1.55E-04	1.48E-04	3.78E-04
RUR_RH_NF	5.39E-05	5.10E-05	6.01E-05	5.17E-05	4.93E-05	1.26E-04
TOTAL	2.16E-03	2.04E-03	2.40E-03	2.07E-03	1.97E-03	5.04E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED RISK VALUES - OTHER

LINK	EARLY FATALITY	EARLY MORBIDITY
RUR_NR_FW	0.00E+00	0.00E+00
RUR_NR_NF	0.00E+00	0.00E+00
RUR_RH_FW	0.00E+00	0.00E+00
RUR_RH_NF	0.00E+00	0.00E+00
SUB_NR_FW	0.00E+00	0.00E+00
SUB_NR_NF	0.00E+00	0.00E+00
SUB_RH_FW	0.00E+00	0.00E+00
SUB_RH_NF	0.00E+00	0.00E+00
URB_NR_FW	0.00E+00	0.00E+00
URB_NR_NF	0.00E+00	0.00E+00
URB_RH_FW	0.00E+00	0.00E+00
URB_RH_NF	0.00E+00	0.00E+00
TOTAL	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

TOTAL EXPOSED POPULATION: INCIDENT-FREE

RUR_NR_FW	3.54E+04	PERSONS
RUR_NR_NF	1.18E+04	PERSONS
RUR_RH_FW	3.93E+03	PERSONS
RUR_RH_NF	1.31E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	3.35E+05	PERSONS
SUB_RH_FW	1.12E+05	PERSONS
SUB_RH_NF	3.73E+04	PERSONS
URB_NR_FW	5.36E+04	PERSONS
URB_NR_NF	2.86E+03	PERSONS
URB_RH_FW	5.98E+03	PERSONS
URB_RH_NF	3.47E+02	PERSONS
TOTAL	1.61E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	8.10E+03	PERSONS
RUR_NR_NF	8.10E+03	PERSONS
RUR_RH_FW	8.10E+03	PERSONS
RUR_RH_NF	8.10E+03	PERSONS
SUB_NR_FW	9.71E+05	PERSONS
SUB_NR_NF	9.71E+05	PERSONS
SUB_RH_FW	9.71E+05	PERSONS
SUB_RH_NF	9.71E+05	PERSONS
URB_NR_FW	5.21E+06	PERSONS
URB_NR_NF	5.21E+06	PERSONS
URB_RH_FW	5.21E+06	PERSONS
URB_RH_NF	5.21E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

LINK: RUR_NR_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.82E-03	1.55E-06	5.43E-07	1.56E-07	1.82E-03
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	6.46E-10	6.46E-10
SFUEL	SR90	5.70E-12	1.50E-10	6.26E-12	1.05E-16	1.62E-10
SFUEL	RU106	4.63E-08	6.44E-09	5.41E-11	0.00E+00	5.28E-08
SFUEL	CS134	9.73E-06	1.24E-07	1.91E-09	2.29E-09	9.86E-06
SFUEL	CS137	7.63E-05	2.76E-07	6.13E-09	7.46E-13	7.66E-05
SFUEL	CE144	1.69E-11	1.54E-10	1.71E-12	2.44E-15	1.72E-10
SFUEL	EU154	1.34E-09	4.34E-11	9.91E-13	1.01E-13	1.39E-09
SFUEL	PU238	1.14E-12	1.64E-09	7.02E-11	3.40E-18	1.71E-09
SFUEL	PU239	8.18E-14	2.45E-10	1.06E-11	4.08E-19	2.55E-10
SFUEL	PU240	2.05E-13	2.79E-10	1.21E-11	5.22E-19	2.91E-10
SFUEL	PU241	5.61E-14	1.31E-09	5.27E-11	2.14E-18	1.36E-09
SFUEL	AM241	1.87E-11	7.96E-10	3.44E-11	2.48E-16	8.49E-10
SFUEL	AM243	5.79E-13	1.23E-11	5.32E-13	1.02E-17	1.34E-11
SFUEL	CM244	4.19E-13	5.81E-10	2.38E-11	2.07E-18	6.05E-10
					TOTAL:	1.91E-03

LINK: RUR_NR_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	6.07E-04	5.17E-07	1.81E-07	5.22E-08	6.08E-04
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	2.15E-10	2.15E-10
SFUEL	SR90	1.90E-12	4.99E-11	2.09E-12	3.52E-17	5.39E-11
SFUEL	RU106	1.54E-08	2.15E-09	1.80E-11	0.00E+00	1.76E-08
SFUEL	CS134	3.24E-06	4.13E-08	6.38E-10	7.62E-10	3.29E-06
SFUEL	CS137	2.54E-05	9.19E-08	2.04E-09	2.49E-13	2.55E-05
SFUEL	CE144	5.62E-12	5.12E-11	5.70E-13	8.15E-16	5.74E-11
SFUEL	EU154	4.48E-10	1.45E-11	3.30E-13	3.36E-14	4.63E-10
SFUEL	PU238	3.80E-13	5.47E-10	2.34E-11	1.13E-18	5.71E-10
SFUEL	PU239	2.73E-14	8.15E-11	3.53E-12	1.36E-19	8.51E-11
SFUEL	PU240	6.82E-14	9.30E-11	4.03E-12	1.74E-19	9.71E-11
SFUEL	PU241	1.87E-14	4.35E-10	1.76E-11	7.14E-19	4.53E-10
SFUEL	AM241	6.22E-12	2.65E-10	1.15E-11	8.26E-17	2.83E-10
SFUEL	AM243	1.93E-13	4.10E-12	1.77E-13	3.39E-18	4.47E-12
SFUEL	CM244	1.40E-13	1.94E-10	7.93E-12	6.89E-19	2.02E-10
					TOTAL:	6.37E-04

LINK: RUR_RH_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	2.02E-04	1.72E-07	6.03E-08	1.74E-08	2.03E-04
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	7.18E-11	7.18E-11
SFUEL	SR90	6.34E-13	1.66E-11	6.95E-13	1.17E-17	1.80E-11
SFUEL	RU106	5.14E-09	7.15E-10	6.01E-12	0.00E+00	5.86E-09
SFUEL	CS134	1.08E-06	1.38E-08	2.13E-10	2.54E-10	1.10E-06
SFUEL	CS137	8.48E-06	3.06E-08	6.81E-10	8.29E-14	8.51E-06
SFUEL	CE144	1.87E-12	1.71E-11	1.90E-13	2.72E-16	1.91E-11
SFUEL	EU154	1.49E-10	4.82E-12	1.10E-13	1.12E-14	1.54E-10
SFUEL	PU238	1.27E-13	1.82E-10	7.81E-12	3.78E-19	1.90E-10
SFUEL	PU239	9.09E-15	2.72E-11	1.18E-12	4.54E-20	2.84E-11
SFUEL	PU240	2.27E-14	3.10E-11	1.34E-12	5.80E-20	3.24E-11
SFUEL	PU241	6.24E-15	1.45E-10	5.86E-12	2.38E-19	1.51E-10
SFUEL	AM241	2.07E-12	8.85E-11	3.82E-12	2.75E-17	9.44E-11
SFUEL	AM243	6.44E-14	1.37E-12	5.91E-14	1.13E-18	1.49E-12
SFUEL	CM244	4.65E-14	6.45E-11	2.64E-12	2.30E-19	6.72E-11
					TOTAL:	2.12E-04

LINK: RUR_RH_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	6.75E-05	5.75E-08	2.01E-08	5.80E-09	6.75E-05
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	2.39E-11	2.39E-11
SFUEL	SR90	2.11E-13	5.54E-12	2.32E-13	3.91E-18	5.99E-12
SFUEL	RU106	1.71E-09	2.38E-10	2.00E-12	0.00E+00	1.95E-09
SFUEL	CS134	3.61E-07	4.59E-09	7.09E-11	8.47E-11	3.65E-07
SFUEL	CS137	2.83E-06	1.02E-08	2.27E-10	2.76E-14	2.84E-06
SFUEL	CE144	6.24E-13	5.69E-12	6.33E-14	9.06E-17	6.38E-12
SFUEL	EU154	4.98E-11	1.61E-12	3.67E-14	3.73E-15	5.14E-11
SFUEL	PU238	4.22E-14	6.08E-11	2.60E-12	1.26E-19	6.34E-11
SFUEL	PU239	3.03E-15	9.06E-12	3.92E-13	1.51E-20	9.45E-12
SFUEL	PU240	7.58E-15	1.03E-11	4.48E-13	1.93E-20	1.08E-11
SFUEL	PU241	2.08E-15	4.83E-11	1.95E-12	7.93E-20	5.03E-11
SFUEL	AM241	6.91E-13	2.95E-11	1.27E-12	9.18E-18	3.15E-11
SFUEL	AM243	2.15E-14	4.55E-13	1.97E-14	3.77E-19	4.96E-13
SFUEL	CM244	1.55E-14	2.15E-11	8.81E-13	7.65E-20	2.24E-11
					TOTAL:	7.07E-05

LINK: SUB_NR_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.51E+00	1.29E-03	4.51E-04	1.30E-04	1.51E+00
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.73E-07	1.73E-07
SFUEL	SR90	1.70E-09	4.29E-08	3.40E-09	3.02E-14	4.80E-08
SFUEL	RU106	8.40E-06	1.17E-06	1.01E-08	0.00E+00	9.58E-06
SFUEL	CS134	2.39E-03	3.03E-05	5.38E-07	5.58E-07	2.42E-03
SFUEL	CS137	1.88E-02	6.73E-05	1.72E-06	1.82E-10	1.88E-02
SFUEL	CE144	5.03E-09	4.01E-08	5.46E-10	7.01E-13	4.57E-08
SFUEL	EU154	4.01E-07	1.13E-08	3.16E-10	2.89E-11	4.13E-07
SFUEL	PU238	3.40E-10	4.71E-07	3.81E-08	9.75E-16	5.09E-07
SFUEL	PU239	2.44E-11	7.01E-08	5.75E-09	1.17E-16	7.59E-08
SFUEL	PU240	6.11E-11	8.01E-08	6.56E-09	1.50E-16	8.67E-08
SFUEL	PU241	1.67E-11	3.74E-07	2.86E-08	6.14E-16	4.03E-07
SFUEL	AM241	5.57E-09	2.28E-07	1.87E-08	7.11E-14	2.53E-07
SFUEL	AM243	1.73E-10	3.52E-09	2.89E-10	2.92E-15	3.99E-09
SFUEL	CM244	1.25E-10	1.67E-07	1.29E-08	5.93E-16	1.80E-07
					TOTAL:	1.53E+00

LINK: SUB_NR_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	5.03E-01	4.28E-04	1.50E-04	4.32E-05	5.04E-01
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	5.78E-08	5.78E-08
SFUEL	SR90	5.67E-10	1.43E-08	1.13E-09	1.01E-14	1.60E-08
SFUEL	RU106	2.80E-06	3.89E-07	3.37E-09	0.00E+00	3.19E-06
SFUEL	CS134	7.97E-04	1.01E-05	1.79E-07	1.86E-07	8.08E-04
SFUEL	CS137	6.25E-03	2.24E-05	5.74E-07	6.08E-11	6.28E-03
SFUEL	CE144	1.68E-09	1.34E-08	1.82E-10	2.34E-13	1.52E-08
SFUEL	EU154	1.34E-07	3.77E-09	1.05E-10	9.63E-12	1.38E-07
SFUEL	PU238	1.13E-10	1.57E-07	1.27E-08	3.25E-16	1.70E-07
SFUEL	PU239	8.13E-12	2.34E-08	1.92E-09	3.90E-17	2.53E-08
SFUEL	PU240	2.04E-11	2.67E-08	2.19E-09	4.99E-17	2.89E-08
SFUEL	PU241	5.58E-12	1.25E-07	9.55E-09	2.05E-16	1.34E-07
SFUEL	AM241	1.86E-09	7.61E-08	6.23E-09	2.37E-14	8.42E-08
SFUEL	AM243	5.76E-11	1.17E-09	9.63E-11	9.74E-16	1.33E-09
SFUEL	CM244	4.16E-11	5.55E-08	4.31E-09	1.98E-16	5.99E-08
					TOTAL:	5.11E-01

LINK: SUB_RH_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.68E-01	1.43E-04	5.01E-05	1.44E-05	1.68E-01
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.93E-08	1.93E-08
SFUEL	SR90	1.89E-10	4.77E-09	3.78E-10	3.36E-15	5.34E-09
SFUEL	RU106	9.34E-07	1.30E-07	1.12E-09	0.00E+00	1.06E-06
SFUEL	CS134	2.66E-04	3.36E-06	5.98E-08	6.20E-08	2.69E-04
SFUEL	CS137	2.08E-03	7.48E-06	1.92E-07	2.03E-11	2.09E-03
SFUEL	CE144	5.59E-10	4.45E-09	6.06E-11	7.79E-14	5.07E-09
SFUEL	EU154	4.46E-08	1.26E-09	3.51E-11	3.21E-12	4.59E-08
SFUEL	PU238	3.78E-11	5.23E-08	4.24E-09	1.08E-16	5.66E-08
SFUEL	PU239	2.71E-12	7.79E-09	6.39E-10	1.30E-17	8.44E-09
SFUEL	PU240	6.79E-12	8.90E-09	7.29E-10	1.66E-17	9.63E-09
SFUEL	PU241	1.86E-12	4.16E-08	3.18E-09	6.83E-17	4.48E-08
SFUEL	AM241	6.19E-10	2.54E-08	2.08E-09	7.90E-15	2.81E-08
SFUEL	AM243	1.92E-11	3.92E-10	3.21E-11	3.25E-16	4.43E-10
SFUEL	CM244	1.39E-11	1.85E-08	1.44E-09	6.58E-17	2.00E-08
					TOTAL:	1.70E-01

LINK: SUB_RH_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	5.59E-02	4.76E-05	1.67E-05	4.80E-06	5.60E-02
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	6.42E-09	6.42E-09
SFUEL	SR90	6.30E-11	1.59E-09	1.26E-10	1.12E-15	1.78E-09
SFUEL	RU106	3.11E-07	4.32E-08	3.74E-10	0.00E+00	3.55E-07
SFUEL	CS134	8.86E-05	1.12E-06	1.99E-08	2.07E-08	8.98E-05
SFUEL	CS137	6.95E-04	2.49E-06	6.38E-08	6.75E-12	6.98E-04
SFUEL	CE144	1.86E-10	1.49E-09	2.02E-11	2.60E-14	1.69E-09
SFUEL	EU154	1.49E-08	4.19E-10	1.17E-11	1.07E-12	1.53E-08
SFUEL	PU238	1.26E-11	1.74E-08	1.41E-09	3.61E-17	1.89E-08
SFUEL	PU239	9.04E-13	2.60E-09	2.13E-10	4.34E-18	2.81E-09
SFUEL	PU240	2.26E-12	2.97E-09	2.43E-10	5.55E-18	3.21E-09
SFUEL	PU241	6.20E-13	1.39E-08	1.06E-09	2.28E-17	1.49E-08
SFUEL	AM241	2.06E-10	8.46E-09	6.92E-10	2.63E-15	9.36E-09
SFUEL	AM243	6.40E-12	1.31E-10	1.07E-11	1.08E-16	1.48E-10
SFUEL	CM244	4.63E-12	6.17E-09	4.78E-10	2.20E-17	6.65E-09
					TOTAL:	5.68E-02

LINK: URB_NR_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	2.63E-02	2.24E-05	7.85E-06	2.26E-06	2.63E-02
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	2.44E-09	2.44E-09
SFUEL	SR90	2.48E-11	6.18E-10	5.62E-11	4.36E-16	6.99E-10
SFUEL	RU106	1.01E-07	1.40E-08	1.23E-10	0.00E+00	1.15E-07
SFUEL	CS134	3.27E-05	4.13E-07	7.68E-09	7.62E-09	3.31E-05
SFUEL	CS137	2.57E-04	9.19E-07	2.46E-08	2.49E-12	2.58E-04
SFUEL	CE144	7.33E-11	5.59E-10	8.07E-12	1.01E-14	6.41E-10
SFUEL	EU154	5.85E-09	1.58E-10	4.68E-12	4.16E-13	6.01E-09
SFUEL	PU238	4.95E-12	6.78E-09	6.31E-10	1.40E-17	7.42E-09
SFUEL	PU239	3.56E-13	1.01E-09	9.51E-11	1.69E-18	1.11E-09
SFUEL	PU240	8.90E-13	1.15E-09	1.09E-10	2.16E-18	1.26E-09
SFUEL	PU241	2.44E-13	5.39E-09	4.74E-10	8.85E-18	5.87E-09
SFUEL	AM241	8.11E-11	3.29E-09	3.09E-10	1.02E-15	3.68E-09
SFUEL	AM243	2.52E-12	5.08E-11	4.78E-12	4.21E-17	5.81E-11
SFUEL	CM244	1.82E-12	2.40E-09	2.14E-10	8.54E-18	2.61E-09
					TOTAL:	2.66E-02

LINK: URB_NR_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.40E-03	1.19E-06	4.19E-07	1.20E-07	1.41E-03
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.31E-10	1.31E-10
SFUEL	SR90	1.32E-12	3.30E-11	3.00E-12	2.33E-17	3.73E-11
SFUEL	RU106	5.40E-09	7.50E-10	6.59E-12	0.00E+00	6.16E-09
SFUEL	CS134	1.75E-06	2.21E-08	4.10E-10	4.07E-10	1.77E-06
SFUEL	CS137	1.37E-05	4.90E-08	1.31E-09	1.33E-13	1.38E-05
SFUEL	CE144	3.91E-12	2.99E-11	4.31E-13	5.39E-16	3.42E-11
SFUEL	EU154	3.12E-10	8.43E-12	2.50E-13	2.22E-14	3.21E-10
SFUEL	PU238	2.65E-13	3.62E-10	3.37E-11	7.50E-19	3.96E-10
SFUEL	PU239	1.90E-14	5.40E-11	5.08E-12	9.01E-20	5.91E-11
SFUEL	PU240	4.75E-14	6.16E-11	5.80E-12	1.15E-19	6.74E-11
SFUEL	PU241	1.30E-14	2.88E-10	2.53E-11	4.72E-19	3.13E-10
SFUEL	AM241	4.33E-12	1.76E-10	1.65E-11	5.47E-17	1.97E-10
SFUEL	AM243	1.35E-13	2.71E-12	2.55E-13	2.25E-18	3.10E-12
SFUEL	CM244	9.72E-14	1.28E-10	1.14E-11	4.56E-19	1.40E-10
					TOTAL:	1.42E-03

LINK: URB_RH_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	2.93E-03	2.50E-06	8.76E-07	2.52E-07	2.94E-03
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	2.73E-10	2.73E-10
SFUEL	SR90	2.77E-12	6.91E-11	6.28E-12	4.86E-17	7.81E-11
SFUEL	RU106	1.13E-08	1.57E-09	1.38E-11	0.00E+00	1.29E-08
SFUEL	CS134	3.65E-06	4.61E-08	8.57E-10	8.51E-10	3.70E-06
SFUEL	CS137	2.86E-05	1.03E-07	2.74E-09	2.78E-13	2.88E-05
SFUEL	CE144	8.18E-12	6.25E-11	9.01E-13	1.13E-15	7.15E-11
SFUEL	EU154	6.53E-10	1.76E-11	5.22E-13	4.65E-14	6.71E-10
SFUEL	PU238	5.53E-13	7.57E-10	7.04E-11	1.57E-18	8.28E-10
SFUEL	PU239	3.97E-14	1.13E-10	1.06E-11	1.88E-19	1.23E-10
SFUEL	PU240	9.94E-14	1.29E-10	1.21E-11	2.41E-19	1.41E-10
SFUEL	PU241	2.72E-14	6.02E-10	5.29E-11	9.88E-19	6.55E-10
SFUEL	AM241	9.06E-12	3.67E-10	3.45E-11	1.14E-16	4.11E-10
SFUEL	AM243	2.81E-13	5.67E-12	5.33E-13	4.70E-18	6.48E-12
SFUEL	CM244	2.03E-13	2.68E-10	2.39E-11	9.53E-19	2.92E-10
					TOTAL:	2.97E-03

LINK: URB_RH_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.70E-04	1.45E-07	5.08E-08	1.46E-08	1.70E-04
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.58E-11	1.58E-11
SFUEL	SR90	1.61E-13	4.00E-12	3.64E-13	2.82E-18	4.53E-12
SFUEL	RU106	6.54E-10	9.09E-11	7.98E-13	0.00E+00	7.46E-10
SFUEL	CS134	2.12E-07	2.67E-09	4.97E-11	4.93E-11	2.15E-07
SFUEL	CS137	1.66E-06	5.95E-09	1.59E-10	1.61E-14	1.67E-06
SFUEL	CE144	4.74E-13	3.62E-12	5.22E-14	6.54E-17	4.15E-12
SFUEL	EU154	3.78E-11	1.02E-12	3.03E-14	2.69E-15	3.89E-11
SFUEL	PU238	3.21E-14	4.39E-11	4.08E-12	9.09E-20	4.80E-11
SFUEL	PU239	2.30E-15	6.54E-12	6.16E-13	1.09E-20	7.16E-12
SFUEL	PU240	5.76E-15	7.47E-12	7.03E-13	1.40E-20	8.17E-12
SFUEL	PU241	1.58E-15	3.49E-11	3.07E-12	5.73E-20	3.80E-11
SFUEL	AM241	5.25E-13	2.13E-11	2.00E-12	6.63E-18	2.38E-11
SFUEL	AM243	1.63E-14	3.29E-13	3.09E-14	2.72E-19	3.76E-13
SFUEL	CM244	1.18E-14	1.55E-11	1.38E-12	5.53E-20	1.69E-11
					TOTAL:	1.72E-04

EOI
END OF RUN
SUCCESSFUL COMPLETION

Appendix C
RADTRAN 5 PC-Version Output with the Pasquill Atmospheric Dispersion Model Using the RADCAT 1.0 Input File Generator

```
                    RUN DATE: [ 09/10/04  AT 06:42:38 ]            PAGE    1

 RRRR     AAA    DDDD    TTTTT  RRRR     AAA    N   N  55555
 R   R   A   A   D   D     T    R   R   A   A   NN  N  5
 R   R   A   A   D   D     T    R   R   A   A   N N N  5
 RRRR    A   A   D   D     T    RRRR    A   A   N  NN  5555
 R R     AAAAA   D   D     T    R R     AAAAA   N   N      5
 R  R    A   A   D   D     T    R  R    A   A   N   N  5   5
 R   R   A   A   DDDD      T    R   R   A   A   N   N  5555

                        RADTRAN 5.2.5   December 29, 2002   PC-version

                                INPUT ECHO
                                ----------


 TITLE CRYSTAL RIVER TO HANFORD; SPENT FUEL
 INPUT STANDARD
STD: 0 10 18                                  && DIMEN=NSEV NRAD NAREAS
STD: 1 3 3 0                                  && PARM=IRNKC IANA ISEN IPSQSB
STD: .TRUE. .FALSE.                           && FORM = UNIT, SI-UNITS?
STD: 2.3E12                                   && NEVAL FOR CF252
STD: 9.25E5 5.77E6 1.27E6                     && RPCTHY FOR I125, I129, I131
STD: 0.0 0.0 0.0 0.0 0.0                      && TRANSFER GAMMA
STD: 7.42E-3 2.02E-2 6.17E-5 3.17E-8 0.0      && TRANSFER NEUTRON
STD: 30  24                                   && MITDDIST  MITDVEL
STD: 1  2   .0018                             && ITRAIN FMINCL DDRWEF
STD:    33    68    105   244   369                    && CENTER LINE
STD:   561  1018   1628  2308  4269                    && DISTANCES
STD:  5468 11136  13097 21334 40502                    && FOR AVERAGE
STD: 69986 89860 120878 0 0 0 0 0 0 0 0 0 0 0 0       && US CLOUD
STD: 4.59E+02 1.53E+03 3.94E+03 1.25E+04 3.04E+04 6.85E+04 1.76E+05 4.45E+05
STD: 8.59E+05 2.55E+06 4.45E+06 1.03E+07 2.16E+07 5.52E+07 1.77E+08 4.89E+08
STD: 8.12E+08 1.35E+09 0 0 0 0 0 0 0 0 0 0 0 0         && AREADA
STD: 3.42E-03 1.72E-03 8.58E-04 3.42E-04 1.72E-04 8.58E-05 3.42E-05 1.72E-05
STD:  8.58E-06 3.42E-06 1.72E-06 8.58E-07 3.42E-07 1.72E-07 8.58E-08 5.42E-08
STD:  4.30E-08 3.42E-08 0 0 0 0 0 0 0 0 0 0 0 0        && DFLEV
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0 && RADIST
STD: 0.5                                  && SMLPKG
STD: 1.0  0.87  0.018                     && SHIELDING FACTORS RR  RS  RU
STD:  30  30  800                         && OFFLINK {FREEWAY}
STD:  27  30  800                         && OFFLINK {NON-FREEWAY}
STD:   5   8  800                         && OFFLINK {CITY STREETS}
STD:  30  30  800                         && OFFLINK {RAILWAY}
STD: 200 200 1000                         && OFFLINK {WATERWAY}
STD: 15  3  3  3  4                       && ONLINK {FWAY NONFWY STREET RAIL ADJ}
STD: 6.0  4  40.0                         && RPD FNOATT INTERDICT
STD: 0.05   0.2   3.3E-4                  && BDF CULVL BRATE
STD: 0.9   0.1                            && UBF USWF
STD: 1.0  10.0 1.0                        && EVACUATION SURVEY CAMPAIGN
```

```
STD: 0.0  0.0     1.5E-8  5.3E-8      && HIGHWAY - RURAL - NONRAD
STD: 0.0  0.0     3.7E-9  1.3E-8      && HIGHWAY - SUBURBAN - NONRAD
STD: 0.0  0.0     2.1E-9  7.5E-9      && HIGHWAY - URBAN - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - R - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - S - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - U - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - R - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - S - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - U - NONRAD
STD: 0.0 0.0 0.0 0.0 0.0 0.0          && PSPROB
STD: 0.67  0.67  0.42                 && TIMENDE NON-DISPERSAL EVAC TIME (LCF&EA
STD: 2 2 1                            && FLAGS=IUOPT IACC REGCHECK
STD: 5E-4, 4E-4, 1.3E-4               && LCFCON(1), LCFCON(2), GECON
STD: R5INGEST.BIN                     && INGESTION FILE
 FORM UNIT
 DIMEN 6 10 18
 PARM 1 3 4 1
 SEVERITY
    NPOP=1
      NMODE=1
        6.03E-01  3.94E-01  3.00E-03  3.00E-06  5.00E-06  7.00E-06
    NPOP=2
      NMODE=1
        6.02E-01  3.94E-01  4.00E-03  4.00E-06  3.00E-06  2.00E-06
    NPOP=3
      NMODE=1
        6.04E-01  3.95E-01  3.80E-04  3.80E-07  2.50E-07  1.30E-07
 RELEASE
    GROUP=PKG1_B
       RFRAC
        0.00E+00  0.00E+00  1.20E-02  1.20E-02  1.20E-02  1.20E-02
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.010000
    GROUP=PKG2_C
       RFRAC
        0.00E+00  0.00E+00  0.00E+00  1.00E-02  1.00E-01  1.10E-01
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.000000
    GROUP=PKG4_E
       RFRAC
```

```
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
  GROUP=PKG5_E
    RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  1.00E-06  4.20E-05
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
  GROUP=PKG3_D
    RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  2.00E-04  2.80E-04
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
  GROUP=PKG4_D
    RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
    AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
    RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
    LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
    DEPVEL 0.010000
  PSPROB
      0.00E+00  2.00E-01  0.00E+00  8.00E-01  0.00E+00  0.00E+00
PACKAGE      SFUEL  1.368E+01 1.000 0.000    5.20
       CO60         9.220E+01 PKG1_B
       KR85         6.100E+03 PKG2_C
       SR90         5.960E+04 PKG4_E
       RU106        1.620E+04 PKG5_E
       CS134        2.740E+04 PKG3_D
       CS137        8.760E+04 PKG3_D
       CE144        1.220E+04 PKG4_D
       EU154        7.000E+03 PKG4_D
       PU238        2.960E+03 PKG4_E
       PU239        4.100E+02 PKG4_E
       PU240        4.680E+02 PKG4_E
       PU241        1.260E+05 PKG4_E
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

```
        AM241       1.290E+03 PKG4_E
        AM243       1.990E+01 PKG4_E
        CM244       1.790E+03 PKG4_E
        END
VEHICLE  -1 TRUCK       1.368E+01 1.000 0.000    5.20  676.00
                          2.00   10.00 1.000    5.20
        SFUEL         1.00
FLAGS
   IUOPT 2
EOF
LINK RUR_NR_FW  TRUCK      2623.81  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_NR_NF  TRUCK       874.60  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK RUR_RH_FW  TRUCK       291.53  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_RH_NF  TRUCK        97.18  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK SUB_NR_FW  TRUCK       623.03  88.6  2.0  719.00  780.00 3.00E-06 S 1 0.00
LINK SUB_NR_NF  TRUCK       207.68  40.3  2.0  719.00  780.00 3.00E-06 S 2 0.00
LINK SUB_RH_FW  TRUCK        69.23  44.3  2.0  719.00 1560.00 3.00E-06 S 1 0.00
LINK SUB_RH_NF  TRUCK        23.08  20.2  2.0  719.00 1560.00 3.00E-06 S 2 0.00
LINK URB_NR_FW  TRUCK         6.18  88.6  2.0 3861.00 2800.00 1.60E-05 U 1 0.00
LINK URB_NR_NF  TRUCK         0.33  24.2  2.0 3861.00 2800.00 1.60E-05 U 2 0.00
LINK URB_RH_FW  TRUCK         0.69  44.3  2.0 3861.00 5600.00 1.60E-05 U 1 0.00
LINK URB_RH_NF  TRUCK         0.04  12.1  2.0 3861.00 5600.00 1.60E-05 U 2 0.00
STOP STOP_      TRUCK        50.00  20.00   20.00 1.000  52.991
EOF
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PACKAGE AND MATERIAL CHARACTERISTICS

MATERIAL	DIMENSION (METERS)	EFFECTIVE DIMENSION	K(0) METERS SQ.	FRACTION GAMMA	FRACTION NEUTRON	DOSE RATE (MREM/HR)
SFUEL	5.200E+00	4.677E+00	1.115E+01	1.000E+00	0.000E+00	1.368E+01

K(0) IS DOSE RATE CONVERSION FACTOR

VEHICLE CHARACTERISTICS

VEHICLE NAME	TRUCK
MODE TYPE	HIGHWAY
EXCLUSIVE USE	YES
DOSE RATE (MREM/HR)	1.37E+01
K(0) (SQ. METERS)	1.11E+01
VEHICLE SIZE (M)	5.20E+00
EFFECTIVE SIZE (M)	4.68E+00
NUMBER OF SHIPMENTS	6.76E+02
NUMBER OF CREW	2.00E+00
CREW DISTANCE (M)	1.00E+01
CREW DOSE ADJUSTMENT FACT	1.00E+00
CREW EXPOSER WIDTH (M)	5.20E+00
EFFECTIVE EXPOSER WIDTH	4.68E+00
K(0) (SQ M) CREW EXPOSURE	1.11E+01

VEHICLE	MATERIAL	NO.PACKAGES
TRUCK		
	SFUEL	1.00E+00

TRANSFER COEFFICIENTS:

	MU	A(1)	A(2)	A(3)	A(4)
GAMMA	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NEUTRON	7.420E-03	2.020E-02	6.170E-05	3.170E-08	0.000E+00

DISTANCES (METERS)	FREEWAY	SECONDARY	STREET	RAIL	WATER	ADJACENT
OFFLINK:						
MINIMUM DISTANCE	3.00E+01	2.70E+01	5.00E+00	3.00E+01	2.00E+02	
SIDEWALK + MINIMUM	3.00E+01	3.00E+01	8.00E+00	3.00E+01	2.00E+02	
MAXIMUM DISTANCE	8.00E+02	8.00E+02	8.00E+02	8.00E+02	1.00E+03	
ONLINK:						
OPPOSITE DIRECTION	1.50E+01	3.00E+00	3.00E+00	3.00E+00		
ADJACENT VEHICLE						4.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP RELATED DATA

	STOP_
VEHICLE	TRUCK
PERSONS	5.00E+01
MINIMUM DISTANCE(M)	2.00E+01
MAXIMUM DISTANCE(M)	2.00E+01
SHIELDING FACTOR	1.00E+00
TIME (HR)	5.30E+01

HANDLING RELATED DATA

CRYSTAL RIVER TO HANFORD; SPENT FUEL

LINK RELATED DATA

	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.62E+03	8.75E+02	2.92E+02	9.72E+01	6.23E+02
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	8.86E+01	8.86E+01	8.86E+01	8.86E+01	8.86E+01
POPULATION DENSITY	6.00E+00	6.00E+00	6.00E+00	6.00E+00	7.19E+02
VEHICLE DENSITY	4.70E+02	4.70E+02	4.70E+02	4.70E+02	7.80E+02
ACCIDENT RATE/KM	1.37E-07	1.37E-07	1.37E-07	1.37E-07	3.00E-06
ZONE	RURAL	RURAL	RURAL	RURAL	SUBURBAN
ROAD TYPE	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY
FARMING FRACTION	5.00E-01	5.00E-01	5.00E-01	5.00E-01	0.00E+00

	SUB_NR_NF	SUB_RH_FW	SUB_RH_NF	URB_NR_FW	URB_NR_NF
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.08E+02	6.92E+01	2.31E+01	6.18E+00	3.30E-01
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	4.03E+01	4.43E+01	2.02E+01	8.86E+01	2.42E+01
POPULATION DENSITY	7.19E+02	7.19E+02	7.19E+02	3.86E+03	3.86E+03
VEHICLE DENSITY	7.80E+02	1.56E+03	1.56E+03	2.80E+03	2.80E+03
ACCIDENT RATE/KM	3.00E-06	3.00E-06	3.00E-06	1.60E-05	1.60E-05
ZONE	SUBURBAN	SUBURBAN	SUBURBAN	URBAN	URBAN
ROAD TYPE	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	URB_RH_FW	URB_RH_NF
VEHICLE	TRUCK	TRUCK
DISTANCE (KM)	6.90E-01	4.00E-02
PERSONS PER VEHICLE	2.00E+00	2.00E+00
SPEED (KM/HR)	4.43E+01	1.21E+01
POPULATION DENSITY	3.86E+03	3.86E+03
VEHICLE DENSITY	5.60E+03	5.60E+03
ACCIDENT RATE/KM	1.60E-05	1.60E-05
ZONE	URBAN	URBAN
ROAD TYPE	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE	CURIES PER PKG	RELEASE GROUP	RESUSPENSION FACTOR	50YR INHALATION (REM/CI) EFFECTIVE
SFUEL				
CO60	9.22E+01	PKG1_B	4.83E+00	2.80E+05
KR85	6.10E+03	PKG2_C	1.00E+00	0.00E+00
SR90	5.96E+04	PKG4_E	5.41E+00	2.40E+06
RU106	1.62E+04	PKG5_E	3.28E+00	8.00E+05
CS134	2.74E+04	PKG3_D	4.07E+00	4.60E+04
CS137	8.76E+04	PKG3_D	5.41E+00	3.20E+04
CE144	1.22E+04	PKG4_D	2.99E+00	6.30E+05
EU154	7.00E+03	PKG4_D	5.09E+00	3.10E+05
PU238	2.96E+03	PKG4_E	5.51E+00	5.30E+08
PU239	4.10E+02	PKG4_E	5.57E+00	5.70E+08
PU240	4.68E+02	PKG4_E	5.56E+00	5.70E+08
PU241	1.26E+05	PKG4_E	5.26E+00	9.90E+06
AM241	1.29E+03	PKG4_E	5.55E+00	5.90E+08
AM243	1.99E+01	PKG4_E	5.56E+00	5.90E+08
CM244	1.79E+03	PKG4_E	5.32E+00	3.10E+08

NUCLIDE	HALF LIFE	GAMMA ENERGY	CLOUD FACTOR	GROUND FACTOR	INGESTION NUCLIDE	NEUTRON EMISSION neutrons/sec/Ci
SFUEL						
CO60	1.93E+03	2.50E+00	4.66E-01	7.51E-04	Co-60	N/A
KR85	3.92E+03	2.21E-03	4.40E-04	8.44E-07	NONE	N/A
SR90	1.06E+04	0.00E+00	2.79E-05	9.08E-08	Sr-90	N/A
RU106	3.68E+02	2.01E-01	0.00E+00	6.78E-05	Ru-106	N/A
CS134	7.53E+02	1.55E+00	2.80E-01	4.86E-04	Cs-134	N/A
CS137	1.10E+04	5.96E-01	2.86E-05	1.77E-04	Cs-137	N/A
CE144	2.84E+02	5.25E-02	3.16E-03	1.84E-05	Ce-144	N/A
EU154	3.21E+03	1.22E+00	2.27E-01	3.80E-04	Eu-154	N/A
PU238	3.21E+04	1.81E-03	1.81E-05	2.68E-07	Pu-238	N/A
PU239	8.79E+06	7.96E-04	1.57E-05	1.17E-07	Pu-239	N/A
PU240	2.39E+06	1.73E-03	1.76E-05	2.57E-07	Pu-240	N/A
PU241	5.26E+03	2.54E-06	2.68E-07	6.17E-10	Pu-241	N/A
AM241	1.58E+05	3.24E-02	3.03E-03	8.79E-06	Am-241	N/A
AM243	2.70E+06	5.59E-02	8.07E-03	1.71E-05	Am-243	N/A
CM244	6.62E+03	1.70E-03	1.82E-05	2.81E-07	Cm-244	N/A

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE	1-YR INHALATION (REM/CI)		
	LUNG	MARROW	THYROID
SFUEL			
CO60	7.90E+05	3.80E+04	0.00E+00
KR85	0.00E+00	0.00E+00	0.00E+00
SR90	4.50E+06	3.80E+03	0.00E+00
RU106	4.30E+06	4.50E+03	0.00E+00
CS134	4.10E+04	3.90E+04	0.00E+00
CS137	3.10E+04	2.60E+04	0.00E+00
CE144	3.60E+06	4.20E+03	0.00E+00
EU154	0.00E+00	0.00E+00	0.00E+00
PU238	4.50E+08	1.10E+06	0.00E+00
PU239	4.20E+08	1.10E+06	0.00E+00
PU240	4.20E+08	1.10E+06	0.00E+00
PU241	3.60E+05	1.30E+03	0.00E+00
AM241	1.20E+08	1.70E+07	0.00E+00
AM243	1.10E+08	1.60E+07	0.00E+00
CM244	1.20E+08	1.70E+07	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RELEASE RELATED DATA
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RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	0.00E+00	0.00E+00	1.20E-02	1.20E-02	1.20E-02	1.20E-02
PKG2_C	0.00E+00	0.00E+00	0.00E+00	1.00E-02	1.00E-01	1.10E-01
PKG4_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08
PKG5_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	1.00E-06	4.20E-05
PKG3_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	2.00E-04	2.80E-04
PKG4_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08

DEPOSITION VELOCITIES

GROUP	M/SEC
PKG1_B	1.00E-02
PKG2_C	0.00E+00
PKG4_E	1.00E-02
PKG5_E	1.00E-02
PKG3_D	1.00E-02
PKG4_D	1.00E-02

ACCIDENT SEVERITY FRACTIONS
FOR HIGHWAY

ZONE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RURAL	6.03E-01	3.94E-01	3.00E-03	3.00E-06	5.00E-06	7.00E-06
SUBURBAN	6.02E-01	3.94E-01	4.00E-03	4.00E-06	3.00E-06	2.00E-06
URBAN	6.04E-01	3.95E-01	3.80E-04	3.80E-07	2.50E-07	1.30E-07

CRYSTAL RIVER TO HANFORD; SPENT FUEL

AEROSOLIZED FRACTION OF RELEASED MATERIAL

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG5_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG3_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00

RESPIRABLE FRACTION OF AEROSOLS (BELOW 10 MICRONS AED)

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG5_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG3_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00
PKG4_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL DATA (FATALITIES/KM)
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HIGHWAY

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RURAL	0.00E+00	0.00E+00	1.50E-08	5.30E-08
SUBURBAN	0.00E+00	0.00E+00	3.70E-09	1.30E-08
URBAN	0.00E+00	0.00E+00	2.10E-09	7.50E-09

CRYSTAL RIVER TO HANFORD; SPENT FUEL

HEALTH RELATED DATA
****

EARLY MORBIDITY THRESHOLD VALUE FOR LUNG 5.000E+02 REM
EARLY MORBIDITY THRESHOLD VALUE FOR MARROW/WHOLE BODY 5.000E+01 REM
EARLY MORBIDITY THRESHOLD VALUE FOR THYROID 2.000E+02 REM

EARLY FATALITY PROBABILITIES (EF)

DOSE(REM)	EF MARROW	DOSE(REM)	EF LUNG
680.00	1.00000	1525.00	1.00000
670.00	0.99999	1500.00	0.99999
660.00	0.99998	1475.00	0.99997
650.00	0.99996	1450.00	0.99991
640.00	0.99992	1425.00	0.99974
630.00	0.99983	1400.00	0.99933
620.00	0.99967	1375.00	0.99840
610.00	0.99938	1350.00	0.99653
600.00	0.99889	1325.00	0.99306
590.00	0.99808	1300.00	0.98709
580.00	0.99679	1275.00	0.97755
570.00	0.99482	1250.00	0.96331
560.00	0.99192	1225.00	0.94326
550.00	0.98776	1200.00	0.91656
540.00	0.98199	1175.00	0.88274
530.00	0.97423	1150.00	0.84178
520.00	0.96406	1125.00	0.79420
510.00	0.95111	1100.00	0.74095
500.00	0.93502	1075.00	0.68335
490.00	0.91551	1050.00	0.62293
480.00	0.89237	1025.00	0.56130
470.00	0.86552	1000.00	0.50000
460.00	0.83499	975.00	0.44042
450.00	0.80096	950.00	0.38372
440.00	0.76371	925.00	0.33077
430.00	0.72363	900.00	0.28218
420.00	0.68123	875.00	0.23830
410.00	0.63706	850.00	0.19925
400.00	0.59172	825.00	0.16498
390.00	0.54583	800.00	0.13529
380.00	0.50000	775.00	0.10988
370.00	0.45481	750.00	0.08837
360.00	0.41078	725.00	0.07038
350.00	0.36838	700.00	0.05548
340.00	0.32798	675.00	0.04329
330.00	0.28990	650.00	0.03341
320.00	0.25438	625.00	0.02549
310.00	0.22155	600.00	0.01922
300.00	0.19150	575.00	0.01430
290.00	0.16425	550.00	0.01050
280.00	0.13977	525.00	0.00759
270.00	0.11797	500.00	0.00000
260.00	0.09872		
250.00	0.08188		
240.00	0.06729		
230.00	0.05475		
220.00	0.04408		
210.00	0.03510		
200.00	0.02761		
190.00	0.02143		
180.00	0.01639		
170.00	0.01234		
160.00	0.00913		
150.00	0.00000		

CRYSTAL RIVER TO HANFORD; SPENT FUEL

METEOROLOGICAL DATA BASED ON PASQUILL CATEGORIES

PROB. A	PROB. B	PROB. C	PROB. D	PROB. E	PROB. F
0.0000	0.2000	0.0000	0.8000	0.0000	0.0000

AREA	*PASQUILL CATEGORY					
(M SQ)	A	B	C	D	E	F
4.60E+02	6.00E-03	4.00E-03	4.00E-03	4.30E-03	9.60E-03	6.20E-02
1.50E+03	1.70E-03	1.30E-03	1.10E-03	1.30E-03	3.20E-03	1.80E-02
3.90E+03	8.40E-04	5.50E-04	5.70E-04	6.50E-04	1.60E-03	8.40E-03
1.30E+04	1.70E-04	1.30E-04	1.30E-04	1.80E-04	4.00E-04	2.00E-03
3.00E+04	7.80E-05	6.00E-05	6.70E-05	9.50E-05	2.10E-04	9.20E-04
6.90E+04	2.80E-05	2.70E-05	3.00E-05	4.30E-05	1.40E-04	4.40E-04
1.80E+05	8.00E-06	1.00E-05	1.00E-05	1.80E-05	4.40E-05	2.00E-04
4.50E+05	2.20E-06	3.50E-06	5.00E-06	8.50E-06	2.10E-05	1.00E-04
8.60E+05	9.00E-07	1.60E-06	2.80E-06	5.00E-06	1.20E-05	6.20E-05
2.60E+06	1.40E-07	4.10E-07	1.00E-06	1.90E-06	4.80E-06	2.60E-05
4.50E+06	7.00E-08	2.20E-07	6.00E-07	1.30E-06	3.60E-06	1.90E-05
1.70E+07	1.10E-08	5.00E-08	1.70E-07	4.00E-07	1.40E-06	8.40E-06
2.20E+07	7.76E-09	3.20E-08	1.30E-07	3.00E-07	1.20E-06	7.00E-06
5.50E+07	2.24E-09	1.10E-08	5.70E-08	1.50E-07	6.00E-07	4.00E-06
1.80E+08	4.50E-10	2.50E-09	1.70E-08	5.50E-08	2.80E-07	2.00E-06
5.00E+08	1.13E-10	7.24E-10	6.32E-09	2.41E-08	1.38E-07	1.09E-06
8.00E+08	5.96E-11	4.09E-10	4.01E-09	1.65E-08	9.97E-08	8.22E-07
1.40E+09	2.76E-11	2.08E-10	2.33E-09	1.05E-08	6.77E-08	5.89E-07

* DILUTION FACTOR UNITS ARE (CI-SEC/M**3/CI-RELEASED)

AREA	CENTER LINE DISTANCES (M)					
(M SQ)	A	B	C	D	E	F
4.60E+02	2.40E+01	3.00E+01	3.30E+01	3.60E+01	4.20E+01	2.50E+01
1.50E+03	4.50E+01	5.40E+01	6.80E+01	7.70E+01	8.40E+01	6.00E+01
3.90E+03	6.50E+01	8.50E+01	9.80E+01	1.18E+02	1.30E+02	1.04E+02
1.30E+04	1.48E+02	1.82E+02	2.23E+02	2.61E+02	3.12E+02	2.90E+02
3.00E+04	2.21E+02	2.74E+02	3.22E+02	3.87E+02	4.68E+02	5.05E+02
6.90E+04	3.74E+02	4.17E+02	5.03E+02	6.33E+02	6.05E+02	8.57E+02
1.80E+05	5.89E+02	7.04E+02	9.25E+02	1.08E+03	1.26E+03	1.51E+03
4.50E+05	8.99E+02	1.22E+03	1.36E+03	1.73E+03	2.00E+03	2.48E+03
8.60E+05	1.20E+03	1.85E+03	1.87E+03	2.40E+03	2.85E+03	3.49E+03
2.60E+06	2.22E+03	3.80E+03	3.31E+03	4.37E+03	5.09E+03	6.51E+03
4.50E+06	2.78E+03	5.27E+03	4.40E+03	5.53E+03	6.10E+03	8.16E+03
1.70E+07	5.11E+03	1.15E+04	8.85E+03	1.15E+04	1.19E+04	1.46E+04
2.20E+07	5.72E+03	1.46E+04	1.03E+04	1.37E+04	1.35E+04	1.67E+04
5.50E+07	8.65E+03	2.56E+04	1.62E+04	2.11E+04	2.37E+04	2.49E+04
1.80E+08	1.46E+04	5.59E+04	3.17E+04	3.92E+04	4.39E+04	4.09E+04
5.00E+08	2.31E+04	1.08E+05	5.50E+04	6.56E+04	7.70E+04	6.29E+04
8.00E+08	2.82E+04	1.45E+05	7.07E+04	8.12E+04	1.01E+05	7.76E+04
1.40E+09	3.62E+04	2.06E+05	9.61E+04	1.06E+05	1.38E+05	9.71E+04

CRYSTAL RIVER TO HANFORD; SPENT FUEL

BUILDING DOSE FACTOR (BDF)	= 5.000E-02
CONTAMINATION CLEAN UP LEVEL (UCI/M**2) (CULVL)	= 2.000E-01
BREATHING RATE (M**3/SEC) (BRATE)	= 3.300E-04
INTERDICTION THRESHOLD (INTERDICT)	= 4.000E+01
EVACUATION TIME (DAYS) (EVACUATION)	= 1.000E+00
SURVEY INTERVAL (DAYS) (SURVEY)	= 1.000E+01
CAMPAIGN LENGTH (YEARS) (CAMPAIGN)	= 1.000E+00
FRACTION OF URBAN AREAS WITH BUILDINGS (UBF)	= 9.000E-01
FRACTION OF URBAN AREAS WITH SIDEWALKS (USWF)	= 1.000E-01
RATIO OF SIDEWALK PEDESTRIAN DENSITY (RPD)	= 6.000E+00
MAXIMUM IN-TRANSIT DOSE DISTANCE (M) (MITDDIST)	= 3.000E+01
MAXIMUM IN-TRANSIT DOSE VELOCITY (KM/H) (MITDVEL)	= 2.400E+01
IACC VALUE: 1=NON-DISPERSAL, 2=DISPERSAL	= 2
REGULATORY CHECK, 1=DO CHECKS, 0=NO CHECKS	= 1
BUILDING SHIELDING OPTION (IUOPT)	= 2

RURAL SHIELDING FACTOR = 1.000E+00
SUBURBAN SHIELDING FACTOR = 8.700E-01
URBAN SHIELDING FACTOR = 1.800E-02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INGESTION RELATED DATA

COMIDA INGESTION FILE USED: R5INGEST.BIN

COMIDA FILE HEADER
COMIDA2 02/17/03 16:17:38 Ver. 1.11a, 1/28/96: avoiding use of UNIT 6 for HP

DOSE CONVERSION FILE USED IN COMIDA
FGRDCF 05/08/95 16:43:45 beta-test version 1.10, minor FORTRAN fixes 5/4/95
Implicit daughter halflives (m) less than 90 and less than 0.100 of parent

NO INGESTION WILL BE CALCULATED FOR THE FOLLOWING ISOTOPES
INGESTION NUCLIDES ARE NOT IN INGESTION FILE

ISOTOPE	INGESTION NUCLIDE
KR85	NONE

CRYSTAL RIVER TO HANFORD; SPENT FUEL

BACKYARD FARMER INGESTION DOSE (REM/CI DEPOSITED)

NUCLIDE	EFFECTIVE	THYROID
Co-60	4.308E+04	1.225E+04
Sr-90	2.541E+05	9.964E+03
Ru-106	2.107E+04	4.014E+03
Cs-134	6.012E+05	5.344E+05
Cs-137	4.870E+05	4.545E+05
Ce-144	1.202E+04	1.085E+01
Eu-154	1.439E+04	3.185E+02
Pu-238	3.858E+04	2.301E-01
Pu-239	4.049E+04	2.169E-01
Pu-240	4.049E+04	2.172E-01
Pu-241	3.231E+03	3.837E-02
Am-241	2.846E+06	3.818E+01
Am-243	2.834E+06	1.968E+02
Cm-244	2.534E+06	3.924E+01

SOCIETAL INGESTION DOSE (PERSON-REM/CI DEPOSITED)

NUCLIDE	GONADS	BREAST	LUNGS	RED MAR	BONE SU	THYROID	REMAIND	EFFECTI
Co-60	8.2E+00	2.8E+00	2.3E+00	3.4E+00	2.4E+00	2.0E+00	1.3E+01	7.1E+00
Sr-90	1.8E+00	1.8E+00	1.8E+00	2.3E+02	4.9E+02	1.8E+00	7.3E+00	4.5E+01
Ru-106	5.5E-01	4.8E-01	4.8E-01	4.9E-01	4.8E-01	4.7E-01	7.1E+00	2.5E+00
Cs-134	8.9E+01	7.5E+01	7.6E+01	8.1E+01	7.5E+01	7.6E+01	9.6E+01	8.6E+01
Cs-137	8.2E+01	7.4E+01	7.5E+01	7.8E+01	7.5E+01	7.5E+01	8.6E+01	8.0E+01
Ce-144	1.7E-02	2.9E-03	1.6E-03	2.1E-02	3.0E-02	1.2E-03	4.5E+00	1.4E+00
Eu-154	1.1E+00	2.3E-01	1.8E-01	9.6E-01	3.7E+00	4.8E-02	5.3E+00	2.2E+00
Pu-238	8.1E-01	6.2E-05	3.0E-05	4.4E+00	5.5E+01	2.8E-05	7.5E+00	4.6E+00
Pu-239	9.2E-01	4.2E-05	2.7E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-240	9.2E-01	6.0E-05	2.9E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-241	1.4E-01	1.3E-05	1.7E-05	7.7E-01	9.6E+00	6.5E-06	3.7E-01	5.3E-01
Am-241	9.4E+01	9.1E-03	1.2E-02	5.0E+02	6.3E+03	4.6E-03	2.3E+02	3.4E+02
Am-243	9.4E+01	4.9E-02	6.8E-02	5.0E+02	6.3E+03	2.4E-02	2.3E+02	3.4E+02
Cm-244	7.6E+01	5.1E-03	5.1E-03	4.5E+02	5.6E+03	4.8E-03	2.4E+02	3.1E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL RISK (FATALITIES)
****

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RUR_NR_FW	0.00E+00	0.00E+00	5.32E-02	1.88E-01
RUR_NR_NF	0.00E+00	0.00E+00	1.77E-02	6.27E-02
RUR_RH_FW	0.00E+00	0.00E+00	5.91E-03	2.09E-02
RUR_RH_NF	0.00E+00	0.00E+00	1.97E-03	6.96E-03
SUB_NR_FW	0.00E+00	0.00E+00	3.12E-03	1.10E-02
SUB_NR_NF	0.00E+00	0.00E+00	1.04E-03	3.65E-03
SUB_RH_FW	0.00E+00	0.00E+00	3.46E-04	1.22E-03
SUB_RH_NF	0.00E+00	0.00E+00	1.15E-04	4.06E-04
URB_NR_FW	0.00E+00	0.00E+00	1.75E-05	6.27E-05
URB_NR_NF	0.00E+00	0.00E+00	9.37E-07	3.35E-06
URB_RH_FW	0.00E+00	0.00E+00	1.96E-06	7.00E-06
URB_RH_NF	0.00E+00	0.00E+00	1.14E-07	4.06E-07
TOTALS:	0.00E+00	0.00E+00	8.35E-02	2.95E-01

CRYSTAL RIVER TO HANFORD; SPENT FUEL

REGULATORY CHECKS

FOR TRUCK THE DOSE RATE AT 2 METERS COULD EXCEED 10 MREM/HR
THE VEHICLE DOSE RATE HAS BEEN RESET TO EQUAL 13.00 MREM/HR

CRYSTAL RIVER TO HANFORD; SPENT FUEL

CALCULATIONAL INFORMATION FOR PASQUILL CATEGORY B

FOR TRUCK AREAS WITH TOTAL CONTAMINATION RATIO GREATER THAN 40.000
(THE AREAS MARKED WITH AN 'X' ARE INTERDICTED AND HAVE
NO 50 YEAR GROUNDSHINE DOSE AND NO INGESTION DOSE.)

AREA/SEVERITY	1	2	3	4	5	6
1	-	-	X	X	X	X
2	-	-	X	X	X	X
3	-	-	-	-	X	X
4	-	-	-	-	X	X
5	-	-	-	-	X	X
6	-	-	-	-	-	X
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-	-	-	-	-
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-

CRYSTAL RIVER TO HANFORD; SPENT FUEL

DILUTION FACTORS FOR PASQUILL CATEGORY B
CHI VALUES AFTER DEPLETION (CI-SEC/M**3/CI-RELEASED)

AREA	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
4.60E+02	4.00E-03	4.00E-03	4.00E-03	4.00E-03	4.00E-03	4.00E-03
1.50E+03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03
3.90E+03	5.36E-04	5.50E-04	5.36E-04	5.36E-04	5.36E-04	5.36E-04
1.30E+04	1.24E-04	1.30E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04
3.00E+04	5.59E-05	6.00E-05	5.59E-05	5.59E-05	5.59E-05	5.59E-05
6.90E+04	2.48E-05	2.70E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05
1.80E+05	9.03E-06	1.00E-05	9.03E-06	9.03E-06	9.03E-06	9.03E-06
4.50E+05	3.10E-06	3.50E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06
8.60E+05	1.40E-06	1.60E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
2.60E+06	3.54E-07	4.10E-07	3.54E-07	3.54E-07	3.54E-07	3.54E-07
4.50E+06	1.87E-07	2.20E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07
1.70E+07	4.23E-08	5.00E-08	4.23E-08	4.23E-08	4.23E-08	4.23E-08
2.20E+07	2.67E-08	3.20E-08	2.67E-08	2.67E-08	2.67E-08	2.67E-08
5.50E+07	9.17E-09	1.10E-08	9.17E-09	9.17E-09	9.17E-09	9.17E-09
1.80E+08	2.07E-09	2.50E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09
5.00E+08	5.96E-10	7.24E-10	5.96E-10	5.96E-10	5.96E-10	5.96E-10
8.00E+08	3.35E-10	4.09E-10	3.35E-10	3.35E-10	3.35E-10	3.35E-10
1.40E+09	1.70E-10	2.08E-10	1.70E-10	1.70E-10	1.70E-10	1.70E-10

CRYSTAL RIVER TO HANFORD; SPENT FUEL
PASQUILL CATEGORY B
VEHICLE TRUCK

1-YEAR DOSE TO LUNG, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	5.77E-02	5.93E-02	1.09E+00	1.68E+00
5.40E+01	0.00E+00	0.00E+00	1.87E-02	1.93E-02	3.53E-01	5.45E-01
8.50E+01	0.00E+00	0.00E+00	7.73E-03	7.96E-03	1.46E-01	2.25E-01
1.82E+02	0.00E+00	0.00E+00	1.79E-03	1.84E-03	3.37E-02	5.22E-02
2.74E+02	0.00E+00	0.00E+00	8.06E-04	8.29E-04	1.52E-02	2.35E-02
4.17E+02	0.00E+00	0.00E+00	3.57E-04	3.67E-04	6.73E-03	1.04E-02
7.04E+02	0.00E+00	0.00E+00	1.30E-04	1.34E-04	2.45E-03	3.79E-03
1.22E+03	0.00E+00	0.00E+00	4.47E-05	4.60E-05	8.42E-04	1.30E-03
1.85E+03	0.00E+00	0.00E+00	2.01E-05	2.07E-05	3.79E-04	5.86E-04
3.80E+03	0.00E+00	0.00E+00	5.11E-06	5.25E-06	9.62E-05	1.49E-04
5.27E+03	0.00E+00	0.00E+00	2.70E-06	2.78E-06	5.09E-05	7.87E-05
1.15E+04	0.00E+00	0.00E+00	6.10E-07	6.28E-07	1.15E-05	1.78E-05
1.46E+04	0.00E+00	0.00E+00	3.86E-07	3.97E-07	7.26E-06	1.12E-05
2.56E+04	0.00E+00	0.00E+00	1.32E-07	1.36E-07	2.49E-06	3.85E-06
5.59E+04	0.00E+00	0.00E+00	2.99E-08	3.07E-08	5.63E-07	8.70E-07
1.08E+05	0.00E+00	0.00E+00	8.59E-09	8.84E-09	1.62E-07	2.50E-07
1.45E+05	0.00E+00	0.00E+00	4.83E-09	4.97E-09	9.10E-08	1.41E-07
2.06E+05	0.00E+00	0.00E+00	2.45E-09	2.52E-09	4.62E-08	7.15E-08

1-YEAR DOSE TO MARROW/WHOLE BODY, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	4.84E-03	4.99E-03	8.96E-01	1.25E+00
5.40E+01	0.00E+00	0.00E+00	1.57E-03	1.62E-03	2.91E-01	4.06E-01
8.50E+01	0.00E+00	0.00E+00	6.48E-04	6.69E-04	1.20E-01	1.68E-01
1.82E+02	0.00E+00	0.00E+00	1.50E-04	1.55E-04	2.78E-02	3.89E-02
2.74E+02	0.00E+00	0.00E+00	6.76E-05	6.98E-05	1.25E-02	1.75E-02
4.17E+02	0.00E+00	0.00E+00	2.99E-05	3.09E-05	5.55E-03	7.75E-03
7.04E+02	0.00E+00	0.00E+00	1.09E-05	1.13E-05	2.02E-03	2.82E-03
1.22E+03	0.00E+00	0.00E+00	3.75E-06	3.87E-06	6.94E-04	9.70E-04
1.85E+03	0.00E+00	0.00E+00	1.69E-06	1.74E-06	3.13E-04	4.37E-04
3.80E+03	0.00E+00	0.00E+00	4.28E-07	4.43E-07	7.93E-05	1.11E-04
5.27E+03	0.00E+00	0.00E+00	2.27E-07	2.34E-07	4.20E-05	5.86E-05
1.15E+04	0.00E+00	0.00E+00	5.12E-08	5.30E-08	9.48E-06	1.32E-05
1.46E+04	0.00E+00	0.00E+00	3.23E-08	3.35E-08	5.99E-06	8.37E-06
2.56E+04	0.00E+00	0.00E+00	1.11E-08	1.15E-08	2.05E-06	2.87E-06
5.59E+04	0.00E+00	0.00E+00	2.50E-09	2.59E-09	4.64E-07	6.48E-07
1.08E+05	0.00E+00	0.00E+00	7.21E-10	7.46E-10	1.33E-07	1.87E-07
1.45E+05	0.00E+00	0.00E+00	4.05E-10	4.20E-10	7.51E-08	1.05E-07
2.06E+05	0.00E+00	0.00E+00	2.06E-10	2.13E-10	3.81E-08	5.33E-08

1-YEAR DOSE TO THYROID, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.50E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.82E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.74E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.17E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.04E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.22E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.85E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.80E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.27E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.15E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.46E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.56E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.59E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.08E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.45E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.06E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
VEHICLE TRUCK

GROUND SURFACE CONTAMINATION TABLE (MICRO CI/M**2)
BEFORE CLEANUP

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	4.43E+01	4.44E+01	9.65E+02	1.36E+03
5.40E+01	0.00E+00	0.00E+00	1.44E+01	1.44E+01	3.13E+02	4.41E+02
8.50E+01	0.00E+00	0.00E+00	5.93E+00	5.95E+00	1.29E+02	1.82E+02
1.82E+02	0.00E+00	0.00E+00	1.37E+00	1.38E+00	3.00E+01	4.22E+01
2.74E+02	0.00E+00	0.00E+00	6.18E-01	6.20E-01	1.35E+01	1.90E+01
4.17E+02	0.00E+00	0.00E+00	2.74E-01	2.75E-01	5.98E+00	8.42E+00
7.04E+02	0.00E+00	0.00E+00	9.99E-02	1.00E-01	2.18E+00	3.07E+00
1.22E+03	0.00E+00	0.00E+00	3.43E-02	3.44E-02	7.48E-01	1.05E+00
1.85E+03	0.00E+00	0.00E+00	1.54E-02	1.55E-02	3.37E-01	4.75E-01
3.80E+03	0.00E+00	0.00E+00	3.92E-03	3.93E-03	8.55E-02	1.20E-01
5.27E+03	0.00E+00	0.00E+00	2.07E-03	2.08E-03	4.52E-02	6.37E-02
1.15E+04	0.00E+00	0.00E+00	4.68E-04	4.70E-04	1.02E-02	1.44E-02
1.46E+04	0.00E+00	0.00E+00	2.96E-04	2.97E-04	6.45E-03	9.09E-03
2.56E+04	0.00E+00	0.00E+00	1.01E-04	1.02E-04	2.21E-03	3.12E-03
5.59E+04	0.00E+00	0.00E+00	2.29E-05	2.30E-05	5.00E-04	7.04E-04
1.08E+05	0.00E+00	0.00E+00	6.59E-06	6.61E-06	1.44E-04	2.03E-04
1.45E+05	0.00E+00	0.00E+00	3.71E-06	3.72E-06	8.09E-05	1.14E-04
2.06E+05	0.00E+00	0.00E+00	1.88E-06	1.89E-06	4.11E-05	5.79E-05

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
VEHICLE TRUCK

MAXIMUM INDIVIDUAL CONSEQUENCE (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	9.57E-02	9.75E-02	2.25E+00	3.29E+00
5.40E+01	0.00E+00	0.00E+00	3.11E-02	3.17E-02	7.29E-01	1.07E+00
8.50E+01	0.00E+00	0.00E+00	1.28E-02	1.31E-02	3.01E-01	4.41E-01
1.82E+02	0.00E+00	0.00E+00	2.97E-03	3.03E-03	6.97E-02	1.02E-01
2.74E+02	0.00E+00	0.00E+00	1.34E-03	1.36E-03	3.14E-02	4.60E-02
4.17E+02	0.00E+00	0.00E+00	5.93E-04	6.04E-04	1.39E-02	2.04E-02
7.04E+02	0.00E+00	0.00E+00	2.16E-04	2.20E-04	5.07E-03	7.42E-03
1.22E+03	0.00E+00	0.00E+00	7.42E-05	7.56E-05	1.74E-03	2.55E-03
1.85E+03	0.00E+00	0.00E+00	3.34E-05	3.40E-05	7.84E-04	1.15E-03
3.80E+03	0.00E+00	0.00E+00	8.47E-06	8.64E-06	1.99E-04	2.91E-04
5.27E+03	0.00E+00	0.00E+00	4.48E-06	4.57E-06	1.05E-04	1.54E-04
1.15E+04	0.00E+00	0.00E+00	1.01E-06	1.03E-06	2.38E-05	3.48E-05
1.46E+04	0.00E+00	0.00E+00	6.40E-07	6.52E-07	1.50E-05	2.20E-05
2.56E+04	0.00E+00	0.00E+00	2.19E-07	2.24E-07	5.15E-06	7.54E-06
5.59E+04	0.00E+00	0.00E+00	4.96E-08	5.05E-08	1.16E-06	1.70E-06
1.08E+05	0.00E+00	0.00E+00	1.43E-08	1.45E-08	3.35E-07	4.90E-07
1.45E+05	0.00E+00	0.00E+00	8.02E-09	8.17E-09	1.88E-07	2.76E-07
2.06E+05	0.00E+00	0.00E+00	4.07E-09	4.15E-09	9.55E-08	1.40E-07

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
VEHICLE TRUCK

BACKYARD FARMER DOSE - EFFECTIVE
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	1.91E+00	1.94E+00	4.75E+02	6.65E+02
5.40E+01	0.00E+00	0.00E+00	6.19E-01	6.30E-01	1.54E+02	2.16E+02
8.50E+01	0.00E+00	0.00E+00	2.56E-01	2.60E-01	6.37E+01	8.91E+01
1.82E+02	0.00E+00	0.00E+00	5.92E-02	6.02E-02	1.47E+01	2.06E+01
2.74E+02	0.00E+00	0.00E+00	2.66E-02	2.71E-02	6.64E+00	9.29E+00
4.17E+02	0.00E+00	0.00E+00	1.18E-02	1.20E-02	2.94E+00	4.12E+00
7.04E+02	0.00E+00	0.00E+00	4.30E-03	4.38E-03	1.07E+00	1.50E+00
1.22E+03	0.00E+00	0.00E+00	1.48E-03	1.50E-03	3.68E-01	5.15E-01
1.85E+03	0.00E+00	0.00E+00	6.65E-04	6.77E-04	1.66E-01	2.32E-01
3.80E+03	0.00E+00	0.00E+00	1.69E-04	1.72E-04	4.21E-02	5.89E-02
5.27E+03	0.00E+00	0.00E+00	8.93E-05	9.08E-05	2.22E-02	3.11E-02
1.15E+04	0.00E+00	0.00E+00	2.02E-05	2.05E-05	5.03E-03	7.03E-03
1.46E+04	0.00E+00	0.00E+00	1.27E-05	1.30E-05	3.17E-03	4.44E-03
2.56E+04	0.00E+00	0.00E+00	4.37E-06	4.45E-06	1.09E-03	1.52E-03
5.59E+04	0.00E+00	0.00E+00	9.87E-07	1.00E-06	2.46E-04	3.44E-04
1.08E+05	0.00E+00	0.00E+00	2.84E-07	2.89E-07	7.08E-05	9.90E-05
1.45E+05	0.00E+00	0.00E+00	1.60E-07	1.63E-07	3.98E-05	5.57E-05
2.06E+05	0.00E+00	0.00E+00	8.11E-08	8.25E-08	2.02E-05	2.83E-05

BACKYARD FARMER DOSE - THYROID
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	5.42E-01	5.64E-01	4.36E+02	6.11E+02
5.40E+01	0.00E+00	0.00E+00	1.76E-01	1.83E-01	1.42E+02	1.98E+02
8.50E+01	0.00E+00	0.00E+00	7.27E-02	7.57E-02	5.85E+01	8.19E+01
1.82E+02	0.00E+00	0.00E+00	1.68E-02	1.75E-02	1.35E+01	1.90E+01
2.74E+02	0.00E+00	0.00E+00	7.58E-03	7.89E-03	6.10E+00	8.53E+00
4.17E+02	0.00E+00	0.00E+00	3.36E-03	3.49E-03	2.70E+00	3.78E+00
7.04E+02	0.00E+00	0.00E+00	1.22E-03	1.27E-03	9.84E-01	1.38E+00
1.22E+03	0.00E+00	0.00E+00	4.20E-04	4.37E-04	3.38E-01	4.73E-01
1.85E+03	0.00E+00	0.00E+00	1.89E-04	1.97E-04	1.52E-01	2.13E-01
3.80E+03	0.00E+00	0.00E+00	4.80E-05	5.00E-05	3.86E-02	5.41E-02
5.27E+03	0.00E+00	0.00E+00	2.54E-05	2.64E-05	2.04E-02	2.86E-02
1.15E+04	0.00E+00	0.00E+00	5.74E-06	5.97E-06	4.62E-03	6.46E-03
1.46E+04	0.00E+00	0.00E+00	3.62E-06	3.77E-06	2.92E-03	4.08E-03
2.56E+04	0.00E+00	0.00E+00	1.24E-06	1.29E-06	1.00E-03	1.40E-03
5.59E+04	0.00E+00	0.00E+00	2.81E-07	2.92E-07	2.26E-04	3.16E-04
1.08E+05	0.00E+00	0.00E+00	8.08E-08	8.41E-08	6.50E-05	9.10E-05
1.45E+05	0.00E+00	0.00E+00	4.54E-08	4.73E-08	3.65E-05	5.12E-05
2.06E+05	0.00E+00	0.00E+00	2.31E-08	2.40E-08	1.86E-05	2.60E-05

CRYSTAL RIVER TO HANFORD; SPENT FUEL

CALCULATIONAL INFORMATION FOR PASQUILL CATEGORY D

FOR TRUCK AREAS WITH TOTAL CONTAMINATION RATIO GREATER THAN 40.000
(THE AREAS MARKED WITH AN 'X' ARE INTERDICTED AND HAVE
NO 50 YEAR GROUNDSHINE DOSE AND NO INGESTION DOSE.)

AREA/SEVERITY	1	2	3	4	5	6
1	-	-	X	X	X	X
2	-	-	X	X	X	X
3	-	-	-	-	X	X
4	-	-	-	-	X	X
5	-	-	-	-	X	X
6	-	-	-	-	X	X
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-	-	-	-	-
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-

CRYSTAL RIVER TO HANFORD; SPENT FUEL

DILUTION FACTORS FOR PASQUILL CATEGORY D
CHI VALUES AFTER DEPLETION (CI-SEC/M**3/CI-RELEASED)

AREA	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
4.60E+02	4.30E-03	4.30E-03	4.30E-03	4.30E-03	4.30E-03	4.30E-03
1.50E+03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03
3.90E+03	6.33E-04	6.50E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04
1.30E+04	1.71E-04	1.80E-04	1.71E-04	1.71E-04	1.71E-04	1.71E-04
3.00E+04	8.76E-05	9.50E-05	8.76E-05	8.76E-05	8.76E-05	8.76E-05
6.90E+04	3.88E-05	4.30E-05	3.88E-05	3.88E-05	3.88E-05	3.88E-05
1.80E+05	1.58E-05	1.80E-05	1.58E-05	1.58E-05	1.58E-05	1.58E-05
4.50E+05	7.24E-06	8.50E-06	7.24E-06	7.24E-06	7.24E-06	7.24E-06
8.60E+05	4.11E-06	5.00E-06	4.11E-06	4.11E-06	4.11E-06	4.11E-06
2.60E+06	1.52E-06	1.90E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06
4.50E+06	9.84E-07	1.30E-06	9.84E-07	9.84E-07	9.84E-07	9.84E-07
1.70E+07	2.93E-07	4.00E-07	2.93E-07	2.93E-07	2.93E-07	2.93E-07
2.20E+07	2.00E-07	3.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07
5.50E+07	9.82E-08	1.50E-07	9.82E-08	9.82E-08	9.82E-08	9.82E-08
1.80E+08	3.34E-08	5.50E-08	3.34E-08	3.34E-08	3.34E-08	3.34E-08
5.00E+08	1.29E-08	2.41E-08	1.29E-08	1.29E-08	1.29E-08	1.29E-08
8.00E+08	7.76E-09	1.65E-08	7.76E-09	7.76E-09	7.76E-09	7.76E-09
1.40E+09	4.62E-09	1.05E-08	4.62E-09	4.62E-09	4.62E-09	4.62E-09

CRYSTAL RIVER TO HANFORD; SPENT FUEL
PASQUILL CATEGORY D
VEHICLE TRUCK

1-YEAR DOSE TO LUNG, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	6.20E-02	6.38E-02	1.17E+00	1.81E+00
7.70E+01	0.00E+00	0.00E+00	1.87E-02	1.93E-02	3.53E-01	5.45E-01
1.18E+02	0.00E+00	0.00E+00	9.13E-03	9.39E-03	1.72E-01	2.66E-01
2.61E+02	0.00E+00	0.00E+00	2.47E-03	2.54E-03	4.66E-02	7.20E-02
3.87E+02	0.00E+00	0.00E+00	1.26E-03	1.30E-03	2.38E-02	3.68E-02
6.33E+02	0.00E+00	0.00E+00	5.59E-04	5.75E-04	1.05E-02	1.63E-02
1.08E+03	0.00E+00	0.00E+00	2.28E-04	2.35E-04	4.30E-03	6.65E-03
1.73E+03	0.00E+00	0.00E+00	1.04E-04	1.07E-04	1.97E-03	3.04E-03
2.40E+03	0.00E+00	0.00E+00	5.93E-05	6.10E-05	1.12E-03	1.73E-03
4.37E+03	0.00E+00	0.00E+00	2.19E-05	2.25E-05	4.13E-04	6.38E-04
5.53E+03	0.00E+00	0.00E+00	1.42E-05	1.46E-05	2.67E-04	4.13E-04
1.15E+04	0.00E+00	0.00E+00	4.23E-06	4.35E-06	7.97E-05	1.23E-04
1.37E+04	0.00E+00	0.00E+00	2.88E-06	2.97E-06	5.43E-05	8.40E-05
2.11E+04	0.00E+00	0.00E+00	1.42E-06	1.46E-06	2.67E-05	4.12E-05
3.92E+04	0.00E+00	0.00E+00	4.82E-07	4.96E-07	9.08E-06	1.40E-05
6.56E+04	0.00E+00	0.00E+00	1.87E-07	1.92E-07	3.52E-06	5.44E-06
8.12E+04	0.00E+00	0.00E+00	1.12E-07	1.15E-07	2.11E-06	3.26E-06
1.06E+05	0.00E+00	0.00E+00	6.67E-08	6.86E-08	1.26E-06	1.94E-06

1-YEAR DOSE TO MARROW/WHOLE BODY, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	5.20E-03	5.36E-03	9.63E-01	1.35E+00
7.70E+01	0.00E+00	0.00E+00	1.57E-03	1.62E-03	2.91E-01	4.06E-01
1.18E+02	0.00E+00	0.00E+00	7.66E-04	7.89E-04	1.42E-01	1.98E-01
2.61E+02	0.00E+00	0.00E+00	2.07E-04	2.14E-04	3.84E-02	5.37E-02
3.87E+02	0.00E+00	0.00E+00	1.06E-04	1.09E-04	1.96E-02	2.74E-02
6.33E+02	0.00E+00	0.00E+00	4.69E-05	4.84E-05	8.68E-03	1.21E-02
1.08E+03	0.00E+00	0.00E+00	1.91E-05	1.98E-05	3.54E-03	4.95E-03
1.73E+03	0.00E+00	0.00E+00	8.75E-06	9.05E-06	1.62E-03	2.27E-03
2.40E+03	0.00E+00	0.00E+00	4.97E-06	5.15E-06	9.21E-04	1.29E-03
4.37E+03	0.00E+00	0.00E+00	1.84E-06	1.90E-06	3.40E-04	4.76E-04
5.53E+03	0.00E+00	0.00E+00	1.19E-06	1.24E-06	2.20E-04	3.08E-04
1.15E+04	0.00E+00	0.00E+00	3.55E-07	3.69E-07	6.57E-05	9.19E-05
1.37E+04	0.00E+00	0.00E+00	2.42E-07	2.52E-07	4.48E-05	6.26E-05
2.11E+04	0.00E+00	0.00E+00	1.19E-07	1.24E-07	2.20E-05	3.07E-05
3.92E+04	0.00E+00	0.00E+00	4.04E-08	4.23E-08	7.49E-06	1.05E-05
6.56E+04	0.00E+00	0.00E+00	1.56E-08	1.64E-08	2.90E-06	4.05E-06
8.12E+04	0.00E+00	0.00E+00	9.39E-09	9.91E-09	1.74E-06	2.43E-06
1.06E+05	0.00E+00	0.00E+00	5.59E-09	5.92E-09	1.04E-06	1.45E-06

1-YEAR DOSE TO THYROID, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.70E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.18E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.61E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.87E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.33E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.08E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.73E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.40E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.37E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.53E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.15E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.37E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.11E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.92E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.56E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.12E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.06E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
VEHICLE TRUCK

GROUND SURFACE CONTAMINATION TABLE (MICRO CI/M**2)
BEFORE CLEANUP

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	4.76E+01	4.77E+01	1.04E+03	1.46E+03
7.70E+01	0.00E+00	0.00E+00	1.44E+01	1.44E+01	3.13E+02	4.41E+02
1.18E+02	0.00E+00	0.00E+00	7.00E+00	7.03E+00	1.53E+02	2.15E+02
2.61E+02	0.00E+00	0.00E+00	1.90E+00	1.90E+00	4.14E+01	5.83E+01
3.87E+02	0.00E+00	0.00E+00	9.69E-01	9.72E-01	2.11E+01	2.98E+01
6.33E+02	0.00E+00	0.00E+00	4.29E-01	4.30E-01	9.35E+00	1.32E+01
1.08E+03	0.00E+00	0.00E+00	1.75E-01	1.76E-01	3.82E+00	5.38E+00
1.73E+03	0.00E+00	0.00E+00	8.01E-02	8.03E-02	1.75E+00	2.46E+00
2.40E+03	0.00E+00	0.00E+00	4.55E-02	4.56E-02	9.92E-01	1.40E+00
4.37E+03	0.00E+00	0.00E+00	1.68E-02	1.69E-02	3.67E-01	5.17E-01
5.53E+03	0.00E+00	0.00E+00	1.09E-02	1.09E-02	2.38E-01	3.35E-01
1.15E+04	0.00E+00	0.00E+00	3.25E-03	3.26E-03	7.08E-02	9.98E-02
1.37E+04	0.00E+00	0.00E+00	2.21E-03	2.22E-03	4.83E-02	6.80E-02
2.11E+04	0.00E+00	0.00E+00	1.09E-03	1.09E-03	2.37E-02	3.34E-02
3.92E+04	0.00E+00	0.00E+00	3.70E-04	3.71E-04	8.07E-03	1.14E-02
6.56E+04	0.00E+00	0.00E+00	1.43E-04	1.44E-04	3.12E-03	4.40E-03
8.12E+04	0.00E+00	0.00E+00	8.59E-05	8.61E-05	1.87E-03	2.64E-03
1.06E+05	0.00E+00	0.00E+00	5.12E-05	5.13E-05	1.12E-03	1.57E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
VEHICLE TRUCK

MAXIMUM INDIVIDUAL CONSEQUENCE (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	1.03E-01	1.05E-01	2.41E+00	3.54E+00
7.70E+01	0.00E+00	0.00E+00	3.11E-02	3.17E-02	7.29E-01	1.07E+00
1.18E+02	0.00E+00	0.00E+00	1.52E-02	1.54E-02	3.55E-01	5.21E-01
2.61E+02	0.00E+00	0.00E+00	4.10E-03	4.18E-03	9.63E-02	1.41E-01
3.87E+02	0.00E+00	0.00E+00	2.10E-03	2.14E-03	4.92E-02	7.21E-02
6.33E+02	0.00E+00	0.00E+00	9.27E-04	9.45E-04	2.18E-02	3.19E-02
1.08E+03	0.00E+00	0.00E+00	3.79E-04	3.86E-04	8.88E-03	1.30E-02
1.73E+03	0.00E+00	0.00E+00	1.73E-04	1.77E-04	4.06E-03	5.95E-03
2.40E+03	0.00E+00	0.00E+00	9.84E-05	1.00E-04	2.31E-03	3.38E-03
4.37E+03	0.00E+00	0.00E+00	3.64E-05	3.71E-05	8.53E-04	1.25E-03
5.53E+03	0.00E+00	0.00E+00	2.36E-05	2.40E-05	5.53E-04	8.10E-04
1.15E+04	0.00E+00	0.00E+00	7.02E-06	7.16E-06	1.65E-04	2.41E-04
1.37E+04	0.00E+00	0.00E+00	4.79E-06	4.88E-06	1.12E-04	1.64E-04
2.11E+04	0.00E+00	0.00E+00	2.35E-06	2.39E-06	5.51E-05	8.07E-05
3.92E+04	0.00E+00	0.00E+00	8.00E-07	8.16E-07	1.88E-05	2.75E-05
6.56E+04	0.00E+00	0.00E+00	3.10E-07	3.16E-07	7.27E-06	1.06E-05
8.12E+04	0.00E+00	0.00E+00	1.86E-07	1.90E-07	4.36E-06	6.39E-06
1.06E+05	0.00E+00	0.00E+00	1.11E-07	1.13E-07	2.60E-06	3.80E-06

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
VEHICLE TRUCK

BACKYARD FARMER DOSE - EFFECTIVE
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	2.05E+00	2.09E+00	5.11E+02	7.15E+02
7.70E+01	0.00E+00	0.00E+00	6.19E-01	6.29E-01	1.54E+02	2.16E+02
1.18E+02	0.00E+00	0.00E+00	3.02E-01	3.07E-01	7.52E+01	1.05E+02
2.61E+02	0.00E+00	0.00E+00	8.17E-02	8.32E-02	2.04E+01	2.85E+01
3.87E+02	0.00E+00	0.00E+00	4.18E-02	4.25E-02	1.04E+01	1.46E+01
6.33E+02	0.00E+00	0.00E+00	1.85E-02	1.88E-02	4.60E+00	6.44E+00
1.08E+03	0.00E+00	0.00E+00	7.54E-03	7.67E-03	1.88E+00	2.63E+00
1.73E+03	0.00E+00	0.00E+00	3.45E-03	3.51E-03	8.59E-01	1.20E+00
2.40E+03	0.00E+00	0.00E+00	1.96E-03	1.99E-03	4.88E-01	6.83E-01
4.37E+03	0.00E+00	0.00E+00	7.24E-04	7.37E-04	1.80E-01	2.53E-01
5.53E+03	0.00E+00	0.00E+00	4.69E-04	4.77E-04	1.17E-01	1.64E-01
1.15E+04	0.00E+00	0.00E+00	1.40E-04	1.42E-04	3.49E-02	4.88E-02
1.37E+04	0.00E+00	0.00E+00	9.53E-05	9.70E-05	2.37E-02	3.32E-02
2.11E+04	0.00E+00	0.00E+00	4.68E-05	4.76E-05	1.17E-02	1.63E-02
3.92E+04	0.00E+00	0.00E+00	1.59E-05	1.62E-05	3.97E-03	5.56E-03
6.56E+04	0.00E+00	0.00E+00	6.17E-06	6.28E-06	1.54E-03	2.15E-03
8.12E+04	0.00E+00	0.00E+00	3.70E-06	3.76E-06	9.22E-04	1.29E-03
1.06E+05	0.00E+00	0.00E+00	2.20E-06	2.24E-06	5.49E-04	7.68E-04

BACKYARD FARMER DOSE - THYROID
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	5.83E-01	6.07E-01	4.69E+02	6.56E+02
7.70E+01	0.00E+00	0.00E+00	1.76E-01	1.83E-01	1.42E+02	1.98E+02
1.18E+02	0.00E+00	0.00E+00	8.58E-02	8.93E-02	6.90E+01	9.66E+01
2.61E+02	0.00E+00	0.00E+00	2.32E-02	2.42E-02	1.87E+01	2.62E+01
3.87E+02	0.00E+00	0.00E+00	1.19E-02	1.24E-02	9.55E+00	1.34E+01
6.33E+02	0.00E+00	0.00E+00	5.25E-03	5.47E-03	4.23E+00	5.91E+00
1.08E+03	0.00E+00	0.00E+00	2.15E-03	2.23E-03	1.73E+00	2.42E+00
1.73E+03	0.00E+00	0.00E+00	9.81E-04	1.02E-03	7.89E-01	1.10E+00
2.40E+03	0.00E+00	0.00E+00	5.58E-04	5.80E-04	4.48E-01	6.28E-01
4.37E+03	0.00E+00	0.00E+00	2.06E-04	2.14E-04	1.66E-01	2.32E-01
5.53E+03	0.00E+00	0.00E+00	1.33E-04	1.39E-04	1.07E-01	1.50E-01
1.15E+04	0.00E+00	0.00E+00	3.98E-05	4.14E-05	3.20E-02	4.48E-02
1.37E+04	0.00E+00	0.00E+00	2.71E-05	2.82E-05	2.18E-02	3.05E-02
2.11E+04	0.00E+00	0.00E+00	1.33E-05	1.38E-05	1.07E-02	1.50E-02
3.92E+04	0.00E+00	0.00E+00	4.53E-06	4.72E-06	3.65E-03	5.10E-03
6.56E+04	0.00E+00	0.00E+00	1.75E-06	1.83E-06	1.41E-03	1.98E-03
8.12E+04	0.00E+00	0.00E+00	1.05E-06	1.10E-06	8.46E-04	1.18E-03
1.06E+05	0.00E+00	0.00E+00	6.27E-07	6.52E-07	5.04E-04	7.06E-04

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE SUMMARY
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IN-TRANSIT POPULATION EXPOSURE IN PERSON-REM
*INPUT DATA WERE ALTERED WITH REGULATORY CHECKS

	PASSENGER	CREW	OFF LINK	ON LINK	TOTALS
RUR_NR_FW	0.00E+00	6.15E+01	3.62E-01	1.47E+01	7.66E+01
RUR_NR_NF	0.00E+00	2.05E+01	1.44E-01	1.35E+01	3.41E+01
RUR_RH_FW	0.00E+00	6.84E+00	4.02E-02	1.64E+00	8.51E+00
RUR_RH_NF	0.00E+00	2.28E+00	1.60E-02	1.50E+00	3.79E+00
SUB_NR_FW	0.00E+00	1.46E+01	8.96E+00	5.80E+00	2.94E+01
SUB_NR_NF	0.00E+00	1.07E+01	8.02E+00	2.62E+01	4.49E+01
SUB_RH_FW	0.00E+00	3.25E+00	1.99E+00	5.38E+00	1.06E+01
SUB_RH_NF	0.00E+00	2.37E+00	1.78E+00	2.39E+01	2.81E+01
URB_NR_FW	0.00E+00	1.45E-01	9.87E-03	2.07E-01	3.61E-01
URB_NR_NF	0.00E+00	2.83E-02	9.48E-02	4.23E-01	5.46E-01
URB_RH_FW	0.00E+00	3.24E-02	2.20E-03	1.92E-01	2.27E-01
URB_RH_NF	0.00E+00	6.87E-03	2.30E-02	4.32E-01	4.62E-01
RURAL	0.00E+00	9.12E+01	5.62E-01	3.13E+01	1.23E+02
SUBURB	0.00E+00	3.09E+01	2.07E+01	6.12E+01	1.13E+02
URBAN	0.00E+00	2.13E-01	1.30E-01	1.25E+00	1.60E+00
TOTALS:	0.00E+00	1.22E+02	2.14E+01	9.38E+01	2.38E+02

MAXIMUM INDIVIDUAL IN-TRANSIT DOSE

TRUCK 3.94E-04 REM

CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP EXPOSURE IN PERSON-REM

POINT-SOURCE	STOP_	6.49E+02
	TOTAL:	6.49E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_NR_FW			
	NUMBER OF SHIPMENTS	7.663E-01	1.0000 %
	DISTANCE TRAVELED	7.663E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	7.663E-01	1.0000 %
	NUMBER OF CREW MEMBERS	6.154E-01	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.154E-01	0.8031 %
	K ZERO FOR CREW DOSE	6.154E-01	0.8031 %
	K ZERO FOR VEHICLE	1.509E-01	0.1969 %
	NUMBER OF PEOPLE PER VEHICLE	1.473E-01	0.1922 %
	TRAFFIC COUNT	1.473E-01	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	3.618E-03	0.0047 %
	POPULATION DENSITY	3.618E-03	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-9.135E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.231E+00	-1.6061 %
RUR_NR_NF			
	DISTANCE TRAVELED	3.414E-01	1.0000 %
	NUMBER OF SHIPMENTS	3.414E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.414E-01	1.0000 %
	NUMBER OF CREW MEMBERS	2.051E-01	0.6009 %
	K ZERO FOR CREW DOSE	2.051E-01	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.051E-01	0.6009 %
	K ZERO FOR VEHICLE	1.363E-01	0.3991 %
	TRAFFIC COUNT	1.348E-01	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.348E-01	0.3949 %
	POPULATION DENSITY	1.438E-03	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.206E-03	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.322E-04	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.102E-01	-1.2017 %
	VELOCITY	-4.762E-01	-1.3949 %
RUR_RH_FW			
	DOSE RATE FOR VEHICLE (TI)	8.514E-02	1.0000 %
	NUMBER OF SHIPMENTS	8.514E-02	1.0000 %
	DISTANCE TRAVELED	8.514E-02	1.0000 %
	NUMBER OF CREW MEMBERS	6.837E-02	0.8031 %
	K ZERO FOR CREW DOSE	6.837E-02	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.837E-02	0.8031 %
	K ZERO FOR VEHICLE	1.677E-02	0.1969 %
	NUMBER OF PEOPLE PER VEHICLE	1.636E-02	0.1922 %
	TRAFFIC COUNT	1.636E-02	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	4.020E-04	0.0047 %
	POPULATION DENSITY	4.020E-04	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-1.015E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.367E-01	-1.6061 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_RH_NF			
	DISTANCE TRAVELED	3.793E-02	1.0000 %
	NUMBER OF SHIPMENTS	3.793E-02	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.793E-02	1.0000 %
	NUMBER OF CREW MEMBERS	2.279E-02	0.6009 %
	K ZERO FOR CREW DOSE	2.279E-02	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.279E-02	0.6009 %
	K ZERO FOR VEHICLE	1.514E-02	0.3991 %
	TRAFFIC COUNT	1.498E-02	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.498E-02	0.3949 %
	POPULATION DENSITY	1.598E-04	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.340E-04	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.580E-05	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.558E-02	-1.2017 %
	VELOCITY	-5.291E-02	-1.3949 %
SUB_NR_FW			
	DISTANCE TRAVELED	2.937E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.937E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.937E-01	1.0000 %
	K ZERO FOR VEHICLE	1.476E-01	0.5025 %
	CREW DOSE ADJUSTMENT FACTOR	1.461E-01	0.4975 %
	NUMBER OF CREW MEMBERS	1.461E-01	0.4975 %
	K ZERO FOR CREW DOSE	1.461E-01	0.4975 %
	SHIELDING FACTOR (RR,RS,RU)	8.956E-02	0.3049 %
	POPULATION DENSITY	8.956E-02	0.3049 %
	NUMBER OF PEOPLE PER VEHICLE	5.804E-02	0.1976 %
	TRAFFIC COUNT	5.804E-02	0.1976 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.922E-01	-0.9949 %
	VELOCITY	-3.518E-01	-1.1976 %
SUB_NR_NF			
	DISTANCE TRAVELED	4.488E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.488E-01	1.0000 %
	NUMBER OF SHIPMENTS	4.488E-01	1.0000 %
	K ZERO FOR VEHICLE	3.417E-01	0.7614 %
	NUMBER OF PEOPLE PER VEHICLE	2.616E-01	0.5828 %
	TRAFFIC COUNT	2.616E-01	0.5828 %
	NUMBER OF CREW MEMBERS	1.071E-01	0.2386 %
	CREW DOSE ADJUSTMENT FACTOR	1.071E-01	0.2386 %
	K ZERO FOR CREW DOSE	1.071E-01	0.2386 %
	POPULATION DENSITY	8.016E-02	0.1786 %
	SHIELDING FACTOR (RR,RS,RU)	6.564E-02	0.1463 %
	RATIO OF PEDESTRIAN DENSITY (RPD	1.453E-02	0.0324 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.142E-01	-0.4772 %
	VELOCITY	-7.103E-01	-1.5828 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
SUB_RH_FW			
	DISTANCE TRAVELED	1.062E-01	1.0000 %
	NUMBER OF SHIPMENTS	1.062E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	1.062E-01	1.0000 %
	K ZERO FOR VEHICLE	7.368E-02	0.6941 %
	NUMBER OF PEOPLE PER VEHICLE	5.378E-02	0.5066 %
	TRAFFIC COUNT	5.378E-02	0.5066 %
	CREW DOSE ADJUSTMENT FACTOR	3.247E-02	0.3059 %
	NUMBER OF CREW MEMBERS	3.247E-02	0.3059 %
	K ZERO FOR CREW DOSE	3.247E-02	0.3059 %
	POPULATION DENSITY	1.990E-02	0.1875 %
	SHIELDING FACTOR (RR,RS,RU)	1.990E-02	0.1875 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.495E-02	-0.6118 %
	VELOCITY	-1.599E-01	-1.5066 %
SUB_RH_NF			
	DISTANCE TRAVELED	2.806E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.806E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.806E-01	1.0000 %
	K ZERO FOR VEHICLE	2.568E-01	0.9154 %
	TRAFFIC COUNT	2.390E-01	0.8520 %
	NUMBER OF PEOPLE PER VEHICLE	2.390E-01	0.8520 %
	NUMBER OF CREW MEMBERS	2.374E-02	0.0846 %
	CREW DOSE ADJUSTMENT FACTOR	2.374E-02	0.0846 %
	K ZERO FOR CREW DOSE	2.374E-02	0.0846 %
	POPULATION DENSITY	1.777E-02	0.0633 %
	SHIELDING FACTOR (RR,RS,RU)	1.455E-02	0.0519 %
	RATIO OF PEDESTRIAN DENSITY (RPD	3.221E-03	0.0115 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.748E-02	-0.1692 %
	VELOCITY	-5.196E-01	-1.8520 %
URB_NR_FW			
	DISTANCE TRAVELED	3.615E-03	1.0000 %
	NUMBER OF SHIPMENTS	3.615E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.615E-03	1.0000 %
	K ZERO FOR VEHICLE	2.165E-03	0.5990 %
	NUMBER OF PEOPLE PER VEHICLE	2.067E-03	0.5717 %
	TRAFFIC COUNT	2.067E-03	0.5717 %
	CREW DOSE ADJUSTMENT FACTOR	1.449E-03	0.4010 %
	K ZERO FOR CREW DOSE	1.449E-03	0.4010 %
	NUMBER OF CREW MEMBERS	1.449E-03	0.4010 %
	POPULATION DENSITY	9.870E-05	0.0273 %
	SHIELDING FACTOR (RR,RS,RU)	9.870E-05	0.0273 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.899E-03	-0.8019 %
	VELOCITY	-5.681E-03	-1.5717 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
URB_NR_NF			
	NUMBER OF SHIPMENTS	5.460E-03	1.0000 %
	DISTANCE TRAVELED	5.460E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	5.460E-03	1.0000 %
	K ZERO FOR VEHICLE	5.177E-03	0.9481 %
	TRAFFIC COUNT	4.229E-03	0.7745 %
	NUMBER OF PEOPLE PER VEHICLE	4.229E-03	0.7745 %
	POPULATION DENSITY	9.478E-04	0.1736 %
	RATIO OF PEDESTRIAN DENSITY (RPD	9.207E-04	0.1686 %
	NUMBER OF CREW MEMBERS	2.834E-04	0.0519 %
	CREW DOSE ADJUSTMENT FACTOR	2.834E-04	0.0519 %
	K ZERO FOR CREW DOSE	2.834E-04	0.0519 %
	SHIELDING FACTOR (RR,RS,RU)	2.706E-05	0.0050 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-5.667E-04	-0.1038 %
	VELOCITY	-9.689E-03	-1.7745 %
URB_RH_FW			
	DISTANCE TRAVELED	2.270E-03	1.0000 %
	NUMBER OF SHIPMENTS	2.270E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.270E-03	1.0000 %
	K ZERO FOR VEHICLE	1.946E-03	0.8574 %
	NUMBER OF PEOPLE PER VEHICLE	1.924E-03	0.8477 %
	TRAFFIC COUNT	1.924E-03	0.8477 %
	CREW DOSE ADJUSTMENT FACTOR	3.237E-04	0.1426 %
	K ZERO FOR CREW DOSE	3.237E-04	0.1426 %
	NUMBER OF CREW MEMBERS	3.237E-04	0.1426 %
	POPULATION DENSITY	2.204E-05	0.0097 %
	SHIELDING FACTOR (RR,RS,RU)	2.204E-05	0.0097 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.473E-04	-0.2852 %
	VELOCITY	-4.194E-03	-1.8477 %
URB_RH_NF			
	DISTANCE TRAVELED	4.622E-03	1.0000 %
	NUMBER OF SHIPMENTS	4.622E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.622E-03	1.0000 %
	K ZERO FOR VEHICLE	4.553E-03	0.9851 %
	TRAFFIC COUNT	4.323E-03	0.9354 %
	NUMBER OF PEOPLE PER VEHICLE	4.323E-03	0.9354 %
	POPULATION DENSITY	2.298E-04	0.0497 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.232E-04	0.0483 %
	NUMBER OF CREW MEMBERS	6.869E-05	0.0149 %
	CREW DOSE ADJUSTMENT FACTOR	6.869E-05	0.0149 %
	K ZERO FOR CREW DOSE	6.869E-05	0.0149 %
	SHIELDING FACTOR (RR,RS,RU)	6.561E-06	0.0014 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-1.374E-04	-0.0297 %
	VELOCITY	-8.945E-03	-1.9354 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

STOP STOP_	PARAMETER	IMPORTANCE	CHANGE
	K ZERO FOR VEHICLE	6.486E+00	1.0000 %
	STOP TIME	6.486E+00	1.0000 %
	POPULATION/POPULATION DENSITY	6.486E+00	1.0000 %
	NUMBER OF SHIPMENTS	6.486E+00	1.0000 %
	DOSE RATE FOR VEHICLE	6.486E+00	1.0000 %
	MAXIMUM DISTANCE AT STOP	0.000E+00	0.0000 %
	MINIMUM DISTANCE AT STOP	-1.297E+01	-2.0000 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ACCIDENT SUMMARY
******** *******

NUMBER OF EXPECTED ACCIDENTS

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	1.47E-01	4.88E-02	1.63E-02	5.43E-03	7.61E-01	2.54E-01	8.45E-02
2	9.57E-02	3.19E-02	1.06E-02	3.55E-03	4.98E-01	1.66E-01	5.53E-02
3	7.29E-04	2.43E-04	8.10E-05	2.70E-05	5.05E-03	1.68E-03	5.62E-04
4	7.29E-07	2.43E-07	8.10E-08	2.70E-08	5.05E-06	1.68E-06	5.62E-07
5	1.21E-06	4.05E-07	1.35E-07	4.50E-08	3.79E-06	1.26E-06	4.21E-07
6	1.70E-06	5.67E-07	1.89E-07	6.30E-08	2.53E-06	8.42E-07	2.81E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	2.82E-02	4.04E-02	2.16E-03	4.51E-03	2.61E-04
2	1.84E-02	2.64E-02	1.41E-03	2.95E-03	1.71E-04
3	1.87E-04	2.54E-05	1.36E-06	2.84E-06	1.64E-07
4	1.87E-07	2.54E-08	1.36E-09	2.84E-09	1.64E-10
5	1.40E-07	1.67E-08	8.92E-10	1.87E-09	1.08E-10
6	9.36E-08	8.69E-09	4.64E-10	9.70E-10	5.62E-11

EARLY FATALITY CONSEQUENCES

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RADIOLOGICAL CONSEQUENCES
50 YEAR POPULATION DOSE IN PERSON-REM

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.56E+00	1.56E+00	1.56E+00	1.56E+00	1.87E+02	1.87E+02	1.87E+02
4	1.56E+00	1.56E+00	1.56E+00	1.56E+00	1.87E+02	1.87E+02	1.87E+02
5	1.71E+01	1.71E+01	1.71E+01	1.71E+01	2.05E+03	2.05E+03	2.05E+03
6	2.24E+01	2.24E+01	2.24E+01	2.24E+01	2.69E+03	2.69E+03	2.69E+03

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.87E+02	6.46E+02	6.46E+02	6.46E+02	6.46E+02
4	1.87E+02	6.47E+02	6.47E+02	6.47E+02	6.47E+02
5	2.05E+03	7.08E+03	7.08E+03	7.08E+03	7.08E+03
6	2.69E+03	9.31E+03	9.31E+03	9.31E+03	9.31E+03

MAXIMUM RISK FOR INDIVIDUAL IN NEAREST ISOPLETH (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	7.40E-05	2.47E-05	8.22E-06	2.74E-06	5.13E-04	1.71E-04	5.70E-05
4	7.54E-08	2.51E-08	8.37E-09	2.79E-09	5.23E-07	1.74E-07	5.81E-08
5	2.89E-06	9.64E-07	3.21E-07	1.07E-07	9.02E-06	3.01E-06	1.00E-06
6	5.93E-06	1.98E-06	6.59E-07	2.20E-07	8.81E-06	2.94E-06	9.79E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.90E-05	2.58E-06	1.38E-07	2.88E-07	1.67E-08
4	1.94E-08	2.63E-09	1.40E-10	2.93E-10	1.70E-11
5	3.34E-07	3.98E-08	2.12E-09	4.44E-09	2.57E-10
6	3.26E-07	3.03E-08	1.62E-09	3.38E-09	1.96E-10

RADIOLOGICAL CONSEQUENCES IN PERSON REM
50 YEAR SOCIETAL INGESTION DOSE - EFFECTIVE

LINK	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RUR_NR_FW	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02
RUR_NR_NF	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02
RUR_RH_FW	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02
RUR_RH_NF	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

	GROUND	INHALED	RESUSPD	CLOUDSH	TOTAL
RUR_NR_FW	1.19E-03	1.24E-06	5.47E-07	1.01E-07	1.20E-03
RUR_NR_NF	3.98E-04	4.14E-07	1.82E-07	3.36E-08	3.98E-04
RUR_RH_FW	1.33E-04	1.38E-07	6.08E-08	1.12E-08	1.33E-04
RUR_RH_NF	4.42E-05	4.60E-08	2.03E-08	3.73E-09	4.43E-05
SUB_NR_FW	9.57E-01	8.76E-04	4.52E-04	8.24E-05	9.59E-01
SUB_NR_NF	3.19E-01	2.92E-04	1.51E-04	2.75E-05	3.20E-01
SUB_RH_FW	1.06E-01	9.74E-05	5.02E-05	9.16E-06	1.07E-01
SUB_RH_NF	3.55E-02	3.25E-05	1.67E-05	3.05E-06	3.55E-02
URB_NR_FW	1.66E-02	1.50E-05	7.86E-06	1.43E-06	1.66E-02
URB_NR_NF	8.87E-04	8.02E-07	4.20E-07	7.65E-08	8.88E-04
URB_RH_FW	1.85E-03	1.68E-06	8.78E-07	1.60E-07	1.86E-03
URB_RH_NF	1.07E-04	9.72E-08	5.09E-08	9.27E-09	1.08E-04
RURAL	1.77E-03	1.84E-06	8.11E-07	1.49E-07	1.77E-03
SUBURB	1.42E+00	1.30E-03	6.69E-04	1.22E-04	1.42E+00
URBAN	1.95E-02	1.76E-05	9.21E-06	1.68E-06	1.95E-02
TOTALS:	1.44E+00	1.32E-03	6.79E-04	1.24E-04	1.44E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

SOCIETAL INGESTION RISK - PERSON-REM

LINK	GONADS	EFFECTIVE
RUR_NR_FW	1.60E-03	1.46E-03
RUR_NR_NF	5.35E-04	4.88E-04
RUR_RH_FW	1.78E-04	1.63E-04
RUR_RH_NF	5.94E-05	5.42E-05
TOTAL	2.38E-03	2.17E-03

SOCIETAL INGESTION RISK BY ORGAN - PERSON-REM

LINK	BREAST	LUNGS	RED MARR	BONE SUR	THYROID	REMAINDER
RUR_NR_FW	9.25E-04	8.76E-04	1.03E-03	8.89E-04	8.47E-04	2.15E-03
RUR_NR_NF	3.08E-04	2.92E-04	3.44E-04	2.96E-04	2.82E-04	7.15E-04
RUR_RH_FW	1.03E-04	9.74E-05	1.15E-04	9.88E-05	9.42E-05	2.38E-04
RUR_RH_NF	3.43E-05	3.25E-05	3.82E-05	3.29E-05	3.14E-05	7.95E-05
TOTAL	1.37E-03	1.30E-03	1.53E-03	1.32E-03	1.26E-03	3.18E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED RISK VALUES - OTHER

LINK	EARLY FATALITY	EARLY MORBIDITY
RUR_NR_FW	0.00E+00	0.00E+00
RUR_NR_NF	0.00E+00	0.00E+00
RUR_RH_FW	0.00E+00	0.00E+00
RUR_RH_NF	0.00E+00	0.00E+00
SUB_NR_FW	0.00E+00	0.00E+00
SUB_NR_NF	0.00E+00	0.00E+00
SUB_RH_FW	0.00E+00	0.00E+00
SUB_RH_NF	0.00E+00	0.00E+00
URB_NR_FW	0.00E+00	0.00E+00
URB_NR_NF	0.00E+00	0.00E+00
URB_RH_FW	0.00E+00	0.00E+00
URB_RH_NF	0.00E+00	0.00E+00
TOTAL	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

TOTAL EXPOSED POPULATION: INCIDENT-FREE

RUR_NR_FW	3.54E+04	PERSONS
RUR_NR_NF	1.18E+04	PERSONS
RUR_RH_FW	3.93E+03	PERSONS
RUR_RH_NF	1.31E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	3.35E+05	PERSONS
SUB_RH_FW	1.12E+05	PERSONS
SUB_RH_NF	3.73E+04	PERSONS
URB_NR_FW	5.36E+04	PERSONS
URB_NR_NF	2.86E+03	PERSONS
URB_RH_FW	5.98E+03	PERSONS
URB_RH_NF	3.47E+02	PERSONS
TOTAL	1.61E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY A
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	8.40E+03	PERSONS
RUR_NR_NF	8.40E+03	PERSONS
RUR_RH_FW	8.40E+03	PERSONS
RUR_RH_NF	8.40E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	1.01E+06	PERSONS
SUB_RH_FW	1.01E+06	PERSONS
SUB_RH_NF	1.01E+06	PERSONS
URB_NR_FW	5.41E+06	PERSONS
URB_NR_NF	5.41E+06	PERSONS
URB_RH_FW	5.41E+06	PERSONS
URB_RH_NF	5.41E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY C
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	8.40E+03	PERSONS
RUR_NR_NF	8.40E+03	PERSONS
RUR_RH_FW	8.40E+03	PERSONS
RUR_RH_NF	8.40E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	1.01E+06	PERSONS
SUB_RH_FW	1.01E+06	PERSONS
SUB_RH_NF	1.01E+06	PERSONS
URB_NR_FW	5.41E+06	PERSONS
URB_NR_NF	5.41E+06	PERSONS
URB_RH_FW	5.41E+06	PERSONS
URB_RH_NF	5.41E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY E
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY F
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

EOI
END OF RUN
SUCCESSFUL COMPLETION

Appendix D
RADTRAN 5.5 Output with the RADTRAN 5 Isotope Library and COMIDA Files Using the Pasquill Atmospheric Dispersion Model

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                    RUN DATE: [ 05-OCT-04 AT 11:08:19 ]          PAGE    1

 RRRR     AAA    DDDD    TTTTT  RRRR     AAA    N   N  55555
 R   R   A   A   D   D     T    R   R   A   A   NN  N  5
 R   R   A   A   D   D     T    R   R   A   A   N N N  5
 RRRR    A   A   D   D     T    RRRR    A   A   N  NN  5555
 R R     AAAAA   D   D     T    R R     AAAAA   N   N      5
 R  R    A   A   D   D     T    R  R    A   A   N   N  5   5
 R   R   A   A   DDDD      T    R   R   A   A   N   N  5555

                        RADTRAN 5.5    May 18, 2004

                                INPUT ECHO
                                ----------


 TITLE CRYSTAL RIVER TO HANFORD; SPENT FUEL
 INPUT STANDARD
STD: 0 10 18                                  && DIMEN=NSEV NRAD NAREAS
STD: 1 3 3 0                                  && PARM=IRNKC IANA ISEN IPSQSB
STD: .TRUE. .FALSE.                           && FORM = UNIT, SI-UNITS?
STD: 2.3E12                                   && NEVAL FOR CF252
STD: 9.25E5 5.77E6 1.27E6                     && RPCTHY FOR I125, I129, I131
STD: 0.0 0.0 0.0 0.0 0.0                      && TRANSFER GAMMA
STD: 7.42E-3 2.02E-2 6.17E-5 3.17E-8 0.0      && TRANSFER NEUTRON
STD: 30  24                                   && MITDDIST  MITDVEL
STD: 1  2   .0018                             && ITRAIN FMINCL DDRWEF
STD:    33    68    105   244   369                    && CENTER LINE
STD:   561  1018   1628  2308  4269                    && DISTANCES
STD:  5468 11136  13097 21334 40502                    && FOR AVERAGE
STD: 69986 89860 120878 0 0 0 0 0 0 0 0 0 0 0 0 0     && US CLOUD
STD: 4.59E+02 1.53E+03 3.94E+03 1.25E+04 3.04E+04 6.85E+04 1.76E+05 4.45E+05
STD: 8.59E+05 2.55E+06 4.45E+06 1.03E+07 2.16E+07 5.52E+07 1.77E+08 4.89E+08
STD: 8.12E+08 1.35E+09 0 0 0 0 0 0 0 0 0 0 0 0      && AREADA
STD: 3.42E-03 1.72E-03 8.58E-04 3.42E-04 1.72E-04 8.58E-05 3.42E-05 1.72E-05
STD:  8.58E-06 3.42E-06 1.72E-06 8.58E-07 3.42E-07 1.72E-07 8.58E-08 5.42E-08
STD:  4.30E-08 3.42E-08 0 0 0 0 0 0 0 0 0 0 0 0      && DFLEV
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0 0 && RADIST
STD: 0.5                                  && SMLPKG
STD: 1.0  0.87  0.018                     && SHIELDING FACTORS RR  RS  RU
STD:  30  30  800                         && OFFLINK {FREEWAY}
STD:  27  30  800                         && OFFLINK {NON-FREEWAY}
STD:   5   8  800                         && OFFLINK {CITY STREETS}
STD:  30  30  800                         && OFFLINK {RAILWAY}
STD: 200 200 1000                         && OFFLINK {WATERWAY}
STD: 15  3  3  3  4                       && ONLINK {FWAY NONFWY STREET RAIL ADJ}
STD: 6.0  4  40.0                         && RPD FNOATT INTERDICT
STD: 0.05   0.2   3.3E-4                  && BDF CULVL BRATE
STD: 0.9   0.1                            && UBF USWF
STD: 1.0  10.0 1.0                        && EVACUATION SURVEY CAMPAIGN
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

```
STD: 0.0  0.0     1.5E-8  5.3E-8      && HIGHWAY - RURAL - NONRAD
STD: 0.0  0.0     3.7E-9  1.3E-8      && HIGHWAY - SUBURBAN - NONRAD
STD: 0.0  0.0     2.1E-9  7.5E-9      && HIGHWAY - URBAN - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - R - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - S - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - U - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - R - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - S - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - U - NONRAD
STD: 0.0 0.0 0.0 0.0 0.0 0.0          && PSPROB
STD: 0.67  0.67  0.42                 && TIMENDE NON-DISPERSAL EVAC TIME (LCF&EA
STD: 2 2 1                            && FLAGS=IUOPT IACC REGCHECK
STD: 5E-4, 4E-4, 1.3E-4               && LCFCON(1), LCFCON(2), GECON
STD: R5INGEST.BIN                     && INGESTION FILE
 FORM UNIT
 DIMEN 6 10 18
 PARM 1 3 4 1
 SEVERITY
    NPOP=1
      NMODE=1
        6.03E-01  3.94E-01  3.00E-03  3.00E-06  5.00E-06  7.00E-06
    NPOP=2
      NMODE=1
        6.02E-01  3.94E-01  4.00E-03  4.00E-06  3.00E-06  2.00E-06
    NPOP=3
      NMODE=1
        6.04E-01  3.95E-01  3.80E-04  3.80E-07  2.50E-07  1.30E-07
 RELEASE
    GROUP=PKG1_B
       RFRAC
        0.00E+00  0.00E+00  1.20E-02  1.20E-02  1.20E-02  1.20E-02
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.010000
    GROUP=PKG2_C
       RFRAC
        0.00E+00  0.00E+00  0.00E+00  1.00E-02  1.00E-01  1.10E-01
       AERSOL
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       RESP
        1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
       LOS
        0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
       DEPVEL 0.000000
    GROUP=PKG4_E
       RFRAC
```

```
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
   GROUP=PKG5_E
     RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  1.00E-06  4.20E-05
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02  5.00E-02
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
   GROUP=PKG3_D
     RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  2.00E-04  2.80E-04
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
   GROUP=PKG4_D
     RFRAC
      0.00E+00  0.00E+00  0.00E+00  1.00E-08  5.00E-08  5.00E-08
     AERSOL
      1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
     RESP
      0.00E+00  0.00E+00  0.00E+00  5.00E-02  1.00E+00  1.00E+00
     LOS
      0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
     DEPVEL 0.010000
  PSPROB
       0.00E+00  2.00E-01  0.00E+00  8.00E-01  0.00E+00  0.00E+00
PACKAGE      SFUEL  1.368E+01 1.000 0.000    5.20
       CO60        9.220E+01 PKG1_B
       KR85        6.100E+03 PKG2_C
       SR90        5.960E+04 PKG4_E
       RU106       1.620E+04 PKG5_E
       CS134       2.740E+04 PKG3_D
       CS137       8.760E+04 PKG3_D
       CE144       1.220E+04 PKG4_D
       EU154       7.000E+03 PKG4_D
       PU238       2.960E+03 PKG4_E
       PU239       4.100E+02 PKG4_E
       PU240       4.680E+02 PKG4_E
       PU241       1.260E+05 PKG4_E
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

```
        AM241       1.290E+03 PKG4_E
        AM243       1.990E+01 PKG4_E
        CM244       1.790E+03 PKG4_E
        END
VEHICLE  -1 TRUCK       1.368E+01 1.000 0.000    5.20  676.00
                          2.00   10.00 1.000    5.20
        SFUEL         1.00
FLAGS
   IUOPT 2
EOF
LINK RUR_NR_FW  TRUCK      2623.81  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_NR_NF  TRUCK       874.60  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK RUR_RH_FW  TRUCK       291.53  88.6  2.0    6.00  470.00 1.37E-07 R 1 0.50
LINK RUR_RH_NF  TRUCK        97.18  88.6  2.0    6.00  470.00 1.37E-07 R 2 0.50
LINK SUB_NR_FW  TRUCK       623.03  88.6  2.0  719.00  780.00 3.00E-06 S 1 0.00
LINK SUB_NR_NF  TRUCK       207.68  40.3  2.0  719.00  780.00 3.00E-06 S 2 0.00
LINK SUB_RH_FW  TRUCK        69.23  44.3  2.0  719.00 1560.00 3.00E-06 S 1 0.00
LINK SUB_RH_NF  TRUCK        23.08  20.2  2.0  719.00 1560.00 3.00E-06 S 2 0.00
LINK URB_NR_FW  TRUCK         6.18  88.6  2.0 3861.00 2800.00 1.60E-05 U 1 0.00
LINK URB_NR_NF  TRUCK         0.33  24.2  2.0 3861.00 2800.00 1.60E-05 U 2 0.00
LINK URB_RH_FW  TRUCK         0.69  44.3  2.0 3861.00 5600.00 1.60E-05 U 1 0.00
LINK URB_RH_NF  TRUCK         0.04  12.1  2.0 3861.00 5600.00 1.60E-05 U 2 0.00
STOP STOP_      TRUCK        50.00  20.00   20.00 1.000  52.991
EOF
```

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PACKAGE AND MATERIAL CHARACTERISTICS

MATERIAL	DIMENSION (METERS)	EFFECTIVE DIMENSION	K(0) METERS SQ.	FRACTION GAMMA	FRACTION NEUTRON	DOSE RATE (MREM/HR)
SFUEL	5.200E+00	4.677E+00	1.115E+01	1.000E+00	0.000E+00	1.368E+01

K(0) IS DOSE RATE CONVERSION FACTOR

VEHICLE CHARACTERISTICS

VEHICLE NAME	TRUCK
MODE TYPE	HIGHWAY
EXCLUSIVE USE	YES
DOSE RATE (MREM/HR)	1.37E+01
K(0) (SQ. METERS)	1.11E+01
VEHICLE SIZE (M)	5.20E+00
EFFECTIVE SIZE (M)	4.68E+00
NUMBER OF SHIPMENTS	6.76E+02
NUMBER OF CREW	2.00E+00
CREW DISTANCE (M)	1.00E+01
CREW DOSE ADJUSTMENT FACT	1.00E+00
CREW EXPOSER WIDTH (M)	5.20E+00
EFFECTIVE EXPOSER WIDTH	4.68E+00
K(0) (SQ M) CREW EXPOSURE	1.11E+01

VEHICLE	MATERIAL	NO.PACKAGES
TRUCK		
	SFUEL	1.00E+00

TRANSFER COEFFICIENTS:

	MU	A(1)	A(2)	A(3)	A(4)
GAMMA	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NEUTRON	7.420E-03	2.020E-02	6.170E-05	3.170E-08	0.000E+00

DISTANCES (METERS)	FREEWAY	SECONDARY	STREET	RAIL	WATER	ADJACENT
OFFLINK:						
MINIMUM DISTANCE	3.00E+01	2.70E+01	5.00E+00	3.00E+01	2.00E+02	
SIDEWALK + MINIMUM	3.00E+01	3.00E+01	8.00E+00	3.00E+01	2.00E+02	
MAXIMUM DISTANCE	8.00E+02	8.00E+02	8.00E+02	8.00E+02	1.00E+03	
ONLINK:						
OPPOSITE DIRECTION	1.50E+01	3.00E+00	3.00E+00	3.00E+00		
ADJACENT VEHICLE						4.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP RELATED DATA

	STOP_
VEHICLE	TRUCK
PERSONS	5.00E+01
MINIMUM DISTANCE(M)	2.00E+01
MAXIMUM DISTANCE(M)	2.00E+01
SHIELDING FACTOR	1.00E+00
TIME (HR)	5.30E+01

HANDLING RELATED DATA

CRYSTAL RIVER TO HANFORD; SPENT FUEL

LINK RELATED DATA

	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.62E+03	8.75E+02	2.92E+02	9.72E+01	6.23E+02
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	8.86E+01	8.86E+01	8.86E+01	8.86E+01	8.86E+01
POPULATION DENSITY	6.00E+00	6.00E+00	6.00E+00	6.00E+00	7.19E+02
VEHICLE DENSITY	4.70E+02	4.70E+02	4.70E+02	4.70E+02	7.80E+02
ACCIDENT RATE/KM	1.37E-07	1.37E-07	1.37E-07	1.37E-07	3.00E-06
ZONE	RURAL	RURAL	RURAL	RURAL	SUBURBAN
ROAD TYPE	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY
FARMING FRACTION	5.00E-01	5.00E-01	5.00E-01	5.00E-01	0.00E+00

	SUB_NR_NF	SUB_RH_FW	SUB_RH_NF	URB_NR_FW	URB_NR_NF
VEHICLE	TRUCK	TRUCK	TRUCK	TRUCK	TRUCK
DISTANCE (KM)	2.08E+02	6.92E+01	2.31E+01	6.18E+00	3.30E-01
PERSONS PER VEHICLE	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
SPEED (KM/HR)	4.03E+01	4.43E+01	2.02E+01	8.86E+01	2.42E+01
POPULATION DENSITY	7.19E+02	7.19E+02	7.19E+02	3.86E+03	3.86E+03
VEHICLE DENSITY	7.80E+02	1.56E+03	1.56E+03	2.80E+03	2.80E+03
ACCIDENT RATE/KM	3.00E-06	3.00E-06	3.00E-06	1.60E-05	1.60E-05
ZONE	SUBURBAN	SUBURBAN	SUBURBAN	URBAN	URBAN
ROAD TYPE	NON-FREEWAY	FREEWAY	NON-FREEWAY	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	URB_RH_FW	URB_RH_NF
VEHICLE	TRUCK	TRUCK
DISTANCE (KM)	6.90E-01	4.00E-02
PERSONS PER VEHICLE	2.00E+00	2.00E+00
SPEED (KM/HR)	4.43E+01	1.21E+01
POPULATION DENSITY	3.86E+03	3.86E+03
VEHICLE DENSITY	5.60E+03	5.60E+03
ACCIDENT RATE/KM	1.60E-05	1.60E-05
ZONE	URBAN	URBAN
ROAD TYPE	FREEWAY	NON-FREEWAY
FARMING FRACTION	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE	CURIES PER PKG	RELEASE GROUP	RESUSPENSION FACTOR	50YR INHALATION (REM/CI) EFFECTIVE
SFUEL				
CO60	9.22E+01	PKG1_B	4.83E+00	2.80E+05
KR85	6.10E+03	PKG2_C	1.00E+00	0.00E+00
SR90	5.96E+04	PKG4_E	5.41E+00	2.40E+06
RU106	1.62E+04	PKG5_E	3.28E+00	8.00E+05
CS134	2.74E+04	PKG3_D	4.07E+00	4.60E+04
CS137	8.76E+04	PKG3_D	5.41E+00	3.20E+04
CE144	1.22E+04	PKG4_D	2.99E+00	6.30E+05
EU154	7.00E+03	PKG4_D	5.09E+00	3.10E+05
PU238	2.96E+03	PKG4_E	5.51E+00	5.30E+08
PU239	4.10E+02	PKG4_E	5.57E+00	5.70E+08
PU240	4.68E+02	PKG4_E	5.56E+00	5.70E+08
PU241	1.26E+05	PKG4_E	5.26E+00	9.90E+06
AM241	1.29E+03	PKG4_E	5.55E+00	5.90E+08
AM243	1.99E+01	PKG4_E	5.56E+00	5.90E+08
CM244	1.79E+03	PKG4_E	5.32E+00	3.10E+08

NUCLIDE	HALF LIFE	GAMMA ENERGY	CLOUD FACTOR	GROUND FACTOR	INGESTION NUCLIDE	NEUTRON EMISSION neutrons/sec/Ci
SFUEL						
CO60	1.93E+03	2.50E+00	4.66E-01	7.51E-04	Co-60	N/A
KR85	3.92E+03	2.21E-03	4.40E-04	8.44E-07	NONE	N/A
SR90	1.06E+04	0.00E+00	2.79E-05	9.08E-08	Sr-90	N/A
RU106	3.68E+02	2.01E-01	0.00E+00	6.78E-05	Ru-106	N/A
CS134	7.53E+02	1.55E+00	2.80E-01	4.86E-04	Cs-134	N/A
CS137	1.10E+04	5.96E-01	2.86E-05	1.77E-04	Cs-137	N/A
CE144	2.84E+02	5.25E-02	3.16E-03	1.84E-05	Ce-144	N/A
EU154	3.21E+03	1.22E+00	2.27E-01	3.80E-04	Eu-154	N/A
PU238	3.21E+04	1.81E-03	1.81E-05	2.68E-07	Pu-238	N/A
PU239	8.79E+06	7.96E-04	1.57E-05	1.17E-07	Pu-239	N/A
PU240	2.39E+06	1.73E-03	1.76E-05	2.57E-07	Pu-240	N/A
PU241	5.26E+03	2.54E-06	2.68E-07	6.17E-10	Pu-241	N/A
AM241	1.58E+05	3.24E-02	3.03E-03	8.79E-06	Am-241	N/A
AM243	2.70E+06	5.59E-02	8.07E-03	1.71E-05	Am-243	N/A
CM244	6.62E+03	1.70E-03	1.82E-05	2.81E-07	Cm-244	N/A

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ISOTOPE RELATED DATA

NUCLIDE	1-YR INHALATION (REM/CI)		
	LUNG	MARROW	THYROID
SFUEL			
CO60	7.90E+05	3.80E+04	0.00E+00
KR85	0.00E+00	0.00E+00	0.00E+00
SR90	4.50E+06	3.80E+03	0.00E+00
RU106	4.30E+06	4.50E+03	0.00E+00
CS134	4.10E+04	3.90E+04	0.00E+00
CS137	3.10E+04	2.60E+04	0.00E+00
CE144	3.60E+06	4.20E+03	0.00E+00
EU154	0.00E+00	0.00E+00	0.00E+00
PU238	4.50E+08	1.10E+06	0.00E+00
PU239	4.20E+08	1.10E+06	0.00E+00
PU240	4.20E+08	1.10E+06	0.00E+00
PU241	3.60E+05	1.30E+03	0.00E+00
AM241	1.20E+08	1.70E+07	0.00E+00
AM243	1.10E+08	1.60E+07	0.00E+00
CM244	1.20E+08	1.70E+07	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RELEASE RELATED DATA
****

RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	0.00E+00	0.00E+00	1.20E-02	1.20E-02	1.20E-02	1.20E-02
PKG2_C	0.00E+00	0.00E+00	0.00E+00	1.00E-02	1.00E-01	1.10E-01
PKG4_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08
PKG5_E	0.00E+00	0.00E+00	0.00E+00	1.00E-08	1.00E-06	4.20E-05
PKG3_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	2.00E-04	2.80E-04
PKG4_D	0.00E+00	0.00E+00	0.00E+00	1.00E-08	5.00E-08	5.00E-08

DEPOSITION VELOCITIES

GROUP	M/SEC
PKG1_B	1.00E-02
PKG2_C	0.00E+00
PKG4_E	1.00E-02
PKG5_E	1.00E-02
PKG3_D	1.00E-02
PKG4_D	1.00E-02

ACCIDENT SEVERITY FRACTIONS
FOR HIGHWAY

ZONE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RURAL	6.03E-01	3.94E-01	3.00E-03	3.00E-06	5.00E-06	7.00E-06
SUBURBAN	6.02E-01	3.94E-01	4.00E-03	4.00E-06	3.00E-06	2.00E-06
URBAN	6.04E-01	3.95E-01	3.80E-04	3.80E-07	2.50E-07	1.30E-07

CRYSTAL RIVER TO HANFORD; SPENT FUEL

AEROSOLIZED FRACTION OF RELEASED MATERIAL

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG5_E	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG3_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_D	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00

RESPIRABLE FRACTION OF AEROSOLS (BELOW 10 MICRONS AED)

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG2_C	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
PKG4_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG5_E	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02	5.00E-02
PKG3_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00
PKG4_D	0.00E+00	0.00E+00	0.00E+00	5.00E-02	1.00E+00	1.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL DATA (FATALITIES/KM)
****

HIGHWAY

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RURAL	0.00E+00	0.00E+00	1.50E-08	5.30E-08
SUBURBAN	0.00E+00	0.00E+00	3.70E-09	1.30E-08
URBAN	0.00E+00	0.00E+00	2.10E-09	7.50E-09

CRYSTAL RIVER TO HANFORD; SPENT FUEL

HEALTH RELATED DATA
****

EARLY MORBIDITY THRESHOLD VALUE FOR LUNG 5.000E+02 REM
EARLY MORBIDITY THRESHOLD VALUE FOR MARROW/WHOLE BODY 5.000E+01 REM
EARLY MORBIDITY THRESHOLD VALUE FOR THYROID 2.000E+02 REM

EARLY FATALITY PROBABILITIES (EF)

DOSE(REM)	EF MARROW	DOSE(REM)	EF LUNG
680.00	1.00000	1525.00	1.00000
670.00	0.99999	1500.00	0.99999
660.00	0.99998	1475.00	0.99997
650.00	0.99996	1450.00	0.99991
640.00	0.99992	1425.00	0.99974
630.00	0.99983	1400.00	0.99933
620.00	0.99967	1375.00	0.99840
610.00	0.99938	1350.00	0.99653
600.00	0.99889	1325.00	0.99306
590.00	0.99808	1300.00	0.98709
580.00	0.99679	1275.00	0.97755
570.00	0.99482	1250.00	0.96331
560.00	0.99192	1225.00	0.94326
550.00	0.98776	1200.00	0.91656
540.00	0.98199	1175.00	0.88274
530.00	0.97423	1150.00	0.84178
520.00	0.96406	1125.00	0.79420
510.00	0.95111	1100.00	0.74095
500.00	0.93502	1075.00	0.68335
490.00	0.91551	1050.00	0.62293
480.00	0.89237	1025.00	0.56130
470.00	0.86552	1000.00	0.50000
460.00	0.83499	975.00	0.44042
450.00	0.80096	950.00	0.38372
440.00	0.76371	925.00	0.33077
430.00	0.72363	900.00	0.28218
420.00	0.68123	875.00	0.23830
410.00	0.63706	850.00	0.19925
400.00	0.59172	825.00	0.16498
390.00	0.54583	800.00	0.13529
380.00	0.50000	775.00	0.10988
370.00	0.45481	750.00	0.08837
360.00	0.41078	725.00	0.07038
350.00	0.36838	700.00	0.05548
340.00	0.32798	675.00	0.04329
330.00	0.28990	650.00	0.03341
320.00	0.25438	625.00	0.02549
310.00	0.22155	600.00	0.01922
300.00	0.19150	575.00	0.01430
290.00	0.16425	550.00	0.01050
280.00	0.13977	525.00	0.00759
270.00	0.11797	500.00	0.00000
260.00	0.09872		
250.00	0.08188		
240.00	0.06729		
230.00	0.05475		
220.00	0.04408		
210.00	0.03510		
200.00	0.02761		
190.00	0.02143		
180.00	0.01639		
170.00	0.01234		
160.00	0.00913		
150.00	0.00000		

CRYSTAL RIVER TO HANFORD; SPENT FUEL

METEOROLOGICAL DATA BASED ON PASQUILL CATEGORIES

PROB. A	PROB. B	PROB. C	PROB. D	PROB. E	PROB. F
0.0000	0.2000	0.0000	0.8000	0.0000	0.0000

AREA	*PASQUILL CATEGORY					
(M SQ)	A	B	C	D	E	F
4.60E+02	6.00E-03	4.00E-03	4.00E-03	4.30E-03	9.60E-03	6.20E-02
1.50E+03	1.70E-03	1.30E-03	1.10E-03	1.30E-03	3.20E-03	1.80E-02
3.90E+03	8.40E-04	5.50E-04	5.70E-04	6.50E-04	1.60E-03	8.40E-03
1.30E+04	1.70E-04	1.30E-04	1.30E-04	1.80E-04	4.00E-04	2.00E-03
3.00E+04	7.80E-05	6.00E-05	6.70E-05	9.50E-05	2.10E-04	9.20E-04
6.90E+04	2.80E-05	2.70E-05	3.00E-05	4.30E-05	1.40E-04	4.40E-04
1.80E+05	8.00E-06	1.00E-05	1.00E-05	1.80E-05	4.40E-05	2.00E-04
4.50E+05	2.20E-06	3.50E-06	5.00E-06	8.50E-06	2.10E-05	1.00E-04
8.60E+05	9.00E-07	1.60E-06	2.80E-06	5.00E-06	1.20E-05	6.20E-05
2.60E+06	1.40E-07	4.10E-07	1.00E-06	1.90E-06	4.80E-06	2.60E-05
4.50E+06	7.00E-08	2.20E-07	6.00E-07	1.30E-06	3.60E-06	1.90E-05
1.70E+07	1.10E-08	5.00E-08	1.70E-07	4.00E-07	1.40E-06	8.40E-06
2.20E+07	7.76E-09	3.20E-08	1.30E-07	3.00E-07	1.20E-06	7.00E-06
5.50E+07	2.24E-09	1.10E-08	5.70E-08	1.50E-07	6.00E-07	4.00E-06
1.80E+08	4.50E-10	2.50E-09	1.70E-08	5.50E-08	2.80E-07	2.00E-06
5.00E+08	1.13E-10	7.24E-10	6.32E-09	2.41E-08	1.38E-07	1.09E-06
8.00E+08	5.96E-11	4.09E-10	4.01E-09	1.65E-08	9.97E-08	8.22E-07
1.40E+09	2.76E-11	2.08E-10	2.33E-09	1.05E-08	6.77E-08	5.89E-07

* DILUTION FACTOR UNITS ARE (CI-SEC/M**3/CI-RELEASED)

AREA	CENTER LINE DISTANCES (M)					
(M SQ)	A	B	C	D	E	F
4.60E+02	2.40E+01	3.00E+01	3.30E+01	3.60E+01	4.20E+01	2.50E+01
1.50E+03	4.50E+01	5.40E+01	6.80E+01	7.70E+01	8.40E+01	6.00E+01
3.90E+03	6.50E+01	8.50E+01	9.80E+01	1.18E+02	1.30E+02	1.04E+02
1.30E+04	1.48E+02	1.82E+02	2.23E+02	2.61E+02	3.12E+02	2.90E+02
3.00E+04	2.21E+02	2.74E+02	3.22E+02	3.87E+02	4.68E+02	5.05E+02
6.90E+04	3.74E+02	4.17E+02	5.03E+02	6.33E+02	6.05E+02	8.57E+02
1.80E+05	5.89E+02	7.04E+02	9.25E+02	1.08E+03	1.26E+03	1.51E+03
4.50E+05	8.99E+02	1.22E+03	1.36E+03	1.73E+03	2.00E+03	2.48E+03
8.60E+05	1.20E+03	1.85E+03	1.87E+03	2.40E+03	2.85E+03	3.49E+03
2.60E+06	2.22E+03	3.80E+03	3.31E+03	4.37E+03	5.09E+03	6.51E+03
4.50E+06	2.78E+03	5.27E+03	4.40E+03	5.53E+03	6.10E+03	8.16E+03
1.70E+07	5.11E+03	1.15E+04	8.85E+03	1.15E+04	1.19E+04	1.46E+04
2.20E+07	5.72E+03	1.46E+04	1.03E+04	1.37E+04	1.35E+04	1.67E+04
5.50E+07	8.65E+03	2.56E+04	1.62E+04	2.11E+04	2.37E+04	2.49E+04
1.80E+08	1.46E+04	5.59E+04	3.17E+04	3.92E+04	4.39E+04	4.09E+04
5.00E+08	2.31E+04	1.08E+05	5.50E+04	6.56E+04	7.70E+04	6.29E+04
8.00E+08	2.82E+04	1.45E+05	7.07E+04	8.12E+04	1.01E+05	7.76E+04
1.40E+09	3.62E+04	2.06E+05	9.61E+04	1.06E+05	1.38E+05	9.71E+04

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BUILDING DOSE FACTOR (BDF)                          = 5.000E-02
CONTAMINATION CLEAN UP LEVEL (UCI/M**2) (CULVL)     = 2.000E-01
BREATHING RATE (M**3/SEC) (BRATE)                   = 3.300E-04
INTERDICTION THRESHOLD (INTERDICT)                  = 4.000E+01
EVACUATION TIME (DAYS) (EVACUATION)                 = 1.000E+00
SURVEY INTERVAL (DAYS) (SURVEY)                     = 1.000E+01
CAMPAIGN LENGTH (YEARS) (CAMPAIGN)                  = 1.000E+00
FRACTION OF URBAN AREAS WITH BUILDINGS (UBF)        = 9.000E-01
FRACTION OF URBAN AREAS WITH SIDEWALKS (USWF)       = 1.000E-01
RATIO OF SIDEWALK PEDESTRIAN DENSITY (RPD)          = 6.000E+00
MAXIMUM IN-TRANSIT DOSE DISTANCE (M) (MITDDIST)     = 3.000E+01
MAXIMUM IN-TRANSIT DOSE VELOCITY (KM/H) (MITDVEL)   = 2.400E+01
IACC VALUE: 1=NON-DISPERSAL, 2=DISPERSAL            = 2
REGULATORY CHECK, 1=DO CHECKS, 0=NO CHECKS          = 1
BUILDING SHIELDING OPTION (IUOPT)                   = 2
       RURAL SHIELDING FACTOR     = 1.000E+00
       SUBURBAN SHIELDING FACTOR  = 8.700E-01
       URBAN SHIELDING FACTOR     = 1.800E-02
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CRYSTAL RIVER TO HANFORD; SPENT FUEL

INGESTION RELATED DATA

COMIDA INGESTION FILE USED: R5INGEST.BIN

COMIDA FILE HEADER
COMIDA2 02/17/03 16:17:38 Ver. 1.11a, 1/28/96: avoiding use of UNIT 6 for HP

DOSE CONVERSION FILE USED IN COMIDA
FGRDCF 05/08/95 16:43:45 beta-test version 1.10, minor FORTRAN fixes 5/4/95
Implicit daughter halflives (m) less than 90 and less than 0.100 of parent

NO INGESTION WILL BE CALCULATED FOR THE FOLLOWING ISOTOPES
INGESTION NUCLIDES ARE NOT IN INGESTION FILE

ISOTOPE	INGESTION NUCLIDE
KR85	NONE

CRYSTAL RIVER TO HANFORD; SPENT FUEL

BACKYARD FARMER INGESTION DOSE (REM/CI DEPOSITED)

NUCLIDE	EFFECTIVE	THYROID
Co-60	4.308E+04	1.225E+04
Sr-90	2.541E+05	9.964E+03
Ru-106	2.107E+04	4.014E+03
Cs-134	6.012E+05	5.344E+05
Cs-137	4.870E+05	4.545E+05
Ce-144	1.202E+04	1.085E+01
Eu-154	1.439E+04	3.185E+02
Pu-238	3.858E+04	2.301E-01
Pu-239	4.049E+04	2.169E-01
Pu-240	4.049E+04	2.172E-01
Pu-241	3.231E+03	3.837E-02
Am-241	2.846E+06	3.818E+01
Am-243	2.834E+06	1.968E+02
Cm-244	2.534E+06	3.924E+01

SOCIETAL INGESTION DOSE (PERSON-REM/CI DEPOSITED)

NUCLIDE	GONADS	BREAST	LUNGS	RED MAR	BONE SU	THYROID	REMAIND	EFFECTI
Co-60	8.2E+00	2.8E+00	2.3E+00	3.4E+00	2.4E+00	2.0E+00	1.3E+01	7.1E+00
Sr-90	1.8E+00	1.8E+00	1.8E+00	2.3E+02	4.9E+02	1.8E+00	7.3E+00	4.5E+01
Ru-106	5.5E-01	4.8E-01	4.8E-01	4.9E-01	4.8E-01	4.7E-01	7.1E+00	2.5E+00
Cs-134	8.9E+01	7.5E+01	7.6E+01	8.1E+01	7.5E+01	7.6E+01	9.6E+01	8.6E+01
Cs-137	8.2E+01	7.4E+01	7.5E+01	7.8E+01	7.5E+01	7.5E+01	8.6E+01	8.0E+01
Ce-144	1.7E-02	2.9E-03	1.6E-03	2.1E-02	3.0E-02	1.2E-03	4.5E+00	1.4E+00
Eu-154	1.1E+00	2.3E-01	1.8E-01	9.6E-01	3.7E+00	4.8E-02	5.3E+00	2.2E+00
Pu-238	8.1E-01	6.2E-05	3.0E-05	4.4E+00	5.5E+01	2.8E-05	7.5E+00	4.6E+00
Pu-239	9.2E-01	4.2E-05	2.7E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-240	9.2E-01	6.0E-05	2.9E-05	4.9E+00	6.1E+01	2.6E-05	7.4E+00	4.9E+00
Pu-241	1.4E-01	1.3E-05	1.7E-05	7.7E-01	9.6E+00	6.5E-06	3.7E-01	5.3E-01
Am-241	9.4E+01	9.1E-03	1.2E-02	5.0E+02	6.3E+03	4.6E-03	2.3E+02	3.4E+02
Am-243	9.4E+01	4.9E-02	6.8E-02	5.0E+02	6.3E+03	2.4E-02	2.3E+02	3.4E+02
Cm-244	7.6E+01	5.1E-03	5.1E-03	4.5E+02	5.6E+03	4.8E-03	2.4E+02	3.1E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

NON-RADIOLOGICAL RISK (FATALITIES)
****

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RUR_NR_FW	0.00E+00	0.00E+00	5.32E-02	1.88E-01
RUR_NR_NF	0.00E+00	0.00E+00	1.77E-02	6.27E-02
RUR_RH_FW	0.00E+00	0.00E+00	5.91E-03	2.09E-02
RUR_RH_NF	0.00E+00	0.00E+00	1.97E-03	6.96E-03
SUB_NR_FW	0.00E+00	0.00E+00	3.12E-03	1.10E-02
SUB_NR_NF	0.00E+00	0.00E+00	1.04E-03	3.65E-03
SUB_RH_FW	0.00E+00	0.00E+00	3.46E-04	1.22E-03
SUB_RH_NF	0.00E+00	0.00E+00	1.15E-04	4.06E-04
URB_NR_FW	0.00E+00	0.00E+00	1.75E-05	6.27E-05
URB_NR_NF	0.00E+00	0.00E+00	9.37E-07	3.35E-06
URB_RH_FW	0.00E+00	0.00E+00	1.96E-06	7.00E-06
URB_RH_NF	0.00E+00	0.00E+00	1.14E-07	4.06E-07
TOTALS:	0.00E+00	0.00E+00	8.35E-02	2.95E-01

CRYSTAL RIVER TO HANFORD; SPENT FUEL

REGULATORY CHECKS

FOR TRUCK THE DOSE RATE AT 2 METERS COULD EXCEED 10 MREM/HR
THE VEHICLE DOSE RATE HAS BEEN RESET TO EQUAL 13.00 MREM/HR

CRYSTAL RIVER TO HANFORD; SPENT FUEL

CALCULATIONAL INFORMATION FOR PASQUILL CATEGORY B

FOR TRUCK AREAS WITH TOTAL CONTAMINATION RATIO GREATER THAN 40.000
(THE AREAS MARKED WITH AN 'X' ARE INTERDICTED AND HAVE
NO 50 YEAR GROUNDSHINE DOSE AND NO INGESTION DOSE.)

AREA/SEVERITY	1	2	3	4	5	6
1	-	-	X	X	X	X
2	-	-	X	X	X	X
3	-	-	-	-	X	X
4	-	-	-	-	X	X
5	-	-	-	-	X	X
6	-	-	-	-	-	X
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-	-	-	-	-
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG2_C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG4_E	2.24E-44	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG5_E	1.40E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG3_D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG4_D	9.81E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DEPOSITION VELOCITIES

GROUP	M/SEC
PKG1_B	1.00E-02
PKG2_C	0.00E+00
PKG4_E	1.00E-02
PKG5_E	1.00E-02
PKG3_D	1.00E-02
PKG4_D	1.00E-02

DILUTION FACTORS FOR PASQUILL CATEGORY B
CHI VALUES AFTER DEPLETION (CI-SEC/M**3/CI-RELEASED)

DISTANCE	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
3.00E+01	4.00E-03	4.00E-03	4.00E-03	4.00E-03	4.00E-03	4.00E-03
5.40E+01	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03
8.50E+01	5.36E-04	5.50E-04	5.36E-04	5.36E-04	5.36E-04	5.36E-04
1.82E+02	1.24E-04	1.30E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04
2.74E+02	5.59E-05	6.00E-05	5.59E-05	5.59E-05	5.59E-05	5.59E-05
4.17E+02	2.48E-05	2.70E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05
7.04E+02	9.03E-06	1.00E-05	9.03E-06	9.03E-06	9.03E-06	9.03E-06
1.22E+03	3.10E-06	3.50E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06
1.85E+03	1.40E-06	1.60E-06	1.40E-06	1.40E-06	1.40E-06	1.40E-06
3.80E+03	3.54E-07	4.10E-07	3.54E-07	3.54E-07	3.54E-07	3.54E-07
5.27E+03	1.87E-07	2.20E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07
1.15E+04	4.23E-08	5.00E-08	4.23E-08	4.23E-08	4.23E-08	4.23E-08
1.46E+04	2.67E-08	3.20E-08	2.67E-08	2.67E-08	2.67E-08	2.67E-08
2.56E+04	9.17E-09	1.10E-08	9.17E-09	9.17E-09	9.17E-09	9.17E-09
5.59E+04	2.07E-09	2.50E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09
1.08E+05	5.96E-10	7.24E-10	5.96E-10	5.96E-10	5.96E-10	5.96E-10
1.45E+05	3.35E-10	4.09E-10	3.35E-10	3.35E-10	3.35E-10	3.35E-10
2.06E+05	1.70E-10	2.08E-10	1.70E-10	1.70E-10	1.70E-10	1.70E-10

DEPOSITION FACTORS
CHI DEPOSITED (CI/M**2/CI-RELEASED)

DISTANCE	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
3.00E+01	4.00E-05	0.00E+00	4.00E-05	4.00E-05	4.00E-05	4.00E-05
5.40E+01	1.30E-05	0.00E+00	1.30E-05	1.30E-05	1.30E-05	1.30E-05
8.50E+01	5.36E-06	0.00E+00	5.36E-06	5.36E-06	5.36E-06	5.36E-06
1.82E+02	1.24E-06	0.00E+00	1.24E-06	1.24E-06	1.24E-06	1.24E-06
2.74E+02	5.59E-07	0.00E+00	5.59E-07	5.59E-07	5.59E-07	5.59E-07
4.17E+02	2.48E-07	0.00E+00	2.48E-07	2.48E-07	2.48E-07	2.48E-07
7.04E+02	9.03E-08	0.00E+00	9.03E-08	9.03E-08	9.03E-08	9.03E-08
1.22E+03	3.10E-08	0.00E+00	3.10E-08	3.10E-08	3.10E-08	3.10E-08
1.85E+03	1.40E-08	0.00E+00	1.40E-08	1.40E-08	1.40E-08	1.40E-08
3.80E+03	3.54E-09	0.00E+00	3.54E-09	3.54E-09	3.54E-09	3.54E-09
5.27E+03	1.87E-09	0.00E+00	1.87E-09	1.87E-09	1.87E-09	1.87E-09
1.15E+04	4.23E-10	0.00E+00	4.23E-10	4.23E-10	4.23E-10	4.23E-10
1.46E+04	2.67E-10	0.00E+00	2.67E-10	2.67E-10	2.67E-10	2.67E-10
2.56E+04	9.17E-11	0.00E+00	9.17E-11	9.17E-11	9.17E-11	9.17E-11
5.59E+04	2.07E-11	0.00E+00	2.07E-11	2.07E-11	2.07E-11	2.07E-11
1.08E+05	5.96E-12	0.00E+00	5.96E-12	5.96E-12	5.96E-12	5.96E-12
1.45E+05	3.35E-12	0.00E+00	3.35E-12	3.35E-12	3.35E-12	3.35E-12
2.06E+05	1.70E-12	0.00E+00	1.70E-12	1.70E-12	1.70E-12	1.70E-12

CRYSTAL RIVER TO HANFORD; SPENT FUEL

CRYSTAL RIVER TO HANFORD; SPENT FUEL
PASQUILL CATEGORY B
VEHICLE TRUCK

1-YEAR DOSE TO LUNG, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	5.77E-02	5.93E-02	1.09E+00	1.68E+00
5.40E+01	0.00E+00	0.00E+00	1.87E-02	1.93E-02	3.53E-01	5.45E-01
8.50E+01	0.00E+00	0.00E+00	7.73E-03	7.96E-03	1.46E-01	2.25E-01
1.82E+02	0.00E+00	0.00E+00	1.79E-03	1.84E-03	3.37E-02	5.22E-02
2.74E+02	0.00E+00	0.00E+00	8.06E-04	8.29E-04	1.52E-02	2.35E-02
4.17E+02	0.00E+00	0.00E+00	3.57E-04	3.67E-04	6.73E-03	1.04E-02
7.04E+02	0.00E+00	0.00E+00	1.30E-04	1.34E-04	2.45E-03	3.79E-03
1.22E+03	0.00E+00	0.00E+00	4.47E-05	4.60E-05	8.42E-04	1.30E-03
1.85E+03	0.00E+00	0.00E+00	2.01E-05	2.07E-05	3.79E-04	5.86E-04
3.80E+03	0.00E+00	0.00E+00	5.11E-06	5.25E-06	9.62E-05	1.49E-04
5.27E+03	0.00E+00	0.00E+00	2.70E-06	2.78E-06	5.09E-05	7.87E-05
1.15E+04	0.00E+00	0.00E+00	6.10E-07	6.28E-07	1.15E-05	1.78E-05
1.46E+04	0.00E+00	0.00E+00	3.86E-07	3.97E-07	7.26E-06	1.12E-05
2.56E+04	0.00E+00	0.00E+00	1.32E-07	1.36E-07	2.49E-06	3.85E-06
5.59E+04	0.00E+00	0.00E+00	2.99E-08	3.07E-08	5.63E-07	8.70E-07
1.08E+05	0.00E+00	0.00E+00	8.59E-09	8.84E-09	1.62E-07	2.50E-07
1.45E+05	0.00E+00	0.00E+00	4.83E-09	4.97E-09	9.10E-08	1.41E-07
2.06E+05	0.00E+00	0.00E+00	2.45E-09	2.52E-09	4.62E-08	7.15E-08

1-YEAR DOSE TO MARROW/WHOLE BODY, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	4.84E-03	4.99E-03	8.96E-01	1.25E+00
5.40E+01	0.00E+00	0.00E+00	1.57E-03	1.62E-03	2.91E-01	4.06E-01
8.50E+01	0.00E+00	0.00E+00	6.48E-04	6.69E-04	1.20E-01	1.68E-01
1.82E+02	0.00E+00	0.00E+00	1.50E-04	1.55E-04	2.78E-02	3.89E-02
2.74E+02	0.00E+00	0.00E+00	6.76E-05	6.98E-05	1.25E-02	1.75E-02
4.17E+02	0.00E+00	0.00E+00	2.99E-05	3.09E-05	5.55E-03	7.75E-03
7.04E+02	0.00E+00	0.00E+00	1.09E-05	1.13E-05	2.02E-03	2.82E-03
1.22E+03	0.00E+00	0.00E+00	3.75E-06	3.87E-06	6.94E-04	9.70E-04
1.85E+03	0.00E+00	0.00E+00	1.69E-06	1.74E-06	3.13E-04	4.37E-04
3.80E+03	0.00E+00	0.00E+00	4.28E-07	4.43E-07	7.93E-05	1.11E-04
5.27E+03	0.00E+00	0.00E+00	2.27E-07	2.34E-07	4.20E-05	5.86E-05
1.15E+04	0.00E+00	0.00E+00	5.12E-08	5.30E-08	9.48E-06	1.32E-05
1.46E+04	0.00E+00	0.00E+00	3.23E-08	3.35E-08	5.99E-06	8.37E-06
2.56E+04	0.00E+00	0.00E+00	1.11E-08	1.15E-08	2.05E-06	2.87E-06
5.59E+04	0.00E+00	0.00E+00	2.50E-09	2.59E-09	4.64E-07	6.48E-07
1.08E+05	0.00E+00	0.00E+00	7.21E-10	7.46E-10	1.33E-07	1.87E-07
1.45E+05	0.00E+00	0.00E+00	4.05E-10	4.20E-10	7.51E-08	1.05E-07
2.06E+05	0.00E+00	0.00E+00	2.06E-10	2.13E-10	3.81E-08	5.33E-08

1-YEAR DOSE TO THYROID, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.50E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.82E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.74E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.17E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.04E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.22E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.85E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.80E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.27E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.15E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.46E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.56E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.59E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.08E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.45E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.06E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
VEHICLE TRUCK

GROUND SURFACE CONTAMINATION TABLE (MICRO CI/M**2)
BEFORE CLEANUP

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	4.43E+01	4.44E+01	9.65E+02	1.36E+03
5.40E+01	0.00E+00	0.00E+00	1.44E+01	1.44E+01	3.13E+02	4.41E+02
8.50E+01	0.00E+00	0.00E+00	5.93E+00	5.95E+00	1.29E+02	1.82E+02
1.82E+02	0.00E+00	0.00E+00	1.37E+00	1.38E+00	3.00E+01	4.22E+01
2.74E+02	0.00E+00	0.00E+00	6.18E-01	6.20E-01	1.35E+01	1.90E+01
4.17E+02	0.00E+00	0.00E+00	2.74E-01	2.75E-01	5.98E+00	8.42E+00
7.04E+02	0.00E+00	0.00E+00	9.99E-02	1.00E-01	2.18E+00	3.07E+00
1.22E+03	0.00E+00	0.00E+00	3.43E-02	3.44E-02	7.48E-01	1.05E+00
1.85E+03	0.00E+00	0.00E+00	1.54E-02	1.55E-02	3.37E-01	4.75E-01
3.80E+03	0.00E+00	0.00E+00	3.92E-03	3.93E-03	8.55E-02	1.20E-01
5.27E+03	0.00E+00	0.00E+00	2.07E-03	2.08E-03	4.52E-02	6.37E-02
1.15E+04	0.00E+00	0.00E+00	4.68E-04	4.70E-04	1.02E-02	1.44E-02
1.46E+04	0.00E+00	0.00E+00	2.96E-04	2.97E-04	6.45E-03	9.09E-03
2.56E+04	0.00E+00	0.00E+00	1.01E-04	1.02E-04	2.21E-03	3.12E-03
5.59E+04	0.00E+00	0.00E+00	2.29E-05	2.30E-05	5.00E-04	7.04E-04
1.08E+05	0.00E+00	0.00E+00	6.59E-06	6.61E-06	1.44E-04	2.03E-04
1.45E+05	0.00E+00	0.00E+00	3.71E-06	3.72E-06	8.09E-05	1.14E-04
2.06E+05	0.00E+00	0.00E+00	1.88E-06	1.89E-06	4.11E-05	5.79E-05

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
VEHICLE TRUCK

MAXIMUM INDIVIDUAL CONSEQUENCE (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	9.57E-02	9.75E-02	2.25E+00	3.29E+00
5.40E+01	0.00E+00	0.00E+00	3.11E-02	3.17E-02	7.29E-01	1.07E+00
8.50E+01	0.00E+00	0.00E+00	1.28E-02	1.31E-02	3.01E-01	4.41E-01
1.82E+02	0.00E+00	0.00E+00	2.97E-03	3.03E-03	6.97E-02	1.02E-01
2.74E+02	0.00E+00	0.00E+00	1.34E-03	1.36E-03	3.14E-02	4.60E-02
4.17E+02	0.00E+00	0.00E+00	5.93E-04	6.04E-04	1.39E-02	2.04E-02
7.04E+02	0.00E+00	0.00E+00	2.16E-04	2.20E-04	5.07E-03	7.42E-03
1.22E+03	0.00E+00	0.00E+00	7.42E-05	7.56E-05	1.74E-03	2.55E-03
1.85E+03	0.00E+00	0.00E+00	3.34E-05	3.40E-05	7.84E-04	1.15E-03
3.80E+03	0.00E+00	0.00E+00	8.47E-06	8.64E-06	1.99E-04	2.91E-04
5.27E+03	0.00E+00	0.00E+00	4.48E-06	4.57E-06	1.05E-04	1.54E-04
1.15E+04	0.00E+00	0.00E+00	1.01E-06	1.03E-06	2.38E-05	3.48E-05
1.46E+04	0.00E+00	0.00E+00	6.40E-07	6.52E-07	1.50E-05	2.20E-05
2.56E+04	0.00E+00	0.00E+00	2.19E-07	2.24E-07	5.15E-06	7.54E-06
5.59E+04	0.00E+00	0.00E+00	4.96E-08	5.05E-08	1.16E-06	1.70E-06
1.08E+05	0.00E+00	0.00E+00	1.43E-08	1.45E-08	3.35E-07	4.90E-07
1.45E+05	0.00E+00	0.00E+00	8.02E-09	8.17E-09	1.88E-07	2.76E-07
2.06E+05	0.00E+00	0.00E+00	4.07E-09	4.15E-09	9.55E-08	1.40E-07

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
VEHICLE TRUCK

BACKYARD FARMER DOSE - EFFECTIVE
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	1.91E+00	1.94E+00	4.75E+02	6.65E+02
5.40E+01	0.00E+00	0.00E+00	6.19E-01	6.30E-01	1.54E+02	2.16E+02
8.50E+01	0.00E+00	0.00E+00	2.56E-01	2.60E-01	6.37E+01	8.91E+01
1.82E+02	0.00E+00	0.00E+00	5.92E-02	6.02E-02	1.47E+01	2.06E+01
2.74E+02	0.00E+00	0.00E+00	2.66E-02	2.71E-02	6.64E+00	9.29E+00
4.17E+02	0.00E+00	0.00E+00	1.18E-02	1.20E-02	2.94E+00	4.12E+00
7.04E+02	0.00E+00	0.00E+00	4.30E-03	4.38E-03	1.07E+00	1.50E+00
1.22E+03	0.00E+00	0.00E+00	1.48E-03	1.50E-03	3.68E-01	5.15E-01
1.85E+03	0.00E+00	0.00E+00	6.65E-04	6.77E-04	1.66E-01	2.32E-01
3.80E+03	0.00E+00	0.00E+00	1.69E-04	1.72E-04	4.21E-02	5.89E-02
5.27E+03	0.00E+00	0.00E+00	8.93E-05	9.08E-05	2.22E-02	3.11E-02
1.15E+04	0.00E+00	0.00E+00	2.02E-05	2.05E-05	5.03E-03	7.03E-03
1.46E+04	0.00E+00	0.00E+00	1.27E-05	1.30E-05	3.17E-03	4.44E-03
2.56E+04	0.00E+00	0.00E+00	4.37E-06	4.45E-06	1.09E-03	1.52E-03
5.59E+04	0.00E+00	0.00E+00	9.87E-07	1.00E-06	2.46E-04	3.44E-04
1.08E+05	0.00E+00	0.00E+00	2.84E-07	2.89E-07	7.08E-05	9.90E-05
1.45E+05	0.00E+00	0.00E+00	1.60E-07	1.63E-07	3.98E-05	5.57E-05
2.06E+05	0.00E+00	0.00E+00	8.11E-08	8.25E-08	2.02E-05	2.83E-05

BACKYARD FARMER DOSE - THYROID
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.00E+01	0.00E+00	0.00E+00	5.42E-01	5.64E-01	4.36E+02	6.11E+02
5.40E+01	0.00E+00	0.00E+00	1.76E-01	1.83E-01	1.42E+02	1.98E+02
8.50E+01	0.00E+00	0.00E+00	7.27E-02	7.57E-02	5.85E+01	8.19E+01
1.82E+02	0.00E+00	0.00E+00	1.68E-02	1.75E-02	1.35E+01	1.90E+01
2.74E+02	0.00E+00	0.00E+00	7.58E-03	7.89E-03	6.10E+00	8.53E+00
4.17E+02	0.00E+00	0.00E+00	3.36E-03	3.49E-03	2.70E+00	3.78E+00
7.04E+02	0.00E+00	0.00E+00	1.22E-03	1.27E-03	9.84E-01	1.38E+00
1.22E+03	0.00E+00	0.00E+00	4.20E-04	4.37E-04	3.38E-01	4.73E-01
1.85E+03	0.00E+00	0.00E+00	1.89E-04	1.97E-04	1.52E-01	2.13E-01
3.80E+03	0.00E+00	0.00E+00	4.80E-05	5.00E-05	3.86E-02	5.41E-02
5.27E+03	0.00E+00	0.00E+00	2.54E-05	2.64E-05	2.04E-02	2.86E-02
1.15E+04	0.00E+00	0.00E+00	5.74E-06	5.97E-06	4.62E-03	6.46E-03
1.46E+04	0.00E+00	0.00E+00	3.62E-06	3.77E-06	2.92E-03	4.08E-03
2.56E+04	0.00E+00	0.00E+00	1.24E-06	1.29E-06	1.00E-03	1.40E-03
5.59E+04	0.00E+00	0.00E+00	2.81E-07	2.92E-07	2.26E-04	3.16E-04
1.08E+05	0.00E+00	0.00E+00	8.08E-08	8.41E-08	6.50E-05	9.10E-05
1.45E+05	0.00E+00	0.00E+00	4.54E-08	4.73E-08	3.65E-05	5.12E-05
2.06E+05	0.00E+00	0.00E+00	2.31E-08	2.40E-08	1.86E-05	2.60E-05

CRYSTAL RIVER TO HANFORD; SPENT FUEL

CALCULATIONAL INFORMATION FOR PASQUILL CATEGORY D

FOR TRUCK AREAS WITH TOTAL CONTAMINATION RATIO GREATER THAN 40.000
(THE AREAS MARKED WITH AN 'X' ARE INTERDICTED AND HAVE
NO 50 YEAR GROUNDSHINE DOSE AND NO INGESTION DOSE.)

AREA/SEVERITY	1	2	3	4	5	6
1	-	-	X	X	X	X
2	-	-	X	X	X	X
3	-	-	-	-	X	X
4	-	-	-	-	X	X
5	-	-	-	-	X	X
6	-	-	-	-	X	X
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-	-	-	-	-
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
PKG1_B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG2_C	9.81E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG4_E	2.24E-44	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG5_E	1.40E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG3_D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKG4_D	9.81E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DEPOSITION VELOCITIES

GROUP	M/SEC
PKG1_B	1.00E-02
PKG2_C	0.00E+00
PKG4_E	1.00E-02
PKG5_E	1.00E-02
PKG3_D	1.00E-02
PKG4_D	1.00E-02

DILUTION FACTORS FOR PASQUILL CATEGORY D
CHI VALUES AFTER DEPLETION (CI-SEC/M**3/CI-RELEASED)

DISTANCE	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
3.60E+01	4.30E-03	4.30E-03	4.30E-03	4.30E-03	4.30E-03	4.30E-03
7.70E+01	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03	1.30E-03
1.18E+02	6.33E-04	6.50E-04	6.33E-04	6.33E-04	6.33E-04	6.33E-04
2.61E+02	1.71E-04	1.80E-04	1.71E-04	1.71E-04	1.71E-04	1.71E-04
3.87E+02	8.76E-05	9.50E-05	8.76E-05	8.76E-05	8.76E-05	8.76E-05
6.33E+02	3.88E-05	4.30E-05	3.88E-05	3.88E-05	3.88E-05	3.88E-05
1.08E+03	1.58E-05	1.80E-05	1.58E-05	1.58E-05	1.58E-05	1.58E-05
1.73E+03	7.24E-06	8.50E-06	7.24E-06	7.24E-06	7.24E-06	7.24E-06
2.40E+03	4.11E-06	5.00E-06	4.11E-06	4.11E-06	4.11E-06	4.11E-06
4.37E+03	1.52E-06	1.90E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06
5.53E+03	9.84E-07	1.30E-06	9.84E-07	9.84E-07	9.84E-07	9.84E-07
1.15E+04	2.93E-07	4.00E-07	2.93E-07	2.93E-07	2.93E-07	2.93E-07
1.37E+04	2.00E-07	3.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07
2.11E+04	9.82E-08	1.50E-07	9.82E-08	9.82E-08	9.82E-08	9.82E-08
3.92E+04	3.34E-08	5.50E-08	3.34E-08	3.34E-08	3.34E-08	3.34E-08
6.56E+04	1.29E-08	2.41E-08	1.29E-08	1.29E-08	1.29E-08	1.29E-08
8.12E+04	7.76E-09	1.65E-08	7.76E-09	7.76E-09	7.76E-09	7.76E-09
1.06E+05	4.62E-09	1.05E-08	4.62E-09	4.62E-09	4.62E-09	4.62E-09

DEPOSITION FACTORS
CHI DEPOSITED (CI/M**2/CI-RELEASED)

DISTANCE	PKG1_B	PKG2_C	PKG4_E	PKG5_E	PKG3_D	PKG4_D
3.60E+01	4.30E-05	0.00E+00	4.30E-05	4.30E-05	4.30E-05	4.30E-05
7.70E+01	1.30E-05	0.00E+00	1.30E-05	1.30E-05	1.30E-05	1.30E-05
1.18E+02	6.33E-06	0.00E+00	6.33E-06	6.33E-06	6.33E-06	6.33E-06
2.61E+02	1.71E-06	0.00E+00	1.71E-06	1.71E-06	1.71E-06	1.71E-06
3.87E+02	8.76E-07	0.00E+00	8.76E-07	8.76E-07	8.76E-07	8.76E-07
6.33E+02	3.88E-07	0.00E+00	3.88E-07	3.88E-07	3.88E-07	3.88E-07
1.08E+03	1.58E-07	0.00E+00	1.58E-07	1.58E-07	1.58E-07	1.58E-07
1.73E+03	7.24E-08	0.00E+00	7.24E-08	7.24E-08	7.24E-08	7.24E-08
2.40E+03	4.11E-08	0.00E+00	4.11E-08	4.11E-08	4.11E-08	4.11E-08
4.37E+03	1.52E-08	0.00E+00	1.52E-08	1.52E-08	1.52E-08	1.52E-08
5.53E+03	9.84E-09	0.00E+00	9.84E-09	9.84E-09	9.84E-09	9.84E-09
1.15E+04	2.93E-09	0.00E+00	2.93E-09	2.93E-09	2.93E-09	2.93E-09
1.37E+04	2.00E-09	0.00E+00	2.00E-09	2.00E-09	2.00E-09	2.00E-09
2.11E+04	9.82E-10	0.00E+00	9.82E-10	9.82E-10	9.82E-10	9.82E-10
3.92E+04	3.34E-10	0.00E+00	3.34E-10	3.34E-10	3.34E-10	3.34E-10
6.56E+04	1.29E-10	0.00E+00	1.29E-10	1.29E-10	1.29E-10	1.29E-10
8.12E+04	7.76E-11	0.00E+00	7.76E-11	7.76E-11	7.76E-11	7.76E-11
1.06E+05	4.62E-11	0.00E+00	4.62E-11	4.62E-11	4.62E-11	4.62E-11

CRYSTAL RIVER TO HANFORD; SPENT FUEL
PASQUILL CATEGORY D
VEHICLE TRUCK

1-YEAR DOSE TO LUNG, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	6.20E-02	6.38E-02	1.17E+00	1.81E+00
7.70E+01	0.00E+00	0.00E+00	1.87E-02	1.93E-02	3.53E-01	5.45E-01
1.18E+02	0.00E+00	0.00E+00	9.13E-03	9.39E-03	1.72E-01	2.66E-01
2.61E+02	0.00E+00	0.00E+00	2.47E-03	2.54E-03	4.66E-02	7.20E-02
3.87E+02	0.00E+00	0.00E+00	1.26E-03	1.30E-03	2.38E-02	3.68E-02
6.33E+02	0.00E+00	0.00E+00	5.59E-04	5.75E-04	1.05E-02	1.63E-02
1.08E+03	0.00E+00	0.00E+00	2.28E-04	2.35E-04	4.30E-03	6.65E-03
1.73E+03	0.00E+00	0.00E+00	1.04E-04	1.07E-04	1.97E-03	3.04E-03
2.40E+03	0.00E+00	0.00E+00	5.93E-05	6.10E-05	1.12E-03	1.73E-03
4.37E+03	0.00E+00	0.00E+00	2.19E-05	2.25E-05	4.13E-04	6.38E-04
5.53E+03	0.00E+00	0.00E+00	1.42E-05	1.46E-05	2.67E-04	4.13E-04
1.15E+04	0.00E+00	0.00E+00	4.23E-06	4.35E-06	7.97E-05	1.23E-04
1.37E+04	0.00E+00	0.00E+00	2.88E-06	2.97E-06	5.43E-05	8.40E-05
2.11E+04	0.00E+00	0.00E+00	1.42E-06	1.46E-06	2.67E-05	4.12E-05
3.92E+04	0.00E+00	0.00E+00	4.82E-07	4.96E-07	9.08E-06	1.40E-05
6.56E+04	0.00E+00	0.00E+00	1.87E-07	1.92E-07	3.52E-06	5.44E-06
8.12E+04	0.00E+00	0.00E+00	1.12E-07	1.15E-07	2.11E-06	3.26E-06
1.06E+05	0.00E+00	0.00E+00	6.67E-08	6.86E-08	1.26E-06	1.94E-06

1-YEAR DOSE TO MARROW/WHOLE BODY, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	5.20E-03	5.36E-03	9.63E-01	1.35E+00
7.70E+01	0.00E+00	0.00E+00	1.57E-03	1.62E-03	2.91E-01	4.06E-01
1.18E+02	0.00E+00	0.00E+00	7.66E-04	7.89E-04	1.42E-01	1.98E-01
2.61E+02	0.00E+00	0.00E+00	2.07E-04	2.14E-04	3.84E-02	5.37E-02
3.87E+02	0.00E+00	0.00E+00	1.06E-04	1.09E-04	1.96E-02	2.74E-02
6.33E+02	0.00E+00	0.00E+00	4.69E-05	4.84E-05	8.68E-03	1.21E-02
1.08E+03	0.00E+00	0.00E+00	1.91E-05	1.98E-05	3.54E-03	4.95E-03
1.73E+03	0.00E+00	0.00E+00	8.75E-06	9.05E-06	1.62E-03	2.27E-03
2.40E+03	0.00E+00	0.00E+00	4.97E-06	5.15E-06	9.21E-04	1.29E-03
4.37E+03	0.00E+00	0.00E+00	1.84E-06	1.90E-06	3.40E-04	4.76E-04
5.53E+03	0.00E+00	0.00E+00	1.19E-06	1.24E-06	2.20E-04	3.08E-04
1.15E+04	0.00E+00	0.00E+00	3.55E-07	3.69E-07	6.57E-05	9.19E-05
1.37E+04	0.00E+00	0.00E+00	2.42E-07	2.52E-07	4.48E-05	6.26E-05
2.11E+04	0.00E+00	0.00E+00	1.19E-07	1.24E-07	2.20E-05	3.07E-05
3.92E+04	0.00E+00	0.00E+00	4.04E-08	4.23E-08	7.49E-06	1.05E-05
6.56E+04	0.00E+00	0.00E+00	1.56E-08	1.64E-08	2.90E-06	4.05E-06
8.12E+04	0.00E+00	0.00E+00	9.39E-09	9.91E-09	1.74E-06	2.43E-06
1.06E+05	0.00E+00	0.00E+00	5.59E-09	5.92E-09	1.04E-06	1.45E-06

1-YEAR DOSE TO THYROID, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.70E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.18E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.61E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.87E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.33E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.08E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.73E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.40E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4.37E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.53E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.15E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.37E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.11E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.92E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.56E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.12E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.06E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
VEHICLE TRUCK

GROUND SURFACE CONTAMINATION TABLE (MICRO CI/M**2)
BEFORE CLEANUP

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	4.76E+01	4.77E+01	1.04E+03	1.46E+03
7.70E+01	0.00E+00	0.00E+00	1.44E+01	1.44E+01	3.13E+02	4.41E+02
1.18E+02	0.00E+00	0.00E+00	7.00E+00	7.03E+00	1.53E+02	2.15E+02
2.61E+02	0.00E+00	0.00E+00	1.90E+00	1.90E+00	4.14E+01	5.83E+01
3.87E+02	0.00E+00	0.00E+00	9.69E-01	9.72E-01	2.11E+01	2.98E+01
6.33E+02	0.00E+00	0.00E+00	4.29E-01	4.30E-01	9.35E+00	1.32E+01
1.08E+03	0.00E+00	0.00E+00	1.75E-01	1.76E-01	3.82E+00	5.38E+00
1.73E+03	0.00E+00	0.00E+00	8.01E-02	8.03E-02	1.75E+00	2.46E+00
2.40E+03	0.00E+00	0.00E+00	4.55E-02	4.56E-02	9.92E-01	1.40E+00
4.37E+03	0.00E+00	0.00E+00	1.68E-02	1.69E-02	3.67E-01	5.17E-01
5.53E+03	0.00E+00	0.00E+00	1.09E-02	1.09E-02	2.38E-01	3.35E-01
1.15E+04	0.00E+00	0.00E+00	3.25E-03	3.26E-03	7.08E-02	9.98E-02
1.37E+04	0.00E+00	0.00E+00	2.21E-03	2.22E-03	4.83E-02	6.80E-02
2.11E+04	0.00E+00	0.00E+00	1.09E-03	1.09E-03	2.37E-02	3.34E-02
3.92E+04	0.00E+00	0.00E+00	3.70E-04	3.71E-04	8.07E-03	1.14E-02
6.56E+04	0.00E+00	0.00E+00	1.43E-04	1.44E-04	3.12E-03	4.40E-03
8.12E+04	0.00E+00	0.00E+00	8.59E-05	8.61E-05	1.87E-03	2.64E-03
1.06E+05	0.00E+00	0.00E+00	5.12E-05	5.13E-05	1.12E-03	1.57E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
VEHICLE TRUCK

MAXIMUM INDIVIDUAL CONSEQUENCE (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	1.03E-01	1.05E-01	2.41E+00	3.54E+00
7.70E+01	0.00E+00	0.00E+00	3.11E-02	3.17E-02	7.29E-01	1.07E+00
1.18E+02	0.00E+00	0.00E+00	1.52E-02	1.54E-02	3.55E-01	5.21E-01
2.61E+02	0.00E+00	0.00E+00	4.10E-03	4.18E-03	9.63E-02	1.41E-01
3.87E+02	0.00E+00	0.00E+00	2.10E-03	2.14E-03	4.92E-02	7.21E-02
6.33E+02	0.00E+00	0.00E+00	9.27E-04	9.45E-04	2.18E-02	3.19E-02
1.08E+03	0.00E+00	0.00E+00	3.79E-04	3.86E-04	8.88E-03	1.30E-02
1.73E+03	0.00E+00	0.00E+00	1.73E-04	1.77E-04	4.06E-03	5.95E-03
2.40E+03	0.00E+00	0.00E+00	9.84E-05	1.00E-04	2.31E-03	3.38E-03
4.37E+03	0.00E+00	0.00E+00	3.64E-05	3.71E-05	8.53E-04	1.25E-03
5.53E+03	0.00E+00	0.00E+00	2.36E-05	2.40E-05	5.53E-04	8.10E-04
1.15E+04	0.00E+00	0.00E+00	7.02E-06	7.16E-06	1.65E-04	2.41E-04
1.37E+04	0.00E+00	0.00E+00	4.79E-06	4.88E-06	1.12E-04	1.64E-04
2.11E+04	0.00E+00	0.00E+00	2.35E-06	2.39E-06	5.51E-05	8.07E-05
3.92E+04	0.00E+00	0.00E+00	8.00E-07	8.16E-07	1.88E-05	2.75E-05
6.56E+04	0.00E+00	0.00E+00	3.10E-07	3.16E-07	7.27E-06	1.06E-05
8.12E+04	0.00E+00	0.00E+00	1.86E-07	1.90E-07	4.36E-06	6.39E-06
1.06E+05	0.00E+00	0.00E+00	1.11E-07	1.13E-07	2.60E-06	3.80E-06

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
VEHICLE TRUCK

BACKYARD FARMER DOSE - EFFECTIVE
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	2.05E+00	2.09E+00	5.11E+02	7.15E+02
7.70E+01	0.00E+00	0.00E+00	6.19E-01	6.29E-01	1.54E+02	2.16E+02
1.18E+02	0.00E+00	0.00E+00	3.02E-01	3.07E-01	7.52E+01	1.05E+02
2.61E+02	0.00E+00	0.00E+00	8.17E-02	8.32E-02	2.04E+01	2.85E+01
3.87E+02	0.00E+00	0.00E+00	4.18E-02	4.25E-02	1.04E+01	1.46E+01
6.33E+02	0.00E+00	0.00E+00	1.85E-02	1.88E-02	4.60E+00	6.44E+00
1.08E+03	0.00E+00	0.00E+00	7.54E-03	7.67E-03	1.88E+00	2.63E+00
1.73E+03	0.00E+00	0.00E+00	3.45E-03	3.51E-03	8.59E-01	1.20E+00
2.40E+03	0.00E+00	0.00E+00	1.96E-03	1.99E-03	4.88E-01	6.83E-01
4.37E+03	0.00E+00	0.00E+00	7.24E-04	7.37E-04	1.80E-01	2.53E-01
5.53E+03	0.00E+00	0.00E+00	4.69E-04	4.77E-04	1.17E-01	1.64E-01
1.15E+04	0.00E+00	0.00E+00	1.40E-04	1.42E-04	3.49E-02	4.88E-02
1.37E+04	0.00E+00	0.00E+00	9.53E-05	9.70E-05	2.37E-02	3.32E-02
2.11E+04	0.00E+00	0.00E+00	4.68E-05	4.76E-05	1.17E-02	1.63E-02
3.92E+04	0.00E+00	0.00E+00	1.59E-05	1.62E-05	3.97E-03	5.56E-03
6.56E+04	0.00E+00	0.00E+00	6.17E-06	6.28E-06	1.54E-03	2.15E-03
8.12E+04	0.00E+00	0.00E+00	3.70E-06	3.76E-06	9.22E-04	1.29E-03
1.06E+05	0.00E+00	0.00E+00	2.20E-06	2.24E-06	5.49E-04	7.68E-04

BACKYARD FARMER DOSE - THYROID
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
3.60E+01	0.00E+00	0.00E+00	5.83E-01	6.07E-01	4.69E+02	6.56E+02
7.70E+01	0.00E+00	0.00E+00	1.76E-01	1.83E-01	1.42E+02	1.98E+02
1.18E+02	0.00E+00	0.00E+00	8.58E-02	8.93E-02	6.90E+01	9.66E+01
2.61E+02	0.00E+00	0.00E+00	2.32E-02	2.42E-02	1.87E+01	2.62E+01
3.87E+02	0.00E+00	0.00E+00	1.19E-02	1.24E-02	9.55E+00	1.34E+01
6.33E+02	0.00E+00	0.00E+00	5.25E-03	5.47E-03	4.23E+00	5.91E+00
1.08E+03	0.00E+00	0.00E+00	2.15E-03	2.23E-03	1.73E+00	2.42E+00
1.73E+03	0.00E+00	0.00E+00	9.81E-04	1.02E-03	7.89E-01	1.10E+00
2.40E+03	0.00E+00	0.00E+00	5.58E-04	5.80E-04	4.48E-01	6.28E-01
4.37E+03	0.00E+00	0.00E+00	2.06E-04	2.14E-04	1.66E-01	2.32E-01
5.53E+03	0.00E+00	0.00E+00	1.33E-04	1.39E-04	1.07E-01	1.50E-01
1.15E+04	0.00E+00	0.00E+00	3.98E-05	4.14E-05	3.20E-02	4.48E-02
1.37E+04	0.00E+00	0.00E+00	2.71E-05	2.82E-05	2.18E-02	3.05E-02
2.11E+04	0.00E+00	0.00E+00	1.33E-05	1.38E-05	1.07E-02	1.50E-02
3.92E+04	0.00E+00	0.00E+00	4.53E-06	4.72E-06	3.65E-03	5.10E-03
6.56E+04	0.00E+00	0.00E+00	1.75E-06	1.83E-06	1.41E-03	1.98E-03
8.12E+04	0.00E+00	0.00E+00	1.05E-06	1.10E-06	8.46E-04	1.18E-03
1.06E+05	0.00E+00	0.00E+00	6.27E-07	6.52E-07	5.04E-04	7.06E-04

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE SUMMARY
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IN-TRANSIT POPULATION EXPOSURE IN PERSON-REM
*INPUT DATA WERE ALTERED WITH REGULATORY CHECKS

	PASSENGER	CREW	OFF LINK	ON LINK	TOTALS
RUR_NR_FW	0.00E+00	6.15E+01	3.62E-01	1.47E+01	7.66E+01
RUR_NR_NF	0.00E+00	2.05E+01	1.44E-01	1.35E+01	3.41E+01
RUR_RH_FW	0.00E+00	6.84E+00	4.02E-02	1.64E+00	8.51E+00
RUR_RH_NF	0.00E+00	2.28E+00	1.60E-02	1.50E+00	3.79E+00
SUB_NR_FW	0.00E+00	1.46E+01	8.96E+00	5.80E+00	2.94E+01
SUB_NR_NF	0.00E+00	1.07E+01	8.02E+00	2.62E+01	4.49E+01
SUB_RH_FW	0.00E+00	3.25E+00	1.99E+00	5.38E+00	1.06E+01
SUB_RH_NF	0.00E+00	2.37E+00	1.78E+00	2.39E+01	2.81E+01
URB_NR_FW	0.00E+00	1.45E-01	9.87E-03	2.07E-01	3.61E-01
URB_NR_NF	0.00E+00	2.83E-02	9.48E-02	4.23E-01	5.46E-01
URB_RH_FW	0.00E+00	3.24E-02	2.20E-03	1.92E-01	2.27E-01
URB_RH_NF	0.00E+00	6.87E-03	2.30E-02	4.32E-01	4.62E-01
RURAL	0.00E+00	9.12E+01	5.62E-01	3.13E+01	1.23E+02
SUBURB	0.00E+00	3.09E+01	2.07E+01	6.12E+01	1.13E+02
URBAN	0.00E+00	2.13E-01	1.30E-01	1.25E+00	1.60E+00
TOTALS:	0.00E+00	1.22E+02	2.14E+01	9.38E+01	2.38E+02

MAXIMUM INDIVIDUAL IN-TRANSIT DOSE

TRUCK 3.94E-04 REM

CRYSTAL RIVER TO HANFORD; SPENT FUEL

STOP EXPOSURE IN PERSON-REM

POINT-SOURCE	STOP_	6.49E+02
	TOTAL:	6.49E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_NR_FW			
	DISTANCE TRAVELED	7.663E-01	1.0000 %
	NUMBER OF SHIPMENTS	7.663E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	7.663E-01	1.0000 %
	K ZERO FOR CREW DOSE	6.154E-01	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.154E-01	0.8031 %
	NUMBER OF CREW MEMBERS	6.154E-01	0.8031 %
	K ZERO FOR VEHICLE	1.509E-01	0.1969 %
	TRAFFIC COUNT	1.473E-01	0.1922 %
	NUMBER OF PEOPLE PER VEHICLE	1.473E-01	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	3.618E-03	0.0047 %
	POPULATION DENSITY	3.618E-03	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-9.135E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.231E+00	-1.6061 %
RUR_NR_NF			
	DISTANCE TRAVELED	3.414E-01	1.0000 %
	NUMBER OF SHIPMENTS	3.414E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.414E-01	1.0000 %
	NUMBER OF CREW MEMBERS	2.051E-01	0.6009 %
	K ZERO FOR CREW DOSE	2.051E-01	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.051E-01	0.6009 %
	K ZERO FOR VEHICLE	1.363E-01	0.3991 %
	TRAFFIC COUNT	1.348E-01	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.348E-01	0.3949 %
	POPULATION DENSITY	1.438E-03	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.206E-03	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.322E-04	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.102E-01	-1.2017 %
	VELOCITY	-4.762E-01	-1.3949 %
RUR_RH_FW			
	DISTANCE TRAVELED	8.514E-02	1.0000 %
	NUMBER OF SHIPMENTS	8.514E-02	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	8.514E-02	1.0000 %
	NUMBER OF CREW MEMBERS	6.837E-02	0.8031 %
	CREW DOSE ADJUSTMENT FACTOR	6.837E-02	0.8031 %
	K ZERO FOR CREW DOSE	6.837E-02	0.8031 %
	K ZERO FOR VEHICLE	1.677E-02	0.1969 %
	NUMBER OF PEOPLE PER VEHICLE	1.636E-02	0.1922 %
	TRAFFIC COUNT	1.636E-02	0.1922 %
	SHIELDING FACTOR (RR,RS,RU)	4.020E-04	0.0047 %
	POPULATION DENSITY	4.020E-04	0.0047 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	VELOCITY	-1.015E-01	-1.1922 %
	DISTANCE FROM PACKAGE TO CREW	-1.367E-01	-1.6061 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
RUR_RH_NF			
	DISTANCE TRAVELED	3.793E-02	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.793E-02	1.0000 %
	NUMBER OF SHIPMENTS	3.793E-02	1.0000 %
	K ZERO FOR CREW DOSE	2.279E-02	0.6009 %
	NUMBER OF CREW MEMBERS	2.279E-02	0.6009 %
	CREW DOSE ADJUSTMENT FACTOR	2.279E-02	0.6009 %
	K ZERO FOR VEHICLE	1.514E-02	0.3991 %
	TRAFFIC COUNT	1.498E-02	0.3949 %
	NUMBER OF PEOPLE PER VEHICLE	1.498E-02	0.3949 %
	POPULATION DENSITY	1.598E-04	0.0042 %
	SHIELDING FACTOR (RR,RS,RU)	1.340E-04	0.0035 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.580E-05	0.0007 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.558E-02	-1.2017 %
	VELOCITY	-5.291E-02	-1.3949 %
SUB_NR_FW			
	DOSE RATE FOR VEHICLE (TI)	2.937E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.937E-01	1.0000 %
	DISTANCE TRAVELED	2.937E-01	1.0000 %
	K ZERO FOR VEHICLE	1.476E-01	0.5025 %
	CREW DOSE ADJUSTMENT FACTOR	1.461E-01	0.4975 %
	NUMBER OF CREW MEMBERS	1.461E-01	0.4975 %
	K ZERO FOR CREW DOSE	1.461E-01	0.4975 %
	SHIELDING FACTOR (RR,RS,RU)	8.956E-02	0.3049 %
	POPULATION DENSITY	8.956E-02	0.3049 %
	NUMBER OF PEOPLE PER VEHICLE	5.804E-02	0.1976 %
	TRAFFIC COUNT	5.804E-02	0.1976 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.922E-01	-0.9949 %
	VELOCITY	-3.518E-01	-1.1976 %
SUB_NR_NF			
	DISTANCE TRAVELED	4.488E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.488E-01	1.0000 %
	NUMBER OF SHIPMENTS	4.488E-01	1.0000 %
	K ZERO FOR VEHICLE	3.417E-01	0.7614 %
	NUMBER OF PEOPLE PER VEHICLE	2.616E-01	0.5828 %
	TRAFFIC COUNT	2.616E-01	0.5828 %
	NUMBER OF CREW MEMBERS	1.071E-01	0.2386 %
	CREW DOSE ADJUSTMENT FACTOR	1.071E-01	0.2386 %
	K ZERO FOR CREW DOSE	1.071E-01	0.2386 %
	POPULATION DENSITY	8.016E-02	0.1786 %
	SHIELDING FACTOR (RR,RS,RU)	6.564E-02	0.1463 %
	RATIO OF PEDESTRIAN DENSITY (RPD	1.453E-02	0.0324 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.142E-01	-0.4772 %
	VELOCITY	-7.103E-01	-1.5828 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
SUB_RH_FW			
	DISTANCE TRAVELED	1.062E-01	1.0000 %
	NUMBER OF SHIPMENTS	1.062E-01	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	1.062E-01	1.0000 %
	K ZERO FOR VEHICLE	7.368E-02	0.6941 %
	NUMBER OF PEOPLE PER VEHICLE	5.378E-02	0.5066 %
	TRAFFIC COUNT	5.378E-02	0.5066 %
	CREW DOSE ADJUSTMENT FACTOR	3.247E-02	0.3059 %
	K ZERO FOR CREW DOSE	3.247E-02	0.3059 %
	NUMBER OF CREW MEMBERS	3.247E-02	0.3059 %
	POPULATION DENSITY	1.990E-02	0.1875 %
	SHIELDING FACTOR (RR,RS,RU)	1.990E-02	0.1875 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.495E-02	-0.6118 %
	VELOCITY	-1.599E-01	-1.5066 %
SUB_RH_NF			
	DOSE RATE FOR VEHICLE (TI)	2.806E-01	1.0000 %
	NUMBER OF SHIPMENTS	2.806E-01	1.0000 %
	DISTANCE TRAVELED	2.806E-01	1.0000 %
	K ZERO FOR VEHICLE	2.568E-01	0.9154 %
	TRAFFIC COUNT	2.390E-01	0.8520 %
	NUMBER OF PEOPLE PER VEHICLE	2.390E-01	0.8520 %
	NUMBER OF CREW MEMBERS	2.374E-02	0.0846 %
	CREW DOSE ADJUSTMENT FACTOR	2.374E-02	0.0846 %
	K ZERO FOR CREW DOSE	2.374E-02	0.0846 %
	POPULATION DENSITY	1.777E-02	0.0633 %
	SHIELDING FACTOR (RR,RS,RU)	1.455E-02	0.0519 %
	RATIO OF PEDESTRIAN DENSITY (RPD	3.221E-03	0.0115 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-4.748E-02	-0.1692 %
	VELOCITY	-5.196E-01	-1.8520 %
URB_NR_FW			
	NUMBER OF SHIPMENTS	3.615E-03	1.0000 %
	DISTANCE TRAVELED	3.615E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	3.615E-03	1.0000 %
	K ZERO FOR VEHICLE	2.165E-03	0.5990 %
	NUMBER OF PEOPLE PER VEHICLE	2.067E-03	0.5717 %
	TRAFFIC COUNT	2.067E-03	0.5717 %
	CREW DOSE ADJUSTMENT FACTOR	1.449E-03	0.4010 %
	K ZERO FOR CREW DOSE	1.449E-03	0.4010 %
	NUMBER OF CREW MEMBERS	1.449E-03	0.4010 %
	POPULATION DENSITY	9.870E-05	0.0273 %
	SHIELDING FACTOR (RR,RS,RU)	9.870E-05	0.0273 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-2.899E-03	-0.8019 %
	VELOCITY	-5.681E-03	-1.5717 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
URB_NR_NF			
	DISTANCE TRAVELED	5.460E-03	1.0000 %
	NUMBER OF SHIPMENTS	5.460E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	5.460E-03	1.0000 %
	K ZERO FOR VEHICLE	5.177E-03	0.9481 %
	TRAFFIC COUNT	4.229E-03	0.7745 %
	NUMBER OF PEOPLE PER VEHICLE	4.229E-03	0.7745 %
	POPULATION DENSITY	9.478E-04	0.1736 %
	RATIO OF PEDESTRIAN DENSITY (RPD	9.207E-04	0.1686 %
	NUMBER OF CREW MEMBERS	2.834E-04	0.0519 %
	CREW DOSE ADJUSTMENT FACTOR	2.834E-04	0.0519 %
	K ZERO FOR CREW DOSE	2.834E-04	0.0519 %
	SHIELDING FACTOR (RR,RS,RU)	2.706E-05	0.0050 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-5.667E-04	-0.1038 %
	VELOCITY	-9.689E-03	-1.7745 %
URB_RH_FW			
	DISTANCE TRAVELED	2.270E-03	1.0000 %
	NUMBER OF SHIPMENTS	2.270E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	2.270E-03	1.0000 %
	K ZERO FOR VEHICLE	1.946E-03	0.8574 %
	NUMBER OF PEOPLE PER VEHICLE	1.924E-03	0.8477 %
	TRAFFIC COUNT	1.924E-03	0.8477 %
	CREW DOSE ADJUSTMENT FACTOR	3.237E-04	0.1426 %
	K ZERO FOR CREW DOSE	3.237E-04	0.1426 %
	NUMBER OF CREW MEMBERS	3.237E-04	0.1426 %
	POPULATION DENSITY	2.204E-05	0.0097 %
	SHIELDING FACTOR (RR,RS,RU)	2.204E-05	0.0097 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-6.473E-04	-0.2852 %
	VELOCITY	-4.194E-03	-1.8477 %
URB_RH_NF			
	DISTANCE TRAVELED	4.622E-03	1.0000 %
	NUMBER OF SHIPMENTS	4.622E-03	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	4.622E-03	1.0000 %
	K ZERO FOR VEHICLE	4.553E-03	0.9851 %
	TRAFFIC COUNT	4.323E-03	0.9354 %
	NUMBER OF PEOPLE PER VEHICLE	4.323E-03	0.9354 %
	POPULATION DENSITY	2.298E-04	0.0497 %
	RATIO OF PEDESTRIAN DENSITY (RPD	2.232E-04	0.0483 %
	NUMBER OF CREW MEMBERS	6.869E-05	0.0149 %
	CREW DOSE ADJUSTMENT FACTOR	6.869E-05	0.0149 %
	K ZERO FOR CREW DOSE	6.869E-05	0.0149 %
	SHIELDING FACTOR (RR,RS,RU)	6.561E-06	0.0014 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-1.374E-04	-0.0297 %
	VELOCITY	-8.945E-03	-1.9354 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

STOP STOP_	PARAMETER	IMPORTANCE	CHANGE
	K ZERO FOR VEHICLE	6.486E+00	1.0000 %
	STOP TIME	6.486E+00	1.0000 %
	POPULATION/POPULATION DENSITY	6.486E+00	1.0000 %
	NUMBER OF SHIPMENTS	6.486E+00	1.0000 %
	DOSE RATE FOR VEHICLE	6.486E+00	1.0000 %
	MAXIMUM DISTANCE AT STOP	0.000E+00	0.0000 %
	MINIMUM DISTANCE AT STOP	-1.297E+01	-2.0000 %

CRYSTAL RIVER TO HANFORD; SPENT FUEL

ACCIDENT SUMMARY
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NUMBER OF EXPECTED ACCIDENTS

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	1.47E-01	4.88E-02	1.63E-02	5.43E-03	7.61E-01	2.54E-01	8.45E-02
2	9.57E-02	3.19E-02	1.06E-02	3.55E-03	4.98E-01	1.66E-01	5.53E-02
3	7.29E-04	2.43E-04	8.10E-05	2.70E-05	5.05E-03	1.68E-03	5.62E-04
4	7.29E-07	2.43E-07	8.10E-08	2.70E-08	5.05E-06	1.68E-06	5.62E-07
5	1.21E-06	4.05E-07	1.35E-07	4.50E-08	3.79E-06	1.26E-06	4.21E-07
6	1.70E-06	5.67E-07	1.89E-07	6.30E-08	2.53E-06	8.42E-07	2.81E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	2.82E-02	4.04E-02	2.16E-03	4.51E-03	2.61E-04
2	1.84E-02	2.64E-02	1.41E-03	2.95E-03	1.71E-04
3	1.87E-04	2.54E-05	1.36E-06	2.84E-06	1.64E-07
4	1.87E-07	2.54E-08	1.36E-09	2.84E-09	1.64E-10
5	1.40E-07	1.67E-08	8.92E-10	1.87E-09	1.08E-10
6	9.36E-08	8.69E-09	4.64E-10	9.70E-10	5.62E-11

EARLY FATALITY CONSEQUENCES

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

RADIOLOGICAL CONSEQUENCES
50 YEAR POPULATION DOSE IN PERSON-REM

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.56E+00	1.56E+00	1.56E+00	1.56E+00	1.87E+02	1.87E+02	1.87E+02
4	1.56E+00	1.56E+00	1.56E+00	1.56E+00	1.87E+02	1.87E+02	1.87E+02
5	1.71E+01	1.71E+01	1.71E+01	1.71E+01	2.05E+03	2.05E+03	2.05E+03
6	2.24E+01	2.24E+01	2.24E+01	2.24E+01	2.69E+03	2.69E+03	2.69E+03

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.87E+02	6.46E+02	6.46E+02	6.46E+02	6.46E+02
4	1.87E+02	6.47E+02	6.47E+02	6.47E+02	6.47E+02
5	2.05E+03	7.08E+03	7.08E+03	7.08E+03	7.08E+03
6	2.69E+03	9.31E+03	9.31E+03	9.31E+03	9.31E+03

MAXIMUM RISK FOR INDIVIDUAL IN NEAREST ISOPLETH (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CATEGORY	RUR_NR_FW	RUR_NR_NF	RUR_RH_FW	RUR_RH_NF	SUB_NR_FW	SUB_NR_NF	SUB_RH_FW
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	7.40E-05	2.47E-05	8.22E-06	2.74E-06	5.13E-04	1.71E-04	5.70E-05
4	7.54E-08	2.51E-08	8.37E-09	2.79E-09	5.23E-07	1.74E-07	5.81E-08
5	2.89E-06	9.64E-07	3.21E-07	1.07E-07	9.02E-06	3.01E-06	1.00E-06
6	5.93E-06	1.98E-06	6.59E-07	2.20E-07	8.81E-06	2.94E-06	9.79E-07

CATEGORY	SUB_RH_NF	URB_NR_FW	URB_NR_NF	URB_RH_FW	URB_RH_NF
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	1.90E-05	2.58E-06	1.38E-07	2.88E-07	1.67E-08
4	1.94E-08	2.63E-09	1.40E-10	2.93E-10	1.70E-11
5	3.34E-07	3.98E-08	2.12E-09	4.44E-09	2.57E-10
6	3.26E-07	3.03E-08	1.62E-09	3.38E-09	1.96E-10

RADIOLOGICAL CONSEQUENCES IN PERSON REM
50 YEAR SOCIETAL INGESTION DOSE - EFFECTIVE

LINK	SEVER: 1	SEVER: 2	SEVER: 3	SEVER: 4	SEVER: 5	SEVER: 6
RUR_NR_FW	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02
RUR_NR_NF	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02
RUR_RH_FW	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02
RUR_RH_NF	0.00E+00	0.00E+00	1.08E+00	1.09E+00	1.94E+02	2.60E+02

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

	GROUND	INHALED	RESUSPD	CLOUDSH	TOTAL
RUR_NR_FW	1.19E-03	1.24E-06	5.47E-07	1.01E-07	1.20E-03
RUR_NR_NF	3.98E-04	4.14E-07	1.82E-07	3.36E-08	3.98E-04
RUR_RH_FW	1.33E-04	1.38E-07	6.08E-08	1.12E-08	1.33E-04
RUR_RH_NF	4.42E-05	4.60E-08	2.03E-08	3.73E-09	4.43E-05
SUB_NR_FW	9.57E-01	8.76E-04	4.52E-04	8.24E-05	9.59E-01
SUB_NR_NF	3.19E-01	2.92E-04	1.51E-04	2.75E-05	3.20E-01
SUB_RH_FW	1.06E-01	9.74E-05	5.02E-05	9.16E-06	1.07E-01
SUB_RH_NF	3.55E-02	3.25E-05	1.67E-05	3.05E-06	3.55E-02
URB_NR_FW	1.66E-02	1.50E-05	7.86E-06	1.43E-06	1.66E-02
URB_NR_NF	8.87E-04	8.02E-07	4.20E-07	7.65E-08	8.88E-04
URB_RH_FW	1.85E-03	1.68E-06	8.78E-07	1.60E-07	1.86E-03
URB_RH_NF	1.07E-04	9.72E-08	5.09E-08	9.27E-09	1.08E-04
RURAL	1.77E-03	1.84E-06	8.11E-07	1.49E-07	1.77E-03
SUBURB	1.42E+00	1.30E-03	6.69E-04	1.22E-04	1.42E+00
URBAN	1.95E-02	1.76E-05	9.21E-06	1.68E-06	1.95E-02
TOTALS:	1.44E+00	1.32E-03	6.79E-04	1.24E-04	1.44E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

SOCIETAL INGESTION RISK - PERSON-REM

LINK	GONADS	EFFECTIVE
RUR_NR_FW	1.60E-03	1.46E-03
RUR_NR_NF	5.35E-04	4.88E-04
RUR_RH_FW	1.78E-04	1.63E-04
RUR_RH_NF	5.94E-05	5.42E-05
TOTAL	2.38E-03	2.17E-03

SOCIETAL INGESTION RISK BY ORGAN - PERSON-REM

LINK	BREAST	LUNGS	RED MARR	BONE SUR	THYROID	REMAINDER
RUR_NR_FW	9.25E-04	8.76E-04	1.03E-03	8.89E-04	8.47E-04	2.15E-03
RUR_NR_NF	3.08E-04	2.92E-04	3.44E-04	2.96E-04	2.82E-04	7.15E-04
RUR_RH_FW	1.03E-04	9.74E-05	1.15E-04	9.88E-05	9.42E-05	2.38E-04
RUR_RH_NF	3.43E-05	3.25E-05	3.82E-05	3.29E-05	3.14E-05	7.95E-05
TOTAL	1.37E-03	1.30E-03	1.53E-03	1.32E-03	1.26E-03	3.18E-03

CRYSTAL RIVER TO HANFORD; SPENT FUEL

EXPECTED RISK VALUES - OTHER

LINK	EARLY FATALITY	EARLY MORBIDITY
RUR_NR_FW	0.00E+00	0.00E+00
RUR_NR_NF	0.00E+00	0.00E+00
RUR_RH_FW	0.00E+00	0.00E+00
RUR_RH_NF	0.00E+00	0.00E+00
SUB_NR_FW	0.00E+00	0.00E+00
SUB_NR_NF	0.00E+00	0.00E+00
SUB_RH_FW	0.00E+00	0.00E+00
SUB_RH_NF	0.00E+00	0.00E+00
URB_NR_FW	0.00E+00	0.00E+00
URB_NR_NF	0.00E+00	0.00E+00
URB_RH_FW	0.00E+00	0.00E+00
URB_RH_NF	0.00E+00	0.00E+00
TOTAL	0.00E+00	0.00E+00

CRYSTAL RIVER TO HANFORD; SPENT FUEL

TOTAL EXPOSED POPULATION: INCIDENT-FREE

RUR_NR_FW	3.54E+04	PERSONS
RUR_NR_NF	1.18E+04	PERSONS
RUR_RH_FW	3.93E+03	PERSONS
RUR_RH_NF	1.31E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	3.35E+05	PERSONS
SUB_RH_FW	1.12E+05	PERSONS
SUB_RH_NF	3.73E+04	PERSONS
URB_NR_FW	5.36E+04	PERSONS
URB_NR_NF	2.86E+03	PERSONS
URB_RH_FW	5.98E+03	PERSONS
URB_RH_NF	3.47E+02	PERSONS
TOTAL	1.61E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY A
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY B
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	8.40E+03	PERSONS
RUR_NR_NF	8.40E+03	PERSONS
RUR_RH_FW	8.40E+03	PERSONS
RUR_RH_NF	8.40E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	1.01E+06	PERSONS
SUB_RH_FW	1.01E+06	PERSONS
SUB_RH_NF	1.01E+06	PERSONS
URB_NR_FW	5.41E+06	PERSONS
URB_NR_NF	5.41E+06	PERSONS
URB_RH_FW	5.41E+06	PERSONS
URB_RH_NF	5.41E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY C
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY D
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	8.40E+03	PERSONS
RUR_NR_NF	8.40E+03	PERSONS
RUR_RH_FW	8.40E+03	PERSONS
RUR_RH_NF	8.40E+03	PERSONS
SUB_NR_FW	1.01E+06	PERSONS
SUB_NR_NF	1.01E+06	PERSONS
SUB_RH_FW	1.01E+06	PERSONS
SUB_RH_NF	1.01E+06	PERSONS
URB_NR_FW	5.41E+06	PERSONS
URB_NR_NF	5.41E+06	PERSONS
URB_RH_FW	5.41E+06	PERSONS
URB_RH_NF	5.41E+06	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY E
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

PASQUILL CATEGORY F
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

RUR_NR_FW	0.00E+00	PERSONS
RUR_NR_NF	0.00E+00	PERSONS
RUR_RH_FW	0.00E+00	PERSONS
RUR_RH_NF	0.00E+00	PERSONS
SUB_NR_FW	0.00E+00	PERSONS
SUB_NR_NF	0.00E+00	PERSONS
SUB_RH_FW	0.00E+00	PERSONS
SUB_RH_NF	0.00E+00	PERSONS
URB_NR_FW	0.00E+00	PERSONS
URB_NR_NF	0.00E+00	PERSONS
URB_RH_FW	0.00E+00	PERSONS
URB_RH_NF	0.00E+00	PERSONS

CRYSTAL RIVER TO HANFORD; SPENT FUEL

LINK: RUR_NR_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.14E-03	9.81E-07	5.42E-07	9.90E-08	1.14E-03
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	3.16E-10	3.16E-10
SFUEL	SR90	3.66E-12	9.47E-11	4.70E-12	6.67E-17	1.03E-10
SFUEL	RU106	2.96E-08	4.07E-09	4.16E-11	0.00E+00	3.37E-08
SFUEL	CS134	6.25E-06	7.84E-08	1.10E-09	1.45E-09	6.33E-06
SFUEL	CS137	4.90E-05	1.74E-07	3.51E-09	4.72E-13	4.92E-05
SFUEL	CE144	1.08E-11	9.71E-11	9.54E-13	1.55E-15	1.09E-10
SFUEL	EU154	8.62E-10	2.74E-11	5.53E-13	6.37E-14	8.90E-10
SFUEL	PU238	7.30E-13	1.04E-09	5.28E-11	2.15E-18	1.09E-09
SFUEL	PU239	5.24E-14	1.55E-10	7.95E-12	2.58E-19	1.63E-10
SFUEL	PU240	1.31E-13	1.77E-10	9.08E-12	3.30E-19	1.86E-10
SFUEL	PU241	3.60E-14	8.25E-10	3.96E-11	1.35E-18	8.65E-10
SFUEL	AM241	1.20E-11	5.04E-10	2.58E-11	1.57E-16	5.41E-10
SFUEL	AM243	3.71E-13	7.77E-12	4.00E-13	6.44E-18	8.54E-12
SFUEL	CM244	2.68E-13	3.67E-10	1.79E-11	1.31E-18	3.85E-10
					TOTAL:	1.20E-03

LINK: RUR_NR_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	3.79E-04	3.27E-07	1.81E-07	3.30E-08	3.80E-04
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.05E-10	1.05E-10
SFUEL	SR90	1.22E-12	3.16E-11	1.57E-12	2.22E-17	3.43E-11
SFUEL	RU106	9.87E-09	1.36E-09	1.39E-11	0.00E+00	1.12E-08
SFUEL	CS134	2.08E-06	2.61E-08	3.65E-10	4.82E-10	2.11E-06
SFUEL	CS137	1.63E-05	5.81E-08	1.17E-09	1.57E-13	1.64E-05
SFUEL	CE144	3.60E-12	3.24E-11	3.18E-13	5.15E-16	3.63E-11
SFUEL	EU154	2.87E-10	9.14E-12	1.84E-13	2.12E-14	2.97E-10
SFUEL	PU238	2.43E-13	3.46E-10	1.76E-11	7.16E-19	3.64E-10
SFUEL	PU239	1.75E-14	5.15E-11	2.65E-12	8.60E-20	5.42E-11
SFUEL	PU240	4.37E-14	5.88E-11	3.03E-12	1.10E-19	6.19E-11
SFUEL	PU241	1.20E-14	2.75E-10	1.32E-11	4.51E-19	2.88E-10
SFUEL	AM241	3.99E-12	1.68E-10	8.61E-12	5.23E-17	1.80E-10
SFUEL	AM243	1.24E-13	2.59E-12	1.33E-13	2.15E-18	2.85E-12
SFUEL	CM244	8.94E-14	1.22E-10	5.96E-12	4.36E-19	1.28E-10
					TOTAL:	3.98E-04

LINK: RUR_RH_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.26E-04	1.09E-07	6.03E-08	1.10E-08	1.27E-04
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	3.51E-11	3.51E-11
SFUEL	SR90	4.06E-13	1.05E-11	5.22E-13	7.41E-18	1.14E-11
SFUEL	RU106	3.29E-09	4.52E-10	4.63E-12	0.00E+00	3.75E-09
SFUEL	CS134	6.94E-07	8.71E-09	1.22E-10	1.61E-10	7.03E-07
SFUEL	CS137	5.44E-06	1.94E-08	3.90E-10	5.25E-14	5.46E-06
SFUEL	CE144	1.20E-12	1.08E-11	1.06E-13	1.72E-16	1.21E-11
SFUEL	EU154	9.58E-11	3.05E-12	6.14E-14	7.08E-15	9.89E-11
SFUEL	PU238	8.12E-14	1.15E-10	5.86E-12	2.39E-19	1.21E-10
SFUEL	PU239	5.83E-15	1.72E-11	8.84E-13	2.87E-20	1.81E-11
SFUEL	PU240	1.46E-14	1.96E-11	1.01E-12	3.67E-20	2.06E-11
SFUEL	PU241	4.00E-15	9.17E-11	4.40E-12	1.50E-19	9.61E-11
SFUEL	AM241	1.33E-12	5.60E-11	2.87E-12	1.74E-17	6.02E-11
SFUEL	AM243	4.13E-14	8.63E-13	4.44E-14	7.16E-19	9.49E-13
SFUEL	CM244	2.98E-14	4.08E-11	1.99E-12	1.45E-19	4.28E-11
					TOTAL:	1.33E-04

LINK: RUR_RH_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	4.22E-05	3.63E-08	2.01E-08	3.67E-09	4.22E-05
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.17E-11	1.17E-11
SFUEL	SR90	1.35E-13	3.51E-12	1.74E-13	2.47E-18	3.82E-12
SFUEL	RU106	1.10E-09	1.51E-10	1.54E-12	0.00E+00	1.25E-09
SFUEL	CS134	2.31E-07	2.90E-09	4.06E-11	5.35E-11	2.34E-07
SFUEL	CS137	1.81E-06	6.46E-09	1.30E-10	1.75E-14	1.82E-06
SFUEL	CE144	4.00E-13	3.60E-12	3.53E-14	5.73E-17	4.03E-12
SFUEL	EU154	3.19E-11	1.02E-12	2.05E-14	2.36E-15	3.30E-11
SFUEL	PU238	2.71E-14	3.84E-11	1.95E-12	7.96E-20	4.04E-11
SFUEL	PU239	1.94E-15	5.73E-12	2.95E-13	9.56E-21	6.02E-12
SFUEL	PU240	4.86E-15	6.54E-12	3.36E-13	1.22E-20	6.88E-12
SFUEL	PU241	1.33E-15	3.06E-11	1.47E-12	5.02E-20	3.20E-11
SFUEL	AM241	4.43E-13	1.87E-11	9.57E-13	5.81E-18	2.01E-11
SFUEL	AM243	1.38E-14	2.88E-13	1.48E-14	2.39E-19	3.16E-13
SFUEL	CM244	9.94E-15	1.36E-11	6.62E-13	4.84E-20	1.43E-11
					TOTAL:	4.43E-05

LINK: SUB_NR_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	9.44E-01	8.13E-04	4.51E-04	8.20E-05	9.45E-01
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	8.48E-08	8.48E-08
SFUEL	SR90	1.09E-09	2.71E-08	2.87E-09	1.91E-14	3.11E-08
SFUEL	RU106	5.38E-06	7.38E-07	7.65E-09	0.00E+00	6.12E-06
SFUEL	CS134	1.54E-03	1.91E-05	2.71E-07	3.53E-07	1.56E-03
SFUEL	CS137	1.21E-02	4.26E-05	8.66E-07	1.15E-10	1.21E-02
SFUEL	CE144	3.22E-09	2.54E-08	2.90E-10	4.43E-13	2.89E-08
SFUEL	EU154	2.57E-07	7.16E-09	1.68E-10	1.83E-11	2.64E-07
SFUEL	PU238	2.17E-10	2.98E-07	3.22E-08	6.16E-16	3.30E-07
SFUEL	PU239	1.56E-11	4.44E-08	4.86E-09	7.40E-17	4.92E-08
SFUEL	PU240	3.91E-11	5.06E-08	5.55E-09	9.47E-17	5.62E-08
SFUEL	PU241	1.07E-11	2.37E-07	2.42E-08	3.88E-16	2.61E-07
SFUEL	AM241	3.56E-09	1.44E-07	1.58E-08	4.50E-14	1.64E-07
SFUEL	AM243	1.11E-10	2.23E-09	2.44E-10	1.85E-15	2.58E-09
SFUEL	CM244	7.99E-11	1.05E-07	1.09E-08	3.75E-16	1.16E-07
					TOTAL:	9.59E-01

LINK: SUB_NR_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	3.15E-01	2.71E-04	1.50E-04	2.73E-05	3.15E-01
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	2.83E-08	2.83E-08
SFUEL	SR90	3.63E-10	9.05E-09	9.57E-10	6.38E-15	1.04E-08
SFUEL	RU106	1.79E-06	2.46E-07	2.55E-09	0.00E+00	2.04E-06
SFUEL	CS134	5.12E-04	6.38E-06	9.02E-08	1.18E-07	5.19E-04
SFUEL	CS137	4.02E-03	1.42E-05	2.89E-07	3.84E-11	4.03E-03
SFUEL	CE144	1.07E-09	8.45E-09	9.68E-11	1.48E-13	9.62E-09
SFUEL	EU154	8.56E-08	2.39E-09	5.61E-11	6.09E-12	8.80E-08
SFUEL	PU238	7.25E-11	9.93E-08	1.07E-08	2.05E-16	1.10E-07
SFUEL	PU239	5.20E-12	1.48E-08	1.62E-09	2.47E-17	1.64E-08
SFUEL	PU240	1.30E-11	1.69E-08	1.85E-09	3.16E-17	1.87E-08
SFUEL	PU241	3.57E-12	7.89E-08	8.07E-09	1.29E-16	8.70E-08
SFUEL	AM241	1.19E-09	4.82E-08	5.26E-09	1.50E-14	5.46E-08
SFUEL	AM243	3.69E-11	7.43E-10	8.14E-11	6.16E-16	8.61E-10
SFUEL	CM244	2.66E-11	3.51E-08	3.64E-09	1.25E-16	3.88E-08
					TOTAL:	3.20E-01

LINK: SUB_RH_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.05E-01	9.03E-05	5.01E-05	9.11E-06	1.05E-01
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	9.42E-09	9.42E-09
SFUEL	SR90	1.21E-10	3.02E-09	3.19E-10	2.13E-15	3.46E-09
SFUEL	RU106	5.97E-07	8.20E-08	8.50E-10	0.00E+00	6.80E-07
SFUEL	CS134	1.71E-04	2.13E-06	3.01E-08	3.92E-08	1.73E-04
SFUEL	CS137	1.34E-03	4.73E-06	9.63E-08	1.28E-11	1.34E-03
SFUEL	CE144	3.57E-10	2.82E-09	3.23E-11	4.93E-14	3.21E-09
SFUEL	EU154	2.85E-08	7.95E-10	1.87E-11	2.03E-12	2.93E-08
SFUEL	PU238	2.42E-11	3.31E-08	3.58E-09	6.85E-17	3.67E-08
SFUEL	PU239	1.73E-12	4.93E-09	5.40E-10	8.23E-18	5.47E-09
SFUEL	PU240	4.34E-12	5.63E-09	6.16E-10	1.05E-17	6.25E-09
SFUEL	PU241	1.19E-12	2.63E-08	2.69E-09	4.32E-17	2.90E-08
SFUEL	AM241	3.96E-10	1.61E-08	1.75E-09	5.00E-15	1.82E-08
SFUEL	AM243	1.23E-11	2.48E-10	2.71E-11	2.05E-16	2.87E-10
SFUEL	CM244	8.88E-12	1.17E-08	1.21E-09	4.16E-17	1.29E-08
					TOTAL:	1.07E-01

LINK: SUB_RH_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	3.50E-02	3.01E-05	1.67E-05	3.04E-06	3.50E-02
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	3.14E-09	3.14E-09
SFUEL	SR90	4.03E-11	1.01E-09	1.06E-10	7.09E-16	1.15E-09
SFUEL	RU106	1.99E-07	2.73E-08	2.83E-10	0.00E+00	2.27E-07
SFUEL	CS134	5.70E-05	7.09E-07	1.00E-08	1.31E-08	5.77E-05
SFUEL	CS137	4.47E-04	1.58E-06	3.21E-08	4.27E-12	4.48E-04
SFUEL	CE144	1.19E-10	9.39E-10	1.08E-11	1.64E-14	1.07E-09
SFUEL	EU154	9.51E-09	2.65E-10	6.23E-12	6.77E-13	9.78E-09
SFUEL	PU238	8.06E-12	1.10E-08	1.19E-09	2.28E-17	1.22E-08
SFUEL	PU239	5.78E-13	1.64E-09	1.80E-10	2.74E-18	1.82E-09
SFUEL	PU240	1.45E-12	1.88E-09	2.05E-10	3.51E-18	2.08E-09
SFUEL	PU241	3.97E-13	8.77E-09	8.97E-10	1.44E-17	9.67E-09
SFUEL	AM241	1.32E-10	5.35E-09	5.85E-10	1.67E-15	6.07E-09
SFUEL	AM243	4.10E-12	8.26E-11	9.04E-12	6.84E-17	9.57E-11
SFUEL	CM244	2.96E-12	3.90E-09	4.04E-10	1.39E-17	4.31E-09
					TOTAL:	3.55E-02

LINK: URB_NR_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.64E-02	1.41E-05	7.84E-06	1.43E-06	1.64E-02
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.20E-09	1.20E-09
SFUEL	SR90	1.59E-11	3.91E-10	4.83E-11	2.76E-16	4.55E-10
SFUEL	RU106	6.47E-08	8.88E-09	9.26E-11	0.00E+00	7.37E-08
SFUEL	CS134	2.10E-05	2.61E-07	3.71E-09	4.82E-09	2.13E-05
SFUEL	CS137	1.65E-04	5.81E-07	1.19E-08	1.57E-12	1.66E-04
SFUEL	CE144	4.69E-11	3.54E-10	4.26E-12	6.39E-15	4.05E-10
SFUEL	EU154	3.74E-09	9.99E-11	2.47E-12	2.63E-13	3.84E-09
SFUEL	PU238	3.17E-12	4.29E-09	5.43E-10	8.88E-18	4.84E-09
SFUEL	PU239	2.27E-13	6.39E-10	8.18E-11	1.07E-18	7.21E-10
SFUEL	PU240	5.69E-13	7.29E-10	9.34E-11	1.36E-18	8.23E-10
SFUEL	PU241	1.56E-13	3.41E-09	4.07E-10	5.60E-18	3.82E-09
SFUEL	AM241	5.19E-11	2.08E-09	2.66E-10	6.48E-16	2.40E-09
SFUEL	AM243	1.61E-12	3.21E-11	4.11E-12	2.66E-17	3.78E-11
SFUEL	CM244	1.16E-12	1.52E-09	1.84E-10	5.40E-18	1.70E-09
					TOTAL:	1.66E-02

LINK: URB_NR_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	8.77E-04	7.55E-07	4.19E-07	7.62E-08	8.78E-04
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	6.39E-11	6.39E-11
SFUEL	SR90	8.47E-13	2.09E-11	2.58E-12	1.47E-17	2.43E-11
SFUEL	RU106	3.45E-09	4.74E-10	4.95E-12	0.00E+00	3.93E-09
SFUEL	CS134	1.12E-06	1.39E-08	1.98E-10	2.57E-10	1.14E-06
SFUEL	CS137	8.81E-06	3.10E-08	6.34E-10	8.40E-14	8.84E-06
SFUEL	CE144	2.50E-12	1.89E-11	2.27E-13	3.41E-16	2.16E-11
SFUEL	EU154	2.00E-10	5.33E-12	1.32E-13	1.41E-14	2.05E-10
SFUEL	PU238	1.69E-13	2.29E-10	2.90E-11	4.74E-19	2.58E-10
SFUEL	PU239	1.21E-14	3.41E-11	4.37E-12	5.70E-20	3.85E-11
SFUEL	PU240	3.04E-14	3.89E-11	4.99E-12	7.29E-20	4.40E-11
SFUEL	PU241	8.33E-15	1.82E-10	2.18E-11	2.99E-19	2.04E-10
SFUEL	AM241	2.77E-12	1.11E-10	1.42E-11	3.46E-17	1.28E-10
SFUEL	AM243	8.60E-14	1.71E-12	2.19E-13	1.42E-18	2.02E-12
SFUEL	CM244	6.22E-14	8.10E-11	9.81E-12	2.88E-19	9.09E-11
					TOTAL:	8.88E-04

LINK: URB_RH_FW EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.83E-03	1.58E-06	8.76E-07	1.59E-07	1.84E-03
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	1.34E-10	1.34E-10
SFUEL	SR90	1.77E-12	4.37E-11	5.40E-12	3.08E-17	5.08E-11
SFUEL	RU106	7.22E-09	9.91E-10	1.03E-11	0.00E+00	8.23E-09
SFUEL	CS134	2.35E-06	2.92E-08	4.14E-10	5.38E-10	2.38E-06
SFUEL	CS137	1.84E-05	6.49E-08	1.33E-09	1.76E-13	1.85E-05
SFUEL	CE144	5.23E-12	3.95E-11	4.75E-13	7.13E-16	4.52E-11
SFUEL	EU154	4.17E-10	1.12E-11	2.76E-13	2.94E-14	4.29E-10
SFUEL	PU238	3.54E-13	4.79E-10	6.06E-11	9.91E-19	5.40E-10
SFUEL	PU239	2.54E-14	7.13E-11	9.13E-12	1.19E-19	8.05E-11
SFUEL	PU240	6.36E-14	8.14E-11	1.04E-11	1.52E-19	9.19E-11
SFUEL	PU241	1.74E-14	3.81E-10	4.55E-11	6.25E-19	4.26E-10
SFUEL	AM241	5.79E-12	2.32E-10	2.97E-11	7.23E-17	2.68E-10
SFUEL	AM243	1.80E-13	3.58E-12	4.59E-13	2.97E-18	4.22E-12
SFUEL	CM244	1.30E-13	1.69E-10	2.05E-11	6.03E-19	1.90E-10
					TOTAL:	1.86E-03

LINK: URB_RH_NF EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
SFUEL	CO60	1.06E-04	9.16E-08	5.08E-08	9.23E-09	1.06E-04
SFUEL	KR85	0.00E+00	0.00E+00	0.00E+00	7.74E-12	7.74E-12
SFUEL	SR90	1.03E-13	2.53E-12	3.13E-13	1.78E-18	2.95E-12
SFUEL	RU106	4.19E-10	5.75E-11	6.00E-13	0.00E+00	4.77E-10
SFUEL	CS134	1.36E-07	1.69E-09	2.40E-11	3.12E-11	1.38E-07
SFUEL	CS137	1.07E-06	3.76E-09	7.68E-11	1.02E-14	1.07E-06
SFUEL	CE144	3.03E-13	2.29E-12	2.76E-14	4.13E-17	2.62E-12
SFUEL	EU154	2.42E-11	6.46E-13	1.60E-14	1.70E-15	2.49E-11
SFUEL	PU238	2.05E-14	2.78E-11	3.51E-12	5.75E-20	3.13E-11
SFUEL	PU239	1.47E-15	4.14E-12	5.29E-13	6.90E-21	4.67E-12
SFUEL	PU240	3.69E-15	4.72E-12	6.04E-13	8.83E-21	5.33E-12
SFUEL	PU241	1.01E-15	2.21E-11	2.64E-12	3.62E-20	2.47E-11
SFUEL	AM241	3.36E-13	1.35E-11	1.72E-12	4.19E-18	1.55E-11
SFUEL	AM243	1.04E-14	2.08E-13	2.66E-14	1.72E-19	2.45E-13
SFUEL	CM244	7.53E-15	9.82E-12	1.19E-12	3.49E-20	1.10E-11
					TOTAL:	1.08E-04

EOI
END OF RUN
SUCCESSFUL COMPLETION

Appendix E
RADTRAN 5.5 Output with Rainfall Using the User-Defined Atmospheric Dispersion Model


```
RRRR    AAA   DDDD   TTTTT  RRRR    AAA   N   N  55555
R   R  A   A  D   D    T    R   R  A   A  NN  N  5
R   R  A   A  D   D    T    R   R  A   A  N N N  5
RRRR   A   A  D   D    T    RRRR   A   A  N  NN  5555
R R    AAAAA  D   D    T    R R    AAAAA  N   N      5
R  R   A   A  D   D    T    R  R   A   A  N   N  5   5
R   R  A   A  DDDD     T    R   R  A   A  N   N  5555
```

RADTRAN 5.5 May 18, 2004

INPUT ECHO

```
 TITLE Societal Ingestion Dose Test
 INPUT STANDARD
STD: 0 10 18                                  && DIMEN=NSEV NRAD NAREAS
STD: 1 3 3 0                                  && PARM=IRNKC IANA ISEN IPSQSB
STD: .TRUE. .FALSE.                           && FORM = UNIT, SI-UNITS?
STD: 2.3E12                                   && NEVAL FOR CF252
STD: 9.25E5 5.77E6 1.27E6                     && RPCTHY FOR I125, I129, I131
STD: 0.0 0.0 0.0 0.0 0.0                      && TRANSFER GAMMA
STD: 7.42E-3 2.02E-2 6.17E-5 3.17E-8 0.0      && TRANSFER NEUTRON
STD: 30  24                                   && MITDDIST  MITDVEL
STD: 1  2   .0018                             && ITRAIN FMINCL DDRWEF
STD:    33    68    105   244   369                    && CENTER LINE
STD:   561  1018   1628  2308  4269                    && DISTANCES
STD:  5468 11136  13097 21334 40502                    && FOR AVERAGE
STD: 69986 89860 120878 0 0 0 0 0 0 0 0 0 0 0 0 0     && US CLOUD
STD: 4.59E+02 1.53E+03 3.94E+03 1.25E+04 3.04E+04 6.85E+04 1.76E+05 4.45E+05
STD: 8.59E+05 2.55E+06 4.45E+06 1.03E+07 2.16E+07 5.52E+07 1.77E+08 4.89E+08
STD: 8.12E+08 1.35E+09 0 0 0 0 0 0 0 0 0 0 0 0      && AREADA
STD: 3.42E-03 1.72E-03 8.58E-04 3.42E-04 1.72E-04 8.58E-05 3.42E-05 1.72E-05
STD:  8.58E-06 3.42E-06 1.72E-06 8.58E-07 3.42E-07 1.72E-07 8.58E-08 5.42E-08
STD:  4.30E-08 3.42E-08 0 0 0 0 0 0 0 0 0 0 0 0      && DFLEV
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0
STD: 3 6 9 12 15 30 61 91 152 305 0 0 0 0 0 && RADIST
STD: 0.5                                  && SMLPKG
STD: 1.0  0.87  0.018                     && SHIELDING FACTORS RR  RS  RU
STD:  30  30  800                         && OFFLINK {FREEWAY}
STD:  27  30  800                         && OFFLINK {NON-FREEWAY}
STD:   5   8  800                         && OFFLINK {CITY STREETS}
STD:  30  30  800                         && OFFLINK {RAILWAY}
STD: 200 200 1000                         && OFFLINK {WATERWAY}
STD: 15  3  3  3  4                       && ONLINK {FWAY NONFWY STREET RAIL ADJ}
STD: 6.0  4  40.0                         && RPD FNOATT INTERDICT
STD: 0.05   0.2   3.3E-4                  && BDF CULVL BRATE
STD: 0.9   0.1                            && UBF USWF
STD: 1.0  10.0 1.0                        && EVACUATION SURVEY CAMPAIGN
```

Societal Ingestion Dose Test

```
STD: 0.0  0.0     1.5E-8  5.3E-8      && HIGHWAY - RURAL - NONRAD
STD: 0.0  0.0     3.7E-9  1.3E-8      && HIGHWAY - SUBURBAN - NONRAD
STD: 0.0  0.0     2.1E-9  7.5E-9      && HIGHWAY - URBAN - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - R - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - S - NONRAD
STD: 0.0  0.0    1.81E-9  2.64E-8     && GENERAL FREIGHT - U - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - R - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - S - NONRAD
STD: 0.0  0.0    1.27E-7  1.85E-6     && DEDICATED RAIL - U - NONRAD
STD: 0.0 0.0 0.0 0.0 0.0 0.0          && PSPROB
STD: 0.67  0.67  0.42                 && TIMENDE NON-DISPERSAL EVAC TIME (LCF&EA
STD: 2 2 1                            && FLAGS=IUOPT IACC REGCHECK
STD: 5E-4, 4E-4, 1.3E-4               && LCFCON(1), LCFCON(2), GECON
STD: R5INGEST.BIN                     && INGESTION FILE
 OUTPUT CI_REM
 FORM UNIT
 DIMEN 2 10 18
 PARM 1 3 4 2
 SEVERITY
    NPOP=1
       NMODE=1
        0.9 0.1
    NPOP=2
       NMODE=1
        0.9 0.1
    NPOP=3
       NMODE=1
        0.9 0.1
 RELEASE
    GROUP=GROUP_1
       RFRAC
          0.0  0.01
       AERSOL
          0.0  1.0
       RESP
          0.0  1.0
       LOS
          0.0   0.0
       DEPVEL 0.010

 RISKIND
     &&   USE_RADTRAN   REL_HT    HEAT_REL   SRC_WDTH   SRC_HT
               0         25.0      100000       3.45      2.87
     &&      WS        ANEM_HT     AMB_T      HT_MIX    RAIN_RT
              4.0         10.0      270.0        5000      1.0
     &&          (Pasquill-1, Briggs-2),   Stability (A=1 through F=6)
                      2                              4
     &&         (Rural-1, Urban/Suburban-2)
                      1
PACKAGE PACKAGE_1 10.0 1.0 0.0 3.45
    NA22 1.0 GROUP_1
    END

 VEHICLE -1 VEHICLE_1 10.0 1.0 0.0 3.45 1.0 2.0 2.0 1.0 2.0
       PACKAGE_1 1.0

 MODSTD
 INTERDICT  1.00E+06

 EOF

 LINK LINK_1 VEHICLE_1 1.0 24.0 2.0 1.0 1.0 1.0 R 1 1.0

 EOF
```

Societal Ingestion Dose Test

PACKAGE AND MATERIAL CHARACTERISTICS

MATERIAL	DIMENSION (METERS)	EFFECTIVE DIMENSION	K(0) METERS SQ.	FRACTION GAMMA	FRACTION NEUTRON	DOSE RATE (MREM/HR)
PACKAGE_1	3.450E+00	3.450E+00	7.426E+00	1.000E+00	0.000E+00	1.000E+01

K(0) IS DOSE RATE CONVERSION FACTOR

VEHICLE CHARACTERISTICS

VEHICLE NAME	VEHICLE_1
MODE TYPE	HIGHWAY
EXCLUSIVE USE	YES
DOSE RATE (MREM/HR)	1.00E+01
K(0) (SQ. METERS)	7.43E+00
VEHICLE SIZE (M)	3.45E+00
EFFECTIVE SIZE (M)	3.45E+00
NUMBER OF SHIPMENTS	1.00E+00
NUMBER OF CREW	2.00E+00
CREW DISTANCE (M)	2.00E+00
CREW DOSE ADJUSTMENT FACT	1.00E+00
CREW EXPOSER WIDTH (M)	2.00E+00
EFFECTIVE EXPOSER WIDTH	2.00E+00
K(0) (SQ M) CREW EXPOSURE	4.00E+00

VEHICLE	MATERIAL	NO.PACKAGES
VEHICLE_1		
	PACKAGE_1	1.00E+00

TRANSFER COEFFICIENTS:

	MU	A(1)	A(2)	A(3)	A(4)
GAMMA	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NEUTRON	7.420E-03	2.020E-02	6.170E-05	3.170E-08	0.000E+00

DISTANCES (METERS)	FREEWAY	SECONDARY	STREET	RAIL	WATER	ADJACENT
OFFLINK:						
MINIMUM DISTANCE	3.00E+01	2.70E+01	5.00E+00	3.00E+01	2.00E+02	
SIDEWALK + MINIMUM	3.00E+01	3.00E+01	8.00E+00	3.00E+01	2.00E+02	
MAXIMUM DISTANCE	8.00E+02	8.00E+02	8.00E+02	8.00E+02	1.00E+03	
ONLINK:						
OPPOSITE DIRECTION	1.50E+01	3.00E+00	3.00E+00	3.00E+00		
ADJACENT VEHICLE						4.00E+00

Societal Ingestion Dose Test

LINK RELATED DATA

	LINK_1
VEHICLE	VEHICLE_1
DISTANCE (KM)	1.00E+00
PERSONS PER VEHICLE	2.00E+00
SPEED (KM/HR)	2.40E+01
POPULATION DENSITY	1.00E+00
VEHICLE DENSITY	1.00E+00
ACCIDENT RATE/KM	1.00E+00
ZONE	RURAL
ROAD TYPE	FREEWAY
FARMING FRACTION	1.00E+00

ISOTOPE RELATED DATA

NUCLIDE	CURIES PER PKG	RELEASE GROUP	SETTLING ONLY RESUSPENSION FACTOR	50YR INHALATION (REM/CI) EFFECTIVE
PACKAGE_1				
NA22	1.00E+00	GROUP_1	1.00E+00	4.81E+03

NUCLIDE	HALF LIFE	GAMMA ENERGY	CLOUD FACTOR	GROUND FACTOR	INGESTION NUCLIDE	NEUTRON EMISSION neutrons/sec/Ci
PACKAGE_1						
NA22	9.49E+02	2.19E+00	4.00E-01	6.71E-04	Na-22	N/A

NUCLIDE	1-YR INHALATION (REM/CI) LUNG	MARROW	THYROID
PACKAGE_1			
NA22	3.29E+03	5.55E+03	0.00E+00

Societal Ingestion Dose Test

RELEASE RELATED DATA
****

RELEASE FRACTIONS

GROUP	SEVER: 1	SEVER: 2
GROUP_1	0.00E+00	1.00E-02

DEPOSITION VELOCITIES

GROUP	M/SEC
GROUP_1	1.00E-02

ACCIDENT SEVERITY FRACTIONS
FOR HIGHWAY

ZONE	SEVER: 1	SEVER: 2
RURAL	9.00E-01	1.00E-01
SUBURBAN	9.00E-01	1.00E-01
URBAN	9.00E-01	1.00E-01

AEROSOLIZED FRACTION OF RELEASED MATERIAL

GROUP	SEVER: 1	SEVER: 2
GROUP_1	0.00E+00	1.00E+00

RESPIRABLE FRACTION OF AEROSOLS (BELOW 10 MICRONS AED)

GROUP	SEVER: 1	SEVER: 2
GROUP_1	0.00E+00	1.00E+00

NON-RADIOLOGICAL DATA (FATALITIES/KM)
****

HIGHWAY

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
RURAL	0.00E+00	0.00E+00	1.50E-08	5.30E-08
SUBURBAN	0.00E+00	0.00E+00	3.70E-09	1.30E-08
URBAN	0.00E+00	0.00E+00	2.10E-09	7.50E-09

Societal Ingestion Dose Test

HEALTH RELATED DATA
****

EARLY MORBIDITY THRESHOLD VALUE FOR LUNG 5.000E+02 REM
EARLY MORBIDITY THRESHOLD VALUE FOR MARROW/WHOLE BODY 5.000E+01 REM
EARLY MORBIDITY THRESHOLD VALUE FOR THYROID 2.000E+02 REM

EARLY FATALITY PROBABILITIES (EF)

DOSE(REM)	EF MARROW	DOSE(REM)	EF LUNG
680.00	1.00000	1525.00	1.00000
670.00	0.99999	1500.00	0.99999
660.00	0.99998	1475.00	0.99997
650.00	0.99996	1450.00	0.99991
640.00	0.99992	1425.00	0.99974
630.00	0.99983	1400.00	0.99933
620.00	0.99967	1375.00	0.99840
610.00	0.99938	1350.00	0.99653
600.00	0.99889	1325.00	0.99306
590.00	0.99808	1300.00	0.98709
580.00	0.99679	1275.00	0.97755
570.00	0.99482	1250.00	0.96331
560.00	0.99192	1225.00	0.94326
550.00	0.98776	1200.00	0.91656
540.00	0.98199	1175.00	0.88274
530.00	0.97423	1150.00	0.84178
520.00	0.96406	1125.00	0.79420
510.00	0.95111	1100.00	0.74095
500.00	0.93502	1075.00	0.68335
490.00	0.91551	1050.00	0.62293
480.00	0.89237	1025.00	0.56130
470.00	0.86552	1000.00	0.50000
460.00	0.83499	975.00	0.44042
450.00	0.80096	950.00	0.38372
440.00	0.76371	925.00	0.33077
430.00	0.72363	900.00	0.28218
420.00	0.68123	875.00	0.23830
410.00	0.63706	850.00	0.19925
400.00	0.59172	825.00	0.16498
390.00	0.54583	800.00	0.13529
380.00	0.50000	775.00	0.10988
370.00	0.45481	750.00	0.08837
360.00	0.41078	725.00	0.07038
350.00	0.36838	700.00	0.05548
340.00	0.32798	675.00	0.04329
330.00	0.28990	650.00	0.03341
320.00	0.25438	625.00	0.02549
310.00	0.22155	600.00	0.01922
300.00	0.19150	575.00	0.01430
290.00	0.16425	550.00	0.01050
280.00	0.13977	525.00	0.00759
270.00	0.11797	500.00	0.00000
260.00	0.09872		
250.00	0.08188		
240.00	0.06729		
230.00	0.05475		
220.00	0.04408		
210.00	0.03510		
200.00	0.02761		
190.00	0.02143		
180.00	0.01639		
170.00	0.01234		
160.00	0.00913		
150.00	0.00000		

Societal Ingestion Dose Test

```
BUILDING DOSE FACTOR (BDF)                              = 5.000E-02
CONTAMINATION CLEAN UP LEVEL (UCI/M**2) (CULVL)         = 2.000E-01
BREATHING RATE (M**3/SEC) (BRATE)                       = 3.300E-04
INTERDICTION THRESHOLD (INTERDICT)                      = 1.000E+06
EVACUATION TIME (DAYS) (EVACUATION)                     = 1.000E+00
SURVEY INTERVAL (DAYS) (SURVEY)                         = 1.000E+01
CAMPAIGN LENGTH (YEARS) (CAMPAIGN)                      = 1.000E+00
FRACTION OF URBAN AREAS WITH BUILDINGS (UBF)            = 9.000E-01
FRACTION OF URBAN AREAS WITH SIDEWALKS (USWF)           = 1.000E-01
RATIO OF SIDEWALK PEDESTRIAN DENSITY (RPD)              = 6.000E+00
MAXIMUM IN-TRANSIT DOSE DISTANCE (M) (MITDDIST)         = 3.000E+01
MAXIMUM IN-TRANSIT DOSE VELOCITY (KM/H) (MITDVEL)       = 2.400E+01
IACC VALUE: 1=NON-DISPERSAL, 2=DISPERSAL                = 2
REGULATORY CHECK, 1=DO CHECKS, 0=NO CHECKS              = 1
BUILDING SHIELDING OPTION (IUOPT)                       = 2
       RURAL SHIELDING FACTOR     = 1.000E+00
       SUBURBAN SHIELDING FACTOR  = 8.700E-01
       URBAN SHIELDING FACTOR     = 1.800E-02
```

INGESTION RELATED DATA

COMIDA INGESTION FILE USED: R5INGEST.BIN

COMIDA FILE HEADER

```
COMIDA2 07/22/03   08:58:40   Ver. 1.11a, 1/28/96: avoiding use of UNIT 6 for HP
```

DOSE CONVERSION FILE USED IN COMIDA

```
FGRDCF 07/10/03   21:45:47   Version 1.10
Implicit daughter halflives (m) less than  90 and less than 0.100 of parent
```

BACKYARD FARMER INGESTION DOSE (REM/CI DEPOSITED)

NUCLIDE	EFFECTIVE	THYROID
Na-22	7.471E+04	6.025E+04

SOCIETAL INGESTION DOSE (PERSON-REM/CI DEPOSITED)

NUCLIDE	GONADS	BREAST	LUNGS	RED MAR	BONE SU	THYROID	REMAIND	EFFECTI
Na-22	7.4E+00	6.8E+00	6.6E+00	1.1E+01	1.5E+01	6.6E+00	8.3E+00	8.1E+00

Societal Ingestion Dose Test

NON-RADIOLOGICAL RISK (FATALITIES)
****

	NORMAL OCCUPATIONAL	NORMAL NON-OCCUPATIONAL	ACCIDENT OCCUPATIONAL	ACCIDENT NON-OCCUPATIONAL
LINK_1	0.00E+00	0.00E+00	3.00E-08	1.06E-07
TOTALS:	0.00E+00	0.00E+00	3.00E-08	1.06E-07

REGULATORY CHECKS

THE SHIPMENT BY VEHICLE_1 IS DESIGNATED AS EXCLUSIVE USE
BUT IS NOT REQUIRED TO BE SO DESIGNATED BY REGULATIONS

FOR THE SHIPMENT BY VEHICLE_1
THE DOSE RATE IN THE CREW COMPARTMENT COULD EXCEED 2 MREM/HR
THE DOSE RATE HAS BEEN RESET FROM 10.00 TO 2 FOR CREW CALCULATIONS

Societal Ingestion Dose Test

CALCULATIONAL INFORMATION

FOR VEHICLE_1 AREAS WITH TOTAL CONTAMINATION RATIO GREATER THAN *******
(THE AREAS MARKED WITH AN 'X' ARE INTERDICTED AND HAVE
NO 50 YEAR GROUNDSHINE DOSE AND NO INGESTION DOSE.)

AREA/SEVERITY	1	2
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-

Societal Ingestion Dose Test

GROUP_1
DEPOSITION VELOCITY = 0.10E-01 (M/SEC)
DILUTION FACTORS
AT DOWNWIND LOCATION = 6.0884E+02 (M)
MAXIMUM AIR CONCENTRATION = 1.3476E-05 (CI-SEC/M^3 per CI released)
AT DOWNWIND LOCATION = 2.0382E+01 (M)
MAXIMUM GROUND DEPOSITION = 2.9436E-06 (CI/M^2 per CI released)

DOWNWIND (M)	AREA (M^2)	DILUTION (CI-S/M^3 per CI-rlse)	DOWNWIND (M)	AREA (M^2)	DEPOSITED (CI/M^2 per CI-rlse)
2.81E+01	1.79E+09	6.74E-13	2.00E+01	1.67E+09	1.47E-13
2.99E+01	1.73E+09	1.35E-12	2.00E+01	1.60E+09	2.94E-13
3.17E+01	1.66E+09	2.70E-12	2.00E+01	1.53E+09	5.89E-13
3.43E+01	1.57E+09	6.74E-12	2.00E+01	1.43E+09	1.47E-12
3.65E+01	1.49E+09	1.35E-11	2.00E+01	1.34E+09	2.94E-12
3.88E+01	1.41E+09	2.70E-11	2.00E+01	1.25E+09	5.89E-12
4.22E+01	1.30E+09	6.74E-11	2.00E+01	1.12E+09	1.47E-11
4.51E+01	1.21E+09	1.35E-10	2.00E+01	1.01E+09	2.94E-11
4.82E+01	1.11E+09	2.70E-10	2.00E+01	8.90E+08	5.89E-11
5.28E+01	9.53E+08	6.74E-10	2.00E+01	6.40E+08	1.66E-10
5.67E+01	8.13E+08	1.35E-09	2.00E+01	4.51E+08	2.94E-10
5.97E+01	6.90E+08	2.15E-09	2.00E+01	2.75E+08	5.89E-10
6.79E+01	3.67E+08	6.74E-09	2.00E+01	1.24E+08	1.47E-09
7.39E+01	2.34E+08	1.35E-08	2.00E+01	5.88E+07	2.94E-09
8.09E+01	1.39E+08	2.70E-08	2.00E+01	2.46E+07	5.89E-09
9.21E+01	6.31E+07	6.74E-08	2.00E+01	6.53E+06	1.47E-08
1.03E+02	3.17E+07	1.35E-07	2.00E+01	2.21E+06	2.94E-08
1.16E+02	1.48E+07	2.70E-07	2.00E+01	7.09E+05	5.89E-08
1.41E+02	4.91E+06	6.74E-07	2.00E+01	1.31E+05	1.47E-07
1.69E+02	1.99E+06	1.35E-06	2.00E+01	1.87E+04	2.94E-07
2.16E+02	7.41E+05	2.70E-06	2.00E+01	1.91E+03	5.89E-07
2.58E+02	3.89E+05	4.04E-06	2.00E+01	7.55E+02	8.83E-07
3.10E+02	1.46E+05	6.74E-06	2.00E+01	1.93E+02	1.47E-06
3.69E+02	5.74E+04	9.43E-06	2.00E+01	5.28E+01	2.06E-06
4.58E+02	1.40E+04	1.21E-05	2.00E+01	7.60E+00	2.65E-06
6.09E+02	0.00E+00	1.35E-05	2.04E+01	0.00E+00	2.94E-06
8.44E+02	1.40E+04	1.21E-05	2.40E+01	7.60E+00	2.65E-06
1.16E+03	5.74E+04	9.43E-06	3.44E+01	5.28E+01	2.06E-06
1.59E+03	1.46E+05	6.74E-06	5.33E+01	1.93E+02	1.47E-06
2.38E+03	3.89E+05	4.04E-06	9.77E+01	7.55E+02	8.83E-07
3.20E+03	7.41E+05	2.70E-06	1.56E+02	1.91E+03	5.89E-07
5.20E+03	1.99E+06	1.35E-06	6.17E+02	1.87E+04	2.94E-07
8.30E+03	4.91E+06	6.74E-07	1.42E+03	1.31E+05	1.47E-07
1.50E+04	1.48E+07	2.70E-07	3.19E+03	7.09E+05	5.89E-08
2.26E+04	3.17E+07	1.35E-07	5.73E+03	2.21E+06	2.94E-08
3.29E+04	6.31E+07	6.74E-08	1.02E+04	6.53E+06	1.47E-08
5.07E+04	1.39E+08	2.70E-08	2.10E+04	2.46E+07	5.89E-09
6.71E+04	2.34E+08	1.35E-08	3.37E+04	5.88E+07	2.94E-09
8.56E+04	3.67E+08	6.74E-09	5.03E+04	1.24E+08	1.47E-09
1.20E+05	6.90E+08	2.15E-09	7.70E+04	2.75E+08	5.89E-10

Societal Ingestion Dose Test

PASQUILL CATEGORY D
VEHICLE VEHICLE_1

1-YEAR DOSE TO LUNG, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2
2.81E+01	0.00E+00	7.32E-15
2.99E+01	0.00E+00	1.46E-14
3.17E+01	0.00E+00	2.93E-14
3.43E+01	0.00E+00	7.32E-14
3.65E+01	0.00E+00	1.46E-13
3.88E+01	0.00E+00	2.93E-13
4.22E+01	0.00E+00	7.32E-13
4.51E+01	0.00E+00	1.46E-12
4.82E+01	0.00E+00	2.93E-12
5.28E+01	0.00E+00	7.32E-12
5.67E+01	0.00E+00	1.46E-11
5.97E+01	0.00E+00	2.34E-11
6.79E+01	0.00E+00	7.32E-11
7.39E+01	0.00E+00	1.46E-10
8.09E+01	0.00E+00	2.93E-10
9.21E+01	0.00E+00	7.32E-10
1.03E+02	0.00E+00	1.46E-09
1.16E+02	0.00E+00	2.93E-09
1.41E+02	0.00E+00	7.32E-09
1.69E+02	0.00E+00	1.46E-08
2.16E+02	0.00E+00	2.93E-08
2.58E+02	0.00E+00	4.39E-08
3.10E+02	0.00E+00	7.32E-08
3.69E+02	0.00E+00	1.02E-07
4.58E+02	0.00E+00	1.32E-07
6.09E+02	0.00E+00	1.32E-07
8.44E+02	0.00E+00	1.32E-07
1.16E+03	0.00E+00	1.02E-07
1.59E+03	0.00E+00	7.32E-08
2.38E+03	0.00E+00	4.39E-08
3.20E+03	0.00E+00	2.93E-08
5.20E+03	0.00E+00	1.46E-08
8.30E+03	0.00E+00	7.32E-09
1.50E+04	0.00E+00	2.93E-09
2.26E+04	0.00E+00	1.46E-09
3.29E+04	0.00E+00	7.32E-10
5.07E+04	0.00E+00	2.93E-10
6.71E+04	0.00E+00	1.46E-10
8.56E+04	0.00E+00	7.32E-11
1.20E+05	0.00E+00	2.34E-11

Societal Ingestion Dose Test

1-YEAR DOSE TO MARROW/WHOLE BODY, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2
2.81E+01	0.00E+00	1.50E-14
2.99E+01	0.00E+00	3.01E-14
3.17E+01	0.00E+00	6.01E-14
3.43E+01	0.00E+00	1.50E-13
3.65E+01	0.00E+00	3.01E-13
3.88E+01	0.00E+00	6.01E-13
4.22E+01	0.00E+00	1.50E-12
4.51E+01	0.00E+00	3.01E-12
4.82E+01	0.00E+00	6.01E-12
5.28E+01	0.00E+00	1.50E-11
5.67E+01	0.00E+00	3.01E-11
5.97E+01	0.00E+00	4.80E-11
6.79E+01	0.00E+00	1.50E-10
7.39E+01	0.00E+00	3.01E-10
8.09E+01	0.00E+00	6.01E-10
9.21E+01	0.00E+00	1.50E-09
1.03E+02	0.00E+00	3.01E-09
1.16E+02	0.00E+00	6.01E-09
1.41E+02	0.00E+00	1.50E-08
1.69E+02	0.00E+00	3.01E-08
2.16E+02	0.00E+00	6.01E-08
2.58E+02	0.00E+00	9.02E-08
3.10E+02	0.00E+00	1.50E-07
3.69E+02	0.00E+00	2.11E-07
4.58E+02	0.00E+00	2.71E-07
6.09E+02	0.00E+00	2.71E-07
8.44E+02	0.00E+00	2.71E-07
1.16E+03	0.00E+00	2.11E-07
1.59E+03	0.00E+00	1.50E-07
2.38E+03	0.00E+00	9.02E-08
3.20E+03	0.00E+00	6.01E-08
5.20E+03	0.00E+00	3.01E-08
8.30E+03	0.00E+00	1.50E-08
1.50E+04	0.00E+00	6.01E-09
2.26E+04	0.00E+00	3.01E-09
3.29E+04	0.00E+00	1.50E-09
5.07E+04	0.00E+00	6.01E-10
6.71E+04	0.00E+00	3.01E-10
8.56E+04	0.00E+00	1.50E-10
1.20E+05	0.00E+00	4.80E-11

Societal Ingestion Dose Test

1-YEAR DOSE TO THYROID, INHALATION PATHWAY
BDF = 1 (REM)

CNTR LINE	SEVER: 1	SEVER: 2
2.81E+01	0.00E+00	0.00E+00
2.99E+01	0.00E+00	0.00E+00
3.17E+01	0.00E+00	0.00E+00
3.43E+01	0.00E+00	0.00E+00
3.65E+01	0.00E+00	0.00E+00
3.88E+01	0.00E+00	0.00E+00
4.22E+01	0.00E+00	0.00E+00
4.51E+01	0.00E+00	0.00E+00
4.82E+01	0.00E+00	0.00E+00
5.28E+01	0.00E+00	0.00E+00
5.67E+01	0.00E+00	0.00E+00
5.97E+01	0.00E+00	0.00E+00
6.79E+01	0.00E+00	0.00E+00
7.39E+01	0.00E+00	0.00E+00
8.09E+01	0.00E+00	0.00E+00
9.21E+01	0.00E+00	0.00E+00
1.03E+02	0.00E+00	0.00E+00
1.16E+02	0.00E+00	0.00E+00
1.41E+02	0.00E+00	0.00E+00
1.69E+02	0.00E+00	0.00E+00
2.16E+02	0.00E+00	0.00E+00
2.58E+02	0.00E+00	0.00E+00
3.10E+02	0.00E+00	0.00E+00
3.69E+02	0.00E+00	0.00E+00
4.58E+02	0.00E+00	0.00E+00
6.09E+02	0.00E+00	0.00E+00
8.44E+02	0.00E+00	0.00E+00
1.16E+03	0.00E+00	0.00E+00
1.59E+03	0.00E+00	0.00E+00
2.38E+03	0.00E+00	0.00E+00
3.20E+03	0.00E+00	0.00E+00
5.20E+03	0.00E+00	0.00E+00
8.30E+03	0.00E+00	0.00E+00
1.50E+04	0.00E+00	0.00E+00
2.26E+04	0.00E+00	0.00E+00
3.29E+04	0.00E+00	0.00E+00
5.07E+04	0.00E+00	0.00E+00
6.71E+04	0.00E+00	0.00E+00
8.56E+04	0.00E+00	0.00E+00
1.20E+05	0.00E+00	0.00E+00

Societal Ingestion Dose Test

PASQUILL CATEGORY D
VEHICLE VEHICLE_1

GROUND SURFACE CONTAMINATION TABLE (MICRO CI/M**2)
BEFORE CLEANUP

CNTR LINE	SEVER: 1	SEVER: 2
2.40E+01	0.00E+00	2.65E-02
3.44E+01	0.00E+00	2.06E-02
5.33E+01	0.00E+00	1.47E-02
9.77E+01	0.00E+00	8.83E-03
1.56E+02	0.00E+00	5.89E-03
6.17E+02	0.00E+00	2.94E-03
1.42E+03	0.00E+00	1.47E-03
3.19E+03	0.00E+00	5.89E-04
5.73E+03	0.00E+00	2.94E-04
1.02E+04	0.00E+00	1.47E-04
2.10E+04	0.00E+00	5.89E-05
3.37E+04	0.00E+00	2.94E-05
5.03E+04	0.00E+00	1.47E-05
7.70E+04	0.00E+00	5.89E-06
9.99E+04	0.00E+00	2.94E-06
1.20E+05	0.00E+00	1.66E-06

Societal Ingestion Dose Test

PASQUILL CATEGORY D
VEHICLE VEHICLE_1

MAXIMUM INDIVIDUAL CONSEQUENCE (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CNTR LINE	SEVER: 1	SEVER: 2
2.81E+01	0.00E+00	1.01E-12
2.99E+01	0.00E+00	2.02E-12
3.17E+01	0.00E+00	4.03E-12
3.43E+01	0.00E+00	1.01E-11
3.65E+01	0.00E+00	2.02E-11
3.88E+01	0.00E+00	4.03E-11
4.22E+01	0.00E+00	1.01E-10
4.51E+01	0.00E+00	2.02E-10
4.82E+01	0.00E+00	4.03E-10
5.28E+01	0.00E+00	1.14E-09
5.67E+01	0.00E+00	2.02E-09
5.97E+01	0.00E+00	4.02E-09
6.79E+01	0.00E+00	1.01E-08
7.39E+01	0.00E+00	2.02E-08
8.09E+01	0.00E+00	4.03E-08
9.21E+01	0.00E+00	1.01E-07
1.03E+02	0.00E+00	2.02E-07
1.16E+02	0.00E+00	4.03E-07
1.41E+02	0.00E+00	1.01E-06
1.69E+02	0.00E+00	2.02E-06
2.16E+02	0.00E+00	4.03E-06
2.58E+02	0.00E+00	6.05E-06
3.10E+02	0.00E+00	1.01E-05
3.69E+02	0.00E+00	1.41E-05
4.58E+02	0.00E+00	1.82E-05
6.09E+02	0.00E+00	1.82E-05
8.44E+02	0.00E+00	1.82E-05
1.16E+03	0.00E+00	1.41E-05
1.59E+03	0.00E+00	1.01E-05
2.38E+03	0.00E+00	6.05E-06
3.20E+03	0.00E+00	4.03E-06
5.20E+03	0.00E+00	2.02E-06
8.30E+03	0.00E+00	1.01E-06
1.50E+04	0.00E+00	4.03E-07
2.26E+04	0.00E+00	2.02E-07
3.29E+04	0.00E+00	1.01E-07
5.07E+04	0.00E+00	4.03E-08
6.71E+04	0.00E+00	2.02E-08
8.56E+04	0.00E+00	1.01E-08
1.20E+05	0.00E+00	4.02E-09

Societal Ingestion Dose Test

PASQUILL CATEGORY D
VEHICLE VEHICLE_1

BACKYARD FARMER DOSE - EFFECTIVE
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2
2.81E+01	0.00E+00	1.10E-10
2.99E+01	0.00E+00	2.20E-10
3.17E+01	0.00E+00	4.40E-10
3.43E+01	0.00E+00	1.10E-09
3.65E+01	0.00E+00	2.20E-09
3.88E+01	0.00E+00	4.40E-09
4.22E+01	0.00E+00	1.10E-08
4.51E+01	0.00E+00	2.20E-08
4.82E+01	0.00E+00	4.40E-08
5.28E+01	0.00E+00	1.24E-07
5.67E+01	0.00E+00	2.20E-07
5.97E+01	0.00E+00	4.40E-07
6.79E+01	0.00E+00	1.10E-06
7.39E+01	0.00E+00	2.20E-06
8.09E+01	0.00E+00	4.40E-06
9.21E+01	0.00E+00	1.10E-05
1.03E+02	0.00E+00	2.20E-05
1.16E+02	0.00E+00	4.40E-05
1.41E+02	0.00E+00	1.10E-04
1.69E+02	0.00E+00	2.20E-04
2.16E+02	0.00E+00	4.40E-04
2.58E+02	0.00E+00	6.60E-04
3.10E+02	0.00E+00	1.10E-03
3.69E+02	0.00E+00	1.54E-03
4.58E+02	0.00E+00	1.98E-03
6.09E+02	0.00E+00	1.98E-03
8.44E+02	0.00E+00	1.98E-03
1.16E+03	0.00E+00	1.54E-03
1.59E+03	0.00E+00	1.10E-03
2.38E+03	0.00E+00	6.60E-04
3.20E+03	0.00E+00	4.40E-04
5.20E+03	0.00E+00	2.20E-04
8.30E+03	0.00E+00	1.10E-04
1.50E+04	0.00E+00	4.40E-05
2.26E+04	0.00E+00	2.20E-05
3.29E+04	0.00E+00	1.10E-05
5.07E+04	0.00E+00	4.40E-06
6.71E+04	0.00E+00	2.20E-06
8.56E+04	0.00E+00	1.10E-06
1.20E+05	0.00E+00	4.40E-07

Societal Ingestion Dose Test

PASQUILL CATEGORY D
VEHICLE VEHICLE_1

BACKYARD FARMER DOSE - THYROID
MAXIMUM INDIVIDUAL CONSEQUENCE (REM)

CNTR LINE	SEVER: 1	SEVER: 2
2.81E+01	0.00E+00	8.87E-11
2.99E+01	0.00E+00	1.77E-10
3.17E+01	0.00E+00	3.55E-10
3.43E+01	0.00E+00	8.87E-10
3.65E+01	0.00E+00	1.77E-09
3.88E+01	0.00E+00	3.55E-09
4.22E+01	0.00E+00	8.87E-09
4.51E+01	0.00E+00	1.77E-08
4.82E+01	0.00E+00	3.55E-08
5.28E+01	0.00E+00	1.00E-07
5.67E+01	0.00E+00	1.77E-07
5.97E+01	0.00E+00	3.55E-07
6.79E+01	0.00E+00	8.87E-07
7.39E+01	0.00E+00	1.77E-06
8.09E+01	0.00E+00	3.55E-06
9.21E+01	0.00E+00	8.87E-06
1.03E+02	0.00E+00	1.77E-05
1.16E+02	0.00E+00	3.55E-05
1.41E+02	0.00E+00	8.87E-05
1.69E+02	0.00E+00	1.77E-04
2.16E+02	0.00E+00	3.55E-04
2.58E+02	0.00E+00	5.32E-04
3.10E+02	0.00E+00	8.87E-04
3.69E+02	0.00E+00	1.24E-03
4.58E+02	0.00E+00	1.60E-03
6.09E+02	0.00E+00	1.60E-03
8.44E+02	0.00E+00	1.60E-03
1.16E+03	0.00E+00	1.24E-03
1.59E+03	0.00E+00	8.87E-04
2.38E+03	0.00E+00	5.32E-04
3.20E+03	0.00E+00	3.55E-04
5.20E+03	0.00E+00	1.77E-04
8.30E+03	0.00E+00	8.87E-05
1.50E+04	0.00E+00	3.55E-05
2.26E+04	0.00E+00	1.77E-05
3.29E+04	0.00E+00	8.87E-06
5.07E+04	0.00E+00	3.55E-06
6.71E+04	0.00E+00	1.77E-06
8.56E+04	0.00E+00	8.87E-07
1.20E+05	0.00E+00	3.55E-07

Societal Ingestion Dose Test

INCIDENT-FREE SUMMARY
******** **** *******

IN-TRANSIT POPULATION EXPOSURE IN PERSON-REM
*INPUT DATA WERE ALTERED WITH REGULATORY CHECKS

	PASSENGER	CREW	OFF LINK	ON LINK	TOTALS
LINK_1	0.00E+00	1.68E-04	6.43E-08	1.38E-07	1.68E-04
RURAL	0.00E+00	1.68E-04	6.43E-08	1.38E-07	1.68E-04
SUBURB	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
URBAN	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTALS:	0.00E+00	1.68E-04	6.43E-08	1.38E-07	1.68E-04

MAXIMUM INDIVIDUAL IN-TRANSIT DOSE

VEHICLE_1 2.84E-07 REM

INCIDENT-FREE IMPORTANCE ANALYSIS SUMMARY
ESTIMATES THE PERSON-REM INFLUENCE OF A ONE PERCENT INCREASE IN THE PARAMETER

LINK	PARAMETER	IMPORTANCE	CHANGE
LINK_1			
	DISTANCE TRAVELED	1.682E-06	1.0000 %
	NUMBER OF SHIPMENTS	1.682E-06	1.0000 %
	DOSE RATE FOR VEHICLE (TI)	1.682E-06	1.0000 %
	NUMBER OF CREW MEMBERS	1.680E-06	0.9988 %
	K ZERO FOR CREW DOSE	1.680E-06	0.9988 %
	CREW DOSE ADJUSTMENT FACTOR	1.680E-06	0.9988 %
	K ZERO FOR VEHICLE	2.019E-09	0.0012 %
	NUMBER OF PEOPLE PER VEHICLE	1.375E-09	0.0008 %
	TRAFFIC COUNT	1.375E-09	0.0008 %
	SHIELDING FACTOR (RR,RS,RU)	6.434E-10	0.0004 %
	POPULATION DENSITY	6.434E-10	0.0004 %
	NUMBER OF FLIGHT ATTENDANTS	0.000E+00	0.0000 %
	RATIO OF PEDESTRIAN DENSITY (RPD	0.000E+00	0.0000 %
	DIST DEP RAIL WORKR EXPOSR FACTR	0.000E+00	0.0000 %
	DISTANCE FROM PACKAGE TO CREW	-8.400E-07	-0.4994 %
	VELOCITY	-1.683E-06	-1.0008 %

Societal Ingestion Dose Test

ACCIDENT SUMMARY
******** *******

NUMBER OF EXPECTED ACCIDENTS

CATEGORY	LINK_1
1	9.00E-01
2	1.00E-01

EARLY FATALITY CONSEQUENCES

CATEGORY	LINK_1
1	0.00E+00
2	0.00E+00

RADIOLOGICAL CONSEQUENCES
50 YEAR POPULATION DOSE IN PERSON-REM

CATEGORY	LINK_1
1	0.00E+00
2	2.87E-03

MAXIMUM RISK FOR INDIVIDUAL IN NEAREST ISOPLETH (DOSE IN REM)
FROM INHALATION, CLOUDSHINE, AND GROUNDSHINE EXPOSURE DURING EVACUATION

CATEGORY	LINK_1
1	0.00E+00
2	1.82E-06

RADIOLOGICAL CONSEQUENCES IN PERSON REM
50 YEAR SOCIETAL INGESTION DOSE - EFFECTIVE

LINK	SEVER: 1	SEVER: 2
LINK_1	0.00E+00	5.37E-02

Societal Ingestion Dose Test

EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

	GROUND	INHALED	RESUSPD	CLOUDSH	TOTAL
LINK_1	2.87E-04	3.97E-08	0.00E+00	1.00E-08	2.87E-04
RURAL	2.87E-04	3.97E-08	0.00E+00	1.00E-08	2.87E-04
SUBURB	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
URBAN	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTALS:	2.87E-04	3.97E-08	0.00E+00	1.00E-08	2.87E-04

SOCIETAL INGESTION RISK - PERSON-REM

LINK	GONADS	EFFECTIVE
LINK_1	4.87E-03	5.37E-03
TOTAL	4.87E-03	5.37E-03

SOCIETAL INGESTION RISK BY ORGAN - PERSON-REM

LINK	BREAST	LUNGS	RED MARR	BONE SUR	THYROID	REMAINDER
LINK_1	4.47E-03	4.35E-03	7.43E-03	9.60E-03	4.33E-03	5.51E-03
TOTAL	4.47E-03	4.35E-03	7.43E-03	9.60E-03	4.33E-03	5.51E-03

EXPECTED RISK VALUES - OTHER

LINK	EARLY FATALITY	EARLY MORBIDITY
LINK_1	0.00E+00	0.00E+00
TOTAL	0.00E+00	0.00E+00

Societal Ingestion Dose Test

TOTAL EXPOSED POPULATION: INCIDENT-FREE

LINK_1 2.25E+00 PERSONS

TOTAL 2.25E+00 PERSONS

PASQUILL CATEGORY D
TOTAL EXPOSED POPULATION: ACCIDENT
(PERSONS UNDER PLUME FOOTPRINT FOR A SINGLE ACCIDENT)

LINK_1 1.79E+03 PERSONS

Societal Ingestion Dose Test

LINK: LINK_1 EXPECTED VALUES OF POPULATION RISK IN PERSON-REM

MATERIAL	ISOTOPE	GROUND	INHALATN	RESUSP	CLOUDSH	TOTAL
PACKAGE_1	NA22	2.87E-04	3.97E-08	0.00E+00	1.00E-08	2.87E-04
					TOTAL:	2.87E-04

EOI
END OF RUN
SUCCESSFUL COMPLETION