PMComanchePeakPEm Resource

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Subject: Evacuation Parameter Sensitivity Study
Attachments: TXNB-09013 Evac study.pdf

The attached letter has been submitted to the NRC providing a sensitivity study of evacuation parameters. The ER assumes 100% of the population evacuates and they no longer receive a dose beyond 25 miles from the plant. The sensitivity study evaluates evacuation rates of 99.5% and 90%, and assumes a 50-mile dose cutoff. The results of the study remained below the NRC Safety Goal Policy by several orders of magnitude. Marked-up ER pages are included to show how the ER will be revised.

If there any questions regarding the letter, please contact me or contact Don Woodlan at (254) 897-6887 or Donald.Woodlan@luminant.com.

Thanks,

John Conly
COLA Project Manager NuBuild
Luminant Power
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April 28, 2009

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555
ATTN: David B. Matthews, Director
Division of New Reactor Licensing

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 3 AND 4
DOCKET NUMBERS 52-034 AND 52-035
SENSITIVITY STUDY OF EVACUATION PARAMETERS

Dear Sir:

Luminant Generation Company LLC (Luminant) hereby submits the attached sensitivity study pertaining to the evacuation parameters assumed in Section 7.2 of the Environmental Report (ER) submitted as part of the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. The value of such a study arose during a conference call with the NRC on March 16, 2009 as part of the environmental review.

The analysis in the ER assumed that 100% of the population within the 10-mile evacuation zone was evacuated and that once the evacuees are more than 25 miles from the site they no longer receive a dose from the postulated accident. The sensitivity study assumed population evacuation rates of 99.5% and 90%, and assumed evacuees could receive dose up to 50 miles from the site. The results of the study remained below the NRC Safety Goal Policy Statement by several orders of magnitude. Section 7.2 of the ER will be revised to reflect the 90% and 50-mile assumptions.

Attachment 1 to this letter provides the sensitivity study and Attachment 2 provides the marked-up Section 7.2 pages as they will be changed in the ER revision.

Should you have any questions regarding the sensitivity study or the ER changed pages, or matters relating more generally to Luminant's nuclear generation development program, please contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com) or me.

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

Executed on April 28, 2009.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

Rafael Flores

Attachments - 1. Sensitivity Analysis to Evaluate Evacuation Parameters
2. Marked-Up Pages for Environmental Report Section 7.2

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ATTACHMENT 1

SENSITIVITY ANALYSIS TO EVALUATE EVACUATION PARAMETERS

Sensitivity Analysis to Evaluate Evacuation Parameters

Part 5 of the Comanche Peak Nuclear Power Plant (CPNPP) Combined License Application provides the emergency plan and the Evacuation Time Estimates (ETE) evaluation. The ETE assumed that 100 percent of the people within the impacted region will evacuate in response to the evacuation advisory. The use of 100% evacuation is based on NUREG/CR-6863, SAND 2004-5900, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants." Section 2.2 of this document states, in part, "For ETE calculations, it should be assumed that the entire population within the assessed area is evacuated." The ETE also determined that a full evacuation (100%) could be accomplished in approximately four hours.

A sensitivity study was performed using an evacuation of 99.5% of the population rather than 100% evacuation. The results of this sensitivity study showed that the dollar consequences decreased by approximately one percent. This was due to slightly decreased relocation costs as a result of 0.5 percent of the population not evacuating. The early fatalities increased by approximately one percent and the latent fatalities increased from 2.32E-04 fatalities per reactor-year to 2.33E-04 fatalities per reactor-year, an increase of 0.4%. These results demonstrate that a change in the population evacuation from 100 percent to 99.5 percent does not create significant changes in the severe accident results.

Evacuees are not considered to receive additional dose due to radiation exposure after traveling beyond 25 miles. When the residents exit the analysis network at 25 miles, their dose calculations are complete and they do not receive further exposure. Nevertheless, all costs for evacuation and relocation are continued even after traveling 25 miles. In the presentation of economic cost results, the costs associated with the emergency phase (*i.e.*, evacuation and short-term relocation) are reported separately from the costs associated with the intermediate phase (*i.e.*, per-diem costs for relocation for the duration of the intermediate phase).

Because 99.5% is a small difference from that assumed in the ER and to provide for additional conservatism, an additional analysis was performed assuming an evacuation of 90% of the population. Additionally, the conservatism was extended to assume that evacuees would receive dose until traveling 50 miles from the site, rather than 25 miles. The results of this analysis showed that the results remained below the NRC's Safety Goal Policy Statement by several orders of magnitude. Although early fatalities approximately doubled from the original analysis using 100% evacuation and that latent fatalities increased by approximately three percent, the early and latent fatality risks from a severe accident at CPNPP using a conservative value of 90% still met the safety goal policy statement. A comparison of the results from all three analyses is provided in the tables below.

Comparison of Evacuation Models for 2001 Meteorological Data

Evacuation	Dose Risk (person-rem/RY	Dollar Risk ($/RY)	Affected Land (hectares)[a]	Early Fatalities (per RY)	Latent Fatalities (per RY)	Water Ingestion Dose Risk (person-rem/RY
100%, 25 Miles	2.21E-01	5.85E+02	2.66 E-02	3.64E-08	1.79E-04	1.62E-02
99.5%, 25 Miles	2.21E-01	5.78E+02	2.66 E-02	3.84E-08	1.79E-04	1.62E-02
90%, 50 Miles	2.21E-01	5.78E+02	2.66 E-02	7.49E-08	1.85E-04	1.62E-02

Comparison of Evacuation Models for 2003 Meteorological Data

Evacuation	Dose Risk (person-rem/RY	Dollar Risk ($/RY)	Affected Land (hectares)[a]	Early Fatalities (per RY)	Latent Fatalities (per RY)	Water Ingestion Dose Risk (person-rem/RY
100%, 25 Miles	2.71E-01	6.70E+02	2.76 E-02	3.40E-08	2.09E-04	1.52E-02
99.5%, 25 Miles	2.71E-01	6.62E+02	2.76 E-02	3.59E-08	2.09E-04	1.52E-02
90%, 50 Miles	2.71E-01	6.62E+02	2.76 E-02	7.43E-08	2.15E-04	1.52E-02

Comparison of Evacuation Models for 2006 Meteorological Data

Evacuation	Dose Risk (person-rem/RY	Dollar Risk ($/RY)	Affected Land (hectares)[a]	Early Fatalities (per RY)	Latent Fatalities (per RY)	Water Ingestion Dose Risk (person-rem/RY
100%, 25 Miles	3.00E-01	7.14E+02	2.70 E-02	2.84E-08	2.32E-04	1.63E-02
99.5%, 25 Miles	3.00E-01	7.06E+02	2.70 E-02	3.03E-08	2.33E-04	1.63E-02
90%, 50 Miles	3.00E-01	7.06E+02	2.70 E-02	6.73E-08	2.39E-04	1.63E-02

(a) These values reflect the sum of affected land areas that have been multiplied by their release category frequency, whereas the affected land areas shown in the MACCS2 analysis are neither multiplied by release category frequency or summed. However, the same MACCS2 data were used as the basis for both values.

ATTACHMENT 2

MARKED-UP PAGES FOR ENVIRONMENTAL REPORT SECTION 7.2

Pages

7.2-3

7.2-7

7.2-8

7.2-14

7.2-16

7.2-18 through 7.2-23

The emergency evacuation model has been modeled as a single evacuation zone extending out 10 mi from the site. For the purposes of this analysis, an average evacuation speed of 4.0 mi per hour (mph) is used with a 7200-second delay between the alarm and start of evacuation, with no sheltering. Once evacuees are more than 50~~25~~ mi from the site, they no longer receive dose and are not included in ~~disappear from~~ the analysis. The evacuation scenario is modeled so that 90~~100~~ percent of the population is evacuated. ACC-06

The ATMOS input data file calculates the dispersion and deposition of material-released "source terms" to the atmosphere as a function of downwind distance. Source term release fractions (RELFRC) are shown in Table 7.2-3, and plume characterizations are shown in Table 7.2-4. These data include the RELFRC, plume start time, plume release height, delay, and duration.

The data in Tables 7.2-3 and 7.2-4 are from the US-APWR DC Applicant's Environmental Report (ER) (MHI 2007). The four plumes in Table 8 of the DC Applicant's ER (MHI 2007) were collapsed into two plumes using the following steps:

1. The release fractions for the first two plumes in the DC Applicant's ER Table 8 (MHI 2007) were added together to produce a release fraction for the first plume in Table 7.2-3. Similarly, the third and fourth plumes in the DC Applicant's ER (MHI 2007) Table 8 were combined for the second plume in Table 7.2-3. This process assures that the total release is the same.

2. The first plume duration in Table 7.2-4 is the maximum of the first two plume durations in the DC Applicant's ER (MHI 2007) Table 8. Similarly, the second plume duration in Table 7.2-4 is the maximum of the third and fourth plume durations in the DC Applicant's ER (MHI 2007) Table 8.

3. The plume delays in Table 7.2-4 were taken as the first and second plume start times in the DC Applicant's ER (MHI 2007) Table 8. The inventory is released faster in this approach than in the four-plume approach.

4. The Ref Time term in Table 7.2-4, which calculates the plume position according to its leading edge (0) or midpoint (0.5), is equal to the plume position in the DC Applicant's ER (MHI 2007) Table 8 for the first and second plumes, respectively, to be consistent with the plume delay approach.

The plume release height was conservatively set to zero, as specified in Appendix A.3 of the DC Applicant's ER (MHI 2007), which corresponds to a ground level release. Parameters are assigned to each source term according to release category. Each released plume is assumed to have two segments.

The results of the dose and dollar risk assessments for internal events, including the water ingestion pathway, are provided in Table 7.2-5. Risk is defined in these results as the product of release category frequency and the dose or cost associated with the release category. The total risk is assumed to be the sum of all scenarios.

The environmental impacts of a postulated severe accident at the CPNPP site could be severe but, due to the low likelihood of such an accident, the impacts are determined to be SMALL. The total dose risk value of 3.00×10^{-1} person-rem/RY is not bounded by the dose risk of 2.7×10^{-1} person-rem/RY calculated in Table 10a of the DC Applicant's ER (MHI 2007). However, the calculation in the DC Applicant's ER (MHI 2007) does not account for Release Category RC5 because there is no release within 24 hr after the onset of core damage. If the dose risk value for RC5 is subtracted from the total dose risk value in Table 7.2-6 for the year 2006, the resulting total dose risk value is 1.52×10^{-1} person-rem/RY, which is bounded by 2.7×10^{-1} person-rem/RY. Other notable differences between the DC Applicant's analysis and the site-specific analysis are that the DC Applicant's analysis did not credit evacuation and sheltering and only considered the first 24 hours (hr) of the event. Radiological dose consequences and health effects associated with normal and anticipated operational releases are discussed in Subsection 5.4.3.

The CDF for internal events is 1.2×10^{-6}. This value is used in conjunction with the Applicant's ER (MHI 2007) to determine the total severe accident health effects, which include internal events, internal fire, internal flood, and low-power and shutdown (LPSD) events, as shown in Tables 7.2-12, 7.2-13, and 7.2-14. The health effects resulting from internal fire, internal flood, and LPSD events were determined using the ratio of the CDF values for these events and the CDF value for the internal events. The maximum dose risk from the three years of meteorological data is ~~5.87×10^{-4}~~1.15 person-rem/RY. The maximum numbers of early and latent fatalities per RY from the three years of meteorological data are 2.87~~1.40~~ $\times 10^{-7}$ and 9.17~~8.90~~ $\times 10^{-4}$, respectively. Finally, the maximum dose for the water ingestion pathway from the three years of meteorological data is 6.25×10^{-2} person-rem/RY. CTS-00470 ACC-06

Additionally, the NRC's Safety Goal Policy Statement, issued in 1986, states that "the risk to an average individual in the vicinity of a nuclear power plant of prompt fatalities that might result from reactor accidents should not exceed one-tenth of one percent (0.1 percent) of the sum of prompt fatality risks resulting from other accidents to which members of the U.S. population are generally exposed" and that "the risk to the population in the area near a nuclear power plant of cancer fatalities that might result from nuclear power plant operation should not exceed one-tenth of one percent (0.1 percent) of the sum of cancer fatality risks resulting from all other causes." According to the Centers for Disease Control and Prevention (CDC), there were 39.7 deaths caused by accidents per 100,000 people in the year 2005. Also, there were 188.7 deaths caused by cancer per 100,000 people in the year 2005 (CDC 2008). These statistics mean that the cancer fatality risk from "all other causes" is 1.89×10^{-3}, and the prompt fatality risk from "other accidents" is 3.97×10^{-4}. One-tenth of one percent of each of these risks results in a value of 1.89×10^{-6} for cancer fatalities and 3.97×10^{-7} for prompt fatalities. As stated above, the maximum number of latent fatalities per RY from the three years of meteorological data is 9.17~~8.90~~ $\times 10^{-4}$. In order to obtain the appropriate risk number, the number of latent fatalities is divided by the calendar year 2056 population within 50 mi of the CPNPP site of 2,760,243. This results in a cancer fatality risk of 3.32~~3.22~~ $\times 10^{-10}$, which is well below the cancer fatality safety goal of 1.89×10^{-6}. Also as stated above, the maximum number of early fatalities per RY from the three years of meteorological data is 2.87~~1.40~~ $\times 10^{-7}$. In order to obtain the appropriate risk number, the number of early fatalities is divided by the calendar year 2056 population within two ACC-06 ACC-06 ACC-06

kilometers of the CPNPP site of 182, as provided in Table 2.5-1. The Safety Goal Policy Statement indicates that the population within one mile of the plant should be used, but here the population within two kilometers is considered to be a reasonable estimate, particularly because the risk of prompt fatalities is bounded by the safety goal regardless of the population size used. This results in a prompt fatality risk of 1.58×10^{-9} ~~7.69×10^{-10}~~, which is well below the prompt fatality safety goal of 3.97×10^{-7}. Therefore, the early and latent fatality risks from a severe accident at the CPNPP site are found to be acceptable. ACC-06

7.2.5 REFERENCES

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TABLE 7.2-5
SEVERE ACCIDENT ANALYSIS RESULTS SUMMARY WITHIN 50 MI OF CPNPP SITE[a]

Met Data Year	Dose Risk (person-rem/ RY)	Dollar Risk ($/RY)	Affected Land (hectares) [b]	Early Fatalities (per RY)	Latent Fatalities (per RY)	Water Ingestion Dose Risk (person-rem/ RY)
2001	2.21E-01	5.78~~5.85~~E+02	2.66E-02	7.49~~3.64~~E-08	1.85~~1.79~~E-04	1.62E-02
2003	2.71E-01	6.62~~6.704~~E+02	2.76~~1~~E-02	7.43~~3.40~~E-08	2.15~~2.09~~E-04	1.52E-02
2006	3.00E-01	7.06~~7.14~~E+02	2.70E-02	6.73~~2.84~~E-08	2.39~~2.32~~E-04	1.63~~8~~E-02

ACC-06

a) All data are compiled from Tables 7.2-9, 7.2-10, and 7.2-11.

b) This value reflects the sum of affected land areas that have been multiplied by their release category frequency, whereas the affected land areas shown in the MACCS2 analysis are neither multiplied by release category frequency or summed. However, the same MACCS2 data were used as the basis for both values.

TABLE 7.2-7
DOLLAR RISK ASSESSMENT IN DOLLARS/RY

Release Category	Frequency (per RY)	Dollar Risk - 2001[a]	Dollar Risk - 2003[a]	Dollar Risk - 2006[a]	
RC1	7.5E-09	8.10E+01	9.08E+01	9.90E+01	
RC2	2.1E-09	1.12E+01	1.47E+01	1.65E+01	
RC3	2.0E-08	2.96E+02	3.18E+02	3.38E+02	
RC4	1.1E-08	4.64~~4.65~~E+01	5.23~~5.24~~E+01	5.73~~5.74~~E+01	ACC-06
RC5	6.5E-08	1.43E+02	1.87E+02	1.95E+02	
RC6	1.1E-06	4.96E-03~~7.38E+00~~	7.46E-03~~7.77E+00~~	6.84E-03~~8.13E+00~~	ACC-06
Total	1.2E-06	5.78~~5.85~~E+02	6.62~~6.70~~E+02	7.06~~7.14~~E+02	

a) The dollar risk accounts for the costs of evacuation, crops contaminated and condemned, milk contaminated and condemned, decontamination of property, and indirect costs resulting from the loss of use of property and incomes. The 2001, 2003, and 2006 refer to the year of meteorological data used in the calculation. ACC-06

TABLE 7.2-9
SEVERE ACCIDENT IMPACTS TO THE POPULATION AND LAND USING 2001 METEOROLOGICAL DATA

Release Category	Core Damage Frequency (per RY)	Dose-Risk (person-rem/ RY)	Number of Early Fatalities (per RY)	Number of Latent Fatalities (per RY)	Affected Land Area (hectares)[a]	Cost-Risk (dollars/ RY)[b]	Water Ingestion Pathway (person-rem/RY)
RC1	7.5E-09	2.39E-02	2.19E-09~~2.07E-10~~	1.59~~1.56~~E-05	2.13E-03	8.10E+01	1.90E-03
RC2	2.1E-09	4.62E-03	3.07E-10~~1.27E-11~~	3.36~~3.28~~E-06	6.95E-04	1.12E+01	1.28E-04
RC3	2.0E-08	7.56E-02	7.16~~3.62~~E-08	1.06~~1.01~~E-04	5.30E-03	2.96E+02	1.21E-02
RC4	1.1E-08	2.24E-02	8.26E-10~~0.00E+00~~	1.38~~1.34~~E-05	2.51E-03	4.64~~4.65~~E+01	6.89E-04
RC5	6.5E-08	9.36E-02	0.00E+00	4.52~~4.50~~E-05	1.59E-02	1.43E+02	1.43E-02
RC6	1.1E-06	9.97E-04	0.00E+00	5.28~~5.27~~E-07	5.40E-06	4.96E-03~~7.38E+00~~	2.39E-6
Total	1.2E-06	2.21E-01	7.49~~3.64~~E-08	1.85~~1.79~~E-04	2.66E-02	5.78~~5.85~~E+02	1.62E-02

ACC-06

a) These values reflect affected land areas that have been multiplied by their release category frequency; whereas, the affected land areas shown in the MACCS2 analysis are not multiplied by release category frequency. However, the same MACCS2 data were used as the basis for both values.

b) The cost-risk accounts for the costs of evacuation, crops contaminated and condemned, milk contaminated and condemned, decontamination of property, and indirect costs resulting from the loss of use of property and incomes.

TABLE 7.2-10
SEVERE ACCIDENT IMPACTS TO THE POPULATION AND LAND USING
2003 METEOROLOGICAL DATA

Release Category	Core Damage Frequency (per RY)	Dose-Risk (person-rem/RY)	Number of Early Fatalities (per RY)	Number of Latent Fatalities (per RY)	Affected Land Area (hectares)[a]	Cost-Risk (dollars/ RY)[b]	Water Ingestion Pathway (person-rem/RY)
RC1	7.5E-09	2.90E-02	2.20E-091.76E-10	1.891.86E-05	2.24E-03	9.08E+01	1.76E-03
RC2	2.1E-09	5.61E-03	2.96E-101.06E-11	3.993.91E-06	7.56E-04	1.47E+01	1.16E-04
RC3	2.0E-08	8.10E-02	7.10E-083.38E-08	1.141.09E-04	5.64E-03	3.18E+02	1.12E-02
RC4	1.1E-08	2.66E-02	7.84E-100.00E+00	1.611.57E-05	2.53E-03	5.235.24E+01	6.41E-04
RC5	6.5E-08	1.27E-01	0.00E+00	6.116.09E-05	1.64E-02	1.87E+.02	1.49E-03
RC6	1.1E-06	1.18E-03	0.00E+00	6.126.09E-07	9.78E-06	7.46E-037.77E+00	2.24E-06
Total	1.2E-06	2.71E-01	7.433.40E-08	2.152.09E-04	2.76E-02	6.626.70E+02	1.52E-02

ACC-06

a) These values reflect affected land areas that have been multiplied by their release category frequency; whereas, the affected land areas shown in the MACCS2 analysis are not multiplied by release category frequency. However, the same MACCS2 data were used as the basis for both values.

b) The cost-risk accounts for the costs of evacuation, crops contaminated and condemned, milk contaminated and condemned, decontamination of property, and indirect costs resulting from the loss of use of property and incomes.

TABLE 7.2-11
SEVERE ACCIDENT IMPACTS TO THE POPULATION AND LAND USING 2006 METEOROLOGICAL DATA

Release Category	Core Damage Frequency (per RY)	Dose-Risk (person-rem/RY)	Number of Early Fatalities (per RY)	Number of Latent Fatalities (per RY)	Affected Land Area (hectares)[a]	Cost-Risk (dollars/ RY)[b]	Water Ingestion Pathway (person-rem/ RY)
RC1	7.5E-09	2.93E-02	1.99E-09~~1.56E-10~~	1.97~~1.94~~E-05	2.05E-03	9.90E+01	1.91E-03
RC2	2.1E-09	6.09E-03	2.46E-10~~1.51E-11~~	4.39~~4.31~~E-06	7.01E-04	1.65E+01	1.27E-04
RC3	2.0E-08	8.96E-02	6.46E-08~~2.82E-08~~	1.27~~1.21~~E-04	5.28E-03	3.38E+02	1.21E-02
RC4	1.1E-08	2.67E-02	4.70E-10~~0.00E+00~~	1.65~~1.62~~E-05	2.44E-03	5.73~~5.74~~E+01	6.90E-04
RC5	6.5E-08	1.48E-01	0.00E+00	7.09~~7.02~~E-05	1.65E-02	1.95E+02	1.45E-03
RC6	1.1E-06	1.01E-03	0.00E+00	5.26~~5.25~~E-07	7.69E-06	6.84E-03~~8.13E+00~~	2.41E-06
Total	1.2E-06	3.00E-01	6.73~~2.84~~E-08	2.39~~2.32~~E-04	2.70E-02	7.06~~7.14~~E+02	1.63E-02

ACC-06

a) These values reflect affected land areas that have been multiplied by their release category frequency; whereas, the affected land areas shown in the MACCS2 analysis are not multiplied by release category frequency. However, the same MACCS2 data were used as the basis for both values.

b) The cost-risk accounts for the costs of evacuation, crops contaminated and condemned, milk contaminated and condemned, decontamination of property, and indirect costs resulting from the loss of use of property and incomes.

TABLE 7.2-12
TOTAL SEVERE ACCIDENT HEALTH EFFECTS USING 2001 METEOROLOGICAL DATA[b] ACC-06

Accident Type	Core Damage Frequency (per RY)[a]	Scaling Factor	Dose-Risk (person-rem/RY)	Number of Early Fatalities (per RY)	Number of Latent Fatalities (per RY)	Water Ingestion Pathway (person-rem/RY)
Internal Events	1.2E-6	1	2.21E-01	7.493.64E-08	1.851.79E-04	1.62E-02
Internal Fire	1.8E-6	1.50	3.32E-01	5.46E-081.12E-07	2.782.69E-04	2.43E-02
Internal Flood	1.4E-6	1.17	2.59E-01	8.764.26E-08	2.162.09E-04	1.90E-02
LPSD	2.0E-7	0.167	3.69E-02	1.25E-086.08E-09	3.092.99E-05	2.71E-03
Total	4.6E-6	-	8.48E-01	2.871.40E-07	7.106.87E-04	6.22E-02

ACC-06

a) Core damage frequency values are from Table 5 of the DC Applicant's Environmental Report (MHI 2007).

b) The values for internal fire, internal flood, and LPSD are calculated as described on page 7.2-7. ACC-06

TABLE 7.2-13
TOTAL SEVERE ACCIDENT HEALTH EFFECTS USING 2003 METEOROLOGICAL DATA[b] ACC-06

Accident Type	Core Damage Frequency (per RY)[a]	Scaling Factor	Dose-Risk (person-rem/RY)	Number of Early Fatalities (per RY)	Number of Latent Fatalities (per RY)	Water Ingestion Pathway (person-rem/ RY)
Internal Events	1.2E-6	1	2.71E-01	7.43~~3.40~~E-08	2.15~~2.09~~E-04	1.52E-02
Internal Fire	1.8E-6	1.50	4.07E-01	1.11E-07~~5.10E-08~~	3.23~~3.14~~E-04	2.28E-02
Internal Flood	1.4E-6	1.17	3.17E-01	8.69~~3.98~~E-08	2.52~~2.45~~E-04	1.78E-02
LPSD	2.0E-7	0.167	4.53E-02	1.24E-08~~5.68E-09~~	3.59~~3.49~~E-05	2.54E-03
Total	4.6E-6	-	1.04E-00	2.85~~1.30~~E-07	8.25~~8.02~~E-04	5.83E-02

ACC-06

a) Core damage frequency values are from Table 5 of the DC Applicant's Environmental Report (MHI 2007).

b) The values for internal fire, internal flood, and LPSD are calculated as described on page 7.2-7. ACC-06

TABLE 7.2-14
TOTAL SEVERE ACCIDENT HEALTH EFFECTS USING 2006 METEOROLOGICAL DATA[b] ACC-06

Accident Type	Core Damage Frequency (per RY)[a]	Scaling Factor	Dose-Risk (person-rem/RY)	Number of Early Fatalities (per RY)	Number of Latent Fatalities (per RY)	Water Ingestion Pathway (person-rem/RY)
Internal Events	1.2E-6	1	3.00E-01	6.732.84E-08	2.392.32E-04	1.63E-02
Internal Fire	1.8E-6	1.50	4.50E-01	1.01E-074.26E-08	3.593.48E-04	2.45E-02
Internal Flood	1.4E-6	1.17	3.51E-01	7.873.32E-08	2.802.71E-04	1.91E-02
LPSD	2.0E-7	0.167	5.01E-02	1.12E-084.74E-09	3.993.87E-05	2.72E-03
Total	4.6E-6	-	1.15E-00	2.581.09E-07	9.178.90E-04	6.25E-02

ACC-06

a) Core damage frequency values are from Table 5 of the DC Applicant's Environmental Report (MHI 2007).

b) The values for internal fire, internal flood, and LPSD are calculated as described on page 7.2-7. ACC-06