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December 22, 2000

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29
GGNS Pilot Full-Scope Application of NUREG-1465 Alternative Source Term Insights, Additional Information, Supporting LDC 2000-070

Reference:
1) GNRO-2000/20005, GGNS Letter to NRC, Pilot Full-Scope Application of NUREG-1465 Alternative Source Term Insights, LDC 1999-082

2) GNRO-2000/00080, GGNS Pilot Full-Scope Application of NUREG-1465 Alternative Source Term Insights, Response to RAI, Proposed Amendment to the Operating License LDC 2000-070

GNRO-2000/00100

Gentlemen:

Grand Gulf Nuclear Station (GGNS) is a pilot plant in the collaborative efforts of the Nuclear Regulatory Commission (NRC). Nuclear Energy Institute (NEI), and the Electric Power Research Institute (EPRI) for the implementation of the NRC research efforts documented in NUREG-1465. On January 21, 2000 GGNS submitted reference 1 requesting approval to implement the alternative source term concept. The NRC provided two requests for additional information (RAI's) dated May 9, 2000 and August 9, 2000. GGNS provided partial responses on June 29, 2000 and September 1, 2000. On October 26, 2000 (reference 2) GGNS provided the balance of the response to the RAI's.

As identified in attachment 1 to reference 2 GGNS indicated it would provide additional information, concerning: Suppression Pool pH and Iodine Re-evolution Methodology, Suppression Pool pH Analysis, and Doses from Iodine re-evolution. This letter contains the information as stipulated in reference 2, which addresses all the requested information by the NRC.

This letter contains no new commitments for the Grand Gulf Nuclear Station.

The revised GGNS suppression pool pH methodology considering the impact of sodium pentaborate is included as Attachment 1. The GGNS Post-Accident Suppression Pool pH transient has been re-analyzed in Attachment 2 and shown to remain alkaline for the duration of the accident. As such, no iodine re-evolution or associated doses are postulated. Attachment 3 contains responses to the NRC questions that have arisen during recent conference calls.

Yours truly,

LFD
attachment: 1. Suppression Pool pH and Iodine Re-Evolution Methodology
2. Suppression Pool pH Analysis Calculation No. XC-Q1111-98013
3. Response to NRC Questions from Recent Conference Calls

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Attachment 1

Suppression Pool pH and Iodine Re-Evolution Methodology

ENTERGY OPERATIONS

Engineering Report

For

SUPPRESSION POOL PH

AND IODINE RE-EVOLUTION

METHODOLOGY

APPLICABLE SITES

ANO Unit 1: ☐	GGNS: ☒	W-3: ☐
ANO Unit 2: ☐	RBS: ☐	ECH: ☐

Safety Related: X Yes
____ No

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TABLE OF CONTENTS

1.0 INTRODUCTION **3**

2.0 BACKGROUND **3**

3.0 GGNS MODEL DESCRIPTION **4**
3.1 Hydriodic Acid Production 6
3.2 Nitric Acid Production 7
3.3 Hydrochloric Acid Production 8
3.4 Cesium Hydroxide Production 10
3.5 Summary 12

4.0 SAMPLE PH CALCULATION **13**

5.0 IODINE RE-EVOLUTION **15**
5.1 Methodology 15
5.2 Partition Coefficient 17
5.3 Governing Formula 18

6.0 CONTROL STRATEGIES **20**
6.1 Standby Liquid Control 20

7.0 REFERENCES **22**

ATTACHMENT 1 - SAMPLE PH CASE RESULTS
APPENDIX A - HYDROCHLORIC ACID PRODUCTION MODEL

1.0 INTRODUCTION

Section 5.2 of NUREG-1465 [1] reports that the re-evolution of iodine can impact the plant radiological analyses if the suppression pool pH drops below a value of 7. Specifically, for those BWRs that credit the long-term retention of iodine in the suppression pool via sprays or pool scrubbing, NUREG-1465 suggests that the maintenance of a pH at or above a level of 7 should be demonstrated. Since BWRs generally do not have a requirement to control post-accident pool pH, the expected pool pH transient has not been evaluated. This report develops a methodology for calculating the suppression pool pH transient using the available NRC research results. This methodology explicitly considers the acids and bases expected to be available in BWR containments under post-accident conditions. Revision 2 adds the temperature dependence of the water ionization constant and bases the hydrochloric acid production term on an energy flux approach. Revision 3 adds methodology for considering standby liquid control (sodium pentaborate) as a pH buffer.

This methodology develops a reasonably bounding negative pH transient for application in radiological analyses in order to quantify (i) the timing requirements for pH control actions, (ii) the required inventories of pH control chemicals, and (iii) as input to the iodine re-evolution calculation in the event the pool pH is uncontrolled. In reality, the pool pH is not anticipated to experience this chemistry transient in the event of a recirculation line break since the EP actions directing operators to flood the containment with outside water sources would result in the significant dilution of any acids in the suppression pool.

Some background on pool pH issues is reported in Section 2. The GGNS model is developed in Section 3 and applied to a sample plant in Section 4. Section 5 develops a method for determining the amount of iodine re-evolution in the event the pool pH is calculated to drop below 7.0. Section 6 describes a pH control strategy while Section 7 lists the references applied in this report.

2.0 BACKGROUND

Unlike PWRs, BWRs currently do not have requirements to control post-accident suppression pool pH. PWRs include boric acid in the reactor coolant which introduces a negative pH transient at the onset of the accident and the PWR sump dose rates are an order of magnitude higher than in BWRs as reported in Section 2.2.4 of NUREG/CR-5950 [2] increasing the production rate of nitric acid (as discussed in Section 3.2). BWRs contain a much larger water inventory in the suppression pool since this volume is credited for condensation of the released reactor coolant, thereby suppressing the containment pressurization transient. As a result, the extent of iodine re-evolution can be significantly higher in PWRs. As illustrated in Figure 4.1 of NUREG/CR-5732 [3], an uncontrolled sump pH can result in the re-evolution of nearly 100% of the dissolved iodine in a PWR sump and as much as ~25% in BWR suppression pools. This figure also illustrates that essentially no iodine is re-evolved if the pool pH is controlled.

3.0 GGNS MODEL DESCRIPTION

Through basic chemistry relationships, the pH of a solution is directly related to the concentration of H^+ ions by the formulas:

$$pH = -\log\left([H^+]\right)$$
$$[H^+]\cdot[OH^-] = K_w(T) \qquad \text{(3-0a)}$$
$$-\log K_w(T) = 15.5129 - 2.24E\text{-}2 * T + 3.352E\text{-}5 * T^2$$

where:

$[H^+]$ = concentration of H^+ ions in moles per liter,
$[OH^-]$ = concentration of OH^- ions in moles per liter,
K_w = ionization constant for water[1], and
T = pool temperature (°F) up to 212 °F

The temperature dependence of the ionization constant is taken from Reference 7 and the associated curve fit is documented in the following table.

Table 3-1 Water Ionization Constant Data Fit

Temp (°C)	Temp (°F)	-LOG(K_w)	Data Fit
25	77	13.995	13.987
30	86	13.836	13.834
35	95	13.685	13.687
40	104	13.542	13.546
45	113	13.405	13.410
50	122	13.275	13.279
55	131	13.152	13.154
60	140	13.034	13.034
65	149	12.921	12.919
70	158	12.814	12.810
75	167	12.712	12.707
80	176	12.613	12.609
85	185	12.520	12.516
90	194	12.428	12.429
95	203	12.345	12.347
100	212	12.265	12.271

A methodology to calculate the concentration of H^+ ions in the suppression pool will be developed in this section. Equation 3-0a can then be applied to determine the pool pH value.

[1] Although the impact of pool temperature on the ionization constant is small at the depressed pH values associated with iodine re-evolution, it's consideration is necessary to accurately characterize the pH values of alkaline solutions at elevated temperatures.

As discussed in Section 2 of NUREG/CR-5950, a variety of acids and bases are produced in containment during accidents. These chemicals are addressed individually below:

Boric Acid is an acid introduced from the reactor coolant system, refueling water storage tanks, and containment sprays. These sources are not borated in BWRs and are consequently not considered in this methodology.

Hydriodic Acid is a strong acid introduced into the containment with the release of iodine. As reported in Section 2.2.2 of NUREG/CR-5950 and Section 4.5 of NUREG-1465, no more than 5% of the core iodine inventory is expected to be released from the RCS in this chemical form. As such, the production of this acid is explicitly considered in this methodology.

Carbon Dioxide depresses the pH of pure water by absorption. Carbonic acid is a weak acid and is expected to be insignificant compared to other acids produced in containment during an accident. However, the initial pool pH may be depressed below 7.0 during normal operations by the absorption of CO_2. As such, the effects of carbon dioxide will be considered in the initial condition assumed for pool pH.

Nitric Acid is a strong acid produced by the irradiation of water and air during accidents. The production of this acid is explicitly considered in this methodology.

Hydrochloric Acid is a strong acid produced by the radiolysis of chloride-bearing insulation during accidents. The production of this acid is explicitly considered in this methodology. The pyrolysis of chloride-bearing insulation produces HCl at temperatures near 572 °F (per Section 2.2.5.3 of NUREG/CR-5950). Since drywell or containment temperatures above 330 °F are not postulated during accidents in BWRs, pyrolysis is not considered in this methodology.

Cesium Hydroxide is a strong base introduced into the containment with the release of cesium. The production of this base is explicitly considered in this methodology.

Core-Concrete Aerosols are basic materials produced from the interaction of the molten core materials with the concrete containment. Since SECY-94-302 [5] reports that the core damage may be assumed to be arrested after the in-vessel release phase, these chemicals are not considered in this methodology.

3.1 Hydriodic Acid Production

Iodine is released from the core as fuel failure occurs. Table 3.12 of NUREG-1465 indicates that 5% of the core halogen inventory is released during the gap release phase while an additional 25% is released during the early in-vessel phase. The core damage is assumed to be arrested after the in-vessel release phase in accordance with the NRC recommendation in SECY-94-302. Consistent with Section 4.5 of NUREG-1465, no more than 5% of the iodine exiting the reactor coolant system will be composed of I and HI. This methodology will conservatively assume that all 5% of this release is in the form of HI in order to maximize the acid generation. This release process is assumed to occur at a constant rate over the release period (*i.e.,* 30 and 90 minutes for the gap and early in-vessel release phases, respectively). The core iodine inventory includes the stable I^{127} species to maximize the amount of acid produced. The following equations describe this release.

$$\frac{d}{dt}[\mathrm{HI}] = \frac{0.05 * 0.05 m_I}{V_{pool} * 0.5\ hr} \quad \text{(Gap Release Phase)} \tag{3-1a}$$

$$\frac{d}{dt}[\mathrm{HI}] = \frac{0.05 * 0.25 m_I}{V_{pool} * 1.5\ hr} \quad \text{(Early In-Vessel Release Phase)} \tag{3-1b}$$

where:

m_I = core iodine inventory (gram-mols), and
V_{pool} = volume of the suppression pool (liters).

A conservatively small pool volume should be applied as generally used in the plant containment thermal-hydraulic analyses. In addition, any changes to the pool volume throughout the duration of the accident should be addressed such as losses due to humidity and ESF leakage and increases from the reactor coolant inventory and any expected pool water supplements. For example, at GGNS, the suppression pool makeup system would automatically transfer water from the upper containment pools into the suppression pool within 30 minutes in the event of a LOCA.

This release can be integrated considering the 1/2-hour BWR gap release duration to yield the following equations during the gap and in-vessel release periods.

$$[\mathrm{HI}](t) = \frac{m_I}{200 * V_{pool}} * \left(t - t_{gap}\right) \quad \text{(Gap Release Phase)} \tag{3-1c}$$

$$[\mathrm{HI}](t) = \frac{m_I}{120 * V_{pool}} * \left[t - \left(0.5 + t_{gap}\right)\right] + \frac{m_I}{400 * V_{pool}} \quad \text{(Early In-Vessel Release Phase)} \tag{3-1d}$$

where:

t = time into accident (hrs), and
t_{gap} = onset of gap release (hrs).

3.2 Nitric Acid Production

Section 2.2.4 of NUREG/CR-5950 and Section 3.3.1.1 of NUREG/CR-5732 report the experimental results of irradiation-assisted nitric acid production with the following constant (based on data at 86 °F):

$$\frac{0.007 \text{ molecules } HNO_3}{100 \text{ eV}}$$

This constant is assumed to be conservative for water temperatures above 86 °F considering the reduced solubility of nitrogen at elevated temperatures. For a water density of 1 g/cc, this constant can be calculated to be 7.3E-6 moles of nitric acid per liter per Megarad of absorbed energy which matches the reported generation term in Section 2.2.4 of NUREG/CR-5950.

$$\frac{0.007 \text{ molecules}}{100 \text{ eV}} \cdot \frac{\text{eV}}{1.60219\text{E-}12 \text{ erg}} \cdot \frac{\text{mole}}{6.022\text{E}23 \text{ molecules}} \cdot \frac{100 \text{ ergs}}{\text{rad} - \text{g}} \cdot \frac{10^6 \text{ rads}}{\text{Megarad}} \cdot \frac{1 \text{ g}}{\text{cc}} \cdot \frac{1000 \text{ cc}}{\text{liter}}$$

$$= 7.3\text{E} - 6 \frac{\text{moles}}{\text{L} - \text{Megarad}}$$

Water densities less than 1 g/cc are applicable in post-accident suppression pools making the above constant conservative. Alternatively, an analysis considering the mass of water in the pool can be applied.

Since nitric acid is a strong acid, $[H^+]$ and $[NO_3^-]$ increase by 7.3E-6 for each Megarad received by the pool, the following formula can be developed.

$$\frac{d}{dt}[HNO_3] = 7.3E-6 \frac{mol\ HNO_3}{L - Megarad} * \dot{X}(t)_{pool} \qquad (3\text{-}2a)$$

where:

$\dot{X}(t)_{pool}$ = the time-dependent dose rate[2] in the suppression pool (Megarads/hr).

The previous equation can be integrated to yield the nitric acid concentration throughout the accident.

$$[HNO_3](t) = 7.3E-6 \int_0^t \dot{X}(t)_{pool} dt \qquad (3\text{-}2b)$$

where:

t = time into accident (hrs).

Since the 30-day suppression pool dose rates generated with TID-14844 source terms have been shown to bound those generated with NUREG-1465 (per Figure 5 of SECY-98-154), EQ dose rates generated by the current TID methods are conservative and acceptable for determining the HNO_3 production rate.

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[2] Note that this dose rate represents an energy deposition to the pool water such that all decay mechanisms need to be considered including both gamma and beta emissions. Existing pool analyses may neglect beta decay if developed for calculated doses to equipment external to the pool.

3.3 Hydrochloric Acid Production

The radiolysis of chloride-bearing cable jacketing will result in the production of HCl vapor as reported in Section 2.2.5.2 of NUREG/CR-5950. A model for the production of HCl from cable jacketing is developed in Appendix A based on the approach in NUREG/CR-5950 and concludes the HCl produced from the radiolysis of a cable is predicted by the following formula.

Beta:
$$M_{HCl}(t) = 3.512E-20 \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{1}{\mu_\beta^{air}} \int_0^t \frac{E_\beta}{V} dt \qquad (3\text{-}3a)$$

Gamma:
$$M_{HCl}(t) = 3.512E-20 \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{\left(1-e^{-\mu_\gamma^{air} \cdot r}\right)}{\mu_\gamma^{air}} \cdot \left(1-e^{-\mu_\gamma^{H} \cdot th}\right) \int_0^t \frac{E_\gamma}{V} dt \qquad (3\text{-}3b)$$

where:

M_{HCl} = total HCl production (g mols).

$\frac{E_\beta}{V}$ = energy release rate per unit volume (MeV/hr-cm^3) for beta radiation,

$\frac{E_\gamma}{V}$ = energy release rate per unit volume (MeV/hr-cm^3) for gamma radiation,

μ_β^{air} = linear absorption coefficient of beta radiation in air (cm^{-1}),

μ_γ^{air} = linear absorption coefficient of gamma radiation in air (cm^{-1}),

μ_γ^{H} = linear absorption coefficient of gamma radiation in Hypalon (cm^{-1}),

ℓ = cable length (cm),

th = thickness of the Hypalon jacket (cm),

R_o = cable radius (cm), and

t = time into accident (hrs).

Equations 3-3a and 3-3b can be applied to all cables in the containment to determine the total HCl generation in containment. Dose rates and the cable inventories may vary throughout containment such that local dose rates can be applied to local cable quantities. Although it is anticipated that a significant portion of the HCl produced from cable radiolysis would react with the plentiful metal surface areas in the containment (*e.g.,* gratings, etc.), the gaseous HCl will be conservatively assumed to be immediately dissolved in the suppression pool water. In the suppression pool, the HCl concentration is given by:

$$[HCl](t) = \frac{1}{V_{pool}} \sum_{\substack{all \\ cables}} M_{HCl}^{\gamma}(t) + M_{HCl}^{\beta}(t) \qquad (3\text{-}3b)$$

The following considerations may be used for determining the HCl production from chloride-bearing cable jackets.

1. Consistent with NUREG-0588 [4], Rev. 1, Section 1.4(9), the beta dose to cables arranged in cable trays is reduced by a factor of 2 due to localized shielding by other cables and the cable tray itself.

2. Cables in conduit or totally enclosed raceways will not contribute any HCl to the suppression pool. This assumption is consistent with Section 2.2 of NUREG-1081 and Table 2.2 of NUREG/CR-5950, which does not include the 15% of

cables at Fermi that are routed in conduit. These conduits are water-resistant and generally routed between sealed terminal boxes at which the cables terminate or are routed through other conduit. There is no significant driving force for source terms to enter this conduit and any potential diffusion of containment atmosphere into these conduits would be a long-term process occurring after a significant decay time and result in minimal dose rates.

In addition, these cables are shielded from any beta dose from the containment and drywell atmosphere outside the conduit due to the metal conduit structure. Although some HCl production may occur due to gamma radiation from the containment and drywell atmosphere outside the conduit, the limited amounts of gaseous HCl evolved from these cables would most likely react with the metal conduit structure considering the tortuous path out of the conduit and therefore is assumed to not enter the suppression pool.

3. Since the airborne dose rates generated with TID-14844 source terms have been shown to bound those generated with NUREG-1465 in SECY-98-154 [6], EQ dose rates generated by the current TID methods are acceptable in determining the HCl evolution rate.

3.4 Cesium Hydroxide Production

Cesium is released from the core as fuel failure occurs. Table 3.12 of NUREG-1465 indicates that 5% of the core alkali metal inventory (including cesium) is discharged during the gap release phase while an additional 20% is discharged during the early in-vessel phase. The core damage is assumed to be arrested after the in-vessel release phase in accordance with the NRC recommendation in SECY-94-302. For iodine, Table 3.12 of NUREG-1465 indicates that 5% of the core halogen inventory is discharged during the gap release phase while an additional 25% is discharged during the early in-vessel phase.

Consistent with Section 4.5 of NUREG-1465, the iodine exiting the reactor coolant system will be composed of at least 95% cesium iodide (CsI). These cesium and iodide inventories include the stable isotopes of I^{127} and Cs^{133}. The cesium that is not in the chemical form of CsI is assumed to exit the RCS in the form of cesium hydroxide (CsOH) and be deposited into the suppression pool[3]. This CsOH inventory is illustrated in Figure 3-1 below.

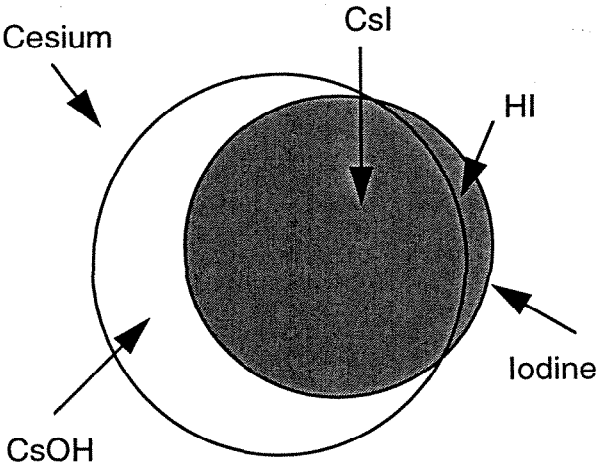

Figure 3-1 CsOH Inventory Assumption

Both the cesium and iodine core inventories grow throughout the cycle with the cesium inventory increasing significantly. Therefore, the EOC core exposure will result in the largest CsOH release. Although a BOC exposure may result in a reduced CsOH release and lower pool pH, the core source term inventory, pool iodine concentration, EQ dose rates, and core decay heat would all be lower at this BOC exposure. Since the radiological analyses are based on EOC conditions, the EOC core source terms for cesium and iodine are considered appropriate for the pool pH analysis.

This release process is assumed to occur at a constant rate over the release period (*i.e.,* 30 and 90 minutes for the gap and early in-vessel release phases, respectively). The following equations describe this release.

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[3] Although, in reality, some CsOH may remain airborne in the containment, this assumption is expected to be sufficiently conservative when taken in conjunction with the assumption in Section 3.3 that all HCl evolved from cable radiolysis immediately enters the pool. Considering the hygroscopic nature of CsOH and its release in the vicinity of the suppression pool, the probability of CsOH migrating to the pool is considered higher than that of HCl produced from cable radiolysis in locations that may be some distance from the pool and are likely to contain large metal surface areas.

$$\frac{d}{dt}[\mathrm{CsOH}] = \frac{0.05 m_{Cs} - 0.95 * 0.05 m_I}{V_{pool} * 0.5\ hr} \quad \text{(Gap Release Phase)} \tag{3-4a}$$

$$\frac{d}{dt}[\mathrm{CsOH}] = \frac{0.2 m_{Cs} - 0.95 * 0.25 m_I}{V_{pool} * 1.5\ hr} \quad \text{(Early In-Vessel Release Phase)} \tag{3-4b}$$

where:

m_{Cs} = core cesium inventory (gram-mols)[4].

This release can be integrated considering the 1/2-hour BWR gap release duration to yield the following equations during the gap and in-vessel release periods.

Gap Release Phase:

$$[\mathrm{CsOH}](t) = \frac{0.1 m_{Cs} - 0.095 m_I}{V_{pool}} * \left(t - t_{gap}\right) \tag{3-4c}$$

Early In-Vessel Release Phase:

$$[\mathrm{CsOH}](t) = \frac{0.4 m_{Cs} - 0.475 m_I}{3 * V_{pool}} * \left[t - \left(0.5 + t_{gap}\right)\right] + \frac{0.05 m_{Cs} - 0.0475 m_I}{V_{pool}} \tag{3-4d}$$

[4] Since cesium is being credited for a beneficial effect, a conservatively small cesium inventory should be applied.

3.5 Summary

The combined effects of the acids and bases that occur during BWR accidents can be calculated as a function of time and initial pool pH with the formulas in Equation 3-0a by separating the acid and base generation terms.

$$[H^+](t) = [H^+](t=0) + \int_0^t \frac{d}{dt}[HI](t)dt + \int_0^t \frac{d}{dt}[HNO_3](t)dt + \int_0^t \frac{d}{dt}[HCl](t)dt$$

$$= 10^{-pH_0} + \int_0^t \frac{d}{dt}[HI](t)dt + \int_0^t \frac{d}{dt}[HNO_3](t)dt + \int_0^t \frac{d}{dt}[HCl](t)dt \qquad (3\text{-}5a)$$

$$[OH^-](t) = [OH^-](t=0) + \int_0^t \frac{d}{dt}[CsOH](t)dt = \frac{10^{-14}}{10^{-pH_0}} + \int_0^t \frac{d}{dt}[CsOH](t)dt \qquad (3\text{-}5b)$$

where:

pH_0 is the initial pool pH value,
[HI](t) is given in Equations 3-1c and 3-1d,
$[HNO_3](t)$ is given is Equation 3-2b,
[HCl](t) is given in Equation 3-3b, and
[CsOH](t) is given in Equations 3-4c and 3-4d.

Some of the generated H^+ ions will be neutralized with the OH^- ions such that Equation 3-0a will be true at the final conditions.

$$([H^+] - x)\cdot([OH^-] - x) = K_w(T)$$
$$-\log K_w(T) = 15.5129 - 2.24E\text{-}2 * T + 3.352E\text{-}5 * T^2 \qquad (3\text{-}5c)$$

Solving for x leads to the final H^+ concentration of:

$$[H^+]_{final} = [H^+] - x = [H^+] - \frac{[OH^-] + [H^+] - \sqrt{([OH^-] + [H^+])^2 - 4\cdot([OH^-]\cdot[H^+] - 10^{-(15.5129 - 2.24E\text{-}2*T + 3.352E\text{-}5*T^2)})}}{2} \qquad (3\text{-}5d)$$

The pool pH can then be directly calculated from Equation 3-0a as

$$pH = -\log([H^+]_{final}) \qquad (3\text{-}5e)$$

4.0 SAMPLE PH CALCULATION

This section develops a sample calculation applying the methodologies developed in Sections 3 with the following input parameters.

Sample Case:

The pH transient for a BWR with a suppression pool water volume of 3.5E6 liters is evaluated based on an initial pH value of 6.0 (based on a normal pool temperature of 77 °F). This plant has 150,000 pounds of chloride-bearing cable insulation in containment, of which 50% is run in conduit and the remainder is in cable trays. All this cable is identical to the NRC model cable in Appendix A. The core inventories of cesium and iodine have been calculated to be 2500 (minimum) and 200 (maximum) gram mols, respectively. The BWR generic gap release time is 121 seconds. The containment has a radius of 63 feet (1920 cm) and the post-accident pool temperature drops linearly from 150 °F at 1 hour to 120 °F at 30 days. The 30-day integrated sump radiation dose is 10 Megarads while the 30-day containment gamma and beta integrated airborne energy depositions are 4E11 MeV/cc and 6E12 MeV/cc, respectively.

Solution:

This sample can be solved on a spreadsheet with the formulas summarized in Section 3.5. The results are illustrated in Figure 4-1 and reported in Attachment 1. The final results can be checked as follows.

The initial H^+ concentration (in gram-mols per liter) can be determined from the initial pool pH as 1.0E-6 from Equation 3-0a. From Section 3.1, 5% of the released iodine is assumed to enter the pool as HI. With 30% of the core iodine inventory released, the HI concentration can be calculated as 8.5714E-7.

$$[HI]_{final} = \frac{0.05 * 0.3 * m_I}{V_{pool}} = \frac{0.05 * 0.3 * 200}{3.5E6} = 8.5714E-7$$

From Section 3.2, the final HNO_3 concentration can be calculated from the final integrated sump dose as 8.76E-5.

$$[HNO_3]_{final} = 7.3E-6 * \int_0^{720} \dot{X}(t)_{pool}\, dt = 7.3E-6 * 12 = 8.76E-5$$

The HCl concentration can then be calculated from the final integrated airborne dose. Neglecting the cable in conduit and reducing the beta dose by a factor of two for the 75,000 pounds of cable run in trays, the HCl concentration can be calculated to be 1.2069E-4.

$$[HCl]_{final} = \frac{3.512E-20 \frac{g\text{-}mol}{MeV} * 973 \frac{cm^2}{lb} * M_{cable} * \left[\frac{0.5}{\mu_\beta^{air}} * \int_0^{720} \dot{X}_\beta(t)dt + \frac{\left(1-e^{-\mu_\gamma^{air} \cdot r}\right)}{\mu_\gamma^{air}} \cdot \left(1-e^{-\mu_\gamma^{H} \cdot th}\right) * \int_0^{720} \dot{X}_\gamma(t)dt\right]}{3.5E6}$$

$$= \frac{3.512E-20 * 973 * 75{,}000 * \left[\frac{0.5}{0.0198} * 6E12 + \frac{0.069}{3.74E-5} * 0.0179 * 4E11\right]}{3.5E6} = 1.2069E-4$$

From Section 3.4, 95% of the released iodine is assumed to enter the pool as CsI with the remainder of the cesium as CsOH. With 25% of the core cesium inventory released, the CsOH concentration can be calculated as 1.62286E-4.

$$[CsOH]_{final} = \frac{0.25 * m_{Cs} - 0.95 * 0.3 * m_I}{V_{pool}} = \frac{0.25 * 2500 - 0.95 * 0.3 * 200}{3.5E6} = 1.62286E-4$$

The total H^+ concentration is the sum of the previous results.

$$[H^+]_{calc} = 1E-6 + 8.5714E-7 + 8.76E-5 + 1.2069E-4 = 2.10147E-4$$
$$[OH^-]_{calc} = 1E-14/1E-6 + 1.62286E-4 = 1.62296E-4$$

The final pH is determined with the neutralized portion, x, calculated with Equation 3-5d to be 1.62295E-4. The final pH can then be calculated to be 4.32.

$$pH = -\log([H^+]_{calc} - 1.62295E-4) = -\log(4.7851E-5) = 4.32$$

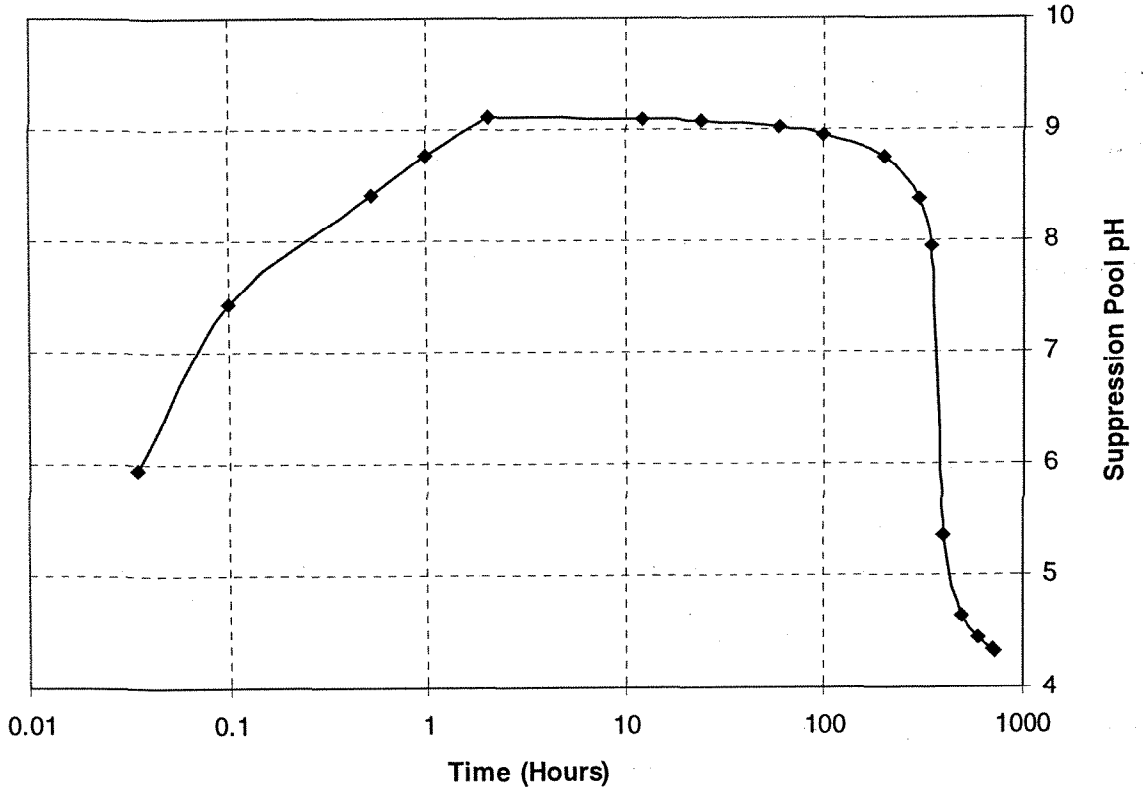

Figure 4-1 Sample Results

5.0 IODINE RE-EVOLUTION

As shown in Figure 4-1, the pool pH may drop below a value of 7 depending on plant-specific parameters such as the plant cable inventory or pool volume. This section develops a methodology for determining the amount of iodine that may evolve from a pool with a pH less than 7 based on the NRC research in NUREG/CR-5950. Specifically, an equation describing the equilibrium concentration of elemental iodine in the air volume above the pool is developed as a function of the pool pH, temperature, and iodine concentration.

5.1 Methodology

Aqueous iodine will exist in water pools in both I^- and I_2 species. Appendix C of NUREG/CR-5950 derives the following relationship between the dissolved iodine ions [I^-] and the aqueous I_2 concentration.

$$[I_2]_{aq} = \frac{[H^+]^2 [I^-]^2_{aq}}{d + e[H^+]} \qquad (5\text{-}1)$$

where:

- $[I_2]$ = concentration of elemental iodine (g-moles/liter)
- d = 6.05E-14 ± 1.83E-14
- e = 1.47E-09
- $[H^+]$ = concentration of H^+ ion (g-moles/liter)
- $[I^-]$ = concentration of ionic iodine (g-moles/liter)

In order to maximize the amount of I_2 in solution (and consequently the amount in the gas phase), the conservative value of the "d" parameter should be the lower of the specified range or 4.22E-14. Although these values are based experimental data at 25 °C, Appendix C of NUREG/CR-5950 indicates that this model conservatively over-predicts the conversion to I_2 at higher temperatures.

The total iodine concentration in the pool is given by the following expression per Section 3.2 of NUREG/CR-5950 and would include the non-radioactive isotope of iodine (*i.e.*, I^{127}).

$$[I]_{aq} = 2 * [I_2]_{aq} + [I^-]_{aq} \qquad (5\text{-}2)$$

where:

- $[I]_{aq}$ = total iodine concentration (g-atoms/liter)[5]

---

[5] As described in Section 3.2 of Reference 5, it is convenient to use g-atom rather than mol in aqueous radioactive iodine concentrations because I_2 contains 2 g-atom I per mol while I^- contains only 1 g-atom. For each radioactive isotope of iodine, the total iodine concentration in g-atoms/liter can be calculated from the activity and pool volume as:

$$[I]_{aq} = \frac{A_i(Ci) * 3.7E10 \frac{atoms}{Ci - s}}{\lambda_i(s^{-1}) * 6.022E23 \frac{atoms}{g - atom} * Vol(liters)}$$

Eliminating the variable for the ionic iodine parameter [I^-] and considering that $[H^+]=10^{-pH}$, the following equation relates the aqueous I_2 concentration to the pool pH and the total iodine concentration [I].

$$[I_2]_{aq} = \frac{[I]_{aq}}{2} + \frac{d + e10^{-pH}}{8 * 10^{-2pH}} - \frac{1}{8 * 10^{-pH}} \sqrt{\frac{\left(d + e10^{-pH}\right)^2}{10^{-2pH}} + 8[I]_{aq} * \left(d + e10^{-pH}\right)} \qquad (5\text{-}3)$$

Applying the nominal value of the "d" parameter of 6.05E-14, the fraction of iodine in the I_2 species (*i.e.*, $2[I_2]/[I]$) can be determined as a function of pH for various total iodine concentrations, [I]. The results are plotted below and are identical to those presented in Figure 3.1 of NUREG/CR-5950.

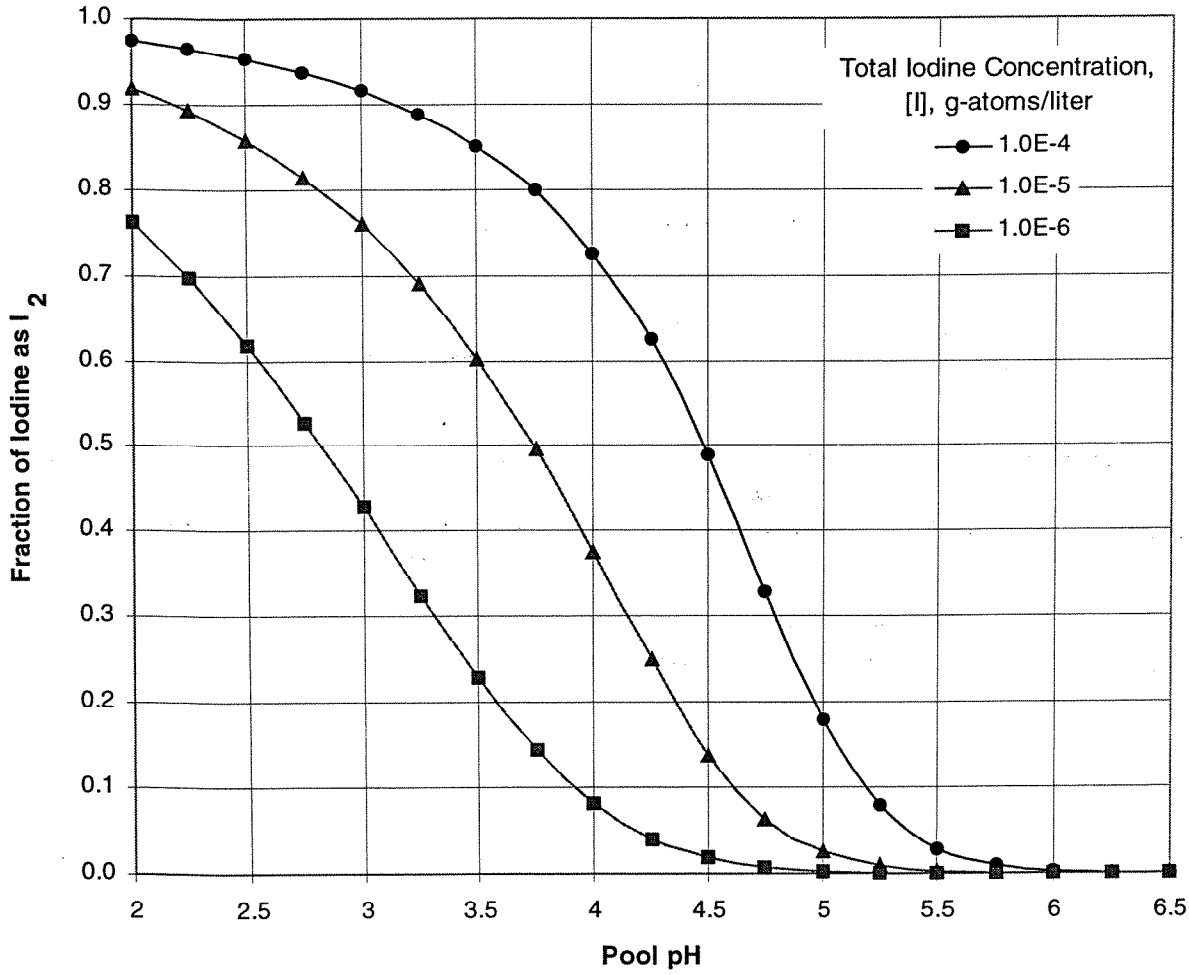

Figure 5-1 Benchmark Model Results for Aqueous Iodine

Considering the non-linear behavior of this Equation 5-3, the aqueous I_2 concentration for each isotope cannot merely be calculated individually for each isotope, but must be calculated based on the total iodine concentration. For example, the total aqueous iodine concentration for the isotopic concentrations reported in Table 5-1 is 8E-6 g-atoms/L. Based on this <u>total</u> iodine

concentration, Equation 5-3 predicts a total aqueous I_2 concentration of 3.63E-6 g-mols/L at a pool pH of 4 while, if this concentration were calculated for each isotope and summed, a total aqueous I_2 concentration of 3.417E-6 g-mols/L would be predicted as shown in Table 5-1.

Table 5-1 Example Isotopic Distribution

Isotope	Aqueous Concentration (g-atoms/L)	Isotopic I_2 Concentration based on Eq. 4-1 (g-mols/L) at pH of 4
I-131	5E-6	2.21E-6
I-132	1E-6	3.81E-7
I-133	2E-6	8.26E-7
Totals	8E-6	3.417E-6

Consequently, the total pool iodine concentration (including the stable isotope I-127) should be applied to calculate the total aqueous I_2 concentration. For the case above, since the I-131 is 62.5% of the pool iodine inventory, the I_2^{131} concentration in the pool would be 2.27E-6 g-mols/L (62.5% of 3.63E-6 g-mols/L) instead of the 2.21E-6 concentration based on only the I-131 concentration. The isotopic distribution for this example is listed in Table 5-2.

Table 5-2 Applied Aqueous Isotopic Distribution

Isotope	Percent of Pool Iodine	Isotopic I_2 Concentration (g-mols/L) at pH of 4
I-131	62.5	2.27E-6
I-132	12.5	4.54E-7
I-133	25	9.08E-7
Totals	100	3.63E-6

Section 3.1 of NUREG/CR-5950 cautions that the data at very low iodine concentrations (<~10^{-6} g-atom/L) are less reliable due to the formation of iodate. Fortunately, at these low concentrations, there is little iodine available for re-evolution.

5.2 Partition Coefficient

The gaseous concentration of iodine above the pool can be determined from the aqueous concentration of iodine in the pool via the partition coefficient (PC). The iodine partition coefficient is defined in Section 3.3.1 of NUREG/CR-5950 as:

$$PC = \frac{[I_2]_{aq}}{[I_2]_{gas}} = 10^{6.29-0.0149T} \qquad (5\text{-}4)$$

where

T = pool temperature (Kelvin)

$[I_2]_{aq}$ = the iodine concentration in the pool (g-moles/liter)

$[I_2]_{gas}$ = the iodine concentration in the air (g-moles/liter)

The temperature dependence of the iodine partition factor is illustrated below. As the pool temperature increases the iodine partition factor decreases, driving the iodine into the airborne phase.

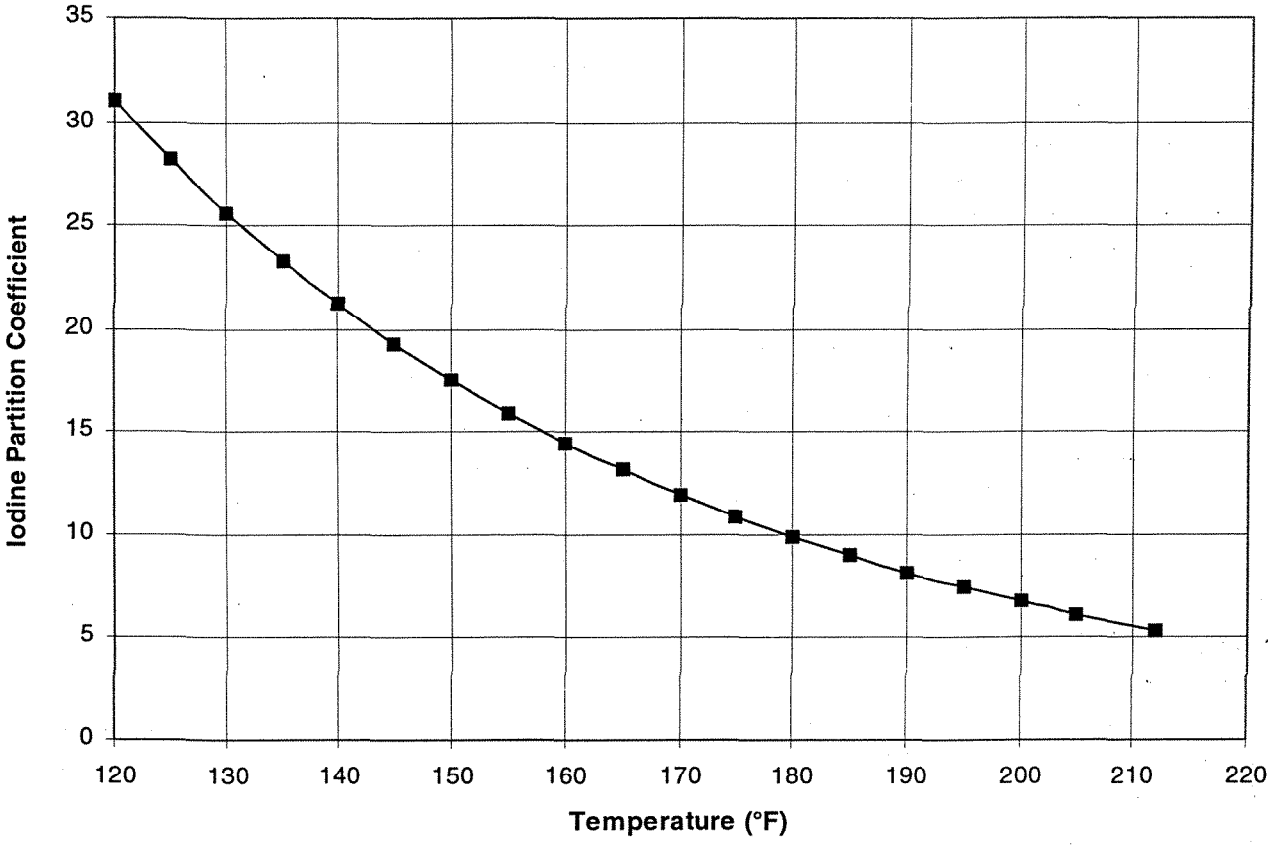

Figure 5-2 Iodine Partition Coefficient versus Temperature

5.3 Governing Formula

Combining Equations 5-3 and 5-4, the equilibrium concentration of iodine in the gaseous phase can be determined from the pool pH and temperature, and total aqueous iodine concentration as follows:

$$[I_2]_{gas} = \frac{[I_2]_{aq}}{PC} = \frac{\frac{[I]_{aq}}{2} + \frac{d + e10^{-pH}}{8 * 10^{-2pH}} - \frac{1}{8 * 10^{-pH}} \sqrt{\frac{\left(d + e10^{-pH}\right)^2}{10^{-2pH}} + 8[I]_{aq} * \left(d + e10^{-pH}\right)}}{10^{6.29 - 0.0149T}} \quad (5\text{-}5)$$

where:

$[I_2]_{gas}$ = iodine concentration in the air above the pool (g-moles/liter)

$[I]_{aq}$ = total iodine concentration in the pool (g-atoms/liter)

pH = pool pH

d = 4.22E-14

e = 1.47E-09

T = pool temperature (K)

Any differences in vapor pressure among the iodine isotopes in the pool are assumed to be negligible based on the relatively small differences in atomic weight. This assumption is conservative since the iodine isotopes with the relatively lower weights are I-127 and I-129 which have little or no dose consequences. As such, the iodine isotopic distribution in the gaseous phase above the pool can be assumed to be identical to the isotopic distribution in the pool.

6.0 CONTROL STRATEGIES

There are a variety of potential strategies to control the post-accident pool pH in nuclear plants. PWRs utilize baskets of tri-sodium phosphate (TSP) that dissolve into the sump water when the containment sprays are initiated. Other PWRs may use sodium hydroxide. These systems, however, are already designed into these plants and are ensured to be operable via existing Technical Specifications. In BWRs, a supply of a buffering sodium pentaborate solution is available with the Standby Liquid Control (SLC) system for injection into the reactor vessel. This capability may also be provided with additional alternate injection procedures for mixing a batch of sodium pentaborate in an outdoor storage tank and injecting it into the vessel or suppression pool.

6.1 Standby Liquid Control

Standby Liquid Control was generally introduced into BWRs to address the Anticipated Transient Without Scram (ATWS) rule in 10CFR50.62. This system consists of a tank of a sodium pentaborate solution with redundant injection pumps that are manually operated from the control room. This system can be initiated in the event of an ATWS to inject this boron-rich solution into the reactor vessel and shut down the reactor core in place of the inoperable control rods. Some plants enhance this shutdown effect by using a solution enriched in the neutron-absorbing isotope, Boron-10, with a corresponding lower sodium pentaborate concentration.

The SLC solution is aqueous sodium pentaborate ($Na_2B_{10}O_{16}$) which is prepared from stoichiometric quantities of borax ($Na_2B_4O_7 \cdot 10H_20$) and boric acid (H_3BO_3). This weak acid and its conjugate base will buffer the pool water at a pH corresponding to the following formula [10,11].

$$pH = pK_a + \log\frac{[anion]}{[acid]}$$

where:

pK_a = negative of the log of the acid dissociation constant
[anion] = borate concentration
[acid] = acid concentration

The dissociation of sodium pentaborate is given by the following formula [11]. Hence, each mole of sodium pentaborate provides 2 equivalents of borate and 8 equivalents of boric acid. The acid and anion concentrations can then be determined from the amount of sodium pentaborate that reaches the pool and the amount of acid produced. The adequacy of this approach was confirmed via a laboratory experiment [12].

$$Na_2B_{10}O_{16} + 16\,H_2O \leftrightarrow 2Na^+ + 2B(OH)_4^- + 8B(OH)_3$$

The temperature dependence of the dissociation constant for boric acid is listed below [7]. As shown in this table, this constant increases with temperature; however, the slope decreases as the solution temperature is increased. Therefore, linear extrapolation of this data to temperatures above 50 °C is expected to result in conservatively high dissociation constants and correspondingly lower pool pH values. Fitting a linear regression line through this data and adjusting the constant term such that all data points are bounded leads to the following equation for the temperature dependence of the boric acid dissociation constant where T is the solution temperature in °F.

$$K_a \cdot 10^{10} = 0.0585 * T + 1.309$$

Table 6-1 Temperature-Dependence of Boric Acid Dissociation Constant

Solution Temperature (°C)	Solution Temperature (°F)	Dissociation Constant ($K_a \cdot 10^{10}$)	Average Change in Dissociation Constant per °C	Fit of Dissociation Constant
5	41	3.63		3.71
10	50	4.17	0.108	4.23
15	59	4.72	0.11	4.76
20	68	5.26	0.108	5.29
25	77	5.79	0.106	5.81
30	86	6.34	0.11	6.34
35	95	6.86	0.104	6.87
40	104	7.38	0.104	7.39
50	122	8.32	0.094	8.45

As a test, the final pH of the sample calculation in Section 4 is calculated assuming that 5000 pounds of sodium pentaborate are injected into the suppression pool. At 30 days, this suppression pool is at 120 °F and the pK_a can be calculated as 9.08.

$$K_a \cdot 10^{10} = 0.0585 * 120 + 1.309 = 8.33$$
$$pK_a = -\log(8.33E-10) = 9.08$$

This injected 5000 pounds of sodium pentaborate is equal to 5543 g-moles based on a molecular weight of 410. This 5543 moles will result 11,086 equivalents of borate and 44,344 equivalents of boric acid. The 11,086 equivalents of borate are neutralized by the 167 (4.785E-5 eq./liter*3.5E6 liters) equivalents of strong acid, leaving 10,919 (11,086-167) equivalents of borate ions and 44,511 (44,344+167) equivalents of boric acid. The pH of this solution would therefore be 8.47 instead of the un-buffered value of 4.32.

$$pH = 9.08 + \log\left[\frac{\left(\frac{10,919}{3.5E6}\right)}{\left(\frac{44,511}{3.5E6}\right)}\right] = 8.47$$

7.0 REFERENCES

1. NUREG-1465, Accident Source Terms for Light-Water Nuclear Power Plants, dated February 1995.
2. NUREG/CR-5950, Iodine Evolution and pH Control, dated December 1992.
3. NUREG/CR-5732, Iodine Chemical Forms in LWR Severe Accidents, dated April 1992.
4. NUREG-0588, Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment, dated July 1981.
5. SECY-94-302, "Source Term-Related Technical and Licensing Issues Pertaining to Evolutionary and Passive Light-Water-Reactor Designs", dated December 19,1994.
6. SECY-98-154, "Results of the Revised (NUREG-1465) Source Term Rebaselining for Operating Reactors", dated June 30, 1998.
7. CRC Handbook and Chemistry and Physics, 73rd Edition, 1992-1993.
8. NUREG-1081, Post-Accident Gas Generation from Radiolysis of Organic Materials, dated September 1984.
9. NUREG/CR-1237, Best-Estimate LOCA Radiation Signature, dated January 1980.
10. S. Parker, McGraw Hill Encyclopedia of Chemistry, 1983
11. GEXI 2000-00157, M.A. Morris to G.E. Broadbent, "Suppression Pool pH", dated December 19, 2000.
12. GIN 2000-01204, G.E. Broadbent to Central File, "Post-Accident Suppression Pool pH Chemistry Results", dated December 18, 2000.

APPENDIX A - HYDROCHLORIC ACID PRODUCTION MODEL

The evolution of gaseous HCl from chloride-bearing cable is described in Section 2.2.5.2 of NUREG/CR-5950 [2]. Based on this description and the production model in Appendix B to NUREG/CR-5950, this appendix develops a generic methodology for calculating the HCl production rate for cables based on the individual cable dimensions.

A.1 Model Cable

The NRC's model for a cable is illustrated in Figure A-1. It is a 600-volt reactor power cable consisting of a copper core with ethylene-propylene rubber (EPR) elastomer insulation and a chloro-sulfonated polyethylene rubber (Hypalon) jacket. The dimensions are illustrated in Figure A-1 which is repeated from Section 4.2 of NUREG-1081 [8]. The material properties of the cable components and air are listed in Table A-1 as reported in Sections 2.1 and 4.2 of NUREG-1081. This model was originally reported in NUREG/CR-1237 [9] and has been referenced in NUREG-1081 and Appendix B to NUREG/CR-5950. The chloride-bearing component of this cable is the Hypalon jacket which is 27 weight percent chlorine per Section 2.2.5.1 of NUREG/CR-5950.

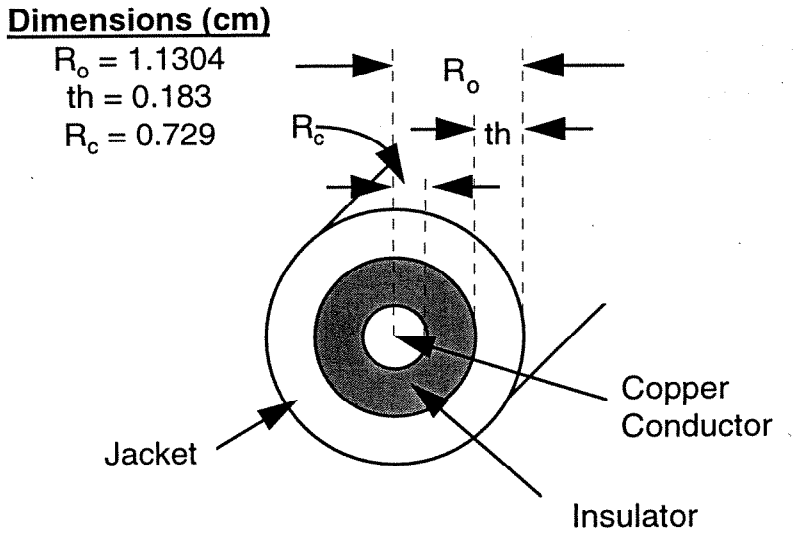

Figure A-1 NRC Cable Model

Table A-1 Cable and Air Material Properties

		Linear Absorption Coefficient (cm^{-1})	
Material	**Density (g/cm^3)**	**Beta Radiation**	**Gamma Radiation**
Hypalon	1.55	52.08	0.099
EPR	1.27	42.67	0.081
Air	5.88E-4	0.0198	3.74E-5

For the cable illustrated in Figure A-1, the absorption of a radiation flux at a radius, r, can be described from basic principles as:

$$\phi(r) = \phi(R_o)e^{-\mu(R_o - r)}$$

where:

μ = linear absorption coefficient (from Table A-1), and
R_o = outside cable radius.

Figure A-2 illustrates the beta and gamma radiation fluxes through the 78.7-mil (0.183-cm) Hypalon jacket of the NRC's model cable based on the linear absorption coefficients in Table A-1. Based on Figure A-2, the beta energy is completely absorbed by this Hypalon jacket in application while the gamma energy is only fractionally absorbed.

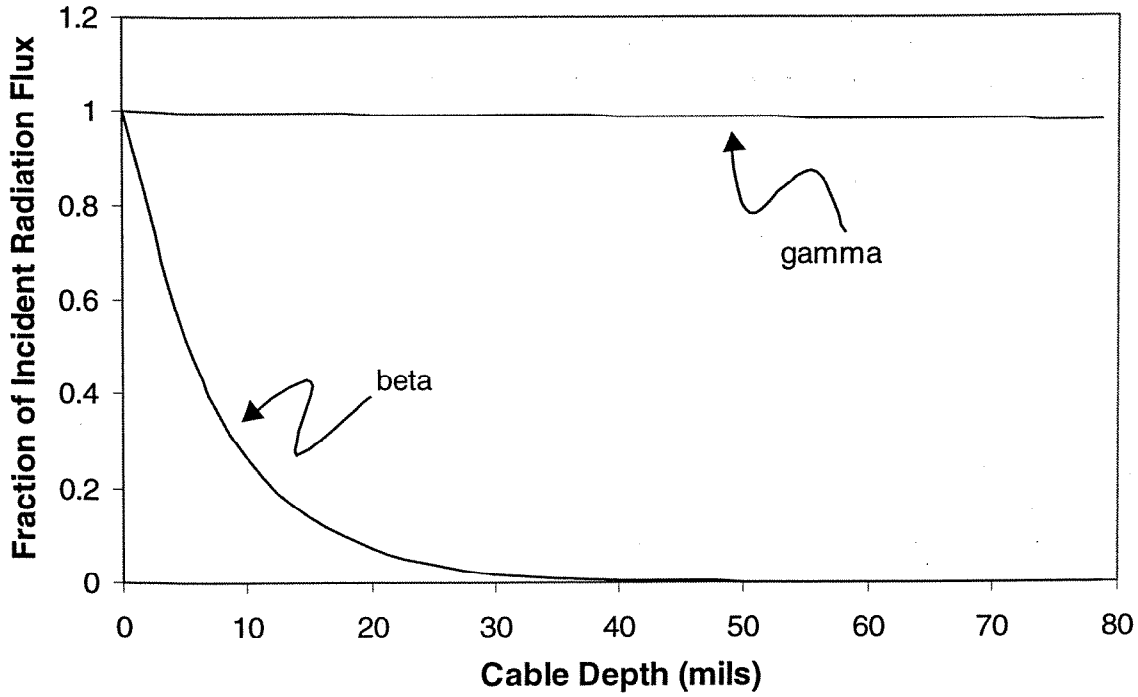

Figure A-2 Radiation Flux Profiles Through Hypalon Jacket of NRC's Model Cable

A.2 GGNS DETAILED MODEL

Similar to the approach in Appendix B to NUREG/CR-5950, the production of HCl from radiolysis can be given by the following formula.

$$R = G \cdot S \cdot \phi \cdot A \qquad \text{(A-1)}$$

where:

R = HCl production rate
G = radiation G value for Hypalon,
S = surface area of cable,
ϕ = incident radiation energy flux, and
A = absorption fraction of energy flux in the Hypalon jacket[6].

[6] Energy absorption in the insulator need not be considered since this component does not contain chlorine.

Radiation G Value

The radiation G value for Hypalon adopted in Appendix B of NUREG/CR-5950 is 2.115 molecules HCl per 100 eV. This G value is based on the energy absorbed by the polymer consistent with the footnote to Table 3 of NUREG-1081. As described in the NUREG, this value represents a balance between the increased HCl production at elevated temperatures expected during accidents and the neutralization potential of fillers in the cable. This value corresponds to 3.512E-20 g-mols HCl/MeV.

$$G = \frac{2.115\ \text{molecules}}{100\ \text{eV}} \cdot \frac{\text{g-mol}}{6.022\text{E}23\ \text{molecules}} \cdot \frac{10^6\ \text{eV}}{\text{MeV}} = 3.512\text{E}-20\ \frac{\text{g-mols}}{\text{MeV}}$$

Cable Surface Area

The surface area of the cable depends on the cable radius and length.

$$S = 2\pi \cdot R_o \cdot \ell \qquad \text{(A-2)}$$

where:

S = cable surface area (cm^2),
R_o = cable radius (cm), and
ℓ = cable length (cm).

Incident Energy Flux

Since the above HCl generation term is based on deposited energy in the cable jacket, the energy flux incident on the cable needs to be developed. Section 2 of NUREG-1081 develops an approach in which the radiation flux is integrated from the center of the containment to the wall at a radius r. This approach is subsequently applied to cable insulation in Section 2.2 of NUREG-1081. The energy flux on a surface area that is a distance, r, from the center of containment is calculated for each radiation type to be:

$$\phi = \frac{E}{V}\frac{\left(1 - e^{-\mu \cdot r}\right)}{\mu} \qquad \text{(A-3)}$$

where:

ϕ = energy flux (MeV/hr-cm^2)
$\frac{E}{V}$ = energy release rate per unit volume (MeV/hr-cm^3)
μ = linear absorption coefficient in air (1/cm), and
r = average distance of air to the cable (cm).

From Equation A-3 and the linear absorption coefficient in Table A-1, it can shown that the beta radiation energy flux can be conservatively approximated by the following equation due to the short range of beta radiation in air relative to the distances in containment.

$$\phi_\beta = \frac{E_\beta}{V}\frac{1}{\mu_\beta} \qquad \text{(A-4)}$$

where:

ϕ_β = beta energy flux (MeV/hr-cm^2)

$\frac{E_\beta}{V}$ = beta energy release rate per unit volume (MeV/hr-cm^3), and

μ_β = beta radiation linear absorption coefficient in air (1/cm).

For the gamma radiation, a conservatively large distance that is characteristic of the plant containment should be applied in Equation A-3.

Absorption Fraction

The absorption fraction is the fraction of incident radiation energy flux absorbed by the Hypalon. As reported in Section 4 of NUREG-1081, this factor is calculated with the following equation for each radiation type.

$$A = 1 - e^{-\mu \cdot th} \qquad \text{(A-5)}$$

where:

A = absorption fraction,

th = thickness of the Hypalon jacket (cm), and

μ = linear absorption coefficient in Hypalon (1/cm).

From the above equation and the beta linear absorption coefficient in Table A-1, it can shown that the beta dose is completely absorbed by Hypalon jackets typically used in industry consistent with Figure A-2. This methodology will assume that the beta energy is completely absorbed in the Hypalon jacket. Equation A-5 above will be applied to explicitly calculate the absorption fraction for gamma radiation.

HCl Generation

The HCl generation rate can be calculated with the equations above as:

Beta: $$R = G \cdot S \cdot \phi \cdot A = 3.512E-20 \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{E_\beta}{V} \frac{1}{\mu_\beta^{air}} \qquad \text{(A-6a)}$$

Gamma: $$R = G \cdot S \cdot \phi \cdot A = 3.512E-20 \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{E_\gamma}{V} \frac{\left(1 - e^{-\mu_\gamma^{air} \cdot r}\right)}{\mu_\gamma^{air}} \cdot \left(1 - e^{-\mu_\gamma^{H} \cdot th}\right) \qquad \text{(A-6b)}$$

where:

R = HCl production rate (g-mol/hr),

$\frac{E_\beta}{V}$ = energy release rate per unit volume (MeV/hr-cm^3) for beta radiation,

$\frac{E_\gamma}{V}$ = energy release rate per unit volume (MeV/hr-cm^3) for gamma radiation,

μ_β^{air} = linear absorption coefficient of beta radiation in air (cm^{-1}),

μ_γ^{air} = linear absorption coefficient of gamma radiation in air (cm^{-1}),

μ_γ^{H} = linear absorption coefficient of gamma radiation in Hypalon (cm^{-1}),

r = containment radius (cm),

ℓ = cable length (cm),

th = thickness of the Hypalon jacket (cm), and

R_o = cable radius (cm).

Equations A-6a and A-6b can be integrated to determine the total HCl generated from an integrated energy release.

Beta: $$M_{HCl}(t) = 3.512E-20 \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{1}{\mu_\beta^{air}} \int_0^t \frac{E_\beta}{V}\, dt \qquad \text{(A-7a)}$$

Gamma: $$M_{HCl}(t) = 3.512E-20 \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{\left(1-e^{-\mu_\gamma^{air} \cdot r}\right)}{\mu_\gamma^{air}} \cdot \left(1-e^{-\mu_\gamma^{H} \cdot th}\right) \int_0^t \frac{E_\gamma}{V}\, dt \qquad \text{(A-7b)}$$

where:

M_{HCl} = total HCl production (g mols), and

t = time into accident (hrs).

A.3 SAMPLE CALCULATION

As a test of this methodology, the HCl production from a 1-cm segment of the NRC model cable is calculated from an integrated beta energy release of 3.67E11 MeV/cc in the containment.

Solution:

Applying Equation A-7a,

$$M_{HCl} = 3.512E-20 \frac{\text{g - mols}}{\text{MeV}} \cdot 2\pi \cdot (1.1304\ \text{cm}) \cdot (1\,\text{cm}) \cdot \frac{1}{0.0198\ \text{cm}^{-1}} \cdot 3.67E11 \frac{\text{MeV}}{\text{cc}} = 4.626E-6\ \text{g - mols HCl}$$

As a check, this result can be compared to that reported in NUREG/CR-05950. The weight of this section of cable can be calculated to be 1.85 grams of Hypalon and 1.46 g of EPR for a total mass of 7.3E-3 pounds.

Hypalon: $$m_H = \rho \cdot \pi \left[R_o^2 - (R_o - th)^2\right] \cdot \ell = 1.55 \frac{\text{g}}{\text{cm}^3} \cdot 3.1416 \cdot \left[(1.1304\ \text{cm})^2 - (0.9474\ \text{cm})^2\right] \cdot 1\,\text{cm} = 1.85\ \text{g}$$

EPR: $$m_E = \rho \cdot \pi \left[R_o^2 - (R_o - th)^2\right] \cdot \ell = 1.27 \frac{\text{g}}{\text{cm}^3} \cdot 3.1416 \cdot \left[(0.9474\,\text{cm})^2 - (0.729\,\text{cm})^2\right] \cdot 1\,\text{cm} = 1.46\,\text{g}$$

$$\text{Total: } (1.85\text{ g} + 1.46\text{ g}) \cdot \left(\frac{\text{kg}}{1000\text{ g}}\right) \cdot \left(\frac{2.205\text{ lbs}}{\text{kg}}\right) = 7.30\text{E}-3\text{ lbs}$$

The total absorbed dose is calculated to be 1.14 Megarads below.

$$\text{Dose} = \frac{\dfrac{4.626\text{E}-6\text{ g}-\text{mols}}{3.512\text{E}-20\ \dfrac{\text{g}-\text{mols}}{\text{MeV}}}}{10^6\ \dfrac{\text{Rads}}{\text{Megarad}} \cdot 100\ \dfrac{\text{ergs}}{\text{Rad}-\text{g}} \cdot 6.24146\text{E}5\ \dfrac{\text{MeV}}{\text{erg}} \cdot 1.85\text{ g}} = 1.14\text{ Megarad}$$

Considering that this segment is 7.3E-3 pounds of insulation, a rate constant of 5.55E-4 g-mols of HCl per pound of insulation per Megarad of absorbed dose can be calculated for the NRC model cable. This result compares well with (and is conservative with respect to) the 4.6E-4 value reported in Section 2.2.5.2 of NUREG/CR-5950.

$$\frac{4.626\text{E}-6\text{ mols}}{(7.3\text{E}-3\text{ lbs})(1.14\text{ Megarad absorbed})} = \frac{5.55\text{E}-4\text{ mols HCl}}{\text{lb of insulation - Megarad absorbed dose}}$$

ATTACHMENT 1 - SAMPLE CASE RESULTS

	Pool		Sump Intgrtd		CMT Int Dose (MeV/cc)								
Time (hr)	Temp (F)	[HI]	Dose (MRad)	[HNO3]	Gamma	Beta	[HCl]	Total [H+]	[CsOH]	Total [OH-]	x	Final [H+]	pH
0	150.0	0.0000E+00	0.00E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.00000E-06	0.00000E+00	1.00000E-08	-1.02352E-07	1.10235E-06	5.958
0.03361	150.0	0.0000E+00	1.56E-03	1.1362E-14	3.7564E+07	6.3584E+08	1.2672E-08	1.01267E-06	0.00000E+00	1.00000E-08	-1.01191E-07	1.11386E-06	5.953
0.1	150.0	1.8968E-08	4.63E-03	3.3801E-08	1.1175E+08	1.8916E+09	3.7700E-08	1.09047E-06	4.38167E-06	4.39167E-06	1.05337E-06	3.71001E-08	7.431
0.53361	150.0	1.4286E-07	2.47E-02	1.8023E-07	5.9603E+08	1.0088E+10	2.0105E-07	1.52414E-06	3.30000E-05	3.30100E-05	1.52021E-06	3.93306E-09	8.405
1	150.0	3.6495E-07	4.62E-02	3.3747E-07	1.1164E+09	1.8893E+10	3.7655E-07	2.07897E-06	7.31983E-05	7.32083E-05	2.07723E-06	1.74117E-09	8.759
2	150.0	8.4114E-07	9.23E-02	6.7375E-07	2.2303E+09	3.7735E+10	7.5209E-07	3.26697E-06	1.59389E-04	1.59399E-04	3.26618E-06	7.92303E-10	9.101
2.03361	150.0	8.5714E-07	9.38E-02	6.8503E-07	2.2677E+09	3.8367E+10	7.6469E-07	3.30687E-06	1.62286E-04	1.62296E-04	3.30609E-06	7.78034E-10	9.109
12	149.5	8.5714E-07	5.44E-01	3.9714E-06	1.3234E+10	2.2338E+11	4.4529E-06	1.02815E-05	1.62286E-04	1.62296E-04	1.02806E-05	8.04157E-10	9.095
24	149.0	8.5714E-07	1.07E+00	7.7766E-06	2.6117E+10	4.3963E+11	8.7655E-06	1.83992E-05	1.62286E-04	1.62296E-04	1.83984E-05	8.37472E-10	9.077
60	147.5	8.5714E-07	2.50E+00	1.8263E-05	6.2757E+10	1.0479E+12	2.0905E-05	4.10250E-05	1.62286E-04	1.62296E-04	4.10241E-05	9.51809E-10	9.021
100	145.9	8.5714E-07	3.90E+00	2.8441E-05	1.0015E+11	1.6578E+12	3.3093E-05	6.33919E-05	1.62286E-04	1.62296E-04	6.33908E-05	1.11204E-09	8.954
200	141.7	8.5714E-07	6.62E+00	4.8359E-05	1.8025E+11	2.9229E+12	5.8439E-05	1.08655E-04	1.62286E-04	1.62296E-04	1.08653E-04	1.81377E-09	8.741
300	137.5	8.5714E-07	8.54E+00	6.2307E-05	2.4430E+11	3.8885E+12	7.7853E-05	1.42017E-04	1.62286E-04	1.62296E-04	1.42013E-04	4.23207E-09	8.373
350	135.4	8.5714E-07	9.26E+00	6.7625E-05	2.7134E+11	4.2818E+12	8.5784E-05	1.55266E-04	1.62286E-04	1.62296E-04	1.55255E-04	1.14392E-08	7.942
400	133.4	8.5714E-07	9.87E+00	7.2075E-05	2.9552E+11	4.6253E+12	9.2726E-05	1.66658E-04	1.62286E-04	1.62296E-04	1.62278E-04	4.37994E-06	5.359
500	129.2	8.5714E-07	1.08E+01	7.8916E-05	3.3648E+11	5.1877E+12	1.0412E-04	1.84896E-04	1.62286E-04	1.62296E-04	1.62293E-04	2.26028E-05	4.646
600	125.0	8.5714E-07	1.15E+01	8.3706E-05	3.6923E+11	5.6169E+12	1.1286E-04	1.98420E-04	1.62286E-04	1.62296E-04	1.62294E-04	3.61259E-05	4.442
700	120.8	8.5714E-07	1.19E+01	8.7061E-05	3.9543E+11	5.9445E+12	1.1955E-04	2.08470E-04	1.62286E-04	1.62296E-04	1.62295E-04	4.61750E-05	4.336
720	120.0	8.5714E-07	1.20E+01	8.7600E-05	4.0000E+11	6.0000E+12	1.2069E-04	2.10147E-04	1.62286E-04	1.62296E-04	1.62295E-04	4.78524E-05	4.320

Attachment 2

Suppression Pool pH Analysis Calculation No. XC-Q1111-98013

DESIGN ENGINEERING CALCULATION GRAND GULF NUCLEAR STATION UNIT ONE	CALC NO.: XC-Q1111-98013 REVISION: 2 PAGE i of iii

TITLE: Suppression Pool pH Analysis

REVISION STATUS	SUPERSEDED BY:	SUPERSEDES:	
[ ] Pending	[X] N/A	[X] N/A	[X] Safety Related
[X] Final	Calc.	Calc.	[ ] Non Safety Related
[ ] Canceled	Rev.:	Rev.:	[ ] Appendix B

ORG CODE: NPE-Safety Analysis

CALC TYPE NUCSAFE

KEYWORD(S):

ACCIDENT

DOSE

AFFECTED COMPONENT(S): (add sheets as needed)

N/A

SYSTEM(s): N/A

COMMENT(s): N/A

SOFTWARE USED FOR CALCULATION: [ ] Yes [X] No

Software Manufacturer:

Software Name/ Program No:

Version/ Release No:

REVIEW AND APPROVAL

PREPARED BY:	G.E. Broadbent / G.K. Broadbent (Signature / Name)	DATE:	12/19/00
CHECKED BY:	Scott Stanchfield / Scott Stanchfield (Signature / Name)	DATE:	12/20/00
REVIEWED BY:	M.D. Withrow / M.D. Withrow (Supervisor Signature / Name)	DATE:	12/20/00
APPROVED BY:	M.D. Withrow / M.D. Withrow (Responsible Manager Signature / Name)	DATE:	12/20/00

REVISION STATUS SHEET

ENGINEERING CALCULATION REVISION SUMMARY

REVISION	DATE	DESCRIPTION
0	2/24/99	Issue for use
1	11/14/00	Revised to address changes to pH methodology documented in Revision 2 to Engineering Report GGNS-98-0039
2	12/20/00	Revised to address impact of SLC injection via the pH methodology documented in Revision 3 to Engineering Report GGNS-98-0039

****

SHEET REVISION STATUS

SHEET NO.	REVISION	SHEET NO.	REVISION	SHEET NO.	REVISION
i	2	5	1	13	1
ii	2	6	1	14	1
iii	2	7	1	15	2
1	2	8	1	16	2
2	1	9	1	17	2
3	1	10	1	18	2
4	2	11	1	19	2
		12	1	20	2

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APPENDIX/ATTACHMENT REVISION STATUS

APPENDIX NO.	REVISION	ATTACHMENT NO.	REVISION
		1	1
		2	1
		3	1

CONTENTS

1.0 PURPOSE 1

2.0 BACKGROUND 1

3.0 GIVEN 2

3.1 Initial pH Values 2
3.2 Pool Water Volume 2
3.3 Chloride-Bearing Cable Inventory 3
3.4 Radiation Dose Profiles 3
3.5 Source Term Inventories 4
3.6 Standby Liquid Control (SLC) System 4

4.0 ASSUMPTIONS 5

4.1 Pool Mixing 5

5.0 CALCULATION 6

5.1 Radiation Doses 6
5.2 Cable Model Calculations 6
5.3 Hydriodic Acid 11
5.4 Nitric Acid 12
5.5 Hydrochloric Acid 13
5.6 Cesium Hydroxide 14
5.7 Final Pool pH Calculation 15

6.0 RESULTS 18

7.0 REFERENCES 20

1.0 PURPOSE

The purpose of this calculation is to develop the GGNS post-LOCA suppression pool pH transient based on the methodology reported in Engineering Report GGNS-98-0039 [1].

Revision 1 of this calculation applies the revised methodology documented in Revision 2 to GGNS-98-0039 and develops an HCl generation rate based on the energy flux to the cable surface. In addition, the GGNS suppression pool dose also considers the impact of beta radiation. Revision 2 addresses the buffering impact on the pool pH for the Standby Liquid *Control system injection.*

2.0 BACKGROUND

BWR suppression pools are credited in minimizing containment pressurization by condensing steam resulting from a loss of coolant accident (LOCA). At GGNS, the suppression pool is also credited for the long-term retention of iodine, which is washed into the pool by containment spray and by the scrubbing of airborne source term flows through the pool.

Standard Review Plan, NUREG-0800, Section 6.5.2 [15] addresses sump pH considerations for PWRs in Section II.C.1(g) stating:

> The pH of the aqueous solution collected in the containment sump after completion of injection of containment spray and ECCS water, and all additives for reactivity control, fission product removal, or other purposes, should be maintained at a level sufficiently high to provide assurance that significant long-term iodine re-evolution does not occur. Long-term iodine retention is calculated on the basis of the expected long-term partition coefficient. Long-term iodine retention may be assumed only when the equilibrium sump solution pH, after mixing and dilution with the primary coolant and ECCS injection, is above 7 (Ref. 5). This pH value should be achieved by the onset of the spray recirculation mode.

Section 5.2 of NUREG-1465 [2] applies these considerations to BWRs reporting that, although there is no current requirement for pH control of BWR suppression pools, there is a potential for these pools to scrub substantial amounts of iodine in the early phases of an accident only to re-evolve it later as elemental iodine. This NUREG also notes that the cesium hydroxide in the pool may well counteract any acid generation to ensure the pH is maintained sufficiently high that iodine re-evolution is precluded.

This calculation determines the GGNS post-accident pH transient based on the methodology reported in Engineering Report GGNS-98-0039, which was developed from NRC research reported in NUREG/CR-5950 [3]. These results may then be applied in the LOCA airborne *dose calculation in the event iodine re-evolution is predicted.*

3.0 GIVEN

3.1 Initial pH Values

The allowable suppression pool pH range is 5.3 to 8.6 consistent with the reactor water chemistry guidelines and SAR Section 9.3.6.1.2 and is confirmed quarterly per 08-S-03-10 [4] with temperature-corrected pH meters. This analysis will conservatively assume an initial suppression pool pH value of 5.3. Per SAR Table 5.2-6, the minimum allowable 24-hour reactor coolant chemistry during operation is 5.6 with a minimum pH of 5.3 when depressurized. As such, the reactor coolant pH will conservatively be modeled as 5.3 such that no suppression pool pH elevation need be considered due to the released reactor coolant mixing with the suppression pool inventory.

3.2 Pool Water Volume

The minimum suppression pool volume is 135,291 ft^3 based on Table 1 of ABD-4 [5] and Technical Specification Bases B3.6.2.2. Consistent with Calculation MC-Q1E30-90112 [6], a volume of 500 ft^3 is subtracted from this value for the new ECCS suction strainer installed in RFO9. The total suppression pool volume is therefore 134,791 ft^3 or 3.817E6 liters (based on 28.317 liters/ft^3).

In the event of a LOCA, the suppression pool makeup (SPMU) system is automatically initiated after a 30-minute timer starts on a LOCA signal (high drywell pressure or low-low reactor water level)[1]. The volume added to the suppression pool based on low water level in the upper pools is 36,163 ft^3 [6]. This volume will be added to the original suppression pool volume after 30 minutes for a total water volume of 170,954 ft^3 or 4.841E6 liters.

The reactor vessel will discharge a large quantity of reactor coolant to the suppression pool in the event of a DBA. A significant fraction of this inventory (~60%) will be discharged as a liquid while most of the resulting steam is quenched in the suppression pool. This reactor coolant inventory is reported as 6.815E5 lbs [5]. Also, some of the suppression pool inventory will vaporize to become humidity in the drywell and containment. Based on the total volume of both drywell and containment of 1.67E6 ft^3 [5] and bounding conditions of atmospheric pressure and 70º F, the total mass of air in the drywell and containment can be calculated to be 1.25E5 lbs (ρ=0.075 lbs/ft^3 [7]). At 100% humidity, a bounding low atmospheric pressure, and 185º F, the moisture content is 0.836 pounds of water vapor per pound of dry air [8]. Consequently, the 1.25E5 lbs of dry air will carry 1.045E5 lbs of water vapor, or significantly less than the 6.815E5 lbs released. Since the additional pool inventory from the reactor coolant release bounds the inventory loss due to evaporation, both of these components will be conservatively neglected in this analysis. The impact of ESF leakage is small compared to the large suppression pool volume and is consequently ignored.

---

1 An alternate SPMU initiation signal is low-low suppression pool level in association with a LOCA signal. Since, in the proposed core melt scenario, the ECCS pumps are not assumed to be injecting into the reactor vessel for approximately 2 hours, the potential immediate SPMU actuation on low-low suppression pool level (which is caused by the ECCS actuation) is not considered in this analysis.

3.3 Chloride-Bearing Cable Inventory

GGNS SAR Table 6.1-2 reports the containment and drywell weights of Hypalon, EPR or cross-linked polyethylene as 176,400 and 9835 lbs, respectively. These values are also reported in Table 2.2 of NUREG/CR-5950 and have been confirmed in EAR X-002-96 [9] to be bounding values based on the GGNS cable database.

A more detailed review of the GGNS chloride-bearing cable inventory in the containment and drywell was performed in EAR X-003-98 [10] based on the methodology reported in Engineering Report GGNS-98-0039. This review concluded that approximately 90% of the cable inventories in the GGNS containment and drywell are routed in conduit or totally enclosed raceways. Consistent with the methodology in Engineering Report GGNS-98-0039, these cable inventories are not included in the HCl generation calculation. The following exposed cable inventories were developed with significant conservatisms that would bound any additional cable lengths that may be added to the GGNS containment or drywell in future design changes.

Table 3-1 Total Combined Pounds of Exposed Cable Jacketing and Insulation

Drywell		Containment	
Free Air Drop	Routed in Trays	Free Air Drop	Routed in Trays
873.65	873.65	1,561.03	14,049.27

In addition to Hypalon, a limited number of cables in the GGNS containment are jacketed with neoprene with a chemical formula of $(C_4H_5Cl)_n$. Based on this formula, neoprene is 35 weight percent (w/o) chlorine relative to the 27 w/o value reported for Hypalon in Section 2.2.5.1 of NUREG/CR-5950. Based on the similar chemical composition of this material relative to Hypalon and the very small inventories in the plant, this material is treated identically to Hypalon in this calculation and is included in the above table.

3.4 Radiation Dose Profiles

The radiation doses that result in the production of acids are due to the presence of radioactive source terms in the containment atmosphere and suppression pool. Some of these source terms will be dissolved in the suppression pool generating nitric acid while others, such as the noble gases and organic species of halogens, will remain airborne irradiating exposed cabling and generating hydrochloric acid. To quantify the applicable radiation dose profiles for this event, this calculation evaluates two bounding profiles for the radiation doses.

1. The first profile assumes that all source terms (except noble gases) are deposited upon release into the suppression pool water. This profile maximizes the suppression pool dose and the generation of nitric acid. Noble gases in the drywell and containment atmosphere are modeled with the same flows as the LOCA dose analysis in which the drywell and lower containment nodes become well mixed after 2 hours.
2. The second profile emphasizes hydrochloric acid production from cable radiolysis by assuming the maximum airborne source term inventory. The lower-bound (10%) deposition constants and the elemental iodine plate-out coefficients

applied in the LOCA dose analysis [21] are also used in this case. Source terms calculated to deposit or plateout in the drywell are considered via a plate-out dose. Source terms removed from the containment atmosphere by containment spray are modeled to enter the suppression pool and generate nitric acid.

Since this analysis specifically considers the impact of daughter products such as Ba-137m, no adder to the gamma dose is required per Section 7 of R.G. 1.183. The RAPTOR code has been qualified to perform energy deposition calculations in Reference 16.

3.5 Source Term Inventories

The cesium and iodine inventories are considered in the suppression pool pH methodology in Engineering Report GGNS-98-0039. These inventories have been calculated for the GGNS core in Calculation XC-Q1J11-98010 [12] as 2400 and 325 g-atoms for cesium and iodine, respectively. These inventories are based on EOC core conditions and include the stable Cs^{133} and I^{127} species. The cesium inventory is a conservatively low estimate for the EOC conditions while the iodine inventory is a conservatively high estimate.

3.6 Standby Liquid Control (SLC) System

In the event of an unmitigated LOCA, the GGNS Severe Accident Procedures (SAPs) direct the operators to inject the SLC solution into the vessel in the early stages of the accident for both vessel inventory and re-criticality protection when the core is re-flooded. As required by Technical Specification 3.1.7, the associated Basis, and Reference 22, the GGNS SLC system is designed to inject at least 5800 pounds of sodium pentaborate into the reactor vessel at a minimum pump flow rate of 41.2 gpm for each of the two SLC pumps. As such, injection of the entire usable volume of the SLC tank would take approximately 2 hours to complete with a single pump. Considering the small flow out of the break until the core is re-flooded, no credit will be taken for the SLC system in the suppression pool for the first 2 hours, after which, the SLC solution will be assumed in the pool.

If the alternate SLC injection were used, 5,000 pounds each of anhydrous borax and boric acid (warehouse stock codes 82267132 and 82267131) would be mixed in the CST per the guidance in Attachment 28 of Reference 23. These fractions are a nearly stoichiometric mixture per Reference 22 making approximately 10,000 pounds of sodium pentaborate. Since the HPCS system can inject nearly all of this solution into the vessel or directly into the suppression pool, the limiting SLC case is via the injection from the SLC tank.

4.0 ASSUMPTIONS

4.1 Pool Mixing

After 2 hours, at least three ECCS pumps will be available to take suction from the pool. At approximately 7000 gpm per pump, at least 21,000 gpm will be circulating from the suppression pool to the reactor vessel or containment spray system. Based on the maximum pool inventory (including the upper containment pool) of 4.841E6 liters, this ECCS flow represents approximately one complete exchange of the pool volume per hour. On this basis, the suppression pool is assumed to be well-mixed such that a single pool pH value can be applied.

5.0 CALCULATION

5.1 Radiation Doses

The RAPTOR calculations are documented in Attachment 1. RAPTOR calculates an integrated suppression pool dose of 14.7 Mrad assuming all decay energy is absorbed in the water. Calculation XC-Q1111-98012 [14] performs a more detailed calculation of this dose considering the potential for some limited gamma release from the pool water with a result 11.54 Mrad. This calculation will apply the results of the detailed analysis in Reference 14. These integrated radiation doses are integrated in Attachment 2 via a fit to one of the following equations.

$$A*(1-B\cdot e^{-C\cdot t}) \text{ or } A+B\cdot \ln(t)$$

5.2 Cable Model Calculations

There are many different types of cables in application at GGNS including single and multiple conductor. Some of these cables include interior Hypalon jackets on each individual conductor and some multiple-conductor cables have outer interstices filled with extruded Hypalon. The cable jacket/insulation inventories reported in Section 3.3 include all of these cable types. Some of these GGNS cable types are illustrated below.

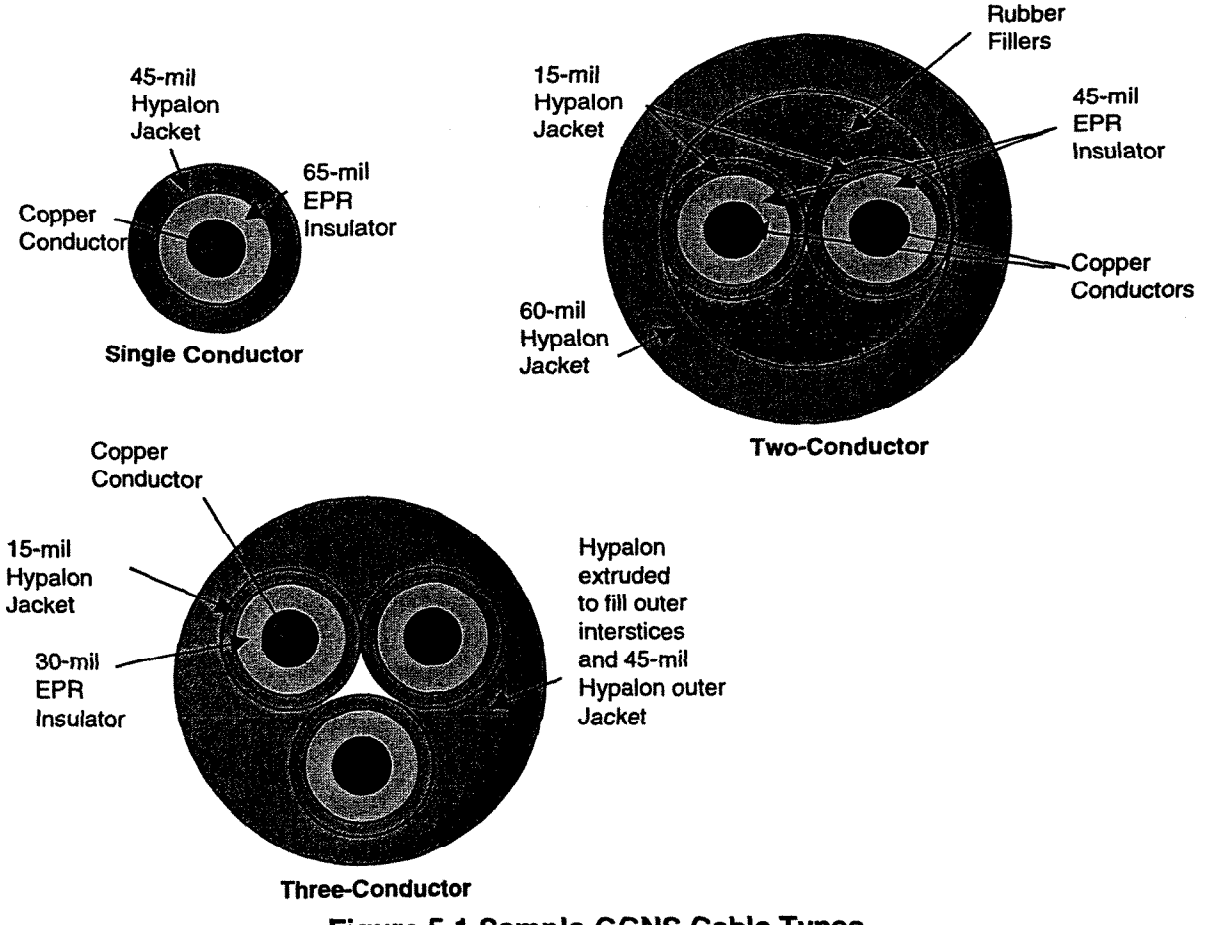

Figure 5-1 Sample GGNS Cable Types

The methodology in Engineering Report GGNS-98-0039, however, is based on simple single-conductor, single-jacketed cables like the NRC model cable in NUREG/CR-1237 [13]. Therefore, to simplify this analysis, the beta and gamma exposures are addressed separately as discussed in detail below.

5.2.1 Beta Radiation

As described in Engineering Report GGNS-98-0039, the beta dose is assumed to be completely absorbed by the cable in the chloride-bearing exterior jacket. Since the beta dose is completely absorbed in the first ~40 mils, the internals of the cable construction may be ignored for the beta calculation. As such, since the cable inventories are reported in terms of pounds, the specific GGNS cable types were reviewed to determine an appropriate surface area per unit mass for application in this calculation. The six cable types (B*6, B*7, C*2, C*4, C*7, and C*9) that make up over 85% of the exposed cables in the drywell and containment are listed below based on the data in Attachment 1 to EAR X-003-98.

Table 5-1 Primary Cable Types in GGNS Containment

EAR Att V Page #	Cable Type	Outer Diam (in)	Outer Radius (in)	Jacket Thickness (in)	Jacket Mass (lbs/ft)	Total Ins Mass (lbs/ft)	Surface Area (cm^2/lb)	GGNS Inventory (lbs)
	NRC Model	0.89	0.445	0.072	0.1237	0.2225	972.9	
3	B*6	0.678	0.3390	0.060	0.0779	0.2210	746.2	3396
4	B*7	0.639	0.3195	0.060	0.0729	0.2080	747.2	3496
16	C*2	0.522	0.2610	0.045	0.0451	0.1360	933.5	5427
17	C*4	0.634	0.3170	0.060	0.0723	0.1925	801.0	1847
19	C*7	0.745	0.3725	0.060	0.0863	0.2500	724.8	4480
20	C*9	1.024	0.5120	0.080	0.1586	0.4540	548.6	947

Based on the data in Table 5-1, the worst cable type is C*2 with a total surface area of 933.5 cm^2/lb. However, all other cable types have significantly less surface area per unit mass than this C*2 type due to their larger size. Considering the abundance of these larger cables, an appropriate value for this calculation would be 800 cm^2/lb since it bounds (or effectively equals) all but one cable type and is higher than the typical GGNS cable.

The HCl production rate is given by Equation 3-3a of Engineering Report GGNS-98-0039 below.

$$[HCl](t) = \frac{3.512E-20}{V_{pool}} \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{1}{\mu_\beta^{air}} \int_0^t \frac{E_\beta}{V} dt$$

$$= \frac{3.512E-20 \frac{\text{g-mols}}{\text{MeV}}}{4.841E6 \text{ liters}} \cdot 800 \frac{\text{cm}^2}{\text{lb}} \cdot \left(\frac{m_{tray}}{2} + m_{fa} \right) \cdot \frac{1}{0.0198 \text{ cm}^{-1}} \int_0^t \frac{E_\beta}{V} dt \qquad (5\text{-}1)$$

$$= 2.93E-22 \cdot \left(\frac{m_{tray}}{2} + m_{fa} \right) \cdot \int_0^t \frac{E_\beta}{V} dt$$

where:

m_{tray} = the mass of combined cable jacket and insulation routed in exposed cable trays (lbs),

m_{fa} = the mass of combined cable jacket and insulation in free air drops (lbs), and

$\frac{E_\beta(t)}{V}$ = energy release rate per unit volume (MeV/hr-cm^3) for beta radiation at time t (hours).

5.2.2 Gamma Radiation

Unlike beta radiation, gamma radiation can penetrate the cable interior and HCl may be generated from the interior Hypalon jackets or extruded Hypalon fillers in some of the GGNS cable types.

Absorption Faction

As illustrated in Figure 5-1, a cable type is needed to bound the various types routed in the GGNS containment. Considering that the worst-case cable would have a large radius and have the interstices between the interior cables are filled with Hypalon, a radius of 0.35 inches is taken to represent the typical GGNS cable. This radius bounds most of those cables in Table 5-1 and is larger than the average GGNS cable. Since the Hypalon depth could range from ~0.090 inches to the entire radius of the cable depending on angle, this calculation will conservatively assume, based on the GGNS cable drawings in Reference 10, an average Hypalon depth of 80% of the cable radius for an average Hypalon depth of 0.28 inches. For this cable, the absorption fraction, $(1-e^{-\mu \cdot th})$, can be calculated with the linear absorption coefficient of 0.099 cm^{-1} from Table A-1 of Engineering Report GGNS-98-0039 to be 0.068, which is significantly higher than the 0.0179 value generated for the NRC's model in Section 4.2 of NUREG-1081.

Gamma Free Path

In the drywell, the largest radial distance would be approximately 20'2" based on the shield wall outer radius at 16'4" and the drywell wall inner radius of 36'6" per Reference 18. This calculation will conservatively apply a value of 36'6" (1112.5 cm) in the drywell. In the containment, the gamma free path in the annular region is severely restricted except in the large open area in the containment dome. Considering the compartments in the containment annulus, the free path in the annular region is taken to be 20'6" based on the 41'6" outer radius of the drywell and the 62' outer radius of the containment wall. In the containment dome, the containment radius of 62' is applied for the gamma distance. Although most cabling is in the annulus (where most of the containment equipment is located), the average containment gamma distance is conservatively taken as the volume-average of the above distances and calculated below to be 1384 cm. These volumes are calculated in the LOCA dose analysis [21] as 5.6E5 ft^3 for the unsprayed region and 8.4E5 ft^3 for the sprayed region.

$$\langle L \rangle = \frac{8.4E5\ ft^3}{1.4E6\ ft^3} \cdot 62' + \frac{5.6E5\ ft^3}{1.4E6\ ft^3} \cdot 20.5' = 45.4' = 1384\ cm$$

The HCl production rate is given by Equation 3-3b of Engineering Report GGNS-98-0039 and is reproduced below.

Drywell:

$$[HCl](t) = \frac{3.512E-20}{V_{pool}} \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{\left(1-e^{-\mu_\gamma^{air} \cdot r}\right)}{\mu_\gamma^{air}} \cdot \left(1-e^{-\mu_\gamma^{H} \cdot th}\right) \int_0^t \frac{E_\gamma}{V} dt$$

$$= \frac{3.512E-20 \frac{g-mols}{MeV}}{4.841E6 \text{ liters}} \cdot 800 \frac{cm^2}{lb} \cdot \left(m_{tray} + m_{fa}\right) \cdot \frac{\left(1-e^{-3.74E\text{-}5\ cm^{-1} \cdot 1112.5\ cm}\right)}{3.74E\text{-}5\ cm^{-1}} \cdot 0.068 \cdot \int_0^t \frac{E_\gamma}{V} dt \quad (5\text{-}2)$$

$$= 4.3E-22 \cdot \left(m_{tray} + m_{fa}\right) \cdot \int_0^t \frac{E_\gamma}{V} dt$$

where:

m_{tray} = the mass of combined cable jacket and insulation routed in exposed cable trays (lbs),

m_{fa} = the mass of combined cable jacket and insulation in free air drops (lbs), and

$\frac{E_\gamma(t)}{V}$ = energy release rate per unit volume (MeV/hr-cm^3) for gamma radiation at time t (hours).

Containment:

$$[HCl](t) = \frac{3.512E-20}{V_{pool}} \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{\left(1-e^{-\mu_\gamma^{air} \cdot r}\right)}{\mu_\gamma^{air}} \cdot \left(1-e^{-\mu_\gamma^{H} \cdot th}\right) \int_0^t \frac{E_\gamma}{V} dt$$

$$= \frac{3.512E-20 \frac{g-mols}{MeV}}{4.841E6 \text{ liters}} \cdot 800 \frac{cm^2}{lb} \cdot \left(m_{tray} + m_{fa}\right) \cdot \frac{\left(1-e^{-3.74E\text{-}5\ cm^{-1} \cdot 1384\ cm}\right)}{3.74E\text{-}5\ cm^{-1}} \cdot 0.068 \cdot \int_0^t \frac{E_\gamma}{V} dt \quad (5\text{-}3)$$

$$= 5.32E-22 \cdot \left(m_{tray} + m_{fa}\right) \cdot \int_0^t \frac{E_\gamma}{V} dt$$

5.2.3 Deposition Doses

Case 1 involves no deposition since the only airborne source terms are noble gases[2] which do not plateout or deposit. For Case 2, the source terms that are removed by deposition and plate-out in the drywell, will result in additional energy absorption by the cables. The drywell plateout area is 181,608 ft^2 [20] or 1.69E8 cm^2. This area conservatively does not include the area of the cables.

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2 Some noble gases decay into radioactive daughters such as Rb-88 or Cs-135. These particulates are modeled to be removed from the atmosphere into the suppression pool with a large lambda.

The deposited source terms are conservatively assumed to be on the surface of the cable such that half of the released energy is in the direction of the affected cable. Similar to the airborne dose, the beta energy is assumed to be completely absorbed in the cable jacket while 6.8% of the gamma dose is absorbed.

$$[HCl](t) = \frac{3.512E-20}{V_{pool}} \cdot 2\pi \cdot R_o \cdot \ell \cdot \frac{1}{2} \cdot \left[0.068 \cdot \int_0^t \frac{E_{\gamma,dep}}{A} dt + \int_0^t \frac{E_{\beta,dep}}{A} dt \right]$$

$$= \frac{3.512E-20 \frac{g-mols}{MeV}}{4.841E6 \text{ liters}} \cdot 800 \frac{cm^2}{lb} \cdot \frac{1}{2} \cdot \left[(m_{tray} + m_{fa}) \cdot 0.068 \cdot \int_0^t \frac{E_{\gamma,dep}}{A} dt + \left(\frac{m_{tray}}{2} + m_{fa} \right) \cdot \int_0^t \frac{E_{\beta,dep}}{A} dt \right] \quad (5\text{-}4)$$

$$= 2.9E-24 \cdot \left[(m_{tray} + m_{fa}) \cdot 0.068 \cdot \int_0^t \frac{E_{\gamma,dep}}{A} dt + \left(\frac{m_{tray}}{2} + m_{fa} \right) \cdot \int_0^t \frac{E_{\beta,dep}}{A} dt \right]$$

where:

$\frac{E_{\gamma,dep}(t)}{A}$ = energy release rate per unit area (MeV/hr-cm^2) for gamma radiation at time t (hours) and

$\frac{E_{\beta,dep}(t)}{A}$ = energy release rate per unit area (MeV/hr-cm^2) for beta radiation at time t (hours).

5.3 Hydriodic Acid

The final hydriodic acid can be calculated from the iodine core inventory of 325 g-atoms reported in Section 3.5.

$$[HI](t) = \frac{m_I}{120 * V_{pool}} * [t - (0.5 + t_{gap})] + \frac{m_I}{400 * V_{pool}}$$

where:

m_I = core iodine inventory (gram-mols), and
V_{pool} = volume of the suppression pool (liters).
t = time into accident (hrs), and
t_{gap} = onset of gap release (121/3600 hrs).

The final HI concentration at 7321 seconds is calculated below to be 1.0076E-6 moles per liter.

$$[HI](t = 7321s) = \frac{325}{120 \cdot 4.841E6} * [7321/3600 - (0.5 + 121/3600)] + \frac{325}{400 \cdot 4.841E6} = 1.0070E-6$$

5.4 Nitric Acid

The nitric acid is calculated from the integrated pool dose. From Section 3.2 of Engineering Report GGNS-98-0039, the transient nitric acid concentration is given by:

$$[HNO_3](t) = 7.3E-6\int_0^t \dot{X}(t)_{pool}\,dt$$

where:

$\dot{X}(t)_{pool}$ = the time-dependent dose rate in the suppression pool (Megarads/hr)

The final HNO_3 concentration at 30 days is calculated below to be 8.424E-5 mols per liter.

$$[HNO_3](t = 30\text{ days}) = 7.3E-6 \cdot 11.54 = 8.424E-5$$

For Case 2, the nitric acid production is calculated to be 6.787E-5 mols per liter.

$$[HNO_3](t = 30\text{ days}) = \frac{\frac{0.007\text{ molecules}}{100\text{ eV}} \cdot 5.839E14\,\frac{\text{MeV}}{\text{cc}} \cdot 10^6\,\frac{\text{eV}}{\text{MeV}} \cdot 1000\,\frac{\text{cc}}{\text{liter}}}{6.022E23\,\frac{\text{molecules}}{\text{mol}}} = 6.787E-5\,\frac{\text{mols}}{\text{liter}}$$

5.5 Hydrochloric Acid

The hydrochloric acid transient can be calculated from the equations developed in Section 5.2. Since the containment and drywell contain different quantities of cable insulation and have different radiation profiles, the HCl generation in each of these regions is evaluated separately and then summed consistent with the well-mixed pool assumed in Section 4.1. The 30-day HCl concentrations are manually calculated below.

The 30-day drywell integrated beta and gamma dose results calculated in Attachment 1 are reported below. The containment doses are based on the volume-average of the sprayed and unsprayed regions.

	Drywell		Containment	
	Beta	Gamma	Beta	Gamma
Case 1	2.55E+13 MeV/cc	1.22E+13 MeV/cc	1.48E+13 MeV/cc	6.29E+12 MeV/cc
Case2 Airborne Dep/Plateout	2.91E+13 MeV/cc 3.75E+23 MeV	1.72E+13 MeV/cc 1.12E+24 MeV	1.57E+13 MeV/cc 7.17E+23 MeV	6.81E+12 MeV/cc 2.11E+24 MeV

Case 1:

Drywell Beta: $[HCl] = 2.93E-22 \cdot \left(\frac{873.65}{2} + 873.65\right) \cdot 2.55E+13 = 9.79E-6$

Containment Beta: $[HCl] = 2.93E-22 \cdot \left(\frac{14049.27}{2} + 1561.03\right) \cdot 1.48E+13 = 3.72E-5$

Drywell Gamma: $[HCl] = 4.3E-22 \cdot (873.65 + 873.65) \cdot 1.22E13 = 9.17E-6$

Containment Gamma: $[HCl] = 5.32E-22 \cdot (14049.27 + 1561.03) \cdot 6.29E12 = 5.22E-5$

Total HCl Concentration: 1.084E-4 mols/liter

Case 2:

Drywell Beta: $[HCl] = 2.93E-22 \cdot \left(\frac{873.65}{2} + 873.65\right) \cdot 2.91E+13 = 1.12E-5$

Containment Beta: $[HCl] = 2.93E-22 \cdot \left(\frac{14049.27}{2} + 1561.03\right) \cdot 1.57E+13 = 3.95E-5$

Drywell Gamma: $[HCl] = 4.3E-22 \cdot (873.65 + 873.65) \cdot 1.72E13 = 1.29E-5$

Containment Gamma: $[HCl] = 5.32E-22 \cdot (14049.27 + 1561.03) \cdot 6.81E12 = 5.66E-5$

Drywell Dep/Plateout:

$$[HCl] = 2.9E-24 \cdot \left[(873.65 + 873.65) \cdot 0.068 \cdot \frac{1.12E+24\,MeV}{1.69E+8\,cm^2} + \left(\frac{873.65}{2} + 873.65\right) \cdot \frac{3.75E+23\,MeV}{1.69E+8\,cm^2}\right] = 1.07E-5$$

Total HCl Concentration: 1.309E-4 mols/liter

5.6 Cesium Hydroxide

The final cesium hydroxide is calculated from the cesium and iodine core inventories reported in Section 3.5 of 2400 and 325 g-atoms for cesium and iodine respectively.

$$[CsOH](t) = \frac{0.4m_{Cs} - 0.475m_I}{3 * V_{pool}} * [t - (0.5 + t_{gap})] + \frac{0.05m_{Cs} - 0.0475m_I}{V_{pool}}$$

The final cesium hydroxide concentration at 7321 seconds is calculated below to be 1.0481E-4 moles per liter.

$$[CsOH](t = 7321s) = \frac{0.4 \cdot 2400 - 0.475 \cdot 325}{3 \cdot 4.841E6} * [7321/3600 - (0.5 + 121/3600)]$$
$$+ \frac{0.05 \cdot 2400 - 0.0475 \cdot 325}{4.841E6} = 1.0481E - 4 \text{ mols/liter}$$

5.7 Final Pool pH Calculation

From the results of Sections 5.3-5.7, the pool pH at 30 days may be calculated for the limiting case (Case 2) with the methodology in Section 3.5 of Engineering Report GGNS-98-0039 where pH_0 is the initial pool pH value.

$$[H^+](t) = 10^{-pH_0} + \int_0^t \frac{d}{dt}[HI](t)dt + \int_0^t \frac{d}{dt}[HNO_3](t)dt + \int_0^t \frac{d}{dt}[HCl](t)dt$$

$$[H^+](t = 30\text{ days}) = 10^{-5.3} + 1.0070E-6 + 6.787E-5 + 1.309E-4 = 2.0479E-4$$

$$[OH^-](t) = \frac{10^{-14}}{10^{-pH_0}} + \int_0^t \frac{d}{dt}[CsOH](t)dt$$

$$[OH^-](t = 30\text{ days}) = \frac{10^{-14}}{10^{-5.3}} + 1.0481E-4 = 1.0481E-4$$

At 120 °F, the ionization constant of water is $10^{-13.31}$ per Equation 3-0a of Engineering Report GGNS-98-0039. The neutralized ions can then be calculated as 1.0481E-4 mols per liter.

$$x = \frac{[OH^-] + [H^+] - \sqrt{([OH^-] + [H^+])^2 - 4 \cdot ([OH^-] \cdot [H^+] - K_w)}}{2}$$

$$= \frac{1.0481E-4 + 2.0479E-4 - \sqrt{(1.0481E-4 + 2.0479E-4)^2 - 4 \cdot (1.0481E-4 \cdot 2.0479E-4 - 10^{-13.31})}}{2}$$

$$= 1.0481E-4$$

The final H^+ concentration can then be determined as 9.998E-5 mols per liter.

$$[H^+]_{final} = [H^+] - x = 9.998E-5$$

The final pool pH can then be calculated as 4.0. This value matches the result in Attachment 3 considering the slight round-off errors in the intermediate values.

$$pH = -\log([H^+]_{final}) = -\log(9.998E-5) = 4.0$$

The pool pH at intermediate points is calculated in Attachment 3.

The injection of 5,800 pounds of sodium pentaborate (or 6,416 g-mols based on a molecular weight of 410) from the SLC tank would introduce 12,832 equivalents of borate and 51,328 equivalents of boric acid into the suppression pool.

$$\frac{(5800\ \text{lb})\cdot\left(453.6\ \frac{\text{g}}{\text{lb}}\right)}{410\ \frac{\text{g}}{\text{g-mol}}} = 6416\ \text{g-mol}$$

The number of strong acid equivalents in the pool after 30 days is 484 based on the 9.998E-5 mols per liter calculated above and the pool volume of 4.841E6 liters. The additional pool inventory associated with the SLC tank is conservatively neglected. Using the methodology in Reference 1, the resulting equivalents of borate and boric acid can then be calculated as 12,348 and 51,812 respectively.

Equivalents Borate:	12,832 – 484 = 12,348
Equivalents Boric Acid:	51,328 + 484 = 51,812

The pool pH at 30 days can then be calculated to be 8.46 based on a temperature of 120 °F.

$$K_a \cdot 10^{10} = 0.0585 * 120 + 1.309 = 8.33$$
$$pK_a = -\log(8.33E-10) = 9.08$$
$$pH = 9.08 + \log\left[\frac{\left(\frac{12{,}348}{4.841E6}\right)}{\left(\frac{51{,}812}{4.841E6}\right)}\right] = 8.46$$

As a bounding sensitivity case, none of the cesium hydroxide and only 10% the sodium pentaborate are assumed to reach the pool, which is also conservatively assumed to be at the design temperature limit of 185 °F. In this case, the number of strong acid equivalents in the pool after 30 days is 991 based on the 2.0479E-4 mols per liter calculated above and the pool volume of 4.841E6 liters. The pool pH at 30 days can then be calculated to be 7.60.

Equivalents Borate:	12,832/10 – 991 = 292
Equivalents Boric Acid:	51,328/10 + 991 = 6124

$$K_a \cdot 10^{10} = 0.0585 * 185 + 1.309 = 12.13$$
$$pK_a = -\log(12.13E-10) = 8.92$$
$$pH = 8.92 + \log\left[\frac{\left(\frac{292}{4.841E6}\right)}{\left(\frac{6124}{4.841E6}\right)}\right] = 7.60$$

As such, the sodium pentaborate solution is a very effective buffer for the post-accident suppression pool chemistry transient and can ensure, with significant safety margin, that the suppression pool pH will remain above a value of 7.

6.0 RESULTS

The un-buffered GGNS post-accident suppression pool pH profile is calculated in Attachment 3 and illustrated in Figure 6-1 below. The pH rises steadily during the gap and in-vessel release due to the introduction of CsOH into the pool. The pH then begins to decrease after the vessel release terminates due to the continued formation of nitric acid in the suppression pool and hydrochloric acid from radiolysis of the Hypalon cable jacketing. As the pH approaches a value of 7, the slope becomes more negative due to the approaching complete neutralization and the logarithmic function of pH. After approximately 4 days, a pH transient is experienced and the pool becomes somewhat acidic.

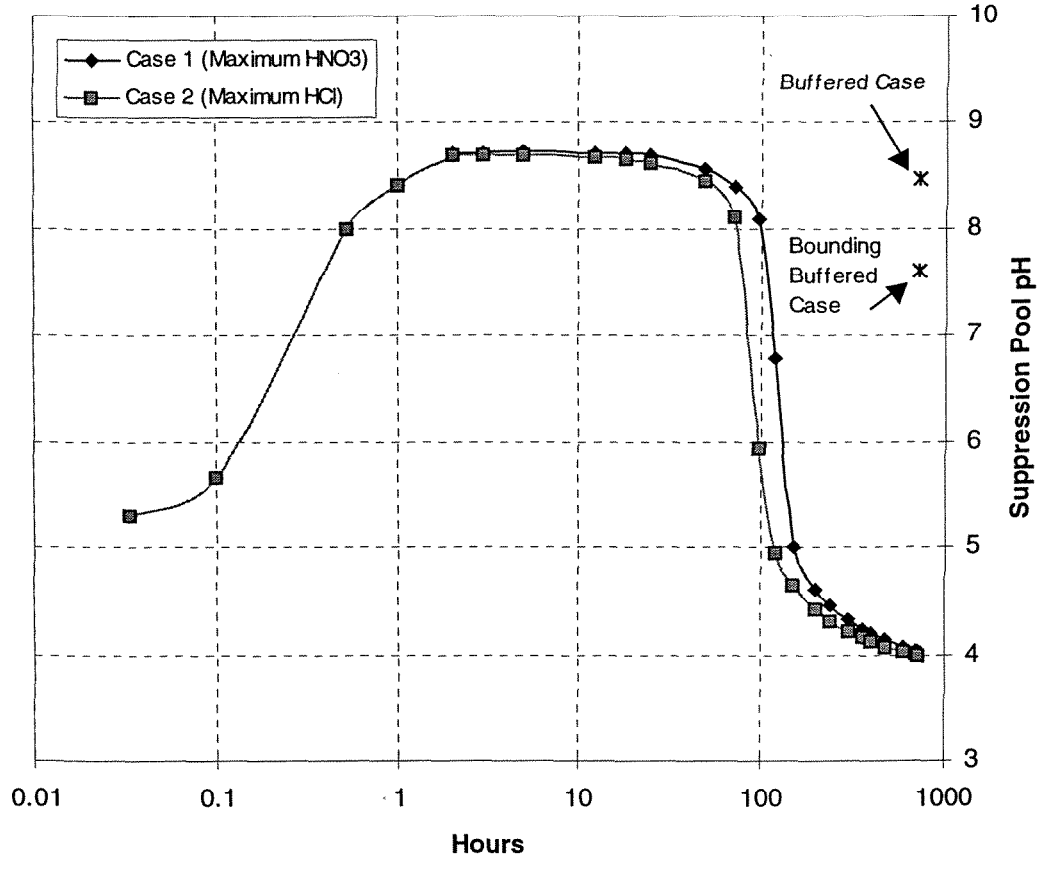

Figure 6-1 GGNS Pool pH Transient

As discussed in Section 3.6, the SLC system will be injected early in the event that such the SLC solution will reach the pool within 2 hours. With only a small credit for CsOH, the suppression pool pH will remain above 7 for the first 2 hours. After the SLC solution reaches the pool, the pH will remain above 7 for the 30-day duration of the accident even without credit for CsOH and assuming only a small fraction of the sodium pentaborate reaching the pool. This "bounding buffered case" is reported in the above figure as calculated in Section 5.7.

Therefore, with the injection of only small amounts of sodium pentaborate, the suppression pool pH will be maintained in an alkaline state such that iodine re-evolution need not be considered.

To evaluate the relative importance of each type of acid, a comparison of the origin of each acid is presented in Figure 6-2. The primary source of acid is from radiolysis of the cable insulation, particularly from the beta dose. The nitric acid generated from radiolysis of the suppression pool water is the second largest source of acid. The hydriodic acid is nearly insignificant in this analysis considering the large quantities of hydrochloric and nitric acids.

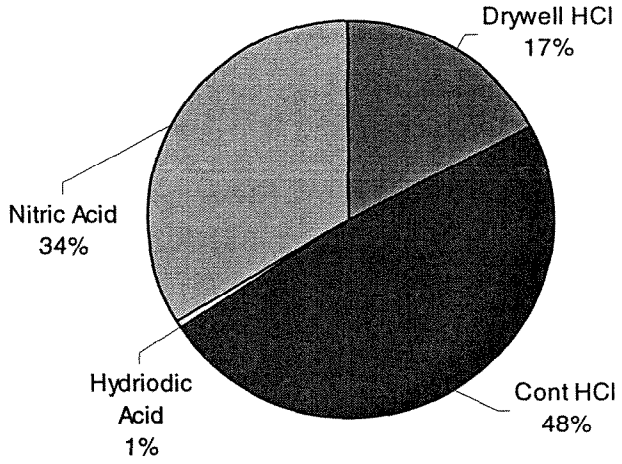

Figure 6-2 Acids by Contribution (after 30 days)

This calculation results in a more severe chemistry transient than the previous revision. The primary reasons for this change in results are described below.

1. The calculation includes beta dose in the pool dose calculation. This consideration will increase the nitric acid production.
2. This calculation uses simplified models for generating the energy flux into cables based on the volumetric energy release rate and a large gamma energy. The previous calculation applied the GGNS EQ results which are based on a complex shielding model and a time-varying gamma energy spectrum which is generally less than the 1 MeV applied in this calculation.
3. This calculation generates the containment volumetric energy release rate without credit for suppression pool scrubbing. The previous calculation took some credit for suppression pool scrubbing. This revision therefore results in higher source terms in the containment and a larger HCl generation rate.

7.0 REFERENCES

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2. NUREG-1465, Accident Source Terms for Light-Water Nuclear Power Plants, dated February 1995.
3. NUREG/CR-5950, Iodine Evolution and pH Control, dated December 1992.
4. Chemistry Procedure 08-S-03-10, Rev. 28, Chemistry Sampling Program.
5. Analysis Basis Document (ABD) 4, Rev. 0, Analytical Bases for Containment Performance.
6. Calculation MC-Q1E30-90112, Rev. 1, Calculation in Support of UFSAR Table 6.2-50 "Suppression Pool Geometry – GGNS" Values.
7. Crane Technical Paper 410, Flow of Fluids through Valves, Fittings, and Pipe, 25th Printing, 1991.
8. Cooling Tower Institute Code Tower Standard Specifications, "Acceptance Test Code for Water-Cooling Towers", CTI Code ATC-105, dated February 1990.
9. Engineering Assistance Request X-002-96, dated April 3, 1996.
10. Engineering Assistance Request X-003-98, dated November 30, 1998.
11. Bechtel Calculation 5.8.3, Rev. 5, NUREG-0588 Source Terms & Integrated Doses.
12. Calculation XC-Q1J11-98010, Rev. 0, Cesium and Iodine Inventories for Pool pH Calculation.
13. NUREG/CR-1237, Best-Estimate LOCA Radiation Signature, dated January 1980.
14. Calculation XC-Q1111-98012, Rev. 1, Suppression Pool Radiation Doses.
15. NUREG-0800, Standard Review Plan, Section 6.5.2, "Containment Spray As a Fission Product Cleanup System" Rev. 2, December 1988.
16. Engineering Report GGNS-00-0014, Rev. 0, RAPTOR Computer Code Validation: Phase I.
17. GGNS Technical Specifications and Bases, Amendment 136.
18. Drawing C-1000, Rev. 3, Unit 1 General Arrangement Plans and Sections.
19. Regulatory Guide 1.183, Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors, dated July 2000.
20. Calculation XC-Q1J11-97003, Rev. 0, NUREG-1465 Input Items for NRC Re-baselining.
21. Calculation XC-Q1111-98017, Rev. 1, LOCA Dose Analysis with Revised Source Term.
22. 22A7419AA, Rev. 5, GE Design Specification Data Sheet, Standby Liquid Control System.
23. Emergency Procedure 05-S-01-EP-2, Rev. 30, RPV Control.

CASE 1

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RRRRRR        AAAA     PPPPPP     TTTTTTTTTT       OOO       RRRRRR
RRRRRRRR     AAAAAA    PPPPPPPP   TTTTTTTTTT     OOOOOOO     RRRRRRRR
RR     RR   AA    AA   PP     PP      TT       OO     OO    RR     RR
RR     RR  AAA    AAA  PP     PP      TT      OO       OO   RR     RR
RR    RR   AA      AA  PP    PP       TT      OO       OO   RR    RR
RRRRRRRR   AAAAAAAAAA  PPPPPPPP       TT      OO 2.14B OO   RRRRRRRR
RRRRRRR    AAAAAAAAAA  PPPPPP         TT      OO       OO   RRRRRRR
RR    RR   AA      AA  PP             TT      OO       OO   RR    RR
RR    RR   AA      AA  PP             TT       OO     OO    RR    RR
RR     RR  AA      AA  PP             TT        OOOOOOO     RR     RR
RR      RR AA      AA  PP             TT          OOO       RR      RR

IIIIIIIIII NN      NN  PPPPPP     UU      UU  TTTTTTTTTT
IIIIIIIIII NNN     NN  PPPPPPPP   UU      UU  TTTTTTTTTT
    II     NNNN    NN  PP     PP  UU      UU      TT
    II     NN NN   NN  PP     PP  UU      UU      TT
    II     NN NN   NN  PP    PP   UU      UU      TT
    II     NN  NN  NN  PPPPPPPP   UU      UU      TT
    II     NN  NN  NN  PPPPPP     UU      UU      TT
    II     NN   NN NN  PP         UU      UU      TT
    II     NN   NN NN  PP         UUU    UUU      TT
IIIIIIIIII NN     NNN  PP          UUUUUUUU       TT
IIIIIIIIII NN      NN  PP            UU           TT
```

Execution Time: 20:23:13 on 11/05/00

RAPTOR Energy Deposition Calculation for Suppression Pool pH Analysis
Case #1 - Maximum Nitric Acid production
All source terms except noble gases deposited into the suppression pool
Drywell/Containment flows identical to the LOCA dose analysis (XC-98017, R. 1)

MODELED NUCLIDE PARAMETERS

Isotope	Group	Half-Life	Whole Body (Rem-m3/Ci-s)	Thyroid (Rem/Ci)	Inhalation (Rem/Ci)	Alpha (MeV)	Beta (MeV)	Gamma (MeV)
Co-58	Noble Mtls	7.0800E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.360E-002	9.760E-001
Co-60	Noble Mtls	5.2710E+000 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.580E-002	2.510E+000
Br-82	Halogens	3.5340E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.360E-001	2.650E+000
Br-83	Halogens	2.3900E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.200E-001	7.450E-003
Br-84	Halogens	3.1800E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.250E+000	1.820E+000
Kr-83m	Noble Gas	1.8300E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.820E-002	2.570E-003
Kr-85m	Noble Gas	4.4800E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.550E-001	1.580E-001
Kr-85	Noble Gas	1.0700E+001 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.510E-001	2.230E-003
Kr-87	Noble Gas	7.6000E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.320E+000	7.930E-001
Kr-88	Noble Gas	2.8400E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.650E-001	1.950E+000
Rb-86	Cesiums	1.8800E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.670E-001	9.450E-002
Rb-87	Cesiums	4.8000E+010 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	7.880E-002	0.000E+000
Rb-88	Cesiums	1.7800E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.070E+000	6.360E-001
Sr-89	Stront/Bar	5.0500E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.830E-001	1.360E-004
Sr-90	Stront/Bar	2.8800E+001 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.960E-001	0.000E+000
Sr-91	Stront/Bar	9.5000E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.530E-001	6.870E-001
Sr-92	Stront/Bar	2.7100E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.000E-001	1.340E+000
Y-90	Lanthanum	6.4100E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.350E-001	0.000E+000
Y-91m	Lanthanum	4.9700E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.020E-001	3.610E-003
Y-91	Lanthanum	5.8500E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.690E-002	5.310E-001
Y-92	Lanthanum	3.5400E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.440E+000	2.520E-001
Y-93	Lanthanum	1.0200E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.170E+000	8.910E-002
Zr-93	Lanthanum	1.5000E+006 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.950E-002	0.000E+000
Zr-95	Lanthanum	6.4000E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.160E-001	7.350E-001
Zr-97	Lanthanum	1.6900E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.970E-001	1.810E-001
Nb-93m	Lanthanum	1.3600E+001 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.830E-002	1.950E-003
Nb-95m	Lanthanum	8.7000E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.800E-001	6.630E-002
Nb-95	Lanthanum	3.5000E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.340E-002	7.640E-001
Nb-97	Lanthanum	7.2000E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.670E-001	6.650E-001
Mo-99	Noble Mtls	6.6020E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.930E-001	1.550E-001
Tc-99m	Noble Mtls	6.0200E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.560E-002	1.270E-001
Tc-99	Noble Mtls	2.1400E+005 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.460E-002	0.000E+000
Ru-103	Noble Mtls	3.9400E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.970E-002	4.840E-001
Ru-105	Noble Mtls	4.4400E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.030E-001	7.840E-001
Ru-106	Noble Mtls	3.6700E+002 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.000E-002	0.000E+000
Rh-103m	Noble Mtls	5.6100E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.670E-001	0.000E+000
Rh-105	Noble Mtls	3.5400E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.520E-001	7.760E-002
Rh-106	Noble Mtls	2.8900E+001 sec	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.410E+000	2.070E-001
Sb-125	Tellurium	2.7000E+000 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.630E-002	4.340E-001
Sb-127	Tellurium	3.9000E+000 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.150E-001	6.450E-001
Sb-129	Tellurium	4.4000E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.580E-001	1.430E+000
Te-125m	Tellurium	5.8000E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.240E-001	3.500E-002
Te-127m	Tellurium	1.0900E+002 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	7.990E-002	3.730E-002
Te-127	Tellurium	9.4000E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.230E-001	4.840E-003
Te-129m	Tellurium	3.3500E+001 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.690E-001	3.940E-002
Te-129	Tellurium	6.9000E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.460E-001	5.770E-002
Te-131m	Tellurium	3.0000E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.900E-001	1.430E+000
Te-131	Tellurium	2.5000E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.970E-001	4.200E-001
Te-132	Tellurium	7.8000E+001 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.840E-002	2.310E-001
Te-133m	Tellurium	5.5400E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	7.090E-001	2.220E+000
Te-133	Tellurium	1.2400E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.150E-001	9.290E-001
Te-134	Tellurium	4.2000E+001 min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.460E-001	8.740E-001
I-129	Halogens	1.6000E+007 yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.430E-002	2.460E-002
I-131	Halogens	8.0400E+000 dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.810E-001	3.810E-001
I-132	Halogens	2.2800E+000 hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.860E-001	2.310E+000

I-133	Halogens	2.0900E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.070E-001	6.070E-001
I-134	Halogens	5.2600E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.030E-001	2.630E+000
I-135	Halogens	6.6100E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.680E-001	1.570E+000
Xe-131m	Noble Gas	1.1770E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.420E-001	2.010E-002
Xe-133m	Noble Gas	2.1900E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.900E-001	4.140E-002
Xe-133	Noble Gas	5.2500E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.360E-001	4.530E-002
Xe-135m	Noble Gas	1.5600E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.580E-002	4.310E-001
Xe-135	Noble Gas	9.1000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.180E-001	2.480E-001
Cs-134m	Cesiums	2.9000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.080E-001	2.700E-002
Cs-134	Cesiums	2.0620E+000	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.570E-001	1.550E+000
Cs-135	Cesiums	3.0000E+006	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.630E-002	0.000E+000
Cs-136	Cesiums	1.3100E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.000E-001	2.170E+000
Cs-137	Cesiums	3.0170E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.870E-001	0.000E+000
Cs-138	Cesiums	3.2200E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.220E+000	2.360E+000
Ba-137m	Stront/Bar	2.5510E+000	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.370E-002	5.980E-001
Ba-139	Stront/Bar	8.2900E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.970E-001	3.530E-002
Ba-140	Stront/Bar	1.2790E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.710E-001	1.910E-001
La-138	Lanthanum	1.1000E+011	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	0.000E+000	0.000E+000
La-140	Lanthanum	4.0300E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.270E-001	2.320E+000
La-141	Lanthanum	3.9000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.480E-001	4.270E-002
La-142	Lanthanum	9.3000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.500E-001	2.730E+000
La-143	Lanthanum	1.4000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	0.000E+000	0.000E+000
Ce-141	Cerium	3.2500E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.700E-001	7.690E-002
Ce-143	Cerium	3.3000E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.370E-001	2.730E-001
Ce-144	Cerium	2.8400E+002	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.140E-002	1.930E-002
Pr-143	Lanthanum	1.3580E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.160E-001	0.000E+000
Pr-144m	Lanthanum	7.2000E+000	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.490E-002	1.180E-002
Pr-144	Lanthanum	1.7300E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.210E+000	3.190E-002
Nd-147	Lanthanum	1.1000E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.700E-001	1.410E-001
Pm-147	Lanthanum	2.6234E+000	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.200E-002	0.000E+000
Np-238	Cerium	2.1170E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.670E-001	5.540E-001
Np-239	Cerium	2.3500E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.430E-001	1.720E-001
Pu-238	Cerium	8.7740E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.490E+000	0.000E+000	1.600E-003
Pu-239	Cerium	2.4100E+004	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.150E+000	0.000E+000	6.540E-004
Pu-240	Cerium	6.5700E+003	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.150E+000	0.000E+000	1.530E-003
Pu-241	Cerium	1.4400E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.230E-003	0.000E+000
Am-241	Lanthanum	4.3270E+002	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.480E+000	0.000E+000	2.810E-002
Cm-242	Lanthanum	1.6280E+002	dys	0.0000E+000	0.0000E+000	0.0000E+000	6.100E+000	0.000E+000	1.670E-003
Cm-244	Lanthanum	1.8110E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.800E+000	0.000E+000	1.490E-003

MODELED DECAY CHAINS

Br-83:	1.000 into	Kr-83m			
Kr-87:	1.000 into	Rb-87			
Kr-88:	1.000 into	Rb-88			
Sr-90:	1.000 into	Y-90			
Sr-91:	0.570 into	Y-91m	0.430 into	Y-91	
Sr-92:	1.000 into	Y-92			
Y-91m:	1.000 into	Y-91			
Y-93:	1.000 into	Zr-93			
Zr-93:	0.950 into	Nb-93m			
Zr-95:	0.009 into	Nb-95m	0.991 into	Nb-95	
Zr-97:	1.000 into	Nb-97			
Nb-95m:	0.975 into	Nb-95			
Mo-99:	0.870 into	Tc-99m	0.130 into	Tc-99	
Tc-99m:	1.000 into	Tc-99			
Ru-103:	1.000 into	Rh-103m			
Ru-105:	1.000 into	Rh-105			
Ru-106:	1.000 into	Rh-106			
Sb-125:	0.230 into	Te-125m			
Sb-127:	0.174 into	Te-127m	0.826 into	Te-127	
Sb-129:	0.166 into	Te-129m	0.834 into	Te-129	
Te-127m:	0.976 into	Te-127			
Te-129m:	0.630 into	Te-129	0.360 into	I-129	
Te-129:	1.000 into	I-129			
Te-131m:	0.220 into	Te-131	0.780 into	I-131	
Te-131:	1.000 into	I-131			
Te-132:	1.000 into	I-132			
Te-133m:	0.170 into	Te-133	0.830 into	I-133	
Te-133:	1.000 into	I-133			
I-131:	0.011 into	Xe-131m			
I-133:	0.029 into	Xe-133m	0.971 into	Xe-133	
I-135:	0.155 into	Xe-135m	0.845 into	Xe-135	
Xe-133m:	1.000 into	Xe-133			
Xe-135m:	1.000 into	Xe-135			
Xe-135:	1.000 into	Cs-135			
Cs-134m:	1.000 into	Cs-134			
Cs-137:	0.946 into	Ba-137m			
Ba-140:	1.000 into	La-140			
La-141:	1.000 into	Ce-141			
La-143:	1.000 into	Ce-143			
Ce-143:	1.000 into	Pr-143			
Ce-144:	0.015 into	Pr-144m	0.985 into	Pr-144	
Pr-144m:	1.000 into	Pr-144			
Nd-147:	1.000 into	Pm-147			
Np-238:	1.000 into	Pu-238			
Np-239:	1.000 into	Pu-239			
Pu-241:	1.000 into	Am-241			
Cm-242:	1.000 into	Pu-238			
Cm-244:	1.000 into	Pu-240			

MODEL PARAMETERS

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Core Power Level =  3910.00 MW
Core Decay Time = 121.000000 Sec
Decay Enabled, Daughter Product Tracking Enabled
Maximum TimeStep = 1.000000 Seconds
Energy Deposition Tracked

NODE PARAMETERS                      Inventory
Name          Volume (cu.ft.)    Tracked  Printed
Drywell         2.7000E+005        X        X
Sprayed         8.4000E+005        X        X
Unsprayed       5.6000E+005        X        X
SuppPool        1.7090E+005        X        X

RELEASE POINTS
Name

RECEIPT POINTS
Name

INITIAL INVENTORIES
  Co-58 In Core          at 1.5290E+002 Ci/MW
  Co-60 In Core          at 1.8300E+002 Ci/MW
  Br-82 In Core          at 1.9500E+002 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
  Br-83 In Core          at 3.5220E+003 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
  Br-84 In Core          at 6.1990E+003 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
 Kr-85m In Core          at 9.1100E+003 Ci/MW
  Kr-85 In Core          at 3.8800E+002 Ci/MW
  Kr-87 In Core          at 1.6570E+004 Ci/MW
  Kr-88 In Core          at 2.2360E+004 Ci/MW
  Rb-86 In Core          at 7.3760E+001 Ci/MW
  Sr-89 In Core          at 2.7950E+004 Ci/MW
  Sr-90 In Core          at 3.1510E+003 Ci/MW
  Sr-91 In Core          at 3.6040E+004 Ci/MW
  Sr-92 In Core          at 3.7650E+004 Ci/MW
   Y-90 In Core          at 3.2510E+003 Ci/MW
   Y-91 In Core          at 3.5600E+004 Ci/MW
   Y-92 In Core          at 3.7800E+004 Ci/MW
   Y-93 In Core          at 4.2980E+004 Ci/MW
  Zr-95 In Core          at 4.6600E+004 Ci/MW
  Zr-97 In Core          at 4.5870E+004 Ci/MW
  Nb-95 In Core          at 4.6750E+004 Ci/MW
  Mo-99 In Core          at 5.1380E+004 Ci/MW
 Tc-99m In Core          at 4.4990E+004 Ci/MW
 Ru-103 In Core          at 4.5190E+004 Ci/MW
 Ru-105 In Core          at 3.3040E+004 Ci/MW
 Ru-106 In Core          at 1.9680E+004 Ci/MW
 Rh-105 In Core          at 3.0870E+004 Ci/MW
 Sb-125 In Core          at 5.5550E+002 Ci/MW
 Sb-127 In Core          at 2.2340E+004 Ci/MW
 Sb-129 In Core          at 9.3090E+003 Ci/MW
Te-127m In Core          at 4.2970E+002 Ci/MW
 Te-127 In Core          at 3.2200E+003 Ci/MW
Te-129m In Core          at 1.9900E+003 Ci/MW
 Te-129 In Core          at 9.1610E+003 Ci/MW
Te-131m In Core          at 4.0790E+003 Ci/MW
 Te-132 In Core          at 3.9080E+004 Ci/MW
Te-133m In Core          at 2.0680E+004 Ci/MW
 Te-134 In Core          at 4.6880E+004 Ci/MW
   I-131 In Core         at 2.7570E+004 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
   I-132 In Core         at 3.9770E+004 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
   I-133 In Core         at 5.5140E+004 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
   I-134 In Core         at 6.0740E+004 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
   I-135 In Core         at 5.1530E+004 Ci/MW  0.0500 elem.  0.0000 org.  0.9500 part.
 Xe-133 In Core          at 5.4250E+004 Ci/MW
 Xe-135 In Core          at 2.1540E+004 Ci/MW
 Cs-134 In Core          at 8.1940E+003 Ci/MW
 Cs-136 In Core          at 2.4040E+003 Ci/MW
 Cs-137 In Core          at 4.1970E+003 Ci/MW
 Cs-138 In Core          at 5.1020E+004 Ci/MW
 Ba-139 In Core          at 4.9940E+004 Ci/MW
 Ba-140 In Core          at 4.9270E+004 Ci/MW
 La-140 In Core          at 5.0690E+004 Ci/MW
 La-141 In Core          at 4.6420E+004 Ci/MW
 La-142 In Core          at 4.4660E+004 Ci/MW
 Ce-141 In Core          at 4.5680E+004 Ci/MW
 Ce-143 In Core          at 4.3550E+004 Ci/MW
 Ce-144 In Core          at 3.5750E+004 Ci/MW
 Pr-143 In Core          at 4.2630E+004 Ci/MW
 Nd-147 In Core          at 1.9050E+004 Ci/MW
 Np-238 In Core          at 1.5800E+004 Ci/MW
 Np-239 In Core          at 6.5700E+005 Ci/MW
 Pu-238 In Core          at 1.8950E+002 Ci/MW
 Pu-239 In Core          at 1.3660E+001 Ci/MW
 Pu-240 In Core          at 2.0690E+001 Ci/MW
 Pu-241 In Core          at 5.5500E+003 Ci/MW
 Am-241 In Core          at 7.1300E+000 Ci/MW
 Cm-242 In Core          at 2.1690E+003 Ci/MW
 Cm-244 In Core          at 4.5780E+002 Ci/MW

RELEASE PARAMETERS
0.000E+000 Sec to 5.000E-001 Hrs : Noble Gas  Into Drywell       at 5.0000E+000 percent
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0.000E+000 Sec to 5.000E-001 Hrs : Halogens   Into SuppPool      at 5.0000E+000 percent
0.000E+000 Sec to 5.000E-001 Hrs : Cesiums    Into SuppPool      at 5.0000E+000 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Noble Gas  Into Drywell       at 9.5000E+001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Halogens   Into SuppPool      at 2.5000E+001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Cesiums    Into SuppPool      at 2.0000E+001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Tellurium  Into SuppPool      at 5.0000E+000 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Stront/Bar Into SuppPool      at 2.0000E+000 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Noble Mtls Into SuppPool      at 2.5000E-001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Lanthanum  Into SuppPool      at 2.0000E-002 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Cerium     Into SuppPool      at 5.0000E-002 percent

FLOW PARAMETERS

Flow#1 from Drywell
0.000E+000 Sec to 1.000E+000 Dys at 2.3020E+000 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 1.4750E+000 percent per day

Flow#2 from Drywell to Unsprayed
0.000E+000 Sec to 2.000E+000 Hrs at 1.6000E+003 percent per day
2.000E+000 Hrs to 7.201E+003 Sec is well-mixed

Flow#3 from Unsprayed to Drywell
2.000E+000 Hrs to 7.201E+003 Sec is well-mixed

Flow#4 from Sprayed to Unsprayed
0.000E+000 Sec to 3.000E+001 Min at 3.2000E+003 percent per day
3.000E+001 Min to 1.000E+000 Dys at 1.2000E+004 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 3.2000E+003 percent per day

Flow#5 from Unsprayed to Sprayed
0.000E+000 Sec to 3.000E+001 Min at 4.8000E+003 percent per day
3.000E+001 Min to 1.000E+000 Dys at 1.8000E+004 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 4.8000E+003 percent per day

Flow#6 from Sprayed
0.000E+000 Sec to 1.000E+000 Dys at 3.8500E-001 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 1.9250E-001 percent per day

Flow#7 from Unsprayed
0.000E+000 Sec to 1.000E+000 Dys at 3.8500E-001 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 1.9250E-001 percent per day

FILTER PARAMETERS
No Filters

REMOVAL PARAMETERS

DRW_Dep from Drywell to SuppPool
0.000E+000 Sec to 4.000E+000 Dys for All Groups Particulate at 3.00000E+001 1/hr
4.000E+000 Dys to 3.000E+001 Dys for All Groups Particulate at 3.00000E+001 1/hr

Sprayed_Dep from Sprayed to SuppPool
0.000E+000 Sec to 3.000E+001 Dys for All Groups Particulate at 3.00000E+001 1/hr

Unsprayed_Dep from Unsprayed to SuppPool
0.000E+000 Sec to 3.000E+001 Dys for All Groups Particulate at 3.00000E+001 1/hr

DIFFUSION PARAMETERS
No Diffusion Parameters

DOSE LOCATIONS
No Dose Locations
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RRRRRR        AAAA     PPPPPP     TTTTTTTTTT      OOO      RRRRRR
RRRRRRRR     AAAAAA    PPPPPPPP   TTTTTTTTTT    OOOOOOO    RRRRRRRR
RR     RR   AA    AA   PP     PP      TT       OO     OO   RR     RR
RR     RR  AAA    AAA  PP     PP      TT       OO     OO   RR     RR
RR     RR  AA      AA  PP     PP      TT       OO     OO   RR     RR
RRRRRRRR   AAAAAAAAAA  PPPPPPPP       TT       OO 2.14B OO  RRRRRRRR
RRRRRRR    AAAAAAAAAA  PPPPPP         TT       OO     OO   RRRRRRR
RR     RR  AA      AA  PP             TT       OO     OO   RR     RR
RR     RR  AA      AA  PP             TT        OO   OO    RR     RR
RR     RR  AA      AA  PP             TT         OOOOO      RR     RR
RR     RR  AA      AA  PP             TT          OOO       RR     RR

    OOO      UU      UU TTTTTTTTTT PPPPPP    UU      UU TTTTTTTTTT
  OOOOOOO    UU      UU TTTTTTTTTT PPPPPPPP  UU      UU TTTTTTTTTT
 OO     OO   UU      UU     TT     PP     PP UU      UU     TT
OO       OO  UU      UU     TT     PP     PP UU      UU     TT
OO       OO  UU      UU     TT     PP    PP  UU      UU     TT
OO       OO  UU      UU     TT     PPPPPPPP  UU      UU     TT
OO       OO  UU      UU     TT     PPPPPP    UU      UU     TT
OO       OO  UU      UU     TT     PP        UU      UU     TT
 OO     OO   UUU    UUU     TT     PP        UUU    UUU     TT
  OOOOOOO     UUUUUUUU      TT     PP         UUUUUUUU      TT
    OOO         UU          TT     PP           UU          TT
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Time = -121.000000 Seconds
CPU ClockTime = 0.060000 Seconds
```

ACTIVITY DISTRIBUTION

Isotope	Core	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	5.978390E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Co-60	7.155300E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82E	3.812250E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82P	7.243275E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83E	6.885510E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83P	1.308247E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84E	1.211905E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84P	2.302618E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85m	3.562010E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85	1.517080E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-87	6.478870E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-88	8.742760E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rb-86	2.884016E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-89	1.092845E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-90	1.232041E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-91	1.409164E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-92	1.472115E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-90	1.271141E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91	1.391960E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-92	1.477980E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-93	1.680518E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-95	1.822060E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-97	1.793517E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95	1.827925E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Mo-99	2.008958E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99m	1.759109E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-103	1.766929E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-105	1.291864E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-106	7.694880E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-105	1.207017E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-125	2.172005E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-127	8.734940E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-129	3.639819E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127m	1.680127E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127	1.259020E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129m	7.780900E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129	3.581951E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131m	1.594889E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-132	1.528028E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133m	8.085880E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-134	1.833008E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131E	5.389935E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131P	1.024088E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132E	7.775035E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132P	1.477257E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133E	1.077987E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133P	2.048175E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134E	1.187467E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134P	2.256187E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135E	1.007412E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135P	1.914082E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-133	2.121175E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-135	8.422140E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-134	3.203854E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-136	9.399640E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-137	1.641027E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-138	1.994882E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-139	1.952654E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-140	1.926457E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-140	1.981979E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

La-141	1.815022E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-142	1.746206E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-141	1.786088E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-143	1.702805E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-144	1.397825E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-143	1.666833E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nd-147	7.448550E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-238	6.177800E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-239	2.568870E+009	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-238	7.409450E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-239	5.341060E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-240	8.089790E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-241	2.170050E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Am-241	2.787830E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-242	8.480790E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-244	1.789998E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

Time = 0.000000 Seconds
CPU ClockTime = 0.220000 Seconds

ACTIVITY DISTRIBUTION

Isotope	Core	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	5.978308E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Co-60	7.155296E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82E	3.809738E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82P	7.238502E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83E	6.818717E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83P	1.295556E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84E	1.159786E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84P	2.203594E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-83m	1.733643E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85m	3.543534E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85	1.517080E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-87	6.360795E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-88	8.671334E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rb-86	2.883867E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rb-88	6.575947E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-89	1.092824E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-90	1.232041E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-91	1.405712E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-92	1.459514E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-90	1.271127E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91m	2.224928E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91	1.391947E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-92	1.477900E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-93	1.676684E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-93	2.967509E-004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-95	1.822032E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-97	1.791046E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95m	4.390691E+002	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95	1.827924E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-97	3.446083E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Mo-99	2.008249E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99m	1.759064E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99	2.506315E-003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-103	1.766885E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-105	1.285103E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-106	7.694860E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-103m	4.348216E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-105	1.207071E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-106	7.272359E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-125	2.172003E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-127	8.732766E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-129	3.620598E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-125m	8.360917E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127m	1.680247E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127	1.274167E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129m	7.780849E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129	3.580665E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131m	1.593651E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131	1.907300E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-132	1.527572E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133m	7.884410E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133	1.446905E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-134	1.773006E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-129P	6.469860E-006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131E	5.389284E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131P	1.023979E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132E	7.695993E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

I-132P	1.477770E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133E	1.076786E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133P	2.046640E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134E	1.156326E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134P	2.197019E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135E	1.003867E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135P	1.907347E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-131m	9.778808E+001	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-133m	2.769701E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-133	2.121170E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-135m	2.671905E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-135	8.444405E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-134	3.203850E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-135	7.418773E-005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-136	9.398944E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-137	1.641027E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-138	1.910134E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-137m	6.549192E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-139	1.920005E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-140	1.926311E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-140	1.981947E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-141	1.804212E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-142	1.720156E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-141	1.786089E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-143	1.701603E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-144	1.397820E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-143	1.666836E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144m	3.699935E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144	1.070235E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nd-147	7.447893E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pm-147	7.545619E+001	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-238	6.174968E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-239	2.567809E+009	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-238	7.409471E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-239	5.341088E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-240	8.089790E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-241	2.170050E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Am-241	2.787843E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-242	8.480739E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-244	1.789998E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

Time = 1800.000000 Seconds
CPU ClockTime = 2.360000 Seconds

ACTIVITY DISTRIBUTION

Isotope	Core	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	5.977089E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Co-60	7.155243E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82E	3.772559E+004	0.000000E+000	0.000000E+000	0.000000E+000	1.886285E+003
Br-82P	7.167862E+005	0.000000E+000	0.000000E+000	0.000000E+000	3.583941E+004
Br-83E	5.898284E+005	0.000000E+000	0.000000E+000	0.000000E+000	2.949261E+004
Br-83P	1.120674E+007	0.000000E+000	0.000000E+000	0.000000E+000	5.603595E+005
Br-84E	6.030973E+005	0.000000E+000	0.000000E+000	0.000000E+000	3.016034E+004
Br-84P	1.145885E+007	0.000000E+000	0.000000E+000	0.000000E+000	5.730465E+005
Kr-83m	2.328785E+006	5.476182E+004	1.285862E+003	5.311129E+003	5.500919E+004
Kr-85m	3.279741E+007	1.394270E+006	5.762544E+004	1.874658E+005	0.000000E+000
Kr-85	1.517074E+006	6.449184E+004	2.665342E+003	8.671011E+003	0.000000E+000
Kr-87	4.838200E+007	2.056908E+006	8.502192E+004	2.765769E+005	0.000000E+000
Kr-88	7.675164E+007	3.262875E+006	1.348587E+005	4.387140E+005	0.000000E+000
Rb-86	2.881653E+005	0.000000E+000	0.000000E+000	0.000000E+000	1.440827E+004
Rb-88	5.764521E+007	2.204444E+005	9.791504E+003	3.159186E+004	2.618208E+006
Sr-89	1.092512E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-90	1.232039E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-91	1.355354E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-92	1.284303E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-90	1.270916E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91m	2.833167E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91	1.391790E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-92	1.467713E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-93	1.620671E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-93	4.645866E-003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-95	1.821621E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-97	1.754691E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95m	6.956024E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95	1.827915E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-97	4.703020E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Mo-99	1.997734E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99m	1.758141E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99	3.978884E-002	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

Ru-103	1.766238E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-105	1.188607E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-106	7.694557E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-103m	5.771589E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-105	1.207354E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-106	7.694564E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-125	2.171971E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-127	8.700491E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-129	3.346357E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-125m	1.327207E+002	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127m	1.682034E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127	1.494605E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129m	7.779987E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129	3.530591E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131m	1.575346E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131	2.050018E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-132	1.520799E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133m	5.416972E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133	8.907608E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-134	1.080659E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-129P	1.024484E-004	0.000000E+000	0.000000E+000	0.000000E+000	2.644756E-006
I-131E	5.379613E+006	0.000000E+000	0.000000E+000	0.000000E+000	2.689808E+005
I-131P	1.022386E+008	0.000000E+000	0.000000E+000	0.000000E+000	5.111308E+006
I-132E	6.610728E+006	0.000000E+000	0.000000E+000	0.000000E+000	3.305504E+005
I-132P	1.484304E+008	0.000000E+000	0.000000E+000	0.000000E+000	6.870991E+006
I-133E	1.059077E+007	0.000000E+000	0.000000E+000	0.000000E+000	5.295412E+005
I-133P	2.023059E+008	0.000000E+000	0.000000E+000	0.000000E+000	1.009099E+007
I-134E	7.787356E+006	0.000000E+000	0.000000E+000	0.000000E+000	3.894106E+005
I-134P	1.479598E+008	0.000000E+000	0.000000E+000	0.000000E+000	7.398801E+006
I-135E	9.525886E+006	0.000000E+000	0.000000E+000	0.000000E+000	4.763013E+005
I-135P	1.809918E+008	0.000000E+000	0.000000E+000	0.000000E+000	9.049724E+006
Xe-131m	1.550314E+003	3.672767E+001	8.676136E-001	3.575124E+000	3.629116E+001
Xe-133m	4.357247E+004	1.033091E+003	2.442043E+001	1.006023E+002	1.017458E+003
Xe-133	2.121056E+008	9.005304E+006	3.719192E+005	1.210240E+006	1.423011E+004
Xe-135m	2.290220E+007	4.293009E+005	8.297967E+003	3.701839E+004	6.699646E+005
Xe-135	8.803191E+007	3.611246E+006	1.462404E+005	4.792642E+005	1.632898E+005
Cs-134	3.203788E+007	0.000000E+000	0.000000E+000	0.000000E+000	1.601894E+006
Cs-135	1.211999E-003	2.927068E-006	1.283643E-007	4.166063E-007	5.708449E-005
Cs-136	9.388588E+006	0.000000E+000	0.000000E+000	0.000000E+000	4.694296E+005
Cs-137	1.641025E+007	0.000000E+000	0.000000E+000	0.000000E+000	8.205124E+005
Cs-138	1.001385E+008	0.000000E+000	0.000000E+000	0.000000E+000	5.007824E+006
Ba-137m	1.552151E+007	0.000000E+000	0.000000E+000	0.000000E+000	6.807940E+005
Ba-139	1.494050E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-140	1.924137E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-140	1.981461E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-141	1.650798E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-142	1.375502E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-141	1.786062E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-143	1.683826E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-144	1.397749E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-143	1.666863E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144m	2.000512E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144	1.006766E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nd-147	7.438122E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pm-147	1.197150E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-238	6.132990E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-239	2.552078E+009	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-238	7.409783E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-239	5.341508E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-240	8.089791E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-241	2.170044E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Am-241	2.788041E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-242	8.479987E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-244	1.789994E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta (MeV/cc-s)	3.460489E+007	4.589093E+005	2.243120E+006	2.301383E+008
Beta Int (MeV/cc)	3.434029E+010	2.325590E+008	1.523191E+009	2.169288E+011
Gamma (MeV/cc-s)	4.763495E+007	6.259927E+005	3.066418E+006	6.078065E+008
Gamma Int (MeV/cc)	4.718093E+010	3.166401E+008	2.077799E+009	5.922071E+011

Time = 7200.000000 Seconds
CPU ClockTime = 8.840000 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	0.000000E+000	0.000000E+000	0.000000E+000	1.493358E+003
Co-60	0.000000E+000	0.000000E+000	0.000000E+000	1.788770E+003
Br-82E	0.000000E+000	0.000000E+000	0.000000E+000	1.098958E+004
Br-82P	0.000000E+000	0.000000E+000	0.000000E+000	2.088021E+005
Br-83E	0.000000E+000	0.000000E+000	0.000000E+000	1.145338E+005
Br-83P	0.000000E+000	0.000000E+000	0.000000E+000	2.176141E+006
Br-84E	0.000000E+000	0.000000E+000	0.000000E+000	2.544578E+004
Br-84P	0.000000E+000	0.000000E+000	0.000000E+000	4.834698E+005
Kr-83m	2.195460E+006	5.207110E+005	4.561159E+005	7.531825E+005

Kr-85m	1.601312E+007	5.483958E+006	4.483834E+006	0.000000E+000
Kr-85	9.341581E+005	3.198842E+005	2.615497E+005	0.000000E+000
Kr-87	1.311150E+007	4.491445E+006	3.672200E+006	0.000000E+000
Kr-88	3.277374E+007	1.122459E+007	9.177459E+006	0.000000E+000
Rb-86	0.000000E+000	0.000000E+000	0.000000E+000	7.187552E+004
Rb-88	2.311104E+006	8.168314E+005	6.667906E+005	4.179892E+007
Sr-89	0.000000E+000	0.000000E+000	0.000000E+000	2.183150E+006
Sr-90	0.000000E+000	0.000000E+000	0.000000E+000	2.464068E+005
Sr-91	0.000000E+000	0.000000E+000	0.000000E+000	2.429720E+006
Sr-92	0.000000E+000	0.000000E+000	0.000000E+000	1.750214E+006
Y-90	0.000000E+000	0.000000E+000	0.000000E+000	4.507975E+003
Y-91m	0.000000E+000	0.000000E+000	0.000000E+000	6.198231E+005
Y-91	0.000000E+000	0.000000E+000	0.000000E+000	2.839558E+004
Y-92	0.000000E+000	0.000000E+000	0.000000E+000	2.894809E+005
Y-93	0.000000E+000	0.000000E+000	0.000000E+000	2.927250E+004
Zr-93	0.000000E+000	0.000000E+000	0.000000E+000	3.369148E-006
Zr-95	0.000000E+000	0.000000E+000	0.000000E+000	3.640777E+004
Zr-97	0.000000E+000	0.000000E+000	0.000000E+000	3.300004E+004
Nb-95m	0.000000E+000	0.000000E+000	0.000000E+000	5.267892E+000
Nb-95	0.000000E+000	0.000000E+000	0.000000E+000	3.655772E+004
Nb-97	0.000000E+000	0.000000E+000	0.000000E+000	2.359151E+004
Mo-99	0.000000E+000	0.000000E+000	0.000000E+000	4.916306E+005
Tc-99m	0.000000E+000	0.000000E+000	0.000000E+000	4.381762E+005
Tc-99	0.000000E+000	0.000000E+000	0.000000E+000	3.781234E-004
Ru-103	0.000000E+000	0.000000E+000	0.000000E+000	4.410743E+005
Ru-105	0.000000E+000	0.000000E+000	0.000000E+000	2.351193E+005
Ru-106	0.000000E+000	0.000000E+000	0.000000E+000	1.923412E+005
Rh-103m	0.000000E+000	0.000000E+000	0.000000E+000	3.435575E+005
Rh-105	0.000000E+000	0.000000E+000	0.000000E+000	3.007653E+005
Rh-106	0.000000E+000	0.000000E+000	0.000000E+000	1.923235E+005
Sb-125	0.000000E+000	0.000000E+000	0.000000E+000	1.085938E+005
Sb-127	0.000000E+000	0.000000E+000	0.000000E+000	4.302194E+006
Sb-129	0.000000E+000	0.000000E+000	0.000000E+000	1.321076E+006
Te-125m	0.000000E+000	0.000000E+000	0.000000E+000	2.527672E+001
Te-127m	0.000000E+000	0.000000E+000	0.000000E+000	8.436735E+004
Te-127	0.000000E+000	0.000000E+000	0.000000E+000	1.051737E+006
Te-129m	0.000000E+000	0.000000E+000	0.000000E+000	3.888163E+005
Te-129	0.000000E+000	0.000000E+000	0.000000E+000	1.587194E+006
Te-131m	0.000000E+000	0.000000E+000	0.000000E+000	7.608446E+005
Te-131	0.000000E+000	0.000000E+000	0.000000E+000	1.636890E+005
Te-132	0.000000E+000	0.000000E+000	0.000000E+000	7.503319E+006
Te-133m	0.000000E+000	0.000000E+000	0.000000E+000	8.784843E+005
Te-133	0.000000E+000	0.000000E+000	0.000000E+000	1.914444E+005
Te-134	0.000000E+000	0.000000E+000	0.000000E+000	1.223641E+006
I-129P	0.000000E+000	0.000000E+000	0.000000E+000	6.547392E-005
I-131E	0.000000E+000	0.000000E+000	0.000000E+000	1.605212E+006
I-131P	0.000000E+000	0.000000E+000	0.000000E+000	3.051816E+007
I-132E	0.000000E+000	0.000000E+000	0.000000E+000	1.257022E+006
I-132P	0.000000E+000	0.000000E+000	0.000000E+000	3.576091E+007
I-133E	0.000000E+000	0.000000E+000	0.000000E+000	3.023054E+006
I-133P	0.000000E+000	0.000000E+000	0.000000E+000	5.799364E+007
I-134E	0.000000E+000	0.000000E+000	0.000000E+000	7.136555E+005
I-134P	0.000000E+000	0.000000E+000	0.000000E+000	1.355946E+007
I-135E	0.000000E+000	0.000000E+000	0.000000E+000	2.441859E+006
I-135P	0.000000E+000	0.000000E+000	0.000000E+000	4.639532E+007
Xe-131m	2.456253E+003	5.928584E+002	5.174695E+002	7.951001E+002
Xe-133m	6.753480E+004	1.634041E+004	1.425560E+004	2.160823E+004
Xe-133	1.301156E+008	4.446032E+007	3.636504E+007	3.033324E+005
Xe-135m	5.028263E+006	5.858503E+005	6.120480E+005	6.190703E+006
Xe-135	5.523823E+007	1.785559E+007	1.473979E+007	3.304752E+006
Cs-134	0.000000E+000	0.000000E+000	0.000000E+000	8.009011E+006
Cs-135	4.687155E-005	1.571671E-005	1.294747E-005	2.466033E-003
Cs-136	0.000000E+000	0.000000E+000	0.000000E+000	2.339399E+006
Cs-137	0.000000E+000	0.000000E+000	0.000000E+000	4.102546E+006
Cs-138	0.000000E+000	0.000000E+000	0.000000E+000	3.607704E+006
Ba-137m	0.000000E+000	0.000000E+000	0.000000E+000	3.766455E+006
Ba-139	0.000000E+000	0.000000E+000	0.000000E+000	1.408035E+006
Ba-140	0.000000E+000	0.000000E+000	0.000000E+000	3.835263E+006
La-140	0.000000E+000	0.000000E+000	0.000000E+000	8.820468E+004
La-141	0.000000E+000	0.000000E+000	0.000000E+000	2.529030E+004
La-142	0.000000E+000	0.000000E+000	0.000000E+000	1.406692E+004
Ce-141	0.000000E+000	0.000000E+000	0.000000E+000	8.925299E+004
Ce-143	0.000000E+000	0.000000E+000	0.000000E+000	8.158031E+004
Ce-144	0.000000E+000	0.000000E+000	0.000000E+000	6.987680E+004
Pr-143	0.000000E+000	0.000000E+000	0.000000E+000	3.341546E+004
Pr-144m	0.000000E+000	0.000000E+000	0.000000E+000	9.754962E+002
Pr-144	0.000000E+000	0.000000E+000	0.000000E+000	5.827933E+004
Nd-147	0.000000E+000	0.000000E+000	0.000000E+000	1.481778E+004
Pm-147	0.000000E+000	0.000000E+000	0.000000E+000	9.105375E-001
Np-238	0.000000E+000	0.000000E+000	0.000000E+000	3.004387E+004
Np-239	0.000000E+000	0.000000E+000	0.000000E+000	1.252733E+006
Pu-238	0.000000E+000	0.000000E+000	0.000000E+000	3.705337E+002
Pu-239	0.000000E+000	0.000000E+000	0.000000E+000	2.671331E+001
Pu-240	0.000000E+000	0.000000E+000	0.000000E+000	4.044743E+001
Pu-241	0.000000E+000	0.000000E+000	0.000000E+000	1.085013E+004
Am-241	0.000000E+000	0.000000E+000	0.000000E+000	5.578161E+000
Cm-242	0.000000E+000	0.000000E+000	0.000000E+000	1.695546E+003
Cm-244	0.000000E+000	0.000000E+000	0.000000E+000	3.579964E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool

Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	1.133842E+005
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	3.062111E+008
Beta (MeV/cc-s)	3.591411E+008	3.888679E+007	4.782802E+007	1.410488E+009
Beta Int (MeV/cc)	1.371699E+012	8.520278E+010	1.182554E+011	4.733194E+012
Gamma (MeV/cc-s)	4.843155E+008	5.216167E+007	6.418784E+007	2.491473E+009
Gamma Int (MeV/cc)	1.881469E+012	1.155815E+011	1.607275E+011	9.545714E+012

Time = 7201.000000 Seconds
CPU ClockTime = 8.840000 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	0.000000E+000	0.000000E+000	0.000000E+000	1.493358E+003
Co-60	0.000000E+000	0.000000E+000	0.000000E+000	1.788770E+003
Br-82E	0.000000E+000	0.000000E+000	0.000000E+000	1.098953E+004
Br-82P	0.000000E+000	0.000000E+000	0.000000E+000	2.088010E+005
Br-83E	0.000000E+000	0.000000E+000	0.000000E+000	1.145245E+005
Br-83P	0.000000E+000	0.000000E+000	0.000000E+000	2.175966E+006
Br-84E	0.000000E+000	0.000000E+000	0.000000E+000	2.543654E+004
Br-84P	0.000000E+000	0.000000E+000	0.000000E+000	4.832942E+005
Kr-83m	8.616900E+005	5.254535E+005	1.787209E+006	7.533442E+005
Kr-85m	6.661696E+006	5.518782E+006	1.381685E+007	0.000000E+000
Kr-85	3.886326E+005	3.219296E+005	8.060527E+005	0.000000E+000
Kr-87	5.454259E+006	4.519468E+006	1.131254E+007	0.000000E+000
Kr-88	1.363418E+007	1.129559E+007	2.827831E+007	0.000000E+000
Rb-86	0.000000E+000	0.000000E+000	0.000000E+000	7.187549E+004
Rb-88	9.680473E+005	8.218227E+005	2.007802E+006	4.182822E+007
Sr-89	0.000000E+000	0.000000E+000	0.000000E+000	2.183149E+006
Sr-90	0.000000E+000	0.000000E+000	0.000000E+000	2.464068E+005
Sr-91	0.000000E+000	0.000000E+000	0.000000E+000	2.429670E+006
Sr-92	0.000000E+000	0.000000E+000	0.000000E+000	1.750090E+006
Y-90	0.000000E+000	0.000000E+000	0.000000E+000	4.508701E+003
Y-91m	0.000000E+000	0.000000E+000	0.000000E+000	6.200009E+005
Y-91	0.000000E+000	0.000000E+000	0.000000E+000	2.839581E+004
Y-92	0.000000E+000	0.000000E+000	0.000000E+000	2.895603E+005
Y-93	0.000000E+000	0.000000E+000	0.000000E+000	2.927195E+004
Zr-93	0.000000E+000	0.000000E+000	0.000000E+000	3.369576E-006
Zr-95	0.000000E+000	0.000000E+000	0.000000E+000	3.640777E+004
Zr-97	0.000000E+000	0.000000E+000	0.000000E+000	3.299966E+004
Nb-95m	0.000000E+000	0.000000E+000	0.000000E+000	5.268605E+000
Nb-95	0.000000E+000	0.000000E+000	0.000000E+000	3.655772E+004
Nb-97	0.000000E+000	0.000000E+000	0.000000E+000	2.359302E+004
Mo-99	0.000000E+000	0.000000E+000	0.000000E+000	4.916291E+005
Tc-99m	0.000000E+000	0.000000E+000	0.000000E+000	4.381759E+005
Tc-99	0.000000E+000	0.000000E+000	0.000000E+000	3.781750E-004
Ru-103	0.000000E+000	0.000000E+000	0.000000E+000	4.410742E+005
Ru-105	0.000000E+000	0.000000E+000	0.000000E+000	2.351091E+005
Ru-106	0.000000E+000	0.000000E+000	0.000000E+000	1.923412E+005
Rh-103m	0.000000E+000	0.000000E+000	0.000000E+000	3.435776E+005
Rh-105	0.000000E+000	0.000000E+000	0.000000E+000	3.007650E+005
Rh-106	0.000000E+000	0.000000E+000	0.000000E+000	1.923239E+005
Sb-125	0.000000E+000	0.000000E+000	0.000000E+000	1.085938E+005
Sb-127	0.000000E+000	0.000000E+000	0.000000E+000	4.302185E+006
Sb-129	0.000000E+000	0.000000E+000	0.000000E+000	1.321019E+006
Te-125m	0.000000E+000	0.000000E+000	0.000000E+000	2.528017E+001
Te-127m	0.000000E+000	0.000000E+000	0.000000E+000	8.436740E+004
Te-127	0.000000E+000	0.000000E+000	0.000000E+000	1.051790E+006
Te-129m	0.000000E+000	0.000000E+000	0.000000E+000	3.888163E+005
Te-129	0.000000E+000	0.000000E+000	0.000000E+000	1.587154E+006
Te-131m	0.000000E+000	0.000000E+000	0.000000E+000	7.608397E+005
Te-131	0.000000E+000	0.000000E+000	0.000000E+000	1.636907E+005
Te-132	0.000000E+000	0.000000E+000	0.000000E+000	7.503301E+006
Te-133m	0.000000E+000	0.000000E+000	0.000000E+000	8.783011E+005
Te-133	0.000000E+000	0.000000E+000	0.000000E+000	1.914052E+005
Te-134	0.000000E+000	0.000000E+000	0.000000E+000	1.223305E+006
I-129P	0.000000E+000	0.000000E+000	0.000000E+000	6.547626E-005
I-131E	0.000000E+000	0.000000E+000	0.000000E+000	1.605211E+006
I-131P	0.000000E+000	0.000000E+000	0.000000E+000	3.051813E+007
I-132E	0.000000E+000	0.000000E+000	0.000000E+000	1.256916E+006
I-132P	0.000000E+000	0.000000E+000	0.000000E+000	3.575852E+007
I-133E	0.000000E+000	0.000000E+000	0.000000E+000	3.023027E+006
I-133P	0.000000E+000	0.000000E+000	0.000000E+000	5.799311E+007
I-134E	0.000000E+000	0.000000E+000	0.000000E+000	7.134988E+005
I-134P	0.000000E+000	0.000000E+000	0.000000E+000	1.355648E+007
I-135E	0.000000E+000	0.000000E+000	0.000000E+000	2.441788E+006
I-135P	0.000000E+000	0.000000E+000	0.000000E+000	4.639397E+007
Xe-131m	9.664820E+002	5.982261E+002	2.004555E+003	7.953404E+002
Xe-133m	2.658241E+004	1.648795E+004	5.513389E+004	2.161463E+004
Xe-133	5.410994E+007	4.474514E+007	1.122280E+008	3.034225E+005
Xe-135m	1.831666E+006	5.963422E+005	3.799010E+006	6.191724E+006
Xe-135	2.274383E+007	1.797613E+007	4.717239E+007	3.305686E+006
Cs-134	0.000000E+000	0.000000E+000	0.000000E+000	8.009010E+006
Cs-135	1.944705E-005	1.581876E-005	4.033461E-005	2.467173E-003
Cs-136	0.000000E+000	0.000000E+000	0.000000E+000	2.339397E+006
Cs-137	0.000000E+000	0.000000E+000	0.000000E+000	4.102546E+006
Cs-138	0.000000E+000	0.000000E+000	0.000000E+000	3.606410E+006
Ba-137m	0.000000E+000	0.000000E+000	0.000000E+000	3.766972E+006
Ba-139	0.000000E+000	0.000000E+000	0.000000E+000	1.407839E+006
Ba-140	0.000000E+000	0.000000E+000	0.000000E+000	3.835260E+006

La-140	0.000000E+000	0.000000E+000	0.000000E+000	8.822258E+004
La-141	0.000000E+000	0.000000E+000	0.000000E+000	2.528905E+004
La-142	0.000000E+000	0.000000E+000	0.000000E+000	1.406517E+004
Ce-141	0.000000E+000	0.000000E+000	0.000000E+000	8.925298E+004
Ce-143	0.000000E+000	0.000000E+000	0.000000E+000	8.157984E+004
Ce-144	0.000000E+000	0.000000E+000	0.000000E+000	6.987680E+004
Pr-143	0.000000E+000	0.000000E+000	0.000000E+000	3.341549E+004
Pr-144m	0.000000E+000	0.000000E+000	0.000000E+000	9.756127E+002
Pr-144	0.000000E+000	0.000000E+000	0.000000E+000	5.828703E+004
Nd-147	0.000000E+000	0.000000E+000	0.000000E+000	1.481777E+004
Pm-147	0.000000E+000	0.000000E+000	0.000000E+000	9.106615E-001
Np-238	0.000000E+000	0.000000E+000	0.000000E+000	3.004375E+004
Np-239	0.000000E+000	0.000000E+000	0.000000E+000	1.252729E+006
Pu-238	0.000000E+000	0.000000E+000	0.000000E+000	3.705337E+002
Pu-239	0.000000E+000	0.000000E+000	0.000000E+000	2.671331E+001
Pu-240	0.000000E+000	0.000000E+000	0.000000E+000	4.044743E+001
Pu-241	0.000000E+000	0.000000E+000	0.000000E+000	1.085013E+004
Am-241	0.000000E+000	0.000000E+000	0.000000E+000	5.578162E+000
Cm-242	0.000000E+000	0.000000E+000	0.000000E+000	1.695546E+003
Cm-244	0.000000E+000	0.000000E+000	0.000000E+000	3.579964E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	1.133842E+005
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	3.063245E+008
Beta (MeV/cc-s)	4.579251E+008	3.913709E+007	2.207853E+008	1.410909E+009
Beta Int (MeV/cc)	1.372157E+012	8.524191E+010	1.184762E+011	4.734604E+012
Gamma (MeV/cc-s)	6.168696E+008	5.249872E+007	2.974193E+008	2.491463E+009
Gamma Int (MeV/cc)	1.882086E+012	1.156340E+011	1.610249E+011	9.548205E+012

Time = 86400.000000 Seconds
CPU ClockTime = 83.600004 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	0.000000E+000	0.000000E+000	0.000000E+000	1.480016E+003
Co-60	0.000000E+000	0.000000E+000	0.000000E+000	1.788180E+003
Br-82E	0.000000E+000	0.000000E+000	0.000000E+000	7.138104E+003
Br-82P	0.000000E+000	0.000000E+000	0.000000E+000	1.356240E+005
Br-83E	0.000000E+000	0.000000E+000	0.000000E+000	1.940645E+002
Br-83P	0.000000E+000	0.000000E+000	0.000000E+000	3.687226E+003
Kr-83m	2.029050E+002	3.348947E+002	2.232655E+002	1.439559E+004
Kr-85m	2.168538E+005	3.854811E+005	2.569885E+005	0.000000E+000
Kr-85	3.804559E+005	6.743712E+005	4.495808E+005	0.000000E+000
Kr-87	3.156617E+001	5.652073E+001	3.768106E+001	0.000000E+000
Kr-88	6.216870E+004	1.106942E+005	7.379663E+004	0.000000E+000
Rb-86	0.000000E+000	0.000000E+000	0.000000E+000	6.948693E+004
Rb-88	4.526279E+003	8.059245E+003	5.372866E+003	2.575166E+005
Sr-89	0.000000E+000	0.000000E+000	0.000000E+000	2.155854E+006
Sr-90	0.000000E+000	0.000000E+000	0.000000E+000	2.463919E+005
Sr-91	0.000000E+000	0.000000E+000	0.000000E+000	4.880160E+005
Sr-92	0.000000E+000	0.000000E+000	0.000000E+000	6.299489E+003
Y-90	0.000000E+000	0.000000E+000	0.000000E+000	5.572034E+004
Y-91m	0.000000E+000	0.000000E+000	0.000000E+000	3.047434E+005
Y-91	0.000000E+000	0.000000E+000	0.000000E+000	4.132444E+004
Y-92	0.000000E+000	0.000000E+000	0.000000E+000	6.027549E+004
Y-93	0.000000E+000	0.000000E+000	0.000000E+000	6.564164E+003
Zr-93	0.000000E+000	0.000000E+000	0.000000E+000	2.099899E-005
Zr-95	0.000000E+000	0.000000E+000	0.000000E+000	3.604811E+004
Zr-97	0.000000E+000	0.000000E+000	0.000000E+000	1.338570E+004
Nb-95m	0.000000E+000	0.000000E+000	0.000000E+000	5.683443E+001
Nb-95	0.000000E+000	0.000000E+000	0.000000E+000	3.654647E+004
Nb-97	0.000000E+000	0.000000E+000	0.000000E+000	1.440885E+004
Mo-99	0.000000E+000	0.000000E+000	0.000000E+000	3.902347E+005
Tc-99m	0.000000E+000	0.000000E+000	0.000000E+000	3.709908E+005
Tc-99	0.000000E+000	0.000000E+000	0.000000E+000	4.160227E-003
Ru-103	0.000000E+000	0.000000E+000	0.000000E+000	4.340183E+005
Ru-105	0.000000E+000	0.000000E+000	0.000000E+000	7.580507E+003
Ru-106	0.000000E+000	0.000000E+000	0.000000E+000	1.920085E+005
Rh-103m	0.000000E+000	0.000000E+000	0.000000E+000	4.344480E+005
Rh-105	0.000000E+000	0.000000E+000	0.000000E+000	2.163309E+005
Rh-106	0.000000E+000	0.000000E+000	0.000000E+000	1.920087E+005
Sb-125	0.000000E+000	0.000000E+000	0.000000E+000	1.085238E+005
Sb-127	0.000000E+000	0.000000E+000	0.000000E+000	3.655402E+006
Sb-129	0.000000E+000	0.000000E+000	0.000000E+000	4.128364E+004
Te-125m	0.000000E+000	0.000000E+000	0.000000E+000	2.970364E+002
Te-127m	0.000000E+000	0.000000E+000	0.000000E+000	8.789169E+004
Te-127	0.000000E+000	0.000000E+000	0.000000E+000	2.851973E+006
Te-129m	0.000000E+000	0.000000E+000	0.000000E+000	3.826576E+005
Te-129	0.000000E+000	0.000000E+000	0.000000E+000	2.880257E+005
Te-131m	0.000000E+000	0.000000E+000	0.000000E+000	4.576575E+005
Te-131	0.000000E+000	0.000000E+000	0.000000E+000	1.021031E+005
Te-132	0.000000E+000	0.000000E+000	0.000000E+000	6.170886E+006
Te-133m	0.000000E+000	0.000000E+000	0.000000E+000	5.904435E-002
Te-133	0.000000E+000	0.000000E+000	0.000000E+000	1.293343E-002
Te-134	0.000000E+000	0.000000E+000	0.000000E+000	4.233616E-004
I-129P	0.000000E+000	0.000000E+000	0.000000E+000	1.485750E-004
I-131E	0.000000E+000	0.000000E+000	0.000000E+000	1.483239E+006

I-131P	0.000000E+000	0.000000E+000	0.000000E+000	2.824451E+007
I-132E	0.000000E+000	0.000000E+000	0.000000E+000	1.565552E+003
I-132P	0.000000E+000	0.000000E+000	0.000000E+000	6.391617E+006
I-133E	0.000000E+000	0.000000E+000	0.000000E+000	1.457378E+006
I-133P	0.000000E+000	0.000000E+000	0.000000E+000	2.797857E+007
I-134E	0.000000E+000	0.000000E+000	0.000000E+000	1.991240E-002
I-134P	0.000000E+000	0.000000E+000	0.000000E+000	3.783355E-001
I-135E	0.000000E+000	0.000000E+000	0.000000E+000	2.431114E+005
I-135P	0.000000E+000	0.000000E+000	0.000000E+000	4.619117E+006
Xe-131m	8.965719E+002	1.474648E+003	9.830989E+002	1.861639E+004
Xe-133m	1.947287E+004	3.204983E+004	2.136656E+004	3.271758E+005
Xe-133	4.694361E+007	8.317607E+007	5.545073E+007	5.054326E+006
Xe-135m	6.056690E-020	9.320925E-020	6.214410E-020	7.845147E+005
Xe-135	4.178031E+006	7.316190E+006	4.877470E+006	1.203959E+007
Cs-134	0.000000E+000	0.000000E+000	0.000000E+000	8.002257E+006
Cs-135	3.680119E-006	6.444291E-006	4.296203E-006	3.534939E-002
Cs-136	0.000000E+000	0.000000E+000	0.000000E+000	2.228639E+006
Cs-137	0.000000E+000	0.000000E+000	0.000000E+000	4.102309E+006
Cs-138	0.000000E+000	0.000000E+000	0.000000E+000	1.647673E-006
Ba-137m	0.000000E+000	0.000000E+000	0.000000E+000	3.880785E+006
Ba-139	0.000000E+000	0.000000E+000	0.000000E+000	2.266593E+001
Ba-140	0.000000E+000	0.000000E+000	0.000000E+000	3.649389E+006
La-140	0.000000E+000	0.000000E+000	0.000000E+000	1.237311E+006
La-141	0.000000E+000	0.000000E+000	0.000000E+000	5.067993E+002
La-142	0.000000E+000	0.000000E+000	0.000000E+000	7.507842E-001
Ce-141	0.000000E+000	0.000000E+000	0.000000E+000	8.764710E+004
Ce-143	0.000000E+000	0.000000E+000	0.000000E+000	5.139238E+004
Ce-144	0.000000E+000	0.000000E+000	0.000000E+000	6.972064E+004
Pr-143	0.000000E+000	0.000000E+000	0.000000E+000	3.486885E+004
Pr-144m	0.000000E+000	0.000000E+000	0.000000E+000	1.045828E+003
Pr-144	0.000000E+000	0.000000E+000	0.000000E+000	6.972361E+004
Nd-147	0.000000E+000	0.000000E+000	0.000000E+000	1.398612E+004
Pm-147	0.000000E+000	0.000000E+000	0.000000E+000	1.045409E+001
Np-238	0.000000E+000	0.000000E+000	0.000000E+000	2.225405E+004
Np-239	0.000000E+000	0.000000E+000	0.000000E+000	9.559510E+005
Pu-238	0.000000E+000	0.000000E+000	0.000000E+000	3.710745E+002
Pu-239	0.000000E+000	0.000000E+000	0.000000E+000	2.679254E+001
Pu-240	0.000000E+000	0.000000E+000	0.000000E+000	4.044752E+001
Pu-241	0.000000E+000	0.000000E+000	0.000000E+000	1.084882E+004
Am-241	0.000000E+000	0.000000E+000	0.000000E+000	5.621757E+000
Cm-242	0.000000E+000	0.000000E+000	0.000000E+000	1.688942E+003
Cm-244	0.000000E+000	0.000000E+000	0.000000E+000	3.579620E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	1.131023E+005
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	9.275118E+009
Beta (MeV/cc-s)	3.822982E+007	2.172998E+007	2.173000E+007	2.861438E+008
Beta Int (MeV/cc)	6.290484E+012	2.835225E+012	2.899515E+012	4.961556E+013
Gamma (MeV/cc-s)	1.608025E+007	9.126405E+006	9.126415E+006	6.461592E+008
Gamma Int (MeV/cc)	5.984551E+012	2.400140E+012	2.487182E+012	9.348425E+013

Time = 345600.000000 Seconds
CPU ClockTime = 324.830015 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	0.000000E+000	0.000000E+000	0.000000E+000	1.437179E+003
Co-60	0.000000E+000	0.000000E+000	0.000000E+000	1.786250E+003
Br-82E	0.000000E+000	0.000000E+000	0.000000E+000	1.738918E+003
Br-82P	0.000000E+000	0.000000E+000	0.000000E+000	3.303943E+004
Br-83P	0.000000E+000	0.000000E+000	0.000000E+000	3.147851E-006
Kr-83m	2.781457E-010	4.799872E-010	3.199948E-010	1.413912E-005
Kr-85m	3.012780E+000	5.579413E+000	3.719625E+000	0.000000E+000
Kr-85	3.637942E+005	6.701322E+005	4.467548E+005	0.000000E+000
Kr-88	1.388697E-003	2.579684E-003	1.719801E-003	0.000000E+000
Rb-86	0.000000E+000	0.000000E+000	0.000000E+000	6.221089E+004
Rb-88	1.011061E-004	1.878175E-004	1.252125E-004	5.938442E-003
Sr-89	0.000000E+000	0.000000E+000	0.000000E+000	2.068885E+006
Sr-90	0.000000E+000	0.000000E+000	0.000000E+000	2.463432E+005
Sr-91	0.000000E+000	0.000000E+000	0.000000E+000	2.552370E+003
Sr-92	0.000000E+000	0.000000E+000	0.000000E+000	6.330828E-005
Y-90	0.000000E+000	0.000000E+000	0.000000E+000	1.588474E+005
Y-91m	0.000000E+000	0.000000E+000	0.000000E+000	1.593837E+003
Y-91	0.000000E+000	0.000000E+000	0.000000E+000	4.324623E+004
Y-92	0.000000E+000	0.000000E+000	0.000000E+000	6.074783E-002
Y-93	0.000000E+000	0.000000E+000	0.000000E+000	4.923362E+001
Zr-93	0.000000E+000	0.000000E+000	0.000000E+000	2.605687E-005
Zr-95	0.000000E+000	0.000000E+000	0.000000E+000	3.489568E+004
Zr-97	0.000000E+000	0.000000E+000	0.000000E+000	6.984677E+002
Nb-95m	0.000000E+000	0.000000E+000	0.000000E+000	1.711577E+002
Nb-95	0.000000E+000	0.000000E+000	0.000000E+000	3.647234E+004
Nb-97	0.000000E+000	0.000000E+000	0.000000E+000	7.518581E+002
Mo-99	0.000000E+000	0.000000E+000	0.000000E+000	1.832437E+005
Tc-99m	0.000000E+000	0.000000E+000	0.000000E+000	1.754170E+005
Tc-99	0.000000E+000	0.000000E+000	0.000000E+000	1.206845E-002
Ru-103	0.000000E+000	0.000000E+000	0.000000E+000	4.117058E+005
Ru-105	0.000000E+000	0.000000E+000	0.000000E+000	9.957053E-002

Ru-106	0.000000E+000	0.000000E+000	0.000000E+000	1.909236E+005
Rh-103m	0.000000E+000	0.000000E+000	0.000000E+000	4.121134E+005
Rh-105	0.000000E+000	0.000000E+000	0.000000E+000	5.309224E+004
Rh-106	0.000000E+000	0.000000E+000	0.000000E+000	1.909238E+005
Sb-125	0.000000E+000	0.000000E+000	0.000000E+000	1.082952E+005
Sb-127	0.000000E+000	0.000000E+000	0.000000E+000	2.144735E+006
Sb-129	0.000000E+000	0.000000E+000	0.000000E+000	4.895902E-001
Te-125m	0.000000E+000	0.000000E+000	0.000000E+000	1.164686E+003
Te-127m	0.000000E+000	0.000000E+000	0.000000E+000	9.553878E+004
Te-127	0.000000E+000	0.000000E+000	0.000000E+000	2.058540E+006
Te-129m	0.000000E+000	0.000000E+000	0.000000E+000	3.596626E+005
Te-129	0.000000E+000	0.000000E+000	0.000000E+000	2.269126E+005
Te-131m	0.000000E+000	0.000000E+000	0.000000E+000	8.670989E+004
Te-131	0.000000E+000	0.000000E+000	0.000000E+000	1.934492E+004
Te-132	0.000000E+000	0.000000E+000	0.000000E+000	3.254421E+006
I-129P	0.000000E+000	0.000000E+000	0.000000E+000	2.773498E-004
I-131E	0.000000E+000	0.000000E+000	0.000000E+000	1.145213E+006
I-131P	0.000000E+000	0.000000E+000	0.000000E+000	2.185692E+007
I-132P	0.000000E+000	0.000000E+000	0.000000E+000	3.352418E+006
I-133E	0.000000E+000	0.000000E+000	0.000000E+000	1.338231E+005
I-133P	0.000000E+000	0.000000E+000	0.000000E+000	2.569120E+006
I-135E	0.000000E+000	0.000000E+000	0.000000E+000	1.278822E+002
I-135P	0.000000E+000	0.000000E+000	0.000000E+000	2.429761E+003
Xe-131m	7.188520E+002	1.228768E+003	8.191787E+002	6.214785E+004
Xe-133m	7.208460E+003	1.233218E+004	8.221459E+003	2.928917E+005
Xe-133	3.022711E+007	5.566252E+007	3.710836E+007	6.821547E+006
Xe-135m	2.516907E-103	4.200760E-103	2.800714E-103	4.126727E+002
Xe-135	1.659504E+004	3.023646E+004	2.015768E+004	9.708007E+004
Cs-134	0.000000E+000	0.000000E+000	0.000000E+000	7.980193E+006
Cs-135	1.461735E-008	2.663307E-008	1.775541E-008	4.636096E-002
Cs-136	0.000000E+000	0.000000E+000	0.000000E+000	1.901523E+006
Cs-137	0.000000E+000	0.000000E+000	0.000000E+000	4.101535E+006
Ba-137m	0.000000E+000	0.000000E+000	0.000000E+000	3.880053E+006
Ba-140	0.000000E+000	0.000000E+000	0.000000E+000	3.101780E+006
La-140	0.000000E+000	0.000000E+000	0.000000E+000	2.711536E+006
La-141	0.000000E+000	0.000000E+000	0.000000E+000	1.403975E-003
Ce-141	0.000000E+000	0.000000E+000	0.000000E+000	8.221722E+004
Ce-143	0.000000E+000	0.000000E+000	0.000000E+000	1.132677E+004
Ce-144	0.000000E+000	0.000000E+000	0.000000E+000	6.921201E+004
Pr-143	0.000000E+000	0.000000E+000	0.000000E+000	3.360998E+004
Pr-144m	0.000000E+000	0.000000E+000	0.000000E+000	1.038198E+003
Pr-144	0.000000E+000	0.000000E+000	0.000000E+000	6.921496E+004
Nd-147	0.000000E+000	0.000000E+000	0.000000E+000	1.157706E+004
Pm-147	0.000000E+000	0.000000E+000	0.000000E+000	3.805630E+001
Np-238	0.000000E+000	0.000000E+000	0.000000E+000	8.333349E+003
Np-239	0.000000E+000	0.000000E+000	0.000000E+000	3.945863E+005
Pu-238	0.000000E+000	0.000000E+000	0.000000E+000	3.720788E+002
Pu-239	0.000000E+000	0.000000E+000	0.000000E+000	2.694239E+001
Pu-240	0.000000E+000	0.000000E+000	0.000000E+000	4.044779E+001
Pu-241	0.000000E+000	0.000000E+000	0.000000E+000	1.084453E+004
Am-241	0.000000E+000	0.000000E+000	0.000000E+000	5.764396E+000
Cm-242	0.000000E+000	0.000000E+000	0.000000E+000	1.667506E+003
Cm-244	0.000000E+000	0.000000E+000	0.000000E+000	3.578495E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	1.121516E+005
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	3.846867E+010
Beta (MeV/cc-s)	2.036886E+007	1.205602E+007	1.205602E+007	1.261471E+008
Beta Int (MeV/cc)	1.319769E+013	6.836185E+012	6.900475E+012	9.496222E+013
Gamma (MeV/cc-s)	6.651915E+006	3.937103E+006	3.937104E+006	3.602417E+008
Gamma Int (MeV/cc)	8.390916E+012	3.792252E+012	3.879295E+012	2.099012E+014

Time = 2592000.000000 Seconds
CPU ClockTime = 2551.890121 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	SuppPool
Co-58	0.000000E+000	0.000000E+000	0.000000E+000	1.114200E+003
Co-60	0.000000E+000	0.000000E+000	0.000000E+000	1.769607E+003
Br-82E	0.000000E+000	0.000000E+000	0.000000E+000	8.413536E-003
Br-82P	0.000000E+000	0.000000E+000	0.000000E+000	1.598572E-001
Kr-85	2.467750E+005	6.344927E+005	4.229952E+005	0.000000E+000
Rb-86	0.000000E+000	0.000000E+000	0.000000E+000	2.385329E+004
Sr-89	0.000000E+000	0.000000E+000	0.000000E+000	1.447940E+006
Sr-90	0.000000E+000	0.000000E+000	0.000000E+000	2.459216E+005
Y-90	0.000000E+000	0.000000E+000	0.000000E+000	2.458813E+005
Y-91	0.000000E+000	0.000000E+000	0.000000E+000	3.179371E+004
Zr-93	0.000000E+000	0.000000E+000	0.000000E+000	2.609509E-005
Zr-95	0.000000E+000	0.000000E+000	0.000000E+000	2.633166E+004
Nb-95m	0.000000E+000	0.000000E+000	0.000000E+000	2.500925E+002
Nb-95	0.000000E+000	0.000000E+000	0.000000E+000	3.387998E+004
Mo-99	0.000000E+000	0.000000E+000	0.000000E+000	2.616913E+002
Tc-99m	0.000000E+000	0.000000E+000	0.000000E+000	2.505149E+002
Tc-99	0.000000E+000	0.000000E+000	0.000000E+000	1.906670E-002
Ru-103	0.000000E+000	0.000000E+000	0.000000E+000	2.605780E+005
Ru-106	0.000000E+000	0.000000E+000	0.000000E+000	1.817747E+005
Rh-103m	0.000000E+000	0.000000E+000	0.000000E+000	2.608360E+005

Rh-105	0.000000E+000	0.000000E+000	0.000000E+000	2.622647E-001
Rh-106	0.000000E+000	0.000000E+000	0.000000E+000	1.817748E+005
Sb-125	0.000000E+000	0.000000E+000	0.000000E+000	1.063342E+005
Sb-127	0.000000E+000	0.000000E+000	0.000000E+000	2.111091E+004
Te-125m	0.000000E+000	0.000000E+000	0.000000E+000	7.442538E+003
Te-127m	0.000000E+000	0.000000E+000	0.000000E+000	9.258068E+004
Te-127	0.000000E+000	0.000000E+000	0.000000E+000	1.100546E+005
Te-129m	0.000000E+000	0.000000E+000	0.000000E+000	2.100197E+005
Te-129	0.000000E+000	0.000000E+000	0.000000E+000	1.325019E+005
Te-131m	0.000000E+000	0.000000E+000	0.000000E+000	4.749465E-002
Te-131	0.000000E+000	0.000000E+000	0.000000E+000	1.059602E-002
Te-132	0.000000E+000	0.000000E+000	0.000000E+000	1.271258E+004
I-129P	0.000000E+000	0.000000E+000	0.000000E+000	1.102551E-003
I-131E	0.000000E+000	0.000000E+000	0.000000E+000	1.217324E+005
I-131P	0.000000E+000	0.000000E+000	0.000000E+000	2.325021E+006
I-132P	0.000000E+000	0.000000E+000	0.000000E+000	1.309538E+004
I-133E	0.000000E+000	0.000000E+000	0.000000E+000	1.376706E-004
I-133P	0.000000E+000	0.000000E+000	0.000000E+000	2.642983E-003
Xe-131m	1.059523E+002	2.528768E+002	1.685846E+002	7.346448E+004
Xe-133m	1.310444E+000	3.134949E+000	2.089967E+000	9.193690E+001
Xe-133	6.654309E+005	1.711653E+006	1.141102E+006	2.447526E+005
Cs-134	0.000000E+000	0.000000E+000	0.000000E+000	7.791503E+006
Cs-135	2.271228E-029	5.837408E-029	3.891614E-029	4.641842E-002
Cs-136	0.000000E+000	0.000000E+000	0.000000E+000	4.804382E+005
Cs-137	0.000000E+000	0.000000E+000	0.000000E+000	4.094833E+006
Ba-137m	0.000000E+000	0.000000E+000	0.000000E+000	3.873713E+006
Ba-140	0.000000E+000	0.000000E+000	0.000000E+000	7.579940E+005
La-140	0.000000E+000	0.000000E+000	0.000000E+000	8.725303E+005
Ce-141	0.000000E+000	0.000000E+000	0.000000E+000	4.722139E+004
Ce-143	0.000000E+000	0.000000E+000	0.000000E+000	2.300925E-002
Ce-144	0.000000E+000	0.000000E+000	0.000000E+000	6.495647E+004
Pr-143	0.000000E+000	0.000000E+000	0.000000E+000	9.253488E+003
Pr-144m	0.000000E+000	0.000000E+000	0.000000E+000	9.743642E+002
Pr-144	0.000000E+000	0.000000E+000	0.000000E+000	6.495924E+004
Nd-147	0.000000E+000	0.000000E+000	0.000000E+000	2.249431E+003
Pm-147	0.000000E+000	0.000000E+000	0.000000E+000	1.431659E+002
Np-238	0.000000E+000	0.000000E+000	0.000000E+000	1.673827E+000
Np-239	0.000000E+000	0.000000E+000	0.000000E+000	1.843305E+002
Pu-238	0.000000E+000	0.000000E+000	0.000000E+000	3.733072E+002
Pu-239	0.000000E+000	0.000000E+000	0.000000E+000	2.704763E+001
Pu-240	0.000000E+000	0.000000E+000	0.000000E+000	4.045017E+001
Pu-241	0.000000E+000	0.000000E+000	0.000000E+000	1.080744E+004
Am-241	0.000000E+000	0.000000E+000	0.000000E+000	6.998161E+000
Cm-242	0.000000E+000	0.000000E+000	0.000000E+000	1.492765E+003
Cm-244	0.000000E+000	0.000000E+000	0.000000E+000	3.568758E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	SuppPool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	1.040663E+005
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	2.811799E+011
Beta (MeV/cc-s)	7.377905E+005	6.098894E+005	6.098894E+005	3.961042E+007
Beta Int (MeV/cc)	2.547779E+013	1.477417E+013	1.483846E+013	2.388861E+014
Gamma (MeV/cc-s)	1.485532E+005	1.228213E+005	1.228213E+005	1.445340E+008
Gamma Int (MeV/cc)	1.221478E+013	6.251003E+012	6.338046E+012	6.778914E+014

CASE 2

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RRRRRR        AAAA     PPPPPP     TTTTTTTTTT       OOO      RRRRRR
RRRRRRRR     AAAAAA    PPPPPPPP   TTTTTTTTTT     OOOOOOO    RRRRRRRR
RR     RR   AA    AA   PP     PP      TT       OO     OO   RR     RR
RR     RR  AAA    AAA  PP     PP      TT      OO       OO  RR     RR
RR    RR   AA      AA  PP    PP       TT      OO       OO  RR    RR
RRRRRRRR   AAAAAAAAAA  PPPPPPPP       TT      OO 2.14B OO  RRRRRRRR
RRRRRRR    AAAAAAAAAA  PPPPPP         TT      OO       OO  RRRRRRR
RR    RR   AA      AA  PP             TT      OO       OO  RR    RR
RR    RR   AA      AA  PP             TT       OO     OO   RR    RR
RR     RR  AA      AA  PP             TT        OOOOOOO    RR     RR
RR      RR AA      AA  PP             TT          OOO      RR      RR

IIIIIIIIII NN      NN PPPPPP    UU      UU TTTTTTTTTT
IIIIIIIIII NNN     NN PPPPPPPP  UU      UU TTTTTTTTTT
    II     NNNN    NN PP     PP UU      UU     TT
    II     NN NN   NN PP     PP UU      UU     TT
    II     NN NN   NN PP    PP  UU      UU     TT
    II     NN  NN  NN PPPPPPPP  UU      UU     TT
    II     NN  NN  NN PPPPPP    UU      UU     TT
    II     NN   NN NN PP        UU      UU     TT
    II     NN   NN NN PP        UUU    UUU     TT
IIIIIIIIII NN     NNN PP         UUUUUUUU      TT
IIIIIIIIII NN      NN PP           UU          TT
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Execution Time: 15:22:28 on 11/07/00

Suppression Pool pH Energy Deposition Case #2 - Maximize Airborne Activity
All source terms stay airborne or plateout.
No source terms in the suppression pool.

MODELED NUCLIDE PARAMETERS

Isotope	Group	Half-Life		Whole Body (Rem-m3/Ci-s)	Thyroid (Rem/Ci)	Inhalation (Rem/Ci)	Alpha (MeV)	Beta (MeV)	Gamma (MeV)
Co-58	Noble Mtls	7.0800E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.360E-002	9.760E-001
Co-60	Noble Mtls	5.2710E+000	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.580E-002	2.510E+000
Br-82	Halogens	3.5340E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.360E-001	2.650E+000
Br-83	Halogens	2.3900E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.200E-001	7.450E-003
Br-84	Halogens	3.1800E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.250E+000	1.820E+000
Kr-83m	Noble Gas	1.8300E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.820E-002	2.570E-003
Kr-85m	Noble Gas	4.4800E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.550E-001	1.580E-001
Kr-85	Noble Gas	1.0700E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.510E-001	2.230E-003
Kr-87	Noble Gas	7.6000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.320E+000	7.930E-001
Kr-88	Noble Gas	2.8400E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.650E-001	1.950E+000
Rb-86	Cesiums	1.8800E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.670E-001	9.450E-002
Rb-87	Cesiums	4.8000E+010	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	7.880E-002	0.000E+000
Rb-88	Cesiums	1.7800E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.070E+000	6.360E-001
Sr-89	Stront/Bar	5.0500E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.830E-001	1.360E-004
Sr-90	Stront/Bar	2.8800E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.960E-001	0.000E+000
Sr-91	Stront/Bar	9.5000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.530E-001	6.870E-001
Sr-92	Stront/Bar	2.7100E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.000E-001	1.340E+000
Y-90	Lanthanum	6.4100E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.350E-001	0.000E+000
Y-91m	Lanthanum	4.9700E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.020E-001	3.610E-003
Y-91	Lanthanum	5.8500E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.690E-002	5.310E-001
Y-92	Lanthanum	3.5400E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.440E+000	2.520E-001
Y-93	Lanthanum	1.0200E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.170E+000	8.910E-002
Zr-93	Lanthanum	1.5000E+006	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.950E-002	0.000E+000
Zr-95	Lanthanum	6.4000E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.160E-001	7.350E-001
Zr-97	Lanthanum	1.6900E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.970E-001	1.810E-001
Nb-93m	Lanthanum	1.3600E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.830E-002	1.950E-003
Nb-95m	Lanthanum	8.7000E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.800E-001	6.630E-002
Nb-95	Lanthanum	3.5000E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.340E-002	7.640E-001
Nb-97	Lanthanum	7.2000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.670E-001	6.650E-001
Mo-99	Noble Mtls	6.6020E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.930E-001	1.550E-001
Tc-99m	Noble Mtls	6.0200E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.560E-002	1.270E-001
Tc-99	Noble Mtls	2.1400E+005	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.460E-002	0.000E+000
Ru-103	Noble Mtls	3.9400E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.970E-002	4.840E-001
Ru-105	Noble Mtls	4.4400E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.030E-001	7.840E-001
Ru-106	Noble Mtls	3.6700E+002	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.000E-002	0.000E+000
Rh-103m	Noble Mtls	5.6100E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.670E-001	0.000E+000
Rh-105	Noble Mtls	3.5400E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.520E-001	7.760E-002
Rh-106	Noble Mtls	2.8900E+001	sec	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.410E+000	2.070E-001
Sb-125	Tellurium	2.7000E+000	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.630E-002	4.340E-001
Sb-127	Tellurium	3.9000E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.150E-001	6.450E-001
Sb-129	Tellurium	4.4000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.580E-001	1.430E+000
Te-125m	Tellurium	5.8000E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.240E-001	3.500E-002
Te-127m	Tellurium	1.0900E+002	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	7.990E-002	3.730E-002
Te-127	Tellurium	9.4000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.230E-001	4.840E-003
Te-129m	Tellurium	3.3500E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.690E-001	3.940E-002
Te-129	Tellurium	6.9000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.460E-001	5.770E-002
Te-131m	Tellurium	3.0000E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.900E-001	1.430E+000
Te-131	Tellurium	2.5000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.970E-001	4.200E-001
Te-132	Tellurium	7.8000E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.840E-002	2.310E-001
Te-133m	Tellurium	5.5400E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	7.090E-001	2.220E+000
Te-133	Tellurium	1.2400E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.150E-001	9.290E-001
Te-134	Tellurium	4.2000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.460E-001	8.740E-001
I-129	Halogens	1.6000E+007	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.430E-002	2.460E-002
I-131	Halogens	8.0400E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.810E-001	3.810E-001
I-132	Halogens	2.2800E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.860E-001	2.310E+000
I-133	Halogens	2.0900E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.070E-001	6.070E-001

I-134	Halogens	5.2600E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.030E-001	2.630E+000
I-135	Halogens	6.6100E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.680E-001	1.570E+000
Xe-131m	Noble Gas	1.1770E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.420E-001	2.010E-002
Xe-133m	Noble Gas	2.1900E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.900E-001	4.140E-002
Xe-133	Noble Gas	5.2500E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.360E-001	4.530E-002
Xe-135m	Noble Gas	1.5600E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.580E-002	4.310E-001
Xe-135	Noble Gas	9.1000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.180E-001	2.480E-001
Cs-134m	Cesiums	2.9000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.080E-001	2.700E-002
Cs-134	Cesiums	2.0620E+000	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.570E-001	1.550E+000
Cs-135	Cesiums	3.0000E+006	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.630E-002	0.000E+000
Cs-136	Cesiums	1.3100E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.000E-001	2.170E+000
Cs-137	Cesiums	3.0170E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.870E-001	0.000E+000
Cs-138	Cesiums	3.2200E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.220E+000	2.360E+000
Ba-137m	Stront/Bar	2.5510E+000	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.370E-002	5.980E-001
Ba-139	Stront/Bar	8.2900E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.970E-001	3.530E-002
Ba-140	Stront/Bar	1.2790E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.710E-001	1.910E-001
La-138	Lanthanum	1.1000E+011	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	0.000E+000	0.000E+000
La-140	Lanthanum	4.0300E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.270E-001	2.320E+000
La-141	Lanthanum	3.9000E+000	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.480E-001	4.270E-002
La-142	Lanthanum	9.3000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	8.500E-001	2.730E+000
La-143	Lanthanum	1.4000E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	0.000E+000	0.000E+000
Ce-141	Cerium	3.2500E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.700E-001	7.690E-002
Ce-143	Cerium	3.3000E+001	hrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.370E-001	2.730E-001
Ce-144	Cerium	2.8400E+002	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	9.140E-002	1.930E-002
Pr-143	Lanthanum	1.3580E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.160E-001	0.000E+000
Pr-144m	Lanthanum	7.2000E+000	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	4.490E-002	1.180E-002
Pr-144	Lanthanum	1.7300E+001	min	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	1.210E+000	3.190E-002
Nd-147	Lanthanum	1.1000E+001	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.700E-001	1.410E-001
Pm-147	Lanthanum	2.6234E+000	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	6.200E-002	0.000E+000
Np-238	Cerium	2.1170E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	3.670E-001	5.540E-001
Np-239	Cerium	2.3500E+000	dys	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	2.430E-001	1.720E-001
Pu-238	Cerium	8.7740E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.490E+000	0.000E+000	1.600E-003
Pu-239	Cerium	2.4100E+004	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.150E+000	0.000E+000	6.540E-004
Pu-240	Cerium	6.5700E+003	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.150E+000	0.000E+000	1.530E-003
Pu-241	Cerium	1.4400E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	0.000E+000	5.230E-003	0.000E+000
Am-241	Lanthanum	4.3270E+002	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.480E+000	0.000E+000	2.810E-002
Cm-242	Lanthanum	1.6280E+002	dys	0.0000E+000	0.0000E+000	0.0000E+000	6.100E+000	0.000E+000	1.670E-003
Cm-244	Lanthanum	1.8110E+001	yrs	0.0000E+000	0.0000E+000	0.0000E+000	5.800E+000	0.000E+000	1.490E-003

MODELED DECAY CHAINS

Br-83:	1.000	into	Kr-83m			
Kr-87:	1.000	into	Rb-87			
Kr-88:	1.000	into	Rb-88			
Sr-90:	1.000	into	Y-90			
Sr-91:	0.570	into	Y-91m	0.430	into	Y-91
Sr-92:	1.000	into	Y-92			
Y-91m:	1.000	into	Y-91			
Y-93:	1.000	into	Zr-93			
Zr-93:	0.950	into	Nb-93m			
Zr-95:	0.009	into	Nb-95m	0.991	into	Nb-95
Zr-97:	1.000	into	Nb-97			
Nb-95m:	0.975	into	Nb-95			
Mo-99:	0.870	into	Tc-99m	0.130	into	Tc-99
Tc-99m:	1.000	into	Tc-99			
Ru-103:	1.000	into	Rh-103m			
Ru-105:	1.000	into	Rh-105			
Ru-106:	1.000	into	Rh-106			
Sb-125:	0.230	into	Te-125m			
Sb-127:	0.174	into	Te-127m	0.826	into	Te-127
Sb-129:	0.166	into	Te-129m	0.834	into	Te-129
Te-127m:	0.976	into	Te-127			
Te-129m:	0.630	into	Te-129	0.360	into	I-129
Te-129:	1.000	into	I-129			
Te-131m:	0.220	into	Te-131	0.780	into	I-131
Te-131:	1.000	into	I-131			
Te-132:	1.000	into	I-132			
Te-133m:	0.170	into	Te-133	0.830	into	I-133
Te-133:	1.000	into	I-133			
I-131:	0.011	into	Xe-131m			
I-133:	0.029	into	Xe-133m	0.971	into	Xe-133
I-135:	0.155	into	Xe-135m	0.845	into	Xe-135
Xe-133m:	1.000	into	Xe-133			
Xe-135m:	1.000	into	Xe-135			
Xe-135:	1.000	into	Cs-135			
Cs-134m:	1.000	into	Cs-134			
Cs-137:	0.946	into	Ba-137m			
Ba-140:	1.000	into	La-140			
La-141:	1.000	into	Ce-141			
La-143:	1.000	into	Ce-143			
Ce-143:	1.000	into	Pr-143			
Ce-144:	0.015	into	Pr-144m	0.985	into	Pr-144
Pr-144m:	1.000	into	Pr-144			
Nd-147:	1.000	into	Pm-147			
Np-238:	1.000	into	Pu-238			
Np-239:	1.000	into	Pu-239			
Pu-241:	1.000	into	Am-241			
Cm-242:	1.000	into	Pu-238			
Cm-244:	1.000	into	Pu-240			

MODEL PARAMETERS

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Core Power Level =  3910.00 MW
Core Decay Time = 121.000000 Sec
Decay Enabled, Daughter Product Tracking Enabled
Maximum TimeStep = 1.000000 Seconds
Energy Deposition Tracked

NODE PARAMETERS                    Inventory
Name          Volume (cu.ft.)   Tracked  Printed
Drywell         2.7000E+005        X        X
Sprayed         8.4000E+005        X        X
Unsprayed       5.6000E+005        X        X
DW_plateout     3.5300E-005        X        X
Supp_Pool       1.7090E+005        X        X

RELEASE POINTS
Name

RECEIPT POINTS
Name

INITIAL INVENTORIES
  Co-58 In Core         at 1.5290E+002 Ci/MW
  Co-60 In Core         at 1.8300E+002 Ci/MW
  Br-82 In Core         at 1.9500E+002 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
  Br-83 In Core         at 3.5220E+003 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
  Br-84 In Core         at 6.1990E+003 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
 Kr-85m In Core         at 9.1100E+003 Ci/MW
  Kr-85 In Core         at 3.8800E+002 Ci/MW
  Kr-87 In Core         at 1.6570E+004 Ci/MW
  Kr-88 In Core         at 2.2360E+004 Ci/MW
  Rb-86 In Core         at 7.3760E+001 Ci/MW
  Sr-89 In Core         at 2.7950E+004 Ci/MW
  Sr-90 In Core         at 3.1510E+003 Ci/MW
  Sr-91 In Core         at 3.6040E+004 Ci/MW
  Sr-92 In Core         at 3.7650E+004 Ci/MW
   Y-90 In Core         at 3.2510E+003 Ci/MW
   Y-91 In Core         at 3.5600E+004 Ci/MW
   Y-92 In Core         at 3.7800E+004 Ci/MW
   Y-93 In Core         at 4.2980E+004 Ci/MW
  Zr-95 In Core         at 4.6600E+004 Ci/MW
  Zr-97 In Core         at 4.5870E+004 Ci/MW
  Nb-95 In Core         at 4.6750E+004 Ci/MW
  Mo-99 In Core         at 5.1380E+004 Ci/MW
 Tc-99m In Core         at 4.4990E+004 Ci/MW
 Ru-103 In Core         at 4.5190E+004 Ci/MW
 Ru-105 In Core         at 3.3040E+004 Ci/MW
 Ru-106 In Core         at 1.9680E+004 Ci/MW
 Rh-105 In Core         at 3.0870E+004 Ci/MW
 Sb-125 In Core         at 5.5550E+002 Ci/MW
 Sb-127 In Core         at 2.2340E+004 Ci/MW
 Sb-129 In Core         at 9.3090E+003 Ci/MW
Te-127m In Core         at 4.2970E+002 Ci/MW
 Te-127 In Core         at 3.2200E+003 Ci/MW
Te-129m In Core         at 1.9900E+003 Ci/MW
 Te-129 In Core         at 9.1610E+003 Ci/MW
Te-131m In Core         at 4.0790E+003 Ci/MW
 Te-132 In Core         at 3.9080E+004 Ci/MW
Te-133m In Core         at 2.0680E+004 Ci/MW
 Te-134 In Core         at 4.6880E+004 Ci/MW
  I-131 In Core         at 2.7570E+004 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
  I-132 In Core         at 3.9770E+004 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
  I-133 In Core         at 5.5140E+004 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
  I-134 In Core         at 6.0740E+004 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
  I-135 In Core         at 5.1530E+004 Ci/MW  0.0485 elem.  0.0015 org.  0.9500 part.
 Xe-133 In Core         at 5.4250E+004 Ci/MW
 Xe-135 In Core         at 2.1540E+004 Ci/MW
 Cs-134 In Core         at 8.1940E+003 Ci/MW
 Cs-136 In Core         at 2.4040E+003 Ci/MW
 Cs-137 In Core         at 4.1970E+003 Ci/MW
 Cs-138 In Core         at 5.1020E+004 Ci/MW
 Ba-139 In Core         at 4.9940E+004 Ci/MW
 Ba-140 In Core         at 4.9270E+004 Ci/MW
 La-140 In Core         at 5.0690E+004 Ci/MW
 La-141 In Core         at 4.6420E+004 Ci/MW
 La-142 In Core         at 4.4660E+004 Ci/MW
 Ce-141 In Core         at 4.5680E+004 Ci/MW
 Ce-143 In Core         at 4.3550E+004 Ci/MW
 Ce-144 In Core         at 3.5750E+004 Ci/MW
 Pr-143 In Core         at 4.2630E+004 Ci/MW
 Nd-147 In Core         at 1.9050E+004 Ci/MW
 Np-238 In Core         at 1.5800E+004 Ci/MW
 Np-239 In Core         at 6.5700E+005 Ci/MW
 Pu-238 In Core         at 1.8950E+002 Ci/MW
 Pu-239 In Core         at 1.3660E+001 Ci/MW
 Pu-240 In Core         at 2.0690E+001 Ci/MW
 Pu-241 In Core         at 5.5500E+003 Ci/MW
 Am-241 In Core         at 7.1300E+000 Ci/MW
 Cm-242 In Core         at 2.1690E+003 Ci/MW
 Cm-244 In Core         at 4.5780E+002 Ci/MW

RELEASE PARAMETERS
0.000E+000 Sec to 5.000E-001 Hrs : Noble Gas  Into Drywell       at 5.0000E+000 percent
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0.000E+000 Sec to 5.000E-001 Hrs : Halogens   Into Drywell       at 5.0000E+000 percent
0.000E+000 Sec to 5.000E-001 Hrs : Cesiums    Into Drywell       at 5.0000E+000 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Noble Gas  Into Drywell       at 9.5000E+001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Halogens   Into Drywell       at 2.5000E+001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Cesiums    Into Drywell       at 2.0000E+001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Tellurium  Into Drywell       at 5.0000E+000 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Stront/Bar Into Drywell       at 2.0000E+000 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Noble Mtls Into Drywell       at 2.5000E-001 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Lanthanum  Into Drywell       at 2.0000E-002 percent
5.000E-001 Hrs to 2.000E+000 Hrs : Cerium     Into Drywell       at 5.0000E-002 percent

FLOW PARAMETERS

Flow#1 from Drywell
0.000E+000 Sec to 1.000E+000 Dys at 2.3020E+000 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 1.4750E+000 percent per day

Flow#2 from Drywell to Unsprayed
0.000E+000 Sec to 2.000E+000 Hrs at 1.6000E+003 percent per day
2.000E+000 Hrs to 7.201E+003 Sec is well-mixed

Flow#3 from Unsprayed to Drywell
2.000E+000 Hrs to 7.201E+003 Sec is well-mixed

Flow#4 from Sprayed to Unsprayed
0.000E+000 Sec to 3.000E+001 Min at 3.2000E+003 percent per day
3.000E+001 Min to 1.000E+000 Dys at 1.2000E+004 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 3.2000E+003 percent per day

Flow#5 from Unsprayed to Sprayed
0.000E+000 Sec to 3.000E+001 Min at 4.8000E+003 percent per day
3.000E+001 Min to 1.000E+000 Dys at 1.8000E+004 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 4.8000E+003 percent per day

Flow#6 from Sprayed
0.000E+000 Sec to 1.000E+000 Dys at 3.8500E-001 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 1.9250E-001 percent per day

Flow#7 from Unsprayed
0.000E+000 Sec to 1.000E+000 Dys at 3.8500E-001 percent per day
1.000E+000 Dys to 3.000E+001 Dys at 1.9250E-001 percent per day

FILTER PARAMETERS
No Filters

REMOVAL PARAMETERS

Drywell_Dep from Drywell to DW_plateout
0.000E+000 Sec to 5.000E-001 Hrs for All Groups Particulate at 7.47400E-001 1/hr
5.000E-001 Hrs to 2.000E+000 Hrs for All Groups Particulate at 2.98300E-001 1/hr
2.000E+000 Hrs to 5.000E+000 Hrs for All Groups Particulate at 1.05500E+000 1/hr
5.000E+000 Hrs to 8.330E+000 Hrs for All Groups Particulate at 6.39000E-001 1/hr
8.330E+000 Hrs to 1.200E+001 Hrs for All Groups Particulate at 5.57100E-001 1/hr
1.200E+001 Hrs to 1.940E+001 Hrs for All Groups Particulate at 5.23600E-001 1/hr
1.940E+001 Hrs to 2.400E+001 Hrs for All Groups Particulate at 5.06800E-001 1/hr
0.000E+000 Sec to 7.000E+000 Hrs for Halogens   Elemental   at 8.66000E-001 1/hr

Containment_Spray from Sprayed to Supp_Pool
0.000E+000 Sec to 3.000E+001 Min for Halogens   Elemental   at 6.82300E-001 1/hr
3.000E+001 Min to 2.800E+000 Hrs for Halogens   Elemental   at 2.06800E+001 1/hr
3.000E+001 Min to 3.000E+000 Hrs for All Groups Particulate at 9.51000E+000 1/hr
3.000E+000 Hrs to 2.400E+001 Hrs for All Groups Particulate at 9.51000E-001 1/hr

Unsprayed_Removal from Unsprayed to Supp_Pool
0.000E+000 Sec to 2.800E+000 Hrs for Halogens   Elemental   at 1.09200E+000 1/hr
2.800E+000 Hrs to 4.000E+000 Dys for Halogens   Elemental   at 0.00000E+000 1/hr

DIFFUSION PARAMETERS
No Diffusion Parameters

DOSE LOCATIONS
No Dose Locations
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RRRRRR        AAAA     PPPPPP     TTTTTTTTTT      OOO      RRRRRR
RRRRRRRR     AAAAAA    PPPPPPPP   TTTTTTTTTT    OOOOOOO    RRRRRRRR
RR     RR   AA    AA   PP     PP      TT      OO     OO   RR     RR
RR     RR  AAA    AAA  PP     PP      TT      OO     OO   RR     RR
RR    RR   AA      AA  PP    PP       TT      OO     OO   RR    RR
RRRRRRRR   AAAAAAAAAA  PPPPPPPP       TT      OO 2.14B OO  RRRRRRRR
RRRRRRR    AAAAAAAAAA  PPPPPP         TT      OO     OO   RRRRRRR
RR    RR   AA      AA  PP             TT      OO     OO   RR    RR
RR     RR  AA      AA  PP             TT       OO   OO    RR     RR
RR      RR AA      AA  PP             TT        OOOOOO     RR      RR
RR       RR AA     AA  PP             TT         OOO       RR       RR

    OOO      UU      UU TTTTTTTTTT PPPPPP    UU      UU TTTTTTTTTT
  OOOOOOO    UU      UU TTTTTTTTTT PPPPPPPP  UU      UU TTTTTTTTTT
 OO     OO   UU      UU     TT     PP     PP UU      UU     TT
OO       OO  UU      UU     TT     PP     PP UU      UU     TT
OO       OO  UU      UU     TT     PP    PP  UU      UU     TT
OO       OO  UU      UU     TT     PPPPPPPP  UU      UU     TT
OO       OO  UU      UU     TT     PPPPPP    UU      UU     TT
OO       OO  UU      UU     TT     PP        UU      UU     TT
 OO     OO   UUU    UUU     TT     PP        UUU    UUU     TT
  OOOOOOO     UUUUUUUU      TT     PP         UUUUUUUU      TT
    OOO         UU          TT     PP           UU          TT
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Time = -121.000000 Seconds
CPU ClockTime = 1.381000 Seconds

ACTIVITY DISTRIBUTION

Isotope	Core	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	5.978390E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Co-60	7.155300E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82E	3.697883E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82O	1.143675E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82P	7.243275E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83E	6.678945E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83O	2.065653E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83P	1.308247E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84E	1.175547E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84O	3.635714E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84P	2.302618E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85m	3.562010E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85	1.517080E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-87	6.478870E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-88	8.742760E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rb-86	2.884016E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-89	1.092845E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-90	1.232041E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-91	1.409164E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-92	1.472115E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-90	1.271141E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91	1.391960E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-92	1.477980E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-93	1.680518E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-95	1.822060E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-97	1.793517E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95	1.827925E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Mo-99	2.008958E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99m	1.759109E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-103	1.766929E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-105	1.291864E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-106	7.694880E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-105	1.207017E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-125	2.172005E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-127	8.734940E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-129	3.639819E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127m	1.680127E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127	1.259020E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129m	7.780900E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129	3.581951E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131m	1.594889E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-132	1.528028E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133m	8.085880E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-134	1.833008E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131E	5.228237E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131O	1.616980E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131P	1.024088E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132E	7.541784E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132O	2.332510E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132P	1.477257E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133E	1.045647E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133O	3.233961E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133P	2.048175E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134E	1.151843E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134O	3.562401E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134P	2.256187E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135E	9.771892E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135O	3.022234E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135P	1.914082E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-133	2.121175E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

Xe-135	8.422140E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-134	3.203854E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-136	9.399640E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-137	1.641027E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-138	1.994882E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-139	1.952654E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-140	1.926457E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-140	1.981979E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-141	1.815022E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-142	1.746206E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-141	1.786088E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-143	1.702805E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-144	1.397825E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-143	1.666833E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nd-147	7.448550E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-238	6.177800E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-239	2.568870E+009	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-238	7.409450E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-239	5.341060E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-240	8.089790E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-241	2.170050E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Am-241	2.787830E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-242	8.480790E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-244	1.789998E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

Time = 0.000000 Seconds
CPU ClockTime = 1.952000 Seconds

ACTIVITY DISTRIBUTION

Isotope	Core	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	5.978308E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Co-60	7.155296E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82E	3.695446E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82O	1.142921E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82P	7.238502E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83E	6.614155E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83O	2.045615E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-83P	1.295556E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84E	1.124993E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84O	3.479358E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-84P	2.203594E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-83m	1.733643E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85m	3.543534E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-85	1.517080E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-87	6.360795E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Kr-88	8.671334E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rb-86	2.883867E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rb-88	6.575947E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-89	1.092824E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-90	1.232041E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-91	1.405712E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-92	1.459514E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-90	1.271127E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91m	2.224928E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91	1.391947E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-92	1.477900E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-93	1.676684E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-93	2.967509E-004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-95	1.822032E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-97	1.791046E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95m	4.390691E+002	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95	1.827924E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-97	3.446083E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Mo-99	2.008249E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99m	1.759064E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99	2.506315E-003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-103	1.766885E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-105	1.285103E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-106	7.694860E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-103m	4.348216E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-105	1.207071E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-106	7.272359E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-125	2.172003E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-127	8.732766E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-129	3.620598E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-125m	8.360917E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127m	1.680247E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127	1.274167E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129m	7.780849E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

Te-129	3.580665E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131m	1.593651E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131	1.907300E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-132	1.527572E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133m	7.884410E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133	1.446905E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-134	1.773006E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-129P	6.469860E-006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131E	5.227606E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131O	1.616785E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-131P	1.023979E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132E	7.465113E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132O	2.308798E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-132P	1.477770E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133E	1.044482E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133O	3.230358E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-133P	2.046640E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134E	1.121636E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134O	3.468977E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-134P	2.197019E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135E	9.737511E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135O	3.011601E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-135P	1.907347E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-131m	9.778808E+001	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-133m	2.769701E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-133	2.121170E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-135m	2.671905E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Xe-135	8.444405E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-134	3.203850E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-135	7.418773E-005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-136	9.398944E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-137	1.641027E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cs-138	1.910134E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-137m	6.549192E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-139	1.920005E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-140	1.926311E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-140	1.981947E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-141	1.804212E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-142	1.720156E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-141	1.786089E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-143	1.701603E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-144	1.397820E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-143	1.666836E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144m	3.699935E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144	1.070235E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nd-147	7.447893E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pm-147	7.545619E+001	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-238	6.174968E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-239	2.567809E+009	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-238	7.409471E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-239	5.341088E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-240	8.089790E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-241	2.170050E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Am-241	2.787843E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-242	8.480739E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-244	1.789998E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Gamma Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

Time = 1800.000000 Seconds
CPU ClockTime = 7.030000 Seconds

ACTIVITY DISTRIBUTION

Isotope	Core	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	5.977089E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Co-60	7.155243E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Br-82E	3.659382E+004	1.277780E+003	4.698698E+001	1.548664E+002	3.115000E+002	3.786113E+001
Br-82O	1.131768E+003	4.811234E+001	1.988415E+000	6.468785E+000	0.000000E+000	0.000000E+000
Br-82P	7.167862E+005	2.568899E+004	1.147996E+003	3.630492E+003	5.358678E+003	0.000000E+000
Br-83E	5.721335E+005	1.997847E+004	7.347118E+002	2.421480E+003	4.870577E+003	5.920182E+002
Br-83O	1.769485E+004	7.522504E+002	3.109185E+001	1.011455E+002	0.000000E+000	0.000000E+000
Br-83P	1.120674E+007	4.016548E+005	1.795064E+004	5.676614E+004	8.378763E+004	0.000000E+000
Br-84E	5.850044E+005	2.043080E+004	7.515648E+002	2.476686E+003	4.981554E+003	6.056080E+002
Br-84O	1.809292E+004	7.692819E+002	3.180505E+001	1.034515E+002	0.000000E+000	0.000000E+000
Br-84P	1.145885E+007	4.107486E+005	1.836240E+004	5.806038E+004	8.569676E+004	0.000000E+000
Kr-83m	2.328785E+006	9.402227E+004	3.873380E+003	1.257405E+004	5.838634E+003	2.983002E+001
Kr-85m	3.279741E+007	1.394270E+006	5.762544E+004	1.874658E+005	0.000000E+000	0.000000E+000
Kr-85	1.517074E+006	6.449184E+004	2.665342E+003	8.671011E+003	0.000000E+000	0.000000E+000
Kr-87	4.838200E+007	2.056908E+006	8.502192E+004	2.765769E+005	0.000000E+000	0.000000E+000
Kr-88	7.675164E+007	3.262875E+006	1.348587E+005	4.387140E+005	0.000000E+000	0.000000E+000
Rb-86	2.881653E+005	1.032757E+004	4.615184E+002	1.459537E+003	2.154307E+003	0.000000E+000

Rb-88	5.764521E+007	2.209925E+006	9.808780E+004	3.125222E+005	2.595164E+005	0.000000E+000
Sr-89	1.092512E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-90	1.232039E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-91	1.355354E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sr-92	1.284303E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-90	1.270916E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91m	2.833167E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-91	1.391790E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-92	1.467713E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Y-93	1.620671E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-93	4.645866E-003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-95	1.821621E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Zr-97	1.754691E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95m	6.956024E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-95	1.827915E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nb-97	4.703020E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Mo-99	1.997734E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99m	1.758141E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Tc-99	3.978884E-002	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-103	1.766238E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-105	1.188607E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ru-106	7.694557E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-103m	5.771589E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-105	1.207354E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Rh-106	7.694564E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-125	2.171971E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-127	8.700491E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Sb-129	3.346357E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-125m	1.327207E+002	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127m	1.682034E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-127	1.494605E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129m	7.779987E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-129	3.530591E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131m	1.575346E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-131	2.050018E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-132	1.520799E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133m	5.416972E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-133	8.907608E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Te-134	1.080659E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
I-129P	1.024484E-004	2.157109E-006	5.322596E-008	2.155217E-007	2.920377E-007	0.000000E+000
I-131E	5.218225E+006	1.822092E+005	6.700228E+003	2.208362E+004	4.441925E+004	5.398904E+003
I-131O	1.613884E+005	6.860733E+003	2.835431E+002	9.224349E+002	0.000000E+000	0.000000E+000
I-131P	1.022386E+008	3.663738E+006	1.637143E+005	5.177530E+005	7.642097E+005	0.000000E+000
I-132E	6.412407E+006	2.239168E+005	8.234614E+003	2.713978E+004	5.458907E+004	6.635312E+003
I-132O	1.983218E+005	8.431151E+003	3.484759E+002	1.133632E+003	0.000000E+000	0.000000E+000
I-132P	1.484304E+008	4.970095E+006	2.124998E+005	6.824129E+005	1.003557E+006	0.000000E+000
I-133E	1.027305E+007	3.587144E+005	1.319082E+004	4.347611E+004	8.744832E+004	1.062889E+004
I-133O	3.177232E+005	1.350669E+004	5.582147E+002	1.816001E+003	0.000000E+000	0.000000E+000
I-133P	2.023059E+008	7.235139E+006	3.228723E+005	1.021573E+006	1.507683E+006	0.000000E+000
I-134E	7.553736E+006	2.637891E+005	9.702278E+003	3.197484E+004	6.431395E+004	7.817993E+003
I-134O	2.336207E+005	9.932464E+003	4.105853E+002	1.335593E+003	0.000000E+000	0.000000E+000
I-134P	1.479598E+008	5.303317E+006	2.370482E+005	7.495784E+005	1.106381E+006	0.000000E+000
I-135E	9.240110E+006	3.226493E+005	1.186486E+004	3.910546E+004	7.865707E+004	9.560472E+003
I-135O	2.857766E+005	1.214873E+004	5.021022E+002	1.633439E+003	0.000000E+000	0.000000E+000
I-135P	1.809918E+008	6.486666E+006	2.898848E+005	9.167389E+005	1.353123E+006	0.000000E+000
Xe-131m	1.550314E+003	6.262883E+001	2.579379E+000	8.374709E+000	3.838793E+000	1.956805E-002
Xe-133m	4.357247E+004	1.759353E+003	7.241553E+001	2.351775E+002	1.075104E+002	5.469258E-001
Xe-133	2.121056E+008	9.015461E+006	3.725906E+005	1.212122E+006	1.503178E+003	7.645454E+000
Xe-135m	2.290220E+007	9.076034E+005	3.759402E+004	1.216312E+005	7.700428E+004	4.143047E+002
Xe-135	8.803191E+007	3.727781E+006	1.540180E+005	5.009903E+005	1.707242E+004	8.632768E+001
Cs-134	3.203788E+007	1.148207E+006	5.131105E+004	1.622696E+005	2.395132E+005	0.000000E+000
Cs-135	1.211999E-003	4.568251E-005	2.036332E-006	6.471091E-006	6.323041E-006	2.391771E-010
Cs-136	9.388588E+006	3.364780E+005	1.503653E+004	4.755257E+004	7.018855E+004	0.000000E+000
Cs-137	1.641025E+007	5.881273E+005	2.628223E+004	8.311674E+004	1.226820E+005	0.000000E+000
Cs-138	1.001385E+008	3.589511E+006	1.604674E+005	5.073854E+005	7.488980E+005	0.000000E+000
Ba-137m	1.552151E+007	4.686569E+005	2.448339E+004	7.538075E+004	1.119906E+005	0.000000E+000
Ba-139	1.494050E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ba-140	1.924137E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-140	1.981461E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-141	1.650798E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
La-142	1.375502E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-141	1.786062E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-143	1.683826E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Ce-144	1.397749E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-143	1.666863E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144m	2.000512E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pr-144	1.006766E+008	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Nd-147	7.438122E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pm-147	1.197150E+003	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-238	6.132990E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Np-239	2.552078E+009	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-238	7.409783E+005	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-239	5.341508E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-240	8.089791E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Pu-241	2.170044E+007	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Am-241	2.788041E+004	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-242	8.479987E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Cm-244	1.789994E+006	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool

Alpha (MeV/cc-s)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Alpha Int (MeV/cc)	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000	0.000000E+000
Beta (MeV/cc-s)	1.401910E+008	1.961646E+006	9.394347E+006	1.564046E+017	1.359509E+005
Beta Int (MeV/cc)	1.451000E+011	1.007342E+009	6.519878E+009	1.047724E+020	6.839667E+007
Gamma (MeV/cc-s)	3.239886E+008	4.544509E+006	2.172431E+007	4.363700E+017	4.649700E+005
Gamma Int (MeV/cc)	3.488593E+011	2.387369E+009	1.552857E+010	2.949925E+020	2.350333E+008

Time = 7200.000000 Seconds
CPU ClockTime = 22.171001 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	7.886535E+002	4.859043E+001	9.702808E+001	2.175962E+002	3.404675E+002
Co-60	9.446629E+002	5.820246E+001	1.162219E+002	2.606406E+002	4.078178E+002
Br-82E	3.598901E+003	9.554030E+001	3.291572E+002	3.986746E+003	2.643856E+003
Br-82O	1.907258E+002	7.722042E+001	6.139902E+001	0.000000E+000	0.000000E+000
Br-82P	9.774930E+004	6.234026E+003	1.233985E+004	3.645224E+004	5.588196E+004
Br-83E	3.750784E+004	9.958131E+002	3.430665E+003	4.155153E+004	2.755763E+004
Br-83O	1.987750E+003	8.049566E+002	6.400172E+002	0.000000E+000	0.000000E+000
Br-83P	1.018746E+006	6.497830E+004	1.286155E+005	3.799205E+005	5.824854E+005
Br-84E	8.333058E+003	2.213132E+002	7.623358E+002	9.232743E+003	6.125189E+003
Br-84O	4.416152E+002	1.789725E+002	1.422878E+002	0.000000E+000	0.000000E+000
Br-84P	2.263331E+005	1.444208E+004	2.858208E+004	8.441826E+004	1.294786E+005
Kr-83m	2.484619E+006	6.398763E+005	5.526757E+005	1.170092E+005	1.304962E+005
Kr-85m	1.601312E+007	5.483958E+006	4.483834E+006	0.000000E+000	0.000000E+000
Kr-85	9.341581E+005	3.198842E+005	2.615497E+005	0.000000E+000	0.000000E+000
Kr-87	1.311150E+007	4.491445E+006	3.672200E+006	0.000000E+000	0.000000E+000
Kr-88	3.277374E+007	1.122459E+007	9.177459E+006	0.000000E+000	0.000000E+000
Rb-86	3.278605E+004	2.107359E+003	4.163244E+003	1.296283E+004	1.980579E+004
Rb-88	2.383591E+007	3.743550E+006	5.321312E+006	2.476464E+006	1.020799E+007
Sr-89	1.152937E+006	7.103466E+004	1.418460E+005	3.181053E+005	4.977316E+005
Sr-90	1.301293E+005	8.017509E+003	1.600981E+004	3.590378E+004	5.617775E+004
Sr-91	1.283153E+006	7.905976E+004	1.578694E+005	3.540364E+005	5.539670E+005
Sr-92	9.243012E+005	5.695373E+004	1.137244E+005	2.550316E+005	3.990797E+005
Y-90	2.138782E+003	1.477836E+002	2.876419E+002	7.315194E+002	1.198513E+003
Y-91m	2.638666E+005	2.085731E+004	3.955550E+004	1.099059E+005	1.850724E+005
Y-91	1.491774E+004	9.239697E+002	1.842731E+003	4.161630E+003	6.529853E+003
Y-92	1.201422E+005	9.550372E+003	1.806727E+004	5.228515E+004	8.916401E+004
Y-93	1.545902E+004	9.524853E+002	1.901958E+003	4.265317E+003	6.674004E+003
Zr-93	1.778053E-006	1.095190E-007	2.187122E-007	4.908285E-007	7.678051E-007
Zr-95	1.922722E+004	1.184625E+003	2.365525E+003	5.304953E+003	8.300530E+003
Zr-97	1.742756E+004	1.073762E+003	2.144137E+003	4.808441E+003	7.523763E+003
Nb-95m	2.782118E+000	1.713753E-001	3.422362E-001	7.674964E-001	1.200631E+000
Nb-95	1.930641E+004	1.189504E+003	2.375268E+003	5.326802E+003	8.334714E+003
Nb-97	1.245938E+004	7.675608E+002	1.532764E+003	3.437229E+003	5.377513E+003
Mo-99	2.596338E+005	1.599659E+004	3.194284E+004	7.163527E+004	1.120864E+005
Tc-99m	2.314060E+005	1.425732E+004	2.846983E+004	6.384582E+004	9.989747E+004
Tc-99	1.997931E-004	1.230759E-005	2.457797E-005	5.509254E-005	8.618618E-005
Ru-103	2.329346E+005	1.435154E+004	2.865796E+004	6.426865E+004	1.005596E+005
Ru-105	1.241683E+005	7.650715E+003	1.527705E+004	3.425982E+004	5.360861E+004
Ru-106	1.015768E+005	6.258339E+003	1.249700E+004	2.802591E+004	4.385145E+004
Rh-103m	1.814433E+005	1.117790E+004	2.232142E+004	5.005560E+004	7.831203E+004
Rh-105	1.588366E+005	9.786233E+003	1.954169E+004	4.382428E+004	6.857080E+004
Rh-106	1.015727E+005	6.257938E+003	1.249628E+004	2.802171E+004	4.384319E+004
Sb-125	5.734918E+004	3.533391E+003	7.055672E+003	1.582313E+004	2.475806E+004
Sb-127	2.272021E+006	1.399839E+005	2.795273E+005	6.268706E+005	9.808515E+005
Sb-129	6.976703E+005	4.298747E+004	8.583793E+004	1.924974E+005	3.012135E+005
Te-125m	1.334933E+001	8.223023E-001	1.642137E+000	3.682646E+000	5.760928E+000
Te-127m	4.455503E+004	2.745117E+003	5.481604E+003	1.229311E+004	1.923470E+004
Te-127	5.554404E+005	3.421897E+004	6.833219E+004	1.532408E+005	2.397526E+005
Te-129m	2.053368E+005	1.265119E+004	2.526259E+004	5.665417E+004	8.864538E+004
Te-129	8.382326E+005	5.164630E+004	1.031293E+005	2.312646E+005	3.618587E+005
Te-131m	4.018077E+005	2.475635E+004	4.943471E+004	1.108625E+005	1.734653E+005
Te-131	8.644961E+004	5.326125E+003	1.063562E+004	2.384959E+004	3.731499E+004
Te-132	3.962559E+006	2.441415E+005	4.875149E+005	1.093305E+006	1.710673E+006
Te-133m	4.639341E+005	2.859239E+004	5.708901E+004	1.280167E+005	2.003605E+005
Te-133	1.011083E+005	6.231158E+003	1.244154E+004	2.789652E+004	4.365932E+004
Te-134	6.462141E+005	3.983015E+004	7.952429E+004	1.783205E+005	2.791165E+005
I-129P	3.786832E-005	2.140666E-006	4.363550E-006	8.988628E-006	1.337684E-005
I-131E	5.256795E+005	1.395518E+004	4.807875E+004	5.823294E+005	3.861765E+005
I-131O	2.785869E+004	1.127920E+004	8.968256E+003	0.000000E+000	0.000000E+000
I-131P	1.428879E+007	9.111856E+005	1.803675E+006	5.327026E+006	8.166239E+006
I-132E	4.116532E+005	1.092922E+004	3.765207E+004	4.560340E+005	3.024502E+005
I-132O	2.181580E+004	8.834589E+003	7.024332E+003	0.000000E+000	0.000000E+000
I-132P	1.801220E+007	1.089405E+006	2.183418E+006	5.744752E+006	8.708460E+006
I-133E	9.899986E+005	2.628169E+004	9.054598E+004	1.096690E+006	7.272856E+005
I-133O	5.246555E+004	2.124229E+004	1.689002E+004	0.000000E+000	0.000000E+000
I-133P	2.719215E+007	1.732574E+006	3.430276E+006	1.010677E+007	1.549183E+007
I-134E	2.337100E+005	6.205909E+003	2.137842E+004	2.589240E+005	1.717486E+005
I-134O	1.238560E+004	5.017538E+003	3.989250E+003	0.000000E+000	0.000000E+000
I-134P	6.347767E+006	4.049595E+005	8.015058E+005	2.367435E+006	3.630392E+006
I-135E	7.996670E+005	2.122942E+004	7.313914E+004	8.858556E+005	5.874804E+005
I-135O	4.237882E+004	1.715929E+004	1.364349E+004	0.000000E+000	0.000000E+000
I-135P	2.171966E+007	1.385233E+006	2.741946E+006	8.099694E+006	1.241739E+007
Xe-131m	2.759829E+003	7.215050E+002	6.211660E+002	1.228553E+002	1.354021E+002
Xe-133m	7.578590E+004	1.985185E+004	1.708375E+004	3.329763E+003	3.662741E+003
Xe-133	1.302314E+008	4.450971E+007	3.640481E+007	4.672009E+004	5.133573E+004
Xe-135m	7.644082E+006	1.166426E+006	1.162653E+006	1.052681E+006	1.386046E+006
Xe-135	5.649013E+007	1.840668E+007	1.518082E+007	5.069905E+005	5.499140E+005

Cs-134	3.653313E+006	2.348206E+005	4.639055E+005	1.444434E+006	2.206936E+006
Cs-135	1.209742E-003	1.367917E-004	2.207293E-004	2.566039E-004	7.153848E-004
Cs-136	1.067118E+006	6.859018E+004	1.355050E+005	4.219132E+005	6.446375E+005
Cs-137	1.871378E+006	1.202848E+005	2.376316E+005	7.398985E+005	1.130484E+006
Cs-138	1.645656E+006	1.058318E+005	2.090415E+005	6.507700E+005	9.947986E+005
Ba-137m	1.662398E+006	1.130096E+005	2.216066E+005	6.978969E+005	1.068835E+006
Ba-139	7.435937E+005	4.582335E+004	9.149634E+004	2.051782E+005	3.210971E+005
Ba-140	2.025431E+006	1.247907E+005	2.491890E+005	5.588338E+005	8.743941E+005
La-140	4.061016E+004	2.897446E+003	5.601549E+003	1.469529E+004	2.432388E+004
La-141	1.335599E+004	8.229460E+002	1.643264E+003	3.685123E+003	5.766402E+003
La-142	7.428843E+003	4.577864E+002	9.140775E+002	2.049809E+003	3.207818E+003
Ce-141	4.713871E+004	2.904076E+003	5.799128E+003	1.300390E+004	2.034608E+004
Ce-143	4.308317E+004	2.654457E+003	5.300553E+003	1.188705E+004	1.859951E+004
Ce-144	3.690246E+004	2.273630E+003	4.540111E+003	1.018170E+004	1.593106E+004
Pr-143	1.763720E+004	1.087304E+003	2.170890E+003	4.871954E+003	7.625204E+003
Pr-144m	4.913375E+002	3.276174E+001	6.447125E+001	1.494963E+002	2.367222E+002
Pr-144	2.850441E+004	1.950418E+003	3.811135E+003	9.193669E+003	1.477530E+004
Nd-147	7.825377E+003	4.821367E+002	9.627571E+002	2.159089E+003	3.378277E+003
Pm-147	4.808798E-001	2.962162E-002	5.915433E-002	1.326591E-001	2.075247E-001
Np-238	1.586639E+004	9.775634E+002	1.952049E+003	4.377681E+003	6.849683E+003
Np-239	6.615778E+005	4.076125E+004	8.139421E+004	1.825353E+005	2.856097E+005
Pu-238	1.956818E+002	1.205631E+001	2.407472E+001	5.399015E+001	8.447700E+001
Pu-239	1.410774E+001	8.692041E-001	1.735675E+000	3.892410E+000	6.090356E+000
Pu-240	2.136140E+001	1.316116E+000	2.628094E+000	5.893708E+000	9.221735E+000
Pu-241	5.730034E+003	3.530382E+002	7.049663E+002	1.580965E+003	2.473697E+003
Am-241	2.945759E+000	1.815010E-001	3.624280E-001	8.128242E-001	1.271830E+000
Cm-242	8.954305E+002	5.516916E+001	1.101649E+002	2.470569E+002	3.865639E+002
Cm-244	1.890606E+002	1.164838E+001	2.326013E+001	5.216342E+001	8.161881E+001

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	3.790125E+004	7.505894E+002	2.248228E+003	7.998481E+013	2.585023E+004
Alpha Int (MeV/cc)	1.262482E+008	1.991753E+006	6.321759E+006	1.595725E+017	4.311407E+007
Beta (MeV/cc-s)	7.998648E+008	5.314616E+007	8.409306E+007	8.261919E+017	3.540077E+008
Beta Int (MeV/cc)	3.193737E+012	1.258031E+011	2.342493E+011	2.549288E+021	7.466366E+011
Gamma (MeV/cc-s)	1.238367E+009	6.928475E+007	1.126254E+008	2.014360E+018	6.397070E+008
Gamma Int (MeV/cc)	5.517314E+012	1.794552E+011	3.608389E+011	6.516823E+021	1.481067E+012

Time = 7201.000000 Seconds
CPU ClockTime = 22.472001 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	2.877822E+002	5.023643E+001	5.968815E+002	2.178558E+002	3.405958E+002
Co-60	3.447105E+002	6.017407E+001	7.149552E+002	2.609515E+002	4.079716E+002
Br-82E	1.276140E+003	1.030150E+002	2.646808E+003	3.987669E+003	2.645582E+003
Br-82O	8.194814E+001	7.763772E+001	1.699665E+002	0.000000E+000	0.000000E+000
Br-82P	3.577083E+004	6.437806E+003	7.419134E+004	3.648430E+004	5.589812E+004
Br-83E	1.329902E+004	1.073637E+003	2.758316E+004	4.155803E+004	2.757354E+004
Br-83O	8.540390E+002	8.092450E+002	1.771340E+003	0.000000E+000	0.000000E+000
Br-83P	3.727795E+005	6.709714E+004	7.731723E+005	3.802261E+005	5.826101E+005
Br-84E	2.953837E+003	2.385382E+002	6.126476E+003	9.231577E+003	6.126994E+003
Br-84O	1.897181E+002	1.798746E+002	3.934895E+002	0.000000E+000	0.000000E+000
Br-84P	8.279895E+004	1.490867E+004	1.717312E+005	8.446229E+004	1.294697E+005
Kr-83m	9.870887E+005	6.452509E+005	2.047295E+006	1.170413E+005	1.305466E+005
Kr-85m	6.661696E+006	5.518782E+006	1.381685E+007	0.000000E+000	0.000000E+000
Kr-85	3.886326E+005	3.219296E+005	8.060527E+005	0.000000E+000	0.000000E+000
Kr-87	5.454259E+006	4.519468E+006	1.131254E+007	0.000000E+000	0.000000E+000
Kr-88	1.363418E+007	1.129559E+007	2.827831E+007	0.000000E+000	0.000000E+000
Rb-86	1.200585E+004	2.175704E+003	2.490102E+004	1.297365E+004	1.981135E+004
Rb-88	9.477167E+006	3.793942E+006	1.965635E+007	2.483399E+006	1.021125E+007
Sr-89	4.207105E+005	7.344095E+004	8.725848E+005	3.184847E+005	4.979192E+005
Sr-90	4.748459E+004	8.289102E+003	9.848655E+004	3.594660E+004	5.619893E+004
Sr-91	4.682181E+005	8.173620E+004	9.711190E+005	3.544515E+005	5.541647E+005
Sr-92	3.372590E+005	5.887873E+004	6.995001E+005	2.553177E+005	3.992017E+005
Y-90	7.885553E+002	1.522576E+002	1.635522E+003	7.323361E+002	1.199069E+003
Y-91m	9.863024E+004	2.140982E+004	2.045664E+005	1.100162E+005	1.851578E+005
Y-91	5.445978E+003	9.551078E+002	1.129536E+004	4.166577E+003	6.532351E+003
Y-92	4.492441E+004	9.801879E+003	9.317655E+004	5.233668E+004	8.920610E+004
Y-93	5.640952E+003	9.847316E+002	1.169975E+004	4.270324E+003	6.676394E+003
Zr-93	6.488863E-007	1.132439E-007	1.345838E-006	4.914777E-007	7.681915E-007
Zr-95	7.016072E+003	1.224754E+003	1.455185E+004	5.311281E+003	8.303658E+003
Zr-97	6.359309E+003	1.110123E+003	1.318968E+004	4.814122E+003	7.526514E+003
Nb-95m	1.015326E+000	1.772051E-001	2.105861E+000	7.685160E-001	1.201246E+000
Nb-95	7.044970E+003	1.229798E+003	1.461179E+004	5.333156E+003	8.337856E+003
Nb-97	4.546723E+003	7.936118E+002	9.430241E+003	3.441549E+003	5.379885E+003
Mo-99	9.474094E+004	1.653843E+004	1.964997E+005	7.172051E+004	1.121283E+005
Tc-99m	8.444070E+004	1.474027E+004	1.751363E+005	6.392193E+004	9.993506E+004
Tc-99	7.291423E-005	1.272626E-005	1.512295E-004	5.516574E-005	8.623045E-005
Ru-103	8.499857E+004	1.483770E+004	1.762933E+005	6.434530E+004	1.005975E+005
Ru-105	4.530763E+004	7.909529E+003	9.397138E+004	3.429920E+004	5.362649E+004
Ru-106	3.706571E+004	6.470341E+003	7.687702E+004	2.805934E+004	4.386798E+004
Rh-103m	6.621262E+004	1.155721E+004	1.373299E+005	5.011823E+004	7.834613E+004
Rh-105	5.795992E+004	1.011773E+004	1.202132E+005	4.387650E+004	6.859657E+004
Rh-106	3.706468E+004	6.467421E+003	7.687490E+004	2.805484E+004	4.385972E+004
Sb-125	2.092690E+004	3.653085E+003	4.340394E+004	1.584200E+004	2.476739E+004
Sb-127	8.290661E+005	1.447255E+005	1.719545E+006	6.276170E+005	9.812193E+005
Sb-129	2.545721E+005	4.444167E+004	5.280014E+005	1.927186E+005	3.013139E+005

Te-125m	4.871803E+000	8.502760E-001	1.010448E+001	3.687542E+000	5.763887E+000
Te-127m	1.625828E+004	2.838109E+003	3.372088E+004	1.230778E+004	1.924196E+004
Te-127	2.026910E+005	3.537995E+004	4.203962E+005	1.534313E+005	2.398551E+005
Te-129m	7.492804E+004	1.307974E+004	1.554063E+005	5.672174E+004	8.867879E+004
Te-129	3.058665E+005	5.339432E+004	6.343898E+005	2.315346E+005	3.619859E+005
Te-131m	1.466201E+005	2.559481E+004	3.041009E+005	1.109940E+005	1.735296E+005
Te-131	3.154598E+004	5.506568E+003	6.542871E+004	2.387829E+004	3.732945E+004
Te-132	1.445947E+006	2.524112E+005	2.999001E+006	1.094606E+006	1.711314E+006
Te-133m	1.692594E+005	2.955460E+004	3.510565E+005	1.281427E+005	2.003943E+005
Te-133	3.688792E+004	6.440808E+003	7.650828E+004	2.792407E+004	4.366683E+004
Te-134	2.357474E+005	4.116773E+004	4.889576E+005	1.784841E+005	2.791450E+005
I-129P	1.372271E-005	2.219938E-006	2.846191E-005	9.000324E-006	1.338285E-005
I-131E	1.864023E+005	1.504705E+004	3.866121E+005	5.824668E+005	3.864303E+005
I-131O	1.196992E+004	1.134020E+004	2.482649E+004	0.000000E+000	0.000000E+000
I-131P	5.228883E+006	9.409779E+005	1.084509E+007	5.331737E+006	8.168638E+006
I-132E	1.459579E+005	1.178330E+004	3.027274E+005	4.561036E+005	3.026237E+005
I-132O	9.373167E+003	8.881622E+003	1.944064E+004	0.000000E+000	0.000000E+000
I-132P	6.561672E+006	1.126940E+006	1.360939E+007	5.750278E+006	8.710747E+006
I-133E	3.510439E+005	2.833775E+004	7.280910E+005	1.096940E+006	7.277577E+005
I-133O	2.254255E+004	2.135700E+004	4.675493E+004	0.000000E+000	0.000000E+000
I-133P	9.949987E+006	1.789257E+006	2.063701E+007	1.011565E+007	1.549627E+007
I-134E	8.285487E+004	6.689929E+003	1.718471E+005	2.589285E+005	1.718239E+005
I-134O	5.321177E+003	5.043561E+003	1.103651E+004	0.000000E+000	0.000000E+000
I-134P	2.322487E+006	4.181047E+005	4.817011E+006	2.369010E+006	3.630665E+006
I-135E	2.835488E+005	2.288976E+004	5.881013E+005	8.860398E+005	5.878500E+005
I-135O	1.820850E+004	1.725160E+004	3.776577E+004	0.000000E+000	0.000000E+000
I-135P	7.948022E+006	1.430479E+006	1.648479E+007	8.106627E+006	1.242068E+007
Xe-131m	1.098900E+003	7.275489E+002	2.279200E+003	1.228996E+002	1.354662E+002
Xe-133m	3.018463E+004	2.001776E+004	6.260517E+004	3.330941E+003	3.664451E+003
Xe-133	5.416051E+007	4.479479E+007	1.123329E+008	4.673665E+004	5.135972E+004
Xe-135m	2.860952E+006	1.182436E+006	5.933826E+006	1.052933E+006	1.386513E+006
Xe-135	2.329425E+007	1.853000E+007	4.831400E+007	5.071627E+005	5.501642E+005
Cs-134	1.337799E+006	2.424363E+005	2.774695E+006	1.445640E+006	2.207556E+006
Cs-135	4.649829E-004	1.393501E-004	9.644090E-004	2.570263E-004	7.157484E-004
Cs-136	3.907654E+005	7.081465E+004	8.104763E+005	4.222653E+005	6.448183E+005
Cs-137	6.852759E+005	1.241859E+005	1.421313E+006	7.405166E+005	1.130801E+006
Cs-138	6.024266E+005	1.092238E+005	1.249477E+006	6.510800E+005	9.947213E+005
Ba-137m	6.123318E+005	1.164678E+005	1.270022E+006	6.984570E+005	1.069136E+006
Ba-139	2.713058E+005	4.736882E+004	5.627084E+005	2.053943E+005	3.211734E+005
Ba-140	7.390857E+005	1.290179E+005	1.532919E+006	5.595000E+005	8.747232E+005
La-140	1.501899E+004	2.982453E+003	3.115050E+004	1.471144E+004	2.433560E+004
La-141	4.873429E+003	8.507800E+002	1.010785E+004	3.689337E+003	5.768291E+003
La-142	2.710507E+003	4.732334E+002	5.621792E+003	2.051999E+003	3.208629E+003
Ce-141	1.720095E+004	3.002459E+003	3.567604E+004	1.301941E+004	2.035375E+004
Ce-143	1.572110E+004	2.744361E+003	3.260673E+004	1.190116E+004	1.860642E+004
Ce-144	1.346582E+004	2.350649E+003	2.792912E+004	1.019385E+004	1.593706E+004
Pr-143	6.436198E+003	1.124115E+003	1.334915E+004	4.877763E+003	7.628083E+003
Pr-144m	1.806325E+002	3.378689E+001	3.746451E+002	1.496643E+002	2.368123E+002
Pr-144	1.050222E+004	2.009955E+003	2.178237E+004	9.203793E+003	1.478122E+004
Nd-147	2.855503E+003	4.984687E+002	5.922526E+003	2.161663E+003	3.379548E+003
Pm-147	1.754958E-001	3.062930E-002	3.639913E-001	1.328355E-001	2.076313E-001
Np-238	5.789677E+003	1.010674E+003	1.200822E+004	4.382886E+003	6.852239E+003
Np-239	2.414111E+005	4.214189E+004	5.007046E+005	1.827524E+005	2.857164E+005
Pu-238	7.140492E+001	1.246472E+001	1.480991E+002	5.405456E+001	8.450885E+001
Pu-239	5.147959E+000	8.986485E-001	1.067725E+001	3.897053E+000	6.092653E+000
Pu-240	7.794844E+000	1.360700E+000	1.616708E+001	5.900738E+000	9.225212E+000
Pu-241	2.090908E+003	3.649973E+002	4.336697E+003	1.582851E+003	2.474630E+003
Am-241	1.074921E+000	1.876491E-001	2.229465E+000	8.137937E-001	1.272310E+000
Cm-242	3.267454E+002	5.703802E+001	6.776943E+002	2.473516E+002	3.867096E+002
Cm-244	6.898880E+001	1.204297E+001	1.430879E+002	5.222564E+001	8.164958E+001

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	4.251532E+004	7.760156E+002	2.049846E+004	8.008022E+013	2.585997E+004
Alpha Int (MeV/cc)	1.262907E+008	1.992529E+006	6.342257E+006	1.596526E+017	4.313993E+007
Beta (MeV/cc-s)	9.733433E+008	5.369338E+007	4.692905E+008	8.272423E+017	3.541092E+008
Beta Int (MeV/cc)	3.194711E+012	1.258568E+011	2.347186E+011	2.550115E+021	7.469907E+011
Gamma (MeV/cc-s)	1.470378E+009	7.012700E+007	7.089322E+008	2.016095E+018	6.398698E+008
Gamma Int (MeV/cc)	5.518785E+012	1.795253E+011	3.615479E+011	6.518839E+021	1.481707E+012

Time = 10080.000000 Seconds
CPU ClockTime = 29.282001 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	1.236436E+002	1.404510E+001	1.977198E+001	3.817044E+002	9.542191E+002
Co-60	1.481491E+002	1.682875E+001	2.369066E+001	4.573559E+002	1.143339E+003
Br-82E	6.280269E+002	4.712953E+000	1.196562E+001	4.553243E+003	5.298139E+003
Br-82O	8.061092E+001	1.462450E+002	9.750197E+001	0.000000E+000	0.000000E+000
Br-82P	1.513444E+004	1.721237E+003	2.423068E+003	5.598093E+004	1.303381E+005
Br-83E	5.272100E+003	3.956912E+001	1.004582E+002	3.822441E+004	4.448077E+004
Br-83O	6.767315E+002	1.228013E+003	8.187259E+002	0.000000E+000	0.000000E+000
Br-83P	1.270496E+005	1.445184E+004	2.034416E+004	4.699603E+005	1.094286E+006
Br-84E	5.188615E+002	3.896207E+000	9.890565E+000	3.762390E+003	4.379294E+003
Br-84O	6.661140E+001	1.209788E+002	8.065980E+001	0.000000E+000	0.000000E+000
Br-84P	1.250395E+004	1.423249E+003	2.003397E+003	4.625811E+004	1.077461E+005
Kr-83m	7.890473E+005	1.235526E+006	8.242208E+005	2.134623E+005	3.697546E+005
Kr-85m	5.881864E+006	1.025177E+007	6.834950E+006	0.000000E+000	0.000000E+000

Kr-85	3.883323E+005	6.767565E+005	4.511977E+005	0.000000E+000	0.000000E+000
Kr-87	3.518394E+006	6.134345E+006	4.089868E+006	0.000000E+000	0.000000E+000
Kr-88	1.120800E+007	1.953638E+007	1.302511E+007	0.000000E+000	0.000000E+000
Rb-86	5.153579E+003	5.862693E+002	8.253202E+002	1.979004E+004	4.544595E+004
Rb-88	8.277755E+006	5.517415E+006	6.089998E+006	3.735849E+006	2.313000E+007
Sr-89	1.807317E+005	2.052992E+004	2.890099E+004	5.579429E+005	1.394796E+006
Sr-90	2.040804E+004	2.318217E+003	3.263470E+003	6.300234E+004	1.574989E+005
Sr-91	1.898264E+005	2.156403E+004	3.035660E+004	5.860247E+005	1.465031E+006
Sr-92	1.181351E+005	1.342156E+004	1.889387E+004	3.647103E+005	9.118089E+005
Y-90	5.117399E+002	5.827828E+001	8.204359E+001	1.713885E+003	4.226356E+003
Y-91m	7.590160E+004	8.645519E+003	1.217102E+004	2.523857E+005	6.227937E+005
Y-91	2.397075E+003	2.723499E+002	3.834014E+002	7.454074E+003	1.861127E+004
Y-92	3.546209E+004	4.045958E+003	5.695872E+003	1.251344E+005	3.060800E+005
Y-93	2.296149E+003	2.608385E+002	3.671936E+002	7.088576E+003	1.772104E+004
Zr-93	3.783739E-007	4.297637E-008	6.050130E-008	1.168788E-006	2.921874E-006
Zr-95	3.014303E+003	3.424048E+002	4.820202E+002	9.305555E+003	2.326287E+004
Zr-97	2.644932E+003	3.004546E+002	4.229636E+002	8.165298E+003	2.041261E+004
Nb-95m	6.059577E-001	6.882518E-002	9.689096E-002	1.870428E+000	4.675409E+000
Nb-95	3.027785E+003	3.439363E+002	4.841762E+002	9.347173E+003	2.336691E+004
Nb-97	2.224793E+003	2.527492E+002	3.558103E+002	6.867352E+003	1.716731E+004
Mo-99	4.037763E+004	4.586660E+003	6.456865E+003	1.246513E+005	3.116155E+005
Tc-99m	3.620220E+004	4.112478E+003	5.789338E+003	1.117582E+005	2.793845E+005
Tc-99	4.360791E-005	4.953036E-006	6.972803E-006	1.345397E-004	3.362990E-004
Ru-103	3.650956E+004	4.147245E+003	5.838282E+003	1.127099E+005	2.817624E+005
Ru-105	1.718700E+004	1.952524E+003	2.748636E+003	5.305958E+004	1.326496E+005
Ru-106	1.592922E+004	1.809454E+003	2.547257E+003	4.917563E+004	1.229337E+005
Rh-103m	3.206532E+004	3.642910E+003	5.128342E+003	9.897632E+004	2.474263E+005
Rh-105	2.480760E+004	2.818002E+003	3.967040E+003	7.658414E+004	1.914524E+005
Rh-106	1.593158E+004	1.810452E+003	2.548663E+003	4.917333E+004	1.229314E+005
Sb-125	8.993823E+003	1.021638E+003	1.438211E+003	2.776513E+004	6.940977E+004
Sb-127	3.542149E+005	4.023664E+004	5.664308E+004	1.093509E+006	2.733659E+006
Sb-129	9.645989E+004	1.095831E+004	1.542638E+004	2.977902E+005	7.444798E+005
Te-125m	2.916707E+000	3.312809E-001	4.663719E-001	9.003088E+000	2.250450E+001
Te-127m	6.999158E+003	7.950573E+002	1.119242E+003	2.160732E+004	5.401588E+004
Te-127	9.932214E+004	1.128204E+004	1.588245E+004	3.065991E+005	7.664338E+005
Te-129m	3.219240E+004	3.656843E+003	5.147919E+003	9.938220E+004	2.484446E+005
Te-129	1.215690E+005	1.381218E+004	1.944395E+004	3.752717E+005	9.381800E+005
Te-131m	6.186120E+004	7.027123E+003	9.892415E+003	1.909743E+005	4.774182E+005
Te-131	1.367031E+004	1.553323E+003	2.186689E+003	4.219543E+004	1.054865E+005
Te-132	6.170432E+005	7.009240E+004	9.867249E+004	1.904897E+006	4.762045E+006
Te-133m	3.990917E+004	4.535599E+003	6.384657E+003	1.232163E+005	3.080998E+005
Te-133	8.737552E+003	9.933539E+002	1.398321E+003	2.697167E+004	6.744383E+004
Te-134	4.589673E+004	5.216875E+003	7.343552E+003	1.417065E+005	3.543611E+005
I-129P	6.443841E-006	7.300757E-007	1.027771E-006	1.819047E-005	4.553298E-005
I-131E	9.291711E+004	6.972798E+002	1.770313E+003	6.736548E+005	7.838594E+005
I-131O	1.192643E+004	2.163673E+004	1.442526E+004	0.000000E+000	0.000000E+000
I-131P	2.241019E+006	2.548672E+005	3.587891E+005	8.287774E+006	1.929699E+007
I-132E	5.721788E+004	4.294449E+002	1.090274E+003	4.148487E+005	4.827504E+005
I-132O	7.344553E+003	1.332776E+004	8.885724E+003	0.000000E+000	0.000000E+000
I-132P	2.345095E+006	2.662750E+005	3.748428E+005	7.853633E+006	1.882588E+007
I-133E	1.708972E+005	1.282486E+003	3.256073E+003	1.239019E+006	1.441724E+006
I-133O	2.193569E+004	3.979637E+004	2.653237E+004	0.000000E+000	0.000000E+000
I-133P	4.165909E+006	4.737763E+005	6.669569E+005	1.537647E+007	3.582329E+007
I-134E	2.200905E+004	1.652271E+002	4.194553E+002	1.595827E+005	1.857251E+005
I-134O	2.825308E+003	5.129043E+003	3.419621E+003	0.000000E+000	0.000000E+000
I-134P	5.303886E+005	6.035085E+004	8.495425E+004	1.962040E+006	4.569286E+006
I-135E	1.303465E+005	9.782107E+002	2.483536E+003	9.450320E+005	1.099659E+006
I-135O	1.673094E+004	3.035560E+004	2.023822E+004	0.000000E+000	0.000000E+000
I-135P	3.141146E+006	3.572614E+005	5.029309E+005	1.161893E+007	2.705262E+007
Xe-131m	1.175072E+003	1.855943E+003	1.237979E+003	2.876603E+002	4.896638E+002
Xe-133m	3.194705E+004	5.052921E+004	3.370425E+004	7.659307E+003	1.300486E+004
Xe-133	5.391101E+007	9.388005E+007	6.259064E+007	1.076735E+005	1.825218E+005
Xe-135m	9.684822E+005	8.153564E+005	5.535730E+005	1.723223E+006	3.725531E+006
Xe-135	2.227005E+007	3.805488E+007	2.537362E+007	1.118281E+006	1.869099E+006
Cs-134	5.749462E+005	6.540561E+004	9.207471E+004	2.207827E+006	5.070061E+006
Cs-135	5.234339E-004	1.957461E-004	2.342953E-004	6.960215E-004	2.789348E-003
Cs-136	1.676486E+005	1.907165E+004	2.684810E+004	6.437805E+005	1.478381E+006
Cs-137	2.945196E+005	3.350441E+004	4.716581E+004	1.130972E+006	2.597169E+006
Cs-138	9.216568E+004	1.049343E+004	1.477080E+004	3.539760E+005	8.132171E+005
Ba-137m	2.786564E+005	3.171257E+004	4.464335E+004	1.069859E+006	2.456880E+006
Ba-139	7.806738E+004	8.870788E+003	1.248742E+004	2.410192E+005	6.026166E+005
Ba-140	3.170737E+005	3.601750E+004	5.070362E+004	9.788488E+005	2.447016E+006
La-140	1.070276E+004	1.219401E+003	1.716669E+003	3.633343E+004	8.940083E+004
La-141	1.817004E+003	2.064231E+002	2.905885E+002	5.609456E+003	1.402381E+004
La-142	8.146737E+002	9.256805E+001	1.303086E+002	2.515144E+003	6.288468E+003
Ce-141	7.388818E+003	8.393186E+002	1.181550E+003	2.280828E+004	5.701905E+004
Ce-143	6.644120E+003	7.547379E+002	1.062480E+003	2.051134E+004	5.127642E+004
Ce-144	5.786917E+003	6.573552E+002	9.253916E+002	1.786498E+004	4.466049E+004
Pr-143	2.772858E+003	3.149844E+002	4.434192E+002	8.565620E+003	2.141075E+004
Pr-144m	8.672739E+001	9.855781E+000	1.387448E+001	2.678148E+002	6.694556E+002
Pr-144	5.600703E+003	6.366789E+002	8.962894E+002	1.747159E+004	4.358770E+004
Nd-147	1.224674E+003	1.391150E+002	1.958391E+002	3.780732E+003	9.451422E+003
Pm-147	1.049785E-001	1.192352E-002	1.678573E-002	3.240406E-001	8.099859E-001
Np-238	2.461306E+003	2.795904E+002	3.935930E+002	7.598393E+003	1.899523E+004
Np-239	1.027397E+005	1.167064E+004	1.642933E+004	3.171717E+005	7.928975E+005
Pu-238	3.069051E+001	3.486237E+000	4.907749E+000	9.474555E+001	2.368535E+002
Pu-239	2.212778E+000	2.513568E-001	3.538475E-001	6.831078E+000	1.707695E+001
Pu-240	3.350095E+000	3.805484E-001	5.357169E-001	1.034204E+001	2.585395E+001
Pu-241	8.986334E+002	1.020788E+002	1.437013E+002	2.774201E+003	6.935197E+003
Am-241	4.621143E-001	5.249317E-002	7.389724E-002	1.426669E+000	3.566490E+000
Cm-242	1.404098E+002	1.594962E+001	2.245308E+001	4.334639E+002	1.083612E+003
Cm-244	2.965014E+001	3.368058E+000	4.741382E+000	9.153391E+001	2.288247E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	5.943496E+003	2.170098E+002	4.582432E+002	1.403415E+014	7.246691E+004
Alpha Int (MeV/cc)	1.531717E+008	5.581878E+006	1.634370E+007	4.890508E+017	2.087038E+008
Beta (MeV/cc-s)	2.336040E+008	8.581725E+007	9.867100E+007	1.149057E+018	7.731620E+008
Beta Int (MeV/cc)	3.975264E+012	4.035207E+011	6.387866E+011	5.528429E+021	2.664990E+012
Gamma (MeV/cc-s)	2.801070E+008	1.000493E+008	1.072107E+008	2.651526E+018	1.321405E+009
Gamma Int (MeV/cc)	6.568591E+012	5.323902E+011	8.850550E+011	1.349200E+022	4.798469E+012

Time = 10800.000000 Seconds
CPU ClockTime = 31.124001 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	1.000960E+002	6.378435E+000	8.979121E+000	4.051928E+002	9.726240E+002
Co-60	1.199439E+002	7.643201E+000	1.075957E+001	4.855378E+002	1.165484E+003
Br-82E	5.259828E+002	9.536733E+000	7.077750E+000	4.634904E+003	5.277396E+003
Br-82O	8.027992E+001	1.456711E+002	9.711456E+001	0.000000E+000	0.000000E+000
Br-82P	1.220516E+004	7.786874E+002	1.096181E+003	5.862961E+004	1.320842E+005
Br-83E	4.183018E+003	7.585561E+001	5.629645E+001	3.686156E+004	4.197411E+004
Br-83O	6.384726E+002	1.158851E+003	7.725773E+002	0.000000E+000	0.000000E+000
Br-83P	9.706513E+004	6.194064E+003	8.719402E+003	4.662846E+005	1.050567E+006
Br-84E	3.358552E+002	6.094147E+000	4.522701E+000	2.959998E+003	3.371381E+003
Br-84O	5.127067E+001	9.315418E+001	6.210531E+001	0.000000E+000	0.000000E+000
Br-84P	7.793484E+003	4.977293E+002	7.006059E+002	3.744318E+004	8.439029E+004
Kr-83m	7.398455E+005	1.146708E+006	7.646857E+005	2.348158E+005	4.242310E+005
Kr-85m	5.701549E+006	9.939554E+006	6.626430E+006	0.000000E+000	0.000000E+000
Kr-85	3.882572E+005	6.767485E+005	4.511679E+005	0.000000E+000	0.000000E+000
Kr-87	3.153045E+006	5.498855E+006	3.665977E+006	0.000000E+000	0.000000E+000
Kr-88	1.067200E+007	1.860621E+007	1.240429E+007	0.000000E+000	0.000000E+000
Rb-86	4.171153E+003	2.661881E+002	3.747211E+002	2.076406E+004	4.620332E+004
Rb-88	7.900899E+006	5.223626E+006	5.756013E+006	3.702295E+006	2.263205E+007
Sr-89	1.463070E+005	9.323147E+003	1.312448E+004	5.922568E+005	1.421652E+006
Sr-90	1.652272E+004	1.052880E+003	1.482171E+003	6.688465E+004	1.605498E+005
Sr-91	1.514606E+005	9.652101E+003	1.358749E+004	6.131243E+005	1.471777E+006
Sr-92	9.087478E+004	5.791994E+003	8.153425E+003	3.678764E+005	8.831221E+005
Y-90	4.491195E+002	2.868567E+001	4.038278E+001	1.951809E+003	4.640595E+003
Y-91m	6.538259E+004	4.175669E+003	5.878327E+003	2.799444E+005	6.666442E+005
Y-91	1.953273E+003	1.244958E+002	1.752570E+002	7.962538E+003	1.909505E+004
Y-92	3.118898E+004	1.995209E+003	2.808789E+003	1.413085E+005	3.342380E+005
Y-93	1.833910E+003	1.168687E+002	1.645190E+002	7.423804E+003	1.782047E+004
Zr-93	3.258085E-007	2.075919E-008	2.922395E-008	1.319687E-006	3.167783E-006
Zr-95	2.440216E+003	1.554982E+002	2.188997E+002	9.878093E+003	2.371135E+004
Zr-97	2.123893E+003	1.353455E+002	1.905295E+002	8.597647E+003	2.063804E+004
Nb-95m	5.247875E-001	3.343696E-002	4.707130E-002	2.124086E+000	5.098178E+000
Nb-95	2.451346E+003	1.562075E+002	2.198981E+002	9.923146E+003	2.381950E+004
Nb-97	1.837407E+003	1.171012E+002	1.648481E+002	7.436939E+003	1.785138E+004
Mo-99	3.262191E+004	2.078788E+003	2.926372E+003	1.320550E+005	3.169855E+005
Tc-99m	2.928960E+004	1.866510E+003	2.627543E+003	1.185623E+005	2.845980E+005
Tc-99	3.778511E-005	2.407496E-006	3.389184E-006	1.528599E-004	3.668885E-004
Ru-103	2.955449E+004	1.883306E+003	2.651188E+003	1.196378E+005	2.871783E+005
Ru-105	1.348717E+004	8.595505E+002	1.210003E+003	5.459766E+004	1.310627E+005
Ru-106	1.289639E+004	8.217986E+002	1.156871E+003	5.220512E+004	1.253130E+005
Rh-103m	2.645680E+004	1.686190E+003	2.373716E+003	1.070834E+005	2.570401E+005
Rh-105	2.005975E+004	1.278284E+003	1.799479E+003	8.120243E+004	1.949186E+005
Rh-106	1.289830E+004	8.222522E+002	1.157510E+003	5.220327E+004	1.253121E+005
Sb-125	7.281525E+003	4.640016E+002	6.531894E+002	2.947591E+004	7.075389E+004
Sb-127	2.863546E+005	1.824751E+004	2.568758E+004	1.159176E+006	2.782489E+006
Sb-129	7.567355E+004	4.822755E+003	6.789068E+003	3.063355E+005	7.353643E+005
Te-125m	2.527991E+000	1.610709E-001	2.267496E-001	1.023208E+001	2.455875E+001
Te-127m	5.668992E+003	3.612457E+002	5.085368E+002	2.294829E+004	5.508498E+004
Te-127	8.278260E+004	5.275016E+003	7.425877E+003	3.350831E+005	8.043018E+005
Te-129m	2.606127E+004	1.660707E+003	2.337828E+003	1.054971E+005	2.532350E+005
Te-129	9.639219E+004	6.143896E+003	8.648891E+003	3.901688E+005	9.366039E+005
Te-131m	4.985308E+004	3.176852E+003	4.472146E+003	2.018079E+005	4.844227E+005
Te-131	1.104667E+004	7.041644E+002	9.912733E+002	4.471034E+004	1.073255E+005
Te-132	4.986827E+005	3.177784E+004	4.473463E+004	2.018690E+006	4.845672E+006
Te-133m	2.780662E+004	1.772975E+003	2.495742E+003	1.125728E+005	2.702846E+005
Te-133	6.089474E+003	3.884144E+002	5.467548E+002	2.464844E+004	5.918185E+004
Te-134	3.048272E+004	1.943973E+003	2.736404E+003	1.234104E+005	2.963283E+005
I-129P	5.322624E-006	3.383096E-007	4.762522E-007	1.979891E-005	4.746124E-005
I-131E	7.806935E+004	1.415483E+003	1.050510E+003	6.879374E+005	7.832965E+005
I-131O	1.191557E+004	2.162094E+004	1.441402E+004	0.000000E+000	0.000000E+000
I-131P	1.813104E+006	1.156739E+005	1.628377E+005	8.707984E+006	1.961866E+007
I-132E	4.527125E+004	8.209639E+002	6.092805E+002	3.989396E+005	4.542726E+005
I-132O	6.909966E+003	1.254202E+004	8.361455E+003	0.000000E+000	0.000000E+000
I-132P	1.816079E+006	1.156828E+005	1.628478E+005	7.929343E+006	1.833120E+007
I-133E	1.427418E+005	2.588110E+003	1.920782E+003	1.257827E+006	1.432193E+006
I-133O	2.178649E+004	3.953301E+004	2.635548E+004	0.000000E+000	0.000000E+000
I-133P	3.350709E+006	2.137699E+005	3.009298E+005	1.606293E+007	3.620788E+007
I-134E	1.579873E+004	2.865823E+002	2.126859E+002	1.392302E+005	1.585604E+005
I-134O	2.411606E+003	4.379375E+003	2.919660E+003	0.000000E+000	0.000000E+000
I-134P	3.666052E+005	2.340361E+004	3.294419E+004	1.761216E+006	3.968787E+006
I-135E	1.073218E+005	1.945978E+003	1.444219E+003	9.457182E+005	1.076837E+006
I-135O	1.638056E+004	2.972575E+004	1.981731E+004	0.000000E+000	0.000000E+000
I-135P	2.490350E+006	1.588946E+005	2.236793E+005	1.196295E+007	2.695159E+007
Xe-131m	1.185694E+003	1.856714E+003	1.238088E+003	3.370969E+002	5.987836E+002

Xe-133m	3.215637E+004	5.044033E+004	3.363420E+004	8.936424E+003	1.583466E+004
Xe-133	5.384562E+007	9.377662E+007	6.251816E+007	1.256975E+005	2.223701E+005
Xe-135m	7.544480E+005	5.033751E+005	3.399998E+005	1.828663E+006	3.986871E+006
Xe-135	2.197963E+007	3.749511E+007	2.499785E+007	1.291129E+006	2.258585E+006
Cs-134	4.654837E+005	2.970547E+004	4.181731E+004	2.317184E+006	5.156099E+006
Cs-135	5.288996E-004	1.838832E-004	2.181881E-004	8.136981E-004	3.160372E-003
Cs-136	1.356716E+005	8.658083E+003	1.218825E+004	6.753755E+005	1.502818E+006
Cs-137	2.384485E+005	1.521691E+004	2.142132E+004	1.187000E+006	2.641261E+006
Cs-138	5.763214E+004	3.681627E+003	5.182279E+003	2.869381E+005	6.387583E+005
Ba-137m	2.256054E+005	1.440310E+004	2.027569E+004	1.122869E+006	2.498614E+006
Ba-139	5.717093E+004	3.644553E+003	5.130373E+003	2.314446E+005	5.556486E+005
Ba-140	2.565929E+005	1.635093E+004	2.301771E+004	1.038699E+006	2.493291E+006
La-140	9.516870E+003	6.080746E+002	8.560318E+002	4.180517E+004	9.925685E+004
La-141	1.419708E+003	9.048092E+001	1.273712E+002	5.747161E+003	1.379626E+004
La-142	6.031449E+002	3.844785E+001	5.412256E+001	2.441690E+003	5.861869E+003
Ce-141	5.981319E+003	3.811476E+002	5.365532E+002	2.421064E+004	5.811581E+004
Ce-143	5.356654E+003	3.413484E+002	4.805261E+002	2.168401E+004	5.205059E+004
Ce-144	4.685101E+003	2.985493E+002	4.202771E+002	1.896548E+004	4.552469E+004
Pr-143	2.246286E+003	1.431432E+002	2.015072E+002	9.098491E+003	2.183819E+004
Pr-144m	7.026495E+001	4.479326E+000	6.305686E+000	2.844236E+002	6.827303E+002
Pr-144	4.592213E+003	2.928084E+002	4.121968E+002	1.870034E+004	4.484504E+004
Nd-147	9.909983E+002	6.314964E+001	8.889769E+001	4.011602E+003	9.629448E+003
Pm-147	9.096847E-002	5.796056E-003	8.159473E-003	3.681965E-001	8.837350E-001
Np-238	1.987290E+003	1.266377E+002	1.782717E+002	8.044644E+003	1.931043E+004
Np-239	8.297582E+004	5.287530E+003	7.443413E+003	3.358899E+005	8.062726E+005
Pu-238	2.484799E+001	1.583391E+000	2.228989E+000	1.005855E+002	2.414453E+002
Pu-239	1.791561E+000	1.141639E-001	1.607120E-001	7.252246E+000	1.740827E+001
Pu-240	2.712299E+000	1.728362E-001	2.433069E-001	1.097934E+001	2.635477E+001
Pu-241	7.275497E+002	4.636174E+001	6.526486E+001	2.945150E+003	7.069531E+003
Am-241	3.741630E-001	2.384286E-002	3.356434E-002	1.514688E+000	3.635832E+000
Cm-242	1.136744E+002	7.243690E+000	1.019717E+001	4.601586E+002	1.104564E+003
Cm-244	2.400529E+001	1.529692E+000	2.153395E+000	9.717436E+001	2.332571E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	4.811858E+003	9.855857E+001	2.081159E+002	1.489864E+014	7.386902E+004
Alpha Int (MeV/cc)	1.570288E+008	5.689872E+006	1.657174E+007	5.933227E+017	2.614513E+008
Beta (MeV/cc-s)	2.193022E+008	8.196510E+007	9.347473E+007	1.166779E+018	7.616114E+008
Beta Int (MeV/cc)	4.138185E+012	4.638698E+011	7.078617E+011	6.362959E+021	3.218082E+012
Gamma (MeV/cc-s)	2.518582E+008	9.384806E+007	9.878277E+007	2.687878E+018	1.297458E+009
Gamma Int (MeV/cc)	6.759749E+012	6.020807E+011	9.589945E+011	1.541591E+022	5.742141E+012

Time = 18000.000000 Seconds
CPU ClockTime = 46.707002 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	1.210231E+001	2.992179E+000	2.153595E+000	4.927076E+002	9.820370E+002
Co-60	1.451345E+001	3.588308E+000	2.582653E+000	5.908697E+002	1.177688E+003
Br-82E	8.931083E+001	9.582541E+000	6.388364E+000	4.872638E+003	5.074386E+003
Br-82O	7.704378E+001	1.400274E+002	9.335164E+001	0.000000E+000	0.000000E+000
Br-82P	1.420080E+003	3.515348E+002	2.530142E+002	6.668200E+004	1.282022E+005
Br-83E	4.135715E+002	4.440077E+001	2.960075E+001	2.256449E+004	2.350031E+004
Br-83O	3.567806E+002	6.489201E+002	4.326169E+002	0.000000E+000	0.000000E+000
Br-83P	6.575986E+003	1.628928E+003	1.172412E+003	3.087957E+005	5.937425E+005
Br-84E	4.336693E+000	4.666482E-001	3.111101E-001	2.366406E+002	2.465163E+002
Br-84O	3.741740E+000	6.824139E+000	4.549591E+000	0.000000E+000	0.000000E+000
Br-84P	6.895646E+001	1.712341E+001	1.232471E+001	3.238470E+003	6.228983E+003
Kr-83m	3.624184E+005	5.403978E+005	3.602717E+005	3.289557E+005	6.257908E+005
Kr-85m	4.176104E+006	7.293770E+006	4.862534E+006	0.000000E+000	0.000000E+000
Kr-85	3.875074E+005	6.765229E+005	4.510153E+005	0.000000E+000	0.000000E+000
Kr-87	1.053383E+006	1.841702E+006	1.227820E+006	0.000000E+000	0.000000E+000
Kr-88	6.537618E+006	1.142098E+007	7.614035E+006	0.000000E+000	0.000000E+000
Rb-86	5.031845E+002	1.245899E+002	8.967247E+001	2.435275E+004	4.648655E+004
Rb-88	4.853320E+006	9.790352E+006	6.952018E+006	2.445378E+006	4.503803E+006
Sr-89	1.768374E+004	4.372135E+003	3.146806E+003	7.199380E+005	1.434940E+006
Sr-90	1.999332E+003	4.943149E+002	3.557789E+002	8.139652E+004	1.622350E+005
Sr-91	1.583910E+004	3.916756E+003	2.819055E+003	6.448455E+005	1.285301E+006
Sr-92	6.593053E+003	1.631080E+003	1.173961E+003	2.684242E+005	5.350531E+005
Y-90	9.596510E+001	2.374782E+001	1.709223E+001	4.037529E+003	8.057255E+003
Y-91m	9.229221E+003	2.282696E+003	1.642951E+003	3.785587E+005	7.547086E+005
Y-91	2.521804E+002	6.236059E+001	4.488346E+001	1.032947E+004	2.059307E+004
Y-92	5.294746E+003	1.311520E+003	9.439541E+002	2.257210E+005	4.507161E+005
Y-93	1.937127E+002	4.790146E+001	3.447670E+001	7.886473E+003	1.571923E+004
Zr-93	6.130407E-008	1.515149E-008	1.090512E-008	2.497411E-006	4.978004E-006
Zr-95	2.950135E+002	7.293924E+001	5.249739E+001	1.201055E+004	2.393875E+004
Zr-97	2.367627E+002	5.854307E+001	4.213590E+001	9.639102E+003	1.921237E+004
Nb-95m	1.044960E-001	2.582471E-002	1.858705E-002	4.253678E+000	8.477647E+000
Nb-95	2.966201E+002	7.333639E+001	5.278323E+001	1.207595E+004	2.406910E+004
Nb-97	2.377782E+002	5.878934E+001	4.231312E+001	9.679097E+003	1.929188E+004
Mo-99	3.865411E+003	9.557089E+002	6.878633E+002	1.573683E+005	3.136587E+005
Tc-99m	3.514051E+003	8.688422E+002	6.253416E+002	1.430568E+005	2.851333E+005
Tc-99	7.556508E-006	1.867505E-006	1.344116E-006	3.074399E-004	6.127305E-004
Ru-103	3.571021E+003	8.829011E+002	6.354604E+002	1.453829E+005	2.897691E+005
Ru-105	1.194338E+003	2.954003E+002	2.126124E+002	4.862469E+004	9.692099E+004
Ru-106	1.560291E+003	3.857665E+002	2.776521E+002	6.352235E+004	1.266092E+005
Rh-103m	3.489057E+003	8.625926E+002	6.208433E+002	1.420257E+005	2.830766E+005
Rh-105	2.387913E+003	5.904042E+002	4.249384E+002	9.721587E+004	1.937658E+005

Rh-106	1.560522E+003	3.857966E+002	2.776737E+002	6.352217E+004	1.266092E+005
Sb-125	8.810539E+002	2.178319E+002	1.567826E+002	3.586935E+004	7.149276E+004
Sb-127	3.414109E+004	8.441199E+003	6.075480E+003	1.389949E+006	2.770374E+006
Sb-129	6.682175E+003	1.652734E+003	1.189544E+003	2.720492E+005	5.422614E+005
Te-125m	5.073434E-001	1.253817E-001	9.024205E-002	2.065224E+001	4.116018E+001
Te-127m	6.887877E+002	1.702952E+002	1.225685E+002	2.804179E+004	5.589127E+004
Te-127	1.263110E+004	3.122303E+003	2.247247E+003	5.141891E+005	1.024821E+006
Te-129m	3.150374E+003	7.789001E+002	5.606065E+002	1.282576E+005	2.556359E+005
Te-129	9.333504E+003	2.308295E+003	1.661379E+003	3.799434E+005	7.573117E+005
Te-131m	5.760085E+003	1.424204E+003	1.025059E+003	2.345045E+005	4.674047E+005
Te-131	1.284924E+003	3.176849E+002	2.286510E+002	5.230400E+004	1.042505E+005
Te-132	5.928040E+004	1.465681E+004	1.054911E+004	2.413419E+006	4.810304E+006
Te-133m	7.497271E+002	1.857010E+002	1.336584E+002	3.052569E+004	6.085717E+004
Te-133	1.642485E+002	4.068022E+001	2.927962E+001	6.686494E+003	1.333049E+004
Te-134	5.090654E+002	1.261646E+002	9.080742E+001	2.072760E+004	4.132660E+004
I-129P	7.587996E-007	1.871810E-007	1.347218E-007	2.885805E-005	5.702233E-005
I-131E	1.368766E+004	1.468555E+003	9.790368E+002	7.467726E+005	7.776892E+005
I-131O	1.180760E+004	2.145945E+004	1.430630E+004	0.000000E+000	0.000000E+000
I-131P	2.178676E+005	5.392989E+004	3.881557E+004	1.022846E+007	1.966557E+007
I-132E	4.352411E+003	4.672866E+002	3.115271E+002	2.374682E+005	2.473176E+005
I-132O	3.754753E+003	6.829480E+003	4.553025E+003	0.000000E+000	0.000000E+000
I-132P	1.468684E+005	3.631104E+004	2.613463E+004	6.293707E+006	1.228992E+007
I-133E	2.358920E+004	2.531063E+003	1.687377E+003	1.286986E+006	1.340277E+006
I-133O	2.034921E+004	3.698611E+004	2.465743E+004	0.000000E+000	0.000000E+000
I-133P	3.795497E+005	9.395587E+004	6.762396E+004	1.779093E+007	3.421395E+007
I-134E	5.738925E+002	6.168192E+001	4.112218E+001	3.131359E+004	3.261626E+004
I-134O	4.951227E+002	9.017481E+002	6.011786E+002	0.000000E+000	0.000000E+000
I-134P	9.125229E+003	2.263149E+003	1.628904E+003	4.285297E+005	8.241036E+005
I-135E	1.536645E+004	1.649047E+003	1.099368E+003	8.383748E+005	8.731053E+005
I-135O	1.325600E+004	2.409833E+004	1.606560E+004	0.000000E+000	0.000000E+000
I-135P	2.443333E+005	6.049621E+004	4.354170E+004	1.147316E+007	2.205884E+007
Xe-131m	1.220718E+003	1.853928E+003	1.235959E+003	8.985872E+002	1.696469E+003
Xe-133m	3.234902E+004	4.928616E+004	3.285761E+004	2.283028E+004	4.306027E+004
Xe-133	5.317011E+007	9.272480E+007	6.181654E+007	3.232979E+005	6.092789E+005
Xe-135m	7.313732E+004	1.914461E+004	1.285478E+004	1.957713E+006	3.692917E+006
Xe-135	1.899664E+007	3.222551E+007	2.148373E+007	2.937296E+006	5.529894E+006
Cs-134	5.632182E+004	1.394539E+004	1.003707E+004	2.725821E+006	5.203271E+006
Cs-135	5.025754E-004	1.139081E-003	8.163182E-004	2.035500E-003	4.874803E-003
Cs-136	1.634480E+004	4.047024E+003	2.912810E+003	7.910436E+005	1.510010E+006
Cs-137	2.885345E+004	7.144167E+003	5.141952E+003	1.396428E+006	2.665616E+006
Cs-138	5.267680E+002	1.308388E+002	9.417222E+001	2.549817E+004	4.869450E+004
Ba-137m	2.729938E+004	6.758902E+003	4.864661E+003	1.321017E+006	2.521672E+006
Ba-139	2.536482E+003	6.278849E+002	4.519186E+002	1.032715E+005	2.058690E+005
Ba-140	3.090927E+004	7.642054E+003	5.500302E+003	1.258375E+006	2.508123E+006
La-140	2.160338E+003	5.346433E+002	3.848033E+002	9.111406E+004	1.818425E+005
La-141	1.204010E+002	2.978082E+001	2.143455E+001	4.901861E+003	9.770687E+003
La-142	2.984018E+001	7.385710E+000	5.315842E+000	1.214918E+003	2.421864E+003
Ce-141	7.227448E+002	1.786914E+002	1.286115E+002	2.942231E+004	5.864273E+004
Ce-143	6.215198E+002	1.536724E+002	1.106044E+002	2.530330E+004	5.043345E+004
Ce-144	5.668083E+002	1.401378E+002	1.008629E+002	2.307582E+004	4.599343E+004
Pr-143	2.733541E+002	6.758508E+001	4.864377E+001	1.113415E+004	2.219238E+004
Pr-144m	8.503522E+000	2.102265E+000	1.513087E+000	3.461422E+002	6.899133E+002
Pr-144	5.668242E+002	1.401324E+002	1.008591E+002	2.307388E+004	4.598973E+004
Nd-147	1.192883E+002	2.949305E+001	2.122736E+001	4.856452E+003	9.679614E+003
Pm-147	1.821776E-002	4.502234E-003	3.240433E-003	7.415838E-001	1.477987E+000
Np-238	2.340007E+002	5.785627E+001	4.164156E+001	9.526621E+003	1.898801E+004
Np-239	9.796756E+003	2.422223E+003	1.743374E+003	3.988448E+005	7.949582E+005
Pu-238	3.007193E+000	7.434986E-001	5.351266E-001	1.224283E+002	2.440172E+002
Pu-239	2.168541E-001	5.361500E-002	3.858893E-002	8.828454E+000	1.759638E+001
Pu-240	3.282035E-001	8.114508E-002	5.840346E-002	1.336158E+001	2.663155E+001
Pu-241	8.803664E+001	2.176619E+001	1.566602E+001	3.584136E+003	7.143697E+003
Am-241	4.530799E-002	1.120196E-002	8.062512E-003	1.844634E+000	3.676624E+000
Cm-242	1.375036E+001	3.399643E+000	2.446863E+000	5.598030E+002	1.115768E+003
Cm-244	2.904749E+000	7.181705E-001	5.168970E-001	1.182578E+002	2.357047E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	5.821315E+002	4.626202E+001	4.994503E+001	1.812721E+014	7.462808E+004
Alpha Int (MeV/cc)	1.714452E+008	6.287237E+006	1.724498E+007	1.820483E+018	7.965058E+008
Beta (MeV/cc-s)	1.393363E+008	8.078806E+007	8.285591E+007	1.058438E+018	4.119605E+008
Beta Int (MeV/cc)	5.381210E+012	1.123969E+012	1.386784E+012	1.451131E+022	6.818505E+012
Gamma (MeV/cc-s)	1.252894E+008	6.802481E+007	6.869597E+007	2.423518E+018	9.454443E+008
Gamma Int (MeV/cc)	8.010662E+012	1.199949E+012	1.563541E+012	3.413408E+022	1.351490E+013

Time = 25200.000000 Seconds
CPU ClockTime = 63.080003 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	3.362423E+000	9.898658E-001	7.124473E-001	5.010234E+002	9.846775E+002
Co-60	4.035490E+000	1.188008E+000	8.550586E-001	6.013148E+002	1.181783E+003
Br-82E	1.516480E+001	9.211268E+000	6.140849E+000	4.755838E+003	4.879185E+003
Br-82O	7.393809E+001	1.346021E+002	8.973476E+001	0.000000E+000	0.000000E+000
Br-82P	3.796777E+002	1.119152E+002	8.055005E+001	6.510127E+004	1.236596E+005
Br-83E	4.088948E+001	2.486298E+001	1.657545E+001	1.282380E+004	1.315726E+004
Br-83O	1.993702E+002	3.633740E+002	2.422513E+002	0.000000E+000	0.000000E+000
Br-83P	1.023744E+003	3.020989E+002	2.174341E+002	1.755417E+005	3.334723E+005
Br-84E	5.599706E-002	3.418490E-002	2.279076E-002	1.756412E+001	1.802533E+001

Br-84O	2.730727E-001	4.999109E-001	3.332860E-001	0.000000E+000	0.000000E+000
Br-84P	1.402010E+000	4.154598E-001	2.990304E-001	2.404334E+002	4.569076E+002
Kr-83m	1.712095E+005	2.540861E+005	1.693930E+005	2.842236E+005	5.337049E+005
Kr-85m	3.058791E+006	5.352250E+006	3.568182E+006	0.000000E+000	0.000000E+000
Kr-85	3.867590E+005	6.762961E+005	4.508641E+005	0.000000E+000	0.000000E+000
Kr-87	3.519191E+005	6.168299E+005	4.112262E+005	0.000000E+000	0.000000E+000
Kr-88	4.004917E+006	7.010477E+006	4.673683E+006	0.000000E+000	0.000000E+000
Rb-86	1.394863E+002	4.112371E+001	2.959843E+001	2.463969E+004	4.648691E+004
Rb-88	3.424037E+006	6.027521E+006	4.280247E+006	1.048681E+006	2.739680E+006
Sr-89	4.911519E+003	1.445906E+003	1.040678E+003	7.318490E+005	1.438327E+006
Sr-90	5.559311E+002	1.636606E+002	1.177933E+002	8.283743E+004	1.628031E+005
Sr-91	3.806225E+003	1.120851E+003	8.067241E+002	5.671580E+005	1.114681E+006
Sr-92	1.099165E+003	3.239240E+002	2.331425E+002	1.637881E+005	3.219261E+005
Y-90	3.800832E+001	1.119338E+001	8.056319E+000	5.791147E+003	1.139478E+004
Y-91m	2.342472E+003	6.898164E+002	4.964899E+002	3.495506E+005	6.870466E+005
Y-91	7.422892E+001	2.185537E+001	1.573021E+001	1.112456E+004	2.187031E+004
Y-92	1.452576E+003	4.282880E+002	3.082568E+002	2.233088E+005	4.396360E+005
Y-93	4.701876E+001	1.384573E+001	9.965354E+000	7.006167E+003	1.376976E+004
Zr-93	2.235656E-008	6.578793E-009	4.735020E-009	3.333469E-006	6.551614E-006
Zr-95	8.195745E+001	2.412751E+001	1.736556E+001	1.221221E+004	2.400104E+004
Zr-97	6.064947E+001	1.785762E+001	1.285287E+001	9.037221E+003	1.776139E+004
Nb-95m	4.026346E-002	1.184682E-002	8.526627E-003	5.998827E+000	1.178913E+001
Nb-95	8.247623E+001	2.428019E+001	1.747546E+001	1.228950E+004	2.415295E+004
Nb-97	6.379315E+001	1.878218E+001	1.351832E+001	9.504654E+003	1.867999E+004
Mo-99	1.052482E+003	3.098538E+002	2.230146E+002	1.568271E+005	3.082184E+005
Tc-99m	9.664078E+002	2.845118E+002	2.047749E+002	1.439933E+005	2.829952E+005
Tc-99	2.921665E-006	8.596573E-007	6.187294E-007	4.350651E-004	8.550048E-004
Ru-103	9.915034E+002	2.918897E+002	2.100850E+002	1.477406E+005	2.903594E+005
Ru-105	2.430338E+002	7.159274E+001	5.152839E+001	3.621437E+004	7.117704E+004
Ru-106	4.337862E+002	1.277024E+002	9.191268E+001	6.463702E+004	1.270332E+005
Rh-103m	9.871557E+002	2.906017E+002	2.091580E+002	1.470779E+005	2.890567E+005
Rh-105	6.494284E+002	1.911956E+002	1.376114E+002	9.676853E+004	1.901831E+005
Rh-106	4.338253E+002	1.277123E+002	9.191985E+001	6.463704E+004	1.270333E+005
Sb-125	2.449715E+002	7.211719E+001	5.190572E+001	3.650238E+004	7.173930E+004
Sb-127	9.353705E+003	2.753722E+003	1.981968E+003	1.393765E+006	2.739219E+006
Sb-129	1.355890E+003	3.994196E+002	2.874796E+002	2.020407E+005	3.970983E+005
Te-125m	1.970227E-001	5.796959E-002	4.172301E-002	2.935428E+001	5.768807E+001
Te-127m	1.922916E+002	5.660831E+001	4.074333E+001	2.865267E+004	5.631197E+004
Te-127	4.123487E+003	1.213602E+003	8.734787E+002	6.143724E+005	1.207417E+006
Te-129m	8.749399E+002	2.575743E+002	1.853869E+002	1.303718E+005	2.562240E+005
Te-129	2.066347E+003	6.085919E+002	4.380295E+002	3.078727E+005	6.050954E+005
Te-131m	1.529321E+003	4.502599E+002	3.240708E+002	2.278797E+005	4.478628E+005
Te-131	3.412183E+002	1.004594E+002	7.230484E+001	5.083928E+004	9.991689E+004
Te-132	1.619314E+004	4.767273E+003	3.431204E+003	2.412888E+006	4.742139E+006
Te-133m	4.645059E+001	1.371692E+001	9.872762E+000	6.922104E+003	1.360771E+004
Te-133	1.017573E+001	3.004868E+000	2.162756E+000	1.516259E+003	2.980715E+003
Te-134	1.953559E+001	5.774574E+000	4.156271E+000	2.911297E+003	5.723592E+003
I-129P	2.370382E-007	6.963706E-008	5.012063E-008	3.313840E-005	6.463695E-005
I-131E	2.399816E+003	1.457584E+003	9.717225E+002	7.526056E+005	7.721220E+005
I-131O	1.170061E+004	2.129912E+004	1.419942E+004	0.000000E+000	0.000000E+000
I-131P	6.015782E+004	1.773111E+004	1.276181E+004	1.031286E+007	1.958971E+007
I-132E	4.184440E+002	2.544501E+002	1.696349E+002	1.312331E+005	1.346461E+005
I-132O	2.040266E+003	3.718835E+003	2.479244E+003	0.000000E+000	0.000000E+000
I-132P	2.967051E+004	8.736631E+003	6.288129E+003	4.592186E+006	8.891466E+006
I-133E	3.898301E+003	2.367996E+003	1.578665E+003	1.222549E+006	1.254261E+006
I-133O	1.900674E+004	3.460324E+004	2.306885E+004	0.000000E+000	0.000000E+000
I-133P	9.877163E+004	2.911495E+004	2.095524E+004	1.690628E+007	3.212150E+007
I-134E	2.084678E+001	1.270078E+001	8.467369E+000	6.538402E+003	6.709246E+003
I-134O	1.016528E+002	1.856768E+002	1.237872E+002	0.000000E+000	0.000000E+000
I-134P	5.219415E+002	1.543387E+002	1.110854E+002	8.950301E+004	1.700564E+005
I-135E	2.200185E+003	1.336862E+003	8.912438E+002	6.900081E+005	7.079187E+005
I-135O	1.072744E+004	1.953621E+004	1.302418E+004	0.000000E+000	0.000000E+000
I-135P	5.508559E+004	1.624294E+004	1.169073E+004	9.445326E+006	1.794190E+007
Xe-131m	1.219984E+003	1.847305E+003	1.231539E+003	1.488616E+003	2.787164E+003
Xe-133m	3.162646E+004	4.806073E+004	3.204055E+004	3.629800E+004	6.795182E+004
Xe-133	5.249042E+007	9.168319E+007	6.112214E+007	5.180142E+005	9.693644E+005
Xe-135m	1.418218E+004	6.812957E+003	4.566570E+003	1.632115E+006	3.007872E+006
Xe-135	1.630282E+007	2.767498E+007	1.845003E+007	4.110526E+006	7.687211E+006
Cs-134	1.565965E+004	4.616789E+003	3.322894E+003	2.766213E+006	5.218923E+006
Cs-135	6.553065E-004	1.287711E-003	9.237912E-004	2.999324E-003	7.599017E-003
Cs-136	4.524840E+003	1.334029E+003	9.601557E+002	7.992948E+005	1.508004E+006
Cs-137	8.022950E+003	2.365332E+003	1.702427E+003	1.417221E+006	2.673825E+006
Cs-138	1.106387E+001	3.279252E+000	2.360266E+000	1.954698E+003	3.689535E+003
Ba-137m	7.590387E+003	2.237776E+003	1.610620E+003	1.340691E+006	2.529439E+006
Ba-139	2.585956E+002	7.628537E+001	5.490621E+001	3.853491E+004	7.574682E+004
Ba-140	8.555905E+003	2.518797E+003	1.812882E+003	1.274887E+006	2.505578E+006
La-140	8.703806E+002	2.563319E+002	1.844922E+002	1.327443E+005	2.612033E+005
La-141	2.346359E+001	6.912503E+000	4.975229E+000	3.496309E+003	6.871824E+003
La-142	3.392456E+000	1.000546E+000	7.201395E-001	5.055270E+002	9.936796E+002
Ce-141	2.006596E+002	5.907223E+001	4.251673E+001	2.989764E+004	5.875857E+004
Ce-143	1.657102E+002	4.878766E+001	3.511450E+001	2.469199E+004	4.852830E+004
Ce-144	1.575747E+002	4.638844E+001	3.338768E+001	2.347967E+004	4.614535E+004
Pr-143	7.640462E+001	2.249300E+001	1.618914E+001	1.139016E+004	2.238601E+004
Pr-144m	2.363872E+000	6.958923E-001	5.008624E-001	3.522011E+002	6.921924E+002
Pr-144	1.575955E+002	4.639397E+001	3.339166E+001	2.348064E+004	4.614727E+004
Nd-147	3.299559E+001	9.713681E+000	6.991337E+000	4.916564E+003	9.662690E+003
Pm-147	7.059723E-003	2.077178E-003	1.495027E-003	1.051824E+000	2.067082E+000
Np-238	6.331490E+001	1.864033E+001	1.341622E+001	9.434358E+003	1.854173E+004
Np-239	2.657945E+003	7.825122E+002	5.632065E+002	3.960521E+005	7.783771E+005
Pu-238	8.363012E-001	2.461987E-001	1.771994E-001	1.246143E+002	2.449085E+002
Pu-239	6.031610E-002	1.775645E-002	1.278005E-002	8.987419E+000	1.766326E+001
Pu-240	9.126030E-002	2.686613E-002	1.933666E-002	1.359819E+001	2.672496E+001

Pu-241	2.447920E+001	7.206434E+000	5.186768E+000	3.647563E+003	7.168673E+003
Am-241	1.260728E-002	3.711459E-003	2.671290E-003	1.878630E+000	3.692137E+000
Cm-242	3.822070E+000	1.125180E+000	8.098387E-001	5.695138E+002	1.119284E+003
Cm-244	8.076876E-001	2.377752E-001	1.711366E-001	1.203508E+002	2.365293E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	1.618311E+002	1.531334E+001	1.653247E+001	1.844407E+014	7.487300E+004
Alpha Int (MeV/cc)	1.738089E+008	6.488769E+006	1.746255E+007	3.139451E+018	1.334880E+009
Beta (MeV/cc-s)	1.082118E+008	6.025584E+007	6.152507E+007	8.717090E+017	3.493480E+008
Beta Int (MeV/cc)	6.277409E+012	1.625576E+012	1.900182E+012	2.129633E+022	9.541079E+012
Gamma (MeV/cc-s)	8.482802E+007	4.670610E+007	4.710604E+007	2.050202E+018	7.953619E+008
Gamma Int (MeV/cc)	8.756789E+012	1.606524E+012	1.973883E+012	5.011187E+022	1.973698E+013

Time = 29988.000000 Seconds
CPU ClockTime = 74.106004 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	1.434726E+000	4.743543E-001	3.414124E-001	5.026749E+002	9.850296E+002
Co-60	1.722819E+000	5.696036E-001	4.099672E-001	6.036121E+002	1.182824E+003
Br-82E	1.475549E+001	8.972370E+000	5.981583E+000	4.633381E+003	4.753551E+003
Br-82O	7.194244E+001	1.311111E+002	8.740746E+001	0.000000E+000	0.000000E+000
Br-82P	1.579203E+002	5.227953E+001	3.762775E+001	6.363666E+004	1.205732E+005
Br-83E	2.776763E+001	1.690757E+001	1.127181E+001	8.719628E+003	8.946370E+003
Br-83O	1.353902E+002	2.471053E+002	1.647382E+002	0.000000E+000	0.000000E+000
Br-83P	2.971836E+002	9.852209E+001	7.091077E+001	1.197591E+005	2.269308E+005
Br-84E	9.821918E-003	6.011130E-003	4.007566E-003	3.084689E+000	3.165690E+000
Br-84O	4.789711E-002	8.790515E-002	5.860556E-002	0.000000E+000	0.000000E+000
Br-84P	1.051207E-001	3.503590E-002	2.521736E-002	4.236692E+001	8.030959E+001
Kr-83m	1.036202E+005	1.537602E+005	1.025080E+005	2.327147E+005	4.345408E+005
Kr-85m	2.486724E+006	4.356623E+006	2.904428E+006	0.000000E+000	0.000000E+000
Kr-85	3.862621E+005	6.761453E+005	4.507635E+005	0.000000E+000	0.000000E+000
Kr-87	1.697490E+005	2.980263E+005	1.986872E+005	0.000000E+000	0.000000E+000
Kr-88	2.891107E+006	5.067539E+006	3.378382E+006	0.000000E+000	0.000000E+000
Rb-86	5.942870E+001	1.967740E+001	1.416264E+001	2.466906E+004	4.642879E+004
Rb-88	2.473126E+006	4.357071E+006	3.094032E+006	7.556947E+005	1.980338E+006
Sr-89	2.095259E+003	6.927427E+002	4.985955E+002	7.341011E+005	1.438527E+006
Sr-90	2.373403E+002	7.847016E+001	5.647821E+001	8.315527E+004	1.629491E+005
Sr-91	1.474695E+003	4.877546E+002	3.510575E+002	5.166835E+005	1.012506E+006
Sr-92	3.339465E+002	1.105584E+002	7.957381E+001	1.170063E+005	2.293029E+005
Y-90	1.938432E+001	6.409958E+000	4.613502E+000	6.917276E+003	1.356872E+004
Y-91m	9.161141E+002	3.030018E+002	2.180832E+002	3.211225E+005	6.292961E+005
Y-91	3.273560E+001	1.082446E+001	7.790805E+000	1.153342E+004	2.260787E+004
Y-92	5.685004E+002	1.882529E+002	1.354936E+002	2.044710E+005	4.012987E+005
Y-93	1.833882E+001	6.065393E+000	4.365519E+000	6.425298E+003	1.259115E+004
Zr-93	1.089036E-008	3.599042E-009	2.590375E-009	3.818126E-006	7.482245E-006
Zr-95	3.496873E+001	1.156149E+001	8.321284E+000	1.225175E+004	2.400824E+004
Zr-97	2.451820E+001	8.108022E+000	5.835682E+000	8.590315E+003	1.683361E+004
Nb-95m	2.032688E-002	6.716643E-003	4.834235E-003	7.120993E+000	1.395356E+001
Nb-95	3.521063E+001	1.164145E+001	8.378830E+000	1.233650E+004	2.417430E+004
Nb-97	2.609804E+001	8.630118E+000	6.211456E+000	9.142952E+003	1.791652E+004
Mo-99	4.431008E+002	1.465074E+002	1.054474E+002	1.552463E+005	3.042181E+005
Tc-99m	4.091173E+002	1.352697E+002	9.735918E+001	1.433311E+005	2.808688E+005
Tc-99	1.477777E-006	4.883085E-007	3.514551E-007	5.174218E-004	1.013885E-003
Ru-103	4.228856E+002	1.398162E+002	1.006315E+002	1.481635E+005	2.903377E+005
Ru-105	8.430347E+001	2.789546E+001	2.007757E+001	2.953740E+004	5.788388E+004
Ru-106	1.851750E+002	6.122313E+001	4.406482E+001	6.487847E+004	1.271343E+005
Rh-103m	4.224790E+002	1.396791E+002	1.005328E+002	1.480072E+005	2.900313E+005
Rh-105	2.725381E+002	9.011405E+001	6.485882E+001	9.548661E+004	1.871141E+005
Rh-106	1.851917E+002	6.122791E+001	4.406826E+001	6.487851E+004	1.271344E+005
Sb-125	1.045805E+002	3.457673E+001	2.488630E+001	3.664114E+004	7.180110E+004
Sb-127	3.954197E+003	1.307399E+003	9.409893E+002	1.385406E+006	2.714814E+006
Sb-129	4.694437E+002	1.553370E+002	1.118028E+002	1.644790E+005	3.223265E+005
Te-125m	9.998481E-002	3.303748E-002	2.377839E-002	3.502707E+001	6.863532E+001
Te-127m	8.230890E+001	2.721295E+001	1.958628E+001	2.883793E+004	5.651008E+004
Te-127	1.910090E+003	6.313469E+002	4.544060E+002	6.691658E+005	1.311256E+006
Te-129m	3.732055E+002	1.233908E+002	8.880942E+001	1.307574E+005	2.562290E+005
Te-129	7.623247E+002	2.521820E+002	1.815061E+002	2.670686E+005	5.233605E+005
Te-131m	6.331480E+002	2.093586E+002	1.506841E+002	2.218323E+005	4.347006E+005
Te-131	1.412673E+002	4.671130E+001	3.362006E+001	4.949056E+004	9.698129E+004
Te-132	6.832036E+003	2.258933E+003	1.625848E+003	2.393695E+006	4.690642E+006
Te-133m	7.306843E+000	2.425329E+000	1.745632E+000	2.560291E+003	5.018380E+003
Te-133	1.600678E+000	5.312996E-001	3.824033E-001	5.608215E+002	1.099256E+003
Te-134	2.234712E+000	7.426897E-001	5.345537E-001	7.830585E+002	1.534985E+003
I-129P	1.074739E-007	3.546311E-008	2.552425E-008	3.541208E-005	6.886333E-005
I-131E	2.385333E+003	1.450333E+003	9.668888E+002	7.490186E+005	7.684419E+005
I-131O	1.163000E+004	2.119317E+004	1.412878E+004	0.000000E+000	0.000000E+000
I-131P	2.556358E+004	8.462073E+003	6.090504E+003	1.029904E+007	1.951426E+007
I-132E	2.789218E+002	1.698461E+002	1.132317E+002	8.758757E+004	8.986547E+004
I-132O	1.359978E+003	2.482332E+003	1.654902E+003	0.000000E+000	0.000000E+000
I-132P	1.073925E+004	3.551719E+003	2.556324E+003	3.876750E+006	7.508213E+006
I-133E	3.725331E+003	2.265416E+003	1.510278E+003	1.169795E+006	1.200139E+006
I-133O	1.816340E+004	3.310424E+004	2.206952E+004	0.000000E+000	0.000000E+000
I-133P	4.034911E+004	1.335807E+004	9.614361E+003	1.623105E+007	3.076077E+007
I-134E	7.274266E+000	4.440402E+000	2.960333E+000	2.284420E+003	2.344110E+003
I-134O	3.547068E+001	6.491570E+001	4.327808E+001	0.000000E+000	0.000000E+000
I-134P	7.785352E+001	2.587773E+001	1.862553E+001	3.137538E+004	5.946348E+004

I-135E	1.911326E+003	1.162717E+003	7.751470E+002	6.001832E+005	6.157623E+005
I-135O	9.319052E+003	1.699135E+004	1.132760E+004	0.000000E+000	0.000000E+000
I-135P	2.045596E+004	6.774969E+003	4.876234E+003	8.243159E+006	1.561889E+007
Xe-131m	1.216409E+003	1.842175E+003	1.228118E+003	1.880131E+003	3.506475E+003
Xe-133m	3.108108E+004	4.724447E+004	3.149634E+004	4.462443E+004	8.323951E+004
Xe-133	5.204219E+007	9.099674E+007	6.066450E+007	6.402882E+005	1.194061E+006
Xe-135m	6.217486E+003	4.361958E+003	2.918235E+003	1.425757E+006	2.618923E+006
Xe-135	1.471808E+007	2.500846E+007	1.667235E+007	4.632093E+006	8.633058E+006
Cs-134	6.685161E+003	2.213502E+003	1.593149E+003	2.775033E+006	5.222792E+006
Cs-135	6.429297E-004	1.246073E-003	8.941143E-004	3.711582E-003	9.500564E-003
Cs-136	1.926114E+003	6.377564E+002	4.590196E+002	7.995364E+005	1.504781E+006
Cs-137	3.425190E+003	1.134103E+003	8.162609E+002	1.421808E+006	2.675935E+006
Cs-138	8.476729E-001	2.825760E-001	2.033862E-001	3.519278E+002	6.626538E+002
Ba-137m	3.240518E+003	1.072944E+003	7.722423E+002	1.345030E+006	2.531434E+006
Ba-139	5.665004E+001	1.877909E+001	1.351620E+001	1.984934E+004	3.890299E+004
Ba-140	3.641781E+003	1.204071E+003	8.666193E+002	1.275946E+006	2.500314E+006
La-140	4.456768E+002	1.473776E+002	1.060735E+002	1.591289E+005	3.121519E+005
La-141	7.908382E+000	2.617128E+000	1.883661E+000	2.770867E+003	5.430055E+003
La-142	7.990301E-001	2.647973E-001	1.905870E-001	2.799664E+002	5.486999E+002
Ce-141	8.557606E+001	2.829345E+001	2.036397E+001	2.998071E+004	5.874925E+004
Ce-143	6.879691E+001	2.274834E+001	1.637293E+001	2.410396E+004	4.723387E+004
Ce-144	6.726355E+001	2.223889E+001	1.600624E+001	2.356666E+004	4.618066E+004
Pr-143	3.272403E+001	1.081940E+001	7.787172E+000	1.147063E+004	2.247816E+004
Pr-144m	1.009061E+000	3.336148E-001	2.401163E-001	3.535060E+002	6.927220E+002
Pr-144	6.727248E+001	2.224157E+001	1.600817E+001	2.356766E+004	4.618262E+004
Nd-147	1.403756E+001	4.641202E+000	3.340465E+000	4.918242E+003	9.637677E+003
Pm-147	3.577611E-003	1.182139E-003	8.508326E-004	1.253323E+000	2.455879E+000
Np-238	2.654471E+001	8.776919E+000	6.317112E+000	9.300301E+003	1.822473E+004
Np-239	1.116347E+003	3.691138E+002	2.656665E+002	3.911274E+005	7.664471E+005
Pu-238	3.570720E-001	1.180562E-001	8.496989E-002	1.251047E+002	2.451521E+002
Pu-239	2.575539E-002	8.515319E-003	6.128827E-003	9.023656E+000	1.768254E+001
Pu-240	3.896136E-002	1.288152E-002	9.271361E-003	1.365042E+001	2.674902E+001
Pu-241	1.045072E+001	3.455248E+000	2.486884E+000	3.661545E+003	7.175075E+003
Am-241	5.384910E-003	1.780374E-003	1.281409E-003	1.886734E+000	3.697205E+000
Cm-242	1.631354E+000	5.393637E-001	3.882023E-001	5.715662E+002	1.120027E+003
Cm-244	3.448204E-001	1.140056E-001	8.205451E-002	1.208123E+002	2.367409E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	6.907951E+001	7.341199E+000	7.925646E+000	1.851213E+014	7.492921E+004
Alpha Int (MeV/cc)	1.743305E+008	6.540682E+006	1.751860E+007	4.024421E+018	1.693526E+009
Beta (MeV/cc-s)	9.175716E+007	5.122079E+007	5.213712E+007	8.061258E+017	3.200706E+008
Beta Int (MeV/cc)	6.754037E+012	1.891324E+012	2.171116E+012	2.530735E+022	1.114082E+013
Gamma (MeV/cc-s)	6.731377E+007	3.735123E+007	3.763717E+007	1.877616E+018	7.266150E+008
Gamma Int (MeV/cc)	9.118609E+012	1.806575E+012	2.175559E+012	5.949890E+022	2.337354E+013

Time = 43200.000000 Seconds
CPU ClockTime = 103.268005 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	1.847779E-001	6.230864E-002	4.484610E-002	5.031686E+002	9.842639E+002
Co-60	2.222016E-001	7.492796E-002	5.392874E-002	6.050769E+002	1.183610E+003
Br-82E	1.368244E+001	8.344807E+000	5.563208E+000	4.311581E+003	4.423405E+003
Br-82O	6.671061E+001	1.219407E+002	8.129383E+001	0.000000E+000	0.000000E+000
Br-82P	1.895431E+001	6.400171E+000	4.606469E+000	5.934473E+004	1.122718E+005
Br-83E	9.544626E+000	5.833911E+000	3.889305E+000	3.007786E+003	3.085999E+003
Br-83O	4.653798E+001	8.526298E+001	5.684244E+001	0.000000E+000	0.000000E+000
Br-83P	1.322224E+001	4.474737E+000	3.220669E+000	4.139937E+004	7.832927E+004
Br-84E	8.057062E-005	4.965308E-005	3.310326E-005	2.539339E-002	2.606019E-002
Br-84O	3.929070E-004	7.261134E-004	4.840932E-004	0.000000E+000	0.000000E+000
Br-84P	1.116167E-004	3.809569E-005	2.741966E-005	3.495203E-001	6.615461E-001
Kr-83m	2.583192E+004	3.844147E+004	2.562792E+004	1.106122E+005	2.048005E+005
Kr-85m	1.404417E+006	2.468864E+006	1.645917E+006	0.000000E+000	0.000000E+000
Kr-85	3.848944E+005	6.757294E+005	4.504863E+005	0.000000E+000	0.000000E+000
Kr-87	2.270302E+004	4.004339E+004	2.669600E+004	0.000000E+000	0.000000E+000
Kr-88	1.176328E+006	2.069467E+006	1.379654E+006	0.000000E+000	0.000000E+000
Rb-86	7.622179E+000	2.574045E+000	1.852647E+000	2.458175E+004	4.619700E+004
Rb-88	1.037379E+006	1.779329E+006	1.263533E+006	2.763418E+005	8.087250E+005
Sr-89	2.696854E+002	9.094027E+001	6.545346E+001	7.343802E+005	1.436544E+006
Sr-90	3.061248E+001	1.032275E+001	7.429706E+000	8.336082E+004	1.630647E+005
Sr-91	1.455262E+002	4.910230E+001	3.534100E+001	3.962858E+005	7.752067E+005
Sr-92	1.684769E+001	5.693282E+000	4.097709E+000	4.587941E+004	8.975414E+004
Y-90	3.594145E+000	1.211799E+000	8.721808E-001	9.907796E+003	1.939462E+004
Y-91m	9.085248E+001	3.065467E+001	2.206346E+001	2.473914E+005	4.839430E+005
Y-91	4.532885E+000	1.528658E+000	1.100238E+000	1.240746E+004	2.427813E+004
Y-92	4.928584E+001	1.665112E+001	1.198453E+001	1.367868E+005	2.678918E+005
Y-93	1.843278E+000	6.219186E-001	4.476210E-001	5.019472E+003	9.818978E+003
Zr-93	1.809718E-009	6.099912E-010	4.390354E-010	4.931414E-006	9.646818E-006
Zr-95	4.502897E+000	1.518414E+000	1.092866E+000	1.226184E+004	2.398576E+004
Zr-97	2.720498E+000	9.176847E-001	6.604960E-001	7.408223E+003	1.449166E+004
Nb-95m	3.715130E-003	1.251966E-003	9.010900E-004	1.011565E+001	1.978698E+001
Nb-95	4.541344E+000	1.531374E+000	1.102193E+000	1.236652E+004	2.419053E+004
Nb-97	2.924089E+000	9.863518E-001	7.099186E-001	7.961986E+003	1.557491E+004
Mo-99	5.499206E+001	1.854533E+001	1.334784E+001	1.497490E+005	2.929297E+005
Tc-99m	5.137175E+001	1.732417E+001	1.246892E+001	1.398813E+005	2.736269E+005
Tc-99	2.711307E-007	9.136922E-008	6.576211E-008	7.378360E-004	1.443261E-003
Ru-103	5.439839E+001	1.834363E+001	1.320267E+001	1.481322E+005	2.897661E+005

Ru-105	6.131299E+000	2.070209E+000	1.490019E+000	1.669646E+004	3.266225E+004
Ru-106	2.387747E+001	8.051657E+000	5.795110E+000	6.502071E+004	1.271890E+005
Rh-103m	5.444917E+001	1.836071E+001	1.321496E+001	1.482588E+005	2.900138E+005
Rh-105	3.328728E+001	1.122624E+001	8.079990E+000	9.064386E+004	1.773122E+005
Rh-106	2.387935E+001	8.052285E+000	5.795562E+000	6.502077E+004	1.271892E+005
Sb-125	1.348763E+001	4.548124E+000	3.273472E+000	3.672814E+004	7.184505E+004
Sb-127	4.963483E+002	1.673825E+002	1.204721E+002	1.351607E+006	2.643927E+006
Sb-129	3.396476E+001	1.146820E+001	8.254162E+000	9.249125E+004	1.809349E+005
Te-125m	1.853745E-002	6.246756E-003	4.496042E-003	5.047420E+001	9.873125E+001
Te-127m	1.069120E+001	3.605095E+000	2.594735E+000	2.911313E+004	5.694905E+004
Te-127	2.889073E+002	9.739537E+001	7.009943E+001	7.866570E+005	1.538786E+006
Te-129m	4.800909E+001	1.618911E+001	1.165197E+001	1.307335E+005	2.557319E+005
Te-129	6.859358E+001	2.314718E+001	1.666000E+001	1.867742E+005	3.653659E+005
Te-131m	7.502580E+001	2.530410E+001	1.821241E+001	2.043033E+005	3.996472E+005
Te-131	1.673950E+001	5.645761E+000	4.063489E+000	4.557992E+004	8.916101E+004
Te-132	8.529384E+002	2.876382E+002	2.070251E+002	2.322638E+006	4.543399E+006
Te-133m	5.994438E-002	2.034053E-002	1.464011E-002	1.632500E+002	3.194219E+002
Te-133	1.313160E-002	4.455855E-003	3.207105E-003	3.575927E+001	6.996811E+001
Te-134	7.611946E-003	2.588072E-003	1.862775E-003	2.073068E+001	4.056592E+001
I-129P	1.566511E-008	5.272963E-009	3.795167E-009	4.028194E-005	7.824813E-005
I-131E	2.345821E+003	1.430512E+003	9.536750E+002	7.392088E+005	7.583778E+005
I-131O	1.143735E+004	2.090354E+004	1.393570E+004	0.000000E+000	0.000000E+000
I-131P	3.255104E+003	1.098976E+003	7.909785E+002	1.018890E+007	1.927665E+007
I-132E	9.107539E+001	5.567381E+001	3.711619E+001	2.870052E+004	2.944694E+004
I-132O	4.440691E+002	8.136830E+002	5.424599E+002	0.000000E+000	0.000000E+000
I-132P	1.035110E+003	3.491596E+002	2.513048E+002	2.855978E+006	5.557784E+006
I-133E	3.286819E+003	2.004824E+003	1.336550E+003	1.035737E+006	1.062604E+006
I-133O	1.602537E+004	2.929624E+004	1.953085E+004	0.000000E+000	0.000000E+000
I-133P	4.607959E+003	1.556061E+003	1.119962E+003	1.440215E+007	2.725348E+007
I-134E	3.981576E-001	2.443493E-001	1.629031E-001	1.254788E+002	1.287575E+002
I-134O	1.941490E+000	3.572222E+000	2.381534E+000	0.000000E+000	0.000000E+000
I-134P	5.515745E-001	1.874471E-001	1.349153E-001	1.727109E+003	3.268342E+003
I-135E	1.296189E+003	7.910795E+002	5.273878E+002	4.084569E+005	4.190592E+005
I-135O	6.319828E+003	1.156043E+004	7.706976E+003	0.000000E+000	0.000000E+000
I-135P	1.795616E+003	6.067442E+002	4.366996E+002	5.622017E+006	1.063638E+007
Xe-131m	1.203700E+003	1.827182E+003	1.218122E+003	2.947196E+003	5.463161E+003
Xe-133m	2.955901E+004	4.504092E+004	3.002730E+004	6.498273E+004	1.205347E+005
Xe-133	5.082413E+007	8.912873E+007	5.941917E+007	9.469082E+005	1.756378E+006
Xe-135m	1.599136E+003	2.121192E+003	1.415051E+003	9.729292E+005	1.783736E+006
Xe-135	1.109378E+007	1.890719E+007	1.260482E+007	5.290177E+006	9.806748E+006
Cs-134	8.621487E+002	2.911480E+002	2.095513E+002	2.780455E+006	5.225364E+006
Cs-135	5.867943E-004	1.000313E-003	7.178981E-004	5.488317E-003	1.434955E-002
Cs-136	2.464333E+002	8.322214E+001	5.989841E+001	7.947547E+005	1.493600E+006
Cs-137	4.417859E+002	1.491913E+002	1.073791E+002	1.424773E+006	2.677604E+006
Cs-138	9.553518E-004	3.261147E-004	2.347235E-004	3.081527E+000	5.793852E+000
Ba-137m	4.179620E+002	1.411458E+002	1.015885E+002	1.347835E+006	2.533013E+006
Ba-139	1.159130E+000	3.925043E-001	2.825040E-001	3.156625E+003	6.175851E+003
Ba-140	4.658500E+002	1.570909E+002	1.130648E+002	1.268556E+006	2.481463E+006
La-140	8.258444E+001	2.784457E+001	2.004086E+001	2.276775E+005	4.456836E+005
La-141	5.313028E-001	1.794246E-001	1.291397E-001	1.446823E+003	2.830350E+003
La-142	1.996794E-002	6.758470E-003	4.864388E-003	5.437775E+001	1.063866E+002
Ce-141	1.100433E+001	3.710754E+000	2.670783E+000	2.996391E+004	5.861311E+004
Ce-143	8.215276E+000	2.770734E+000	1.994212E+000	2.237107E+004	4.376106E+004
Ce-144	8.672596E+000	2.924463E+000	2.104857E+000	2.361634E+004	4.619665E+004
Pr-143	4.254417E+000	1.434625E+000	1.032559E+000	1.159048E+004	2.267312E+004
Pr-144m	1.301013E-001	4.387109E-002	3.157583E-002	3.542513E+002	6.929619E+002
Pr-144	8.673648E+000	2.924816E+000	2.105111E+000	2.361734E+004	4.619862E+004
Nd-147	1.793239E+000	6.047060E-001	4.352319E-001	4.883168E+003	9.552126E+003
Pm-147	6.607265E-004	2.226539E-004	1.602530E-004	1.799042E+000	3.519059E+000
Np-238	3.256606E+000	1.098275E+000	7.904743E-001	8.868075E+003	1.734720E+004
Np-239	1.376393E+002	4.641770E+001	3.340874E+001	3.748060E+005	7.331728E+005
Pu-238	4.606769E-002	1.553434E-002	1.118071E-002	1.254467E+002	2.453902E+002
Pu-239	3.323695E-003	1.120772E-003	8.066661E-004	9.050669E+000	1.770429E+001
Pu-240	5.025342E-003	1.694581E-003	1.219660E-003	1.368430E+001	2.676828E+001
Pu-241	1.347935E+000	4.545331E-001	3.271462E-001	3.670559E+003	7.180094E+003
Am-241	6.954638E-004	2.345149E-004	1.687901E-004	1.893877E+000	3.704678E+000
Cm-242	2.102795E-001	7.090783E-002	5.103529E-002	5.726119E+002	1.120104E+003
Cm-244	4.447515E-002	1.499734E-002	1.079420E-002	1.211102E+002	2.369075E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	8.906372E+000	9.653446E-001	1.042198E+000	1.855039E+014	7.495209E+004
Alpha Int (MeV/cc)	1.747186E+008	6.582201E+006	1.756342E+007	6.473742E+018	2.683755E+009
Beta (MeV/cc-s)	6.546144E+007	3.649043E+007	3.686409E+007	6.761674E+017	2.653868E+008
Beta Int (MeV/cc)	7.773947E+012	2.458442E+012	2.746225E+012	3.500332E+022	1.497619E+013
Gamma (MeV/cc-s)	4.013318E+007	2.235823E+007	2.247356E+007	1.551853E+018	6.001717E+008
Gamma Int (MeV/cc)	9.805016E+012	2.187860E+012	2.559323E+012	8.195446E+022	3.206155E+013

Time = 69840.000000 Seconds
CPU ClockTime = 160.681008 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	3.797711E-003	1.039984E-003	7.485196E-004	5.018321E+002	9.814023E+002
Co-60	4.580171E-003	1.254250E-003	9.027354E-004	6.052270E+002	1.183605E+003
Br-82E	1.175024E+001	7.209741E+000	4.806497E+000	3.729087E+003	3.825804E+003
Br-82O	5.728994E+001	1.053542E+002	7.023619E+001	0.000000E+000	0.000000E+000
Br-82P	3.379534E-001	9.268279E-002	6.670765E-002	5.134329E+004	9.711326E+004

Br-83E	1.108197E+000	6.825926E-001	4.550654E-001	3.517123E+002	3.608581E+002
Br-83O	5.403381E+000	9.976136E+000	6.650811E+000	0.000000E+000	0.000000E+000
Br-83P	3.187341E-002	8.775717E-003	6.316278E-003	4.842504E+003	9.160238E+003
Br-84E	5.012262E-009	3.132361E-009	2.088316E-009	1.590964E-006	1.632741E-006
Br-84P	1.441622E-010	4.028553E-011	2.899582E-011	2.190522E-005	4.145168E-005
Kr-83m	1.569276E+003	2.355671E+003	1.570464E+003	1.737991E+004	3.198254E+004
Kr-85m	4.437889E+005	7.855235E+005	5.236846E+005	0.000000E+000	0.000000E+000
Kr-85	3.821513E+005	6.748915E+005	4.499277E+005	0.000000E+000	0.000000E+000
Kr-87	3.929635E+002	6.995707E+002	4.663876E+002	0.000000E+000	0.000000E+000
Kr-88	1.918986E+005	3.401126E+005	2.267433E+005	0.000000E+000	0.000000E+000
Rb-86	1.553548E-001	4.260608E-002	3.066536E-002	2.431125E+004	4.567911E+004
Rb-88	1.713989E+005	2.924290E+005	2.076590E+005	4.291211E+004	1.329123E+005
Sr-89	5.536079E+000	1.516031E+000	1.091150E+000	7.315413E+005	1.430631E+006
Sr-90	6.310626E-001	1.728123E-001	1.243802E-001	8.338905E+004	1.630788E+005
Sr-91	1.748386E+000	4.792934E-001	3.449677E-001	2.310351E+005	4.518326E+005
Sr-92	5.232659E-002	1.438281E-002	1.035195E-002	6.914695E+003	1.352385E+004
Y-90	1.169294E-001	3.200824E-002	2.303763E-002	1.556198E+004	3.044627E+004
Y-91m	1.091865E+000	2.993192E-001	2.154327E-001	1.442706E+005	2.821483E+005
Y-91	1.020178E-001	2.793920E-002	2.010899E-002	1.354430E+004	2.649534E+004
Y-92	3.340229E-001	9.174450E-002	6.603249E-002	4.474253E+004	8.757759E+004
Y-93	2.298155E-002	6.299583E-003	4.534075E-003	3.036824E+003	5.939071E+003
Zr-93	4.895774E-011	1.340218E-011	9.646095E-012	6.473834E-006	1.266085E-005
Zr-95	9.251763E-002	2.533551E-002	1.823501E-002	1.222534E+004	2.390836E+004
Zr-97	4.140180E-002	1.134439E-002	8.165030E-003	5.470890E+003	1.069924E+004
Nb-95m	1.199570E-004	3.282717E-005	2.362705E-005	1.584979E+001	3.099593E+001
Nb-95	9.360946E-002	2.563434E-002	1.845009E-002	1.236960E+004	2.419047E+004
Nb-97	4.456845E-002	1.221212E-002	8.789572E-003	5.888907E+003	1.151674E+004
Mo-99	1.048917E+000	2.872829E-001	2.067694E-001	1.386048E+005	2.710618E+005
Tc-99m	9.929765E-001	2.719584E-001	1.957397E-001	1.312036E+005	2.565877E+005
Tc-99	8.784123E-009	2.403864E-009	1.730158E-009	1.159986E-003	2.268474E-003
Ru-103	1.115355E+000	3.054358E-001	2.198347E-001	1.473837E+005	2.882294E+005
Ru-105	3.981242E-002	1.092720E-002	7.864781E-003	5.260945E+003	1.028907E+004
Ru-106	4.919468E-001	1.347165E-001	9.696106E-002	6.500619E+004	1.271286E+005
Rh-103m	1.116539E+000	3.057614E-001	2.200691E-001	1.475295E+005	2.885145E+005
Rh-105	6.036277E-001	1.653441E-001	1.190050E-001	7.976310E+004	1.559888E+005
Rh-106	4.919833E-001	1.347271E-001	9.696862E-002	6.500625E+004	1.271287E+005
Sb-125	2.779868E-001	7.612488E-002	5.479022E-002	3.673336E+004	7.183718E+004
Sb-127	9.686567E+000	2.652889E+000	1.909394E+000	1.279991E+006	2.503206E+006
Sb-129	2.182396E-001	5.990086E-002	4.311324E-002	2.883891E+004	5.640158E+004
Te-125m	6.159496E-004	1.685500E-004	1.213123E-004	8.138465E+001	1.591560E+002
Te-127m	2.233610E-001	6.116442E-002	4.402256E-002	2.951497E+004	5.772057E+004
Te-127	6.992681E+000	1.914552E+000	1.377982E+000	9.239456E+005	1.806895E+006
Te-129m	9.838482E-001	2.694236E-001	1.939153E-001	1.300064E+005	2.542455E+005
Te-129	8.671421E-001	2.376192E-001	1.710245E-001	1.145770E+005	2.240748E+005
Te-131m	1.303585E+000	3.570983E-001	2.570185E-001	1.722571E+005	3.368753E+005
Te-131	2.908501E-001	7.967451E-002	5.734506E-002	3.843044E+004	7.515665E+004
Te-132	1.646422E+001	4.509202E+000	3.245459E+000	2.175596E+006	4.254692E+006
Te-133m	4.779080E-006	1.323118E-006	9.523152E-007	6.315710E-001	1.235448E+000
Te-133	1.046915E-006	2.898461E-007	2.086170E-007	1.383432E-001	2.706201E-001
Te-134	1.031244E-007	2.865048E-008	2.062129E-008	1.362863E-002	2.666190E-002
I-129P	3.757643E-010	1.027388E-010	7.394534E-011	4.703377E-005	9.145416E-005
I-131E	2.268130E+003	1.391367E+003	9.275779E+002	7.198179E+005	7.384841E+005
I-131O	1.105855E+004	2.033152E+004	1.355435E+004	0.000000E+000	0.000000E+000
I-131P	6.538100E+001	1.792627E+001	1.290228E+001	9.929666E+006	1.878246E+007
I-132E	9.534355E+000	5.873844E+000	3.915929E+000	3.025956E+003	3.104652E+003
I-132O	4.648799E+001	8.584731E+001	5.723202E+001	0.000000E+000	0.000000E+000
I-132P	1.730121E+001	4.738779E+000	3.410696E+000	2.289981E+006	4.475344E+006
I-133E	2.553339E+003	1.566986E+003	1.044658E+003	8.103355E+005	8.313549E+005
I-133O	1.244918E+004	2.289817E+004	1.526546E+004	0.000000E+000	0.000000E+000
I-133P	7.432020E+001	2.038545E+001	1.467226E+001	1.127142E+007	2.132452E+007
I-134E	1.137519E-003	7.056653E-004	4.704539E-004	3.610412E-001	3.704749E-001
I-134O	5.546755E-003	1.031635E-002	6.877719E-003	0.000000E+000	0.000000E+000
I-134P	3.271698E-005	9.073956E-006	6.530991E-006	4.970975E+000	9.404938E+000
I-135E	5.923494E+002	3.638965E+002	2.425983E+002	1.879916E+005	1.928713E+005
I-135O	2.888117E+003	5.317797E+003	3.545208E+003	0.000000E+000	0.000000E+000
I-135P	1.703681E+001	4.678109E+000	3.367035E+000	2.588332E+006	4.895848E+006
Xe-131m	1.176513E+003	1.796611E+003	1.197740E+003	5.029631E+003	9.279384E+003
Xe-133m	2.666966E+004	4.088348E+004	2.725566E+004	9.578729E+004	1.769013E+005
Xe-133	4.845339E+007	8.547754E+007	5.698504E+007	1.442315E+006	2.664177E+006
Xe-135m	5.650248E+002	9.177236E+002	6.118246E+002	4.479557E+005	8.210585E+005
Xe-135	6.271417E+006	1.075645E+007	7.170984E+006	4.765169E+006	8.797068E+006
Cs-134	1.776813E+001	4.872805E+000	3.507159E+000	2.780508E+006	5.224374E+006
Cs-135	3.680311E-004	5.758793E-004	4.133073E-004	8.360783E-003	2.163997E-002
Cs-136	4.998006E+000	1.370717E+000	9.865619E-001	7.821309E+005	1.469569E+006
Cs-137	9.107228E+000	2.497603E+000	1.797628E+000	1.425177E+006	2.677804E+006
Cs-138	1.391547E-009	3.888765E-010	2.798968E-010	2.177957E-004	4.094120E-004
Ba-137m	8.616067E+000	2.362914E+000	1.700687E+000	1.348218E+006	2.533203E+006
Ba-139	5.835031E-004	1.609611E-004	1.158514E-004	7.710940E+001	1.508245E+002
Ba-140	9.444343E+000	2.586356E+000	1.861507E+000	1.247982E+006	2.440604E+006
La-140	2.637077E+000	7.219018E-001	5.195822E-001	3.509126E+005	6.865383E+005
La-141	2.939948E-003	8.071737E-004	5.809580E-004	3.884955E+002	7.598040E+002
La-142	1.504321E-005	4.146422E-006	2.984374E-006	1.987933E+000	3.888284E+000
Ce-141	2.254069E-001	6.172683E-002	4.442735E-002	2.978347E+004	5.824548E+004
Ce-143	1.449777E-001	3.971334E-002	2.858334E-002	1.915750E+004	3.746542E+004
Ce-144	1.786508E-001	4.892242E-002	3.521149E-002	2.360704E+004	4.616684E+004
Pr-143	8.878408E-002	2.431294E-002	1.749903E-002	1.173717E+004	2.295427E+004
Pr-144m	2.680005E-003	7.339056E-004	5.282222E-004	3.541119E+002	6.925148E+002
Pr-144	1.786716E-001	4.892832E-002	3.521573E-002	2.360805E+004	4.616881E+004
Nd-147	3.625625E-002	9.928915E-003	7.146251E-003	4.790928E+003	9.369331E+003
Pm-147	2.178333E-005	5.960938E-006	4.290329E-006	2.878204E+000	5.628625E+000
Np-238	6.068817E-002	1.662236E-002	1.196380E-002	8.019390E+003	1.568310E+004
Np-239	2.590767E+000	7.095915E-001	5.107224E-001	3.423463E+005	6.695084E+005

Pu-238	9.501326E-004	2.601873E-004	1.872675E-004	1.255510E+002	2.455324E+002
Pu-239	6.858374E-005	1.878117E-005	1.351758E-005	9.062619E+000	1.772321E+001
Pu-240	1.035974E-004	2.836945E-005	2.041867E-005	1.368923E+001	2.677117E+001
Pu-241	2.778650E-002	7.609151E-003	5.476620E-003	3.671728E+003	7.180572E+003
Am-241	1.437453E-005	3.936354E-006	2.833157E-006	1.899520E+000	3.714780E+000
Cm-242	4.329219E-003	1.185531E-003	8.532756E-004	5.720659E+002	1.118754E+003
Cm-244	9.168244E-004	2.510663E-004	1.807028E-004	1.211498E+002	2.369252E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	1.834504E-001	1.614754E-002	1.743307E-002	1.854147E+014	7.489718E+004
Alpha Int (MeV/cc)	1.747784E+008	6.588382E+006	1.757009E+007	1.141485E+019	4.679806E+009
Beta (MeV/cc-s)	4.468565E+007	2.515266E+007	2.521405E+007	5.316431E+017	2.061501E+008
Beta Int (MeV/cc)	9.188676E+012	3.250180E+012	3.542568E+012	5.088792E+022	2.116722E+013
Gamma (MeV/cc-s)	2.093670E+007	1.174400E+007	1.176288E+007	1.207300E+018	4.677357E+008
Gamma Int (MeV/cc)	1.056278E+013	2.611113E+012	2.983995E+012	1.181394E+023	4.606589E+013

Time = 86400.000000 Seconds
CPU ClockTime = 196.722009 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	3.667150E-004	8.167345E-005	5.878376E-005	5.008948E+002	9.795641E+002
Co-60	4.430712E-004	9.867851E-005	7.102300E-005	6.051893E+002	1.183525E+003
Br-82E	1.068925E+001	6.583378E+000	4.388921E+000	3.407369E+003	3.495742E+003
Br-82O	5.211693E+001	9.620134E+001	6.413426E+001	0.000000E+000	0.000000E+000
Br-82P	2.987413E-002	6.663728E-003	4.796162E-003	4.691406E+004	8.873519E+004
Br-83E	2.906113E-001	1.798605E-001	1.199079E-001	9.264016E+001	9.504914E+001
Br-83O	1.416972E+000	2.628672E+000	1.752462E+000	0.000000E+000	0.000000E+000
Br-83P	8.121983E-004	1.820755E-004	1.310479E-004	1.275511E+003	2.412788E+003
Kr-83m	2.760342E+002	4.168140E+002	2.778789E+002	5.000653E+003	9.188141E+003
Kr-85m	2.168538E+005	3.854811E+005	2.569885E+005	0.000000E+000	0.000000E+000
Kr-85	3.804559E+005	6.743712E+005	4.495808E+005	0.000000E+000	0.000000E+000
Kr-87	3.156617E+001	5.652073E+001	3.768106E+001	0.000000E+000	0.000000E+000
Kr-88	6.216870E+004	1.106942E+005	7.379663E+004	0.000000E+000	0.000000E+000
Rb-86	1.492373E-002	3.328692E-003	2.395797E-003	2.414020E+004	4.535752E+004
Rb-88	5.588638E+004	9.517493E+004	6.758539E+004	1.354300E+004	4.325808E+004
Sr-89	5.341725E-001	1.189693E-001	8.562714E-002	7.296243E+005	1.426874E+006
Sr-90	6.105043E-002	1.359683E-002	9.786201E-003	8.338857E+004	1.630770E+005
Sr-91	1.209197E-001	2.696689E-002	1.940921E-002	1.651654E+005	3.230103E+005
Sr-92	1.560884E-003	3.492767E-004	2.513900E-004	2.132075E+003	4.169920E+003
Y-90	1.372595E-002	3.055628E-003	2.199260E-003	1.885341E+004	3.688232E+004
Y-91m	7.551412E-002	1.684087E-002	1.212109E-002	1.031381E+005	2.017050E+005
Y-91	1.019088E-002	2.269871E-003	1.633720E-003	1.398309E+004	2.735332E+004
Y-92	1.474803E-002	3.296967E-003	2.372970E-003	2.038980E+004	3.990670E+004
Y-93	1.626457E-003	3.626904E-004	2.610436E-004	2.221590E+003	4.344708E+003
Zr-93	5.199378E-012	1.157647E-012	8.332058E-013	7.106803E-006	1.389868E-005
Zr-95	8.931919E-003	1.989286E-003	1.431772E-003	1.220008E+004	2.385882E+004
Zr-97	3.316682E-003	7.392332E-004	5.320570E-004	4.530267E+003	8.859646E+003
Nb-95m	1.408343E-005	3.134450E-006	2.255992E-006	1.923486E+001	3.761574E+001
Nb-95	9.055416E-003	2.016776E-003	1.451557E-003	1.236874E+004	2.418866E+004
Nb-97	3.570450E-003	7.957987E-004	5.727696E-004	4.876545E+003	9.536846E+003
Mo-99	9.669151E-002	2.153879E-002	1.550236E-002	1.320708E+005	2.582823E+005
Tc-99m	9.192972E-002	2.047791E-002	1.473880E-002	1.255578E+005	2.455453E+005
Tc-99	1.031476E-009	2.295709E-010	1.652316E-010	1.407972E-003	2.753434E-003
Ru-103	1.075401E-001	2.395108E-002	1.723858E-002	1.468886E+005	2.872596E+005
Ru-105	1.878289E-003	4.195296E-004	3.019536E-004	2.565599E+003	5.017632E+003
Ru-106	4.757543E-002	1.059576E-002	7.626209E-003	6.498311E+004	1.270828E+005
Rh-103m	1.076541E-001	2.397663E-002	1.725697E-002	1.470340E+005	2.875440E+005
Rh-105	5.360259E-002	1.194229E-002	8.595363E-003	7.321495E+004	1.431822E+005
Rh-106	4.757884E-002	1.059659E-002	7.626804E-003	6.498317E+004	1.270829E+005
Sb-125	2.688979E-002	5.988755E-003	4.310355E-003	3.672867E+004	7.182762E+004
Sb-127	9.057273E-001	2.017464E-001	1.452052E-001	1.237131E+006	2.419374E+006
Sb-129	1.022921E-002	2.284829E-003	1.644490E-003	1.397232E+004	2.732618E+004
Te-125m	7.360491E-005	1.638058E-005	1.178977E-005	1.005280E+002	1.965925E+002
Te-127m	2.177769E-002	4.850068E-003	3.490794E-003	2.974594E+004	5.817197E+004
Te-127	7.067079E-001	1.573763E-001	1.132702E-001	9.652170E+005	1.887601E+006
Te-129m	9.481407E-002	2.111682E-002	1.519865E-002	1.295062E+005	2.532660E+005
Te-129	7.137147E-002	1.590327E-002	1.144625E-002	9.747944E+004	1.906353E+005
Te-131m	1.133974E-001	2.526604E-002	1.818502E-002	1.548896E+005	3.029089E+005
Te-131	2.530067E-002	5.637270E-003	4.057378E-003	3.455576E+004	6.757876E+004
Te-132	1.529009E+000	3.405886E-001	2.451357E-001	2.088469E+006	4.084283E+006
Te-133m	1.463019E-008	3.303816E-009	2.377924E-009	1.998522E-002	3.909391E-002
Te-133	3.204912E-009	7.237436E-010	5.209149E-010	4.377684E-003	8.563369E-003
Te-134	1.049025E-010	2.379424E-011	1.712599E-011	1.433040E-004	2.803463E-004
I-129P	3.887850E-011	8.645843E-012	6.222769E-012	5.036933E-005	9.798304E-005
I-131E	2.221137E+003	1.367575E+003	9.117166E+002	7.080214E+005	7.263816E+005
I-131O	1.082944E+004	1.998386E+004	1.332257E+004	0.000000E+000	0.000000E+000
I-131P	6.223495E+000	1.387794E+000	9.988529E-001	9.769680E+006	1.847993E+007
I-132E	2.344412E+000	1.451332E+000	9.675630E-001	7.473455E+002	7.667817E+002
I-132O	1.143098E+001	2.121149E+001	1.414111E+001	0.000000E+000	0.000000E+000
I-132P	1.583286E+000	3.526893E-001	2.538451E-001	2.163429E+006	4.230123E+006
I-133E	2.182413E+003	1.344450E+003	8.963007E+002	6.956799E+005	7.137252E+005
I-133O	1.064068E+004	1.964628E+004	1.309753E+004	0.000000E+000	0.000000E+000
I-133P	6.172672E+000	1.377176E+000	9.912107E-001	9.676664E+006	1.830731E+007
I-134E	2.981902E-005	1.862281E-005	1.241548E-005	9.506216E-003	9.754606E-003
I-134O	1.454031E-004	2.722529E-004	1.815059E-004	0.000000E+000	0.000000E+000
I-134P	8.333855E-008	1.885595E-008	1.357159E-008	1.308866E-001	2.476324E-001

I-135E	3.640579E+002	2.245643E+002	1.497100E+002	1.160505E+005	1.190628E+005
I-135O	1.775037E+003	3.281668E+003	2.187785E+003	0.000000E+000	0.000000E+000
I-135P	1.017463E+000	2.273129E-001	1.636068E-001	1.597832E+006	3.022298E+006
Xe-131m	1.159814E+003	1.777809E+003	1.185206E+003	6.277355E+003	1.156586E+004
Xe-133m	2.501305E+004	3.848931E+004	2.565955E+004	1.092615E+005	2.015373E+005
Xe-133	4.703564E+007	8.328351E+007	5.552235E+007	1.680637E+006	3.100767E+006
Xe-135m	3.453451E+002	5.657745E+002	3.771844E+002	2.765329E+005	5.068548E+005
Xe-135	4.399064E+006	7.574995E+006	5.050007E+006	4.002706E+006	7.380927E+006
Cs-134	1.718648E+000	3.833284E-001	2.758973E-001	2.780034E+006	5.223460E+006
Cs-135	2.677027E-004	4.056836E-004	2.911585E-004	9.633592E-003	2.475058E-002
Cs-136	4.786457E-001	1.067617E-001	7.684084E-002	7.742435E+005	1.454742E+006
Cs-137	8.810545E-001	1.965109E-001	1.414370E-001	1.425168E+006	2.677776E+006
Cs-138	3.538853E-013	8.083503E-014	5.818162E-014	5.725255E-007	1.076228E-006
Ba-137m	8.335365E-001	1.859136E-001	1.338097E-001	1.348209E+006	2.533176E+006
Ba-139	5.616193E-006	1.262443E-006	9.086405E-007	7.671625E+000	1.500548E+001
Ba-140	9.042373E-001	2.013954E-001	1.449526E-001	1.235095E+006	2.415388E+006
La-140	3.048568E-001	6.787003E-002	4.884883E-002	4.186574E+005	8.189973E+005
La-141	1.255742E-004	2.805911E-005	2.019536E-005	1.715252E+002	3.354604E+002
La-142	1.860300E-007	4.177496E-008	3.006740E-008	2.541120E-001	4.970264E-001
Ce-141	2.171849E-002	4.837094E-003	3.481456E-003	2.966326E+004	5.801009E+004
Ce-143	1.273389E-002	2.837125E-003	2.041997E-003	1.739323E+004	3.401493E+004
Ce-144	1.727522E-002	3.847454E-003	2.769171E-003	2.359616E+004	4.614533E+004
Pr-143	8.635817E-003	1.923326E-003	1.384297E-003	1.180075E+004	2.307849E+004
Pr-144m	2.591512E-004	5.771725E-005	4.154149E-005	3.539487E+002	6.921921E+002
Pr-144	1.727720E-002	3.847917E-003	2.769505E-003	2.359717E+004	4.614729E+004
Nd-147	3.465449E-003	7.718439E-004	5.555279E-004	4.733445E+003	9.256869E+003
Pm-147	2.590499E-006	5.765199E-007	4.149449E-007	3.538046E+000	6.919004E+000
Np-238	5.514060E-003	1.228372E-003	8.841099E-004	7.531647E+003	1.472917E+004
Np-239	2.368634E-001	5.276494E-002	3.797711E-002	3.235314E+005	6.327099E+005
Pu-238	9.194410E-005	2.047728E-005	1.473835E-005	1.255860E+002	2.455995E+002
Pu-239	6.638709E-006	1.478535E-006	1.064163E-006	9.067705E+000	1.773306E+001
Pu-240	1.002237E-005	2.232130E-006	1.606556E-006	1.368932E+001	2.677123E+001
Pu-241	2.688096E-003	5.986785E-004	4.308937E-004	3.671660E+003	7.180402E+003
Am-241	1.392901E-006	3.102179E-007	2.232766E-007	1.902617E+000	3.720819E+000
Cm-242	4.184821E-004	9.320243E-005	6.708164E-005	5.716032E+002	1.117844E+003
Cm-244	8.869501E-005	1.975369E-005	1.421754E-005	1.211482E+002	2.369208E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	1.773832E-002	1.269833E-003	1.370927E-003	1.853186E+014	7.485797E+004
Alpha Int (MeV/cc)	1.747796E+008	6.588478E+006	1.757020E+007	1.448452E+019	5.919780E+009
Beta (MeV/cc-s)	3.919111E+007	2.218465E+007	2.220463E+007	4.729987E+017	1.831777E+008
Beta Int (MeV/cc)	9.879391E+012	3.640032E+012	3.933032E+012	5.918480E+022	2.438191E+013
Gamma (MeV/cc-s)	1.660467E+007	9.362351E+006	9.368499E+006	1.082248E+018	4.199579E+008
Gamma Int (MeV/cc)	1.086994E+013	2.783819E+012	3.156889E+012	1.370377E+023	5.339328E+013

Time = 345600.000000 Seconds
CPU ClockTime = 760.153036 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	3.406871E-004	8.136467E-005	5.424311E-005	4.863971E+002	9.512121E+002
Co-60	4.234352E-004	1.011256E-004	6.741708E-005	6.045360E+002	1.182248E+003
Br-82E	2.491299E+000	1.595048E+000	1.063366E+000	8.300712E+002	8.515997E+002
Br-82O	1.214668E+001	2.330805E+001	1.553871E+001	0.000000E+000	0.000000E+000
Br-82P	6.962638E-003	1.665932E-003	1.110622E-003	1.142876E+004	2.161683E+004
Br-83P	6.633746E-013	1.602094E-013	1.068071E-013	1.088927E-006	2.059840E-006
Kr-83m	6.323819E-009	1.080273E-008	7.201880E-009	4.983921E-006	9.135615E-006
Kr-85m	3.012780E+000	5.579413E+000	3.719625E+000	0.000000E+000	0.000000E+000
Kr-85	3.637942E+005	6.701322E+005	4.467548E+005	0.000000E+000	0.000000E+000
Kr-88	1.388697E-003	2.579684E-003	1.719801E-003	0.000000E+000	0.000000E+000
Rb-86	1.278272E-002	3.057421E-003	2.038281E-003	2.161246E+004	4.060809E+004
Rb-88	1.550735E-003	2.880689E-003	1.920472E-003	1.182351E-069	3.776581E-069
Sr-89	4.904345E-001	1.171288E-001	7.808586E-002	7.001907E+005	1.369313E+006
Sr-90	5.839631E-002	1.394632E-002	9.297544E-003	8.337208E+004	1.630448E+005
Sr-91	6.050471E-004	1.448621E-004	9.657495E-005	8.638304E+002	1.689374E+003
Sr-92	1.500750E-011	3.615840E-012	2.410577E-012	2.142682E-005	4.190665E-005
Y-90	3.761991E-002	8.982965E-003	5.988642E-003	5.375802E+004	1.051362E+005
Y-91m	3.778240E-004	9.045970E-005	6.030659E-005	5.394221E+002	1.054936E+003
Y-91	1.020695E-002	2.438128E-003	1.625419E-003	1.463361E+004	2.862528E+004
Y-92	1.426564E-008	3.431328E-009	2.287564E-009	2.055226E-002	4.021749E-002
Y-93	1.167098E-005	2.793818E-006	1.862549E-006	1.666274E+001	3.258689E+001
Zr-93	6.172350E-012	1.474109E-012	9.827390E-013	8.818614E-006	1.724644E-005
Zr-95	8.272113E-003	1.975592E-003	1.317061E-003	1.181005E+004	2.309607E+004
Zr-97	1.655738E-004	3.959855E-005	2.639906E-005	2.363900E+002	4.622976E+002
Nb-95m	4.057398E-005	9.687752E-006	6.458500E-006	5.792632E+001	1.132821E+002
Nb-95	8.645877E-003	2.064828E-003	1.376552E-003	1.234365E+004	2.413960E+004
Nb-97	1.782301E-004	4.262543E-005	2.841699E-005	2.544595E+002	4.976353E+002
Mo-99	4.343841E-002	1.037779E-002	6.918532E-003	6.201686E+004	1.212824E+005
Tc-99m	4.158307E-002	9.934537E-003	6.623027E-003	5.936799E+004	1.161021E+005
Tc-99	2.862489E-009	6.834865E-010	4.556576E-010	4.084427E-003	7.987603E-003
Ru-103	9.759594E-002	2.330863E-002	1.553909E-002	1.393372E+005	2.724918E+005
Ru-105	2.360356E-008	5.667444E-009	3.778312E-009	3.369934E-002	6.590697E-002
Ru-106	4.525895E-002	1.080886E-002	7.205904E-003	6.461595E+004	1.263648E+005
Rh-103m	9.769256E-002	2.333171E-002	1.555447E-002	1.394751E+005	2.727616E+005
Rh-105	1.258580E-002	3.007802E-003	2.005203E-003	1.796852E+004	3.513999E+004
Rh-106	4.525899E-002	1.080887E-002	7.205910E-003	6.461601E+004	1.263649E+005
Sb-125	2.567167E-002	6.130962E-003	4.087308E-003	3.665130E+004	7.167633E+004

Sb-127	5.084151E-001	1.214516E-001	8.096776E-002	7.258620E+005	1.419520E+006
Sb-129	1.160592E-007	2.786829E-008	1.857894E-008	1.657003E-001	3.240661E-001
Te-125m	2.760973E-004	6.591521E-005	4.394346E-005	3.941742E+002	7.708555E+002
Te-127m	2.264780E-002	5.408649E-003	3.605766E-003	3.233402E+004	6.323330E+004
Te-127	4.879828E-001	1.165688E-001	7.771257E-002	6.966905E+005	1.362471E+006
Te-129m	8.525898E-002	2.036232E-002	1.357488E-002	1.217237E+005	2.380465E+005
Te-129	5.379024E-002	1.284667E-002	8.564445E-003	7.679600E+004	1.501845E+005
Te-131m	2.055482E-002	4.912849E-003	3.275235E-003	2.934609E+004	5.739050E+004
Te-131	4.585766E-003	1.096053E-003	7.307026E-004	6.547091E+003	1.280378E+004
Te-132	7.714691E-001	1.843001E-001	1.228668E-001	1.101423E+006	2.153981E+006
I-129P	6.855589E-011	1.635810E-011	1.090540E-011	9.417062E-005	1.852069E-004
I-131E	1.640715E+003	1.049890E+003	6.999270E+002	5.466656E+005	5.608416E+005
I-131O	7.999516E+003	1.534166E+004	1.022777E+004	0.000000E+000	0.000000E+000
I-131P	4.608860E+000	1.102131E+000	7.347543E-001	7.559867E+006	1.430100E+007
I-132P	7.946998E-001	1.898498E-001	1.265665E-001	1.134590E+006	2.218843E+006
I-133E	1.917247E+002	1.228079E+002	8.187202E+001	6.388050E+004	6.553751E+004
I-133O	9.347824E+002	1.794577E+003	1.196386E+003	0.000000E+000	0.000000E+000
I-133P	5.422687E-001	1.298034E-001	8.653569E-002	8.885554E+005	1.681061E+006
I-135E	1.832135E-001	1.176431E-001	7.842896E-002	6.104521E+001	6.262977E+001
I-135O	8.932940E-001	1.719176E+000	1.146121E+000	0.000000E+000	0.000000E+000
I-135P	5.120424E-004	1.228754E-004	8.191715E-005	8.404962E+002	1.589798E+003
Xe-131m	9.494475E+002	1.514572E+003	1.009715E+003	2.166541E+004	3.976610E+004
Xe-133m	9.328666E+003	1.492790E+004	9.951940E+003	1.008748E+005	1.854397E+005
Xe-133	3.028884E+007	5.573810E+007	3.715874E+007	2.334940E+006	4.294743E+006
Xe-135m	1.737758E-001	2.963884E-001	1.975928E-001	1.454626E+002	2.666172E+002
Xe-135	1.749281E+004	3.133986E+004	2.089329E+004	3.321863E+004	6.107048E+004
Cs-134	1.639722E+000	3.921749E-001	2.614499E-001	2.772369E+006	5.209058E+006
Cs-135	1.706931E-003	3.011880E-003	2.007920E-003	1.144192E-002	2.808032E-002
Cs-136	3.907136E-001	9.345455E-002	6.230304E-002	6.606013E+005	1.241218E+006
Cs-137	8.427588E-001	2.015637E-001	1.343758E-001	1.424899E+006	2.677271E+006
Ba-137m	7.972500E-001	1.906793E-001	1.271195E-001	1.347955E+006	2.532698E+006
Ba-140	7.352852E-001	1.756158E-001	1.170772E-001	1.049763E+006	2.052948E+006
La-140	6.422994E-001	1.533868E-001	1.022579E-001	9.176610E+005	1.794680E+006
La-141	3.328176E-010	7.997226E-011	5.331510E-011	4.751725E-004	9.293185E-004
Ce-141	1.949114E-002	4.655041E-003	3.103361E-003	2.782557E+004	5.441627E+004
Ce-143	2.685041E-003	6.417107E-004	4.278074E-004	3.833429E+003	7.496817E+003
Ce-144	1.640689E-002	3.918337E-003	2.612225E-003	2.342402E+004	4.580869E+004
Pr-143	7.964126E-003	1.902133E-003	1.268089E-003	1.137473E+004	2.224529E+004
Pr-144m	2.461077E-004	5.877609E-005	3.918406E-005	3.513665E+002	6.871424E+002
Pr-144	1.640759E-002	3.918504E-003	2.612336E-003	2.342502E+004	4.581064E+004
Nd-147	2.744371E-003	6.554751E-004	4.369835E-004	3.918125E+003	7.662403E+003
Pm-147	9.021544E-006	2.153870E-006	1.435913E-006	1.287971E+001	2.518784E+001
Np-238	1.975443E-003	4.720007E-004	3.146673E-004	2.820334E+003	5.515551E+003
Np-239	9.353774E-002	2.234832E-002	1.489888E-002	1.335435E+005	2.611626E+005
Pu-238	8.820236E-005	2.106464E-005	1.404309E-005	1.259259E+002	2.462642E+002
Pu-239	6.386875E-006	1.525323E-006	1.016882E-006	9.118423E+000	1.783225E+001
Pu-240	9.588619E-006	2.289972E-006	1.526648E-006	1.368942E+001	2.677141E+001
Pu-241	2.570724E-003	6.139452E-004	4.092968E-004	3.670209E+003	7.177564E+003
Am-241	1.366421E-006	3.263279E-007	2.175519E-007	1.950892E+000	3.815227E+000
Cm-242	3.952866E-004	9.440367E-005	6.293578E-005	5.643486E+002	1.103656E+003
Cm-244	8.482916E-005	2.025906E-005	1.350604E-005	1.211101E+002	2.368464E+002

ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	1.682787E-002	1.291782E-003	1.291782E-003	1.837609E+014	7.422876E+004
Alpha Int (MeV/cc)	1.747841E+008	6.588816E+006	1.757054E+007	6.231829E+019	2.524184E+010
Beta (MeV/cc-s)	2.042367E+007	1.207922E+007	1.207922E+007	2.103991E+017	8.243347E+007
Beta Int (MeV/cc)	1.683100E+013	7.660516E+012	7.953529E+012	1.348904E+023	5.386884E+013
Gamma (MeV/cc-s)	6.688303E+006	3.954667E+006	3.954667E+006	6.019865E+017	2.357701E+008
Gamma Int (MeV/cc)	1.330592E+013	4.189255E+012	4.562329E+012	3.318229E+023	1.294439E+014

Time = 2592000.000000 Seconds
CPU ClockTime = 5875.538279 Seconds

ACTIVITY DISTRIBUTION

Isotope	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Co-58	1.799932E-004	6.000412E-005	4.000275E-005	3.770885E+002	7.374450E+002
Co-60	2.858707E-004	9.529391E-005	6.352927E-005	5.989035E+002	1.171233E+003
Br-82E	8.214357E-006	7.360760E-006	4.907176E-006	4.016196E-003	4.120359E-003
Br-82O	4.005024E-005	1.075610E-004	7.170740E-005	0.000000E+000	0.000000E+000
Br-82P	2.295733E-008	7.687874E-009	5.125252E-009	5.529663E-002	1.045903E-001
Kr-85	2.467750E+005	6.344927E+005	4.229952E+005	0.000000E+000	0.000000E+000
Rb-86	3.340052E-003	1.115316E-003	7.435442E-004	8.286785E+003	1.557021E+004
Sr-89	2.339071E-001	7.797955E-002	5.198637E-002	4.900389E+005	9.583342E+005
Sr-90	3.972733E-002	1.324293E-002	8.828618E-003	8.322937E+004	1.627657E+005
Y-90	3.972079E-002	1.324074E-002	8.827158E-003	8.321573E+004	1.627390E+005
Y-91	5.113730E-003	1.705096E-003	1.136731E-003	1.075832E+004	2.104470E+004
Zr-93	4.212454E-012	1.404222E-012	9.361482E-013	8.831550E-006	1.727173E-005
Zr-95	4.253741E-003	1.418076E-003	9.453838E-004	8.911654E+003	1.742789E+004
Nb-95m	4.040113E-005	1.346850E-005	8.979001E-006	8.464098E+001	1.655263E+002
Nb-95	5.473138E-003	1.824503E-003	1.216335E-003	1.146630E+004	2.242381E+004
Mo-99	4.227487E-005	1.411776E-005	9.411845E-006	8.856661E+001	1.732040E+002
Tc-99m	4.046937E-005	1.351481E-005	9.009879E-006	8.478406E+001	1.658067E+002
Tc-99	3.081824E-009	1.027316E-009	6.848771E-010	6.452908E-003	1.261949E-002
Ru-103	4.209501E-002	1.403396E-002	9.355971E-003	8.818970E+004	1.724663E+005
Ru-106	2.936474E-002	9.788733E-003	6.525822E-003	6.151958E+004	1.203094E+005
Rh-103m	4.213668E-002	1.404785E-002	9.365232E-003	8.827699E+004	1.726370E+005
Rh-105	4.236798E-008	1.417117E-008	9.447450E-009	8.876081E-002	1.735843E-001

Rh-106	2.936477E-002	9.788742E-003	6.525828E-003	6.151964E+004	1.203095E+005
Sb-125	1.717773E-002	5.726145E-003	3.817430E-003	3.598760E+004	7.037838E+004
Sb-127	3.410357E-003	1.138285E-003	7.588568E-004	7.144758E+003	1.397253E+004
Te-125m	1.202306E-003	4.007041E-004	2.671361E-004	2.518842E+003	4.925917E+003
Te-127m	1.495597E-002	4.985725E-003	3.323817E-003	3.133288E+004	6.127548E+004
Te-127	1.777879E-002	5.928031E-003	3.952021E-003	3.724674E+004	7.284081E+004
Te-129m	3.392759E-002	1.131129E-002	7.540862E-003	7.107880E+004	1.390038E+005
Te-129	2.140500E-002	7.136323E-003	4.757549E-003	4.484379E+004	8.769782E+004
Te-131m	7.672516E-009	2.567847E-009	1.711899E-009	1.607409E-002	3.143519E-002
Te-131	1.711733E-009	5.728848E-010	3.819235E-010	3.586117E-003	7.013169E-003
Te-132	2.053651E-003	6.856288E-004	4.570860E-004	4.302435E+003	8.413990E+003
I-129P	1.840329E-010	6.132635E-011	4.088423E-011	3.726293E-004	7.284273E-004
I-131E	1.188505E+002	1.062059E+002	7.080392E+001	5.810877E+004	5.961563E+004
I-131O	5.794710E+002	1.551947E+003	1.034631E+003	0.000000E+000	0.000000E+000
I-131P	3.341327E-001	1.115823E-001	7.438821E-002	8.041651E+005	1.521276E+006
I-132P	2.115491E-003	7.062746E-004	4.708499E-004	4.431991E+003	8.667354E+003
I-133E	1.344114E-007	1.207263E-007	8.048425E-008	6.571709E-005	6.742173E-005
I-133O	6.553429E-007	1.764158E-006	1.176107E-006	0.000000E+000	0.000000E+000
I-133P	3.801654E-010	1.276032E-010	8.506887E-011	9.141017E-004	1.729392E-003
Xe-131m	1.570805E+002	3.523649E+002	2.349100E+002	2.583894E+004	4.738259E+004
Xe-133m	1.699804E+000	3.804136E+000	2.536091E+000	3.177386E+001	5.838851E+001
Xe-133	6.668278E+005	1.714045E+006	1.142697E+006	8.396891E+004	1.544103E+005
Cs-134	1.091004E+000	3.642154E-001	2.428103E-001	2.706817E+006	5.085891E+006
Cs-135	1.167351E-003	2.875193E-003	1.916796E-003	1.145365E-002	2.810188E-002
Cs-136	6.727326E-002	2.246661E-002	1.497774E-002	1.669073E+005	3.136056E+005
Cs-137	5.733781E-001	1.914126E-001	1.276084E-001	1.422571E+006	2.672896E+006
Ba-137m	5.424158E-001	1.810764E-001	1.207176E-001	1.345752E+006	2.528560E+006
Ba-140	1.224500E-001	4.083408E-002	2.722272E-002	2.565346E+005	5.016867E+005
La-140	1.409527E-001	4.700428E-002	3.133619E-002	2.952981E+005	5.774938E+005
Ce-141	7.628890E-003	2.543440E-003	1.695627E-003	1.598159E+004	3.125394E+004
Ce-143	3.717025E-009	1.243566E-009	8.290446E-010	7.787245E-003	1.522907E-002
Ce-144	1.049338E-002	3.497979E-003	2.331986E-003	2.198378E+004	4.299211E+004
Pr-143	1.494273E-003	4.983006E-004	3.322004E-004	3.131690E+003	6.124567E+003
Pr-144m	1.574034E-004	5.247062E-005	3.498041E-005	3.297625E+002	6.448930E+002
Pr-144	1.049382E-002	3.498128E-003	2.332086E-003	2.198472E+004	4.299394E+004
Nd-147	3.633837E-004	1.211873E-004	8.079157E-005	7.612948E+002	1.488811E+003
Pm-147	2.312783E-005	7.708970E-006	5.139313E-006	4.845288E+001	9.475581E+001
Np-238	2.703981E-007	9.034906E-008	6.023273E-008	5.664892E-001	1.107848E+000
Np-239	2.977763E-005	9.947374E-006	6.631585E-006	6.238470E+001	1.220018E+002
Pu-238	6.030588E-005	2.010268E-005	1.340178E-005	1.263416E+002	2.470772E+002
Pu-239	4.369478E-006	1.456545E-006	9.710301E-007	9.154039E+000	1.790190E+001
Pu-240	6.534760E-006	2.178332E-006	1.452221E-006	1.369022E+001	2.677298E+001
Pu-241	1.745884E-003	5.819830E-004	3.879886E-004	3.657654E+003	7.153012E+003
Am-241	1.130486E-006	3.768244E-007	2.512163E-007	2.368446E+000	4.631807E+000
Cm-242	2.411483E-004	8.038812E-005	5.359208E-005	5.052093E+002	9.880018E+002
Cm-244	5.765141E-005	1.921785E-005	1.281190E-005	1.207806E+002	2.362020E+002

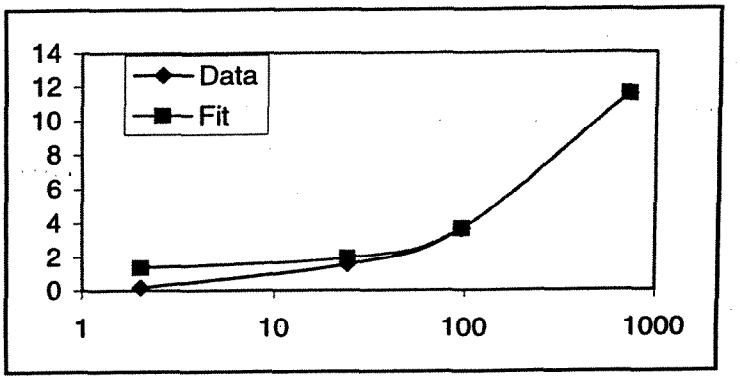
ENERGY DEPOSITION

Radiation Type	Drywell	Sprayed	Unsprayed	DW_plateout	Supp_Pool
Alpha (MeV/cc-s)	1.064098E-002	1.140169E-003	1.140169E-003	1.705131E+014	6.887738E+004
Alpha Int (MeV/cc)	1.748144E+008	6.591543E+006	1.757326E+007	4.600016E+020	1.858828E+011
Beta (MeV/cc-s)	7.393609E+005	6.108849E+005	6.108849E+005	6.590513E+016	2.599382E+007
Beta Int (MeV/cc)	2.914260E+013	1.561321E+013	1.590622E+013	3.746025E+023	1.481304E+014
Gamma (MeV/cc-s)	1.501652E+005	1.239771E+005	1.239771E+005	2.424289E+017	9.447081E+007
Gamma Int (MeV/cc)	1.715245E+013	6.660256E+012	7.033331E+012	1.115346E+024	4.355403E+014

CASE 1

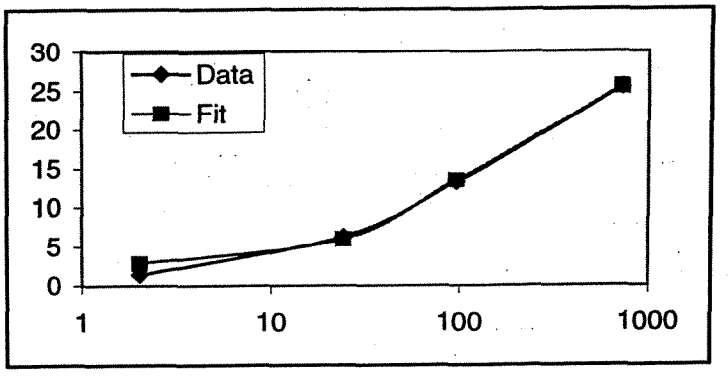
Pool Total

Time(hr)	Data	Fit
2	0.169	1.38
24	1.56	1.95
96	3.64	3.66
720	11.54	11.55
	A=	14.72
	B=	0.91
	C=	0.002



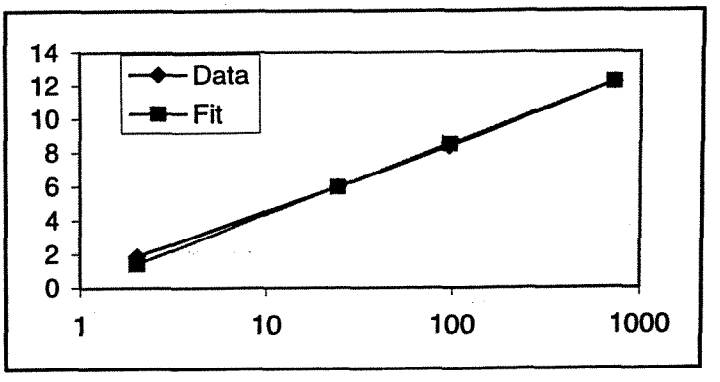
Drywell Beta

Time(hr)	Data	Fit
2	1.37	2.87
24	6.29	5.96
96	13.2	13.43
720	25.48	25.50
	A=	25.7
	B=	0.9
	C=	0.0066



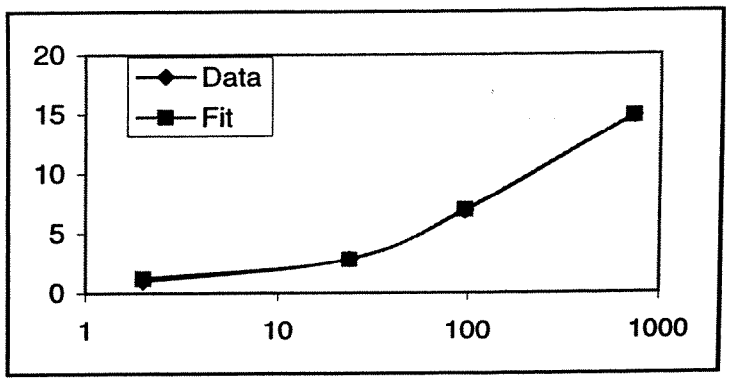
Drywell Gamma

Time(hr)	Data	Fit
2	1.88	1.42
24	5.98	5.97
96	8.39	8.51
720	12.21	12.21
	A=	0.15
	B=	1.83235



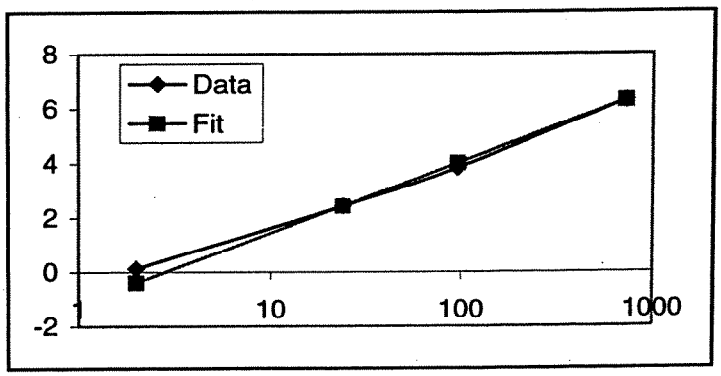
Containment Beta

Time(hr)	Data	Fit
2	0.984	1.21
24	2.86	2.84
96	6.86	6.95
720	14.8	14.82
	A=	15.05
	B=	0.93
	C=	0.0057



Containment Gamma

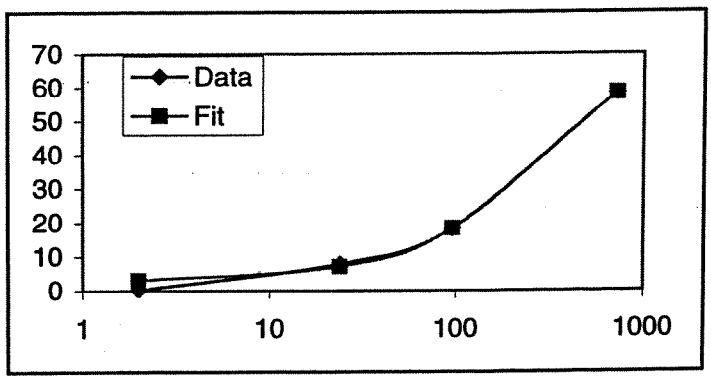
Time(hr)	Data	Fit
2	0.134	-0.39
24	2.43	2.43
96	3.83	4.00
720	6.29	6.29
	A=	-1.18
	B=	1.135



CASE 2

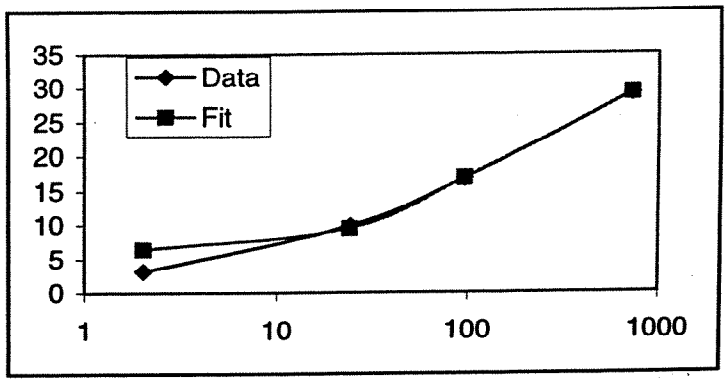
Pool Total

Time(hr)	Data	Fit
2	0.222	3.00
24	7.777	7.01
96	18.33	18.40
720	58.39	58.39
	A=	65.66
	B=	0.96
	C=	0.003



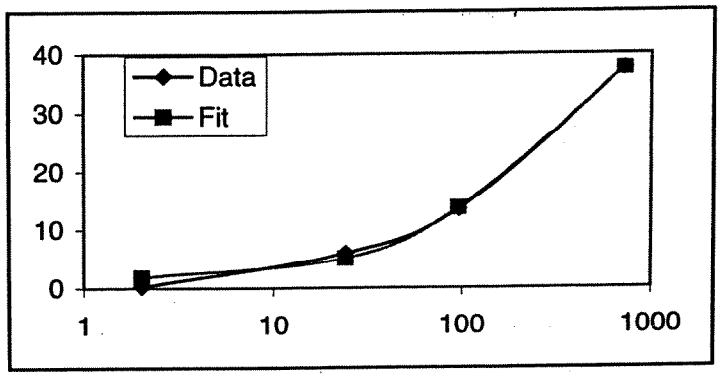
Drywell Beta

Time(hr)	Data	Fit
2	3.19	6.47
24	9.88	9.48
96	16.83	16.84
720	29.14	29.17
	A=	29.4
	B=	0.79
	C=	0.0064



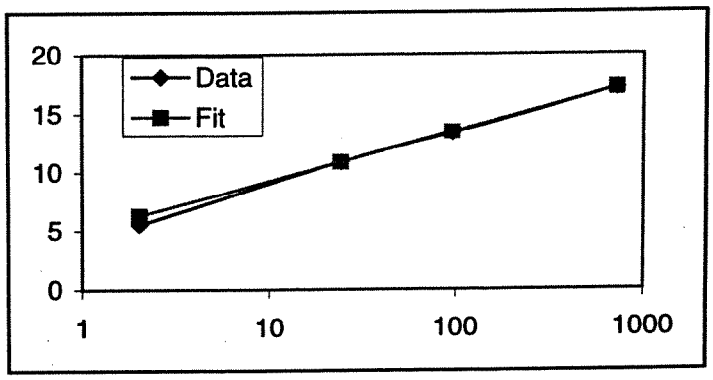
Drywell Beta Plateout

Time(hr)	Data	Fit
2	0.255	1.89
24	5.92	5.06
96	13.49	13.71
720	37.46	37.47
	A=	39.6
	B=	0.96
	C=	0.004



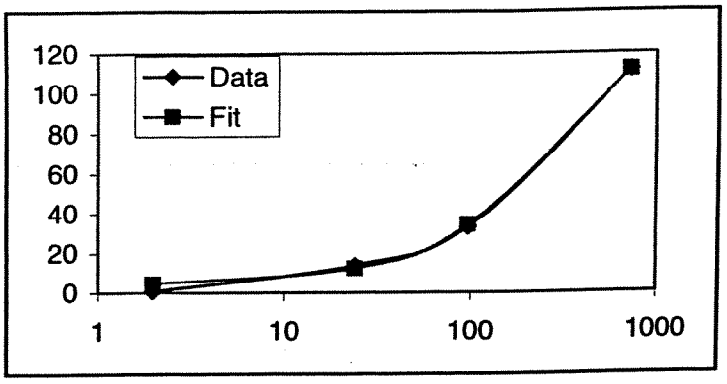
Drywell Gamma

Time(hr)	Data	Fit
2	5.52	6.28
24	10.87	10.87
96	13.31	13.43
720	17.15	17.15
	A=	5
	B=	1.8464



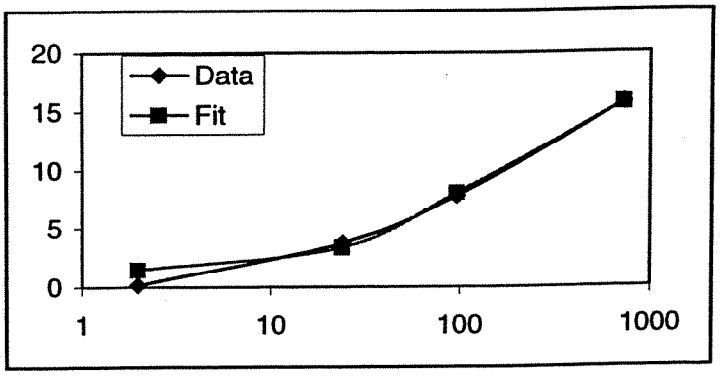
Drywell Gamma Plateout

Time(hr)	Data	Fit
2	0.652	4.50
24	13.7	12.23
96	33.18	34.26
720	111.53	111.55
	A=	125.6
	B=	0.97
	C=	0.003



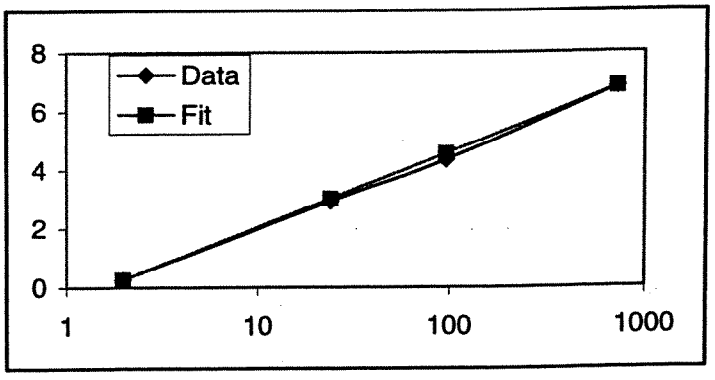
Containment Beta

Time(hr)	Data	Fit
2	0.169	1.46
24	3.76	3.38
96	7.78	8.05
720	15.73	15.73
	A=	15.87
	B=	0.92
	C=	0.0065



Containment Gamma

Time(hr)	Data	Fit
2	0.252	0.25
24	2.93	3.02
96	4.34	4.57
720	6.81	6.81
	A=	-0.52
	B=	1.11415



Transient Pool pH Results

CASE 1

Time		Pool Int		DRYWELL Int Gamma	DRYWELL Int Beta		CONTAINMENT Int Gamma	CONTAINMENT Int Beta					Pool			
(Hours)	[HI]	Dose (MRad)	[HNO3]	Dose (MeV/cc)	Dose (MeV/cc)	[HCl]	Dose (MeV/cc)	Dose (MeV/cc)	[HCl]	Total [H+]	[CsOH]	Total [OH-]	Temp (F)	-LOG(Kw)	Root x	Final [H+]	pH
0	0.0000E+00					0.0000E+00			0.0000E+00	5.011872E-06	0.0000E+00	1.995262E-09	77.0	13.99	-6.136028E-11	5.011934E-06	5.300
0.03361	0.0000E+00					0.0000E+00			0.0000E+00	5.011872E-06	0.0000E+00	1.995262E-09	160.0	12.79	-3.039112E-08	5.042263E-06	5.297
0.1	2.2285E-08					0.0000E+00			0.0000E+00	5.034157E-06	2.8679E-06	2.869910E-06	160.0	12.79	2.796918E-06	2.237239E-06	5.650
0.53361	1.6784E-07					0.0000E+00			0.0000E+00	5.179710E-06	2.1599E-05	2.160135E-05	160.0	12.79	5.169771E-06	9.938219E-09	8.003
1	4.2876E-07					0.0000E+00			0.0000E+00	5.440634E-06	4.7471E-05	4.747304E-05	160.0	12.79	5.436750E-06	3.884754E-09	8.411
2	9.8822E-07	1.3783E+00	1.0061E-05	1.4201E+12	2.8733E+12	2.1702E-06	0.0000E+00	1.2122E+12	3.0493E-06	2.128101E-05	1.0294E-04	1.029454E-04	160.0	12.79	2.127902E-05	1.999607E-09	8.699
2.03361	1.0070E-06	1.3792E+00	1.0068E-05	1.4506E+12	2.8784E+12	2.1951E-06	0.0000E+00	1.2148E+12	3.0560E-06	2.133792E-05	1.0481E-04	1.048099E-04	160.0	12.79	2.133597E-05	1.956308E-09	8.709
3	1.0070E-06	1.4049E+00	1.0256E-05	2.1630E+12	3.0235E+12	2.7861E-06	6.6925E+10	1.2908E+12	3.8029E-06	2.286393E-05	1.0481E-04	1.048099E-04	159.1	12.80	2.286198E-05	1.946042E-09	8.711
5	1.0070E-06	1.4581E+00	1.0644E-05	3.0991E+12	3.3208E+12	3.6035E-06	6.4671E+11	1.4468E+12	9.0102E-06	2.927668E-05	1.0481E-04	1.048099E-04	155.5	12.84	2.927477E-05	1.911617E-09	8.719
12	1.0070E-06	1.6425E+00	1.1990E-05	4.7032E+12	4.3312E+12	5.1968E-06	1.6404E+12	1.9789E+12	1.8601E-05	4.180635E-05	1.0481E-04	1.048099E-04	149.2	12.92	4.180442E-05	1.923853E-09	8.716
18	1.0070E-06	1.7985E+00	1.3129E-05	5.4462E+12	5.1609E+12	6.0735E-06	2.1006E+12	2.4183E+12	2.3528E-05	4.874925E-05	1.0481E-04	1.048099E-04	146.4	12.95	4.874726E-05	1.989732E-09	8.701
24	1.0070E-06	1.9526E+00	1.4254E-05	5.9733E+12	5.9584E+12	6.7758E-06	2.4271E+12	2.8430E+12	2.7308E-05	5.435668E-05	1.0481E-04	1.048099E-04	144.3	12.98	5.435460E-05	2.082674E-09	8.681
48	1.0070E-06	2.5509E+00	1.8622E-05	7.2434E+12	8.8503E+12	8.8405E-06	3.2138E+12	4.4038E+12	3.7768E-05	7.124905E-05	1.0481E-04	1.048099E-04	139.4	13.04	7.124635E-05	2.703981E-09	8.568
72	1.0070E-06	3.1213E+00	2.2785E-05	7.9863E+12	1.1319E+13	1.0346E-05	3.6740E+12	5.7649E+12	4.5014E-05	8.416437E-05	1.0481E-04	1.048099E-04	136.5	13.08	8.416034E-05	4.026858E-09	8.395
96	1.0070E-06	3.6648E+00	2.6753E-05	8.5135E+12	1.3425E+13	1.1551E-05	4.0005E+12	6.9521E+12	5.0712E-05	9.503557E-05	1.0481E-04	1.048099E-04	134.4	13.11	9.502759E-05	7.982502E-09	8.098
120	1.0070E-06	4.1830E+00	3.0536E-05	8.9224E+12	1.5224E+13	1.2549E-05	4.2538E+12	7.9874E+12	5.5420E-05	1.045233E-04	1.0481E-04	1.048099E-04	132.8	13.13	1.043586E-04	1.647163E-07	6.783
150	1.0070E-06	4.7966E+00	3.5015E-05	9.3312E+12	1.7105E+13	1.3579E-05	4.5071E+12	9.0975E+12	6.0316E-05	1.149284E-04	1.0481E-04	1.048099E-04	131.3	13.15	1.048029E-04	1.012551E-05	4.995
200	1.0070E-06	5.7409E+00	4.1909E-05	9.8584E+12	1.9521E+13	1.4903E-05	4.8336E+12	1.0574E+13	6.6740E-05	1.295707E-04	1.0481E-04	1.048099E-04	129.2	13.18	1.048072E-04	2.476347E-05	4.606
240	1.0070E-06	6.4313E+00	4.6948E-05	1.0192E+13	2.0955E+13	1.5704E-05	5.0405E+12	1.1486E+13	7.0755E-05	1.394260E-04	1.0481E-04	1.048099E-04	127.9	13.20	1.048080E-04	3.461794E-05	4.461
300	1.0070E-06	7.3686E+00	5.3790E-05	1.0601E+13	2.2506E+13	1.6607E-05	5.2938E+12	1.2519E+13	7.5455E-05	1.518712E-04	1.0481E-04	1.048099E-04	126.3	13.22	1.048086E-04	4.706257E-05	4.327
360	1.0070E-06	8.1999E+00	5.9859E-05	1.0935E+13	2.3551E+13	1.7259E-05	5.5007E+12	1.3252E+13	7.9018E-05	1.621547E-04	1.0481E-04	1.048099E-04	125.0	13.24	1.048089E-04	5.734583E-05	4.241
400	1.0070E-06	8.7011E+00	6.3518E-05	1.1128E+13	2.4049E+13	1.7595E-05	5.6203E+12	1.3618E+13	8.0933E-05	1.680660E-04	1.0481E-04	1.048099E-04	124.3	13.25	1.048090E-04	6.325705E-05	4.199
480	1.0070E-06	9.5911E+00	7.0015E-05	1.1463E+13	2.4727E+13	1.8106E-05	5.8272E+12	1.4143E+13	8.3971E-05	1.781108E-04	1.0481E-04	1.048099E-04	123.0	13.27	1.048091E-04	7.330164E-05	4.135
600	1.0070E-06	1.0685E+01	7.8004E-05	1.1871E+13	2.5259E+13	1.8618E-05	6.0805E+12	1.4592E+13	8.7205E-05	1.898455E-04	1.0481E-04	1.048099E-04	121.4	13.29	1.048093E-04	8.503623E-05	4.070
700	1.0070E-06	1.1417E+01	8.3343E-05	1.2154E+13	2.5472E+13	1.8912E-05	6.2555E+12	1.4791E+13	8.9158E-05	1.974317E-04	1.0481E-04	1.048099E-04	120.3	13.30	1.048093E-04	9.262239E-05	4.033
720	1.0070E-06	1.1546E+01	8.4288E-05	1.2205E+13	2.5500E+13	1.8962E-05	6.2875E+12	1.4819E+13	8.9494E-05	1.987626E-04	1.0481E-04	1.048099E-04	120.1	13.31	1.048094E-04	9.395320E-05	4.027

CASE 2

				DRYWELL					CONTAINMENT								
Time		Pool Int		Int Air Gamma	Int Air Beta	Int Dep Gamma	Int Dep Beta		Int Gamma	Int Beta			Pool				
(Hours)	[HI]	Dose (MeV/cc)	[HNO3]	E (MeV/cc)	E (MeV/cc)	E (MeV/cm^2)	E (MeV/cm^2)	[HCl]	Dose (MeV/cc)	Dose (MeV/cc)	[HCl]	Total [H+]	[CsOH]	Total [OH-]	Temp (F)	Final [H+]	pH
0	0.0000E+00		0.0000E+00									5.011872E-06	0.0000E+00	1.995262E-09	77.0	5.011934E-06	5.300
0.03361	0.0000E+00		0.0000E+00									5.011872E-06	0.0000E+00	1.995262E-09	160.0	5.042263E-06	5.297
0.1	2.2285E-08		0.0000E+00									5.034157E-06	2.8679E-06	2.869910E-06	160.0	2.237239E-06	5.650
0.53361	1.6784E-07		0.0000E+00									5.179710E-06	2.1599E-05	2.160135E-05	160.0	9.938219E-09	8.003
1	4.2876E-07		0.0000E+00									5.440634E-06	4.7471E-05	4.747304E-05	160.0	3.884754E-09	8.411
2	9.8822E-07	3.0035E+13	3.4912E-06	6.2798E+12	6.4694E+12	2.6653E+14	1.1184E+14	7.7192E-06	2.5227E+11	1.4582E+12	5.7632E-06	2.297374E-05	1.0294E-04	1.029454E-04	160.0	2.041930E-09	8.690
2.03361	1.0070E-06	3.0098E+13	3.4986E-06	6.3106E+12	6.4743E+12	2.6725E+14	1.1214E+14	7.7456E-06	2.7084E+11	1.4613E+12	5.9253E-06	2.318841E-05	1.0481E-04	1.048099E-04	160.0	2.000658E-09	8.699
3	1.0070E-06	3.1912E+13	3.7094E-06	7.0285E+12	6.6157E+12	2.8803E+14	1.2076E+14	8.3792E-06	7.0402E+11	1.5515E+12	9.7497E-06	2.785721E-05	1.0481E-04	1.048099E-04	159.1	2.072309E-09	8.684
5	1.0070E-06	3.5648E+13	4.1438E-06	7.9717E+12	6.9055E+12	3.3084E+14	1.3850E+14	9.2813E-06	1.2732E+12	1.7365E+12	1.4941E-05	3.438540E-05	1.0481E-04	1.048099E-04	155.5	2.050281E-09	8.688
12	1.0070E-06	4.8552E+13	5.6438E-06	9.5881E+12	7.8910E+12	4.7866E+14	1.9948E+14	1.1157E-05	2.2486E+12	2.3651E+12	2.4623E-05	4.744286E-05	1.0481E-04	1.048099E-04	149.2	2.112865E-09	8.675
18	1.0070E-06	5.9399E+13	6.9046E-06	1.0337E+13	8.7013E+12	6.0292E+14	2.5041E+14	1.2267E-05	2.7003E+12	2.8817E+12	2.9674E-05	5.486476E-05	1.0481E-04	1.048099E-04	146.4	2.233343E-09	8.651
24	1.0070E-06	7.0053E+13	8.1430E-06	1.0868E+13	9.4810E+12	7.2496E+14	3.0013E+14	1.3196E-05	3.0208E+12	3.3785E+12	3.3586E-05	6.094419E-05	1.0481E-04	1.048099E-04	144.3	2.395407E-09	8.621
48	1.0070E-06	1.1080E+14	1.2879E-05	1.2148E+13	1.2317E+13	1.1918E+15	4.8750E+14	1.6120E-05	3.7931E+12	5.1828E+12	4.4538E-05	7.955644E-05	1.0481E-04	1.048099E-04	139.4	3.593262E-09	8.445
72	1.0070E-06	1.4872E+14	1.7287E-05	1.2896E+13	1.4750E+13	1.6261E+15	6.5772E+14	1.8413E-05	4.2448E+12	6.7264E+12	5.2173E-05	9.389173E-05	1.0481E-04	1.048099E-04	136.5	7.610703E-09	8.119
96	1.0070E-06	1.8400E+14	2.1388E-05	1.3428E+13	1.6836E+13	2.0303E+15	8.1236E+14	2.0340E-05	4.5654E+12	8.0472E+12	5.8157E-05	1.059041E-04	1.0481E-04	1.048099E-04	134.4	1.161486E-06	5.935
120	1.0070E-06	2.1683E+14	2.5204E-05	1.3840E+13	1.8625E+13	2.4064E+15	9.5284E+14	2.2000E-05	4.8140E+12	9.1771E+12	6.3064E-05	1.162876E-04	1.0481E-04	1.048099E-04	132.8	1.148415E-05	4.940
150	1.0070E-06	2.5468E+14	2.9604E-05	1.4252E+13	2.0507E+13	2.8400E+15	1.1105E+15	2.3781E-05	5.0626E+12	1.0363E+13	6.8112E-05	1.275158E-04	1.0481E-04	1.048099E-04	131.3	2.270903E-05	4.644
200	1.0070E-06	3.1066E+14	3.6112E-05	1.4783E+13	2.2942E+13	3.4814E+15	1.3347E+15	2.6188E-05	5.3831E+12	1.1891E+13	7.4618E-05	1.429364E-04	1.0481E-04	1.048099E-04	129.2	3.812823E-05	4.419
240	1.0070E-06	3.4978E+14	4.0659E-05	1.5119E+13	2.4401E+13	3.9295E+15	1.4844E+15	2.7724E-05	5.5863E+12	1.2802E+13	7.8597E-05	1.529984E-04	1.0481E-04	1.048099E-04	127.9	4.818987E-05	4.317
300	1.0070E-06	4.0032E+14	4.6534E-05	1.5531E+13	2.5995E+13	4.5085E+15	1.6684E+15	2.9545E-05	5.8349E+12	1.3793E+13	8.3154E-05	1.652513E-04	1.0481E-04	1.048099E-04	126.3	6.044246E-05	4.219
360	1.0070E-06	4.4254E+14	5.1441E-05	1.5868E+13	2.7081E+13	4.9921E+15	1.8132E+15	3.0932E-05	6.0380E+12	1.4464E+13	8.6528E-05	1.749199E-04	1.0481E-04	1.048099E-04	125.0	7.011083E-05	4.154
400	1.0070E-06	4.6675E+14	5.4255E-05	1.6063E+13	2.7605E+13	5.2694E+15	1.8922E+15	3.1674E-05	6.1554E+12	1.4786E+13	8.8313E-05	1.802613E-04	1.0481E-04	1.048099E-04	124.3	7.545214E-05	4.122
480	1.0070E-06	5.0726E+14	5.8964E-05	1.6399E+13	2.8324E+13	5.7335E+15	2.0168E+15	3.2837E-05	6.3585E+12	1.5225E+13	9.1106E-05	1.889257E-04	1.0481E-04	1.048099E-04	123.0	8.411650E-05	4.075
600	1.0070E-06	5.5241E+14	6.4212E-05	1.6811E+13	2.8901E+13	6.2507E+15	2.1427E+15	3.4025E-05	6.6071E+12	1.5574E+13	9.4049E-05	1.983049E-04	1.0481E-04	1.048099E-04	121.4	9.349558E-05	4.029
700	1.0070E-06	5.7941E+14	6.7351E-05	1.7096E+13	2.9137E+13	6.5601E+15	2.2101E+15	3.4692E-05	6.7789E+12	1.5716E+13	9.5831E-05	2.038928E-04	1.0481E-04	1.048099E-04	120.3	9.908342E-05	4.004
720	1.0070E-06	5.8391E+14	6.7874E-05	1.7148E+13	2.9168E+13	6.6116E+15	2.2206E+15	3.4801E-05	6.8103E+12	1.5735E+13	9.6139E-05	2.048323E-04	1.0481E-04	1.048099E-04	120.1	1.000229E-04	4.000

Attachment 3

Response to NRC Questions from Recent Conference Calls

Question 1:
Considering the relatively small variation in wind speeds at GGNS, the windspeed categories assumed in the χ/Q calculation may be too large. What is the impact of smaller windspeed category sizes on the offsite dispersion factors?

Response:
EOI has re-calculated the GGNS offsite dispersion factors based on smaller windspeed categories with small increases in the results. However, these resulting values are still bounded by the dispersion factors applied in the previously-submitted GGNS AST calculations.

EOI has re-sorted the GGNS meteorological data based on 0.25-m/s windspeed increments up to 2 m/s and progressively larger categories at the less-frequent higher windspeeds for a total of 14 different categories compared to the 5 used previously. The PAVAN input file is listed below.

The resulting χ/Q values still remain bounded by those applied in the offsite radiological analyses. For example, as shown in Table 3-1 of Calculation XC-Q1111-98017, Rev. 1, the LOCA dose calculation applies an EAB χ/Q value of 6.0E-4 s/m^3 while the calculated value with these smaller windspeed increments is 5.31E-4 s/m^3. The calculated LPZ χ/Q values are also bounded by those applied in the dose calculations in the same table.

Note that the EAB calculation contains significant conservatisms. As shown in the PAVAN input file, the EAB is modeled as a constant distance of 696 meters; however, this distance is actually the closest approach of the plant property line as illustrated in SAR Figure 2.1-2. In the worst-case downwind sectors, SW and W, the property lines are actually some 1300-1800 meters from the containment.

PAVAN INPUT FILE

```
       1
 GRAND GULF NS       95-99 AVERAGE       GROUND-LEVEL RELEASE
 10.0 METER          10.0 TO 50.0 METER
 95 thru 99 - Joint Frequency Tables - GGNS transmittal
 Hours in each stability class obtained from sort of raw data.
   14    0
2729. 53.3 10.0 10.0
    0    0    0    3    6    9    7
    0    0    1    0    0    0    0    0    0    0    0    0    0    0    0    0
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```

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-1.	0.277	0.5	0.75	1.0	1.25	1.5	1.75	2.0	2.5	3.0	4.0	5.0	7.0	13.0	
696.	696.	696.	696.	696.	696.	696.	696.	696.	696.	696.	696.	696.	696.	696.	696.
3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.	3219.

Question 2:
The EOI response to a previous RAI included the distance and direction to the control room intake from the primary GGNS release point. Please provide distances and directions from all release points to all control room intakes.

Response:
The distances and directions to the control room intakes from the various modeled GGNS release points are listed below.

Standby Gas Treatment System (SGTS) Releases
For the SGTS release, the χ/Qs were calculated from the nearest SGTS exhaust vent to normal control room intake and to the nearest Safeguard Switchgear and Battery Room Ventilation (SSBRV) intake. After a LOCA, the SSBRV system would provide ventilation to various areas of the control building outside the control room envelope; however, dilution within the control building is conservatively neglected and the source term concentration of the control room inleakage is assumed to be that at the SSBRV intake.

Standby Gas Treatment System Exhaust Vent (Source)	**SSBRV Intake (Receptor)**	**Control Room Roof Intake (Receptor)**
Release Type: Ground	Distance to Receptor: 73.2 m	Distance to Receptor: 84 m
Release Height: 42.5 m	Intake Height: 2 m	Intake Height: 22.4 m
Building Area: 3233 m^2	Elevation Difference: 0	Elevation Difference: 0
Vertical Velocity: 0 (capped vent)	Direction to Source: 281°	Direction to Source: 257°
Stack Flow: 0		
Stack Radius: N/A		

Two alternate cases were evaluated based on flows directed through the buildings. Considering that the building walls are several feet of reinforced concrete, the distances between the source and receptor were not reduced, only the direction to the source was modified. The resulting directions to the SGTS vent from the SSBRV intake and control room roof intake are 242° and 236° respectively.

Containment Vent Releases
The containment vent release path is modeled for 2% of the released activity in a fuel handling accident. The SSBRV intake point is not modeled for this event since this system is run post-LOCA and the fuel handling accident assumes no control room isolation.

Containment Vent (Source)	**Control Room Roof Intake Intake (Receptor)**
Release Type: Ground	Distance to Receptor: 43.8 m
Release Height: 18.44 m	Intake Height: 18.44 m
Building Area: 3233 m^2	Elevation Difference: 0
Vertical Velocity: 0 (capped vent)	Direction to Source: 181°
Stack Flow: 0	
Stack Radius: N/A	

Turbine Building Vent Releases

The turbine building vent release path is modeled for the MSIV leakage that passes the outboard MSIV and for the control rod drop accident.

Turbine Building Vent (Source)	**SSBRV Intake (Receptor)** (assumes source terms flow through Turbine Building and Control Building)	**Control Room Roof Intake (Receptor)**
Release Type: Ground	Distance to Receptor: 85.6 m	Distance to Receptor: 100.4 m
Release Height: 30.3 m	Intake Height: 2 m	Intake Height: 22.4 m
Building Area: 3233 m^2	Elevation Difference: 0	Elevation Difference: 0
Vertical Velocity: 0 (capped vent)	Direction to Source: 179°	Direction to Source: 185°
Stack Flow: 0		
Stack Radius: N/A		

Secondary Containment Seepage Releases

Since gap source terms are not released until 2 minutes and the secondary containment drawdown period is proposed to be extended to 3 minutes, there exists a one minute period during which gap source terms are being released and secondary containment may not be completely established. For this minute, a χ/Q was developed based on an assumed release point at the enclosure building boundary's closest to the control room intakes.

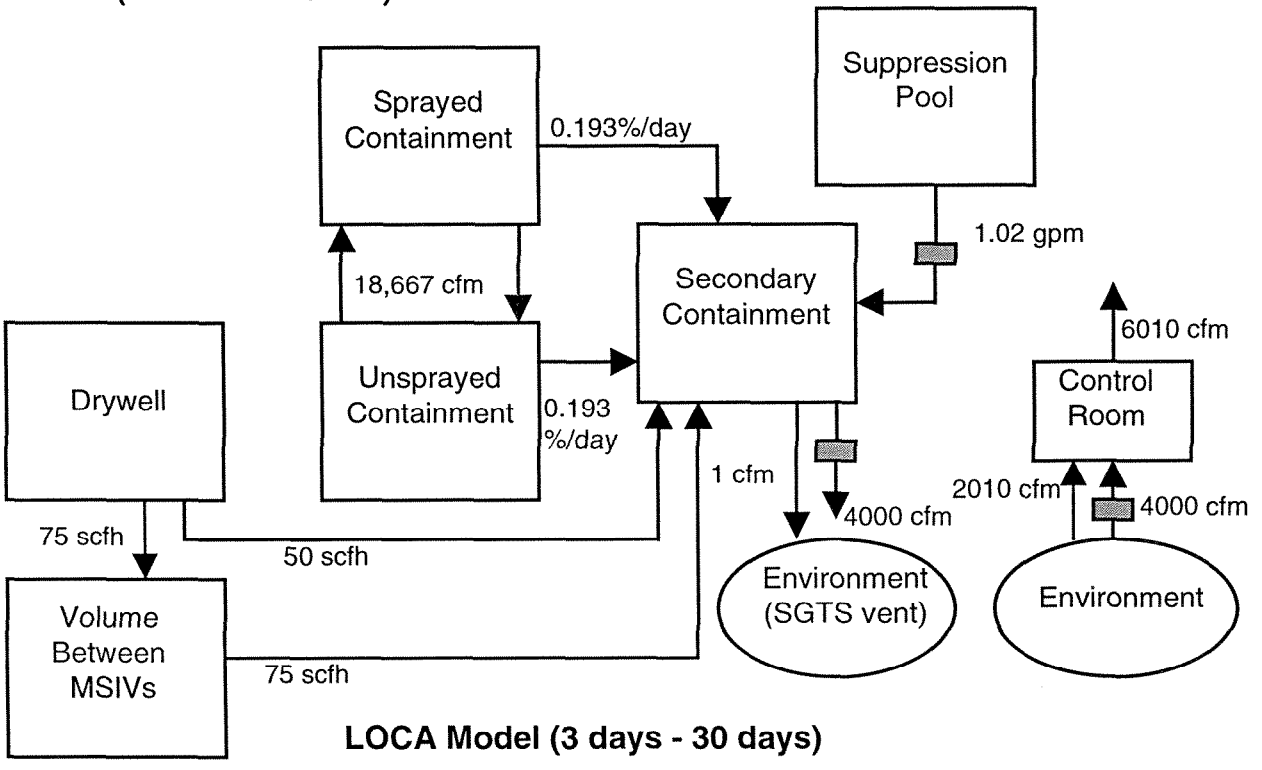
Enclosure Building Boundary (Source)	**Control Room Roof Intake (Receptor)**
Release Type: Ground	Distance to Receptor: 26.8 m
Release Height: 22.4 m	Intake Height: 22.4 m
Building Area: 3233 m^2	Elevation Difference: 0
Vertical Velocity: 0 (capped vent)	Direction to Source: 210°
Stack Flow: 0	
Stack Radius: N/A	

Question 3:
The GGNS LOCA dose calculation did not assume 2010 cfm of unfiltered inleakage into the control room for the duration of the accident. Specifically, after 3 days, the in-leakage was reduced to 10 cfm. What is the impact on the control room dose if the 2010 cfm were assumed to continue after 3 days for the entire duration of the accident?

Response:
EOI has re-calculated the control room dose associated with this additional late-term in-leakage and found no significant impact. The changes to the flow diagrams in Calculation XC-Q1111-98017, Rev. 1 are attached for information.

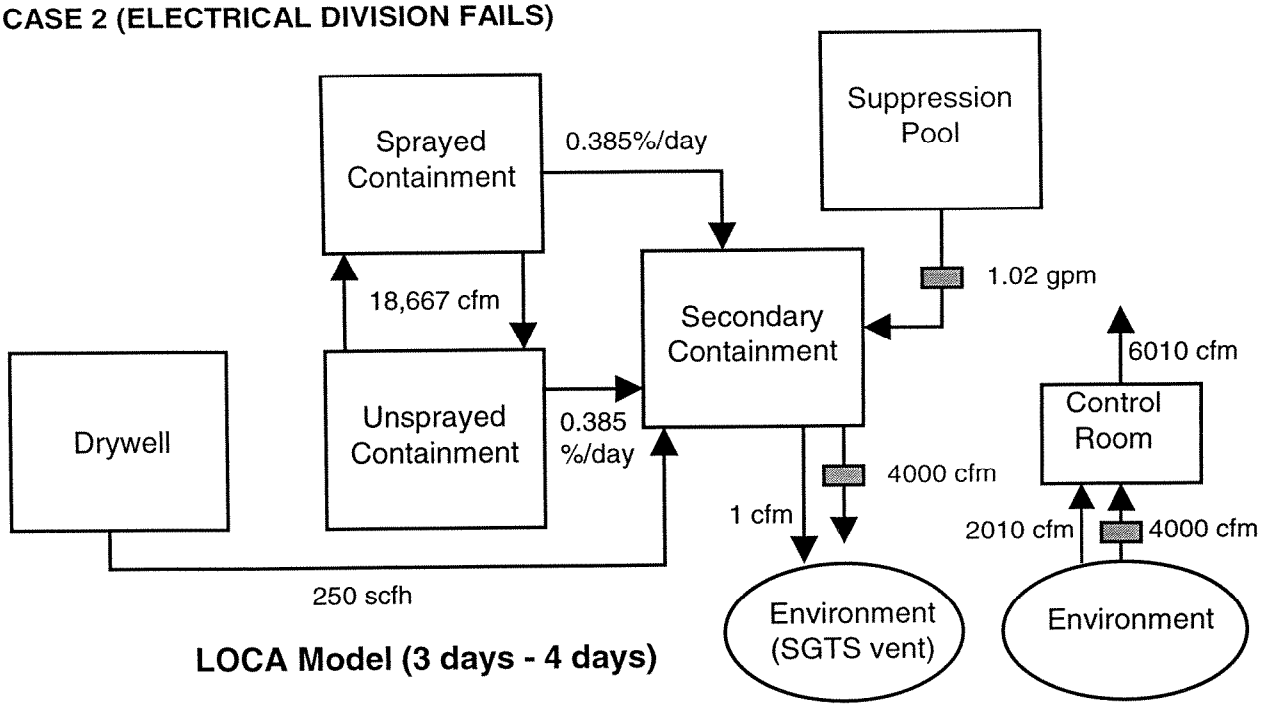
The calculated impact on the 30-day control room was determined to be no more than 1 millirem TEDE. This small impact was expected since the source term release rate, the control room dispersion factor, and the control room occupancy factor are all at their smallest values at this late period.

CASE 1 (MSIV FAILS OPEN)

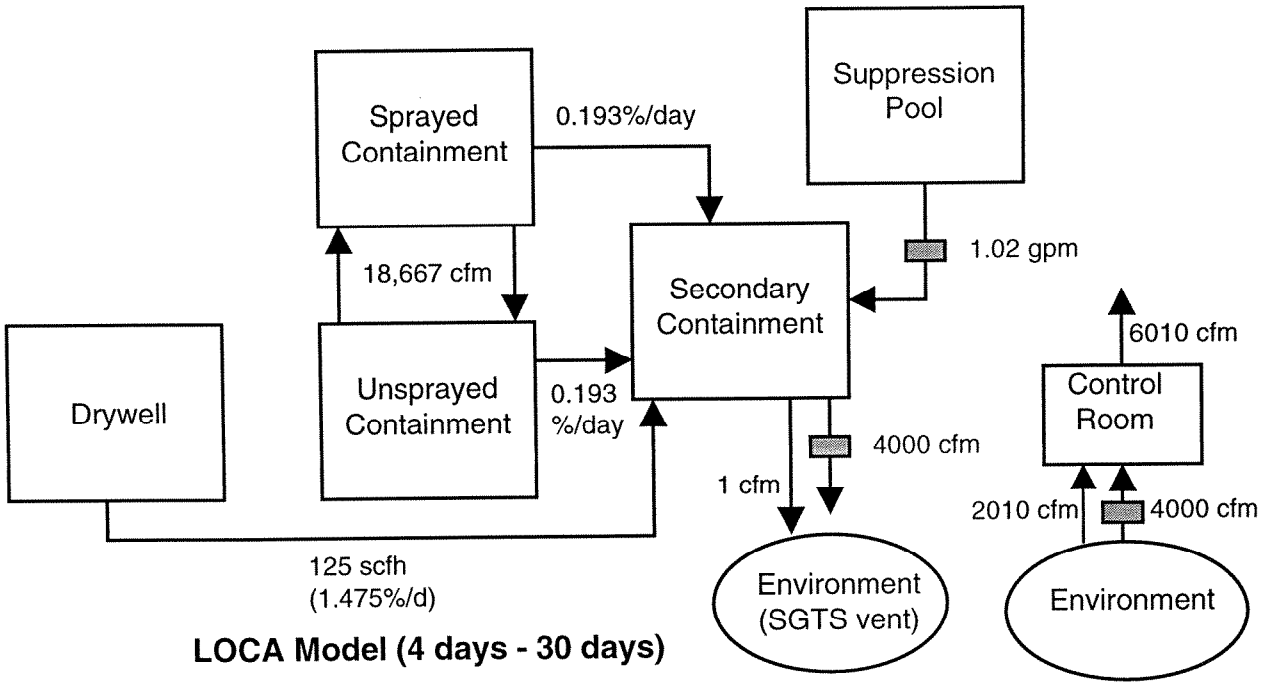


LOCA Model (3 days - 30 days)

CASE 2 (ELECTRICAL DIVISION FAILS)



LOCA Model (3 days - 4 days)



LOCA Model (4 days - 30 days)

Question 4:
The control room χ/Q applied in the fuel handling accident considered a single effective release point by combining the containment vent and Standby Gas Treatment system release points with a 2%/98% split. Please describe how this effective release point was calculated.

Response:
Appendix B to RG 1.183 and its predecessor, RG 1.25, require that the source terms be released to the environment over a 2-hour time period. GGNS procedures call for venting this release through the SGTS system; however, for drops in the GGNS containment, the potential exists for some limited activity release through the containment ventilation system. Although this system is automatically isolated within several seconds based on high radiation in the ductwork, a release duration of 2 minutes is assumed. As shown in Calculation XC-Q1111-98019, Rev. 1, less than 2% of the source terms are released from the containment vent before it is isolated. The remainder of the source terms are released from the SGTS vent.

The impact on the control room dose can be assessed by two approaches. A separate evaluation for each release point could be performed or a single evaluation based on an effective release point (and associated control room χ/Q) could be performed. The GGNS calculation applied an effective χ/Q which is based on 2% of the containment vent χ/Q (3E-3 s/m^3) and 98% of the SGTS χ/Q (8E-4 s/m^3) for a total of 8.44E-4 s/m^3, which was rounded up to 8.5E-4 s/m^3.