

## NAI Report Release

Calculation Number: NAI-1149-018

Revision Number: 1

Title: Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Description:

Revision 0

This calculation reanalyzes the radiological consequences of the Main Steam Line Break event presented in Section 14.14.3 of the Palisades FSAR using the AST methodology described in USNRC Reg. Guide 1.183.

Revision 1

Revision 1 is issued to credit the reduction in control room unfiltered inleakage afforded by the installation of bubble-tight dampers.

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## NAI Calculation Approval

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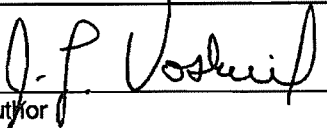
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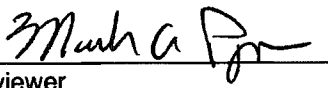
06-07-2006  
Date

Scope of Review:

Review included:

- A review of calculation methods was completed for consistency with plant-specific and generic regulatory requirements and guidance.
- Computer codes (RADTRAD-NAI) were checked for appropriate qualification.
- Calculation and code inputs and assumptions were verified against IAM document(s) and/or checked for reasonableness and conservatism.
- Computations were checked for correctness.
- References were verified as appropriate.
- Outputs from spreadsheets and utility programs were checked.
- Reported Results were verified against computer outputs.
- Results and conclusions were reviewed for reasonableness.
- Cases run were checked against procurement documents.

**Design Verification –** See Attachment 1 for Revision 0 comments  
See Attachment 7 for Revision 1 comments.

  
\_\_\_\_\_  
Reviewer  
Mark Pope

6-8-06  
Date

Check items in the following lists to verify that project documentation and engineering calculations are complete. Mark any items that are not applicable with N/A notation.

Project Documentation Checklist:

- N/A
- Project QA Plan.
  - Project Organization.
  - Project Work Scope and Design Plan.
  - Project Calculation and Document Index.
  - Project QA Requirements.
  - Project Engineer Training and Qualification Forms.
  - Project QA Training Certification Forms.
  - Project Correspondence.

Engineering Calculations Checklist:

- Identification by subject, originator, reviewer, date and Project so that the calculation is retrievable.
- Table of contents.
- Statement of the objective of the analysis.
- Analysis inputs and their sources.
- Assumptions and how they were developed or determined.
- Hand calculations.
- Identification of computer calculations, including computer type, computer program name and version, code input and output.
- Conclusions.
- Review summary.
- Responses to review comments.
- References.
- Each page of the calculation shall be numbered and the first page shall indicate the total number of pages. The calculation pages may be numbered by sections with the first page of the section indicating the total number of pages in the section.
- The Calculation Approval Sheet shall be signed and dated by the originator.

**Table of Contents**

**1.0 INTRODUCTION ..... 7**

**2.0 SUMMARY OF RESULTS ..... 9**

**3.0 DESIGN INPUT ..... 10**

    3.1 SOURCE TERM INPUT ..... 10

    3.2 OTHER INPUT ..... 11

**4.0 ASSUMPTIONS ..... 12**

**5.0 ACCEPTANCE CRITERIA..... 13**

**6.0 COMPUTER CODES ..... 13**

**7.0 CALCULATIONS..... 14**

    7.1 NOBLE GAS DOSE RADTRAD-NAI MODEL ..... 14

        7.1.1 PCS Compartment ..... 16

        7.1.2 Environment Compartment..... 16

        7.1.3 Control Room Compartment..... 16

        7.1.4 Steam Generator Tube Leakage to Environment Pathway ..... 16

        7.1.5 Control Room Unfiltered Makeup ..... 17

        7.1.6 Control Room Filtered Makeup..... 17

        7.1.7 Control Room Unfiltered Inleakage ..... 18

        7.1.8 Control Room Exhaust..... 18

        7.1.9 Plant Power and Release Information ..... 18

        7.1.10 Dose Location Information..... 19

        7.1.11 Source Term..... 21

        7.1.12 Noble Gas Release Fraction Timing File ..... 21

    7.2 FUEL DAMAGE IODINE DOSE RADTRAD-NAI MODEL ..... 23

        7.2.1 PCS Compartment ..... 25

        7.2.2 Environment and Control Room Compartments..... 25

        7.2.3 Faulted Steam Generator Compartment..... 25

        7.2.4 Intact Steam Generator Compartment..... 25

        7.2.5 Tube Leakage to Faulted Steam Generator Pathway ..... 25

        7.2.6 Control Room Pathways ..... 26

        7.2.7 Tube Leakage to Intact Steam Generators Pathway..... 26

        7.2.8 Steam Release From Intact Steam Generator Pathway..... 27

        7.2.9 Steam Release From Faulted Steam Generator Pathway..... 27

        7.2.10 Plant Power and Release Information..... 28

        7.2.11 Dose Location Information..... 28

        7.2.12 Source Term..... 29

        7.2.13 Fuel Damage Iodine Release Fraction Timing File ..... 30

    7.3 SECONDARY ACTIVITY IODINE DOSE RADTRAD-NAI MODEL ..... 31

**8.0 REFERENCES ..... 33**

**9.0 MSLB RADTRAD-NAI ANALYSIS FILES..... 34**

**Tables**

Table 2-1 MSLB Radiological Dose..... 9  
Table 3-1 MSLB Source Term..... 10  
Table 7-1 Noble Gas Release Fraction Timing File ..... 21  
Table 7-2 Fuel Damage Iodine Release Fraction Timing File ..... 30  
Table 7-3 Secondary Activity Dose Release Fraction Timing File ..... 32

**Figures**

Figure 1 Noble Gas RADTRAD-NAI Model..... 15  
Figure 2 Fuel Damage Iodine Dose RADTRAD-NAI Model..... 24

**Attachments**

Attachment 1 Verification Comments for Calculation NAI-1149-018 Rev. 0..... 35  
Attachment 2 Palisades MSLB Design Basis Source Term..... 37  
Attachment 3 RADTRAD-NAI Dose Conversion Factor File..... 51  
Attachment 4 Palisades MSLB Noble Gas Dose (*pal\_MSLB\_ng\_db\_ast.out*) ..... 68  
Attachment 5 Palisades MSLB Iodine Dose (*pal\_MSLB\_iodine\_db\_ast.out*)..... 99  
Attachment 6 Palisades MSLB Secondary Dose (*pal\_MSLB\_sg\_db\_ast.out*) ..... 154  
Attachment 7 Verification Comments for Calculation NAI-1149-018 Rev. 1..... 196

**1.0 Introduction**

The purpose of this calculation is to reanalyze the radiological consequences of the Main Steam Line Break (MSLB) event presented in Section 14.14.3 of the Palisades FSAR (Reference 2). This reanalysis will use the AST dose methodology described in Regulatory Guide 1.183 (Reference 1).

Appendix E of Reg. Guide 1.183 specifies the cases that must be considered for a MSLB event:

*“2. If no or minimal<sup>2</sup> fuel damage is postulated for the limiting event, the activity released should be the maximum coolant activity allowed by the technical specifications. Two cases of iodine spiking should be assumed.”*

*“<sup>2</sup> The activity assumed in the analysis should be based on the activity associated with the projected fuel damage or the maximum technical specification values, whichever maximizes the radiological consequences. In determining dose equivalent I-131 (DE I- 131), only the radioiodine associated with normal operations or iodine spikes should be included. Activity from projected fuel damage should not be included.”*

Per Palisades Tech. Spec. LCO 3.4.16, the maximum allowable iodine concentration is 40.0 µCi/gm D.E. I-131. The table presented below lists the PCS iodine concentrations for 2% fuel failure (cladding damage or DNB) with a peaking factor of 2.04:

	Core Activity Curies	Peaking	Gap Fraction	Damage Fraction	Release Curies	PCS grams	µCi/gm
I-131	7.4830E+07	2.04	0.08	0.02	2.44E+05	2.08E+08	<b>1172.0</b>
I-132	1.0680E+08	2.04	0.05	0.02	2.18E+05	2.08E+08	1045.5
I-133	1.4620E+08	2.04	0.05	0.02	2.98E+05	2.08E+08	1431.1
I-134	1.6020E+08	2.04	0.05	0.02	3.27E+05	2.08E+08	1568.2
I-135	1.3720E+08	2.04	0.05	0.02	2.80E+05	2.08E+08	1343.0

Note: the values above were copied from a spreadsheet; therefore, all of the significant figures are not displayed.

The µCi/gm of I-131 alone exceeds 40 µCi/gm of Dose Equivalent I-131; thus, the activity from 2% fuel failure exceeds that for the pre-accident spike. The iodine Core Activity listed in the table above corresponds to the the total iodine activities in the Palisades design basis AST LOCA source term. The radial peaking factor of 2.04 is from Reference 14, the gap fractions are from Reg. Guide 1.183, the fuel clad damage fraction of 2% for MSLB is from Reference 15, and the PCS mass in grams in from Reference 7.

Reference 7 presents the derivation of the amount of iodine released by a concurrent iodine spike. Applying an appearance rate multiplier of 500 (required for concurrent iodine spike by Reg. Guide 1.183) for the MSLB produces the following:

Nuclide	1.0 uCi/gm D.E I-131 concentrations	RCS Mass gm	Iodine Activity Ci	Iodine Removal min <sup>-1</sup>	Iodine Appearance Ci/min	X 500	Iodine Appearance Ci/min	8 hours Ci
I-131	8.305E-01	2.084E+08	1.731E+02	0.001002	0.1734	500	86.7114868	<b>4.162E+04</b>
I-132	1.917E-01	2.084E+08	3.995E+01	0.005965	0.2383	500	119.152137	<b>5.719E+04</b>
I-133	8.624E-01	2.084E+08	1.797E+02	0.001497	0.2690	500	134.524016	<b>6.457E+04</b>
I-134	7.510E-02	2.084E+08	1.565E+01	0.01412	0.2210	500	110.495326	<b>5.304E+04</b>
I-135	3.673E-01	2.084E+08	7.655E+01	0.00269	0.2059	500	102.953824	<b>4.942E+04</b>

A comparison of the total iodine released over 8 hours from the above table to the iodine release for 2% fuel failure from the previous table shows that the concurrent iodine spike release is also bounded by the release from 2% fuel failure. Therefore, only the 2% fuel damage case will be analyzed.

**Note:**

The potential exists for operators to isolate auxiliary feedwater flow to the faulted steam generator anywhere from 0 to 30 minutes following the main steam line break (versus the traditionally assumed operator action time of 10 minutes). The maximum HZP steam generator inventory was used for the faulted steam generator for the MSLB dose analysis. The excess liquid inventory (relative to the lower HFP steam generator inventory) and the instantaneous inventory release provide sufficient conservatism with respect to an operator action time of 30 minutes to isolate AFW flow.



## 2.0 Summary of Results

Table 2-1 presents the results of the MSLB. The control room shine dose is the sum of the cloud and filter doses from Table 1 of Reference 13.

**Table 2-1 MSLB Radiological Dose**

Dose Contribution	TEDE Dose (rem)		
	EAB	LPZ	CR
Noble Gas Dose	3.1700E-02	5.8465E-03	7.0375E-03
PCS Iodine Dose	2.3697E+00	7.5497E-01	4.0423E+00
S/G Initial Iodine Dose	5.7666E-02	7.5222E-03	6.6577E-01
Control Room Shine Dose			0.268
<b>Total</b>	<b>2.46</b>	<b>0.77</b>	<b>4.98</b>
<b>Acceptance Criteria</b>	<b>25</b>	<b>25</b>	<b>5</b>
<b>Control Room Unfiltered Inleakage = 10 cfm</b>			

### 3.0 Design Input

#### 3.1 Source Term Input

Attachment 24 of Reference 8 presents the design basis AST source term for the Palisades LOCA. The "Curies" entry of this file provides the source term for the entire core with an average assembly burnup of 39,300 MWD/MTU and a core power level of 2703 MW<sub>th</sub> (including uncertainty). This file provides the input for the determination of the MSLB event source term. The RADTRAD-NAI release fraction timing file is used to account for the radial peaking factor (2.04), fraction of fuel damage (2% from Reference 15), and gap release fractions for the various nuclides (listed in Table 3 of Reg. Guide 1.183). The gap fraction for I-131 is 0.08 versus 0.05 for the other iodine isotopes; therefore, the I-131 activity was increased by a factor of 0.08/0.05. The Kr-85 gap fraction is 0.10 versus 0.05 for the other noble gases; therefore, the Kr-85 activity was increased by a factor of 0.10/0.05. Listed below is the MSLB source term with the adjustments for I-131 and Kr-85. The corresponding RADTRAD-NAI file is *pal\_mslb\_db\_ast.nif* (Attachment 2).

**Table 3-1 MSLB Source Term**

Nuclide	Curies	Nuclide	Curies
Co-58	0.0000E+00	Pu-239	0.3558E+05
Co-60	0.0000E+00	Pu-240	0.5406E+05
<b>Kr-85</b>	<b>0.2104E+07</b>	Pu-241	0.1522E+08
Kr-85m	0.1948E+08	Am-241	0.1884E+05
Kr-87	0.3756E+08	Cm-242	0.5669E+07
Kr-88	0.5286E+08	Cm-244	0.5943E+06
Rb-86	0.1959E+06	I-130	0.3743E+07
Sr-89	0.7213E+08	Kr-83m	0.9119E+07
Sr-90	0.8458E+07	Xe-138	0.1211E+09
Sr-91	0.8874E+08	Xe-131m	0.8346E+06
Sr-92	0.9557E+08	Xe-133m	0.4659E+07
Y-90	0.8737E+07	Xe-135m	0.2999E+08
Y-91	0.9264E+08	Cs-138	0.1340E+09
Y-92	0.9596E+08	Cs-134m	0.4920E+07
Y-93	0.1101E+09	Rb-88	0.5369E+08
Zr-95	0.1236E+09	Rb-89	0.6895E+08
Zr-97	0.1206E+09	Sb-124	0.1702E+06
Nb-95	0.1249E+09	Sb-125	0.1567E+07
Mo-99	0.1368E+09	Sb-126	0.1107E+06
Tc-99m	0.1198E+09	Te-131	0.6601E+08
Ru-103	0.1260E+09	Te-133	0.8639E+08
Ru-105	0.9451E+08	Te-134	0.1220E+09
Ru-106	0.5794E+08	Te-125m	0.3413E+06
Rh-105	0.8741E+08	Te-133m	0.5406E+08
Sb-127	0.9111E+07	Ba-141	0.1188E+09

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1149-018 Rev. 1

Nuclide	Curies	Nuclide	Curies
Sb-129	0.2568E+08	Ba-137m	0.1043E+08
Te-127	0.9047E+07	Pd-109	0.3327E+08
Te-127m	0.1223E+07	Rh-106	0.6285E+08
Te-129	0.2528E+08	Rh-103m	0.1135E+09
Te-129m	0.3772E+07	Tc-101	0.1261E+09
Te-131m	0.1113E+08	Eu-154	0.1247E+07
Te-132	0.1048E+09	Eu-155	0.8448E+06
<b>I-131</b>	<b>0.1197E+09</b>	Eu-156	0.2023E+08
I-132	0.1068E+09	La-143	0.1108E+09
I-133	0.1462E+09	Nb-97	0.1216E+09
I-134	0.1602E+09	Nb-95m	0.8835E+06
I-135	0.1372E+09	Pm-147	0.1292E+08
Xe-133	0.1466E+09	Pm-148	0.2144E+08
Xe-135	0.4692E+08	Pm-149	0.4541E+08
Cs-134	0.2037E+08	Pm-151	0.1606E+08
Cs-136	0.5873E+07	Pm-148m	0.2999E+07
Cs-137	0.1100E+08	Pr-144	0.1025E+09
Ba-139	0.1307E+09	Pr-144m	0.1224E+07
Ba-140	0.1260E+09	Sm-153	0.4423E+08
La-140	0.1299E+09	Y-94	0.1105E+09
La-141	0.1193E+09	Y-95	0.1183E+09
La-142	0.1156E+09	Y-91m	0.5151E+08
Ce-141	0.1212E+09	Br-82	0.5282E+06
Ce-143	0.1115E+09	Br-83	0.9102E+07
Ce-144	0.1020E+09	Br-84	0.1591E+08
Pr-143	0.1111E+09	Am-242	0.9062E+07
Nd-147	0.4770E+08	Np-238	0.4306E+08
Np-239	0.1830E+10	Pu-243	0.4690E+08
Pu-238	0.3927E+06		

### 3.2 Other Input

Reference 5 lists other input, provided by Palisades, used in the development of the Palisades MSLB RADTRAD-NAI models.

Control room unfiltered inleakage is taken as 10 cfm based on the modification to install bubble tight dampers and subsequent post-modification testing, as indicated in the assumption section below.

#### 4.0 Assumptions

- Operator action and makeup flow from the auxiliary feedwater system are assumed to maintain a constant mass on the secondary side of the intact steam generator. This is consistent with assumptions for the MSLB analysis described in Reference 10 and approved by the NRC in Reference 12.
- The initial concentration of the I-131 on the secondary side was set to 0.1 uCi/gm I-131 (Tech. Spec. LCO 3.7.17).
- The steam generator mass for the intact steam generator is assumed to be the minimum (HFP) value. This is a conservative assumption that maximizes the nuclide concentration available for release from the intact steam generator.
- The steam generator mass for the faulted steam generator is assumed to be the maximum (HZP) value. This is a conservative assumption that maximizes the amount of secondary activity released from the faulted steam generator.
- The faulted steam generator is assumed to blow down near instantaneously.
- The steam generator tube leakage ceases at 12 hours (time for the PCS to reach 212°F).
- Releases from the intact steam generator were assumed to cease at 8 hours (time of SDC initiation).
- Tube leakage to the faulted steam generator is assumed to flash and leak directly to the environment.
- All noble gases are assumed to leak directly to the environment.
- The control room unfiltered inleakage is assumed to be 10 cfm. Control room HVAC dampers D-1, D-2, D-8, D-9, D-15, and D-16 are to be replaced to support this assumption. Post-modification and periodic tracer gas testing to confirm control room envelope inleakage assumptions are also required.

## 5.0 Acceptance Criteria

Per Section 4.4 and Table 6 of Reg. Guide 1.183, the acceptable dose limits for the Exclusion Area Boundary (EAB), Low Population Zone (LPZ), and Control Room (CR) for the MSLB with fuel damage are:

### MSLB With Fuel Failure Dose Limits

Area	Dose Criteria
EAB	25 rem TEDE (worst 2 hours)
LPZ	25 rem TEDE (30 days)
Control Room	5 rem TEDE (30 days)*

\*Reg. Guide 1.183 and 10CFR50.67

## 6.0 Computer Codes

The following computer code was used for performing the analyses presented in this calculation:

Computer Code	Version	Reference	Purpose
RADTRAD-NAI	1.1a(QA)	3	Radiological Dose Calculations

RADTRAD-NAI (Reference 3) is qualified and maintained under the Numerical Applications Inc. QA program (Reference 4). This QA program meets the requirements of 10CFR50 Appendix B with code error reporting per 10CFR21. RADTRAD-NAI is accessed via a controlled access web-based interface that provides a front-end for developing and submitting input models. The input developed via the interface is submitted to the RADTRAD-NAI solver that runs on an AMD-ATHLON based personal computer running LINUX.

**7.0 Calculations**

Section 5 of Appendix E to Reg. Guide 1.183 sets the requirements for the transport, reduction, and release of radionuclides for the MSLB. The transport model specified for noble gases is different than that specified for the non-noble gas nuclides; therefore, a separate RADTRAD model was required for determining the noble gas dose.

The MSLB consists of a dose contribution from several sources. Therefore, separate RADTRAD models were required to calculate the dose from each source. Listed below are the RADTRAD models produced for determining the individual dose contributions:

- Dose from noble gas release from failed fuel (Section 7.1)
- Dose from non-noble gas release from failed fuel (Section 7.2)
- Dose from initial activity on the secondary side of the steam generators (Section 7.3)

**7.1 Noble Gas Dose RADTRAD-NAI Model**

Section 5.4 of Appendix E to Reg. Guide 1.183 specifies the method for handling noble gases:

*“All noble gas radionuclides released from the primary system are assumed to be released to the environment without reduction or mitigation.”*

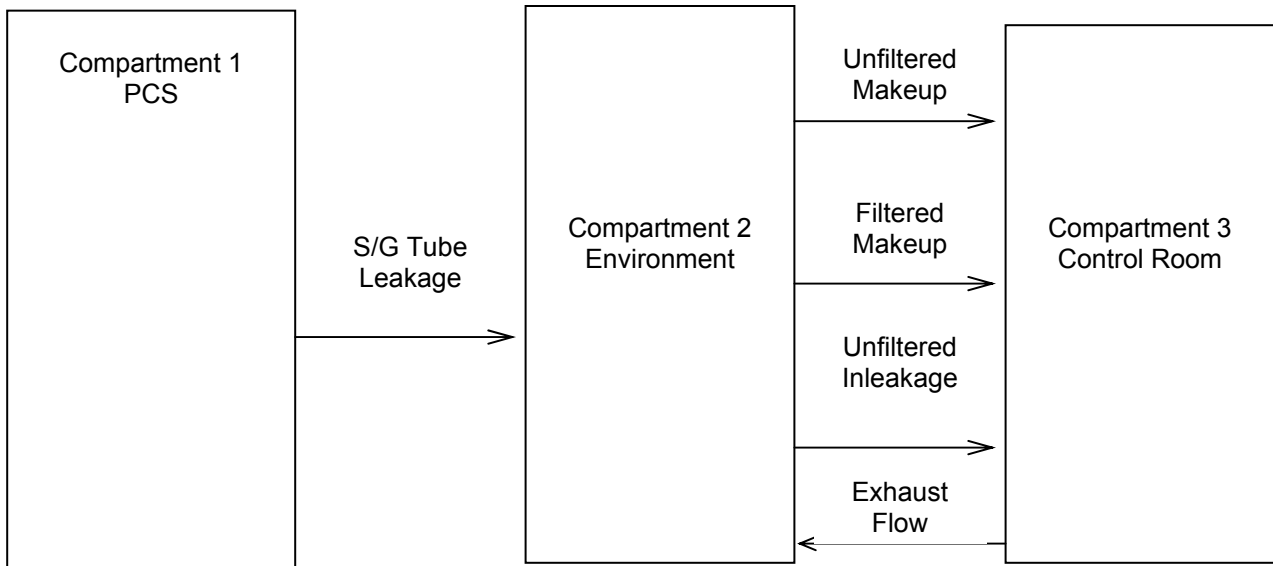
The RADTRAD-NAI model developed for the noble gas calculation consists of three compartments and 5 pathways (see Figure 1). The corresponding RADTRAD-NAI model output *pal\_MSLB\_ng\_db\_ast.out* (Attachment 4).

Compartment Description	Compartment Number	RADTRAD-NAI Compartment Type
PCS	1	(3) Normal
Environment	2	(2) Environment
Control Room	3	(1) Control Room

Pathway Description	Compartment Connections	Pathway Number	RADTRAD-NAI Pathway Type
S/G Tube Leakage	1 to 2	1	Filtered
Control Room Unfiltered Makeup	2 to 3	2	Filtered
Control Room Filtered Makeup	2 to 3	3	Filtered
Control Room Unfiltered Inleakage	2 to 3	4	Filtered
Control Room Exhaust	3 to 2	5	Filtered

The subsections that follow describe the RADTRAD-NAI input for the noble gas model. The noble gas RADTRAD-NAI model was set up on a mass flow basis rather than the typical volumetric flow basis; therefore, the RCS volume was specified as lb<sub>m</sub> and the steam generator tube leakage was specified as lb<sub>m</sub>/min.

Figure 1 Noble Gas RADTRAD-NAI Model



**7.1.1 PCS Compartment**

To conservatively maximize the PCS nuclide concentration from the damaged fuel, the minimum PCS volume minus the pressurizer volume was used. From Reference 16 this volume is 9400 ft<sup>3</sup>. At system conditions of 2060 psia and 560°F (Reference 7), the PCS mass is:

$$(9400 \text{ ft}^3) / (2.171017\text{E-}2 \text{ ft}^3/\text{lb}_m) = 432,977 \text{ lb}_m$$

The following input was specified for the PCS Compartment:

Volume	432,977 lb <sub>m</sub>	
Source Fraction	1.0	100% of source term applied to PCS volume
Recirculation Filters	no	
Natural Deposition	no	

**7.1.2 Environment Compartment**

The only required input for the environment compartment is volume. This value is a “dummy” value; however, an input is required for this field. An arbitrary value of 2.0E20 ft<sup>3</sup> was specified.

**7.1.3 Control Room Compartment**

The control room volume was set to 35,923 ft<sup>3</sup>. The control room HVAC system is assumed to be operating in normal mode at the beginning of the event. The control room enters emergency filtration mode at 20 minutes.

Time (hours)	Flow Rate (cfm)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	0.0	99	99	99
0.3333	1413.6	99	99	99
720.0	1413.6	99	99	99

**7.1.4 Steam Generator Tube Leakage to Environment Pathway**

This pathway, which models the total steam generator tube leakage, connects the PCS (Compartment 1) with the Environment Compartment (Compartment 2). The limit for steam generator tube leakage is 432 gallon per day (0.3 gpm) to any single SG (Palisades Tech. Spec. LCO 3.4.13). Item 5.2 of Appendix E to Reg. Guide 1.183 states:

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



The Palisades leak rate testing results are adjusted so that the allowable leakage corresponds to a density of 1.0 gm/cc (62.4 lb<sub>m</sub>/ft<sup>3</sup>).

The total leak mass flow rate is:

$$\text{SG Tube Leak rate} = (0.3 \text{ gpm/SG})(2 \text{ SG})(0.13368 \text{ ft}^3/\text{gal})(62.4 \text{ lb}_m/\text{ft}^3) = 5.005 \text{ lb}_m/\text{min}$$

The tube leakage ceases at 12 hours (time to reach 212°F):

Time (hours)	Flow Rate (lb/min)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	5.005	0	0	0
12.0	0.0	0	0	0
720.0	0.0	0	0	0

### 7.1.5 Control Room Unfiltered Makeup

The unfiltered makeup flow covers two time periods. During the first 20 minutes, the normal makeup flow is 660.0 cfm. After control room isolation at 20 minutes, the flow is 0 cfm.

#### Unfiltered Makeup Flow

Time (hours)	Flow Rate (cfm)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	660.0	0	0	0
0.3333	0.0	0	0	0
720.0	0.0	0	0	0

### 7.1.6 Control Room Filtered Makeup

The control room filtered makeup flow of 1413.6 cfm starts at 20 minutes (time of control room isolation).

#### Filtered Makeup Flow

Time (hours)	Flow Rate (cfm)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	0.0	99	99	99
0.3333	1413.6	99	99	99
720.0	1413.6	99	99	99

**7.1.7 Control Room Unfiltered Inleakage**

The unfiltered inleakage was set to 10 cfm. The normal unfiltered intake flow rate includes any unfiltered inleakage when the control room ventilation system is operating in normal mode.

**Unfiltered Inleakage**

Time (hours)	Flow Rate (cfm)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	0.0	0	0	0
0.3333	10.0	0	0	0
720.0	10.0	0	0	0

**7.1.8 Control Room Exhaust**

The control room exhaust is equal to the sum of the control room intake and inleakage flows.

**Exhaust Flow**

Time (hours)	Flow Rate (cfm)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	660.0	0	0	0
0.3333	1423.6	0	0	0
720.0	1423.6	0	0	0

**7.1.9 Plant Power and Release Information**

The nuclide inventory file containing the source term is *pal\_mslb\_db\_ast.nif*. The “nif” file lists the source term in terms of Curies and the reference power level in the “nif” file is 2703. The total source term is defined by the combination of the “nif” file activities, the “nif” file reference power level, the plant power input to the RADTRAD model, and the release fractions specified in the release fraction timing file (“rft” file). The plant power input was set to 2703 to match the power in the “nif” file.

“Dummy” values were specified for the iodine fractions (no iodine release for the Noble Gas case).

Start of first release time (hours)	0.0
Calculate decay	yes
Calculate daughters	yes
Iodine Fraction – aerosol	1.0
Iodine Fraction – elemental	0.0
Iodine Fraction – organic	0.0

### 7.1.10 Dose Location Information

Three dose locations were specified; the Exclusion Boundary (EAB), the Low Population Zone (LPZ), and the Control Room (CR). The X/Qs for the EAB and LPZ are from Table 5 of Reference 11. The breathing rates are from Section 4.1.3 of Reg. Guide 1.183:

Exclusion Boundary Data:

**Table 1 - EAB X/Q**

Time (hours)	X/Q (sec/m <sup>3</sup> )
0.0	5.39E-4
720.0	5.39E-4

**EAB and LPZ Breathing Rate**

Time (hours)	Breathing Rate (m <sup>3</sup> /sec)
0.0	3.5E-4
8.0	1.8E-4
24.0	2.3E-4
720.0	2.3E-4

Low Population Zone Data:

**Table 2 - LPZ X/Q**

Time (hours)	X/Q (sec/m <sup>3</sup> )
0.0	6.66E-5
2.0	3.03E-5
8.0	2.04E-5
24.0	8.67E-6
96.0	2.54E-6
720.0	2.54E-6

The breathing rates and occupancy factor for the control room are from Section 4.2.6 of Reg. Guide 1.183. All of the noble gas is conservatively assumed to exit the steam line break. The X/Qs correspond to the turbine building roof exhauster and are listed in Table 4 of Reference 11.

Control Room Data:

**Table 3 - Control Room X/Q (Line Break to Normal Intake)**

Time (hours)	X/Q (sec/m <sup>3</sup> )
0.0	1.31E-2
2.0	1.13E-2
8.0	4.68E-3
24.0	2.87E-3
96.0	2.36E-3
720.0	2.36E-3

**Table 4 - Control Room X/Q (Line Break to Emergency Intake)**

Time (hours)	X/Q (sec/m <sup>3</sup> )
0.0	7.99E-4
2.0	6.43E-4
8.0	2.58E-4
24.0	1.75E-4
96.0	1.32E-4
720.0	1.32E-4

**Control Room Breathing Rate**

Time (hours)	Breathing Rate (m <sup>3</sup> /sec)
0.0	3.5E-4
720.0	3.5E-4

**Control Room Occupancy Factor**

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

**Dose Location Pathway Combinations**

Control Room Intake Path	Release Path	X/Q Table
2	1	3
3	1	4
4	1	3

**7.1.11 Source Term**

Section 3.4 of Reg. Guide 1.183 specifies the radionuclide groups that should be considered for radiological analyses. Reference 9 provides a listing of the individual nuclides and dose conversion factors used for the analyses presented in this calculation. The data provided in Reference 9 are consistent with Section 3.4 of Reg. Guide 1.183. The dose conversion factors provided in Reference 9 were obtained from Table 2.1 of Federal Guidance Report 11 and Table III.1 of Federal Guidance Report 12. The RADTRAD-NAI dose conversion factor file, *nai-1101-001rev0.dcf*, is provided in Attachment 3.

The source term is given in Table 3-1. The corresponding nuclide inventory file is *pal\_mslb\_db\_ast.nif* (Attachment 2)

**7.1.12 Noble Gas Release Fraction Timing File**

Table 7-1 presents the release fraction timing file, *pal\_mslb\_noblegas\_db.rft*, used for the noble gas case. The release fractions for all non-noble gas nuclides were set to zero. The release fraction for the noble gas was set to the gap fraction with adjustments for the peaking factor and fraction of fuel damaged:

$$\text{release fraction} = (0.05)(2.04)(0.02) = 0.00204$$

**Table 7-1 Noble Gas Release Fraction Timing File**

```

Release Fraction and Timing Name:
PWR, NUREG 1.183, Palisades MSLB Noble Gas Release
Duration (h): Design Basis Accident
 0.1000E-02  0.0000E+00  0.0000E+00  0.0000E+00
Noble Gases:
 0.2040E-02  0.0000E+00  0.0000E+00  0.0000E+00
Iodine:
 0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Cesium:
 0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Tellurium:
 0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
Strontium:
 0.0000E+00  0.0000E+00  0.0000E+00  0.0000E+00
    
```

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1149-018 Rev. 1

Barium:

0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00

Ruthenium:

0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00

Cerium:

0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00

Lanthanum:

0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00

Non-Radioactive Aerosols (kg):

0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00

End of Release File

## 7.2 Fuel Damage Iodine Dose RADTRAD-NAI Model

The RADTRAD-NAI model developed for the fuel damage iodine dose calculation consists of five compartments and 8 pathways (see Figure 2). The corresponding RADTRAD-NAI model output is *pal\_MSLB\_iodine\_db\_ast.out* (Attachment 5).

Compartment Description	Compartment Number	RADTRAD-NAI Compartment Type
PCS	1	(3) Normal
Environment	2	(2) Environment
Control Room	3	(1) Control Room
Faulted S/G	4	(3) Normal
Intact S/G	5	(3) Normal

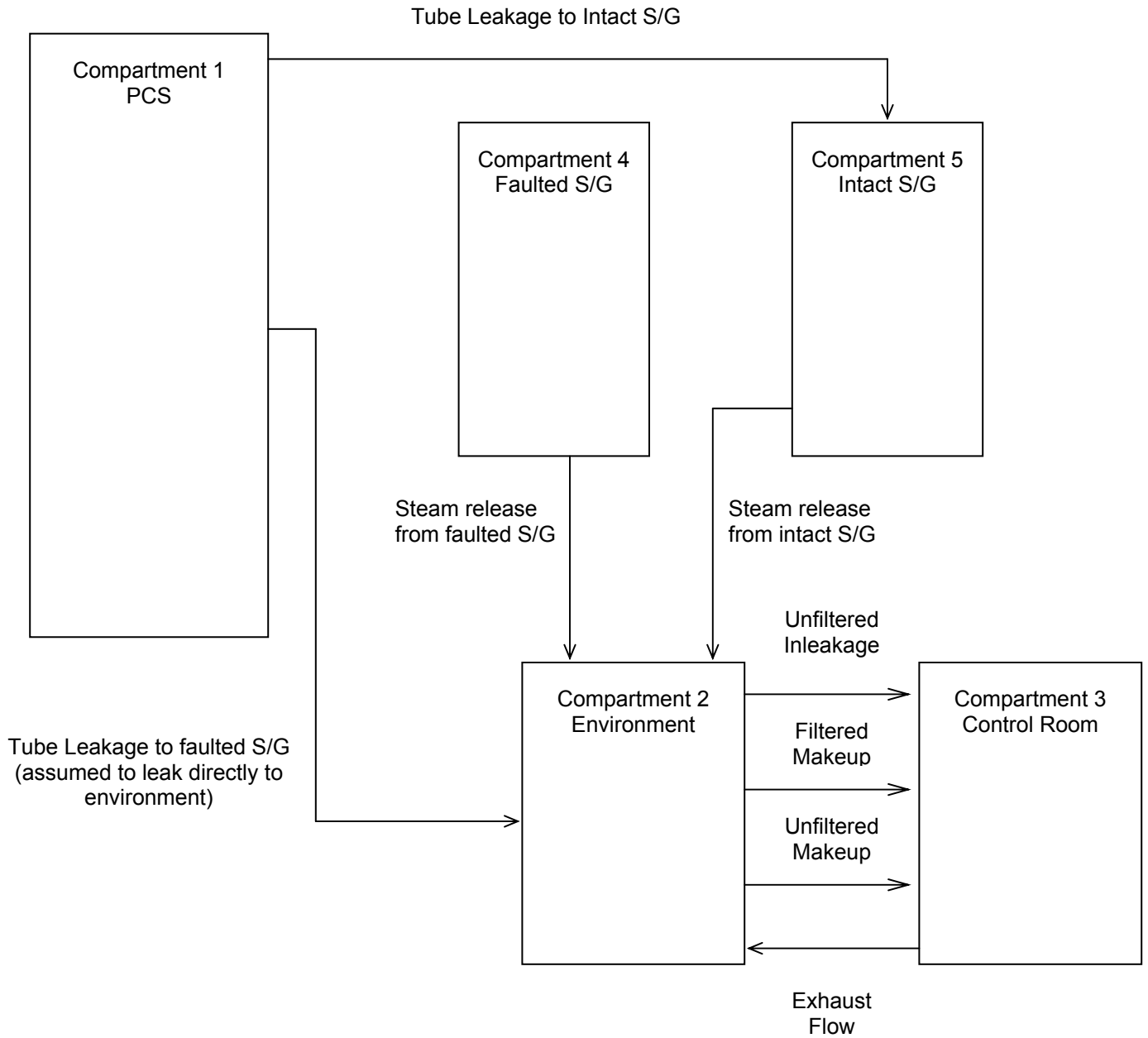
Pathway Description	Compartment Connections	Pathway Number	RADTRAD-NAI Pathway Type
Faulted S/G Tube Leakage	1 to 2	1	Filtered
Control Room Unfiltered Makeup	2 to 3	2	Filtered
Control Room Filtered Makeup	2 to 3	3	Filtered
Control Room Unfiltered Inleakage	2 to 3	4	Filtered
Control Room Exhaust	3 to 2	5	Filtered
Intact S/G Tube Leakage	1 to 5	6	Filtered
Intact S/G Steam Release	5 to 2	7	Filtered
Faulted S/G Steam Release	4 to 2	8	Filtered

Two cases were run with the fuel damage iodine model:

- Dose due to damaged fuel iodine and cesium activity (Section 7.2)
- Dose due to initial S/G iodine activity (Section 7.3)

The subsections that follow describe the input for the fuel damage iodine dose model. The RADTRAD-NAI model was set up on a mass flow basis rather than the typical volumetric flow basis; therefore, the RCS volume was specified as  $lb_m$  and the steam generator leakage and steam release rates were specified as  $lb_m/min$ .

Figure 2 Fuel Damage Iodine Dose RADTRAD-NAI Model





### 7.2.1 PCS Compartment

The input for this compartment is the same as that used for the noble gas model (Section 7.1.1).

### 7.2.2 Environment and Control Room Compartments

The input for these compartments is the same as that used for the noble gas model (Sections 7.1.2 and 7.1.3).

### 7.2.3 Faulted Steam Generator Compartment

The following input was specified for the Faulted Steam Generator Compartment:

Volume	210,759 lb <sub>m</sub>	Calculation performed on a lb <sub>m</sub> basis; therefore, faulted S/G water mass is input. Maximum S/G water mass corresponding to HZP is used to maximum source.
Source Fraction	0	Dose due to RCS leakage only, dose due to initial secondary activity is calculated in Section 7.3.
Recirculation Filters	no	
Natural Deposition	no	

### 7.2.4 Intact Steam Generator Compartment

The following input was specified for the Intact Steam Generator Compartment:

Volume	141,065 lb <sub>m</sub>	Calculation performed on a lb <sub>m</sub> basis; therefore, intact S/G water mass is input. Minimum S/G mass corresponding to HFP is used to maximize concentration.
Source Fraction	0	Dose due to RCS leakage only, dose due to initial secondary activity is calculated in Section 7.3.
Recirculation Filters	no	
Natural Deposition	no	

### 7.2.5 Tube Leakage to Faulted Steam Generator Pathway

The faulted steam generator is assumed to blow down and boil dry within a relatively short period of time (see Section 7.2.8). As a result, no credit for iodine partitioning can be taken for the RCS leakage into the faulted steam generator. Thus, the RCS leakage into the faulted steam generator was assumed to leak directly to the environment.

This pathway connects the RCS (Compartment 1) with the Environment (Compartment 2). The Tech. Spec. limit for steam generator tube leakage is 0.3 gpm per steam generator. The leak mass flow rate to the faulted steam generator is:

$$\text{leak rate} = (0.3 \text{ gal/min})(0.13368 \text{ ft}^3/\text{gal})(62.4 \text{ lb}_m/\text{ft}^3)$$

$$\text{leak rate} = 2.5025 \text{ lb}_m/\text{min}$$

The tube leakage to the faulted steam generator ceases at 12 hours (time for PCS to reach 212°F):

Time (hours)	Flow Rate (lbm/min)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	2.5025	0	0	0
12.0	0.0	0	0	0
720.0	0.0	0	0	0

### 7.2.6 Control Room Pathways

The input for the control room pathways is the same as that used for the noble gas model (Sections 7.1.5, 7.1.6, 7.1.7, and 7.1.8).

### 7.2.7 Tube Leakage to Intact Steam Generators Pathway

This pathway connects the RCS (Compartment 1) with the Intact Steam Generators (Compartment 5). The leak rate is the same as that for the faulted steam generator pathway.

Per Reference 5, the tubes in the intact steam generators remain covered during the MSLB; therefore, the tube leakage can be assumed to mix with the fluid on the secondary side. The tube leakage to the intact steam generators ceases at 12 hours (time for PCS to reach 212°F):

Time (hours)	Flow Rate (lbm/min)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	2.5025	0	0	0
12.0	0.0	0	0	0
720.0	0.0	0	0	0

**7.2.8 Steam Release From Intact Steam Generator Pathway**

This pathway connects the Intact Steam Generator (Compartment 5) with the Environment (Compartment 2). Makeup flow from the auxiliary feedwater system is assumed to maintain a constant mass on the secondary side of the intact steam generator. Section 5.5.4 of Appendix E to Reg. Guide 1.183 states:

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

The steam carryover fraction is less than 1%; therefore, a partition coefficient of 100 can be applied to all particulates.

The partition coefficient was modeled by adjusting the steam mass release rates from the intact steam generator by a factor of 0.01. The total steam release of 800,000 lb<sub>m</sub> (Reference 5) is terminated at 8 hours (time of SDC initiation).

0-8 hours:  $(0.01)(800,000 \text{ lb}_m) / 480 \text{ min} = 16.67 \text{ lb}_m/\text{min}$

Time (hours)	Flow Rate (lb <sub>m</sub> /min)
0.0	16.67
8.0	0.0
720.0	0.0

**7.2.9 Steam Release From Faulted Steam Generator Pathway**

This pathway connects the Faulted Steam Generator (Compartment 4) with the Environment (Compartment 2). All of the initial steam generator mass is assumed to be released from the faulted steam generator at the beginning of the event. A high flow rate was used to ensure that all of the activity was released from the faulted steam generator.

Time (hours)	Flow Rate (lbm/min)	Filter Efficiency		
		Aerosol	Elemental	Organic
0.0	1.0e6	0	0	0
720.0	1.0e6	0	0	0

**7.2.10 Plant Power and Release Information**

The plant power in the RADTRAD model was set to 2703 so as to match the nominal power in the nuclide inventory file.

The composition of the iodine released from the steam generators during a MSLB is specified in Section 4 of Appendix E to Reg. Guide 1.183 (97% elemental and 3% organic).

Start of first release time (hours)	0.0
Calculate decay	yes
Calculate daughters	yes
Iodine Fraction – aerosol	0.0
Iodine Fraction – elemental	0.97
Iodine Fraction – organic	0.03

**7.2.11 Dose Location Information**

The dose location input for the EAB and LPZ are the same as that used for the noble gas model. The X/Qs for the control room for releases from the faulted steam generator are also the same as those used for the noble gas model. The X/Qs for releases from the ADVs (intact S/G) are listed below:

**Table 5 - Control Room X/Q (ADV to Normal Intake)**

Time (hours)	X/Q (sec/m <sup>3</sup> )
0.0	1.65E-2
2.0	1.34E-2
8.0	5.40E-3
24.0	4.03E-3
96.0	2.98E-3
720.0	2.98E-3

**Table 6 - Control Room X/Q (ADV to Emergency Intake)**

Time (hours)	X/Q (sec/m <sup>3</sup> )
0.0	7.36E-4
2.0	6.42E-4
8.0	2.43E-4
24.0	1.75E-4
96.0	1.28E-4
720.0	1.28E-4

**Dose Location Pathway Combinations**

<b>Control Room Intake Path</b>	<b>Release Path</b>	<b>X/Q Table</b>
2	1	3
3	1	4
4	1	3
2	7	5
3	7	6
4	7	5
2	8	3
3	8	4
4	8	3

**7.2.12 Source Term**

The source term is the same as that used for the noble gas model (Table 3-1).

### 7.2.13 Fuel Damage Iodine Release Fraction Timing File

Table 7-2 presents the release fraction timing file used for the fuel damage iodine dose case. The noble gas dose was calculated separately; therefore, the noble gas release fraction was set to 0. The release fraction for iodine was set to 0.204E-2 (see Section 7.1.12). The release fraction for alkali metal (cesium) was set to:

$$(0.12)(2.04)(0.02) = 0.004896$$

The release fraction timing file name is *pal\_mslb\_iodine\_ast\_db.rft*.

**Table 7-2 Fuel Damage Iodine Release Fraction Timing File**

```

Release Fraction and Timing Name:
PWR, NUREG 1.183, Palisades AST MSLB Iodine Release
Duration (h): Design Basis Accident
0.1000E-02 0.0000E+00 0.0000E+00 0.0000E+00
Noble Gases:
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
Iodine:
0.2040E-02 0.0000E+00 0.0000E+00 0.0000E+00
Cesium:
0.4896E-02 0.0000E+00 0.0000E+00 0.0000E+00
Tellurium:
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
Strontium:
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
Barium:
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
Ruthenium:
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
Cerium:
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
Lanthanum:
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
Non-Radioactive Aerosols (kg):
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00
End of Release File

```

### 7.3 Secondary Activity Iodine Dose RADTRAD-NAI Model

The fuel damage iodine dose model determined the dose due to the iodine released from the damaged fuel; therefore, an additional case was required for calculating the dose due to the initial secondary iodine activity. The corresponding RADTRAD-NAI model output is *pal\_MSLB\_sg\_db\_ast.out* (Attachment 6).

The following changes were made to the fuel damage iodine dose model (Section 7.2) for this run:

- The dose due to PCS leakage via the S/G tubes was determined by the fuel damage iodine dose RADTRAD model; therefore, the PCS compartment source fraction was set to zero.
- A modified nuclide inventory file was used. In this file, the activity for I-131 was set to 1.0 Ci and the activities for the remaining nuclides were set to zero. The file name is *pal\_mslb\_sg\_db.nif*.

- The initial Tech Spec limit for steam generator activity is 0.1  $\mu\text{Ci/gm D.E. I-131}$ . Therefore, the steam generator iodine inventories were determined:

$$\text{Faulted S/G Source} = (0.1\mu\text{Ci/gm})(453.59\text{ gm/lb}_m)(1\text{ Ci}/10^6\mu\text{Ci})(210,759\text{ lb}_m) = 9.56\text{ Ci I-131}$$

$$\text{Intact S/G Source} = (0.1\mu\text{Ci/gm})(453.59\text{ gm/lb}_m)(1\text{ Ci}/10^6\mu\text{Ci})(141,065\text{ lb}_m) = 6.40\text{ Ci I-131}$$

Since the I-131 activity was set to 1.0 Ci in the "nif" file, the source fractions for the faulted and intact steam generators were set to 9.56 and 6.40 respectively.

- The secondary side activity consists of iodine only; therefore, the release fractions for all isotopes other than iodine were set to zero (*pal\_mslb\_sg.rft*).
- The tube leakage rates were set to zero.

**Table 7-3 Secondary Activity Dose Release Fraction Timing File**

Release Fraction and Timing Name:  
PWR, NUREG 1.183, Palisades MSLB Secondary Activity  
Duration (h): Design Basis Accident  
0.1000E-02 0.0000E+00 0.0000E+00 0.0000E+00  
Noble Gases:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Iodine:  
0.1000E+01 0.0000E+00 0.0000E+00 0.0000E+00  
Cesium:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Tellurium:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Strontium:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Barium:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Ruthenium:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Cerium:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Lanthanum:  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
Non-Radioactive Aerosols (kg):  
0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00  
End of Release File



## 8.0 References

1. USNRC, Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Plants", July 2000.
2. Palisades Nuclear Plant FSAR, Revision 24.
3. Numerical Applications Inc., NAI-9912-04, Revision 4, "RADTRAD-NAI Version 1.1a(QA) Documentation", October 2004.
4. Numerical Applications Inc., "Dose Methodology Quality Assurance Procedures", Revision 1, June 4, 2001.
5. NAI-E03-211 Project Memo 2004-06, "MSLB and SGTR Inputs", July 6 2004.
6. Palisades Plant Technical Specifications through Amendment 213.
7. NAI Calculation Number NAI-1149-019 Rev. 0, "Palisades Design Basis Steam Generator Tube Rupture AST Radiological Analysis".
8. NAI Calculation Number NAI-1149-001 Rev. 1, "Source Terms for Palisades Dose Calculations".
9. NAI Calculation Number NAI-1101-001 Rev. 1, "Generation of .nif and .inp Files for RADTRAD-NAI", August 8, 2002.
10. USNRC, Serial: RNP-RA/02-0067, H.B. Robinson Steam Electric Plant, Unit No. 2 Docket No. 50-261/License No. DPR-23, "Request for Technical Specifications Change Regarding Full Implementation of Alternative Radiological Source Term."
11. NAI Calculation Number NAI-1149-002 Rev. 0, "Determination of Atmospheric Dispersion Factors for Palisades".
12. USNRC, "Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Amendment No. 201 to Renewed Facility Operating License No. DPR-23 Carolina Power & Light Company H. B. Robinson Steam Electric Plant, Unit No. 2 Docket No. 50-261".
13. NAI Calculation Number NAI-1149-024 Rev. 1, "Determination of Direct Shine Doses for a Design Basis LOCA for Palisades".
14. EA-PSA-DOSE-04-01, Revision 0, "ORIGEN Source Term Calculation Inputs for Radiological Analyses".
15. NAI-E03-211 Project Memo 2004-09, "Additional Inputs", October 20 2004.
16. NAI-E03-211 Project Memo 2004-03, "MHA/LOCA Inputs", June 11 2004.

**9.0 MSLB RADTRAD-NAI Analysis Files**

**RADTRAD-NAI MSLB Case Files**

File Name	Attachment	Case
		<u>Base Cases</u>
pal_MSLB_ng_db_ast.out	Attachment 4	MSLB noble gas dose
pal_MSLB_iodine_db_ast.out	Attachment 5	MSLB iodine and cesium dose
pal_MSLB_sg_db_ast.out	Attachment 6	MSLB secondary side dose

**RADTRAD-NAI MSLB Nuclide Inventory Files**

File Name	Attachment #	Case
pal_mslb_db_ast.nif	Attachment 2	MSLB source term
nai-1101-001rev0	Attachment 3	RADTRAD-NAI dose conversion factor file

**RADTRAD-NAI MSLB Release Fraction Timing Files**

File Name	Table	Description
pal_mslb_noblegas_db.rft	Table 7-1	MSLB noble gas release fraction timing file
pal_mslb_iodine_ast_db.rft	Table 7-2	MSLB pre-accident iodine spike release fraction timing file
pal_mslb_sg.rft	Table 7-3	MSLB secondary side release fraction timing file

**Attachment 1 Verification Comments for Calculation NAI-1149-018 Rev. 0****Comment 1**

Attachment 1 and TOC - Calculation number should be NAI-1149-018 versus NAI-1131-018.

*Response: Corrected.*

**Comment 2**

Page 7, Section 1.0, last paragraph on page, 2<sup>nd</sup> sentence – Correct typographical error in “corresponds”.

*Response: Corrected.*

**Comment 3**

Page 12, Section 4.0, 1<sup>st</sup> assumption – Suggest adding reference to NRC SER for Robinson to indicate this approach was approved.

*Response: Reference added.*

**Comment 4**

Page 13, Section 5.0 – Please add a note indicating that the control room dose limit is specified in 10CFR50.67.

*Response: Note added.*

**Comment 5**

Page 18, Section 7.1.7 – Since the AST calculations will eventually replace the existing Palisades calculations, please remove the reference to EA-TAM-96-02 in this section and remove Reference 12.

*Response: Reference deleted.*

**Comment 6**

Page 25, Section 7.2.3 – Please delete the ? note. It appears to already exist on page 8.

*Response: Deleted.*

**Comment 7**

Attachment 5 – The plant power and PCS volume in the psf file for the fuel damage case are incorrect. The plant power should be 2703 as per Sections 7.2.10 and 7.1.9 of the calculation and the PCS volume should be 432,977 as per Sections 7.2.1 and 7.1.1 of the calculation. These correction should be made and the case should be re-run and the results should be replaced in the attachment and results table.

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1149-018 Rev. 1

*Response: Corrections made.*

### **Comment 8**

Attachment 6 – The PCS compartment source fraction was not set to 0 in the psf file for the secondary release case. This correction should be made and the case should be re-run and results replaced in the attachment and results table. Also, suggest making the tube leakage flow to both intact and faulted generators equal to 0. Leaving the tube leakage flow at 2.5025 lbm/min to each of the generators with a 0 source fraction in the PCS will tend to dilute the secondary source. Although the current calculation approach for tube leakage modeling may more accurately reflect the physical configuration, it may not be conservative.

*Response: Corrections made.*

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

**Attachment 2 Palisades MSLB Design Basis Source Term**

Nuclide Inventory Name:

Palisades AST Design Basis MSLB source term

Power Level:

0.2703E+04

Nuclides:

107

Nuclide 001:

Co-58

7

0.6117120000E+07

0.5800E+02

0.0000E+00

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 002:

Co-60

7

0.1663401096E+09

0.6000E+02

0.0000E+00

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 003:

Kr-85

1

0.3382974720E+09

0.8500E+02

0.2104E+07

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 004:

Kr-85m

1

0.1612800000E+05

0.8500E+02

0.1948E+08

Kr-85 0.2110E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 005:

Kr-87

1

0.4578000000E+04

0.8700E+02

0.3756E+08

Rb-87 0.1000E+01

none 0.0000E+00

none 0.0000E+00

Nuclide 006:

Kr-88

1

0.1022400000E+05

0.8800E+02

0.5286E+08

Rb-88 0.1000E+01

none 0.0000E+00

none 0.0000E+00

Nuclide 007:

Rb-86

3

0.1612224000E+07

0.8600E+02

0.1959E+06

none 0.0000E+00

none 0.0000E+00

none 0.0000E+00

Nuclide 008:

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
Sr-89
5
0.4363200000E+07
0.8900E+02
0.7213E+08
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 009:
Sr-90
5
0.9189573120E+09
0.9000E+02
0.8458E+07
Y-90 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 010:
Sr-91
5
0.3420000000E+05
0.9100E+02
0.8874E+08
Y-91m 0.5780E+00
Y-91 0.4220E+00
none 0.0000E+00
Nuclide 011:
Sr-92
5
0.9756000000E+04
0.9200E+02
0.9557E+08
Y-92 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 012:
Y-90
9
0.2304000000E+06
0.9000E+02
0.8737E+07
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 013:
Y-91
9
0.5055264000E+07
0.9100E+02
0.9264E+08
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 014:
Y-92
9
0.1274400000E+05
0.9200E+02
0.9596E+08
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 015:
Y-93
9
0.3636000000E+05
0.9300E+02
0.1101E+09
Zr-93 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 016:
Zr-95
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
9
0.5527872000E+07
0.9500E+02
0.1236E+09
Nb-95m 0.7000E-02
Nb-95 0.9930E+00
none 0.0000E+00
Nuclide 017:
Zr-97
9
0.6084000000E+05
0.9700E+02
0.1206E+09
Nb-97m 0.9470E+00
Nb-97 0.5300E-01
none 0.0000E+00
Nuclide 018:
Nb-95
9
0.3036960000E+07
0.9500E+02
0.1249E+09
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 019:
Mo-99
7
0.2376000000E+06
0.9900E+02
0.1368E+09
Tc-99m 0.8760E+00
Tc-99 0.1240E+00
none 0.0000E+00
Nuclide 020:
Tc-99m
7
0.2167200000E+05
0.9900E+02
0.1198E+09
Tc-99 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 021:
Ru-103
7
0.3393792000E+07
0.1030E+03
0.1260E+09
Rh-103m 0.9970E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 022:
Ru-105
7
0.1598400000E+05
0.1050E+03
0.9451E+08
Rh-105 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 023:
Ru-106
7
0.3181248000E+08
0.1060E+03
0.5794E+08
Rh-106 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 024:
Rh-105
7
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
0.1272960000E+06
0.1050E+03
0.8741E+08
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 025:
Sb-127
  4
0.3326400000E+06
0.1270E+03
0.9111E+07
Te-127m   0.1760E+00
Te-127    0.8240E+00
none      0.0000E+00
Nuclide 026:
Sb-129
  4
0.1555200000E+05
0.1290E+03
0.2568E+08
Te-129m   0.2250E+00
Te-129    0.7750E+00
none      0.0000E+00
Nuclide 027:
Te-127
  4
0.3366000000E+05
0.1270E+03
0.9047E+07
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 028:
Te-127m
  4
0.9417600000E+07
0.1270E+03
0.1223E+07
Te-127    0.9760E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 029:
Te-129
  4
0.4176000000E+04
0.1290E+03
0.2528E+08
I-129     0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 030:
Te-129m
  4
0.2903040000E+07
0.1290E+03
0.3772E+07
Te-129    0.6500E+00
I-129     0.3500E+00
none      0.0000E+00
Nuclide 031:
Te-131m
  4
0.1080000000E+06
0.1310E+03
0.1113E+08
Te-131    0.2220E+00
I-131     0.7780E+00
none      0.0000E+00
Nuclide 032:
Te-132
  4
0.2815200000E+06
```



## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
0.1320E+03
0.1048E+09
I-132 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 033:
I-131
2
0.6946560000E+06
0.1310E+03
0.1197E+09
Xe-131m 0.1110E-01
none 0.0000E+00
none 0.0000E+00
Nuclide 034:
I-132
2
0.8280000000E+04
0.1320E+03
0.1068E+09
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 035:
I-133
2
0.7488000000E+05
0.1330E+03
0.1462E+09
Xe-133m 0.2900E-01
Xe-133 0.9710E+00
none 0.0000E+00
Nuclide 036:
I-134
2
0.3156000000E+04
0.1340E+03
0.1602E+09
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 037:
I-135
2
0.2379600000E+05
0.1350E+03
0.1372E+09
Xe-135m 0.1540E+00
Xe-135 0.8460E+00
none 0.0000E+00
Nuclide 038:
Xe-133
1
0.4531680000E+06
0.1330E+03
0.1466E+09
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 039:
Xe-135
1
0.3272400000E+05
0.1350E+03
0.4692E+08
Cs-135 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 040:
Cs-134
3
0.6507177120E+08
0.1340E+03
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
0.2037E+08
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 041:
Cs-136
  3
  0.1131840000E+07
  0.1360E+03
  0.5873E+07
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 042:
Cs-137
  3
  0.9467280000E+09
  0.1370E+03
  0.1100E+08
Ba-137m  0.9460E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 043:
Ba-139
  6
  0.4962000000E+04
  0.1390E+03
  0.1307E+09
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 044:
Ba-140
  6
  0.1100736000E+07
  0.1400E+03
  0.1260E+09
La-140   0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 045:
La-140
  9
  0.1449792000E+06
  0.1400E+03
  0.1299E+09
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 046:
La-141
  9
  0.1414800000E+05
  0.1410E+03
  0.1193E+09
Ce-141   0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 047:
La-142
  9
  0.5550000000E+04
  0.1420E+03
  0.1156E+09
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 048:
Ce-141
  8
  0.2808086400E+07
  0.1410E+03
  0.1212E+09
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 049:
Ce-143
  8
  0.1188000000E+06
  0.1430E+03
  0.1115E+09
Pr-143    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 050:
Ce-144
  8
  0.2456352000E+08
  0.1440E+03
  0.1020E+09
Pr-144m   0.1780E-01
Pr-144    0.9822E+00
none      0.0000E+00
Nuclide 051:
Pr-143
  9
  0.1171584000E+07
  0.1430E+03
  0.1111E+09
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 052:
Nd-147
  9
  0.9486720000E+06
  0.1470E+03
  0.4770E+08
Pm-147    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 053:
Np-239
  8
  0.2034720000E+06
  0.2390E+03
  0.1830E+10
Pu-239    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 054:
Pu-238
  8
  0.2768863824E+10
  0.2380E+03
  0.3927E+06
U-234     0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 055:
Pu-239
  8
  0.7594336440E+12
  0.2390E+03
  0.3558E+05
U-235     0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 056:
Pu-240
  8
  0.2062920312E+12
  0.2400E+03
  0.5406E+05
U-236     0.1000E+01
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
none      0.0000E+00
none      0.0000E+00
Nuclide 057:
Pu-241
  8
  0.4544294400E+09
  0.2410E+03
  0.1522E+08
U-237     0.2450E-04
Am-241    0.1000E+01
none      0.0000E+00
Nuclide 058:
Am-241
  9
  0.1363919472E+11
  0.2410E+03
  0.1884E+05
Np-237    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 059:
Cm-242
  9
  0.1406592000E+08
  0.2420E+03
  0.5669E+07
Pu-238    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 060:
Cm-244
  9
  0.5715081360E+09
  0.2440E+03
  0.5943E+06
Pu-240    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 061:
I-130
  2
  0.4449600000E+05
  0.1300E+03
  0.3743E+07
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 062:
Kr-83m
  1
  0.6588000000E+04
  0.8300E+02
  0.9119E+07
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 063:
Xe-138
  1
  0.8502000000E+03
  0.1380E+03
  0.1211E+09
Cs-138    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 064:
Xe-131m
  1
  0.1028160000E+07
  0.1310E+03
  0.8346E+06
none      0.0000E+00
none      0.0000E+00
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
none 0.0000E+00
Nuclide 065:
Xe-133m
  1
  0.1890432000E+06
  0.1330E+03
  0.4659E+07
Xe-133 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 066:
Xe-135m
  1
  0.9174000000E+03
  0.1350E+03
  0.2999E+08
Xe-135 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 067:
Cs-138
  3
  0.1932000000E+04
  0.1380E+03
  0.1340E+09
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 068:
Cs-134m
  3
  0.1044000000E+05
  0.1340E+03
  0.4920E+07
Cs-134 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 069:
Rb-88
  3
  0.1068000000E+04
  0.8800E+02
  0.5369E+08
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 070:
Rb-89
  3
  0.9120000000E+03
  0.8900E+02
  0.6895E+08
Sr-89 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 071:
Sb-124
  4
  0.5201280000E+07
  0.1240E+03
  0.1702E+06
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 072:
Sb-125
  4
  0.8741455200E+08
  0.1250E+03
  0.1567E+07
Te-125m 0.2280E+00
none 0.0000E+00
none 0.0000E+00
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
Nuclide 073:
Sb-126
  4
  0.1071360000E+07
  0.1260E+03
  0.1107E+06
  none      0.0000E+00
  none      0.0000E+00
  none      0.0000E+00
Nuclide 074:
Te-131
  4
  0.1500000000E+04
  0.1310E+03
  0.6601E+08
I-131      0.1000E+01
  none      0.0000E+00
  none      0.0000E+00
Nuclide 075:
Te-133
  4
  0.7470000000E+03
  0.1330E+03
  0.8639E+08
I-133      0.1000E+01
  none      0.0000E+00
  none      0.0000E+00
Nuclide 076:
Te-134
  4
  0.2508000000E+04
  0.1340E+03
  0.1220E+09
I-134      0.1000E+01
  none      0.0000E+00
  none      0.0000E+00
Nuclide 077:
Te-125m
  4
  0.5011200000E+07
  0.1250E+03
  0.3413E+06
  none      0.0000E+00
  none      0.0000E+00
  none      0.0000E+00
Nuclide 078:
Te-133m
  4
  0.3324000000E+04
  0.1330E+03
  0.5406E+08
I-133      0.8700E+00
Te-133      0.1300E+00
  none      0.0000E+00
Nuclide 079:
Ba-141
  6
  0.1096200000E+04
  0.1410E+03
  0.1188E+09
La-141      0.1000E+01
  none      0.0000E+00
  none      0.0000E+00
Nuclide 080:
Ba-137m
  6
  0.1531200000E+03
  0.1370E+03
  0.1043E+08
  none      0.0000E+00
  none      0.0000E+00
  none      0.0000E+00
Nuclide 081:
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Pd-109  
7  
0.4833720000E+05  
0.1090E+03  
0.3327E+08  
none 0.0000E+00  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 082:  
Rh-106  
7  
0.2990000000E+02  
0.1060E+03  
0.6285E+08  
none 0.0000E+00  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 083:  
Rh-103m  
7  
0.3367200000E+04  
0.1030E+03  
0.1135E+09  
none 0.0000E+00  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 084:  
Tc-101  
7  
0.8520000000E+03  
0.1010E+03  
0.1261E+09  
none 0.0000E+00  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 085:  
Eu-154  
9  
0.2777068800E+09  
0.1540E+03  
0.1247E+07  
none 0.0000E+00  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 086:  
Eu-155  
9  
0.1565256960E+09  
0.1550E+03  
0.8448E+06  
none 0.0000E+00  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 087:  
Eu-156  
9  
0.1312416000E+07  
0.1560E+03  
0.2023E+08  
none 0.0000E+00  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 088:  
La-143  
9  
0.8538000000E+03  
0.1430E+03  
0.1108E+09  
Ce-143 0.1000E+01  
none 0.0000E+00  
none 0.0000E+00  
Nuclide 089:  
Nb-97

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
9
0.4326000000E+04
0.9700E+02
0.1216E+09
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 090:
Nb-95m
9
0.3117600000E+06
0.9500E+02
0.8835E+06
Nb-95     0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 091:
Pm-147
9
0.8278820780E+08
0.1470E+03
0.1292E+08
Sm-147    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 092:
Pm-148
9
0.4639680000E+06
0.1480E+03
0.2144E+08
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 093:
Pm-149
9
0.1910880000E+06
0.1490E+03
0.4541E+08
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 094:
Pm-151
9
0.1022400000E+06
0.1510E+03
0.1606E+08
Sm-151    0.1000E+01
none      0.0000E+00
none      0.0000E+00
Nuclide 095:
Pm-148m
9
0.3568320000E+07
0.1480E+03
0.2999E+07
Pm-148    0.4600E-01
none      0.0000E+00
none      0.0000E+00
Nuclide 096:
Pr-144
9
0.1036800000E+04
0.1440E+03
0.1025E+09
none      0.0000E+00
none      0.0000E+00
none      0.0000E+00
Nuclide 097:
Pr-144m
9
```



## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
0.4320000000E+03
0.1440E+03
0.1224E+07
Pr-144 0.9990E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 098:
Sm-153
9
0.1681200000E+06
0.1530E+03
0.4423E+08
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 099:
Y-94
9
0.1146000000E+04
0.9400E+02
0.1105E+09
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 100:
Y-95
9
0.6420000000E+03
0.9500E+02
0.1183E+09
Zr-95 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 101:
Y-91m
9
0.2982600000E+04
0.9100E+02
0.5151E+08
Y-91 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 102:
Br-82
2
0.1270800000E+06
0.8200E+02
0.5282E+06
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 103:
Br-83
2
0.8604000000E+04
0.8300E+02
0.9102E+07
Kr-83m 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 104:
Br-84
2
0.1908000000E+04
0.8400E+02
0.1591E+08
none 0.0000E+00
none 0.0000E+00
none 0.0000E+00
Nuclide 105:
Am-242
9
0.5767200000E+05
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
0.2420E+03
0.9062E+07
Cm-242 0.8270E+00
Pu-242 0.1730E+00
none 0.0000E+00
Nuclide 106:
Np-238
8
0.1829088000E+06
0.2380E+03
0.4306E+08
Pu-238 0.1000E+01
none 0.0000E+00
none 0.0000E+00
Nuclide 107:
Pu-243
8
0.1784160000E+05
0.2430E+03
0.4690E+08
Am-243 0.1000E+01
none 0.0000E+00
none 0.0000E+00
End of Nuclear Inventory File
```

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

**Attachment 3 RADTRAD-NAI Dose Conversion Factor File**

NAI-1101-001rev0.DCF

Includes 107 isotopes

9 ORGANS DEFINED IN THIS FILE:

GONADS  
BREAST  
LUNGS  
RED MARR  
BONE SUR  
THYROID  
REMAINDER  
EFFECTIVE  
SKIN(FGR)

107 NUCLIDES DEFINED IN THIS FILE:

Co-58 Y  
Co-60 Y  
Kr-85  
Kr-85m  
Kr-87  
Kr-88  
Rb-86 D  
Sr-89 Y  
Sr-90 Y  
Sr-91 Y  
Sr-92 Y  
Y-90 Y  
Y-91 Y  
Y-92 Y  
Y-93 Y  
Zr-95 D  
Zr-97 Y  
Nb-95 Y  
Mo-99 Y  
Tc-99m D  
Ru-103 Y  
Ru-105 Y  
Ru-106 Y  
Rh-105 Y  
Sb-127 W  
Sb-129 W  
Te-127 W  
Te-127m W  
Te-129 D  
Te-129m W  
Te-131m W  
Te-132 W  
I-131 D  
I-132 D  
I-133 D  
I-134 D  
I-135 D  
Xe-133  
Xe-135  
Cs-134 D  
Cs-136 D  
Cs-137 D  
Ba-139 D  
Ba-140 D  
La-140 W  
La-141 D  
La-142 D  
Ce-141 Y  
Ce-143 Y  
Ce-144 Y  
Pr-143 Y  
Nd-147 Y  
Np-239 W  
Pu-238 W  
Pu-239 W  
Pu-240 W  
Pu-241 W  
Am-241 W

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Cm-242 W  
 Cm-244 W  
 I-130 D  
 Kr-83m  
 Xe-138  
 Xe-131m  
 Xe-133m  
 Xe-135m  
 Cs-138 D  
 Cs-134m D  
 Rb-88 D  
 Rb-89 D  
 Sb-124 W  
 Sb-125 W  
 Sb-126 W  
 Te-131 D  
 Te-133 D  
 Te-134 D  
 Te-125m W  
 Te-133m D  
 Ba-141 D  
 Ba-137m  
 Pd-109 Y  
 Rh-106  
 Rh-103m D  
 Tc-101 D  
 Eu-154 W  
 Eu-155 W  
 Eu-156 W  
 La-143 W  
 Nb-97 Y  
 Nb-95m Y  
 Pm-147 Y  
 Pm-148 Y  
 Pm-149 Y  
 Pm-151 Y  
 Pm-148m Y  
 Pr-144 Y  
 Pr-144m  
 Sm-153 W  
 Y-94 Y  
 Y-95 Y  
 Y-91m Y  
 Br-82 W  
 Br-83 W  
 Br-84 D  
 Am-242 W  
 Np-238 W  
 Pu-243 Y

CLOUDSHINE GROUND GROUND GROUND INHALED INHALED INGESTION  
 SHINE 8HR SHINE 7DAY SHINE RATE ACUTE CHRONIC

Co-58							
GONADS	4.660E-14	2.867E-11	5.828E-10	9.970E-16-1.000E+00	6.170E-10	1.040E-09	
BREAST	5.300E-14	2.737E-11	5.565E-10	9.520E-16-1.000E+00	9.370E-10	1.790E-10	
LUNGS	4.640E-14	2.617E-11	5.319E-10	9.100E-16-1.000E+00	1.600E-08	8.530E-11	
RED MARR	4.530E-14	2.671E-11	5.430E-10	9.290E-16-1.000E+00	9.230E-10	2.600E-10	
BONE SUR	7.410E-14	3.795E-11	7.716E-10	1.320E-15-1.000E+00	6.930E-10	1.250E-10	
THYROID	4.770E-14	2.720E-11	5.530E-10	9.460E-16-1.000E+00	8.720E-10	6.310E-11	
REMAINDER	4.440E-14	2.585E-11	5.255E-10	8.990E-16-1.000E+00	1.890E-09	1.580E-09	
EFFECTIVE	4.760E-14	2.732E-11	5.553E-10	9.500E-16-1.000E+00	2.940E-09	8.090E-10	
SKIN (FGR)	5.580E-14	3.278E-11	6.664E-10	1.140E-15-1.000E+00	0.000E+00	0.000E+00	
Co-60							
GONADS	1.230E-13	7.056E-11	1.480E-09	2.450E-15-1.000E+00	4.760E-09	3.190E-09	
BREAST	1.390E-13	6.739E-11	1.413E-09	2.340E-15-1.000E+00	1.840E-08	1.100E-09	
LUNGS	1.240E-13	6.537E-11	1.371E-09	2.270E-15-1.000E+00	3.450E-07	8.770E-10	
RED MARR	1.230E-13	6.710E-11	1.407E-09	2.330E-15-1.000E+00	1.720E-08	1.320E-09	
BONE SUR	1.780E-13	8.956E-11	1.879E-09	3.110E-15-1.000E+00	1.350E-08	9.390E-10	
THYROID	1.270E-13	6.480E-11	1.359E-09	2.250E-15-1.000E+00	1.620E-08	7.880E-10	
REMAINDER	1.200E-13	6.508E-11	1.365E-09	2.260E-15-1.000E+00	3.600E-08	4.970E-09	
EFFECTIVE	1.260E-13	6.768E-11	1.419E-09	2.350E-15-1.000E+00	5.910E-08	2.770E-09	
SKIN (FGR)	1.450E-13	7.948E-11	1.667E-09	2.760E-15-1.000E+00	0.000E+00	0.000E+00	
Kr-85							
GONADS	1.170E-16	8.121E-14	1.704E-12	2.820E-18-1.000E+00	0.000E+00	0.000E+00	

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

BREAST	1.340E-16	7.891E-14	1.656E-12	2.740E-18	-1.000E+00	0.000E+00	0.000E+00
LUNGS	1.140E-16	7.056E-14	1.481E-12	2.450E-18	-1.000E+00	0.000E+00	0.000E+00
RED MARR	1.090E-16	6.998E-14	1.469E-12	2.430E-18	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	2.200E-16	1.287E-13	2.702E-12	4.470E-18	-1.000E+00	0.000E+00	0.000E+00
THYROID	1.180E-16	7.459E-14	1.565E-12	2.590E-18	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	1.090E-16	6.941E-14	1.457E-12	2.410E-18	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	1.190E-16	7.603E-14	1.596E-12	2.640E-18	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	1.320E-14	2.304E-11	4.835E-10	8.000E-16	-1.000E+00	0.000E+00	0.000E+00
Kr-85m							
GONADS	7.310E-15	2.594E-12	3.653E-12	1.570E-16	-1.000E+00	0.000E+00	0.000E+00
BREAST	8.410E-15	2.527E-12	3.560E-12	1.530E-16	-1.000E+00	0.000E+00	0.000E+00
LUNGS	7.040E-15	2.379E-12	3.351E-12	1.440E-16	-1.000E+00	0.000E+00	0.000E+00
RED MARR	6.430E-15	2.346E-12	3.304E-12	1.420E-16	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	1.880E-14	5.286E-12	7.446E-12	3.200E-16	-1.000E+00	0.000E+00	0.000E+00
THYROID	7.330E-15	2.395E-12	3.374E-12	1.450E-16	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	6.640E-15	2.313E-12	3.257E-12	1.400E-16	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	7.480E-15	2.511E-12	3.537E-12	1.520E-16	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	2.240E-14	2.247E-11	3.164E-11	1.360E-15	-1.000E+00	0.000E+00	0.000E+00
Kr-87							
GONADS	4.000E-14	4.962E-12	5.026E-12	7.610E-16	-1.000E+00	0.000E+00	0.000E+00
BREAST	4.500E-14	4.740E-12	4.802E-12	7.270E-16	-1.000E+00	0.000E+00	0.000E+00
LUNGS	4.040E-14	4.603E-12	4.663E-12	7.060E-16	-1.000E+00	0.000E+00	0.000E+00
RED MARR	4.000E-14	4.708E-12	4.769E-12	7.220E-16	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	6.020E-14	6.514E-12	6.598E-12	9.990E-16	-1.000E+00	0.000E+00	0.000E+00
THYROID	4.130E-14	4.473E-12	4.531E-12	6.860E-16	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	3.910E-14	4.590E-12	4.650E-12	7.040E-16	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	4.120E-14	4.773E-12	4.835E-12	7.320E-16	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	1.370E-13	8.802E-11	8.916E-11	1.350E-14	-1.000E+00	0.000E+00	0.000E+00
Kr-88							
GONADS	9.900E-14	2.278E-11	2.655E-11	1.800E-15	-1.000E+00	0.000E+00	0.000E+00
BREAST	1.110E-13	2.177E-11	2.537E-11	1.720E-15	-1.000E+00	0.000E+00	0.000E+00
LUNGS	1.010E-13	2.139E-11	2.493E-11	1.690E-15	-1.000E+00	0.000E+00	0.000E+00
RED MARR	1.000E-13	2.190E-11	2.552E-11	1.730E-15	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	1.390E-13	2.886E-11	3.363E-11	2.280E-15	-1.000E+00	0.000E+00	0.000E+00
THYROID	1.030E-13	2.012E-11	2.345E-11	1.590E-15	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	9.790E-14	2.139E-11	2.493E-11	1.690E-15	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	1.020E-13	2.202E-11	2.567E-11	1.740E-15	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	1.350E-13	5.607E-11	6.534E-11	4.430E-15	-1.000E+00	0.000E+00	0.000E+00
Rb-86							
GONADS	4.710E-15	2.788E-12	5.187E-11	9.740E-17	-1.000E+00	1.340E-09	2.150E-09
BREAST	5.340E-15	2.662E-12	4.953E-11	9.300E-17	-1.000E+00	1.330E-09	2.140E-09
LUNGS	4.710E-15	2.553E-12	4.750E-11	8.920E-17	-1.000E+00	3.300E-09	2.140E-09
RED MARR	4.640E-15	2.619E-12	4.873E-11	9.150E-17	-1.000E+00	2.320E-09	3.720E-09
BONE SUR	7.050E-15	3.635E-12	6.764E-11	1.270E-16	-1.000E+00	4.270E-09	6.860E-09
THYROID	4.840E-15	2.599E-12	4.836E-11	9.080E-17	-1.000E+00	1.330E-09	2.140E-09
REMAINDER	4.520E-15	2.542E-12	4.729E-11	8.880E-17	-1.000E+00	1.380E-09	2.330E-09
EFFECTIVE	4.810E-15	2.665E-12	4.958E-11	9.310E-17	-1.000E+00	1.790E-09	2.530E-09
SKIN (FGR)	4.850E-14	2.210E-10	4.111E-09	7.720E-15	-1.000E+00	0.000E+00	0.000E+00
Sr-89							
GONADS	7.730E-17	7.155E-14	1.436E-12	2.490E-18	-1.000E+00	7.950E-12	8.050E-12
BREAST	9.080E-17	7.212E-14	1.447E-12	2.510E-18	-1.000E+00	7.960E-12	7.980E-12
LUNGS	7.080E-17	5.689E-14	1.142E-12	1.980E-18	-1.000E+00	8.350E-08	7.970E-12
RED MARR	6.390E-17	5.345E-14	1.073E-12	1.860E-18	-1.000E+00	1.070E-10	1.080E-10
BONE SUR	1.940E-16	1.560E-13	3.131E-12	5.430E-18	-1.000E+00	1.590E-10	1.610E-10
THYROID	7.600E-17	6.063E-14	1.217E-12	2.110E-18	-1.000E+00	7.960E-12	7.970E-12
REMAINDER	6.710E-17	5.603E-14	1.124E-12	1.950E-18	-1.000E+00	3.970E-09	8.250E-09
EFFECTIVE	7.730E-17	6.523E-14	1.309E-12	2.270E-18	-1.000E+00	1.120E-08	2.500E-09
SKIN (FGR)	3.690E-14	1.914E-10	3.841E-09	6.660E-15	-1.000E+00	0.000E+00	0.000E+00
Sr-90							
GONADS	7.780E-18	9.590E-15	2.014E-13	3.330E-19	-1.000E+00	2.690E-10	5.040E-11
BREAST	9.490E-18	1.008E-14	2.116E-13	3.500E-19	-1.000E+00	2.690E-10	5.040E-11
LUNGS	6.440E-18	6.307E-15	1.324E-13	2.190E-19	-1.000E+00	2.860E-06	5.040E-11
RED MARR	5.440E-18	5.558E-15	1.167E-13	1.930E-19	-1.000E+00	3.280E-08	6.450E-09
BONE SUR	2.280E-17	2.393E-14	5.025E-13	8.310E-19	-1.000E+00	7.090E-08	1.390E-08
THYROID	7.330E-18	7.171E-15	1.506E-13	2.490E-19	-1.000E+00	2.690E-10	5.040E-11
REMAINDER	6.110E-18	6.422E-15	1.348E-13	2.230E-19	-1.000E+00	5.730E-09	6.700E-09
EFFECTIVE	7.530E-18	8.179E-15	1.717E-13	2.840E-19	-1.000E+00	3.510E-07	3.230E-09
SKIN (FGR)	9.200E-15	4.032E-12	8.465E-11	1.400E-16	-1.000E+00	0.000E+00	0.000E+00
Sr-91							
GONADS	3.380E-14	2.155E-11	5.062E-11	1.026E-15	-1.000E+00	5.650E-11	2.520E-10
BREAST	3.830E-14	2.059E-11	4.838E-11	9.806E-16	-1.000E+00	1.740E-11	3.676E-11
LUNGS	3.370E-14	1.970E-11	4.626E-11	9.376E-16	-1.000E+00	2.130E-09	1.055E-11
RED MARR	3.310E-14	2.011E-11	4.722E-11	9.570E-16	-1.000E+00	2.230E-11	5.659E-11

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

BONE SUR	5.200E-14	2.852E-11	6.709E-11	1.360E-15-1.000E+00	1.270E-11	2.070E-11
THYROID	3.470E-14	2.035E-11	4.782E-11	9.693E-16-1.000E+00	9.640E-12	1.968E-12
REMAINDER	3.240E-14	1.948E-11	4.573E-11	9.268E-16-1.000E+00	5.780E-10	2.557E-09
EFFECTIVE	3.450E-14	2.057E-11	4.832E-11	9.793E-16-1.000E+00	4.490E-10	8.455E-10
SKIN (FGR)	8.140E-14	1.748E-10	3.987E-10	8.080E-15-1.000E+00	0.000E+00	0.000E+00
Sr-92						
GONADS	6.610E-14	1.593E-11	1.830E-11	1.300E-15-1.000E+00	1.020E-11	8.180E-11
BREAST	7.480E-14	1.520E-11	1.745E-11	1.240E-15-1.000E+00	6.490E-12	1.700E-11
LUNGS	6.670E-14	1.483E-11	1.703E-11	1.210E-15-1.000E+00	1.050E-09	7.220E-12
RED MARR	6.620E-14	1.520E-11	1.745E-11	1.240E-15-1.000E+00	6.980E-12	2.290E-11
BONE SUR	9.490E-14	2.010E-11	2.308E-11	1.640E-15-1.000E+00	4.360E-12	8.490E-12
THYROID	6.820E-14	1.446E-11	1.661E-11	1.180E-15-1.000E+00	3.920E-12	1.300E-12
REMAINDER	6.450E-14	1.471E-11	1.689E-11	1.200E-15-1.000E+00	2.900E-10	1.720E-09
EFFECTIVE	6.790E-14	1.532E-11	1.759E-11	1.250E-15-1.000E+00	2.180E-10	5.430E-10
SKIN (FGR)	8.560E-14	2.280E-11	2.618E-11	1.860E-15-1.000E+00	0.000E+00	0.000E+00
Y-90						
GONADS	1.890E-16	1.586E-13	1.601E-12	5.750E-18-1.000E+00	5.170E-13	1.430E-14
BREAST	2.200E-16	1.578E-13	1.593E-12	5.720E-18-1.000E+00	5.170E-13	1.270E-14
LUNGS	1.770E-16	1.313E-13	1.326E-12	4.760E-18-1.000E+00	9.310E-09	1.260E-14
RED MARR	1.620E-16	1.261E-13	1.273E-12	4.570E-18-1.000E+00	1.520E-11	3.700E-13
BONE SUR	4.440E-16	3.228E-13	3.259E-12	1.170E-17-1.000E+00	1.510E-11	3.670E-13
THYROID	1.870E-16	1.385E-13	1.398E-12	5.020E-18-1.000E+00	5.170E-13	1.260E-14
REMAINDER	1.680E-16	1.291E-13	1.303E-12	4.680E-18-1.000E+00	3.870E-09	9.680E-09
EFFECTIVE	1.900E-16	1.468E-13	1.482E-12	5.320E-18-1.000E+00	2.280E-09	2.910E-09
SKIN (FGR)	6.240E-14	2.897E-10	2.924E-09	1.050E-14-1.000E+00	0.000E+00	0.000E+00
Y-91						
GONADS	2.560E-16	1.756E-13	3.546E-12	6.110E-18-1.000E+00	8.200E-12	3.540E-12
BREAST	2.930E-16	1.713E-13	3.459E-12	5.960E-18-1.000E+00	8.920E-12	5.540E-13
LUNGS	2.500E-16	1.526E-13	3.082E-12	5.310E-18-1.000E+00	9.870E-08	2.020E-13
RED MARR	2.410E-16	1.521E-13	3.070E-12	5.290E-18-1.000E+00	3.190E-10	6.590E-12
BONE SUR	4.560E-16	2.903E-13	5.862E-12	1.010E-17-1.000E+00	3.180E-10	6.130E-12
THYROID	2.600E-16	1.564E-13	3.157E-12	5.440E-18-1.000E+00	8.500E-12	1.290E-13
REMAINDER	2.390E-16	1.509E-13	3.047E-12	5.250E-18-1.000E+00	4.200E-09	8.570E-09
EFFECTIVE	2.600E-16	1.650E-13	3.332E-12	5.740E-18-1.000E+00	1.320E-08	2.570E-09
SKIN (FGR)	3.850E-14	1.989E-10	4.016E-09	6.920E-15-1.000E+00	0.000E+00	0.000E+00
Y-92						
GONADS	1.270E-14	3.855E-12	4.872E-12	2.650E-16-1.000E+00	2.610E-12	1.960E-11
BREAST	1.440E-14	3.680E-12	4.652E-12	2.530E-16-1.000E+00	1.500E-12	3.550E-12
LUNGS	1.270E-14	3.535E-12	4.468E-12	2.430E-16-1.000E+00	1.240E-09	1.390E-12
RED MARR	1.250E-14	3.608E-12	4.560E-12	2.480E-16-1.000E+00	2.070E-12	4.910E-12
BONE SUR	1.950E-14	5.091E-12	6.435E-12	3.500E-16-1.000E+00	1.510E-12	1.750E-12
THYROID	1.300E-14	3.579E-12	4.523E-12	2.460E-16-1.000E+00	1.050E-12	1.770E-13
REMAINDER	1.220E-14	3.506E-12	4.431E-12	2.410E-16-1.000E+00	2.030E-10	1.700E-09
EFFECTIVE	1.300E-14	3.680E-12	4.652E-12	2.530E-16-1.000E+00	2.110E-10	5.150E-10
SKIN (FGR)	1.140E-13	2.022E-10	2.556E-10	1.390E-14-1.000E+00	0.000E+00	0.000E+00
Y-93						
GONADS	4.670E-15	2.108E-12	4.989E-12	9.510E-17-1.000E+00	5.310E-12	2.200E-11
BREAST	5.300E-15	2.026E-12	4.794E-12	9.140E-17-1.000E+00	1.740E-12	3.130E-12
LUNGS	4.680E-15	1.937E-12	4.585E-12	8.740E-17-1.000E+00	2.520E-09	8.670E-13
RED MARR	4.580E-15	1.972E-12	4.669E-12	8.900E-17-1.000E+00	4.040E-12	4.930E-12
BONE SUR	7.580E-15	2.948E-12	6.977E-12	1.330E-16-1.000E+00	3.140E-12	1.730E-12
THYROID	4.790E-15	1.908E-12	4.516E-12	8.610E-17-1.000E+00	9.260E-13	1.260E-13
REMAINDER	4.510E-15	1.919E-12	4.543E-12	8.660E-17-1.000E+00	9.250E-10	4.090E-09
EFFECTIVE	4.800E-15	2.021E-12	4.784E-12	9.120E-17-1.000E+00	5.820E-10	1.230E-09
SKIN (FGR)	8.500E-14	2.726E-10	6.452E-10	1.230E-14-1.000E+00	0.000E+00	0.000E+00
Zr-95						
GONADS	3.530E-14	2.182E-11	4.421E-10	7.590E-16-1.000E+00	1.880E-09	8.160E-10
BREAST	4.010E-14	2.084E-11	4.223E-10	7.250E-16-1.000E+00	1.910E-09	1.050E-10
LUNGS	3.510E-14	1.989E-11	4.030E-10	6.920E-16-1.000E+00	2.170E-09	2.340E-11
RED MARR	3.430E-14	2.030E-11	4.112E-10	7.060E-16-1.000E+00	1.300E-08	2.140E-10
BONE SUR	5.620E-14	2.875E-11	5.824E-10	1.000E-15-1.000E+00	1.030E-07	4.860E-10
THYROID	3.610E-14	2.076E-11	4.205E-10	7.220E-16-1.000E+00	1.440E-09	8.270E-12
REMAINDER	3.360E-14	1.963E-11	3.978E-10	6.830E-16-1.000E+00	2.280E-09	2.530E-09
EFFECTIVE	3.600E-14	2.078E-11	4.211E-10	7.230E-16-1.000E+00	6.390E-09	1.020E-09
SKIN (FGR)	4.500E-14	2.561E-11	5.190E-10	8.910E-16-1.000E+00	0.000E+00	0.000E+00
Zr-97						
GONADS	8.800E-15	2.179E-11	7.799E-11	9.253E-16-1.000E+00	1.840E-10	6.228E-10
BREAST	9.990E-15	2.083E-11	7.455E-11	8.846E-16-1.000E+00	4.700E-11	8.137E-11
LUNGS	8.810E-15	1.992E-11	7.127E-11	8.456E-16-1.000E+00	4.100E-09	1.770E-11
RED MARR	8.640E-15	2.034E-11	7.279E-11	8.634E-16-1.000E+00	6.370E-11	1.302E-10
BONE SUR	1.380E-14	2.881E-11	1.031E-10	1.224E-15-1.000E+00	3.500E-11	4.558E-11
THYROID	9.030E-15	2.061E-11	7.377E-11	8.755E-16-1.000E+00	2.310E-11	2.671E-12
REMAINDER	8.480E-15	1.966E-11	7.035E-11	8.345E-16-1.000E+00	2.040E-09	6.990E-09

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

EFFECTIVE	9.020E-15	2.078E-11	7.438E-11	8.824E-16	-1.000E+00	1.170E-09	2.283E-09
SKIN (FGR)	5.550E-14	2.281E-10	8.148E-10	9.587E-15	-1.000E+00	0.000E+00	0.000E+00
Nb-95							
GONADS	3.660E-14	2.253E-11	4.435E-10	7.850E-16	-1.000E+00	4.320E-10	8.050E-10
BREAST	4.160E-14	2.150E-11	4.231E-10	7.490E-16	-1.000E+00	4.070E-10	1.070E-10
LUNGS	3.650E-14	2.055E-11	4.045E-10	7.160E-16	-1.000E+00	8.320E-09	2.740E-11
RED MARR	3.560E-14	2.101E-11	4.135E-10	7.320E-16	-1.000E+00	4.420E-10	1.990E-10
BONE SUR	5.790E-14	2.957E-11	5.819E-10	1.030E-15	-1.000E+00	5.130E-10	2.940E-10
THYROID	3.750E-14	2.144E-11	4.220E-10	7.470E-16	-1.000E+00	3.580E-10	1.180E-11
REMAINDER	3.490E-14	2.032E-11	4.000E-10	7.080E-16	-1.000E+00	1.070E-09	1.470E-09
EFFECTIVE	3.740E-14	2.147E-11	4.226E-10	7.480E-16	-1.000E+00	1.570E-09	6.950E-10
SKIN (FGR)	4.300E-14	2.598E-11	5.112E-10	9.050E-16	-1.000E+00	0.000E+00	0.000E+00
Mo-99							
GONADS	7.130E-15	4.282E-12	4.403E-11	1.550E-16	-1.000E+00	9.510E-11	2.180E-10
BREAST	8.130E-15	4.116E-12	4.233E-11	1.490E-16	-1.000E+00	2.750E-11	3.430E-11
LUNGS	7.060E-15	3.867E-12	3.977E-11	1.400E-16	-1.000E+00	4.290E-09	1.510E-11
RED MARR	6.820E-15	3.923E-12	4.034E-11	1.420E-16	-1.000E+00	5.240E-11	8.320E-11
BONE SUR	1.240E-14	6.105E-12	6.278E-11	2.210E-16	-1.000E+00	4.130E-11	6.320E-11
THYROID	7.270E-15	4.033E-12	4.147E-11	1.460E-16	-1.000E+00	1.520E-11	1.030E-11
REMAINDER	6.740E-15	3.812E-12	3.920E-11	1.380E-16	-1.000E+00	1.740E-09	4.280E-09
EFFECTIVE	7.280E-15	4.061E-12	4.176E-11	1.470E-16	-1.000E+00	1.070E-09	1.360E-09
SKIN (FGR)	3.140E-14	1.039E-10	1.068E-09	3.760E-15	-1.000E+00	0.000E+00	0.000E+00
Tc-99m							
GONADS	5.750E-15	2.334E-12	3.877E-12	1.240E-16	-1.000E+00	2.770E-12	9.750E-12
BREAST	6.650E-15	2.258E-12	3.752E-12	1.200E-16	-1.000E+00	2.150E-12	3.570E-12
LUNGS	5.490E-15	2.127E-12	3.533E-12	1.130E-16	-1.000E+00	2.280E-11	3.140E-12
RED MARR	4.910E-15	2.070E-12	3.439E-12	1.100E-16	-1.000E+00	3.360E-12	6.290E-12
BONE SUR	1.630E-14	5.383E-12	8.942E-12	2.860E-16	-1.000E+00	2.620E-12	4.060E-12
THYROID	5.750E-15	2.145E-12	3.564E-12	1.140E-16	-1.000E+00	5.010E-11	8.460E-11
REMAINDER	5.150E-15	2.070E-12	3.439E-12	1.100E-16	-1.000E+00	1.020E-11	3.340E-11
EFFECTIVE	5.890E-15	2.277E-12	3.783E-12	1.210E-16	-1.000E+00	8.800E-12	1.680E-11
SKIN (FGR)	7.140E-15	2.710E-12	4.502E-12	1.440E-16	-1.000E+00	0.000E+00	0.000E+00
Ru-103							
GONADS	2.190E-14	1.404E-11	2.783E-10	4.892E-16	-1.000E+00	3.070E-10	5.720E-10
BREAST	2.510E-14	1.350E-11	2.677E-10	4.705E-16	-1.000E+00	3.110E-10	1.200E-10
LUNGS	2.180E-14	1.273E-11	2.522E-10	4.432E-16	-1.000E+00	1.560E-08	7.310E-11
RED MARR	2.100E-14	1.287E-11	2.551E-10	4.483E-16	-1.000E+00	3.190E-10	1.660E-10
BONE SUR	3.890E-14	1.958E-11	3.882E-10	6.823E-16	-1.000E+00	2.370E-10	9.631E-11
THYROID	2.240E-14	1.331E-11	2.639E-10	4.638E-16	-1.000E+00	2.570E-10	6.250E-11
REMAINDER	2.080E-14	1.248E-11	2.472E-10	4.346E-16	-1.000E+00	1.250E-09	2.110E-09
EFFECTIVE	2.250E-14	1.332E-11	2.641E-10	4.642E-16	-1.000E+00	2.420E-09	8.271E-10
SKIN (FGR)	2.770E-14	1.785E-11	3.543E-10	6.229E-16	-1.000E+00	0.000E+00	0.000E+00
Ru-105							
GONADS	3.720E-14	1.327E-11	1.861E-11	8.070E-16	-1.000E+00	1.590E-11	9.670E-11
BREAST	4.240E-14	1.271E-11	1.783E-11	7.730E-16	-1.000E+00	6.610E-12	1.590E-11
LUNGS	3.700E-14	1.210E-11	1.697E-11	7.360E-16	-1.000E+00	5.730E-10	6.210E-12
RED MARR	3.590E-14	1.230E-11	1.725E-11	7.480E-16	-1.000E+00	7.700E-12	2.350E-11
BONE SUR	6.280E-14	1.809E-11	2.537E-11	1.100E-15	-1.000E+00	4.620E-12	8.890E-12
THYROID	3.800E-14	1.260E-11	1.766E-11	7.660E-16	-1.000E+00	4.150E-12	1.820E-12
REMAINDER	3.540E-14	1.189E-11	1.667E-11	7.230E-16	-1.000E+00	1.610E-10	8.540E-10
EFFECTIVE	3.810E-14	1.265E-11	1.773E-11	7.690E-16	-1.000E+00	1.230E-10	2.870E-10
SKIN (FGR)	6.730E-14	7.368E-11	1.033E-10	4.480E-15	-1.000E+00	0.000E+00	0.000E+00
Ru-106							
GONADS	0.000E+00	6.411E-12	1.340E-10	2.230E-16	-1.000E+00	1.300E-09	1.640E-09
BREAST	0.000E+00	6.152E-12	1.286E-10	2.140E-16	-1.000E+00	1.780E-09	1.440E-09
LUNGS	0.000E+00	5.836E-12	1.220E-10	2.030E-16	-1.000E+00	1.040E-06	1.420E-09
RED MARR	0.000E+00	5.893E-12	1.232E-10	2.050E-16	-1.000E+00	1.760E-09	1.460E-09
BONE SUR	0.000E+00	8.883E-12	1.856E-10	3.090E-16	-1.000E+00	1.610E-09	1.430E-09
THYROID	0.000E+00	6.066E-12	1.268E-10	2.110E-16	-1.000E+00	1.720E-09	1.410E-09
REMAINDER	0.000E+00	5.721E-12	1.196E-10	1.990E-16	-1.000E+00	1.200E-08	2.110E-08
EFFECTIVE	0.000E+00	6.095E-12	1.274E-10	2.120E-16	-1.000E+00	1.290E-07	7.400E-09
SKIN (FGR)	0.000E+00	4.082E-10	8.531E-09	1.420E-14	-1.000E+00	0.000E+00	0.000E+00
Rh-105							
GONADS	3.640E-15	2.127E-12	1.411E-11	7.980E-17	-1.000E+00	2.110E-11	5.800E-11
BREAST	4.160E-15	2.063E-12	1.369E-11	7.740E-17	-1.000E+00	5.610E-12	8.970E-12
LUNGS	3.570E-15	1.935E-12	1.284E-11	7.260E-17	-1.000E+00	9.580E-10	3.860E-12
RED MARR	3.380E-15	1.946E-12	1.291E-11	7.300E-17	-1.000E+00	7.770E-12	1.470E-11
BONE SUR	7.530E-15	3.332E-12	2.210E-11	1.250E-16	-1.000E+00	4.460E-12	6.750E-12
THYROID	3.680E-15	1.983E-12	1.316E-11	7.440E-17	-1.000E+00	2.880E-12	2.910E-12
REMAINDER	3.390E-15	1.885E-12	1.250E-11	7.070E-17	-1.000E+00	4.530E-10	1.270E-09
EFFECTIVE	3.720E-15	2.031E-12	1.347E-11	7.620E-17	-1.000E+00	2.580E-10	3.990E-10
SKIN (FGR)	1.070E-14	4.691E-12	3.112E-11	1.760E-16	-1.000E+00	0.000E+00	0.000E+00
Sb-127							

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

GONADS	3.260E-14	1.985E-11	2.441E-10	7.100E-16	-1.000E+00	2.520E-10	6.140E-10
BREAST	3.720E-14	1.904E-11	2.341E-10	6.810E-16	-1.000E+00	9.120E-11	7.600E-11
LUNGS	3.240E-14	1.809E-11	2.224E-10	6.470E-16	-1.000E+00	6.940E-09	1.570E-11
RED MARR	3.140E-14	1.834E-11	2.255E-10	6.560E-16	-1.000E+00	1.610E-10	1.330E-10
BONE SUR	5.520E-14	2.720E-11	3.345E-10	9.730E-16	-1.000E+00	1.340E-10	5.240E-11
THYROID	3.330E-14	1.884E-11	2.317E-10	6.740E-16	-1.000E+00	6.150E-11	4.640E-12
REMAINDER	3.090E-14	1.775E-11	2.183E-10	6.350E-16	-1.000E+00	2.330E-09	5.870E-09
EFFECTIVE	3.330E-14	1.890E-11	2.324E-10	6.760E-16	-1.000E+00	1.630E-09	1.950E-09
SKIN (FGR)	5.580E-14	7.967E-11	9.799E-10	2.850E-15	-1.000E+00	0.000E+00	0.000E+00
Sb-129							
GONADS	6.970E-14	2.336E-11	3.231E-11	1.440E-15	-1.000E+00	2.150E-11	1.510E-10
BREAST	7.910E-14	2.222E-11	3.074E-11	1.370E-15	-1.000E+00	1.280E-11	2.560E-11
LUNGS	6.980E-14	2.141E-11	2.962E-11	1.320E-15	-1.000E+00	8.980E-10	9.390E-12
RED MARR	6.860E-14	2.190E-11	3.029E-11	1.350E-15	-1.000E+00	1.700E-11	3.670E-11
BONE SUR	1.070E-13	3.033E-11	4.196E-11	1.870E-15	-1.000E+00	1.460E-11	1.340E-11
THYROID	7.160E-14	2.174E-11	3.007E-11	1.340E-15	-1.000E+00	9.720E-12	1.470E-12
REMAINDER	6.710E-14	2.125E-11	2.939E-11	1.310E-15	-1.000E+00	1.870E-10	1.450E-09
EFFECTIVE	7.140E-14	2.238E-11	3.096E-11	1.380E-15	-1.000E+00	1.740E-10	4.840E-10
SKIN (FGR)	1.050E-13	8.273E-11	1.144E-10	5.100E-15	-1.000E+00	0.000E+00	0.000E+00
Te-127							
GONADS	2.370E-16	1.191E-13	2.661E-13	5.480E-18	-1.000E+00	2.020E-12	4.020E-12
BREAST	2.730E-16	1.158E-13	2.588E-13	5.330E-18	-1.000E+00	1.880E-12	3.000E-12
LUNGS	2.320E-16	1.060E-13	2.370E-13	4.880E-18	-1.000E+00	4.270E-10	2.890E-12
RED MARR	2.210E-16	1.058E-13	2.365E-13	4.870E-18	-1.000E+00	4.090E-12	6.570E-12
BONE SUR	4.650E-16	1.862E-13	4.162E-13	8.570E-18	-1.000E+00	4.090E-12	6.460E-12
THYROID	2.400E-16	1.106E-13	2.472E-13	5.090E-18	-1.000E+00	1.840E-12	2.860E-12
REMAINDER	2.210E-16	1.036E-13	2.316E-13	4.770E-18	-1.000E+00	1.110E-10	6.130E-10
EFFECTIVE	2.420E-16	1.125E-13	2.515E-13	5.180E-18	-1.000E+00	8.600E-11	1.870E-10
SKIN (FGR)	1.140E-14	1.173E-11	2.622E-11	5.400E-16	-1.000E+00	0.000E+00	0.000E+00
Te-127m							
GONADS	1.900E-16	4.689E-13	9.642E-12	1.630E-17	-1.000E+00	1.100E-10	1.250E-10
BREAST	2.690E-16	5.150E-13	1.059E-11	1.790E-17	-1.000E+00	1.100E-10	9.740E-11
LUNGS	7.620E-17	1.602E-13	3.295E-12	5.570E-18	-1.000E+00	3.340E-08	9.620E-11
RED MARR	6.430E-17	1.249E-13	2.567E-12	4.340E-18	-1.000E+00	5.360E-09	5.430E-09
BONE SUR	3.940E-16	9.005E-13	1.852E-11	3.130E-17	-1.000E+00	2.040E-08	2.070E-08
THYROID	1.500E-16	2.779E-13	5.714E-12	9.660E-18	-1.000E+00	9.660E-11	9.430E-11
REMAINDER	8.640E-17	1.999E-13	4.111E-12	6.950E-18	-1.000E+00	1.660E-09	2.980E-09
EFFECTIVE	1.470E-16	3.251E-13	6.684E-12	1.130E-17	-1.000E+00	5.810E-09	2.230E-09
SKIN (FGR)	8.490E-16	1.496E-12	3.076E-11	5.200E-17	-1.000E+00	0.000E+00	0.000E+00
Te-129							
GONADS	2.710E-15	3.889E-13	3.922E-13	6.510E-17	-1.000E+00	1.750E-12	1.590E-12
BREAST	3.120E-15	3.800E-13	3.832E-13	6.360E-17	-1.000E+00	1.680E-12	6.050E-13
LUNGS	2.640E-15	3.298E-13	3.326E-13	5.520E-17	-1.000E+00	1.330E-10	4.910E-13
RED MARR	2.540E-15	3.298E-13	3.326E-13	5.520E-17	-1.000E+00	1.970E-12	7.640E-13
BONE SUR	4.880E-15	5.753E-13	5.802E-13	9.630E-17	-1.000E+00	2.030E-12	5.400E-13
THYROID	2.740E-15	3.525E-13	3.555E-13	5.900E-17	-1.000E+00	1.630E-12	3.360E-13
REMAINDER	2.520E-15	3.262E-13	3.289E-13	5.460E-17	-1.000E+00	2.400E-11	1.790E-10
EFFECTIVE	2.750E-15	3.590E-13	3.621E-13	6.010E-17	-1.000E+00	2.420E-11	5.450E-11
SKIN (FGR)	3.570E-14	3.429E-11	3.458E-11	5.740E-15	-1.000E+00	0.000E+00	0.000E+00
Te-129m							
GONADS	1.560E-15	2.206E-12	4.799E-11	8.561E-17	-1.000E+00	1.780E-10	2.420E-10
BREAST	1.810E-15	2.181E-12	4.739E-11	8.454E-17	-1.000E+00	1.690E-10	1.664E-10
LUNGS	1.460E-15	1.741E-12	3.815E-11	6.808E-17	-1.000E+00	4.030E-08	1.593E-10
RED MARR	1.420E-15	1.729E-12	3.793E-11	6.768E-17	-1.000E+00	3.100E-09	3.500E-09
BONE SUR	2.600E-15	3.287E-12	7.147E-11	1.275E-16	-1.000E+00	7.050E-09	7.990E-09
THYROID	1.560E-15	1.923E-12	4.201E-11	7.495E-17	-1.000E+00	1.560E-10	1.572E-10
REMAINDER	1.410E-15	1.746E-12	3.822E-11	6.819E-17	-1.000E+00	3.270E-09	7.196E-09
EFFECTIVE	1.550E-15	1.974E-12	4.308E-11	7.686E-17	-1.000E+00	6.470E-09	2.925E-09
SKIN (FGR)	1.490E-14	1.501E-10	3.360E-09	6.001E-15	-1.000E+00	0.000E+00	0.000E+00
Te-131m							
GONADS	6.850E-14	4.020E-11	2.343E-10	1.535E-15	-1.000E+00	2.340E-10	7.415E-10
BREAST	7.780E-14	3.853E-11	2.246E-10	1.472E-15	-1.000E+00	9.250E-11	1.361E-10
LUNGS	6.830E-14	3.657E-11	2.131E-10	1.397E-15	-1.000E+00	2.230E-09	6.335E-11
RED MARR	6.680E-14	3.736E-11	2.178E-10	1.427E-15	-1.000E+00	1.410E-10	2.435E-10
BONE SUR	1.090E-13	5.467E-11	3.189E-10	2.090E-15	-1.000E+00	2.270E-10	3.248E-10
THYROID	7.020E-14	3.741E-11	2.181E-10	1.429E-15	-1.000E+00	3.610E-08	4.383E-08
REMAINDER	6.550E-14	3.626E-11	2.113E-10	1.385E-15	-1.000E+00	9.460E-10	3.153E-09
EFFECTIVE	7.010E-14	3.825E-11	2.229E-10	1.461E-15	-1.000E+00	1.730E-09	2.514E-09
SKIN (FGR)	8.850E-14	1.033E-10	6.188E-10	4.056E-15	-1.000E+00	0.000E+00	0.000E+00
Te-132							
GONADS	1.020E-14	6.812E-12	7.706E-11	2.450E-16	-1.000E+00	4.150E-10	5.410E-10
BREAST	1.180E-14	6.756E-12	7.643E-11	2.430E-16	-1.000E+00	3.630E-10	3.500E-10
LUNGS	9.650E-15	5.727E-12	6.479E-11	2.060E-16	-1.000E+00	1.670E-09	3.300E-10



## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

RED MARR	8.950E-15	5.588E-12	6.322E-11	2.010E-16	-1.000E+00	4.270E-10	4.440E-10
BONE SUR	2.420E-14	1.273E-11	1.441E-10	4.580E-16	-1.000E+00	7.120E-10	8.300E-10
THYROID	1.020E-14	5.978E-12	6.762E-11	2.150E-16	-1.000E+00	6.280E-08	5.950E-08
REMAINDER	9.160E-15	5.644E-12	6.385E-11	2.030E-16	-1.000E+00	7.890E-10	1.490E-09
EFFECTIVE	1.030E-14	6.339E-12	7.171E-11	2.280E-16	-1.000E+00	2.550E-09	2.540E-09
SKIN (FGR)	1.390E-14	8.313E-12	9.405E-11	2.990E-16	-1.000E+00	0.000E+00	0.000E+00
I-131							
GONADS	1.780E-14	1.119E-11	1.789E-10	3.940E-16	-1.000E+00	2.530E-11	4.070E-11
BREAST	2.040E-14	1.082E-11	1.730E-10	3.810E-16	-1.000E+00	7.880E-11	1.210E-10
LUNGS	1.760E-14	1.016E-11	1.626E-10	3.580E-16	-1.000E+00	6.570E-10	1.020E-10
RED MARR	1.680E-14	1.022E-11	1.635E-10	3.600E-16	-1.000E+00	6.260E-11	9.440E-11
BONE SUR	3.450E-14	1.675E-11	2.679E-10	5.900E-16	-1.000E+00	5.730E-11	8.720E-11
THYROID	1.810E-14	1.053E-11	1.685E-10	3.710E-16	-1.000E+00	2.920E-07	4.760E-07
REMAINDER	1.670E-14	9.908E-12	1.585E-10	3.490E-16	-1.000E+00	8.030E-11	1.570E-10
EFFECTIVE	1.820E-14	1.067E-11	1.707E-10	3.760E-16	-1.000E+00	8.890E-09	1.440E-08
SKIN (FGR)	2.980E-14	1.825E-11	2.920E-10	6.430E-16	-1.000E+00	0.000E+00	0.000E+00
I-132							
GONADS	1.090E-13	2.523E-11	2.771E-11	2.320E-15	-1.000E+00	9.950E-12	2.330E-11
BREAST	1.240E-13	2.414E-11	2.652E-11	2.220E-15	-1.000E+00	1.410E-11	2.520E-11
LUNGS	1.090E-13	2.305E-11	2.532E-11	2.120E-15	-1.000E+00	2.710E-10	2.640E-11
RED MARR	1.070E-13	2.360E-11	2.592E-11	2.170E-15	-1.000E+00	1.400E-11	2.460E-11
BONE SUR	1.730E-13	3.327E-11	3.655E-11	3.060E-15	-1.000E+00	1.240E-11	2.190E-11
THYROID	1.120E-13	2.381E-11	2.616E-11	2.190E-15	-1.000E+00	1.740E-09	3.870E-09
REMAINDER	1.050E-13	2.283E-11	2.509E-11	2.100E-15	-1.000E+00	3.780E-11	1.650E-10
EFFECTIVE	1.120E-13	2.403E-11	2.640E-11	2.210E-15	-1.000E+00	1.030E-10	1.820E-10
SKIN (FGR)	1.580E-13	8.199E-11	9.007E-11	7.540E-15	-1.000E+00	0.000E+00	0.000E+00
I-133							
GONADS	2.870E-14	1.585E-11	6.748E-11	6.270E-16	-1.000E+00	1.950E-11	3.630E-11
BREAST	3.280E-14	1.519E-11	6.468E-11	6.010E-16	-1.000E+00	2.940E-11	4.680E-11
LUNGS	2.860E-14	1.446E-11	6.156E-11	5.720E-16	-1.000E+00	8.200E-10	4.530E-11
RED MARR	2.770E-14	1.466E-11	6.242E-11	5.800E-16	-1.000E+00	2.720E-11	4.300E-11
BONE SUR	4.870E-14	2.161E-11	9.202E-11	8.550E-16	-1.000E+00	2.520E-11	4.070E-11
THYROID	2.930E-14	1.502E-11	6.393E-11	5.940E-16	-1.000E+00	4.860E-08	9.100E-08
REMAINDER	2.730E-14	1.418E-11	6.038E-11	5.610E-16	-1.000E+00	5.000E-11	1.550E-10
EFFECTIVE	2.940E-14	1.509E-11	6.425E-11	5.970E-16	-1.000E+00	1.580E-09	2.800E-09
SKIN (FGR)	5.830E-14	1.150E-10	4.897E-10	4.550E-15	-1.000E+00	0.000E+00	0.000E+00
I-134							
GONADS	1.270E-13	1.200E-11	1.202E-11	2.640E-15	-1.000E+00	4.250E-12	1.100E-11
BREAST	1.440E-13	1.145E-11	1.147E-11	2.520E-15	-1.000E+00	6.170E-12	1.170E-11
LUNGS	1.270E-13	1.100E-11	1.102E-11	2.420E-15	-1.000E+00	1.430E-10	1.260E-11
RED MARR	1.250E-13	1.127E-11	1.129E-11	2.480E-15	-1.000E+00	6.080E-12	1.090E-11
BONE SUR	1.960E-13	1.568E-11	1.571E-11	3.450E-15	-1.000E+00	5.310E-12	9.320E-12
THYROID	1.300E-13	1.127E-11	1.129E-11	2.480E-15	-1.000E+00	2.880E-10	6.210E-10
REMAINDER	1.220E-13	1.091E-11	1.093E-11	2.400E-15	-1.000E+00	2.270E-11	1.340E-10
EFFECTIVE	1.300E-13	1.150E-11	1.152E-11	2.530E-15	-1.000E+00	3.550E-11	6.660E-11
SKIN (FGR)	1.870E-13	4.477E-11	4.485E-11	9.850E-15	-1.000E+00	0.000E+00	0.000E+00
I-135							
GONADS	7.770E-14	3.113E-11	5.489E-11	1.599E-15	-1.000E+00	1.700E-11	3.610E-11
BREAST	8.790E-14	2.971E-11	5.240E-11	1.526E-15	-1.000E+00	2.340E-11	3.850E-11
LUNGS	7.840E-14	2.886E-11	5.089E-11	1.482E-15	-1.000E+00	4.410E-10	3.750E-11
RED MARR	7.760E-14	2.965E-11	5.228E-11	1.523E-15	-1.000E+00	2.240E-11	3.650E-11
BONE SUR	1.130E-13	3.983E-11	7.024E-11	2.046E-15	-1.000E+00	2.010E-11	3.360E-11
THYROID	8.010E-14	2.852E-11	5.030E-11	1.465E-15	-1.000E+00	8.460E-09	1.790E-08
REMAINDER	7.570E-14	2.883E-11	5.084E-11	1.481E-15	-1.000E+00	4.700E-11	1.540E-10
EFFECTIVE	7.980E-14	2.989E-11	5.271E-11	1.535E-15	-1.000E+00	3.320E-10	6.080E-10
SKIN (FGR)	1.110E-13	9.826E-11	1.733E-10	5.047E-15	-1.000E+00	0.000E+00	0.000E+00
Xe-133							
GONADS	1.610E-15	1.465E-12	2.052E-11	5.200E-17	-1.000E+00	0.000E+00	0.000E+00
BREAST	1.960E-15	1.505E-12	2.107E-11	5.340E-17	-1.000E+00	0.000E+00	0.000E+00
LUNGS	1.320E-15	1.045E-12	1.464E-11	3.710E-17	-1.000E+00	0.000E+00	0.000E+00
RED MARR	1.070E-15	8.791E-13	1.231E-11	3.120E-17	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	5.130E-15	4.254E-12	5.958E-11	1.510E-16	-1.000E+00	0.000E+00	0.000E+00
THYROID	1.510E-15	1.181E-12	1.653E-11	4.190E-17	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	1.240E-15	1.042E-12	1.460E-11	3.700E-17	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	1.560E-15	1.299E-12	1.819E-11	4.610E-17	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	4.970E-15	1.953E-12	2.734E-11	6.930E-17	-1.000E+00	0.000E+00	0.000E+00
Xe-135							
GONADS	1.170E-14	5.455E-12	1.194E-11	2.530E-16	-1.000E+00	0.000E+00	0.000E+00
BREAST	1.330E-14	5.325E-12	1.166E-11	2.470E-16	-1.000E+00	0.000E+00	0.000E+00
LUNGS	1.130E-14	4.959E-12	1.086E-11	2.300E-16	-1.000E+00	0.000E+00	0.000E+00
RED MARR	1.070E-14	4.959E-12	1.086E-11	2.300E-16	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	2.570E-14	9.120E-12	1.997E-11	4.230E-16	-1.000E+00	0.000E+00	0.000E+00
THYROID	1.180E-14	5.023E-12	1.100E-11	2.330E-16	-1.000E+00	0.000E+00	0.000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

REMAINDER	1.080E-14	4.829E-12	1.058E-11	2.240E-16	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	1.190E-14	5.217E-12	1.142E-11	2.420E-16	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	3.120E-14	4.506E-11	9.867E-11	2.090E-15	-1.000E+00	0.000E+00	0.000E+00
Cs-134							
GONADS	7.400E-14	4.607E-11	9.646E-10	1.600E-15	-1.000E+00	1.300E-08	2.060E-08
BREAST	8.430E-14	4.406E-11	9.224E-10	1.530E-15	-1.000E+00	1.080E-08	1.720E-08
LUNGS	7.370E-14	4.204E-11	8.802E-10	1.460E-15	-1.000E+00	1.180E-08	1.760E-08
RED MARR	7.190E-14	4.262E-11	8.922E-10	1.480E-15	-1.000E+00	1.180E-08	1.870E-08
BONE SUR	1.200E-13	6.105E-11	1.278E-09	2.120E-15	-1.000E+00	1.100E-08	1.740E-08
THYROID	7.570E-14	4.377E-11	9.163E-10	1.520E-15	-1.000E+00	1.110E-08	1.760E-08
REMAINDER	7.060E-14	4.147E-11	8.681E-10	1.440E-15	-1.000E+00	1.390E-08	2.210E-08
EFFECTIVE	7.570E-14	4.377E-11	9.163E-10	1.520E-15	-1.000E+00	1.250E-08	1.980E-08
SKIN (FGR)	9.450E-14	6.249E-11	1.308E-09	2.170E-15	-1.000E+00	0.000E+00	0.000E+00
Cs-136							
GONADS	1.040E-13	6.223E-11	1.102E-09	2.180E-15	-1.000E+00	1.880E-09	3.040E-09
BREAST	1.180E-13	5.966E-11	1.056E-09	2.090E-15	-1.000E+00	1.670E-09	2.650E-09
LUNGS	1.040E-13	5.710E-11	1.011E-09	2.000E-15	-1.000E+00	2.320E-09	2.620E-09
RED MARR	1.010E-13	5.824E-11	1.031E-09	2.040E-15	-1.000E+00	1.860E-09	2.950E-09
BONE SUR	1.660E-13	8.422E-11	1.491E-09	2.950E-15	-1.000E+00	1.700E-09	2.710E-09
THYROID	1.070E-13	5.852E-11	1.036E-09	2.050E-15	-1.000E+00	1.730E-09	2.740E-09
REMAINDER	9.950E-14	5.652E-11	1.001E-09	1.980E-15	-1.000E+00	2.190E-09	3.520E-09
EFFECTIVE	1.060E-13	5.966E-11	1.056E-09	2.090E-15	-1.000E+00	1.980E-09	3.040E-09
SKIN (FGR)	1.250E-13	7.251E-11	1.284E-09	2.540E-15	-1.000E+00	0.000E+00	0.000E+00
Cs-137							
GONADS	7.960E-18	1.669E-11	3.530E-10	5.840E-16	-1.000E+00	8.760E-09	1.390E-08
BREAST	9.670E-18	1.596E-11	3.376E-10	5.585E-16	-1.000E+00	7.840E-09	1.240E-08
LUNGS	6.680E-18	1.517E-11	3.209E-10	5.309E-16	-1.000E+00	8.820E-09	1.270E-08
RED MARR	5.700E-18	1.542E-11	3.260E-10	5.394E-16	-1.000E+00	8.300E-09	1.320E-08
BONE SUR	2.290E-17	2.238E-11	4.734E-10	7.832E-16	-1.000E+00	7.940E-09	1.260E-08
THYROID	7.550E-18	1.588E-11	3.358E-10	5.556E-16	-1.000E+00	7.930E-09	1.260E-08
REMAINDER	6.340E-18	1.490E-11	3.152E-10	5.215E-16	-1.000E+00	9.120E-09	1.450E-08
EFFECTIVE	7.740E-18	1.585E-11	3.353E-10	5.546E-16	-1.000E+00	8.630E-09	1.350E-08
SKIN (FGR)	8.630E-15	5.253E-11	1.110E-09	1.836E-15	-1.000E+00	0.000E+00	0.000E+00
Ba-139							
GONADS	2.130E-15	3.368E-13	3.429E-13	4.790E-17	-1.000E+00	2.560E-12	1.560E-12
BREAST	2.450E-15	3.297E-13	3.357E-13	4.690E-17	-1.000E+00	2.460E-12	5.170E-13
LUNGS	2.030E-15	3.002E-13	3.057E-13	4.270E-17	-1.000E+00	2.530E-10	3.890E-13
RED MARR	1.870E-15	2.932E-13	2.985E-13	4.170E-17	-1.000E+00	3.410E-12	8.590E-13
BONE SUR	5.290E-15	6.841E-13	6.965E-13	9.730E-17	-1.000E+00	2.490E-12	4.380E-13
THYROID	2.130E-15	3.044E-13	3.100E-13	4.330E-17	-1.000E+00	2.400E-12	2.660E-13
REMAINDER	1.920E-15	2.932E-13	2.985E-13	4.170E-17	-1.000E+00	4.820E-11	3.570E-10
EFFECTIVE	2.170E-15	3.227E-13	3.286E-13	4.590E-17	-1.000E+00	4.640E-11	1.080E-10
SKIN (FGR)	6.160E-14	7.241E-11	7.373E-11	1.030E-14	-1.000E+00	0.000E+00	0.000E+00
Ba-140							
GONADS	8.410E-15	5.451E-12	9.607E-11	1.910E-16	-1.000E+00	4.300E-10	9.960E-10
BREAST	9.640E-15	5.280E-12	9.305E-11	1.850E-16	-1.000E+00	2.870E-10	1.590E-10
LUNGS	8.270E-15	4.852E-12	8.550E-11	1.700E-16	-1.000E+00	1.660E-09	6.630E-11
RED MARR	7.930E-15	4.880E-12	8.601E-11	1.710E-16	-1.000E+00	1.290E-09	4.390E-10
BONE SUR	1.550E-14	8.020E-12	1.413E-10	2.810E-16	-1.000E+00	2.410E-09	5.530E-10
THYROID	8.530E-15	5.109E-12	9.003E-11	1.790E-16	-1.000E+00	2.560E-10	5.250E-11
REMAINDER	7.890E-15	4.766E-12	8.399E-11	1.670E-16	-1.000E+00	1.410E-09	7.370E-09
EFFECTIVE	8.580E-15	5.137E-12	9.053E-11	1.800E-16	-1.000E+00	1.010E-09	2.560E-09
SKIN (FGR)	2.520E-14	5.565E-11	9.808E-10	1.950E-15	-1.000E+00	0.000E+00	0.000E+00
La-140							
GONADS	1.140E-13	6.027E-11	4.425E-10	2.240E-15	-1.000E+00	4.540E-10	1.340E-09
BREAST	1.290E-13	5.758E-11	4.228E-10	2.140E-15	-1.000E+00	1.450E-10	1.800E-10
LUNGS	1.150E-13	5.596E-11	4.109E-10	2.080E-15	-1.000E+00	4.210E-09	4.010E-11
RED MARR	1.140E-13	5.731E-11	4.208E-10	2.130E-15	-1.000E+00	2.140E-10	2.810E-10
BONE SUR	1.690E-13	7.776E-11	5.709E-10	2.890E-15	-1.000E+00	1.410E-10	9.770E-11
THYROID	1.180E-13	5.462E-11	4.010E-10	2.030E-15	-1.000E+00	6.870E-11	6.400E-12
REMAINDER	1.110E-13	5.569E-11	4.089E-10	2.070E-15	-1.000E+00	2.120E-09	6.260E-09
EFFECTIVE	1.170E-13	5.812E-11	4.267E-10	2.160E-15	-1.000E+00	1.310E-09	2.280E-09
SKIN (FGR)	1.660E-13	2.217E-10	1.628E-09	8.240E-15	-1.000E+00	0.000E+00	0.000E+00
La-141							
GONADS	2.330E-15	7.315E-13	9.675E-13	4.740E-17	-1.000E+00	1.010E-11	3.770E-12
BREAST	2.640E-15	7.007E-13	9.267E-13	4.540E-17	-1.000E+00	9.840E-12	7.070E-13
LUNGS	2.340E-15	6.713E-13	8.879E-13	4.350E-17	-1.000E+00	6.460E-10	2.720E-13
RED MARR	2.310E-15	6.852E-13	9.063E-13	4.440E-17	-1.000E+00	2.930E-11	1.070E-12
BONE SUR	3.490E-15	9.923E-13	1.312E-12	6.430E-17	-1.000E+00	1.200E-10	6.060E-13
THYROID	2.390E-15	6.590E-13	8.716E-13	4.270E-17	-1.000E+00	9.400E-12	5.290E-14
REMAINDER	2.260E-15	6.682E-13	8.838E-13	4.330E-17	-1.000E+00	2.280E-10	1.240E-09
EFFECTIVE	2.390E-15	7.007E-13	9.267E-13	4.540E-17	-1.000E+00	1.570E-10	3.740E-10
SKIN (FGR)	6.580E-14	1.667E-10	2.204E-10	1.080E-14	-1.000E+00	0.000E+00	0.000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

## La-142

GONADS	1.400E-13	1.978E-11	2.034E-11	2.540E-15-1.000E+00	1.660E-11	6.990E-11
BREAST	1.570E-13	1.885E-11	1.938E-11	2.420E-15-1.000E+00	1.130E-11	1.540E-11
LUNGS	1.420E-13	1.846E-11	1.898E-11	2.370E-15-1.000E+00	3.010E-10	8.400E-12
RED MARR	1.420E-13	1.900E-11	1.954E-11	2.440E-15-1.000E+00	1.360E-11	1.930E-11
BONE SUR	1.950E-13	2.484E-11	2.554E-11	3.190E-15-1.000E+00	1.110E-11	7.400E-12
THYROID	1.450E-13	1.768E-11	1.818E-11	2.270E-15-1.000E+00	8.740E-12	1.160E-12
REMAINDER	1.380E-13	1.853E-11	1.906E-11	2.380E-15-1.000E+00	8.070E-11	5.200E-10
EFFECTIVE	1.440E-13	1.916E-11	1.970E-11	2.460E-15-1.000E+00	6.840E-11	1.790E-10
SKIN (FGR)	2.160E-13	9.111E-11	9.368E-11	1.170E-14-1.000E+00	0.000E+00	0.000E+00

## Ce-141

GONADS	3.380E-15	2.213E-12	4.332E-11	7.710E-17-1.000E+00	5.540E-11	1.080E-10
BREAST	3.930E-15	2.170E-12	4.247E-11	7.560E-17-1.000E+00	4.460E-11	1.110E-11
LUNGS	3.170E-15	1.951E-12	3.820E-11	6.800E-17-1.000E+00	1.670E-08	1.430E-12
RED MARR	2.830E-15	1.860E-12	3.641E-11	6.480E-17-1.000E+00	8.960E-11	3.390E-11
BONE SUR	9.410E-15	5.166E-12	1.011E-10	1.800E-16-1.000E+00	2.540E-10	2.300E-11
THYROID	3.350E-15	2.003E-12	3.922E-11	6.980E-17-1.000E+00	2.550E-11	1.800E-13
REMAINDER	2.980E-15	1.894E-12	3.708E-11	6.600E-17-1.000E+00	1.260E-09	2.500E-09
EFFECTIVE	3.430E-15	2.118E-12	4.146E-11	7.380E-17-1.000E+00	2.420E-09	7.830E-10
SKIN (FGR)	1.020E-14	3.788E-12	7.416E-11	1.320E-16-1.000E+00	0.000E+00	0.000E+00

## Ce-143

GONADS	1.280E-14	7.900E-12	4.958E-11	2.980E-16-1.000E+00	7.530E-11	2.120E-10
BREAST	1.470E-14	7.688E-12	4.825E-11	2.900E-16-1.000E+00	1.660E-11	2.320E-11
LUNGS	1.230E-14	6.893E-12	4.325E-11	2.600E-16-1.000E+00	3.880E-09	3.820E-12
RED MARR	1.170E-14	6.787E-12	4.259E-11	2.560E-16-1.000E+00	2.960E-11	5.070E-11
BONE SUR	2.520E-14	1.323E-11	8.302E-11	4.990E-16-1.000E+00	1.640E-11	1.610E-11
THYROID	1.280E-14	7.211E-12	4.525E-11	2.720E-16-1.000E+00	6.230E-12	4.350E-13
REMAINDER	1.170E-14	6.734E-12	4.226E-11	2.540E-16-1.000E+00	1.420E-09	3.890E-09
EFFECTIVE	1.290E-14	7.396E-12	4.642E-11	2.790E-16-1.000E+00	9.160E-10	1.230E-09
SKIN (FGR)	3.960E-14	1.058E-10	6.638E-10	3.990E-15-1.000E+00	0.000E+00	0.000E+00

## Ce-144

GONADS	8.530E-16	6.328E-13	1.319E-11	6.088E-17-1.000E+00	2.390E-10	6.987E-11
BREAST	1.010E-15	6.274E-13	1.307E-11	5.922E-17-1.000E+00	3.480E-10	1.223E-11
LUNGS	7.690E-16	5.228E-13	1.089E-11	5.362E-17-1.000E+00	7.910E-07	6.551E-12
RED MARR	6.680E-16	4.755E-13	9.907E-12	5.247E-17-1.000E+00	2.880E-09	8.923E-11
BONE SUR	2.490E-15	1.646E-12	3.429E-11	1.127E-16-1.000E+00	4.720E-09	1.280E-10
THYROID	8.330E-16	5.529E-13	1.152E-11	5.418E-17-1.000E+00	2.920E-10	5.154E-12
REMAINDER	7.230E-16	5.086E-13	1.060E-11	5.283E-17-1.000E+00	1.910E-08	1.890E-08
EFFECTIVE	8.530E-16	5.909E-13	1.231E-11	5.766E-17-1.000E+00	1.010E-07	5.711E-09
SKIN (FGR)	2.930E-15	7.648E-13	1.594E-11	1.250E-14-1.000E+00	0.000E+00	0.000E+00

## Pr-143

GONADS	2.130E-17	2.264E-14	4.032E-13	7.930E-19-1.000E+00	4.370E-18	8.990E-18
BREAST	2.550E-17	2.330E-14	4.149E-13	8.160E-19-1.000E+00	2.220E-18	1.090E-18
LUNGS	1.860E-17	1.642E-14	2.923E-13	5.750E-19-1.000E+00	1.330E-08	1.910E-19
RED MARR	1.620E-17	1.493E-14	2.659E-13	5.230E-19-1.000E+00	1.480E-11	1.030E-12
BONE SUR	5.930E-17	5.454E-14	9.711E-13	1.910E-18-1.000E+00	1.490E-11	1.030E-12
THYROID	2.050E-17	1.802E-14	3.208E-13	6.310E-19-1.000E+00	1.680E-18	2.660E-20
REMAINDER	1.760E-17	1.642E-14	2.923E-13	5.750E-19-1.000E+00	1.970E-09	4.220E-09
EFFECTIVE	2.100E-17	2.002E-14	3.564E-13	7.010E-19-1.000E+00	2.190E-09	1.270E-09
SKIN (FGR)	1.760E-14	5.711E-11	1.017E-09	2.000E-15-1.000E+00	0.000E+00	0.000E+00

## Nd-147

GONADS	6.130E-15	4.218E-12	7.235E-11	1.480E-16-1.000E+00	8.410E-11	1.790E-10
BREAST	7.120E-15	4.132E-12	7.088E-11	1.450E-16-1.000E+00	3.450E-11	1.870E-11
LUNGS	5.820E-15	3.648E-12	6.257E-11	1.280E-16-1.000E+00	1.060E-08	2.440E-12
RED MARR	5.400E-15	3.505E-12	6.013E-11	1.230E-16-1.000E+00	9.190E-11	5.050E-11
BONE SUR	1.320E-14	8.265E-12	1.418E-10	2.900E-16-1.000E+00	3.260E-10	2.220E-11
THYROID	6.120E-15	3.876E-12	6.648E-11	1.360E-16-1.000E+00	1.820E-11	2.640E-13
REMAINDER	5.530E-15	3.562E-12	6.111E-11	1.250E-16-1.000E+00	1.760E-09	3.760E-09
EFFECTIVE	6.190E-15	3.961E-12	6.795E-11	1.390E-16-1.000E+00	1.850E-09	1.180E-09
SKIN (FGR)	1.950E-14	3.135E-11	5.377E-10	1.100E-15-1.000E+00	0.000E+00	0.000E+00

## Np-239

GONADS	7.530E-15	4.691E-12	4.380E-11	1.710E-16-1.000E+00	7.450E-11	1.620E-10
BREAST	8.730E-15	4.636E-12	4.329E-11	1.690E-16-1.000E+00	1.630E-11	1.720E-11
LUNGS	7.180E-15	4.115E-12	3.842E-11	1.500E-16-1.000E+00	2.360E-09	2.400E-12
RED MARR	6.500E-15	4.005E-12	3.740E-11	1.460E-16-1.000E+00	2.080E-10	4.660E-11
BONE SUR	2.000E-14	1.001E-11	9.349E-11	3.650E-16-1.000E+00	2.030E-09	3.590E-11
THYROID	7.520E-15	4.197E-12	3.919E-11	1.530E-16-1.000E+00	7.620E-12	2.070E-13
REMAINDER	6.760E-15	4.005E-12	3.740E-11	1.460E-16-1.000E+00	9.590E-10	2.770E-09
EFFECTIVE	7.690E-15	4.471E-12	4.175E-11	1.630E-16-1.000E+00	6.780E-10	8.820E-10
SKIN (FGR)	1.600E-14	7.215E-12	6.737E-11	2.630E-16-1.000E+00	0.000E+00	0.000E+00

## Pu-238

GONADS	6.560E-18	4.291E-14	9.011E-13	1.490E-18-1.000E+00	2.800E-05	2.330E-09
BREAST	1.270E-17	5.558E-14	1.167E-12	1.930E-18-1.000E+00	1.000E-09	1.800E-13

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

LUNGS	1.060E-18	2.267E-15	4.759E-14	7.870E-20	-1.000E+00	1.840E-05	8.640E-14
RED MARR	1.680E-18	5.587E-15	1.173E-13	1.940E-19	-1.000E+00	1.520E-04	1.270E-08
BONE SUR	9.300E-18	3.514E-14	7.378E-13	1.220E-18	-1.000E+00	1.900E-03	1.580E-07
THYROID	4.010E-18	9.792E-15	2.056E-13	3.400E-19	-1.000E+00	9.620E-10	7.990E-14
REMAINDER	1.990E-18	9.216E-15	1.935E-13	3.200E-19	-1.000E+00	7.020E-05	2.180E-08
EFFECTIVE	4.880E-18	2.413E-14	5.068E-13	8.380E-19	-1.000E+00	1.060E-04	1.340E-08
SKIN (FGR)	4.090E-17	2.776E-13	5.830E-12	9.640E-18	-1.000E+00	0.000E+00	0.000E+00
Pu-239							
GONADS	4.840E-18	1.768E-14	3.713E-13	6.140E-19	-1.000E+00	3.180E-05	2.640E-09
BREAST	7.550E-18	2.238E-14	4.699E-13	7.770E-19	-1.000E+00	9.220E-10	1.210E-13
LUNGS	2.650E-18	2.267E-15	4.760E-14	7.870E-20	-1.000E+00	1.730E-05	7.890E-14
RED MARR	2.670E-18	3.456E-15	7.258E-14	1.200E-19	-1.000E+00	1.690E-04	1.410E-08
BONE SUR	9.470E-18	1.673E-14	3.514E-13	5.810E-19	-1.000E+00	2.110E-03	1.760E-07
THYROID	3.880E-18	5.126E-15	1.077E-13	1.780E-19	-1.000E+00	9.030E-10	7.500E-14
REMAINDER	2.860E-18	4.838E-15	1.016E-13	1.680E-19	-1.000E+00	7.560E-05	2.120E-08
EFFECTIVE	4.240E-18	1.057E-14	2.220E-13	3.670E-19	-1.000E+00	1.160E-05	1.400E-08
SKIN (FGR)	1.860E-17	1.057E-13	2.220E-12	3.670E-18	-1.000E+00	0.000E+00	0.000E+00
Pu-240							
GONADS	6.360E-18	4.118E-14	8.649E-13	1.430E-18	-1.000E+00	3.180E-05	2.640E-09
BREAST	1.230E-17	5.328E-14	1.119E-12	1.850E-18	-1.000E+00	9.510E-10	1.730E-13
LUNGS	1.090E-18	2.249E-15	4.723E-14	7.810E-20	-1.000E+00	1.730E-05	8.220E-14
RED MARR	1.650E-18	5.386E-15	1.131E-13	1.870E-19	-1.000E+00	1.690E-04	1.410E-08
BONE SUR	9.260E-18	3.398E-14	7.137E-13	1.180E-18	-1.000E+00	2.110E-03	1.760E-07
THYROID	3.920E-18	9.446E-15	1.984E-13	3.280E-19	-1.000E+00	9.050E-10	7.510E-14
REMAINDER	1.960E-18	8.870E-15	1.863E-13	3.080E-19	-1.000E+00	7.560E-05	2.130E-08
EFFECTIVE	4.750E-18	2.313E-14	4.857E-13	8.030E-19	-1.000E+00	1.160E-04	1.400E-08
SKIN (FGR)	3.920E-17	2.644E-13	5.552E-12	9.180E-18	-1.000E+00	0.000E+00	0.000E+00
Pu-241							
GONADS	7.190E-20	6.653E-17	1.396E-15	2.310E-21	-1.000E+00	6.820E-07	5.660E-11
BREAST	8.670E-20	7.229E-17	1.517E-15	2.510E-21	-1.000E+00	3.060E-11	2.790E-15
LUNGS	6.480E-20	4.090E-17	8.584E-16	1.420E-21	-1.000E+00	7.420E-09	4.480E-15
RED MARR	5.630E-20	4.003E-17	8.403E-16	1.390E-21	-1.000E+00	3.360E-06	2.780E-10
BONE SUR	2.190E-19	1.385E-16	2.908E-15	4.810E-21	-1.000E+00	4.200E-05	3.480E-09
THYROID	6.980E-20	4.522E-17	9.491E-16	1.570E-21	-1.000E+00	1.240E-11	1.010E-15
REMAINDER	6.090E-20	4.291E-17	9.007E-16	1.490E-21	-1.000E+00	1.310E-06	1.850E-10
EFFECTIVE	7.250E-20	5.558E-17	1.167E-15	1.930E-21	-1.000E+00	2.230E-06	2.070E-10
SKIN (FGR)	1.170E-19	2.033E-16	4.268E-15	7.060E-21	-1.000E+00	0.000E+00	0.000E+00
Am-241							
GONADS	8.580E-16	9.360E-13	1.966E-11	3.250E-17	-1.000E+00	3.250E-05	2.700E-07
BREAST	1.070E-15	1.014E-12	2.129E-11	3.520E-17	-1.000E+00	2.670E-09	2.620E-11
LUNGS	6.740E-16	5.789E-13	1.216E-11	2.010E-17	-1.000E+00	1.840E-05	3.360E-11
RED MARR	5.210E-16	4.838E-13	1.016E-11	1.680E-17	-1.000E+00	1.740E-04	1.450E-06
BONE SUR	2.870E-15	2.678E-12	5.625E-11	9.300E-17	-1.000E+00	2.170E-03	1.810E-05
THYROID	7.830E-16	6.365E-13	1.337E-11	2.210E-17	-1.000E+00	1.600E-09	1.320E-11
REMAINDER	6.340E-16	5.933E-13	1.246E-11	2.060E-17	-1.000E+00	7.820E-05	6.660E-07
EFFECTIVE	8.180E-16	7.920E-13	1.663E-11	2.750E-17	-1.000E+00	1.200E-04	9.840E-07
SKIN (FGR)	1.280E-15	2.396E-12	5.032E-11	8.320E-17	-1.000E+00	0.000E+00	0.000E+00
Cm-242							
GONADS	7.830E-18	4.893E-14	1.013E-12	1.700E-18	-1.000E+00	5.700E-07	5.200E-09
BREAST	1.480E-17	6.159E-14	1.275E-12	2.140E-18	-1.000E+00	9.440E-10	8.950E-12
LUNGS	1.130E-18	3.022E-15	6.257E-14	1.050E-19	-1.000E+00	1.550E-05	8.840E-12
RED MARR	1.890E-18	6.562E-15	1.359E-13	2.280E-19	-1.000E+00	3.900E-06	3.570E-08
BONE SUR	1.060E-17	4.231E-14	8.759E-13	1.470E-18	-1.000E+00	4.870E-05	4.460E-07
THYROID	4.910E-18	1.261E-14	2.610E-13	4.380E-19	-1.000E+00	9.410E-10	8.820E-12
REMAINDER	2.270E-18	1.079E-14	2.235E-13	3.750E-19	-1.000E+00	2.450E-06	4.020E-08
EFFECTIVE	5.690E-18	2.751E-14	5.697E-13	9.560E-19	-1.000E+00	4.670E-06	3.100E-08
SKIN (FGR)	4.290E-17	2.700E-13	5.589E-12	9.380E-18	-1.000E+00	0.000E+00	0.000E+00
Cm-244							
GONADS	6.900E-18	4.522E-14	9.492E-13	1.570E-18	-1.000E+00	1.590E-05	1.330E-07
BREAST	1.330E-17	5.702E-14	1.197E-12	1.980E-18	-1.000E+00	1.040E-09	8.820E-12
LUNGS	7.080E-19	2.592E-15	5.441E-14	9.000E-20	-1.000E+00	1.930E-05	8.810E-12
RED MARR	1.460E-18	5.875E-15	1.233E-13	2.040E-19	-1.000E+00	9.380E-05	7.820E-07
BONE SUR	8.820E-18	3.859E-14	8.101E-13	1.340E-18	-1.000E+00	1.170E-03	9.770E-06
THYROID	4.190E-18	1.146E-14	2.406E-13	3.980E-19	-1.000E+00	1.010E-09	8.440E-12
REMAINDER	1.810E-18	9.821E-15	2.062E-13	3.410E-19	-1.000E+00	4.780E-05	4.150E-07
EFFECTIVE	4.910E-18	2.529E-14	5.308E-13	8.780E-19	-1.000E+00	6.700E-05	5.450E-07
SKIN (FGR)	3.910E-17	2.506E-13	5.260E-12	8.700E-18	-1.000E+00	0.000E+00	0.000E+00
I-130							
GONADS	1.010E-13	2.867E-11	5.828E-10	9.970E-16	-1.000E+00	2.810E-11	1.040E-09
BREAST	1.160E-13	2.737E-11	5.565E-10	9.520E-16	-1.000E+00	4.870E-11	1.790E-10
LUNGS	1.010E-13	2.617E-11	5.319E-10	9.100E-16	-1.000E+00	6.030E-10	8.530E-11
RED MARR	9.820E-14	2.671E-11	5.430E-10	9.290E-16	-1.000E+00	4.550E-11	2.600E-10
BONE SUR	1.680E-13	3.795E-11	7.716E-10	1.320E-15	-1.000E+00	4.030E-11	1.250E-10

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

THYROID	1.040E-13	2.720E-11	5.530E-10	9.460E-16	-1.000E+00	1.990E-08	6.310E-11
REMAINDER	9.660E-14	2.585E-11	5.255E-10	8.990E-16	-1.000E+00	8.020E-11	1.580E-09
EFFECTIVE	1.040E-13	2.732E-11	5.553E-10	9.500E-16	-1.000E+00	7.140E-10	8.090E-10
SKIN (FGR)	1.360E-13	3.278E-11	6.664E-10	1.140E-15	-1.000E+00	0.000E+00	0.000E+00
Kr-83m							
GONADS	1.710E-18	7.056E-11	1.480E-09	2.450E-15	-1.000E+00	0.000E+00	3.190E-09
BREAST	5.050E-18	6.739E-11	1.413E-09	2.340E-15	-1.000E+00	0.000E+00	1.100E-09
LUNGS	1.640E-19	6.537E-11	1.371E-09	2.270E-15	-1.000E+00	0.000E+00	8.770E-10
RED MARR	3.830E-19	6.710E-11	1.407E-09	2.330E-15	-1.000E+00	0.000E+00	1.320E-09
BONE SUR	2.250E-18	8.956E-11	1.879E-09	3.110E-15	-1.000E+00	0.000E+00	9.390E-10
THYROID	6.430E-19	6.480E-11	1.359E-09	2.250E-15	-1.000E+00	0.000E+00	7.880E-10
REMAINDER	5.300E-19	6.508E-11	1.365E-09	2.260E-15	-1.000E+00	0.000E+00	4.970E-09
EFFECTIVE	1.500E-18	6.768E-11	1.419E-09	2.350E-15	-1.000E+00	0.000E+00	2.770E-09
SKIN (FGR)	3.560E-17	7.948E-11	1.667E-09	2.760E-15	-1.000E+00	0.000E+00	0.000E+00
Xe-138							
GONADS	5.590E-14	8.121E-14	1.704E-12	2.820E-18	-1.000E+00	0.000E+00	0.000E+00
BREAST	6.320E-14	7.891E-14	1.656E-12	2.740E-18	-1.000E+00	0.000E+00	0.000E+00
LUNGS	5.660E-14	7.056E-14	1.481E-12	2.450E-18	-1.000E+00	0.000E+00	0.000E+00
RED MARR	5.600E-14	6.998E-14	1.469E-12	2.430E-18	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	8.460E-14	1.287E-13	2.702E-12	4.470E-18	-1.000E+00	0.000E+00	0.000E+00
THYROID	5.770E-14	7.459E-14	1.565E-12	2.590E-18	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	5.490E-14	6.941E-14	1.457E-12	2.410E-18	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	5.770E-14	7.603E-14	1.596E-12	2.640E-18	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	1.070E-13	2.304E-11	4.835E-10	8.000E-16	-1.000E+00	0.000E+00	0.000E+00
Xe-131m							
GONADS	4.570E-16	2.594E-12	3.653E-12	1.570E-16	-1.000E+00	0.000E+00	0.000E+00
BREAST	6.020E-16	2.527E-12	3.560E-12	1.530E-16	-1.000E+00	0.000E+00	0.000E+00
LUNGS	2.670E-16	2.379E-12	3.351E-12	1.440E-16	-1.000E+00	0.000E+00	0.000E+00
RED MARR	2.270E-16	2.346E-12	3.304E-12	1.420E-16	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	1.060E-15	5.286E-12	7.446E-12	3.200E-16	-1.000E+00	0.000E+00	0.000E+00
THYROID	3.910E-16	2.395E-12	3.374E-12	1.450E-16	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	2.710E-16	2.313E-12	3.257E-12	1.400E-16	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	3.890E-16	2.511E-12	3.537E-12	1.520E-16	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	4.820E-15	2.247E-11	3.164E-11	1.360E-15	-1.000E+00	0.000E+00	0.000E+00
Xe-133m							
GONADS	1.420E-15	4.962E-12	5.026E-12	7.610E-16	-1.000E+00	0.000E+00	0.000E+00
BREAST	1.700E-15	4.740E-12	4.802E-12	7.270E-16	-1.000E+00	0.000E+00	0.000E+00
LUNGS	1.190E-15	4.603E-12	4.663E-12	7.060E-16	-1.000E+00	0.000E+00	0.000E+00
RED MARR	1.100E-15	4.708E-12	4.769E-12	7.220E-16	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	3.230E-15	6.514E-12	6.598E-12	9.990E-16	-1.000E+00	0.000E+00	0.000E+00
THYROID	1.360E-15	4.473E-12	4.531E-12	6.860E-16	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	1.150E-15	4.590E-12	4.650E-12	7.040E-16	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	1.370E-15	4.773E-12	4.835E-12	7.320E-16	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	1.040E-14	8.802E-11	8.916E-11	1.350E-14	-1.000E+00	0.000E+00	0.000E+00
Xe-135m							
GONADS	2.000E-14	2.278E-11	2.655E-11	1.800E-15	-1.000E+00	0.000E+00	0.000E+00
BREAST	2.290E-14	2.177E-11	2.537E-11	1.720E-15	-1.000E+00	0.000E+00	0.000E+00
LUNGS	1.980E-14	2.139E-11	2.493E-11	1.690E-15	-1.000E+00	0.000E+00	0.000E+00
RED MARR	1.910E-14	2.190E-11	2.552E-11	1.730E-15	-1.000E+00	0.000E+00	0.000E+00
BONE SUR	3.500E-14	2.886E-11	3.363E-11	2.280E-15	-1.000E+00	0.000E+00	0.000E+00
THYROID	2.040E-14	2.012E-11	2.345E-11	1.590E-15	-1.000E+00	0.000E+00	0.000E+00
REMAINDER	1.890E-14	2.139E-11	2.493E-11	1.690E-15	-1.000E+00	0.000E+00	0.000E+00
EFFECTIVE	2.040E-14	2.202E-11	2.567E-11	1.740E-15	-1.000E+00	0.000E+00	0.000E+00
SKIN (FGR)	2.970E-14	5.607E-11	6.534E-11	4.430E-15	-1.000E+00	0.000E+00	0.000E+00
Cs-138							
GONADS	1.170E-13	2.788E-12	5.187E-11	9.740E-17	-1.000E+00	3.280E-12	2.150E-09
BREAST	1.330E-13	2.662E-12	4.953E-11	9.300E-17	-1.000E+00	4.020E-12	2.140E-09
LUNGS	1.190E-13	2.553E-12	4.750E-11	8.920E-17	-1.000E+00	1.590E-10	2.140E-09
RED MARR	1.180E-13	2.619E-12	4.873E-11	9.150E-17	-1.000E+00	3.950E-12	3.720E-09
BONE SUR	1.700E-13	3.635E-12	6.764E-11	1.270E-16	-1.000E+00	3.550E-12	6.860E-09
THYROID	1.210E-13	2.599E-12	4.836E-11	9.080E-17	-1.000E+00	3.570E-12	2.140E-09
REMAINDER	1.150E-13	2.542E-12	4.729E-11	8.880E-17	-1.000E+00	2.060E-11	2.330E-09
EFFECTIVE	1.210E-13	2.665E-12	4.958E-11	9.310E-17	-1.000E+00	2.740E-11	2.530E-09
SKIN (FGR)	2.170E-13	2.210E-10	4.111E-09	7.720E-15	-1.000E+00	0.000E+00	0.000E+00
Cs-134m							
GONADS	9.300E-16	7.155E-14	1.436E-12	2.490E-18	-1.000E+00	3.610E-12	8.050E-12
BREAST	1.120E-15	7.212E-14	1.447E-12	2.510E-18	-1.000E+00	3.390E-12	7.980E-12
LUNGS	7.840E-16	5.689E-14	1.142E-12	1.980E-18	-1.000E+00	6.400E-11	7.970E-12
RED MARR	6.810E-16	5.345E-14	1.073E-12	1.860E-18	-1.000E+00	3.760E-12	1.080E-10
BONE SUR	2.610E-15	1.560E-13	3.131E-12	5.430E-18	-1.000E+00	3.550E-12	1.610E-10
THYROID	8.880E-16	6.063E-14	1.217E-12	2.110E-18	-1.000E+00	3.340E-12	7.970E-12
REMAINDER	7.450E-16	5.603E-14	1.124E-12	1.950E-18	-1.000E+00	6.900E-12	8.250E-09
EFFECTIVE	9.050E-16	6.523E-14	1.309E-12	2.270E-18	-1.000E+00	1.180E-11	2.500E-09

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

SKIN (FGR)	2.880E-15	1.914E-10	3.841E-09	6.660E-15-1.000E+00	0.000E+00	0.000E+00
Rb-88						
GONADS	3.260E-14	9.590E-15	2.014E-13	3.330E-19-1.000E+00	1.310E-12	5.040E-11
BREAST	3.670E-14	1.008E-14	2.116E-13	3.500E-19-1.000E+00	1.430E-12	5.040E-11
LUNGS	3.310E-14	6.307E-15	1.324E-13	2.190E-19-1.000E+00	1.470E-10	5.040E-11
RED MARR	3.300E-14	5.558E-15	1.167E-13	1.930E-19-1.000E+00	1.450E-12	6.450E-09
BONE SUR	4.620E-14	2.393E-14	5.025E-13	8.310E-19-1.000E+00	1.470E-12	1.390E-08
THYROID	3.370E-14	7.171E-15	1.506E-13	2.490E-19-1.000E+00	1.370E-12	5.040E-11
REMAINDER	3.210E-14	6.422E-15	1.348E-13	2.230E-19-1.000E+00	1.380E-11	6.700E-09
EFFECTIVE	3.360E-14	8.179E-15	1.717E-13	2.840E-19-1.000E+00	2.260E-11	3.230E-09
SKIN (FGR)	1.830E-13	4.032E-12	8.465E-11	1.400E-16-1.000E+00	0.000E+00	0.000E+00
Rb-89						
GONADS	1.030E-13	2.155E-11	5.062E-11	1.026E-15-1.000E+00	1.340E-12	2.520E-10
BREAST	1.170E-13	2.059E-11	4.838E-11	9.806E-16-1.000E+00	1.730E-12	3.676E-11
LUNGS	1.040E-13	1.970E-11	4.626E-11	9.376E-16-1.000E+00	6.800E-11	1.055E-11
RED MARR	1.040E-13	2.011E-11	4.722E-11	9.570E-16-1.000E+00	2.020E-12	5.659E-11
BONE SUR	1.480E-13	2.852E-11	6.709E-11	1.360E-15-1.000E+00	2.540E-12	2.070E-11
THYROID	1.070E-13	2.035E-11	4.782E-11	9.693E-16-1.000E+00	1.610E-12	1.968E-12
REMAINDER	1.010E-13	1.948E-11	4.573E-11	9.268E-16-1.000E+00	8.140E-12	2.557E-09
EFFECTIVE	1.060E-13	2.057E-11	4.832E-11	9.793E-16-1.000E+00	1.160E-11	8.455E-10
SKIN (FGR)	1.870E-13	1.748E-10	3.987E-10	8.080E-15-1.000E+00	0.000E+00	0.000E+00
Sb-124						
GONADS	8.890E-14	1.593E-11	1.830E-11	1.300E-15-1.000E+00	1.040E-09	8.180E-11
BREAST	1.010E-13	1.520E-11	1.745E-11	1.240E-15-1.000E+00	8.940E-10	1.700E-11
LUNGS	8.970E-14	1.483E-11	1.703E-11	1.210E-15-1.000E+00	4.140E-08	7.220E-12
RED MARR	8.850E-14	1.520E-11	1.745E-11	1.240E-15-1.000E+00	1.090E-09	2.290E-11
BONE SUR	1.340E-13	2.010E-11	2.308E-11	1.640E-15-1.000E+00	1.240E-09	8.490E-12
THYROID	9.150E-14	1.446E-11	1.661E-11	1.180E-15-1.000E+00	6.740E-10	1.300E-12
REMAINDER	8.660E-14	1.471E-11	1.689E-11	1.200E-15-1.000E+00	4.180E-09	1.720E-09
EFFECTIVE	9.150E-14	1.532E-11	1.759E-11	1.250E-15-1.000E+00	6.800E-09	5.430E-10
SKIN (FGR)	1.260E-13	2.280E-11	2.618E-11	1.860E-15-1.000E+00	0.000E+00	0.000E+00
Sb-125						
GONADS	1.980E-14	1.586E-13	1.601E-12	5.750E-18-1.000E+00	3.600E-10	1.430E-14
BREAST	2.270E-14	1.578E-13	1.593E-12	5.720E-18-1.000E+00	4.160E-10	1.270E-14
LUNGS	1.950E-14	1.313E-13	1.326E-12	4.760E-18-1.000E+00	2.170E-08	1.260E-14
RED MARR	1.870E-14	1.261E-13	1.273E-12	4.570E-18-1.000E+00	5.350E-10	3.700E-13
BONE SUR	3.530E-14	3.228E-13	3.259E-12	1.170E-17-1.000E+00	9.780E-10	3.670E-13
THYROID	2.010E-14	1.385E-13	1.398E-12	5.020E-18-1.000E+00	3.240E-10	1.260E-14
REMAINDER	1.860E-14	1.291E-13	1.303E-12	4.680E-18-1.000E+00	1.450E-09	9.680E-09
EFFECTIVE	2.020E-14	1.468E-13	1.482E-12	5.320E-18-1.000E+00	3.300E-09	2.910E-09
SKIN (FGR)	2.650E-14	2.897E-10	2.924E-09	1.050E-14-1.000E+00	0.000E+00	0.000E+00
Sb-126						
GONADS	1.350E-13	1.756E-13	3.546E-12	6.110E-18-1.000E+00	1.320E-09	3.540E-12
BREAST	1.530E-13	1.713E-13	3.459E-12	5.960E-18-1.000E+00	6.440E-10	5.540E-13
LUNGS	1.340E-13	1.526E-13	3.082E-12	5.310E-18-1.000E+00	1.380E-08	2.020E-13
RED MARR	1.300E-13	1.521E-13	3.070E-12	5.290E-18-1.000E+00	7.970E-10	6.590E-12
BONE SUR	2.220E-13	2.903E-13	5.862E-12	1.010E-17-1.000E+00	6.750E-10	6.130E-12
THYROID	1.370E-13	1.564E-13	3.157E-12	5.440E-18-1.000E+00	4.800E-10	1.290E-13
REMAINDER	1.280E-13	1.509E-13	3.047E-12	5.250E-18-1.000E+00	3.190E-09	8.570E-09
EFFECTIVE	1.370E-13	1.650E-13	3.332E-12	5.740E-18-1.000E+00	3.170E-09	2.570E-09
SKIN (FGR)	1.730E-13	1.989E-10	4.016E-09	6.920E-15-1.000E+00	0.000E+00	0.000E+00
Te-131						
GONADS	1.990E-14	3.855E-12	4.872E-12	2.650E-16-1.000E+00	6.140E-12	1.960E-11
BREAST	2.280E-14	3.680E-12	4.652E-12	2.530E-16-1.000E+00	5.530E-12	3.550E-12
LUNGS	1.960E-14	3.535E-12	4.468E-12	2.430E-16-1.000E+00	2.540E-10	1.390E-12
RED MARR	1.880E-14	3.608E-12	4.560E-12	2.480E-16-1.000E+00	6.640E-12	4.910E-12
BONE SUR	3.800E-14	5.091E-12	6.435E-12	3.500E-16-1.000E+00	6.210E-12	1.750E-12
THYROID	2.030E-14	3.579E-12	4.523E-12	2.460E-16-1.000E+00	2.630E-09	1.770E-13
REMAINDER	1.870E-14	3.506E-12	4.431E-12	2.410E-16-1.000E+00	5.420E-11	1.700E-09
EFFECTIVE	2.040E-14	3.680E-12	4.652E-12	2.530E-16-1.000E+00	1.290E-10	5.150E-10
SKIN (FGR)	6.890E-14	2.022E-10	2.556E-10	1.390E-14-1.000E+00	0.000E+00	0.000E+00
Te-133						
GONADS	4.490E-14	2.108E-12	4.989E-12	9.510E-17-1.000E+00	6.700E-13	2.200E-11
BREAST	5.100E-14	2.026E-12	4.794E-12	9.140E-17-1.000E+00	8.480E-13	3.130E-12
LUNGS	4.470E-14	1.937E-12	4.585E-12	8.740E-17-1.000E+00	4.390E-11	8.670E-13
RED MARR	4.360E-14	1.972E-12	4.669E-12	8.900E-17-1.000E+00	8.390E-13	4.930E-12
BONE SUR	7.500E-14	2.948E-12	6.977E-12	1.330E-16-1.000E+00	7.490E-13	1.730E-12
THYROID	4.590E-14	1.908E-12	4.516E-12	8.610E-17-1.000E+00	5.910E-10	1.260E-13
REMAINDER	4.290E-14	1.919E-12	4.543E-12	8.660E-17-1.000E+00	5.020E-12	4.090E-09
EFFECTIVE	4.600E-14	2.021E-12	4.784E-12	9.120E-17-1.000E+00	2.490E-11	1.230E-09
SKIN (FGR)	1.060E-13	2.726E-10	6.452E-10	1.230E-14-1.000E+00	0.000E+00	0.000E+00
Te-134						
GONADS	4.160E-14	2.182E-11	4.421E-10	7.590E-16-1.000E+00	9.000E-12	8.160E-10

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

BREAST	4.750E-14	2.084E-11	4.223E-10	7.250E-16	-1.000E+00	8.720E-12	1.050E-10
LUNGS	4.100E-14	1.989E-11	4.030E-10	6.920E-16	-1.000E+00	6.020E-11	2.340E-11
RED MARR	3.940E-14	2.030E-11	4.112E-10	7.060E-16	-1.000E+00	9.300E-12	2.140E-10
BONE SUR	7.560E-14	2.875E-11	5.824E-10	1.000E-15	-1.000E+00	8.580E-12	4.860E-10
THYROID	4.230E-14	2.076E-11	4.205E-10	7.220E-16	-1.000E+00	5.540E-10	8.270E-12
REMAINDER	3.910E-14	1.963E-11	3.978E-10	6.830E-16	-1.000E+00	1.880E-11	2.530E-09
EFFECTIVE	4.240E-14	2.078E-11	4.211E-10	7.230E-16	-1.000E+00	3.440E-11	1.020E-09
SKIN (FGR)	6.350E-14	2.561E-11	5.190E-10	8.910E-16	-1.000E+00	0.000E+00	0.000E+00
Te-125m							
GONADS	5.960E-16	2.179E-11	7.799E-11	9.253E-16	-1.000E+00	7.930E-11	6.228E-10
BREAST	8.480E-16	2.083E-11	7.455E-11	8.846E-16	-1.000E+00	7.080E-11	8.137E-11
LUNGS	2.230E-16	1.992E-11	7.127E-11	8.456E-16	-1.000E+00	1.040E-08	1.770E-11
RED MARR	1.860E-16	2.034E-11	7.279E-11	8.634E-16	-1.000E+00	1.150E-09	1.302E-10
BONE SUR	1.220E-15	2.881E-11	1.031E-10	1.224E-15	-1.000E+00	1.180E-08	4.558E-11
THYROID	4.640E-16	2.061E-11	7.377E-11	8.755E-16	-1.000E+00	3.870E-11	2.671E-12
REMAINDER	2.590E-16	1.966E-11	7.035E-11	8.345E-16	-1.000E+00	6.750E-10	6.990E-09
EFFECTIVE	4.530E-16	2.078E-11	7.438E-11	8.824E-16	-1.000E+00	1.970E-09	2.283E-09
SKIN (FGR)	1.940E-15	2.281E-10	8.148E-10	9.587E-15	-1.000E+00	0.000E+00	0.000E+00
Te-133m							
GONADS	1.120E-13	2.253E-11	4.435E-10	7.850E-16	-1.000E+00	8.970E-12	8.050E-10
BREAST	1.270E-13	2.150E-11	4.231E-10	7.490E-16	-1.000E+00	7.820E-12	1.070E-10
LUNGS	1.120E-13	2.055E-11	4.045E-10	7.160E-16	-1.000E+00	1.820E-10	2.740E-11
RED MARR	1.090E-13	2.101E-11	4.135E-10	7.320E-16	-1.000E+00	8.320E-12	1.990E-10
BONE SUR	1.750E-13	2.957E-11	5.819E-10	1.030E-15	-1.000E+00	6.940E-12	2.940E-10
THYROID	1.150E-13	2.144E-11	4.220E-10	7.470E-16	-1.000E+00	2.610E-09	1.180E-11
REMAINDER	1.070E-13	2.032E-11	4.000E-10	7.080E-16	-1.000E+00	4.140E-11	1.470E-09
EFFECTIVE	1.140E-13	2.147E-11	4.226E-10	7.480E-16	-1.000E+00	1.170E-10	6.950E-10
SKIN (FGR)	1.740E-13	2.598E-11	5.112E-10	9.050E-16	-1.000E+00	0.000E+00	0.000E+00
Ba-141							
GONADS	4.060E-14	4.282E-12	4.403E-11	1.550E-16	-1.000E+00	1.410E-12	2.180E-10
BREAST	4.630E-14	4.116E-12	4.233E-11	1.490E-16	-1.000E+00	1.470E-12	3.430E-11
LUNGS	4.030E-14	3.867E-12	3.977E-11	1.400E-16	-1.000E+00	1.160E-10	1.510E-11
RED MARR	3.910E-14	3.923E-12	4.034E-11	1.420E-16	-1.000E+00	2.490E-12	8.320E-11
BONE SUR	7.170E-14	6.105E-12	6.278E-11	2.210E-16	-1.000E+00	4.730E-12	6.320E-11
THYROID	4.150E-14	4.033E-12	4.147E-11	1.460E-16	-1.000E+00	1.330E-12	1.030E-11
REMAINDER	3.870E-14	3.812E-12	3.920E-11	1.380E-16	-1.000E+00	2.270E-11	4.280E-09
EFFECTIVE	4.160E-14	4.061E-12	4.176E-11	1.470E-16	-1.000E+00	2.180E-11	1.360E-09
SKIN (FGR)	1.070E-13	1.039E-10	1.068E-09	3.760E-15	-1.000E+00	0.000E+00	0.000E+00
Ba-137m							
GONADS	2.820E-14	2.334E-12	3.877E-12	1.240E-16	-1.000E+00	0.000E+00	9.750E-12
BREAST	3.220E-14	2.258E-12	3.752E-12	1.200E-16	-1.000E+00	0.000E+00	3.570E-12
LUNGS	2.800E-14	2.127E-12	3.533E-12	1.130E-16	-1.000E+00	0.000E+00	3.140E-12
RED MARR	2.730E-14	2.070E-12	3.439E-12	1.100E-16	-1.000E+00	0.000E+00	6.290E-12
BONE SUR	4.630E-14	5.383E-12	8.942E-12	2.860E-16	-1.000E+00	0.000E+00	4.060E-12
THYROID	2.880E-14	2.145E-12	3.564E-12	1.140E-16	-1.000E+00	0.000E+00	8.460E-11
REMAINDER	2.680E-14	2.070E-12	3.439E-12	1.100E-16	-1.000E+00	0.000E+00	3.340E-11
EFFECTIVE	2.880E-14	2.277E-12	3.783E-12	1.210E-16	-1.000E+00	0.000E+00	1.680E-11
SKIN (FGR)	3.730E-14	2.710E-12	4.502E-12	1.440E-16	-1.000E+00	0.000E+00	0.000E+00
Pd-109							
GONADS	2.710E-16	1.404E-11	2.783E-10	4.892E-16	-1.000E+00	2.130E-12	5.720E-10
BREAST	3.520E-16	1.350E-11	2.677E-10	4.705E-16	-1.000E+00	5.110E-13	1.200E-10
LUNGS	1.940E-16	1.273E-11	2.522E-10	4.432E-16	-1.000E+00	1.200E-09	7.310E-11
RED MARR	1.740E-16	1.287E-11	2.551E-10	4.483E-16	-1.000E+00	9.820E-13	1.660E-10
BONE SUR	7.020E-16	1.958E-11	3.882E-10	6.823E-16	-1.000E+00	9.580E-13	9.631E-11
THYROID	2.460E-16	1.331E-11	2.639E-10	4.638E-16	-1.000E+00	1.550E-13	6.250E-11
REMAINDER	1.920E-16	1.248E-11	2.472E-10	4.346E-16	-1.000E+00	5.040E-10	2.110E-09
EFFECTIVE	2.510E-16	1.332E-11	2.641E-10	4.642E-16	-1.000E+00	2.960E-10	8.271E-10
SKIN (FGR)	2.150E-14	1.785E-11	3.543E-10	6.229E-16	-1.000E+00	0.000E+00	0.000E+00
Rh-106							
GONADS	1.010E-14	1.327E-11	1.861E-11	8.070E-16	-1.000E+00	0.000E+00	9.670E-11
BREAST	1.160E-14	1.271E-11	1.783E-11	7.730E-16	-1.000E+00	0.000E+00	1.590E-11
LUNGS	1.010E-14	1.210E-11	1.697E-11	7.360E-16	-1.000E+00	0.000E+00	6.210E-12
RED MARR	9.750E-15	1.230E-11	1.725E-11	7.480E-16	-1.000E+00	0.000E+00	2.350E-11
BONE SUR	1.720E-14	1.809E-11	2.537E-11	1.100E-15	-1.000E+00	0.000E+00	8.890E-12
THYROID	1.030E-14	1.260E-11	1.766E-11	7.660E-16	-1.000E+00	0.000E+00	1.820E-12
REMAINDER	9.630E-15	1.189E-11	1.667E-11	7.230E-16	-1.000E+00	0.000E+00	8.540E-10
EFFECTIVE	1.040E-14	1.265E-11	1.773E-11	7.690E-16	-1.000E+00	0.000E+00	2.870E-10
SKIN (FGR)	1.090E-13	7.368E-11	1.033E-10	4.480E-15	-1.000E+00	0.000E+00	0.000E+00
Rh-103m							
GONADS	1.250E-17	6.411E-12	1.340E-10	2.230E-16	-1.000E+00	8.910E-14	1.640E-09
BREAST	2.150E-17	6.152E-12	1.286E-10	2.140E-16	-1.000E+00	8.800E-14	1.440E-09
LUNGS	1.870E-18	5.836E-12	1.220E-10	2.030E-16	-1.000E+00	7.750E-12	1.420E-09
RED MARR	2.820E-18	5.893E-12	1.232E-10	2.050E-16	-1.000E+00	8.840E-14	1.460E-09

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

BONE SUR	1.760E-17	8.883E-12	1.856E-10	3.090E-16	-1.000E+00	8.730E-14	1.430E-09
THYROID	8.550E-18	6.066E-12	1.268E-10	2.110E-16	-1.000E+00	8.490E-14	1.410E-09
REMAINDER	3.680E-18	5.721E-12	1.196E-10	1.990E-16	-1.000E+00	1.340E-12	2.110E-08
EFFECTIVE	8.800E-18	6.095E-12	1.274E-10	2.120E-16	-1.000E+00	1.380E-12	7.400E-09
SKIN (FGR)	4.490E-17	4.082E-10	8.531E-09	1.420E-14	-1.000E+00	0.000E+00	0.000E+00
Tc-101							
GONADS	1.570E-14	2.127E-12	1.411E-11	7.980E-17	-1.000E+00	2.500E-13	5.800E-11
BREAST	1.800E-14	2.063E-12	1.369E-11	7.740E-17	-1.000E+00	3.030E-13	8.970E-12
LUNGS	1.540E-14	1.935E-12	1.284E-11	7.260E-17	-1.000E+00	2.830E-11	3.860E-12
RED MARR	1.460E-14	1.946E-12	1.291E-11	7.300E-17	-1.000E+00	3.190E-13	1.470E-11
BONE SUR	3.210E-14	3.332E-12	2.210E-11	1.250E-16	-1.000E+00	2.800E-13	6.750E-12
THYROID	1.590E-14	1.983E-12	1.316E-11	7.440E-17	-1.000E+00	7.720E-12	2.910E-12
REMAINDER	1.470E-14	1.885E-12	1.250E-11	7.070E-17	-1.000E+00	3.520E-12	1.270E-09
EFFECTIVE	1.610E-14	2.031E-12	1.347E-11	7.620E-17	-1.000E+00	4.840E-12	3.990E-10
SKIN (FGR)	4.770E-14	4.691E-12	3.112E-11	1.760E-16	-1.000E+00	0.000E+00	0.000E+00
Eu-154							
GONADS	6.000E-14	1.985E-11	2.441E-10	7.100E-16	-1.000E+00	1.170E-08	6.140E-10
BREAST	6.810E-14	1.904E-11	2.341E-10	6.810E-16	-1.000E+00	1.550E-08	7.600E-11
LUNGS	5.990E-14	1.809E-11	2.224E-10	6.470E-16	-1.000E+00	7.920E-08	1.570E-11
RED MARR	5.870E-14	1.834E-11	2.255E-10	6.560E-16	-1.000E+00	1.060E-07	1.330E-10
BONE SUR	9.430E-14	2.720E-11	3.345E-10	9.730E-16	-1.000E+00	5.230E-07	5.240E-11
THYROID	6.150E-14	1.884E-11	2.317E-10	6.740E-16	-1.000E+00	7.140E-09	4.640E-12
REMAINDER	5.750E-14	1.775E-11	2.183E-10	6.350E-16	-1.000E+00	1.130E-07	5.870E-09
EFFECTIVE	6.140E-14	1.890E-11	2.324E-10	6.760E-16	-1.000E+00	7.730E-08	1.950E-09
SKIN (FGR)	8.290E-14	7.967E-11	9.799E-10	2.850E-15	-1.000E+00	0.000E+00	0.000E+00
Eu-155							
GONADS	2.490E-15	2.336E-11	3.231E-11	1.440E-15	-1.000E+00	3.560E-10	1.510E-10
BREAST	2.950E-15	2.222E-11	3.074E-11	1.370E-15	-1.000E+00	6.140E-10	2.560E-11
LUNGS	2.220E-15	2.141E-11	2.962E-11	1.320E-15	-1.000E+00	1.190E-08	9.390E-12
RED MARR	1.850E-15	2.190E-11	3.029E-11	1.350E-15	-1.000E+00	1.430E-08	3.670E-11
BONE SUR	8.090E-15	3.033E-11	4.196E-11	1.870E-15	-1.000E+00	1.520E-07	1.340E-11
THYROID	2.410E-15	2.174E-11	3.007E-11	1.340E-15	-1.000E+00	2.400E-10	1.470E-12
REMAINDER	2.070E-15	2.125E-11	2.939E-11	1.310E-15	-1.000E+00	1.110E-08	1.450E-09
EFFECTIVE	2.490E-15	2.238E-11	3.096E-11	1.380E-15	-1.000E+00	1.120E-08	4.840E-10
SKIN (FGR)	3.390E-15	8.273E-11	1.144E-10	5.100E-15	-1.000E+00	0.000E+00	0.000E+00
Eu-156							
GONADS	6.570E-14	1.191E-13	2.661E-13	5.480E-18	-1.000E+00	6.120E-10	4.020E-12
BREAST	7.420E-14	1.158E-13	2.588E-13	5.330E-18	-1.000E+00	3.640E-10	3.000E-12
LUNGS	6.630E-14	1.060E-13	2.370E-13	4.880E-18	-1.000E+00	1.840E-08	2.890E-12
RED MARR	6.560E-14	1.058E-13	2.365E-13	4.870E-18	-1.000E+00	1.140E-09	6.570E-12
BONE SUR	9.580E-14	1.862E-13	4.162E-13	8.570E-18	-1.000E+00	2.760E-09	6.460E-12
THYROID	6.780E-14	1.106E-13	2.472E-13	5.090E-18	-1.000E+00	2.160E-10	2.860E-12
REMAINDER	6.410E-14	1.036E-13	2.316E-13	4.770E-18	-1.000E+00	3.910E-09	6.130E-10
EFFECTIVE	6.750E-14	1.125E-13	2.515E-13	5.180E-18	-1.000E+00	3.820E-09	1.870E-10
SKIN (FGR)	9.980E-14	1.173E-11	2.622E-11	5.400E-16	-1.000E+00	0.000E+00	0.000E+00
La-143							
GONADS	5.040E-15	4.689E-13	9.642E-12	1.630E-17	-1.000E+00	6.530E-13	1.250E-10
BREAST	5.700E-15	5.150E-13	1.059E-11	1.790E-17	-1.000E+00	3.200E-13	9.740E-11
LUNGS	5.070E-15	1.602E-13	3.295E-12	5.570E-18	-1.000E+00	1.060E-10	9.620E-11
RED MARR	5.010E-15	1.249E-13	2.567E-12	4.340E-18	-1.000E+00	7.300E-13	5.430E-09
BONE SUR	7.590E-15	9.005E-13	1.852E-11	3.130E-17	-1.000E+00	7.290E-13	2.070E-08
THYROID	5.190E-15	2.779E-13	5.714E-12	9.660E-18	-1.000E+00	2.440E-13	9.430E-11
REMAINDER	4.900E-15	1.999E-13	4.111E-12	6.950E-18	-1.000E+00	1.050E-11	2.980E-09
EFFECTIVE	5.180E-15	3.251E-13	6.684E-12	1.130E-17	-1.000E+00	1.620E-11	2.230E-09
SKIN (FGR)	9.640E-14	1.496E-12	3.076E-11	5.200E-17	-1.000E+00	0.000E+00	0.000E+00
Nb-97							
GONADS	3.110E-14	3.889E-13	3.922E-13	6.510E-17	-1.000E+00	8.650E-13	1.590E-12
BREAST	3.550E-14	3.800E-13	3.832E-13	6.360E-17	-1.000E+00	1.120E-12	6.050E-13
LUNGS	3.100E-14	3.298E-13	3.326E-13	5.520E-17	-1.000E+00	1.560E-10	4.910E-13
RED MARR	3.010E-14	3.298E-13	3.326E-13	5.520E-17	-1.000E+00	1.140E-12	7.640E-13
BONE SUR	5.110E-14	5.753E-13	5.802E-13	9.630E-17	-1.000E+00	8.260E-13	5.400E-13
THYROID	3.180E-14	3.525E-13	3.555E-13	5.900E-17	-1.000E+00	9.200E-13	3.360E-13
REMAINDER	2.960E-14	3.262E-13	3.289E-13	5.460E-17	-1.000E+00	1.050E-11	1.790E-10
EFFECTIVE	3.180E-14	3.590E-13	3.621E-13	6.010E-17	-1.000E+00	2.240E-11	5.450E-11
SKIN (FGR)	6.510E-14	3.429E-11	3.458E-11	5.740E-15	-1.000E+00	0.000E+00	0.000E+00
Nb-95m							
GONADS	2.880E-15	2.206E-12	4.799E-11	8.561E-17	-1.000E+00	4.960E-11	2.420E-10
BREAST	3.310E-15	2.181E-12	4.739E-11	8.454E-17	-1.000E+00	4.530E-11	1.664E-10
LUNGS	2.770E-15	1.741E-12	3.815E-11	6.808E-17	-1.000E+00	3.070E-09	1.593E-10
RED MARR	2.590E-15	1.729E-12	3.793E-11	6.768E-17	-1.000E+00	5.870E-11	3.500E-09
BONE SUR	6.600E-15	3.287E-12	7.147E-11	1.275E-16	-1.000E+00	6.610E-11	7.990E-09
THYROID	2.890E-15	1.923E-12	4.201E-11	7.495E-17	-1.000E+00	3.860E-11	1.572E-10
REMAINDER	2.630E-15	1.746E-12	3.822E-11	6.819E-17	-1.000E+00	8.690E-10	7.196E-09



## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

EFFECTIVE	2.930E-15	1.974E-12	4.308E-11	7.686E-17	-1.000E+00	6.590E-10	2.925E-09
SKIN (FGR)	1.120E-14	1.501E-10	3.360E-09	6.001E-15	-1.000E+00	0.000E+00	0.000E+00
Pm-147							
GONADS	7.480E-19	4.020E-11	2.343E-10	1.535E-15	-1.000E+00	8.250E-15	7.415E-10
BREAST	9.560E-19	3.853E-11	2.246E-10	1.472E-15	-1.000E+00	3.600E-14	1.361E-10
LUNGS	5.450E-19	3.657E-11	2.131E-10	1.397E-15	-1.000E+00	7.740E-08	6.335E-11
RED MARR	4.460E-19	3.736E-11	2.178E-10	1.427E-15	-1.000E+00	1.610E-09	2.435E-10
BONE SUR	2.180E-18	5.467E-11	3.189E-10	2.090E-15	-1.000E+00	2.010E-08	3.248E-10
THYROID	6.750E-19	3.741E-11	2.181E-10	1.429E-15	-1.000E+00	1.980E-14	4.383E-08
REMAINDER	5.260E-19	3.626E-11	2.113E-10	1.385E-15	-1.000E+00	1.560E-09	3.153E-09
EFFECTIVE	6.930E-19	3.825E-11	2.229E-10	1.461E-15	-1.000E+00	1.060E-08	2.514E-09
SKIN (FGR)	8.110E-16	1.033E-10	6.188E-10	4.056E-15	-1.000E+00	0.000E+00	0.000E+00
Pm-148							
GONADS	2.810E-14	6.812E-12	7.706E-11	2.450E-16	-1.000E+00	2.120E-10	5.410E-10
BREAST	3.190E-14	6.756E-12	7.643E-11	2.430E-16	-1.000E+00	7.190E-11	3.500E-10
LUNGS	2.830E-14	5.727E-12	6.479E-11	2.060E-16	-1.000E+00	1.370E-08	3.300E-10
RED MARR	2.790E-14	5.588E-12	6.322E-11	2.010E-16	-1.000E+00	1.070E-10	4.440E-10
BONE SUR	4.240E-14	1.273E-11	1.441E-10	4.580E-16	-1.000E+00	7.080E-11	8.300E-10
THYROID	2.890E-14	5.978E-12	6.762E-11	2.150E-16	-1.000E+00	3.820E-11	5.950E-08
REMAINDER	2.730E-14	5.644E-12	6.385E-11	2.030E-16	-1.000E+00	4.100E-09	1.490E-09
EFFECTIVE	2.890E-14	6.339E-12	7.171E-11	2.280E-16	-1.000E+00	2.950E-09	2.540E-09
SKIN (FGR)	7.970E-14	8.313E-12	9.405E-11	2.990E-16	-1.000E+00	0.000E+00	0.000E+00
Pm-149							
GONADS	5.300E-16	1.119E-11	1.789E-10	3.940E-16	-1.000E+00	3.610E-12	4.070E-11
BREAST	6.070E-16	1.082E-11	1.730E-10	3.810E-16	-1.000E+00	8.200E-13	1.210E-10
LUNGS	5.170E-16	1.016E-11	1.626E-10	3.580E-16	-1.000E+00	3.120E-09	1.020E-10
RED MARR	4.890E-16	1.022E-11	1.635E-10	3.600E-16	-1.000E+00	5.530E-12	9.440E-11
BONE SUR	1.100E-15	1.675E-11	2.679E-10	5.900E-16	-1.000E+00	5.010E-12	8.720E-11
THYROID	5.360E-16	1.053E-11	1.685E-10	3.710E-16	-1.000E+00	3.310E-13	4.760E-07
REMAINDER	4.910E-16	9.908E-12	1.585E-10	3.490E-16	-1.000E+00	1.390E-09	1.570E-10
EFFECTIVE	5.410E-16	1.067E-11	1.707E-10	3.760E-16	-1.000E+00	7.930E-10	1.440E-08
SKIN (FGR)	2.190E-14	1.825E-11	2.920E-10	6.430E-16	-1.000E+00	0.000E+00	0.000E+00
Pm-151							
GONADS	1.480E-14	2.523E-11	2.771E-11	2.320E-15	-1.000E+00	7.170E-11	2.330E-11
BREAST	1.700E-14	2.414E-11	2.652E-11	2.220E-15	-1.000E+00	1.590E-11	2.520E-11
LUNGS	1.440E-14	2.305E-11	2.532E-11	2.120E-15	-1.000E+00	1.640E-09	2.640E-11
RED MARR	1.370E-14	2.360E-11	2.592E-11	2.170E-15	-1.000E+00	2.720E-11	2.460E-11
BONE SUR	2.990E-14	3.327E-11	3.655E-11	3.060E-15	-1.000E+00	1.860E-11	2.190E-11
THYROID	1.500E-14	2.381E-11	2.616E-11	2.190E-15	-1.000E+00	6.180E-12	3.870E-09
REMAINDER	1.370E-14	2.283E-11	2.509E-11	2.100E-15	-1.000E+00	8.390E-10	1.650E-10
EFFECTIVE	1.510E-14	2.403E-11	2.640E-11	2.210E-15	-1.000E+00	4.730E-10	1.820E-10
SKIN (FGR)	3.320E-14	8.199E-11	9.007E-11	7.540E-15	-1.000E+00	0.000E+00	0.000E+00
Pm-148m							
GONADS	9.470E-14	1.585E-11	6.748E-11	6.270E-16	-1.000E+00	1.190E-09	3.630E-11
BREAST	1.080E-13	1.519E-11	6.468E-11	6.010E-16	-1.000E+00	1.240E-09	4.680E-11
LUNGS	9.420E-14	1.446E-11	6.156E-11	5.720E-16	-1.000E+00	3.590E-08	4.530E-11
RED MARR	9.140E-14	1.466E-11	6.242E-11	5.800E-16	-1.000E+00	1.360E-09	4.300E-11
BONE SUR	1.580E-13	2.161E-11	9.202E-11	8.550E-16	-1.000E+00	1.360E-09	4.070E-11
THYROID	9.680E-14	1.502E-11	6.393E-11	5.940E-16	-1.000E+00	1.050E-09	9.100E-08
REMAINDER	9.010E-14	1.418E-11	6.038E-11	5.610E-16	-1.000E+00	3.580E-09	1.550E-10
EFFECTIVE	9.680E-14	1.509E-11	6.425E-11	5.970E-16	-1.000E+00	6.100E-09	2.800E-09
SKIN (FGR)	1.180E-13	1.150E-10	4.897E-10	4.550E-15	-1.000E+00	0.000E+00	0.000E+00
Pr-144							
GONADS	1.900E-15	1.200E-11	1.202E-11	2.640E-15	-1.000E+00	2.410E-15	1.100E-11
BREAST	2.150E-15	1.145E-11	1.147E-11	2.520E-15	-1.000E+00	1.050E-14	1.170E-11
LUNGS	1.900E-15	1.100E-11	1.102E-11	2.420E-15	-1.000E+00	9.400E-11	1.260E-11
RED MARR	1.870E-15	1.127E-11	1.129E-11	2.480E-15	-1.000E+00	1.380E-14	1.090E-11
BONE SUR	2.990E-15	1.568E-11	1.571E-11	3.450E-15	-1.000E+00	1.470E-14	9.320E-12
THYROID	1.950E-15	1.127E-11	1.129E-11	2.480E-15	-1.000E+00	8.470E-15	6.210E-10
REMAINDER	1.840E-15	1.091E-11	1.093E-11	2.400E-15	-1.000E+00	1.400E-12	1.340E-10
EFFECTIVE	1.950E-15	1.150E-11	1.152E-11	2.530E-15	-1.000E+00	1.170E-11	6.660E-11
SKIN (FGR)	8.430E-14	4.477E-11	4.485E-11	9.850E-15	-1.000E+00	0.000E+00	0.000E+00
Pr-144m							
GONADS	3.250E-16	3.113E-11	5.489E-11	1.599E-15	-1.000E+00	0.000E+00	3.610E-11
BREAST	4.200E-16	2.971E-11	5.240E-11	1.526E-15	-1.000E+00	0.000E+00	3.850E-11
LUNGS	2.000E-16	2.886E-11	5.089E-11	1.482E-15	-1.000E+00	0.000E+00	3.750E-11
RED MARR	1.560E-16	2.965E-11	5.228E-11	1.523E-15	-1.000E+00	0.000E+00	3.650E-11
BONE SUR	8.160E-16	3.983E-11	7.024E-11	2.046E-15	-1.000E+00	0.000E+00	3.360E-11
THYROID	2.810E-16	2.852E-11	5.030E-11	1.465E-15	-1.000E+00	0.000E+00	1.790E-08
REMAINDER	1.980E-16	2.883E-11	5.084E-11	1.481E-15	-1.000E+00	0.000E+00	1.540E-10
EFFECTIVE	2.790E-16	2.989E-11	5.271E-11	1.535E-15	-1.000E+00	0.000E+00	6.080E-10
SKIN (FGR)	5.080E-16	9.826E-11	1.733E-10	5.047E-15	-1.000E+00	0.000E+00	0.000E+00
Sm-153							

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

GONADS	2.330E-15	1.465E-12	2.052E-11	5.200E-17	-1.000E+00	2.360E-11	0.000E+00
BREAST	2.820E-15	1.505E-12	2.107E-11	5.340E-17	-1.000E+00	5.670E-12	0.000E+00
LUNGS	1.970E-15	1.045E-12	1.464E-11	3.710E-17	-1.000E+00	2.050E-09	0.000E+00
RED MARR	1.620E-15	8.791E-13	1.231E-11	3.120E-17	-1.000E+00	6.660E-11	0.000E+00
BONE SUR	7.290E-15	4.254E-12	5.958E-11	1.510E-16	-1.000E+00	1.570E-10	0.000E+00
THYROID	2.220E-15	1.181E-12	1.653E-11	4.190E-17	-1.000E+00	1.510E-12	0.000E+00
REMAINDER	1.850E-15	1.042E-12	1.460E-11	3.700E-17	-1.000E+00	8.840E-10	0.000E+00
EFFECTIVE	2.280E-15	1.299E-12	1.819E-11	4.610E-17	-1.000E+00	5.310E-10	0.000E+00
SKIN (FGR)	1.450E-14	1.953E-12	2.734E-11	6.930E-17	-1.000E+00	0.000E+00	0.000E+00
Y-94							
GONADS	5.490E-14	5.455E-12	1.194E-11	2.530E-16	-1.000E+00	1.230E-13	0.000E+00
BREAST	6.210E-14	5.325E-12	1.166E-11	2.470E-16	-1.000E+00	4.400E-13	0.000E+00
LUNGS	5.500E-14	4.959E-12	1.086E-11	2.300E-16	-1.000E+00	1.480E-10	0.000E+00
RED MARR	5.420E-14	4.959E-12	1.086E-11	2.300E-16	-1.000E+00	4.180E-13	0.000E+00
BONE SUR	8.220E-14	9.120E-12	1.997E-11	4.230E-16	-1.000E+00	3.280E-13	0.000E+00
THYROID	5.650E-14	5.023E-12	1.100E-11	2.330E-16	-1.000E+00	4.120E-13	0.000E+00
REMAINDER	5.300E-14	4.829E-12	1.058E-11	2.240E-16	-1.000E+00	3.080E-12	0.000E+00
EFFECTIVE	5.620E-14	5.217E-12	1.142E-11	2.420E-16	-1.000E+00	1.890E-11	0.000E+00
SKIN (FGR)	1.800E-13	4.506E-11	9.867E-11	2.090E-15	-1.000E+00	0.000E+00	0.000E+00
Y-95							
GONADS	4.650E-14	4.607E-11	9.646E-10	1.600E-15	-1.000E+00	1.070E-13	2.060E-08
BREAST	5.190E-14	4.406E-11	9.224E-10	1.530E-15	-1.000E+00	3.170E-13	1.720E-08
LUNGS	4.720E-14	4.204E-11	8.802E-10	1.460E-15	-1.000E+00	8.040E-11	1.760E-08
RED MARR	4.730E-14	4.262E-11	8.922E-10	1.480E-15	-1.000E+00	3.200E-13	1.870E-08
BONE SUR	6.410E-14	6.105E-11	1.278E-09	2.120E-15	-1.000E+00	3.790E-13	1.740E-08
THYROID	4.840E-14	4.377E-11	9.163E-10	1.520E-15	-1.000E+00	2.790E-13	1.760E-08
REMAINDER	4.590E-14	4.147E-11	8.681E-10	1.440E-15	-1.000E+00	1.250E-12	2.210E-08
EFFECTIVE	4.790E-14	4.377E-11	9.163E-10	1.520E-15	-1.000E+00	1.020E-11	1.980E-08
SKIN (FGR)	1.590E-13	6.249E-11	1.308E-09	2.170E-15	-1.000E+00	0.000E+00	0.000E+00
Y-91m							
GONADS	2.490E-14	6.223E-11	1.102E-09	2.180E-15	-1.000E+00	3.210E-13	3.040E-09
BREAST	2.850E-14	5.966E-11	1.056E-09	2.090E-15	-1.000E+00	6.080E-13	2.650E-09
LUNGS	2.480E-14	5.710E-11	1.011E-09	2.000E-15	-1.000E+00	7.000E-11	2.620E-09
RED MARR	2.390E-14	5.824E-11	1.031E-09	2.040E-15	-1.000E+00	7.740E-13	2.950E-09
BONE SUR	4.280E-14	8.422E-11	1.491E-09	2.950E-15	-1.000E+00	6.210E-13	2.710E-09
THYROID	2.540E-14	5.852E-11	1.036E-09	2.050E-15	-1.000E+00	5.020E-13	2.740E-09
REMAINDER	2.370E-14	5.652E-11	1.001E-09	1.980E-15	-1.000E+00	3.740E-12	3.520E-09
EFFECTIVE	2.550E-14	5.966E-11	1.056E-09	2.090E-15	-1.000E+00	9.820E-12	3.040E-09
SKIN (FGR)	3.110E-14	7.251E-11	1.284E-09	2.540E-15	-1.000E+00	0.000E+00	0.000E+00
Br-82							
GONADS	1.270E-13	1.669E-11	3.530E-10	5.840E-16	-1.000E+00	1.690E-10	1.390E-08
BREAST	1.440E-13	1.596E-11	3.376E-10	5.585E-16	-1.000E+00	2.100E-10	1.240E-08
LUNGS	1.270E-13	1.517E-11	3.209E-10	5.309E-16	-1.000E+00	1.680E-09	1.270E-08
RED MARR	1.240E-13	1.542E-11	3.260E-10	5.394E-16	-1.000E+00	2.180E-10	1.320E-08
BONE SUR	1.990E-13	2.238E-11	4.734E-10	7.832E-16	-1.000E+00	1.920E-10	1.260E-08
THYROID	1.300E-13	1.588E-11	3.358E-10	5.556E-16	-1.000E+00	2.060E-10	1.260E-08
REMAINDER	1.220E-13	1.490E-11	3.152E-10	5.215E-16	-1.000E+00	3.310E-10	1.450E-08
EFFECTIVE	1.300E-13	1.585E-11	3.353E-10	5.546E-16	-1.000E+00	4.130E-10	1.350E-08
SKIN (FGR)	1.540E-13	5.253E-11	1.110E-09	1.836E-15	-1.000E+00	0.000E+00	0.000E+00
Br-83							
GONADS	3.740E-16	3.368E-13	3.429E-13	4.790E-17	-1.000E+00	1.130E-12	1.560E-12
BREAST	4.290E-16	3.297E-13	3.357E-13	4.690E-17	-1.000E+00	1.140E-12	5.170E-13
LUNGS	3.690E-16	3.002E-13	3.057E-13	4.270E-17	-1.000E+00	1.820E-10	3.890E-13
RED MARR	3.540E-16	2.932E-13	2.985E-13	4.170E-17	-1.000E+00	1.140E-12	8.590E-13
BONE SUR	6.750E-16	6.841E-13	6.965E-13	9.730E-17	-1.000E+00	1.140E-12	4.380E-13
THYROID	3.800E-16	3.044E-13	3.100E-13	4.330E-17	-1.000E+00	1.140E-12	2.660E-13
REMAINDER	3.520E-16	2.932E-13	2.985E-13	4.170E-17	-1.000E+00	5.310E-12	3.570E-10
EFFECTIVE	3.820E-16	3.227E-13	3.286E-13	4.590E-17	-1.000E+00	2.410E-11	1.080E-10
SKIN (FGR)	1.850E-14	7.241E-11	7.373E-11	1.030E-14	-1.000E+00	0.000E+00	0.000E+00
Br-84							
GONADS	9.160E-14	5.451E-12	9.607E-11	1.910E-16	-1.000E+00	2.840E-12	9.960E-10
BREAST	1.020E-13	5.280E-12	9.305E-11	1.850E-16	-1.000E+00	3.310E-12	1.590E-10
LUNGS	9.270E-14	4.852E-12	8.550E-11	1.700E-16	-1.000E+00	1.560E-10	6.630E-11
RED MARR	9.260E-14	4.880E-12	8.601E-11	1.710E-16	-1.000E+00	3.270E-12	4.390E-10
BONE SUR	1.280E-13	8.020E-12	1.413E-10	2.810E-16	-1.000E+00	2.990E-12	5.530E-10
THYROID	9.500E-14	5.109E-12	9.003E-11	1.790E-16	-1.000E+00	3.120E-12	5.250E-11
REMAINDER	8.990E-14	4.766E-12	8.399E-11	1.670E-16	-1.000E+00	1.870E-11	7.370E-09
EFFECTIVE	9.410E-14	5.137E-12	9.053E-11	1.800E-16	-1.000E+00	2.610E-11	2.560E-09
SKIN (FGR)	1.880E-13	5.565E-11	9.808E-10	1.950E-15	-1.000E+00	0.000E+00	0.000E+00
Am-242							
GONADS	6.090E-16	6.027E-11	4.425E-10	2.240E-15	-1.000E+00	1.940E-09	1.340E-09
BREAST	7.300E-16	5.758E-11	4.228E-10	2.140E-15	-1.000E+00	2.940E-12	1.800E-10
LUNGS	5.510E-16	5.596E-11	4.109E-10	2.080E-15	-1.000E+00	5.200E-08	4.010E-11

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

RED MARR	4.770E-16	5.731E-11	4.208E-10	2.130E-15	-1.000E+00	1.320E-08	2.810E-10
BONE SUR	1.880E-15	7.776E-11	5.709E-10	2.890E-15	-1.000E+00	1.650E-07	9.770E-11
THYROID	5.940E-16	5.462E-11	4.010E-10	2.030E-15	-1.000E+00	2.520E-12	6.400E-12
REMAINDER	5.180E-16	5.569E-11	4.089E-10	2.070E-15	-1.000E+00	8.540E-09	6.260E-09
EFFECTIVE	6.150E-16	5.812E-11	4.267E-10	2.160E-15	-1.000E+00	1.580E-08	2.280E-09
SKIN (FGR)	8.200E-15	2.217E-10	1.628E-09	8.240E-15	-1.000E+00	0.000E+00	0.000E+00
Np-238							
GONADS	2.660E-14	7.315E-13	9.675E-13	4.740E-17	-1.000E+00	1.990E-09	3.770E-12
BREAST	3.020E-14	7.007E-13	9.267E-13	4.540E-17	-1.000E+00	4.180E-11	7.070E-13
LUNGS	2.650E-14	6.713E-13	8.879E-13	4.350E-17	-1.000E+00	3.470E-09	2.720E-13
RED MARR	2.610E-14	6.852E-13	9.063E-13	4.440E-17	-1.000E+00	1.690E-08	1.070E-12
BONE SUR	3.990E-14	9.923E-13	1.312E-12	6.430E-17	-1.000E+00	2.100E-07	6.060E-13
THYROID	2.730E-14	6.590E-13	8.716E-13	4.270E-17	-1.000E+00	2.450E-11	5.290E-14
REMAINDER	2.550E-14	6.682E-13	8.838E-13	4.330E-17	-1.000E+00	2.550E-09	1.240E-09
EFFECTIVE	2.720E-14	7.007E-13	9.267E-13	4.540E-17	-1.000E+00	1.000E-08	3.740E-10
SKIN (FGR)	4.310E-14	1.667E-10	2.204E-10	1.080E-14	-1.000E+00	0.000E+00	0.000E+00
Pu-243							
GONADS	1.020E-15	1.978E-11	2.034E-11	2.540E-15	-1.000E+00	1.670E-12	6.990E-11
BREAST	1.210E-15	1.885E-11	1.938E-11	2.420E-15	-1.000E+00	2.750E-13	1.540E-11
LUNGS	9.280E-16	1.846E-11	1.898E-11	2.370E-15	-1.000E+00	2.270E-10	8.400E-12
RED MARR	7.840E-16	1.900E-11	1.954E-11	2.440E-15	-1.000E+00	5.770E-12	1.930E-11
BONE SUR	3.230E-15	2.484E-11	2.554E-11	3.190E-15	-1.000E+00	6.530E-11	7.400E-12
THYROID	9.910E-16	1.768E-11	1.818E-11	2.270E-15	-1.000E+00	1.130E-13	1.160E-12
REMAINDER	8.660E-16	1.853E-11	1.906E-11	2.380E-15	-1.000E+00	4.690E-11	5.200E-10
EFFECTIVE	1.030E-15	1.916E-11	1.970E-11	2.460E-15	-1.000E+00	4.440E-11	1.790E-10
SKIN (FGR)	8.150E-15	9.111E-11	9.368E-11	1.170E-14	-1.000E+00	0.000E+00	0.000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

**Attachment 4 Palisades MSLB Noble Gas Dose (pal\_MSLB\_ng\_db\_ast.out)**

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#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:06:58
#####

#####
File information
#####

Plant file name          = AST/MSLB/pal_MSLB_ng_db_ast.psf
Inventory file name      = AST/MSLB/pal_mslb_db_ast.nif
Scenario file name       = AST/MSLB/pal_MSLB_ng_db_ast.psf
Release file name        = AST/MSLB/pal_mslb_noble gas_db.rft
Dose conversion file name = AST/MSLB/nai-1101-001rev0.dcf
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#####      #####      #####      # #      # #####      # #      #####
# # #      #      # ##      # #      # #      # #      #
# # #      #      # # #      # #      # #      # #      #
#####      #####      # # #      # #####      # #      #
# # #      # #      # # #      # #      # #      # #      #
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# # #      # #      # #      # #      # #      # #      #
```

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*RADTRAD-NAI 1.1a(QA)
*26 May 2006 14:06:49
** Palisades MSLB Design Basis AST
** Noble Gas Activity Dose
**
*Nuclide inventory file
AST/MSLB/pal_mslb_db_ast.nif
*Plant power
2703
*Compartments
3
*Compartment 1:
PCS
3
432977
0
0
0
0
*Compartment 2:
Environment
2
2e+20
0
0
0
0
*Compartment 3:
Control Room
1
35923
0
1
0
0
*Pathways
5
*Pathway 1:
SG Tube Leakage
1
2
2
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

## \*Pathway 2:

Control Room Unfiltered Makeup

2

3

2

## \*Pathway 3:

Control Room Filtered Makeup

2

3

2

## \*Pathway 4:

Control Room Unfiltered Inleakage

2

3

2

## \*Pathway 5:

Control Room Exhaust

3

2

2

## \*Sources

3

1 1

2 0

3 0

\*dose conversion factors filename

AST/MSLB/nai-1101-001rev0.dcf

\*release fraction and timing filename

AST/MSLB/pal\_mslb\_noble gas\_db.rft

0

1

1

\*Iodine

1 0 0

\*Overlying pool

\*aerosol model

0

\*elemental model

0

\*organic model

0

\*pH tracking

0

\*Compartment detail

\*Compartment 1:

1

\*spray model

0

0

0

\*filter model

0

\*deposition model

0

0

\*Compartment 2:

1

\*spray model

0

0

0

\*filter model

0

\*deposition model

0

0

\*Compartment 3:

1

\*spray model

0

0

0

\*filter model

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
1
3
0 0 99 99 99
0.3333 1413.6 99 99 99
720 1413.6 99 99 99
*deposition model
0
0
*Pathways:
*Pathway 1
*filter efficiency model
1
3
0 5.005 0 0 0
12 0 0 0 0
720 0 0 0 0
*Pathway 2
*filter efficiency model
1
3
0 660 0 0 0
0.3333 0 0 0 0
720 0 0 0 0
*Pathway 3
*filter efficiency model
1
3
0 0 99 99 99
0.3333 1413.6 99 99 99
720 1413.6 99 99 99
*Pathway 4
*filter efficiency model
1
3
0 0 0 0 0
0.3333 10 0 0 0
720 10 0 0 0
*Pathway 5
*filter efficiency model
1
3
0 660 0 0 0
0.3333 1423.6 0 0 0
720 1423.6 0 0 0
*x/q tables
4
EAB
2
0 0.000539
720 0.000539
LPZ
6
0 6.66e-05
2 3.03e-05
8 2.04e-05
24 8.67e-06
96 2.54e-06
720 2.54e-06
Control Room Unfiltered
6
0 0.0131
2 0.0113
8 0.00468
24 0.00287
96 0.00236
720 0.00236
Control Room Filtered
6
0 0.000799
2 0.000643
8 0.000258
24 0.000175
96 0.000132
```

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```

720 0.000132
*dose locations
3
*location name, compartment number and x/q table
EAB
2
1
*br model
1
4
0 0.00035
8 0.00018
24 0.00023
720 0.00023
*of model
0
*location x/q input to be included
0
*location name, compartment number and x/q table
LPZ
2
2
*br model
1
4
0 0.00035
8 0.00018
24 0.00023
720 0.00023
*of model
0
*location x/q input to be included
0
*location name, compartment number and x/q table
Control Room
3
0
*br model
1
2
0 0.00035
720 0.00035
*of model
1
4
0 1
24 0.6
96 0.4
720 0.4
*location x/q input to be included
1
*number of intake combinations
3
*intake combinations
2 1 3
3 1 4
4 1 3
*time step count
1
0 0.02
*show plant, scenario, event, step, model
1
1
1
0
1

```

```

#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:06:58
#####
#####
Plant Description

```

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

#####

Number of Nuclides = 107

Inventory Power = 2.7030E+03 MWth
Plant Power Level = 2.7030E+03 MWth

Number of compartments = 3

Compartment information

Compartment number 1 (Source term fraction = 1.0000E+00)
Name: PCS
Compartment volume = 4.3298E+05 (Cubic feet)
Pathways into and out of compartment 1
Pathway to compartment number 2: SG Tube Leakage

Compartment number 2
Name: Environment
Pathways into and out of compartment 2
Pathway to compartment number 3: Control Room Unfiltered Makeup
Pathway to compartment number 3: Control Room Filtered Makeup
Pathway to compartment number 3: Control Room Unfiltered Inleakage
Pathway from compartment number 1: SG Tube Leakage
Pathway from compartment number 3: Control Room Exhaust

Compartment number 3
Name: Control Room
Compartment volume = 3.5923E+04 (Cubic feet)
Removal devices within compartment:
Filter(s)
Pathways into and out of compartment 3
Pathway to compartment number 2: Control Room Exhaust
Pathway from compartment number 2: Control Room Unfiltered Makeup
Pathway from compartment number 2: Control Room Filtered Makeup
Pathway from compartment number 2: Control Room Unfiltered Inleakage

Total number of pathways = 5

#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:06:58
#####

#####
Scenario Description
#####

Radioactive Decay is enabled
Calculation of Daughters is enabled

Iodine fractions
Aerosol = 1.0000E+00
Elemental = 0.0000E+00
Organic = 0.0000E+00

COMPARTMENT DATA

Compartment number 1: PCS
Compartment number 2: Environment
Compartment number 3: Control Room

Compartment Filter Data

Table with 5 columns: Time (hr), Flow Rate (cfm), and Filter Efficiencies (%) for Aerosol, Elemental, and Organic.

PATHWAY DATA



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Pathway number 1: SG Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	5.0050E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Unfiltered Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	6.6000E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 3: Control Room Filtered Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.9000E+01	9.9000E+01	9.9000E+01
3.3330E-01	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01
7.2000E+02	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01

Pathway number 4: Control Room Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	1.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 5: Control Room Exhaust

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	6.6000E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	1.4236E+03	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.4236E+03	0.0000E+00	0.0000E+00	0.0000E+00

X/Q DATA

X/Q table 1: EAB

Time (hr)	X/Q (s * m^-3)
0.0000E+00	5.3900E-04
7.2000E+02	5.3900E-04

X/Q table 2: LPZ

Time (hr)	X/Q (s * m^-3)
0.0000E+00	6.6600E-05
2.0000E+00	3.0300E-05
8.0000E+00	2.0400E-05
2.4000E+01	8.6700E-06
9.6000E+01	2.5400E-06
7.2000E+02	2.5400E-06

X/Q table 3: Control Room Unfiltered

Time (hr)	X/Q (s * m^-3)
0.0000E+00	1.3100E-02
2.0000E+00	1.1300E-02
8.0000E+00	4.6800E-03
2.4000E+01	2.8700E-03

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

9.6000E+01 2.3600E-03
7.2000E+02 2.3600E-03

X/Q table 4: Control Room Filtered
Time (hr) X/Q (s \* m^-3)
0.0000E+00 7.9900E-04
2.0000E+00 6.4300E-04
8.0000E+00 2.5800E-04
2.4000E+01 1.7500E-04
9.6000E+01 1.3200E-04
7.2000E+02 1.3200E-04

LOCATION DATA

Location EAB is in compartment 2

Using X/Q Table 1

Location Breathing Rate Data

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

Location LPZ is in compartment 2

Using X/Q Table 2

Location Breathing Rate Data

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

Location Control Room is in compartment 3

Inleakage X/Q Table Assignments

Inleakage Path Source Path X/Q Table
2 1 3
3 1 4
4 1 3

Location Breathing Rate Data

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

Location Occupancy Factor Data

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

USER SPECIFIED TIME STEP DATA - SUPPLEMENTAL TIME STEPS

Time Time step
0.0000E+00 2.0000E-02

#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:06:58
#####

#### # # ##### ##### # # #####
# # # # # # # # # # #
# # # # # # ##### # # #
# # # # # # # # # # #

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

# # # # # # # # # #  
 ##### ##### # # ##### #

#####  
 Dose, Detailed Model and Detailed Inventory Output  
 #####

Detailed model information at time (H) = 0.0010

EAB Doses:

Time (h) =	0.0010	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		1.0872E-05	4.9052E-11	2.0260E-05	1.0873E-05
Accumulated dose (rem)		1.0872E-05	4.9052E-11	2.0260E-05	1.0873E-05

LPZ Doses:

Time (h) =	0.0010	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		1.3434E-06	6.0609E-12	2.5034E-06	1.3434E-06
Accumulated dose (rem)		1.3434E-06	6.0609E-12	2.5034E-06	1.3434E-06

Control Room Doses:

Time (h) =	0.0010	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		3.2524E-09	6.5955E-13	2.0519E-07	3.2588E-09
Accumulated dose (rem)		3.2524E-09	6.5955E-13	2.0519E-07	3.2588E-09

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) =	0.0010	Ci	kg	Atoms	Bq
Kr-85		2.1461E+03	5.4700E-03	3.8754E+22	7.9405E+13
Kr-85m		1.9867E+04	2.4141E-06	1.7103E+19	7.3506E+14
Kr-87		3.8290E+04	1.3518E-06	9.3571E+18	1.4167E+15
Kr-88		5.3904E+04	4.2988E-06	2.9418E+19	1.9944E+15
Xe-133		1.4953E+05	7.9886E-04	3.6172E+21	5.5327E+15
Xe-135		4.7859E+04	1.8741E-05	8.3601E+19	1.7708E+15
Kr-83m		9.2987E+03	4.5069E-07	3.2700E+18	3.4405E+14
Xe-138		1.2316E+05	1.2808E-06	5.5894E+18	4.5569E+15
Xe-131m		8.5129E+02	1.0163E-05	4.6721E+19	3.1498E+13
Xe-133m		4.7521E+03	1.0591E-05	4.7954E+19	1.7583E+14
Xe-135m		3.0521E+04	3.3506E-07	1.4946E+18	1.1293E+15
Cs-138		1.1992E+02	2.8339E-09	1.2367E+16	4.4369E+12
Rb-88		9.4816E+01	7.8988E-10	5.4054E+15	3.5082E+12

PCS Transport Group Inventory:

Time (h) =	0.0010	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		4.2616E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)		3.6238E-09	0.0000E+00	0.0000E+00

		Deposition	Recirculating
Time (h) =	0.0010	Surfaces	Filter
Noble gases (atoms)		0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

		Pathway
Time (h) =	0.0010	Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Environment Integral Nuclide Release:

Time (h) =	0.0010	Ci	kg	Atoms	Bq
------------	--------	----	----	-------	----

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Kr-85	5.1243E-04	1.3061E-09	9.2536E+15	1.8960E+07
Kr-85m	4.7436E-03	5.7642E-13	4.0838E+12	1.7551E+08
Kr-87	9.1428E-03	3.2277E-13	2.2342E+12	3.3828E+08
Kr-88	1.2871E-02	1.0265E-12	7.0244E+12	4.7622E+08
Xe-133	3.5704E-02	1.9075E-10	8.6369E+14	1.3211E+09
Xe-135	1.1427E-02	4.4748E-12	1.9961E+13	4.2281E+08
Kr-83m	2.2202E-03	1.0761E-13	7.8078E+11	8.2148E+07
Xe-138	2.9407E-02	3.0583E-13	1.3346E+12	1.0881E+09
Xe-131m	2.0327E-04	2.4267E-12	1.1156E+13	7.5209E+06
Xe-133m	1.1347E-03	2.5288E-12	1.1450E+13	4.1983E+07
Xe-135m	7.2865E-03	7.9990E-14	3.5682E+11	2.6960E+08
Cs-138	3.1988E-05	7.5595E-16	3.2989E+09	1.1835E+06
Rb-88	2.5289E-05	2.1068E-16	1.4417E+09	9.3571E+05

Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) =	Release	Rate/s	Release
0.0010			
Noble gases (atoms)	1.0176E+16	5.0878E+15	1.0176E+16
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	9.6663E-16	4.8331E-16	9.6663E-16

SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) =	Filter
0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) =	Filter
0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) =	Filter
0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) =	Filter
0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) =	Filter
0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
0.0010				
Kr-85	3.0357E-06	7.7375E-12	5.4819E+13	1.1232E+05
Kr-85m	2.8102E-05	3.4147E-15	2.4193E+10	1.0398E+06

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Kr-87	5.4163E-05	1.9121E-15	1.3236E+10	2.0040E+06
Kr-88	7.6248E-05	6.0808E-15	4.1613E+10	2.8212E+06
Xe-133	2.1152E-04	1.1300E-12	5.1166E+12	7.8261E+06
Xe-135	6.7696E-05	2.6509E-14	1.1825E+11	2.5048E+06
Kr-83m	1.3153E-05	6.3748E-16	4.6253E+09	4.8665E+05
Xe-138	1.7421E-04	1.8118E-15	7.9064E+09	6.4459E+06
Xe-131m	1.2042E-06	1.4376E-14	6.6088E+10	4.4554E+04
Xe-133m	6.7220E-06	1.4981E-14	6.7832E+10	2.4871E+05
Xe-135m	4.3161E-05	4.7382E-16	2.1136E+09	1.5970E+06
Cs-138	2.0053E-07	4.7391E-18	2.0681E+07	7.4197E+03
Rb-88	1.5853E-07	1.3207E-18	9.0379E+06	5.8657E+03

Control Room Transport Group Inventory:

Time (h) =	0.0010	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		6.0281E+13	0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)		6.0598E-18	0.0000E+00	0.0000E+00

Time (h) =	0.0010	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)		0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) =	0.0010	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	0.0010	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	0.0010	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) =	0.0010	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Detailed model information at time (H) = 0.3333

EAB Doses:

Time (h) =	0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		7.0044E-03	1.2791E-05	1.3855E-02	7.1327E-03
Accumulated dose (rem)		7.0152E-03	1.2792E-05	1.3875E-02	7.1435E-03

LPZ Doses:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) =	0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		8.6547E-04	1.5805E-06	1.7119E-03	8.8133E-04
Accumulated dose (rem)		8.6682E-04	1.5805E-06	1.7144E-03	8.8267E-04

Control Room Doses:

Time (h) =	0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		8.1234E-04	6.4608E-05	5.5370E-02	1.4628E-03
Accumulated dose (rem)		8.1234E-04	6.4608E-05	5.5370E-02	1.4628E-03

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) =	0.3333	Ci	kg	Atoms	Bq
Kr-85		2.1456E+03	5.4688E-03	3.8746E+22	7.9387E+13
Kr-85m		1.8867E+04	2.2925E-06	1.6242E+19	6.9806E+14
Kr-87		3.1939E+04	1.1276E-06	7.8051E+18	1.1818E+15
Kr-88		4.9693E+04	3.9630E-06	2.7120E+19	1.8387E+15
Xe-133		1.4923E+05	7.9726E-04	3.6099E+21	5.5216E+15
Xe-135		4.7153E+04	1.8464E-05	8.2367E+19	1.7447E+15
Kr-83m		8.1971E+03	3.9730E-07	2.8826E+18	3.0329E+14
Xe-138		4.6430E+04	4.8287E-07	2.1072E+18	1.7179E+15
Xe-131m		8.5041E+02	1.0153E-05	4.6673E+19	3.1465E+13
Xe-133m		4.7302E+03	1.0542E-05	4.7733E+19	1.7502E+14
Xe-135m		1.2358E+04	1.3567E-07	6.0520E+17	4.5726E+14
Cs-138		2.6931E+04	6.3646E-07	2.7774E+18	9.9646E+14
Rb-88		2.8490E+04	2.3734E-07	1.6242E+18	1.0541E+15

PCS Transport Group Inventory:

Time (h) =	0.3333	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		4.2589E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)		8.7380E-07	0.0000E+00	0.0000E+00

Time (h) =	0.3333	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)		0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Environment Integral Nuclide Release:

Time (h) =	0.3333	Ci	kg	Atoms	Bq
Kr-85		4.9338E-01	1.2576E-06	8.9096E+18	1.8255E+10
Kr-85m		4.3384E+00	5.2718E-10	3.7350E+15	1.6052E+11
Kr-87		7.3445E+00	2.5929E-10	1.7948E+15	2.7175E+11
Kr-88		1.1427E+01	9.1131E-10	6.2364E+15	4.2280E+11
Xe-133		3.4316E+01	1.8333E-07	8.3011E+17	1.2697E+12
Xe-135		1.0843E+01	4.2459E-09	1.8940E+16	4.0119E+11
Kr-83m		1.8849E+00	9.1360E-11	6.6287E+14	6.9743E+10
Xe-138		1.0677E+01	1.1104E-10	4.8455E+14	3.9504E+11
Xe-131m		1.9555E-01	2.3346E-09	1.0733E+16	7.2355E+09
Xe-133m		1.0877E+00	2.4241E-09	1.0976E+16	4.0246E+10
Xe-135m		2.8418E+00	3.1197E-11	1.3917E+14	1.0515E+11
Cs-138		6.1929E+00	1.4635E-10	6.3867E+14	2.2914E+11
Rb-88		6.5513E+00	5.4577E-11	3.7349E+14	2.4240E+11

Environment Transport Group Inventory:

Present	Release	Integral
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Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) =	0.3333	Release	Rate/s	Release
Noble gases (atoms)		3.9174E+17	5.4409E+15	9.7934E+18
Elemental I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)		8.0374E-12	1.1163E-13	2.0093E-10

SG Tube Leakage Transport Group Inventory:

Time (h) =	0.3333	Pathway
		Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) =	0.3333	Pathway
		Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	0.3333	Pathway
		Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	0.3333	Pathway
		Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) =	0.3333	Pathway
		Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	0.3333	Ci	kg	Atoms	Bq
Kr-85		1.6918E-03	4.3121E-09	3.0551E+16	6.2596E+07
Kr-85m		1.4876E-02	1.8077E-12	1.2807E+13	5.5042E+08
Kr-87		2.5184E-02	8.8909E-13	6.1543E+12	9.3181E+08
Kr-88		3.9183E-02	3.1248E-12	2.1384E+13	1.4498E+09
Xe-133		1.1767E-01	6.2863E-10	2.8464E+15	4.3537E+09
Xe-135		3.7180E-02	1.4559E-11	6.4946E+13	1.3757E+09
Kr-83m		6.4634E-03	3.1327E-13	2.2729E+12	2.3914E+08
Xe-138		3.6610E-02	3.8074E-13	1.6615E+12	1.3546E+09
Xe-131m		6.7054E-04	8.0054E-12	3.6801E+13	2.4810E+07
Xe-133m		3.7298E-03	8.3123E-12	3.7637E+13	1.3800E+08
Xe-135m		9.7445E-03	1.0697E-13	4.7719E+11	3.6055E+08
Cs-138		2.1235E-02	5.0184E-13	2.1900E+12	7.8570E+08
Rb-88		2.2464E-02	1.8714E-13	1.2807E+12	8.3118E+08

Control Room Transport Group Inventory:

Time (h) =	0.3333	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		3.3581E+16	0.0000E+00	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	6.8898E-13	0.0000E+00	0.0000E+00

	Deposition	Recirculating
	Surfaces	Filter
Time (h) = 0.3333		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
	Filter
Time (h) = 0.3333	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
	Filter
Time (h) = 0.3333	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
	Filter
Time (h) = 0.3333	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
	Filter
Time (h) = 0.3333	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 2.0000

EAB Doses:

Time (h) = 2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	2.3424E-02	9.7905E-05	5.4018E-02	2.4560E-02
Accumulated dose (rem)	3.0439E-02	1.1070E-04	6.7893E-02	3.1703E-02

LPZ Doses:

Time (h) = 2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	2.8943E-03	1.2097E-05	6.6746E-03	3.0347E-03
Accumulated dose (rem)	3.7611E-03	1.3678E-05	8.3890E-03	3.9173E-03

Control Room Doses:

Time (h) = 2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.9251E-03	1.6067E-04	1.3792E-01	3.7751E-03
Accumulated dose (rem)	2.7374E-03	2.2528E-04	1.9329E-01	5.2380E-03

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 2.0000	Ci	kg	Atoms	Bq
Kr-85	2.1431E+03	5.4625E-03	3.8701E+22	7.9296E+13
Kr-85m	1.4561E+04	1.7694E-06	1.2536E+19	5.3877E+14
Kr-87	1.2861E+04	4.5405E-07	3.1429E+18	4.7586E+14



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Kr-88	3.3047E+04	2.6355E-06	1.8036E+19	1.2227E+15
Xe-133	1.4774E+05	7.8929E-04	3.5738E+21	5.4664E+15
Xe-135	4.1787E+04	1.6363E-05	7.2994E+19	1.5461E+15
Kr-83m	4.3550E+03	2.1108E-07	1.5315E+18	1.6114E+14
Xe-138	3.4821E+02	3.6213E-09	1.5803E+16	1.2884E+13
Xe-131m	8.4600E+02	1.0100E-05	4.6431E+19	3.1302E+13
Xe-133m	4.6220E+03	1.0301E-05	4.6641E+19	1.7101E+14
Xe-135m	1.3262E+02	1.4559E-09	6.4946E+15	4.9070E+12
Cs-138	7.1372E+03	1.6867E-07	7.3605E+17	2.6408E+14
Rb-88	3.7195E+04	3.0986E-07	2.1205E+18	1.3762E+15

PCS Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 2.0000			
Noble gases (atoms)	4.2476E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	4.7853E-07	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 2.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

	Pathway Filter
Time (h) = 2.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 2.0000	Ci	kg	Atoms	Bq
Kr-85	2.9735E+00	7.5790E-06	5.3696E+19	1.1002E+11
Kr-85m	2.0203E+01	2.4550E-09	1.7393E+16	7.4752E+11
Kr-87	1.7844E+01	6.2998E-10	4.3607E+15	6.6025E+11
Kr-88	4.5852E+01	3.6566E-09	2.5024E+16	1.6965E+12
Xe-133	2.0499E+02	1.0951E-06	4.9586E+18	7.5844E+12
Xe-135	5.7979E+01	2.2704E-08	1.0128E+17	2.1452E+12
Kr-83m	6.0424E+00	2.9287E-10	2.1249E+15	2.2357E+11
Xe-138	4.8313E-01	5.0244E-12	2.1926E+13	1.7876E+10
Xe-131m	1.1738E+00	1.4014E-08	6.4421E+16	4.3430E+10
Xe-133m	6.4128E+00	1.4292E-08	6.4712E+16	2.3727E+11
Xe-135m	1.8401E-01	2.0200E-12	9.0110E+12	6.8083E+09
Cs-138	9.8979E+00	2.3391E-10	1.0208E+15	3.6622E+11
Rb-88	5.1602E+01	4.2988E-10	2.9418E+15	1.9093E+12

Environment Transport Group Inventory:

	Present Release	Release Rate/s	Integral Release
Time (h) = 2.0000			
Noble gases (atoms)	5.8923E+17	8.1838E+15	5.8934E+19
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	6.6352E-12	9.2156E-14	6.6380E-10

SG Tube Leakage Transport Group Inventory:

	Pathway Filter
Time (h) = 2.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 2.0000	Ci	kg	Atoms	Bq
Cs-138	3.6166E-03	8.5470E-14	3.7298E+11	1.3381E+08
Rb-88	5.9224E-03	4.9337E-14	3.3763E+11	2.1913E+08

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	1.3481E-13

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 2.0000	Ci	kg	Atoms	Bq
Kr-85	3.9706E-04	1.0120E-09	7.1702E+15	1.4691E+07
Kr-85m	2.6978E-03	3.2782E-13	2.3225E+12	9.9818E+07
Kr-87	2.3828E-03	8.4122E-14	5.8229E+11	8.8164E+07
Kr-88	6.1227E-03	4.8828E-13	3.3415E+12	2.2654E+08
Xe-133	2.7372E-02	1.4623E-10	6.6213E+14	1.0128E+09
Xe-135	7.7420E-03	3.0317E-12	1.3524E+13	2.8645E+08
Kr-83m	8.0686E-04	3.9107E-14	2.8375E+11	2.9854E+07
Xe-138	6.4513E-05	6.7093E-16	2.9278E+09	2.3870E+06
Xe-131m	1.5674E-04	1.8713E-12	8.6023E+12	5.7993E+06
Xe-133m	8.5632E-04	1.9084E-12	8.6412E+12	3.1684E+07
Xe-135m	2.4571E-05	2.6974E-16	1.2033E+09	9.0913E+05
Cs-138	1.0215E-04	2.4140E-15	1.0534E+10	3.7794E+06
Rb-88	2.5720E-03	2.1427E-14	1.4663E+11	9.5165E+07

Control Room Transport Group Inventory:

			Overlying
Time (h) = 2.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	7.8696E+15	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	2.3841E-14	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 2.0000	Ci	kg	Atoms	Bq
Cs-138	2.2692E-03	5.3628E-14	2.3403E+11	8.3962E+07
Rb-88	3.4345E-03	2.8611E-14	1.9580E+11	1.2707E+08

Deposition Recirculating

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) =	2.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	8.2240E-14	

Control Room Unfiltered Makeup Transport Group Inventory:

		Pathway
Time (h) =	2.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	2.0000	Ci	kg	Atoms	Bq
Cs-138		3.6166E-03	8.5470E-14	3.7298E+11	1.3381E+08
Rb-88		5.9224E-03	4.9337E-14	3.3763E+11	2.1913E+08

Control Room Filtered Makeup Transport Group Inventory:

		Pathway
Time (h) =	2.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	1.3481E-13	

Control Room Unfiltered Inleakage Transport Group Inventory:

		Pathway
Time (h) =	2.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Exhaust Transport Group Inventory:

		Pathway
Time (h) =	2.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Total Filter Nuclide Inventory:

Time (h) =	2.0000	Ci	kg	Atoms	Bq
Cs-138		5.8858E-03	1.3910E-13	6.0700E+11	2.1778E+08
Rb-88		9.3568E-03	7.7948E-14	5.3343E+11	3.4620E+08

Detailed model information at time (H) = 8.0000

EAB Doses:

Time (h) =	8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		2.8317E-02	8.8653E-05	7.2650E-02	2.9692E-02
Accumulated dose (rem)		5.8755E-02	1.9935E-04	1.4054E-01	6.1395E-02

LPZ Doses:

Time (h) =	8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		1.5918E-03	4.9837E-06	4.0840E-03	1.6691E-03
Accumulated dose (rem)		5.3529E-03	1.8662E-05	1.2473E-02	5.5865E-03

Control Room Doses:

Time (h) =	8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		9.7330E-04	3.9463E-05	7.1241E-02	1.6157E-03
Accumulated dose (rem)		3.7107E-03	2.6474E-04	2.6453E-01	6.8537E-03

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
Kr-85	2.1342E+03	5.4398E-03	3.8540E+22	7.8966E+13
Kr-85m	5.7309E+03	6.9639E-07	4.9338E+18	2.1204E+14
Kr-87	4.8657E+02	1.7178E-08	1.1891E+17	1.8003E+13
Kr-88	7.6093E+03	6.0684E-07	4.1528E+18	2.8154E+14
Xe-133	1.4249E+05	7.6124E-04	3.4468E+21	5.2721E+15
Xe-135	2.6338E+04	1.0313E-05	4.6007E+19	9.7450E+14
Kr-83m	4.4689E+02	2.1660E-08	1.5716E+17	1.6535E+13
Xe-138	7.8006E-06	8.1125E-17	3.5402E+08	2.8862E+05
Xe-131m	8.3030E+02	9.9128E-06	4.5569E+19	3.0721E+13
Xe-133m	4.2523E+03	9.4768E-06	4.2910E+19	1.5734E+14
Xe-135m	1.0792E-05	1.1848E-16	5.2851E+08	3.9932E+05
Cs-138	3.1821E+00	7.5202E-11	3.2817E+14	1.1774E+11
Rb-88	8.6971E+03	7.2453E-08	4.9582E+17	3.2179E+14

PCS Transport Group Inventory:

Time (h) =	Atmosphere	Sump	Overlying Pool
8.0000			
Noble gases (atoms)	4.2131E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	7.2528E-08	0.0000E+00	0.0000E+00

Time (h) =	Deposition Surfaces	Recirculating Filter
8.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
Kr-85	1.1873E+01	3.0264E-05	2.1441E+20	4.3932E+11
Kr-85m	3.1883E+01	3.8743E-09	2.7449E+16	1.1797E+12
Kr-87	2.7070E+00	9.5567E-11	6.6152E+14	1.0016E+11
Kr-88	4.2334E+01	3.3761E-09	2.3104E+16	1.5663E+12
Xe-133	7.9272E+02	4.2351E-06	1.9176E+19	2.9331E+13
Xe-135	1.4653E+02	5.7378E-08	2.5595E+17	5.4215E+12
Kr-83m	2.4862E+00	1.2050E-10	8.7432E+14	9.1990E+10
Xe-131m	4.6193E+00	5.5149E-08	2.5352E+17	1.7091E+11
Xe-133m	2.3657E+01	5.2723E-08	2.3873E+17	8.7532E+11
Cs-138	1.7695E-02	4.1819E-13	1.8249E+12	6.5472E+08
Rb-88	4.8385E+01	4.0308E-10	2.7584E+15	1.7902E+12

Environment Transport Group Inventory:

Time (h) =	Present Release	Release Rate/s	Integral Release
8.0000			
Noble gases (atoms)	5.8442E+17	8.1169E+15	2.3439E+20
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	1.0058E-12	1.3969E-14	4.0349E-10

SG Tube Leakage Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 8.0000	Ci	kg	Atoms	Bq
Cs-138	7.1723E-06	1.6950E-16	7.3968E+08	2.6538E+05
Rb-88	1.1993E-03	9.9907E-15	6.8370E+10	4.4373E+07

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	1.0160E-14

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 8.0000	Ci	kg	Atoms	Bq
Kr-85	3.0034E-04	7.6552E-10	5.4236E+15	1.1113E+07
Kr-85m	8.0649E-04	9.7999E-14	6.9431E+11	2.9840E+07
Kr-87	6.8473E-05	2.4174E-15	1.6733E+10	2.5335E+06
Kr-88	1.0708E-03	8.5398E-14	5.8441E+11	3.9620E+07
Xe-133	2.0052E-02	1.0713E-10	4.8505E+14	7.4192E+08
Xe-135	3.7064E-03	1.4514E-12	6.4743E+12	1.3714E+08
Kr-83m	6.2889E-05	3.0481E-15	2.2116E+10	2.3269E+06
Xe-131m	1.1684E-04	1.3950E-12	6.4128E+12	4.3233E+06
Xe-133m	5.9841E-04	1.3336E-12	6.0386E+12	2.2141E+07
Cs-138	2.6974E-08	6.3747E-19	2.7819E+06	9.9805E+02
Rb-88	4.4409E-04	3.6996E-15	2.5317E+10	1.6431E+07

Control Room Transport Group Inventory:

			Overlying
Time (h) = 8.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	5.9289E+15	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	3.7002E-15	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 8.0000	Ci	kg	Atoms	Bq
Cs-138	1.3734E-06	3.2457E-17	1.4164E+08	5.0816E+04

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Rb-88 4.6773E-04 3.8965E-15 2.6665E+10 1.7306E+07

		Deposition	Recirculating
Time (h) =	8.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00	
Elemental I (atoms)	0.0000E+00	0.0000E+00	
Organic I (atoms)	0.0000E+00	0.0000E+00	
Aerosols (kg)	0.0000E+00	3.9289E-15	

Control Room Unfiltered Makeup Transport Group Inventory:

		Pathway
Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	8.0000	Ci	kg	Atoms	Bq
Cs-138		7.1723E-06	1.6950E-16	7.3968E+08	2.6538E+05
Rb-88		1.1993E-03	9.9907E-15	6.8370E+10	4.4373E+07

Control Room Filtered Makeup Transport Group Inventory:

		Pathway
Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	1.0160E-14	

Control Room Unfiltered Inleakage Transport Group Inventory:

		Pathway
Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Exhaust Transport Group Inventory:

		Pathway
Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Total Filter Nuclide Inventory:

Time (h) =	8.0000	Ci	kg	Atoms	Bq
Cs-138		8.5457E-06	2.0196E-16	8.8132E+08	3.1619E+05
Rb-88		1.6670E-03	1.3887E-14	9.5035E+10	6.1679E+07

Detailed model information at time (H) = 12.0000

EAB Doses:

Time (h) =	12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		6.7449E-03	7.5869E-06	1.8147E-02	6.8700E-03
Accumulated dose (rem)		6.5500E-02	2.0694E-04	1.5869E-01	6.8265E-02

LPZ Doses:

Time (h) =	12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		2.5528E-04	2.8715E-07	6.8682E-04	2.6001E-04
Accumulated dose (rem)		5.6082E-03	1.8949E-05	1.3160E-02	5.8465E-03

Control Room Doses:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.1549E-04	3.5208E-06	9.3034E-03	1.7356E-04
Accumulated dose (rem)	3.8262E-03	2.6826E-04	2.7384E-01	7.0272E-03

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Kr-85	2.1283E+03	5.4246E-03	3.8433E+22	7.8746E+13
Kr-85m	3.0778E+03	3.7400E-07	2.6497E+18	1.1388E+14
Kr-87	5.4835E+01	1.9359E-09	1.3400E+16	2.0289E+12
Kr-88	2.8586E+03	2.2797E-07	1.5601E+18	1.0577E+14
Xe-133	1.3909E+05	7.4307E-04	3.3646E+21	5.1463E+15
Xe-135	1.9360E+04	7.5811E-06	3.3818E+19	7.1632E+14
Kr-83m	9.7950E+01	4.7475E-09	3.4446E+16	3.6242E+12
Xe-131m	8.2000E+02	9.7898E-06	4.5004E+19	3.0340E+13
Xe-133m	4.0224E+03	8.9645E-06	4.0591E+19	1.4883E+14
Cs-138	1.8106E-02	4.2788E-13	1.8672E+12	6.6990E+08
Rb-88	3.2673E+03	2.7219E-08	1.8627E+17	1.2089E+14

PCS Transport Group Inventory:

Time (h) = 12.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	4.1921E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	2.7219E-08	0.0000E+00	0.0000E+00

Time (h) = 12.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

Time (h) = 12.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Kr-85	1.7786E+01	4.5334E-05	3.2119E+20	6.5809E+11
Kr-85m	2.5722E+01	3.1255E-09	2.2144E+16	9.5170E+11
Kr-87	4.5826E-01	1.6178E-11	1.1199E+14	1.6956E+10
Kr-88	2.3890E+01	1.9052E-09	1.3038E+16	8.8391E+11
Xe-133	1.1624E+03	6.2099E-06	2.8118E+19	4.3008E+13
Xe-135	1.6179E+02	6.3356E-08	2.8262E+17	5.9864E+12
Kr-83m	8.1858E-01	3.9675E-11	2.8787E+14	3.0287E+10
Xe-131m	6.8528E+00	8.1814E-08	3.7610E+17	2.5355E+11
Xe-133m	3.3616E+01	7.4917E-08	3.3922E+17	1.2438E+12
Cs-138	1.5125E-04	3.5745E-15	1.5599E+10	5.5963E+06
Rb-88	2.7305E+01	2.2747E-10	1.5566E+15	1.0103E+12

Environment Transport Group Inventory:

Time (h) = 12.0000	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)	5.8151E+17	8.0765E+15	3.5034E+20
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	3.7752E-13	5.2434E-15	2.2747E-10

SG Tube Leakage Transport Group Inventory:

Time (h) = 12.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Cs-138	4.9493E-08	1.1697E-18	5.1042E+06	1.8313E+03
Rb-88	1.8084E-04	1.5065E-15	1.0309E+10	6.6909E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	1.5077E-15

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Kr-85	1.2061E-04	3.0743E-10	2.1781E+15	4.4627E+06
Kr-85m	1.7443E-04	2.1195E-14	1.5017E+11	6.4538E+06
Kr-87	3.1077E-06	1.0971E-16	7.5942E+08	1.1498E+05
Kr-88	1.6200E-04	1.2920E-14	8.8414E+10	5.9942E+06
Xe-133	7.8825E-03	4.2112E-11	1.9068E+14	2.9165E+08
Xe-135	1.0972E-03	4.2964E-13	1.9166E+12	4.0596E+07
Kr-83m	5.5511E-06	2.6905E-16	1.9521E+09	2.0539E+05
Xe-131m	4.6472E-05	5.5481E-13	2.5505E+12	1.7194E+06
Xe-133m	2.2796E-04	5.0804E-13	2.3004E+12	8.4345E+06
Rb-88	6.7386E-05	5.6137E-16	3.8417E+09	2.4933E+06

Control Room Transport Group Inventory:

			Overlying
Time (h) = 12.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	2.3758E+15	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	5.6137E-16	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Cs-138	8.4745E-09	2.0028E-19	8.7397E+05	3.1356E+02



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Rb-88 7.1159E-05 5.9281E-16 4.0568E+09 2.6329E+06

	Deposition Surfaces	Recirculating Filter
Time (h) = 12.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	5.9301E-16

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway Filter
Time (h) = 12.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Cs-138	4.9493E-08	1.1697E-18	5.1042E+06	1.8313E+03
Rb-88	1.8084E-04	1.5065E-15	1.0309E+10	6.6909E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway Filter
Time (h) = 12.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	1.5077E-15

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway Filter
Time (h) = 12.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway Filter
Time (h) = 12.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Cs-138	5.7968E-08	1.3699E-18	5.9782E+06	2.1448E+03
Rb-88	2.5200E-04	2.0993E-15	1.4366E+10	9.3238E+06

Detailed model information at time (H) = 24.0000

EAB Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	8.7834E-08	3.5351E-11	2.2639E-07	8.8417E-08
Accumulated dose (rem)	6.5500E-02	2.0694E-04	1.5869E-01	6.8265E-02

LPZ Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	3.3243E-09	1.3380E-12	8.5683E-09	3.3464E-09
Accumulated dose (rem)	5.6082E-03	1.8949E-05	1.3160E-02	5.8465E-03

Control Room Doses:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	7.1661E-06	1.8995E-07	6.2530E-04	1.0300E-05
Accumulated dose (rem)	3.8334E-03	2.6845E-04	2.7446E-01	7.0375E-03

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Kr-85	2.1281E+03	5.4242E-03	3.8430E+22	7.8740E+13
Kr-85m	4.8074E+02	5.8417E-08	4.1388E+17	1.7788E+13
Kr-87	7.9143E-02	2.7940E-12	1.9340E+13	2.9283E+09
Kr-88	1.5283E+02	1.2188E-08	8.3405E+16	5.6546E+12
Xe-133	1.3043E+05	6.9683E-04	3.1552E+21	4.8260E+15
Xe-135	7.7537E+03	3.0362E-06	1.3544E+19	2.8689E+14
Kr-83m	1.0400E+00	5.0408E-11	3.6574E+14	3.8481E+10
Xe-131m	7.9647E+02	9.5088E-06	4.3712E+19	2.9469E+13
Xe-133m	3.4332E+03	7.6513E-06	3.4645E+19	1.2703E+14
Cs-138	3.3628E-09	7.9473E-20	3.4681E+05	1.2442E+02
Rb-88	1.7467E+02	1.4552E-09	9.9581E+15	6.4629E+12

PCS Transport Group Inventory:

Time (h) = 24.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	4.1677E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	1.4552E-09	0.0000E+00	0.0000E+00

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

SG Tube Leakage Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Transport Group Inventory:

Time (h) = 24.0000	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)	4.6677E+01	6.4829E-01	3.4830E+20
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	8.0503E-31	1.1181E-32	1.2161E-11

SG Tube Leakage Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	2.1825E-25

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Transport Group Inventory:

			Overlying
Time (h) = 24.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	9.5837E+02	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	1.6175E-29	0.0000E+00	0.0000E+00

	Deposition Recirculating	
	Surfaces	Filter
Time (h) = 24.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	4.1439E-26

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	2.1825E-25

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Detailed model information at time (H) = 96.0000

EAB Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.4575E-20	1.0839E-24	4.5467E-20	1.4593E-20
Accumulated dose (rem)	6.5500E-02	2.0694E-04	1.5869E-01	6.8265E-02

LPZ Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	2.3444E-22	1.7435E-26	7.3136E-22	2.3473E-22
Accumulated dose (rem)	5.6082E-03	1.8949E-05	1.3160E-02	5.8465E-03

Control Room Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	7.1345E-19	2.7348E-21	7.5347E-17	7.5856E-19
Accumulated dose (rem)	3.8334E-03	2.6845E-04	2.7446E-01	7.0375E-03

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Kr-85	2.1270E+03	5.4214E-03	3.8410E+22	7.8698E+13
Kr-85m	6.9812E-03	8.4831E-13	6.0102E+12	2.5831E+08
Kr-88	3.5682E-06	2.8456E-16	1.9474E+09	1.3202E+05
Xe-133	8.8445E+04	4.7251E-04	2.1395E+21	3.2725E+15
Xe-135	3.1997E+01	1.2530E-08	5.5893E+16	1.1839E+12
Xe-131m	6.6877E+02	7.9843E-06	3.6704E+19	2.4745E+13
Xe-133m	1.3272E+03	2.9579E-06	1.3393E+19	4.9108E+13
Rb-88	4.0783E-06	3.3975E-17	2.3250E+08	1.5090E+05

PCS Transport Group Inventory:

Time (h) = 96.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	4.0599E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	3.3975E-17	0.0000E+00	0.0000E+00

Time (h) = 96.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

Time (h) = 96.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Transport Group Inventory:

Time (h) = 96.0000	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)	0.0000E+00	0.0000E+00	3.3929E+20
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	2.8393E-19

SG Tube Leakage Transport Group Inventory:

Pathway

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 96.0000 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 96.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 96.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 96.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) = 96.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 96.0000			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 96.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 96.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 96.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 720.0000

EAB Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	2.8724E-95	1.1293-106	9.9169E-95	2.8724E-95
Accumulated dose (rem)	6.5500E-02	2.0694E-04	1.5869E-01	6.8265E-02

LPZ Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.3536E-97	5.3218-109	4.6733E-97	1.3536E-97
Accumulated dose (rem)	5.6082E-03	1.8949E-05	1.3160E-02	5.8465E-03

Control Room Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	9.3737E-94	1.8996-103	1.0956E-91	9.3737E-94
Accumulated dose (rem)	3.8334E-03	2.6845E-04	2.7446E-01	7.0375E-03

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Kr-85	2.1172E+03	5.3965E-03	3.8233E+22	7.8337E+13
Xe-133	2.8777E+03	1.5374E-05	6.9611E+19	1.0647E+14
Xe-131m	1.4708E+02	1.7560E-06	8.0724E+18	5.4421E+12
Xe-133m	3.5141E-01	7.8316E-10	3.5461E+15	1.3002E+10

PCS Transport Group Inventory:

			Overlying
Time (h) = 720.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	3.8311E+22	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition Recirculating	
Time (h) = 720.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) = 720.0000	Release	Rate/s	Release
Noble gases (atoms)	0.0000E+00	0.0000E+00	3.2017E+20
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 720.0000			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 720.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

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Transport Group Totals in Model:  
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Noble Gases (atoms)	3.8631E+22
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

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36004

#####  
I-131 Summary  
#####

	PCS	Environment	Control Room
Time (hr)	I-131 (Curies)	I-131 (Curies)	I-131 (Curies)
0.001	0.0000E+00	0.0000E+00	0.0000E+00
0.001	0.0000E+00	0.0000E+00	0.0000E+00
0.280	0.0000E+00	0.0000E+00	0.0000E+00
0.333	0.0000E+00	0.0000E+00	0.0000E+00
0.600	0.0000E+00	0.0000E+00	0.0000E+00
0.860	0.0000E+00	0.0000E+00	0.0000E+00
1.120	0.0000E+00	0.0000E+00	0.0000E+00
1.380	0.0000E+00	0.0000E+00	0.0000E+00
1.640	0.0000E+00	0.0000E+00	0.0000E+00
1.900	0.0000E+00	0.0000E+00	0.0000E+00
2.000	0.0000E+00	0.0000E+00	0.0000E+00
2.260	0.0000E+00	0.0000E+00	0.0000E+00
2.520	0.0000E+00	0.0000E+00	0.0000E+00
2.780	0.0000E+00	0.0000E+00	0.0000E+00
3.040	0.0000E+00	0.0000E+00	0.0000E+00
3.300	0.0000E+00	0.0000E+00	0.0000E+00
3.560	0.0000E+00	0.0000E+00	0.0000E+00
3.820	0.0000E+00	0.0000E+00	0.0000E+00
4.080	0.0000E+00	0.0000E+00	0.0000E+00
4.340	0.0000E+00	0.0000E+00	0.0000E+00
4.600	0.0000E+00	0.0000E+00	0.0000E+00
4.860	0.0000E+00	0.0000E+00	0.0000E+00



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

5.120	0.0000E+00	0.0000E+00	0.0000E+00
5.380	0.0000E+00	0.0000E+00	0.0000E+00
5.640	0.0000E+00	0.0000E+00	0.0000E+00
5.900	0.0000E+00	0.0000E+00	0.0000E+00
6.160	0.0000E+00	0.0000E+00	0.0000E+00
6.420	0.0000E+00	0.0000E+00	0.0000E+00
6.680	0.0000E+00	0.0000E+00	0.0000E+00
6.940	0.0000E+00	0.0000E+00	0.0000E+00
7.200	0.0000E+00	0.0000E+00	0.0000E+00
7.460	0.0000E+00	0.0000E+00	0.0000E+00
7.720	0.0000E+00	0.0000E+00	0.0000E+00
7.980	0.0000E+00	0.0000E+00	0.0000E+00
8.000	0.0000E+00	0.0000E+00	0.0000E+00
8.260	0.0000E+00	0.0000E+00	0.0000E+00
8.520	0.0000E+00	0.0000E+00	0.0000E+00
8.780	0.0000E+00	0.0000E+00	0.0000E+00
9.040	0.0000E+00	0.0000E+00	0.0000E+00
9.300	0.0000E+00	0.0000E+00	0.0000E+00
9.560	0.0000E+00	0.0000E+00	0.0000E+00
9.820	0.0000E+00	0.0000E+00	0.0000E+00
10.080	0.0000E+00	0.0000E+00	0.0000E+00
12.000	0.0000E+00	0.0000E+00	0.0000E+00
24.000	0.0000E+00	0.0000E+00	0.0000E+00
96.000	0.0000E+00	0.0000E+00	0.0000E+00
720.000	0.0000E+00	0.0000E+00	0.0000E+00

#####  
 Cumulative Dose Summary  
 #####

Time (hr)	EAB		LPZ		Control Room	
	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)
0.001	0.0000E+00	3.3562E-06	0.0000E+00	4.1470E-07	0.0000E+00	7.4069E-10
0.001	4.9052E-11	1.0873E-05	6.0609E-12	1.3434E-06	6.5955E-13	3.2588E-09
0.280	9.4842E-06	6.0313E-03	1.1719E-06	7.4524E-04	4.1502E-05	1.0056E-03
0.333	1.2792E-05	7.1435E-03	1.5805E-06	8.8267E-04	6.4608E-05	1.4628E-03
0.600	3.1818E-05	1.2417E-02	3.9315E-06	1.5343E-03	1.4952E-04	3.1746E-03
0.860	5.0755E-05	1.6997E-02	6.2714E-06	2.1002E-03	1.8459E-04	3.9825E-03
1.120	6.7977E-05	2.1046E-02	8.3994E-06	2.6004E-03	2.0160E-04	4.4422E-03
1.380	8.2972E-05	2.4628E-02	1.0252E-05	3.0431E-03	2.1146E-04	4.7483E-03
1.640	9.5838E-05	2.7818E-02	1.1842E-05	3.4372E-03	2.1823E-04	4.9800E-03
1.900	1.0687E-04	3.0679E-02	1.3205E-05	3.7907E-03	2.2350E-04	5.1714E-03
2.000	1.1070E-04	3.1703E-02	1.3678E-05	3.9173E-03	2.2528E-04	5.2380E-03
2.260	1.1972E-04	3.4197E-02	1.4185E-05	4.0575E-03	2.2936E-04	5.3921E-03
2.520	1.2762E-04	3.6475E-02	1.4629E-05	4.1856E-03	2.3278E-04	5.5231E-03
2.780	1.3461E-04	3.8570E-02	1.5022E-05	4.3033E-03	2.3574E-04	5.6385E-03
3.040	1.4086E-04	4.0505E-02	1.5373E-05	4.4121E-03	2.3838E-04	5.7430E-03
3.300	1.4650E-04	4.2302E-02	1.5690E-05	4.5131E-03	2.4079E-04	5.8392E-03
3.560	1.5162E-04	4.3976E-02	1.5979E-05	4.6073E-03	2.4301E-04	5.9285E-03
3.820	1.5632E-04	4.5542E-02	1.6243E-05	4.6953E-03	2.4506E-04	6.0120E-03
4.080	1.6064E-04	4.7008E-02	1.6486E-05	4.7777E-03	2.4698E-04	6.0904E-03
4.340	1.6464E-04	4.8386E-02	1.6710E-05	4.8551E-03	2.4877E-04	6.1640E-03
4.600	1.6834E-04	4.9682E-02	1.6918E-05	4.9280E-03	2.5044E-04	6.2333E-03
4.860	1.7179E-04	5.0903E-02	1.7112E-05	4.9966E-03	2.5200E-04	6.2985E-03
5.120	1.7500E-04	5.2055E-02	1.7293E-05	5.0614E-03	2.5347E-04	6.3601E-03
5.380	1.7800E-04	5.3143E-02	1.7461E-05	5.1226E-03	2.5485E-04	6.4182E-03
5.640	1.8080E-04	5.4172E-02	1.7619E-05	5.1804E-03	2.5614E-04	6.4730E-03
5.900	1.8342E-04	5.5146E-02	1.7766E-05	5.2352E-03	2.5735E-04	6.5249E-03
6.160	1.8587E-04	5.6069E-02	1.7904E-05	5.2870E-03	2.5848E-04	6.5739E-03
6.420	1.8817E-04	5.6944E-02	1.8033E-05	5.3362E-03	2.5955E-04	6.6202E-03
6.680	1.9032E-04	5.7774E-02	1.8154E-05	5.3829E-03	2.6055E-04	6.6641E-03
6.940	1.9234E-04	5.8562E-02	1.8268E-05	5.4272E-03	2.6148E-04	6.7056E-03
7.200	1.9423E-04	5.9311E-02	1.8374E-05	5.4693E-03	2.6236E-04	6.7449E-03
7.460	1.9601E-04	6.0023E-02	1.8474E-05	5.5094E-03	2.6319E-04	6.7822E-03
7.720	1.9767E-04	6.0701E-02	1.8567E-05	5.5475E-03	2.6396E-04	6.8176E-03
7.980	1.9923E-04	6.1347E-02	1.8655E-05	5.5838E-03	2.6468E-04	6.8512E-03
8.000	1.9935E-04	6.1395E-02	1.8662E-05	5.5865E-03	2.6474E-04	6.8537E-03
8.260	2.0010E-04	6.1997E-02	1.8690E-05	5.6092E-03	2.6535E-04	6.8814E-03
8.520	2.0080E-04	6.2571E-02	1.8717E-05	5.6310E-03	2.6581E-04	6.9016E-03
8.780	2.0146E-04	6.3118E-02	1.8742E-05	5.6517E-03	2.6615E-04	6.9174E-03
9.040	2.0208E-04	6.3642E-02	1.8765E-05	5.6715E-03	2.6643E-04	6.9305E-03
9.300	2.0266E-04	6.4142E-02	1.8787E-05	5.6904E-03	2.6667E-04	6.9421E-03

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

9.560	2.0321E-04	6.4621E-02	1.8808E-05	5.7086E-03	2.6688E-04	6.9526E-03
9.820	2.0372E-04	6.5079E-02	1.8827E-05	5.7259E-03	2.6708E-04	6.9624E-03
10.080	2.0420E-04	6.5518E-02	1.8845E-05	5.7425E-03	2.6726E-04	6.9716E-03
12.000	2.0694E-04	6.8265E-02	1.8949E-05	5.8465E-03	2.6826E-04	7.0272E-03
24.000	2.0694E-04	6.8265E-02	1.8949E-05	5.8465E-03	2.6845E-04	7.0375E-03
96.000	2.0694E-04	6.8265E-02	1.8949E-05	5.8465E-03	2.6845E-04	7.0375E-03
720.000	2.0694E-04	6.8265E-02	1.8949E-05	5.8465E-03	2.6845E-04	7.0375E-03

#####  
Worst Two-Hour Dose  
(Provided for Dose Location 1)  
#####

EAB

Time (hr)	Whole Body (rem)	Thyroid (rem)	Skin (rem)	TEDE (rem)
0.0	3.0435E-02	1.1070E-04	6.7886E-02	3.1700E-02

#####  
30 Day Control Room Skin Dose  
#####

Control Room

Time (hr)	Skin (rem)
720.0	2.7446E-01

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Attachment 5 Palisades MSLB Iodine Dose (pal\_MSLB\_iodine\_db\_ast.out)

```
#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:03:06
#####

#####
File information
#####

Plant file name      = AST/MSLB/pal_MSLB_iodine_db_ast.psf
Inventory file name  = AST/MSLB/pal_mslb_db_ast.nif
Scenario file name   = AST/MSLB/pal_MSLB_iodine_db_ast.psf
Release file name    = AST/MSLB/pal_mslb_iodine_ast_db.rft
Dose conversion file name = AST/MSLB/nai-1101-001rev0.dcf
```

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

```
*RADTRAD-NAI 1.1a(QA)
*26 May 2006 14:02:56
** Palisades MSLB Design Basis AST
** Failed Fuel Iodine Activity Dose
**
*Nuclide inventory file
AST/MSLB/pal_mslb_db_ast.nif
*Plant power
2703
*Compartments
5
*Compartment 1:
PCS
3
432977
0
0
0
0
*Compartment 2:
Environment
2
2e+20
0
0
0
0
*Compartment 3:
Control Room
1
35923
0
1
0
0
*Compartment 4:
Faulted S/G
3
210759
0
0
0
0
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

\*Compartment 5:

Intact S/G

3

141065

0

0

0

0

\*Pathways

8

\*Pathway 1:

Faulted SG Tube Leakage

1

2

2

\*Pathway 2:

Control Room Unfiltered Makeup

2

3

2

\*Pathway 3:

Control Room Filtered Makeup

2

3

2

\*Pathway 4:

Control Room Unfiltered Inleakage

2

3

2

\*Pathway 5:

Control Room Exhaust

3

2

2

\*Pathway 6:

Intact S/G Tube Leakage

1

5

2

\*Pathway 7:

Intact S/G Steam Release

5

2

2

\*Pathway 8:

Faulted S/G Steam Release

4

2

2

\*Sources

5

1 1

2 0

3 0

4 0

5 0

\*dose conversion factors filename

AST/MSLB/nai-1101-001rev0.dcf

\*release fraction and timing filename

AST/MSLB/pal\_mslb\_iodine\_ast\_db.rft

0

1

1

\*Iodine

0 0.97 0.03

\*Overlying pool

\*aerosol model

0

\*elemental model

0

\*organic model

0

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
*pH tracking
0
*Compartment detail
*Compartment 1:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Compartment 2:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Compartment 3:
1
*spray model
0
0
0
*filter model
1
3
0 0 99 99 99
0.3333 1413.6 99 99 99
720 1413.6 99 99 99
*deposition model
0
0
*Compartment 4:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Compartment 5:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Pathways:
*Pathway 1
*filter efficiency model
1
3
0 2.5025 0 0 0
12 0 0 0 0
720 0 0 0 0
*Pathway 2
*filter efficiency model
1
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
3
0 660 0 0 0
0.3333 0 0 0 0
720 0 0 0 0
*Pathway 3
*filter efficiency model
  1
  3
0 0 99 99 99
0.3333 1413.6 99 99 99
720 1413.6 99 99 99
*Pathway 4
*filter efficiency model
  1
  3
0 0 0 0 0
0.3333 10 0 0 0
720 10 0 0 0
*Pathway 5
*filter efficiency model
  1
  3
0 660 0 0 0
0.3333 1423.6 0 0 0
720 1423.6 0 0 0
*Pathway 6
*filter efficiency model
  1
  3
0 2.5025 0 0 0
12 0 0 0 0
720 0 0 0 0
*Pathway 7
*filter efficiency model
  1
  3
0 16.67 0 0 0
8 0 0 0 0
720 0 0 0 0
*Pathway 8
*filter efficiency model
  1
  2
0 1000000 0 0 0
720 1000000 0 0 0
*x/q tables
  6
EAB
  2
0 0.000539
720 0.000539
LPZ
  6
0 6.66e-05
2 3.03e-05
8 2.04e-05
24 8.67e-06
96 2.54e-06
720 2.54e-06
Control Room Unfiltered
  6
0 0.0131
2 0.0113
8 0.00468
24 0.00287
96 0.00236
720 0.00236
Control Room Filtered
  6
0 0.000799
2 0.000643
8 0.000258
24 0.000175
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
96 0.000132
720 0.000132
ADV-Normal
  6
0 0.0165
2 0.0134
8 0.0054
24 0.00403
96 0.00298
720 0.00298
ADV-Emergency
  6
0 0.000736
2 0.000642
8 0.000243
24 0.000175
96 0.000128
720 0.000128
*dose locations
  3
*location name, compartment number and x/q table
EAB
  2
  1
*br model
  1
  4
0 0.00035
8 0.00018
24 0.00023
720 0.00023
*of model
  0
*location x/q input to be included
  0
*location name, compartment number and x/q table
LPZ
  2
  2
*br model
  1
  4
0 0.00035
8 0.00018
24 0.00023
720 0.00023
*of model
  0
*location x/q input to be included
  0
*location name, compartment number and x/q table
Control Room
  3
  0
*br model
  1
  2
0 0.00035
720 0.00035
*of model
  1
  4
0 1
24 0.6
96 0.4
720 0.4
*location x/q input to be included
  1
*number of intake combinations
  9
*intake combinations
2 1 3
3 1 4
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

4 1 3  
 2 7 5  
 3 7 6  
 4 7 5  
 2 8 3  
 3 8 4  
 4 8 3

\*time step count

1  
 0 0.02

\*show plant, scenario, event, step, model

1  
 1  
 1  
 0  
 1

```
#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:03:06
#####
#####
Plant Description
#####
```

Number of Nuclides = 107

Inventory Power = 2.7030E+03 MWth  
 Plant Power Level = 2.7030E+03 MWth

Number of compartments = 5

Compartment information

Compartment number 1 (Source term fraction = 1.0000E+00)

Name: PCS

Compartment volume = 4.3298E+05 (Cubic feet)

Pathways into and out of compartment 1

Pathway to compartment number 2: Faulted SG Tube Leakage  
 Pathway to compartment number 5: Intact S/G Tube Leakage

Compartment number 2

Name: Environment

Pathways into and out of compartment 2

Pathway to compartment number 3: Control Room Unfiltered Makeup  
 Pathway to compartment number 3: Control Room Filtered Makeup  
 Pathway to compartment number 3: Control Room Unfiltered Inleakage  
 Pathway from compartment number 1: Faulted SG Tube Leakage  
 Pathway from compartment number 3: Control Room Exhaust  
 Pathway from compartment number 5: Intact S/G Steam Release  
 Pathway from compartment number 4: Faulted S/G Steam Release

Compartment number 3

Name: Control Room

Compartment volume = 3.5923E+04 (Cubic feet)

Removal devices within compartment:

Filter(s)

Pathways into and out of compartment 3

Pathway to compartment number 2: Control Room Exhaust  
 Pathway from compartment number 2: Control Room Unfiltered Makeup  
 Pathway from compartment number 2: Control Room Filtered Makeup  
 Pathway from compartment number 2: Control Room Unfiltered Inleakage

Compartment number 4

Name: Faulted S/G

Compartment volume = 2.1076E+05 (Cubic feet)

Pathways into and out of compartment 4

Pathway to compartment number 2: Faulted S/G Steam Release

Compartment number 5

Name: Intact S/G

Compartment volume = 1.4106E+05 (Cubic feet)

Pathways into and out of compartment 5



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Pathway to compartment number 2: Intact S/G Steam Release  
 Pathway from compartment number 1: Intact S/G Tube Leakage

Total number of pathways = 8

```
#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:03:06
#####
Scenario Description
#####
```

Radioactive Decay is enabled  
 Calculation of Daughters is enabled

Iodine fractions  
 Aerosol = 0.0000E+00  
 Elemental = 9.7000E-01  
 Organic = 3.0000E-02

COMPARTMENT DATA

Compartment number 1: PCS  
 Compartment number 2: Environment  
 Compartment number 3: Control Room

Compartment Filter Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.9000E+01	9.9000E+01	9.9000E+01
3.3330E-01	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01
7.2000E+02	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01

Compartment number 4: Faulted S/G  
 Compartment number 5: Intact S/G

PATHWAY DATA

Pathway number 1: Faulted SG Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	2.5025E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Unfiltered Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	6.6000E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 3: Control Room Filtered Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.9000E+01	9.9000E+01	9.9000E+01
3.3330E-01	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01
7.2000E+02	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Pathway number 4: Control Room Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	1.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 5: Control Room Exhaust

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	6.6000E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	1.4236E+03	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.4236E+03	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 6: Intact S/G Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	2.5025E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 7: Intact S/G Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	1.6670E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 8: Faulted S/G Steam Release

Pathway Filter: Removal Data

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

X/Q DATA

X/Q table 1: EAB

Time (hr)	X/Q (s * m^-3)
0.0000E+00	5.3900E-04
7.2000E+02	5.3900E-04

X/Q table 2: LPZ

Time (hr)	X/Q (s * m^-3)
0.0000E+00	6.6600E-05
2.0000E+00	3.0300E-05
8.0000E+00	2.0400E-05
2.4000E+01	8.6700E-06
9.6000E+01	2.5400E-06
7.2000E+02	2.5400E-06

X/Q table 3: Control Room Unfiltered

Time (hr)	X/Q (s * m^-3)
0.0000E+00	1.3100E-02
2.0000E+00	1.1300E-02
8.0000E+00	4.6800E-03
2.4000E+01	2.8700E-03
9.6000E+01	2.3600E-03

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

7.2000E+02                    2.3600E-03

X/Q table 4: Control Room Filtered

Time (hr)	X/Q (s * m <sup>-3</sup> )
0.0000E+00	7.9900E-04
2.0000E+00	6.4300E-04
8.0000E+00	2.5800E-04
2.4000E+01	1.7500E-04
9.6000E+01	1.3200E-04
7.2000E+02	1.3200E-04

X/Q table 5: ADV-Normal

Time (hr)	X/Q (s * m <sup>-3</sup> )
0.0000E+00	1.6500E-02
2.0000E+00	1.3400E-02
8.0000E+00	5.4000E-03
2.4000E+01	4.0300E-03
9.6000E+01	2.9800E-03
7.2000E+02	2.9800E-03

X/Q table 6: ADV-Emergency

Time (hr)	X/Q (s * m <sup>-3</sup> )
0.0000E+00	7.3600E-04
2.0000E+00	6.4200E-04
8.0000E+00	2.4300E-04
2.4000E+01	1.7500E-04
9.6000E+01	1.2800E-04
7.2000E+02	1.2800E-04

LOCATION DATA

Location EAB is in compartment 2

Using X/Q Table 1

Location Breathing Rate Data

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

Location LPZ is in compartment 2

Using X/Q Table 2

Location Breathing Rate Data

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

Location Control Room is in compartment 3

Inleakage X/Q Table Assignments

Inleakage Path	Source Path	X/Q Table
2	1	3
3	1	4
4	1	3
2	7	5
3	7	6
4	7	5
2	8	3
3	8	4
4	8	3

Location Breathing Rate Data

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

Location Occupancy Factor Data

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

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

USER SPECIFIED TIME STEP DATA - SUPPLEMENTAL TIME STEPS

Time	Time step
0.0000E+00	2.0000E-02

#####  
 RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:03:06  
 #####

```

#####
# # # # # # # # # #
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#####  
 Dose, Detailed Model and Detailed Inventory Output  
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Detailed model information at time (H) = 0.0010

EAB Doses:

Time (h) =	Whole Body	Thyroid	Skin	TEDE
0.0010				
Delta dose (rem)	8.2988E-05	1.0894E-02	1.4669E-04	6.3436E-04
Accumulated dose (rem)	8.2988E-05	1.0894E-02	1.4669E-04	6.3436E-04

LPZ Doses:

Time (h) =	Whole Body	Thyroid	Skin	TEDE
0.0010				
Delta dose (rem)	1.0254E-05	1.3461E-03	1.8126E-05	7.8383E-05
Accumulated dose (rem)	1.0254E-05	1.3461E-03	1.8126E-05	7.8383E-05

Control Room Doses:

Time (h) =	Whole Body	Thyroid	Skin	TEDE
0.0010				
Delta dose (rem)	2.4823E-08	1.1032E-04	1.4854E-06	5.6084E-06
Accumulated dose (rem)	2.4823E-08	1.1032E-04	1.4854E-06	5.6084E-06

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
0.0010				
Rb-86	9.5912E+02	1.1788E-05	8.2542E+19	3.5488E+13
Sr-89	1.4517E-01	4.9967E-09	3.3810E+16	5.3711E+09
I-131	2.4419E+05	1.9697E-03	9.0546E+21	9.0349E+15
I-132	2.1782E+05	2.1102E-05	9.6274E+19	8.0594E+15
I-133	2.9824E+05	2.6327E-04	1.1921E+21	1.1035E+16
I-134	3.2660E+05	1.2243E-05	5.5021E+19	1.2084E+16
I-135	2.7986E+05	7.9690E-05	3.5548E+20	1.0355E+16
Xe-133	1.2009E+00	6.4156E-09	2.9050E+16	4.4433E+10
Xe-135	1.3598E+01	5.3247E-09	2.3753E+16	5.0312E+11
Cs-134	9.9731E+04	7.7082E-02	3.4642E+23	3.6901E+15
Cs-136	2.8754E+04	3.9233E-04	1.7372E+21	1.0639E+15
Cs-137	5.3856E+04	6.1916E-01	2.7217E+24	1.9927E+15
I-130	7.6353E+03	3.9149E-06	1.8135E+19	2.8251E+14
Kr-83m	5.2952E+00	2.5665E-10	1.8621E+15	1.9592E+11
Xe-131m	4.9540E-03	5.9145E-11	2.7189E+14	1.8330E+08
Xe-133m	8.5976E-02	1.9161E-10	8.6759E+14	3.1811E+09
Xe-135m	8.8242E+01	9.6871E-10	4.3213E+15	3.2650E+12
Cs-138	6.5541E+05	1.5489E-05	6.7592E+19	2.4250E+16
Cs-134m	2.4083E+04	2.9863E-06	1.3421E+19	8.9105E+14

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Rb-88	2.6240E+05	2.1860E-06	1.4959E+19	9.7089E+15
Rb-89	3.3666E+05	2.4221E-06	1.6389E+19	1.2456E+16
Ba-137m	6.2342E+02	1.1592E-09	5.0955E+15	2.3066E+13
Br-82	1.0775E+03	9.9526E-07	7.3093E+18	3.9868E+13
Br-83	1.8563E+04	1.1750E-06	8.5255E+18	6.8682E+14
Br-84	3.2414E+04	4.6049E-07	3.3013E+18	1.1993E+15

PCS Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 0.0010			
Noble gases (atoms)	6.0125E+16	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.0467E+22	0.0000E+00	0.0000E+00
Organic I (atoms)	3.2372E+20	0.0000E+00	0.0000E+00
Aerosols (kg)	6.9667E-01	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 0.0010		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway Filter
Time (h) = 0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway Filter
Time (h) = 0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 0.0010	Ci	kg	Atoms	Bq
Rb-86	1.1451E-04	1.4073E-12	9.8545E+12	4.2368E+06
Sr-89	1.9362E-08	6.6645E-16	4.5095E+09	7.1639E+02
I-131	2.9153E-02	2.3515E-10	1.0810E+15	1.0787E+09
I-132	2.6005E-02	2.5193E-12	1.1494E+13	9.6217E+08
I-133	3.5606E-02	3.1432E-11	1.4232E+14	1.3174E+09
I-134	3.8990E-02	1.4616E-12	6.5685E+12	1.4426E+09
I-135	3.3412E-02	9.5140E-12	4.2440E+13	1.2362E+09
Xe-133	1.6016E-07	8.5564E-16	3.8743E+09	5.9259E+03
Xe-135	1.8135E-06	7.1015E-16	3.1679E+09	6.7101E+04
Cs-134	1.1907E-02	9.2027E-09	4.1358E+16	4.4055E+08
Cs-136	3.4329E-03	4.6839E-11	2.0741E+14	1.2702E+08
Cs-137	6.4297E-03	7.3921E-08	3.2493E+17	2.3790E+08
I-130	9.1156E-04	4.6739E-13	2.1651E+12	3.3728E+07
Kr-83m	7.0621E-07	3.4229E-17	2.4835E+08	2.6130E+04
Xe-131m	6.6071E-10	7.8880E-18	3.6261E+07	2.4446E+01
Xe-133m	1.1466E-08	2.5555E-17	1.1571E+08	4.2426E+02
Xe-135m	1.1768E-05	1.2919E-16	5.7628E+08	4.3541E+05
Cs-138	7.8239E-02	1.8490E-12	8.0688E+12	2.8949E+09
Cs-134m	2.8752E-03	3.5653E-13	1.6023E+12	1.0638E+08
Rb-88	3.1321E-02	2.6093E-13	1.7856E+12	1.1589E+09
Rb-89	4.0193E-02	2.8917E-13	1.9567E+12	1.4871E+09
Ba-137m	8.3107E-05	1.5453E-16	6.7927E+08	3.0749E+06
Br-82	1.2864E-04	1.1882E-13	8.7264E+11	4.7597E+06
Br-83	2.2162E-03	1.4028E-13	1.0178E+12	8.1998E+07
Br-84	3.8698E-03	5.4976E-14	3.9414E+11	1.4318E+08

Environment Transport Group Inventory:

Present Release Integral

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) =	0.0010	Release	Rate/s	Release
Noble gases (atoms)		8.0187E+09	4.0094E+09	8.0187E+09
Elemental I (atoms)		1.2496E+15	6.2482E+14	1.2496E+15
Organic I (atoms)		3.8648E+13	1.9324E+13	3.8648E+13
Aerosols (kg)		8.3174E-08	4.1587E-08	8.3174E-08

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) =	0.0010	Pathway
		Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) =	0.0010	Pathway
		Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	0.0010	Pathway
		Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	0.0010	Pathway
		Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Exhaust Transport Group Inventory:

Time (h) =	0.0010	Pathway
		Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Intact S/G Steam Release Transport Group Inventory:

Time (h) =	0.0010	Pathway
		Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Faulted S/G Steam Release Transport Group Inventory:

Time (h) =	0.0010	Pathway
		Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	0.0010	Ci	kg	Atoms	Bq
Rb-86		6.7835E-07	8.3369E-15	5.8379E+10	2.5099E+04

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Sr-89	1.2138E-10	4.1781E-18	2.8271E+07	4.4912E+00
I-131	1.7270E-04	1.3931E-12	6.4040E+12	6.3901E+06
I-132	1.5405E-04	1.4924E-14	6.8088E+10	5.6999E+06
I-133	2.1093E-04	1.8620E-13	8.4312E+11	7.8045E+06
I-134	2.3097E-04	8.6582E-15	3.8911E+10	8.5460E+06
I-135	1.9793E-04	5.6362E-14	2.5142E+11	7.3235E+06
Xe-133	1.0040E-09	5.3639E-18	2.4287E+07	3.7149E+01
Xe-135	1.1369E-08	4.4519E-18	1.9859E+07	4.2065E+02
Cs-134	7.0536E-05	5.4518E-11	2.4501E+14	2.6098E+06
Cs-136	2.0337E-05	2.7748E-13	1.2287E+12	7.5246E+05
Cs-137	3.8090E-05	4.3791E-10	1.9249E+15	1.4093E+06
I-130	5.4002E-06	2.7688E-15	1.2826E+10	1.9981E+05
Kr-83m	4.4272E-09	2.1458E-19	1.5569E+06	1.6381E+02
Xe-131m	4.1419E-12	4.9449E-20	2.2732E+05	1.5325E-01
Xe-133m	7.1882E-11	1.6020E-19	7.2537E+05	2.6596E+00
Xe-135m	7.3769E-08	8.0983E-19	3.6125E+06	2.7295E+03
Cs-138	4.6347E-04	1.0953E-14	4.7798E+10	1.7148E+07
Cs-134m	1.7033E-05	2.1121E-15	9.4921E+09	6.3021E+05
Rb-88	1.8553E-04	1.5456E-15	1.0577E+10	6.8646E+06
Rb-89	2.3810E-04	1.7131E-15	1.1591E+10	8.8099E+06
Ba-137m	5.2088E-07	9.6853E-19	4.2574E+06	1.9272E+04
Br-82	7.6208E-07	7.0391E-16	5.1696E+09	2.8197E+04
Br-83	1.3129E-05	8.3105E-16	6.0297E+09	4.8576E+05
Br-84	2.2925E-05	3.2568E-16	2.3349E+09	8.4823E+05

Control Room Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) =	0.0010		
Noble gases (atoms)	5.0269E+07	0.0000E+00	0.0000E+00
Elemental I (atoms)	7.4029E+12	0.0000E+00	0.0000E+00
Organic I (atoms)	2.2896E+11	0.0000E+00	0.0000E+00
Aerosols (kg)	4.9273E-10	0.0000E+00	0.0000E+00

	Surfaces	Recirculating Filter
Time (h) =	0.0010	
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway Filter
Time (h) =	0.0010
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway Filter
Time (h) =	0.0010
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway Filter
Time (h) =	0.0010
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway Filter
Time (h) =	0.0010
Noble gases (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Faulted S/G Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 0.0010			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Surfaces	Filter
Time (h) = 0.0010		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway Filter
Time (h) = 0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 0.0010	Ci	kg	Atoms	Bq
Rb-86	1.6630E-04	2.0439E-12	1.4312E+13	6.1533E+06
Sr-89	2.9759E-08	1.0243E-15	6.9311E+09	1.1011E+03
I-131	4.2340E-02	3.4152E-10	1.5700E+15	1.5666E+09
I-132	3.7767E-02	3.6588E-12	1.6692E+13	1.3974E+09
I-133	5.1712E-02	4.5650E-11	2.0670E+14	1.9134E+09
I-134	5.6625E-02	2.1226E-12	9.5394E+12	2.0951E+09
I-135	4.8525E-02	1.3818E-11	6.1638E+13	1.7954E+09
Xe-133	2.4615E-07	1.3150E-15	5.9544E+09	9.1076E+03
Xe-135	2.7873E-06	1.0915E-15	4.8688E+09	1.0313E+05
Cs-134	1.7293E-02	1.3365E-08	6.0066E+16	6.3983E+08
Cs-136	4.9857E-03	6.8027E-11	3.0123E+14	1.8447E+08
Cs-137	9.3382E-03	1.0736E-07	4.7192E+17	3.4551E+08
I-130	1.3239E-03	6.7880E-13	3.1445E+12	4.8984E+07
Kr-83m	1.0854E-06	5.2607E-17	3.8169E+08	4.0159E+04
Xe-131m	1.0155E-09	1.2123E-17	5.5731E+07	3.7572E+01
Xe-133m	1.7623E-08	3.9275E-17	1.7784E+08	6.5205E+02
Xe-135m	1.8086E-05	1.9854E-16	8.8566E+08	6.6917E+05
Cs-138	1.1362E-01	2.6852E-12	1.1718E+13	4.2041E+09
Cs-134m	4.1757E-03	5.1780E-13	2.3271E+12	1.5450E+08
Rb-88	4.5484E-02	3.7891E-13	2.5930E+12	1.6829E+09
Rb-89	5.8374E-02	4.1998E-13	2.8418E+12	2.1598E+09
Ba-137m	1.2770E-04	2.3745E-16	1.0438E+09	4.7249E+06
Br-82	1.8683E-04	1.7257E-13	1.2674E+12	6.9128E+06
Br-83	3.2186E-03	2.0374E-13	1.4782E+12	1.1909E+08
Br-84	5.6203E-03	7.9845E-14	5.7242E+11	2.0795E+08

Intact S/G Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 0.0010			
Noble gases (atoms)	1.2324E+10	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.8149E+15	0.0000E+00	0.0000E+00
Organic I (atoms)	5.6131E+13	0.0000E+00	0.0000E+00
Aerosols (kg)	1.2080E-07	0.0000E+00	0.0000E+00

	Surfaces	Filter
Time (h) = 0.0010		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00



## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

## Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 0.3333

## EAB Doses:

Time (h) = 0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	4.7557E-02	7.2378E+00	8.2132E-02	4.1353E-01
Accumulated dose (rem)	4.7640E-02	7.2487E+00	8.2278E-02	4.1417E-01

## LPZ Doses:

Time (h) = 0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	5.8763E-03	8.9432E-01	1.0148E-02	5.1097E-02
Accumulated dose (rem)	5.8865E-03	8.9566E-01	1.0167E-02	5.1176E-02

## Control Room Doses:

Time (h) = 0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	5.3082E-03	2.8771E+01	3.0780E-01	1.4597E+00
Accumulated dose (rem)	5.3082E-03	2.8771E+01	3.0781E-01	1.4597E+00

## PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 0.3333	Ci	kg	Atoms	Bq
Rb-86	9.5841E+02	1.1779E-05	8.2481E+19	3.5461E+13
Sr-89	4.2152E+01	1.4509E-06	9.8175E+18	1.5596E+12
I-131	2.4384E+05	1.9668E-03	9.0417E+21	9.0221E+15
I-132	1.9702E+05	1.9087E-05	8.7080E+19	7.2897E+15
I-133	2.9489E+05	2.6032E-04	1.1787E+21	1.0911E+16
I-134	2.5108E+05	9.4119E-06	4.2298E+19	9.2899E+15
I-135	2.7021E+05	7.6943E-05	3.4323E+20	9.9979E+15
Xe-133	5.2762E+02	2.8188E-06	1.2763E+19	1.9522E+13
Xe-135	6.1860E+03	2.4223E-06	1.0806E+19	2.2888E+14
Cs-134	9.9708E+04	7.7064E-02	3.4634E+23	3.6892E+15
Cs-136	2.8726E+04	3.9195E-04	1.7356E+21	1.0629E+15
Cs-137	5.3844E+04	6.1902E-01	2.7210E+24	1.9922E+15
I-130	7.4926E+03	3.8417E-06	1.7796E+19	2.7723E+14
Kr-83m	2.1027E+03	1.0192E-07	7.3946E+17	7.7802E+13
Xe-131m	2.1883E+00	2.6125E-08	1.2010E+17	8.0966E+10
Xe-133m	3.7727E+01	8.4079E-08	3.8070E+17	1.3959E+12
Xe-135m	2.5841E+04	2.8368E-07	1.2655E+18	9.5613E+14
Cs-138	4.2659E+05	1.0082E-05	4.3994E+19	1.5784E+16
Cs-134m	2.2239E+04	2.7577E-06	1.2393E+19	8.2283E+14
Rb-88	1.2069E+05	1.0054E-06	6.8806E+18	4.4656E+15
Rb-89	1.3559E+05	9.7551E-07	6.6008E+18	5.0168E+15
Ba-137m	5.8833E+04	1.0939E-07	4.8087E+17	2.1768E+15
Br-82	1.0703E+03	9.8856E-07	7.2600E+18	3.9599E+13
Br-83	1.6853E+04	1.0668E-06	7.7404E+18	6.2357E+14
Br-84	2.0984E+04	2.9811E-07	2.1372E+18	7.7641E+14

## PCS Transport Group Inventory:

Time (h) = 0.3333	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	2.6075E+19	0.0000E+00	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms)	1.0406E+22	0.0000E+00	0.0000E+00
Organic I (atoms)	3.2184E+20	0.0000E+00	0.0000E+00
Aerosols (kg)	6.9650E-01	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 0.3333	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 0.3333	Ci	kg	Atoms	Bq
Rb-86	1.1032E-01	1.3559E-09	9.4945E+15	4.0820E+09
Sr-89	4.8522E-03	1.6702E-10	1.1301E+15	1.7953E+08
I-131	2.8069E+01	2.2641E-07	1.0408E+18	1.0385E+12
I-132	2.2679E+01	2.1971E-09	1.0024E+16	8.3913E+11
I-133	3.3945E+01	2.9965E-08	1.3568E+17	1.2560E+12
I-134	2.8902E+01	1.0834E-09	4.8690E+15	1.0694E+12
I-135	3.1104E+01	8.8570E-09	3.9510E+16	1.1509E+12
Xe-133	6.0735E-02	3.2447E-10	1.4692E+15	2.2472E+09
Xe-135	7.1208E-01	2.7884E-10	1.2439E+15	2.6347E+10
Cs-134	1.1477E+01	8.8709E-06	3.9867E+19	4.2467E+11
Cs-136	3.3067E+00	4.5118E-08	1.9978E+17	1.2235E+11
Cs-137	6.1980E+00	7.1256E-05	3.1322E+20	2.2933E+11
I-130	8.6248E-01	4.4222E-10	2.0486E+15	3.1912E+10
Kr-83m	2.4205E-01	1.1732E-11	8.5121E+13	8.9558E+09
Xe-131m	2.5190E-04	3.0073E-12	1.3825E+13	9.3201E+06
Xe-133m	4.3428E-03	9.6784E-12	4.3823E+13	1.6068E+08
Xe-135m	2.9746E+00	3.2655E-11	1.4567E+14	1.1006E+11
Cs-138	4.9106E+01	1.1605E-09	5.0643E+15	1.8169E+12
Cs-134m	2.5599E+00	3.1744E-10	1.4266E+15	9.4717E+10
Rb-88	1.3893E+01	1.1574E-10	7.9204E+14	5.1404E+11
Rb-89	1.5608E+01	1.1229E-10	7.5982E+14	5.7749E+11
Ba-137m	6.7723E+00	1.2593E-11	5.5354E+13	2.5058E+11
Br-82	1.2320E-01	1.1379E-10	8.3571E+14	4.5583E+09
Br-83	1.9400E+00	1.2280E-10	8.9101E+14	7.1780E+10
Br-84	2.4155E+00	3.4316E-11	2.4602E+14	8.9374E+10

Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) = 0.3333	Release	Rate/s	Release
Noble gases (atoms)	1.2020E+14	1.6694E+12	3.0015E+15
Elemental I (atoms)	4.7969E+16	6.6624E+14	1.1979E+18
Organic I (atoms)	1.4836E+15	2.0605E+13	3.7047E+16
Aerosols (kg)	3.2107E-06	4.4593E-08	8.0176E-05

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 0.0000E+00  
Aerosols (kg) 0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
0.3333				
Rb-86	3.7845E-04	4.6511E-12	3.2569E+13	1.4003E+07
Sr-89	1.6645E-05	5.7292E-13	3.8766E+12	6.1585E+05
I-131	9.6285E-02	7.7665E-10	3.5703E+15	3.5625E+09
I-132	7.7797E-02	7.5369E-12	3.4385E+13	2.8785E+09
I-133	1.1644E-01	1.0279E-10	4.6543E+14	4.3084E+09
I-134	9.9143E-02	3.7164E-12	1.6702E+13	3.6683E+09
I-135	1.0670E-01	3.0382E-11	1.3553E+14	3.9478E+09
Xe-133	2.0834E-04	1.1130E-12	5.0398E+12	7.7086E+06
Xe-135	2.4427E-03	9.5651E-13	4.2668E+12	9.0378E+07
Cs-134	3.9371E-02	3.0430E-08	1.3676E+17	1.4567E+09
Cs-136	1.1343E-02	1.5477E-10	6.8532E+14	4.1970E+08
Cs-137	2.1261E-02	2.4443E-07	1.0745E+18	7.8666E+08
I-130	2.9586E-03	1.5170E-12	7.0272E+12	1.0947E+08

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Kr-83m	8.3031E-04	4.0244E-14	2.9199E+11	3.0721E+07
Xe-131m	8.6408E-07	1.0316E-14	4.7423E+10	3.1971E+04
Xe-133m	1.4897E-05	3.3200E-14	1.5033E+11	5.5119E+05
Xe-135m	1.0204E-02	1.1202E-13	4.9969E+11	3.7755E+08
Cs-138	1.6845E-01	3.9809E-12	1.7372E+13	6.2326E+09
Cs-134m	8.7813E-03	1.0889E-12	4.8937E+12	3.2491E+08
Rb-88	4.7658E-02	3.9702E-13	2.7169E+12	1.7633E+09
Rb-89	5.3540E-02	3.8520E-13	2.6064E+12	1.9810E+09
Ba-137m	2.3231E-02	4.3197E-14	1.8988E+11	8.5955E+08
Br-82	4.2261E-04	3.9035E-13	2.8668E+12	1.5637E+07
Br-83	6.6549E-03	4.2125E-13	3.0564E+12	2.4623E+08
Br-84	8.2860E-03	1.1771E-13	8.4392E+11	3.0658E+08

Control Room Transport Group Inventory:

Time (h) =	0.3333	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		1.0296E+13	0.0000E+00	0.0000E+00
Elemental I (atoms)		4.1090E+15	0.0000E+00	0.0000E+00
Organic I (atoms)		1.2708E+14	0.0000E+00	0.0000E+00
Aerosols (kg)		2.7503E-07	0.0000E+00	0.0000E+00

Time (h) =	0.3333	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)		0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Faulted S/G Transport Group Inventory:

Time (h) =	0.3333	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 0.3333	Deposition Recirculating	
	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 0.3333	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 0.3333	Ci	kg	Atoms	Bq
Rb-86	1.1049E-01	1.3579E-09	9.5090E+15	4.0882E+09
Sr-89	4.8596E-03	1.6727E-10	1.1318E+15	1.7981E+08
I-131	2.8112E+01	2.2675E-07	1.0424E+18	1.0401E+12
I-132	2.2714E+01	2.2005E-09	1.0039E+16	8.4041E+11
I-133	3.3997E+01	3.0011E-08	1.3589E+17	1.2579E+12
I-134	2.8946E+01	1.0851E-09	4.8764E+15	1.0710E+12
I-135	3.1152E+01	8.8705E-09	3.9570E+16	1.1526E+12
Xe-133	6.0828E-02	3.2497E-10	1.4714E+15	2.2506E+09
Xe-135	7.1317E-01	2.7927E-10	1.2458E+15	2.6387E+10
Cs-134	1.1495E+01	8.8845E-06	3.9928E+19	4.2532E+11
Cs-136	3.3118E+00	4.5187E-08	2.0009E+17	1.2254E+11
Cs-137	6.2075E+00	7.1365E-05	3.1370E+20	2.2968E+11
I-130	8.6380E-01	4.4290E-10	2.0517E+15	3.1961E+10
Kr-83m	2.4242E-01	1.1750E-11	8.5251E+13	8.9695E+09
Xe-131m	2.5228E-04	3.0119E-12	1.3846E+13	9.3344E+06
Xe-133m	4.3494E-03	9.6932E-12	4.3890E+13	1.6093E+08
Xe-135m	2.9792E+00	3.2705E-11	1.4589E+14	1.1023E+11
Cs-138	4.9181E+01	1.1623E-09	5.0720E+15	1.8197E+12
Cs-134m	2.5638E+00	3.1792E-10	1.4288E+15	9.4862E+10
Rb-88	1.3914E+01	1.1592E-10	7.9325E+14	5.1483E+11
Rb-89	1.5632E+01	1.1246E-10	7.6098E+14	5.7837E+11
Ba-137m	6.7827E+00	1.2612E-11	5.5438E+13	2.5096E+11
Br-82	1.2339E-01	1.1397E-10	8.3699E+14	4.5653E+09
Br-83	1.9430E+00	1.2299E-10	8.9237E+14	7.1890E+10
Br-84	2.4192E+00	3.4368E-11	2.4639E+14	8.9511E+10

Intact S/G Transport Group Inventory:

Time (h) = 0.3333	Atmosphere	Sump	Overlying
			Pool
Noble gases (atoms)	3.0061E+15	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.1997E+18	0.0000E+00	0.0000E+00
Organic I (atoms)	3.7104E+16	0.0000E+00	0.0000E+00
Aerosols (kg)	8.0298E-05	0.0000E+00	0.0000E+00

Time (h) = 0.3333	Deposition Recirculating	
	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 0.3333	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 2.0000

EAB Doses:

Time (h) = 2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.2659E-01	3.6202E+01	2.0047E-01	1.9557E+00
Accumulated dose (rem)	1.7424E-01	4.3451E+01	2.8275E-01	2.3699E+00

LPZ Doses:

Time (h) = 2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.5642E-02	4.4732E+00	2.4771E-02	2.4165E-01
Accumulated dose (rem)	2.1529E-02	5.3689E+00	3.4937E-02	2.9283E-01

Control Room Doses:

Time (h) = 2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	5.3342E-03	3.7411E+01	2.9716E-01	1.8949E+00
Accumulated dose (rem)	1.0642E-02	6.6182E+01	6.0496E-01	3.3547E+00

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 2.0000	Ci	kg	Atoms	Bq
Rb-86	9.5484E+02	1.1735E-05	8.2173E+19	3.5329E+13
Sr-89	7.0054E+01	2.4113E-06	1.6316E+19	2.5920E+12
I-131	2.4210E+05	1.9529E-03	8.9774E+21	8.9579E+15
I-132	1.1909E+05	1.1537E-05	5.2635E+19	4.4062E+15
I-133	2.7863E+05	2.4597E-04	1.1137E+21	1.0309E+16
I-134	6.7142E+04	2.5169E-06	1.1311E+19	2.4843E+15
I-135	2.2662E+05	6.4530E-05	2.8786E+20	8.3850E+15
Xe-133	3.0650E+03	1.6374E-05	7.4142E+19	1.1340E+14
Xe-135	3.4683E+04	1.3581E-05	6.0585E+19	1.2833E+15
Cs-134	9.9587E+04	7.6971E-02	3.4592E+23	3.6847E+15
Cs-136	2.8588E+04	3.9006E-04	1.7272E+21	1.0578E+15
Cs-137	5.3781E+04	6.1830E-01	2.7179E+24	1.9899E+15
I-130	6.8161E+03	3.4948E-06	1.6190E+19	2.5220E+14
Kr-83m	7.2323E+03	3.5054E-07	2.5433E+18	2.6759E+14
Xe-131m	1.3058E+01	1.5590E-07	7.1668E+17	4.8316E+11
Xe-133m	2.1767E+02	4.8511E-07	2.1965E+18	8.0538E+12
Xe-135m	3.7096E+04	4.0723E-07	1.8166E+18	1.3725E+15
Cs-138	4.9501E+04	1.1698E-06	5.1051E+18	1.8316E+15
Cs-134m	1.4914E+04	1.8494E-06	8.3114E+18	5.5182E+14
Rb-88	2.4545E+03	2.0448E-08	1.3993E+17	9.0817E+13
Rb-89	1.4165E+03	1.0191E-08	6.8959E+16	5.2411E+13
Ba-137m	5.9618E+04	1.1085E-07	4.8729E+17	2.2059E+15
Br-82	1.0346E+03	9.5562E-07	7.0182E+18	3.8280E+13
Br-83	1.0381E+04	6.5714E-07	4.7680E+18	3.8411E+14
Br-84	2.3699E+03	3.3668E-08	2.4137E+17	8.7687E+13

PCS Transport Group Inventory:

Time (h) = 2.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	1.4200E+20	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.0157E+22	0.0000E+00	0.0000E+00
Organic I (atoms)	3.1413E+20	0.0000E+00	0.0000E+00
Aerosols (kg)	6.9568E-01	0.0000E+00	0.0000E+00

Time (h) = 2.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Environment Integral Nuclide Release:

Time (h) =	Ci	kg	Atoms	Bq
Rb-86	6.6666E-01	8.1932E-09	5.7373E+16	2.4667E+10
Sr-89	4.8912E-02	1.6836E-09	1.1392E+16	1.8097E+09
I-131	1.6904E+02	1.3635E-06	6.2679E+18	6.2543E+12
I-132	8.3146E+01	8.0551E-09	3.6749E+16	3.0764E+12
I-133	1.9454E+02	1.7173E-07	7.7759E+17	7.1980E+12
I-134	4.6878E+01	1.7573E-09	7.8974E+15	1.7345E+12
I-135	1.5823E+02	4.5055E-08	2.0098E+17	5.8543E+12
Xe-133	2.1411E+00	1.1438E-08	5.1792E+16	7.9219E+10
Xe-135	2.4228E+01	9.4875E-09	4.2322E+16	8.9645E+11
Cs-134	6.9531E+01	5.3741E-05	2.4152E+20	2.5727E+12
Cs-136	1.9960E+01	2.7234E-07	1.2059E+18	7.3852E+11
Cs-137	3.7550E+01	4.3170E-04	1.8976E+21	1.3893E+12
I-130	4.7590E+00	2.4401E-09	1.1303E+16	1.7608E+11
Kr-83m	5.0521E+00	2.4487E-10	1.7767E+15	1.8693E+11
Xe-131m	9.1219E-03	1.0890E-10	5.0064E+14	3.3751E+08
Xe-133m	1.5206E-01	3.3887E-10	1.5344E+15	5.6260E+09
Xe-135m	2.5908E+01	2.8442E-10	1.2687E+15	9.5860E+11
Cs-138	3.4562E+01	8.1678E-10	3.5643E+15	1.2788E+12
Cs-134m	1.0413E+01	1.2912E-09	5.8030E+15	3.8528E+11
Rb-88	1.7137E+00	1.4276E-11	9.7699E+13	6.3408E+10
Rb-89	9.8900E-01	7.1155E-12	4.8147E+13	3.6593E+10
Ba-137m	4.1625E+01	7.7398E-11	3.4022E+14	1.5401E+12
Br-82	7.2235E-01	6.6721E-10	4.9001E+15	2.6727E+10
Br-83	7.2483E+00	4.5882E-10	3.3290E+15	2.6819E+11
Br-84	1.6547E+00	2.3507E-11	1.6853E+14	6.1223E+10

## Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) =	Release	Rate/s	Release
Noble gases (atoms)	9.9918E+14	1.3877E+13	9.9195E+16
Elemental I (atoms)	7.1394E+16	9.9158E+14	7.0915E+18
Organic I (atoms)	2.2080E+15	3.0667E+13	2.1933E+17
Aerosols (kg)	4.8900E-06	6.7916E-08	4.8572E-04

## Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	Ci	kg	Atoms	Bq
2.0000				
Rb-86	2.9362E-04	3.6085E-12	2.5269E+13	1.0864E+07
Sr-89	2.1542E-05	7.4149E-13	5.0173E+12	7.9705E+05
I-131	7.4448E-02	6.0051E-10	2.7606E+15	2.7546E+09
I-132	3.6620E-02	3.5477E-12	1.6185E+13	1.3549E+09
I-133	8.5681E-02	7.5636E-11	3.4247E+14	3.1702E+09
I-134	2.0646E-02	7.7395E-13	3.4782E+12	7.6392E+08
I-135	6.9687E-02	1.9843E-11	8.8518E+13	2.5784E+09
Cs-134	3.0624E-02	2.3669E-08	1.0637E+17	1.1331E+09
Cs-136	8.7910E-03	1.1995E-10	5.3113E+14	3.2527E+08
Cs-137	1.6538E-02	1.9013E-07	8.3576E+17	6.1190E+08
I-130	2.0960E-03	1.0747E-12	4.9784E+12	7.7552E+07
Cs-138	1.5222E-02	3.5973E-13	1.5698E+12	5.6321E+08
Cs-134m	4.5862E-03	5.6870E-13	2.5558E+12	1.6969E+08
Rb-88	7.5477E-04	6.2877E-15	4.3029E+10	2.7927E+07
Rb-89	4.3558E-04	3.1339E-15	2.1205E+10	1.6117E+07
Ba-137m	1.8333E-02	3.4088E-14	1.4984E+11	6.7831E+08
Br-82	3.1814E-04	2.9386E-13	2.1581E+12	1.1771E+07
Br-83	3.1923E-03	2.0207E-13	1.4662E+12	1.1812E+08
Br-84	7.2876E-04	1.0353E-14	7.4224E+10	2.6964E+07

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	3.1233E+15
Organic I (atoms)	9.6597E+13
Aerosols (kg)	2.1393E-07

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
2.0000				
Rb-86	4.9339E-06	6.0638E-14	4.2462E+11	1.8256E+05
Sr-89	3.6199E-07	1.2460E-14	8.4310E+10	1.3394E+04



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

I-131	1.2510E-03	1.0091E-11	4.6389E+13	4.6288E+07
I-132	6.1536E-04	5.9616E-14	2.7198E+11	2.2768E+07
I-133	1.4398E-03	1.2710E-12	5.7549E+12	5.3272E+07
I-134	3.4694E-04	1.3005E-14	5.8448E+10	1.2837E+07
I-135	1.1710E-03	3.3345E-13	1.4875E+12	4.3328E+07
Xe-133	5.0523E-04	2.6992E-12	1.2222E+13	1.8694E+07
Xe-135	5.5676E-03	2.1802E-12	9.7255E+12	2.0600E+08
Cs-134	5.1460E-04	3.9773E-10	1.7875E+15	1.9040E+07
Cs-136	1.4772E-04	2.0156E-12	8.9250E+12	5.4658E+06
Cs-137	2.7790E-04	3.1950E-09	1.4044E+16	1.0282E+07
I-130	3.5221E-05	1.8059E-14	8.3656E+10	1.3032E+06
Kr-83m	1.2357E-03	5.9894E-14	4.3457E+11	4.5723E+07
Xe-131m	2.1705E-06	2.5913E-14	1.1912E+11	8.0307E+04
Xe-133m	3.5970E-05	8.0164E-14	3.6298E+11	1.3309E+06
Xe-135m	1.1274E-02	1.2376E-13	5.5207E+11	4.1712E+08
Cs-138	2.5579E-04	6.0450E-15	2.6379E+10	9.4642E+06
Cs-134m	7.7066E-05	9.5564E-15	4.2948E+10	2.8514E+06
Rb-88	1.2683E-05	1.0566E-16	7.2306E+08	4.6928E+05
Rb-89	7.3196E-06	5.2662E-17	3.5633E+08	2.7082E+05
Ba-137m	3.0806E-04	5.7282E-16	2.5180E+09	1.1398E+07
Br-82	5.3461E-06	4.9380E-15	3.6265E+10	1.9781E+05
Br-83	5.3644E-05	3.3957E-15	2.4638E+10	1.9848E+06
Br-84	1.2246E-05	1.7397E-16	1.2473E+09	4.5311E+05

Control Room Transport Group Inventory:

Time (h) =	Atmosphere	Sump	Overlying Pool
2.0000			
Noble gases (atoms)	2.3416E+13	0.0000E+00	0.0000E+00
Elemental I (atoms)	5.2484E+13	0.0000E+00	0.0000E+00
Organic I (atoms)	1.6232E+12	0.0000E+00	0.0000E+00
Aerosols (kg)	3.5948E-09	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) =	Ci	kg	Atoms	Bq
2.0000				
Rb-86	2.0338E-04	2.4995E-12	1.7503E+13	7.5250E+06
Sr-89	1.4921E-05	5.1361E-13	3.4753E+12	5.5209E+05
I-131	5.1568E-02	4.1595E-10	1.9122E+15	1.9080E+09
I-132	2.5365E-02	2.4574E-12	1.1211E+13	9.3852E+08
I-133	5.9349E-02	5.2391E-11	2.3722E+14	2.1959E+09
I-134	1.4301E-02	5.3609E-13	2.4093E+12	5.2914E+08
I-135	4.8270E-02	1.3745E-11	6.1313E+13	1.7860E+09
Cs-134	2.1212E-02	1.6395E-08	7.3680E+16	7.8484E+08
Cs-136	6.0892E-03	8.3083E-11	3.6789E+14	2.2530E+08
Cs-137	1.1455E-02	1.3170E-07	5.7891E+17	4.2385E+08
I-130	1.4518E-03	7.4440E-13	3.4483E+12	5.3717E+07
Cs-138	1.0544E-02	2.4918E-13	1.0874E+12	3.9012E+08
Cs-134m	3.1767E-03	3.9392E-13	1.7703E+12	1.1754E+08
Rb-88	5.2281E-04	4.3553E-15	2.9805E+10	1.9344E+07
Rb-89	3.0172E-04	2.1707E-15	1.4688E+10	1.1163E+07
Ba-137m	1.2698E-02	2.3612E-14	1.0379E+11	4.6984E+08
Br-82	2.2037E-04	2.0355E-13	1.4949E+12	8.1536E+06
Br-83	2.2112E-03	1.3997E-13	1.0156E+12	8.1815E+07
Br-84	5.0479E-04	7.1713E-15	5.1412E+10	1.8677E+07

Time (h) =	Deposition Surfaces	Recirculating Filter
2.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	2.1634E+15
Organic I (atoms)	0.0000E+00	6.6910E+13
Aerosols (kg)	0.0000E+00	1.4818E-07

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) =	Pathway Filter
2.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) =	Ci	kg	Atoms	Bq
2.0000				
Rb-86	2.9362E-04	3.6085E-12	2.5269E+13	1.0864E+07
Sr-89	2.1542E-05	7.4149E-13	5.0173E+12	7.9705E+05
I-131	7.4448E-02	6.0051E-10	2.7606E+15	2.7546E+09
I-132	3.6620E-02	3.5477E-12	1.6185E+13	1.3549E+09
I-133	8.5681E-02	7.5636E-11	3.4247E+14	3.1702E+09
I-134	2.0646E-02	7.7395E-13	3.4782E+12	7.6392E+08
I-135	6.9687E-02	1.9843E-11	8.8518E+13	2.5784E+09
Cs-134	3.0624E-02	2.3669E-08	1.0637E+17	1.1331E+09
Cs-136	8.7910E-03	1.1995E-10	5.3113E+14	3.2527E+08
Cs-137	1.6538E-02	1.9013E-07	8.3576E+17	6.1190E+08
I-130	2.0960E-03	1.0747E-12	4.9784E+12	7.7552E+07
Cs-138	1.5222E-02	3.5973E-13	1.5698E+12	5.6321E+08
Cs-134m	4.5862E-03	5.6870E-13	2.5558E+12	1.6969E+08
Rb-88	7.5477E-04	6.2877E-15	4.3029E+10	2.7927E+07
Rb-89	4.3558E-04	3.1339E-15	2.1205E+10	1.6117E+07
Ba-137m	1.8333E-02	3.4088E-14	1.4984E+11	6.7831E+08
Br-82	3.1814E-04	2.9386E-13	2.1581E+12	1.1771E+07
Br-83	3.1923E-03	2.0207E-13	1.4662E+12	1.1812E+08
Br-84	7.2876E-04	1.0353E-14	7.4224E+10	2.6964E+07

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	3.1233E+15
Organic I (atoms)	9.6597E+13
Aerosols (kg)	2.1393E-07

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) =	Pathway
2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
2.0000				
Rb-86	4.9700E-04	6.1080E-12	4.2771E+13	1.8389E+07
Sr-89	3.6463E-05	1.2551E-12	8.4926E+12	1.3491E+06
I-131	1.2602E-01	1.0165E-09	4.6727E+15	4.6626E+09
I-132	6.1985E-02	6.0051E-12	2.7397E+13	2.2935E+09
I-133	1.4503E-01	1.2803E-10	5.7969E+14	5.3661E+09
I-134	3.4948E-02	1.3100E-12	5.8875E+12	1.2931E+09
I-135	1.1796E-01	3.3588E-11	1.4983E+14	4.3644E+09
Cs-134	5.1835E-02	4.0064E-08	1.8005E+17	1.9179E+09
Cs-136	1.4880E-02	2.0303E-10	8.9902E+14	5.5057E+08
Cs-137	2.7993E-02	3.2183E-07	1.4147E+18	1.0357E+09
I-130	3.5478E-03	1.8191E-12	8.4267E+12	1.3127E+08
Cs-138	2.5766E-02	6.0891E-13	2.6572E+12	9.5333E+08
Cs-134m	7.7628E-03	9.6261E-13	4.3261E+12	2.8723E+08
Rb-88	1.2776E-03	1.0643E-14	7.2834E+10	4.7270E+07
Rb-89	7.3730E-04	5.3046E-15	3.5893E+10	2.7280E+07
Ba-137m	3.1031E-02	5.7700E-14	2.5363E+11	1.1482E+09
Br-82	5.3851E-04	4.9741E-13	3.6530E+12	1.9925E+07
Br-83	5.4036E-03	3.4205E-13	2.4817E+12	1.9993E+08
Br-84	1.2336E-03	1.7524E-14	1.2564E+11	4.5642E+07

Faulted S/G Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Atmosphere	Sump	Overlying Pool
Time (h) = 2.0000			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 2.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway Filter
Time (h) = 2.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 2.0000	Ci	kg	Atoms	Bq
Rb-86	6.5786E-01	8.0851E-09	5.6616E+16	2.4341E+10
Sr-89	4.8266E-02	1.6614E-09	1.1241E+16	1.7858E+09
I-131	1.6681E+02	1.3455E-06	6.1852E+18	6.1718E+12
I-132	8.2049E+01	7.9488E-09	3.6264E+16	3.0358E+12
I-133	1.9197E+02	1.6947E-07	7.6733E+17	7.1030E+12
I-134	4.6260E+01	1.7341E-09	7.7932E+15	1.7116E+12
I-135	1.5614E+02	4.4460E-08	1.9833E+17	5.7771E+12
Xe-133	2.1117E+00	1.1282E-08	5.1082E+16	7.8133E+10
Xe-135	2.3896E+01	9.3574E-09	4.1742E+16	8.8416E+11
Cs-134	6.8614E+01	5.3031E-05	2.3833E+20	2.5387E+12
Cs-136	1.9697E+01	2.6875E-07	1.1900E+18	7.2877E+11
Cs-137	3.7054E+01	4.2600E-04	1.8726E+21	1.3710E+12
I-130	4.6962E+00	2.4079E-09	1.1154E+16	1.7376E+11
Kr-83m	4.9829E+00	2.4151E-10	1.7523E+15	1.8437E+11
Xe-131m	8.9969E-03	1.0741E-10	4.9378E+14	3.3289E+08
Xe-133m	1.4997E-01	3.3423E-10	1.5134E+15	5.5489E+09
Xe-135m	2.5558E+01	2.8057E-10	1.2516E+15	9.4565E+11
Cs-138	3.4106E+01	8.0600E-10	3.5173E+15	1.2619E+12
Cs-134m	1.0276E+01	1.2742E-09	5.7264E+15	3.8020E+11
Rb-88	1.6911E+00	1.4088E-11	9.6409E+13	6.2571E+10
Rb-89	9.7595E-01	7.0216E-12	4.7512E+13	3.6110E+10
Ba-137m	4.1075E+01	7.6377E-11	3.3573E+14	1.5198E+12
Br-82	7.1282E-01	6.5841E-10	4.8354E+15	2.6374E+10
Br-83	7.1526E+00	4.5276E-10	3.2850E+15	2.6465E+11
Br-84	1.6328E+00	2.3197E-11	1.6630E+14	6.0415E+10

Intact S/G Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 2.0000			
Noble gases (atoms)	9.7835E+16	0.0000E+00	0.0000E+00
Elemental I (atoms)	6.9980E+18	0.0000E+00	0.0000E+00
Organic I (atoms)	2.1643E+17	0.0000E+00	0.0000E+00
Aerosols (kg)	4.7931E-04	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 2.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway Filter
Time (h) = 2.0000	

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 8.0000

EAB Doses:

Time (h) = 8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	2.0703E-01	1.2806E+02	3.1236E-01	6.7469E+00
Accumulated dose (rem)	3.8126E-01	1.7151E+02	5.9511E-01	9.1168E+00

LPZ Doses:

Time (h) = 8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.1638E-02	7.1990E+00	1.7559E-02	3.7928E-01
Accumulated dose (rem)	3.3167E-02	1.2568E+01	5.2496E-02	6.7211E-01

Control Room Doses:

Time (h) = 8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.4141E-03	1.0397E+01	8.0175E-02	5.3237E-01
Accumulated dose (rem)	1.2056E-02	7.6580E+01	6.8514E-01	3.8870E+00

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 8.0000	Ci	kg	Atoms	Bq
Rb-86	9.4208E+02	1.1578E-05	8.1076E+19	3.4857E+13
Sr-89	6.9818E+01	2.4032E-06	1.6261E+19	2.5833E+12
I-131	2.3596E+05	1.9033E-03	8.7494E+21	8.7304E+15
I-132	1.9443E+04	1.8836E-06	8.5935E+18	7.1939E+14
I-133	2.2719E+05	2.0056E-04	9.0810E+20	8.4061E+15
I-134	5.8198E+02	2.1816E-08	9.8044E+16	2.1533E+13
I-135	1.2029E+05	3.4254E-05	1.5280E+20	4.4509E+15
Xe-133	1.0902E+04	5.8241E-05	2.6371E+20	4.0336E+14
Xe-135	8.2325E+04	3.2237E-05	1.4380E+20	3.0460E+15
Cs-134	9.9153E+04	7.6635E-02	3.4441E+23	3.6686E+15
Cs-136	2.8095E+04	3.8334E-04	1.6974E+21	1.0395E+15
Cs-137	5.3557E+04	6.1573E-01	2.7066E+24	1.9816E+15
I-130	4.8484E+03	2.4859E-06	1.1516E+19	1.7939E+14
Kr-83m	3.9513E+03	1.9151E-07	1.3895E+18	1.4620E+14
Xe-131m	5.1090E+01	6.0995E-07	2.8040E+18	1.8903E+12
Xe-133m	7.5495E+02	1.6825E-06	7.6182E+18	2.7933E+13
Xe-135m	1.9797E+04	2.1733E-07	9.6947E+17	7.3249E+14
Cs-138	2.1245E+01	5.0208E-10	2.1910E+15	7.8607E+11
Cs-134m	3.5397E+03	4.3894E-07	1.9726E+18	1.3097E+14
Rb-88	1.9948E-03	1.6618E-14	1.1373E+11	7.3809E+07
Rb-89	1.0465E-04	7.5295E-16	5.0948E+09	3.8722E+06
Ba-137m	5.9369E+04	1.1039E-07	4.8525E+17	2.1967E+15
Br-82	9.1579E+02	8.4589E-07	6.2123E+18	3.3884E+13
Br-83	1.8144E+03	1.1485E-07	8.3330E+17	6.7132E+13
Br-84	9.2266E-01	1.3108E-11	9.3972E+13	3.4138E+10

PCS Transport Group Inventory:

Time (h) = 8.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	4.2030E+20	0.0000E+00	0.0000E+00
Elemental I (atoms)	9.5425E+21	0.0000E+00	0.0000E+00
Organic I (atoms)	2.9513E+20	0.0000E+00	0.0000E+00
Aerosols (kg)	6.9276E-01	0.0000E+00	0.0000E+00

Deposition Recirculating

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) =	8.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

		Pathway
Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Intact S/G Tube Leakage Transport Group Inventory:

		Pathway
Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Environment Integral Nuclide Release:

Time (h) =	8.0000	Ci	kg	Atoms	Bq
Rb-86	2.6922E+00	3.3087E-08	2.3169E+17	9.9613E+10	
Sr-89	1.9952E-01	6.8677E-09	4.6470E+16	7.3824E+09	
I-131	6.7431E+02	5.4391E-06	2.5004E+19	2.4949E+13	
I-132	5.5563E+01	5.3829E-09	2.4558E+16	2.0558E+12	
I-133	6.4925E+02	5.7314E-07	2.5951E+18	2.4022E+13	
I-134	1.6631E+00	6.2344E-11	2.8018E+14	6.1536E+10	
I-135	3.4377E+02	9.7888E-08	4.3666E+17	1.2719E+13	
Xe-133	3.1169E+01	1.6652E-07	7.5398E+17	1.1533E+12	
Xe-135	2.3538E+02	9.2170E-08	4.1115E+17	8.7089E+12	
Cs-134	2.8335E+02	2.1900E-04	9.8423E+20	1.0484E+13	
Cs-136	8.0289E+01	1.0955E-06	4.8508E+18	2.9707E+12	
Cs-137	1.5305E+02	1.7596E-03	7.7347E+21	5.6629E+12	
I-130	1.3856E+01	7.1042E-09	3.2909E+16	5.1265E+11	
Kr-83m	1.1297E+01	5.4754E-10	3.9728E+15	4.1799E+11	
Xe-131m	1.4607E-01	1.7439E-09	8.0169E+15	5.4047E+09	
Xe-133m	2.1585E+00	4.8105E-09	2.1781E+16	7.9864E+10	
Xe-135m	5.6589E+01	6.2122E-10	2.7712E+15	2.0938E+12	
Cs-138	6.0713E-02	1.4348E-12	6.2613E+12	2.2464E+09	
Cs-134m	1.0116E+01	1.2544E-09	5.6373E+15	3.7428E+11	
Rb-88	5.7008E-06	4.7491E-17	3.2500E+08	2.1093E+05	
Ba-137m	1.6966E+02	3.1547E-10	1.3867E+15	6.2775E+12	
Br-82	2.6171E+00	2.4173E-09	1.7753E+16	9.6833E+10	
Br-83	5.1850E+00	3.2821E-10	2.3814E+15	1.9185E+11	
Br-84	2.6367E-03	3.7458E-14	2.6855E+11	9.7559E+07	

Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) =	8.0000	Release	Rate/s
Noble gases (atoms)	3.0773E+15	4.2741E+13	1.2017E+18
Elemental I (atoms)	6.9808E+16	9.6955E+14	2.7270E+19
Organic I (atoms)	2.1590E+15	2.9986E+13	8.4340E+17
Aerosols (kg)	5.0678E-06	7.0387E-08	1.9797E-03

Faulted SG Tube Leakage Transport Group Inventory:

		Pathway
Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Unfiltered Makeup Transport Group Inventory:

Pathway

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) =	8.0000	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

## Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	8.0000	Ci	kg	Atoms	Bq
Rb-86		1.1541E-03	1.4184E-11	9.9321E+13	4.2702E+07
Sr-89		8.5531E-05	2.9440E-12	1.9921E+13	3.1646E+06
I-131		2.8906E-01	2.3316E-09	1.0718E+16	1.0695E+10
I-132		2.3819E-02	2.3075E-12	1.0527E+13	8.8129E+08
I-133		2.7832E-01	2.4569E-10	1.1125E+15	1.0298E+10
I-134		7.1295E-04	2.6726E-14	1.2011E+11	2.6379E+07
I-135		1.4737E-01	4.1962E-11	1.8719E+14	5.4525E+09
Cs-134		1.2147E-01	9.3881E-08	4.2192E+17	4.4943E+09
Cs-136		3.4418E-02	4.6961E-10	2.0794E+15	1.2735E+09
Cs-137		6.5610E-02	7.5429E-07	3.3157E+18	2.4276E+09
I-130		5.9395E-03	3.0454E-12	1.4107E+13	2.1976E+08
Cs-138		2.6026E-05	6.1507E-16	2.6841E+09	9.6297E+05
Cs-134m		4.3363E-03	5.3772E-13	2.4166E+12	1.6044E+08
Rb-88		2.4438E-09	2.0358E-20	1.3932E+05	9.0420E+01
Ba-137m		7.2730E-02	1.3524E-13	5.9446E+11	2.6910E+09
Br-82		1.1219E-03	1.0363E-12	7.6103E+12	4.1510E+07
Br-83		2.2227E-03	1.4070E-13	1.0208E+12	8.2239E+07
Br-84		1.1303E-06	1.6057E-17	1.1512E+08	4.1821E+04

## Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	1.1690E+16
Organic I (atoms)	3.6155E+14
Aerosols (kg)	8.4866E-07

## Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) =	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

## Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
Rb-86	4.2449E-06	5.2170E-14	3.6532E+11	1.5706E+05
Sr-89	3.1459E-07	1.0829E-14	7.3271E+10	1.1640E+04
I-131	1.0632E-03	8.5759E-12	3.9424E+13	3.9338E+07
I-132	8.7608E-05	8.4873E-15	3.8721E+10	3.2415E+06
I-133	1.0237E-03	9.0368E-13	4.0918E+12	3.7877E+07
I-134	2.6223E-06	9.8300E-17	4.4177E+08	9.7026E+04
I-135	5.4203E-04	1.5434E-13	6.8850E+11	2.0055E+07
Xe-133	1.5297E-03	8.1721E-12	3.7003E+13	5.6598E+07
Xe-135	1.1152E-02	4.3669E-12	1.9480E+13	4.1262E+08
Cs-134	4.4677E-04	3.4531E-10	1.5519E+15	1.6530E+07
Cs-136	1.2659E-04	1.7273E-12	7.6484E+12	4.6840E+06
Cs-137	2.4132E-04	2.7744E-09	1.2195E+16	8.9289E+06
I-130	2.1846E-05	1.1201E-14	5.1889E+10	8.0831E+05
Kr-83m	6.8417E-04	3.3161E-14	2.4060E+11	2.5314E+07
Xe-131m	7.5222E-06	8.9806E-14	4.1284E+11	2.7832E+05
Xe-133m	1.0746E-04	2.3949E-13	1.0844E+12	3.9760E+06
Xe-135m	1.6331E-02	1.7928E-13	7.9972E+11	6.0423E+08
Cs-138	9.5728E-08	2.2623E-18	9.8723E+06	3.5419E+03
Cs-134m	1.5950E-05	1.9778E-15	8.8884E+09	5.9013E+05
Ba-137m	2.6751E-04	4.9741E-16	2.1865E+09	9.8979E+06
Br-82	4.1264E-06	3.8115E-15	2.7992E+10	1.5268E+05
Br-83	8.1753E-06	5.1750E-16	3.7548E+09	3.0249E+05
Br-84	4.1574E-09	5.9061E-20	4.2342E+05	1.5382E+02

## Control Room Transport Group Inventory:

Time (h) =	Atmosphere	Sump	Overlying Pool
8.0000			
Noble gases (atoms)	5.9021E+13	0.0000E+00	0.0000E+00
Elemental I (atoms)	4.2997E+13	0.0000E+00	0.0000E+00
Organic I (atoms)	1.3298E+12	0.0000E+00	0.0000E+00
Aerosols (kg)	3.1215E-09	0.0000E+00	0.0000E+00

## Recirculating Filter Inventory

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
Rb-86	2.6021E-04	3.1980E-12	2.2394E+13	9.6279E+06
Sr-89	1.9285E-05	6.6379E-13	4.4915E+12	7.1353E+05
I-131	6.5174E-02	5.2571E-10	2.4167E+15	2.4114E+09
I-132	5.3704E-03	5.2028E-13	2.3736E+12	1.9870E+08
I-133	6.2753E-02	5.5396E-11	2.5083E+14	2.3218E+09
I-134	1.6075E-04	6.0258E-15	2.7081E+10	5.9477E+06
I-135	3.3226E-02	9.4612E-12	4.2205E+13	1.2294E+09
Cs-134	2.7387E-02	2.1167E-08	9.5129E+16	1.0133E+09
Cs-136	7.7602E-03	1.0588E-10	4.6885E+14	2.8713E+08
Cs-137	1.4793E-02	1.7007E-07	7.4758E+17	5.4734E+08
I-130	1.3392E-03	6.8664E-13	3.1808E+12	4.9550E+07
Cs-138	5.8681E-06	1.3868E-16	6.0518E+08	2.1712E+05
Cs-134m	9.7771E-04	1.2124E-13	5.4486E+11	3.6175E+07
Ba-137m	1.6398E-02	3.0492E-14	1.3403E+11	6.0674E+08
Br-82	2.5295E-04	2.3364E-13	1.7159E+12	9.3592E+06
Br-83	5.0115E-04	3.1723E-14	2.3017E+11	1.8543E+07
Br-84	2.5485E-07	3.6205E-18	2.5956E+07	9.4294E+03

Time (h) =	Deposition Surfaces	Recirculating Filter
8.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	2.6357E+15
Organic I (atoms)	0.0000E+00	8.1518E+13
Aerosols (kg)	0.0000E+00	1.9135E-07

## Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
Rb-86	1.1541E-03	1.4184E-11	9.9321E+13	4.2702E+07
Sr-89	8.5531E-05	2.9440E-12	1.9921E+13	3.1646E+06
I-131	2.8906E-01	2.3316E-09	1.0718E+16	1.0695E+10
I-132	2.3819E-02	2.3075E-12	1.0527E+13	8.8129E+08
I-133	2.7832E-01	2.4569E-10	1.1125E+15	1.0298E+10
I-134	7.1295E-04	2.6726E-14	1.2011E+11	2.6379E+07
I-135	1.4737E-01	4.1962E-11	1.8719E+14	5.4525E+09
Cs-134	1.2147E-01	9.3881E-08	4.2192E+17	4.4943E+09
Cs-136	3.4418E-02	4.6961E-10	2.0794E+15	1.2735E+09
Cs-137	6.5610E-02	7.5429E-07	3.3157E+18	2.4276E+09
I-130	5.9395E-03	3.0454E-12	1.4107E+13	2.1976E+08
Cs-138	2.6026E-05	6.1507E-16	2.6841E+09	9.6297E+05
Cs-134m	4.3363E-03	5.3772E-13	2.4166E+12	1.6044E+08
Rb-88	2.4438E-09	2.0358E-20	1.3932E+05	9.0420E+01
Ba-137m	7.2730E-02	1.3524E-13	5.9446E+11	2.6910E+09
Br-82	1.1219E-03	1.0363E-12	7.6103E+12	4.1510E+07
Br-83	2.2227E-03	1.4070E-13	1.0208E+12	8.2239E+07
Br-84	1.1303E-06	1.6057E-17	1.1512E+08	4.1821E+04

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	Pathway
8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	1.1690E+16
Organic I (atoms)	3.6155E+14
Aerosols (kg)	8.4866E-07

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	Pathway
8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) =	Pathway
8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
Rb-86	1.4143E-03	1.7382E-11	1.2172E+14	5.2329E+07
Sr-89	1.0482E-04	3.6078E-12	2.4412E+13	3.8782E+06
I-131	3.5423E-01	2.8573E-09	1.3135E+16	1.3107E+10
I-132	2.9189E-02	2.8278E-12	1.2901E+13	1.0800E+09
I-133	3.4107E-01	3.0108E-10	1.3633E+15	1.2620E+10
I-134	8.7370E-04	3.2751E-14	1.4719E+11	3.2327E+07
I-135	1.8059E-01	5.1423E-11	2.2939E+14	6.6819E+09
Cs-134	1.4885E-01	1.1505E-07	5.1704E+17	5.5076E+09
Cs-136	4.2178E-02	5.7549E-10	2.5483E+15	1.5606E+09
Cs-137	8.0403E-02	9.2436E-07	4.0632E+18	2.9749E+09
I-130	7.2787E-03	3.7320E-12	1.7288E+13	2.6931E+08
Cs-138	3.1894E-05	7.5375E-16	3.2893E+09	1.1801E+06
Cs-134m	5.3140E-03	6.5896E-13	2.9614E+12	1.9662E+08
Rb-88	2.9948E-09	2.4948E-20	1.7073E+05	1.1081E+02
Ba-137m	8.9128E-02	1.6573E-13	7.2849E+11	3.2978E+09
Br-82	1.3748E-03	1.2699E-12	9.3262E+12	5.0869E+07
Br-83	2.7238E-03	1.7242E-13	1.2510E+12	1.0078E+08
Br-84	1.3852E-06	1.9678E-17	1.4108E+08	5.1251E+04

Faulted S/G Transport Group Inventory:



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Atmosphere	Sump	Overlying Pool
Time (h) = 8.0000			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 8.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway Filter
Time (h) = 8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

	Ci	kg	Atoms	Bq
Time (h) = 8.0000				
Rb-86	2.5477E+00	3.1311E-08	2.1926E+17	9.4265E+10
Sr-89	1.8881E-01	6.4990E-09	4.3975E+16	6.9860E+09
I-131	6.3811E+02	5.1471E-06	2.3661E+19	2.3610E+13
I-132	5.2580E+01	5.0939E-09	2.3240E+16	1.9455E+12
I-133	6.1440E+02	5.4237E-07	2.4558E+18	2.2733E+13
I-134	1.5739E+00	5.8997E-11	2.6514E+14	5.8233E+10
I-135	3.2531E+02	9.2633E-08	4.1322E+17	1.2037E+13
Xe-133	2.9482E+01	1.5750E-07	7.1316E+17	1.0908E+12
Xe-135	2.2263E+02	8.7180E-08	3.8889E+17	8.2374E+12
Cs-134	2.6814E+02	2.0725E-04	9.3139E+20	9.9212E+12
Cs-136	7.5979E+01	1.0367E-06	4.5904E+18	2.8112E+12
Cs-137	1.4484E+02	1.6651E-03	7.3194E+21	5.3589E+12
I-130	1.3112E+01	6.7228E-09	3.1143E+16	4.8513E+11
Kr-83m	1.0685E+01	5.1791E-10	3.7577E+15	3.9536E+11
Xe-131m	1.3816E-01	1.6495E-09	7.5829E+15	5.1121E+09
Xe-133m	2.0416E+00	4.5500E-09	2.0602E+16	7.5540E+10
Xe-135m	5.3538E+01	5.8773E-10	2.6218E+15	1.9809E+12
Cs-138	5.7454E-02	1.3578E-12	5.9252E+12	2.1258E+09
Cs-134m	9.5726E+00	1.1870E-09	5.3346E+15	3.5419E+11
Rb-88	5.3947E-06	4.4942E-17	3.0755E+08	1.9960E+05
Rb-89	2.8302E-07	2.0362E-18	1.3778E+07	1.0472E+04
Ba-137m	1.6055E+02	2.9854E-10	1.3123E+15	5.9405E+12
Br-82	2.4766E+00	2.2876E-09	1.6800E+16	9.1634E+10
Br-83	4.9066E+00	3.1059E-10	2.2535E+15	1.8155E+11
Br-84	2.4952E-03	3.5447E-14	2.5413E+11	9.2321E+07

Intact S/G Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 8.0000			
Noble gases (atoms)	1.1366E+18	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.5806E+19	0.0000E+00	0.0000E+00
Organic I (atoms)	7.9812E+17	0.0000E+00	0.0000E+00
Aerosols (kg)	1.8734E-03	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 8.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway Filter
Time (h) = 8.0000	
Noble gases (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 12.0000

EAB Doses:

Time (h) = 12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	9.3324E-02	4.0402E+01	1.4280E-01	2.1892E+00
Accumulated dose (rem)	4.7459E-01	2.1191E+02	7.3791E-01	1.1306E+01

LPZ Doses:

Time (h) = 12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	3.5321E-03	1.5291E+00	5.4047E-03	8.2857E-02
Accumulated dose (rem)	3.6699E-02	1.4097E+01	5.7901E-02	7.5497E-01

Control Room Doses:

Time (h) = 12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	6.7307E-04	2.8264E+00	3.8894E-02	1.4723E-01
Accumulated dose (rem)	1.2730E-02	7.9406E+01	7.2403E-01	4.0343E+00

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	9.3367E+02	1.1475E-05	8.0352E+19	3.4546E+13
Sr-89	6.9466E+01	2.3911E-06	1.6179E+19	2.5702E+12
I-131	2.3195E+05	1.8709E-03	8.6007E+21	8.5821E+15
I-132	5.8080E+03	5.6267E-07	2.5670E+18	2.1490E+14
I-133	1.9829E+05	1.7504E-04	7.9257E+20	7.3366E+15
I-134	2.4557E+01	9.2055E-10	4.1371E+15	9.0862E+11
I-135	7.8863E+04	2.2456E-05	1.0017E+20	2.9179E+15
Xe-133	1.5140E+04	8.0884E-05	3.6624E+20	5.6018E+14
Xe-135	8.6180E+04	3.3747E-05	1.5054E+20	3.1887E+15
Cs-134	9.8863E+04	7.6411E-02	3.4340E+23	3.6579E+15
Cs-136	2.7771E+04	3.7892E-04	1.6779E+21	1.0275E+15
Cs-137	5.3408E+04	6.1401E-01	2.6990E+24	1.9761E+15
I-130	3.8634E+03	1.9809E-06	9.1764E+18	1.4295E+14
Kr-83m	1.5921E+03	7.7167E-08	5.5989E+17	5.8908E+13
Xe-131m	7.5510E+01	9.0149E-07	4.1442E+18	2.7939E+12
Xe-133m	1.0303E+03	2.2963E-06	1.0397E+19	3.8123E+13
Xe-135m	1.2979E+04	1.4248E-07	6.3557E+17	4.8021E+14
Cs-138	1.2088E-01	2.8567E-12	1.2466E+13	4.4725E+09
Cs-134m	1.3569E+03	1.6826E-07	7.5618E+17	5.0206E+13
Rb-88	1.7373E-07	1.4473E-18	9.9042E+06	6.4280E+03
Ba-137m	5.9204E+04	1.1009E-07	4.8390E+17	2.1906E+15
Br-82	8.4427E+02	7.7983E-07	5.7271E+18	3.1238E+13
Br-83	5.6716E+02	3.5901E-08	2.6048E+17	2.0985E+13
Br-84	4.9194E-03	6.9887E-14	5.0103E+11	1.8202E+08

PCS Transport Group Inventory:

			Overlying
Time (h) = 12.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	5.3251E+20	0.0000E+00	0.0000E+00
Elemental I (atoms)	9.2259E+21	0.0000E+00	0.0000E+00
Organic I (atoms)	2.8534E+20	0.0000E+00	0.0000E+00
Aerosols (kg)	6.9082E-01	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 12.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	3.9723E+00	4.8820E-08	3.4186E+17	1.4698E+11
Sr-89	2.9554E-01	1.0173E-08	6.8834E+16	1.0935E+10
I-131	9.8682E+02	7.9599E-06	3.6592E+19	3.6512E+13
I-132	2.4710E+01	2.3939E-09	1.0922E+16	9.1428E+11
I-133	8.4361E+02	7.4471E-07	3.3720E+18	3.1214E+13
I-134	1.0448E-01	3.9165E-12	1.7601E+13	3.8657E+09
I-135	3.3552E+02	9.5539E-08	4.2619E+17	1.2414E+13
Xe-133	6.4439E+01	3.4426E-07	1.5588E+18	2.3842E+12
Xe-135	3.6680E+02	1.4363E-07	6.4073E+17	1.3572E+13
Cs-134	4.2061E+02	3.2509E-04	1.4610E+21	1.5563E+13
Cs-136	1.1815E+02	1.6121E-06	7.1385E+18	4.3717E+12
Cs-137	2.2722E+02	2.6123E-03	1.1483E+22	8.4073E+12
I-130	1.6437E+01	8.4278E-09	3.9041E+16	6.0817E+11
Kr-83m	6.7763E+00	3.2843E-10	2.3830E+15	2.5072E+11
Xe-131m	3.2138E-01	3.8369E-09	1.7638E+16	1.1891E+10
Xe-133m	4.3853E+00	9.7733E-09	4.4253E+16	1.6226E+11
Xe-135m	5.5228E+01	6.0629E-10	2.7046E+15	2.0434E+12
Cs-138	5.1428E-04	1.2154E-14	5.3038E+10	1.9028E+07
Cs-134m	5.7730E+00	7.1586E-10	3.2172E+15	2.1360E+11
Ba-137m	2.5188E+02	4.6836E-10	2.0588E+15	9.3197E+12
Br-82	3.5919E+00	3.3178E-09	2.4366E+16	1.3290E+11
Br-83	2.4130E+00	1.5274E-10	1.1082E+15	8.9280E+10
Br-84	2.0930E-05	2.9733E-16	2.1317E+09	7.7440E+05

Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) = 12.0000	Release	Rate/s	Release
Noble gases (atoms)	3.6947E+15	5.1315E+13	2.2665E+18
Elemental I (atoms)	6.3977E+16	8.8857E+14	3.9252E+19
Organic I (atoms)	1.9787E+15	2.7481E+13	1.2140E+18
Aerosols (kg)	4.7905E-06	6.6534E-08	2.9391E-03

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	1.3680E-03	1.6812E-11	1.1773E+14	5.0615E+07
Sr-89	1.0178E-04	3.5033E-12	2.3705E+13	3.7658E+06
I-131	3.3984E-01	2.7412E-09	1.2601E+16	1.2574E+10
I-132	8.5096E-03	8.2440E-13	3.7611E+12	3.1486E+08
I-133	2.9052E-01	2.5646E-10	1.1612E+15	1.0749E+10
I-134	3.5980E-05	1.3487E-15	6.0614E+09	1.3313E+06
I-135	1.1555E-01	3.2902E-11	1.4677E+14	4.2752E+09
Cs-134	1.4485E-01	1.1195E-07	5.0314E+17	5.3594E+09
Cs-136	4.0689E-02	5.5517E-10	2.4583E+15	1.5055E+09
Cs-137	7.8251E-02	8.9962E-07	3.9545E+18	2.8953E+09
I-130	5.6605E-03	2.9023E-12	1.3445E+13	2.0944E+08
Cs-138	1.7711E-07	4.1855E-18	1.8265E+07	6.5529E+03
Cs-134m	1.9881E-03	2.4653E-13	1.1079E+12	7.3559E+07
Ba-137m	8.6743E-02	1.6129E-13	7.0899E+11	3.2095E+09
Br-82	1.2370E-03	1.1426E-12	8.3911E+12	4.5768E+07
Br-83	8.3097E-04	5.2601E-14	3.8165E+11	3.0746E+07
Br-84	7.2077E-09	1.0239E-19	7.3409E+05	2.6668E+02

Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	1.3517E+16
Organic I (atoms)	4.1806E+14
Aerosols (kg)	1.0122E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	1.6351E-06	2.0096E-14	1.4072E+11	6.0499E+04

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Sr-89	1.2165E-07	4.1874E-15	2.8334E+10	4.5012E+03
I-131	4.0620E-04	3.2765E-12	1.5062E+13	1.5030E+07
I-132	1.0171E-05	9.8540E-16	4.4956E+09	3.7634E+05
I-133	3.4726E-04	3.0654E-13	1.3880E+12	1.2848E+07
I-134	4.3007E-08	1.6121E-18	7.2452E+06	1.5912E+03
I-135	1.3811E-04	3.9327E-14	1.7543E+11	5.1101E+06
Xe-133	1.2178E-03	6.5058E-12	2.9458E+13	4.5057E+07
Xe-135	6.5946E-03	2.5823E-12	1.1519E+13	2.4400E+08
Cs-134	1.7314E-04	1.3382E-10	6.0139E+14	6.4061E+06
Cs-136	4.8635E-05	6.6359E-13	2.9384E+12	1.7995E+06
Cs-137	9.3532E-05	1.0753E-09	4.7267E+15	3.4607E+06
I-130	6.7659E-06	3.4691E-15	1.6070E+10	2.5034E+05
Kr-83m	1.9804E-04	9.5987E-15	6.9644E+10	7.3275E+06
Xe-131m	6.7362E-06	8.0422E-14	3.6970E+11	2.4924E+05
Xe-133m	8.5480E-05	1.9050E-13	8.6259E+11	3.1628E+06
Xe-135m	1.2347E-02	1.3554E-13	6.0462E+11	4.5683E+08
Cs-134m	2.3763E-06	2.9467E-16	1.3243E+09	8.7924E+04
Ba-137m	1.0368E-04	1.9279E-16	8.4745E+08	3.8363E+06
Br-82	1.4785E-06	1.3657E-15	1.0030E+10	5.4706E+04
Br-83	9.9325E-07	6.2873E-17	4.5618E+08	3.6750E+04

Control Room Transport Group Inventory:

Time (h) = 12.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	4.2884E+13	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.6157E+13	0.0000E+00	0.0000E+00
Organic I (atoms)	4.9970E+11	0.0000E+00	0.0000E+00
Aerosols (kg)	1.2098E-09	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	2.7520E-04	3.3821E-12	2.3683E+13	1.0182E+07
Sr-89	2.0475E-05	7.0476E-13	4.7687E+12	7.5757E+05
I-131	6.8366E-02	5.5145E-10	2.5350E+15	2.5295E+09
I-132	1.7119E-03	1.6585E-13	7.5663E+11	6.3340E+07
I-133	5.8444E-02	5.1592E-11	2.3361E+14	2.1624E+09
I-134	7.2382E-06	2.7133E-16	1.2194E+09	2.6781E+05
I-135	2.3244E-02	6.6188E-12	2.9526E+13	8.6004E+08
Cs-134	2.9139E-02	2.2522E-08	1.0122E+17	1.0782E+09
Cs-136	8.1855E-03	1.1168E-10	4.9455E+14	3.0286E+08
Cs-137	1.5742E-02	1.8098E-07	7.9553E+17	5.8245E+08
I-130	1.1387E-03	5.8386E-13	2.7047E+12	4.2133E+07
Cs-138	3.5629E-08	8.4200E-19	3.6744E+06	1.3183E+03
Cs-134m	3.9994E-04	4.9594E-14	2.2288E+11	1.4798E+07
Ba-137m	1.7450E-02	3.2447E-14	1.4263E+11	6.4566E+08
Br-82	2.4884E-04	2.2985E-13	1.6880E+12	9.2073E+06
Br-83	1.6717E-04	1.0582E-14	7.6777E+10	6.1852E+06
Br-84	1.4500E-09	2.0599E-20	1.4768E+05	5.3649E+01

Time (h) = 12.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	2.7193E+15
Organic I (atoms)	0.0000E+00	8.4102E+13
Aerosols (kg)	0.0000E+00	2.0362E-07

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 12.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	1.3680E-03	1.6812E-11	1.1773E+14	5.0615E+07
Sr-89	1.0178E-04	3.5033E-12	2.3705E+13	3.7658E+06
I-131	3.3984E-01	2.7412E-09	1.2601E+16	1.2574E+10

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

I-132	8.5096E-03	8.2440E-13	3.7611E+12	3.1486E+08
I-133	2.9052E-01	2.5646E-10	1.1612E+15	1.0749E+10
I-134	3.5980E-05	1.3487E-15	6.0614E+09	1.3313E+06
I-135	1.1555E-01	3.2902E-11	1.4677E+14	4.2752E+09
Cs-134	1.4485E-01	1.1195E-07	5.0314E+17	5.3594E+09
Cs-136	4.0689E-02	5.5517E-10	2.4583E+15	1.5055E+09
Cs-137	7.8251E-02	8.9962E-07	3.9545E+18	2.8953E+09
I-130	5.6605E-03	2.9023E-12	1.3445E+13	2.0944E+08
Cs-138	1.7711E-07	4.1855E-18	1.8265E+07	6.5529E+03
Cs-134m	1.9881E-03	2.4653E-13	1.1079E+12	7.3559E+07
Ba-137m	8.6743E-02	1.6129E-13	7.0899E+11	3.2095E+09
Br-82	1.2370E-03	1.1426E-12	8.3911E+12	4.5768E+07
Br-83	8.3097E-04	5.2601E-14	3.8165E+11	3.0746E+07
Br-84	7.2077E-09	1.0239E-19	7.3409E+05	2.6668E+02

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	1.3517E+16
Organic I (atoms)	4.1806E+14
Aerosols (kg)	1.0122E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	1.6432E-03	2.0194E-11	1.4141E+14	6.0797E+07
Sr-89	1.2225E-04	4.2080E-12	2.8473E+13	4.5233E+06
I-131	4.0820E-01	3.2926E-09	1.5136E+16	1.5104E+10
I-132	1.0221E-02	9.9025E-13	4.5177E+12	3.7820E+08
I-133	3.4897E-01	3.0805E-10	1.3948E+15	1.2912E+10
I-134	4.3218E-05	1.6201E-15	7.2808E+09	1.5991E+06
I-135	1.3879E-01	3.9520E-11	1.7629E+14	5.1352E+09
Cs-134	1.7399E-01	1.3448E-07	6.0435E+17	6.4376E+09
Cs-136	4.8875E-02	6.6686E-10	2.9529E+15	1.8084E+09
Cs-137	9.3992E-02	1.0806E-06	4.7500E+18	3.4777E+09
I-130	6.7992E-03	3.4862E-12	1.6149E+13	2.5157E+08
Cs-138	2.1273E-07	5.0275E-18	2.1939E+07	7.8712E+03
Cs-134m	2.3880E-03	2.9612E-13	1.3308E+12	8.8357E+07
Ba-137m	1.0419E-01	1.9374E-13	8.5162E+11	3.8551E+09
Br-82	1.4858E-03	1.3724E-12	1.0079E+13	5.4976E+07
Br-83	9.9814E-04	6.3182E-14	4.5843E+11	3.6931E+07
Br-84	8.6576E-09	1.2299E-19	8.8177E+05	3.2033E+02

Faulted S/G Transport Group Inventory:

			Overlying
Time (h) = 12.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Deposition Recirculating

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 12.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 12.0000	Pathway	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Rb-86	3.8289E+00	4.7057E-08	3.2952E+17	1.4167E+11
Sr-89	2.8487E-01	9.8055E-09	6.6349E+16	1.0540E+10
I-131	9.5119E+02	7.6725E-06	3.5271E+19	3.5194E+13
I-132	2.3818E+01	2.3075E-09	1.0527E+16	8.8127E+11
I-133	8.1316E+02	7.1782E-07	3.2503E+18	3.0087E+13
I-134	1.0071E-01	3.7751E-12	1.6966E+13	3.7262E+09
I-135	3.2341E+02	9.2090E-08	4.1080E+17	1.1966E+13
Xe-133	6.2088E+01	3.3170E-07	1.5019E+18	2.2973E+12
Xe-135	3.5342E+02	1.3839E-07	6.1735E+17	1.3076E+13
Cs-134	4.0543E+02	3.1336E-04	1.4083E+21	1.5001E+13
Cs-136	1.1389E+02	1.5539E-06	6.8808E+18	4.2138E+12
Cs-137	2.1902E+02	2.5180E-03	1.1068E+22	8.1038E+12
I-130	1.5844E+01	8.1235E-09	3.7631E+16	5.8621E+11
Kr-83m	6.5291E+00	3.1645E-10	2.2961E+15	2.4158E+11
Xe-131m	3.0966E-01	3.6969E-09	1.6995E+16	1.1457E+10
Xe-133m	4.2254E+00	9.4168E-09	4.2638E+16	1.5634E+11
Xe-135m	5.3224E+01	5.8429E-10	2.6064E+15	1.9693E+12
Cs-138	4.9571E-04	1.1715E-14	5.1123E+10	1.8341E+07
Cs-134m	5.5646E+00	6.9002E-10	3.1010E+15	2.0589E+11
Ba-137m	2.4279E+02	4.5145E-10	1.9844E+15	8.9832E+12
Br-82	3.4623E+00	3.1980E-09	2.3486E+16	1.2810E+11
Br-83	2.3259E+00	1.4723E-10	1.0682E+15	8.6057E+10
Br-84	2.0174E-05	2.8660E-16	2.0547E+09	7.4644E+05

Intact S/G Transport Group Inventory:

Time (h) = 12.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	2.1838E+18	0.0000E+00	0.0000E+00
Elemental I (atoms)	3.7834E+19	0.0000E+00	0.0000E+00
Organic I (atoms)	1.1701E+18	0.0000E+00	0.0000E+00
Aerosols (kg)	2.8330E-03	0.0000E+00	0.0000E+00

Time (h) = 12.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 12.0000	Pathway	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 12.0000	Pathway	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Detailed model information at time (H) = 24.0000

EAB Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	9.6956E-06	2.5222E-05	1.6189E-05	1.1013E-05
Accumulated dose (rem)	4.7460E-01	2.1191E+02	7.3792E-01	1.1306E+01

LPZ Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	3.6696E-07	9.5461E-07	6.1271E-07	4.1681E-07
Accumulated dose (rem)	3.6700E-02	1.4097E+01	5.7902E-02	7.5497E-01

Control Room Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	7.9102E-04	1.3553E-01	4.4712E-02	7.8691E-03
Accumulated dose (rem)	1.3521E-02	7.9542E+01	7.6875E-01	4.0421E+00

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Rb-86	9.1649E+02	1.1264E-05	7.8873E+19	3.3910E+13
Sr-89	6.8991E+01	2.3747E-06	1.6068E+19	2.5527E+12
I-131	2.2216E+05	1.7920E-03	8.2379E+21	8.2200E+15
I-132	1.5611E+02	1.5124E-08	6.8999E+16	5.7761E+12
I-133	1.3293E+05	1.1735E-04	5.3133E+20	4.9184E+15
I-134	1.8604E-03	6.9740E-14	3.1342E+11	6.8837E+07
I-135	2.2406E+04	6.3802E-06	2.8461E+19	8.2904E+14
Xe-133	2.4383E+04	1.3026E-04	5.8982E+20	9.0217E+14
Xe-135	5.9151E+04	2.3163E-05	1.0333E+20	2.1886E+15
Cs-134	9.8818E+04	7.6376E-02	3.4324E+23	3.6563E+15
Cs-136	2.7046E+04	3.6903E-04	1.6341E+21	1.0007E+15
Cs-137	5.3406E+04	6.1399E-01	2.6989E+24	1.9760E+15
I-130	1.9711E+03	1.0107E-06	4.6818E+18	7.2931E+13
Kr-83m	6.5943E+01	3.1961E-09	2.3190E+16	2.4399E+12
Xe-131m	1.4567E+02	1.7391E-06	7.9947E+18	5.3897E+12
Xe-133m	1.5702E+03	3.4993E-06	1.5845E+19	5.8096E+13
Xe-135m	3.6875E+03	4.0481E-08	1.8058E+17	1.3644E+14
Cs-138	2.2452E-08	5.3059E-19	2.3154E+06	8.3071E+02
Cs-134m	7.7074E+01	9.5574E-09	4.2952E+16	2.8517E+12
Ba-137m	5.9202E+04	1.1008E-07	4.8389E+17	2.1905E+15
Br-82	6.6703E+02	6.1612E-07	4.5248E+18	2.4680E+13
Br-83	1.7469E+01	1.1058E-09	8.0229E+15	6.4634E+11

PCS Transport Group Inventory:

Time (h) = 24.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	7.1719E+20	0.0000E+00	0.0000E+00
Elemental I (atoms)	8.5427E+21	0.0000E+00	0.0000E+00
Organic I (atoms)	2.6421E+20	0.0000E+00	0.0000E+00
Aerosols (kg)	6.9075E-01	0.0000E+00	0.0000E+00

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

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00



## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

## Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Environment Integral Nuclide Release:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Xe-133	1.0378E+02	5.5443E-07	2.5104E+18	3.8398E+12
Xe-135	2.5176E+02	9.8586E-08	4.3978E+17	9.3152E+12
Kr-83m	2.8066E-01	1.3603E-11	9.8700E+13	1.0385E+10
Xe-131m	6.2000E-01	7.4019E-09	3.4027E+16	2.2940E+10
Xe-133m	6.6830E+00	1.4894E-08	6.7439E+16	2.4727E+11
Xe-135m	1.5691E+01	1.7226E-10	7.6842E+14	5.8058E+11

## Environment Transport Group Inventory:

Time (h) = 24.0000	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)	7.4978E+11	1.0414E+10	3.0525E+18
Elemental I (atoms)	1.9925E-13	2.7674E-15	3.6345E+19
Organic I (atoms)	6.1625E-15	8.5590E-17	1.1241E+18
Aerosols (kg)	1.6111E-35	2.2377E-37	2.9388E-03

## Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Rb-86	1.3428E-03	1.6503E-11	1.1556E+14	4.9684E+07
Sr-89	1.0108E-04	3.4793E-12	2.3543E+13	3.7400E+06
I-131	3.2550E-01	2.6255E-09	1.2070E+16	1.2043E+10
I-132	2.2873E-04	2.2159E-14	1.0109E+11	8.4629E+06
I-133	1.9476E-01	1.7193E-10	7.7848E+14	7.2062E+09
I-134	2.7258E-09	1.0218E-19	4.5921E+05	1.0086E+02
I-135	3.2829E-02	9.3480E-12	4.1700E+13	1.2147E+09
Cs-134	1.4478E-01	1.1190E-07	5.0291E+17	5.3570E+09
Cs-136	3.9627E-02	5.4068E-10	2.3941E+15	1.4662E+09
Cs-137	7.8248E-02	8.9959E-07	3.9544E+18	2.8952E+09
I-130	2.8880E-03	1.4808E-12	6.8595E+12	1.0686E+08
Cs-134m	1.1293E-04	1.4003E-14	6.2932E+10	4.1782E+06
Ba-137m	8.6740E-02	1.6129E-13	7.0897E+11	3.2094E+09
Br-82	9.7730E-04	9.0271E-13	6.6295E+12	3.6160E+07
Br-83	2.5594E-05	1.6201E-15	1.1755E+10	9.4698E+05

## Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	1.2516E+16
Organic I (atoms)	3.8710E+14

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Aerosols (kg) 1.0121E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Xe-133	5.4543E-04	2.9139E-12	1.3194E+13	2.0181E+07
Xe-135	1.2178E-03	4.7688E-13	2.1273E+12	4.5059E+07
Kr-83m	4.8549E-06	2.3531E-16	1.7073E+09	1.7963E+05
Xe-131m	4.5405E-06	5.4208E-14	2.4920E+11	1.6800E+05
Xe-133m	3.8919E-05	8.6736E-14	3.9273E+11	1.4400E+06
Xe-135m	3.4815E-03	3.8220E-14	1.7049E+11	1.2882E+08

Control Room Transport Group Inventory:

			Overlying
Time (h) = 24.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	1.6135E+13	0.0000E+00	0.0000E+00
Elemental I (atoms)	3.9955E-12	0.0000E+00	0.0000E+00
Organic I (atoms)	1.2357E-13	0.0000E+00	0.0000E+00
Aerosols (kg)	3.2307E-34	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Rb-86	2.7093E-04	3.3297E-12	2.3316E+13	1.0024E+07
Sr-89	2.0395E-05	7.0200E-13	4.7500E+12	7.5460E+05
I-131	6.5674E-02	5.2974E-10	2.4352E+15	2.4299E+09
I-132	4.6149E-05	4.4709E-15	2.0397E+10	1.7075E+06
I-133	3.9296E-02	3.4689E-11	1.5707E+14	1.4540E+09
I-135	6.6236E-03	1.8861E-12	8.4135E+12	2.4508E+08
Cs-134	2.9212E-02	2.2578E-08	1.0147E+17	1.0808E+09
Cs-136	7.9953E-03	1.0909E-10	4.8305E+14	2.9583E+08
Cs-137	1.5788E-02	1.8151E-07	7.9785E+17	5.8414E+08
I-130	5.8269E-04	2.9876E-13	1.3840E+12	2.1560E+07
Cs-134m	2.2784E-05	2.8253E-15	1.2697E+10	8.4302E+05
Ba-137m	1.7501E-02	3.2542E-14	1.4304E+11	6.4754E+08
Br-82	1.9718E-04	1.8213E-13	1.3376E+12	7.2958E+06

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Br-83 5.1640E-06 3.2688E-16 2.3717E+09 1.9107E+05

	Deposition Surfaces	Recirculating Filter
Time (h) = 24.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	2.5254E+15
Organic I (atoms)	0.0000E+00	7.8104E+13
Aerosols (kg)	0.0000E+00	2.0420E-07

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway Filter
Time (h) = 24.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Rb-86	1.3428E-03	1.6503E-11	1.1556E+14	4.9684E+07
Sr-89	1.0108E-04	3.4793E-12	2.3543E+13	3.7400E+06
I-131	3.2550E-01	2.6255E-09	1.2070E+16	1.2043E+10
I-132	2.2873E-04	2.2159E-14	1.0109E+11	8.4629E+06
I-133	1.9476E-01	1.7193E-10	7.7848E+14	7.2062E+09
I-134	2.7258E-09	1.0218E-19	4.5921E+05	1.0086E+02
I-135	3.2829E-02	9.3480E-12	4.1700E+13	1.2147E+09
Cs-134	1.4478E-01	1.1190E-07	5.0291E+17	5.3570E+09
Cs-136	3.9627E-02	5.4068E-10	2.3941E+15	1.4662E+09
Cs-137	7.8248E-02	8.9959E-07	3.9544E+18	2.8952E+09
I-130	2.8880E-03	1.4808E-12	6.8595E+12	1.0686E+08
Cs-134m	1.1293E-04	1.4003E-14	6.2932E+10	4.1782E+06
Ba-137m	8.6740E-02	1.6129E-13	7.0897E+11	3.2094E+09
Br-82	9.7730E-04	9.0271E-13	6.6295E+12	3.6160E+07
Br-83	2.5594E-05	1.6201E-15	1.1755E+10	9.4698E+05

Control Room Filtered Makeup Transport Group Inventory:

	Pathway Filter
Time (h) = 24.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	1.2516E+16
Organic I (atoms)	3.8710E+14
Aerosols (kg)	1.0121E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway Filter
Time (h) = 24.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway Filter
Time (h) = 24.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Rb-86	1.6137E-03	1.9833E-11	1.3888E+14	5.9708E+07
Sr-89	1.2148E-04	4.1813E-12	2.8293E+13	4.4946E+06
I-131	3.9117E-01	3.1553E-09	1.4505E+16	1.4473E+10
I-132	2.7488E-04	2.6630E-14	1.2149E+11	1.0170E+07
I-133	2.3406E-01	2.0662E-10	9.3555E+14	8.6602E+09
I-134	3.2758E-09	1.2280E-19	5.5186E+05	1.2121E+02

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

I-135	3.9452E-02	1.1234E-11	5.0113E+13	1.4597E+09
Cs-134	1.7399E-01	1.3448E-07	6.0437E+17	6.4378E+09
Cs-136	4.7622E-02	6.4977E-10	2.8772E+15	1.7620E+09
Cs-137	9.4036E-02	1.0811E-06	4.7522E+18	3.4793E+09
I-130	3.4707E-03	1.7795E-12	8.2435E+12	1.2841E+08
Cs-134m	1.3571E-04	1.6828E-14	7.5629E+10	5.0213E+06
Ba-137m	1.0424E-01	1.9383E-13	8.5202E+11	3.8569E+09
Br-82	1.1745E-03	1.0848E-12	7.9671E+12	4.3456E+07
Br-83	3.0758E-05	1.9470E-15	1.4127E+10	1.1380E+06

Faulted S/G Transport Group Inventory:

Time (h) = 24.0000	Overlying		
	Atmosphere	Sump	Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

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

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 24.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Rb-86	3.7585E+00	4.6191E-08	3.2345E+17	1.3906E+11
Sr-89	2.8292E-01	9.7385E-09	6.5895E+16	1.0468E+10
I-131	9.1106E+02	7.3488E-06	3.3783E+19	3.3709E+13
I-132	6.4020E-01	6.2022E-11	2.8296E+14	2.3687E+10
I-133	5.4513E+02	4.8122E-07	2.1789E+18	2.0170E+13
I-134	7.6295E-06	2.8600E-16	1.2853E+09	2.8229E+05
I-135	9.1886E+01	2.6165E-08	1.1672E+17	3.3998E+12
Xe-133	9.9992E+01	5.3420E-07	2.4188E+18	3.6997E+12
Xe-135	2.4257E+02	9.4988E-08	4.2373E+17	8.9752E+12
Cs-134	4.0524E+02	3.1321E-04	1.4076E+21	1.4994E+13
Cs-136	1.1091E+02	1.5133E-06	6.7011E+18	4.1038E+12
Cs-137	2.1901E+02	2.5179E-03	1.1068E+22	8.1035E+12
I-130	8.0833E+00	4.1446E-09	1.9199E+16	2.9908E+11
Kr-83m	2.7042E-01	1.3107E-11	9.5099E+13	1.0006E+10
Xe-131m	5.9737E-01	7.1318E-09	3.2785E+16	2.2103E+10
Xe-133m	6.4391E+00	1.4350E-08	6.4977E+16	2.3825E+11
Xe-135m	1.5122E+01	1.6601E-10	7.4053E+14	5.5951E+11
Cs-134m	3.1607E-01	3.9194E-11	1.7614E+14	1.1695E+10
Ba-137m	2.4278E+02	4.5144E-10	1.9844E+15	8.9830E+12
Br-82	2.7354E+00	2.5266E-09	1.8556E+16	1.0121E+11
Br-83	7.1637E-02	4.5346E-12	3.2901E+13	2.6506E+09

Intact S/G Transport Group Inventory:

Time (h) = 24.0000	Overlying		
	Atmosphere	Sump	Pool
Noble gases (atoms)	2.9411E+18	0.0000E+00	0.0000E+00
Elemental I (atoms)	3.5033E+19	0.0000E+00	0.0000E+00
Organic I (atoms)	1.0835E+18	0.0000E+00	0.0000E+00
Aerosols (kg)	2.8327E-03	0.0000E+00	0.0000E+00

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

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 96.0000

EAB Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	3.8933E-06	7.9011E-30	6.6479E-06	3.8933E-06
Accumulated dose (rem)	4.7460E-01	2.1191E+02	7.3793E-01	1.1306E+01

LPZ Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	6.2625E-08	1.2709E-31	1.0693E-07	6.2625E-08
Accumulated dose (rem)	3.6700E-02	1.4097E+01	5.7902E-02	7.5497E-01

Control Room Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.9058E-04	1.9936E-26	1.1017E-02	1.9058E-04
Accumulated dose (rem)	1.3711E-02	7.9542E+01	7.7976E-01	4.0423E+00

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Rb-86	8.1985E+02	1.0076E-05	7.0556E+19	3.0334E+13
Sr-89	6.6207E+01	2.2789E-06	1.5420E+19	2.4497E+12
I-131	1.7153E+05	1.3836E-03	6.3605E+21	6.3467E+15
I-132	5.8869E-08	5.7032E-18	2.6019E+07	2.1782E+03
I-133	1.2067E+04	1.0652E-05	4.8232E+19	4.4648E+14
I-135	1.1786E+01	3.3561E-09	1.4971E+16	4.3609E+11
Xe-133	3.1819E+04	1.6999E-04	7.6970E+20	1.1773E+15
Xe-135	4.6066E+02	1.8039E-07	8.0469E+17	1.7045E+13
Cs-134	9.8545E+04	7.6166E-02	3.4230E+23	3.6462E+15
Cs-136	2.3076E+04	3.1486E-04	1.3942E+21	8.5383E+14
Cs-137	5.3396E+04	6.1388E-01	2.6984E+24	1.9757E+15
I-130	3.4765E+01	1.7825E-08	8.2573E+16	1.2863E+12
Kr-83m	6.3876E-08	3.0960E-18	2.2463E+07	2.3634E+03
Xe-131m	4.6939E+02	5.6039E-06	2.5761E+19	1.7367E+13
Xe-133m	1.3551E+03	3.0200E-06	1.3674E+19	5.0138E+13
Xe-135m	1.9397E+00	2.1294E-11	9.4988E+13	7.1769E+10
Cs-134m	2.5886E-06	3.2099E-16	1.4426E+09	9.5777E+04
Ba-137m	5.9191E+04	1.1006E-07	4.8380E+17	2.1901E+15
Br-82	1.6224E+02	1.4985E-07	1.1005E+18	6.0028E+12
Br-83	1.4913E-08	9.4401E-19	6.8493E+06	5.5179E+02

PCS Transport Group Inventory:

Time (h) = 96.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	8.0994E+20	0.0000E+00	0.0000E+00
Elemental I (atoms)	6.2176E+21	0.0000E+00	0.0000E+00
Organic I (atoms)	1.9230E+20	0.0000E+00	0.0000E+00
Aerosols (kg)	6.9037E-01	0.0000E+00	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Deposition Recirculating	
	Surfaces	Filter
Time (h) = 96.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
	Filter
Time (h) = 96.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
	Filter
Time (h) = 96.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Xe-133	1.3543E+02	7.2352E-07	3.2761E+18	5.0109E+12
Xe-135	1.9607E+00	7.6778E-10	3.4250E+15	7.2546E+10
Xe-131m	1.9978E+00	2.3852E-08	1.0965E+17	7.3920E+10
Xe-133m	5.7676E+00	1.2854E-08	5.8201E+16	2.1340E+11
Xe-135m	8.2540E-03	9.0612E-14	4.0421E+11	3.0540E+08

Environment Transport Group Inventory:

	Present	Release	Integral
	Release	Rate/s	Release
Time (h) = 96.0000			
Noble gases (atoms)	6.6303E+10	9.2088E+08	3.4473E+18
Elemental I (atoms)	0.0000E+00	0.0000E+00	2.6453E+19
Organic I (atoms)	0.0000E+00	0.0000E+00	8.1813E+17
Aerosols (kg)	0.0000E+00	0.0000E+00	2.9372E-03

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
	Filter
Time (h) = 96.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
	Filter
Time (h) = 96.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Rb-86	1.2012E-03	1.4763E-11	1.0338E+14	4.4444E+07
Sr-89	9.7004E-05	3.3390E-12	2.2593E+13	3.5891E+06
I-131	2.5132E-01	2.0272E-09	9.3191E+15	9.2988E+09
I-133	1.7680E-02	1.5607E-11	7.0668E+13	6.5416E+08
I-135	1.7269E-05	4.9172E-15	2.1935E+10	6.3894E+05
Cs-134	1.4438E-01	1.1159E-07	5.0152E+17	5.3422E+09
Cs-136	3.3811E-02	4.6132E-10	2.0427E+15	1.2510E+09
Cs-137	7.8233E-02	8.9942E-07	3.9536E+18	2.8946E+09

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

I-130	5.0936E-05	2.6116E-14	1.2098E+11	1.8846E+06
Ba-137m	8.6724E-02	1.6126E-13	7.0884E+11	3.2088E+09
Br-82	2.3770E-04	2.1956E-13	1.6124E+12	8.7949E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	9.1097E+15
Organic I (atoms)	2.8174E+14
Aerosols (kg)	1.0115E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Xe-133	4.9512E-05	2.6451E-13	1.1977E+12	1.8320E+06
Xe-135	6.4060E-07	2.5085E-16	1.1190E+09	2.3702E+04
Xe-131m	3.5057E-06	4.1854E-14	1.9240E+11	1.2971E+05
Xe-133m	3.5329E-06	7.8735E-15	3.5651E+10	1.3072E+05
Xe-135m	1.8314E-06	2.0104E-17	8.9683E+07	6.7760E+04

Control Room Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 96.0000			
Noble gases (atoms)	1.4270E+12	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Rb-86	2.4236E-04	2.9786E-12	2.0857E+13	8.9673E+06
Sr-89	1.9572E-05	6.7368E-13	4.5584E+12	7.2416E+05
I-131	5.0707E-02	4.0901E-10	1.8803E+15	1.8762E+09

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

I-133	3.5672E-03	3.1490E-12	1.4258E+13	1.3199E+08
I-135	3.4842E-06	9.9212E-16	4.4257E+09	1.2892E+05
Cs-134	2.9131E-02	2.2516E-08	1.0119E+17	1.0779E+09
Cs-136	6.8217E-03	9.3078E-11	4.1215E+14	2.5240E+08
Cs-137	1.5785E-02	1.8147E-07	7.9770E+17	5.8403E+08
I-130	1.0277E-05	5.2693E-15	2.4410E+10	3.8025E+05
Ba-137m	1.7498E-02	3.2536E-14	1.4302E+11	6.4742E+08
Br-82	4.7960E-05	4.4299E-14	3.2533E+11	1.7745E+06

Deposition Recirculating

Time (h) = 96.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	1.8380E+15
Organic I (atoms)	0.0000E+00	5.6846E+13
Aerosols (kg)	0.0000E+00	2.0408E-07

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Rb-86	1.2012E-03	1.4763E-11	1.0338E+14	4.4444E+07
Sr-89	9.7004E-05	3.3390E-12	2.2593E+13	3.5891E+06
I-131	2.5132E-01	2.0272E-09	9.3191E+15	9.2988E+09
I-133	1.7680E-02	1.5607E-11	7.0668E+13	6.5416E+08
I-135	1.7269E-05	4.9172E-15	2.1935E+10	6.3894E+05
Cs-134	1.4438E-01	1.1159E-07	5.0152E+17	5.3422E+09
Cs-136	3.3811E-02	4.6132E-10	2.0427E+15	1.2510E+09
Cs-137	7.8233E-02	8.9942E-07	3.9536E+18	2.8946E+09
I-130	5.0936E-05	2.6116E-14	1.2098E+11	1.8846E+06
Ba-137m	8.6724E-02	1.6126E-13	7.0884E+11	3.2088E+09
Br-82	2.3770E-04	2.1956E-13	1.6124E+12	8.7949E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	9.1097E+15
Organic I (atoms)	2.8174E+14
Aerosols (kg)	1.0115E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Rb-86	1.4436E-03	1.7741E-11	1.2423E+14	5.3412E+07
Sr-89	1.1658E-04	4.0126E-12	2.7151E+13	4.3133E+06
I-131	3.0203E-01	2.4362E-09	1.1199E+16	1.1175E+10



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

I-133	2.1247E-02	1.8756E-11	8.4926E+13	7.8614E+08
I-135	2.0753E-05	5.9094E-15	2.6361E+10	7.6785E+05
Cs-134	1.7352E-01	1.3411E-07	6.0271E+17	6.4201E+09
Cs-136	4.0632E-02	5.5440E-10	2.4549E+15	1.5034E+09
Cs-137	9.4018E-02	1.0809E-06	4.7513E+18	3.4787E+09
I-130	6.1212E-05	3.1386E-14	1.4539E+11	2.2649E+06
Ba-137m	1.0422E-01	1.9379E-13	8.5185E+11	3.8562E+09
Br-82	2.8566E-04	2.6386E-13	1.9378E+12	1.0569E+07

Faulted S/G Transport Group Inventory:

Time (h) = 96.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) = 96.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 96.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Rb-86	3.3621E+00	4.1320E-08	2.8934E+17	1.2440E+11
Sr-89	2.7151E-01	9.3456E-09	6.3237E+16	1.0046E+10
I-131	7.0343E+02	5.6740E-06	2.6084E+19	2.6027E+13
I-132	2.4142E-10	2.3388E-20	1.0670E+05	8.9324E+00
I-133	4.9485E+01	4.3684E-08	1.9780E+17	1.8310E+12
I-135	4.8334E-02	1.3763E-11	6.1395E+13	1.7884E+09
Xe-133	1.3049E+02	6.9711E-07	3.1565E+18	4.8280E+12
Xe-135	1.8891E+00	7.3976E-10	3.2999E+15	6.9898E+10
Cs-134	4.0413E+02	3.1235E-04	1.4037E+21	1.4953E+13
Cs-136	9.4634E+01	1.2912E-06	5.7176E+18	3.5015E+12
Cs-137	2.1897E+02	2.5175E-03	1.1066E+22	8.1020E+12
I-130	1.4257E-01	7.3098E-11	3.3862E+14	5.2750E+09
Xe-131m	1.9249E+00	2.2981E-08	1.0564E+17	7.1222E+10
Xe-133m	5.5571E+00	1.2385E-08	5.6077E+16	2.0561E+11
Xe-135m	7.9545E-03	8.7324E-14	3.8954E+11	2.9432E+08
Cs-134m	1.0616E-08	1.3164E-18	5.9159E+06	3.9277E+02
Ba-137m	2.4274E+02	4.5135E-10	1.9840E+15	8.9813E+12
Br-82	6.6532E-01	6.1453E-10	4.5132E+15	2.4617E+10

Intact S/G Transport Group Inventory:

Time (h) = 96.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	3.3215E+18	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.5498E+19	0.0000E+00	0.0000E+00
Organic I (atoms)	7.8859E+17	0.0000E+00	0.0000E+00
Aerosols (kg)	2.8311E-03	0.0000E+00	0.0000E+00

Time (h) = 96.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 720.0000

EAB Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.4970E-08	2.0487-177	6.2073E-08	1.4970E-08
Accumulated dose (rem)	4.7460E-01	2.1191E+02	7.3793E-01	1.1306E+01

LPZ Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	7.0545E-11	9.6543-180	2.9251E-10	7.0545E-11
Accumulated dose (rem)	3.6700E-02	1.4097E+01	5.7902E-02	7.5497E-01

Control Room Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	4.8853E-07	3.4461-174	6.8576E-05	4.8853E-07
Accumulated dose (rem)	1.3712E-02	7.9542E+01	7.7983E-01	4.0423E+00

PCS Compartment Atmosphere Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Rb-86	3.1210E+02	3.8357E-06	2.6859E+19	1.1548E+13
Sr-89	4.6336E+01	1.5949E-06	1.0792E+19	1.7144E+12
I-131	1.8233E+04	1.4707E-04	6.7610E+20	6.7463E+14
I-133	1.1238E-05	9.9207E-15	4.4920E+10	4.1581E+05
Xe-133	1.1338E+03	6.0571E-06	2.7426E+19	4.1950E+13
Cs-134	9.6215E+04	7.4365E-02	3.3420E+23	3.5600E+15
Cs-136	5.8305E+03	7.9553E-05	3.5226E+20	2.1573E+14
Cs-137	5.3308E+04	6.1287E-01	2.6940E+24	1.9724E+15
Xe-131m	5.5390E+02	6.6129E-06	3.0400E+19	2.0494E+13
Xe-133m	4.1956E-01	9.3504E-10	4.2338E+15	1.5524E+10
Ba-137m	5.9094E+04	1.0988E-07	4.8300E+17	2.1865E+15
Br-82	7.7415E-04	7.1506E-13	5.2514E+12	2.8644E+07

PCS Transport Group Inventory:

			Overlying
Time (h) = 720.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	5.7830E+19	0.0000E+00	0.0000E+00
Elemental I (atoms)	6.5582E+20	0.0000E+00	0.0000E+00
Organic I (atoms)	2.0283E+19	0.0000E+00	0.0000E+00
Aerosols (kg)	6.8732E-01	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 720.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 720.0000 Ci kg Atoms Bq  
 Xe-131m 2.3576E+00 2.8146E-08 1.2939E+17 8.7229E+10

Environment Transport Group Inventory:

Time (h) = 720.0000 Present Release Integral  
 Release Rate/s Release  
 Noble gases (atoms) 9.4985E+08 1.3192E+07 2.4614E+17  
 Elemental I (atoms) 0.0000E+00 0.0000E+00 2.7902E+18  
 Organic I (atoms) 0.0000E+00 0.0000E+00 8.6294E+16  
 Aerosols (kg) 0.0000E+00 0.0000E+00 2.9242E-03

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 720.0000 Ci kg Atoms Bq  
 Rb-86 4.5727E-04 5.6198E-12 3.9353E+13 1.6919E+07  
 Sr-89 6.7890E-05 2.3368E-12 1.5812E+13 2.5119E+06  
 I-131 2.6714E-02 2.1548E-10 9.9059E+14 9.8843E+08  
 Cs-134 1.4097E-01 1.0896E-07 4.8966E+17 5.2159E+09  
 Cs-136 8.5425E-03 1.1656E-10 5.1612E+14 3.1607E+08  
 Cs-137 7.8105E-02 8.9794E-07 3.9471E+18 2.8899E+09  
 Ba-137m 8.6581E-02 1.6099E-13 7.0767E+11 3.2035E+09  
 Br-82 1.1342E-09 1.0477E-18 7.6942E+06 4.1967E+01

Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 9.6087E+14  
 Organic I (atoms) 2.9718E+13  
 Aerosols (kg) 1.0070E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Xe-131m	3.7265E-07	4.4489E-15	2.0452E+10	1.3788E+04

Control Room Transport Group Inventory:

Time (h) = 720.0000	Overlying		
	Atmosphere	Sump	Pool
Noble gases (atoms)	2.0452E+10	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Rb-86	9.2261E-05	1.1339E-12	7.9400E+12	3.4136E+06
Sr-89	1.3698E-05	4.7149E-13	3.1903E+12	5.0681E+05
I-131	5.3900E-03	4.3477E-11	1.9986E+14	1.9943E+08
Cs-134	2.8443E-02	2.1983E-08	9.8796E+16	1.0524E+09
Cs-136	1.7236E-03	2.3517E-11	1.0413E+14	6.3772E+07
Cs-137	1.5759E-02	1.8117E-07	7.9638E+17	5.8307E+08
Ba-137m	1.7469E-02	3.2482E-14	1.4278E+11	6.4635E+08
Br-82	2.2885E-10	2.1138E-19	1.5524E+06	8.4675E+00

Deposition Recirculating

Time (h) = 720.0000	Surfaces	
	Filter	
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	1.9387E+14
Organic I (atoms)	0.0000E+00	5.9959E+12
Aerosols (kg)	0.0000E+00	2.0318E-07

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 720.0000 Pathway  
 Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Rb-86	4.5727E-04	5.6198E-12	3.9353E+13	1.6919E+07
Sr-89	6.7890E-05	2.3368E-12	1.5812E+13	2.5119E+06
I-131	2.6714E-02	2.1548E-10	9.9059E+14	9.8843E+08
Cs-134	1.4097E-01	1.0896E-07	4.8966E+17	5.2159E+09
Cs-136	8.5425E-03	1.1656E-10	5.1612E+14	3.1607E+08
Cs-137	7.8105E-02	8.9794E-07	3.9471E+18	2.8899E+09
Ba-137m	8.6581E-02	1.6099E-13	7.0767E+11	3.2035E+09
Br-82	1.1342E-09	1.0477E-18	7.6942E+06	4.1967E+01

Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 720.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	9.6087E+14
Organic I (atoms)	2.9718E+13
Aerosols (kg)	1.0070E-06

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 720.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) = 720.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Rb-86	5.4953E-04	6.7537E-12	4.7293E+13	2.0333E+07
Sr-89	8.1587E-05	2.8083E-12	1.9002E+13	3.0187E+06
I-131	3.2104E-02	2.5896E-10	1.1905E+15	1.1879E+09
Cs-134	1.6941E-01	1.3094E-07	5.8846E+17	6.2683E+09
Cs-136	1.0266E-02	1.4007E-10	6.2025E+14	3.7985E+08
Cs-137	9.3864E-02	1.0791E-06	4.7435E+18	3.4730E+09
Ba-137m	1.0405E-01	1.9347E-13	8.5045E+11	3.8499E+09
Br-82	1.3631E-09	1.2591E-18	9.2466E+06	5.0435E+01

Faulted S/G Transport Group Inventory:

Time (h) = 720.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) = 720.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 720.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Aerosols (kg) 0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Rb-86	1.2799E+00	1.5730E-08	1.1015E+17	4.7356E+10
Sr-89	1.9002E-01	6.5407E-09	4.4257E+16	7.0308E+09
I-131	7.4773E+01	6.0313E-07	2.7726E+18	2.7666E+12
I-133	4.6087E-08	4.0684E-17	1.8421E+08	1.7052E+03
Xe-133	4.6495E+00	2.4840E-08	1.1247E+17	1.7203E+11
Cs-134	3.9457E+02	3.0496E-04	1.3705E+21	1.4599E+13
Cs-136	2.3910E+01	3.2624E-07	1.4446E+18	8.8468E+11
Cs-137	2.1861E+02	2.5133E-03	1.1048E+22	8.0887E+12
Xe-131m	2.2715E+00	2.7119E-08	1.2467E+17	8.4045E+10
Xe-133m	1.7206E-03	3.8345E-12	1.7362E+13	6.3661E+07
Ba-137m	2.4234E+02	4.5061E-10	1.9807E+15	8.9665E+12
Br-82	3.1747E-06	2.9324E-15	2.1536E+10	1.1746E+05

Intact S/G Transport Group Inventory:

Time (h) = 720.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	2.3716E+17	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.6894E+18	0.0000E+00	0.0000E+00
Organic I (atoms)	8.3178E+16	0.0000E+00	0.0000E+00
Aerosols (kg)	2.8186E-03	0.0000E+00	0.0000E+00

Time (h) = 720.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

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Transport Group Totals in Model:  
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Noble Gases (atoms)	5.8313E+19
Elemental I (atoms)	6.6130E+20
Organic I (atoms)	2.0452E+19
Aerosols (kg)	6.9306E-01

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36004

#####  
I-131 Summary  
#####

Time (hr)	PCS I-131 (Curies)	Environment I-131 (Curies)	Control Room I-131 (Curies)
0.001	1.3566E+05	1.3015E-02	5.3313E-05
0.001	2.4419E+05	2.9153E-02	1.7270E-04
0.280	2.4390E+05	2.3569E+01	8.3133E-02
0.333	2.4384E+05	2.8069E+01	9.6285E-02

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

0.600	2.4356E+05	5.0666E+01	2.8217E-02
0.860	2.4329E+05	7.2667E+01	9.1280E-03
1.120	2.4302E+05	9.4657E+01	3.5320E-03
1.380	2.4275E+05	1.1664E+02	1.8921E-03
1.640	2.4248E+05	1.3862E+02	1.4123E-03
1.900	2.4221E+05	1.6059E+02	1.2725E-03
2.000	2.4210E+05	1.6904E+02	1.2510E-03
2.260	2.4183E+05	1.9100E+02	1.1038E-03
2.520	2.4157E+05	2.1296E+02	1.0614E-03
2.780	2.4130E+05	2.3492E+02	1.0496E-03
3.040	2.4103E+05	2.5687E+02	1.0469E-03
3.300	2.4076E+05	2.7881E+02	1.0468E-03
3.560	2.4049E+05	3.0075E+02	1.0475E-03
3.820	2.4022E+05	3.2268E+02	1.0484E-03
4.080	2.3996E+05	3.4460E+02	1.0493E-03
4.340	2.3969E+05	3.6652E+02	1.0503E-03
4.600	2.3942E+05	3.8843E+02	1.0512E-03
4.860	2.3915E+05	4.1033E+02	1.0522E-03
5.120	2.3889E+05	4.3223E+02	1.0531E-03
5.380	2.3862E+05	4.5412E+02	1.0541E-03
5.640	2.3836E+05	4.7601E+02	1.0550E-03
5.900	2.3809E+05	4.9788E+02	1.0559E-03
6.160	2.3783E+05	5.1975E+02	1.0569E-03
6.420	2.3756E+05	5.4162E+02	1.0578E-03
6.680	2.3730E+05	5.6347E+02	1.0587E-03
6.940	2.3703E+05	5.8532E+02	1.0596E-03
7.200	2.3677E+05	6.0716E+02	1.0605E-03
7.460	2.3650E+05	6.2899E+02	1.0614E-03
7.720	2.3624E+05	6.5081E+02	1.0623E-03
7.980	2.3598E+05	6.7263E+02	1.0631E-03
8.000	2.3596E+05	6.7431E+02	1.0632E-03
8.260	2.3570E+05	6.9493E+02	6.0334E-04
8.520	2.3543E+05	7.1551E+02	4.6818E-04
8.780	2.3517E+05	7.3604E+02	4.2823E-04
9.040	2.3491E+05	7.5653E+02	4.1619E-04
9.300	2.3465E+05	7.7698E+02	4.1234E-04
9.560	2.3439E+05	7.9739E+02	4.1089E-04
9.820	2.3412E+05	8.1775E+02	4.1014E-04
10.080	2.3386E+05	8.3807E+02	4.0960E-04
12.000	2.3195E+05	9.8682E+02	4.0620E-04
24.000	2.2216E+05	9.4519E+02	1.0391E-28
96.000	1.7153E+05	7.2978E+02	2.9109-176
720.000	1.8233E+04	7.7573E+01	0.0000E+00

Time (hr)	Faulted S/G	Intact S/G
	I-131 (Curies)	I-131 (Curies)
0.001	0.0000E+00	1.3068E-02
0.001	0.0000E+00	4.2340E-02
0.280	0.0000E+00	2.3619E+01
0.333	0.0000E+00	2.8112E+01
0.600	0.0000E+00	5.0539E+01
0.860	0.0000E+00	7.2316E+01
1.120	0.0000E+00	9.4009E+01
1.380	0.0000E+00	1.1562E+02
1.640	0.0000E+00	1.3714E+02
1.900	0.0000E+00	1.5858E+02
2.000	0.0000E+00	1.6681E+02
2.260	0.0000E+00	1.8813E+02
2.520	0.0000E+00	2.0937E+02
2.780	0.0000E+00	2.3053E+02
3.040	0.0000E+00	2.5160E+02
3.300	0.0000E+00	2.7259E+02
3.560	0.0000E+00	2.9350E+02
3.820	0.0000E+00	3.1433E+02
4.080	0.0000E+00	3.3508E+02
4.340	0.0000E+00	3.5574E+02
4.600	0.0000E+00	3.7632E+02
4.860	0.0000E+00	3.9682E+02
5.120	0.0000E+00	4.1725E+02
5.380	0.0000E+00	4.3759E+02
5.640	0.0000E+00	4.5784E+02
5.900	0.0000E+00	4.7802E+02
6.160	0.0000E+00	4.9812E+02

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

6.420	0.0000E+00	5.1814E+02
6.680	0.0000E+00	5.3808E+02
6.940	0.0000E+00	5.5795E+02
7.200	0.0000E+00	5.7773E+02
7.460	0.0000E+00	5.9743E+02
7.720	0.0000E+00	6.1706E+02
7.980	0.0000E+00	6.3661E+02
8.000	0.0000E+00	6.3811E+02
8.260	0.0000E+00	6.5876E+02
8.520	0.0000E+00	6.7938E+02
8.780	0.0000E+00	6.9995E+02
9.040	0.0000E+00	7.2048E+02
9.300	0.0000E+00	7.4097E+02
9.560	0.0000E+00	7.6141E+02
9.820	0.0000E+00	7.8181E+02
10.080	0.0000E+00	8.0217E+02
12.000	0.0000E+00	9.5119E+02
24.000	0.0000E+00	9.1106E+02
96.000	0.0000E+00	7.0343E+02
720.000	0.0000E+00	7.4773E+01

#####  
 Cumulative Dose Summary  
 #####

Time (hr)	EAB		LPZ		Control Room	
	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)
0.001	3.3623E-03	1.9580E-04	4.1546E-04	2.4194E-05	2.5121E-05	1.2771E-06
0.001	1.0894E-02	6.3436E-04	1.3461E-03	7.8383E-05	1.1032E-04	5.6084E-06
0.280	6.0883E+00	3.4887E-01	7.5228E-01	4.3107E-02	2.0678E+01	1.0494E+00
0.333	7.2487E+00	4.1417E-01	8.9566E-01	5.1176E-02	2.8771E+01	1.4597E+00
0.600	1.3072E+01	7.3770E-01	1.6152E+00	9.1151E-02	5.3705E+01	2.7230E+00
0.860	1.8734E+01	1.0473E+00	2.3148E+00	1.2940E-01	6.1059E+01	3.0952E+00
1.120	2.4385E+01	1.3529E+00	3.0131E+00	1.6716E-01	6.3584E+01	3.2230E+00
1.380	3.0028E+01	1.6556E+00	3.7103E+00	2.0457E-01	6.4696E+01	3.2793E+00
1.640	3.5662E+01	1.9563E+00	4.4065E+00	2.4172E-01	6.5395E+01	3.3147E+00
1.900	4.1289E+01	2.2553E+00	5.1018E+00	2.7866E-01	6.5972E+01	3.3440E+00
2.000	4.3451E+01	2.3699E+00	5.3689E+00	2.9283E-01	6.6182E+01	3.3547E+00
2.260	4.9068E+01	2.6672E+00	5.6847E+00	3.0954E-01	6.6686E+01	3.3802E+00
2.520	5.4678E+01	2.9635E+00	6.0000E+00	3.2620E-01	6.7152E+01	3.4039E+00
2.780	6.0281E+01	3.2590E+00	6.3150E+00	3.4281E-01	6.7607E+01	3.4270E+00
3.040	6.5877E+01	3.5538E+00	6.6296E+00	3.5938E-01	6.8058E+01	3.4500E+00
3.300	7.1466E+01	3.8480E+00	6.9438E+00	3.7592E-01	6.8508E+01	3.4729E+00
3.560	7.7049E+01	4.1418E+00	7.2576E+00	3.9244E-01	6.8958E+01	3.4958E+00
3.820	8.2626E+01	4.4351E+00	7.5711E+00	4.0892E-01	6.9407E+01	3.5187E+00
4.080	8.8196E+01	4.7280E+00	7.8843E+00	4.2539E-01	6.9855E+01	3.5416E+00
4.340	9.3761E+01	5.0206E+00	8.1971E+00	4.4184E-01	7.0303E+01	3.5644E+00
4.600	9.9319E+01	5.3129E+00	8.5096E+00	4.5827E-01	7.0751E+01	3.5873E+00
4.860	1.0487E+02	5.6049E+00	8.8217E+00	4.7469E-01	7.1199E+01	3.6102E+00
5.120	1.1042E+02	5.8967E+00	9.1335E+00	4.9109E-01	7.1646E+01	3.6331E+00
5.380	1.1596E+02	6.1882E+00	9.4451E+00	5.0748E-01	7.2093E+01	3.6560E+00
5.640	1.2150E+02	6.4796E+00	9.7563E+00	5.2385E-01	7.2539E+01	3.6789E+00
5.900	1.2703E+02	6.7707E+00	1.0067E+01	5.4022E-01	7.2986E+01	3.7018E+00
6.160	1.3255E+02	7.0617E+00	1.0378E+01	5.5658E-01	7.3432E+01	3.7247E+00
6.420	1.3807E+02	7.3525E+00	1.0688E+01	5.7293E-01	7.3877E+01	3.7477E+00
6.680	1.4359E+02	7.6431E+00	1.0998E+01	5.8927E-01	7.4323E+01	3.7706E+00
6.940	1.4910E+02	7.9337E+00	1.1308E+01	6.0560E-01	7.4768E+01	3.7935E+00
7.200	1.5460E+02	8.2241E+00	1.1617E+01	6.2192E-01	7.5213E+01	3.8164E+00
7.460	1.6010E+02	8.5143E+00	1.1927E+01	6.3824E-01	7.5657E+01	3.8394E+00
7.720	1.6560E+02	8.8045E+00	1.2235E+01	6.5455E-01	7.6101E+01	3.8623E+00
7.980	1.7109E+02	9.0945E+00	1.2544E+01	6.7086E-01	7.6545E+01	3.8853E+00
8.000	1.7151E+02	9.1168E+00	1.2568E+01	6.7211E-01	7.6580E+01	3.8870E+00
8.260	1.7418E+02	9.2613E+00	1.2669E+01	6.7758E-01	7.6908E+01	3.9040E+00
8.520	1.7685E+02	9.4054E+00	1.2770E+01	6.8303E-01	7.7126E+01	3.9153E+00
8.780	1.7951E+02	9.5492E+00	1.2871E+01	6.8847E-01	7.7311E+01	3.9249E+00
9.040	1.8216E+02	9.6927E+00	1.2971E+01	6.9390E-01	7.7486E+01	3.9340E+00
9.300	1.8481E+02	9.8359E+00	1.3071E+01	6.9932E-01	7.7657E+01	3.9429E+00
9.560	1.8745E+02	9.9788E+00	1.3171E+01	7.0473E-01	7.7828E+01	3.9518E+00
9.820	1.9008E+02	1.0121E+01	1.3271E+01	7.1013E-01	7.7998E+01	3.9607E+00
10.080	1.9271E+02	1.0264E+01	1.3370E+01	7.1552E-01	7.8167E+01	3.9695E+00
12.000	2.1191E+02	1.1306E+01	1.4097E+01	7.5497E-01	7.9406E+01	4.0343E+00
24.000	2.1191E+02	1.1306E+01	1.4097E+01	7.5497E-01	7.9542E+01	4.0421E+00



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

96.000 2.1191E+02 1.1306E+01 1.4097E+01 7.5497E-01 7.9542E+01 4.0423E+00  
720.000 2.1191E+02 1.1306E+01 1.4097E+01 7.5497E-01 7.9542E+01 4.0423E+00

#####  
Worst Two-Hour Dose  
(Provided for Dose Location 1)  
#####

EAB

Time (hr)	Whole Body (rem)	Thyroid (rem)	Skin (rem)	TEDE (rem)
0.0	1.7421E-01	4.3448E+01	2.8270E-01	2.3697E+00

#####  
30 Day Control Room Skin Dose  
#####

Control Room

Time (hr)	Skin (rem)
720.0	7.7983E-01

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Attachment 6 Palisades MSLB Secondary Dose (pal\_MSLB\_sg\_db\_ast.out)

#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:11:50
#####
File information
#####

Plant file name = AST/MSLB/pal\_MSLB\_sg\_db\_ast.psf
Inventory file name = AST/MSLB/pal\_mslb\_sg\_db.nif
Scenario file name = AST/MSLB/pal\_MSLB\_sg\_db\_ast.psf
Release file name = AST/MSLB/pal\_mslb\_sg.rft
Dose conversion file name = AST/MSLB/nai-1101-001rev0.dcf

##### # # # # # # # # # # # # # # # #
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\*RADTRAD-NAI 1.1a(QA)
\*26 May 2006 14:11:40
\*\* Palisades MSLB Design Basis AST
\*\* S/G Initial Iodine Activity Dose
\*\*
\*Nuclide inventory file
AST/MSLB/pal\_mslb\_sg\_db.nif
\*Plant power
2703
\*Compartments
5
\*Compartment 1:
PCS
3
432977
0
0
0
0
\*Compartment 2:
Environment
2
2e+20
0
0
0
0
\*Compartment 3:
Control Room
1
35923
0
1
0
0
\*Compartment 4:
Faulted S/G
3
210759
0
0
0
0

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
*Compartment 5:
Intact S/G
  3
141065
  0
  0
  0
  0
*Pathways
  8
*Pathway 1:
Faulted SG Tube Leakage
  1
  2
  2
*Pathway 2:
Control Room Unfiltered Makeup
  2
  3
  2
*Pathway 3:
Control Room Filtered Makeup
  2
  3
  2
*Pathway 4:
Control Room Unfiltered Inleakage
  2
  3
  2
*Pathway 5:
Control Room Exhaust
  3
  2
  2
*Pathway 6:
Intact S/G Tube Leakage
  1
  5
  2
*Pathway 7:
Intact S/G Steam Release
  5
  2
  2
*Pathway 8:
Faulted S/G Steam Release
  4
  2
  2
*Sources
  5
  1 0
  2 0
  3 0
  4 9.56
  5 6.4
*dose conversion factors filename
AST/MSLB/nai-1101-001rev0.dcf
*release fraction and timing filename
AST/MSLB/pal_mslb_sg.rft
  0
  1
  1
*Iodine
0 0.97 0.03
*Overlying pool
*aerosol model
  0
*elemental model
  0
*organic model
  0
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
*pH tracking
0
*Compartment detail
*Compartment 1:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Compartment 2:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Compartment 3:
1
*spray model
0
0
0
*filter model
1
3
0 0 99 99 99
0.3333 1413.6 99 99 99
720 1413.6 99 99 99
*deposition model
0
0
*Compartment 4:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Compartment 5:
1
*spray model
0
0
0
*filter model
0
*deposition model
0
0
*Pathways:
*Pathway 1
*filter efficiency model
1
3
0 0 0 0 0
12 0 0 0 0
720 0 0 0 0
*Pathway 2
*filter efficiency model
1
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
3
0 660 0 0 0
0.3333 0 0 0 0
720 0 0 0 0
*Pathway 3
*filter efficiency model
  1
  3
0 0 99 99 99
0.3333 1413.6 99 99 99
720 1413.6 99 99 99
*Pathway 4
*filter efficiency model
  1
  3
0 0 0 0 0
0.3333 10 0 0 0
720 10 0 0 0
*Pathway 5
*filter efficiency model
  1
  3
0 660 0 0 0
0.3333 1423.6 0 0 0
720 1423.6 0 0 0
*Pathway 6
*filter efficiency model
  1
  3
0 0 0 0 0
12 0 0 0 0
720 0 0 0 0
*Pathway 7
*filter efficiency model
  1
  3
0 16.67 0 0 0
8 0 0 0 0
720 0 0 0 0
*Pathway 8
*filter efficiency model
  1
  2
0 1000000 0 0 0
720 1000000 0 0 0
*x/q tables
  6
EAB
  2
0 0.000539
720 0.000539
LPZ
  6
0 6.66e-05
2 3.03e-05
8 2.04e-05
24 8.67e-06
96 2.54e-06
720 2.54e-06
Control Room Unfiltered
  6
0 0.0131
2 0.0113
8 0.00468
24 0.00287
96 0.00236
720 0.00236
Control Room Filtered
  6
0 0.000799
2 0.000643
8 0.000258
24 0.000175
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```
96 0.000132
720 0.000132
ADV-Normal
  6
0 0.0165
2 0.0134
8 0.0054
24 0.00403
96 0.00298
720 0.00298
ADV-Emergency
  6
0 0.000736
2 0.000642
8 0.000243
24 0.000175
96 0.000128
720 0.000128
*dose locations
  3
*location name, compartment number and x/q table
EAB
  2
  1
*br model
  1
  4
0 0.00035
8 0.00018
24 0.00023
720 0.00023
*of model
  0
*location x/q input to be included
  0
*location name, compartment number and x/q table
LPZ
  2
  2
*br model
  1
  4
0 0.00035
8 0.00018
24 0.00023
720 0.00023
*of model
  0
*location x/q input to be included
  0
*location name, compartment number and x/q table
Control Room
  3
  0
*br model
  1
  2
0 0.00035
720 0.00035
*of model
  1
  4
0 1
24 0.6
96 0.4
720 0.4
*location x/q input to be included
  1
*number of intake combinations
  9
*intake combinations
2 1 3
3 1 4
```

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

```

4 1 3
2 7 5
3 7 6
4 7 5
2 8 3
3 8 4
4 8 3
*time step count
  1
0 0.02
*show plant, scenario, event, step, model
  1
  1
  1
  0
  1

#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:11:50
#####

#####
Plant Description
#####

Number of Nuclides = 107

Inventory Power = 2.7030E+03 MWth
Plant Power Level = 2.7030E+03 MWth

Number of compartments = 5

Compartment information

Compartment number 1
Name: PCS
Compartment volume = 4.3298E+05 (Cubic feet)
Pathways into and out of compartment 1
  Pathway to compartment number 2: Faulted SG Tube Leakage
  Pathway to compartment number 5: Intact S/G Tube Leakage

Compartment number 2
Name: Environment
Pathways into and out of compartment 2
  Pathway to compartment number 3: Control Room Unfiltered Makeup
  Pathway to compartment number 3: Control Room Filtered Makeup
  Pathway to compartment number 3: Control Room Unfiltered Inleakage
  Pathway from compartment number 1: Faulted SG Tube Leakage
  Pathway from compartment number 3: Control Room Exhaust
  Pathway from compartment number 5: Intact S/G Steam Release
  Pathway from compartment number 4: Faulted S/G Steam Release

Compartment number 3
Name: Control Room
Compartment volume = 3.5923E+04 (Cubic feet)
Removal devices within compartment:
  Filter(s)
Pathways into and out of compartment 3
  Pathway to compartment number 2: Control Room Exhaust
  Pathway from compartment number 2: Control Room Unfiltered Makeup
  Pathway from compartment number 2: Control Room Filtered Makeup
  Pathway from compartment number 2: Control Room Unfiltered Inleakage

Compartment number 4 (Source term fraction = 9.5600E+00)
Name: Faulted S/G
Compartment volume = 2.1076E+05 (Cubic feet)
Pathways into and out of compartment 4
  Pathway to compartment number 2: Faulted S/G Steam Release

Compartment number 5 (Source term fraction = 6.4000E+00)
Name: Intact S/G
Compartment volume = 1.4106E+05 (Cubic feet)
Pathways into and out of compartment 5

```

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Pathway to compartment number 2: Intact S/G Steam Release  
 Pathway from compartment number 1: Intact S/G Tube Leakage

Total number of pathways = 8

```
#####
RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:11:50
#####
Scenario Description
#####
```

Radioactive Decay is enabled  
 Calculation of Daughters is enabled

Iodine fractions  
 Aerosol = 0.0000E+00  
 Elemental = 9.7000E-01  
 Organic = 3.0000E-02

COMPARTMENT DATA

Compartment number 1: PCS  
 Compartment number 2: Environment  
 Compartment number 3: Control Room

Compartment Filter Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.9000E+01	9.9000E+01	9.9000E+01
3.3330E-01	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01
7.2000E+02	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01

Compartment number 4: Faulted S/G  
 Compartment number 5: Intact S/G

PATHWAY DATA

Pathway number 1: Faulted SG Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 2: Control Room Unfiltered Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	6.6000E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 3: Control Room Filtered Makeup

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	9.9000E+01	9.9000E+01	9.9000E+01
3.3330E-01	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01
7.2000E+02	1.4136E+03	9.9000E+01	9.9000E+01	9.9000E+01



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Pathway number 4: Control Room Unfiltered Inleakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	1.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.0000E+01	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 5: Control Room Exhaust

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	6.6000E+02	0.0000E+00	0.0000E+00	0.0000E+00
3.3330E-01	1.4236E+03	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	1.4236E+03	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 6: Intact S/G Tube Leakage

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1.2000E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 7: Intact S/G Steam Release

Pathway Filter: Removal Data

Time (hr)	Flow Rate (cfm)	Filter Efficiencies (%)		
		Aerosol	Elemental	Organic
0.0000E+00	1.6670E+01	0.0000E+00	0.0000E+00	0.0000E+00
8.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.2000E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Pathway number 8: Faulted S/G Steam Release

Pathway Filter: Removal Data

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

X/Q DATA

X/Q table 1: EAB

Time (hr)	X/Q (s * m^-3)
0.0000E+00	5.3900E-04
7.2000E+02	5.3900E-04

X/Q table 2: LPZ

Time (hr)	X/Q (s * m^-3)
0.0000E+00	6.6600E-05
2.0000E+00	3.0300E-05
8.0000E+00	2.0400E-05
2.4000E+01	8.6700E-06
9.6000E+01	2.5400E-06
7.2000E+02	2.5400E-06

X/Q table 3: Control Room Unfiltered

Time (hr)	X/Q (s * m^-3)
0.0000E+00	1.3100E-02
2.0000E+00	1.1300E-02
8.0000E+00	4.6800E-03
2.4000E+01	2.8700E-03
9.6000E+01	2.3600E-03

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

7.2000E+02                      2.3600E-03

X/Q table 4: Control Room Filtered

Time (hr)	X/Q (s * m <sup>-3</sup> )
0.0000E+00	7.9900E-04
2.0000E+00	6.4300E-04
8.0000E+00	2.5800E-04
2.4000E+01	1.7500E-04
9.6000E+01	1.3200E-04
7.2000E+02	1.3200E-04

X/Q table 5: ADV-Normal

Time (hr)	X/Q (s * m <sup>-3</sup> )
0.0000E+00	1.6500E-02
2.0000E+00	1.3400E-02
8.0000E+00	5.4000E-03
2.4000E+01	4.0300E-03
9.6000E+01	2.9800E-03
7.2000E+02	2.9800E-03

X/Q table 6: ADV-Emergency

Time (hr)	X/Q (s * m <sup>-3</sup> )
0.0000E+00	7.3600E-04
2.0000E+00	6.4200E-04
8.0000E+00	2.4300E-04
2.4000E+01	1.7500E-04
9.6000E+01	1.2800E-04
7.2000E+02	1.2800E-04

LOCATION DATA

Location EAB is in compartment 2

Using X/Q Table 1

Location Breathing Rate Data

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

Location LPZ is in compartment 2

Using X/Q Table 2

Location Breathing Rate Data

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

Location Control Room is in compartment 3

Inleakage X/Q Table Assignments

Inleakage Path	Source Path	X/Q Table
2	1	3
3	1	4
4	1	3
2	7	5
3	7	6
4	7	5
2	8	3
3	8	4
4	8	3

Location Breathing Rate Data

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

Location Occupancy Factor Data

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

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

USER SPECIFIED TIME STEP DATA - SUPPLEMENTAL TIME STEPS

Time	Time step
0.0000E+00	2.0000E-02

#####  
 RADTRAD-NAI Version 1.1a(QA) run on May 26, 2006 at 14:11:50  
 #####

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#####
# # # # # # # # # #
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#####  
 Dose, Detailed Model and Detailed Inventory Output  
 #####

Detailed model information at time (H) = 0.0010

EAB Doses:

Time (h) =	Whole Body	Thyroid	Skin	TEDE
0.0010				
Delta dose (rem)	4.4837E-05	2.5178E-01	7.3415E-05	7.7103E-03
Accumulated dose (rem)	4.4837E-05	2.5178E-01	7.3415E-05	7.7103E-03

LPZ Doses:

Time (h) =	Whole Body	Thyroid	Skin	TEDE
0.0010				
Delta dose (rem)	5.5402E-06	3.1110E-02	9.0713E-06	9.5270E-04
Accumulated dose (rem)	5.5402E-06	3.1110E-02	9.0713E-06	9.5270E-04

Control Room Doses:

Time (h) =	Whole Body	Thyroid	Skin	TEDE
0.0010				
Delta dose (rem)	1.3640E-08	2.5930E-03	7.5608E-07	7.8958E-05
Accumulated dose (rem)	1.3640E-08	2.5930E-03	7.5608E-07	7.8958E-05

PCS Transport Group Inventory:

Time (h) =	Atmosphere	Sump	Overlying Pool
0.0010			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) =	Deposition Surfaces	Recirculating Filter
0.0010		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) =	Pathway Filter
0.0010	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

## Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Environment Integral Nuclide Release:

Time (h) =		Ci	kg	Atoms	Bq
0.0010	I-131	8.3823E-01	6.7613E-09	3.1082E+16	3.1014E+10
	Xe-131m	1.8739E-08	2.2372E-16	1.0284E+09	6.9333E+02

## Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) =	Release	Rate/s	Release
0.0010	1.0284E+09	5.1422E+08	1.0284E+09
Noble gases (atoms)	3.0150E+16	1.5075E+16	3.0150E+16
Elemental I (atoms)	9.3246E+14	4.6623E+14	9.3246E+14
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)			

## Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Intact S/G Steam Release Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 0.0010	Ci	kg	Atoms	Bq
I-131	5.0594E-03	4.0810E-11	1.8761E+14	1.8720E+08
Xe-131m	1.2056E-10	1.4393E-18	6.6165E+06	4.4606E+00

Control Room Transport Group Inventory:

			Overlying
Time (h) = 0.0010	Atmosphere	Sump	Pool
Noble gases (atoms)	6.6165E+06	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.8198E+14	0.0000E+00	0.0000E+00
Organic I (atoms)	5.6282E+12	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 0.0010	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 0.0010	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Aerosols (kg) 0.0000E+00

## Faulted S/G Compartment Atmosphere Nuclide Inventory:

Time (h) =	0.0010	Ci	kg	Atoms	Bq
I-131		8.3196E+00	6.7107E-08	3.0850E+17	3.0783E+11
Xe-131m		1.6439E-07	1.9627E-15	9.0225E+09	6.0826E+03

## Faulted S/G Transport Group Inventory:

Time (h) =	0.0010	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		9.0225E+09	0.0000E+00	0.0000E+00
Elemental I (atoms)		2.9924E+17	0.0000E+00	0.0000E+00
Organic I (atoms)		9.2549E+15	0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00	0.0000E+00

Time (h) =	0.0010	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)		0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00

## Faulted S/G Steam Release Transport Group Inventory:

Time (h) =	0.0010	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

## Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) =	0.0010	Ci	kg	Atoms	Bq
I-131		6.4000E+00	5.1623E-08	2.3731E+17	2.3680E+11
Xe-131m		1.2984E-07	1.5501E-15	7.1261E+09	4.8041E+03

## Intact S/G Transport Group Inventory:

Time (h) =	0.0010	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		7.1261E+09	0.0000E+00	0.0000E+00
Elemental I (atoms)		2.3019E+17	0.0000E+00	0.0000E+00
Organic I (atoms)		7.1194E+15	0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00	0.0000E+00

Time (h) =	0.0010	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)		0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00

## Intact S/G Tube Leakage Transport Group Inventory:

Time (h) =	0.0010	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

## Intact S/G Steam Release Transport Group Inventory:

Time (h) =	0.0010	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Detailed model information at time (H) = 0.3333

EAB Doses:

Time (h) =	0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		3.0171E-04	1.6942E+00	4.9401E-04	5.1883E-02
Accumulated dose (rem)		3.4655E-04	1.9460E+00	5.6743E-04	5.9593E-02

LPZ Doses:

Time (h) =	0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		3.7280E-05	2.0934E-01	6.1041E-05	6.4108E-03
Accumulated dose (rem)		4.2821E-05	2.4045E-01	7.0113E-05	7.3635E-03

Control Room Doses:

Time (h) =	0.3333	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		7.4405E-05	1.4144E+01	4.1243E-03	4.3070E-01
Accumulated dose (rem)		7.4419E-05	1.4147E+01	4.1250E-03	4.3078E-01

PCS Transport Group Inventory:

Time (h) =	0.3333	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00	0.0000E+00

Time (h) =	0.3333	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)		0.0000E+00	0.0000E+00
Elemental I (atoms)		0.0000E+00	0.0000E+00
Organic I (atoms)		0.0000E+00	0.0000E+00
Aerosols (kg)		0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
Noble gases (atoms)		0.0000E+00
Elemental I (atoms)		0.0000E+00
Organic I (atoms)		0.0000E+00
Aerosols (kg)		0.0000E+00

Environment Integral Nuclide Release:

Time (h) =	0.3333	Ci	kg	Atoms	Bq
I-131		9.1398E+00	7.3723E-08	3.3891E+17	3.3817E+11
Xe-131m		8.2021E-05	9.7922E-13	4.5015E+12	3.0348E+06

Environment Transport Group Inventory:

Time (h) =	0.3333	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)		4.9231E+08	6.8376E+06	4.5015E+12
Elemental I (atoms)		3.5952E+13	4.9933E+11	3.2874E+17
Organic I (atoms)		1.1119E+12	1.5443E+10	1.0167E+16
Aerosols (kg)		0.0000E+00	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) =	0.3333	Pathway Filter
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Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 0.3333	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 0.3333	Ci	kg	Atoms	Bq
I-131	2.7167E-02	2.1913E-10	1.0074E+15	1.0052E+09
Xe-131m	2.4380E-07	2.9107E-15	1.3381E+10	9.0207E+03

Control Room Transport Group Inventory:

			Overlying
Time (h) = 0.3333	Atmosphere	Sump	Pool
Noble gases (atoms)	1.3381E+10	0.0000E+00	0.0000E+00
Elemental I (atoms)	9.7715E+14	0.0000E+00	0.0000E+00
Organic I (atoms)	3.0221E+13	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

		Deposition Recirculating	
Time (h) =	0.3333	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

		Pathway
Time (h) =	0.3333	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Filtered Makeup Transport Group Inventory:

		Pathway
Time (h) =	0.3333	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Unfiltered Inleakage Transport Group Inventory:

		Pathway
Time (h) =	0.3333	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Control Room Exhaust Transport Group Inventory:

		Pathway
Time (h) =	0.3333	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Faulted S/G Transport Group Inventory:

				Overlying
Time (h) =	0.3333	Atmosphere	Sump	Pool
Noble gases (atoms)	3.3676E-29	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.4594E-24	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	7.6064E-26	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

		Deposition Recirculating	
Time (h) =	0.3333	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

		Pathway
Time (h) =	0.3333	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) =	0.3333	Ci	kg	Atoms	Bq
I-131		6.3773E+00	5.1440E-08	2.3647E+17	2.3596E+11

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Xe-131m 5.7231E-05 6.8327E-13 3.1410E+12 2.1176E+06

Intact S/G Transport Group Inventory:

			Overlying
Time (h) =	0.3333	Atmosphere	Sump Pool
Noble gases (atoms)	3.1410E+12	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.2938E+17	0.0000E+00	0.0000E+00
Organic I (atoms)	7.0942E+15	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

		Deposition	Recirculating
Time (h) =	0.3333	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00	
Elemental I (atoms)	0.0000E+00	0.0000E+00	
Organic I (atoms)	0.0000E+00	0.0000E+00	
Aerosols (kg)	0.0000E+00	0.0000E+00	

Intact S/G Tube Leakage Transport Group Inventory:

		Pathway
Time (h) =	0.3333	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Intact S/G Steam Release Transport Group Inventory:

		Pathway
Time (h) =	0.3333	Filter
Noble gases (atoms)	0.0000E+00	
Elemental I (atoms)	0.0000E+00	
Organic I (atoms)	0.0000E+00	
Aerosols (kg)	0.0000E+00	

Detailed model information at time (H) = 2.0000

EAB Doses:

Time (h) =	2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		3.2065E-06	1.8006E-02	5.2503E-06	5.5140E-04
Accumulated dose (rem)		3.4976E-04	1.9640E+00	5.7268E-04	6.0145E-02

LPZ Doses:

Time (h) =	2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		3.9621E-07	2.2249E-03	6.4874E-07	6.8133E-05
Accumulated dose (rem)		4.3217E-05	2.4268E-01	7.0762E-05	7.4316E-03

Control Room Doses:

Time (h) =	2.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)		4.0552E-05	7.7090E+00	2.2478E-03	2.3474E-01
Accumulated dose (rem)		1.1497E-04	2.1856E+01	6.3729E-03	6.6552E-01

PCS Transport Group Inventory:

			Overlying
Time (h) =	2.0000	Atmosphere	Sump Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

		Deposition	Recirculating
Time (h) =	2.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00	
Elemental I (atoms)	0.0000E+00	0.0000E+00	
Organic I (atoms)	0.0000E+00	0.0000E+00	
Aerosols (kg)	0.0000E+00	0.0000E+00	

Faulted SG Tube Leakage Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 2.0000	Ci	kg	Atoms	Bq
I-131	9.1733E+00	7.3994E-08	3.4015E+17	3.3941E+11
Xe-131m	4.9534E-04	5.9137E-12	2.7186E+13	1.8328E+07

Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) = 2.0000	Release	Rate/s	Release
Noble gases (atoms)	3.0389E+09	4.2208E+07	2.7186E+13
Elemental I (atoms)	3.1958E+13	4.4386E+11	3.2995E+17
Organic I (atoms)	9.8838E+11	1.3727E+10	1.0205E+16
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 2.0000	Ci	kg	Atoms	Bq
I-131	3.6202E-05	2.9201E-13	1.3424E+12	1.3395E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	1.3021E+12
Organic I (atoms)	4.0271E+10
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 2.0000	Ci	kg	Atoms	Bq
I-131	1.1214E-05	9.0450E-14	4.1581E+11	4.1490E+05
Xe-131m	1.6081E-07	1.9199E-15	8.8258E+09	5.9500E+03

Control Room Transport Group Inventory:

			Overlying
Time (h) = 2.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	8.8258E+09	0.0000E+00	0.0000E+00
Elemental I (atoms)	4.0333E+11	0.0000E+00	0.0000E+00
Organic I (atoms)	1.2474E+10	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 2.0000	Ci	kg	Atoms	Bq
I-131	1.3394E-02	1.0804E-10	4.9666E+14	4.9558E+08

Deposition Recirculating

Time (h) = 2.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	4.8176E+14
Organic I (atoms)	0.0000E+00	1.4900E+13
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 2.0000	Ci	kg	Atoms	Bq
I-131	3.6202E-05	2.9201E-13	1.3424E+12	1.3395E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Elemental I (atoms) 1.3021E+12  
 Organic I (atoms) 4.0271E+10  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 2.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) = 2.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
2.0000				
I-131	1.3430E-02	1.0833E-10	4.9800E+14	4.9692E+08

Faulted S/G Transport Group Inventory:

Time (h) =	Pathway		Overlying
	Atmosphere	Sump	Pool
2.0000			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) =	Deposition		Recirculating
	Surfaces	Filter	
2.0000			
Noble gases (atoms)	0.0000E+00	0.0000E+00	
Elemental I (atoms)	0.0000E+00	0.0000E+00	
Organic I (atoms)	0.0000E+00	0.0000E+00	
Aerosols (kg)	0.0000E+00	0.0000E+00	

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 2.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
2.0000				
I-131	6.2647E+00	5.0532E-08	2.3230E+17	2.3180E+11
Xe-131m	3.3790E-04	4.0341E-12	1.8545E+13	1.2502E+07

Intact S/G Transport Group Inventory:

Time (h) =	Pathway		Overlying
	Atmosphere	Sump	Pool
2.0000			
Noble gases (atoms)	1.8545E+13	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.2533E+17	0.0000E+00	0.0000E+00
Organic I (atoms)	6.9690E+15	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) =	Deposition		Recirculating
	Surfaces	Filter	
2.0000			
Noble gases (atoms)	0.0000E+00	0.0000E+00	
Elemental I (atoms)	0.0000E+00	0.0000E+00	
Organic I (atoms)	0.0000E+00	0.0000E+00	
Aerosols (kg)	0.0000E+00	0.0000E+00	

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 2.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 8.0000

EAB Doses:

Time (h) = 8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	9.3663E-06	5.2595E-02	1.5336E-05	1.6106E-03
Accumulated dose (rem)	3.5912E-04	2.0166E+00	5.8802E-04	6.1755E-02

LPZ Doses:

Time (h) = 8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	5.2653E-07	2.9566E-03	8.6213E-07	9.0542E-05
Accumulated dose (rem)	4.3743E-05	2.4564E-01	7.1624E-05	7.5222E-03

Control Room Doses:

Time (h) = 8.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	4.1994E-08	7.9568E-03	2.3779E-06	2.4229E-04
Accumulated dose (rem)	1.1501E-04	2.1864E+01	6.3753E-03	6.6577E-01

PCS Transport Group Inventory:

			Overlying
Time (h) = 8.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 8.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Environment Integral Nuclide Release:

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
I-131	9.2330E+00	7.4475E-08	3.4236E+17	3.4162E+11
Xe-131m	2.0019E-03	2.3900E-11	1.0987E+14	7.4069E+07

Environment Transport Group Inventory:

Time (h) =	Present Release	Release Rate/s	Integral Release
8.0000			
Noble gases (atoms)	1.0294E+10	1.4298E+08	1.0987E+14
Elemental I (atoms)	2.9958E+13	4.1608E+11	3.3209E+17
Organic I (atoms)	9.2654E+11	1.2869E+10	1.0271E+16
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
I-131	1.4371E-04	1.1592E-12	5.3288E+12	5.3172E+06

Control Room Filtered Makeup Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	5.1690E+12
Organic I (atoms)	1.5986E+11
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) =	Pathway Filter
8.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

## Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
I-131	5.9751E-07	4.8196E-15	2.2156E+10	2.2108E+04
Xe-131m	1.5567E-07	1.8585E-15	8.5435E+09	5.7597E+03

## Control Room Transport Group Inventory:

Time (h) =	Atmosphere	Sump	Overlying Pool
8.0000			
Noble gases (atoms)	8.5435E+09	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.1491E+10	0.0000E+00	0.0000E+00
Organic I (atoms)	6.6468E+08	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

## Recirculating Filter Inventory

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
I-131	1.3122E-02	1.0585E-10	4.8658E+14	4.8552E+08

## Deposition Recirculating

Time (h) =	Surfaces	Filter
8.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	4.7198E+14
Organic I (atoms)	0.0000E+00	1.4597E+13
Aerosols (kg)	0.0000E+00	0.0000E+00

## Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	Ci	kg	Atoms	Bq
8.0000				
I-131	1.4371E-04	1.1592E-12	5.3288E+12	5.3172E+06

## Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	5.1690E+12
Organic I (atoms)	1.5986E+11
Aerosols (kg)	0.0000E+00

## Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 8.0000	Filter



Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 8.0000 Ci kg Atoms Bq  
 I-131 1.3266E-02 1.0701E-10 4.9191E+14 4.9084E+08

Faulted S/G Transport Group Inventory:

Time (h) = 8.0000 Atmosphere Sump Overlying Pool  
 Noble gases (atoms) 0.0000E+00 0.0000E+00 0.0000E+00  
 Elemental I (atoms) 0.0000E+00 0.0000E+00 0.0000E+00  
 Organic I (atoms) 0.0000E+00 0.0000E+00 0.0000E+00  
 Aerosols (kg) 0.0000E+00 0.0000E+00 0.0000E+00

Time (h) = 8.0000 Deposition Surfaces Recirculating Filter  
 Noble gases (atoms) 0.0000E+00 0.0000E+00  
 Elemental I (atoms) 0.0000E+00 0.0000E+00  
 Organic I (atoms) 0.0000E+00 0.0000E+00  
 Aerosols (kg) 0.0000E+00 0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 8.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 8.0000 Ci kg Atoms Bq  
 I-131 5.8758E+00 4.7395E-08 2.1788E+17 2.1740E+11  
 Xe-131m 1.2722E-03 1.5189E-11 6.9824E+13 4.7073E+07

Intact S/G Transport Group Inventory:

Time (h) = 8.0000 Atmosphere Sump Overlying Pool  
 Noble gases (atoms) 6.9824E+13 0.0000E+00 0.0000E+00  
 Elemental I (atoms) 2.1134E+17 0.0000E+00 0.0000E+00  
 Organic I (atoms) 6.5363E+15 0.0000E+00 0.0000E+00  
 Aerosols (kg) 0.0000E+00 0.0000E+00 0.0000E+00

Time (h) = 8.0000 Deposition Surfaces Recirculating Filter  
 Noble gases (atoms) 0.0000E+00 0.0000E+00  
 Elemental I (atoms) 0.0000E+00 0.0000E+00  
 Organic I (atoms) 0.0000E+00 0.0000E+00  
 Aerosols (kg) 0.0000E+00 0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 8.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00  
 Aerosols (kg) 0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 8.0000 Pathway Filter  
 Noble gases (atoms) 0.0000E+00  
 Elemental I (atoms) 0.0000E+00  
 Organic I (atoms) 0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Aerosols (kg) 0.0000E+00

Detailed model information at time (H) = 12.0000

EAB Doses:

Time (h) = 12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.2031E-11	3.1561E-08	3.1561E-11	9.7290E-10
Accumulated dose (rem)	3.5912E-04	2.0166E+00	5.8802E-04	6.1755E-02

LPZ Doses:

Time (h) = 12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	4.5537E-13	1.1945E-09	1.1945E-12	3.6822E-11
Accumulated dose (rem)	4.3743E-05	2.4564E-01	7.1624E-05	7.5222E-03

Control Room Doses:

Time (h) = 12.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	9.8208E-10	1.6959E-04	8.7196E-08	5.1641E-06
Accumulated dose (rem)	1.1501E-04	2.1864E+01	6.3754E-03	6.6577E-01

PCS Transport Group Inventory:

			Overlying
Time (h) = 12.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

		Deposition	Recirculating
Time (h) = 12.0000	Surfaces	Filter	
Noble gases (atoms)	0.0000E+00	0.0000E+00	
Elemental I (atoms)	0.0000E+00	0.0000E+00	
Organic I (atoms)	0.0000E+00	0.0000E+00	
Aerosols (kg)	0.0000E+00	0.0000E+00	

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 12.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
Xe-131m	2.9670E-03	3.5422E-11	1.6284E+14	1.0978E+08

Environment Transport Group Inventory:

	Present	Release	Integral
Time (h) = 12.0000	Release	Rate/s	Release
Noble gases (atoms)	3.8690E+08	5.3736E+06	1.6284E+14
Elemental I (atoms)	6.8035E+00	9.4493E-02	3.2736E+17
Organic I (atoms)	2.1042E-01	2.9225E-03	1.0124E+16
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

Pathway

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 12.0000      Pathway  
 Filter  
 Noble gases (atoms)    0.0000E+00  
 Elemental I (atoms)    0.0000E+00  
 Organic I (atoms)      0.0000E+00  
 Aerosols (kg)          0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 12.0000      Pathway  
 Filter  
 Noble gases (atoms)    0.0000E+00  
 Elemental I (atoms)    0.0000E+00  
 Organic I (atoms)      0.0000E+00  
 Aerosols (kg)          0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) =	Ci	kg	Atoms	Bq
12.0000				
I-131	1.4166E-04	1.1426E-12	5.2528E+12	5.2414E+06

Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 12.0000      Pathway  
 Filter  
 Noble gases (atoms)    0.0000E+00  
 Elemental I (atoms)    5.0952E+12  
 Organic I (atoms)      1.5758E+11  
 Aerosols (kg)          0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 12.0000      Pathway  
 Filter  
 Noble gases (atoms)    0.0000E+00  
 Elemental I (atoms)    0.0000E+00  
 Organic I (atoms)      0.0000E+00  
 Aerosols (kg)          0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) = 12.0000      Pathway  
 Filter  
 Noble gases (atoms)    0.0000E+00  
 Elemental I (atoms)    0.0000E+00  
 Organic I (atoms)      0.0000E+00  
 Aerosols (kg)          0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 12.0000      Pathway  
 Filter  
 Noble gases (atoms)    0.0000E+00  
 Elemental I (atoms)    0.0000E+00  
 Organic I (atoms)      0.0000E+00  
 Aerosols (kg)          0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 12.0000      Pathway  
 Filter  
 Noble gases (atoms)    0.0000E+00  
 Elemental I (atoms)    0.0000E+00  
 Organic I (atoms)      0.0000E+00  
 Aerosols (kg)          0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) =	Ci	kg	Atoms	Bq
12.0000				
Xe-131m	1.5179E-07	1.8122E-15	8.3306E+09	5.6162E+03

Control Room Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 12.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	8.3306E+09	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.3643E+02	0.0000E+00	0.0000E+00
Organic I (atoms)	4.2194E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 12.0000	Ci	kg	Atoms	Bq
I-131	1.2935E-02	1.0434E-10	4.7965E+14	4.7861E+08

Deposition Recirculating

Time (h) = 12.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	4.6526E+14
Organic I (atoms)	0.0000E+00	1.4389E+13
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 12.0000	Ci	kg	Atoms	Bq
I-131	1.4166E-04	1.1426E-12	5.2528E+12	5.2414E+06

Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	5.0952E+12
Organic I (atoms)	1.5758E+11
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

Time (h) = 12.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
I-131	1.3077E-02	1.0548E-10	4.8490E+14	4.8385E+08

Faulted S/G Transport Group Inventory:

Time (h) = 12.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Deposition Surfaces	Recirculating Filter
Time (h) = 12.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway Filter
Time (h) = 12.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 12.0000	Ci	kg	Atoms	Bq
I-131	5.7920E+00	4.6719E-08	2.1477E+17	2.1430E+11
Xe-131m	1.8856E-03	2.2511E-11	1.0348E+14	6.9766E+07

Intact S/G Transport Group Inventory:

	Atmosphere	Sump	Overlying Pool
Time (h) = 12.0000			
Noble gases (atoms)	1.0348E+14	0.0000E+00	0.0000E+00
Elemental I (atoms)	2.0833E+17	0.0000E+00	0.0000E+00
Organic I (atoms)	6.4431E+15	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition Surfaces	Recirculating Filter
Time (h) = 12.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway Filter
Time (h) = 12.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway Filter
Time (h) = 12.0000	
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 24.0000

EAB Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	3.2117E-12	2.0034E-16	3.9795E-11	3.2117E-12
Accumulated dose (rem)	3.5912E-04	2.0166E+00	5.8802E-04	6.1755E-02

LPZ Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.2155E-13	7.5826E-18	1.5062E-12	1.2156E-13
Accumulated dose (rem)	4.3743E-05	2.4564E-01	7.1624E-05	7.5222E-03

Control Room Doses:

Time (h) = 24.0000	Whole Body	Thyroid	Skin	TEDE
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Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Delta dose (rem)	2.6202E-10	1.0765E-12	1.0991E-07	2.6206E-10
Accumulated dose (rem)	1.1501E-04	2.1864E+01	6.3755E-03	6.6577E-01

PCS Transport Group Inventory:

Time (h) = 24.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

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

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Xe-131m	5.7238E-03	6.8335E-11	3.1414E+14	2.1178E+08

Environment Transport Group Inventory:

Time (h) = 24.0000	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)	3.7058E+08	5.1469E+06	3.1414E+14
Elemental I (atoms)	1.7403E-24	2.4171E-26	3.1354E+17
Organic I (atoms)	5.3824E-26	7.4756E-28	9.6973E+15
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 24.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 24.0000	Ci	kg	Atoms	Bq
I-131	1.3568E-04	1.0944E-12	5.0312E+12	5.0203E+06

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	4.8802E+12
Organic I (atoms)	1.5094E+11
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
Xe-131m	1.4538E-07	1.7357E-15	7.9791E+09	5.3792E+03

Control Room Transport Group Inventory:

			Overlying
Time (h) = 24.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	7.9791E+09	0.0000E+00	0.0000E+00
Elemental I (atoms)	3.4897E-23	0.0000E+00	0.0000E+00
Organic I (atoms)	1.0793E-24	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 24.0000	Ci	kg	Atoms	Bq
I-131	1.2390E-02	9.9936E-11	4.5941E+14	4.5841E+08

	Deposition Surfaces	Recirculating Filter
Time (h) = 24.0000		
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	4.4563E+14
Organic I (atoms)	0.0000E+00	1.3782E+13
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 24.0000	Ci	kg	Atoms	Bq
I-131	1.3568E-04	1.0944E-12	5.0312E+12	5.0203E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	4.8802E+12
Organic I (atoms)	1.5094E+11
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
I-131	1.2525E-02	1.0103E-10	4.6444E+14	4.6343E+08

Faulted S/G Transport Group Inventory:

			Overlying
Time (h) = 24.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

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

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 24.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 24.0000	Ci	kg	Atoms	Bq
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Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

I-131	5.5476E+00	4.4748E-08	2.0571E+17	2.0526E+11
Xe-131m	3.6375E-03	4.3427E-11	1.9963E+14	1.3459E+08

Intact S/G Transport Group Inventory:

Time (h) = 24.0000	Atmosphere		Overlying Pool	
	Sump			
Noble gases (atoms)	1.9963E+14	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.9954E+17	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	6.1712E+15	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 24.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 24.0000	Pathway
	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 96.0000

EAB Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.6616E-11	6.5483E-41	2.0589E-10	1.6616E-11
Accumulated dose (rem)	3.5912E-04	2.0166E+00	5.8802E-04	6.1755E-02

LPZ Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	2.6728E-13	1.0533E-42	3.3118E-12	2.6728E-13
Accumulated dose (rem)	4.3743E-05	2.4564E-01	7.1624E-05	7.5222E-03

Control Room Doses:

Time (h) = 96.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	8.1339E-10	1.6522E-37	3.4119E-07	8.1339E-10
Accumulated dose (rem)	1.1502E-04	2.1864E+01	6.3758E-03	6.6577E-01

PCS Transport Group Inventory:

Time (h) = 96.0000	Atmosphere		Overlying Pool	
	Sump			
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) = 96.0000	Deposition Surfaces		Recirculating Filter
	Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Xe-131m	1.8444E-02	2.2020E-10	1.0123E+15	6.8244E+08

Environment Transport Group Inventory:

Time (h) = 96.0000	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)	2.8612E+08	3.9739E+06	1.0123E+15
Elemental I (atoms)	0.0000E+00	0.0000E+00	2.4209E+17
Organic I (atoms)	0.0000E+00	0.0000E+00	7.4873E+15
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 96.0000	Ci	kg	Atoms	Bq
I-131	1.0476E-04	8.4502E-13	3.8846E+12	3.8762E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	3.7681E+12
Organic I (atoms)	1.1654E+11
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
Xe-131m	1.1225E-07	1.3401E-15	6.1607E+09	4.1533E+03

Control Room Transport Group Inventory:

Time (h) = 96.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	6.1607E+09	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 96.0000	Ci	kg	Atoms	Bq
I-131	9.5660E-03	7.7161E-11	3.5471E+14	3.5394E+08

Deposition Recirculating

Time (h) = 96.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	3.4407E+14
Organic I (atoms)	0.0000E+00	1.0641E+13
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 96.0000	Ci	kg	Atoms	Bq
I-131	1.0476E-04	8.4502E-13	3.8846E+12	3.8762E+06

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	3.7681E+12

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Organic I (atoms) 1.1654E+11  
 Aerosols (kg) 0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
I-131	9.6708E-03	7.8006E-11	3.5860E+14	3.5782E+08

Faulted S/G Transport Group Inventory:

			Overlying
Time (h) = 96.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 96.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 96.0000	Ci	kg	Atoms	Bq
I-131	4.2833E+00	3.4550E-08	1.5883E+17	1.5848E+11
Xe-131m	1.1721E-02	1.3993E-10	6.4329E+14	4.3368E+08

Intact S/G Transport Group Inventory:

			Overlying
Time (h) = 96.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	6.4329E+14	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.5406E+17	0.0000E+00	0.0000E+00
Organic I (atoms)	4.7648E+15	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 96.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

	Pathway
Time (h) = 96.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Detailed model information at time (H) = 720.0000

EAB Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	5.0311E-11	1.8345-188	6.2340E-10	5.0311E-11
Accumulated dose (rem)	3.5912E-04	2.0166E+00	5.8802E-04	6.1755E-02

LPZ Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	2.3709E-13	8.6448-191	2.9377E-12	2.3709E-13
Accumulated dose (rem)	4.3743E-05	2.4564E-01	7.1624E-05	7.5222E-03

Control Room Doses:

Time (h) = 720.0000	Whole Body	Thyroid	Skin	TEDE
Delta dose (rem)	1.6419E-09	3.0858-185	6.8871E-07	1.6419E-09
Accumulated dose (rem)	1.1502E-04	2.1864E+01	6.3765E-03	6.6577E-01

PCS Transport Group Inventory:

			Overlying
Time (h) = 720.0000	Atmosphere	Sump	Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

	Deposition	Recirculating
Time (h) = 720.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted SG Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Environment Integral Nuclide Release:

## Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Xe-131m	2.1766E-02	2.5985E-10	1.1946E+15	8.0532E+08

## Environment Transport Group Inventory:

Time (h) = 720.0000	Present Release	Release Rate/s	Integral Release
Noble gases (atoms)	3.0414E+07	4.2242E+05	1.1946E+15
Elemental I (atoms)	0.0000E+00	0.0000E+00	2.5733E+16
Organic I (atoms)	0.0000E+00	0.0000E+00	7.9587E+14
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

## Faulted SG Tube Leakage Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Unfiltered Makeup Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 720.0000	Ci	kg	Atoms	Bq
I-131	1.1136E-05	8.9823E-14	4.1292E+11	4.1202E+05

## Control Room Filtered Makeup Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	4.0053E+11
Organic I (atoms)	1.2388E+10
Aerosols (kg)	0.0000E+00

## Control Room Unfiltered Inleakage Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Control Room Exhaust Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Intact S/G Steam Release Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

## Faulted S/G Steam Release Transport Group Inventory:

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Compartment Atmosphere Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
Xe-131m	1.1932E-08	1.4245E-16	6.5486E+08	4.4148E+02

Control Room Transport Group Inventory:

Time (h) = 720.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	6.5486E+08	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Recirculating Filter Inventory

Time (h) = 720.0000	Ci	kg	Atoms	Bq
I-131	1.0168E-03	8.2020E-12	3.7705E+13	3.7623E+07

Deposition Recirculating

Time (h) = 720.0000	Surfaces	Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	3.6574E+13
Organic I (atoms)	0.0000E+00	1.1311E+12
Aerosols (kg)	0.0000E+00	0.0000E+00

Control Room Unfiltered Makeup Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Filter Pathway Nuclide Inventory for Control Room Filtered Makeup

Time (h) = 720.0000	Ci	kg	Atoms	Bq
I-131	1.1136E-05	8.9823E-14	4.1292E+11	4.1202E+05

Control Room Filtered Makeup Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	4.0053E+11
Organic I (atoms)	1.2388E+10
Aerosols (kg)	0.0000E+00

Control Room Unfiltered Inleakage Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Control Room Exhaust Transport Group Inventory:

	Pathway
Time (h) = 720.0000	Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Aerosols (kg) 0.0000E+00

Control Room Total Filter Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
I-131	1.0280E-03	8.2918E-12	3.8118E+13	3.8035E+07

Faulted S/G Transport Group Inventory:

Time (h) = 720.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) = 720.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Faulted S/G Steam Release Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Compartment Atmosphere Nuclide Inventory:

Time (h) = 720.0000	Ci	kg	Atoms	Bq
I-131	4.5530E-01	3.6725E-09	1.6883E+16	1.6846E+10
Xe-131m	1.3832E-02	1.6513E-10	7.5911E+14	5.1177E+08

Intact S/G Transport Group Inventory:

Time (h) = 720.0000	Atmosphere	Sump	Overlying Pool
Noble gases (atoms)	7.5911E+14	0.0000E+00	0.0000E+00
Elemental I (atoms)	1.6376E+16	0.0000E+00	0.0000E+00
Organic I (atoms)	5.0649E+14	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00	0.0000E+00

Time (h) = 720.0000	Deposition Surfaces	Recirculating Filter
Noble gases (atoms)	0.0000E+00	0.0000E+00
Elemental I (atoms)	0.0000E+00	0.0000E+00
Organic I (atoms)	0.0000E+00	0.0000E+00
Aerosols (kg)	0.0000E+00	0.0000E+00

Intact S/G Tube Leakage Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

Intact S/G Steam Release Transport Group Inventory:

Time (h) = 720.0000	Pathway Filter
Noble gases (atoms)	0.0000E+00
Elemental I (atoms)	0.0000E+00
Organic I (atoms)	0.0000E+00
Aerosols (kg)	0.0000E+00

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Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

Transport Group Totals in Model:

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Noble Gases (atoms)      1.9537E+15
Elemental I (atoms)     4.2147E+16
Organic I (atoms)       1.3035E+15
Aerosols (kg)           0.0000E+00
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36004

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#####
I-131 Summary
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Time (hr)	PCS	Environment	Control Room
	I-131 (Curies)	I-131 (Curies)	I-131 (Curies)
0.001	0.0000E+00	3.9708E-01	1.6266E-03
0.001	0.0000E+00	8.3823E-01	5.0594E-03
0.280	0.0000E+00	9.1376E+00	2.8804E-02
0.333	0.0000E+00	9.1398E+00	2.7167E-02
0.600	0.0000E+00	9.1529E+00	7.7182E-03
0.860	0.0000E+00	9.1588E+00	2.2636E-03
1.120	0.0000E+00	9.1627E+00	6.6424E-04
1.380	0.0000E+00	9.1661E+00	1.9531E-04
1.640	0.0000E+00	9.1692E+00	5.7821E-05
1.900	0.0000E+00	9.1722E+00	1.7505E-05
2.000	0.0000E+00	9.1733E+00	1.1214E-05
2.260	0.0000E+00	9.1763E+00	3.7364E-06
2.520	0.0000E+00	9.1792E+00	1.5428E-06
2.780	0.0000E+00	9.1821E+00	8.9837E-07
3.040	0.0000E+00	9.1850E+00	7.0819E-07
3.300	0.0000E+00	9.1878E+00	6.5120E-07
3.560	0.0000E+00	9.1906E+00	6.3326E-07
3.820	0.0000E+00	9.1933E+00	6.2677E-07
4.080	0.0000E+00	9.1960E+00	6.2364E-07
4.340	0.0000E+00	9.1987E+00	6.2151E-07
4.600	0.0000E+00	9.2014E+00	6.1966E-07
4.860	0.0000E+00	9.2040E+00	6.1791E-07
5.120	0.0000E+00	9.2066E+00	6.1618E-07
5.380	0.0000E+00	9.2091E+00	6.1447E-07
5.640	0.0000E+00	9.2116E+00	6.1277E-07
5.900	0.0000E+00	9.2141E+00	6.1107E-07
6.160	0.0000E+00	9.2166E+00	6.0937E-07
6.420	0.0000E+00	9.2190E+00	6.0768E-07
6.680	0.0000E+00	9.2214E+00	6.0600E-07
6.940	0.0000E+00	9.2237E+00	6.0432E-07
7.200	0.0000E+00	9.2261E+00	6.0264E-07
7.460	0.0000E+00	9.2283E+00	6.0097E-07
7.720	0.0000E+00	9.2306E+00	5.9930E-07
7.980	0.0000E+00	9.2328E+00	5.9764E-07
8.000	0.0000E+00	9.2330E+00	5.9751E-07
8.260	0.0000E+00	9.2244E+00	1.7519E-07
8.520	0.0000E+00	9.2158E+00	5.1368E-08
8.780	0.0000E+00	9.2072E+00	1.5061E-08
9.040	0.0000E+00	9.1986E+00	4.4160E-09
9.300	0.0000E+00	9.1900E+00	1.2948E-09
9.560	0.0000E+00	9.1814E+00	3.7964E-10
9.820	0.0000E+00	9.1728E+00	1.1131E-10
10.080	0.0000E+00	9.1643E+00	3.2637E-11
12.000	0.0000E+00	9.1013E+00	3.7930E-15
24.000	0.0000E+00	8.7173E+00	9.7023E-40
96.000	0.0000E+00	6.7306E+00	2.7181E-187
720.000	0.0000E+00	7.1545E-01	0.0000E+00

Time (hr)	Faulted S/G	Intact S/G
	I-131 (Curies)	I-131 (Curies)
0.001	4.9124E+00	3.5555E+00
0.001	8.3196E+00	6.4000E+00
0.280	2.6599E-34	6.3809E+00
0.333	6.8377E-41	6.3773E+00
0.600	7.2515E-74	6.3591E+00
0.860	5.1800E-106	6.3415E+00
1.120	3.7003E-138	6.3239E+00

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

1.380	2.6432-170	6.3064E+00
1.640	1.8882-202	6.2889E+00
1.900	1.3488-234	6.2714E+00
2.000	5.8352-247	6.2647E+00
2.260	4.1683-279	6.2474E+00
2.520	2.9775-311	6.2300E+00
2.780	0.0000E+00	6.2128E+00
3.040	0.0000E+00	6.1955E+00
3.300	0.0000E+00	6.1783E+00
3.560	0.0000E+00	6.1612E+00
3.820	0.0000E+00	6.1441E+00
4.080	0.0000E+00	6.1271E+00
4.340	0.0000E+00	6.1101E+00
4.600	0.0000E+00	6.0931E+00
4.860	0.0000E+00	6.0762E+00
5.120	0.0000E+00	6.0594E+00
5.380	0.0000E+00	6.0426E+00
5.640	0.0000E+00	6.0258E+00
5.900	0.0000E+00	6.0091E+00
6.160	0.0000E+00	5.9924E+00
6.420	0.0000E+00	5.9758E+00
6.680	0.0000E+00	5.9592E+00
6.940	0.0000E+00	5.9427E+00
7.200	0.0000E+00	5.9262E+00
7.460	0.0000E+00	5.9098E+00
7.720	0.0000E+00	5.8934E+00
7.980	0.0000E+00	5.8771E+00
8.000	0.0000E+00	5.8758E+00
8.260	0.0000E+00	5.8703E+00
8.520	0.0000E+00	5.8648E+00
8.780	0.0000E+00	5.8594E+00
9.040	0.0000E+00	5.8539E+00
9.300	0.0000E+00	5.8484E+00
9.560	0.0000E+00	5.8430E+00
9.820	0.0000E+00	5.8375E+00
10.080	0.0000E+00	5.8321E+00
12.000	0.0000E+00	5.7920E+00
24.000	0.0000E+00	5.5476E+00
96.000	0.0000E+00	4.2833E+00
720.000	0.0000E+00	4.5530E-01

#####  
 Cumulative Dose Summary  
 #####

Time (hr)	EAB		LPZ		Control Room	
	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)	Thyroid (rem)	TEDE (rem)
0.001	8.0933E-02	2.4784E-03	1.0000E-02	3.0624E-04	6.0467E-04	1.8412E-05
0.001	2.5178E-01	7.7103E-03	3.1110E-02	9.5270E-04	2.5930E-03	7.8958E-05
0.280	1.9452E+00	5.9568E-02	2.4035E-01	7.3604E-03	1.2151E+01	3.7001E-01
0.333	1.9460E+00	5.9593E-02	2.4045E-01	7.3635E-03	1.4147E+01	4.3078E-01
0.600	1.9505E+00	5.9730E-02	2.4100E-01	7.3803E-03	1.9667E+01	5.9887E-01
0.860	1.9534E+00	5.9820E-02	2.4137E-01	7.3915E-03	2.1215E+01	6.4602E-01
1.120	1.9560E+00	5.9898E-02	2.4168E-01	7.4011E-03	2.1670E+01	6.5985E-01
1.380	1.9584E+00	5.9972E-02	2.4198E-01	7.4102E-03	2.1803E+01	6.6391E-01
1.640	1.9608E+00	6.0045E-02	2.4227E-01	7.4193E-03	2.1842E+01	6.6511E-01
1.900	1.9631E+00	6.0117E-02	2.4257E-01	7.4282E-03	2.1854E+01	6.6547E-01
2.000	1.9640E+00	6.0145E-02	2.4268E-01	7.4316E-03	2.1856E+01	6.6552E-01
2.260	1.9664E+00	6.0217E-02	2.4281E-01	7.4357E-03	2.1858E+01	6.6559E-01
2.520	1.9687E+00	6.0289E-02	2.4294E-01	7.4397E-03	2.1859E+01	6.6562E-01
2.780	1.9711E+00	6.0360E-02	2.4307E-01	7.4437E-03	2.1860E+01	6.6563E-01
3.040	1.9734E+00	6.0431E-02	2.4320E-01	7.4477E-03	2.1860E+01	6.6564E-01
3.300	1.9757E+00	6.0503E-02	2.4334E-01	7.4517E-03	2.1860E+01	6.6565E-01
3.560	1.9780E+00	6.0574E-02	2.4347E-01	7.4557E-03	2.1860E+01	6.6565E-01
3.820	1.9803E+00	6.0644E-02	2.4360E-01	7.4597E-03	2.1860E+01	6.6566E-01
4.080	1.9826E+00	6.0715E-02	2.4373E-01	7.4637E-03	2.1861E+01	6.6567E-01
4.340	1.9849E+00	6.0785E-02	2.4385E-01	7.4676E-03	2.1861E+01	6.6567E-01
4.600	1.9872E+00	6.0855E-02	2.4398E-01	7.4716E-03	2.1861E+01	6.6568E-01
4.860	1.9895E+00	6.0925E-02	2.4411E-01	7.4755E-03	2.1861E+01	6.6569E-01
5.120	1.9918E+00	6.0995E-02	2.4424E-01	7.4794E-03	2.1862E+01	6.6569E-01
5.380	1.9941E+00	6.1065E-02	2.4437E-01	7.4833E-03	2.1862E+01	6.6570E-01
5.640	1.9963E+00	6.1134E-02	2.4450E-01	7.4872E-03	2.1862E+01	6.6571E-01

Palisades Design Basis Main Steam Line Break AST Radiological Analysis

Calculation Number: NAI-1131-018 Rev. 1

5.900	1.9986E+00	6.1203E-02	2.4462E-01	7.4911E-03	2.1862E+01	6.6571E-01
6.160	2.0008E+00	6.1272E-02	2.4475E-01	7.4950E-03	2.1862E+01	6.6572E-01
6.420	2.0031E+00	6.1341E-02	2.4488E-01	7.4989E-03	2.1863E+01	6.6573E-01
6.680	2.0053E+00	6.1410E-02	2.4500E-01	7.5027E-03	2.1863E+01	6.6573E-01
6.940	2.0076E+00	6.1478E-02	2.4513E-01	7.5066E-03	2.1863E+01	6.6574E-01
7.200	2.0098E+00	6.1547E-02	2.4525E-01	7.5104E-03	2.1863E+01	6.6575E-01
7.460	2.0120E+00	6.1615E-02	2.4538E-01	7.5142E-03	2.1863E+01	6.6575E-01
7.720	2.0142E+00	6.1683E-02	2.4550E-01	7.5181E-03	2.1864E+01	6.6576E-01
7.980	2.0164E+00	6.1750E-02	2.4563E-01	7.5219E-03	2.1864E+01	6.6577E-01
8.000	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
8.260	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
8.520	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
8.780	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
9.040	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
9.300	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
9.560	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
9.820	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
10.080	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
12.000	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
24.000	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
96.000	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01
720.000	2.0166E+00	6.1755E-02	2.4564E-01	7.5222E-03	2.1864E+01	6.6577E-01

#####  
Worst Two-Hour Dose  
(Provided for Dose Location 1)  
#####

EAB

Time (hr)	Whole Body (rem)	Thyroid (rem)	Skin (rem)	TEDE (rem)
0.0	3.3534E-04	1.8831E+00	5.4908E-04	5.7666E-02

#####  
30 Day Control Room Skin Dose  
#####

Control Room

Time (hr)	Skin (rem)
720.0	6.3765E-03

**Attachment 7 Verification Comments for Calculation NAI-1149-018 Rev. 1****Comment 1**

Page 12 – The last assumption makes reference to actions that will be taken ‘prior to the end of Palisades refueling outage 19’ and to scheduled testing. There is no statement in the purpose of this calculation that limits its applicability to a specific time frame. If this calculation is to become the analysis of record for the MSLB dose, it should not contain references to time-dependent plant conditions.

**Response**

Once NRC approval is received for the alternate source term calculations, formal incorporation into the design and licensing basis will occur. However, prior to formal incorporation, plant modifications are required. The statements in Section 4 are meant to indicate that the calculation is not applicable to Palisades until after the required modifications are implemented. Beyond the initial limitation of applicability to time periods post-modification, no additional restriction to specific time frames is intended. The text has been changed for clarification.