

August 7, 2008

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

Peach Bottom Atomic Power Station, Units 2 and 3  
Renewed Facility Operating License Nos. DPR-44 and DPR-56  
Docket Nos. 50-277 and 50-278

Subject: Supplemental Response to Request for Additional Information Concerning  
License Amendment Request – Application of Alternative Source Term

References:

1. Letter from Pamela B. Cowan, Exelon Generation Company, LLC, to U. S. Nuclear Regulatory Commission, "License Amendment Request – Application of Alternative Source Term," dated July 13, 2007
2. U. S. Nuclear Regulatory Commission e-mail dated July 18, 2008, draft Request for Additional Information (RAI), Peach Bottom Atomic Power Station, Units 2 and 3, License Amendment Request (LAR), Alternative Source Term Application (five questions)
3. U. S. Nuclear Regulatory Commission updated e-mail dated July 25, 2008, draft Request for Additional Information (RAI), Peach Bottom Atomic Power Station, Units 2 and 3, License Amendment Request (LAR), Alternative Source Term Application (one question)
4. Letter from Pamela B. Cowan, Exelon Generation Company, LLC, to U. S. Nuclear Regulatory Commission, "Response to Request for Additional Information Concerning License Amendment Request – Application of Alternative Source Term," dated July 29, 2008

In Reference 1, Exelon Generation Company, LLC (Exelon) submitted an application requesting a change to the Technical Specifications (TS), Appendix A, of Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, respectively. The proposed change was requested to support the application of Alternative Source Term (AST) methodology at PBAPS, Units 2 and 3.

In References 2 and 3, the U. S. Nuclear Regulatory Commission (NRC) issued draft requests for additional information (RAIs) concerning the PBAPS License Amendment Request (LAR). The NRC identified six questions in the draft RAIs in which additional information was requested concerning meteorological and dose consequence aspects related to AST. The draft questions were identified as AADB RAI 20 through AADB RAI 25.

ADD 1  
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In Reference 4, Exelon responded to four of the six draft questions identified by the NRC. Specifically, information was provided to RAI questions AADB 20, AADB 21, AADB 22, and AADB 24. The response indicated that Exelon would submit a supplemental response to address RAI questions AADB 23 and AADB 25, since these questions focused on further evaluation of X/Q values and the need to submit revised calculations. The attachments to this letter contain the complete responses to AADB 23 and AADB 25. The revised calculations also provide documentation and clarification for those responses discussed in the Reference 4 letter.

Exelon has concluded that the information provided in this response does not impact the conclusions of the: 1) Technical Analysis, 2) No Significant Hazards Consideration under the standards set forth in 10 CFR 50.92(c), or 3) Environmental Consideration as provided in the original submittal (Reference 1).

There are no regulatory commitments contained in this letter. If you have any further questions or require additional information, please contact Richard Gropp at 610-765-5557.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 7th day of August 2008.

Respectfully,

*Pamela B. Cowan*

Pamela B. Cowan  
Director – Licensing and Regulatory Affairs  
Exelon Generation Company, LLC

- Attachment 1: Supplemental Response to Request for Additional Information  
RAI Questions AADB 23 and AADB 25
- Attachment 2: Revised Calculation PM-1055, "*Calculation of Alternative Source Term (AST) Onsite and Offsite X/Q Values,*" Revision 1
- Attachment 3: Revised Calculation PM-1077, "*Post-LOCA EAB, LPZ and CR Doses Using Alternative Source Term (AST),*" Revision 1
- Attachment 4: Revised Calculation PM-1059, "*Re-analysis of Fuel Handling Accident (FHA) Using Alternative Source Terms,*" Revision 3
- Attachment 5: Revised Calculation PM-1057, "*Re-analysis of Control Rod Drop Accident (CRDA) Using Alternative Source Terms,*" Revision 2
- Attachment 6: Additional PAVAN Input and Output Data Files

cc: Regional Administrator - NRC Region I Attachment 1 only  
NRC Senior Resident Inspector - PBAPS "  
NRC Project Manager, NRR - PBAPS "  
Director, Bureau of Radiation Protection - Pennsylvania "  
Department of Environmental Protection "  
S. T. Gray, State of Maryland "

**ATTACHMENT 1**

**Peach Bottom Atomic Power Station  
Units 2 and 3  
Docket Nos. 50-277 and 50-278**

**License Amendment Request  
Supplemental Response to Request for Additional Information**

**Alternative Source Term (AST)**

**Response to RAI Questions AADB 23 and AADB 25**

## **Background**

By letter dated July 13, 2007, Exelon Generation Company, LLC (Exelon) submitted an application requesting a change to the Technical Specifications (TS), Appendix A, of Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, respectively. The proposed change was requested to support the application of Alternative Source Term (AST) methodology at PBAPS, Units 2 and 3.

By electronic mail (e-mail) on July 18, 2008 and an updated e-mail on July 25, 2008, the U. S. Nuclear Regulatory Commission (NRC) transmitted six draft Request for Additional Information (RAI) questions pertaining to the meteorological and dose consequence issues related to AST. The questions were identified as AADB RAI 20 through AADB RAI 25. By letter dated July 29, 2008, Exelon provided information in response to four of the six RAI questions (AADB 20, AADB 21, AADB 22, and AADB 24). The response to the remaining two questions would be provided in a supplemental response, since these questions focused on further evaluation of X/Q values and the need to submit revised calculations. The calculations requiring revision as a result of the changes in X/Q values are included in Attachments 2 through 5 of this submittal as listed below.

- Attachment 2 - Revised Calculation PM-1055, "*Calculation of Alternative Source Term (AST) Onsite and Offsite X/Q Values,*" Revision 1
- Attachment 3 - Revised Calculation PM-1077, "*Post-LOCA EAB, LPZ and CR Doses Using Alternative Source Term (AST),*" Revision 1
- Attachment 4 - Revised Calculation PM-1059, "*Re-analysis of Fuel Handling Accident (FHA) Using Alternative Source Terms,*" Revision 3
- Attachment 5 - Revised Calculation PM-1057, "*Re-analysis of Control Rod Drop Accident (CRDA) Using Alternative Source Terms,*" Revision 2

In addition, Attachment 6 provides additional PAVAN input and output data files that were used in support of revising Calculation PM-1055 (Attachment 2). These files use the 11 wind speed categories per Regulatory Guide 1.23, Revision 1.

Tables 1 through 4 below provide a summary of the changes made to the attached calculations. Table 5 provides a summary comparing the dose values between the revisions in the calculations. Table 6 provides a summary of the revised X/Q (sec/m<sup>3</sup>) values used.

Exelon agreed to provide a supplemental response to the remaining two RAI questions (AADB 23 and AADB 25) and submit the revised calculations by August 7, 2008. AADB 23 and AADB 25 have been restated below followed by Exelon's response. RAI Questions AADB 20, AADB 21, AADB 22, and AADB 24 are not discussed since the responses to these questions were the subject of the July 29, 2008 letter. The revised calculations also provide documentation and clarification for those responses discussed in the July 29, 2008 letter.

**NRC Question 4 (AADB RAI 23)**

*The response to NRC Question 12 (AADB RAI 12) of the licensee's May 23, 2008, letter stated that the reactor building stack tops are at 305 feet (ft) mean sea level (msl) and the meteorological Tower 2 grade elevation is 367 ft msl. NRC staff agrees that the elevation of the reactor building stack tops is nearer the height of the meteorological Tower 2 grade elevation than the grade elevation of the River Tower or Tower 1A which are approximately 116 feet msl. However, the reactor building stack tops are about 60 feet below the Tower 2 grade elevation and therefore appear to be below the top of at least part of the bluff upon which Tower 2 is located. In addition, other postulated release locations such as the personnel access door, railway bay door, and ground hatches are at or near the plant structures on the river valley shoreline and appear to be at a height more nearly that of River Tower and Tower 1A. Therefore, please provide justification that these postulated releases could not be impacted by localized air flow patterns in the valley. Further, please provide justification that use of the Tower 2 meteorological data in the PAVAN computer calculations provides the limiting atmospheric dispersion factors ( $\chi/Q$  values) for the low population zone dose assessment.*

**Response**

Topography near the Peach Bottom Site is complex. The facility is located on the shore of the Susquehanna River adjacent to a bluff. Effluent releases are postulated from multiple locations, including from short stacks and openings on top of facility structures, locations at or near ground-level at the facility, and from the 152 meter off-gas stack on the bluff. Meteorological data from all three towers were utilized to generate atmospheric dispersion factors ( $X/Q$  values), namely Tower 2 on the bluff, Tower 1A near the shore in the vicinity of the Peach Bottom facility structures, and from the River Tower based in the Susquehanna River. In most cases, two (and in some cases three) sets of data were used to generate  $X/Q$  values for a single release/receptor pair. In every such case, the limiting (highest)  $X/Q$  values were selected for use in the dose assessment.

Meteorological Tower 2 is located on a bluff approximately 2600 feet (approximately 800 meters) from the Reactor Building stacks. Tower 2 has a grade elevation of 367 feet above mean sea level (msl), or 251 feet (76.5 meters) above station grade. Tower 1A is located at 119 feet msl approximately 1300 feet southeast of the Reactor Building stacks, and is also topographically situated very similarly to the Station (i.e., at the Susquehanna River's edge and immediately adjacent to the steeply higher terrain in the westerly, southwesterly, and southerly directions). The River Tower is approximately 1200 meters north-northeast of the Station. The River Tower measures winds at 45 feet above the river level, but stability class based on the delta temperature parameter, in accordance with NRC Regulatory Guide 1.23, is not monitored on the River Tower. However, Tower 1A, prior to its decommissioning in 1993, monitored the temperature difference between elevation 89 feet and elevation 34 feet. Tower 1A is ideally situated adjacent to and based at essentially the same grade elevation as the Station so as to best represent the local dispersion conditions to which the Reactor Building stack releases are subject for over-river trajectories out to the EAB.

While meteorological tower data measured on Towers 1A and the River Tower would not generally be representative of conditions at the LPZ, for purposes of conservatism additional LPZ X/Q values for the Units 2 and 3 Reactor Building stacks were calculated based on the meteorological data from Tower 1A located in the Valley immediately adjacent to the Peach Bottom Facility. Furthermore, these LPZ X/Q values are utilized to conservatively represent the Reactor Building Personnel Access Doors, Railway Bay Doors, Roof Scuttle, and Ground-Level Hatch for the Fuel Handling Accident analysis, and for a conservatively-assumed ground level release for the Control Rod Drop Accident analysis. Conservatively, corresponding EAB X/Q values for these accidents based on the meteorological data from Tower 1A are utilized as well.

For each time-averaging period, the use by PAVAN of the 11-bin joint frequency distributions based on Regulatory Guide 1.23, Revision 1, results in somewhat higher X/Q values for the EAB and LPZ, and for the other modeled distance values in support of the Off-Gas Stack to Control Room X/Q. These 11-bin joint frequency distributions were used in the development of the X/Qs for this response as well as for use in the dose calculations (Attachments 3 through 5).

**NRC Question 6 (AADB RAI 25)**

*Updated Table 4.3-1 (LOCA Parameters) of the Enclosure to the May 23, 2008, Peach Bottom response to a request for additional information provides a set of control room atmospheric dispersion factors (X/Q values) for containment and ESF leakage releases via an off-gas stack release. Sheet 5 of Attachment A to the Enclosure provides a second set of X/Q values for releases from the off-gas stack to the control room intake that were calculated in accordance with Section 3.2.2 of Regulatory Guide 1.194. The two sets of values appear to be for a single release scenario using two different methodologies. If this is the case, please identify which set you propose to establish as the new licensing basis control room X/Q values for postulated releases from the off-gas stack.*

**Response**

The X/Q values used for the new licensing basis are shown in Table 6 below.

**Table 1**  
**Calculation Changes Made to PM-1055**  
***"Calculation of Alternative Source Term (AST) Onsite and Offsite X/Q Values"***

**SUMMARY:**  
Calculation PM-1055 is revised to determine more conservative ground level X/Q values for the EAB and LPZ, developed using the meteorological wind and stability data from Tower 1A. The EAB and LPZ X/Qs were also recalculated using PAVAN with the finer wind speed categories described in Regulatory Guide 1.23, Revision 1. There are no changes made to the Control Room X/Q values except to those for Off-Gas Stack releases as a result of the PAVAN finer wind speed categories results.

Item	Specific Changes Made to:	As Submitted	As Revised	Reason for Change
1	Cover Sheet	Revision 0	Revision 1	Administrative change replaces the Revision 0 cover sheet.
2	Owners Acceptance Checklist	Revision 0	Revision 1	Administrative change replaces the Revision 0 checklist.
3	Table of Contents	Revision 0	Revision 1	Editorial change reflects updated page numbers and attachments.
4	Section 1.0, "Purpose/Objective"	Revision 0	Revision 1	Updated to reflect changes made in Revision 1.
5	Section 4.0, "Additional PAVAN Analysis Of Control Room, EAB, and LPZ"	Revision 0	Revision 1	Provides additional X/Q values that support responses to Questions AADB RAI 12, 13, and 23. It also provides justifications for the use of the meteorological data used in the development of various X/Q values. Section 4 Tables are also updated to reflect new calculated X/Q values.
6	Section 5.0, "Summary and Conclusions" (Table 5-1)	Revision 0	Revision 1	Updates the summary of the worst-case X/Q results.
7	Section 6.0, "References"	Revision 0	Revision 1	Editorial change that adds RG 1.194 (as the superceded DG-1111) and RG 1.23 Rev. 1 (regarding additional wind speed categories used for the EAB, LPZ, and the Off-Gas stack to Control Room intake analyses).
8	Attachment "H"	Revision 0	Revision 1	This attachment incorporates the corrected sheet 4 previously provided in response to NRC RAI AADB 16.
9	Attachment "J"	Revision 0	Revision 1	Duplicated pages identified in Question AADB RAI 17 from the July 23, 2008, letter to NRC were removed.
10	Attachments "K" and "L"	Revision 0	Revision 1	These attachments include the finer wind speed category Joint Frequency Distribution results and the PAVAN input and output summaries for the new cases for the EAB, LPZ, and the Off-Gas stack to Control Room intake X/Qs in response to NRC RAIs.

**Table 2**  
**Calculation Changes Made to PM-1077**  
**" Post-LOCA EAB, LPZ, and CR Doses Using Alternative Source Term (AST) "**

<b>SUMMARY:</b>				
Calculation PM-1077 is revised to reflect doses due to more conservative X/Q values for the EAB and LPZ that were developed in calculation PM-1055, Revision 1, "Calculation of Alternative Source Term (AST) Onsite and Offsite X/Q Values." A description of the Maximum Hypothetical Accident (MHA) is also included as a response to Question AADB RAI 20.				
<b>Item</b>	<b>Specific Changes Made to:</b>	<b>As Submitted</b>	<b>As Revised</b>	<b>Reason for Change</b>
1	Cover Sheet	Revision 0	Revision 1	Administrative change replaces the Revision 0 cover sheet.
2	Owners Acceptance Checklist	Revision 0	Revision 1	Administrative change replaces the Revision 0 checklist.
3	Table of Contents	Revision 0	Revision 1	Editorial change reflects updated page numbers and attachments.
4	Section 2.3.3, "Recirculation Line Rupture Vs. Main Steam Line Rupture"	Revision 0	Revision 1	Revised to better describe the MHA. Added a tracking number to ensure it is not deleted in future revisions in response to Question AADB RAI 22.
5	Editorial changes (throughout)	Revision 0	Revision 1	Reflect changes to RADTRAD run numbers based on new X/Q values.
6	Section 5.0, " Design Inputs "	Revision 0	Revision 1	Sections 5.6.7, 5.7.1, 5.7.2, 5.7.4, and 5.7.5 revised to indicate the new X/Q values used in the analysis, consistent with the releases modeled in Figure 2 of the calculation.
7	Section 8.1, "Results Summary"	Revision 0	Revision 1	Updated to reflect doses based on new X/Q values.
8	Section 9.0, "References"	Revision 0	Revision 1	References updated to reflect revised X/Q Calculation PM-1055, Revision 1 and addition of RAIs.
9	Appendix "A"	Revision 0	Revision 1	Includes the sensitivity study regarding question AADB RAI 22.
10	Attachments "A" through "O"	Revision 0	Revision 1	Contains RADTRAD outputs for all runs made for the DBA case as well as for the AEB 98-03 sensitivity study. Additional supporting RADTRAD runs were included for completeness of the CR shine dose model.

**Table 3**  
**Calculation Changes Made to PM-1059**  
**" Re-analysis of Fuel Handling Accident (FHA) Using Alternative Source Terms "**

**SUMMARY:**

Calculation PM-1059 is revised to reflect new more conservative X/Q values for the EAB and LPZ that were developed in calculation PM-1055, Revision 1, "Calculation of Alternative Source Term (AST) Onsite and Offsite X/Q Values."

Item	Specific Changes Made to:	As Submitted	As Revised	Reason for Change
1	Cover Sheet	Revision 2	Revision 3	Administrative change replaces the Revision 0 cover sheet.
2	Owners Acceptance Checklist	Revision 2	Revision 3	Administrative change replaces the Revision 0 checklist.
3	Table of Contents	Revision 2	Revision 3	Editorial change reflects updated page numbers and attachments.
4	Section 1.0, "Purpose/Objective"	Revision 2	Revision 3	Updated to describe Revision 3 calculation changes.
5	Table 2	Revision 2	Revision 3	Updated to reflect new EAB and LPZ X/Qs
6	Section 5.0, "References"	Revision 2	Revision 3	Updated references list for X/Q Calculation PM-1055, Rev. 1
7	Section 6.0, "Calculations"	Revision 2	Revision 3	Changes to reflect updated EAB and LPZ X/Qs
8	Section 7.0, "Summary and Conclusions"	Revision 2	Revision 3	Updated to reflect new EAB and LPZ doses based on revised X/Q values, and the resulting unacceptability of only the EAB dose resulting for Case 2 (the zero decay time case, illustrating the acceptability with respect to Control Room doses of even this improbable scenario).
9	Section 8.0, "Owners Acceptance Checklist"	Revision 2	Revision 3	Administrative change replaces the Revision 0 checklist.
10	Attachment "B"	Revision 2	Revision 3	Contains new RADTRAD runs using revised EAB and LPZ X/Qs (and a minor correction in the Control Room X/Q values used for Cases 3 and 4 from 1.93E-03 to the proper value of 1.90E-03).
11	Attachment "G", Figure 3-1	Revision 2	Revision 3	Corrected the note describing the elevation of the roof scuttle to the proper value of 294 feet msl.

**Table 4**  
**Calculation Changes Made to PM-1057**

***" Re-analysis of Control Rod Drop Accident (CRDA) Using Alternative Source Terms "***

**SUMMARY:**

Calculation PM-1057 is revised to reflect new more conservative X/Q values for the EAB and LPZ that were developed in calculation PM-1055, Revision 1, "Calculation of Alternative Source Term (AST) Onsite and Offsite X/Q Values."

<b>Item</b>	<b>Specific Changes Made to:</b>	<b>As Submitted</b>	<b>As Revised</b>	<b>Reason for Change</b>
1	Cover Sheet	Revision 1	Revision 2	Administrative change replaces the Revision 1 cover sheet.
2	Owners Acceptance Checklist	Revision 1	Revision 2	Administrative change replaces the Revision 1 checklist.
3	Table of Contents	Revision 1	Revision 2	Editorial changes reflect updated page numbers and attachments.
4	Section 1.0, "Purpose/Objective"	Revision 1	Revision 2	Updated to describe Revision 2 calculation changes.
5	Section 4.1, "X/Q Calculations (Meteorology)"	Revision 1	Revision 2	Updated to reflect new EAB and LPZ X/Qs
6	Section 5.0, "References"	Revision 1	Revision 2	Updated references list for X/Q Calculation PM-1055, Rev. 1 and FHA Calculation PM-1059, Rev. 3.
7	Section 6.2, "Dose Calculations"	Revision 1	Revision 2	Changes to reflect updated EAB and LPZ X/Qs
8	Section 7.0, "Summary and Conclusions"	Revision 1	Revision 2	Updated to reflect new EAB & LPZ doses based on revised X/Q values.
9	Attachment "B"	Revision 1	Revision 2	New RADTRAD runs using revised EAB and LPZ X/Qs.

<b>Table 5 Dose Results Summary</b>			
<b>Accident</b>	<b>Dose Receptor Location</b>	<b>Rem TEDE Prior to X/Q Revision</b>	<b>Rem TEDE After X/Q Revision</b>
<b>LOCA (PM-1077)</b>	<b>CR</b>	4.66	4.69 <sup>1</sup>
	<b>EAB</b>	6.65	10.7
	<b>LPZ</b>	7.13	8.99
<b>FHA<sup>3</sup> (PM-1059) 24-Hour Decay</b>	<b>CR</b>	3.85	3.79 <sup>2</sup>
	<b>EAB</b>	1.16	2.49
	<b>LPZ</b>	0.132	0.377
<b>FHA<sup>3</sup> (PM-1059) 84-Hour Decay</b>	<b>CR</b>	4.56	4.56
	<b>EAB</b>	0.714	1.53
	<b>LPZ</b>	0.081	0.232
<b>CRDA (PM-1057)</b>	<b>CR</b>	0.302	0.302
	<b>EAB</b>	0.065	0.086
	<b>LPZ</b>	0.012	0.032

Notes:

1. CR dose for the LOCA increased due to the change in X/Q from the elevated Off-Gas (main) stack.
2. CR dose for the FHA decreased due to the minor correction in X/Q (1.90E-03 vs. 1.93E-03).
3. FHA 24-hour decay results support Technical Specifications (TS) changes that include the definition of Recently Irradiated Fuel, and relaxation of TS for secondary containment integrity during fuel handling operations with as little as 24 hours after shutdown. FHA with a minimum of 84 hours decay is included as the bounding case that would allow limiting ground-level hatches (H15 through H24) to the west of the Reactor/Radwaste Buildings to be opened, with a minimum decay time of 84 hours after shutdown and MCREV operable via automatic initiation.

**Table 6**  
**X/Q (sec/m<sup>3</sup>) Results Summary (from PM-1055 Rev. 1 Table 5-1),**  
**Meteorological Database Utilized with Justification, and Dose Calculation Application Bases**

Receptor	Release Point	0 – 0.5 hour	0-2 hour	2-8 hour	8-24 hour	1-4 day	4-30 day	Controlling Meteorological Tower Database Utilized	Justification for Usage	Used in Dose Calculation
Control Room Intake	Off-Gas Stack		3.31E-06	1.00E-15	1.00E-15	1.64E-08	4.54E-09	Tower 2	Tower 2 is the only representative database (See Calculation PM-1055, Rev 1, Sections 2.2.3 and 2.2.4)	PM-1077, Rev. 1
	Unit 2 Reactor Building Stack		1.18E-03	9.08E-04	4.14E-04	2.90E-04	2.26E-04	Tower 2 (0-2 hour) Tower 1A (all other periods)	The higher of the X/Qs predicted by representative Towers 2 and 1A databases were selected (See Calculation PM-1055, Rev 1, Sections 2.2.3 and 2.2.4)	PM-1077, Rev. 1, PM-1057, Rev. 2, PM-1059, Rev 3
	Unit 3 Reactor Building Stack (Unit 2 is limiting)		1.18E-03	8.91E-04	4.00E-04	2.51E-04	1.98E-04	Tower 2	The higher of the X/Qs predicted by representative Towers 2 and 1A databases were selected (See Calculation PM-1055, Rev 1, Sections 2.2.3 and 2.2.4)	PM-1077, Rev. 1, PM-1057, Rev. 2, PM-1059, Rev 3
	Fuel Handling Accident Reactor Building Personnel Access Doors and Roof Scuttles, Railway Bay Doors, and Ground-Level Hatches		(Various) 4.36E-04 to 1.28E-02	0-2 hour values conservatively utilized					Tower 1A	Tower 1A is the most representative and conservative database (See Calculation PM-1059, Rev 3, Attachment G, Section 3.1 and Table 4-1)

**Table 6 (continued)**

Receptor	Release Point	0 – 0.5 hour	0-2 hour	2-8 hour	8-24 hour	1-4 day	4-30 day	Controlling Meteorological Tower Database Utilized	Justification for Usage	Used in Dose Calculation
EAB (823 m)	Off-Gas Stack	5.30E-05	9.17E-06	3.24E-06*	1.92E-06	6.22E-07	1.23E-07	Tower 2	Tower 2 is the only representative database (See Calculation PM-1055, Rev 1, Sections 3.2.3, 3.2.4, and 4.1)	PM-1077, Rev. 1
	Units 2 and 3 Reactor Building Stacks, Turbine Building, and Personnel Access Doors, Railway Bay Doors, Roof Scuttle, and Ground-Level Hatches		9.11E-04	4.67E-04*	3.35E-04	1.64E-04	6.26E-05	Tower 1A	The highest of the X/Qs predicted by the representative Towers 2, 1A, and River Tower/1A databases were selected (See Calculation PM-1055, Rev 1, Sections 3.2.4 and 4.1)	PM-1077, Rev. 1, PM-1057, Rev. 2, PM-1059, Rev 3
LPZ (7,300 m)	Off-Gas Stack	1.75E-05	9.05E-06	4.01E-06*	2.67E-06	1.10E-06	3.10E-07	Tower 2	Tower 2 is the only representative database (See Calculation PM-1055, Rev 1, Sections 3.2.3, 3.2.4, and 4.1)	PM-1077, Rev. 1
	Units 2 and 3 Reactor Building Stacks, Turbine Building, and Personnel Access Doors, Railway Bay Doors, Roof Scuttle, and Ground-Level Hatches		1.38E-04	5.81E-05*	3.77E-05	1.48E-05	4.15E-06	Tower 1A	The higher of the X/Qs predicted by the representative Towers 2 and 1A databases were selected (See Calculation PM-1055, Rev 1, Sections 3.2.4 and 4.1)	PM-1077, Rev. 1, PM-1057, Rev. 2, PM-1059, Rev 3

\*PAVAN result representing 0-8 hour time period.

NOTE: AST Calculation PM-1058 for the Main Steam Line Break accident utilized Regulatory Guide 1.5 methodology for off-site X/Qs, and steam cloud concentrations rather than X/Qs for Control Room dose modeling, as developed within Calculation PM-1058.