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April 21, 2016

PG&E Letter DCL-16-044

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

10 CFR 50.90

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Response to NRC Request for Additional Information Regarding License Amendment Request 15-03, "Application of Alternative Source Term"

References:
1. PG&E Letter DCL-15-069, "License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated June 17, 2015 (ADAMS Accession No. ML15176A539)
2. PG&E Letter DCL-15-105, "Supplement to License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated August 31, 2015 (ADAMS Accession No. ML15243A363)
3. E-mail from NRC Project Manager Siva P. Lingam, "Diablo Canyon 1 and 2 - Requests for Additional Information for License Amendment Request 15-03 to Adopt the Alternative Source Term per 10 CFR 50.67 (TAC Nos. MF6399 and MF6400)," dated October 1, 2015 (ADAMS Accession No. ML15278A049)
4. PG&E Letter DCL-15-130, "Response to NRC Request for Additional Information Regarding License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated November 2, 2015 (ADAMS Accession No. ML15321A235)
5. E-mail from NRC Project Manager Siva P. Lingam, "Diablo Canyon 1 and 2 - Met Data Second Round of Requests for Additional Information for License Amendment Request 15-03 to Adopt the Alternative Source Term per 10 CFR 50.67 (TAC Nos. MF6399 and MF640," dated February 17, 2016 (ADAMS Accession No. ML16048A232)
6. PG&E Letter DCL-15-152, "Response to NRC Request for Additional Information Regarding License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated December 17, 2015 (ADAMS Accession Numbers ML16004A354, ML16004A355, ML16004A356, ML16004A357, ML16004A359, and ML16004A361)

A001
NRR

Dear Commissioners and Staff:

License Amendment Request (LAR) 15-03, "Application of Alternative Source Term," was submitted by Pacific Gas and Electric Company (PG&E) in Reference 1 and supplemented by PG&E in Reference 2.

In Reference 3, the NRC Radiation Protection and Consequence Branch (ARCB) requested additional information required to complete the review of LAR 15-03. PG&E responded to this request for additional information (RAI) in Reference 4.

In Reference 5, the ARCB provided a follow-up RAI associated with the meteorological data provided in Reference 4. PG&E's response to the follow-up RAI is provided in the Enclosure to this letter.

The Enclosure includes the following attachments:

- Attachment 1 – Diablo Canyon Power Plant Technical Assessment Prepared by WECTEC (previously CB&I Stone and Webster, Inc.), "Implementation of Alternative Source Terms, Summary of Dose Analyses and Results," Revision 2
- Attachment 2 – Diablo Canyon Power Plant Updated Final Safety Analysis Report Markup (For Information Only), Revision 2
- Attachment 3 – Data files in support of the RAI responses in the Enclosure.

Attachment 1 supersedes Reference 1, Enclosure Attachment 4 and Reference 6, Enclosure Attachment 2 (ML16004A354). The revised Updated Final Safety Analysis Report tables contained in Attachment 2 supersede those contained in Reference 1, Enclosure Attachment 8 and Reference 6, Enclosure Attachment 4 (ML16004A357, ML16004A359, and ML16004A361).

This information does not affect the results of the technical evaluation or the no significant hazards consideration determination previously transmitted in References 1 and 2.

PG&E makes no regulatory commitments (as defined by NEI 99-04) in this letter. This letter includes no revisions to existing regulatory commitments.

If you have any questions or require additional information, please contact Mr. Hossein Hamzehee at (805) 545-4720.

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

Executed on April 21, 2016.

Sincerely,

James M. Welsch
Vice President, Nuclear Generation

e1d7/4418/50705089
Enclosure
cc: Diablo Distribution
cc/enc: Marc L. Dapas, NRC Region IV Administrator
Gonzalo L. Perez, Branch Chief, California Department of Public Health
John P. Reynoso, NRC Acting Senior Resident Inspector
Balwant K. Singal, NRR Project Manager

Pacific Gas and Electric Company (PG&E) Response to NRC Request for Additional Information (RAI) Regarding Diablo Canyon Power Plant (DCPP) License Amendment Request (LAR) 15-03, "Application of Alternative Source Term"

NRC ARCB-RAI-1

Either confirm and reconcile all noted and any other discrepancies within the RG 1.23-formatted hourly data sets and between those data sets and the presumably parallel hourly data sets input to the ARCON96 dispersion modeling analyses used to estimate onsite impacts at CR and TSC receptor locations, or provide technical justification for each of those differences. In addition, and as necessary, the licensee should: [refer to RAI-1a thru RAI-1g]

PG&E Response

PG&E has determined there are no discrepancies within the Regulatory Guide (RG) 1.23, Revision 1, "Meteorological Monitoring Programs for Nuclear Power Plants," March 2007, formatted data files submitted to the NRC in Enclosure Attachment 3 of Reference 4.

PG&E has confirmed that discrepancies exist between the RG 1.23-formatted data sets and the sequential hourly ARCON96 input files provided to the NRC in Enclosure Attachment 3 of Reference 4. The meteorological (Met) data that PG&E provided to WECTEC, previously Chicago Bridge and Iron (CB&I) Stone and Webster, Inc., to perform the ARCON96 analysis contained wind speed, wind direction, and stability class. The wind speed and wind direction data were based on the RG 1.23 format, consistent with the data supplied to NRC in the Annual Radioactive Effluent Release Reports. The stability class data were not determined based on Table 1 of RG 1.23. The actual stability class data used in the ARCON96 run files were developed by the PG&E meteorologist using an alternate methodology. The NRC found, and PG&E confirmed, that the PG&E supplied stability data used in the development of the atmospheric dispersion factors and the RG 1.23 delta temperature-based stability classes are different approximately 30 percent of the time. This difference in methodology for developing the stability classes used by the PG&E meteorologist explains the difference between the ARCON96 input files and RG 1.23 data. The ARCON96 Met input files have been revised using the RG 1.23-formatted data and its associated stability classification methodology and are included in the response to RAI-1d. Note that the updated ARCON96 hourly data set has some additional missing data as discussed in response to RAI-1d.

In summary, to be consistent with the RG 1.23 methodology, the ARCON96 Met input files have been revised using the RG 1.23-formatted data and its associated stability classification methodology, and are included in the response to RAI-1d.

NRC ARCB-RAI-1a

verify that the DELT3 and DELT1 values listed in the RG 1.23-formatted data files represent the vertical temperature differences per 100 meters consistent with the guidance in Appendix A to RG 1.23 and stability classification methodology rather than the temperature differences over the literal vertical distances between the temperature measurement heights (i.e., respectively, 66 m between the 76- and 10-m measurement heights and 36 m between the 46- and 10-m measurement heights);

PG&E Response

The DELT3 and DELT1 values listed in the RG 1.23-formatted data files submitted to the NRC in Enclosure Attachment 3 of Reference 4, represent the vertical temperature difference per 100 meters (m) consistent with the stability classification methodology of Appendix A to RG 1.23.

NRC ARCB-RAI-1b

identify and explain any differences between the wind speed, wind direction, and atmospheric stability class values listed in the MS Excel files of ARCON96 sequential hourly Met data provided in Attachment 3 to the RAI responses of November 2, 2015 (PG&E Letter DCL-15-130) and those listed in the Met data files specified in the ARCON96 run files (i.e., DCPP2007.MET, DCPP2008.MET, DCPP2009.MET, DCPP2010.MET, and DCPP2011.MET);

PG&E Response

The wind speed, wind direction, and stability class values listed in the ARCON96 run files (filenames = DCPP2007.MET, DCPP2008.MET, DCPP2009.MET, DCPP2010.MET, and DCPP2011.MET) are the same as those listed in the Microsoft Excel files provided in Enclosure Attachment 3 of Reference 4. The ARCON96 Met input files have been revised using the RG 1.23-formatted data and its associated stability classification methodology and are included in the response to RAI-1d.

NRC ARCB-RAI-1c

resubmit any corrected RG 1.23-formatted Met data files and document any changes to the previously submitted data files;

PG&E Response

The RG 1.23-formatted data supplied in Enclosure Attachment 3 of Reference 4 are correct. No changes to the RG 1.23-formatted Met data files are necessary.

NRC ARCB-RAI-1d

resubmit any corrected Met data files input to the ARCON96 dispersion modeling runs and document any changes to the previously submitted data files;

PG&E Response

The corrected ARCON96 input files are provided in the zipped file (filename = dcpprg711) provided in the Attachment 3 Data Disc. This file provides the updated 5-year Met hourly data files with stability class based on the RG 1.23-formatted hourly data sets, which were used as input to the updated ARCON96 dispersion modeling runs. These Met data files used in ARCON96 (which contain the hourly wind direction and wind speed at two elevations, and the stability class) differ from the previously submitted Met data files in that the stability class determination is based on the RG 1.23, Table 1, vertical temperature difference classification methodology.

Note that the updated ARCON96 hourly data set has 280 additional missing values of 10 m wind speed and/or wind direction since the previously submitted data set had contained substituted values based on the 76-m wind speed and wind direction data. There are also 118 additional missing values of stability class in the updated ARCON96 hourly data set since the previously submitted data set had substituted values. The updated ARCON96 data set still exceeds the "90 percent data recovery" guidance identified in RG 1.23, Revision 1, for the 2007-2011 data period.

NRC ARCB-RAI-1e

revise (if necessary) the previously submitted ARCON96 dispersion modeling runs and resubmit any corrected model input and output files and affected summaries of results, or otherwise justify the previously submitted modeling results and downstream dose calculations and related impact evaluations;

PG&E Response

The revised ARCON96 dispersion modeling runs are provided in the zipped files (filenames = dclocarg, dcfhrg, dcmssvrg, dctscrg) provided in the Attachment 3 Data Disc. These files represent the updated ARCON96 dispersion modeling runs developed using the RG 1.23-formatted Met data (filename = dcpprg711) as input, as discussed in response to NRC RAI-1d. Tables 2-1 through 2-4 of this enclosure provide a description of the ARCON96 input/output file names. The revised input files are identical to the previously submitted files except for the new Met data files used (filenames = DCPPRG07, DCPPRG08, DCPPRG09, DCPPRG10, and DCPPRG11).

A summary of results is provided in Tables 1-1 to 1-3 of this enclosure, which show comparisons between the previously reported on-site atmospheric dispersion factor (X/Q, expressed in seconds per cubic meter or sec/m^3) values in Section 5 of Reference 1, LAR 15-03, Enclosure Attachment 4, and the updated X/Q values developed using the revised Met data (i.e., corrected for stability classes) in the ARCON96 dispersion modeling runs.

- Table 1-1 - DCPP Unit 1 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons
- Table 1-2 - DCPP Unit 2 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons
- Table 1-3 - DCPP Units 1 and 2 - Technical Support Center Atmospheric Dispersion Factor (sec/m^3) Comparisons

The revised X/Q values developed from the updated Met data are labeled "RG 1.23 Met Data" in red font. The percent change in X/Q values from that reported previously is also provided. Positive "percent change" values (identified in ***red bold italicized*** font) indicate that the X/Q values developed using the updated Met data are higher than the previously reported values. Negative "percent change" values indicate the X/Q values developed using the updated Met data are lower than the previously reported values.

Tables 1-1 to 1-3 indicate that for a large majority of the 116 release point-receptor combinations, the X/Q values show improved dispersion for all five time periods.

NRC ARCB-RAI-1f

> *update (if necessary) any previously submitted data recovery statistics or summaries of time periods during which data substitution was stated to have occurred; and*

PG&E Response

The previously submitted data recovery statistics of the time periods during which data substitution was stated to have occurred are bounded by the updated RG 1.23-formatted data. Therefore, the data submitted do not need to be updated.

As noted in the RAI-1d response, the updated ARCON96 hourly data set has 280 additional missing values of 10-m wind speed and wind direction since the previously submitted data set had contained substituted values based on the 76-m wind speed and wind direction data. There are also 118 additional missing values of stability class in the updated ARCON96 hourly data set since the previously submitted data set had substituted values. The updated ARCON96 data set still exceeds the "90 percent data recovery" guidance identified in RG 1.23 for the 2007-2011 data period.

NRC ARCB-RAI-1g

update (if necessary) the UFSAR and LAR 15-03 discussions.

PG&E Response

Attachment 1 of this response provides Revision 2 of the Diablo Canyon Power Plant Technical Assessment prepared by WECTEC (previously CB&I Stone and Webster, Inc.), "Implementation of Alternative Source Terms, Summary of Dose Analyses and Results." This updated report provides the revised on-site, post-accident atmospheric dispersion factor (X/Q) values that support LAR 15-03.

Attachment 2 of this response provides the affected tables of the previously submitted Updated Final Safety Analysis Report (UFSAR) markup to address the change in the X/Q values.

As discussed in the response to RAI-1, the NRC found, and PG&E confirmed, that the PG&E-supplied stability class data used to develop the DCPP X/Q values, and the RG 1.23-based stability classes are different approximately 30 percent of the time due to use by the PG&E meteorologist of an alternate methodology to establish hourly stability class.

The revisions provided in this response are consistent with use of RG 1.23 stability classification methodology in the development of hourly stability classes for purposes of developing post-accident off-site and on-site X/Q values.

PG&E has:

- Revised the ARCON96 dispersion modeling runs supporting LAR 15-03, by using as input, the updated RG 1.23-formatted Met data discussed in response to RAI-1d.

- Assessed the impact of the updated X/Qs on the dose consequences reported in LAR 15-03 at the Exclusion Area Boundary (EAB), the Low Population Zone (LPZ), and the Control Room (CR) for each of the analyzed accidents, and at the Technical Support Center (TSC) for the Loss-of-Coolant Accident (LOCA).

Tables 1-1 through 1-3 of this enclosure show that the limited number of on-site X/Q values that were adversely impacted were primarily those associated with releases from the containment edge, and seven X/Q values at other locations (six for Unit 1 and one for Unit 2). These containment edge X/Q values were not utilized in the AST dose consequence analyses since other X/Q values were considered more restrictive for releases from the containment building. PG&E determined that the updated X/Q values that were actually utilized in the dose consequence analyses continue to be more restrictive than the increased X/Q values for the containment edge. The seven X/Q values at other locations are included in the assessments summarized in Table 3-2 through Table 3-9.

Tables 3-2 through Table 3-9 provide the X/Q values selected for use for each accident for the purpose of estimating the dose consequences at the CR and TSC. These X/Q values represent the bounding values applicable for the release points/receptor combinations associated with each accident. The listed tables provide a comparison between the previously reported X/Q values and the updated X/Q values per accident. The updated values are provided in red font below the previously reported values. The few X/Q values that have increased are in ***red bold italicized*** font.

Tables 3-2 through 3-9 also provide a summary of the results of the assessment of the effect of the updated X/Q values on the currently reported on-site dose consequences in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6).

- Table 3-2 - Effect of Updated CR X/Qs on the Dose Consequences in the CR following a Loss-of-Coolant Accident (LOCA)
- Table 3-3 - Effect of Updated TSC X/Qs on the Dose Consequences in the TSC following a Loss-of-Coolant Accident (LOCA)
- Table 3-4 - Effect of Updated CR X/Qs on the Dose Consequences in the CR following a Fuel Handling Accident
- Table 3-5 - Effect of Updated CR X/Qs on the Dose Consequences in the CR following a Locked Rotor Accident
- Table 3-6 - Effect of Updated CR X/Qs on the Dose Consequences in the CR following a Control Rod Ejection Accident
- Table 3-7 - Effect of Updated CR X/Qs on the Dose Consequences in the CR following a Main Steam Line Break
- Table 3-8 - Effect of Updated CR X/Qs on the Dose Consequences in the CR following a Steam Generator Tube Rupture
- Table 3-9 - Effect of Updated CR X/Qs on the Dose Consequences in the CR following a Loss of Load

PG&E concluded that the use of the updated X/Q values do not adversely impact the dose consequences reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the CR or TSC.

Based on the above:

- Upon AST implementation, the updated X/Q values reported herein will become the DCPP licensing basis.
- The dose consequences reported in LAR 15-03 are considered conservative and bounding, and will remain unchanged.

NRC ARCB-RAI-2

As explained previously, the NRC staff did not initially request the sequential hourly Met data used as input to the EN-113 dispersion model for estimating offsite impacts at the EAB and the LPZ. However, given the issues identified in the staff's initial evaluation, the licensee should:

NRC ARCB-RAI-2a

> *confirm, reconcile, and document any additional discrepancies between the RG 1.23-formatted and/or ARCON96 sequential hourly input Met data files;*

PG&E Response

The differences between the RG 1.23-formatted and the ARCON96 input files are confined to the determination of stability class as described in the response to RAI-1 and a small amount of additional missing data in the RG 1.23-formatted data as described in the response to RAI-1d. The corrected ARCON96 input files, using RG 1.23 methodology to establish stability class are supplied as part of the response to RAI-1d.

NRC ARCB-RAI-2b

> *resubmit any corrected RG 1.23-formatted Met data files and document any additional changes to the previously submitted data files;*

PG&E Response

The RG 1.23-formatted Met data files submitted to the NRC in Enclosure Attachment 3 of Reference 4 are correct. No changes to the RG 1.23-formatted Met data files are necessary.

NRC ARCB-RAI-2c

> *submit that portion of the EN-113 input data files for the 2007 through 2011 POR that includes sequential hourly Met data and provide detailed formatting information for each parameter to facilitate the staff's understanding and review of those input data;*

PG&E Response

The listed file (filename = met113_dcpp_0711RG.inp) provided in the Attachment 3 Data Disc represents the 5-year Met data file based on the RG 1.23-formatted hourly data used as input to the EN-113 dispersion modeling runs. This RG 1.23-formatted Met data file differs from that previously used in the EN-113 dispersion model runs in that the stability class is determined based on the RG 1.23, Table 1, vertical temperature difference classification methodology.

As noted in the response to NRC RAI-1d the updated hourly data set has 280 additional missing values of 10-m wind speed and/or wind direction since the previously submitted data set had contained substituted values based on the 76-m wind data. Moreover, there are also 118 additional missing values of stability class in the updated data set since the previously submitted data set had substituted values. The updated EN-113 data set exceeds the "90 percent data recovery" guidance identified in RG 1.23, Revision 1, for the 2007-2011 period.

Detailed formatting information for each Met parameter used as input to the EN-113 dispersion models is provided in Table 2-5.

NRC ARCB-RAI-2d

> *revise (if necessary) the previously analyzed EN-113 dispersion modeling runs and resubmit any affected summaries of results, or otherwise justify the previously submitted modeling results and downstream dose calculations and related impact evaluations;*

PG&E Response

Table 1-4, "DCPP Unit 1 and Unit 2 - Offsite Receptor Atmospheric Dispersion Factor (sec/m^3) Comparisons," provides comparisons between the previously reported off-site atmospheric dispersion factors in Section 5 of LAR 15-03, Enclosure Attachment 4, and the updated values developed using the revised Met data corrected for stability classes in the EN-113 dispersion modeling runs.

Table 1-4 indicates that with the exception of the last two time periods for the LPZ, the updated X/Q values show improved dispersion.

NRC ARCB-RAI-2e

> *update (if necessary) any previously submitted data recovery statistics or summaries of time periods during which data substitution was stated to have occurred; and*

PG&E Response

The previously submitted data recovery statistics of the time periods during which data substitution was stated to have occurred are bounded by the updated RG 1.23-formatted data. Therefore, the data submitted do not need to be updated.

As noted in the RAI-2c response, the updated ARCON96 hourly data set has 280 additional missing values of 10-m wind speed and wind direction since the previously submitted data set had contained substituted values based on the 76-m wind speed and wind direction data. There are also 118 additional missing values of stability class in the updated ARCON96 hourly data set since the previously submitted data set had substituted values. The updated ARCON96 data set still exceeds the "90 percent data recovery" guidance identified in RG 1.23, Revision 1, for the 2007-2011 data period.

NRC ARCB-RAI-2f

update (if necessary) the UFSAR and LAR 15-03 discussions.

PG&E Response

Attachment 1 of this response provides Revision 2 of the Diablo Canyon Power Plant Technical Assessment Prepared by WECTEC (previously CB&I Stone and Webster, Inc.), "Implementation of Alternative Source Terms, Summary of Dose Analyses and Results." This updated report provides the revised off-site X/Q values that support LAR 15-03.

Attachment 2 of this response provides the affected tables of the previously submitted UFSAR markup to address the change in the off-site X/Q values.

Summarized in Table 3-1 are the results of the assessment of the effect of the updated X/Q values on the currently reported off-site dose consequences in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6).

PG&E concluded that the use of the updated X/Q values do not adversely impact the dose consequences reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the EAB and LPZ.

Based on the above:

- Upon AST implementation the updated X/Q values reported herein will become DCPP licensing basis.
- The dose consequences reported in LAR 15-03 are considered conservative and bounding and will remain unchanged.

NRC ARCB-RAI-3

In marked contrast to the typical daily variation in atmospheric stability class, the NRC staff has identified quite a few extended, and for the most part unbroken except for a few hours, time periods when moderately or extremely stable atmospheric conditions (i.e., F or G Pasquill-Gifford stability classes) persisted with very little or no variation. This includes two separate occasions that lasted the better part of five (5) consecutive days with a total of only 12 and 6 hours scattered over those entire time intervals not being designated as F or G stability. To the extent that the licensee believes that any of the time periods identified by the staff are valid (or other similar persistence periods in the RG 1.23 formatted Met data files), the licensee should:

NRC ARCB-RAI-3a

provide technical and climatological justification of these frequencies and durations to establish the validity of these portions of the basic Met data sets;

PG&E Response

The apparent unusual persistence of stable atmospheric conditions is a direct result of the marine environment climate where the DCPP primary and backup Met towers are sited, in combination with a high frequency of onshore afternoon sea breeze winds. The Figure below shows the proximity of the primary and backup Met towers to the Pacific Ocean, which, due to upwelling, is cold throughout the year.

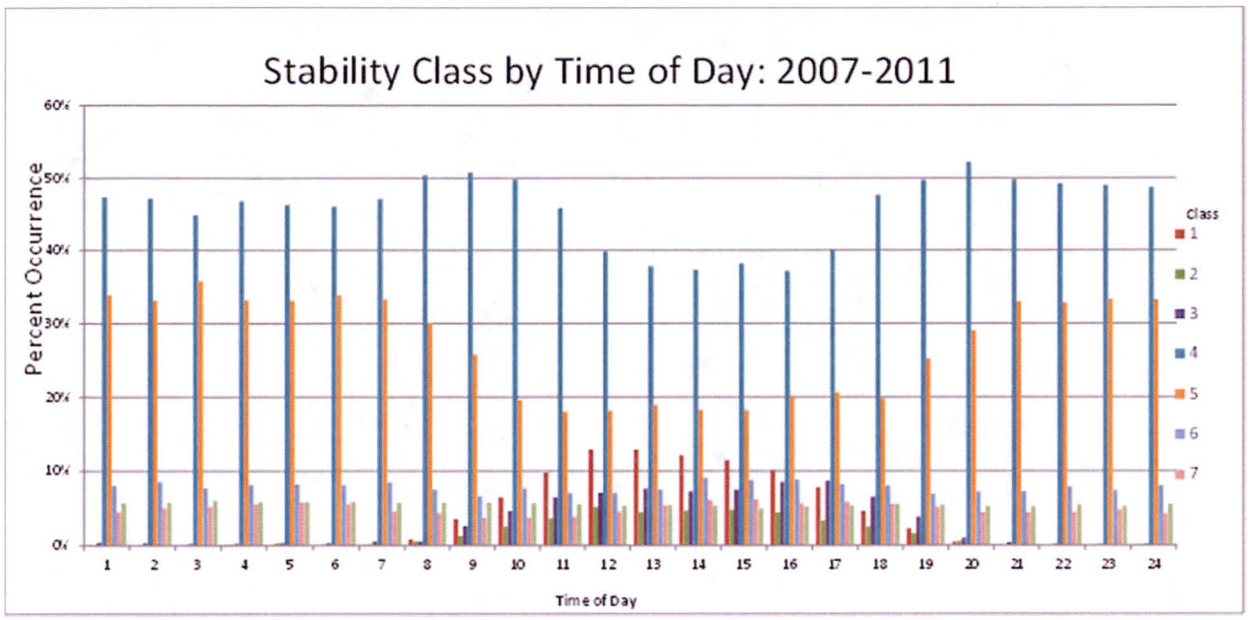
Item Labels: Main Power Plant (Red Polygon), Primary Tower (Blue Marker), Back-up Tower (Green Marker)

In this marine environment, the mean 10-m above ground level (AGL) temperature is generally within a narrow range of 54°F - 59°F throughout the year as a result of the persistence of moderate to strong afternoon onshore northwest winds from the cold Pacific Ocean. Table RAI-3a-1 presents annual wind frequencies for 2007-2011, showing the high frequency of West Northwest and Northwest winds at DCPP. When the fetch is from the Northwest, West Northwest, West, West Southwest, Southwest and South Southwest, winds are always blowing inland from a cold ocean surface, with water temperatures generally 50°F - 60°F, to the primary and backup Met tower locations.

Direction	2007	2008	2009	2010	2011	Average
N	2.9	3.4	2.6	2.9	3.3	3.0
NNE	2.9	2.7	2.5	2.3	2.9	2.7
NE	3.6	2.8	3.2	3.5	3.5	3.3
ENE	3.0	2.9	2.4	2.3	2.5	2.6
E	2.0	2.2	1.8	1.9	2.2	2.0
ESE	3.2	4.1	4.2	5.3	5.1	4.4
SE	7.9	8.9	8.7	9.7	9.0	8.8
SSE	6.6	5.5	6.8	7.4	5.7	6.4
S	2.7	2.3	3.2	2.8	2.4	2.7
SSW	1.7	1.9	1.8	1.6	1.4	1.7
SW	1.5	1.4	1.7	1.4	1.2	1.4
WSW	1.2	1.4	1.7	1.2	1.4	1.4
W	2.0	2.6	2.5	2.0	2.3	2.3
WNW	11.8	20.1	14.9	13.0	15.5	15.1
NW	38.3	30.3	35.3	35.3	34.8	34.8
NNW	8.7	7.4	6.8	7.5	6.8	7.4
Total	100	100	100	100	100	100

Table RAI-3a-1

This very high persistence of the onshore winds (wind from the cold Pacific Ocean) significantly modifies the effects of surface heating during the day and generates a much higher frequency of stable or neutral conditions during the time of maximum solar heating (i.e., 10 AM – 4 PM) than what occurs at locations farther inland with little to no marine influence. Furthermore, the presence and persistence of summertime coastal low-lying stratus clouds further inhibit surface warming and add to the decrease in the frequency of unstable conditions. Figure RAI-3a-2, based on 2007-2011 RG 1.23 stability class data derived from vertical temperature differences, shows that neutral and slightly stable stability classes are the most frequent due to persistent onshore winds and coastal stratus clouds, but also that unstable conditions (stability classes A, B, and C) increase during the diurnal cycle and occur with a frequency near 20 – 25 percent during the afternoon hours (12 PM – 4 PM).



Note: Stability Class 1 = Class A, Class 2 = Class B, Class 3 = Class C, Class 4 = Class D, Class 5 = Class E, Class 6 = Class F, Class 7 = Class G

Figure RAI-3a-2

The 2007-2011 analysis, shown on Figure RAI-3a-3, correlates well with a 1986-2010 stability by Delta T data analysis performed by PG&E meteorologists Clifford and McCarthy shown in Figures RAI-3a-4, RAI-3a-5, and RAI-3a-6. Averaging the data between 1986 and 2010 indicates that 45 percent of the data are Stability Class D (neutral), while 30 percent of the data are Class E (slightly stable). This average of the data between 1986 and 2010 is consistent with the data shown on Figure 3a-3, for years 2007-2011 where approximately 45 percent of the data were Stability Class D and approximately 27 percent of the data were stability Class E. Additionally, Stability Class A, B, and C (very unstable, moderately unstable, and slightly unstable, respectively) each remained below 5 percent, while Stability Class F and G (moderately stable and very stable, respectively) remained below 10 percent throughout the 1986-2010 time period.

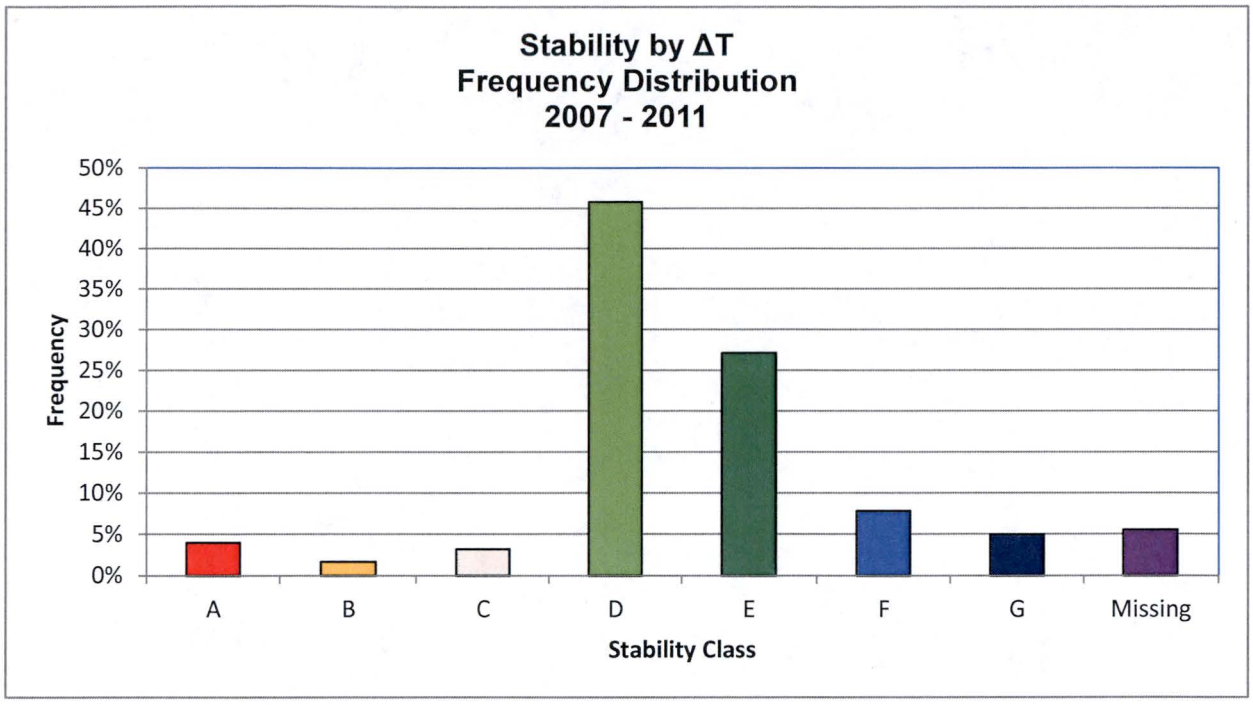


Figure RAI-3a-3

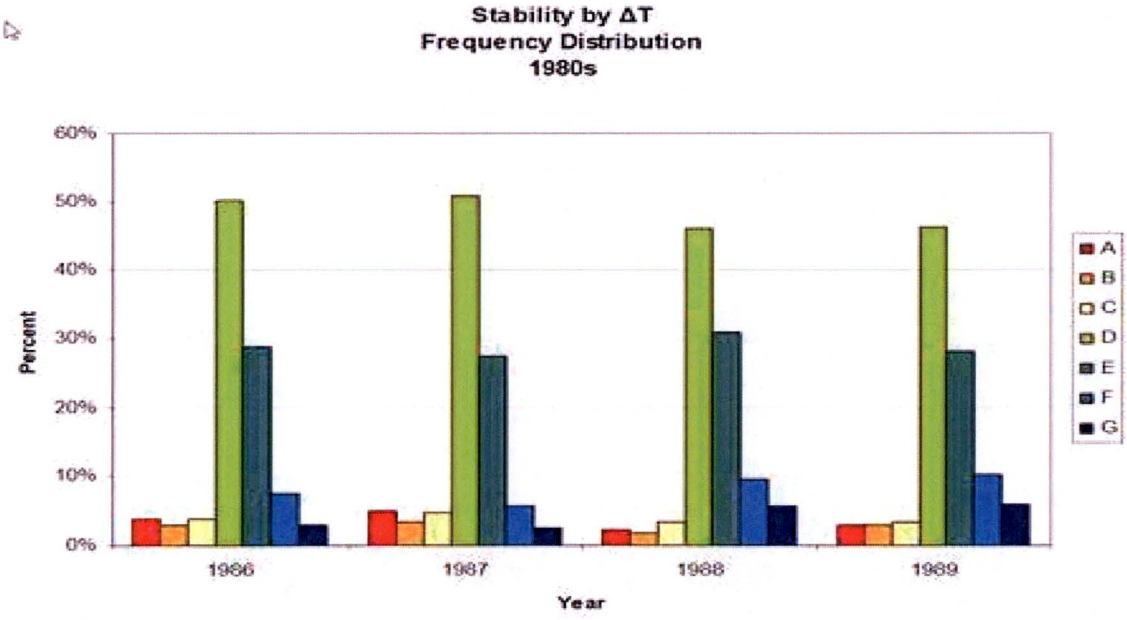


Figure RAI-3a-4

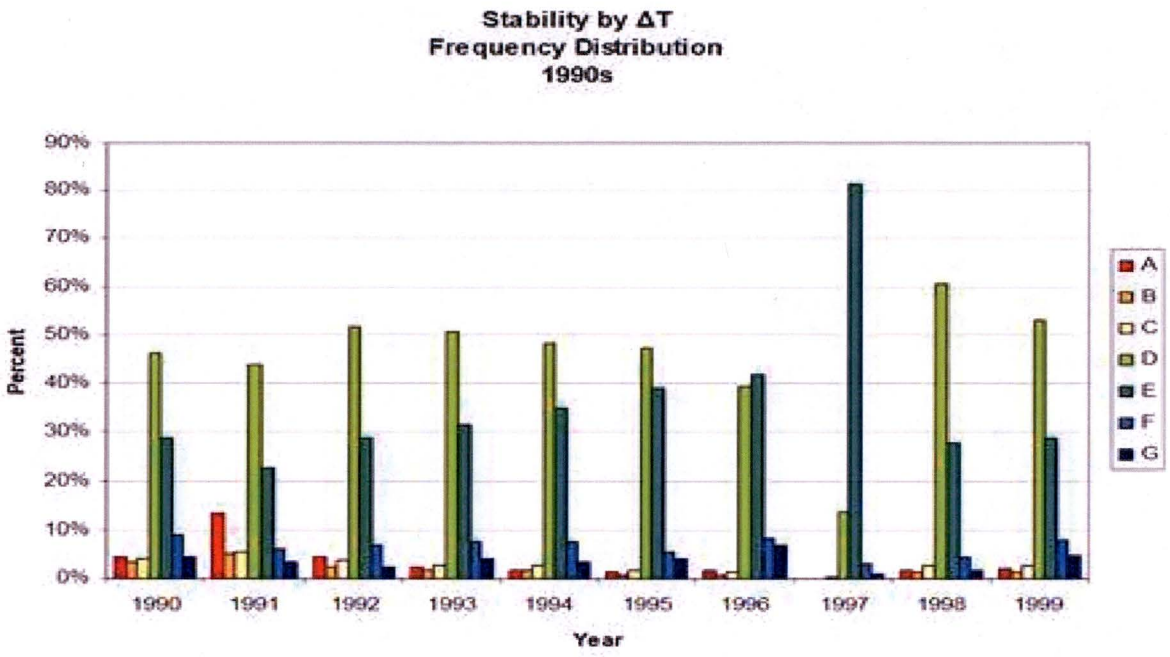


Figure RAI-3a-5

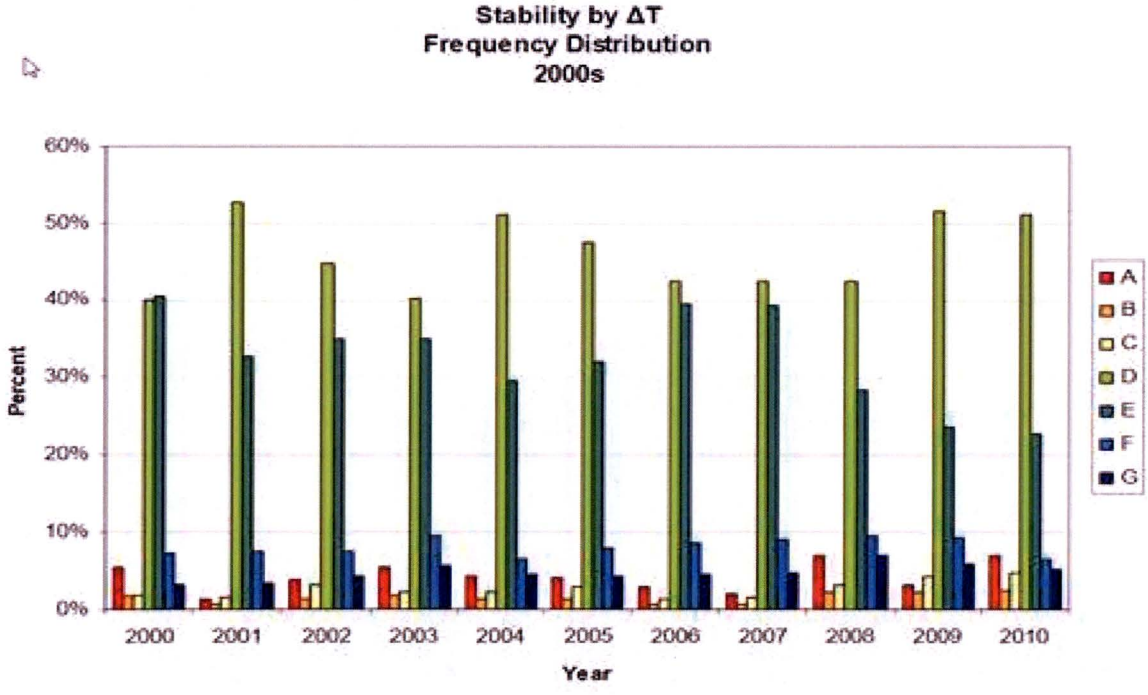


Figure RAI-3a-6

NRC ARCB-RAI-3b

confirm, reconcile, and document any additional related discrepancies and changes to the RG 1.23-formatted Met data sets;

PG&E Response

The response to RAI-3a explains the apparent unusual persistence of stable atmospheric conditions, which is a reflection of the marine climate at DCPP, and is not a discrepancy. Accordingly, no changes to data sets are warranted.

NRC ARCB-RAI-3c

incorporate any related corrections to the Met data input to the ARCON96 and EN 113 dispersion modeling analyses and revised (if necessary) model runs;

PG&E Response

As described in the response to RAI-3a, no corrections are required.

NRC ARCB-RAI-3d

update (if necessary) any previously submitted data recovery statistics or summaries of time periods during which data substitution was stated to have occurred; and

PG&E Response

The previously submitted data recovery statistics of the time periods during which data substitution was stated to have occurred are bounded by the updated RG 1.23-formatted data. Therefore, the data submitted do not need to be updated.

As noted in the RAI-1d and RAI-2c responses, the updated ARCON96 hourly data set has 280 additional missing values of 10-m wind speed and wind direction since the previously submitted data set had contained substituted values based on the 76-m wind speed and wind direction data. There are also 118 additional missing values of stability class in the updated ARCON96 hourly data set since the previously submitted data set had substituted values. The updated ARCON96 data set still exceeds the "90 percent data recovery" guidance identified in RG 1.23, Revision 1, for the 2007-2011 data period.

NRC ARCB-RAI-3e

update (if necessary) the UFSAR and LAR 15-03 discussions.

PG&E Response

As described in the response to RAI-3a, no updates are required.

NRC ARCB-RAI-4

As indicated previously, the NRC staff is continuing to evaluate the appropriateness of determining atmospheric stability class based on the DELT1 measurements monitored on the primary Met tower (i.e., the vertical temperature differences between the 46- and 10-m measurement levels), when appropriate, in lieu of the DELT3 measurements between 76 and 10 m as used in the current licensing basis. To facilitate the staff's review, the licensee should address the following technical issues:

NRC ARCB-RAI-4a

> *All 116 accident scenarios evaluated by the licensee with the ARCON96 dispersion model to estimate onsite impacts at the CR and TSC air intakes have been assumed to be ground-level releases consistent with the guidance in Regulatory Positions C.3.2.1 and C.3.2.2 of RG 1.194. Of these, only 14 (or about 12%) have been assigned a release height of 74.1 m. The remainder of the modeled release heights and all of the receptor (intake) elevations are well within the vertical layer covered by the DELT1 temperature difference measurements. Under the ground-level release assumption, ARCON96 does not consider release velocity and all effluent vertical velocities appear to have been assigned a value of zero (0.00 m/sec). The ARCON96 model does not calculate plume rise due to "buoyancy or mechanical jet effects." However, the NRC staff understands that the LAR submittal indicates accident releases from the main steam safety valves and the 10% atmospheric dump valves would have significant vertical velocities. Of the remaining onsite accident release scenarios, confirm whether which (if any) of these would be subject to significant buoyancy and/or mechanical plume rise effects during part or all of the accident release duration.*

PG&E Response

Aside from the Main Steam Safety Valves (MSSVs) and the 10 percent Atmospheric Dump Valves (ADVs), no other onsite post-accident environmental release points (or accident release scenarios) would be subject to significant buoyancy or mechanical plume rise effects during part or all of the accident release duration.

NRC ARCB-RAI-4b

> *Provide any additional documentation (including NRC staff interactions and correspondence) regarding the specification and rationale for measuring the vertical temperature difference between 46 and 10 m and the intended application(s) of those data.*

PG&E Response

The vertical temperature difference between 46-m and 10-m from the primary Met tower is available on the Emergency Assessment and Response System (EARS) and the plant process computer (PPC) for both units. The Met tower temperature instrumentation is discussed in numerous documents as being available, but the vertical

temperature difference between 46-m and 10-m from the Met tower is not described as being utilized to perform any dose analysis functions.

Additional documentation regarding the specification and rationale for measuring the vertical temperature difference between 46-m and 10-m and the intended application(s) of those data is provided below.

- The UFSAR includes in Section 2.3, "Meteorology," analysis of historical vertical temperature difference data between 76-m and 10-m collected in the late 1960s and early 1970s. Temperature instrumentation at the 46-m location is mentioned in UFSAR Section 2.3 as being installed but no use for the data is identified.

- Equipment Control Guideline (ECG) 40.0, "Meteorological Monitoring," identifies Met tower instrumentation that is required to be available at all times to ensure the capability to provide Met data to evaluate need for initiating protective measures to protect the health and safety of the public. The Met data available are consistent with the recommendations of Safety Guide 23, "Onsite Meteorological Programs," February 1972 (which is the initial version of RG 1.23). The 10-m – 46-m differential air temperature instrumentation is included in Table 40.1-1, which lists Met tower instrumentation along with the 10-m – 76-m differential temperature indication. The Bases section of the ECG states that "differential air temperature is used to derive the vertical wind stability input for radiological release dose assessment." The ECG Bases section does not specifically state which of the two differential temperature indications are used for dose assessment. For additional explanation on which set of instrumentation is used to determine the vertical wind stability class, refer to the response to RAI-4c.

- In a letter to the NRC dated January 13, 1981 (prior to plant operations), PG&E provided additional information in response to a request from the NRC on the DCPP Site Emergency Plan. The information included a description of the emergency facilities and equipment. Included in the description of the emergency equipment is the 46-m temperature instrumentation, but no description of its use is included in the letter.

- In a letter dated August 14, 1985, the NRC provided the results of an inspection of the DCPP Emergency Response Facilities. Described in this inspection report are the Met data available at the TSC, which include the "vertical temperature difference data between 10 and 46 meter levels and between 10 and 76 meter levels." No use for the Met data is provided in the inspection report.

- As part of PG&E's ongoing license renewal effort, the NRC RAI dated July 6, 2010, requested PG&E to *"justify that the meteorological data used in the [Severe Accident Mitigation Alternative] SAMA analysis (collected at 10 meters) are high quality data representative of the Diablo Canyon site and are not adversely affected by the siting of the meteorological tower."* PG&E responded to the RAI in Letter DCL-10-082, "Response to NRC Letter dated July 6, 2010,

Request for Additional Information for the Applicant's Environmental Report - Operating License Renewal Stage," dated August 2, 2010. To evaluate the siting of the primary Met tower, PG&E examined Met data from before and after the addition of the Simulator Building including wind rose plots at DCPP and vertical temperature differences. PG&E stated that vertical temperature data are calculated between the 10-m level and the 76-m level and the 10-m and 46-m level of the primary Met tower. The analysis of the impact of the Simulator Building included in this PG&E letter only used the 10-m – 76-m historical vertical temperature differential data (did not use 10-m – 46-m data).

In conclusion, the additional documentation regarding the specification and rationale for measuring the vertical temperature difference between 46-m and 10-m does not specify an application for the data other than it be available.

NRC ARCB-RAI-4c

Confirm whether vertical temperature differences between the 46- and 10-m measurement levels (i.e., DELT1) on the primary Met tower are relied on (even as a back-up source of information) by DCPP for characterizing atmospheric stability for purposes of emergency preparedness and planning. If so, explain the situation(s) under which this information would be used.

PG&E Response

The vertical temperature differences between the 46-m and 10-m measurement levels on the primary Met tower is not relied on (even as a backup source of information) for any aspect of performing accident dose assessment calculations at DCPP.

The EARS obtains the 46-m (as well as the 10-m and 76-m) temperature in degrees Celsius (°C) from the primary Met tower computer and forwards the value to the EARS and PPC servers. This 46-m temperature value is displayed on the Unit 1 and Unit 2 PPCs on the meteorology page and is also displayed on the Plant Data Network Server web application.

The vertical stability class is calculated by the primary tower meteorology computer based on 10-m and 76-m temperature delta-T; the horizontal stability class is based on the sigma theta value of wind direction on the 10-m and 76-m anemometers. The calculation does not use the 46-m temperature data for vertical stability class determination.

The vertical stability class is calculated by the backup tower meteorology computer based on 10-m and 60-m temperature delta-T; the horizontal stability class is based on sigma theta of wind direction on the 10-m and 60-m anemometers. The backup tower does not have an intermediate elevation temperature sensor.

The Meteorological Information and Dose Assessment System (MIDAS) emergency response dose assessment software program obtains primary Met tower and backup

Met tower input data in automatic mode. These MIDAS program data points include the actual vertical and horizontal stability class; they do not include tower temperature data.

DCPP's manual dose assessment dispersion calculation procedure provides instructions for determining the vertical stability class based on RG 1.23, Revision 1, Section 2.2, "Table 1 Classification of Atmospheric Stability." The procedure includes three tables; one with °C/100-m, one adjusted for degrees °C/66-m (for the 76-m primary Met tower), and one adjusted for degrees °C/50-m (for the 60-m backup Met tower). The procedure does not use the primary tower 46-m temperatures for calculating vertical stability.

In all of the above instances, the primary Met tower 46-m temperature is not used in any capacity for performing accident dose assessment calculations or emergency response consequence assessment calculations at DCPP.

References:

1. PG&E Letter DCL-15-069, "License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated June 17, 2015 (ADAMS Accession No. ML15176A539)

2. PG&E Letter DCL-15-105, "Supplement to License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated August 31, 2015 (ADAMS Accession No. ML15243A363)

3. E-mail from NRC Project Manager Siva P. Lingam, "Diablo Canyon 1 and 2-Requests for Additional Information for License Amendment Request 15-03 to Adopt the Alternative Source Term per 10 CFR 50.67 (TAC Nos. MF6399 and MF6400)," dated October 1, 2015 (ADAMS Accession No. ML15278A049)

4. PG&E Letter DCL-15-130, "Response to NRC Request for Additional Information Regarding License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated November 2, 2015 (ADAMS Accession No. ML15321A235)

5. E-mail from NRC Project Manager Siva P. Lingam, "Diablo Canyon 1 and 2 - Met Data Second Round of Requests for Additional Information for License Amendment Request 15-03 to Adopt the Alternative Source Term per 10 CFR 50.67 (TAC Nos. MF6399 and MF640," dated February 17, 2016 (ADAMS Accession No. ML16048A232)

6. PG&E Letter DCL-15-152, "Response to NRC Request for Additional Information Regarding License Amendment Request 15-03, 'Application of Alternative Source Term,'" dated December 17, 2015 (ADAMS Accession Numbers ML16004A354, ML16004A355, ML16004A356, ML16004A357, ML16004A359, and ML16004A361)

TABLE 1-1[5]
DCPP Unit 1 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 1 Containment Edge to Unit 1 Control Room (CR) Normal Intake	1.28E-03	7.12E-04	2.87E-04	2.90E-04	2.84E-04
RG 1.23 Met Data	1.44E-03	7.03E-04	3.00E-04	3.06E-04	3.04E-04
Percent Change	***12.5***	-1.3	***4.5***	***5.5***	***7.0***
Unit 1 Containment Edge to Unit 2 CR Normal Intake	6.52E-04	3.51E-04	1.51E-04	1.49E-04	1.37E-04
RG 1.23 Met Data	6.41E-04	3.51E-04	1.49E-04	1.49E-04	1.36E-04
Percent Change	-1.7	0.0	-1.3	0.0	-0.7
Unit 1 Containment Edge to Unit 1 CR Emergency Intake[4]	4.11E-04	2.30E-04	9.62E-05	8.69E-05	7.03E-05
RG 1.23 Met Data	4.09E-04	2.31E-04	9.54E-05	8.61E-05	7.04E-05
Percent Change	-0.5	***0.4***	-0.8	-0.9	***0.1***
Unit 1 Containment Edge to Unit 2 CR Emergency Intake[4]	1.67E-04	7.95E-05	2.63E-05	2.81E-05	2.34E-05
RG 1.23 Met Data	1.57E-04	7.82E-05	2.57E-05	2.71E-05	2.32E-05
Percent Change	-6.0	-1.6	-2.3	-3.6	-0.9
Unit 1 Containment Edge to CR Center	8.85E-04	4.43E-04	1.75E-04	1.77E-04	1.65E-04
RG 1.23 Met Data	9.21E-04	4.38E-04	1.77E-04	1.80E-04	1.67E-04
Percent Change	***4.1***	-1.1	***1.1***	***1.7***	***1.2***
Unit 1 Plant Vent to Unit 1 CR Normal Intake	1.67E-03	1.22E-03	4.90E-04	4.90E-04	4.44E-04
RG 1.23 Met Data	1.67E-03	1.22E-03	4.93E-04	4.89E-04	4.36E-04
Percent Change	0.0	0.0	***0.6***	-0.2	-1.8
Unit 1 Plant Vent to Unit 2 CR Normal Intake	9.10E-04	6.57E-04	2.68E-04	2.62E-04	2.45E-04
RG 1.23 Met Data	9.08E-04	6.53E-04	2.69E-04	2.62E-04	2.38E-04
Percent Change	-0.2	-0.6	***0.4***	0.0	-2.9
Unit 1 Plant Vent to Unit 1 CR Emergency Intake[4]	5.59E-04	3.38E-04	1.32E-04	1.12E-04	8.38E-05
RG 1.23 Met Data	5.56E-04	3.33E-04	1.29E-04	1.11E-04	8.34E-05
Percent Change	-0.5	-1.5	-2.3	-0.9	-0.5

TABLE 1-1[5]
DCPP Unit 1 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 1 Plant Vent to Unit 2 CR Emergency Intake[4]	2.26E-04	1.48E-04	5.40E-05	5.47E-05	4.45E-05
RG 1.23 Met Data	2.22E-04	1.47E-04	5.44E-05	5.52E-05	4.45E-05
Percent Change	-1.8	-0.7	***0.7***	***0.9***	0.0
Unit 1 Plant Vent to CR Center	1.26E-03	8.96E-04	3.44E-04	3.44E-04	2.99E-04
RG 1.23 Met Data	1.25E-03	8.93E-04	3.47E-04	3.46E-04	2.98E-04
Percent Change	-0.8	-0.3	***0.9***	***0.6***	-0.3
Unit 1 Containment Penetration (GE Area) to Unit 1 CR Normal Intake	6.84E-03	3.08E-03	1.21E-03	1.12E-03	8.75E-04
RG 1.23 Met Data	6.59E-03	2.81E-03	1.16E-03	1.07E-03	8.31E-04
Percent Change	-3.7	-8.8	-4.1	-4.5	-5.0
Unit 1 Containment Penetration (GE Area) to Unit 2 CR Normal Intake	2.24E-03	1.15E-03	3.98E-04	3.89E-04	3.20E-04
RG 1.23 Met Data	2.07E-03	1.13E-03	3.73E-04	3.78E-04	3.05E-04
Percent Change	-7.6	-1.7	-6.3	-2.8	-4.7
Unit 1 Containment Penetration (GE Area) to Unit 1 CR Emergency Intake[4]	3.75E-04	2.33E-04	9.12E-05	8.45E-05	6.62E-05
RG 1.23 Met Data	3.67E-04	2.31E-04	9.02E-05	8.38E-05	6.42E-05
Percent Change	-2.1	-0.9	-1.1	-0.8	-3.0
Unit 1 Containment Penetration (GE Area) to Unit 2 CR Emergency Intake[4]	2.55E-04	1.25E-04	4.42E-05	4.38E-05	3.55E-05
RG 1.23 Met Data	2.39E-04	1.20E-04	4.27E-05	4.22E-05	3.39E-05
Percent Change	-6.3	-4.0	-3.4	-3.7	-4.5
Unit 1 Containment Penetration (GE Area) to CR Center	3.22E-03	1.42E-03	5.54E-04	5.20E-04	4.21E-04
RG 1.23 Met Data	3.01E-03	1.33E-03	5.43E-04	4.93E-04	4.01E-04
Percent Change	-6.5	-6.3	-2.0	-5.2	-4.8
Unit 1 Containment Penetration (GW/FW Area) to Unit 1 CR Normal Intake	4.90E-03	3.45E-03	1.37E-03	1.37E-03	1.28E-03
RG 1.23 Met Data	4.86E-03	3.43E-03	1.35E-03	1.37E-03	1.25E-03
Percent Change	-0.8	-0.6	-1.5	0.0	-2.3

TABLE 1-1[5]
DCPP Unit 1 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 1 Containment Penetration (GW/FW Area) to Unit 2 CR Normal Intake	1.38E-03	9.83E-04	3.92E-04	3.88E-04	3.65E-04
RG 1.23 Met Data	1.35E-03	9.79E-04	3.86E-04	3.84E-04	3.46E-04
Percent Change	-2.2	-0.4	-1.5	-1.0	-5.2
Unit 1 Containment Penetration (GW/FW Area) to Unit 1 CR Emergency Intake[4]	8.20E-04	5.40E-04	2.15E-04	1.87E-04	1.43E-04
RG 1.23 Met Data	8.05E-04	5.32E-04	2.12E-04	1.86E-04	1.40E-04
Percent Change	-1.8	-1.5	-1.4	-0.5	-2.1
Unit 1 Containment Penetration (GW/FW Area) to Unit 2 CR Emergency Intake[4]	2.58E-04	1.54E-04	4.95E-05	5.26E-05	4.48E-05
RG 1.23 Met Data	2.40E-04	1.53E-04	4.83E-05	5.20E-05	4.41E-05
Percent Change	-7.0	-0.6	-2.4	-1.1	-1.6
Unit 1 Containment Penetration (GW/FW Area) to CR Center	2.59E-03	1.81E-03	7.29E-04	7.15E-04	6.64E-04
RG 1.23 Met Data	2.55E-03	1.80E-03	7.17E-04	7.13E-04	6.50E-04
Percent Change	-1.5	-0.6	-1.6	-0.3	-2.1
Unit 1 Refueling Water Storage Tank (RWST) Vent to Unit 1 CR Emergency Intake[4]	3.27E-04	1.90E-04	7.13E-05	6.99E-05	5.76E-05
RG 1.23 Met Data	3.24E-04	1.83E-04	6.94E-05	6.82E-05	5.57E-05
Percent Change	-0.9	-3.7	-2.7	-2.4	-3.3
Unit 1 RWST Vent to Unit 2 CR Emergency Intake[4]	2.10E-04	9.83E-05	3.73E-05	3.53E-05	2.86E-05
RG 1.23 Met Data	1.88E-04	9.18E-05	3.40E-05	3.28E-05	2.69E-05
Percent Change	-10.5	-6.6	-8.8	-7.1	-5.9
Unit 1 RWST Vent to CR Center	1.07E-03	4.86E-04	1.99E-04	1.75E-04	1.43E-04
RG 1.23 Met Data	1.01E-03	4.26E-04	1.85E-04	1.62E-04	1.31E-04
Percent Change	-5.6	-12.3	-7.0	-7.4	-8.4

TABLE 1-1[5]
DCPP Unit 1 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 1 MSSVs to Unit 1 CR Normal Intake[1, 2]	N/A	N/A	N/A	N/A	N/A
Unit 1 MSSVs to Unit 2 CR Normal Intake[3]	4.29E-03	2.76E-03	1.04E-03	1.06E-03	9.46E-04
RG 1.23 Met Data	4.05E-03	2.65E-03	1.02E-03	1.02E-03	8.95E-04
Percent Change	-5.6	-4.0	-1.9	-3.8	-5.4
Unit 1 MSSVs to Unit 1 CR Emergency Intake[3, 4]	4.66E-04	2.92E-04	1.16E-04	1.04E-04	8.08E-05
RG 1.23 Met Data	4.52E-04	2.86E-04	1.14E-04	1.01E-04	7.82E-05
Percent Change	-3.0	-2.1	-1.7	-2.9	-3.2
Unit 1 MSSVs to Unit 2 CR Emergency Intake[3, 4]	3.14E-04	1.53E-04	5.12E-05	5.29E-05	4.38E-05
RG 1.23 Met Data	2.75E-04	1.49E-04	4.79E-05	5.02E-05	4.14E-05
Percent Change	-12.4	-2.6	-6.4	-5.1	-5.5
Unit 1 MSSVs to CR Center[3]	1.39E-02	7.40E-03	2.38E-03	2.56E-03	2.15E-03
RG 1.23 Met Data	1.23E-02	7.28E-03	2.21E-03	2.43E-03	2.06E-03
Percent Change	-11.5	-1.6	-7.1	-5.1	-4.2
Unit 1 10 Percent ADVs to Unit 1 CR Normal Intake[1, 2]	N/A	N/A	N/A	N/A	N/A
Unit 1 10 Percent ADVs to Unit 2 CR Normal Intake[3]	4.30E-03	2.79E-03	1.05E-03	1.06E-03	9.49E-04
RG 1.23 Met Data	4.06E-03	2.66E-03	1.03E-03	1.02E-03	9.03E-04
Percent Change	-5.6	-4.7	-1.9	-3.8	-4.8
Unit 1 10 Percent ADVs to Unit 1 CR Emergency Intake[3, 4]	4.66E-04	2.92E-04	1.16E-04	1.04E-04	8.07E-05
RG 1.23 Met Data	4.52E-04	2.86E-04	1.14E-04	1.01E-04	7.82E-05
Percent Change	-3.0	-2.1	-1.7	-2.9	-3.2
Unit 1 10 Percent ADVs to Unit 2 CR Emergency Intake[3, 4]	3.13E-04	1.54E-04	5.13E-05	5.30E-05	4.39E-05
RG 1.23 Met Data	2.75E-04	1.50E-04	4.82E-05	5.03E-05	4.15E-05
Percent Change	-12.1	-2.6	-6.0	-5.1	-5.5

TABLE 1-1[5]
DCPP Unit 1 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor		0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 1 10 Percent ADVs to CR Center[3]		1.39E-02	7.45E-03	2.39E-03	2.59E-03	2.15E-03
RG 1.23 Met Data		1.23E-02	7.34E-03	2.22E-03	2.45E-03	2.08E-03
Percent Change		-11.5	-1.5	-7.1	-5.4	-3.3
Unit 1 MSLB Location to Unit 1 CR Normal Intake[1]		N/A	N/A	N/A	N/A	N/A
Unit 1 MSLB Location to Unit 2 CR Normal Intake		4.23E-03	2.90E-03	1.13E-03	1.11E-03	1.02E-03
RG 1.23 Met Data		4.07E-03	2.86E-03	1.11E-03	1.10E-03	9.70E-04
Percent Change		-3.8	-1.4	-1.8	-0.9	-4.9
Unit 1 MSLB Location to Unit 1 CR Emergency Intake[4]		4.35E-04	2.94E-04	1.15E-04	1.01E-04	7.76E-05
RG 1.23 Met Data		4.30E-04	2.89E-04	1.14E-04	1.00E-04	7.63E-05
Percent Change		-1.1	-1.7	-0.9	-1.0	-1.7
Unit 1 MSLB Location to Unit 2 CR Emergency Intake[4]		3.06E-04	1.54E-04	5.19E-05	5.32E-05	4.38E-05
RG 1.23 Met Data		2.74E-04	1.54E-04	4.98E-05	5.12E-05	4.20E-05
Percent Change		-10.5	0.0	-4.0	-3.8	-4.1
Unit 1 MSLB Location to CR Center		1.24E-02	7.10E-03	2.24E-03	2.43E-03	2.07E-03
RG 1.23 Met Data		1.14E-02	7.05E-03	2.19E-03	2.37E-03	1.98E-03
Percent Change		-8.1	-0.7	-2.2	-2.5	-4.3
Unit 1 Fuel Handling Building (FHB) to Unit 1 CR Normal Intake		6.98E-03	-	-	-	-
RG 1.23 Met Data		6.68E-03	-	-	-	-
Percent Change		-4.3				
Unit 1 FHB to Unit 2 CR Normal Intake		2.93E-03	-	-	-	-
RG 1.23 Met Data		2.69E-03	-	-	-	-
Percent Change		-8.2				
Unit 1 FHB to Unit 1 CR Emergency Intake[4]		3.31E-04	-	-	-	-
RG 1.23 Met Data		3.28E-04	-	-	-	-
Percent Change		-0.9				

TABLE 1-1[5]
DCPP Unit 1 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor		0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 1 FHB to Unit 2 CR Emergency Intake[4]		2.56E-04	-	-	-	-
RG 1.23 Met Data		2.39E-04	-	-	-	-
Percent Change		-6.6				
Unit 1 FHB to CR Center		3.78E-03	-	-	-	-
RG 1.23 Met Data		3.54E-03	-	-	-	-
Percent Change		-6.3				
Unit 1 Equipment Hatch to Unit 1 CR Normal Intake		2.61E-02	-	-	-	-
RG 1.23 Met Data		2.43E-02	-	-	-	-
Percent Change		-6.9				
Unit 1 Equipment Hatch to Unit 2 CR Normal Intake		2.88E-03	-	-	-	-
RG 1.23 Met Data		2.67E-03	-	-	-	-
Percent Change		-7.3				
Unit 1 Equipment Hatch to Unit 1 CR Emergency Intake[4]		4.36E-04	-	-	-	-
RG 1.23 Met Data		4.32E-04	-	-	-	-
Percent Change		-0.9				
Unit 1 Equipment Hatch to Unit 2 CR Emergency Intake[4]		2.64E-04	-	-	-	-
RG 1.23 Met Data		2.45E-04	-	-	-	-
Percent Change		-7.2				
Unit 1 Equipment Hatch to CR Center		5.51E-03	-	-	-	-
RG 1.23 Met Data		5.06E-03	-	-	-	-
Percent Change		-8.2				

Notes:

1. ARCON96-based X/Q values are not applicable for these cases given that the horizontal distance from the source to the receptor is 1.5-m (which is much less than the 10-m required by the ARCON96 methodology).

2. Due to the proximity of the release from the MSSVs and 10 Percent ADVs to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs and10 Percent ADVs, the resultant plume from the MSSVs and 10 Percent ADVs will not contaminate the normal operation CR intake of the affected unit.

3. For releases from the MSSVs and 10 percent ADVs (which are uncapped, vertically oriented, and have a high vertical velocity discharge for the first 10.73 hrs of the accident), a X/Q reduction factor of 5 is applicable to the values listed above. Since X/Q values are averaged over the identified period (i.e., 0-2 hrs, 2-8 hrs, 8-24 hrs, etc.), and the vertical velocity has been estimated only up to 10.73 hrs, application of the factor of 5 reduction is not appropriate for X/Q values applicable to averaging periods beyond the 2-8 hrs averaging period. For assessment of an environmental release between T=8 to T=10.73 hrs, continued use of the 2-8 hr X/Q (with the factor of 5 reduction) is acceptable and conservative.

4. The more favorable X/Q value presented above for the CR Pressurization intakes is further reduced by a factor of 4 to address the "dual intake" credit, the capability of initial selection of the cleaner intake, and the expectation that the operator will manually make the proper intake selection throughout the event.

5. X/Q values for RWST vent releases to the CR normal intakes are not needed for the dose calculations since the normal intakes are isolated prior to releases occurring from the RWST vent.

TABLE 1-2[5]
DCPP Unit 2 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 2 Containment Edge to Unit 2 CR Normal Intake	1.96E-03	9.42E-04	4.48E-04	3.98E-04	3.18E-04
RG 1.23 Met Data	1.99E-03	9.59E-04	4.60E-04	4.04E-04	3.20E-04
Percent Change	***1.5***	***1.8***	***2.7***	***1.5***	***0.6***
Unit 2 Containment Edge to Unit 1 CR Normal Intake	6.93E-04	3.84E-04	1.67E-04	1.42E-04	1.08E-04
RG 1.23 Met Data	6.89E-04	3.85E-04	1.66E-04	1.41E-04	1.08E-04
Percent Change	-0.6	***0.3***	-0.6	-0.7	0.0
Unit 2 Containment Edge to Unit 1 CR Emergency Intake[4]	1.70E-04	1.06E-04	4.23E-05	3.81E-05	2.95E-05
RG 1.23 Met Data	1.66E-04	1.05E-04	4.19E-05	3.73E-05	2.93E-05
Percent Change	-2.4	-0.9	-0.9	-2.1	-0.7
Unit 2 Containment Edge to Unit 2 CR Emergency Intake[4]	3.85E-04	1.47E-04	5.94E-05	5.84E-05	4.84E-05
RG 1.23 Met Data	3.78E-04	1.47E-04	5.99E-05	5.87E-05	4.90E-05
Percent Change	-1.8	0.0	***0.8***	***0.5***	***1.2***
Unit 2 Containment Edge to CR Center	1.08E-03	5.46E-04	2.47E-04	2.12E-04	1.68E-04
RG 1.23 Met Data	1.09E-03	5.49E-04	2.47E-04	2.12E-04	1.70E-04
Percent Change	***0.9***	***0.5***	0.0	0.0	***1.2***
Unit 2 Plant Vent to Unit 2 CR Normal Intake	1.51E-03	9.41E-04	3.86E-04	3.23E-04	2.23E-04
RG 1.23 Met Data	1.49E-03	9.29E-04	3.80E-04	3.16E-04	2.21E-04
Percent Change	-1.3	-1.3	-1.6	-2.2	-0.9
Unit 2 Plant Vent to Unit 1 CR Normal Intake	7.88E-04	4.86E-04	2.01E-04	1.69E-04	1.17E-04
RG 1.23 Met Data	7.79E-04	4.80E-04	1.98E-04	1.65E-04	1.15E-04
Percent Change	-1.1	-1.2	-1.5	-2.4	-1.7
Unit 2 Plant Vent to Unit 1 CR Emergency Intake[4]	2.03E-04	1.29E-04	5.13E-05	4.32E-05	3.19E-05
RG 1.23 Met Data	2.02E-04	1.27E-04	5.11E-05	4.20E-05	3.15E-05
Percent Change	-0.5	-1.6	-0.4	-2.8	-1.3

TABLE 1-2[5]
DCPP Unit 2 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 2 Plant Vent to Unit 2 CR Emergency Intake[4]	5.71E-04	2.96E-04	1.20E-04	1.04E-04	8.19E-05
RG 1.23 Met Data	5.61E-04	2.91E-04	1.16E-04	1.02E-04	8.03E-05
Percent Change	-1.8	-1.7	-3.3	-1.9	-2.0
Unit 2 Plant Vent to CR Center	1.13E-03	7.08E-04	2.85E-04	2.39E-04	1.70E-04
RG 1.23 Met Data	1.12E-03	6.99E-04	2.82E-04	2.34E-04	1.68E-04
Percent Change	-0.9	-1.3	-1.1	-2.1	-1.2
Unit 2 Containment Penetration (GE Area) to Unit 2 CR Normal Intake	6.71E-03	3.12E-03	1.21E-03	1.22E-03	1.02E-03
RG 1.23 Met Data	6.60E-03	3.01E-03	1.17E-03	1.20E-03	1.01E-03
Percent Change	-1.6	-3.5	-3.3	-1.6	-1.0
Unit 2 Containment Penetration (GE Area) to Unit 1 CR Normal Intake	2.14E-03	1.39E-03	5.72E-04	4.83E-04	3.62E-04
RG 1.23 Met Data	2.08E-03	1.38E-03	5.62E-04	4.76E-04	3.59E-04
Percent Change	-2.8	-0.7	-1.7	-1.4	-0.8
Unit 2 Containment Penetration (GE Area) to Unit 1 CR Emergency Intake[4]	2.28E-04	1.60E-04	6.25E-05	5.52E-05	4.21E-05
RG 1.23 Met Data	2.26E-04	1.57E-04	6.15E-05	5.47E-05	4.08E-05
Percent Change	-0.9	-1.9	-1.6	-0.9	-3.1
Unit 2 Containment Penetration (GE Area) to Unit 2 CR Emergency Intake[4]	3.97E-04	1.76E-04	6.93E-05	6.44E-05	5.27E-05
RG 1.23 Met Data	3.74E-04	1.67E-04	6.72E-05	6.14E-05	5.08E-05
Percent Change	-5.8	-5.1	-3.0	-4.7	-3.6
Unit 2 Containment Penetration (GE Area) to CR Center	3.16E-03	1.85E-03	7.17E-04	6.84E-04	5.43E-04
RG 1.23 Met Data	3.09E-03	1.83E-03	7.22E-04	6.74E-04	5.35E-04
Percent Change	-2.2	-1.1	***0.7***	-1.5	-1.5
Unit 2 Containment Penetration (GW/FW Area) to Unit 2 CR Normal Intake	3.55E-03	1.19E-03	4.82E-04	4.56E-04	3.03E-04
RG 1.23 Met Data	3.45E-03	1.14E-03	4.70E-04	4.42E-04	2.93E-04
Percent Change	-2.8	-4.2	-2.5	-3.1	-3.3

TABLE 1-2[5]
DCPP Unit 2 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 2 Containment Penetration (GW/FW Area) to Unit 1 CR Normal Intake	1.22E-03	6.26E-04	2.53E-04	2.12E-04	1.41E-04
RG 1.23 Met Data	1.20E-03	6.21E-04	2.49E-04	2.09E-04	1.41E-04
Percent Change	-1.6	-0.8	-1.6	-1.4	0.0
Unit 2 Containment Penetration (GW/FW Area) to Unit 1 CR Emergency Intake[4]	2.28E-04	1.62E-04	6.58E-05	5.43E-05	3.99E-05
RG 1.23 Met Data	2.26E-04	1.59E-04	6.50E-05	5.36E-05	3.96E-05
Percent Change	-0.9	-1.9	-1.2	-1.3	-0.8
Unit 2 Containment Penetration (GW/FW Area) to Unit 2 CR Emergency Intake[4]	8.64E-04	4.23E-04	1.50E-04	1.48E-04	1.20E-04
RG 1.23 Met Data	8.08E-04	4.07E-04	1.43E-04	1.42E-04	1.14E-04
Percent Change	-6.5	-3.8	-4.7	-4.1	-5.0
Unit 2 Containment Penetration (GW/FW Area) to CR Center	2.21E-03	1.17E-03	4.70E-04	3.90E-04	2.61E-04
RG 1.23 Met Data	2.19E-03	1.16E-03	4.56E-04	3.83E-04	2.58E-04
Percent Change	-0.9	-0.9	-3.0	-1.8	-1.1
Unit 2 RWST Vent to Unit 1 CR Emergency Intake[4]	1.91E-04	1.21E-04	4.58E-05	4.39E-05	3.53E-05
RG 1.23 Met Data	1.89E-04	1.17E-04	4.52E-05	4.30E-05	3.40E-05
Percent Change	-1.0	-3.3	-1.3	-2.1	-3.7
Unit 2 RWST Vent to Unit 2 CR Emergency Intake[4]	3.29E-04	1.61E-04	6.10E-05	5.53E-05	4.45E-05
RG 1.23 Met Data	3.17E-04	1.40E-04	5.64E-05	5.12E-05	4.16E-05
Percent Change	-3.6	-13.0	-7.5	-7.4	-6.5
Unit 2 RWST Vent to CR Center	1.07E-03	5.80E-04	2.18E-04	2.19E-04	1.79E-04
RG 1.23 Met Data	1.05E-03	5.55E-04	2.12E-04	2.12E-04	1.72E-04
Percent Change	-1.9	-4.3	-2.8	-3.2	-3.9

TABLE 1-2[5]
DCPP Unit 2 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Source and Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 2 MSSVs to Unit 1 CR Normal Intake[3]	3.87E-03	2.42E-03	9.89E-04	8.17E-04	6.09E-04
RG 1.23 Met Data	3.80E-03	2.36E-03	9.80E-04	8.00E-04	5.99E-04
Percent Change	-1.8	-2.5	-0.9	-2.1	-1.6
Unit 2 MSSVs to Unit 2 CR Normal Intake[1,2]	N/A	N/A	N/A	N/A	N/A
Unit 2 MSSVs to Unit 1 CR Emergency Intake[3,4]	2.89E-04	1.91E-04	7.45E-05	6.62E-05	5.08E-05
RG 1.23 Met Data	2.79E-04	1.87E-04	7.33E-05	6.50E-05	4.89E-05
Percent Change	-3.5	-2.1	-1.6	-1.8	-3.7
Unit 2 MSSVs to Unit 2 CR Emergency Intake[3,4]	4.90E-04	2.29E-04	8.24E-05	8.07E-05	6.49E-05
RG 1.23 Met Data	4.39E-04	2.14E-04	7.68E-05	7.54E-05	6.09E-05
Percent Change	-10.4	-6.6	-6.8	-6.6	-6.2
Unit 2 MSSVs to CR Center[3]	1.22E-02	8.10E-03	3.27E-03	2.76E-03	2.08E-03
RG 1.23 Met Data	1.19E-02	7.90E-03	3.22E-03	2.68E-03	2.05E-03
Percent Change	-2.5	-2.5	-1.5	-2.9	-1.4
Unit 2 10 Percent ADVs to Unit 1 CR Normal Intake[3]	3.88E-03	2.43E-03	9.94E-04	8.19E-04	6.10E-04
RG 1.23 Met Data	3.82E-03	2.36E-03	9.86E-04	8.01E-04	6.01E-04
Percent Change	-1.5	-2.9	-0.8	-2.2	-1.5
Unit 2 10 Percent ADVs to Unit 2 CR Normal Intake[1,2]	N/A	N/A	N/A	N/A	N/A
Unit 2 10 Percent ADVs to Unit 1 CR Emergency Intake[3,4]	2.87E-04	1.92E-04	7.48E-05	6.61E-05	5.07E-05
RG 1.23 Met Data	2.77E-04	1.88E-04	7.35E-05	6.49E-05	4.89E-05
Percent Change	-3.5	-2.1	-1.7	-1.8	-3.6
Unit 2 10 Percent ADVs to Unit 2 CR Emergency Intake[3,4]	4.90E-04	2.29E-04	8.24E-05	8.08E-05	6.48E-05
RG 1.23 Met Data	4.39E-04	2.14E-04	7.68E-05	7.54E-05	6.09E-05
Percent Change	-10.4	-6.6	-6.8	-6.6	-6.2

TABLE 1-2[5]
DCPP Unit 2 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Source and Receptor	0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 2 10 Percent ADVs to CR Center[3]	1.22E-02	8.16E-03	3.28E-03	2.78E-03	2.09E-03
RG 1.23 Met Data	1.19E-02	7.94E-03	3.23E-03	2.70E-03	2.05E-03
Percent Change	-2.5	-2.7	-1.5	-2.9	-1.9
Unit 2 MSLB Location to Unit 1 CR Normal Intake	3.81E-03	2.40E-03	1.01E-03	8.09E-04	5.88E-04
RG 1.23 Met Data	3.75E-03	2.37E-03	1.00E-03	7.93E-04	5.81E-04
Percent Change	-1.6	-1.2	-1.0	-2.0	-1.2
Unit 2 MSLB Location to Unit 2 CR Normal Intake[1]	N/A	N/A	N/A	N/A	N/A
Unit 2 MSLB Location to Unit 1 CR Emergency Intake[4]	2.75E-04	1.91E-04	7.45E-05	6.53E-05	4.86E-05
RG 1.23 Met Data	2.72E-04	1.88E-04	7.40E-05	6.42E-05	4.80E-05
Percent Change	-1.1	-1.6	-0.7	-1.7	-1.2
Unit 2 MSLB Location to Unit 2 CR Emergency Intake[4]	4.76E-04	2.24E-04	8.14E-05	7.94E-05	6.40E-05
RG 1.23 Met Data	4.29E-04	2.19E-04	7.73E-05	7.57E-05	6.11E-05
Percent Change	-9.9	-2.2	-5.0	-4.7	-4.5
Unit 2 MSLB Location to CR Center	1.09E-02	7.35E-03	3.01E-03	2.48E-03	1.86E-03
RG 1.23 Met Data	1.08E-02	7.22E-03	3.00E-03	2.44E-03	1.83E-03
Percent Change	-0.9	-1.8	-0.3	-1.6	-1.6
Unit 2 FHB to Unit 1 CR Normal Intake	2.72E-03	-	-	-	-
RG 1.23 Met Data	2.68E-03				
Percent Change	-1.5				
Unit 2 FHB to Unit 2 CR Normal Intake	6.98E-03	-	-	-	-
RG 1.23 Met Data	6.68E-03				
Percent Change	-4.3				
Unit 2 FHB to Unit 1 CR Emergency Intake[4]	2.49E-04	-	-	-	-
RG 1.23 Met Data	2.45E-04				
Percent Change	-1.6				

TABLE 1-2[5]
DCPP Unit 2 - Control Room Atmospheric Dispersion Factor (sec/m^3) Comparisons

Source and Receptor		0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 2 FHB to Unit 2 CR Emergency Intake[4]		3.50E-04	-	-	-	-
RG 1.23 Met Data		3.23E-04				
Percent Change		-7.7				
Unit 2 FHB to CR Center		3.71E-03	-	-	-	-
RG 1.23 Met Data		3.61E-03				
Percent Change		-2.7				
Unit 2 Equipment Hatch to Unit 1 CR Normal Intake		2.49E-03	-	-	-	-
RG 1.23 Met Data		2.47E-03				
Percent Change		-0.8				
Unit 2 Equipment Hatch to Unit 2 CR Normal Intake		2.51E-02	-	-	-	-
RG 1.23 Met Data		2.48E-02				
Percent Change		-1.2				
Unit 2 Equipment Hatch to Unit 1 CR Emergency Intake[4]		2.49E-04	-	-	-	-
RG 1.23 Met Data		2.46E-04				
Percent Change		-1.2				
Unit 2 Equipment Hatch to Unit 2 CR Emergency Intake[4]		4.68E-04	-	-	-	-
RG 1.23 Met Data		4.26E-04				
Percent Change		-9.0				
Unit 2 Equipment Hatch to CR Center		5.19E-03	-	-	-	-
RG 1.23 Met Data		5.09E-03				
Percent Change		-1.9				

Notes:

1. ARCON96-based X/Q values are not applicable for these cases given that the horizontal distance from the source to the receptor is 1.5-m (which is much less than the 10-m required by the ARCON96 methodology).

2. Due to the proximity of the release from the MSSVs and 10 Percent ADVs to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs and 10 Percent ADVs, the resultant plume from the MSSVs and 10 Percent ADVs will not contaminate the normal operation CR intake of the affected unit.

3. For releases from the MSSVs and 10 Percent ADVs (which are uncapped, vertically oriented and have a high vertical velocity discharge for the first 10.73 hrs of the accident), a X/Q values reduction factor of 5 is applicable. Since X/Q values are averaged over the identified period (i.e., 0-2 hrs, 2-8 hrs, 8-24 hrs, etc.), and the vertical velocity has been estimated only up to 10.73 hrs, application of the factor of 5 reduction is not appropriate for X/Q values applicable to averaging periods beyond 2-8 hrs. For assessment of an environmental release between T=8 to T=10.73 hrs, continued use of the 2-8 hr X/Q (with the factor of 5 reduction) is both acceptable and conservative.

4. The more favorable X/Q value presented above for the CR Pressurization Intakes is further reduced by a factor of 4 to address the "dual intake" credit, the capability of initial selection of the cleaner intake, and the expectation that the CR operator will manually choose the proper intake selection throughout the event.

5. X/Q values for RWST vent releases to the CR normal intakes are not needed for the dose calculations since the normal intakes are isolated prior to releases occurring from the RWST vent.

TABLE 1-3
DCPP Units 1 and 2 - Technical Support Center Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor		0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
UNIT 1						
Unit 1 Containment Edge to TSC Normal Intake		2.57E-04	1.18E-04	4.27E-05	4.24E-05	3.50E-05
RG 1.23 Met Data		2.45E-04	1.16E-04	4.08E-05	4.17E-05	3.48E-05
Percent Change		-4.7	-1.7	-4.4	-1.7	-0.6
Unit 1 Containment Edge to TSC Center		2.90E-04	1.33E-04	4.98E-05	4.83E-05	4.02E-05
RG 1.23 Met Data		2.74E-04	1.31E-04	4.80E-05	4.70E-05	4.00E-05
Percent Change		-5.5	-1.5	-3.6	-2.7	-0.5
Unit 1 Plant Vent to TSC Normal Intake		3.12E-04	1.77E-04	6.91E-05	6.29E-05	5.21E-05
RG 1.23 Met Data		3.04E-04	1.76E-04	6.82E-05	6.21E-05	5.20E-05
Percent Change		-2.6	-0.6	-1.3	-1.3	-0.2
Unit 1 Plant Vent to TSC Center		3.54E-04	1.95E-04	7.71E-05	6.70E-05	5.67E-05
RG 1.23 Met Data		3.41E-04	1.94E-04	7.63E-05	6.61E-05	5.62E-05
Percent Change		-3.7	-0.5	-1.0	-1.3	-0.9
Unit 1 RWST Vent to TSC Normal Intake		2.72E-04	1.27E-04	4.80E-05	4.49E-05	3.71E-05
RG 1.23 Met Data		2.48E-04	1.15E-04	4.52E-05	4.11E-05	3.40E-05
Percent Change		-8.8	-9.4	-5.8	-8.5	-8.4
Unit 1 RWST Vent to TSC Center		2.94E-04	1.38E-04	5.40E-05	4.89E-05	3.97E-05
RG 1.23 Met Data		2.76E-04	1.23E-04	5.00E-05	4.53E-05	3.65E-05
Percent Change		-6.1	-10.9	-7.4	-7.4	-8.1
Unit 1 Containment Penetration (GE Area) to TSC Normal Intake		3.64E-04	1.74E-04	6.55E-05	6.14E-05	5.00E-05
RG 1.23 Met Data		3.51E-04	1.61E-04	6.43E-05	5.89E-05	4.83E-05
Percent Change		-3.6	-7.5	-1.8	-4.1	-3.4
Unit 1 Containment Penetration (GE Area) to TSC Center		4.27E-04	1.91E-04	7.45E-05	6.84E-05	5.62E-05
RG 1.23 Met Data		4.05E-04	1.80E-04	7.26E-05	6.60E-05	5.37E-05
Percent Change		-5.2	-5.8	-2.6	-3.5	-4.4

TABLE 1-3
DCPP Units 1 and 2 - Technical Support Center Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor		0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 1 Containment Penetration (GW/FW Area) to TSC Normal Intake		4.80E-04	2.51E-04	8.31E-05	8.64E-05	6.95E-05
RG 1.23 Met Data		4.44E-04	2.48E-04	8.04E-05	8.31E-05	6.68E-05
Percent Change		-7.5	-1.2	-3.2	-3.8	-3.9
Unit 1 Containment Penetration (GW/FW Area) to TSC Center		5.98E-04	3.03E-04	1.04E-04	1.03E-04	8.46E-05
RG 1.23 Met Data		5.61E-04	2.93E-04	1.00E-04	9.86E-05	8.16E-05
Percent Change		-6.2	-3.3	-3.8	-4.3	-3.5
UNIT 2						
Unit 2 Containment Edge to TSC Normal Intake		5.48E-04	2.00E-04	8.52E-05	8.37E-05	6.84E-05
RG 1.23 Met Data		5.31E-04	1.97E-04	8.36E-05	8.25E-05	6.72E-05
Percent Change		-3.1	-1.5	-1.9	-1.4	-1.8
Unit 2 Containment Edge to TSC Center		5.57E-04	2.01E-04	8.81E-05	8.89E-05	6.92E-05
RG 1.23 Met Data		5.39E-04	2.01E-04	8.73E-05	8.78E-05	6.84E-05
Percent Change		-3.2	0.0	-0.9	-1.2	-1.2
Unit 2 Plant Vent to TSC Normal Intake		5.52E-04	2.35E-04	1.06E-04	8.71E-05	6.95E-05
RG 1.23 Met Data		5.47E-04	2.27E-04	1.03E-04	8.46E-05	6.68E-05
Percent Change		-0.9	-3.4	-2.8	-2.9	-3.9
Unit 2 Plant Vent to TSC Center		5.43E-04	2.16E-04	9.97E-05	8.11E-05	6.58E-05
RG 1.23 Met Data		5.41E-04	2.09E-04	9.67E-05	7.95E-05	6.43E-05
Percent Change		-0.4	-3.2	-3.0	-2.0	-2.3
Unit 2 RWST Vent to TSC Normal Intake		3.63E-04	1.68E-04	6.47E-05	6.04E-05	4.91E-05
RG 1.23 Met Data		3.52E-04	1.46E-04	6.12E-05	5.66E-05	4.63E-05
Percent Change		-3.0	-13.1	-5.4	-6.3	-5.7
Unit 2 RWST Vent to TSC Center		3.72E-04	1.68E-04	6.64E-05	6.17E-05	5.10E-05
RG 1.23 Met Data		3.61E-04	1.48E-04	6.30E-05	5.80E-05	4.69E-05
Percent Change		-3.0	-11.9	-5.1	-6.0	-8.0

TABLE 1-3
DCPP Units 1 and 2 - Technical Support Center Atmospheric Dispersion Factor (sec/m^3) Comparisons

Release Point and On-Site Receptor		0-2 hours	2-8 hours	8-24 hours	1-4 days	4-30 days
Unit 2 Containment Penetration (GE Area) to TSC Normal Intake		5.47E-04	2.41E-04	9.36E-05	8.83E-05	7.02E-05
RG 1.23 Met Data		5.22E-04	2.21E-04	9.14E-05	8.61E-05	6.71E-05
Percent Change		-4.6	-8.3	-2.4	-2.5	-4.4
Unit 2 Containment Penetration (GE Area) to TSC Center		5.72E-04	2.43E-04	9.75E-05	9.12E-05	7.52E-05
RG 1.23 Met Data		5.49E-04	2.24E-04	9.60E-05	8.85E-05	7.05E-05
Percent Change		-4.0	-7.8	-1.5	-3.0	-6.2
Unit 2 Containment Penetration (GW/FW Area) to TSC Normal Intake		1.80E-03	7.72E-04	3.07E-04	2.87E-04	2.33E-04
RG 1.23 Met Data		1.71E-03	7.07E-04	2.98E-04	2.76E-04	2.21E-04
Percent Change		-5.0	-8.4	-2.9	-3.8	-5.2
Unit 2 Containment Penetration (GW/FW Area) to TSC Center		1.83E-03	7.49E-04	3.16E-04	2.92E-04	2.41E-04
RG 1.23 Met Data		1.76E-03	7.16E-04	3.01E-04	2.84E-04	2.28E-04
Percent Change		-3.8	-4.4	-4.7	-2.7	-5.4

TABLE 1-4
DCPP Unit 1 and Unit 2 - Offsite Receptor Atmospheric Dispersion Factor (sec/m^3) Comparisons

Off-Site Receptor	0 - 2 hours	2 - 8 hours	8 - 24 hours	1 - 4 days	4 - 30 days
Unit 1 EAB RG 1.23 Met Data Percent Change	2.50E-04 2.50E-04 0.0	-----	-----	-----	-----
Unit 2 EAB RG 1.23 Met Data Percent Change	2.30E-04 2.17E-04 -5.7	-----	-----	-----	-----
Units 1 and 2 LPZ RG 1.23 Met Data Percent Change	2.12E-05 2.00E-05 -5.7	9.26E-06 8.94E-06 -3.5	6.26E-06 6.14E-06 -1.9	2.67E-06 2.72E-06 ***1.9***	7.86E-07 8.48E-07 ***7.9***

Notes:

1. An EAB X/Q value of 2.5E-4 sec/m^3 is used for all release points.

2. The 0.5 percent sector dependent X/Q values are presented above. The worst-case downwind sector for the 0-2 hr period for all receptors is northwest. For Units 1 and 2 LPZ the worst-case sector for periods 2-8 hrs and longer is southeast.

TABLE 2-1
Atmospheric Dispersion Factors (X/Qs) at Control Room Receptors for Post- Accident LOCA Radiological Releases
Input / Output File Names

File Name	Description of Release-Receptor Cases	X/Q (sec/m^3)				
		0 - 2 hours	2 - 8 hours	8 - 24 hours	1 - 4 days	4 - 30 days
dccase01	Unit 1 CB Edge to Unit 1 CR Normal Intake	1.44E-03	7.03E-04	3.00E-04	3.06E-04	3.04E-04
dccase02	Unit 1 CB Edge to Unit 1 CR Emergency Intake	4.09E-04	2.31E-04	9.54E-05	8.61E-05	7.04E-05
dccase03	Unit 1 CB Edge to Unit 2 CR Emergency Intake	1.57E-04	7.82E-05	2.57E-05	2.71E-05	2.32E-05
dccase04	Unit 1 CB Edge to CR Center	9.21E-04	4.38E-04	1.77E-04	1.80E-04	1.67E-04
dccase05	Unit 1 PV to Unit 1 CR Emergency Intake	5.56E-04	3.33E-04	1.29E-04	1.11E-04	8.34E-05
dccase06	Unit 1 PV to Unit 2 CR Emergency Intake	2.22E-04	1.47E-04	5.44E-05	5.52E-05	4.45E-05
dccase07	Unit 1 PV to CR Center	1.25E-03	8.93E-04	3.47E-04	3.46E-04	2.98E-04
dccase08	Unit 1 RWST Vent to Unit 1 CR Emergency Intake	3.24E-04	1.83E-04	6.94E-05	6.82E-05	5.57E-05
dccase09	Unit 1 RWST Vent to Unit 2 CR Emergency Intake	1.88E-04	9.18E-05	3.40E-05	3.28E-05	2.69E-05
dccase10	Unit 1 RWST Vent to CR Center	1.01E-03	4.26E-04	1.85E-04	1.62E-04	1.31E-04
dccase11	Unit 2 CB Edge to Unit 2 CR Normal Intake	1.99E-03	9.59E-04	4.60E-04	4.04E-04	3.20E-04
dccase12	Unit 2 CB Edge to Unit 1 CR Emergency Intake	1.66E-04	1.05E-04	4.19E-05	3.73E-05	2.93E-05
dccase13	Unit 2 CB Edge to Unit 2 CR Emergency Intake	3.78E-04	1.47E-04	5.99E-05	5.87E-05	4.90E-05
dccase14	Unit 2 CB Edge to CR Center	1.09E-03	5.49E-04	2.47E-04	2.12E-04	1.70E-04
dccase15	Unit 2 PV to Unit 1 CR Emergency Intake	2.02E-04	1.27E-04	5.11E-05	4.20E-05	3.15E-05
dccase16	Unit 2 PV to Unit 2 CR Emergency Intake	5.61E-04	2.91E-04	1.16E-04	1.02E-04	8.03E-05
dccase17	Unit 2 PV to CR Center	1.12E-03	6.99E-04	2.82E-04	2.34E-04	1.68E-04
dccase18	Unit 2 RWST Vent to Unit 1 CR Emergency Intake	1.89E-04	1.17E-04	4.52E-05	4.30E-05	3.40E-05
dccase19	Unit 2 RWST Vent to Unit 2 CR Emergency Intake	3.17E-04	1.40E-04	5.64E-05	5.12E-05	4.16E-05
dccase20	Unit 2 RWST Vent to CR Center	1.05E-03	5.55E-04	2.12E-04	2.12E-04	1.72E-04
dccase21	Unit 1 140' Leakage to Unit 1 CR Normal Intake	6.59E-03	2.81E-03	1.16E-03	1.07E-03	8.31E-04
dccase22	Unit 1 140' Leakage to Unit 1 CR Emergency Intake	3.67E-04	2.31E-04	9.02E-05	8.38E-05	6.42E-05
dccase23	Unit 1 140' Leakage to Unit 2 CR Emergency Intake	2.39E-04	1.20E-04	4.27E-05	4.22E-05	3.39E-05
dccase24	Unit 1 140' Leakage to CR Center	3.01E-03	1.33E-03	5.43E-04	4.93E-04	4.01E-04
dccase25	Unit 1 PL to Unit 1 CR Normal Intake	4.86E-03	3.43E-03	1.35E-03	1.37E-03	1.25E-03
dccase26	Unit 1 PL to Unit 1 CR Emergency Intake	8.05E-04	5.32E-04	2.12E-04	1.86E-04	1.40E-04
dccase27	Unit 1 PL to Unit 2 CR Emergency Intake	2.40E-04	1.53E-04	4.83E-05	5.20E-05	4.41E-05
dccase28	Unit 1 PL to CR Center	2.55E-03	1.80E-03	7.17E-04	7.13E-04	6.50E-04

File Name	Description of Release-Receptor Cases	X/Q (sec/m^3)				
		0 - 2 hours	2 - 8 hours	8 - 24 hours	1 - 4 days	4 - 30 days
dccase29	Unit 2 140' Leakage to Unit 2 CR Normal Intake	6.60E-03	3.01E-03	1.17E-03	1.20E-03	1.01E-03
dccase30	Unit 2 140' Leakage to Unit 1 CR Emergency Intake	2.26E-04	1.57E-04	6.15E-05	5.47E-05	4.08E-05
dccase31	Unit 2 140' Leakage to Unit 2 CR Emergency Intake	3.74E-04	1.67E-04	6.72E-05	6.14E-05	5.08E-05
dccase32	Unit 2 140' Leakage to CR Center	3.09E-03	1.83E-03	7.22E-04	6.74E-04	5.35E-04
dccase33	Unit 2 PL to Unit 2 CR Normal Intake	3.45E-03	1.14E-03	4.70E-04	4.42E-04	2.93E-04
dccase34	Unit 2 PL to Unit 1 CR Emergency Intake	2.26E-04	1.59E-04	6.50E-05	5.36E-05	3.96E-05
dccase35	Unit 2 PL to Unit 2 CR Emergency Intake	8.08E-04	4.07E-04	1.43E-04	1.42E-04	1.14E-04
dccase36	Unit 2 PL to CR Center	2.19E-03	1.16E-03	4.56E-04	3.83E-04	2.58E-04
dccase37	Unit 1 PV to Unit 1 CR Normal Intake	1.67E-03	1.22E-03	4.93E-04	4.89E-04	4.36E-04
dccase38	Unit 2 PV to Unit 2 CR Normal Intake	1.49E-03	9.29E-04	3.80E-04	3.16E-04	2.21E-04
dccase39	Unit 1 CB Edge to Unit 2 CR Normal Intake	6.41E-04	3.51E-04	1.49E-04	1.49E-04	1.36E-04
dccase40	Unit 2 CB Edge to Unit 1 CR Normal Intake	6.89E-04	3.85E-04	1.66E-04	1.41E-04	1.08E-04
dccase41	Unit 1 PV to Unit 2 CR Normal Intake	9.08E-04	6.53E-04	2.69E-04	2.62E-04	2.38E-04
dccase42	Unit 2 PV to Unit 1 CR Normal Intake	7.79E-04	4.80E-04	1.98E-04	1.65E-04	1.15E-04
dccase43	Unit 1 140' Leakage to Unit 2 CR Normal Intake	2.07E-03	1.13E-03	3.73E-04	3.78E-04	3.05E-04
dccase44	Unit 1 PL to Unit 2 CR Normal Intake	1.35E-03	9.79E-04	3.86E-04	3.84E-04	3.46E-04
dccase45	Unit 2 140' Leakage to Unit 1 CR Normal Intake	2.08E-03	1.38E-03	5.62E-04	4.76E-04	3.59E-04
dccase46	Unit 2 PL to Unit 1 CR Normal Intake	1.20E-03	6.21E-04	2.49E-04	2.09E-04	1.41E-04

Notes:
File names = Input (.rsf), Output (.log)
CR = Control Room
CB = Containment Building
PV = Plant Vent
140' Leakage = Containment Penetration (GE Area)
RWST = Refueling Water Storage Tank
PL = Containment Penetration (GW/FW Area)

TABLE 2-2
Atmospheric Dispersion Factors (X/Qs) at Control Room Receptors for Fuel Handling Accident Radiological Releases
Input / Output File Names

File Name	Description of Release-Receptor Case	X/Q (sec/m^3)
		0 - 2 hours
dcfhc1	Unit 1 FHB to Unit 1 CR Normal Intake	6.68E-03
dcfhc2	Unit 1 FHB to Unit 2 CR Normal Intake	2.69E-03
dcfhc3	Unit 1 FHB to Unit 2 CR Emergency Intake	2.39E-04
dcfhc4	Unit 1 FHB to CR Center	3.54E-03
dcfhc5	Unit 1 EH to Unit 1 CR Normal Intake	2.43E-02
dcfhc6	Unit 1 EH to Unit 2 CR Normal Intake	2.67E-03
dcfhc7	Unit 1 EH to Unit 2 CR Emergency Intake	2.45E-04
dcfhc8	Unit 1 EH to CR Center	5.06E-03
dcfhc9	Unit 2 FHB to Unit 1 CR Normal Intake	2.68E-03
dcfhc10	Unit 2 FHB to Unit 2 CR Normal Intake	6.68E-03
dcfhc11	Unit 2 FHB to Unit 1 CR Emergency Intake	2.45E-04
dcfhc12	Unit 2 FHB to CR Center	3.61E-03
dcfhc13	Unit 2 EH to Unit 1 CR Normal Intake	2.47E-03
dcfhc14	Unit 2 EH to Unit 2 CR Normal Intake	2.48E-02
dcfhc15	Unit 2 EH to Unit 1 CR Emergency Intake	2.46E-04
dcfhc16	Unit 2 EH to CR Center	5.09E-03
dcfhc17	Unit 1 FHB to Unit 1 CR Emergency Intake	3.28E-04
dcfhc18	Unit 2 FHB to Unit 2 CR Emergency Intake	3.23E-04
dcfhc19	Unit 1 EH to Unit 1 CR Emergency Intake	4.32E-04
dcfhc20	Unit 2 EH to Unit 2 CR Emergency Intake	4.26E-04

Notes:
File names = Input (.rsf), Output (.log)
CR = Control Room
FHB = Fuel Handling Building
EH = Equipment Hatch

TABLE 2-3

Atmospheric Dispersion Factors (X/Qs) at Control Room Receptors for Radiological Releases from MSSVs/ADVs/MSLB
Input / Output File Names

File Name	Description of Release-Receptor Cases	X/Q (sec/m^3)				
		0 - 2 hours	2 - 8 hours	8 - 24 hours	1 - 4 days	4 - 30 days
-	Unit 1 MSSVs to Unit 1 CR Normal Intake	N/A	N/A	N/A	N/A	N/A
dcmssv02	Unit 1 MSSVs to Unit 2 CR Normal Intake	4.05E-03	2.65E-03	1.02E-03	1.02E-03	8.95E-04
dcmssv03	Unit 1 MSSVs to Unit 2 CR Emergency Intake	2.75E-04	1.49E-04	4.79E-05	5.02E-05	4.14E-05
dcmssv04	Unit 1 MSSVs to CR Center	1.23E-02	7.28E-03	2.21E-03	2.43E-03	2.06E-03
dcmssv05	Unit 2 MSSVs to Unit 1 CR Normal Intake	3.80E-03	2.36E-03	9.80E-04	8.00E-04	5.99E-04
-	Unit 2 MSSVs to Unit 2 CR Normal Intake	N/A	N/A	N/A	N/A	N/A
dcmssv07	Unit 2 MSSVs to Unit 1 CR Emergency Intake	2.79E-04	1.87E-04	7.33E-05	6.50E-05	4.89E-05
dcmssv08	Unit 2 MSSVs to CR Center	1.19E-02	7.90E-03	3.22E-03	2.68E-03	2.05E-03
-	Unit 1 ADVs to Unit 1 CR Normal Intake	N/A	N/A	N/A	N/A	N/A
dcmssv10	Unit 1 ADVs to Unit 2 CR Normal Intake	4.06E-03	2.66E-03	1.03E-03	1.02E-03	9.03E-04
dcmssv11	Unit 1 ADVs to Unit 2 CR Emergency Intake	2.75E-04	1.50E-04	4.82E-05	5.03E-05	4.15E-05
dcmssv12	Unit 1 ADVs to CR Center	1.23E-02	7.34E-03	2.22E-03	2.45E-03	2.08E-03
dcmssv13	Unit 2 ADVs to Unit 1 CR Normal Intake	3.82E-03	2.36E-03	9.86E-04	8.01E-04	6.01E-04
-	Unit 2 ADVs to Unit 2 CR Normal Intake	N/A	N/A	N/A	N/A	N/A
dcmssv15	Unit 2 ADVs to Unit 1 CR Emergency Intake	2.77E-04	1.88E-04	7.35E-05	6.49E-05	4.89E-05
dcmssv16	Unit 2 ADVs to CR Center	1.19E-02	7.94E-03	3.23E-03	2.70E-03	2.05E-03
-	Unit 1 MSLB to Unit 1 CR Normal Intake	N/A	N/A	N/A	N/A	N/A
dcmssv18	Unit 1 MSLB to Unit 2 CR Normal Intake	4.07E-03	2.86E-03	1.11E-03	1.10E-03	9.70E-04
dcmssv19	Unit 1 MSLB to Unit 2 CR Emergency Intake	2.74E-04	1.54E-04	4.98E-05	5.12E-05	4.20E-05
dcmssv20	Unit 1 MSLB to CR Center	1.14E-02	7.05E-03	2.19E-03	2.37E-03	1.98E-03
dcmssv21	Unit 2 MSLB to Unit 1 CR Normal Intake	3.75E-03	2.37E-03	1.00E-03	7.93E-04	5.81E-04
-	Unit 2 MSLB to Unit 2 CR Normal Intake	N/A	N/A	N/A	N/A	N/A
dcmssv23	Unit 2 MSLB to Unit 1 CR Emergency Intake	2.72E-04	1.88E-04	7.40E-05	6.42E-05	4.80E-05
dcmssv24	Unit 2 MSLB to Control Room Center	1.08E-02	7.22E-03	3.00E-03	2.44E-03	1.83E-03
dcmssv25	Unit 1 MSSVs to Unit 1 CR Emergency Intake	4.52E-04	2.86E-04	1.14E-04	1.01E-04	7.82E-05
dcmssv26	Unit 2 MSSVs to Unit 2 CR Emergency Intake	4.39E-04	2.14E-04	7.68E-05	7.54E-05	6.09E-05
dcmssv27	Unit 1 ADVs to Unit 1 CR Emergency Intake	4.52E-04	2.86E-04	1.14E-04	1.01E-04	7.82E-05
dcmssv28	Unit 2 ADVs to Unit 2 CR Emergency Intake	4.39E-04	2.14E-04	7.68E-05	7.54E-05	6.09E-05

Case No.	Description of Release-Receptor Cases	X/Q (sec/m^3)				
		0 - 2 hours	2 - 8 hours	8 - 24 hours	1 - 4 days	4 - 30 days
dcmssv29	Unit 1 MSLB to Unit 1 CR Emergency Intake	4.30E-04	2.89E-04	1.14E-04	1.00E-04	7.63E-05
dcmssv30	Unit 2 MSLB to Unit 2 CR Emergency Intake	4.29E-04	2.19E-04	7.73E-05	7.57E-05	6.11E-05

Notes:
File names = Input (.rsf), Output (.log)
N/A = Not applicable due to the source-receptor distance being much less than 10 meters, outside of the applicability of ARCON96.
CR = Control Room
MSSVs = Main Steam Safety Valves
ADVs = 10 percent Atmospheric Dump Valves
MSLB = Main Steam Line Break

TABLE 2-4

Atmospheric Dispersion Factors (X/Qs) at TSC Receptors for LOCA Radiological Releases
Input / Output File Names

File Name	Release-Receptor Case Description	X/Q (sec/m^3)				
		0 - 2 hours	2 - 8 hours	8 - 24 hours	1 - 4 days	4 - 30 days
dctsc01	Unit 1 CB Edge to TSC Normal Intake	2.45E-04	1.16E-04	4.08E-05	4.17E-05	3.48E-05
dctsc02	Unit 1 CB Edge to TSC Center	2.74E-04	1.31E-04	4.80E-05	4.70E-05	4.00E-05
dctsc03	Unit 1 PV (ECCS Leakage) to TSC Normal Intake	3.04E-04	1.76E-04	6.82E-05	6.21E-05	5.20E-05
dctsc04	Unit 1 PV(ECCS Leakage) to TSC Center	3.41E-04	1.94E-04	7.63E-05	6.61E-05	5.62E-05
dctsc05	Unit 1 RWST Vent to TSC Normal Intake	2.48E-04	1.15E-04	4.52E-05	4.11E-05	3.40E-05
dctsc06	Unit 1 RWST Vent to TSC Center	2.76E-04	1.23E-04	5.00E-05	4.53E-05	3.65E-05
dctsc07	Unit 1 140' Elevation Area Leakage to TSC Normal Intake	3.51E-04	1.61E-04	6.43E-05	5.89E-05	4.83E-05
dctsc08	Unit 1 140' Elevation Area Leakage to TSC Center	4.05E-04	1.80E-04	7.26E-05	6.60E-05	5.37E-05
dctsc09	Unit 1 PL to TSC Normal Intake	4.44E-04	2.48E-04	8.04E-05	8.31E-05	6.68E-05
dctsc10	Unit 1 PL to TSC Center	5.61E-04	2.93E-04	1.00E-04	9.86E-05	8.16E-05
dctsc11	Unit 2 CB Edge to TSC Normal Intake	5.31E-04	1.97E-04	8.36E-05	8.25E-05	6.72E-05
dctsc12	Unit 2 CB Edge to TSC Center	5.39E-04	2.01E-04	8.73E-05	8.78E-05	6.84E-05
dctsc13	Unit 2 PV (ECCS Leakage) to TSC Normal Intake	5.47E-04	2.27E-04	1.03E-04	8.46E-05	6.68E-05
dctsc14	Unit 2 PV (ECCS Leakage) to TSC Center	5.41E-04	2.09E-04	9.67E-05	7.95E-05	6.43E-05
dctsc15	Unit 2 RWST Vent to TSC Normal Intake	3.52E-04	1.46E-04	6.12E-05	5.66E-05	4.63E-05
dctsc16	Unit 2 RWST Vent to TSC Center	3.61E-04	1.48E-04	6.30E-05	5.80E-05	4.69E-05
dctsc17	Unit 2 140' Elevation Area Leakage to TSC Normal Intake	5.22E-04	2.21E-04	9.14E-05	8.61E-05	6.71E-05
dctsc18	Unit 2 140' Elevation Area Leakage to TSC Center	5.49E-04	2.24E-04	9.60E-05	8.85E-05	7.05E-05
dctsc19	Unit 2 PL to TSC Normal Intake	1.71E-03	7.07E-04	2.98E-04	2.76E-04	2.21E-04
dctsc20	Unit 2 PL to TSC Center	1.76E-03	7.16E-04	3.01E-04	2.84E-04	2.28E-04

Notes:
File names = Input (.rsf), Output (.log)
CB = Containment Building
PV = Plant Vent
140' Leakage = Containment Penetration (GE Area)
RWST = Refueling Water Storage Tank
PL = Containment Penetration (GW/FW Area)

TABLE 2-5

Meteorological Data Format for EN-113 Dispersion Model

The order of information in the EN-113 format (A3, I2, I3, 24I3) is:

A3 = meteorological parameter identifier as given below

131 = 10-meter wind speed (0.1 mph)
132 = 10-meter wind direction (degrees azimuth)
136 = 100-meter temperature difference (0.1°C)

I2 = last 2 digits of calendar year
I3 = Julian day
24I3 = hourly parameter values (1 - 24 hours)

A sample of the EN-113 formatted meteorological data is provided below:

Sample Day 1/1/07

```
13187001 60 78 92 72 85 96 87 94 94 58 67 49 45 85 72150163114 87 49 69 81 49
54
13287001  4337336 44 46 44 41 25 46 58 57 65 52 13 33311306300321 37360
37334355
13687001 -4 -5 -4 -3 -4 -5 -4 -5 -3 -5 -9-10-12-10-11 -6-12 -5 -3  4 -3 -6 -2
2
```

Notes:
131 = 10-meter wind speed (0.1 mph)
132 = 10-meter wind direction (degrees azimuth)
136 = 100-meter temperature difference (0.1°C)
The year is shown as 87 in place of 07 due to a Year 2000 incompatibility

Table 3-1
Effect of Updated Site Boundary X/Qs on Dose Consequences at the EAB and LPZ
All Accidents

	X/Q (sec/m^3)				
Receptor	**0 - 2 hours**	**2 - 8 hours**	**8 - 24 hours**	**1 - 4 days**	**4 - 30 days**
Unit 1 EAB (NW) RG 1.23 Met Data	2.50E-04 2.50E-04				
Unit 2 EAB (NW) RG 1.23 Met Data	2.30E-04 2.17E-04				
Unit 1/2 LPZ (NW) RG 1.23 Met Data	2.12E-05 2.00E-05	9.26E-06 8.94E-06	6.26E-06 6.14E-06	2.67E-06 ***2.72E-06***	7.86E-07 ***8.48E-07***

Impact of Updated X/Qs on EAB and LPZ Dose Consequences (All Accidents)

EAB

Since the updated 0-2 hr EAB X/Q values are equal to or less than the original 0-2 hr EAB X/Q values, the EAB doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the Fuel Handling Accident (FHA), Main Steam Line Break (MSLB), Locked Rotor Accident (LRA), Control Rod Ejection Accident (CREA), Steam Generator Tube Rupture (SGTR), Loss of Load (LOL), and LOCA remain bounding.

LPZ

The updated LPZ X/Q values are less than the original X/Q values with the exception of the X/Qs associated with time periods between 1 day to 30 days. Provided below is an assessment of the potential impact on dose consequences at the LPZ for each accident.

The following accidents are not impacted by the updated LPZ X/Q values since: (a) the releases are terminated prior to 24 hrs or (b) the LPZ doses reported in LAR 15-03 are conservatively based on X/Q values that bound the updated X/Q values for impacted time periods.

- FHA (release terminated in less than or equal to 2 hrs)
- SGTR (release terminated in 10.73 hrs after the accident)
- LRA (release terminated in 10.73 hrs after the accident)
- Loss of Load (release terminated in 10.73 hrs after the accident)
- MSLB (is not adversely impacted by the updated X/Q values even though releases from the affected steam generator continue for up to 30 hrs after the postulated accident. This is because the original 8-24 hr X/Qs values were conservatively used for the time period between 8 to 30 hrs)

The LOCA and the CREA both have 30-day releases of radioactivity. The LPZ dose estimates for the LOCA and CREA were re-run using the updated X/Qs and it was determined that the LPZ dose reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the LOCA and the CREA remain bounding. This result reflects the fact that the reduction in X/Qs during the earlier time periods (when the radiation source term in the post-accident environmental releases are significantly higher) is more than sufficient to offset the increase in X/Qs during the later time periods.

Note

1. An EAB X/Q value of 2.5E-4 sec/m^3 is used for all release points.

2. The 0.5 percent sector dependent X/Q values are presented above. The worst-case downwind sector for the 0-2 hour period for all receptors is northwest. For Unit 1/2 LPZ the worst-case sector for periods 2-8 hrs and longer is southeast.

Table 3-2
Effect of Updated CR X/Qs (sec/m^3) on the Dose Consequences in the CR Following a Loss-of-Coolant Accident

Release Location / Receptor	0-2 hr	2-8 hr	8-24 hr	1-4 days	4-30 days
Control Room (CR) Normal Intakes					
Plant Vent Release					
- Affected Unit Intake	1.67E-03 1.67E-03	-----	-----	-----	-----
- Non-Affected Unit Intake	9.10E-04 9.08E-04	-----	-----	-----	-----
Containment Penetration Areas					
- Affected Unit Intake	6.84E-03 6.60E-03	-----	-----	-----	-----
- Non-Affected Unit Intake	2.24E-03 2.08E-03	-----	-----	-----	-----
CR Infiltration					
Plant Vent	1.26E-03 1.25E-03	8.96E-04 8.93E-04	3.44E-04 ***3.47E-04***	3.44E-04 ***3.46E-04***	2.99E-04 2.98E-04
Containment Penetration Areas	3.22E-03 3.09E-03	1.85E-03 1.83E-03	7.29E-04 7.22E-04	7.15E-04 7.13E-04	6.64E-04 6.50E-04
RWST Vent	1.07E-03 1.05E-03	5.80E-04 5.55E-04	2.18E-04 2.12E-04	2.19E-04 2.12E-04	1.79E-04 1.72E-04
CR Pressurization Intake					
Plant Vent	5.65E-05 5.55E-05	3.70E-05 3.68E-05	1.35E-05 ***1.36E-05***	1.37E-05 ***1.38E-05***	1.11E-05 1.11E-05
Containment Penetration Areas	6.45E-05 6.00E-05	4.05E-05 3.98E-05	1.65E-05 1.63E-05	1.38E-05 1.37E-05	1.12E-05 1.10E-05
RWST Vent	5.25E-05 4.73E-05	3.03E-05 2.93E-05	1.15E-05 1.13E-05	1.10E-05 1.08E-05	8.83E-06 8.50E-06

Impact of Updated X/Qs on the CR Dose

All of the updated X/Q values are either the same or less than the original X/Q values with the exception of the X/Qs associated with time periods between 8 to 96 hours for releases from the plant vent, to receptors associated with CR infiltration and the CR Pressurization intake. The maximum increase in X/Q values for these time intervals/release pathways is less than 1 percent. Taking into consideration the corresponding decrease in X/Q values for the other time intervals with more dominant dose consequences, as well as the general reduction in X/Q values for all of the other release pathways, it is concluded that the CR doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the LOCA remain bounding.

Note 1:
Release from the Containment penetration areas (i.e., areas GE or GW and FW): applicable to containment leakage and ESF system leakage that occurs in the Containment Penetration Area.

Note 2:
Release from Plant Vent: applicable to ESF system leakage that occurs in the Auxiliary Building, Miscellaneous Equipment Drain Tank (MEDT) release, Residual Heat Removal (RHR) pump seal failure release, and containment vacuum/pressure relief line release.

Table 3-3
Effect of Updated TSC X/Qs (sec/m^3) on the Dose Consequences in the TSC Following a Loss-of-Coolant Accident

Release Location / Receptor	0-2 hr	2-8 hr	8-24 hr	1-4 days	4-30 days
TSC Normal Intakes					
Plant Vent Release	5.52E-04 5.47E-04	-----	-----	-----	-----
Containment Penetration Areas	1.80E-03 1.71E-03	-----	-----	-----	-----
RWST Vent	3.63E-04 3.52E-04	-----	-----	-----	-----
TSC Infiltration					
Plant Vent	5.43E-04 5.41E-04	2.16E-04 2.09E-04	9.97E-05 9.67E-05	8.11E-05 7.95E-05	6.58E-05 6.43E-05
Containment Penetration Areas	1.83E-03 1.76E-03	7.49E-04 7.16E-04	3.16E-04 3.01E-04	2.92E-04 2.84E-04	2.41E-04 2.28E-04
RWST Vent	3.72E-04 3.61E-04	1.68E-04 1.48E-04	6.64E-05 6.30E-05	6.17E-05 5.80E-05	5.10E-05 4.69E-05
CR/TSC Pressurization Intake					
Plant Vent	-----	3.70E-05 3.68E-05	1.35E-05 ***1.36E-05***	1.37E-05 ***1.38E-05***	1.11E-05 1.11E-05
Containment Penetration Areas	-----	4.05E-05 3.98E-05	1.65E-05 1.63E-05	1.38E-05 1.37E-05	1.12E-05 1.10E-05
RWST Vent	-----	3.03E-05 2.93E-05	1.15E-05 1.13E-05	1.10E-05 1.08E-05	8.83E-06 8.50E-06

Impact of Updated X/Qs on the TSC Dose

All of the updated X/Q values are either the same or less than the original X/Q values with the exception of the X/Qs associated with time periods between 8 to 96 hours for releases from the plant vent, to receptors associated with the TSC Pressurization intake. The maximum increase in X/Q values for these time intervals/release pathways is less than 1 percent. Taking into consideration the corresponding decrease in X/Q values for the other time intervals, as well as the general reduction in X/Q values for all of the other release pathways, it is concluded that the TSC doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the LOCA remain bounding.

Note 1:
Release from the Containment penetration areas (i.e., areas GE or GW and FW): applicable to containment leakage and ESF system leakage that occurs in the Containment Penetration Area.

Note 2:
Release from Plant Vent: applicable to ESF system leakage that occurs in the Auxiliary Building, MEDT release, RHR pump seal failure release, and containment vacuum/pressure relief line release.

Table 3-4
Effect of Updated CR X/Qs (sec/m^3) on the Dose Consequences in the CR Following a Fuel Handling Accident.

Release Location / Receptor	0-22 sec	22 sec - 2 hr	2-8 hr	8-24 hr	1-4 d	4-30 d
Control Room (CR) Normal Intakes						
Containment Hatch Release						
- Affected Unit Intake	2.61E-02 2.48E-02	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	2.88E-03 2.67E-03	-----	-----	-----	-----	-----
Plant Vent Release						
- Affected Unit Intake	1.67E-03 1.67E-03	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	9.10E-04 9.08E-04	-----	-----	-----	-----	-----
FHB Out-leakage points						
- Affected Unit Intake	6.98E-03 6.68E-03	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	2.93E-03 2.69E-03	-----	-----	-----	-----	-----
CR Infiltration						
Containment Hatch Release	5.51E-03 5.09E-03	5.51E-03 5.09E-03	-----	-----	-----	-----
Plant Vent	1.26E-03 1.25E-03	1.26E-03 1.25E-03	-----	-----	-----	-----
FHB Out-leakage points	3.78E-03 3.61E-03	3.78E-03 3.61E-03	-----	-----	-----	-----
CR Pressurization Intake						
Containment Hatch Release	-----	6.60E-05 6.15E-05	-----	-----	-----	-----
Plant Vent	-----	5.65E-05 5.55E-05	-----	-----	-----	-----
FHB Out-leakage points	-----	6.40E-05 6.13E-05	-----	-----	-----	-----

Impact of Updated X/Qs on the CR Dose
Since all of the updated X/Q values are either the same or less than the original X/Q values, the CR doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the FHA remain bounding.

Note 1:
Release from the Containment Hatch: applicable to FHA in Containment

Note 2:
Release from Plant Vent/FHB Out-leakage: applicable to FHA in FHB

Table 3-5
Effect of Updated CR X/Qs (sec/m^3) on the Dose Consequences in the CR Following a Locked Rotor Accident

Release point and receptor	0-2hr	2-8 hr	8-10.73 hr
MSSVs/10 Percent ADVs to CR NOP Intake (Note 1)	8.60E-04 8.12E-04	5.58E-04 5.32E-04	5.58E-04 5.32E-04
MSSVs/10 Percent ADVs to CR In-leakage (CR Centerline)	2.78E-03 2.46E-03	1.63E-03 1.59E-03	1.63E-03 1.59E-03

Impact of Updated X/Qs on the CR Dose

Since all of the updated X/Q values are less than the original X/Q values, the CR doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the LRA remain bounding.

Note 1:
Due to the proximity of the release from the MSSVs/10 Percent ADVs to the normal operation (NOP) CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10 Percent ADVs, the resultant plume from the MSSVs/10 Percent ADVs will not contaminate the normal operation CR intake of the affected unit. Thus, the X/Qs presented reflect those applicable to the CR intake of the unaffected unit.

Table 3-6
Effect of Updated CR X/Qs (sec/m^3) on the Dose Consequences in the CR Following a Control Rod Ejection Accident

Release Location / Receptor	0-2 hr	2-8 hr	8-10.73 hr	10.73-24 hr	24-96 hr	96-720 hr
Control Room (CR) Normal Intakes						
Containment leakage						
- Affected Unit Intake	6.84E-03 6.60E-03	-----		-----	-----	-----
- Non-Affected Unit Intake	2.24E-03 2.08E-03	-----		-----	-----	-----
MSSVs/10 Percent ADVs						
- Affected Unit Intake	Note 3	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	8.60E-04 8.12E-04	-----	-----	-----	-----	-----
CR Infiltration						
Containment leakage	3.22E-03 3.09E-03	1.85E-03 1.83E-03	7.29E-04 7.22E-04	7.29E-04 7.22E-04	7.15E-04 7.13E-04	6.64E-04 6.50E-04
MSSVs/10 Percent ADVs	2.78E-03 2.46E-03	1.63E-03 1.59E-03	1.63E-03 1.59E-03	-----	-----	-----
CR Pressurization Intake						
Containment leakage	6.45E-05 6.00E-05	4.05E-05 3.98E-05	1.65E-05 1.63E-05	1.65E-05 1.63E-05	1.38E-05 1.37E-05	1.12E-05 1.10E-05
MSSVs/10 Percent ADVs	1.57E-05 1.40E-05	9.60E-06 9.40E-06	9.60E-06 9.40E-06	-----	-----	-----

Impact of Updated X/Qs on the CR Dose
Since all of the updated X/Q values are less than the original X/Q values, the control room doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the CREA remain bounding.

Note 1:
Containment leakage: Used for Containment release scenario; based on Containment penetration area release point.

Note 2:
MSSV/10 Percent ADVs: Used for Secondary System Release Scenario.

Note 3:
Due to the proximity of the release from the MSSVs/10 Percent ADVs to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10 Percent ADVs, the resultant plume from the MSSVs/10 Percent ADVs will not contaminate the normal operation CR intake of the affected unit.

Table 3-7
Effect of Updated CR X/Qs (sec/m^3)on the Dose Consequences in the CR Following a Main Steam Line Break

Receptor - Release Point	0-2hr	2-8 hr	8-10.73 hr	10.73-30 hr
CR NOP Intake - Faulted SG (Break Location)	Note 1			
CR NOP Intake - Intact SG (MSSVs/10 Percent ADVs) - Note 2	8.60E-04 8.12E-04			
CR Inleakage - Faulted SG (Break Location)	1.24E-02 1.14E-02	7.35E-03 7.22E-03	3.01E-03 3.00E-03	3.01E-03 3.00E-03
CR Inleakage - Intact SG (MSSVs/10 Percent ADVs)	2.78E-03 2.46E-03	1.63E-03 1.59E-03	1.63E-03 1.59E-03	-----
CR Emergency Intake & Bypass - Faulted SG (Break Location)	7.65E-05 6.85E-05	4.78E-05 4.70E-05	1.86E-05 1.85E-05	1.86E-05 1.85E-05
CR Emergency Intake & Bypass - Intact SG (MSSVs/10 Percent ADVs)	1.57E-05 1.40E-05	9.60E-06 9.40E-06	9.60E-06 9.40E-06	-----

Impact of Updated X/Qs on the CR Dose
Since all of the updated X/Q values are less than the original X/Q values, the CR doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the MSLB remain bounding.

Note 1:
ARCON96-based X/Qs are not applicable for these cases given that the horizontal distance from the source to the receptor is 1.5 m (which is much less than the 10-m required by the ARCON96 methodology).

Note 2:
Due to the proximity of the release from the MSSVs/10 Percent ADVs to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10 Percent ADVs, the resultant plume from the MSSVs/10 Percent ADVs will not contaminate the normal operation CR intake of the affected unit. Thus the X/Qs presented reflect those applicable to the CR intake of the unaffected unit.

TABLE 3-8
Effect of Updated CR X/Qs (sec/m^3) on the Dose Consequences in the CR Following a Steam Generator Tube Rupture

Release Location / Receptor	0-179 s	179-257.2 s	257.2 s- 2 h	2-8 hr	8-10.73 hr
Control Room (CR) Normal Intakes					
- Plant Vent	1.29E-03 1.29E-03	-----	-----	-----	-----
- MSSVs/10 Percent ADVs (Note 1)	-----	8.60E-04 8.12E-04	-----	-----	-----
CR Infiltration					
- Plant Vent	1.26E-03 1.25E-03	-----	-----	-----	-----
- MSSVs/10 Percent ADVs	-----	2.78E-03 2.46E-03	2.78E-03 2.46E-03	1.49E-03[2] 1.47E-03[2]	1.49E-03[2] 1.47E-03[2]
CR Pressurization Intake					
- MSSVs/10 Percent ADVs	-----	-----	1.57E-05 1.40E-05	7.65E-06[2] ***9.40E-06***[2]	7.65E-06[2] ***9.40E-06***[2]

Impact of Updated X/Qs on the CR Dose

All of the updated X/Q values are either the same or less than the original X/Q values with the exception of the X/Q values associated with time periods between 2 to 10.73 hours for releases from the MSSVs/10 Percent ADVs to the CR Pressurization intakes. The increase in X/Q values for the time periods between 2 to 10.73 hours is an artifact of the method of selection of the X/Q values as described in Note 2 below. Taking into consideration the decrease in X/Q values for the earlier time interval with more dominant dose consequences, as well as the fact that the dose contribution in the CR due to the MSSV/10 Percent ADV releases via the CR Pressurization intake is several decades less than the dose contribution due to CR in-leakage, it is concluded that the effect of the above increase in X/Q values is insignificant, and that the CR doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the SGTR remain bounding.

Note 1:
Due to the proximity of the release from the MSSVs/10 Percent ADVs to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10 Percent ADVs, the resultant plume from the MSSVs/10 Percent ADVs will not contaminate the normal operation CR intake of the affected unit. Thus the X/Qs presented reflect those applicable to the CR intake of the unaffected unit.

Note 2:
Since the 0-2 hour activity intake following a SGTR controls the 30-day integrated dose, the SGTR dose model utilizes a simplified model with respect to selection of the X/Q values for the 2-10.73 hr time period. Specifically, the bounding X/Q value is selected for the release point/receptor for the 0-2 hr time period, but unlike the dose models used for the other accidents, the X/Q values for time periods beyond t=2 hr, are not switched to the other unit if they display higher values.

Table 3-9
Effect of Updated CR X/Qs (sec/m^3) on the Dose Consequences in the CR Following a Loss of Load

Release point and receptor	0-2 hr	2-8 hr	8-10.73 hr
MSSVs/10 Percent ADVs to CR NOP Intake (Note 1)	8.60E-04 8.12E-04	5.58E-04 5.32E-04	5.58E-04 5.32E-04
MSSVs/10 Percent ADVs to CR Inleakage (CR Centerline)	2.78E-03 2.46E-03	1.63E-03 1.59E-03	1.63E-03 1.59E-03

Impact of Updated X/Qs on the CR Dose

Since all of the updated X/Q values are less than the original X/Q values, the CR doses reported in LAR 15-03 (specifically, Enclosure Attachment 2 of Reference 6) for the Loss-of-Load remain bounding.

Note 1:
Due to the proximity of the release from the MSSVs/10 Percent ADVs to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10 Percent ADVs, the resultant plume from the MSSVs/10 Percent ADVs will not contaminate the normal operation CR intake of the affected unit. Thus, the X/Qs presented reflect those applicable to the CR intake of the unaffected unit.

ATTACHMENT 1

Diablo Canyon Power Plant
Technical Assessment
Prepared by WECTEC Global Project Services Inc. (WECTEC)

Implementation of Alternative Source Terms
Summary of Dose Analyses and Results
Revision 2

ATTACHMENT 2

Diablo Canyon Power Plant
Updated Final Safety Analysis Report Markup
(For Information Only)
Revision 2

TABLE 2.3-145
EXCLUSION AREA BOUNDARY AND LOW POPULATION ZONE ATMOSPHERIC DISPERSION FACTORS

Receptor	χ/Q (sec/m^3) 0 - 2 hours	2 - 8 hours	8 - 24 hours	1 - 4 days	4 - 30 days
Unit 1 EAB	2.50E-04	-	-	-	-
Unit 2 EAB	2.17E-04	-	-	-	-
Unit 1/2 LPZ	2.00E-05	8.94E-06	6.14E-06	2.72E-06	8.48E-07

Notes:

1. An EAB χ/Q value of 2.5E-04 sec/m^3 is used for radiological dose calculations from all release points.

2. The 0.5% sector dependent X/Q values are presented above. The worst-case downwind sector for the 0-2 hour period for all receptors is northwest. For Unit 1/2 LPZ the worst case sector for periods 2-8 hours and longer is southeast.

TABLE 2.3-147
UNIT 1 CONTROL ROOM INTAKE AND CENTER ATMOSPHERIC DISPERSION FACTORS (SEC/M^3)

Release Point and Receptor	0-2 Hour	2-8 Hour	8-24 Hour	1-4 Day	4-30 Day
Unit 1 Containment Building Edge to Unit 1 Control Room (CR) Normal Intake	1.44E-03	7.03E-04	3.00E-04	3.06E-04	3.04E-04
Unit 1 Containment Building Edge to Unit 2 CR Normal Intake	6.41E-04	3.51E-04	1.49E-04	1.49E-04	1.36E-04
Unit 1 Containment Building Edge to Unit 1 CR Emergency Intake[4]	4.09E-04	2.31E-04	9.54E-05	8.61E-05	7.04E-05
Unit 1 Containment Building Edge to Unit 2 CR Emergency Intake[4]	1.57E-04	7.82E-05	2.57E-05	2.71E-05	2.32E-05
Unit 1 Containment Building Edge to CR Center	9.21E-04	4.38E-04	1.77E-04	1.80E-04	1.67E-04
Unit 1 Plant Vent to Unit 1 CR Normal Intake	1.67E-03	1.22E-03	4.93E-04	4.89E-04	4.36E-04
Unit 1 Plant Vent to Unit 2 CR Normal Intake	9.08E-04	6.53E-04	2.69E-04	2.62E-04	2.38E-04
Unit 1 Plant Vent to Unit 1 CR Emergency Intake[4]	5.56E-04	3.33E-04	1.29E-04	1.11E-04	8.34E-05
Unit 1 Plant Vent to Unit 2 CR Emergency Intake[4]	2.22E-04	1.47E-04	5.44E-05	5.52E-05	4.45E-05
Unit 1 Plant Vent to CR Center	1.25E-03	8.93E-04	3.47E-04	3.46E-04	2.98E-04
Unit 1 Containment Penetration (GE Area) to Unit 1 CR Normal Intake	6.59E-03	2.81E-03	1.16E-03	1.07E-03	8.31E-04
Unit 1 Containment Penetration (GE Area) to Unit 2 CR Normal Intake	2.07E-03	1.13E-03	3.73E-04	3.78E-04	3.05E-04
Unit 1 Containment Penetration (GE Area) to Unit 1 CR Emergency Intake[4]	3.67E-04	2.31E-04	9.02E-05	8.38E-05	6.42E-05
Unit 1 Containment Penetration (GE Area) to Unit 2 CR Emergency Intake[4]	2.39E-04	1.20E-04	4.27E-05	4.22E-05	3.39E-05
Unit 1 Containment Penetration (GE Area) to CR Center	3.01E-03	1.33E-03	5.43E-04	4.93E-04	4.01E-04
Unit 1 Containment Penetration (GW/FW Area) to Unit 1 CR Normal Intake	4.86E-03	3.43E-03	1.35E-03	1.37E-03	1.25E-03
Unit 1 Containment Penetration (GW/FW Area) to Unit 2 CR Normal Intake	1.35E-03	9.79E-04	3.86E-04	3.84E-04	3.46E-04
Unit 1 Containment Penetration (GW/FW Area) to Unit 1 CR Emergency Intake[4]	8.05E-04	5.32E-04	2.12E-04	1.86E-04	1.40E-04
Unit 1 Containment Penetration (GW/FW Area) to Unit 2 CR Emergency Intake[4]	2.40E-04	1.53E-04	4.83E-05	5.20E-05	4.41E-05
Unit 1 Containment Penetration (GW/FW Area) to CR Center	2.55E-03	1.80E-03	7.17E-04	7.13E-04	6.50E-04
Unit 1 RWST Vent to Unit 1 CR Emergency Intake[4,5]	3.24E-04	1.83E-04	6.94E-05	6.82E-05	5.57E-05
Unit 1 RWST Vent to Unit 2 CR Emergency Intake[4,5]	1.88E-04	9.18E-05	3.40E-05	3.28E-05	2.69E-05
Unit 1 RWST Vent to CR Center[5]	1.01E-03	4.26E-04	1.85E-04	1.62E-04	1.31E-04

TABLE 2.3-147 (Continued)
UNIT 1 CONTROL ROOM INTAKE AND CENTER ATMOSPHERIC DISPERSION FACTORS (SEC/M^3)

Release Point and Receptor	0-2 Hour	2-8 Hour	8-24 Hour	1-4 Day	4-30 Day
Unit 1 MSSVs to Unit 1 CR Normal Intake [1, 2]	N/A	N/A	N/A	N/A	N/A
Unit 1 MSSVs to Unit 2 CR Normal Intake [3]	4.05E-03	2.65E-03	1.02E-03	1.02E-03	8.95E-04
Unit 1 MSSVs to Unit 1 CR Emergency Intake [3, 4]	4.52E-04	2.86E-04	1.14E-04	1.01E-04	7.82E-05
Unit 1 MSSVs to Unit 2 CR Emergency Intake [3, 4]	2.75E-04	1.49E-04	4.79E-05	5.02E-05	4.14E-05
Unit 1 MSSVs to CR Center [3]	1.23E-02	7.28E-03	2.21E-03	2.43E-03	2.06E-03
Unit 1 10% ADVs to Unit 1 CR Normal Intake [1, 2]	N/A	N/A	N/A	N/A	N/A
Unit 1 10% ADVs to Unit 2 CR Normal Intake [3]	4.06E-03	2.66E-03	1.03E-03	1.02E-03	9.03E-04
Unit 1 10% ADVs to Unit 1 CR Emergency Intake [3, 4]	4.52E-04	2.86E-04	1.14E-04	1.01E-04	7.82E-05
Unit 1 10% ADVs to Unit 2 CR Emergency Intake [3, 4]	2.75E-04	1.50E-04	4.82E-05	5.03E-05	4.15E-05
Unit 1 10% ADVs to CR Center [3]	1.23E-02	7.34E-03	2.22E-03	2.45E-03	2.08E-03
Unit 1 MSL Break Location to Unit 1 CR Normal Intake [1]	N/A	N/A	N/A	N/A	N/A
Unit 1 MSL Break Location to Unit 2 CR Normal Intake	4.07E-03	2.86E-03	1.11E-03	1.10E-03	9.70E-04
Unit 1 MSL Break Location to Unit 1 CR Emergency Intake [4]	4.30E-04	2.89E-04	1.14E-04	1.00E-04	7.63E-05
Unit 1 MSL Break Location to Unit 2 CR Emergency Intake [4]	2.74E-04	1.54E-04	4.98E-05	5.12E-05	4.20E-05
Unit 1 MSL Break Location to CR Center	1.14E-02	7.05E-03	2.19E-03	2.37E-03	1.98E-03
Unit 1 FHB to Unit 1 CR Normal Intake	6.68E-03	-	-	-	-
Unit 1 FHB to Unit 2 CR Normal Intake	2.69E-03	-	-	-	-
Unit 1 FHB to Unit 1 CR Emergency Intake [4]	3.28E-04	-	-	-	-
Unit 1 FHB to Unit 2 CR Emergency Intake [4]	2.39E-04	-	-	-	-
Unit 1 FHB to CR Center	3.54E-03	-	-	-	-
Unit 1 Equipment Hatch to Unit 1 CR Normal Intake	2.43E-02	-	-	-	-
Unit 1 Equipment Hatch to Unit 2 CR Normal Intake	2.67E-03	-	-	-	-
Unit 1 Equipment Hatch to Unit 1 CR Emergency Intake [4]	4.32E-04	-	-	-	-
Unit 1 Equipment Hatch to Unit 2 CR Emergency Intake [4]	2.45E-04	-	-	-	-
Unit 1 Equipment Hatch to CR Center	5.06E-03	-	-	-	-

TABLE 2.3-148
UNIT 2 CONTROL ROOM INTAKE AND CENTER ATMOSPHERIC DISPERSION FACTORS (SEC/M^3)

Release Point and Receptor	0-2 Hour	2-8 Hour	8-24 Hour	1-4 Day	4-30 Day
Unit 2 Containment Edge to Unit 2 CR Normal Intake	1.99E-03	9.59E-04	4.60E-04	4.04E-04	3.20E-04
Unit 2 Containment Edge to Unit 1 CR Normal Intake	6.89E-04	3.85E-04	1.66E-04	1.41E-04	1.08E-04
Unit 2 Containment Edge to Unit 1 CR Emergency Intake[4]	1.66E-04	1.05E-04	4.19E-05	3.73E-05	2.93E-05
Unit 2 Containment Edge to Unit 2 CR Emergency Intake[4]	3.78E-04	1.47E-04	5.99E-05	5.87E-05	4.90E-05
Unit 2 Containment Edge to CR Center	1.09E-03	5.49E-04	2.47E-04	2.12E-04	1.70E-04
Unit 2 Plant Vent to Unit 1 CR Normal Intake	1.49E-03	9.29E-04	3.80E-04	3.16E-04	2.21E-04
Unit 2 Plant Vent to Unit 1 CR Normal Intake	7.79E-04	4.80E-04	1.98E-04	1.65E-04	1.15E-04
Unit 2 Plant Vent to Unit 1 CR Emergency Intake[4]	2.02E-04	1.27E-04	5.11E-05	4.20E-05	3.15E-05
Unit 2 Plant Vent to Unit 2 CR Emergency Intake[4]	5.61E-04	2.91E-04	1.16E-04	1.02E-04	8.03E-05
Unit 2 Plant Vent to CR Center	1.12E-03	6.99E-04	2.82E-04	2.34E-04	1.68E-04
Unit 2 Containment Penetration (GE Area) to Unit 2 CR Normal Intake	6.60E-03	3.01E-03	1.17E-03	1.20E-03	1.01E-03
Unit 2 Containment Penetration (GE Area) to Unit 1 CR Normal Intake	2.08E-03	1.38E-03	5.62E-04	4.76E-04	3.59E-04
Unit 2 Containment Penetration (GE Area) to Unit 1 CR Emergency Intake[4]	2.26E-04	1.57E-04	6.15E-05	5.47E-05	4.08E-05
Unit 2 Containment Penetration (GE Area) to Unit 2 CR Emergency Intake[4]	3.74E-04	1.67E-04	6.72E-05	6.14E-05	5.08E-05
Unit 2 Containment Penetration (GE Area) to CR Center	3.09E-03	1.83E-03	7.22E-04	6.74E-04	5.35E-04
Unit 2 Containment Penetration (GW/FW Area) to Unit 2 CR Normal Intake	3.45E-03	1.14E-03	4.70E-04	4.42E-04	2.93E-04
Unit 2 Containment Penetration (GW/FW Area) to Unit 1 CR Normal Intake	1.20E-03	6.21E-04	2.49E-04	2.09E-04	1.41E-04
Unit 2 Containment Penetration (GW/FW Area) to Unit 1 CR Emergency Intake[4]	2.26E-04	1.59E-04	6.50E-05	5.36E-05	3.96E-05
Unit 2 Containment Penetration (GW/FW Area) to Unit 2 CR Emergency Intake[4]	8.08E-04	4.07E-04	1.43E-04	1.42E-04	1.14E-04
Unit 2 Containment Penetration (GW/FW Area) to CR Center	2.19E-03	1.16E-03	4.56E-04	3.83E-04	2.58E-04
Unit 2 RWST Vent to Unit 1 CR Emergency Intake[4,5]	1.89E-04	1.17E-04	4.52E-05	4.30E-05	3.40E-05
Unit 2 RWST Vent to Unit 2 CR Emergency Intake[4,5]	3.17E-04	1.40E-04	5.64E-05	5.12E-05	4.16E-05
Unit 2 RWST Vent to CR Center[5]	1.05E-03	5.55E-04	2.12E-04	2.12E-04	1.72E-04

TABLE 2.3-148 (Continued)
UNIT 2 CONTROL ROOM INTAKE AND CENTER ATMOSPHERIC DISPERSION FACTORS (SEC/M^3)

Release Point and Receptor	0-2 Hour	2-8 Hour	8-24 Hour	1-4 Day	4-30 Day
Unit 2 MSSVs to Unit 1 CR Normal Intake [3]	3.80E-03	2.36E-03	9.80E-04	8.00E-04	5.99E-04
Unit 2 MSSVs to Unit 2 CR Normal Intake [1,2]	N/A	N/A	N/A	N/A	N/A
Unit 2 MSSVs to Unit 1 CR Emergency Intake [3,4]	2.79E-04	1.87E-04	7.33E-05	6.50E-05	4.89E-05
Unit 2 MSSVs to Unit 2 CR Emergency Intake [3,4]	4.39E-04	2.14E-04	7.68E-05	7.54E-05	6.09E-05
Unit 2 MSSVs to CR Center [3]	1.19E-02	7.90E-03	3.22E-03	2.68E-03	2.05E-03
Unit 2 10% ADVs to Unit 1 CR Normal Intake [3]	3.82E-03	2.36E-03	9.86E-04	8.01E-04	6.01E-04
Unit 2 10% ADVs to Unit 2 CR Normal Intake [1,2]	N/A	N/A	N/A	N/A	N/A
Unit 2 10% ADVs to Unit 1 CR Emergency Intake [3,4]	2.77E-04	1.88E-04	7.35E-05	6.49E-05	4.89E-05
Unit 2 10% ADVs to Unit 2 CR Emergency Intake [3,4]	4.39E-04	2.14E-04	7.68E-05	7.54E-05	6.09E-05
Unit 2 10% ADVs to CR Center [3]	1.19E-02	7.94E-03	3.23E-03	2.70E-03	2.05E-03
Unit 2 MSL Break Location to Unit 1 CR Normal Intake	3.75E-03	2.37E-03	1.00E-03	7.93E-04	5.81E-04
Unit 2 MSL Break Location to Unit 2 CR Normal Intake [1]	N/A	N/A	N/A	N/A	N/A
Unit 2 MSL Break Location to Unit 1 CR Emergency Intake [4]	2.72E-04	1.88E-04	7.40E-05	6.42E-05	4.80E-05
Unit 2 MSL Break Location to Unit 2 CR Emergency Intake [4]	4.29E-04	2.19E-04	7.73E-05	7.57E-05	6.11E-05
Unit 2 MSL Break Location to CR Center	1.08E-02	7.22E-03	3.00E-03	2.44E-03	1.83E-03
Unit 2 FHB to Unit 1 CR Normal Intake	2.68E-03	-	-	-	-
Unit 2 FHB to Unit 2 CR Normal Intake	6.68E-03	-	-	-	-
Unit 2 FHB to Unit 1 CR Emergency Intake [4]	2.45E-04	-	-	-	-
Unit 2 FHB to Unit 2 CR Emergency Intake [4]	3.23E-04	-	-	-	-
Unit 2 FHB to CR Center	3.61E-03	-	-	-	-
Unit 2 Equipment Hatch to Unit 1 CR Normal Intake	2.47E-03	-	-	-	-
Unit 2 Equipment Hatch to Unit 2 CR Normal Intake	2.48E-02	-	-	-	-
Unit 2 Equipment Hatch to Unit 1 CR Emergency Intake [4]	2.46E-04	-	-	-	-
Unit 2 Equipment Hatch to Unit 2 CR Emergency Intake [4]	4.26E-04	-	-	-	-
Unit 2 Equipment Hatch to CR Center	5.09E-03	-	-	-	-

TABLE 2.3-149
UNITS 1 AND 2 TECHNICAL SUPPORT CENTER INTAKE AND CENTER ATMOSPHERIC DISPERSION FACTORS (SEC/M^3)

Release Point and Receptor	0-2 Hour	2-8 Hour	8-24 Hour	1-4 Day	4-30 Day
UNIT 1					
Unit 1 Containment Building Edge to TSC Normal Intake	2.45E-04	1.16E-04	4.08E-05	4.17E-05	3.48E-05
Unit 1 Containment Building Edge to TSC Center	2.74E-04	1.31E-04	4.80E-05	4.70E-05	4.00E-05
Unit 1 Plant Vent to TSC Normal Intake	3.04E-04	1.76E-04	6.82E-05	6.21E-05	5.20E-05
Unit 1 Plant Vent to TSC Center	3.41E-04	1.94E-04	7.63E-05	6.61E-05	5.62E-05
Unit 1 RWST Vent to TSC Normal Intake	2.48E-04	1.15E-04	4.52E-05	4.11E-05	3.40E-05
Unit 1 RWST Vent to TSC Center	2.76E-04	1.23E-04	5.00E-05	4.53E-05	3.65E-05
Unit 1 Containment Penetration (GE Area) to TSC Normal Intake	3.51E-04	1.61E-04	6.43E-05	5.89E-05	4.83E-05
Unit 1 Containment Penetration (GE Area) to TSC Center	4.05E-04	1.80E-04	7.26E-05	6.60E-05	5.37E-05
Unit 1 Containment Penetration (GW/FW Area) to TSC Normal Intake	4.44E-04	2.48E-04	8.04E-05	8.31E-05	6.68E-05
Unit 1 Containment Penetration (GW/FW Area) to TSC Center	5.61E-04	2.93E-04	1.00E-04	9.86E-05	8.16E-05
UNIT 2					
Unit 2 Containment Building Edge to TSC Normal Intake	5.31E-04	1.97E-04	8.36E-05	8.25E-05	6.72E-05
Unit 2 Containment Building Edge to TSC Center	5.39E-04	2.01E-04	8.73E-05	8.78E-05	6.84E-05
Unit 2 Plant Vent to TSC Normal Intake	5.47E-04	2.27E-04	1.03E-04	8.46E-05	6.68E-05
Unit 2 Plant Vent to TSC Center	5.41E-04	2.09E-04	9.67E-05	7.95E-05	6.43E-05
Unit 2 RWST Vent to TSC Normal Intake	3.52E-04	1.46E-04	6.12E-05	5.66E-05	4.63E-05
Unit 2 RWST Vent to TSC Center	3.61E-04	1.48E-04	6.30E-05	5.80E-05	4.69E-05
Unit 2 Containment Penetration (GE Area) to TSC Normal Intake	5.22E-04	2.21E-04	9.14E-05	8.61E-05	6.71E-05
Unit 2 Containment Penetration (GE Area) to TSC Center	5.49E-04	2.24E-04	9.60E-05	8.85E-05	7.05E-05
Unit 2 Containment Penetration (GW/FW Area) to TSC Normal Intake	1.71E-03	7.07E-04	2.98E-04	2.76E-04	2.21E-04
Unit 2 Containment Penetration (GW/FW Area) to TSC Center	1.76E-03	7.16E-04	3.01E-04	2.84E-04	2.28E-04

TABLE 15.5-9B LOSS OF ELECTRICAL LOAD Control Room Limiting Atmospheric Dispersion Factors (sec/m^3)			
Release point and receptor	0-2hr	2-8 hr	8-10.73 hr
MSSVs/10% ADVs to CR NOP Intake (Note 1)	8.12E-04	5.32E-04	5.32E-04
MSSVs/10% ADVs to CR Inleakage (CR Centerline)	2.46E-03	1.59E-03	1.59E-03

Note 1: Due to the proximity of the release from the MSSVs/10% ADVs, to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10% ADVs, the resultant plume from the MSSVs/10% ADVs will not contaminate the normal operation CR intake of the affected unit. Thus the χ/Q s presented reflect those applicable to the CR intake of the unaffected unit.

Note 2: The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit.

15.5-23B LOSS OF COOLANT ACCIDENT Control Room Limiting Atmospheric Dispersion Factors (sec/m^3)					
Release Location / Receptor	0-2 hr	2-8 hr	8-24 hr	24-96 hr	96-720 hr
Control Room Normal Intakes					
Plant Vent Release					
- Affected Unit Intake	1.67E-03	-----	-----	-----	-----
- Non-Affected Unit Intake	9.08E-04	-----	-----	-----	-----
Containment Penetration Areas					
- Affected Unit Intake	6.60E-03	-----	-----	-----	-----
- Non-Affected Unit Intake	2.08E-03	-----	-----	-----	-----
Control Room Infiltration					
Plant Vent	1.25E-03	8.93E-04	3.47E-04	3.46E-04	2.98E-04
Containment Penetration Areas	3.09E-03	1.83E-03	7.22E-04	7.13E-04	6.50E-04
RWST Vent	1.05E-03	5.55E-04	2.12E-04	2.12E-04	1.72E-04
Control Room Pressurization Intake					
Plant Vent	5.55E-05	3.68E-05	1.36E-05	1.38E-05	1.11E-05
Containment Penetration Areas	6.00E-05	3.98E-05	1.63E-05	1.37E-05	1.10E-05
RWST Vent	4.73E-05	2.93E-05	1.13E-05	1.08E-05	8.50E-06

Note 1: Release from the Containment penetration areas (i.e., areas GE or GW & FW): applicable to containment leakage and ESF system leakage that occurs in the Containment Penetration Area

Note 2: Release from Plant Vent: applicable to ESF system leakage that occurs in the Auxiliary building, MEDT releases, RHR Pump Seal Failure Release and Containment Vacuum/Pressure Relief Line Release

Note 3: The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit

TABLE 15.5-23E
LOSS OF COOLANT ACCIDENT
TSC Limiting Atmospheric Dispersion Factors (sec/m^3)

Release Location / Receptor	0-2 hr	2-8 hr	8-24 hr	24-96 hr	96-720 hr
TSC Normal Intakes					
Plant Vent Release	5.47E-04	-----	-----	-----	-----
Containment Penetration Areas	1.71E-03	-----	-----	-----	-----
RWST Vent	3.52E-04	-----	-----	-----	-----
TSC Infiltration					
Plant Vent	5.41E-04	2.09E-04	9.67E-05	7.95E-05	6.43E-05
Containment Penetration Areas	1.76E-03	7.16E-04	3.01E-04	2.84E-04	2.28E-04
RWST Vent	3.61E-04	1.48E-04	6.30E-05	5.80E-05	4.69E-05
CR/TSC Pressurization Intake					
Plant Vent	-----	3.68E-05	1.36E-05	1.38E-05	1.11E-05
Containment Penetration Areas	-----	3.98E-05	1.63E-05	1.37E-05	1.10E-05
RWST Vent	-----	2.93E-05	1.13E-05	1.08E-05	8.50E-06

Note 1: Release from the Containment penetration areas (i.e., areas GE or GW & FW): applicable to containment leakage and ESF system leakage that occurs in the Containment Penetration Area

Note 2: Release from Plant Vent: applicable to ESF system leakage that occurs in the Auxiliary building, MEDT releases, RHR Pump Seal Failure Release and Containment Vacuum/Pressure Relief Line Release

Note 3: The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit

TABLE 15.5-34B
MAIN STEAM LINE BREAK
Control Room Limiting Atmospheric Dispersion Factors (sec/m^3)

Receptor - Release Point	0-2hr	2-8 hr	8-10.73 hr	10.73-30 hr
CR NOP Intake - Faulted SG (Break Location)	Note 1			
CR NOP Intake - Intact SG (MSSVs/10% ADVs) - Note 2	8.12E-04			
CR Inleakage - Faulted SG (Break Location)	1.14E-02	7.22E-03	3.00E-03	3.00E-03
CR Inleakage - Intact SG (MSSVs/10% ADVs)	2.46E-03	1.59E-03	1.59E-03	-----
CR Emergency Intake & Bypass - Faulted SG (Break Location)	6.85E-05	4.70E-05	1.85E-05	1.85E-05
CR Emergency Intake & Bypass - Intact SG (MSSVs/10% ADVs)	1.40E-05	9.40E-06	9.40E-06	-----

Notes:

1. ARCON96 based χ/Q s are not applicable for these cases given that the horizontal distance from the source to the receptor is 1.5 meters (which is much less than the 10 meters required by ARCON96 methodology).

2. Due to the proximity of the release from the MSSVs/10% ADVs, to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10% ADVs, the resultant plume from the MSSVs/10% ADVs will not contaminate the normal operation CR intake of the affected unit. Thus the χ/Q s presented reflect those applicable to the CR intake of the unaffected unit.

3. The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit

TABLE 15.5-42B
LOCKED ROTOR ACCIDENT
Control Room Limiting Atmospheric Dispersion Factors (sec/m^3)

Release point and receptor	0-2hr	2-8 hr	8-10.73 hr
MSSVs/10% ADVs to CR NOP Intake (Note 1)	8.12E-04	5.32E-04	5.32E-04
MSSVs/10% ADVs to CR In-leakage (CR Centerline)	2.46E-03	1.59E-03	1.59E-03

Note 1: Due to the proximity of the release from the MSSVs/10% ADVs, to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10% ADVs, the resultant plume from the MSSVs/10% ADVs will not contaminate the normal operation CR intake of the affected unit. Thus the χ/Q s presented reflect those applicable to the CR intake of the unaffected unit.

Note 2: The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit

TABLE 15.5-47B
FUEL HANDLING ACCIDENT IN THE FUEL HANDLING BUILDING OR CONTAINMENT
Control Room Limiting Atmospheric Dispersion Factors (sec/m^3)

Release Location / Receptor	0-22 s	22 sec - 2 hr	2-8 hr	8-24 hr	1-4 d	4-30 d
Control Room Normal Intakes						
Containment Hatch Release						
- Affected Unit Intake	2.48E-02	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	2.67E-03	-----	-----	-----	-----	-----
Plant Vent Release						
- Affected Unit Intake	1.67E-03	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	9.08E-04	-----	-----	-----	-----	-----
FHB Out-leakage points						
- Affected Unit Intake	6.68E-03	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	2.69E-03	-----	-----	-----	-----	-----
Control Room Infiltration						
Containment Hatch Release	5.09E-03	5.09E-03	-----	-----	-----	-----
Plant Vent	1.25E-03	1.25E-03	-----	-----	-----	-----
FHB Out-leakage points	3.61E-03	3.61E-03	-----	-----	-----	-----
Control Room Pressurization Intake						
Containment Hatch Release	-----	6.15E-05	-----	-----	-----	-----
Plant Vent	-----	5.55E-05	-----	-----	-----	-----
FHB Out-leakage points	-----	6.13E-05	-----	-----	-----	-----

Note 1: Release from the Containment Hatch: applicable to FHA in Containment

Note 2: Release from Plant Vent / FHB Out-leakage: applicable to FHA in FHB

Note 3: The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit

TABLE 15.5-52B
CONTROL ROD EJECTION ACCIDENT
Control Room Limiting Atmospheric Dispersion Factors (sec/m^3)

Release Location / Receptor	0-2hr	2-8hr	8-10.73hr	10.73-24hr	24-96hr	96-720hr
CR Normal Intakes						
Containment leakage						
- Affected Unit Intake	6.60E-03	-----		-----	-----	-----
- Non-Affected Unit Intake	2.08E-03	-----		-----	-----	-----
MSSVs/10% ADVs						
- Affected Unit Intake	Note 3	-----	-----	-----	-----	-----
- Non-Affected Unit Intake	8.12E-04	-----	-----	-----	-----	-----
CR Infiltration						
Containment leakage	3.09E-03	1.83E-03	7.22E-04	7.22E-04	7.13E-04	6.50E-04
MSSVs/10% ADVs	2.46E-03	1.59E-03	1.59E-03	-----	-----	-----
CR Pressurization Intake						
Containment leakage	6.00E-05	3.98E-05	1.63E-05	1.63E-05	1.37E-05	1.10E-05
MSSVs/10% ADVs	1.40E-05	9.40E-06	9.40E-06	-----	-----	-----

Note 1: Containment leakage: Used for Containment release scenario; based on Containment penetration area release point.

Note 2: MSSV /10% ADVs: Used for Secondary System Release Scenario;

Note 3: Due to the proximity of the release from the MSSVs/10% ADVs, to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10% ADVs, the resultant plume from the MSSVs/10% ADVs will not contaminate the normal operation CR intake of the affected unit.

Note 4: The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit

~~TABLE 15.5-64~~ ~~Sheet 2 of 2~~

~~PARAMETERS USED IN EVALUATING~~
~~RADIOLOGICAL CONSEQUENCES FOR SGTR ANALYSIS~~

TABLE 15.5-64B
STEAM GENERATOR TUBE RUPTURE
Control Room Limiting Atmospheric Dispersion Factors (sec/m^3)

Release Location / Receptor	0-179 s	179-257.2 s	257.2 s- 2 h	2-8 hr	8-10.73 hr
CR Normal Intakes					
- Plant Vent	1.29E-03	-----	-----	-----	-----
- MSSVs/10% ADVs (Note 1)	-----	8.12E-04	-----	-----	-----
CR Infiltration					
- Plant Vent	1.25E-03	-----	-----	-----	-----
- MSSVs/10% ADVs	-----	2.46E-03	2.46E-03	1.47E-03[2]	1.47E-03[2]
CR Pressurization Intake					
- MSSVs/10% ADVs	-----	-----	1.40E-05	9.40E-06[2]	9.40E-06[2]

~~TABLE 15.5-68~~

~~ATMOSPHERIC DISPERSION FACTORS AND BREATHING RATES - SGTR ANALYSIS~~

~~OFFSITE EXPOSURE~~

~~Time (hours)~~	~~Exclusion Area Boundary χ/Q (Sec/m^3)~~	~~Low Population Zone χ/Q (Sec/m^3)~~	~~Breathing Rate[(a)] (m^3/Sec)~~
~~0-2~~	~~5.29×10^{-4}~~	~~2.2×10^{-5}~~	~~3.47×10^{-4}~~
~~2-8~~	~~—~~	~~2.2×10^{-5}~~	~~3.47×10^{-4}~~

~~CONTROL ROOM EXPOSURE~~

~~Time (hours)~~	~~Control Room Filtered Pressurization χ/Q (Sec/m^3)~~	~~Control Room Unfiltered Pressurization Zone χ/Q (Sec/m^3)~~	~~Control Room Breathing Rate[(a)] (m^3/Sec)~~
~~0-8~~	~~7.05×10^{-5}~~	~~1.96×10^{-4}~~	~~3.47×10^{-4}~~
~~8-24~~	~~5.38×10^{-5}~~	~~1.49×10^{-4}~~	~~3.47×10^{-4}~~
~~24-96~~	~~3.91×10^{-5}~~	~~1.08×10^{-4}~~	~~3.47×10^{-4}~~
~~>96~~	~~2.27×10^{-5}~~	~~6.29×10^{-5}~~	~~3.47×10^{-4}~~

Note 1: Due to the proximity of the release from the MSSVs/10% ADVs, to the normal operation CR intake of the affected unit, and due to the high vertical velocity of the steam discharge from the MSSVs/10% ADVs, the resultant plume from the MSSVs/10% ADVs will not contaminate the normal operation CR intake of the affected unit. Thus the χ/Q s presented reflect those applicable to the CR intake of the unaffected unit.

Note 2: Since the 0-2hour activity intake following a SGTR controls the 30-day integrated dose, the SGTR dose model utilizes a simplified model with respect to selection of the X/Q values for the 2-10.73hr time period. Specifically, the bounding X/Q value is selected for the release point / receptor for the 0-2 hr time period, but unlike the dose models used for the other accidents, the X/Q values for time periods beyond t=2hr, are not switched to the other unit if they display higher values.

Note 3: The selection of the χ/Q values for the release points/ receptors listed above are intended to provide bounding dose estimates for an event at either unit.

Enclosure
Attachment 3
PG&E Letter DCL-16-044

ATTACHMENT 3

DATA DISC

Do not add CDs

Comment #3A

ATTENTION DCD

FILES ON CD-ROM WERE **NOT** ADDED TO ADAMS