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Your ref: Docket Number 52-006
Our ref: DCP/NRC2099

March 7, 2008

Subject: AP1000 DCD Impact Document Submittal of APP-GW-GLE-001, Revision 0

Westinghouse is submitting Revision 0 of APP-GW-GLE-001, "Impact of Annex Building Expansion and Condenser Air Removal Stack Location on the Control Room Atmospheric Dispersion Factors." The purpose of this report is to identify changes to the AP1000 Design Control Document (DCD). These DCD changes provide clarification to the Annex Building Expansion and Condenser Air Removal Stack relocation's impact on the Control Room Atmospheric Dispersion Factors information contained in the AP1000 DCD.

This report is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information provided in this report is generic and is expected to apply to all Combined Operating License (COL) applicants referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Pursuant to 10 CFR 50.30(b), APP-GW-GLE-001, Revision 0, "Impact of Annex Building Expansion and Condenser Air Removal Stack Location on the Control Room Atmospheric Dispersion Factors," is submitted as Enclosure 1 under the attached Oath of Affirmation.

Questions or requests for additional information related to the content and preparation of this report should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,

Monte D Bartley FOR

D. A. Lindgren, Licensing Lead
Licensing and Customer Interface
Regulatory Affairs and Standardization

D063
NRO

/Attachment

1. "Oath of Affirmation," dated March 7, 2008

/Enclosure

1. APP-GW-GLE-001, Revision 0, "Impact of Annex Building Expansion and Condenser Air Removal Stack Location on the Control Room Atmospheric Dispersion Factors,"

cc:	B. Gleaves	- U.S. NRC	1E	1A
	E. McKenna	- U.S. NRC	1E	1A
	P. Ray	- TVA	1E	1A
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	R. Kitchen	- Progress Energy	1E	1A
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	J. Wilkinson	- Florida Power & Light	1E	1A
	C. Pierce	- Southern Company	1E	1A
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	R. Grumbir	- NuStart	1E	1A
	E. Schmiech	- Westinghouse	1E	1A
	M. Bartley	- Westinghouse	1E	1A

ATTACHMENT 1

"Oath of Affirmation"

ATTACHMENT 1

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of:)

AP1000 Design Certification Amendment Application)

NRC Docket Number 52-006)

APPLICATION FOR REVIEW OF
"AP1000 GENERAL INFORMATION"
FOR AP1000 DESIGN CERTIFICATION AMENDMENT APPLICATION REVIEW

W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs and Standardization, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.

W. E. Cummins
Vice President
Regulatory Affairs and Standardization

Subscribed and sworn to
before me this 7th day
of March 2008.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Patricia S. Aston, Notary Public
Murrysville Boro, Westmoreland County
My Commission Expires July 11, 2011
Member, Pennsylvania Association of Notaries

Notary Public

ENCLOSURE 1

APP-GW-GLE-001

Revision 0

"Impact of Annex Building Expansion and Condenser Air Removal Stack Location on the Control Room Atmospheric Dispersion Factors"

AP1000 DOCUMENT COVER SHEET

TDC: _____ Permanent File: _____

AP1000 DOCUMENT NO.	REVISION	PAGE	ASSIGNED TO	OPEN ITEMS (Y/N)
APP-GW-GLE-001	0	1 of 13	W-GROVER	N

ALTERNATE DOCUMENT NUMBER: WORK BREAKDOWN #:

ORIGINATING ORGANIZATION: AP1000 Licensing & Cust. Interface

TITLE: **Impact of Annex Building Expansion and Condenser Air Removal Stack Location on the Control Room Atmospheric Dispersion Factors**

ATTACHMENTS:	DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION:
	APP-GW-GEE-158
CALCULATION/ANALYSIS REFERENCE:	APP-GW-GEE-228

ELECTRONIC FILENAME	ELECTRONIC FILE FORMAT	ELECTRONIC FILE DESCRIPTION
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LEGAL REVIEW T. J. White	SIGNATURE / DATE T.J. White 3-5-08
PATENT REVIEW Doug Ekeroth	SIGNATURE / DATE for DEE (Signed) JM Haduck JR 3-5-08

ORIGINATOR(S) J. L. Grover	SIGNATURE / DATE J. L. Grover 3/5/08	
REVIEWER(S) S. T. Kinnas	SIGNATURE / DATE 3/5/08	
	SIGNATURE / DATE	
	SIGNATURE / DATE	
VERIFIER(S) T. L. Morante	SIGNATURE / DATE T. L. Morante 3/5/08	Verification Method: Independent Review

**Plant Applicability: ☒ All AP1000 plants except: No Exceptions
☐ Only the following plants:

APPLICABILITY REVIEWER** J. A. Speer	SIGNATURE / DATE 3/5/08
RESPONSIBLE MANAGER* D. A. Lindgren (Acting)	SIGNATURE / DATE D. A. Lindgren 3/5/2008

* Approval of the responsible manager signifies that the document and all required reviews are complete, the appropriate proprietary class has been assigned, electronic file has been provided to the EDMS, and the document is released for use.

Document Number: APP-GW-GLE-001 **Revision Number:** 0

Title: Impact of Annex Building Expansion and Condenser Air Removal Stack Location on the Control Room Atmospheric Dispersion Factors

Brief Description of the Impact (what is being changed and why):

Impact of Annex Building Expansion and Condenser Air Removal Stack Location on the Control Room Atmospheric Dispersion Factors

SRP Section Impacted:
Impacts Section 2.3.4 and 2.3.5 of the Standard Review Plan (SRP).

This evaluation is prepared to document the Design Control Document (DCD) changes to Figure 15A-1, Table 15A-7, Table 2-1, Table 15A-6, and Table 5.0-1 (Tier 1). The DCD change is a clarification of the Annex Building Expansion and Condenser Air Removal Stack relocation's impact on the Control Room Atmospheric Dispersion Factors information contained in the AP1000 DCD. This change is intended to be included in the revision 17 of the DCD or be included as generic information in plant specific FSARs.

I. TECHNICAL DESCRIPTION

The revised DCD Table 15A-7 provides a listing of updated values for separation distances and release point elevations for use in determining the atmospheric dispersion factors (X/Q values) for the control room air intake and the Annex Building entrance (which provides the pathway for contaminated air entering the control room when the Control Room Habitability System is in service). The bases for the changes are Design Change Proposal "Annex Building Expanded Office Area," APP-GW-GEE-158, Revision 0 and Design Change Proposal "Outside Air Inlet Structure," APP-GW-GEE-228, Revision 0. In both cases, the distance from the sources to the receptors increased. (Refer to Figure 15A-1 attached). Additionally, the location of the condenser air removal stack was corrected to address an inconsistency between the illustrative DCD figure, Figure 15A-1, and the engineering design drawings. The revised DCD Figure 15A-1 and DCD Table 15A-7 are consistent with the layout shown in APP-GW-GEE-158, Revision 0. With the correction made to the location of the condenser air removal stack, there is an increase in the defined distance to the control room air intake and a decrease in the defined distance to the Annex Building access door.

Additional clarification is provided to address concerns regarding the change in location of the condenser air removal stack as indicated in Supplier Deficiency Report (WEC08-001). Concerns were expressed with the relocation of the condenser air removal stack since it places it much closer to the Annex Building entrance than was originally designated. The AP1000 DCD currently states in footnote 5 of Tables 2-1 and 15A-6 that the listed X/Q values for the PORV and safety valve releases "bound the dispersion factors for releases from the steam line safety & power-operated relief valves and the condenser air removal stack." [The same statement appears in footnote 5 of Table 5.0-1 in the Tier 1 material.]

The concern is that, with the revised location of this potential activity release point, this statement may no longer be valid. While none of the accident dose analyses in the AP1000 DCD include the condenser air removal stack as a release pathway, the current statements in the DCD and in the Tier 1 material need

to be corrected. The concern is being addressed by revising the three tables in question to separately list atmospheric dispersion factors specifically for the condenser air removal stack release point and to revise the footnotes both to remove the inaccuracy in footnote 5 and to include an additional footnote (footnote 7) to address the air removal stack values.

II. CHANGE JUSTIFICATION

The atmospheric dispersion factors selected for the condenser air removal stack are listed in the following chart:

Time Period	X/Q at CR Air Intake (sec/m^3)	X/Q at Annex Building Entrance (sec/m^3)
0-2 hours	6.0E-3	2.0E-2
2-8 hours	4.0E-3	1.8E-2
8-24 hours	2.0E-3	7.0E-3
1-4 days	1.5E-3	5.0E-3
4-30 days	1.0E-3	4.5E-3

The above values for the X/Q at the CR air intake were selected to be the same as for those currently defined values for the release-receptor pair of the fuel handling area to the CR air intake since the straight line distances are similar.

The above X/Q values at the Annex Building entrance were selected to be the same as those currently identified for the release-receptor pair of PORV & safety valves to the CR intake since the straight line distances are similar. Note that this is considered to be highly conservative since no consideration is being taken of the higher elevation associated with the condenser air removal stack.

Footnote 5 for the various tables included in the DCD Mark-Up section is also being revised to eliminate reference to the small line break outside containment since that event is not associated with the release points associated with footnote 5.

Footnote 7 was added to the various tables noting that the condenser air removal stack X/Q values are included for information only since this release point is not modeled in any of the design basis dose analyses. Prior to reactor trip, steam releases would be through the condenser; however, none of the AP1000 dose analyses consider pre-trip releases. Additionally, the condenser, when available, would significantly reduce the iodine and alkali metal activity releases. The typical condenser removal coefficient is 0.01; reducing non-gaseous activity releases though the condenser by a factor of 100. Thus, it is conservative to ignore the condenser air removal stack release pathway in the dose analyses. Note that once the reactor trips the condenser is not available and steam releases are through the steam generator relief valves and/or safety valves, consistent with the AP1000 design basis dose analyses.

Note also that, early in an accident, the primary pathway for activity to enter the CR is through the air intake. It is more conservative to assume that the release point is the one closer to the air intake.

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III. REGULATORY IMPACT

A. EVALUATION OF DEPARTURE FROM TIER 2 INFORMATION (Check correct response and provide justification for that determination under each response)

10 CFR Part 52, Appendix D, Section VIII. B.5.a. provides that an applicant for a combined licensee who references the AP1000 design certification may depart from Tier 2 information, without prior NRC approval, if it does not require a license amendment under paragraph B.5.b. The questions below address the criteria of B.5.b.

1. Does the proposed departure result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location does not alter accident precursors or the design function of the stack.

2. Does the proposed departure result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location does not increase the likelihood of an occurrence of a malfunction of a structure, system, or component important to safety. The addition of stack parameters and change in stack location will not affect accident precursors.

3. Does the proposed departure result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location does not alter the design function of the stack or increase the consequences of an accident previously evaluated in the plant-specific DCD.

4. Does the proposed departure result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location does not increase the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD.

5. Does the proposed departure create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location does not alter the design function of the condenser stack. The changes to the stack do not add or modify accident precursors.

6. Does the proposed departure create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location do not alter operating conditions or design functions of SSCs important to safety. Therefore there is no new malfunction.

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7. Does the proposed departure result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location do not alter the pressure boundary integrity design function of the reactor coolant system or other SSCs important to safety.

8. Does the proposed departure result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location do not alter the methodology of the evaluation of the pressure boundary integrity of the safety analysis.

B. IMPACT ON RESOLUTION OF A SEVERE ACCIDENT ISSUE

10 CFR Part 52, Appendix D, Section VIII. B.5.a. provides that an applicant for a combined licensee who references the AP1000 design certification may depart from Tier 2 information, without prior NRC approval, if it does not require a license amendment under paragraph B.5.c. The questions below address the criteria of B.5.c.

1. Does the proposed activity result in an impact to features that mitigate severe accidents. If the answer is Yes answer Questions 2 and 3 below. ☐ YES ☒ NO

   There is no change to the response of safety systems used to mitigate severe accidents due to the addition of the condenser stack parameters and change of stack location.

2. Is there is a substantial increase in the probability of a severe accident such that a particular severe accident previously reviewed and determined to be not credible could become credible? ☐ YES ☐ NO ☐ N/A

   There is no change to the response of safety systems used to mitigate accidents due to the addition of the condenser stack parameters and change of stack location.

3. Is there is a substantial increase in the consequences to the public of a particular severe accident previously reviewed? ☐ YES ☐ NO ☐ N/A

   There is no change to the response of safety systems used to mitigate accidents due to the addition of the condenser stack parameters and change of stack location.

C. SECURITY ASSESSMENT

1. Does the proposed change have an adverse impact on the security assessment of the AP1000? ☐ YES ☒ NO

   The addition of the condenser stack parameters and change of stack location will not alter barriers or alarms that control access to protected areas of the plant. The changes to the stack will not alter requirements for security personnel.

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D. OTHER REGULATORY CRITERIA

N/A

IV. DCD MARK-UP

Table 15A-7

CONTROL ROOM SOURCE/RECEPTOR DATA FOR DETERMINATION OF ATMOSPHERIC DISPERSION FACTORS

Source Description	Release Elevation Note 1 (m)	Horizontal Straight-Line Distance To Receptor		
		Control Room HVAC Intake (Elevation 19.9 m) (Δ1)	Annex Building Access (Elevation 1.5 m) (Δ2)	Comment
Plant Vent (⬡1)	55.7	147.2 ft (44.9 m)	379.3 ft (115.6 m)	
PCS Air Diffuser (⬡2)	69.8	118.1 ft (36.0 m)	343.2 ft (104.6 m)	
Fuel Building Blowout Panel (⬡3)	17.4	203.2 ft (61.9 m)	427.4 ft (130.3 m)	Note 3
NRC Fuel Building Rail Bay Door (⬡4)	1.5	218.5 ft (66.6 m)	433.5 ft (132.1 m)	Note 3
Steam Vent (⬡5)	17.1	61.5 ft (18.8 m)	261.6 ft (79.7 m)	
PORV/Safety Valves (⬡6)	19.2	66.9 ft (20.4 m)	255.4 ft (77.8 m)	
Condenser Air Removal Stack (⬡7)	38.4	198.3 ft (60.4 m)	58.3 ft (17.8 m)	Note 3
Containment Shell (Diffuse Area Source) (⬡8)	Same as Receptor Elevation (19.9 m or 1.5 m)	42.0 ft (12.8 m)	272.3 ft (83.0 m)	Note 2

Notes:
1. All elevations relative to grade at 0.0 m.
2. For calculating distance, the source is defined as the point on the containment shell closest to receptor.
3. Vertical distance traveled is conservatively neglected.
4. ⬡ – Refer to Symbols on Figure 15A-1.
5. Δ – Refer to Symbols on Figure 15A-1.

NRC

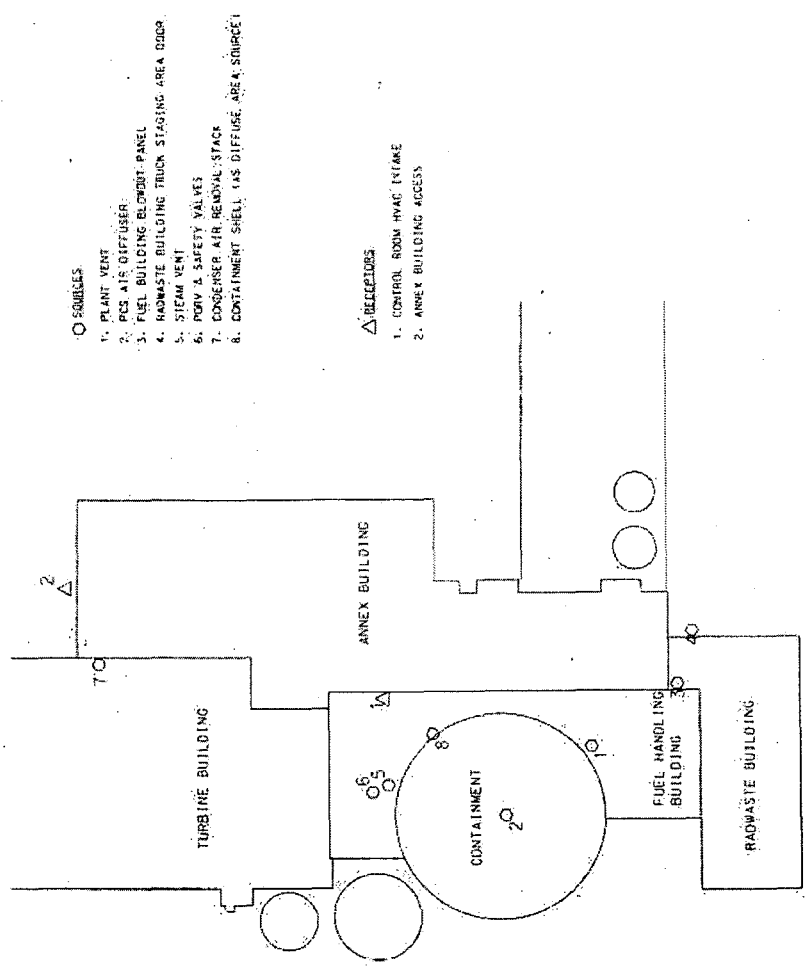

Figure 15A-1

Site Plan with Release and Intake Locations

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2. Site Characteristics **AP1000 Design Control Document**

Table 2-1 (Sheet 3 of 3)

SITE PARAMETERS

Control Room Atmospheric Dispersion Factors (χ/Q) for Accident Dose Analysis

χ/Q (s/m^3) at HVAC Intake for the Identified Release Points[1]

	Plant Vent or PCS Air Diffuser[3]	Ground Level Containment Release Points[4]	PORV and Safety Valve Releases[5]	Steam Line Break Releases	Fuel Handling Area[6]	Condenser Air Removal Stack[9]
0 - 2 hours	3.0E-3	6.0E-3	2.0E-2	2.4E-2	6.0E-3	6.0E-3
2 - 8 hours	2.5E-3	4.5E-3	1.8E-2	2.0E-2	4.0E-3	4.0E-3
8 - 24 hours	1.0E-3	2.0E-3	7.0E-3	7.5E-3	2.0E-3	2.0E-3
1 - 4 days	8.0E-4	1.8E-3	5.0E-3	5.5E-3	1.5E-3	1.5E-3
4 - 30 days	6.0E-4	1.5E-3	4.5E-3	5.0E-3	1.0E-3	1.0E-3

χ/Q (s/m^3) at Control Room Door for the Identified Release Points[2]

	Plant Vent or PCS Air Diffuser[3]	Ground Level Containment Release Points[4]	PORV and Safety Valve Releases[5]	Steam Line Break Releases	Fuel Handling Area[6]	Condenser Air Removal Stack[9]
0 - 2 hours	1.0E-3	1.0E-3	4.0E-3	4.0E-3	6.0E-3	2.0E-2
2 - 8 hours	7.5E-4	7.5E-4	3.2E-3	3.2E-3	4.0E-3	1.8E-2
8 - 24 hours	3.5E-4	3.5E-4	1.2E-3	1.2E-3	2.0E-3	7.0E-3
1 - 4 days	2.8E-4	2.8E-4	1.0E-3	1.0E-3	1.5E-3	5.0E-3
4 - 30 days	2.5E-4	2.5E-4	8.0E-4	8.0E-4	1.0E-3	4.5E-3

Notes:

1. These dispersion factors are to be used 1) for the time period preceding the isolation of the main control room and actuation of the emergency habitability system, 2) for the time after 72 hours when the compressed air supply in the emergency habitability system would be exhausted and outside air would be drawn into the main control room, and 3) for the determination of control room doses when the non-safety ventilation system is assumed to remain operable such that the emergency habitability system is not actuated.
2. These dispersion factors are to be used when the emergency habitability system is in operation and the only path for outside air to enter the main control room is that due to ingress/egress.
3. These dispersion factors are used for analysis of the doses due to a postulated small line break outside of containment. The plant vent and PCS air diffuser are potential release paths for other postulated events (loss-of-coolant accident, rod ejection accident, and fuel handling accident inside the containment); however, the values are bounded by the dispersion factors for ground level releases.

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2. Site Characteristics **AP1000 Design Control Document**

4. The listed values represent modeling the containment shell as a diffuse area source, and are used for evaluating the doses in the main control room for a loss-of-coolant accident, for the containment leakage of activity following a rod ejection accident, and for a fuel handling accident occurring inside the containment.
5. The listed values bound the dispersion factors for releases from the steam line safety & power-operated relief valves ~~and the condenser air removal stack.~~ These dispersion factors would be used for evaluating the doses in the main control room for a steam generator tube rupture, a main steam line break, a locked reactor coolant pump rotor, and for the secondary side release from a rod ejection accident. ~~Additionally, these dispersion coefficients are conservative for the small line break outside containment.~~
6. The listed values bound the dispersion factors for releases from the fuel storage and handling area. The listed values also bound the dispersion factors for releases from the fuel storage area in the event that spent fuel boiling occurs and the fuel building relief panel opens on high temperature. These dispersion factors are used for the fuel handling accident occurring outside containment and for evaluating the impact of releases associated with spent fuel pool boiling.
7. This release point is included for information only as a potential activity release point. None of the design basis accident radiological consequences analyses model releases from this point.

Table 15A-6

CONTROL ROOM ATMOSPHERIC DISPERSION FACTORS (χ/Q) FOR ACCIDENT DOSE ANALYSIS

χ/Q (s/m³) at HVAC Intake for the Identified Release Points[1]						
	Plant Vent or PCS Air Diffuser[3]	Ground Level Containment Release Points[4]	PORV and Safety Valve Releases[5]	Steam Line Break Releases	Fuel Handling Area[6]	Condenser Air Removal Stack[7]
0 - 2 hours	3.0E-3	6.0E-3	2.0E-2	2.4E-2	6.0E-3	6.0E-3
2 - 8 hours	2.5E-3	4.5E-3	1.8E-2	2.0E-2	4.0E-3	4.0E-3
8 - 24 hours	1.0E-3	2.0E-3	7.0E-3	7.5E-3	2.0E-3	2.0E-3
1 - 4 days	8.0E-4	1.8E-3	5.0E-3	5.5E-3	1.5E-3	1.5E-3
4 - 30 days	6.0E-4	1.5E-3	4.5E-3	5.0E-3	1.0E-3	1.0E-3
χ/Q (s/m³) at Control Room Door for the Identified Release Points[2]						
	Plant Vent or PCS Air Diffuser[3]	Ground Level Containment Release Points[4]	PORV and Safety Valve Releases[5]	Steam Line Break Releases	Fuel Handling Area[6]	Condenser Air Removal Stack[7]
0 - 2 hours	1.0E-3	1.0E-3	4.0E-3	4.0E-3	6.0E-3	2.0E-2
2 - 8 hours	7.5E-4	7.5E-4	3.2E-3	3.2E-3	4.0E-3	1.8E-2
8 - 24 hours	3.5E-4	3.5E-4	1.2E-3	1.2E-3	2.0E-3	7.0E-3
1 - 4 days	2.8E-4	2.8E-4	1.0E-3	1.0E-3	1.5E-3	5.0E-3
4 - 30 days	2.5E-4	2.5E-4	8.0E-4	8.0E-4	1.0E-3	4.5E-3

Notes:

1. These dispersion factors are to be used 1) for the time period preceding the isolation of the main control room and actuation of the emergency habitability system, 2) for the time after 72 hours when the compressed air supply in the emergency habitability system would be exhausted and outside air would be drawn into the main control room, and 3) for the determination of control room doses when the non-safety ventilation system is assumed to remain operable such that the emergency habitability system is not actuated.
2. These dispersion factors are to be used when the emergency habitability system is in operation and the only path for outside air to enter the main control room is that due to ingress/egress.
3. These dispersion factors are used for analysis of the doses due to a postulated small line break outside of containment. The plant vent and PCS air diffuser are potential release paths for other postulated events (loss-of-coolant accident, rod ejection accident, and fuel handling accident inside the containment); however, the values are bounded by the dispersion factors for ground level releases.
4. The listed values represent modeling the containment shell as a diffuse area source, and are used for evaluating the doses in the main control room for a loss-of-coolant accident, for the containment leakage of activity following a rod ejection accident, and for a fuel handling accident occurring inside the containment.

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15. Accident Analyses **AP1000 Design Control Document**

5. The listed values bound the dispersion factors for releases from the steam line safety & power-operated relief valves ~~and the condenser air removal stack~~. These dispersion factors would be used for evaluating the doses in the main control room for a steam generator tube rupture, a main steam line break, a locked reactor coolant pump rotor, and for the secondary side release from a rod ejection accident. ~~Additionally, these dispersion coefficients are conservative for the small line break outside containment.~~
6. The listed values bound the dispersion factors for releases from the fuel storage and handling area. The listed values also bound the dispersion factors for releases from the fuel storage area in the event that spent fuel boiling occurs and the fuel building relief panel opens on high temperature. These dispersion factors are used for the fuel handling accident occurring outside containment and for evaluating the impact of releases associated with spent fuel pool boiling.
7. This release point is included for information only as a potential activity release point. None of the design basis accident radiological consequences analyses model releases from this point.

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5. Site Parameters **AP1000 Design Control Document**

Table 5.0-1 (cont.)
Site Parameters

Control Room Atmospheric Dispersion Factors (χ/Q) for Accident Dose Analysis						
χ/Q (s/m³) at HVAC Intake for the Identified Release Points[1]						
	Plant Vent or PCS Air Diffuser[3]	**Ground Level Containment Release Points[4]**	**PORV and Safety Valve Releases[5]**	**Steam Line Break Releases**	**Fuel Handling Area[6]**	Condenser Air Removal Stack[7]
0 - 2 hours	3.0E-3	6.0E-3	2.0E-2	2.4E-2	6.0E-3	6.0E-3
2 - 8 hours	2.5E-3	4.5E-3	1.8E-2	2.0E-2	4.0E-3	4.0E-3
8 - 24 hours	1.0E-3	2.0E-3	7.0E-3	7.5E-3	2.0E-3	2.0E-3
1 - 4 days	8.0E-4	1.8E-3	5.0E-3	5.5E-3	1.5E-3	1.5E-3
4 - 30 days	6.0E-4	1.5E-3	4.5E-3	5.0E-3	1.0E-3	1.0E-3
χ/Q (s/m³) at Control Room Door for the Identified Release Points[2]						
0 - 2 hours	1.0E-3	1.0E-3	4.0E-3	4.0E-3	6.0E-3	2.0E-2
2 - 8 hours	7.5E-4	7.5E-4	3.2E-3	3.2E-3	4.0E-3	1.8E-2
8 - 24 hours	3.5E-4	3.5E-4	1.2E-3	1.2E-3	2.0E-3	7.0E-3
1 - 4 days	2.8E-4	2.8E-4	1.0E-3	1.0E-3	1.5E-3	5.0E-3
4 - 30 days	2.5E-4	2.5E-4	8.0E-4	8.0E-4	1.0E-3	4.5E-3

Notes:

1. These dispersion factors are to be used 1) for the time period preceding the isolation of the main control room and actuation of the emergency habitability system, 2) for the time after 72 hours when the compressed air supply in the emergency habitability system would be exhausted and outside air would be drawn into the main control room, and 3) for the determination of control room doses when the nonsafety ventilation system is assumed to remain operable such that the emergency habitability system is not actuated.
2. These dispersion factors are to be used when the emergency habitability system is in operation and the only path for outside air to enter the main control room is that due to ingress/egress.
3. These dispersion factors are used for analysis of the doses due to a postulated small line break outside of containment. The plant vent and PCS air diffuser are potential release paths for other postulated events (loss-of-coolant accident, rod ejection accident, and fuel handling accident inside the containment); however, the values are bounded by the dispersion factors for ground level releases.
4. The listed values represent modeling the containment shell as a diffuse area source, and are used for evaluating the doses in the main control room for a loss-of-coolant accident, for the containment leakage of activity following a rod ejection accident, and for a fuel handling accident occurring inside the containment.
5. The listed values bound the dispersion factors for releases from the steam line safety and power-operated relief valves, ~~and the condenser air removal stack.~~ These dispersion factors would be used for evaluating the doses in the main control room for a steam generator tube rupture, a main steam line break, a locked reactor coolant pump rotor, and the secondary side release from a rod ejection accident. ~~Additionally, these dispersion coefficients are conservative for the small line break outside Containment.~~
6. The listed values bound the dispersion factors for releases from the fuel storage and handling area. The listed values also bound the dispersion factors for releases from the fuel storage area in the event that spent fuel boiling occurs and the fuel building relief panel opens on high temperature. These dispersion factors are used for the fuel handling accident occurring outside containment and for evaluating the impact of releases associated with spent fuel pool boiling.
7. This release point is included for information only as a potential activity release point. None of the design basis accident radiological consequences analyses model releases from this point.