



**Northeast
Nuclear Energy**

Rope Ferry Rd. (Route 156), Waterford, CT 06385

Millstone Nuclear Power Station
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385-0128
(860) 447-1791
Fax (860) 444-4277

The Northeast Utilities System

JUL 31 2000

Docket No. 50-423
B18157

Re: 10 CFR 2.790
10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

**Millstone Nuclear Power Station, Unit No. 3
License Amendment Related to the Supplementary Leakage Collection and
Release System (PLAR 3-98-5), Supplemental Information**

This letter contains proprietary information provided by Stone & Webster Engineering Corporation (S&W). Pursuant to 10 CFR 2.790, it is requested that the report entitled "Analysis of Containment Mixing Rate During a Design Basis LOCA," (see Attachment 5) describing the S&W mixing model, be withheld from public disclosure. Upon separation of Attachment 5 from this letter, this letter may be decontrolled.

Background

In a letter dated June 6, 1998,⁽¹⁾ Northeast Nuclear Energy Company (NNECO) applied for an amendment to the Millstone Unit No. 3 Operating License to reflect changes in the licensing basis for post-accident operation of the Supplementary Leakage Collection and Release System (SLCRS) as described in the Final Safety Analysis Report (FSAR).

The Nuclear Regulatory Commission (NRC) staff requested additional information via letters dated August 20, 1998,⁽²⁾ and January 25, 1999.⁽³⁾ NNECO provided that

⁽¹⁾ M. H. Brothers letter to the U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3 - Proposed License Amendment Request SLCRS Bypass Leakage (PLAR 3-98-5)," dated June 6, 1998.

⁽²⁾ J. W. Andersen (USNRC) letter to M. L. Bowling, Jr., "Millstone Nuclear Power Station, Unit No. 3 - Request for Additional Information (TAC No. MA2035)," dated August 20, 1998.

⁽³⁾ J. W. Andersen (USNRC) letter to M. L. Bowling, Jr., "Millstone Nuclear Power Station, Unit No. 3 - Request for Additional Information (TAC No. MA2035)," dated January 25, 1999.

APD

information in a letter dated April 5, 1999,⁽⁴⁾ with additional supplemental information provided in a letter dated April 19, 2000.⁽⁵⁾

Discussion

The NRC staff provided a draft request for additional clarification on NNECO's last response in a facsimile transmission dated May 24, 2000.⁽⁶⁾ On June 13, 2000, a telephone conference call between the NRC staff, NNECO staff, and appropriate S&W staff, was conducted to ensure that all parties had a clear understanding of the information being requested by the NRC staff.

The ultimate results of that telephone conference eliminated questions 2, 3, and 4 of the facsimile transmission of the draft request, and generated a request for Verified Revisions of the following calculations;

- WM(B)-01 Normalized X/Q at the Unit 3 Control Room for Releases From the Unit 3 MSVB and ESFB
- WM(B)-02 Normalized X/Q at the Unit 3 Control Room for Releases From the Unit 1 Stack
- WM(B)-04 Normalized X/Q at the Unit 3 Control Room for Releases From the Unit 3 Containment and Turbine Bldg.

Another telephone conference between the same groups occurred on June 29, 2000, and the NRC staff requested some editorial changes to Enclosure 1 of the April 19, 2000, letter. The changes requested would make the Enclosure much easier to understand for future potential readers. S&W considers the material provided in the original Enclosure to be proprietary information, and requested that it be exempt from public disclosure for commercial reasons. The edited version provided as Attachment 5 to this letter is also considered proprietary information by S&W, and the same request is made.

Also requested at the same telephone conference was a copy of a table containing spray zone data, and a diagram of the containment identifying the mixing zones. This is provided in Attachment 6.

⁽⁴⁾ R. P. Necci letter to the U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3 - License Amendment Related to the Supplementary Leakage Collection and Release System (PLAR 3-98-5), Response to Request for Additional Information," dated April 5, 1999.

⁽⁵⁾ M. H. Brothers letter to the U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3 - License Amendment Related to the Supplementary Leakage Collection and Release System (PLAR 3-98-5) Supplemental Information," dated April 19, 2000.

⁽⁶⁾ Jacob I. Zimmerman facsimile to Ravi Joshi, "Draft RAI Associated with Supplementary Leakage Collection and Release System, Millstone Unit No. 3 (TAC No. MA2035)," dated May 24, 2000.

In response to the NRC staff request in the facsimile transmission and the two telephone conferences, the following information is provided:

1. Attachment 1 - Response to Requests for Additional Information
2. Attachment 2 - Calculation WM(B)-01
3. Attachment 3 - Calculation WM(B)-02
4. Attachment 4 - Calculation WM(B)-04
5. Attachment 5 - Affidavit from S&W to withhold proprietary information and an edited revision of "Analysis of Containment Mixing Rate During a Design Basis LOCA"
6. Attachment 6 - "Containment Spray Zone Description and Data" and "Identification of Mixing Zones Within Containment"

There are no regulatory commitments contained within this letter.

If you have any questions or comments regarding this submittal, please contact Mr. David W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,

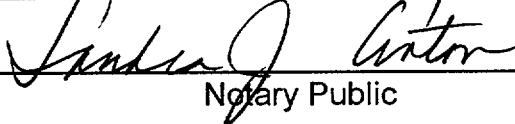
NORTHEAST NUCLEAR ENERGY COMPANY



Raymond P. Necci
Vice President - Nuclear Technical Services

Subscribed and sworn to before me

this 31st day of July, 2000


Notary Public

Date Commission Expires: _____

**SANDRA J. ANTON
NOTARY PUBLIC
COMMISSION EXPIRES
MAY 31, 2005**

cc: See next page

Attachments (6): Response to Requests for Additional Information

Calculation WM(B)-01

Calculation WM(B)-02

Calculation WM(B)-04

Affidavit from Stone & Webster Engineering Corp. to Withhold
Proprietary Information

Containment Spray Zone Description and Data and Identification of
Mixing Zones Within Containment

cc: H. J. Miller, Region I Administrator
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
A. C. Cerne, Senior Resident Inspector, Millstone Unit No. 3

Docket No. 50-423
B18157

Attachment 1

Millstone Nuclear Power Station, Unit No. 3

License Amendment Related to the Supplementary Leakage Collection
Release System (PLAR 3-98-5)
Response to Requests for Additional Information

**License Amendment Related to the Supplementary Leakage Collection
Release System (PLAR 3-98-5)
Response to Requests for Additional Information**

Question 1

The sprayed region of Zone 3 is added to the "effectively sprayed volume" of Zones 1 and 2 for the mixing model. What fraction of the total containment volume is the unsprayed region in Zone 3? It is our understanding that this unsprayed region in Zone 3 is a slow mixing region due to structural interferences in the region. Assuming the volume of the unsprayed region in Zone 3 is not negligible or even substantial, was a qualitative or quantitative estimation or actual calculation of the mixing rate for this region done?

Response

The unsprayed region in Zone 3 represents approximately 47 percent of the containment net volume. The mixing rate for this region was obtained by actual calculation.

Question 2

Do the final mixing rates (time-dependent) include any correction(s) contributed by the Zone 3 unsprayed region for its slow mixing rate(s)? If not, please provide a brief discussion.

Response

This question was withdrawn per the telephone conference conducted on June 13, 2000, between the Nuclear Regulatory Commission (NRC) staff, Northeast Nuclear Energy Company (NNECO) staff, and Stone and Webster (S&W) staff.

Question 3

Is there any qualitative relationship or a discussion representing a relationship between the mixing rate and other removal coefficients by spray for first order elemental Iodine? Please provide a brief discussion.

Response

This question was withdrawn per the telephone conference conducted on June 13, 2000, between the NRC staff, NNECO staff, and S&W staff.

Question 4

Insert G in the submittal dated April 19, 2000, contains a list of parameters used in determining removal rates of elemental and particulate iodine from the post-accident containment atmosphere. We would like to know how did you arrive at the values of the following iodine removal coefficients (λ). Please, provide a description of the method and the values of input parameters used in calculation:

- **Elemental iodine coefficient by plate out in the sprayed region of containment**
- **Particulate iodine removal coefficients by sprays in the sprayed region of containment**

Response

This question was withdrawn per the telephone conference conducted on June 13, 2000, between the NRC staff, NNECO staff, and S&W staff.

Question 5

Stone and Webster calculation dated May 27, 1998, on X/Qs from the Unit 3 main steam building (MSVB) states that the postulated effluent release for the MSVB bypass scenario does not meet the Murphy-Campe criteria for using the diffuse source equation. However, a general statement is made that because of multiple flow disruptions due to buildings both upwind and downwind of the release, it is reasonable to assume that this equation may be used to estimate resultant X/Q values. The calculation assumes that the release occurs from the vent closest to the control room intake and mixes in the wake of the MSVB.

Response

S&W calculation WM(B)-01, dated May 27, 1998, calculates the X/Q from the Unit No. 3 Main Steam Valve Building (MSVB) to the MP3 control room using the diffuse source equation of Murphy-Campe. The diffuse source equation was used to estimate the X/Q even though the elevation difference between the MSVB release point and the control room intake meet the criteria of the point source - point receptor technique of Murphy - Campe. The justification for using the diffuse source equation is based upon the aerodynamic obstacles encountered by the plume in the straight line pathway between the two points. Figures 1 and 2 depict the postulated flow path that the plume would have to travel from the MSVB to the Unit 3 control room intake.

The MSVB has two exhaust vents as shown in Figure 2. These vents (elev. 85.9') are physically located between the containment structure and the Aux. Bay/Ventilation Enclosure structures. The MSVB vents discharge downward. The closest vent to the

control room intake is considered in the X/Q calculation. The prevailing wind necessary to transport postulated radioactivity released from the MSVB to the control room intake would need to flow around the containment structure, entrain the MSVB effluent discharged downward, flow up and over the Ventilation Enclosure roof (elev. 100'), be effected by the turbulent flow created by skirting the turbine building corner (elev. 132') at approximately a 45 degree angle, then decrease in elevation to the control room intake (elev. 94.6'). The accumulated affect of containment structure building wake and complex aerodynamic forces and obstacles encountered in the pathway between the source point and receptor, were justification for using the diffuse source equation of Murphy-Campe for this pathway.

Figure 1 - Plant Isometric

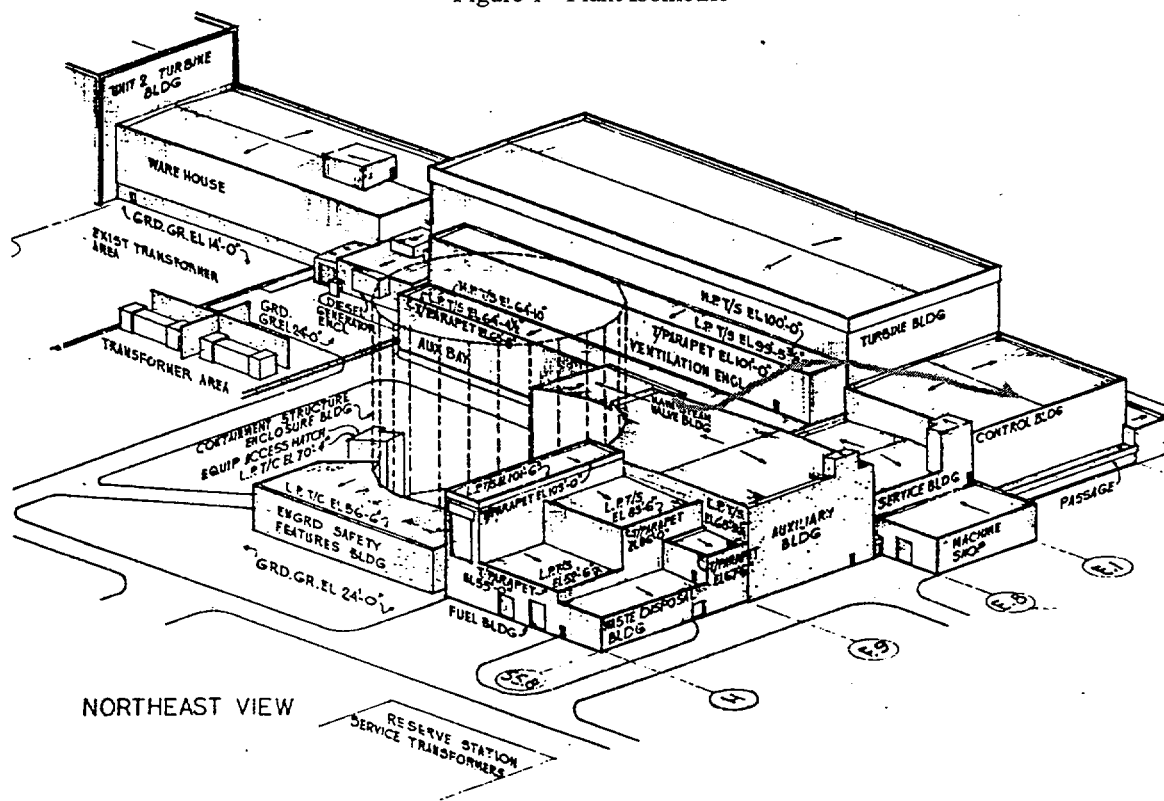
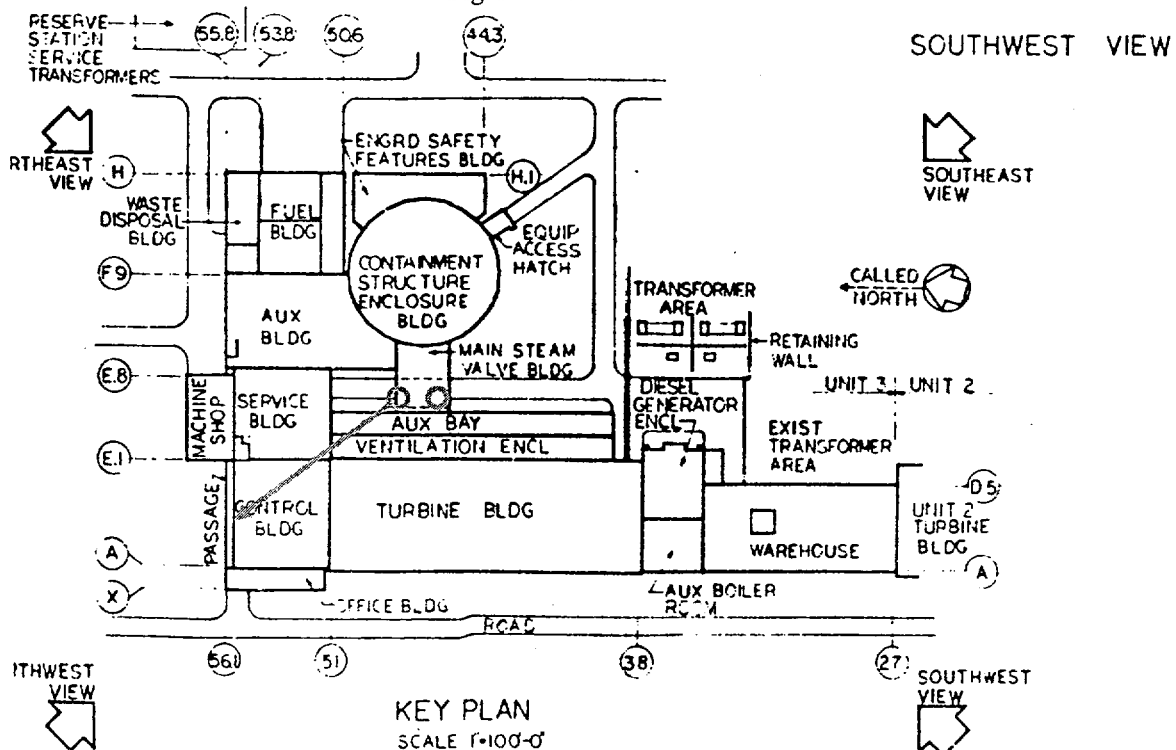


Figure 2 - Unit 3 Plot Plan



Both figures were obtained from Dwg. No. 12179-EA-200A-1 (Conceptual Design)

Attachment 2

Millstone Nuclear Power Station, Unit No. 3

Calculation WM(B)-01
Normalized X/Q at the Unit 3 Control Room for
Releases From the MSVB and ESFB



CALCULATION TITLE PAGE

Total Number of Pages: 56

Normalized X/Q at the Unit 3 Control Room For Releases From the Unit 3 MSVB and ESFB

TITLE																				
CALCULATION #	REVISION No.	SYSTEM NAME																		
N/A	0	RBVS/SLCRS																		
WM(B)-01	CB,MS,ES	N/A																		
VENDOR CALCULATION NUMBER	Structure	System Number																		
<table border="1"><thead><tr><th colspan="3">NUCLEAR INDICATOR:</th><th>Calc. Supports DCR/MMOD?</th><th>Calc. Supports Ind. Analysis?</th><th>Component</th></tr></thead><tbody><tr><td><input checked="" type="checkbox"/> CAT1</td><td><input type="checkbox"/> RWQA</td><td><input type="checkbox"/> SBOQA</td><td><input checked="" type="checkbox"/> YES</td><td><input type="checkbox"/> YES</td><td><input checked="" type="checkbox"/> NO</td></tr><tr><td><input type="checkbox"/> FPQA</td><td><input type="checkbox"/> ATWSQA</td><td><input type="checkbox"/> NON-QA</td><td><input type="checkbox"/> NO</td><td><input type="checkbox"/> NO</td><td></td></tr></tbody></table>			NUCLEAR INDICATOR:			Calc. Supports DCR/MMOD?	Calc. Supports Ind. Analysis?	Component	<input checked="" type="checkbox"/> CAT1	<input type="checkbox"/> RWQA	<input type="checkbox"/> SBOQA	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> FPQA	<input type="checkbox"/> ATWSQA	<input type="checkbox"/> NON-QA	<input type="checkbox"/> NO	<input type="checkbox"/> NO	
NUCLEAR INDICATOR:			Calc. Supports DCR/MMOD?	Calc. Supports Ind. Analysis?	Component															
<input checked="" type="checkbox"/> CAT1	<input type="checkbox"/> RWQA	<input type="checkbox"/> SBOQA	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO															
<input type="checkbox"/> FPQA	<input type="checkbox"/> ATWSQA	<input type="checkbox"/> NON-QA	<input type="checkbox"/> NO	<input type="checkbox"/> NO																
<div style="display: flex; justify-content: space-around;"><div>↓ M3-98-029 DCR/MMOD No.</div><div>↓ N/A Reference</div></div>																				
INCORPORATES: CCN NO: N/A AGAINST REV. N/A																				

Executive Summary

THIS IS FORMAL APPROVAL OF A QA APPROVED VENDOR CALCULATION. NO (NU) IR IS REQUIRED.

Verified Revision	<u> </u>
Initial	<u>jr</u> Date <u>6/13/98</u>

REC'D 6-8-98
ON HOLD
CDS 6/17/98
CDS QC 6/25/98
NRP ✓ TJ

Approvals (Print & Sign Name)		
Preparer::James L. Wheeler	<i>[Signature]</i>	Date: <u>5/27/98</u>
Interdiscipline Reviewer:N/A	Discipline:	Date:
Interdiscipline Reviewer:N/A	Discipline:	Date:
Independent Reviewer:N/A		Date:
Supervisor: William Eakin	<i>[Signature]</i>	Date: <u>5/27/98</u>
Installation Verification		
<input checked="" type="checkbox"/> Calculation accurately reflects plant configuration, OR		
<input type="checkbox"/> N/A does not affect plant configuration)		
Preparer/Designer Engineer:JAMES L. WHEELER	<i>[Signature]</i>	Date: <u>5/27/98</u>



PassPort DATABASE INPUTs

CH
#4Page 1B of 56Calculation Number: N/A N/A N/A Revision: N/A
(prefix) (sequence no.) (suffix)Vendor Calculation Number/Other: WM(B)-01 Revision: 0CCN # N/A QA ☒ Yes ☐ No Calc Voided: ☐ Yes ☒ NoSuperseded By: N/A Supersedes Calc: N/ADiscipline (Up to 10) Z

Unit	Project Reference (EWA)	Component Id	Computer Code	Rev. No./ Level No.
3	N/A	N/A	EN-200	0/0

PMMS CODES*

Structure	System	Component	Reference Calculation	Rev No.
N/A	N/A	N/A	ENVR-W223	0

*The codes required must be alpha codes designed for structure, system and component.

Reference Drawing	Sheet	Rev. No.
25212-10002	A	11
25212-24114-00001	N 01	13
25212-24118-00001	S 01	11
25212-14045	B	15
25212-24215-00001	L 01	14

Comments:

Table of Contents

Title page	1A
CTP Database	1B
Table of Contents	1C
Vendor Calculation Pages	1 thru 13
Appendix 1	20 pages
Appendix 2	20 pages
Total number of pages	56

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION TITLE PAGE

5010.65

CLIENT & PROJECT: NORTHEAST UTILITIES - MILLSTONE UNIT 3				PAGE 1 of 13 Total Pages: 53 w/attachments pages		
CALCULATION TITLE: Normalized Concentrations (X/Qs) at Unit 3 Control Room Air Intake for Releases from the Unit 3 Main Steam Valve Bldg. & Engineered Safety Features Bldg.				QA CATEGORY (✓) <input checked="" type="checkbox"/> I <input type="checkbox"/> II		
CALCULATION IDENTIFICATION NUMBER				OPTIONAL WORK PACKAGE NO.		
JOB ORDER NO. 03703.7002	DISCIPLINE WM(B)	CURRENT CALC NO. 01 <i>REV 0</i>	OPTIONAL TASK CODE			
APPROVALS - SIGNATURE & DATE			REVISION NO. OR NEW CALCULATION NO.	SUPERSEDES CALCULATION NO. OR REVISION NO.	CONFIRMATION REQUIRED (✓)	
PREPARES(S) / DATE(S)	REVIEWER(S) / DATES(S)	INDEPENDENT REVIEWER(S) / DATE(S)			YES	NO
Stephen A. Vigeant <i>Stephen A. Vigeant</i> 5/21/98	Carl A. Mazzola <i>Carl A. Mazzola</i> 5/21/98	Carl A. Mazzola <i>Carl A. Mazzola</i> 5/21/98	0			✓
DISTRIBUTION						
GROUP	NAME & LOCATION	COPY SENT (✓)	GROUP	NAME & LOCATION	COPY SENT (✓)	
Record Mgmt. File (or Fire File if none) Lead Radiological Specialist Project Files NU. RAD PROT NUNDS	S. Ferguson Boston - 6 Stephen A. Vigeant Boston - 3 Charlie Cronan Boston - 7 RJ Schmidt New Britain MP3 Site	cc cc cc original				

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 037037002	DISCIPLINE WM(B)	CALCULATION NO. 01 <i>Rev 0</i>	OPTIONAL TASK CODE	PAGE 2 OF 13

REVISION NO.	DESCRIPTION OF CHANGES	PAGES REVISED	PAGES ADDED	PAGES REPLACED
0	0	N/A	N/A	N/A

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	01 <i>Rev 0</i>		3 OF 13

TABLE OF CONTENTS

COVER PAGE.....	1
CHANGE HISTORY PAGE.....	2
TABLE OF CONTENTS.....	3
OBJECTIVE	4
METHODOLOGY	4
ASSUMPTIONS	5
EQUATIONS	5
DATA.....	6
CALCULATION.....	6
CONCLUSIONS	7
REFERENCES	7
ATTACHMENTS.....	8
APPENDICES.....	8

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	01 <i>REV 0</i>		4 OF 13

OBJECTIVE

To calculate the normalized atmospheric dispersion values (X/Qs) at the Millstone Unit 3 control room air intake for gaseous radiological releases from the Unit 3 Main Steam Valve Building (MSVB) and from the Engineered Safety Features Building (ESFB). These X/Q values will apply to the 0-2 hour through 30-day period for the MSVB and ESFB ground level releases. The specific release-receptor combinations for which X/Q values are calculated are as follows:

1. Unit 3 MSVB to Unit 3 Control Room Air Intake
2. Unit 3 ESFB to Unit 3 Control Room Air Intake

METHODOLOGY

The control room X/Q values are calculated using the methodology described in Murphy and Campe (Ref. 1). The radiological releases are from vents which are essentially point sources. The difference in elevation between the MSVB release point and the control room air intake is less than 30 percent of the MSVB and the difference in elevation between the ESFB release point and the control room air intake is greater than 30 percent of the ESFB height (see Data Section, p. 6). Reference 1 recommends that the point source - point receptor technique for X/Q calculation be used when the elevation difference between the release and receptor is less than or equal to 30 percent of the building height. Otherwise, the diffuse source - point receptor technique for X/Q calculation is recommended.

Although the MSVB release point does not meet the 30 percent elevation difference criterion for use of the diffuse source - point receptor technique, the wind flow transporting the release to the control room air intake must first flow around the containment structure and the MSVB along with other structures between the MSVB and control room air intake. Therefore, it is reasonable to use the diffuse source - point receptor technique for X/Q calculation from Section V(B)(1)(b) of Murphy and Campe (Ref. 1) for both release points given the multiple flow disruptions caused by the aerodynamic obstacles on the MSVB release, effectively making it a diffuse source. The X/Q equation is as follows:

$$X/Q = [u(\pi\sigma_y\sigma_z + A/(K+2))]^{-1}$$

where:

X/Q is relative concentration (sec/m³)

σ_y, σ_z are horizontal and vertical dispersion coefficients based on stability class and horizontal distance between the source and receptor (m)

u = wind speed at 10-meter (33-ft) elevation (m/sec)

A = projected building area (m²)

k = 3/(s/d)^{1.4}

s = source to receptor distance (m)

d = building width (m)

The above relationship is used to calculate the 0 - 2 hour X/Q value based on onsite meteorological data, selecting the condition that represents the 5 percentile dispersion condition at the site. In this case, 1974 to 1981 onsite meteorological data (Ref. 2) are used. This period of record (i.e., 8 years) is temporally representative of the meteorological conditions encountered at the site. From earlier control room X/Q calculations (Ref. 3), the 5 percentile site stability class is F stability.

The corresponding 5 percentile wind speed is determined from the onsite meteorological data considering only those wind directions resulting in receptor exposure (i.e., influencing wind directions). The number of wind direction sectors to be considered for each source-receptor relationship is determined using Figure 2 of Ref. 1 which is based on the ratio of the distance (s) between the source and receptor to the diameter (d) or width of the building from which the release emanates (i.e., s/d ratio). The dispersion coefficients (σ_y, σ_z) are determined from Ref. 4.

The intermediate averaging time X/Qs (8-24 hours, 1-4 days, and 4-30 days) are determined from the 0-2 hour X/Q value multiplying by occupancy, wind speed, and wind direction factors in accordance with Ref. 1. These factors are as follows:

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	01 <i>PURQ</i>		5 OF 13

<u>Averaging Time</u>	<u>Occupancy Factor</u>	<u>Wind Speed Factor</u>	<u>Wind Direction Factor</u>
0 - 2 Hours	1	1	1
8 - 24 Hours	1	5%/10% wind speed	$0.75 + F/4$
1 - 4 Days	0.6	5%/20% wind speed	$0.50 + F/2$
4 - 30 Days	0.4	5%/40% wind speed	F

F is the fraction of time the wind blows the activity toward the receptor for the wind azimuth range of influence.

The frequency of wind directions blowing in the appropriate range and at certain wind speeds is determined from the on-site meteorological data base (Ref. 2) using Stone & Webster computer program EN-200, "Distribution of Two Parameters" (Ref. 5).

ASSUMPTIONS

1. It is conservatively assumed that each plume centerline is transported directly over the Unit 3 control room intake and that the plume dispersion is not aerodynamically affected by the containment building which is adjacent to or very near the release points.
2. For purposes of determining the appropriate dispersion equation to use in the analysis, the elevation differences between the release points and the control room air intake are compared to the height of the buildings from which the releases occur (MSVB and ESFB). Although the release-receptor elevation difference of 30 percent of the building height criterion is not met, the MSVB release is assumed to be a diffuse source given the multiple flow disruptions encountered by the release due to the aerodynamic interference of buildings both upwind and downwind of the release point.
3. It is assumed that the Unit 3 control room air intake X/Q values are representative of the X/Q values for the center of the Unit 3 control room given that the distances and directions from the release to these receptors are very similar.

EQUATIONS

$$X/Q = [u(\pi\sigma_y\sigma_z + A/(K+2))]^{-1} \quad (\text{Ref. 1})$$

where:

X/Q is relative concentration (sec/m³) for point source - point receptor configurations

σ_y, σ_z are horizontal and vertical dispersion coefficients (m) (Ref. 4)

u = wind speed at 10-meter elevation (m/sec)

A = projected building area (m²)

$k = 3/(s/d)^{1.4}$

s = source to receptor distance (m)

d = building width (m)

Determination of Influencing Wind Directions (Ref. 1)

s = source to receptor distance (m)

d = release point diameter or width (m)

Calculate s/d ratio and use Figure 2 from Ref. 1 to determine the appropriate number of influencing wind directions.

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	01 <i>Rev 0</i>		6 OF 13

Determination of Intermediate Period Factors (Ref. 1)

<u>Averaging Time</u>	<u>Occupancy Factor</u>	<u>Wind Speed Factor</u>	<u>Wind Direction Factor</u>
0 - 2 Hours	1	1	1
8 - 24 Hours	1	5%/10% wind speed	0.75 + F/4
1 - 4 Days	0.6	5%/20% wind speed	0.50 + F/2
4 - 30 Days	0.4	5%/40% wind speed	F

F is the fraction of time the wind blows the activity toward the receptor, within the influencing wind direction azimuthal range.

DATA

1. Unit 3 MSVB to Unit 3 Control Room Air Intake

Distance from nearest MSVB vent to Unit 3 control room air intake = 68.2 m (Ref. 6)
 Wind direction from nearest MSVB vent to Unit 3 control room air intake = 120 deg (Ref. 6)
 d = MSVB diagonal width = 74.0 ft or 22.56 m (Ref. 7)
 MSVB vent elevation = 85.9 ft (Ref. 7)
 Unit 3 control room air intake elevation = 94.6 ft (Ref. 9)
 MSVB vent-control room air intake elevation difference = 85.9 ft - 94.6 ft = -8.7 ft
 MSVB height (top elevation - grade elevation) = 83.9 ft - 24.0 ft = 59.9 ft (Ref. 6)
 Percentage difference in elevations = 8.7 ft/ 59.9 ft = 14.5 percent
 A = MSVB projected area = diagonal width x height = 74.0 ft x 59.9 ft = 4432.6 ft² or 411.8 m²

2. Unit 3 ESFB to Unit 3 Control Room Air Intake

Distance from ESFB vent to Unit 3 control room center = 120.5 m (Ref. 6)
 Wind direction from ESFB vent to Unit 3 control room center = 90 deg (Ref. 6)
 d = ESFB diagonal width = 144.0 ft = 43.9 m (Ref. 6)
 ESFB vent elevation = 39.5 ft (Ref. 8)
 Unit 3 control room air intake elevation = 94.6 ft (Ref. 9)
 ESFB vent-control room air intake elevation difference = 94.6 ft - 39.5 ft = 55.1 ft
 ESFB height (top elevation - grade elevation) = 56.8 ft - 24.0 ft = 32.8 ft (Ref. 8)
 Percentage difference in elevations = 55.1 ft/ 32.8 ft = 168 percent
 A = ESFB projected area = diagonal width x height = 144.0 ft x 32.8 ft = 4723.2 ft² or 438.8 m²

CALCULATION

1. Unit 3 MSVB to Unit 3 Control Room Air Intake

s = 68.2 m (Ref. 6)
 direction = 120 deg (Ref. 6)
 d = 22.56 m (Ref. 7)
 s/d = 68.2 m/22.56 m = 3.02 or 3 sectors (3 x 22.5° = 68° or 120° - 34° = 86° to 120° + 34° = 154°)
 A = 411.8 m²
 $k = 3/(s/d)^{1.4} = 3/(3.02)^{1.4} = 0.64$
 σ_y @ 68.2m for F stability class = 3.27 m (Reference 4)
 σ_z @ 68.2m for F stability class = 1.65 m (Reference 4)
 u(5%) = 2.2 mph (1.0 m/sec) (Appendix 1, p. 12)
 u(10%) = 3.1 mph (1.4 m/sec) (Appendix 1, p. 13)
 u(20%) = 4.5 mph (2.0 m/sec) (Appendix 1, p. 14)
 u(40%) = 6.7 mph (3.0 m/sec) (Appendix 1, p. 16)
 F = 8,266/66,332 = 0.12 (Appendix 1, p. 19)

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	01 <i>Ref 0</i>		7 OF 13

Short-Term X/Q Value for Unit 3 Intake (0 - 2 Hours)

$$X/Q = \{ (1.0 \text{ m/sec}) [(3.14159275...) (3.27\text{m}) (1.65 \text{ m}) + (411.8 \text{ m}^2) / (0.64 + 2)] \}^{-1}$$

X/Q = 5.78 E- 3 sec/m³

Intermediate Period X/Q Value for Unit 3 Intake

<u>Averaging Period</u>	<u>Occupancy Factor</u>	<u>Wind Speed Factor</u>	<u>Wind Direction Factor</u>	<u>X/Q (sec/m³)</u>
0 - 8 hours	1	1	1	5.78 E- 3
8 - 24 hours	1	2.2/3.1 = 0.71	0.75 + 0.12/4 = 0.78	3.20 E- 3
1 - 4 days	0.6	2.2/4.5 = 0.49	0.50 + 0.12/2 = 0.56	9.52 E- 4
4 - 30 days	0.4	2.2/6.7 = 0.33	0.12	9.16 E- 5

2. Unit 3 ESFB to Unit 3 Control Room Air Intake

s = 120.5 m (Ref. 6)

direction = 90 deg (Ref. 6)

d = 43.9 m (Ref. 8)

s/d = 120.5 m/43.9 m = 2.74 or 3 sectors (3 x 22.5° = 68° or 90° - 34° = 56° to 90° + 34° = 124°

A = 1439.7 m²

$$k = 3/(s/d)^{1.4} = 3/(2.74)^{1.4} = 0.73$$

σ_y @ 120.5m for F stability class = 5.47 m (Reference 4)

σ_z @ 120.5m for F stability class = 2.63 m (Reference 4)

u(5%) = 2.2 mph (1.0 m/sec) (Appendix 2, p. 12)

u(10%) = 3.1 mph (1.4 m/sec) (Appendix 2, p. 13)

u(20%) = 4.5 mph (2.0 m/sec) (Appendix 2, p. 14)

u(40%) = 7.6 mph (3.4 m/sec) (Appendix 2, p. 17)

F = 7,922/66,332 = 0.12 (Appendix 2, p. 19)

Short-Term X/Q Value for Unit 3 Intake (0 - 2 Hours)

$$X/Q = \{ (1.0 \text{ m/sec}) [(3.14159275...) (5.47\text{m}) (2.63 \text{ m}) + (438.8 \text{ m}^2) / (0.73 + 2)] \}^{-1}$$

X/Q = 4.86 E- 3 sec/m³

Intermediate Period X/Q Value for Unit 3 Intake

<u>Averaging Period</u>	<u>Occupancy Factor</u>	<u>Wind Speed Factor</u>	<u>Wind Direction Factor</u>	<u>X/Q (sec/m³)</u>
0 - 8 hours	1	1	1	4.86 E- 3
8 - 24 hours	1	2.2/3.1 = 0.71	0.75 + 0.12/4 = 0.78	2.69 E- 3
1 - 4 days	0.6	2.2/4.5 = 0.49	0.50 + 0.12/2 = 0.56	8.00 E- 4
4 - 30 days	0.4	2.2/7.6 = 0.29	0.12	6.77 E- 5

CONCLUSIONS

The Unit 3 control room X/Qs are summarized in the body of the calculation. The Unit 3 control room air intake X/Q values are representative of the X/Q values for the center of the Unit 3 control room given that the distances and directions from the release to these receptors are very similar. The Unit 3 control room air intake X/Q values are also conservative when applied to the Technical Support Center which is located at a farther distance from the releases than the control room.

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	01 <i>Rev 0</i>		8 OF 13

REFERENCES

1. Murphy, K.G. and K.M. Campe., "Nuclear Power Plant Control Room Ventilation System Design for Meeting General Design Criterion 19". Presented at the 13th AEC Air Cleaning Conference, August, 1974.
2. Millstone onsite meteorological data for the period 1974 - 1981 provided by H. L. Chamberlain, Jr. of Northeast Utilities, April 28, 1998. The data are hourly values represented by one 15-minute average value per hour. See Attachment 5 for transmittal letter.
3. Stone & Webster Calculation No. 12179.12-ENVR-W223, dated 11/29/82
4. U. S. Nuclear Regulatory Commission, Subroutine "POLYN", Horizontal and Vertical Dispersion Coefficients as a Function of Downwind Distance (see Attachment 5 for F-stability values).
5. EN-200, Version 0, Level 0. SWEC computer code "Distribution of Two Parameters". Output is provided in Appendices 1 and 2.
6. Stone & Webster Drawing No. 12179-EM-1A-11, Rev. 11, "Plot Plan", Millstone Unit 3. See Attachment 1.
7. Stone & Webster Drawing No. 12179-EB-15N-13, "Ventilation Main Steam Valve Building", Millstone Unit 3, Rev. 13, 6/9/94. See Attachment 2.
8. Stone & Webster Drawing No. 12179-EB-15S-11, Rev. 11, 10/14/87, "Heating Vent & Air Cond ENG Safety Features Bldg SH-4". See Attachment 3.
9. Stone & Webster Drawing Nos. 12179-EA-1B-15 and 12179-EB-39L-14.

ATTACHMENTS

1. Stone & Webster Drawing No. 12179-EM-1A-11, Rev. 11, "Plot Plan", Millstone Unit 3
2. Stone & Webster Drawing No. 12179-EB-15N-13, "Ventilation Main Steam Valve Building", Millstone Unit 3, Rev. 13, 6/9/94.
3. Stone & Webster Drawing No. 12179-EB-15S-11, Rev. 11, 10/14/87, "Heating Vent & Air Cond ENG Safety Features Bldg SH-4".
4. Subroutine "POLYN", Horizontal and Vertical Dispersion Coefficients as a Function of Downwind Distance (F-stability).
5. Millstone onsite meteorological data transmittal letter from H. L. Chamberlain to J. Creamer, April 28, 1998.

APPENDICES (40 pages)

1. EN-200 Wind Speed/Wind Direction Distribution Computer Output:

<u>Release/Receptor Combination</u>	<u>Wind Direction Range</u>	<u>Job No.</u>
Unit 3 MSVB to Unit 3 Control Room Air Intake	86 - 154 degrees	09666
2. EN-200 Wind Speed/Wind Direction Distribution Computer Output:

<u>Release/Receptor Combination</u>	<u>Wind Direction Range</u>	<u>Job No.</u>
Unit 3 ESFB to Unit 3 Control Room Air Intake	56 - 124 degrees	09668

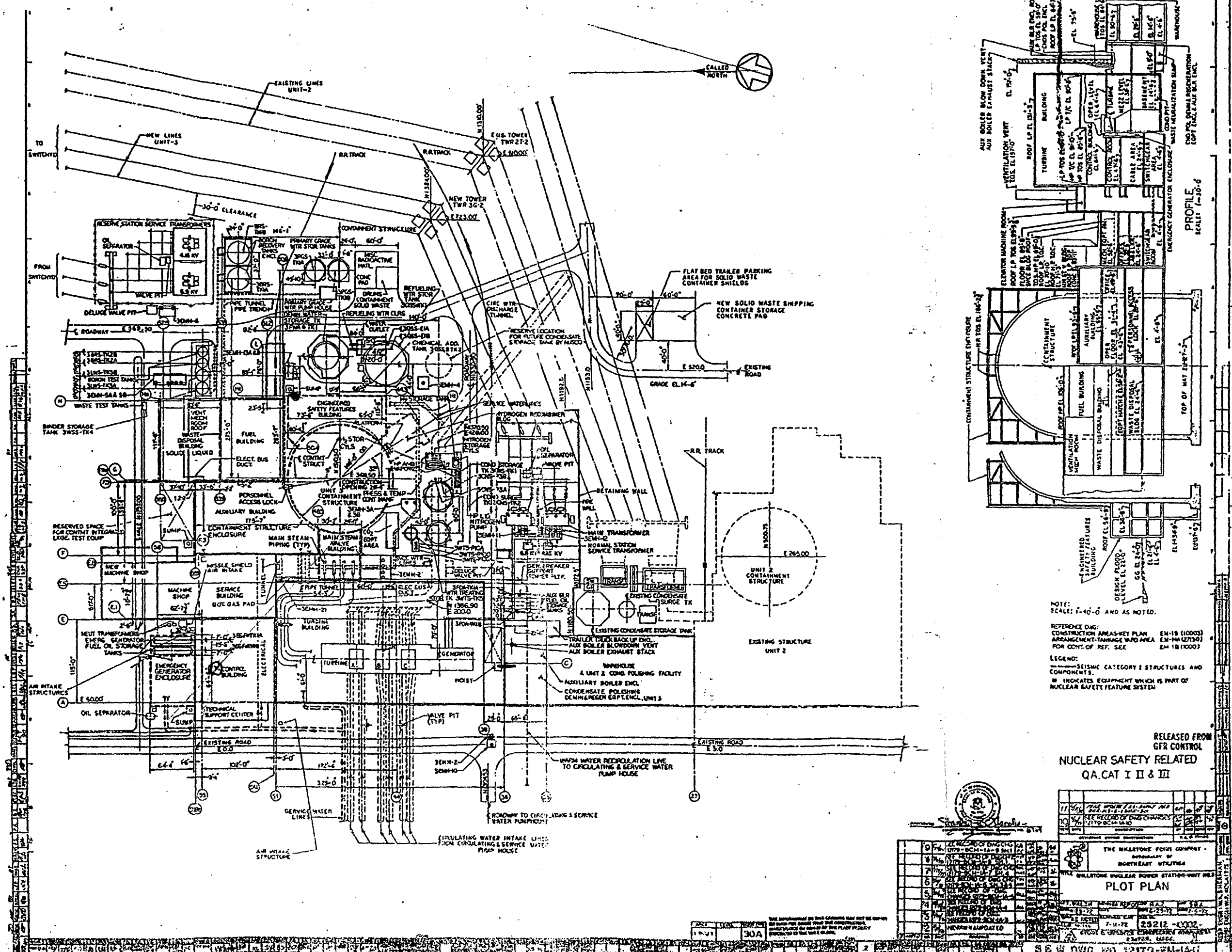
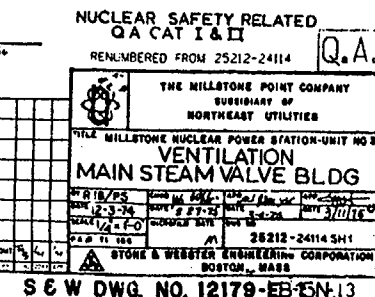
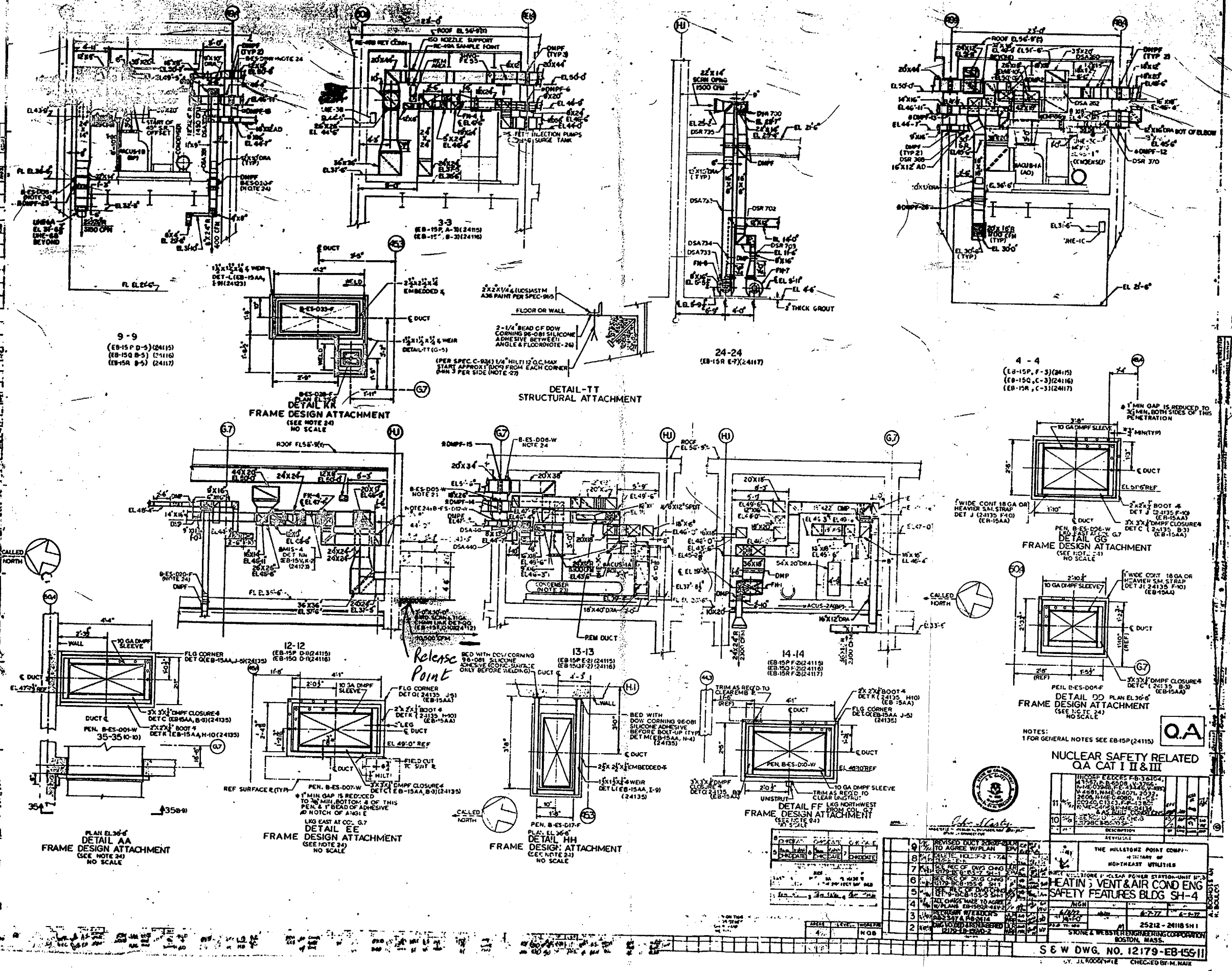


FIGURE 1



P.11
03703.7002
WH(B)-01
Rev 0

12-79-EB-155-11



NOTES:	
1 FOR GENERAL NOTES SEE EB-15P (24115)	
NUCLEAR SAFETY RELATED	
QA CAT I II & III	
NO.	DESCRIPTION
1	REVISIONS
2	REVISIONS
3	REVISIONS
4	REVISIONS
5	REVISIONS
6	REVISIONS
7	REVISIONS
8	REVISIONS
9	REVISIONS
10	REVISIONS
11	REVISIONS
12	REVISIONS
13	REVISIONS
14	REVISIONS
15	REVISIONS
16	REVISIONS
17	REVISIONS
18	REVISIONS
19	REVISIONS
20	REVISIONS
21	REVISIONS
22	REVISIONS
23	REVISIONS
24	REVISIONS
25	REVISIONS
26	REVISIONS
27	REVISIONS
28	REVISIONS
29	REVISIONS
30	REVISIONS
31	REVISIONS
32	REVISIONS
33	REVISIONS
34	REVISIONS
35	REVISIONS
36	REVISIONS
37	REVISIONS
38	REVISIONS
39	REVISIONS
40	REVISIONS
41	REVISIONS
42	REVISIONS
43	REVISIONS
44	REVISIONS
45	REVISIONS
46	REVISIONS
47	REVISIONS
48	REVISIONS
49	REVISIONS
50	REVISIONS
51	REVISIONS
52	REVISIONS
53	REVISIONS
54	REVISIONS
55	REVISIONS
56	REVISIONS
57	REVISIONS
58	REVISIONS
59	REVISIONS
60	REVISIONS
61	REVISIONS
62	REVISIONS
63	REVISIONS
64	REVISIONS
65	REVISIONS
66	REVISIONS
67	REVISIONS
68	REVISIONS
69	REVISIONS
70	REVISIONS
71	REVISIONS
72	REVISIONS
73	REVISIONS
74	REVISIONS
75	REVISIONS
76	REVISIONS
77	REVISIONS
78	REVISIONS
79	REVISIONS
80	REVISIONS
81	REVISIONS
82	REVISIONS
83	REVISIONS
84	REVISIONS
85	REVISIONS
86	REVISIONS
87	REVISIONS
88	REVISIONS
89	REVISIONS
90	REVISIONS
91	REVISIONS
92	REVISIONS
93	REVISIONS
94	REVISIONS
95	REVISIONS
96	REVISIONS
97	REVISIONS
98	REVISIONS
99	REVISIONS
100	REVISIONS

S & W DWG. NO. 12179-EB-155-11
J. L. ROBERTS
CHECKED BY: M. HARRIS



**Northeast
Utilities System**

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

P.13

0370 3,700-

WM(B)-01

ew-0

April 28, 1998

Mr. Joseph Creamer
Stone and Webster
245 Summer Street, 7th Floor
Boston, MA 02210

Dear Mr. Creamer:

**Millstone Nuclear Power Station
Meteorological Data**

Accompanying this memo are four computer diskettes containing the meteorological data from 1974 through 1981, for your use in the Millstone Unit 3 X/Q calculations. Each diskette contains two years of data, as noted on the labels. The year of data is represented in each dataset name.

Each line of the datasets represents one hour of data. There is a nine character "time stamp" on each line; columns 1 and 2 are the year, columns 3 through 5 are the Julian day, and columns 6 through 9 are the time (military time, always on Eastern Standard Time). Columns 10 through 54 are, in order, the AT033, WS033, WD033, WS142, WD142, DT142, WS374, WD374, & DT374 (AT = air temperature, WS = wind speed, WD = wind direction, DT = delta-temperature, and numbers are instrument height). These are all in "F5.1" format. Missing data are represented by "999.0."

The data generated by our meteorological monitoring system consist of four fifteen-minute averages per hour. However, the attached datasets only contain one fifteen-minute average per hour. Historically, most of our analyses involving meteorological data, including Category 1 X/Q calculations, have been based on one fifteen-minute average representing an entire hour of data. It was found that this methodology introduced very small errors into the analyses results, compared to calculating an average of the available fifteen-minute averages for each hour.

If you have any questions, please call me, at (860) 665-3183.

Very truly yours,

H. L. Chamberlain, Jr.
Environmental Services

Enclosures

10 MAR 1981

DISPERSION COEFFICIENTS AS A FUNCTION OF DOWNWIND DISTANCE
PASQUILL STABILITY CLASS (F)

PAGE 41

DOWNWIND DISTANCE (METERS)	**	STONE & WEBSTER	**	**	POLYN (LONG)	**	**	POLYN (DESERT)	**	**	POLYN (XOQDOQ)	**
		SIGMA Y	SIGMA Z	**	SIGMA Y	SIGMA Z	**	SIGMA Y	SIGMA Z	**	SIGMA Y	SIGMA Z
10.	**	0.4739	0.1971	**	0.4014	0.1395	**	2.4230	1.6073	**	0.5776	0.3454
20.	**	0.0969	0.4437	**	0.0020	0.3243	**	4.5718	1.9981	**	1.0802	0.6072
30.	**	1.3054	0.6928	**	1.2022	0.5313	**	6.6281	2.2694	**	1.5578	0.8446
40.	**	1.7048	0.9383	**	1.6022	0.7540	**	8.6265	2.4839	**	2.0200	1.0675
50.	**	2.0977	1.1786	**	2.0021	0.9893	**	10.5829	2.6642	**	2.4710	1.2801
60.	**	2.4855	1.4134	**	2.4019	1.2351	**	12.5064	2.8212	**	2.9133	1.4849
70.	**	2.8691	1.6427	**	2.8015	1.4900	**	14.4031	2.9611	**	3.3485	1.6834
80.	**	3.2490	1.8667	**	3.2011	1.7530	**	16.2771	3.0879	**	3.7776	1.8767
90.	**	3.6259	2.0857	**	3.6006	2.0232	**	18.1315	3.2043	**	4.2016	2.0655
100.	**	4.0000	2.3000	**	4.0000	2.3000	**	19.9686	3.3120	**	4.6210	2.2472
110.	**	4.3716	2.5090	**	4.3994	2.5829	**	21.7903	3.4126	**	5.0364	2.4369
120.	**	4.7409	2.7153	**	4.7987	2.7365	**	23.5981	3.5072	**	5.4481	2.6223
130.	**	5.1032	2.9169	**	5.1979	2.8894	**	25.3933	3.5964	**	5.8565	2.8037
140.	**	5.4736	3.1146	**	5.5971	3.0416	**	27.1769	3.6811	**	6.2619	2.9815
150.	**	5.8372	3.3088	**	5.9963	3.1930	**	28.9499	3.7617	**	6.6645	3.1560
160.	**	6.1991	3.4995	**	6.3954	3.3437	**	30.7129	3.8387	**	7.0644	3.3275
170.	**	6.5595	3.6870	**	6.7945	3.4937	**	32.4667	3.9125	**	7.4620	3.4962
180.	**	6.9184	3.8714	**	7.1936	3.6430	**	34.2119	3.9834	**	7.8573	3.6624
190.	**	7.2759	4.0528	**	7.5926	3.7916	**	35.9489	4.0516	**	8.2505	3.8261
200.	**	7.6321	4.2314	**	7.9916	3.9395	**	37.6782	4.1174	**	8.6417	3.9877
210.	**	7.9871	4.4073	**	8.3905	4.0867	**	39.4003	4.1809	**	9.0309	4.1472
220.	**	8.3409	4.5806	**	8.7895	4.2332	**	41.1156	4.2424	**	9.4184	4.3047
230.	**	8.6935	4.7514	**	9.1884	4.3790	**	42.8242	4.3021	**	9.8042	4.4603
240.	**	9.0451	4.9198	**	9.5972	4.5241	**	44.5267	4.3599	**	10.1884	4.6143
250.	**	9.3956	5.0860	**	9.9861	4.6685	**	46.2232	4.4162	**	10.5710	4.7665
260.	**	9.7451	5.2499	**	10.3425	4.8123	**	47.9140	4.4709	**	10.9521	4.9172
270.	**	10.0936	5.4117	**	10.6986	4.9553	**	49.5994	4.5242	**	11.3319	5.0664
280.	**	10.4412	5.5714	**	11.0542	5.0977	**	51.2795	4.5762	**	11.7102	5.2141
290.	**	10.7878	5.7292	**	11.4095	5.2395	**	52.9546	4.6269	**	12.0873	5.3605
300.	**	11.1337	5.8850	**	11.7643	5.3805	**	54.6248	4.6764	**	12.4631	5.5056
310.	**	11.4786	6.0390	**	12.1188	5.5209	**	56.2904	4.7248	**	12.8377	5.6494
320.	**	11.8228	6.1912	**	12.4729	5.6607	**	57.9515	4.7721	**	13.2111	5.7920
330.	**	12.1661	6.3416	**	12.8266	5.7997	**	59.6082	4.8185	**	13.5833	5.9335
340.	**	12.5087	6.4903	**	13.1799	5.9382	**	61.2607	4.8639	**	13.9546	6.0738
350.	**	12.8505	6.6374	**	13.5328	6.0759	**	62.9091	4.9083	**	14.3247	6.2131
360.	**	13.1916	6.7830	**	13.8854	6.2131	**	64.5535	4.9519	**	14.6938	6.3513
370.	**	13.5320	6.9269	**	14.2375	6.3496	**	66.1942	4.9947	**	15.0619	6.4886
380.	**	13.8718	7.0694	**	14.5893	6.4854	**	67.8311	5.0367	**	15.4291	6.6249
390.	**	14.2107	7.2104	**	14.9407	6.6206	**	69.4644	5.0780	**	15.7953	6.7603
400.	**	14.5491	7.3500	**	15.2917	6.7552	**	71.0942	5.1185	**	16.1606	6.8947
410.	**	14.8868	7.4882	**	15.6424	6.8922	**	72.7205	5.1583	**	16.5250	7.0283
420.	**	15.2239	7.6251	**	15.9927	7.0225	**	74.3436	5.1975	**	16.8886	7.1611
430.	**	15.5604	7.7607	**	16.3426	7.1552	**	75.9634	5.2360	**	17.2513	7.2930
440.	**	15.8963	7.8949	**	16.6921	7.2872	**	77.5800	5.2740	**	17.6132	7.4242
450.	**	16.2316	8.0280	**	17.0413	7.4187	**	79.1935	5.3113	**	17.9743	7.5545
460.	**	16.5663	8.1598	**	17.3901	7.5496	**	80.8041	5.3481	**	18.3347	7.6841
470.	**	16.9005	8.2904	**	17.7385	7.6798	**	82.4117	5.3843	**	18.6943	7.8130
480.	**	17.2340	8.4199	**	18.0865	7.8094	**	84.0164	5.4201	**	19.0531	7.9412
490.	**	17.5670	8.5482	**	18.4342	7.9384	**	85.6184	5.4553	**	19.4112	8.0687

POLYN Dispersion
CoefficientsP.12
03703.700
WM(8)-01
WFO

JES2 JOB LOG -- SYSTEM C168 -- NODE JES2B0S

11.33.37 JOB09666 IRR010I USERID VIG7988 IS ASSIGNED TO THIS JOB.
11.33.39 JOB09666 ICH70001I VIG7988 LAST ACCESS AT 11:21:00 ON FRIDAY, MAY 1, 1998
11.33.39 JOB09666 \$HASP373 DISTRIB STARTED - INIT 8 - CLASS A - SYS C168
11.33.45 JOB09666 +IH0002I STOP 1
11.33.46 JOB09666 \$HASP395 DISTRIB ENDED

----- JES2 JOB STATISTICS -----

01 MAY 1998 JOB EXECUTION DATE

37 CARDS READ

840 SYSOUT PRINT RECORDS

0 SYSOUT PUNCH RECORDS

34 SYSOUT SPOOL KBYTES

0.12 MINUTES EXECUTION TIME

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 1
03703.7002
WM(B)-01

12/20

```

1 //DISTRIB JOB (0031,3),'VIGEANT-SA',
  // MSGLEVEL=2,MSGCLASS=A
  //* RJETRA.VIG7988.DATA(DISTRIB)
  /*JOBPARM ROOM=3
2 //METRDISK EXEC METRPROC
9 //DISK DD DISP=SHR,DSN=ENVIRONH.METDATA.MILSTONE.YR7481
12 //SYSIN DD * GENERATED STATEMENT
13 //DISTRIB EXEC PGM=DISTRB00,REGION=284K,TIME=1
14 //STEPLIB DD DSN=ENVIRONH.DISTRIB,DISP=SHR
15 //GO.FT06F001 DD DCB=PRINT1,SYSOUT=*
16 //GO.FT10F001 DD UNIT=DISK,DISP=(OLD,DELETE),DSN=&SAMPLE
17 //GO.FT05F001 DD *
18 //IMBLIST EXEC PGM=IMBLIST
19 //SYSPRINT DD SYSOUT=*
20 //SYSLIB DD DSN=ENVIRONH.DISTRIB,DISP=SHR
21 //SYSIN DD * GENERATED STATEMENT

```

01-MAY-98JOB09666

JOB09666

APPENDIX 1
 DISTRIBUTION Program Output
 Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 2
 03703.7002
 WM(B)-01 *WCO*

STMT NO. MESSAGE

2 IEF001I PROCEDURE METRPROC WAS EXPANDED USING SYSTEM LIBRARY SYS1.USER.PROCLIB
ICH70001I VIG7988 LAST ACCESS AT 11:21:00 ON FRIDAY, MAY 1, 1998

IEF236I ALLOC. FOR DISTRIB METRPROC METROISK

IGD103I SMS ALLOCATED TO DDNAME STEPLIB

IEF237I JES2 ALLOCATED TO FT06F001

IEF237I JES2 ALLOCATED TO SYSPRINT

IGD103I SMS ALLOCATED TO DDNAME SYS010

IGD101I SMS ALLOCATED TO DDNAME (SYS011)

DSN (SYS98121.T113339.RA000.DISTRIB.SAMPLE.H01)

STORCLAS (TEMP) MGMTCLAS () DATACLAS ()

VOL SER NOS= VIO

IEF237I JES2 ALLOCATED TO FT05F001

IEF142I DISTRIB METRPROC METROISK - STEP WAS EXECUTED - COND CODE 0000

IGD104I ENVIRONM.METODOLOGY RETAINED, DDNAME=STEPLIB

IEF285I VIG7988.DISTRIB.JOB09666.D0000104.? SYSOUT

IEF285I VIG7988.DISTRIB.JOB09666.D0000105.? SYSOUT

IGD104I ENVIRONM.METDATA.MILSTONE.YR7481 RETAINED, DDNAME=SYS010

IGD106I SYS98121.T113339.RA000.DISTRIB.SAMPLE.H01 PASSED, DDNAME=SYS011

IEF285I VIG7988.DISTRIB.JOB09666.D0000101.? SYSIN

..... V09 .
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 11.33.37, 05/01/98
.STEP NUMBER - 1, STEP NAME - METRPROC, PROGRAM NAME - METWR01, RAN FROM 11.33.39 TO 11.33.41
.ENDING CONDITION - RETURN CODE 0, REGION USED - 380K, PERFORMANCE GROUP - 20, SHAPS - 0
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
.CPU TIME - .50 VECTOR TIME - .00 SECS, EXCPS -(352 NON-VIO, 1,169 VIO), CPU UNITS - 1.87 SECS
.SYSIN RECORDS - 3, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$3.12
.EXCPS/DDNAME - 9/STEPLIB 343/SYS010 1,169/SYS011
.....

IEF373I STEP/METRPROC/START 1998121.1133
IEF374I STEP/METRPROC/STOP 1998121.1133 CPU 0MIN 00.46SEC SRB 0MIN 00.02SEC VIRT 88K SYS 292K EXT 4K SYS 10132K
IEF236I ALLOC. FOR DISTRIB DISTRIB
IGD103I SMS ALLOCATED TO DDNAME STEPLIB
IEF237I JES2 ALLOCATED TO FT06F001
IGD103I SMS ALLOCATED TO DDNAME FT10F001
IEF237I JES2 ALLOCATED TO FT05F001
IEF142I DISTRIB DISTRIB - STEP WAS EXECUTED - COND CODE 0001
IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=STEPLIB
IEF285I VIG7988.DISTRIB.JOB09666.D0000106.? SYSOUT
IGD105I SYS98121.T113339.RA000.DISTRIB.SAMPLE.H01 DELETED, DDNAME=FT10F001
IEF285I VIG7988.DISTRIB.JOB09666.D0000102.? SYSIN

..... V09 .
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 11.33.37, 05/01/98
.STEP NUMBER - 2, STEP NAME - DISTRIB , PROGRAM NAME - DISTRB00, RAN FROM 11.33.41 TO 11.33.45
.ENDING CONDITION - RETURN CODE 1, REGION USED - 340K, PERFORMANCE GROUP - 20, SHAPS - 0
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
.CPU TIME - 2.35 VECTOR TIME - .00 SECS, EXCPS -(8 NON-VIO, 1,170 VIO), CPU UNITS - 3.41 SECS
.SYSIN RECORDS - 16, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$5.68
.EXCPS/DDNAME - 8/STEPLIB 1,170/FT10F001
.....

IEF373I STEP/DISTRIB /START 1998121.1133
IEF374I STEP/DISTRIB /STOP 1998121.1133 CPU 0MIN 02.34SEC SRB 0MIN 00.01SEC VIRT 64K SYS 276K EXT 4K SYS 10140K
IEF236I ALLOC. FOR DISTRIB IMBLIST
IEF237I JES2 ALLOCATED TO SYSPRINT
IGD103I SMS ALLOCATED TO DDNAME SYSLIB
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I DISTRIB IMBLIST - STEP WAS EXECUTED - COND CODE 0008
IEF285I VIG7988.DISTRIB.JOB09666.D0000107.? SYSOUT
IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=SYSLIB

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 3
03703.7002
WM(B)-01
2000

```

IEF285I  VIG7988.DISTRIB.JOB09666.D0000103.?          SYSIN
.....
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 11.33.37, 05/01/98          V09 .
.STEP NUMBER - 3, STEP NAME - IMBLIST , PROGRAM NAME - IMBLIST , RAN FROM 11.33.45 TO 11.33.46          .
.ENDING CONDITION - RETURN CODE 8, REGION USED - 428K, PERFORMANCE GROUP - 20, SHAPS - 0          .
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0          .
.CPU TIME - .03 VECTOR TIME - .00 SECS, EXCPS -( 0 NON-VIO, 0 VIO), CPU UNITS - .03 SECS          .
.SYSIN RECORDS - 1, OPENS - ( 0 TAPE, 0 TEMP, 0 PERM), COST = $0.05          .
.....
IEF373I STEP/IMBLIST /START 1998121.1133          .
IEF374I STEP/IMBLIST /STOP 1998121.1133 CPU 0MIN 00.03SEC SRB 0MIN 00.00SEC VIRT 156K SYS 272K EXT 4K SYS 10044K          .
IEF375I JOB/DISTRIB /START 1998121.1133          .
IEF376I JOB/DISTRIB /STOP 1998121.1133 CPU 0MIN 02.83SEC SRB 0MIN 00.03SEC          .
.....
.TOTAL CPU TIME - 2.88 SECS, TOTAL VECTOR TIME - .00 SECS, TOTAL CPU UNITS - 5.31 SECS          .
.TOTAL EXCPS -( 360 NON-VIO, 2,339 VIO)          .
.TOTAL JOB COST EXCLUDING PRINT CHARGES = $8.85 CHARGED TO AUTH = 0031 , JO/HO = 022685067          .
.....

```

APPENDIX 1
 DISTRIBUTION Program Output
 Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 4
 03703.7002
 WMB(B)-01 *WMB*



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: SITE DATA RETREIVAL PROGAM
VERSION OF PROGRAM: 00
LINK EDIT DATE (JULIAN): 80.184
DATE OF RUN (MO/DAY/YR): 5/01/98
JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-112
LEVEL OF PROGRAM: 01
LINK EDIT TIME (HRS.MINS.SECS): 14.21.36
TIME OF RUN (MILITARY): 1133
JOB09666

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 5
03703.7002
WM(B)-01
W-0

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

```
CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
      1      2
      2    111 112
      3  74001    81365
CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
```

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 6
03703.7002
WM(B)-01
le 4/10

INPUT TO METOWER PROGRAM

2

111 112

74001 81365

EOF OF INPUT DATA REACHED

NUMBER OF CARDS SELECTED = 5844

NUMBER OF DAYS SELECTED = 2922

APPENDIX 1

DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 7

03703.7002
WM(B)-01

REV 0



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: FREQ OF OCCUR OF TWO PARAMETERS

VERSION OF PROGRAM: 00

LOAD MODULE: ENVIRONM.DISTRIB

LINK EDIT DATE (JULIAN): 81.182

DATE OF RUN (MO/DAY/YR): 5/01/98

JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-200

LEVEL OF PROGRAM: 00

MEMBER (PGM): DISTRB00

LINK EDIT TIME (HRS.MINS.SECONDS): 12.11.26

TIME OF RUN (MILITARY): 1133

JOB09666

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 8
03703.7002
WM(B)-01
Rev 0

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

CARD# 1 2 3 4 5 6 7 8 9 10

1 2

2 MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA

3 33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION

4 WIND DIRECTION (DEGREES) 3 0 999

5 154 360

6 0

7 WIND SPEED (MPH) (TENTHS) 99 0 1000

8 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

9 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

10 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

CARD# 11 12 13 14 15 16

11 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84

12 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 110 120 130 140

13 1 999

14 74

15 7400181365 0 0

16 112 0.0 0.0 111 0.0 0.0

CARD# 1 2 3 4 5 6 7 8

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 9
03703.7002
WM(B)-01
Ret

***** SITE WEATHER DATA *****

FIRST YEAR = 1974, JSYR = 74001, JNYR = 81365, JM01 = 0, JM02 = 0

TOP PARAMETER CODE = 112 MULT = 1.00000 ADD = 0.0

SIDE PARAMETER CODE = 111 MULT = 1.00000 ADD = 0.0

FIRST DATE RETURNED = 74001

LAST DATE RETURNED = 81365

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 10
03703.7002
WM(B)-01
WVO

MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA

33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 85	86- 154	155- 360	361- 999	TOTAL
0 - 5	0	0	0	87	87
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.13	0.13
6 - 6	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
7 - 7	0	0	0	123	123
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.19	0.19
8 - 8	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
9 - 9	0	0	0	237	237
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.36	0.36
10 - 10	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
11 - 11	0	0	0	367	367
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.55	0.55
12 - 12	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
13 - 13	182	75	264	14	535
PCT CLASS	34.02	14.02	49.35	2.62	100.00
PCT TOTAL	0.27	0.11	0.40	0.02	0.81
14 - 14	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
15 - 15	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 11
03703.7002
WM(B)-01
lec O

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 85	86- 154	155- 360	361- 999	
16 - 16	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
17 - 17	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
18 - 18	262	89	359	11	721
PCT CLASS	36.34	12.34	49.79	1.53	100.00
PCT TOTAL	0.39	0.13	0.54	0.02	1.09
19 - 19	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
20 - 20	281	101	426	13	821
PCT CLASS	34.23	12.30	51.89	1.58	100.00
PCT TOTAL	0.42	0.15	0.64	0.02	1.24
21 - 21	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
22 - 22	247	93	327	6	673
PCT CLASS	36.70	13.82	48.59	0.89	100.00
PCT TOTAL	0.37	0.14	0.49	0.01	1.01
23 - 23	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
24 - 24	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
25 - 25	308	130	549	11	998
PCT CLASS	30.86	13.03	55.01	1.10	100.00
PCT TOTAL	0.46	0.20	0.83	0.02	1.50
26 - 26	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
27 - 27	0	0	1	0	1
PCT CLASS	0.0	0.0	100.00	0.0	100.00
PCT TOTAL	0.0	0.0	0.00	0.0	0.00

86° → 154°

← Cumulative Hours = 358

Total Hours = 8266

358/8266 = 4.3%

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 12
03703.7002
WM(B)-01
KCO

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 85	86- 154	155- 360	361- 999	TOTAL
28 - 28	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
29 - 29	372	166	625	8	1171
PCT CLASS	31.77	14.18	53.37	0.68	100.00
PCT TOTAL	0.56	0.25	0.94	0.01	1.77
30 - 30	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
31 - 31	345	169	640	6	1160
PCT CLASS	29.74	14.57	55.17	0.52	100.00
PCT TOTAL	0.52	0.25	0.96	0.01	1.75
32 - 32	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
33 - 33	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
34 - 34	374	165	732	10	1281
PCT CLASS	29.20	12.88	57.14	0.78	100.00
PCT TOTAL	0.56	0.25	1.10	0.02	1.93
35 - 35	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
36 - 36	390	176	792	11	1369
PCT CLASS	28.49	12.86	57.85	0.80	100.00
PCT TOTAL	0.59	0.27	1.19	0.02	2.06
37 - 37	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
38 - 38	1	0	1	0	2
PCT CLASS	50.00	0.0	50.00	0.0	100.00
PCT TOTAL	0.00	0.0	0.00	0.0	0.00
39 - 39	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

86° → 154°

← Cumulative Hours = 82.3

Total Hours = 8266

823/8266 = 10.0%

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 13
03703.7002
WM(B)-01

Rec'd

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 85	86- 154	155- 360	361- 999	
40 - 40	336	173	805	8	1322
PCT CLASS	25.42	13.09	60.89	0.61	100.00
PCT TOTAL	0.51	0.26	1.21	0.01	1.99
41 - 41	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
42 - 42	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
43 - 43	371	201	864	7	1443
PCT CLASS	25.71	13.93	59.88	0.49	100.00
PCT TOTAL	0.56	0.30	1.30	0.01	2.18
44 - 44	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
45 - 45	240	112	579	7	938
PCT CLASS	25.59	11.94	61.73	0.75	100.00
PCT TOTAL	0.36	0.17	0.87	0.01	1.41
46 - 46	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
47 - 47	361	185	914	9	1469
PCT CLASS	24.57	12.59	62.22	0.61	100.00
PCT TOTAL	0.54	0.28	1.38	0.01	2.21
48 - 48	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
49 - 49	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
50 - 50	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
51 - 51	342	202	868	9	1421
PCT CLASS	24.07	14.22	61.08	0.63	100.00
PCT TOTAL	0.52	0.30	1.31	0.01	2.14

86° → 154°

Cumulative Hours = 1,650
Total Hours = 8,266

$1,650 / 8,266 = 20.0\%$

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 14
03703.7002
WM(B)-01

WCO

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 85	86- 154	155- 360	361- 999	
52 - 52	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
53 - 53	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
54 - 54	301	211	901	6	1419
PCT CLASS	21.21	14.87	63.50	0.42	100.00
PCT TOTAL	0.45	0.32	1.36	0.01	2.14
55 - 55	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
56 - 56	318	208	900	13	1439
PCT CLASS	22.10	14.45	62.54	0.90	100.00
PCT TOTAL	0.48	0.31	1.36	0.02	2.17
57 - 57	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
58 - 58	336	199	901	5	1441
PCT CLASS	23.32	13.81	62.53	0.35	100.00
PCT TOTAL	0.51	0.30	1.36	0.01	2.17
59 - 59	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
60 - 60	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
61 - 61	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
62 - 62	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
63 - 63	302	193	912	6	1413
PCT CLASS	21.37	13.66	64.54	0.42	100.00
PCT TOTAL	0.46	0.29	1.37	0.01	2.13

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 15
03703.7002
WM(B)-01

2000

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 85	86- 154	155- 360	361- 999	TOTAL
64 - 64	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
65 - 65	293	208	969	8	1478
PCT CLASS	19.82	14.07	65.56	0.54	100.00
PCT TOTAL	0.44	0.31	1.46	0.01	2.23
66 - 66	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
67 - 67	205	153	651	5	1014
PCT CLASS	20.22	15.09	64.20	0.49	100.00
PCT TOTAL	0.31	0.23	0.98	0.01	1.53
68 - 68	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
69 - 69	282	223	975	10	1490
PCT CLASS	18.93	14.97	65.44	0.67	100.00
PCT TOTAL	0.43	0.34	1.47	0.02	2.25
70 - 70	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
71 - 71	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
72 - 72	1	1	0	0	2
PCT CLASS	50.00	50.00	0.0	0.0	100.00
PCT TOTAL	0.00	0.00	0.0	0.0	0.00
73 - 73	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
74 - 74	280	207	968	10	1465
PCT CLASS	19.11	14.13	66.08	0.68	100.00
PCT TOTAL	0.42	0.31	1.46	0.02	2.21
75 - 75	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

86° → 154°

Cumulative Hours = 3,209

Total Hours = 8,266

 $3,209 / 8,266 = 38.8\%$

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 16
03703.7002
WM(B)-01

Rev 0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 85	86- 154	155- 360	361- 999	
76 - 76	276	181	967	8	1432
PCT CLASS	19.27	12.64	67.53	0.56	100.00
PCT TOTAL	0.42	0.27	1.46	0.01	2.16
77 - 77	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
78 - 78	286	176	880	8	1350
PCT CLASS	21.19	13.04	65.19	0.59	100.00
PCT TOTAL	0.43	0.27	1.33	0.01	2.04
79 - 79	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
80 - 80	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
81 - 81	225	193	911	8	1337
PCT CLASS	16.83	14.44	68.14	0.60	100.00
PCT TOTAL	0.34	0.29	1.37	0.01	2.02
82 - 82	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
83 - 83	0	2	2	0	4
PCT CLASS	0.0	50.00	50.00	0.0	100.00
PCT TOTAL	0.0	0.00	0.00	0.0	0.01
84 - 84	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
85 - 85	238	202	898	6	1344
PCT CLASS	17.71	15.03	66.82	0.45	100.00
PCT TOTAL	0.36	0.30	1.35	0.01	2.03
86 - 86	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
87 - 87	244	180	942	4	1370
PCT CLASS	17.81	13.14	68.76	0.29	100.00
PCT TOTAL	0.37	0.27	1.42	0.01	2.07

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 17
03703.7002
WM(B)-01

Rec'd

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)					TOTAL
	0- 85	86- 154	155- 360	361- 999		
88 - 88	0	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	0.0
89 - 89	168	118	635	5	926	
PCT CLASS	18.14	12.74	68.57	0.54	100.00	
PCT TOTAL	0.25	0.18	0.96	0.01	1.40	
90 - 90	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
91 - 91	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
92 - 92	208	152	870	5	1235	
PCT CLASS	16.84	12.31	70.45	0.40	100.00	
PCT TOTAL	0.31	0.23	1.31	0.01	1.86	
93 - 93	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
94 - 94	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
95 - 95	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
96 - 96	222	176	876	6	1280	
PCT CLASS	17.34	13.75	68.44	0.47	100.00	
PCT TOTAL	0.33	0.27	1.32	0.01	1.93	
97 - 97	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
98 - 98	219	158	935	7	1319	
PCT CLASS	16.60	11.98	70.89	0.53	100.00	
PCT TOTAL	0.33	0.24	1.41	0.01	1.99	
99 - 99	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 18
03703.7002
WM(B)-01

Rev C

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)					TOTAL
	0- 85	86- 154	155- 360	361- 999		
100 - 100	0	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	0.0
101 - 110	734	528	3406	14	4682	
PCT CLASS	15.68	11.28	72.75	0.30	100.00	
PCT TOTAL	1.11	0.80	5.13	0.02	7.06	
111 - 120	437	303	2125	8	2873	
PCT CLASS	15.21	10.55	73.96	0.28	100.00	
PCT TOTAL	0.66	0.46	3.20	0.01	4.33	
121 - 130	474	418	2820	20	3732	
PCT CLASS	12.70	11.20	75.56	0.54	100.00	
PCT TOTAL	0.71	0.63	4.25	0.03	5.63	
131 - 1000	1392	1839	12778	139	16148	
PCT CLASS	8.62	11.39	79.13	0.86	100.00	
PCT TOTAL	2.10	2.77	19.26	0.21	24.34	
TOTAL	11853	8266	44968	1245	66332	
PCT CLASS	17.87	12.46	67.79	1.88	100.00	
PCT TOTAL	17.87	12.46	67.79	1.88	100.00	

← Total Valid Observations (All Sectors)

Total Observations (86° → 154°)

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 19
03703.7002
WM(B)-01
McCB

OBSERVATIONS READ = 70128

CHECKED = 70128

USED = 66332

APPENDIX 1
DISTRIBUTION Program Output
Unit 3 MSVB to Unit 3 Control Room Air Intake

P. 20
03703.7002
WM(B)-01

WFO

JES2 JOB LOG -- SYSTEM C168 -- NODE JES2B0S

11.34.03 JOB09668 IRR010I USERID VIG7988 IS ASSIGNED TO THIS JOB.
11.34.04 JOB09668 ICH70001I VIG7988 LAST ACCESS AT 11:33:39 ON FRIDAY, MAY 1, 1998
11.34.04 JOB09668 \$HASP373 DISTRIB STARTED - INIT 8 - CLASS A - SYS C168
11.34.09 JOB09668 +IH0002I STOP 1
11.34.09 JOB09668 \$HASP395 DISTRIB ENDED

----- JES2 JOB STATISTICS -----

01 MAY 1998 JOB EXECUTION DATE

37 CARDS READ

840 SYSOUT PRINT RECORDS

0 SYSOUT PUNCH RECORDS

34 SYSOUT SPOOL KBYTES

0.09 MINUTES EXECUTION TIME

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 1
03703.7002
WM(B)-01

Revo

01-MAY-98JOB09668

JOB09668

```
1 //DISTRIB JOB (0031,3),'VIGEANT-SA',  
  // MSGLEVEL=2,MSGCLASS=A  
  //* RJETRAN.VIG7988.DATA(DISTRIB)  
  /*JOBPARM ROOM=3  
2 //METRODISK EXEC METRPROC  
9 //DISK DD DISP=SHR,DSN=ENVIRONM.METDATA.MILSTONE.YR7481  
12 //SYSIN DD * GENERATED STATEMENT  
13 //DISTRIB EXEC PGH=DISTRB00,REGION=284K,TIME=1  
14 //STEPLIB DD DSN=ENVIRONM.DISTRIB,DISP=SHR  
15 //GO.FT06F001 DD DCB=PRINT1,SYSOUT=*,  
16 //GO.FT10F001 DD UNIT=DISK,DISP=(OLD,DELETE),DSN=&SAMPLE  
17 //GO.FT05F001 DD *  
18 //IMBLIST EXEC PGH=IMBLIST  
19 //SYSPRINT DD SYSOUT=*,  
20 //SYSLIB DD DSN=ENVIRONM.DISTRIB,DISP=SHR  
21 //SYSIN DD * GENERATED STATEMENT
```

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 2
03703.7002
WM(B)-01
Dejo

STHT NO. MESSAGE

2 IEF0001I PROCEDURE METRPROC HAS EXPANDED USING SYSTEM LIBRARY SYS1.USER.PROCLIB
ICH70001I VIG7988 LAST ACCESS AT 11:33:39 ON FRIDAY, MAY 1, 1998
IEF236I ALLOC. FOR DISTRIB METRPROC METRDISK
IGD103I SMS ALLOCATED TO DDNAME STEPLIB
IEF237I JES2 ALLOCATED TO FT06F001
IEF237I JES2 ALLOCATED TO SYSPRINT
IGD103I SMS ALLOCATED TO DDNAME SYS010
IGD101I SMS ALLOCATED TO DDNAME (SYS011)

DSN (SYS98121.T113403.RA000.DISTRIB.SAMPLE.H01)
STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
VOL SER NOS= VIO

IEF237I JES2 ALLOCATED TO FT05F001
IEF142I DISTRIB METRPROC METRDISK - STEP HAS EXECUTED - COND CODE 0000
IGD104I ENVIRONM.METOLOGY RETAINED, DDNAME=STEPLIB
IEF285I VIG7988.DISTRIB.JOB09668.D0000104.? SYSOUT
IEF285I VIG7988.DISTRIB.JOB09668.D0000105.? SYSOUT
IGD104I ENVIRONM.METDATA.MILSTONE.YR7481 RETAINED, DDNAME=SYS010
IGD106I SYS98121.T113403.RA000.DISTRIB.SAMPLE.H01 PASSED, DDNAME=SYS011
IEF285I VIG7988.DISTRIB.JOB09668.D0000101.? SYSIN

.....
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 11.34.03, 05/01/98 V09
.STEP NUMBER - 1, STEP NAME - METRPROC, PROGRAM NAME - METWR01 , RAN FROM 11.34.04 TO 11.34.06
.ENDING CONDITION - RETURN CODE 0, REGION USED - 380K, PERFORMANCE GROUP - 20, SHAPS - 0
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
.CPU TIME - .49 VECTOR TIME - .00 SECS, EXCPS -(352 NON-VIO, 1,169 VIO), CPU UNITS - 1.86 SECS
.SYSIN RECORDS - 3, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$3.10
.EXCPS/DDNAME - 9/STEPLIB 343/SYS010 1,169/SYS011
.....

IEF373I STEP/METRPROC/START 1998121.1134
IEF374I STEP/METRPROC/STOP 1998121.1134 CPU OMIN 00.46SEC SRB OMIN 00.02SEC VIRT 88K SYS 292K EXT 4K SYS 10132K
IEF236I ALLOC. FOR DISTRIB DISTRIB
IGD103I SMS ALLOCATED TO DDNAME STEPLIB
IEF237I JES2 ALLOCATED TO FT06F001
IGD103I SMS ALLOCATED TO DDNAME FT10F001
IEF237I JES2 ALLOCATED TO FT05F001
IEF142I DISTRIB DISTRIB - STEP HAS EXECUTED - COND CODE 0001
IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=STEPLIB
IEF285I VIG7988.DISTRIB.JOB09668.D0000106.? SYSOUT
IGD105I SYS98121.T113403.RA000.DISTRIB.SAMPLE.H01 DELETED, DDNAME=FT10F001
IEF285I VIG7988.DISTRIB.JOB09668.D0000102.? SYSIN

.....
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 11.34.03, 05/01/98 V09
.STEP NUMBER - 2, STEP NAME - DISTRIB , PROGRAM NAME - DISTRB00, RAN FROM 11.34.06 TO 11.34.09
.ENDING CONDITION - RETURN CODE 1, REGION USED - 340K, PERFORMANCE GROUP - 20, SHAPS - 0
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
.CPU TIME - 2.35 VECTOR TIME - .00 SECS, EXCPS -(8 NON-VIO, 1,170 VIO), CPU UNITS - 3.41 SECS
.SYSIN RECORDS - 16, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$5.68
.EXCPS/DDNAME - 8/STEPLIB 1,170/FT10F001
.....

IEF373I STEP/DISTRIB /START 1998121.1134
IEF374I STEP/DISTRIB /STOP 1998121.1134 CPU OMIN 02.34SEC SRB OMIN 00.01SEC VIRT 64K SYS 276K EXT 4K SYS 10140K
IEF236I ALLOC. FOR DISTRIB IMBLIST
IEF237I JES2 ALLOCATED TO SYSPRINT
IGD103I SMS ALLOCATED TO DDNAME SYSLIB
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I DISTRIB IMBLIST - STEP HAS EXECUTED - COND CODE 0008
IEF285I VIG7988.DISTRIB.JOB09668.D0000107.? SYSOUT
IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=SYSLIB

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 3
03703.7002
WM(B)-01

IEF285I VIG7988.DISTRIB.JOB09668.D0000103.?

SYSIN

```
.....
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 11.34.03, 05/01/98 V09 .
.STEP NUMBER - 3, STEP NAME - IMBLIST , PROGRAM NAME - IMBLIST , RAN FROM 11.34.09 TO 11.34.09 .
.ENDING CONDITION - RETURN CODE 8, REGION USED - 428K, PERFORMANCE GROUP - 20, SHAPS - 0 .
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0 .
.CPU TIME - .03 VECTOR TIME - .00 SECS, EXCPS -( 0 NON-VIO, 0 VIO), CPU UNITS - .03 SECS .
.SYSIN RECORDS - 1, OPENS - ( 0 TAPE, 0 TEMP, 0 PERM), COST = $0.05 .
.....
IEF373I STEP/IMBLIST /START 1998121.1134 .
IEF374I STEP/IMBLIST /STOP 1998121.1134 CPU 0MIN 00.03SEC SRB 0MIN 00.00SEC VIRT 156K SYS 272K EXT 4K SYS 10044K
IEF375I JOB/DISTRIB /START 1998121.1134 .
IEF376I JOB/DISTRIB /STOP 1998121.1134 CPU 0MIN 02.83SEC SRB 0MIN 00.03SEC
.....
.TOTAL CPU TIME - 2.87 SECS, TOTAL VECTOR TIME - .00 SECS, TOTAL CPU UNITS - 5.30 SECS .
.TOTAL EXCPS -( 360 NON-VIO, 2,339 VIO) .
.TOTAL JOB COST EXCLUDING PRINT CHARGES = $8.83 CHARGED TO AUTH = 0031 , JO/HO = 022685067 .
.....
```

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

Revo

P. 4
03703.7002
WM(B)-01



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: SITE DATA RETREIVAL PROGAM
VERSION OF PROGRAM: 00
LINK EDIT DATE (JULIAN): 80.184
DATE OF RUN (MO/DAY/YR): 5/01/98
JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-112
LEVEL OF PROGRAM: 01
LINK EDIT TIME (HRS.MINS.SECONDS): 14.21.36
TIME OF RUN (MILITARY): 1134
JOB09668

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 5
03703.7002
WM(B)-01
Petro

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

```
CARD# 1-----2-----3-----4-----5-----6-----7-----8
      1      2
      2 111 112
      3 74001 81365
CARD# 1-----2-----3-----4-----5-----6-----7-----8
```

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 6
03703.7002
WM(B)-01
Leuc

INPUT TO METOWER PROGRAM

2
111.112
74001 81365

EOF OF INPUT DATA REACHED

NUMBER OF CARDS SELECTED = 5844

NUMBER OF DAYS SELECTED = 2922

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 7
03703.7002
WM(B)-01
Ward



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: FREQ OF OCCUR OF THO PARAMETERS
VERSION OF PROGRAM: 00
LOAD MODULE: ENVIRONM.DISTRIB
LINK EDIT DATE (JULIAN): 81.182
DATE OF RUN (MO/DAY/YR): 5/01/98
JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-200
LEVEL OF PROGRAM: 00
MEMBER (PGM): DISTRB00
LINK EDIT TIME (HRS.MINS.SECONDS): 12.11.26
TIME OF RUN (MILITARY): 1134
JOB09668

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 8
03703.7002
WM(B)-01

PCW

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

1 2

2 MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA

3 33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION

4 56 WIND DIRECTION (DEGREES) 3 0 999

5 59 124 360

6 0

7 WIND SPEED (MPH) (TENTHS) 99 0 1000

8 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

9 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

10 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

11 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84

12 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 110 120 130 140

13 1 999

14 74

15 7400181365 0 0

16 112 0.0 0.0 111 0.0 0.0

CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 9
03703.7002
WM(B)-01

Per-O

***** SITE WEATHER DATA *****

FIRST YEAR = 1974, JSYR = 74001, JNYR = 81365, JM01 = 0, JM02 = 0

TOP PARAMETER CODE = 112 MULT = 1.00000 ADD = 0.0

SIDE PARAMETER CODE = 111 MULT = 1.00000 ADD = 0.0

FIRST DATE RETURNED = 74001

LAST DATE RETURNED = 81365

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 10
03703.7002
WM(B)-01
Rev 0

MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA

33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION



WIND DIRECTION (DEGREES)

WIND SPEED (MPH) (TENTHS)	0- 55	56- 124	125- 360	361- 999	TOTAL
0 - 5	0	0	0	87	87
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.13	0.13
6 - 6	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
7 - 7	0	0	0	123	123
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.19	0.19
8 - 8	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
9 - 9	0	0	0	237	237
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.36	0.36
10 - 10	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
11 - 11	0	0	0	367	367
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.55	0.55
12 - 12	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
13 - 13	136	83	302	14	535
PCT CLASS	25.42	15.51	56.45	2.62	100.00
PCT TOTAL	0.21	0.13	0.46	0.02	0.81
14 - 14	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
15 - 15	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 11
03703.7002
WM(B)-01
240

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 55	56- 124	125- 360	361- 999	TOTAL
16 - 16	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
17 - 17	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
18 - 18	193	122	395	11	721
PCT CLASS	26.77	16.92	54.79	1.53	100.00
PCT TOTAL	0.29	0.18	0.60	0.02	1.09
19 - 19	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
20 - 20	217	119	472	13	821
PCT CLASS	26.43	14.49	57.49	1.58	100.00
PCT TOTAL	0.33	0.18	0.71	0.02	1.24
21 - 21	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
22 - 22	187	106	374	6	673
PCT CLASS	27.79	15.75	55.57	0.89	100.00
PCT TOTAL	0.28	0.16	0.56	0.01	1.01
23 - 23	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
24 - 24	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
25 - 25	244	121	622	11	998
PCT CLASS	24.45	12.12	62.32	1.10	100.00
PCT TOTAL	0.37	0.18	0.94	0.02	1.50
26 - 26	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
27 - 27	0	0	1	0	1
PCT CLASS	0.0	0.0	100.00	0.0	100.00
PCT TOTAL	0.0	0.0	0.00	0.0	0.00

56° → 124°

Cumulative Hours = 430 Total Hours = 7,922

 $430 / 7,922 = 5.4\%$

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 12
03703.7002
WM(B)-01
Rev 0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 55	56- 124	125- 360	361- 999	TOTAL
28 - 28	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
29 - 29	299	150	714	8	1171
PCT CLASS	25.53	12.81	60.97	0.68	100.00
PCT TOTAL	0.45	0.23	1.08	0.01	1.77
30 - 30	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
31 - 31	276	140	738	6	1160
PCT CLASS	23.79	12.07	63.62	0.52	100.00
PCT TOTAL	0.42	0.21	1.11	0.01	1.75
32 - 32	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
33 - 33	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
34 - 34	315	129	827	10	1281
PCT CLASS	24.59	10.07	64.56	0.78	100.00
PCT TOTAL	0.47	0.19	1.25	0.02	1.93
35 - 35	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
36 - 36	319	137	902	11	1369
PCT CLASS	23.30	10.01	65.89	0.80	100.00
PCT TOTAL	0.48	0.21	1.36	0.02	2.06
37 - 37	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
38 - 38	0	1	1	0	2
PCT CLASS	0.0	50.00	50.00	0.0	100.00
PCT TOTAL	0.0	0.00	0.00	0.0	0.00
39 - 39	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

56° → 124°

Cumulative Observations = 841

Total Observations = 7,922

841 / 7,922 = 10.6%

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 13
03703.7002
WM(B)-01
Rev D

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 55	56- 124	125- 360	361- 999	TOTAL
40 - 40	266	154	894	8	1322
PCT CLASS	20.12	11.65	67.62	0.61	100.00
PCT TOTAL	0.40	0.23	1.35	0.01	1.99
41 - 41	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
42 - 42	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
43 - 43	311	149	976	7	1443
PCT CLASS	21.55	10.33	67.64	0.49	100.00
PCT TOTAL	0.47	0.22	1.47	0.01	2.18
44 - 44	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
45 - 45	198	102	631	7	938
PCT CLASS	21.11	10.87	67.27	0.75	100.00
PCT TOTAL	0.30	0.15	0.95	0.01	1.41
46 - 46	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
47 - 47	309	141	1010	9	1469
PCT CLASS	21.03	9.60	68.75	0.61	100.00
PCT TOTAL	0.47	0.21	1.52	0.01	2.21
48 - 48	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
49 - 49	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
50 - 50	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
51 - 51	282	150	980	9	1421
PCT CLASS	19.85	10.56	68.97	0.63	100.00
PCT TOTAL	0.43	0.23	1.48	0.01	2.14

$56^{\circ} \rightarrow 124^{\circ}$
 Cumulative Hours = 1,513
 Total Hours = 7,922
 $1,513 / 7,922 = 19.0\%$

APPENDIX 2
 DISTRIBUTION Program Output
 Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 14
 03703.7002
 WM(B)-01
Rec'd

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 55	56- 124	125- 360	361- 999	
52 - 52	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
53 - 53	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
54 - 54	257	155	1001	6	1419
PCT CLASS	18.11	10.92	70.54	0.42	100.00
PCT TOTAL	0.39	0.23	1.51	0.01	2.14
55 - 55	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
56 - 56	272	153	1001	13	1439
PCT CLASS	18.90	10.63	69.56	0.90	100.00
PCT TOTAL	0.41	0.23	1.51	0.02	2.17
57 - 57	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
58 - 58	265	174	997	5	1441
PCT CLASS	18.39	12.07	69.19	0.35	100.00
PCT TOTAL	0.40	0.26	1.50	0.01	2.17
59 - 59	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
60 - 60	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
61 - 61	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
62 - 62	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
63 - 63	243	165	999	6	1413
PCT CLASS	17.20	11.68	70.70	0.42	100.00
PCT TOTAL	0.37	0.25	1.51	0.01	2.13

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 15
03703.7002
WM(B)-01

Rev 0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)					TOTAL
	0- 55	56- 124	125- 360	361- 999		
64 - 64	0	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	0.0
65 - 65	251	148	1071	8	1478	
PCT CLASS	16.98	10.01	72.46	0.54	100.00	
PCT TOTAL	0.38	0.22	1.61	0.01	2.23	
66 - 66	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
67 - 67	176	121	712	5	1014	
PCT CLASS	17.36	11.93	70.22	0.49	100.00	
PCT TOTAL	0.27	0.18	1.07	0.01	1.53	
68 - 68	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
69 - 69	233	177	1070	10	1490	
PCT CLASS	15.64	11.88	71.81	0.67	100.00	
PCT TOTAL	0.35	0.27	1.61	0.02	2.25	
70 - 70	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
71 - 71	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
72 - 72	0	2	0	0	2	
PCT CLASS	0.0	100.00	0.0	0.0	100.00	
PCT TOTAL	0.0	0.00	0.0	0.0	0.00	
73 - 73	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
74 - 74	225	176	1054	10	1465	
PCT CLASS	15.36	12.01	71.95	0.68	100.00	
PCT TOTAL	0.34	0.27	1.59	0.02	2.21	
75 - 75	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 16
03703.7002
WM(B)-01
RUC

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 55	56- 124	125- 360	361- 999	TOTAL
76 - 76	208	185	1031	8	1432
PCT CLASS	14.53	12.92	72.00	0.56	100.00
PCT TOTAL	0.31	0.28	1.55	0.01	2.16
77 - 77	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
78 - 78	225	162	955	8	1350
PCT CLASS	16.67	12.00	70.74	0.59	100.00
PCT TOTAL	0.34	0.24	1.44	0.01	2.04
79 - 79	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
80 - 80	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
81 - 81	180	158	991	8	1337
PCT CLASS	13.46	11.82	74.12	0.60	100.00
PCT TOTAL	0.27	0.24	1.49	0.01	2.02
82 - 82	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
83 - 83	0	2	2	0	4
PCT CLASS	0.0	50.00	50.00	0.0	100.00
PCT TOTAL	0.0	0.00	0.00	0.0	0.01
84 - 84	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
85 - 85	187	182	969	6	1344
PCT CLASS	13.91	13.54	72.10	0.45	100.00
PCT TOTAL	0.28	0.27	1.46	0.01	2.03
86 - 86	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
87 - 87	182	171	1013	4	1370
PCT CLASS	13.28	12.48	73.94	0.29	100.00
PCT TOTAL	0.27	0.26	1.53	0.01	2.07

56° → 124°

← Cumulative Hours = 3,260

Total Hours = 7,922

 $3,260 / 7,922 = 41.2\%$

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 17
03703.7002
WM(B)-01

Rec'd

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 55	56- 124	125- 360	361- 999	
88 - 88	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
89 - 89	128	115	678	5	926
PCT CLASS	13.82	12.42	73.22	0.54	100.00
PCT TOTAL	0.19	0.17	1.02	0.01	1.40
90 - 90	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
91 - 91	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
92 - 92	169	132	929	5	1235
PCT CLASS	13.68	10.69	75.22	0.40	100.00
PCT TOTAL	0.25	0.20	1.40	0.01	1.86
93 - 93	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
94 - 94	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
95 - 95	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
96 - 96	176	164	934	6	1280
PCT CLASS	13.75	12.81	72.97	0.47	100.00
PCT TOTAL	0.27	0.25	1.41	0.01	1.93
97 - 97	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
98 - 98	165	154	993	7	1319
PCT CLASS	12.51	11.68	75.28	0.53	100.00
PCT TOTAL	0.25	0.23	1.50	0.01	1.99
99 - 99	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 18
03703.7002
WM(B)-01

Rev 0

WIND SPEED
(MPH)
(TENTHS)

WIND DIRECTION (DEGREES)

0- 55 56- 124 125- 360 361- 999 TOTAL

100 - 100 0 0 0 0 0
PCT CLASS 0.0 0.0 0.0 0.0 0.0
PCT TOTAL 0.0 0.0 0.0 0.0 0.0

101 - 110 558 536 3574 14 4682
PCT CLASS 11.92 11.45 76.33 0.30 100.00
PCT TOTAL 0.84 0.81 5.39 0.02 7.06

111 - 120 312 348 2205 8 2873
PCT CLASS 10.86 12.11 76.75 0.28 100.00
PCT TOTAL 0.47 0.52 3.32 0.01 4.33

121 - 130 326 465 2921 20 3732
PCT CLASS 8.74 12.46 78.27 0.54 100.00
PCT TOTAL 0.49 0.70 4.40 0.03 5.63

131 - 1000 761 2073 13175 139 16148
PCT CLASS 4.71 12.84 81.59 0.86 100.00
PCT TOTAL 1.15 3.13 19.86 0.21 24.34

TOTAL 9051 7922 48114 1245 66332
PCT CLASS 13.64 11.94 72.54 1.88 100.00
PCT TOTAL 13.64 11.94 72.54 1.88 100.00

← Total Valid Observations (All Sectors)

→ Total Observations (56° → 124°)

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 19
03703.7002
WM(B)-01

Net 0

CHECKED = 70128

USED = 66332

APPENDIX 2
DISTRIBUTION Program Output
Unit 3 ESFB to Unit 3 Control Room Air Intake

P. 20
03703.7002
WM(B)-01

RWO

Attachment 3

Millstone Nuclear Power Station, Unit No. 3

Calculation WM(B)-02
Normalized X/Q at the Unit 3 Control Room for
Releases From the Unit 1 Stack



CALCULATION TITLE PAGE

Total Number of Pages: 30

Normalized X/Q at the Unit 3 Control Room For Releases From the Unit 1 Stack

TITLE		
CALCULATION #	REVISION No.	SYSTEM NAME
N/A	0	RBVS/SLCRS
WM(B)-02	CB	3314I
VENDOR CALCULATION NUMBER	Structure	System Number
N/A		
Component		
NUCLEAR INDICATOR:		
<input checked="" type="checkbox"/> CATI	<input type="checkbox"/> RWQA	<input type="checkbox"/> SBOQA
<input type="checkbox"/> FPQA	<input type="checkbox"/> ATWSQA	<input type="checkbox"/> NON-QA
Calc. Supports DCR/MMOD?		
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
Calc. Supports Ind. Analysis?		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
↓		
M3-98-029		
DCR/MMOD No.		
↓		
N/A		
Reference		
INCORPORATES:		
CCN NO:	AGAINST REV.	
N/A	N/A	

Executive Summary

THIS IS FORMAL APPROVAL OF A QA APPROVED VENDOR CALCULATION. NO (NU) IR IS REQUIRED.

Veri.	on
Initial	Date 6/13/00

REC'D 6-8-98
ON HOLD
CDS 6/17/98
CDS QC 6/23/98
NRP ✓ TJ

Approvals (Print & Sign Name)		
Preparer: James L. Wheeler		Date: 5/27/98
Interdiscipline Reviewer: N/A	Discipline:	Date:
Interdiscipline Reviewer: N/A	Discipline:	Date:
Independent Reviewer: N/A		Date:
Supervisor: William Eakin		Date: 5/27/98
Installation Verification		
<input checked="" type="checkbox"/> Calculation accurately reflects plant configuration, OR		
<input type="checkbox"/> N/A does not affect plant configuration)		
Preparer/Designer Engineer: JAMES L. WHEELER		Date: 5/27/98

DCM FORM 5-1A

Rev. 6

Page 1 of 1



PassPort DATABASE INPUTs

CH
#4

Page 1B of 30

Calculation Number: N/A N/A N/A Revision: N/A
(prefix) (sequence no.) (suffix)

Vendor Calculation Number/Other: 03703.7002-WM(B)-02 Revision: 0

CCN # N/A QA ☒ Yes ☐ No Calc Voided: ☐ Yes ☒ No

Superseded By: N/A Supersedes Calc: N/A

Discipline (Up to 10) N,A,Z

Unit	Project Reference (EWA)	Component Id	Computer Code	Rev. No./ Level No.
3	N/A	N/A	EN-113	6/8

PMMS CODES*				
Structure	System	Component	Reference Calculation	Rev No.
CB	RBV	N/A	N/A	N/A

*The codes required must be alpha codes designed for structure, system and component.

Reference Drawing	Sheet	Rev. No.
25212-10002	A	11
25212-11000	A	9

Comments:

Table of Contents

Title page	1A
CTP Database	1B
Table of Contents	1C
Vendor Calculation Pages	1 thru 12
Appendix 1	15 pages
 Total number of pages	 30

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION TITLE PAGE

5010.65

CLIENT & PROJECT: NORTHEAST UTILITIES - MILLSTONE UNIT 3				PAGE 1 of 12 Total Pages: 27 w/attachments pages		
CALCULATION TITLE: Normalized Concentrations (X/Q) at Unit 3 Control Room Air Intake for Gaseous Releases from the Top of the Unit 1 Stack Under Fumigation and Non-Fumigation Conditions				QA CATEGORY (✓) <input checked="" type="checkbox"/> I		
CALCULATION IDENTIFICATION NUMBER				OPTIONAL WORK PACKAGE NO.		
JOB ORDER NO. 037037002	DISCIPLINE WM(B)	CURRENT CALC NO 02	OPTIONAL TASK CODE REV 0			
APPROVALS - SIGNATURE & DATE				REVISION NO. OR NEW CALCULATION NO.	SUPERSEDES CALCULATION NO. OR REVISION NO.	CONFIRMATION REQUIRED (✓)
PREPARES(S) / DATE(S)	REVIEWER(S) / DATE(S)	INDEPENDENT REVIEWER(S) / DATE(S)			YES	NO
S. A. Vigeant <i>Stephen A. Vigeant</i> 5/21/98	C. A. Mazzola <i>Carl A. Mazzola</i> 5/21/98	C. A. Mazzola <i>Carl A. Mazzola</i> 5/21/98	0			✓
DISTRIBUTION						
GROUP	NAME & LOCATION	COPY SENT (✓)	GROUP	NAME & LOCATION	COPY SENT (✓)	
Record Mgmt. File (or Fire File if none) Lead Environmental Specialist Project Files NU RAD PROT NUNDS SWEC Rad Prot	Carl A. Mazzola Atlanta Steven A. Vigeant Boston Charlie Cronan Boston RJ Schmidt New Britain MP3 Site S Ferguson (Boston)	 cc cc ORIGINAL cc				

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 037037002	DISCIPLINE WM(B)	CALCULATION NO. 02 <i>Rev 0</i>	OPTIONAL TASK CODE	PAGE 2 OF 12

CHANGE HISTORY PAGE

REVISION NO.	DESCRIPTION OF CHANGES	PAGES REVISED	PAGES ADDED	PAGES REPLACED
0	0	N/A		

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 037037002	DISCIPLINE WM(B)	CALCULATION NO. 02 <i>REV 0</i>	OPTIONAL TASK CODE	PAGE 3 OF 12

TABLE OF CONTENTS

COVER PAGE.....	1
CHANGE HISTORY PAGE.....	2
TABLE OF CONTENTS.....	3
OBJECTIVE	4
METHODOLOGY.....	4
ASSUMPTIONS	4
DATA.....	4
EQUATION.....	5
CALCULATION.....	5
CONCLUSIONS	5
REFERENCES	6
ATTACHMENTS.....	6
APPENDICES.....	6

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	02 <i>Rev 0</i>		4 OF 12

OBJECTIVE

To calculate the normalized atmospheric dispersion (X/Q) values at the Unit 3 Control Room air intake for a gaseous release from the top of the Unit 1 stack under fumigation conditions for the 0 - 4 hour period and under non-fumigation conditions for the remaining averaging periods of 4-8 hours, 8-24 hours, 1-4 days, and 4-30 days.

METHODOLOGY

The applicable methodology is identified in Regulatory Guide 1.145 (Ref. 1). The fumigation X/Q is used for the first 4 hours of the accident. The non-fumigation X/Qs for the longer averaging times are derived from the log-log interpolation between the 2-hour and annual average value obtained from Ref. 3 using 1974 to 1981 on-site meteorological data (Ref. 4). The highest annual average X/Q from among the affected downwind sectors is taken Ref. 3. The affected downwind sectors (W, WNW, NW, and NNW) are determined using the "s/d" method from Ref. 9 (see Data Section).

ASSUMPTIONS

1. It is conservatively assumed that the sea breeze fumigation condition is occurring simultaneously with the onset of an accident condition with the wind direction moving the plume centerline towards the Unit 3 CR intake located on the control building.
2. It is conservatively assumed that the NRC recommended wind speed of 2.0 meters per second in Regulatory Guide 1.145 is representative of the fumigation layer. Fumigation most frequently occurs at higher wind speeds (Ref. 5). The top of the fumigation layer is located at the centerline of the elevated plume, while the bottom of the fumigation layer is conservatively located at the shortest roof height in the control building complex (Ref. 8) rather than ground level. The stack effluent is uniformly mixed in the vertical fumigation layer which normally extends from stack top to ground level.
3. It is conservatively assumed that the effective stack height is the same as the actual stack height. Therefore, no credit is taken for plume rise that can occur due to either thermal buoyancy, where the plume is warmer than the ambient air it is being released into, or mechanical rise due to its efflux velocity.
4. The sea breeze fumigation condition is assumed to persist for the 0-4 hour period which is consistent with the NRC recommendation in Ref. 1 for off-site calculations. Although sea breeze fumigation can persist for longer periods of time, the point of fumigation moves with time due to sea breeze inland penetration and backing due to the Coriolis effect forming a helical track down the coastline (Ref. 5).
5. It is assumed that the Unit 3 control room air intake X/Q values are representative of the X/Q values for the center of the Unit 3 control room given that the distances and directions from the release to these receptors are very similar.

DATA

Top of stack = plant elevation 389.0 ft MSL (Ref. 6)
 Bottom of stack = plant elevation 14.0 ft MSL (Ref. 6)
 Height of lowest roof top in control building complex = plant elevation 64.5 ft MSL (Ref. 8)
 h_e = Height from stack top to bottom of fumigation layer = 389.0 ft - 64.5 ft = 324.5 ft = 98.9 m
 u_{he} = Wind speed representative of the fumigation layer = 2.0 m/sec (Ref. 1)
 Distance (s) from stack to Unit 3 control room air intake = 1165 ft = 355 m (Ref. 7)
 Direction from stack to Unit 3 control room air intake = 130° (Ref. 7)
 Diameter (d) of stack top = 7.0 ft = 2.1 m (Ref. 6)
 $s/d = 355 \text{ m} / 2.1 \text{ m} = 169.1$ or 3 sectors ($3 \times 22.5^\circ = 68^\circ$ or $130^\circ - 34^\circ = 96^\circ$ to $130^\circ + 34^\circ = 164^\circ$) (Ref. 9)
 Wind directions 96° to 164° include the 22.5° downwind sectors of W, WNW, NW, and NNW
 σ_y @ 355 m for F-stability class = 14.51 m (Ref. 2)

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	02 <i>huc</i>		5 OF 12

EQUATION

$$X/Q = [(2\pi)^{1/2} (u_{he}) \sigma_y (h_e)]^{-1} \quad (\text{Ref. 1})$$

CALCULATION

Unit 1 Stack to Unit 3 Control Room Air Intake

$u_{he} = 2.0 \text{ m/sec}$ (Ref. 1)
 $\sigma_y @ 355 \text{ m}$ for F-stability class = 14.51 m (Ref. 2)
 $h_e = 98.9 \text{ m}$

Short-Term X/Q Value for Unit 3 Intake (0 - 4 Hours)

$$X/Q = [(2.5066) (2 \text{ m/sec})(14.51\text{m})(98.9 \text{ m})]^{-1}$$

$$X/Q = 1.39 \text{ E-4 sec/m}^3$$

CONCLUSIONS

The fumigation X/Q applicable to the Unit 3 intake for the 0-4 hour period of the accident is 1.39 E-4 sec/m³. The non-fumigation X/Qs for the longer averaging times are derived from the log-log interpolation between the 2-hour and annual average value obtained from Ref. 3 using 1974 to 1981 on-site meteorological data (Ref. 4). This period of record (8 years) is temporally representative of the meteorological conditions encountered at the site. The highest annual average X/Q from among the affected downwind sectors is taken Ref. 3 (see Appendix 1, p. 15). The affected downwind sectors (W, WNW, NW, and NNW) are determined using the "s/d" method from Ref. 9 (see Data Section). The X/Q values are as follows:

Period (Hours after Accident)	Logarithmic Interpolation Point (Hr)	X/Q (sec/m ³)
4-8	8	3.23 E- 5
8-24	16	1.56 E- 5
24-96	72	3.20 E- 6
96-720	624	3.30 E- 7
Annual	8760	2.05 E- 8

The intermediate period X/Q values are calculated according to the expression:

$$X/Q_t = \exp \{ \ln(X/Q_2) + \{ [(\ln(X/Q_a) - \ln(X/Q_2)) / (\ln(8760) - \ln(2))] [\ln(t) - \ln(2)] \} \}$$

where t is the time period in hours, X/Q_t is the X/Q value for time t, X/Q_2 is the 2-hour X/Q value, X/Q_a is the annual average X/Q value, and 8760 is the number of hours in a year.

The Unit 3 control room air intake X/Q values are representative of the X/Q values for the center of the Unit 3 control room given that the distances and directions from the release to these receptors are very similar. The Unit 3 control room air intake X/Q values are also representative of those for the Technical Support Center which is located adjacent to the control room.

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	02 <i>W-0</i>		6 OF 12

REFERENCES

1. US Nuclear Regulatory Commission, Office of Standards Development, Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants", August, 1979.
2. U. S. Nuclear Regulatory Commission, Subroutine "POLYN", Horizontal and Vertical Dispersion Coefficients as a Function of Downwind Distance (see Attachment 1 for F-stability values), 1974.
3. Stone & Webster computer program EN-113, Version 6, Level 8. See output in Appendix 1.
4. On-site meteorological data for the period 1974 - 1981 provided by Northeast Utilities. The data are hourly values represented by one 15-minute average value per hour (see Attachment 2).
5. Lyons, W. A., "Turbulent Diffusion and Pollutant Transport in Shoreline Environments" from Lectures on Air Pollution and Environmental Impact Analyses, American Meteorological Society, Boston, Massachusetts, September 29 to October 3, 1975, pp. 182-194.
6. Telecopier transmittal from Bill Jones, Northeast Utilities to Joe Creamer, Stone & Webster dated 4/23/98 providing Millstone Unit 1 stack dimensions (see Attachment 3).
7. Stone & Webster Drawing No. 12179-EY-16A-7, Rev. 7, 8/18/81, "Station Plan" (see Attachment 4)
8. Stone & Webster Drawing No. 12179-EM-1A-11. (see Attachment 5)
9. Murphy, K.G. and K.M. Campe., "Nuclear Power Plant Control Room Ventilation System Design for Meeting General Design Criterion 19". Presented at the 13th AEC Air Cleaning Conference, August, 1974.

ATTACHMENTS

1. "POLYN" Horizontal and Vertical Dispersion Coefficient Values as a Function of Downwind Distance (F-stability).
2. Letter from Northeast Utilities transmitting onsite meteorological data for the period 1974 - 1981.
3. Telecopier transmittal from Bill Jones, Northeast Utilities to Joe Creamer, Stone & Webster dated 4/23/98 providing Millstone Unit 1 stack dimensions
4. Stone & Webster Drawing No. 12179-EY-16A-7, Rev. 7, 8/18/81, "Station Plan"
5. Stone & Webster Drawing No. 12179-EM-1A-11, "Plot Plan".

APPENDICES (15 pages)

1. EN-113 computer output, Job No. 04820 dated 4/29/98.

10 MAR 1981

DISPERSION COEFFICIENTS AS A FUNCTION OF DOWNWIND DISTANCE
PASQUILL STABILITY CLASS (F)

PAGE 41

DOWNWIND DISTANCE (METERS)	STONE & WEBSTER	** **	POLYN (LONG)	** **	POLYN (DESERT)	** **	POLYN (X00000)	** **
	SIGMA Y	SIGMA Z	SIGMA Y	SIGMA Z	SIGMA Y	SIGMA Z	SIGMA Y	SIGMA Z
10. **	0.4739	0.1971 **	0.4014	0.1395 **	2.4230	1.6073 **	0.5776	0.3454
20. **	0.8969	0.4437 **	0.8020	0.3243 **	4.5718	1.9901 **	1.0802	0.6072
30. **	1.3054	0.6928 **	1.2022	0.5313 **	6.6281	2.2694 **	1.5578	0.8446
40. **	1.7048	0.9383 **	1.6022	0.7540 **	8.6265	2.4039 **	2.0200	1.0675
50. **	2.0977	1.1786 **	2.0021	0.9093 **	10.5029	2.6642 **	2.4710	1.2801
60. **	2.4855	1.4134 **	2.4019	1.2351 **	12.5064	2.8212 **	2.9133	1.4849
70. **	2.8691	1.6427 **	2.8015	1.4900 **	14.4031	2.9611 **	3.3485	1.6834
80. **	3.2490	1.8667 **	3.2011	1.7530 **	16.2771	3.0079 **	3.7776	1.8767
90. **	3.6259	2.0857 **	3.6006	2.0232 **	18.1315	3.2043 **	4.2016	2.0655
100. **	4.0000	2.3000 **	4.0000	2.3000 **	19.9686	3.3120 **	4.6210	2.2472
110. **	4.3716	2.5098 **	4.3994	2.5829 **	21.7903	3.4126 **	5.0364	2.4369
120. **	4.7409	2.7153 **	4.7987	2.7365 **	23.5981	3.5072 **	5.4481	2.6223
130. **	5.1082	2.9169 **	5.1979	2.8894 **	25.3933	3.5964 **	5.8565	2.8037
140. **	5.4736	3.1146 **	5.5971	3.0416 **	27.1769	3.6811 **	6.2619	2.9815
150. **	5.8372	3.3088 **	5.9963	3.1930 **	28.9499	3.7617 **	6.6645	3.1560
160. **	6.1991	3.4995 **	6.3954	3.3437 **	30.7129	3.8387 **	7.0644	3.3275
170. **	6.5595	3.6870 **	6.7945	3.4937 **	32.4667	3.9125 **	7.4620	3.4962
180. **	6.9184	3.8714 **	7.1936	3.6430 **	34.2119	3.9834 **	7.8573	3.6624
190. **	7.2759	4.0528 **	7.5926	3.7916 **	35.9489	4.0516 **	8.2505	3.8261
200. **	7.6321	4.2314 **	7.9916	3.9395 **	37.6782	4.1174 **	8.6417	3.9877
210. **	7.9871	4.4073 **	8.3905	4.0867 **	39.4003	4.1809 **	9.0309	4.1472
220. **	8.3409	4.5806 **	8.7895	4.2332 **	41.1156	4.2424 **	9.4184	4.3047
230. **	8.6935	4.7514 **	9.1884	4.3790 **	42.8242	4.3021 **	9.8042	4.4603
240. **	9.0451	4.9198 **	9.5872	4.5241 **	44.5267	4.3599 **	10.1894	4.6143
250. **	9.3956	5.0860 **	9.9861	4.6685 **	46.2232	4.4162 **	10.5710	4.7665
260. **	9.7451	5.2499 **	10.3425	4.8123 **	47.9140	4.4709 **	10.9521	4.9172
270. **	10.0936	5.4117 **	10.6986	4.9553 **	49.5994	4.5242 **	11.3319	5.0664
280. **	10.4412	5.5714 **	11.0542	5.0977 **	51.2795	4.5762 **	11.7102	5.2141
290. **	10.7878	5.7292 **	11.4095	5.2395 **	52.9546	4.6269 **	12.0873	5.3605
300. **	11.1337	5.8850 **	11.7643	5.3805 **	54.6248	4.6764 **	12.4631	5.5056
310. **	11.4786	6.0390 **	12.1188	5.5209 **	56.2904	4.7248 **	12.8377	5.6494
320. **	11.8228	6.1912 **	12.4729	5.6607 **	57.9515	4.7721 **	13.2111	5.7920
330. **	12.1661	6.3416 **	12.8266	5.7997 **	59.6082	4.8185 **	13.5833	5.9335
340. **	12.5087	6.4903 **	13.1799	5.9382 **	61.2607	4.8638 **	13.9546	6.0738
350. **	12.8505	6.6374 **	13.5328	6.0759 **	62.9091	4.9083 **	14.3247	6.2131
360. **	13.1916	6.7830 **	13.8854	6.2131 **	64.5535	4.9519 **	14.6938	6.3513
370. **	13.5320	6.9269 **	14.2375	6.3496 **	66.1942	4.9947 **	15.0619	6.4886
380. **	13.8718	7.0694 **	14.5893	6.4854 **	67.8311	5.0367 **	15.4291	6.6249
390. **	14.2107	7.2104 **	14.9407	6.6206 **	69.4644	5.0780 **	15.7953	6.7603
400. **	14.5491	7.3500 **	15.2917	6.7552 **	71.0942	5.1185 **	16.1606	6.8947
410. **	14.8868	7.4882 **	15.6424	6.8892 **	72.7205	5.1583 **	16.5250	7.0283
420. **	15.2239	7.6251 **	15.9927	7.0225 **	74.3436	5.1975 **	16.8886	7.1611
430. **	15.5604	7.7607 **	16.3426	7.1552 **	75.9634	5.2360 **	17.2513	7.2930
440. **	15.8963	7.8949 **	16.6921	7.2872 **	77.5800	5.2740 **	17.6132	7.4242
450. **	16.2316	8.0280 **	17.0413	7.4187 **	79.1935	5.3113 **	17.9743	7.5545
460. **	16.5663	8.1598 **	17.3901	7.5496 **	80.8041	5.3481 **	18.3347	7.6841
470. **	16.9005	8.2904 **	17.7385	7.6798 **	82.4117	5.3843 **	18.6943	7.8130
480. **	17.2340	8.4199 **	18.0865	7.8094 **	84.0164	5.4201 **	19.0531	7.9412
490. **	17.5670	8.5482 **	18.4342	7.9384 **	85.6184	5.4553 **	19.4112	8.0687

"POLYN" Dispersion Coefficients

P 7
03703.7002
WM(B)-02
BUCO



**Northeast
Utilities System**

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

P. 8
03703,7012
WM(B)-02
kur-o

April 28, 1998

Mr. Joseph Creamer
Stone and Webster
245 Summer Street, 7th Floor
Boston, MA 02210

Dear Mr. Creamer:

**Millstone Nuclear Power Station
Meteorological Data**

Accompanying this memo are four computer diskettes containing the meteorological data from 1974 through 1981, for your use in the Millstone Unit 3 X/Q calculations. Each diskette contains two years of data, as noted on the labels. The year of data is represented in each dataset name.

Each line of the datasets represents one hour of data. There is a nine character "time stamp" on each line; columns 1 and 2 are the year, columns 3 through 5 are the Julian day, and columns 6 through 9 are the time (military time, always on Eastern Standard Time). Columns 10 through 54 are, in order, the AT033, WS033, WD033, WS142, WD142, DT142, WS374, WD374, & DT374 (AT = air temperature, WS = wind speed, WD = wind direction, DT = delta-temperature, and numbers are instrument height). These are all in "F5.1" format. Missing data are represented by "999.0."

The data generated by our meteorological monitoring system consist of four fifteen-minute averages per hour. However, the attached datasets only contain one fifteen-minute average per hour. Historically, most of our analyses involving meteorological data, including Category 1 X/Q calculations, have been based on one fifteen-minute average representing an entire hour of data. It was found that this methodology introduced very small errors into the analyses results, compared to calculating an average of the available fifteen-minute averages for each hour.

If you have any questions, please call me, at (860) 665-3183.

Very truly yours,

H. L. Chamberlain, Jr.
Environmental Services

Enclosures

P. 9

03703,700

WM(B)-0.

kwo



Northeast
Utilities System

TELECOPIER COVER LETTER
(FAX)

JN1761-1 REV. 9-94

DATE: TIME: TOTAL NUMBER OF PAGES BEING SENT: 2
(Including this page)

TO:

COMPANY

DEPARTMENT/DIVISION

ATTENTION

JOE CREAMER

TELEPHONE NUMBER

() X1027

TELECOPIER TELEPHONE NUMBER

(INCLUDE AREA CODE)

()

FROM:

NAME

BILL JONES

ROOM NO.

TELEPHONE NUMBER *

() X0199

DEPARTMENT/DIVISION

TELECOPIER TELEPHONE NUMBER

(INCLUDE AREA CODE)

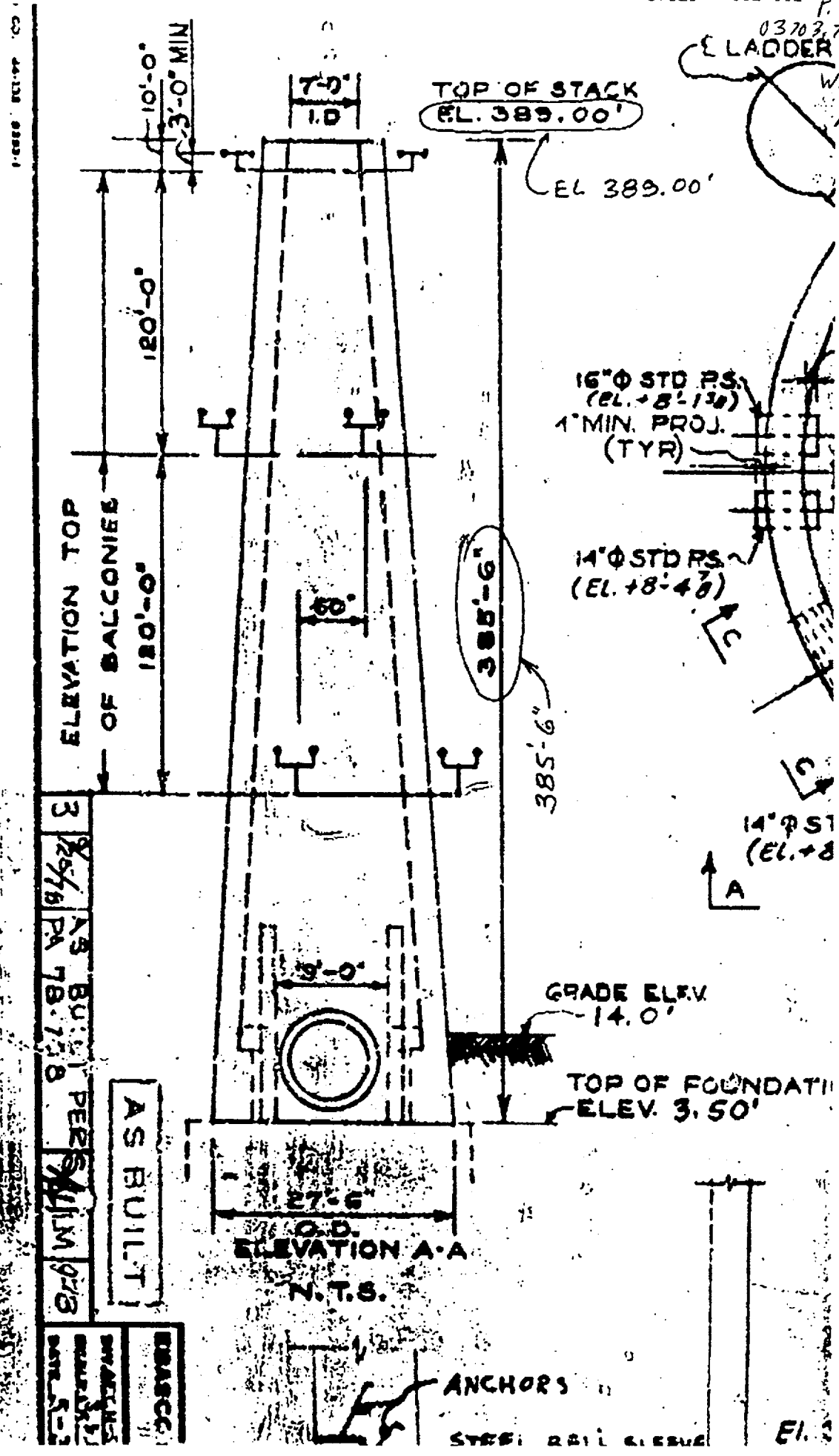
()

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED DATE 04/23/95 BY 1013

COMMENTS/DIRECTIONS

UNIT 1 STACK HEIGHT

WM(B)
02
Per
0



Ex. 44-128, 00000-1

3	25/6	3 Bu	PER	9-3
		PA 78.750	Alum	

AS BUILT

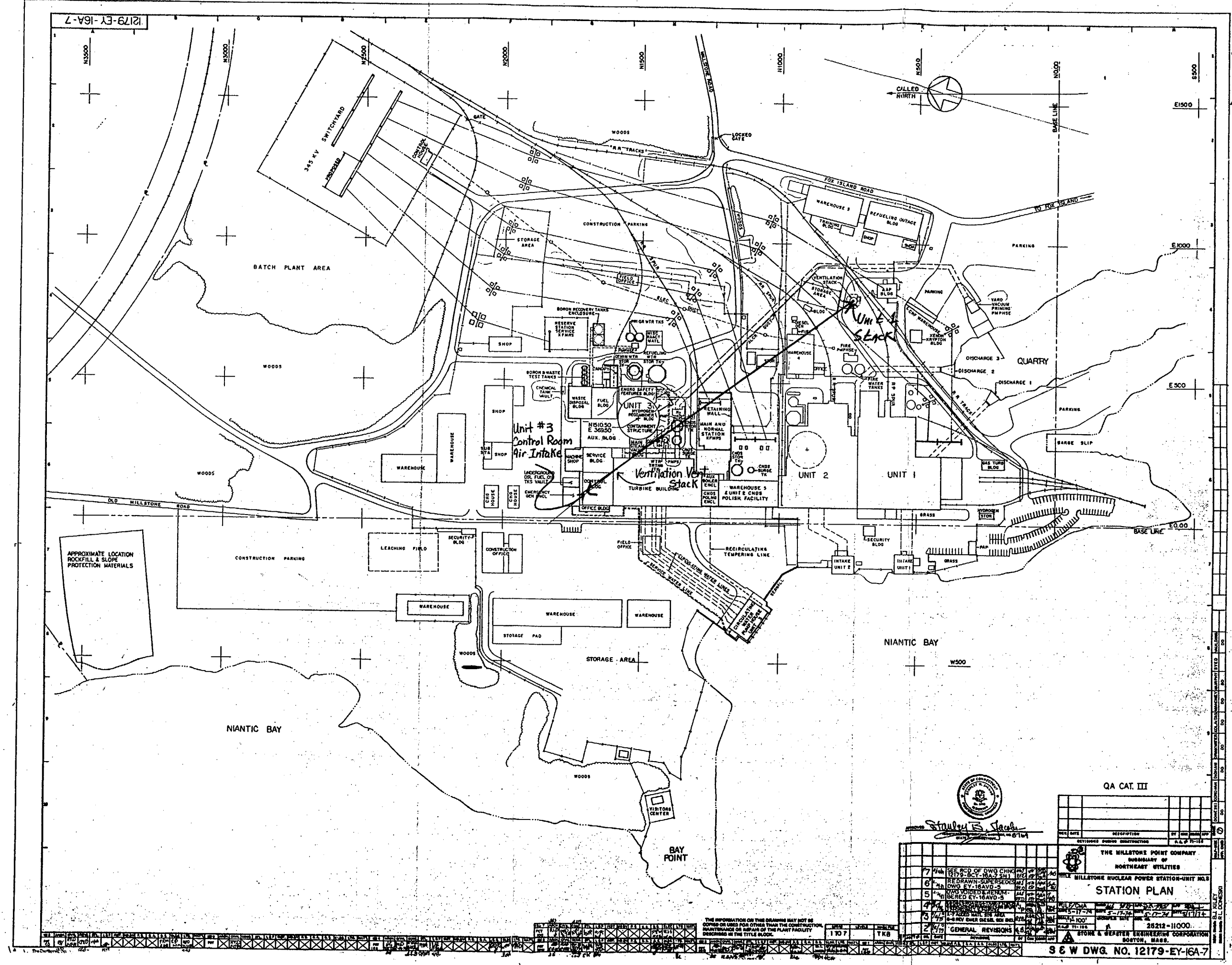
THE

ANCHORS

STEF: 2211 6.1500

Fl. 3

P.11
03703
WMCB
RWD



QA CAT. III

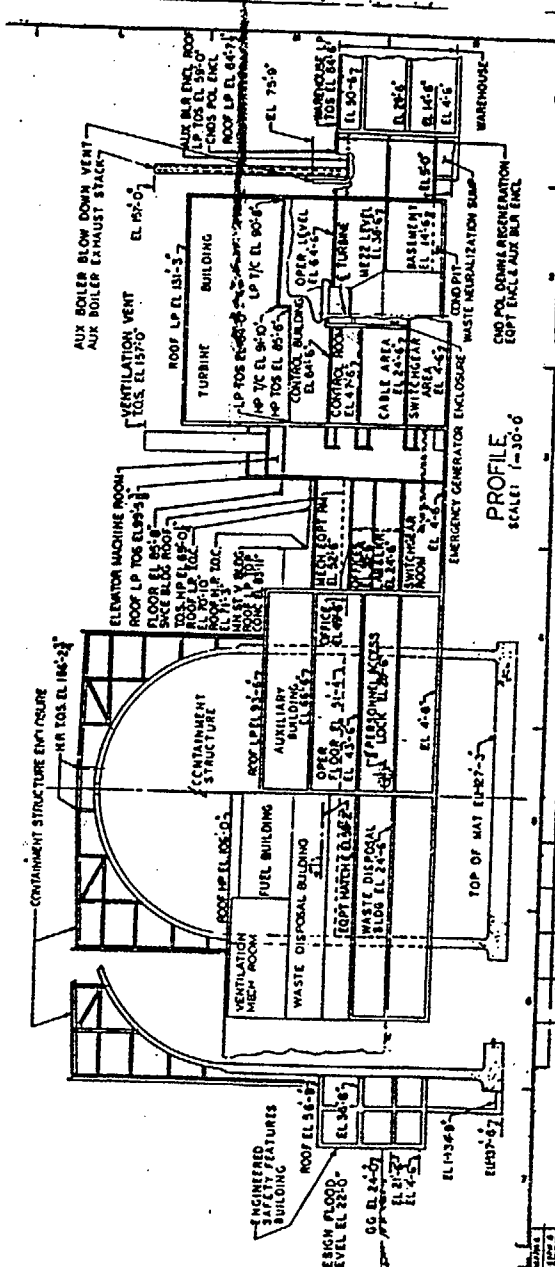
THE MILLSTONE POINT COMPANY
SUBSIDIARY OF
NORTHEAST UTILITIES

MILLSTONE NUCLEAR POWER STATION-UNIT NO. 3
STATION PLAN

25212-11000

SEW DWG. NO. 12179-EY-16A-7

NO.	DATE	DESCRIPTION	BY	CHKD	APP'D
7	11/14/77	SEE RCD OF DWG CHNG	...	...	...
6	11/14/77	REDRAWN-SUPERSEDES	...	...	...
5	11/14/77	DWG EY-16A-7-5	...	...	...
4	11/14/77	VOIDED & RETURNED	...	...	...
3	11/14/77	VOIDED & RETURNED	...	...	...
2	11/14/77	VOIDED & RETURNED	...	...	...
1	11/14/77	GENERAL REVISIONS	...	...	...



NOTE: SCALE: 1"=40'-0" AND AS NOTED.

REFERENCE DWG:
CONSTRUCTION AREAS-KEY PLAN
ARRANGEMENT-TANKAGE WIND AREA
FOR CONT. OF REF. SEE

EM-1B (10003)
EM-1A (27130)
EM 1B (10003)

LEGEND:
===== SEISMIC CATEGORY I STRUCTURES AND
COMPONENTS.
■ INDICATES EQUIPMENT WHICH IS PART OF
NUCLEAR SAFETY FEATURE SYSTEM

RELEASED FROM
GFR CONTROL
NUCLEAR SAFETY RELATED
QA.CAT I II & III

The image shows a document with a circular seal at the top left. The seal contains the text "U.S. GOVERNMENT PRINTING OFFICE" and "WASHINGTON, D.C. 20540". Below the seal, there is a large grid of numbers, likely a calendar or a schedule. To the right of the grid, there are several sections of text and stamps.

Top Section:

- 11 MAY 67
- 10 MAY 67
- 9 MAY 67
- 8 MAY 67
- 7 MAY 67
- 6 MAY 67
- 5 MAY 67
- 4 MAY 67
- 3 MAY 67
- 2 MAY 67
- 1 MAY 67
- 30 APR 67
- 29 APR 67
- 28 APR 67
- 27 APR 67
- 26 APR 67
- 25 APR 67
- 24 APR 67
- 23 APR 67
- 22 APR 67
- 21 APR 67
- 20 APR 67
- 19 APR 67
- 18 APR 67
- 17 APR 67
- 16 APR 67
- 15 APR 67
- 14 APR 67
- 13 APR 67
- 12 APR 67
- 11 APR 67
- 10 APR 67
- 9 APR 67
- 8 APR 67
- 7 APR 67
- 6 APR 67
- 5 APR 67
- 4 APR 67
- 3 APR 67
- 2 APR 67
- 1 APR 67
- 31 MAR 67
- 30 MAR 67
- 29 MAR 67
- 28 MAR 67
- 27 MAR 67
- 26 MAR 67
- 25 MAR 67
- 24 MAR 67
- 23 MAR 67
- 22 MAR 67
- 21 MAR 67
- 20 MAR 67
- 19 MAR 67
- 18 MAR 67
- 17 MAR 67
- 16 MAR 67
- 15 MAR 67
- 14 MAR 67
- 13 MAR 67
- 12 MAR 67
- 11 MAR 67
- 10 MAR 67
- 9 MAR 67
- 8 MAR 67
- 7 MAR 67
- 6 MAR 67
- 5 MAR 67
- 4 MAR 67
- 3 MAR 67
- 2 MAR 67
- 1 MAR 67
- 31 FEB 67
- 30 FEB 67
- 29 FEB 67
- 28 FEB 67
- 27 FEB 67
- 26 FEB 67
- 25 FEB 67
- 24 FEB 67
- 23 FEB 67
- 22 FEB 67
- 21 FEB 67
- 20 FEB 67
- 19 FEB 67
- 18 FEB 67
- 17 FEB 67
- 16 FEB 67
- 15 FEB 67
- 14 FEB 67
- 13 FEB 67
- 12 FEB 67
- 11 FEB 67
- 10 FEB 67
- 9 FEB 67
- 8 FEB 67
- 7 FEB 67
- 6 FEB 67
- 5 FEB 67
- 4 FEB 67
- 3 FEB 67
- 2 FEB 67
- 1 FEB 67
- 31 JAN 67
- 30 JAN 67
- 29 JAN 67
- 28 JAN 67
- 27 JAN 67
- 26 JAN 67
- 25 JAN 67
- 24 JAN 67
- 23 JAN 67
- 22 JAN 67
- 21 JAN 67
- 20 JAN 67
- 19 JAN 67
- 18 JAN 67
- 17 JAN 67
- 16 JAN 67
- 15 JAN 67
- 14 JAN 67
- 13 JAN 67
- 12 JAN 67
- 11 JAN 67
- 10 JAN 67
- 9 JAN 67
- 8 JAN 67
- 7 JAN 67
- 6 JAN 67
- 5 JAN 67
- 4 JAN 67
- 3 JAN 67
- 2 JAN 67
- 1 JAN 67
- 31 DEC 66
- 30 DEC 66
- 29 DEC 66
- 28 DEC 66
- 27 DEC 66
- 26 DEC 66
- 25 DEC 66
- 24 DEC 66
- 23 DEC 66
- 22 DEC 66
- 21 DEC 66
- 20 DEC 66
- 19 DEC 66
- 18 DEC 66
- 17 DEC 66
- 16 DEC 66
- 15 DEC 66
- 14 DEC 66
- 13 DEC 66
- 12 DEC 66
- 11 DEC 66
- 10 DEC 66
- 9 DEC 66
- 8 DEC 66
- 7 DEC 66
- 6 DEC 66
- 5 DEC 66
- 4 DEC 66
- 3 DEC 66
- 2 DEC 66
- 1 DEC 66
- 31 NOV 66
- 30 NOV 66
- 29 NOV 66
- 28 NOV 66
- 27 NOV 66
- 26 NOV 66
- 25 NOV 66
- 24 NOV 66
- 23 NOV 66
- 22 NOV 66
- 21 NOV 66
- 20 NOV 66
- 19 NOV 66
- 18 NOV 66
- 17 NOV 66
- 16 NOV 66
- 15 NOV 66
- 14 NOV 66
- 13 NOV 66
- 12 NOV 66
- 11 NOV 66
- 10 NOV 66
- 9 NOV 66
- 8 NOV 66
- 7 NOV 66
- 6 NOV 66
- 5 NOV 66
- 4 NOV 66
- 3 NOV 66
- 2 NOV 66
- 1 NOV 66
- 30 OCT 66
- 29 OCT 66
- 28 OCT 66
- 27 OCT 66
- 26 OCT 66
- 25 OCT 66
- 24 OCT 66
- 23 OCT 66
- 22 OCT 66
- 21 OCT 66
- 20 OCT 66
- 19 OCT 66
- 18 OCT 66
- 17 OCT 66
- 16 OCT 66
- 15 OCT 66
- 14 OCT 66
- 13 OCT 66
- 12 OCT 66
- 11 OCT 66
- 10 OCT 66
- 9 OCT 66
- 8 OCT 66
- 7 OCT 66
- 6 OCT 66
- 5 OCT 66
- 4 OCT 66
- 3 OCT 66
- 2 OCT 66
- 1 OCT 66
- 30 SEP 66
- 29 SEP 66
- 28 SEP 66
- 27 SEP 66
- 26 SEP 66
- 25 SEP 66
- 24 SEP 66
- 23 SEP 66
- 22 SEP 66
- 21 SEP 66
- 20 SEP 66
- 19 SEP 66
- 18 SEP 66
- 17 SEP 66
- 16 SEP 66
- 15 SEP 66
- 14 SEP 66
- 13 SEP 66
- 12 SEP 66
- 11 SEP 66
- 10 SEP 66
- 9 SEP 66
- 8 SEP 66
- 7 SEP 66
- 6 SEP 66
- 5 SEP 66
- 4 SEP 66
- 3 SEP 66
- 2 SEP 66
- 1 SEP 66
- 30 AUG 66
- 29 AUG 66
- 28 AUG 66
- 27 AUG 66
- 26 AUG 66
- 25 AUG 66
- 24 AUG 66
- 23 AUG 66
- 22 AUG 66
- 21 AUG 66
- 20 AUG 66
- 19 AUG 66
- 18 AUG 66
- 17 AUG 66
- 16 AUG 66
- 15 AUG 66
- 14 AUG 66
- 13 AUG 66
- 12 AUG 66
- 11 AUG 66
- 10 AUG 66
- 9 AUG 66
- 8 AUG 66
- 7 AUG 66
- 6 AUG 66
- 5 AUG 66
- 4 AUG 66
- 3 AUG 66
- 2 AUG 66
- 1 AUG 66
- 31 JUL 66
- 30 JUL 66
- 29 JUL 66
- 28 JUL 66
- 27 JUL 66
- 26 JUL 66
- 25 JUL 66
- 24 JUL 66
- 23 JUL 66
- 22 JUL 66
- 21 JUL 66
- 20 JUL 66
- 19 JUL 66
- 18 JUL 66
- 17 JUL 66
- 16 JUL 66
- 15 JUL 66
- 14 JUL 66
- 13 JUL 66
- 12 JUL 66
- 11 JUL 66
- 10 JUL 66
- 9 JUL 66
- 8 JUL 66
- 7 JUL 66
- 6 JUL 66
- 5 JUL 66
- 4 JUL 66
- 3 JUL 66
- 2 JUL 66
- 1 JUL 66
- 30 JUN 66
- 29 JUN 66
- 28 JUN 66
- 27 JUN 66
- 26 JUN 66
- 25 JUN 66
- 24 JUN 66
- 23 JUN 66
- 22 JUN 66
- 21 JUN 66
- 20 JUN 66
- 19 JUN 66
- 18 JUN 66
- 17 JUN 66
- 16 JUN 66
- 15 JUN 66
- 14 JUN 66
- 13 JUN 66
- 12 JUN

FIGURE 1.2-2 MAY 1992

JES2 JOB LOG -- SYSTEM C168 -- NODE JES2B0S

10.02.03 JOB04820 IRR010I USERID VIG7988 IS ASSIGNED TO THIS JOB.
10.02.37 JOB04820 ICH70001I VIG7988 LAST ACCESS AT 10:01:36 ON WEDNESDAY, APRIL 29, 1998
10.02.37 JOB04820 \$HASP373 CQ68 STARTED - INIT 10 - CLASS A - SYS C168
10.02.47 JOB04820 IEC137I TRACK OVERFLOW RESET FOR FT11F001
10.03.06 JOB04820 IEC137I TRACK OVERFLOW RESET FOR FT10F001
10.03.10 JOB04820 IEC137I TRACK OVERFLOW RESET FOR FT16F001
10.03.10 JOB04820 IEC137I TRACK OVERFLOW RESET FOR FT31F001
10.05.13 JOB04820 +IH0002I STOP 1
10.05.14 JOB04820 \$HASP395 CQ68 ENDED

----- JES2 JOB STATISTICS -----

29 APR 1998 JOB EXECUTION DATE

59 CARDS READ

1,971 SYSOUT PRINT RECORDS

0 SYSOUT PUNCH RECORDS

148 SYSOUT SPOOL KBYTES

2.62 MINUTES EXECUTION TIME

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 1
03703.7002
WM(B)-02
MCO

29-APR-98JOB04820

```

1 //CQ68 JOB (0031,3),'VIGEANT-SA',
  // MSGLEVEL=2,MSGCLASS=A
  //* RJETRAN.VIG7988.DATA(CQ68EL)
  /*JOBPARM ROOM=3
2 //METRDISK EXEC METRPROC
9 //DISK DD DISP=SHR,DSN=ENVIRONM.METDATA.MILSTONE.YR7481
12 //SYSIN DD * GENERATED STATEMENT
13 //CHIQ68 EXEC PGM=CHIQ68,REGION=700K,TIME=20
14 //STEPLIB DD DSN=ENVIRONM.HXLOADLB,DISP=SHR
15 //GO.FT06F001 DD DCB=PRINT1,SYSOUT=*
16 //GO.FT08F001 DD DUMMY
17 //GO.FT09F001 DD DCB=PRINT1,SYSOUT=*
18 //GO.FT10F001 DD UNIT=DISK,SPACE=(19982,(100,10)),DISP=(,PASS),
  // DCB=(RECFM=VBST,LRECL=X,BLKSIZE=19982)
19 //GO.FT11F001 DD UNIT=DISK,SPACE=(19982,(100,10)),DISP=(,PASS),
  // DCB=(RECFM=VBST,LRECL=X,BLKSIZE=19982)
20 //GO.FT12F001 DD UNIT=DISK,DISP=(OLD,DELETE),DSN=&SAMPLE
21 //GO.FT16F001 DD UNIT=DISK,SPACE=(32760,(70,10)),DISP=(,PASS),
  // DCB=(RECFM=VST,LRECL=X,BLKSIZE=32760,BUFNO=1)
22 //GO.FT31F001 DD UNIT=DISK,SPACE=(32760,(70,10)),DISP=(,PASS),
  // DCB=(RECFM=VST,LRECL=X,BLKSIZE=32760,BUFNO=1)
23 //GO.FT05F001 DD *
24 //IMBLIST EXEC PGM=IMBLIST
25 //SYSPRINT DD SYSOUT=*
26 //SYSLIB DD DSN=ENVIRONM.HXLOADLB,DISP=SHR
27 //SYSIN DD * GENERATED STATEMENT

```

JOB04820

APPENDIX 1
 EN-113 Program Output
 Unit 1 Stack to Unit 3 Control Room Air Intake

P. 2
 03703.7002
 WM(B)-02

WUC

STMT NO. MESSAGE
 2 IEF001I PROCEDURE METRPROC WAS EXPANDED USING SYSTEM LIBRARY SYS1.USER.PROCLIB
 ICH70001I VIG7988 LAST ACCESS AT 10:01:36 ON WEDNESDAY, APRIL 29, 1998
 IEF236I ALLOC. FOR CQ68 METRPROC METRDISK
 IGD103I SMS ALLOCATED TO DDNAME STEPLIB
 IEF237I JES2 ALLOCATED TO FT06F001
 IEF237I JES2 ALLOCATED TO SYSPRINT
 IGD103I SMS ALLOCATED TO DDNAME SYS010
 IGD101I SMS ALLOCATED TO DDNAME (SYS011)
 DSN (SYS98119.T100237.RA000.CQ68.SAMPLE.H01)
 STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
 VOL SER NOS= VIO
 IEF237I JES2 ALLOCATED TO FT05F001
 IEF142I CQ68 METRPROC METRDISK - STEP WAS EXECUTED - COND CODE 0000
 IGD104I ENVIRONM.METOLOGY RETAINED, DDNAME=STEPLIB
 IEF285I VIG7988.CQ68.JOB04820.D0000104.? SYSOUT
 IEF285I VIG7988.CQ68.JOB04820.D0000105.? SYSOUT
 IGD104I ENVIRONM.METDATA.MILSTONE.YR7481 RETAINED, DDNAME=SYS010
 IGD106I SYS98119.T100237.RA000.CQ68.SAMPLE.H01 PASSED, DDNAME=SYS011
 IEF285I VIG7988.CQ68.JOB04820.D0000101.? SYSIN

 .JOB - CQ68 , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 10.02.02, 04/29/98 V09
 .STEP NUMBER - 1, STEP NAME - METRPROC, PROGRAM NAME - METHR01 , RAN FROM 10.02.37 TO 10.02.44
 .ENDING CONDITION - RETURN CODE 0, REGION USED - 380K, PERFORMANCE GROUP - 20, SHAPS - 0
 .PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
 .CPU TIME - .60 VECTOR TIME - .00 SECS, EXCPs - (354 NON-VIO, 1,754 VIO), CPU UNITS - 2.50 SECS
 .SYSIN RECORDS - 3, OPENS - (0 TAPE, 0 PERM), COST = \$4.17
 .EXCPs/DDNAME - 9/STEPLIB 345/SYS010 1,754/SYS011

 IEF373I STEP/METRPROC/START 1998119.1002
 IEF374I STEP/METRPROC/STOP 1998119.1002 CPU 0MIN 00.56SEC SRB 0MIN 00.02SEC VIRT 88K SYS 292K EXT 4K SYS 10120K
 IEF236I ALLOC. FOR CQ68 CHI068
 IGD103I SMS ALLOCATED TO DDNAME STEPLIB
 IEF237I JES2 ALLOCATED TO FT06F001
 IEF237I DMY ALLOCATED TO FT08F001
 IEF237I JES2 ALLOCATED TO FT09F001
 IGD101I SMS ALLOCATED TO DDNAME (FT10F001)
 DSN (SYS98119.T100237.RA000.CQ68.R0110984)
 STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
 VOL SER NOS= VIO
 IGD101I SMS ALLOCATED TO DDNAME (FT11F001)
 DSN (SYS98119.T100237.RA000.CQ68.R0110985)
 STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
 VOL SER NOS= VIO
 IGD103I SMS ALLOCATED TO DDNAME FT12F001
 IGD101I SMS ALLOCATED TO DDNAME (FT16F001)
 DSN (SYS98119.T100237.RA000.CQ68.R0110986)
 STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
 VOL SER NOS= VIO
 IGD101I SMS ALLOCATED TO DDNAME (FT31F001)
 DSN (SYS98119.T100237.RA000.CQ68.R0110987)
 STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
 VOL SER NOS= VIO
 IEF237I JES2 ALLOCATED TO FT05F001
 IEC137I TRACK OVERFLOW RESET FOR FT11F001
 IEC137I TRACK OVERFLOW RESET FOR FT10F001
 IEC137I TRACK OVERFLOW RESET FOR FT16F001
 IEC137I TRACK OVERFLOW RESET FOR FT31F001
 IEF142I CQ68 CHI068 - STEP WAS EXECUTED - COND CODE 0001

WMB

```

IGD104I ENVIRONM.WXLOADLB          RETAINED, DDNAME=STEPLIB
IEF285I VIG7988.CQ68.JOB04820.D0000106.?      SYSOUT
IEF285I VIG7988.CQ68.JOB04820.D0000107.?      SYSOUT
IGD106I SYS98119.T100237.RA000.CQ68.R0110984  PASSED, DDNAME=FT10F001
IGD106I SYS98119.T100237.RA000.CQ68.R0110985  PASSED, DDNAME=FT11F001
IGD105I SYS98119.T100237.RA000.CQ68.SAMPLE.H01 DELETED, DDNAME=FT12F001
IGD106I SYS98119.T100237.RA000.CQ68.R0110986  PASSED, DDNAME=FT16F001
IGD106I SYS98119.T100237.RA000.CQ68.R0110987  PASSED, DDNAME=FT31F001
IEF285I VIG7988.CQ68.JOB04820.D0000102.?      SYSIN

.....
.JOB - CQ68 , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 10.02.02, 04/29/98 V09
.STEP NUMBER - 2, STEP NAME - CHIQ68 , PROGRAM NAME - CHIQ68 , RAN FROM 10.02.44 TO 10.05.14
.ENDING CONDITION - RETURN CODE 1, REGION USED - 864K, PERFORMANCE GROUP - 20, SHAPS - 0
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
.CPU TIME - 21.02 VECTOR TIME - .00 SECS, EXCPS -( 30 NON-VIO, 10,311 VIO), CPU UNITS - 30.33 SECS
.SYSIN RECORDS - 28, OPENS - ( 0 TAPE, 0 TEMP, 0 PERM), COST = $50.55
.EXCPS/DDNAME - 30/STEPLIB 228/FT10F001 228/FT11F001 1,755/FT12F001
. 4,050/FT16F001 4,050/FT31F001
.....
IEF373I STEP/CHIQ68 /START 1998119.1002
IEF374I STEP/CHIQ68 /STOP 1998119.1005 CPU OMIN 20.98SEC SRB OMIN 00.03SEC VIRT 556K SYS 308K EXT 4K SYS 10404K
IEF236I ALLOC. FOR CQ68 IMBLIST
IEF237I JES2 ALLOCATED TO SYSPRINT
IGD103I SMS ALLOCATED TO DDNAME SYSLIB
IEF237I JES2 ALLOCATED TO SYSIN
IEF142I CQ68 IMBLIST - STEP HAS EXECUTED - COND CODE 0008
IEF285I VIG7988.CQ68.JOB04820.D0000108.?      SYSOUT
IGD104I ENVIRONM.WXLOADLB          RETAINED, DDNAME=SYSLIB
IEF285I VIG7988.CQ68.JOB04820.D0000103.?      SYSIN

.....
.JOB - CQ68 , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 10.02.02, 04/29/98 V09
.STEP NUMBER - 3, STEP NAME - IMBLIST , PROGRAM NAME - IMBLIST , RAN FROM 10.05.14 TO 10.05.14
.ENDING CONDITION - RETURN CODE 8, REGION USED - 428K, PERFORMANCE GROUP - 20, SHAPS - 0
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
.CPU TIME - .03 VECTOR TIME - .00 SECS, EXCPS -( 0 NON-VIO, 0 VIO), CPU UNITS - .03 SECS
.SYSIN RECORDS - 1, OPENS - ( 0 TAPE, 0 TEMP, 0 PERM), COST = $0.05
.....
IEF373I STEP/IMBLIST /START 1998119.1005
IEF374I STEP/IMBLIST /STOP 1998119.1005 CPU OMIN 00.03SEC SRB OMIN 00.00SEC VIRT 156K SYS 272K EXT 4K SYS 10116K
IGD105I SYS98119.T100237.RA000.CQ68.R0110984 DELETED, DDNAME=FT10F001
IGD105I SYS98119.T100237.RA000.CQ68.R0110985 DELETED, DDNAME=FT11F001
IGD105I SYS98119.T100237.RA000.CQ68.R0110986 DELETED, DDNAME=FT16F001
IGD105I SYS98119.T100237.RA000.CQ68.R0110987 DELETED, DDNAME=FT31F001
IEF375I JOB/CQ68 /START 1998119.1002
IEF376I JOB/CQ68 /STOP 1998119.1005 CPU OMIN 21.57SEC SRB OMIN 00.05SEC
.....
.TOTAL CPU TIME - 21.65 SECS, TOTAL VECTOR TIME - .00 SECS, TOTAL CPU UNITS - 32.85 SECS
.TOTAL EXCPS -( 384 NON-VIO, 12,065 VIO)
.TOTAL JOB COST EXCLUDING PRINT CHARGES = $54.77 CHARGED TO AUTH = 0031 , JO/HO = 022685067
.....

```

APPENDIX 1
 EN-113 Program Output
 Unit 1 Stack to Unit 3 Control Room Air Intake

P. 4
 03703.7002
 WM(B)-02

WVC



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: SITE DATA RETREIVAL PROGAM

VERSION OF PROGRAM: 00

LINK EDIT DATE (JULIAN): 80.184

DATE OF RUN (MO/DAY/YR): 4/29/98

JOB NAME OF RUN: CQ68

LIBRARY REFERENCE NUMBER: EN-112

LEVEL OF PROGRAM: 01

LINK EDIT TIME (HRS.MINS.SECONDS): 14.21.36

TIME OF RUN (MILITARY): 1002

JOB04820

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 5
03703.7002
WM(B)-02
RWO

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

CARD#	1	2	3	4	5	6	7	8
1	3							
2	131	132	135					
3	74001	81365						

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 6
03703.7002
WM(B)-02

over

...
INPUT TO METOHER PROGRAM

3
131 132 135
74001 81365

EOF OF INPUT DATA REACHED

NUMBER OF CARDS SELECTED = 8766

NUMBER OF DAYS SELECTED = 2922

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 7
03703.7002
WM(B)-02

WFO



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: ATMOSPHERIC DISPERSION FACTORS

VERSION OF PROGRAM: 06

LOAD MODULE: ENVIRONM.WXLOADLB

LINK EDIT DATE (JULIAN): 82.263

DATE OF RUN (MO/DAY/YR): 4/29/98

JOB NAME OF RUN: CQ68

LIBRARY REFERENCE NUMBER: EN-113

LEVEL OF PROGRAM: 08

MEMBER (PGM): CHIOQ68

LINK EDIT TIME (HRS.MINS.SECS): 12.40.03

TIME OF RUN (MILITARY): 1002

JOB04820

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 8
03703.7002
WM(B)-02

W-0

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

CARD#	1	2	3	4	5	6	7	8
1	MILLSTONE NUCLEAR POWER STATION - UNIT 3 037037002							
2	ONSITE METDATA (1974-1981)							
3	7400181365	2922	3	341	2			
4	131	132	0	0	0	135	0	0
5	0.1	0	0	0	0	0.1	0	0
6	2 ELEVATED RELEASE (355 M)							
7	1	0	0	389	0	0	0	00
8	1	0	0	0	16	3	0	0
9	1	0	0	0	0	1000	8	0
10	35599999							

CARD#	1	2	3	4	5	6	7	8
11	35199999							
12								
13	1	64.5	64.5					
14	2	64.5	64.5					
15	3	64.5	64.5					
16	4	64.5	64.5					
17	5	64.5	64.5					
18	6	64.5	64.5					
19	7	64.5	64.5					
20	8	64.5	64.5					

CARD#	1	2	3	4	5	6	7	8
21	9	64.5	64.5					
22	10	64.5	64.5					
23	11	64.5	64.5					
24	12	64.5	64.5					
25	13	64.5	64.5					
26	14	64.5	64.5					
27	15	64.5	64.5					
28	16	64.5	64.5					

***** END OF INPUT ON DEVICE 5 *****

***** PROGRAM OPTIONS AVAILABLE IN THE LOAD MODULE (ENVIRONM.WXLOADLB(CHIOQ68)) *****

METSTB - METHOD OF DETERMINING STABILITY CLASS. - ALL METHODS
IREDIS - REDISTRIBUTION OF CALMS - ALL
TPGRAD - SPECIFIED TEMPERATURE GRADIENTS FOR STABILITY CLASS DETERMINATION
IRETYP - RELEASE POINT AND CALCULATION TYPE
ISTTYP - STATION TYPE - NUCLEAR OR FOSSIL, - BOTH
HLID - LIMITED MIXING LID HEIGHT
ISTRNLN - CALCULATE TIME PERIOD AVERAGES USING STRAIGHT LINE
ICALM - RESET WIND SPEED TO CALM SPEED IF WIND SPEED FALLS BELOW CALM SPEED
UCU - UNSTABLE AND NETURAL WIND SPEED CORRECTION FACTOR
UCS - STABLE WIND SPEED HEIGHT CORRECTION FACTOR
ISECVG - SECTOR AVERAGING CORRECTION
MESHT - WIND SPEED MODIFICATION WITH HEIGHT (ASME)
IAECSC - DISPERSION COEFFICIENTS (SIGMA Y AND SIGMA Z), AEC, AEC DESERT AND S+H (TURNER'S)
IBWEFF - BUILDING WAKE EFFECT (SHORT TERM) - ALL
ITOPD - TOPOGRAPHIC DATA INPUT CONTROL
ITERIN - TERRAIN ADJUSTMENT FACTOR - ALL
ISIGMA - SIGMA VALUE PRINTOUT CONTROL
ISTABY - HORIZONTAL DISPERSION COEFFICIENT SELECTION ARRAY
ISTABZ - VERTICAL DISPERSION COEFFICIENT SELECTION ARRAY
NHR72 - 72 HOUR SLIDING AVERAGE HOURS TO BE SLID CONTROL
NHR624 - 624 HOUR SLIDING AVERAGE HOURS TO BE SLID CONTROL
LIMXOR - X/Q - D/Q WRITE LIMIT CONTROL
PRGHR - NUMBER OF PURGE HOURS
RFCWSP - WIND SPEED BELOW WHICH TERRAIN RECIRCULATION FRACTION WILL BE APPLIED
JHRARY - TIME PERIOD CONTROL
IPLMEQ - PLUME RISE EQUATION CONTROL (14 METHODS)
BHT - BUILDING HEIGHT WAKE EFFECT (LONG TERM)
SPDBHE - GROUND TO ELEVATED RELEASE SHIFT AND DOWNWASH CONTROL
IAJDIR - ADJACENT DOWNWIND SECTOR DISTANCE SELECTION SWITCH

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 10
03703.7002
WM(B)-02
WFO

MILLSTONE NUCLEAR POWER STATION - UNIT 3
ELEVATED RELEASE (355 M)

CALCULATION NUMBER
ONSITE METDATA (1974-1981)

037037002

***** READ1 (6.8) INPUT DATA *****

CLIENT(11)
MILLSTONE NUCLEAR POWER STATION - UNIT 3
SITE(11)

JOBNO(3)
037037002
CALCNU(5)

ONSITE.METDATA (1974-1981)

ISTART ISTOP NDYSOT METSTB DHT IREDIS
74001 81365 2922 3 341.0 2

ELEVATED CONDITIONS

SPEED DIR TEMP RANGE STD DEV DELTA T SPEED DIR TEMP ISPUNT ITPUNT
131 132 0 0 0 135 0 0 0 0 0

PARMUL(9)

TPGRAD(6)

0.0 0.0 0.0 0.0 0.0 0.0

***** READ2 (6.8) INPUT DATA *****

IRETYP RELSID(11)

2 ELEVATED RELEASE (355 M)

ISTTYP	HFLUE	STKHT	STKDIA	GASVEL	TS	HLID	HFUEL	HVALUE	ISTRNL	ICALM	UCU	UCS	
1	0.	389.00	0.0	0.0	0.	0.	0.	0.	0 2	0	0.0	0.0	
ISECVG	MESHT	IAECGS	IBWIFF	ITOPD	ITERIN	ISIGHA	ISTABY	ISTABZ	NHR72	NHR624	LIMXQR	PRGHR	RFCHSP
1	0	0	0	16	3	0	0000000	0000000	0	0	0	0.0	0.0
JHRRY(6)	IPLMEQ	PLUMRS	CALMAC	CALMAN	BHT	SPDBWE	IAJDIR						
1	0	0	0	1000	8	0.0	1.1	0.6	0.0	0.0	0.0	0	

DISITE(16)

355.0 355.0 355.0 355.0 355.0 355.0 355.0 355.0 355.0 355.0 355.0 355.0 355.0

DISLPZ(16)

351.0 351.0 351.0 351.0 351.0 351.0 351.0 351.0 351.0 351.0 351.0 351.0 351.0

IDSLP DISTAN(10)

0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

IDR TOPOHT(16,12)

1 64.5 64.5
2 64.5 64.5
3 64.5 64.5
4 64.5 64.5
5 64.5 64.5
6 64.5 64.5
7 64.5 64.5
8 64.5 64.5
9 64.5 64.5
10 64.5 64.5
11 64.5 64.5
12 64.5 64.5
13 64.5 64.5
14 64.5 64.5
15 64.5 64.5
16 64.5 64.5

***** TERRAIN ADJUSTMENT FACTORS USED *****

IDR FACTORS (2)

1 4.000 4.000
2 4.000 4.000
3 4.000 4.000
4 4.000 4.000
5 4.000 4.000
6 4.000 4.000
7 4.000 4.000
8 4.000 4.000

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 11
03703.7002
WM(B)-02

9	4.000	4.000
10	4.000	4.000
11	4.000	4.000
12	4.000	4.000
13	4.000	4.000
14	4.000	4.000
15	4.000	4.000
16	4.000	4.000

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 12
03703.7002
WM(B)-02

W S

MILLSTONE NUCLEAR POWER STATION - UNIT 3

ELEVATED RELEASE (355 M)

CHI/Q CALCULATION

RELEASE TYPE - ELEVATED NUCLEAR
 STABILITY DETERMINED BY DELTA TEMPERATURE
 WIND SPEED ASSIGNED TO CALM OBSERVATIONS = 1.10 MPH
 DISPERSION COEFFICIENTS (AEC GIFFORD'S)

CALCULATION NUMBER
 ONSITE METDATA (1974-1981)

037037002

1 HOUR PERIOD

1/01/74 - 12/31/81

ZERO PLUME RISE
 TOPOGRAPHY USED - YES

CALM REDISTRIBUTION - PROP TO 1.5 MPS W/S CLASS DIR FREQ

***** CHI/Q VALUES *****

DOWNWIND SECTOR	DOWNWIND DISTANCE (M)	MAXIMUM VALUE	ARITHMETIC MEAN	50 PERCENT VALUE	50 PC EQUAL RISK VALUE	5 PERCENT VALUE	5 PC EQUAL RISK VALUE	8 PC EQUAL RISK VALUE
S	355.	0.8356E-05	0.5924E-07	0.5133E-14	0.7795E-23	0.5092E-07	0.2730E-07	0.1641E-13
SSW	355.	0.2051E-04	0.4650E-07	0.5191E-14	0.4313E-14	0.2850E-07	0.1945E-07	0.1641E-13
SW	355.	0.9601E-05	0.3937E-07	0.5966E-14	0.3547E-14	0.2850E-07	0.2964E-13	0.1641E-13
WSW	355.	0.7780E-05	0.7870E-08	0.6336E-14	0.3178E-59	0.2297E-13	0.1641E-13	0.1209E-13
W	355.	0.4600E-05	0.1766E-07	0.3995E-14	0.1626E-23	0.2552E-13	0.1413E-13	0.9571E-14
WNW	355.	0.8058E-05	0.3805E-07	0.4836E-14	0.9035E-59	0.2158E-07	0.1641E-13	0.1178E-13
NW	355.	0.1126E-04	0.7589E-07	0.7362E-23	0.1491E-59	0.4594E-13	0.1641E-13	0.1209E-13
NNW	355.	0.4102E-04	0.1217E-06	0.3118E-23	0.1000E-70	0.2137E-13	0.1371E-13	0.9987E-14
N	355.	0.1128E-04	0.6439E-07	0.2409E-23	0.1031E-23	0.1955E-13	0.1458E-13	0.1134E-13
NNE	355.	0.1456E-04	0.6309E-07	0.2120E-23	0.2409E-23	0.1458E-13	0.1641E-13	0.1134E-13
NE	355.	0.1253E-04	0.3063E-07	0.2120E-23	0.2648E-14	0.1242E-13	0.2042E-13	0.1242E-13
ENE	355.	0.2507E-04	0.2092E-07	0.2366E-23	0.4313E-14	0.1413E-13	0.1763E-07	0.1701E-13
E	355.	0.1003E-04	0.1550E-07	0.3797E-14	0.4940E-14	0.1407E-07	0.1970E-07	0.3675E-13
ESE	355.	0.2507E-04	0.3352E-07	0.5280E-14	0.6336E-14	0.2605E-07	0.6124E-07	0.2255E-07
SE	355.	0.9199E-05	0.8219E-07	0.5535E-14	0.8587E-14	0.4819E-06	0.8363E-06	0.5440E-06
SSE	355.	0.2256E-04	0.8636E-07	0.5405E-14	0.6425E-14	0.5326E-06	0.6571E-06	0.4306E-06
DIRECTION INDEPENDENT		0.4102E-04	0.4872E-07	0.4065E-14		0.2385E-07		

OBSERVATIONS EXAMINED 70128 GOOD OBSERVATIONS 65563 PERCENT DATA RECOVERY 93.49

GOOD DATA PERIODS
 NUMBER CHI/Q = 0.0

65563
 62538 62314 62719 63469 63066 63362 63430 63523 62782 61111 58971 58276 59875 60166 57739 60104 0
 95.39 95.04 95.66 96.81 96.19 96.64 96.75 96.89 95.76 93.21 89.95 88.89 91.32 91.77 88.07 91.67 0.0
 NON ZERO TOTAL 3025 3249 2844 2094 2497 2201 2133 2040 2781 4452 6592 7287 5688 5397 7824 5459 65563

APPENDIX 1
 EN-113 Program Output
 Unit 1 Stack to Unit 3 Control Room Air Intake

P. 13
 03703.7002
 WMB(B)-02

WMB

CALCULATION NUMBER

***** CUMULATIVE FREQUENCY SUMMARY *****

DOWNHIND SECTOR	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	DIRECTION
DOWNHIND DISTANCE (M)	355.	355.	355.	355.	355.	355.	355.	355.	355.	355.	355.	355.	355.	355.	355.	355.	INDEPENDENT
TOPOGRAPHIC HEIGHT	65.	65.	65.	65.	65.	65.	65.	65.	65.	65.	65.	65.	65.	65.	65.	65.	
CHI/Q RANGE																	
GTE LT																	
0.10E-08	2792	3034	2672	2057	2411	2083	2039	1983	2710	4357	6448	7041	5383	4908	6610	4823	61351
0.10E-08 0.39E-08	92.30	93.38	93.95	98.23	96.56	94.64	95.59	97.21	97.45	97.87	97.82	96.62	94.64	90.94	84.48	88.35	93.58
0.40E-08 0.69E-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.70E-08 0.99E-08	92.30	93.38	93.95	98.23	96.56	94.64	95.59	97.21	97.45	97.87	97.82	96.62	94.64	90.94	84.48	88.35	93.58
0.10E-07 0.39E-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.40E-07 0.69E-07	92.30	93.38	93.95	98.23	96.56	94.64	95.59	97.21	97.45	97.87	97.82	96.62	94.64	90.94	84.48	88.35	93.58
0.70E-07 0.99E-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.10E-06 0.39E-06	92.30	93.38	93.95	98.23	96.56	94.64	95.59	97.21	97.45	97.87	97.82	96.62	94.64	90.94	84.48	88.35	93.58
0.40E-06 0.69E-06	69	85	63	12	31	37	14	5	6	9	38	116	188	278	536	235	1722
0.70E-06 0.99E-06	94.58	96.00	96.17	98.81	97.80	96.32	96.25	97.45	97.66	98.07	98.39	98.22	97.94	96.09	91.33	92.65	96.20
0.10E-05 0.29E-05	30	37	31	12	9	22	22	5	10	15	20	14	2	7	40	41	317
0.30E-05 0.49E-05	95.57	97.14	97.26	99.38	98.16	97.32	97.28	97.70	98.02	98.41	98.70	98.41	97.98	96.22	91.85	93.41	96.69
0.50E-05 0.69E-05	4	10	10	1	6	5	3	5	2	1	1	2	2	0	1	2	55
0.70E-05 0.89E-05	95.70	97.45	97.61	99.43	98.40	97.55	97.42	97.94	98.09	98.43	98.71	98.44	98.01	96.22	91.86	93.44	96.77
0.90E-05 0.11E-04	3	8	5	4	2	6	6	2	2	1	7	33	47	68	121	14	329
0.12E-04 0.31E-04	95.80	97.69	97.78	99.62	98.48	97.82	97.70	98.04	98.17	98.45	98.82	98.89	98.84	97.48	93.40	93.70	97.27
0.32E-04 0.51E-04	46	15	15	2	16	12	2	0	0	4	16	38	45	90	265	155	721
	97.32	98.15	98.31	99.71	99.12	98.36	97.80	98.04	98.17	98.54	99.06	99.41	99.63	99.15	96.79	96.54	98.37
	33	23	21	3	13	11	5	2	2	5	18	7	3	7	63	64	280
	98.41	98.86	99.05	99.86	99.64	98.86	98.03	98.14	98.24	98.65	99.33	99.51	99.68	99.28	97.60	97.71	98.80
	35	23	16	2	6	18	21	12	28	23	20	26	15	34	164	102	545
	99.57	99.57	99.61	99.95	99.88	99.68	99.02	98.73	99.24	99.17	99.64	99.86	99.95	99.91	99.69	99.58	99.63
	10	9	6	0	3	5	11	8	8	11	9	5	1	3	23	15	127
	99.90	99.85	99.82	99.95	100.00	99.91	99.53	99.12	99.53	99.42	99.77	99.93	99.96	99.96	99.99	99.85	99.82
	0	3	2	0	0	1	5	6	7	15	9	3	1	0	0	5	57
	99.90	99.94	99.89	99.95	100.00	99.95	99.77	99.41	99.78	99.75	99.91	99.97	99.98	99.96	99.99	99.95	99.91
	3	1	2	1	0	1	3	5	3	7	2	1	0	0	0	1	30
	100.00	99.97	99.96	100.00	100.00	100.00	99.91	99.66	99.89	99.91	99.94	99.99	99.98	99.96	99.99	99.96	99.96
	0	0	1	0	0	0	2	3	3	2	3	0	1	1	1	1	18
	100.00	99.97	100.00	100.00	100.00	100.00	99.80	100.00	99.96	99.98	99.99	100.00	99.99	100.00	99.98	99.98	99.98
	0	1	0	0	0	0	0	3	0	2	1	1	0	1	0	1	10
	100.00	100.00	100.00	100.00	100.00	100.00	99.95	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 14
03703.7002
WM(B)-02

MILLSTONE NUCLEAR POWER STATION - UNIT 3
ELEVATED RELEASE (355 M)
CHI/Q CALCULATION

CALCULATION NUMBER
ONSITE METDATA (1974-1981)

037037002

ANNUAL

1/01/74 - 12/31/81

RELEASE TYPE - ELEVATED NUCLEAR

ZERO PLUME RISE

STABILITY DETERMINED BY DELTA TEMPERATURE

TOPOGRAPHY USED - YES

WIND SPEED ASSIGNED TO CALM OBSERVATIONS = 0.60 MPH

CALM REDISTRIBUTION - PROP TO 1.5 MPS W/S CLASS DIR FREQ

DISPERSION COEFFICIENTS (AEC GIFFORD'S)

RECIRCULATION FACTORS APPLIED (PLAIN (CURVE))

HEIGHT OF ELEVATED RELEASE 389.0 FEET (118.6 METERS)

***** ANNUAL CHI/Q AVERAGES ***** UNDECAYED UNDEPLETED CHI/Q VALUES.

DOWNWIND
SECTOR

DOWNWIND DISTANCE (M) AND CHI/Q AVERAGES

	<u>355</u>	351.	
S	0.133E-07	0.129E-07	
SSW	0.112E-07	0.108E-07	
SW	0.809E-08	0.782E-08	
WSW	0.118E-08	0.114E-08	
W	0.299E-08	0.286E-08	← 259° - 281°
WNW	0.628E-08	0.611E-08	← 282° - 305°
NW	0.126E-07	0.124E-07	← 306° - 329°
NNW	0.205E-07	0.202E-07	← 330° - 353°
N	0.138E-07	0.134E-07	
NNE	0.224E-07	0.220E-07	
NE	0.159E-07	0.156E-07	
ENE	0.116E-07	0.113E-07	
E	0.642E-08	0.622E-08	
ESE	0.133E-07	0.129E-07	
SE	0.484E-07	0.471E-07	
SSE	0.358E-07	0.349E-07	

OBSERVATIONS EXAMINED 70128

GOOD OBSERVATIONS

65563

PERCENT DATA RECOVERY 93.49

Maximum Value 2.05×10^{-8}

APPENDIX 1
EN-113 Program Output
Unit 1 Stack to Unit 3 Control Room Air Intake

P. 15
03703.7002
WM(B)-02

Attachment 4

Millstone Nuclear Power Station, Unit No. 3

Calculation WM(B)-04

Normalized X/Q at the Unit 3 Control Room

Releases From the Unit 3 Containment and Turbine Bldg.

CALCULATION TITLE PAGE

Total Number of Pages: 49

Normalized X/Q at the Unit 3 Control Room For Releases From the Unit 3 Containment and Turbine Bldg

N/A		0		RBVS/SLCRS	
CALCULATION #		REVISION No.		SYSTEM NAME	
WM(B)-04		CB,CE,TB		N/A	
VENDOR CALCULATION NUMBER		Structure		System Number	
NUCLEAR INDICATOR: <input checked="" type="checkbox"/> CATI <input type="checkbox"/> RWQA <input type="checkbox"/> SBOQA <input type="checkbox"/> FPQA <input type="checkbox"/> ATWSQA <input type="checkbox"/> NON-QA		Calc. Supports DCR/MMOD? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Calc. Supports Ind. Analysis? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
				N/A	
				Component	
		↓		↓	
		M3-98-029		N/A	
		DCR/MMOD No.		Reference	
INCORPORATES:					
CCN NO:		AGAINST REV.			
N/A		N/A			

Executive Summary

THIS IS FORMAL APPROVAL OF A QA APPROVED VENDOR CALCULATION. NO (NU) IR IS REQUIRED.

REC'D 6-8-98
ON HOLD _____
CDS 6/17/98
CDS QC 6/25/98
NRP ✓ TS

Verified Revision ✓
Initial AW Date 6/13/00

Approvals (Print & Sign Name)		
Preparer::James L. Wheeler		Date: 5/27/98
Interdiscipline Reviewer:N/A	Discipline:	Date:
Interdiscipline Reviewer:N/A	Discipline:	Date:
Independent Reviewer:N/A		Date:
Supervisor: William Eakin		Date: 5/27/98
Installation Verification		
<input checked="" type="checkbox"/> Calculation accurately reflects plant configuration, OR <input type="checkbox"/> N/A does not affect plant configuration)		
Preparer/Designer Engineer:JAMES L. WHEELER		Date: 5/22/98



PassPort DATABASE INPUTs

CH
#4

Page 1B of 49

Calculation Number: N/A N/A N/A Revision: N/A
(prefix) (sequence no.) (suffix)

Vendor Calculation Number/Other: 03703.7002-WM(B)-04 Revision: 0

CCN # N/A QA ☒ Yes ☐ No Calc Voided: ☐ Yes ☒ No

Superseded By: N/A Supersedes Calc: N/A

Discipline (Up to 10) N,A,Z

Unit	Project Reference (EWA)	Component Id	Computer Code	Rev. No./ Level No.
3	N/A	N/A	EN-200	0/0

PMMS CODES*				
Structure	System	Component	Reference Calculation	Rev No.
CB	RBV	N/A	ENVR-W210	0
CE			ENVR-W228	0
TB				

*The codes required must be alpha codes designed for structure, system and component.

Reference Drawing	Sheet	Rev. No.
25212-14045	B	15
25212-24215	X 01	14

Comments:

Table of Contents

Title page	1A
CTP Database	1B
Table of Contents	1C
Vendor Calculation Pages	1 thru 10
Appendix 1	18 pages
Appendix 2	18 pages
 Total number of pages	 49

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION TITLE PAGE

5010.65

CLIENT & PROJECT: NORTHEAST UTILITIES - MILLSTONE UNIT 3				PAGE 1 of 10 Total Pages: 46 w/attachments pages		
CALCULATION TITLE: Normalized Concentrations (X/Qs) at Unit 3 Control Room Air Intake for Releases from the Unit 3 Containment Structure and Turbine Bldg. Vent				QA CATEGORY (✓) <input checked="" type="checkbox"/> I <input type="checkbox"/> II		
CALCULATION IDENTIFICATION NUMBER				OPTIONAL WORK PACKAGE NO.		
JOB ORDER NO. 03703.7002	DISCIPLINE WM(B)	CURRENT CALC NO. 04 <i>new</i>	OPTIONAL TASK CODE			
APPROVALS - SIGNATURE & DATE			REVISION NO. OR NEW CALCULATION NO.	SUPERSEDES CALCULATION NO. OR REVISION NO.	CONFIRMATION REQUIRED (✓)	
PREPARES(S) / DATE(S)	REVIEWER(S) / DATE(S)	INDEPENDENT REVIEWER(S) / DATE(S)			YES	NO
Stephen A. Vigeant <i>Stephen A. Vigeant</i> 5/21/98	Carl A. Mazzola <i>Carl A. Mazzola</i> 5/21/98	Carl A. Mazzola <i>Carl A. Mazzola</i> 5/21/98	0			✓
DISTRIBUTION						
GROUP	NAME & LOCATION	COPY SENT (✓)	GROUP	NAME & LOCATION	COPY SENT (✓)	
Record Mgmt. File (or Fire File if none) Lead Radiological Specialist Project Files NU RAD PROT PROT NUNDS	S. Ferguson Boston - 6 Stephen A. Vigeant Boston - 3 Charlotte Cronan Boston - 7 Schmidt, R.J. New Britain MP3 Site	CC CC CC original e				

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 037037002	DISCIPLINE WM(B)	CALCULATION NO. 04 <i>Puro</i>	OPTIONAL TASK CODE	PAGE 2 OF 10
CHANGE HISTORY PAGE				
REVISION NO.	DESCRIPTION OF CHANGES	PAGES REVISED	PAGES ADDED	PAGES REPLACED
0	0	N/A	N/A	N/A

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	04 <i>new</i>		3 OF 10

TABLE OF CONTENTS

COVER PAGE.....	1
CHANGE HISTORY PAGE.....	2
TABLE OF CONTENTS.....	3
OBJECTIVE	4
METHODOLOGY	4
ASSUMPTIONS	5
EQUATIONS	5
DATA.....	6
CALCULATION.....	6
CONCLUSIONS	7
REFERENCES	8
ATTACHMENTS.....	8
APPENDICES.....	8

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	04 <i>nwo</i>		4 OF 10

OBJECTIVE

To calculate the normalized atmospheric dispersion values (X/Qs) at the Millstone Unit 3 control room air intake for gaseous radiological releases from the Unit 3 Containment Structure and Turbine Building Vent. These X/Q values will apply to the 0-2 hour through 30-day period for the containment and turbine building vent ground level release.

METHODOLOGY

The control room X/Q values are calculated using the methodology described in Murphy and Campe (Ref. 1). Given that the radiological releases are from the containment surface and from a point source (turbine bldg. vent) with a large elevation difference relative to the control room intake (see Data Section, p. 6), the diffuse source - point receptor technique for X/Q calculation from Section V(B)(1)(b) of Murphy and Campe (Ref. 1) is used. The X/Q equation is as follows:

$$X/Q = [u(\pi\sigma_y\sigma_z + A/(K+2))]^{-1}$$

where:

X/Q is relative concentration (sec/m³)

σ_y, σ_z are horizontal and vertical dispersion coefficients based on stability class and horizontal distance (m)

u = wind speed at 10-meter elevation (m/sec)

A = projected building area (m²)

k = 3/(s/d)^{1.4}

s = source to receptor difference (m)

d = building width (m)

The above relationship is used to calculate the 0 - 2 hour X/Q value based on site meteorological data, selecting the condition that represents the 5 percentile worst dispersion condition at the site. In this case, 1974 to 1981 on-site meteorological data (Ref. 2) are used. From earlier control room X/Q calculations (Ref. 3), the 5 percentile worst site stability class is F stability. The corresponding 5 percentile low wind speed is determined from the on-site meteorological data considering only those wind directions resulting in receptor exposure. The number of wind direction sectors to be considered for each source-receptor relationship is determined using Figure 2 of Ref. 1 which is based on the ratio of the distance (s) between the source and receptor to the diameter (d) or width of the building from which the release emanates (s/d ratio). The dispersion coefficients (σ_y, σ_z) are determined from Ref. 4.

The intermediate averaging time X/Qs (8-24 hours, 1-4 days, and 4-30 days) are determined from the 0-2 hour X/Q value multiplying by occupancy, wind speed, and wind direction factors in accordance with Ref. 1. These factors are as follows:

<u>Averaging Time</u>	<u>Occupancy Factor</u>	<u>Wind Speed Factor</u>	<u>Wind Direction Factor</u>
0 - 2 Hours	1	1	1
8 - 24 Hours	1	5%/10% wind speed	0.75 + F/4
1 - 4 Days	0.6	5%/20% wind speed	0.50 + F/2
4 - 30 Days	0.4	5%/40% wind speed	F

F is the fraction of time the wind blows the activity toward the receptor.

The frequency of wind directions blowing in the appropriate range and at individual wind speeds is determined from the on-site meteorological data base (Ref. 2) using Stone & Webster computer program "Distribution of Two Parameters" (Ref. 5).

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	04 <i>Revised</i>		5 OF 10

ASSUMPTIONS

1. It is conservatively assumed that each plume centerline is transported directly over the Unit 3 control room intake and that the plume dispersion is affected by the containment structure (containment release) and turbine building (turbine building vent).
2. For purposes of determining the appropriate dispersion equation to use in the analysis, the nature of the release and elevation difference between the release point and the control room air intake is compared to the appropriate building height. Point sources with elevation differences that are greater than 30 percent of the building height are evaluated using the diffuse source - point receptor equation from Ref. 1.
3. It is assumed that the Unit 3 control room air intake X/Q values are representative of the X/Q values for the center of the Unit 3 control room given that the distances and directions from the releases to these receptors are very similar.

EQUATIONS

$$X/Q = [u(\pi\sigma_y\sigma_z + A/(K+2))]^{-1} \quad (\text{Ref. 1})$$

where:

X/Q is relative concentration (sec/m³) for point source - point receptor configurations

σ_y, σ_z are horizontal and vertical dispersion coefficients (m) (Ref. 4)

u = wind speed at 10-meter elevation (m/sec)

A = projected building area (m²)

k = 3/(s/d)^{1.4}

Determination of Influencing Wind Directions (Ref. 1)

s = source to receptor distance (m)

d = release point diameter or width (m)

Calculate s/d ratio and use Figure 2 from Ref. 1

Determination of Intermediate Period Factors (Ref. 1)

<u>Averaging Time</u>	<u>Occupancy Factor</u>	<u>Wind Speed Factor</u>	<u>Wind Direction Factor</u>
0 - 2 Hours	1	1	1
8 - 24 Hours	1	5%/10% wind speed	0.75 + F/4
1 - 4 Days	0.6	5%/20% wind speed	0.50 + F/2
4 - 30 Days	0.4	5%/40% wind speed	F

F is the fraction of time the wind blows the activity toward the receptor.

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	04 <i>Ward</i>		6 OF 10

DATA

1. Unit 3 Containment to Unit 3 Control Room Air Intake

Distance (s) from containment to Unit 3 control room air intake = 72.0 m (Ref. 6)
 Wind direction from containment to Unit 3 control room air intake = 108 deg (Ref. 6)
 Unit 3 control room air intake elevation = 94.6 ft (Ref. 8)
 Containment structure enclosure height (top elevation - grade elevation) = 186.2 ft - 24.0 ft = 162.2 ft (Ref. 6)
 Containment structure enclosure width (d) = 47.2 m (Ref. 6)
 Containment structure enclosure area = 2336.4 m² (Ref. 6)

2. Unit 3 Turbine Bldg. to Unit 3 Control Room Air Intake

Distance from turbine bldg. vent to Unit 3 control room center = 38.1 m (Ref. 7)
 Wind direction from turbine bldg. vent to Unit 3 control room center = 128 deg (Ref. 7)
 d = turbine bldg. width = 36 m (Ref. 7)
 Turbine bldg. vent elevation = 157 ft (Ref. 7)
 Turbine bldg. roof height above grade = 113 ft (Ref. 7)
 Unit 3 control room air intake elevation = 94.6 ft (Ref. 8)
 Turbine bldg. vent-control room air intake elevation difference = 157 ft - 94.6 ft = 62.4 ft
 Percentage difference in elevations = 62.4 ft/113 ft = 55 percent

CALCULATION

1. Unit 3 Containment to Unit 3 Control Room Air Intake

s = 72.0 m (Ref. 6)
 direction = 108 deg (Ref. 6)
 d = 47.2 m (Ref. 6)
 s/d = 72.0 m/47.2 m = 1.53 or 4 sectors (4 x 22.5° = 90° or 108° - 45° = 63° to 108° + 45° = 153°)

A = 2336.4 m² (Ref. 6)
 $k = 3/(s/d)^{1.4} = 3/(1.53)^{1.4} = 1.65$
 σ_y @ 72.0 m for F stability class = 3.43 m (Ref. 4)
 σ_z @ 72.0 m for F stability class = 1.72 m (Ref. 4)
 u(5%) = 2.2 mph (1.0 m/sec) (Appendix 1, p. 11)
 u(10%) = 3.1 mph (1.4 m/sec) (Appendix 1, p. 12)
 u(20%) = 4.5 mph (2.0 m/sec) (Appendix 1, p. 13)
 u(40%) = 6.7 mph (3.0 m/sec) (Appendix 1, p. 15)
 F = 10,208/66332 = 0.16 (Appendix 1, p. 18)

Short-Term X/Q Value for Unit 3 Intake (0 - 2 Hours)

$X/Q = [(1.0 \text{ m/sec}) (3.14159275...) (3.43\text{m}) (1.72 \text{ m}) + (2336.4 \text{ m}^2)/(1.65 + 2)]^{-1}$

X/Q = 1.52 E- 3 sec/m³

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	04 <i>Rev 0</i>		7 OF 10

Intermediate Period X/Q Value for Unit 3 Intake

Averaging Period	Occupancy Factor	Wind Speed Factor	Wind Direction Factor	X/Q (sec/m ³)
0 - 8 hours	1	1	1	1.52 E- 3
8 - 24 hours	1	2.2/3.1 = 0.71	0.75 + 0.16/4 = 0.79	8.53 E- 4
1 - 4 days	0.6	2.2/4.5 = 0.49	0.50 + 0.16/2 = 0.58	2.59 E- 4
4 - 30 days	0.4	2.2/6.7 = 0.33	0.16	3.21 E- 5

2. Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

s = 38.1 m (Ref. 7)

direction = 128 deg (Ref. 7)

d = 36 m (Ref. 7)

s/d = 38.1 m/36 m = 1.06 or 5 sectors (5 x 22.5° = 113° or 128° - 57° = 71° to 128° + 57° = 185°)

k = 3/(s/d)^{1.4} = 3/(1.06)^{1.4} = 2.76

A = 1239 m² (Ref. 7)

σ_y @ 38.1m for F stability class = 1.93 m (Ref. 4)

σ_z @ 38.1m for F stability class = 1.03 m (Ref. 4)

u(5%) = 2.2 mph (1.0 m/sec) (Appendix 2, P. 11)

u(10%) = 2.9 mph (1.3 m/sec) (Appendix 2, p. 12)

u(20%) = 4.0 mph (1.8 m/sec) (Appendix 2, p. 13)

u(40%) = 6.5 mph (2.9 m/sec) (Appendix 2, p. 15)

F = 12,724/66,332 = 0.19 (Appendix 2, p. 18)

Short-Term X/Q Value for Unit 3 Intake (0 - 2 Hours)

X/Q = [(1.0 m/sec) (3.14159275...) (1.93m) (1.03 m) + (1239 m²) / (2.76 + 2)]⁻¹

X/Q = 3.75 E- 3 sec/m³

Intermediate Period X/Q Value for Unit 3 Intake

Averaging Period	Occupancy Factor	Wind Speed Factor	Wind Direction Factor	X/Q (sec/m ³)
0 - 8 hours	1	1	1	3.75 E- 3
8 - 24 hours	1	2.2/2.9 = 0.76	0.75 + 0.19/4 = 0.80	2.28 E- 3
1 - 4 days	0.6	2.2/4.0 = 0.55	0.50 + 0.19/2 = 0.60	7.43 E- 4
4 - 30 days	0.4	2.2/6.5 = 0.34	0.19	9.69 E- 5

CONCLUSIONS

The Unit 3 control room X/Qs are summarized in the body of the calculation. The Unit 3 control room air intake X/Q values are representative of the X/Q values for the center of the Unit 3 control room given that the distances and directions from the releases to these receptors are very similar. The Unit 3 control room air intake X/Q values are also conservative when applied to the Technical Support Center which is located at a farther distance from the releases than the control room.

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

5010.65

CALCULATION IDENTIFICATION NUMBER

JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	OPTIONAL TASK CODE	PAGE
037037002	WM(B)	04 <i>two</i>		8 OF 10

REFERENCES

1. Murphy, K.G. and K.M. Campe., "Nuclear Power Plant Control Room Ventilation System Design for Meeting General Design Criterion 19". Presented at the 13th AEC Air Cleaning Conference, August, 1974.
2. Millstone onsite meteorological data for the period 1974 - 1981 provided by H. L. Chamberlain, Jr. of Northeast Utilities, April 28, 1998. The data are hourly values represented by one 15-minute average value per hour. See Attachment 2 for transmittal letter.
3. Stone & Webster Calculation No. 12179.12-ENVR-W223, dated 11/29/82.
4. U. S. Nuclear Regulatory Commission, Subroutine "POLYN", Horizontal and Vertical Dispersion Coefficients as a Function of Downwind Distance (see Attachment 1 for F-stability values).
5. EN-200, Version 0, Level 0. SWEC computer code "Distribution of Two Parameters". Output is provided in Appendices 1 and 2.
6. Stone & Webster Calculation No. 12179.12-ENVR-W210, 11/23/82.
7. Stone & Webster Calculation No. 12179.12-ENVR-W228, 12/02/82.
8. Stone & Webster Drawing Nos. 12179-EA-1B-15 and 12179-EB-39L-14.

ATTACHMENTS

1. Subroutine "POLYN", Horizontal and Vertical Dispersion Coefficients as a Function of Downwind Distance (F-stability).
2. Millstone onsite meteorological data transmittal letter from H. L. Chamberlain to J. Creamer, April 28, 1998.

APPENDICES (36 pages)

EN-200 Wind Speed/Wind Direction Distribution Computer Output:

<u>Release/Receptor Combination</u>	<u>Wind Direction Range</u>	<u>Job No</u>
1. Unit 3 Containment to Unit 3 Control Room Intake	63 - 153 degrees	02236
2. Unit 3 Turbine Bldg. to Unit 3 Control Room Intake	71 - 185 degrees	00106

10 MAR 1981

DISPERSION COEFFICIENTS AS A FUNCTION OF DOWNWIND DISTANCE
PASQUILL STABILITY CLASS (F)

PAGE 41

DOWNWIND DISTANCE (METERS)	**	STONE & WEBSTER	**	**	POLYN (LONG)	**	**	POLYN (DESERT)	**	**	POLYN (XOQDOQ)	**
		SIGMA Y	SIGMA Z		SIGMA Y	SIGMA Z		SIGMA Y	SIGMA Z		SIGMA Y	SIGMA Z
10.	**	0.4739	0.1971	**	0.4014	0.1395	**	2.4230	1.6073	**	0.5776	0.3454
20.	**	0.8969	0.4437	**	0.8020	0.3243	**	4.5718	1.9981	**	1.0802	0.6072
30.	**	1.3054	0.6928	**	1.2022	0.5313	**	6.6281	2.2694	**	1.5578	0.8446
40.	**	1.7048	0.9383	**	1.6022	0.7540	**	8.6265	2.4839	**	2.0200	1.0675
50.	**	2.0977	1.1786	**	2.0021	0.9893	**	10.5829	2.6642	**	2.4710	1.2801
60.	**	2.4855	1.4134	**	2.4019	1.2351	**	12.5064	2.8212	**	2.9133	1.4849
70.	**	2.8691	1.6427	**	2.8015	1.4900	**	14.4031	2.9611	**	3.3485	1.6834
80.	**	3.2490	1.8667	**	3.2011	1.7530	**	16.2771	3.0879	**	3.7776	1.8767
90.	**	3.6259	2.0857	**	3.6006	2.0232	**	18.1315	3.2043	**	4.2016	2.0655
100.	**	4.0000	2.3000	**	4.0000	2.3000	**	19.9696	3.3120	**	4.6210	2.2472
110.	**	4.3716	2.5098	**	4.3994	2.5829	**	21.7903	3.4126	**	5.0364	2.4369
120.	**	4.7409	2.7153	**	4.7987	2.7365	**	23.5981	3.5072	**	5.4481	2.6223
130.	**	5.1082	2.9169	**	5.1979	2.8894	**	25.3933	3.5964	**	5.8565	2.8037
140.	**	5.4736	3.1146	**	5.5971	3.0416	**	27.1769	3.6811	**	6.2619	2.9815
150.	**	5.8372	3.3088	**	5.9963	3.1930	**	28.9499	3.7617	**	6.6645	3.1560
160.	**	6.1991	3.4995	**	6.3954	3.3437	**	30.7129	3.8387	**	7.0644	3.3275
170.	**	6.5595	3.6870	**	6.7945	3.4937	**	32.4667	3.9125	**	7.4620	3.4962
180.	**	6.9184	3.8714	**	7.1936	3.6430	**	34.2119	3.9834	**	7.8573	3.6624
190.	**	7.2759	4.0528	**	7.5926	3.7916	**	35.9489	4.0516	**	8.2505	3.8261
200.	**	7.6321	4.2314	**	7.9916	3.9395	**	37.6782	4.1174	**	8.6417	3.9877
210.	**	7.9871	4.4073	**	8.3905	4.0867	**	39.4003	4.1809	**	9.0309	4.1472
220.	**	8.3409	4.5806	**	8.7895	4.2332	**	41.1156	4.2424	**	9.4184	4.3047
230.	**	8.6935	4.7514	**	9.1884	4.3790	**	42.8242	4.3021	**	9.8042	4.4603
240.	**	9.0451	4.9198	**	9.5872	4.5241	**	44.5267	4.3599	**	10.1884	4.6143
250.	**	9.3956	5.0860	**	9.9861	4.6685	**	46.2232	4.4162	**	10.5710	4.7665
260.	**	9.7451	5.2499	**	10.3425	4.8123	**	47.9140	4.4709	**	10.9521	4.9172
270.	**	10.0936	5.4117	**	10.6986	4.9553	**	49.5994	4.5242	**	11.3319	5.0664
280.	**	10.4412	5.5714	**	11.0542	5.0977	**	51.2795	4.5762	**	11.7102	5.2141
290.	**	10.7878	5.7292	**	11.4095	5.2395	**	52.9546	4.6269	**	12.0873	5.3605
300.	**	11.1337	5.8850	**	11.7643	5.3805	**	54.6248	4.6764	**	12.4631	5.5056
310.	**	11.4786	6.0390	**	12.1108	5.5209	**	56.2904	4.7248	**	12.8377	5.6494
320.	**	11.8228	6.1912	**	12.4729	5.6607	**	57.9515	4.7721	**	13.2111	5.7920
330.	**	12.1661	6.3416	**	12.8266	5.7997	**	59.6082	4.8185	**	13.5833	5.9335
340.	**	12.5087	6.4903	**	13.1799	5.9382	**	61.2607	4.8638	**	13.9546	6.0738
350.	**	12.8505	6.6374	**	13.5328	6.0759	**	62.9091	4.9083	**	14.3247	6.2131
360.	**	13.1916	6.7830	**	13.8854	6.2131	**	64.5535	4.9519	**	14.6938	6.3513
370.	**	13.5320	6.9269	**	14.2375	6.3496	**	66.1942	4.9947	**	15.0619	6.4886
380.	**	13.8718	7.0694	**	14.5893	6.4854	**	67.8311	5.0367	**	15.4291	6.6249
390.	**	14.2107	7.2104	**	14.9407	6.6206	**	69.4644	5.0780	**	15.7953	6.7603
400.	**	14.5491	7.3500	**	15.2917	6.7552	**	71.0942	5.1185	**	16.1606	6.8947
410.	**	14.8868	7.4882	**	15.6424	6.8892	**	72.7205	5.1583	**	16.5250	7.0283
420.	**	15.2239	7.6251	**	15.9927	7.0225	**	74.3436	5.1975	**	16.8886	7.1611
430.	**	15.5604	7.7607	**	16.3426	7.1552	**	75.9634	5.2360	**	17.2513	7.2930
440.	**	15.8963	7.8949	**	16.6921	7.2872	**	77.5800	5.2740	**	17.6132	7.4242
450.	**	16.2316	8.0280	**	17.0413	7.4187	**	79.1935	5.3113	**	17.9743	7.5545
460.	**	16.5663	8.1598	**	17.3901	7.5496	**	80.8041	5.3481	**	18.3347	7.6841
470.	**	16.9005	8.2904	**	17.7385	7.6798	**	82.4117	5.3843	**	18.6943	7.8130
480.	**	17.2340	8.4199	**	18.0865	7.8094	**	84.0164	5.4201	**	19.0531	7.9412
490.	**	17.5670	8.5482	**	18.4342	7.9384	**	85.6184	5.4553	**	19.4112	8.0687

"POLYN" Dispersion Coefficients

03763.7012
WM(B)-04
RLO

P.9



Northeast
Utilities System

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

P.10

03703.706

VH(B)-04

DW-0

April 28, 1998

Mr. Joseph Creamer
Stone and Webster
245 Summer Street, 7th Floor
Boston, MA 02210

Dear Mr. Creamer:

Millstone Nuclear Power Station
Meteorological Data

Accompanying this memo are four computer diskettes containing the meteorological data from 1974 through 1981, for your use in the Millstone Unit 3 X/Q calculations. Each diskette contains two years of data, as noted on the labels. The year of data is represented in each dataset name.

Each line of the datasets represents one hour of data. There is a nine character "time stamp" on each line; columns 1 and 2 are the year, columns 3 through 5 are the Julian day, and columns 6 through 9 are the time (military time, always on Eastern Standard Time). Columns 10 through 54 are, in order, the AT033, WS033, WD033, WS142, WD142, DT142, WS374, WD374, & DT374 (AT = air temperature, WS = wind speed, WD = wind direction, DT = delta-temperature, and numbers are instrument height). These are all in "F5.1" format. Missing data are represented by "999.0."

The data generated by our meteorological monitoring system consist of four fifteen-minute averages per hour. However, the attached datasets only contain one fifteen-minute average per hour. Historically, most of our analyses involving meteorological data, including Category 1 X/Q calculations, have been based on one fifteen-minute average representing an entire hour of data. It was found that this methodology introduced very small errors into the analyses results, compared to calculating an average of the available fifteen-minute averages for each hour.

If you have any questions, please call me, at (860) 665-3183.

Very truly yours,

H. L. Chamberlain, Jr.
Environmental Services

Enclosures

```

1 //DISTRIB JOB (0031,3),'VIGEANT-SA',
  // MSGLEVEL=2,MSGCLASS=A
  //* RJETRAN.VIG7988.DATA(DISTRIB)
  /*JOBPARM ROOM=3
2 //METRDISK EXEC METRPROC
9 //DISK DD DISP=SHR,DSN=ENVIRONM.METDATA.MILSTONE.YR7481
12 //SYSIN DD * GENERATED STATEMENT
13 //DISTRIB EXEC PGH=DISTRB00,REGION=284K,TIME=1
14 //STEPLIB DD DSN=ENVIRONM.DISTRIB,DISP=SHR
15 //GO.FT06F001 DD DCB=PRINT1,SYSOUT=*
16 //GO.FT10F001 DD UNIT=DISK,DISP=(OLD,DELETE),DSN=&SAMPLE
17 //GO.FT05F001 DD *
18 //IMBLIST EXEC PGH=IMBLIST
19 //SYSPRINT DD SYSOUT=*
20 //SYSLIB DD DSN=ENVIRONM.DISTRIB,DISP=SHR
21 //SYSIN DD * GENERATED STATEMENT

```

01-MAY-98JOB02236

JOB02236

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 1
03703.7002
WM(B)-04

W-0

STMT NO. MESSAGE
 2 IEF001I PROCEDURE METRPROC WAS EXPANDED USING SYSTEM LIBRARY SYS1.USER.PROCLIB
 ICH70001I VIG7988 LAST ACCESS AT 12:52:23 ON THURSDAY, MAY 7, 1998
 IEF236I ALLOC. FOR DISTRIB METRPROC METRDISK
 IGD103I SMS ALLOCATED TO DDNAME STEPLIB
 IEF237I JES2 ALLOCATED TO FT06F001
 IEF237I JES2 ALLOCATED TO SYSPRINT
 IGD103I SMS ALLOCATED TO DDNAME SYS010
 IGD101I SMS ALLOCATED TO DDNAME (SYS011...)
 DSN (SYS98127.T125351.RA000.DISTRIB.SAMPLE.H01)
 STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
 VOL SER NOS= VIO
 IEF237I JES2 ALLOCATED TO FT05F001
 IEF142I DISTRIB METRPROC METRDISK - STEP WAS EXECUTED - COND CODE 0000
 IGD104I ENVIRONM.METOLOGY RETAINED, DDNAME=STEPLIB
 IEF285I VIG7988.DISTRIB.JOB02236.D0000104.? SYSOUT
 IEF285I VIG7988.DISTRIB.JOB02236.D0000105.? SYSOUT
 IGD104I ENVIRONM.METDATA.HILSTONE.YR7481 RETAINED, DDNAME=SYS010
 IGD106I SYS98127.T125351.RA000.DISTRIB.SAMPLE.H01 PASSED, DDNAME=SYS011
 IEF285I VIG7988.DISTRIB.JOB02236.D0000101.? SYSIN

 .JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 12.53.51, 05/07/98 V09 .
 .STEP NUMBER - 1, STEP NAME - METRPROC, PROGRAM NAME - METHR01 , RAN FROM 12.53.52 TO 12.53.55 .
 .ENDING CONDITION - RETURN CODE 0, REGION USED - 376K, PERFORMANCE GROUP - 20, SHAPS - 0 .
 .PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0 .
 .CPU TIME - .51 VECTOR TIME - .00 SECS, EXCPs -(352 NON-VIO, 1,169 VIO), CPU UNITS - 1.88 SECS .
 .SYSIN RECORDS - 3, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$3.13 .
 .EXCPs/DDNAME - 9/STEPLIB 343/SYS010 1,169/SYS011 .

 IEF373I STEP/METRPROC/START 1998127.1253
 IEF374I STEP/METRPROC/STOP 1998127.1253 CPU 0MIN 00.47SEC SRB 0MIN 00.02SEC VIRT 88K SYS 288K EXT 4K SYS 9956K
 IEF236I ALLOC. FOR DISTRIB DISTRIB
 IGD103I SMS ALLOCATED TO DDNAME STEPLIB
 IEF237I JES2 ALLOCATED TO FT06F001
 IGD103I SMS ALLOCATED TO DDNAME FT10F001
 IEF237I JES2 ALLOCATED TO FT05F001
 IEF142I DISTRIB DISTRIB - STEP WAS EXECUTED - COND CODE 0001
 IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=STEPLIB
 IEF285I VIG7988.DISTRIB.JOB02236.D0000106.? SYSOUT
 IGD105I SYS98127.T125351.RA000.DISTRIB.SAMPLE.H01 DELETED, DDNAME=FT10F001
 IEF285I VIG7988.DISTRIB.JOB02236.D0000102.? SYSIN

 .JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 12.53.51, 05/07/98 V09 .
 .STEP NUMBER - 2, STEP NAME - DISTRIB , PROGRAM NAME - DISTRB00, RAN FROM 12.53.55 TO 12.54.00 .
 .ENDING CONDITION - RETURN CODE 1, REGION USED - 336K, PERFORMANCE GROUP - 20, SHAPS - 0 .
 .PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0 .
 .CPU TIME - 2.35 VECTOR TIME - .00 SECS, EXCPs -(8 NON-VIO, 1,170 VIO), CPU UNITS - 3.41 SECS .
 .SYSIN RECORDS - 16, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$5.68 .
 .EXCPs/DDNAME - 8/STEPLIB 1,170/FT10F001 .

 IEF373I STEP/DISTRIB /START 1998127.1253
 IEF374I STEP/DISTRIB /STOP 1998127.1254 CPU 0MIN 02.34SEC SRB 0MIN 00.01SEC VIRT 64K SYS 272K EXT 4K SYS 9964K
 IEF236I ALLOC. FOR DISTRIB IMBLIST
 IEF237I JES2 ALLOCATED TO SYSPRINT
 IGD103I SMS ALLOCATED TO DDNAME SYSLIB
 IEF237I JES2 ALLOCATED TO SYSIN
 IEF142I DISTRIB IMBLIST - STEP WAS EXECUTED - COND CODE 0008
 IEF285I VIG7988.DISTRIB.JOB02236.D0000107.? SYSOUT
 IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=SYSLIB

No-0

IEF285I VIG7988.DISTRIB.JOB02236.D0000103.?

SYSIN

.....
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 12.53.51, 05/07/98 V09 .
.STEP NUMBER - 3, STEP NAME - IMBLIST , PROGRAM NAME - IMBLIST , RAN FROM 12.54.00 TO 12.54.00 .
.ENDING CONDITION - RETURN CODE 8, REGION USED - 424K, PERFORMANCE GROUP - 20, SHAPS - 0 .
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0 .
.CPU TIME - .03 VECTOR TIME - .00 SECS, EXCPS -(0 NON-VIO, 0 VIO), CPU UNITS - .03 SECS .
.SYSIN RECORDS - 1, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$0.05 .
.....

IEF373I STEP/IMBLIST /START 1998127.1254
IEF374I STEP/IMBLIST /STOP 1998127.1254 CPU 0MIN 00.03SEC SRB 0MIN 00.00SEC VIRT 156K SYS 268K EXT 4K SYS 9868K
IEF375I JOB/DISTRIB /START 1998127.1253
IEF376I JOB/DISTRIB /STOP 1998127.1254 CPU 0MIN 02.84SEC SRB 0MIN 00.03SEC
.....

.TOTAL CPU TIME - 2.89 SECS, TOTAL VECTOR TIME - .00 SECS, TOTAL CPU UNITS - 5.32 SECS .
.TOTAL EXCPS -(360 NON-VIO, 2,339 VIO) .
.TOTAL JOB COST EXCLUDING PRINT CHARGES = \$8.86 CHARGED TO AUTH = 0031 , JO/HO = 022685067 .
.....

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 3
03703.7002
WM(B)-04

WLD



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: SITE DATA RETREIVAL PROGAM

VERSION OF PROGRAM: 00

LINK EDIT DATE (JULIAN): 80.184

DATE OF RUN (MO/DAY/YR): 5/07/98

JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-112

LEVEL OF PROGRAM: 01

LINK EDIT TIME (HRS.MINS.SECONDS): 14.21.36

TIME OF RUN (MILITARY): 1253

JOB02236

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 4
03703.7002
WM(B)-04

WV

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

CARD#	1	2	3	4	5	6	7	8
1	2							
2	111	112						
3	74001	81365						
CARD#	1	2	3	4	5	6	7	8

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 5
03703.7002
WM(B)-04

Handwritten signature

INPUT TO METOWER PROGRAM

2
111 112
74001 81365

EOF OF INPUT DATA REACHED

NUMBER OF CARDS SELECTED = 5844

NUMBER OF DAYS SELECTED = 2922

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 6
03703.7002
WM(B)-04

WV



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: FREQ OF OCCUR OF TWO PARAMETERS

VERSION OF PROGRAM: 00

LOAD MODULE: ENVIRONM.DISTRIB

LINK EDIT DATE (JULIAN): 81.182

DATE OF RUN (MO/DAY/YR): 5/07/98

JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-200

LEVEL OF PROGRAM: 00

MEMBER (PGM): DISTRB00

LINK EDIT TIME (HRS.MINS.SECs): 12.11.26

TIME OF RUN (MILITARY): 1253

JOB02236

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 7
03703.7002
WM(B)-04

W-6

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

```

CARD# 1-----2-----3-----4-----5-----6-----7-----8
1      2
2      MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA
3      33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION
4      WIND DIRECTION (DEGREES)          3      0 999
5      62 153 360
6      0
7      WIND SPEED      (MPH)      (TENTHS)      99      0 1000
8      5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
9      25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44
10     45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

CARD# 1-----2-----3-----4-----5-----6-----7-----8
11     65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84
12     85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 110 120 130 140
13     1 999
14     74
15     7400181365      0      0
16     112      0.0      0.0 111      0.0      0.0

CARD# 1-----2-----3-----4-----5-----6-----7-----8
***** END OF INPUT ON DEVICE 5 *****

```

ALL-2

***** SITE WEATHER DATA *****

FIRST YEAR = 1974, JSYR = 74001, JNYR = 81365, JM01 = 0, JM02 = 0

TOP PARAMETER CODE = 112 MULT = 1.00000 ADD = 0.0

SIDE PARAMETER CODE = 111 MULT = 1.00000 ADD = 0.0

FIRST DATE RETURNED = 74001

LAST DATE RETURNED = 81365

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 9
03703.7002
WM(B)-04

Ward

MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA
33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 62	63- 153	154- 360	361- 999	TOTAL
0 - 5	0	0	0	87	87
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.13	0.13
6 - 6	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
7 - 7	0	0	0	123	123
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.19	0.19
8 - 8	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
9 - 9	0	0	0	237	237
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.36	0.36
10 - 10	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
11 - 11	0	0	0	367	367
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.55	0.55
12 - 12	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
13 - 13	147	109	265	14	535
PCT CLASS	27.48	20.37	49.53	2.62	100.00
PCT TOTAL	0.22	0.16	0.40	0.02	0.81
14 - 14	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
15 - 15	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 10
03703.7002
WM(B)-04

WMO

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 62	63- 153	154- 360	361- 999	
16 - 16	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
17 - 17	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
18 - 18	215	136	359	11	721
PCT CLASS	29.82	18.86	49.79	1.53	100.00
PCT TOTAL	0.32	0.21	0.54	0.02	1.09
19 - 19	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
20 - 20	241	139	428	13	821
PCT CLASS	29.35	16.93	52.13	1.58	100.00
PCT TOTAL	0.36	0.21	0.65	0.02	1.24
21 - 21	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
22 - 22	206	133	328	6	673
PCT CLASS	30.61	19.76	48.74	0.89	100.00
PCT TOTAL	0.31	0.20	0.49	0.01	1.01
23 - 23	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
24 - 24	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
25 - 25	269	165	553	11	998
PCT CLASS	26.95	16.53	55.41	1.10	100.00
PCT TOTAL	0.41	0.25	0.83	0.02	1.50
26 - 26	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
27 - 27	0	0	1	0	1
PCT CLASS	0.0	0.0	100.00	0.0	100.00
PCT TOTAL	0.0	0.0	0.00	0.0	0.00

63° → 153°

Cumulative Hours = 517

Total Hours = 10,208

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 11
03703.7002
WM(B)-04

W-2

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 62	63- 153	154- 360	361- 999	TOTAL
28 - 28	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
29 - 29	320	214	629	8	1171
PCT CLASS	27.33	18.27	53.71	0.68	100.00
PCT TOTAL	0.48	0.32	0.95	0.01	1.77
30 - 30	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
31 - 31	298	213	643	6	1160
PCT CLASS	25.69	18.36	55.43	0.52	100.00
PCT TOTAL	0.45	0.32	0.97	0.01	1.75
32 - 32	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
33 - 33	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
34 - 34	334	204	733	10	1281
PCT CLASS	26.07	15.93	57.22	0.78	100.00
PCT TOTAL	0.50	0.31	1.11	0.02	1.93
35 - 35	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
36 - 36	342	223	793	11	1369
PCT CLASS	24.98	16.29	57.93	0.80	100.00
PCT TOTAL	0.52	0.34	1.20	0.02	2.06
37 - 37	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
38 - 38	0	1	1	0	2
PCT CLASS	0.0	50.00	50.00	0.0	100.00
PCT TOTAL	0.0	0.00	0.00	0.0	0.00
39 - 39	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

$63^{\circ} \rightarrow 153^{\circ}$
 Cumulative Hours = 1,109
 Total Hours = 10,208
 $1,109/10,208 = 10.9\%$

APPENDIX 1
 Distribution Program Output
 Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 12
 03703.7002
 WM(B)-04

WV 0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 62	63- 153	154- 360	361- 999	TOTAL
40 - 40	286	220	808	8	1322
PCT CLASS	21.63	16.64	61.12	0.61	100.00
PCT TOTAL	0.43	0.33	1.22	0.01	1.99
41 - 41	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
42 - 42	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
43 - 43	328	240	868	7	1443 ←
PCT CLASS	22.73	16.63	60.15	0.49	100.00
PCT TOTAL	0.49	0.36	1.31	0.01	2.18
44 - 44	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
45 - 45	211	141	579	7	938 ←
PCT CLASS	22.49	15.03	61.73	0.75	100.00
PCT TOTAL	0.32	0.21	0.87	0.01	1.41
46 - 46	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
47 - 47	331	211	918	9	1469
PCT CLASS	22.53	14.36	62.49	0.61	100.00
PCT TOTAL	0.50	0.32	1.38	0.01	2.21
48 - 48	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
49 - 49	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
50 - 50	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
51 - 51	297	245	870	9	1421
PCT CLASS	20.90	17.24	61.22	0.63	100.00
PCT TOTAL	0.45	0.37	1.31	0.01	2.14

63-153°
 Cumulative Hours = 2,138
 Total Hours = 10,208
 $2,138 / 10,208 = 20.9\%$

APPENDIX 1
 Distribution Program Output
 Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 13
 03703.7002
 WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 62	63- 153	154- 360	361- 999	
52 - 52	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
53 - 53	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
54 - 54	266	242	905	6	1419
PCT CLASS	18.75	17.05	63.78	0.42	100.00
PCT TOTAL	0.40	0.36	1.36	0.01	2.14
55 - 55	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
56 - 56	282	243	901	13	1439
PCT CLASS	19.60	16.89	62.61	0.90	100.00
PCT TOTAL	0.43	0.37	1.36	0.02	2.17
57 - 57	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
58 - 58	290	244	902	5	1441
PCT CLASS	20.12	16.93	62.60	0.35	100.00
PCT TOTAL	0.44	0.37	1.36	0.01	2.17
59 - 59	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
60 - 60	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
61 - 61	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
62 - 62	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
63 - 63	257	235	915	6	1413
PCT CLASS	18.19	16.63	64.76	0.42	100.00
PCT TOTAL	0.39	0.35	1.38	0.01	2.13

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 14
03703.7002
WM(B)-04

11-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 62	63- 153	154- 360	361- 999	TOTAL
64 - 64	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
65 - 65	263	236	971	8	1478
PCT CLASS	17.79	15.97	65.70	0.54	100.00
PCT TOTAL	0.40	0.36	1.46	0.01	2.23
66 - 66	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
67 - 67	187	171	651	5	1014
PCT CLASS	18.44	16.86	64.20	0.49	100.00
PCT TOTAL	0.28	0.26	0.98	0.01	1.53
68 - 68	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
69 - 69	248	255	977	10	1490
PCT CLASS	16.64	17.11	65.57	0.67	100.00
PCT TOTAL	0.37	0.38	1.47	0.02	2.25
70 - 70	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
71 - 71	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
72 - 72	0	2	0	0	2
PCT CLASS	0.0	100.00	0.0	0.0	100.00
PCT TOTAL	0.0	0.00	0.0	0.0	0.00
73 - 73	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
74 - 74	240	245	970	10	1465
PCT CLASS	16.38	16.72	66.21	0.68	100.00
PCT TOTAL	0.36	0.37	1.46	0.02	2.21
75 - 75	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

63°-153°

← Cumulative Hours = 3,965
 Total Hours = 10,208
 $3,965 / 10,208 = \underline{38.8\%}$

APPENDIX 1
 Distribution Program Output
 Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 15
 03703.7002
 WM(B)-04
Wur

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)					TOTAL
	0- 62	63- 153	154- 360	361- 999		
76 - 76	226	229	969	8	1432	
PCT CLASS	15.78	15.99	67.67	0.56	100.00	
PCT TOTAL	0.34	0.35	1.46	0.01	2.16	
77 - 77	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
78 - 78	244	213	885	8	1350	
PCT CLASS	18.07	15.78	65.56	0.59	100.00	
PCT TOTAL	0.37	0.32	1.33	0.01	2.04	
79 - 79	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
80 - 80	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
81 - 81	189	228	912	8	1337	
PCT CLASS	14.14	17.05	68.21	0.60	100.00	
PCT TOTAL	0.28	0.34	1.37	0.01	2.02	
82 - 82	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
83 - 83	0	2	2	0	4	
PCT CLASS	0.0	50.00	50.00	0.0	100.00	
PCT TOTAL	0.0	0.00	0.00	0.0	0.01	
84 - 84	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
85 - 85	204	234	900	6	1344	
PCT CLASS	15.18	17.41	66.96	0.45	100.00	
PCT TOTAL	0.31	0.35	1.36	0.01	2.03	
86 - 86	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
87 - 87	202	221	943	4	1370	
PCT CLASS	14.74	16.13	68.83	0.29	100.00	
PCT TOTAL	0.30	0.33	1.42	0.01	2.07	

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 16
03703.7002
WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 62	63- 153	154- 360	361- 999	
88 - 88	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
89 - 89	140	145	636	5	926
PCT CLASS	15.12	15.66	68.68	0.54	100.00
PCT TOTAL	0.21	0.22	0.96	0.01	1.40
90 - 90	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
91 - 91	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
92 - 92	182	177	871	5	1235
PCT CLASS	14.74	14.33	70.53	0.40	100.00
PCT TOTAL	0.27	0.27	1.31	0.01	1.86
93 - 93	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
94 - 94	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
95 - 95	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
96 - 96	193	201	880	6	1280
PCT CLASS	15.08	15.70	68.75	0.47	100.00
PCT TOTAL	0.29	0.30	1.33	0.01	1.93
97 - 97	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
98 - 98	184	191	937	7	1319
PCT CLASS	13.95	14.48	71.04	0.53	100.00
PCT TOTAL	0.28	0.29	1.41	0.01	1.99
99 - 99	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 17
03703.7002
WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 62	63- 153	154- 360	361- 999	TOTAL
100 - 100	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
101 - 110	614	643	3411	14	4682
PCT CLASS	13.11	13.73	72.85	0.30	100.00
PCT TOTAL	0.93	0.97	5.14	0.02	7.06
111 - 120	352	385	2128	8	2873
PCT CLASS	12.25	13.40	74.07	0.28	100.00
PCT TOTAL	0.53	0.58	3.21	0.01	4.33
121 - 130	373	517	2822	20	3732
PCT CLASS	9.99	13.85	75.62	0.54	100.00
PCT TOTAL	0.56	0.78	4.25	0.03	5.63
131 - 1000	863	2355	12791	139	16148
PCT CLASS	5.34	14.58	79.21	0.86	100.00
PCT TOTAL	1.30	3.55	19.28	0.21	24.34
TOTAL	9824	10208	45055	1245	66332
PCT CLASS	14.81	15.39	67.92	1.88	100.00
PCT TOTAL	14.81	15.39	67.92	1.88	100.00

← Total Valid Observations

Total Hours for 63° → 153°

APPENDIX 1
Distribution Program Output
Unit 3 Containment Structure to Unit 3 Control Room Air Intake

P. 18
03703.7002
WM(B)-04

Ward

01-MAY-98JOB00106

```
1 //DISTRIB JOB (0031,3),'VIGEANT-SA',
  // MSGLEVEL=2,MSGCLASS=A
  //* RJETRAN.VIG7988.DATA(DISTRIB)
  /*JOBPARM ROOM=3
2 //METRDISK EXEC METRPROC
9 //DISK DD DISP=SHR,DSN=ENVIRONM.METDATA.MILSTONE.YR7481
12 //SYSIN DD * GENERATED STATEMENT
13 //DISTRIB EXEC PGM=DISTRB00,REGION=284K,TIME=1
14 //STEPLIB DD DSN=ENVIRONM.DISTRIB,DISP=SHR
15 //GO.FT06F001 DD DCB=PRINT1,SYSOBT=*
16 //GO.FT10F001 DD UNIT=DISK,DISP=(OLD,DELETE),DSN=&SAMPLE
17 //GO.FT05F001 DD *
18 //IMBLIST EXEC PGM=IMBLIST
19 //SYSPRINT DD SYSOUT=*
20 //SYSLIB DD DSN=ENVIRONM.DISTRIB,DISP=SHR
21 //SYSIN DD * GENERATED STATEMENT
```

JOB00106

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 1
03703.7002
WM(B)-04

Rev-2

STMT NO. MESSAGE
 2 IEF001I PROCEDURE METRPROC WAS EXPANDED USING SYSTEM LIBRARY SYS1.USER.PROCLIB
 ICH70001I VIG7988 LAST ACCESS AT 15:43:00 ON FRIDAY, MAY 1, 1998
 IEF236I ALLOC. FOR DISTRIB METRPROC METRDISK
 IGD103I SMS ALLOCATED TO DDNAME STEPLIB
 IEF237I JES2 ALLOCATED TO FT06F001
 IEF237I JES2 ALLOCATED TO SYSPRINT
 IGD103I SMS ALLOCATED TO DDNAME SYS010
 IGD101I SMS ALLOCATED TO DDNAME (SYS011)
 DSN (SYS98121.T154342.RA000.DISTRIB.SAMPLE.H01)
 STORCLAS (TEMP) MGMTCLAS () DATACLAS ()
 VOL SER NOS= VIO
 IEF237I JES2 ALLOCATED TO FT05F001
 IEF142I DISTRIB METRPROC METRDISK - STEP WAS EXECUTED - COND CODE 0000
 IGD104I ENVIRONM.METODOLOGY RETAINED, DDNAME=STEPLIB
 IEF285I VIG7988.DISTRIB.JOB00106.D0000104.? SYSOUT
 IEF285I VIG7988.DISTRIB.JOB00106.D0000105.? SYSOUT
 IGD104I ENVIRONM.METODATA.MILSTONE.YR7481 RETAINED, DDNAME=SYS010
 IGD106I SYS98121.T154342.RA000.DISTRIB.SAMPLE.H01 PASSED, DDNAME=SYS011
 IEF285I VIG7988.DISTRIB.JOB00106.D0000101.? SYSIN

 .JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 15.43.41, 05/01/98 V09 .
 .STEP NUMBER - 1, STEP NAME - METRPROC, PROGRAM NAME - METWR01 , RAN FROM 15.43.43 TO 15.43.45 .
 .ENDING CONDITION - RETURN CODE 0, REGION USED - 380K, PERFORMANCE GROUP - 20, SHAPS - 0 .
 .PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0 .
 .CPU TIME - .49 VECTOR TIME - .00 SECS, EXCPS -(352 NON-VIO, 1,169 VIO), CPU UNITS - 1.86 SECS .
 .SYSIN RECORDS - 3, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$3.10 .
 .EXCPS/DDNAME - 9/STEPLIB 343/SYS010 1,169/SYS011 .

 IEF373I STEP/METRPROC/START 1998121.1543
 IEF374I STEP/METRPROC/STOP 1998121.1543 CPU 0MIN 00.46SEC SRB 0MIN 00.02SEC VIRT 88K SYS 292K EXT 4K SYS 10132K
 IEF236I ALLOC. FOR DISTRIB DISTRIB
 IGD103I SMS ALLOCATED TO DDNAME STEPLIB
 IEF237I JES2 ALLOCATED TO FT06F001
 IGD103I SMS ALLOCATED TO DDNAME FT10F001
 IEF237I JES2 ALLOCATED TO FT05F001
 IEF142I DISTRIB DISTRIB - STEP WAS EXECUTED - COND CODE 0001
 IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=STEPLIB
 IEF285I VIG7988.DISTRIB.JOB00106.D0000106.? SYSOUT
 IGD105I SYS98121.T154342.RA000.DISTRIB.SAMPLE.H01 DELETED, DDNAME=FT10F001
 IEF285I VIG7988.DISTRIB.JOB00106.D0000102.? SYSIN

 .JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 15.43.41, 05/01/98 V09 .
 .STEP NUMBER - 2, STEP NAME - DISTRIB , PROGRAM NAME - DISTRB00, RAN FROM 15.43.45 TO 15.43.49 .
 .ENDING CONDITION - RETURN CODE 1, REGION USED - 340K, PERFORMANCE GROUP - 20, SHAPS - 0 .
 .PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0 .
 .CPU TIME - 2.34 VECTOR TIME - .00 SECS, EXCPS -(8 NON-VIO, 1,170 VIO), CPU UNITS - 3.40 SECS .
 .SYSIN RECORDS - 16, OPENS - (0 TAPE, 0 TEMP, 0 PERM), COST = \$5.67 .
 .EXCPS/DDNAME - 8/STEPLIB 1,170/FT10F001 .

 IEF373I STEP/DISTRIB /START 1998121.1543
 IEF374I STEP/DISTRIB /STOP 1998121.1543 CPU 0MIN 02.33SEC SRB 0MIN 00.01SEC VIRT 64K SYS 276K EXT 4K SYS 10140K
 IEF236I ALLOC. FOR DISTRIB IMBLIST
 IEF237I JES2 ALLOCATED TO SYSPRINT
 IGD103I SMS ALLOCATED TO DDNAME SYSLIB
 IEF237I JES2 ALLOCATED TO SYSIN
 IEF142I DISTRIB IMBLIST - STEP WAS EXECUTED - COND CODE 0008
 IEF285I VIG7988.DISTRIB.JOB00106.D0000107.? SYSOUT
 IGD104I ENVIRONM.DISTRIB RETAINED, DDNAME=SYSLIB



IEF285I VIG7988.DISTRIB.JOB00106.D0000103.?

SYSIN

```
.....V09 .
.JOB - DISTRIB , SUBMITTER - VIGEANT-SA , FLOOR - 3 , READER TIME, DATE - 15.43.41, 05/01/98
.STEP NUMBER - 3, STEP NAME - IMBLIST , PROGRAM NAME - IMBLIST , RAN FROM 15.43.49 TO 15.43.49
.ENDING CONDITION - RETURN CODE 8, REGION USED - 428K, PERFORMANCE GROUP - 20, SHAPS - 0
.PAGEINS - 0, PAGEOUTS - 0, VIO PAGEINS - 0, VIO PAGEOUTS - 0
.CPU TIME - .03 VECTOR TIME - .00 SECS, EXCPS -( 0 NON-VIO, 0 VIO), CPU UNITS - .03 SECS
.SYSIN RECORDS - 1, OPENS - ( 0 TAPE, 0 TEMP, 0 PERM), COST = $0.05
.....
IEF373I STEP/IMBLIST /START 1998121.1543
IEF374I STEP/IMBLIST /STOP 1998121.1543 CPU 0MIN 00.03SEC SRB 0MIN 00.00SEC VIRT 156K SYS 272K EXT 4K SYS 10044K
IEF375I JOB/DISTRIB /START 1998121.1543
IEF376I JOB/DISTRIB /STOP 1998121.1543 CPU 0MIN 02.82SEC SRB 0MIN 00.03SEC
.....
.TOTAL CPU TIME - 2.86 SECS, TOTAL VECTOR TIME - .00 SECS, TOTAL CPU UNITS - 5.29 SECS
.TOTAL EXCPS -( 360 NON-VIO, 2,339 VIO)
.TOTAL JOB COST EXCLUDING PRINT CHARGES = $8.82 CHARGED TO AUTH = 0031 , JO/HO = 022685067
.....
```

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 3
03703.7002
WM(B)-04

WV



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: SITE DATA RETREIVAL PROGAM
VERSION OF PROGRAM: 00
LINK EDIT DATE (JULIAN): 80.184
DATE OF RUN (MO/DAY/YR): 5/01/98
JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-112
LEVEL OF PROGRAM: 01
LINK EDIT TIME (HRS.MINS.SECs): 14.21.36
TIME OF RUN (MILITARY): 1543
JOB00106

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 4
03703.7002
WM(B)-04

Handwritten signature

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

CARD#	1	2	3	4	5	6	7	8
1								
2	111	112						
3	74001	81365						
CARD#	1	2	3	4	5	6	7	8

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 5
03703.7002
WM(B)-04

WV

INPUT TO METONER PROGRAM

2
111 112
74001 81365

EOF OF INPUT DATA REACHED

NUMBER OF CARDS SELECTED = 5844

NUMBER OF DAYS SELECTED = 2922

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 6
03703.7002
WM(B)-04

W-0



STONE & WEBSTER ENGINEERING CORPORATION
ENVIRONMENTAL ENGINEERING DIVISION

COMPUTER CODE IDENTIFICATION

PROGRAM NAME: FREQ OF OCCUR OF TWO PARAMETERS

VERSION OF PROGRAM: 00

LOAD MODULE: ENVIRONM.DISTRIB

LINK EDIT DATE (JULIAN): 81.182

DATE OF RUN (MO/DAY/YR): 5/01/98

JOB NAME OF RUN: DISTRIB

LIBRARY REFERENCE NUMBER: EN-200

LEVEL OF PROGRAM: 00

MEMBER (PGM): DISTRB00

LINK EDIT TIME (HRS.MINS.SECONDS): 12.11.26

TIME OF RUN (MILITARY): 1543

JOB00106

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 7
03703.7002
WMB(B)-04

WMB

INPUT DATA TRACEBACK

DATA SUBMITTED ON DEVICE: 5

CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

1 2

2 MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA

3 33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION

4 WIND DIRECTION (DEGREES) 3 0 999

5 70 185 360

6 0

7 WIND SPEED (MPH) (TENTHS) 99 0 1000

8 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

9 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

10 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

11 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84

12 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 110 120 130 140

13 1 999

14 74

15 7400181365 0 0

16 112 0.0 0.0 111 0.0 0.0

CARD# ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

***** END OF INPUT ON DEVICE 5 *****

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 8
03703.7002
WM(B)-04

W-0

***** SITE WEATHER DATA *****

FIRST YEAR = 1974, JSYR = 74001, JNYR = 81365, JM01 = 0, JM02 = 0

TOP PARAMETER CODE = 112 MULT = 1.00000 ADD = 0.0

SIDE PARAMETER CODE = 111 MULT = 1.00000 ADD = 0.0

FIRST DATE RETURNED = 74001

LAST DATE RETURNED = 81365

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 9
03703.7002
WMM(B)-04

WMM

MILLSTONE NUCLEAR POWER STATION 1974 - 1981 ONSITE DATA
33-FT WIND DIRECTION VS. 33-FT WIND SPEED DISTRIBUTION

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 70	71- 185	186- 360	361- 999	TOTAL
0 - 5	0	0	0	87	87
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.13	0.13
6 - 6	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
7 - 7	0	0	0	123	123
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.19	0.19
8 - 8	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
9 - 9	0	0	0	237	237
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.36	0.36
10 - 10	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
11 - 11	0	0	0	367	367
PCT CLASS	0.0	0.0	0.0	100.00	100.00
PCT TOTAL	0.0	0.0	0.0	0.55	0.55
12 - 12	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
13 - 13	165	123	233	14	535
PCT CLASS	30.84	22.99	43.55	2.62	100.00
PCT TOTAL	0.25	0.19	0.35	0.02	0.81
14 - 14	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
15 - 15	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 10
03703.7002
WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 70	71- 185	186- 360	361- 999	
16 - 16	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
17 - 17	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
18 - 18	237	162	311	11	721
PCT CLASS	32.87	22.47	43.13	1.53	100.00
PCT TOTAL	0.36	0.24	0.47	0.02	1.09
19 - 19	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
20 - 20	258	201	349	13	821
PCT CLASS	31.43	24.48	42.51	1.58	100.00
PCT TOTAL	0.39	0.30	0.53	0.02	1.24
21 - 21	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
22 - 22	220	175	272	6	673
PCT CLASS	32.69	26.00	40.42	0.89	100.00
PCT TOTAL	0.33	0.26	0.41	0.01	1.01
23 - 23	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
24 - 24	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
25 - 25	292	232	463	11	998
PCT CLASS	29.26	23.25	46.39	1.10	100.00
PCT TOTAL	0.44	0.35	0.70	0.02	1.50
26 - 26	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
27 - 27	0	0	1	0	1
PCT CLASS	0.0	0.0	100.00	0.0	100.00
PCT TOTAL	0.0	0.0	0.00	0.0	0.00

$71^{\circ} \rightarrow 185^{\circ}$
 ← Cumulative Hours = 661
 Total Hours = 12,724
 $661 / 12,724 = 5.2\%$

APPENDIX 2
 Distribution Program Output
 Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 11
 03703.7002
 WM(B)-04

RUC

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 70	71- 185	186- 360	361- 999	
28 - 28	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
29 - 29	346	303	514	8	1171
PCT CLASS	29.55	25.88	43.89	0.68	100.00
PCT TOTAL	0.52	0.46	0.77	0.01	1.77
30 - 30	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
31 - 31	315	309	530	6	1160
PCT CLASS	27.16	26.64	45.69	0.52	100.00
PCT TOTAL	0.47	0.47	0.80	0.01	1.75
32 - 32	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
33 - 33	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
34 - 34	352	309	610	10	1281
PCT CLASS	27.48	24.12	47.62	0.78	100.00
PCT TOTAL	0.53	0.47	0.92	0.02	1.93
35 - 35	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
36 - 36	366	298	694	11	1369
PCT CLASS	26.73	21.77	50.69	0.80	100.00
PCT TOTAL	0.55	0.45	1.05	0.02	2.06
37 - 37	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
38 - 38	0	1	1	0	2
PCT CLASS	0.0	50.00	50.00	0.0	100.00
PCT TOTAL	0.0	0.00	0.00	0.0	0.00
39 - 39	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

71° → 185°

Cumulative Hours = 1,196

Total Hours = 12,724

1,196 / 12,724 = 9.4%

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 12
03703.7002
WM(B)-04

WFO

WIND SPEED
(MPH)
(TENTHS)

WIND DIRECTION (DEGREES)

0- 70 71- 185 186- 360 361- 999 TOTAL

40 - 40	304	309	701	8	1322
PCT CLASS	23.00	23.37	53.03	0.61	100.00
PCT TOTAL	0.46	0.47	1.06	0.01	1.99
41 - 41	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
42 - 42	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
43 - 43	347	334	755	7	1443
PCT CLASS	24.05	23.15	52.32	0.49	100.00
PCT TOTAL	0.52	0.50	1.14	0.01	2.18
44 - 44	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
45 - 45	219	209	503	7	938
PCT CLASS	23.35	22.28	53.62	0.75	100.00
PCT TOTAL	0.33	0.32	0.76	0.01	1.41
46 - 46	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
47 - 47	343	303	814	9	1469
PCT CLASS	23.35	20.63	55.41	0.61	100.00
PCT TOTAL	0.52	0.46	1.23	0.01	2.21
48 - 48	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
49 - 49	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
50 - 50	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
51 - 51	312	338	762	9	1421
PCT CLASS	21.96	23.79	53.62	0.63	100.00
PCT TOTAL	0.47	0.51	1.15	0.01	2.14

71° → 185°

Cumulative Hours = 2,422

Total Hours = 12,724

2,422 / 12,724 = 19.0%

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 13
03703.7002
WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 70	71- 185	186- 360	361- 999	
52 - 52	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
53 - 53	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
54 - 54	274	333	806	6	1419
PCT CLASS	19.31	23.47	56.80	0.42	100.00
PCT TOTAL	0.41	0.50	1.22	0.01	2.14
55 - 55	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
56 - 56	298	309	819	13	1439
PCT CLASS	20.71	21.47	56.91	0.90	100.00
PCT TOTAL	0.45	0.47	1.23	0.02	2.17
57 - 57	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
58 - 58	309	325	802	5	1441
PCT CLASS	21.44	22.55	55.66	0.35	100.00
PCT TOTAL	0.47	0.49	1.21	0.01	2.17
59 - 59	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
60 - 60	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
61 - 61	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
62 - 62	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
63 - 63	269	313	825	6	1413
PCT CLASS	19.04	22.15	58.39	0.42	100.00
PCT TOTAL	0.41	0.47	1.24	0.01	2.13

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 14
03703.7002
WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				
	0- 70	71- 185	186- 360	361- 999	TOTAL
64 - 64	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
65 - 65	274	308	888	8	1478
PCT CLASS	18.54	20.84	60.08	0.54	100.00
PCT TOTAL	0.41	0.46	1.34	0.01	2.23
66 - 66	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
67 - 67	194	210	605	5	1014
PCT CLASS	19.13	20.71	59.66	0.49	100.00
PCT TOTAL	0.29	0.32	0.91	0.01	1.53
68 - 68	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
69 - 69	263	317	900	10	1490
PCT CLASS	17.65	21.28	60.40	0.67	100.00
PCT TOTAL	0.40	0.48	1.36	0.02	2.25
70 - 70	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
71 - 71	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
72 - 72	0	2	0	0	2
PCT CLASS	0.0	100.00	0.0	0.0	100.00
PCT TOTAL	0.0	0.00	0.0	0.0	0.00
73 - 73	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
74 - 74	256	301	898	10	1465
PCT CLASS	17.47	20.55	61.30	0.68	100.00
PCT TOTAL	0.39	0.45	1.35	0.02	2.21
75 - 75	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

$71^{\circ} \rightarrow 185^{\circ}$
 Cumulative Hours = 5,194
 Total Hours = 12,724
 $5,194 / 12,724 = 40.8\%$

Nur 1

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 70	71- 185	186- 360	361- 999	
76 - 76	248	259	917	8	1432
PCT CLASS	17.32	18.09	64.04	0.56	100.00
PCT TOTAL	0.37	0.39	1.38	0.01	2.16
77 - 77	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
78 - 78	263	266	813	8	1350
PCT CLASS	19.48	19.70	60.22	0.59	100.00
PCT TOTAL	0.40	0.40	1.23	0.01	2.04
79 - 79	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
80 - 80	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
81 - 81	204	269	856	8	1337
PCT CLASS	15.26	20.12	64.02	0.60	100.00
PCT TOTAL	0.31	0.41	1.29	0.01	2.02
82 - 82	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
83 - 83	0	2	2	0	4
PCT CLASS	0.0	50.00	50.00	0.0	100.00
PCT TOTAL	0.0	0.00	0.00	0.0	0.01
84 - 84	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
85 - 85	213	282	843	6	1344
PCT CLASS	15.85	20.98	62.72	0.45	100.00
PCT TOTAL	0.32	0.43	1.27	0.01	2.03
86 - 86	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0
87 - 87	224	255	887	4	1370
PCT CLASS	16.35	18.61	64.74	0.29	100.00
PCT TOTAL	0.34	0.38	1.34	0.01	2.07

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 16
03703.7002
WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)					TOTAL
	0- 70	71- 185	186- 360	361- 999		
88 - 88	0	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	0.0
89 - 89	150	175	596	5	926	
PCT CLASS	16.20	18.90	64.36	0.54	100.00	
PCT TOTAL	0.23	0.26	0.90	0.01	1.40	
90 - 90	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
91 - 91	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
92 - 92	190	213	827	5	1235	
PCT CLASS	15.38	17.25	66.96	0.40	100.00	
PCT TOTAL	0.29	0.32	1.25	0.01	1.86	
93 - 93	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
94 - 94	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
95 - 95	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
96 - 96	205	236	833	6	1280	
PCT CLASS	16.02	18.44	65.08	0.47	100.00	
PCT TOTAL	0.31	0.36	1.26	0.01	1.93	
97 - 97	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	
98 - 98	198	223	891	7	1319	
PCT CLASS	15.01	16.91	67.55	0.53	100.00	
PCT TOTAL	0.30	0.34	1.34	0.01	1.99	
99 - 99	0	0	0	0	0	
PCT CLASS	0.0	0.0	0.0	0.0	0.0	
PCT TOTAL	0.0	0.0	0.0	0.0	0.0	

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 17
03703.7002
WM(B)-04

W-0

WIND SPEED (MPH) (TENTHS)	WIND DIRECTION (DEGREES)				TOTAL
	0- 70	71- 185	186- 360	361- 999	

100 - 100	0	0	0	0	0
PCT CLASS	0.0	0.0	0.0	0.0	0.0
PCT TOTAL	0.0	0.0	0.0	0.0	0.0

101 - 110	654	767	3247	14	4682
PCT CLASS	13.94	16.38	69.35	0.30	100.00
PCT TOTAL	0.99	1.16	4.90	0.02	7.06

111 - 120	382	439	2044	8	2873
PCT CLASS	13.30	15.28	71.15	0.28	100.00
PCT TOTAL	0.58	0.66	3.08	0.01	4.33

121 - 130	421	569	2722	20	3732
PCT CLASS	11.28	15.25	72.94	0.54	100.00
PCT TOTAL	0.63	0.86	4.10	0.03	5.63

131 - 1000	975	2745	12289	139	16148
PCT CLASS	6.04	17.00	76.10	0.86	100.00
PCT TOTAL	1.47	4.14	18.53	0.21	24.34

TOTAL	10540	12724	41823	1245	66332
PCT CLASS	15.89	19.18	63.05	1.88	100.00
PCT TOTAL	15.89	19.18	63.05	1.88	100.00

← Total Valid Observations (All Sectors)

Total Hours of Winds Between 71° → 185°

APPENDIX 2
Distribution Program Output
Unit 3 Turbine Bldg. Vent to Unit 3 Control Room Air Intake

P. 18
03703.7002
WM(B)-04

WV-C

Attachment 5

Millstone Nuclear Power Station, Unit No. 3

AFFIDAVIT from Stone & Webster Engineering Corp. to Withhold Proprietary
Information

and

Edited Revision 1 of

ANALYSIS OF CONTAINMENT MIZING RATE DURING A DESIGN BASIS LOCA
by Stone & Webster Engineering Corporation
© Stone & Webster Engineering Corporation, 1999,2000

VIA TELECOPY AND NEXT-DAY DELIVERY

Mr. Raymond P. Necci
Vice President – Nuclear Technical Services
Northeast Utilities Service Company
Millstone Nuclear Power Station
P.O. Box 128
Waterford, Connecticut 06385

July 5, 2000

SRE-MP3-0003

**SUBJECT: Request for Withholding from the Public Record
Containment Mixing Model Derivation and Application
MILLSTONE NUCLEAR POWER STATION - UNIT 3**

References: 1. ***Analysis of Containment Mixing Rate During A Design Basis Accident by*** Stone & Webster Engineering Corporation, Revision 4

Dear Mr. Necci:

With this letter, Stone & Webster transmits to ref. 1 to Northeast Utilities and requests that this document be withheld from public disclosure in accordance with 10 CFR Part 2, Subpart G, Section 2.790 a (4) and that it be transmitted to the NRC in confidence. We are requesting Northeast Utilities' cooperation in seeking an exemption from public records disclosure for this material, for commercial reasons.

The following information is provided to support classification of ref. 1 as proprietary or privileged commercial as contemplated in the above-noted regulation:

- In previous correspondence, Stone & Webster stated that an earlier revision of ref. 1 document contents cannot be released to third parties without authorization.
- The methodology described in ref. 1 provides the basis for increasing the effectiveness credit for containment spray system in the fission product cleanup function. In very restrictive cases, the model provides the basis for avoiding redesign of the spray system. This makes the Stone & Webster Mixing Model commercially "valuable" to our company.
- The proprietary information contained in this document is not available through public sources.
- The Stone & Webster Mixing Model was developed at an estimated cost to the company of \$250,000.

- The Stone & Webster Mixing Model constitutes a trade secret and an advancement in the state of the art, and therefore provides this company with a competitive advantage in obtaining and performing similar design projects. Making this model available to the public will forfeit this company's hard-earned competitive advantage.

If you have any questions or require any additional information, please contact Frank Elia at 617-589-7225.

Very truly yours,



James T. Callahan
Senior Vice President

cc: F. Elia 245/6
J. T. Creamer 245/7
J. S. Lunde 245/6
C. Zappile Chill/30R

COMMONWEALTH OF MASSACHUSETTS
COUNTY OF SUFFOLK

**AFFIDAVIT OF JAMES CALLAHAN IN SUPPORT OF APPLICATION FOR WITHHOLDING
PURSUANT TO 10 C.F.R. PART 2, SUBPART G, SECTION 2.790**

James T. Callahan, being duly sworn, does hereby depose and state:

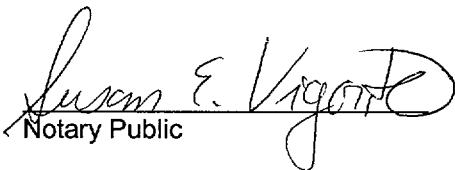
1. I hold the position of Senior Vice President of Stone & Webster Engineering Corporation, and I am authorized to make the request for withholding accompanying this affidavit.
2. The work underlying the information in question was performed under my authority, and I am responsible for the engineering divisions (s) performing the work.
3. The information that we request be withheld appears in a letter dated July 5, 2000 from the undersigned to Mr. Raymond P. Necce of Northeast Utilities Service Company (letter number SRE-MP3-0003). It comprises this company's analysis of containment mixing rate during a design basis accident.
4. The analysis identified above constitutes a novel advance in the state of the art for such analysis, and as such constitutes a source of competitive advantage for our company in the competition and performance of such work in the industry.

Further affiant sayeth not.



James T. Callahan, Senior Vice President
Stone & Webster Engineering Corporation

Signed and sworn before me this 5th day of July, 2000


Notary Public

SUSAN E. VIGORITO

Notary Public

My Commission Expires October 18, 2002