FENOC
FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
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July 1, 2009
L-09-140

10 CFR 50.36(a)

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

SUBJECT:
Beaver Valley Power Station Unit Nos. 1 and 2
Docket No. 50-334, License No. DPR-66
Docket No. 50-412, License No. NPF-73
Submittal of *2008 Radioactive Effluent Release Report / 2008 Annual Radiological Environmental Operating Report, Revision 1*

In accordance with 10 CFR 50.36(a) and Beaver Valley Power Station (BVPS) Unit Nos. 1 and 2 Technical Specifications, FirstEnergy Nuclear Operating Company (FENOC) submitted the BVPS *2008 Radioactive Effluent Release Report and 2008 Annual Radiological Environmental Operating Report* by letter dated April 28, 2009. These reports were provided in a single enclosure.

After submittal, it was identified that the Executive Summary and Index section was inadvertently left out of the *2008 Annual Radiological Environmental Operating Report*. FENOC hereby submits Revision 1 of the BVPS *2008 Radioactive Effluent Release Report and 2008 Annual Radiological Environmental Operating Report*, which includes the *2008 Annual Radiological Environmental Operating Report* Executive Summary and Index. These reports are provided in a single enclosure.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager - Fleet Licensing, at (330) 761-6071.

Sincerely,

Peter P. Sena III

IE48
IE25
NRR

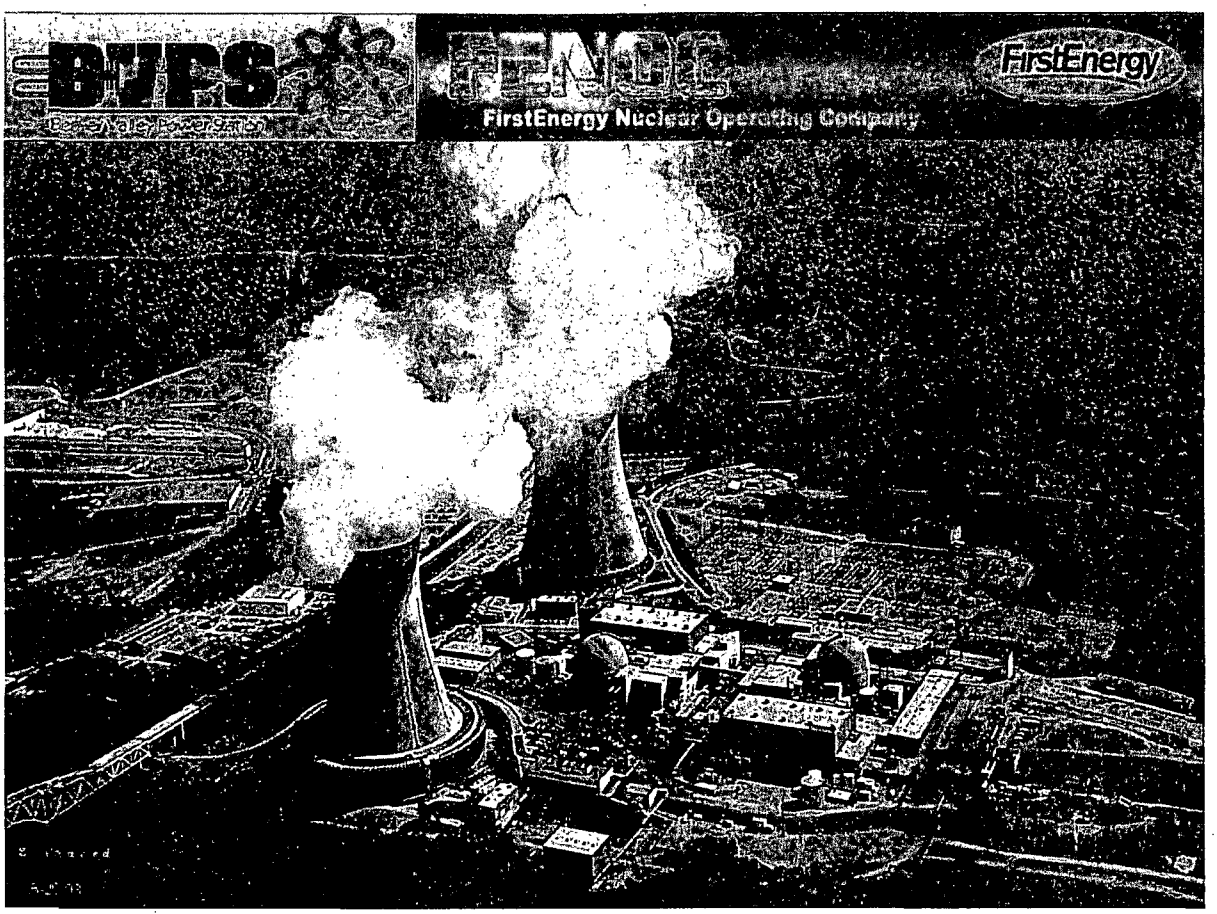
Enclosure:
2008 Radioactive Effluent Release Report and 2008 Annual Radiological Environmental Operating Report, Revision 1

cc: NRC Region I Administrator
NRC Resident Inspector
NRR Project Manager
Director BRP/DEP
Site BRP/DEP Representative

RTL# A9.690E

FIRSTENERGY NUCLEAR OPERATING COMPANY

BEAVER VALLEY POWER STATION



2008 RADIOACTIVE EFFLUENT RELEASE REPORT

AND

2008 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

REVISION 1

UNITS NO. 1 AND 2

LICENSES DPR-66 AND NPF-73

RTL A9.690E
Enclosure 1

BEAVER VALLEY POWER STATION

ENVIRONMENTAL & CHEMISTRY SECTION

Technical Report Approval:

2008 RADIOACTIVE EFFLUENT RELEASE REPORT

AND

2008 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

REVISION 1

UNITS NO. 1 AND 2

LICENSES DPR-66 AND NPF-73

Prepared by: Jennifer L. Powell-Campbell J Powell Campbell Date: 5-11-09

Prepared by: Anthony T. Lonnett A Lonnett Date: 05-11-09

Reviewed by: Michael D. Banko III Donald J Salera FOR MDB Date: 5-14-09

Approved by: Donald J. Salera Donald J Salera Date: 5-14-09

RTL A9.690E
Enclosure 1

BEAVER VALLEY POWER STATION

ENVIRONMENTAL & CHEMISTRY SECTION

Technical Report Approval:

2008 RADIOACTIVE EFFLUENT RELEASE REPORT

AND

2008 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

UNITS NO. 1 AND 2

LICENSES DPR-66 AND NPF-73

Prepared by: Jennifer L. Powell-Campbell J L Powell-Campbell Date: 04-03-09

Prepared by: Anthony T. Lonnett A Lonnett Date: 04-02-09

Reviewed by: Michael D. Banko III Date: 4/07/09

Approved by: Donald J. Salera Donald J Salera Date: 4-9-09

Subject: **Beaver Valley Power Station, Unit Nos. 1 and 2**
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Radioactive Effluent Release Report for 2008, and
Annual Radiological Environmental Operating Report for 2008

Distribution for Enclosures 1 - 3:

Original Report to:

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

Copies of Report to Other USNRC:

U. S. Nuclear Regulatory Commission
Ms. N. S. Morgan, NRR Project Manager

U. S. Nuclear Regulatory Commission
Mr. D. L. Werkheiser, NRC Senior Resident Inspector

U. S. Nuclear Regulatory Commission
Mr. S. J. Collins, NRC Region I Administrator

Copies of Report to Other Agencies:

American Nuclear Insurers
95 Glastonbury Boulevard
Glastonbury, CT 06033

Department of Environmental Protection (5 copies)
Bureau of Radiation Protection & Toxicology
P.O. Box 2063
Harrisburg, PA 17120

Department of Environmental Protection (2 copies)
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222

INPO (Attn: Bill Nestel)
700 Galleria Parkway SE
Suite 100
Atlanta, GA 30339-5957

Beaver County Cooperative Extension (Attn: JL Miller)
156 Cowpath Road
Aliquippa, PA 15001-5842

Hancock County Office of Emergency Services (Attn: JP Jones)
PO Box 884
New Cumberland, WV 20647

Ohio Department of Health (Attn: RL Suppes)
246 North High Street
Columbus, OH 43266-0288

Ohio Emergency Management Agency (Attn: Carol O'Claire)
2855 West Dublin Granville Road
Columbus, OH 43235

East Liverpool Water Authority (Attn: Keith Clark)
2220 Michigan Avenue
East Liverpool, OH 43920

ORSANCO (Attn: Jerry Schulte)
5735 Kellogg Avenue
Cincinnati, OH 45228

B. F. Jones Memorial Library
663 Franklin Avenue
Aliquippa, PA 15001

Mr. Robert Leidy, HP3
Bureau of Radiation Protection
Ohio Department of Health
Northeast District Office
161 South High Street, Suite 400
Akron, OH 44308-1612

Copies of Report for FENOC Addressees:

MD Banko, BVPS; Supervisor, Nuclear Chemistry Services (A-BV-A)
JL Powell-Campbell, BVPS; Chemistry RETS & REMP Administrator (A-BV-A) 15 copies
DJ Salera, BVPS; Manager, Site Chemistry (A-BV-A)
K Nevins, Akron; Sr. Nuclear Specialist, Fleet Licensing (A-GO-2) 2 copies
FA Cocivera, BVPS; Sr. Nuclear Specialist, Operations Oversight (A-BV-NCD3)
DV Steen, Akron; Vice President, Environmental (A-GO-13)
DW Jenkins, Akron; Sr. Attorney, Legal (A-GO-18)
M Hall, Akron; Vice President, Energy Policy (A-GO-18)
MJ Jirousek, Akron; Manager, Environmental Reporting & Performance (A-GO-13)
M Dues, Perry NPP RETS Administrator (A-PY-CCB125)
JP Balstad, Perry NPP REMP Administrator (A-PY-CCB125)
AM Percival, Davis-Besse RETS & REMP Administrator (A-DB-1041)
B Grob, Manager, Environmental, Inc.
RJ Dinello, Field Specialist, Environmental, Inc

BVPS Document Control, RTL A9.690E
BVRC - *Keywords: Radioactive Effluent Release Report,*
Annual Radiological Environmental Operating Report

Form 1/2-ENV-01.05.F01 (page 1 of 38), Rev 2
Beaver Valley Power Station - Units 1 & 2

2008 Radioactive Effluent Release Report

FirstEnergy Nuclear Operating Company
FENOC

Beaver Valley Power Station - Units 1 & 2
Unit 1 License No. DPR-66
Unit 2 License No. NPF-73

Radioactive Effluent Release Report

Calendar Year - 2008

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Note: The Total Error values (%) listed in this report are documented in Calculation Package No. ERS-ATL-04-002

Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Report Submittal Requirements

Report Submittal and Requirements: The report was prepared and submitted in accordance with the requirements contained in the following documents:

BVPS Integrated Technical Specifications, Administrative Control 5.6.2

Offsite Dose Calculation Manual (ODCM) procedure 1/2-ODC-3.03, "*Controls for RETS and REMP Programs*", Attachment U, Control 6.9.3

BVPS procedure 1/2-ENV-01.05, "*Compliance with Regulatory Guide 1.21 and Technical Specifications*"

NUREG-1301, "*Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors, Generic Letter 89-01, Supplement No.1, April 1991*"

Regulatory Guide 1.21, "*Measuring Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Material in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants, Revision 1, June 1974*"

BVPS Condition Report No. CR08-38484, and BVPS-SAP Order Number 200197646-0500 are associated with reporting of the failure to change out weekly filter media on gaseous effluent pathway radiation monitors.

BVPS Condition Report No. CR08-49089, and BVPS-SAP Order Number 200197646-0680 are associated with reporting of the failure to obtain a grab sample when a gaseous effluent pathway radiation monitor was inoperable.

BVPS Condition Report No. CR08-50899, and BVPS-SAP Order Number 200197646-0700 are associated with reporting the failure to return a liquid effluent radiation monitor to service withn 30 days.

BVPS Condition Report No. CR09-56073, and BVPS-SAP Order Number 200197646-0800 are associated with reporting the failure to return a gaseous effluent radiation monitor to service withn 30 days.

Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Liquid and Gaseous Effluent Control (Part 1 of 2)

Onsite Groundwater Monitoring: Tritium results from two (2) of seventeen (17) wells were >2000 pCi/L, which are similar to results initially communicated in 2007. All gamma spectrometry analyses were <LLD. No adverse effect has been detected in offsite groundwater, drinking water and surface water.

Onsite Spills: There were no onsite spills >100 gallons.

Decommissioning File Update: There were no items added to the site decommissioning files in accordance with 10CFR50.75(g).

Abnormal Liquid Releases: There were no abnormal liquid releases.

Abnormal Gaseous Releases: There were no abnormal gaseous releases.

Liquid Radwaste Treatment System: The site operated via a shared Liquid Radwaste Treatment System, even though each Unit has its own ion-exchange vessels. Shared operation allowed either Unit to process liquid waste at the Unit of origin, or at the other Unit. Typically, when Unit 1 or 2 high level liquid waste was processed (e.g., coolant recovery waste) it was performed at Unit 1, because it has a carbon pre-conditioning filter.

Gaseous Radwaste Treatment System: The site operated via a shared Gaseous Radwaste Treatment System, even though each Unit has its own charcoal delay beds and storage/decay tanks. Shared operation allowed either Unit to process gaseous waste at the Unit of origin, or at the other Unit. Typically, when Unit 1 or 2 went to a shutdown condition, the gaseous waste was transferred for storage and decay at Unit 2, because Unit 2 has four (4) additional storage tanks.

Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Liquid and Gaseous Effluent Control (Part 2 of 2)

Lower Limits of Detectability (LLD): All a-priori calculated LLD met the minimum requirements specified in the ODCM.

Effluent Monitoring Channels Inoperable >30 Days: There were two (2) Effluent Monitoring Instrumentation Channels not returned to Operable status within 30 days. They are described in table 6

ODCM Surveillance Deficiencies: There were two ODCM Surveillance Deficiencies. They are described in table 8.

ODCM Changes: There were no changes made to the ODCM.

Meteorological Data Recovery: The Meteorological Data Recovery met the minimum requirement of at-least 90%, as specified in Section 5 of Revision 1 to Regulatory Guide 1.23, Meteorological Monitoring Programs for Nuclear Power Plants.

Population Dose vs. Natural Background: The 0-50 mile total and average population doses were calculated using liquid and gaseous release quantities and real time meteorology. The average population dose is based on four (4) million people within 0-50 miles of the BVPS site. The following comparison to natural background radiation demonstrates that BVPS operations did not adversely affect the surrounding environment.

564 man-mrem =BVPS Total Population Dose for the year

0.0001365 mrem = BVPS Average Individual Dose for the year

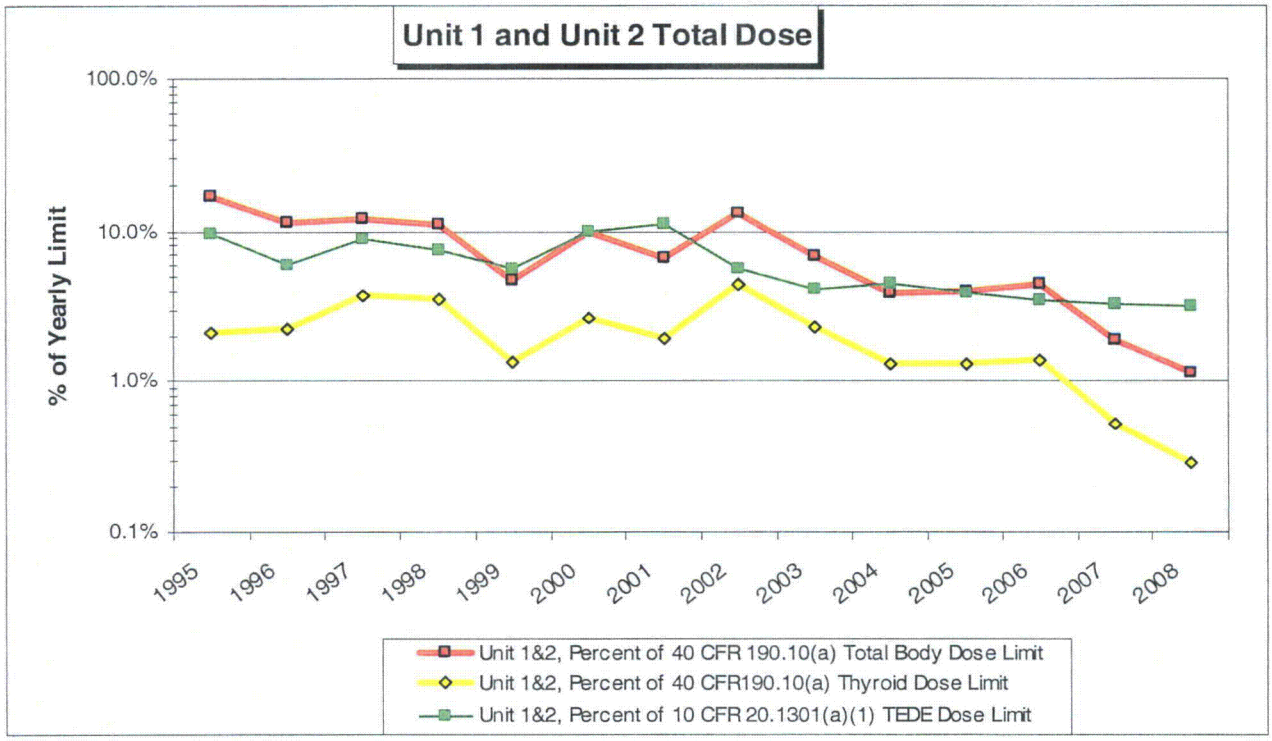
296 mrem = Natural Background Individual Dose for the year. This dose value is documented as natural background radiation exposure for an individual in a year from the 1990 BEIR V Report.

Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Total Dose

Trends of Total Dose: The following graph provides a comparison of the ODCM dose projections from all facility releases and direct radiation exposures to show compliance with Member of the Public dose limits from 10 CFR 20.1301 and 40 CFR Part 190. The graph reflects the results of the efforts to stabilize and reduce offsite dose.

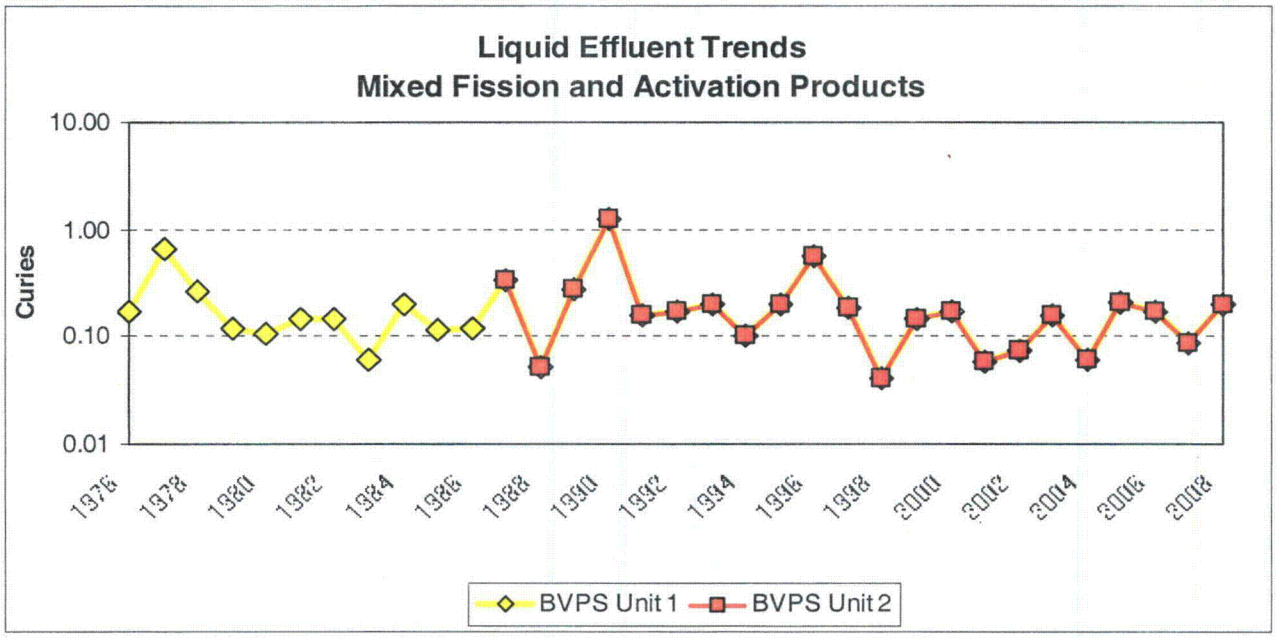


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Liquid Release Activity (Fission and Activation Products)

Liquid Release Activity (Fission and Activation Products): The following graph provides a comparison of total liquid mixed fission and activation product (particulate) radioactivity discharged from the site from 1976 to present. The recent increases were due to efforts to reduce overall offsite dose. Specifically, discharging liquid radioactive inventory provided the benefit of reduced total offsite dose, due to reduction in evaporative losses from the fuel pools.

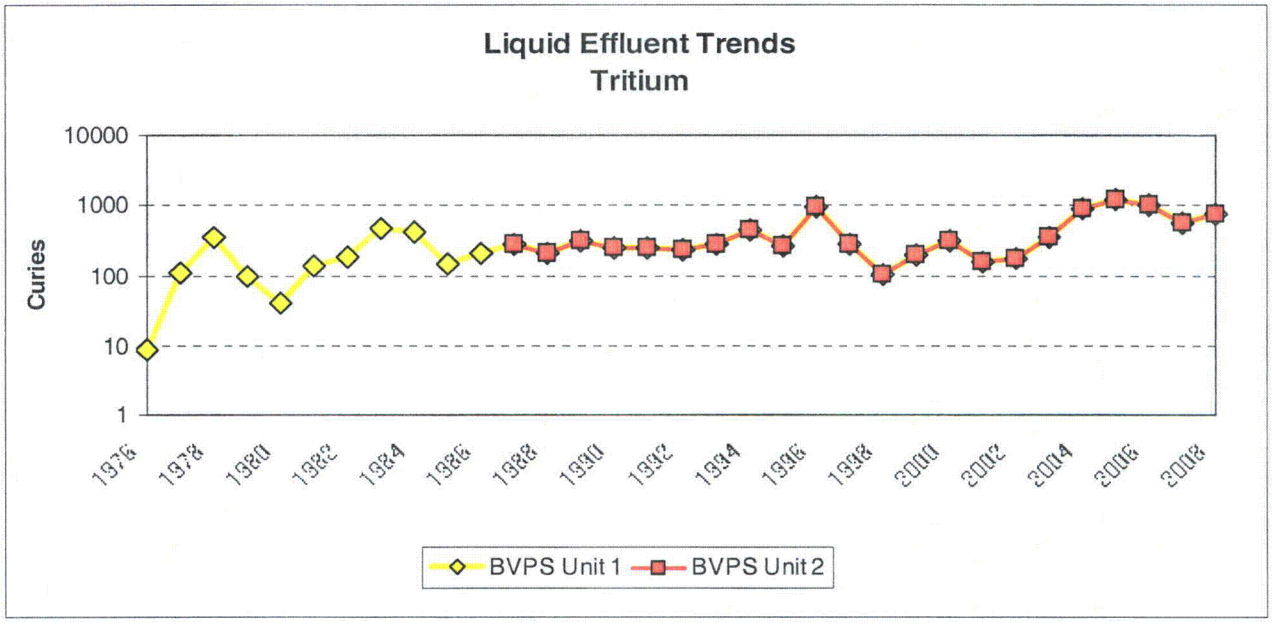


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Liquid Release Activity (Tritium)

Liquid Release Activity (Tritium): The following graph provides a comparison of total liquid tritium radioactivity discharged from the site from 1976 to present. The recent increases were due to efforts to reduce overall offsite dose. Specifically, discharging liquid radioactive inventory provided the benefit of reduced total offsite dose, due to reduction in evaporative losses from the fuel pools.

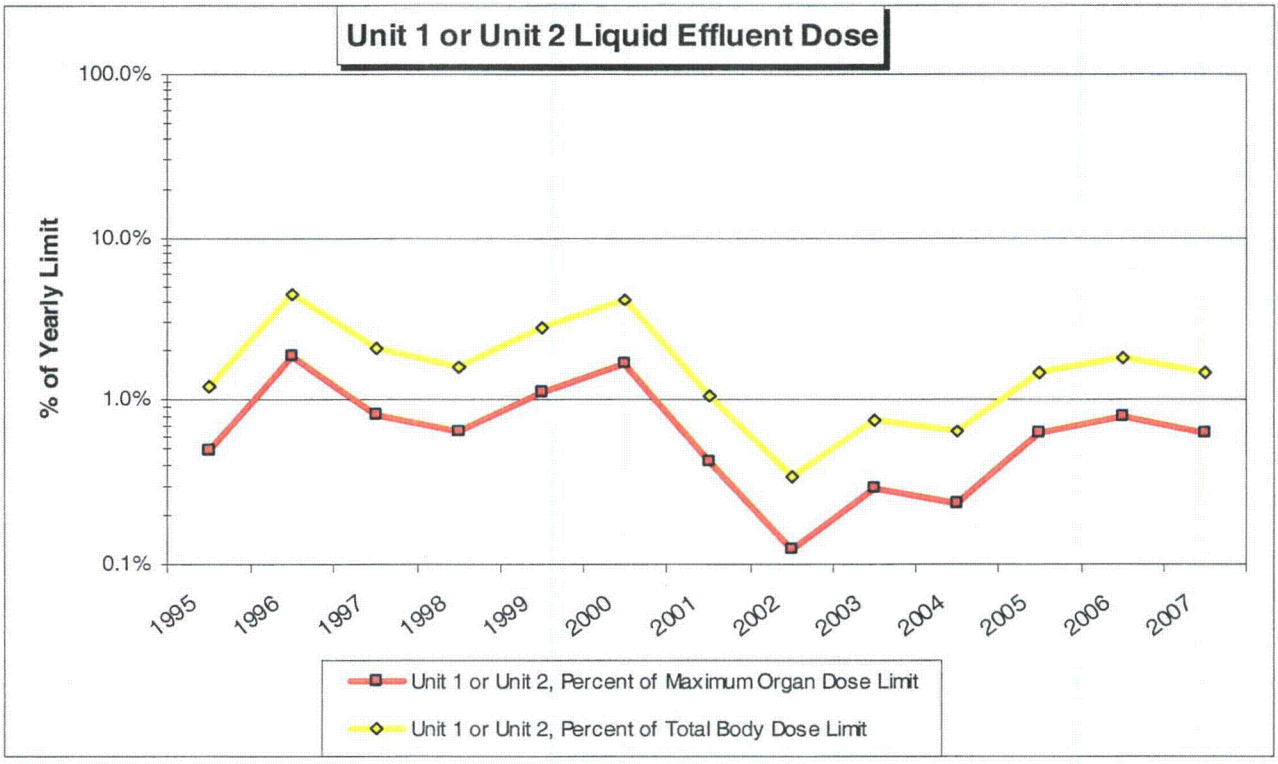


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Liquid Release Offsite Dose Projections

Liquid Release Offsite Dose Projections: The following graph provides a comparison of liquid offsite dose projections that were calculated to the maximum individual per 10 CFR 50, Appendix I and the ODCM. The projections use ODCM default flow rates for the receiving water (Ohio River), and were performed prior to release authorization. The recent increases were due to efforts to reduce overall offsite dose. Specifically, discharging liquid radioactive inventory provided the benefit of reduced total offsite dose, due to reduction in evaporative losses from the fuel pools.

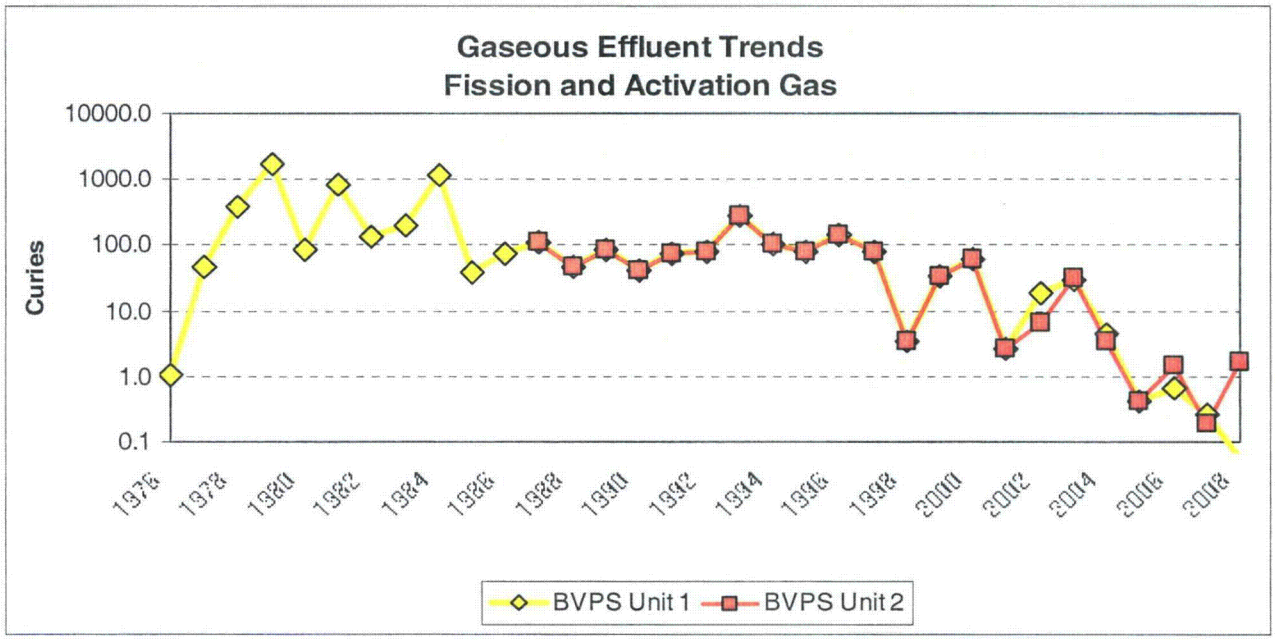


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Gaseous Release Activity (Fission and Activation Gas)

Gaseous Release Activity (Fission and Activation Gas): The following graph provides a comparison of total gaseous fission and activation gas discharged from the site from 1976 to present. The steady decreases are due to extended hold-up periods of gas space prior to release.

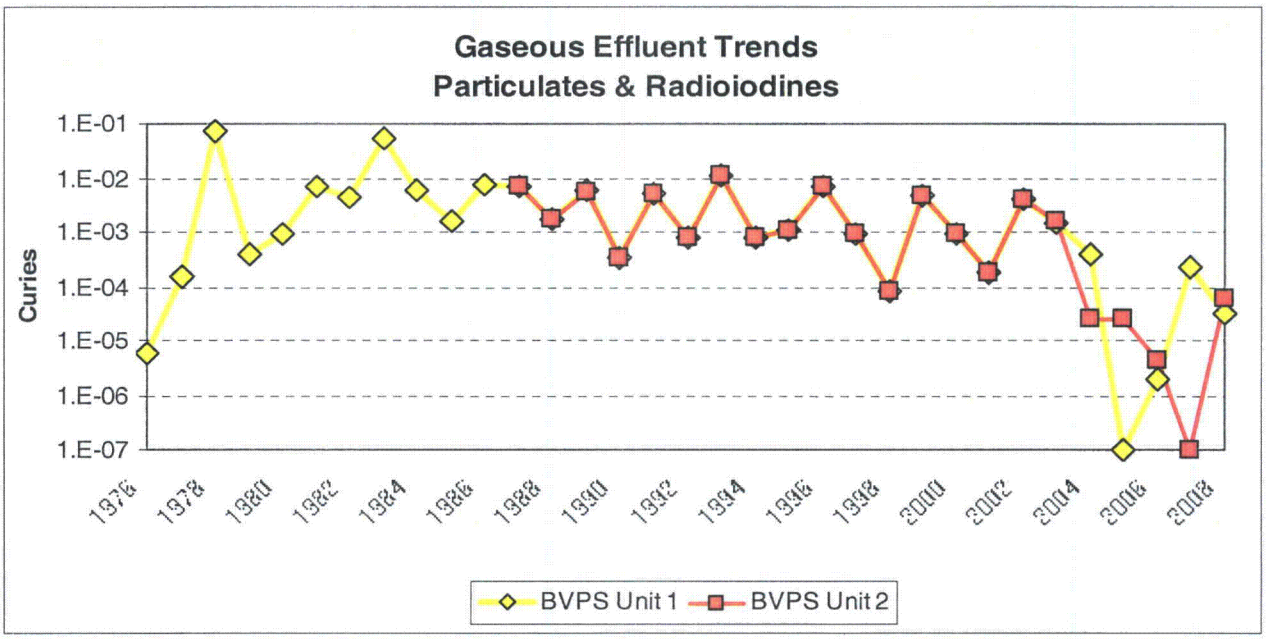


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Gaseous Release Activity (Particulates and Radioiodines)

Gaseous Release Activity (Particulates and Radioiodines): The following graph provides a comparison of total gaseous particulates and radioiodines discharged from the site from 1976 to present. The recent increase at Unit 1 was due to identification of Co-58 in weekly effleunt pathway samples during a refueling outage. The increaseat at Unit 2 was due to identification of Co-58 and Co-60 in weekly effluent pathway samples during a refueling outage and due to a planned release of the pressurizer gas space after the refueling outage.

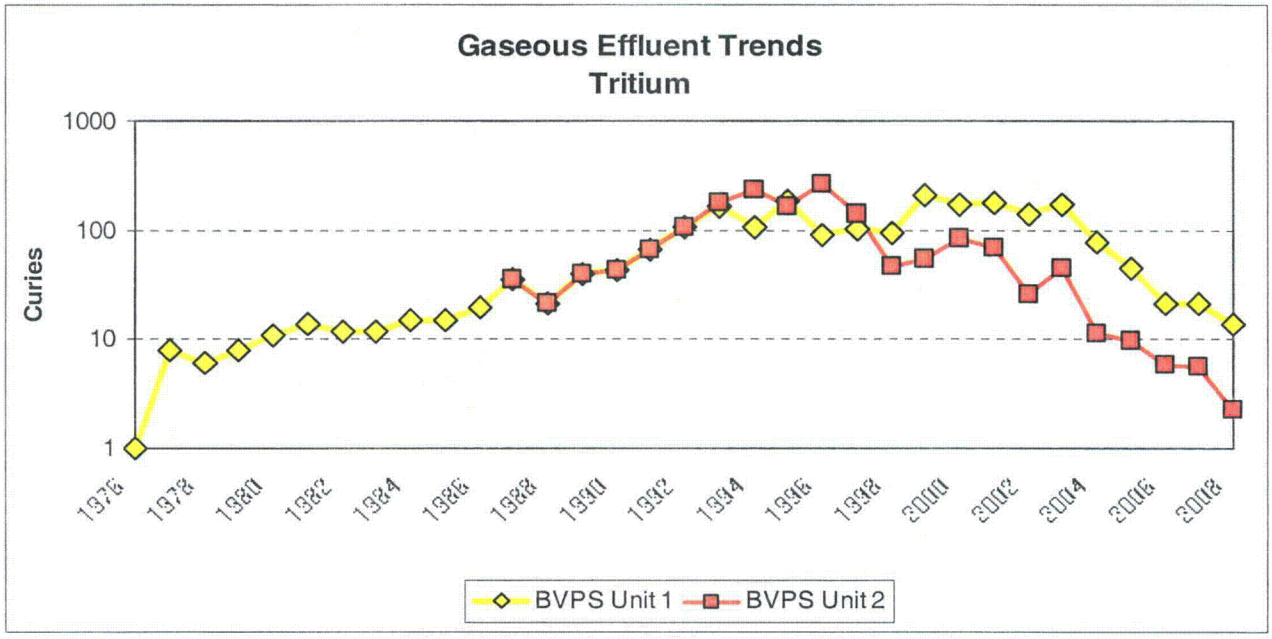


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Gaseous Release Activity (Tritium)

Gaseous Release Activity (Tritium): The following graph provides a comparison of total gaseous tritium discharged from the site from 1976 to present. The recent decreases were due to efforts to reduce overall offsite dose. Specifically, discharging liquid radioactive inventory provided the benefit of reduced total offsite dose, due to reduction in evaporative losses from the fuel pools.

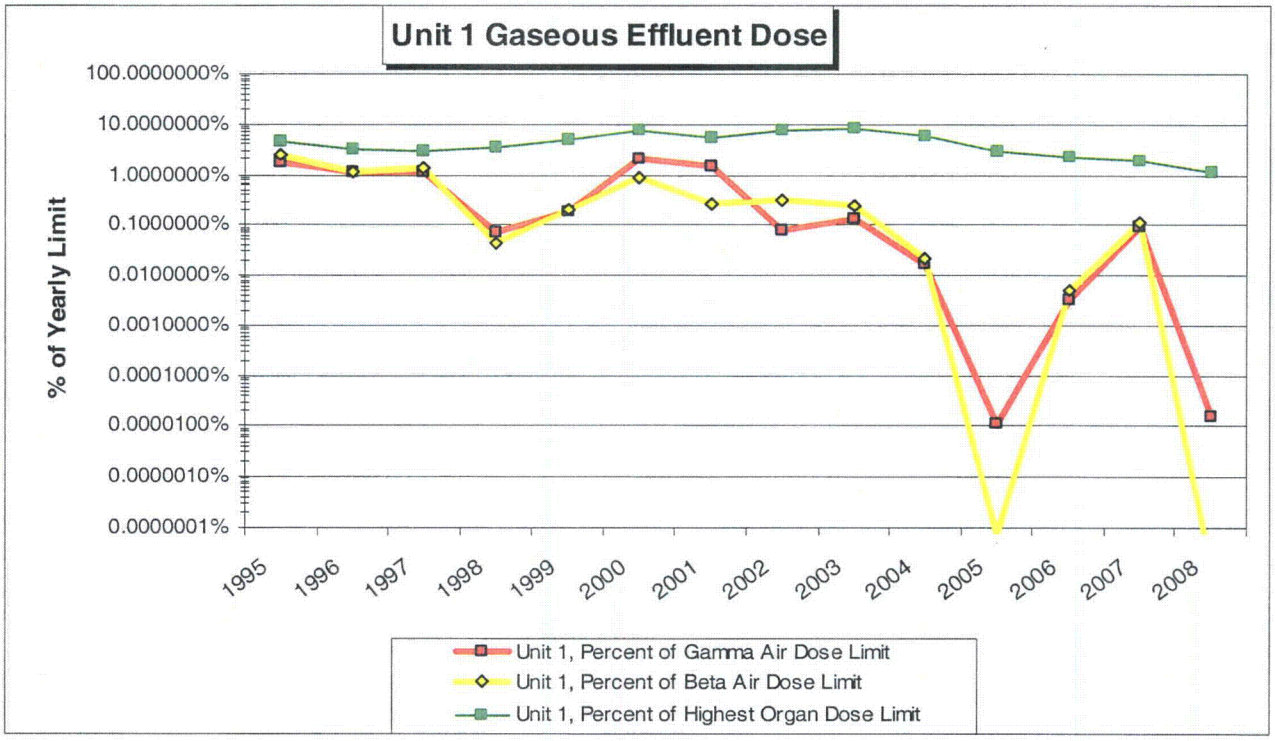


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Unit 1 Gaseous Release Offsite Dose Projections

Unit 1 Gaseous Release Offsite Dose Projections: The following graph provides a comparison of Unit 1 gaseous offsite dose projections that were calculated to the maximum individual per 10 CFR 50, Appendix I and the ODCM. The projections use ODCM default meteorological parameters for the atmospheric conditions surrounding the plant site, and were performed prior to release authorization. The steady decrease in highest organ dose was due to efforts to reduce overall offsite dose. Specifically, discharging liquid radioactive inventory provided the benefit of reduced total offsite dose, due to reduction in evaporative losses from the fuel pools.

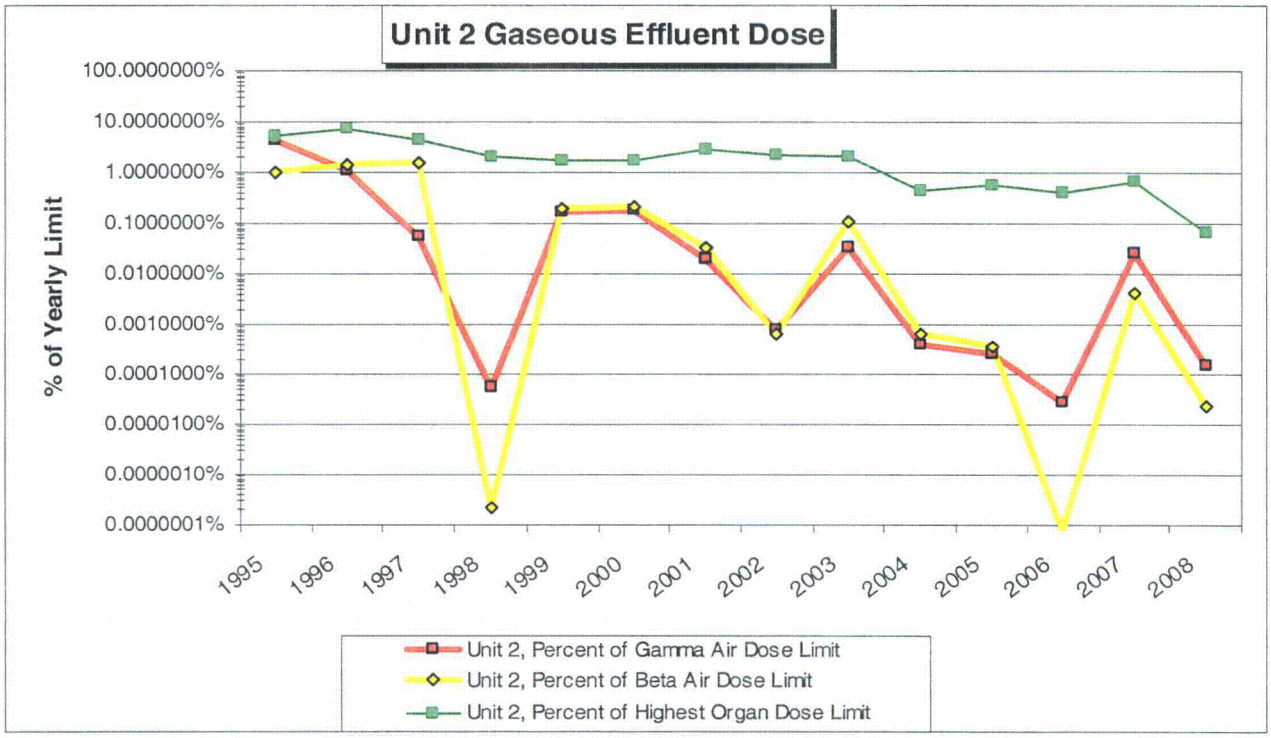


Radioactive Effluent Release Report

Calendar Year - 2008

Executive Summary - Trends of Unit 2 Gaseous Release Offsite Dose Projections

Unit 2 Gaseous Release Offsite Dose Projections: The following graph provides a comparison of Unit 2 gaseous offsite dose projections that were calculated to the maximum individual per 10 CFR 50, Appendix I and the ODCM. The projections use ODCM default meteorological parameters for the atmospheric conditions surrounding the plant site, and were performed prior to release authorization. The steady decrease in highest organ dose were due to efforts to reduce overall offsite dose. Specifically, discharging liquid radioactive inventory provided the benefit of reduced total offsite dose, due to reduction in evaporative losses from the fuel pools.



Radioactive Effluent Release Report

Calendar Year - 2008

Results of Abnormal Releases

Abnormal Liquid Releases: None

Abnormal Gas Releases: None

Radioactive Effluent Release Report

Calendar Year - 2008

Results of Onsite Spills and Items Added to Decommissioning Files per 10CFR50.75(g)

Summary of Onsite Spills (>100 gallons): None

Summary of Items added to Decommissioning Files per 10CFR50.75(g) Files: None

Radioactive Effluent Release Report

Calendar Year - 2008

Results of Onsite Groundwater Monitoring Program

Summary of Onsite Groundwater Samples

	2008 H-3 Maximum (pCi/L)	2008 H-3 Minimum (pCi/L)	2008 H-3 Average (pCi/L)	Typical H-3 LLD (pCi/L)	Required H-3 LLD (pCi/L)	Pre Operational Mean For H-3 (pCi/L)	Are Any H-3 Analyses Greater Than The Pre Operational Mean For H-3 ?	NEI and FENOC Communication Level For H-3 (pCi/L)	EPA Reporting Level For H-3 (pCi/L)
1st Quarter	13356	177	1782	<200	<2000	440	Yes	2000	20000
3rd Quarter	11501	144	1661	<200	<2000	440	Yes	2000	20000

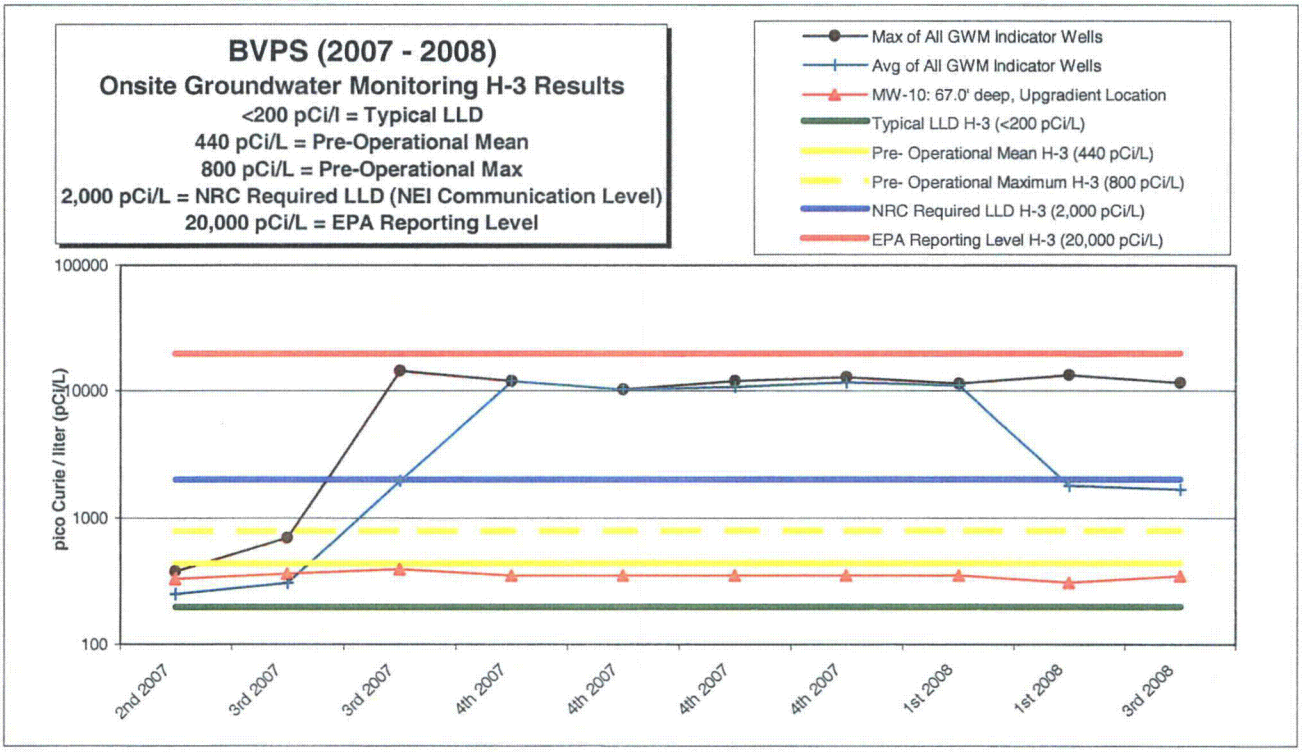
Sample Summary: Seventeen (17) onsite monitoring wells were sampled during the year. Each of these wells was sampled two (2) times during the year, with exception of MW-12S & MW-12D, which were sampled three (3) times.

H-3 Summary: Results from twelve (12) wells were ≤440 pCi/L (BVPS pre-operational mean). Results from three (3) wells were >440 pCi/L, but ≤2000 pCi/L. Results from two (2) wells (MW-12S & MW-12D) were >2000 pCi/L, but ≤20,000 pCi/L. Results from no wells were >20,000 pCi/L. SINCE the NEI/FENOC communication level was reached for MW-12S & MW-12D during 2007, THEN notification to local, state & federal agencies was performed on 10/08/07. No additional wells reached the NEI/FENOC communication level during 2008. No adverse effect to the offsite environment has been detected at this time, because all offsite groundwater, drinking water and surface water samples were ≤440 pCi/L.

Principal Gamma Emitter Summary: Results showed <LLD for all principal gamma emitters associated with Licensed Radioactive Material (LRM).

Gross Alpha & Gross Beta Summary: Baseline analyses were performed on fourteen (14) of the 3rd quarter samples. The Gross Alpha results ranged from <MDA to 2.2 pCi/L, and the Gross Beta results ranged from 1.0 pCi/L to 5.6 pCi/L.

Fe-55, Ni-63, Sr-89 & Sr-90: Baseline analyses were performed on the 3rd quarter samples from MW-12S & MW-12D. The Fe 55 results were <LLD, the Ni-63 results were <LLD, the Sr-89 results were <LLD, and the Sr-90 results were <LLD.



Radioactive Effluent Release Report

Calendar Year - 2008

Supplemental Information Page

FACILITY: B.V.P.S. Units 1 and 2 **LICENSEE: FENOC**

1. Regulatory Limits	
a. Fission and activation gases:	Annual Unit 1 or 2 Dose: 10 mrad from Gamma, & 20 mrad from Beta
b. Iodines & particulates, half-lives > 8 days:	Annual Unit 1 or 2 Dose: 15 mrem to Any Organ
c. Liquid effluents:	Annual Unit 1 or 2 Dose: 3 mrem to Total Body, & 10 mrem to Any Organ

2. Maximum Permissable Concentrations Used In Determining Allowable Release Rates Or Concentrations	
a. Fission and activation gases:	Site Release Rate: 500 mrem/yr to Total Body, & 3000 mrem/yr to the Skin
b. Iodines & particulates, half-lives > 8 days:	Site Release Rate: 1500 mrem/yr to Any Organ
c. Liquid effluents:	Site Release Concentration: 10 times 10 CFR 20 Appendix B, Table 2, EC's

3. Average Energy (Not Applicable To The BVPS ODCM)

4. Measurements and Approximations of Total Radioactivity	
The methods used to measure or approximate the total radioactivity in effluents, and the methods used to determine radionuclide composition are as follows:	
a. Fission and activation gases:	Ge Gamma Spectrometry, Liquid Scintillation Counter
b. Iodines:	Ge Gamma Spectrometry
c. Particulates, half-lives > 8 days:	Ge Gamma Spectrometry, Proportional Counter
d. Liquid effluents:	Ge Gamma Spectrometry, Proportional Counter, Liquid Scintillation

5. Batch & Abnormal Release Information	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
a. Liquid Batch Releases						
1. Number of batch releases		47	43	52	45	187
2. Total time period for batch releases	minutes	22139	16429	12242	15766	66576
3. Maximum time period for a batch release	minutes	2782	1628	1140	1080	2782
4. Average time period for batch releases	minutes	471	382	235	350	356
5. Minimum time period for a batch release	minutes	80	83	3	90	3
6. Average river flow during release periods	cuft/sec	85567	46300	15567	33933	45342
b. Gaseous Batch Releases						
1. Number of batch releases		11	22	10	9	52
2. Total time period for batch releases	minutes	5725	18209	3381	336	27651
3. Maximum time period for a batch release	minutes	3859	6610	2280	167	6610
4. Average time period for batch releases	minutes	520	828	338	37	532
5. Minimum time period for a batch release	minutes	52	1	167	2	1
c. Abnormal Liquid Releases						
1. Number of releases		NONE	NONE	NONE	NONE	NONE
2. Total activity released	Curies	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
d. Abnormal Gaseous Releases						
1. Number of releases		NONE	NONE	NONE	NONE	NONE
2. Total activity released	Curies	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Radioactive Effluent Release Report

Calendar Year - 2008

Table 1A

Gaseous Effluents - Summation Of All Releases

	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year	Total Error, %
A. Fission & Activation Gases							
1. Site Total release	Ci	7.90E-02	1.67E+00	0.00E+00	0.00E+00	1.75E+00	26.5%
1a. Unit 1 Gases	Ci	3.85E-02	1.81E-02	0.00E+00	0.00E+00	5.66E-02	
1b. Unit 2 Gases	Ci	4.06E-02	1.65E+00	0.00E+00	0.00E+00	1.69E+00	
2. Average release rate for period	uCi/sec	1.00E-02	2.12E-01	0.00E+00	0.00E+00	5.55E-02	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
B. Iodines							
1. Site Total iodine - 131	Ci	0.00E+00	1.17E-07	0.00E+00	0.00E+00	1.17E-07	28.3%
1a. Unit 1 iodine - 131	Ci	0.00E+00	5.85E-08	0.00E+00	0.00E+00	5.85E-08	
1b. Unit 2 iodine - 131	Ci	0.00E+00	5.85E-08	0.00E+00	0.00E+00	5.85E-08	
2. Average release rate for period	uCi/sec	0.00E+00	1.48E-08	0.00E+00	0.00E+00	3.71E-09	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
C. Particulates							
1. Particulates with half-lives > 8 days	Ci	0.00E+00	9.38E-05	0.00E+00	0.00E+00	9.38E-05	30.0%
1a. Unit 1 Particulates	Ci	0.00E+00	3.24E-05	0.00E+00	0.00E+00	3.24E-05	
1b. Unit 2 Particulates	Ci	0.00E+00	6.14E-05	0.00E+00	0.00E+00	6.14E-05	
2. Average release rate for period	uCi/sec	0.00E+00	1.19E-05	0.00E+00	0.00E+00	2.98E-06	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
D. Gross Alpha							
1. Site Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	30.0%
1a. Unit 1 Gross alpha	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1b. Unit 2 Gross alpha	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average release rate for period	uCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
E. Tritium							
1. Site Total release	Ci	4.21E+00	2.36E+00	5.96E+00	3.46E+00	1.60E+01	32.9%
1a. Unit 1 Tritium	Ci	3.60E+00	1.80E+00	5.61E+00	2.67E+00	1.37E+01	
1b. Unit 2 Tritium	Ci	6.05E-01	5.55E-01	3.45E-01	7.89E-01	2.29E+00	
2. Average release rate for period	uCi/sec	5.34E-01	2.99E-01	7.56E-01	4.39E-01	5.07E-01	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	

N/A = Not Applicable

The amount of time (in seconds) used to calculate the release rates specified in A.2, B.2, C.2, D.2 and E.2 is the average amount of seconds per calendar quarter (7.88E+06 seconds).

Radioactive Effluent Release Report

Calendar Year - 2008
Table 1B-EB
Gaseous Effluents - Elevated Batch Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission gases						
argon-41	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	LLD	LLD	LLD	LLD
krypton-87	Ci	LLD	LLD	LLD	LLD	LLD
krypton-88	Ci	LLD	LLD	LLD	LLD	LLD
xenon-131m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	LLD	4.99E-04	LLD	LLD	4.99E-04
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	3.24E-05	LLD	LLD	3.24E-05
xenon-135m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	5.31E-04	ND	ND	5.31E-04
2. Iodines						
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	ND	ND	ND
3. Particulates						
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	LLD	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-57	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-58	Ci	LLD	1.52E-05	LLD	LLD	1.52E-05
cobalt-60	Ci	LLD	LLD	LLD	LLD	LLD
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	1.52E-05	ND	ND	1.52E-05

LLD = Below the Lower Limit of Detectability, in uCi/cc (Table 4).

ND = None Detected

Radioactive Effluent Release Report

Calendar Year - 2008
Table 1B-EC
Gaseous Effluents - Elevated Continuous Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission gases						
argon-41	Ci	LLD	3.57E-02	LLD	LLD	3.57E-02
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	LLD	LLD	LLD	LLD
krypton-87	Ci	LLD	LLD	LLD	LLD	LLD
krypton-88	Ci	LLD	LLD	LLD	LLD	LLD
xenon-131m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	7.69E-02	LLD	LLD	LLD	7.69E-02
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	7.69E-02	3.57E-02	ND	ND	1.13E-01
2. Iodines						
iodine-131	Ci	LLD	1.17E-07	LLD	LLD	1.17E-07
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	1.17E-07	ND	ND	1.17E-07
3. Particulates						
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	LLD	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-57	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-58	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-60	Ci	LLD	LLD	LLD	LLD	LLD
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	ND	ND	ND	ND

LLD = Below the Lower Limit of Detectability, in uCi/cc (Table 4).

ND = None Detected

Radioactive Effluent Release Report

Calendar Year - 2008
Table 1C-GB1
Gaseous Effluents - Ground Level Batch Releases (Unit 1)

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission gases						
argon-41	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	LLD	LLD	LLD	LLD
krypton-87	Ci	LLD	LLD	LLD	LLD	LLD
krypton-88	Ci	LLD	LLD	LLD	LLD	LLD
xenon-131m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	ND	ND	ND	ND
2. Iodines						
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	ND	ND	ND
3. Particulates						
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	LLD	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-57	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-58	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-60	Ci	LLD	LLD	LLD	LLD	LLD
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	ND	ND	ND	ND

LLD = Below the Lower Limit of Detectability, in uCi/cc (Table 4).

ND = None Detected

Radioactive Effluent Release Report

Calendar Year - 2008
Table 1C-GC1
Gaseous Effluents - Ground Level Continuous Releases (Unit 1)

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission gases						
argon-41	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	LLD	LLD	LLD	LLD
krypton-87	Ci	LLD	LLD	LLD	LLD	LLD
krypton-88	Ci	LLD	LLD	LLD	LLD	LLD
xenon-131m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	ND	ND	ND	ND
2. Iodines						
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	ND	ND	ND
3. Particulates						
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	LLD	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-57	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-58	Ci	LLD	2.48E-05	LLD	LLD	2.48E-05
cobalt-60	Ci	LLD	LLD	LLD	LLD	LLD
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
zirconium/niobium-95	Ci	LLD	LLD	LLD	LLD	LLD
zirconium/niobium-97	Ci	LLD	LLD	LLD	LLD	LLD
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	2.48E-05	ND	ND	2.48E-05

LLD = Below the Lower Limit of Detectability, in uCi/cc (Table 4).

ND = None Detected

Radioactive Effluent Release Report

Calendar Year - 2008
Table 1C-GB2
Gaseous Effluents - Ground Level Batch Releases (Unit 2

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission gases						
argon-41	Ci	LLD	1.58E+00	LLD	LLD	1.58E+00
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	3.23E-03	LLD	LLD	3.23E-03
krypton-87	Ci	LLD	6.59E-03	LLD	LLD	6.59E-03
krypton-88	Ci	LLD	8.43E-03	LLD	LLD	8.43E-03
xenon-131m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	LLD	1.42E-02	LLD	LLD	1.42E-02
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	2.01E-02	LLD	LLD	2.01E-02
xenon-135m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	1.63E+00	ND	ND	1.63E+00
2. Iodines						
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	ND	ND	ND
3. Particulates						
beryllium-7	Ci	LLD	LLD	LLD	LLD	LLD
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	LLD	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-57	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-58	Ci	LLD	1.38E-05	LLD	LLD	1.38E-05
cobalt-60	Ci	LLD	9.17E-07	LLD	LLD	9.17E-07
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
zirconium/niobium-97	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	9.17E-07	LLD	LLD	9.17E-07
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	1.56E-05	ND	ND	1.56E-05

LLD = Below the Lower Limit of Detectability, in uCi/cc (Table 4).

ND = None Detected

Radioactive Effluent Release Report

Calendar Year - 2008
Table 1C-GC2
Gaseous Effluents - Ground Level Continuous Releases (Unit 2)

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission gases						
argon-41	Ci	2.12E-03	LLD	LLD	LLD	2.12E-03
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	LLD	LLD	LLD	LLD
krypton-87	Ci	LLD	LLD	LLD	LLD	LLD
krypton-88	Ci	LLD	LLD	LLD	LLD	LLD
xenon-131m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	2.12E-03	ND	ND	ND	2.12E-03
2. Iodines						
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	ND	ND	ND
3. Particulates						
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	LLD	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-57	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-58	Ci	LLD	3.82E-05	LLD	LLD	3.82E-05
cobalt-60	Ci	LLD	LLD	LLD	LLD	LLD
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
zirconium/niobium-95	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	3.82E-05	ND	ND	3.82E-05

LLD = Below the Lower Limit of Detectability, in uCi/cc (Table 4).

ND = None Detected

Radioactive Effluent Release Report

Calendar Year - 2008

Table 2A

Liquid Effluents - Summation Of All Releases

	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year	Total Error, %
A. Fission & activation products							
1. Total release (excl. H-3, gas & alpha)	Ci	5.68E-02	6.76E-02	1.97E-01	7.64E-02	3.97E-01	26.1%
2. Average diluted concentration	uCi/ml	3.37E-08	5.47E-08	1.44E-07	4.97E-08	6.82E-08	
3. Percent of applicable limit	%	2.27E+00	2.70E+00	7.86E+00	3.06E+00	3.97E+00	
B. Tritium							
1. Total release	Ci	3.07E+02	5.00E+02	1.54E+02	5.42E+02	1.50E+03	25.0%
2. Average diluted concentration	uCi/ml	1.82E-04	4.05E-04	1.13E-04	3.52E-04	2.58E-04	
3. Percent of applicable limit	%	1.82E+00	4.05E+00	1.13E+00	3.52E+00	2.58E+00	
C. Dissolved and entrained gases							
1. Total release	Ci	4.98E-06	7.23E-05	9.58E-05	2.18E-03	2.35E-03	27.0%
2. Average diluted concentration	uCi/ml	2.95E-12	5.85E-11	7.04E-11	1.42E-09	4.04E-10	
3. Percent of applicable limit	%	1.48E-06	2.92E-05	3.52E-05	7.08E-04	2.02E-04	
D. Gross alpha radioactivity (total release)	Ci	LLD	LLD	LLD	LLD	LLD	28.9%
E. Volume of waste released (prior to dilution)	liters	2.34E+06	2.19E+06	2.41E+06	2.43E+06	9.37E+06	11.2%
F. Volume of dilution water used	liters	1.68E+09	1.23E+09	1.36E+09	1.54E+09	5.81E+09	22.9%

LLD = Below the Lower Limit of Detectability, in uCi/ml (Table 4)

A.3 is based on a historical PA-DEP guide of 10 Ci/yr

B.3 is based on a ODCM limit of 1.00E-2 uCi/ml

C.3 is based on a ODCM limit of 2.00E-04 uCi/ml

The values listed at F. are the volumes during actual liquid waste discharge periods. The total dilution volume for a continuous calendar quarter is approximately 1E+10 liters for BVPS-1 & 2 (ie.; ~ 22,800 gpm is the total dilution flowrate from the site)

Radioactive Effluent Release Report

Calendar Year - 2008

Table 2B-B

Liquid Effluents - Batch Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission and activation products						
beryllium-7	Ci	LLD	LLD	LLD	LLD	LLD
sodium-24	Ci	LLD	LLD	LLD	LLD	LLD
chromium-51	Ci	3.21E-04	2.97E-03	1.46E-03	LLD	4.75E-03
manganese-54	Ci	1.28E-04	4.54E-04	4.40E-04	3.34E-04	1.36E-03
iron-55	Ci	2.33E-02	8.31E-03	1.01E-01	3.02E-02	1.63E-01
iron-59	Ci	4.94E-04	8.58E-04	1.21E-03	1.64E-04	2.73E-03
cobalt-57	Ci	1.67E-05	9.14E-05	2.66E-04	2.56E-04	6.30E-04
cobalt-58	Ci	2.43E-03	3.48E-02	4.24E-02	2.13E-02	1.01E-01
cobalt-60	Ci	3.95E-03	3.41E-03	1.24E-02	9.99E-03	2.97E-02
zinc-65	Ci	1.95E-03	3.53E-04	6.02E-03	3.81E-03	1.21E-02
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
zirconium/niobium-95	Ci	5.84E-05	9.58E-05	3.78E-04	2.80E-04	8.12E-04
zirconium/niobium-97	Ci	8.16E-06	1.02E-05	7.42E-06	2.45E-05	5.03E-05
molybdenum-99/technetium-99m	Ci	LLD	LLD	LLD	LLD	LLD
tin-113	Ci	LLD	LLD	LLD	LLD	LLD
silver-110m	Ci	9.91E-04	1.42E-03	1.39E-03	1.04E-03	4.85E-03
antimony-122	Ci	LLD	4.72E-04	LLD	LLD	4.72E-04
antimony-124	Ci	1.41E-03	2.17E-03	7.96E-04	LLD	4.37E-03
antimony-125	Ci	2.14E-02	1.21E-02	2.85E-02	8.18E-03	7.01E-02
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	1.53E-05	4.71E-07	LLD	3.78E-05	5.36E-05
cesium-137	Ci	3.65E-04	6.42E-05	3.52E-04	8.35E-04	1.62E-03
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	5.68E-02	6.76E-02	1.97E-01	7.64E-02	3.97E-01
2. Dissolved and entrained gases						
krypton-85	Ci	LLD	LLD	LLD	1.73E-03	1.73E-03
xenon-133	Ci	4.98E-06	7.23E-05	9.58E-05	4.50E-04	6.23E-04
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	4.98E-06	7.23E-05	9.58E-05	2.18E-03	2.35E-03

LLD = Below the Lower Limit of Detectability, in uCi/ml (Table 4)

Radioactive Effluent Release Report

Calendar Year - 2008

Table 2B-C

Liquid Effluents - Continuous Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
1. Fission and activation products						
beryllium-7	Ci	N/A	N/A	N/A	N/A	N/A
sodium-24	Ci	N/A	N/A	N/A	N/A	N/A
chromium-51	Ci	N/A	N/A	N/A	N/A	N/A
manganese-54	Ci	N/A	N/A	N/A	N/A	N/A
iron-55	Ci	N/A	N/A	N/A	N/A	N/A
iron-59	Ci	N/A	N/A	N/A	N/A	N/A
cobalt-57	Ci	N/A	N/A	N/A	N/A	N/A
cobalt-58	Ci	N/A	N/A	N/A	N/A	N/A
cobalt-60	Ci	N/A	N/A	N/A	N/A	N/A
zinc-65	Ci	N/A	N/A	N/A	N/A	N/A
strontium-89	Ci	N/A	N/A	N/A	N/A	N/A
strontium-90	Ci	N/A	N/A	N/A	N/A	N/A
zirconium/niobium-95	Ci	N/A	N/A	N/A	N/A	N/A
zirconium/niobium-97	Ci	N/A	N/A	N/A	N/A	N/A
molybdenum-99	Ci	N/A	N/A	N/A	N/A	N/A
technetium-99m	Ci	N/A	N/A	N/A	N/A	N/A
ruthenium-103	Ci	N/A	N/A	N/A	N/A	N/A
silver-110m	Ci	N/A	N/A	N/A	N/A	N/A
antimony-124	Ci	N/A	N/A	N/A	N/A	N/A
antimony-125	Ci	N/A	N/A	N/A	N/A	N/A
iodine-131	Ci	N/A	N/A	N/A	N/A	N/A
iodine-133	Ci	N/A	N/A	N/A	N/A	N/A
cesium-134	Ci	N/A	N/A	N/A	N/A	N/A
cesium-137	Ci	N/A	N/A	N/A	N/A	N/A
barium/lanthanum-140	Ci	N/A	N/A	N/A	N/A	N/A
cerium-141	Ci	N/A	N/A	N/A	N/A	N/A
cerium-144	Ci	N/A	N/A	N/A	N/A	N/A
unidentified	Ci	N/A	N/A	N/A	N/A	N/A
Total for period	Ci	N/A	N/A	N/A	N/A	N/A
2. Dissolved and entrained gases						
argon-41	Ci	N/A	N/A	N/A	N/A	N/A
xenon-133	Ci	N/A	N/A	N/A	N/A	N/A
xenon-133m	Ci	N/A	N/A	N/A	N/A	N/A
xenon-135	Ci	N/A	N/A	N/A	N/A	N/A
unidentified	Ci	N/A	N/A	N/A	N/A	N/A
Total for period	Ci	N/A	N/A	N/A	N/A	N/A

N/A = Not Applicable (liquids not discharged in a continuous mode during this period)

Radioactive Effluent Release Report

Calendar Year - 2008

Table 3A

Solid Waste And Irradiated Fuel Shipments (Part 1 of 3)

A. Solid Waste Shipped Offsite For Burial Or Disposal (Not irradiated fuel)				
1. Type of Waste (Spent resins, Filter Sludges, Evaporator Bottoms, Oil)		1st Half	2nd Half	Estimated Total Error
a. Volume Shipped		1.39E+01 m3	6.46E+00 m3	0.0% (1)
b. Volume Buried		6.29E-01 m3	1.80E-01 m3	0.0% (1)
c. Total Activity		1.30E+00 Ci	9.58E-01 Ci	30.0%
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)		Percent (%)	Percent (%)	
H-3		12.70 %	0.69 %	
C-14		3.57 %	0.54 %	
Mn-54		0.59 %	2.24 %	
Fe-55		17.80 %	42.50 %	
Co-58		4.91 %	5.19 %	
Co-60		14.40 %	18.10 %	
Ni-59		0.29 %	0.21 %	
Ni-63		32.40 %	13.00 %	
Cs-134		0.21 %	0.00 %	
Cs-137		2.29 %	0.18 %	
Ce-144/Pr-144		0.02 %	0.96 %	
Pu-238		0.00 %	0.01 %	
Pu-241		0.09 %	0.05 %	
3. Number of Shipments		4	2	
a. Type of Container Used	LSA	3	1	
	Type A	0	0	
	Type B	0	0	
	Large Quantity	0	0	
b. Solidification Agent Used	Cement	0	0	
	Urea Formaldehyde	0	0	
	None	4	2	
c. Mode of Transport	Truck	4	2	
	Rail	0	0	
d. Final Destination	Erwin, TN	2	0	
	Oak Ridge, TN	2	2	
e. Waste Class per 10 CFR Part 61	Class A	4	2	
	Class B	0	0	
	Class C	0	0	
	> Class C	0	0	

(1) Since container volumes are provided by the burial site, a calculational error of zero is assumed.
(2) Percent values for any nuclide that are <0.01 % are not shown on this table. Data is available upon request

Radioactive Effluent Release Report

Calendar Year - 2008
Table 3B
Solid Waste And Irradiated Fuel Shipments (Part 2 of 3)

A. Solid Waste Shipped Offsite For Burial Or Disposal (Not irradiated fuel)				
1. Type of Waste (Dry Compressible Waste, Contaminated Equipment, etc.)		1st Half	2nd Half	Estimated Total Error
a. Volume Shipped		4.71E+01 m3	1.48E+02 m3	0.0% (1)
b. Volume Buried		1.15E+02 m3	6.16E+01 m3	0.0% (1)
c. Total Activity		3.07E-01 Ci	3.89E-01 Ci	30.0%
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)		Percent (%)	Percent (%)	
H-3		0.98 %	1.90 %	
C-14		0.47 %	0.91 %	
Cr-51		6.52 %	0.30 %	
Mn-54		1.45 %	2.12 %	
Fe-55		17.00 %	30.30 %	
Co-58		13.40 %	7.11 %	
Co-60		8.38 %	17.60 %	
Ni-59		0.15 %	1.68 %	
Ni-63		8.75 %	18.20 %	
Sr-90		0.07 %	0.02 %	
Nb-95		23.00 %	2.74 %	
Zr-95		15.00 %	5.86 %	
Tc-99		0.01 %	0.00 %	
Ag-110m		0.09 %	0.00 %	
Sb-125		0.72 %	1.38 %	
I-129		0.01 %	0.00 %	
Cs-134		0.08 %	0.04 %	
Cs-137		0.92 %	0.62 %	
Ce-144/Pr-144		0.24 %	0.32 %	
Pu-241		0.09 %	0.26 %	
3. Number of Shipments		8	4	
a. Type of Container Used	LSA	8	4	
	Type A	0	0	
	Type B	0	0	
	Large Quantity	0	0	
b. Solidification Agent Used	Cement	0	0	
	Urea Formaldehyde	0	0	
	None	8	4	
c. Mode of Transport	Truck	8	4	
	Rail	0	0	
	Other	0	0	
d. Final Destination	Oak Ridge, TN	8	4	
	Wampum, PA	0	0	
e. Waste Class per 10 CFR Part 61	Class A	8	4	
	Class B	0	0	
	Class C	0	0	
	> Class C	0	0	

(1) Since container volumes are provided by the burial site, a calculational error of zero is assumed.
(2) Percent values for any nuclide that are <0.01 % are not shown on this table. Data is available upon request.

Radioactive Effluent Release Report

Calendar Year - 2008
Table 3C
Solid Waste And Irradiated Fuel Shipments (Part 3 of 3)

A. Solid Waste Shipped Offsite For Burial Or Disposal (Not irradiated fuel)				
1. Type of Waste (Irradiated components, Control Rods, etc)		1st Half	2nd Half	Estimated Total Error
a. Volume Shipped		0.00E+00 m3	0.00E+00 m3	0.0% (1)
b. Volume Buried		0.00E+00 m3	0.00E+00 m3	0.0% (1)
c. Total Activity		0.00E+00 Ci	0.00E+00 Ci	0.0%
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)		Percent (%)	Percent (%)	
3. Number of Shipments		0	0	
a. Type of Container Used	LSA	0	0	
	Type A	0	0	
	Type B	0	0	
	Large Quantity	0	0	
b. Solidification Agent Used	Cement	0	0	
	Urea Formaldehyde	0	0	
	None	0	0	
c. Mode of Transport	Truck	0	0	
	Rail	0	0	
	Other	0	0	
d. Final Destination	Barnwell, SC	0	0	
	Oak Ridge, TN	0	0	
e. Waste Class per 10 CFR Part 61	Class A	0	0	
	Class B	0	0	
	Class C	0	0	
	> Class C	0	0	

B. No Irradiated Fuel Shipments

(1) Since container volumes are provided by the burial site, a calculational error of zero is assumed.
(2) Percent values for any nuclide that are <0.01 % are not shown on this table. Data is available upon request.

Radioactive Effluent Release Report

Calendar Year - 2008
Table 4
Lower Limits Of Detectability (LLD)

	RWDA-G 1000 cc Gas Grab Sample		RWDA-L 1000 ml Liquid Grab Sample		Filter Paper / Charcoal Continuous Effluent Sample	
Nuclide	(3) Calculated LLD (uCi/cc)	ODCM Required LLD (uCi/cc)	(3) Calculated LLD (uCi/ml)	ODCM Required LLD (uCi/ml)	(3) Calculated (2) LLD (uCi/cc)	ODCM Required LLD (uCi/cc)
H-3	(4) 1.00E-06	1E-06	1.00E-06	1E-05	--------	-----
Na-24	7.17E-08	1E-04	1.54E-08	5E-07	1.55E-13	1E-11
Ar-41	1.54E-08	1E-04	3.32E-09	5E-07	--------	-----
Cr-51	6.78E-07	1E-04	1.55E-07	5E-07	5.98E-13	1E-11
Mn-54	6.71E-08	1E-04	1.45E-08	5E-07	1.00E-13	1E-11
Fe-55	--------	-----	(1) 1.00E-06	1E-06	--------	-----
Fe-59	1.83E-07	1E-04	3.94E-08	5E-07	2.26E-13	1E-11
Co-57	6.55E-08	1E-04	1.76E-08	5E-07	7.48E-14	1E-11
Co-58	9.87E-08	1E-04	2.13E-08	5E-07	1.27E-13	1E-11
Co-60	9.96E-08	1E-04	2.15E-08	5E-07	1.11E-13	1E-11
Zn-65	1.82E-07	1E-04	3.92E-08	5E-07	1.30E-13	1E-11
Kr-85	1.91E-05	1E-04	4.19E-06	1E-05	--------	-----
Kr-85m	7.65E-08	1E-04	1.96E-08	1E-05	--------	-----
Kr-87	1.32E-07	1E-04	2.96E-08	1E-05	--------	-----
Kr-88	2.20E-07	1E-04	5.36E-08	1E-05	--------	-----
Sr-89	--------	-----	(1) 5.00E-08	5E-08	(1) 1.00E-13	1E-11
Sr-90	--------	-----	(1) 5.00E-08	5E-08	(1) 1.00E-14	1E-11
Sr-92	1.14E-07	1E-04	2.44E-08	5E-07	3.18E-14	1E-11
Nb-95	8.26E-08	1E-04	1.79E-05	5E-07	7.60E-14	1E-11
Nb-97	2.79E-08	1E-04	6.04E-09	5E-07	8.27E-14	1E-11
Zr-95	1.12E-07	1E-04	2.41E-08	5E-07	1.66E-13	1E-11
Mo-99	5.75E-08	1E-04	1.49E-08	5E-07	7.53E-14	1E-11
Tc-99m	5.60E-08	1E-04	1.45E-08	5E-07	7.34E-14	1E-11
Ag-110m	2.89E-08	1E-04	6.28E-09	5E-07	8.59E-14	1E-11
Sb-124	6.33E-08	1E-04	1.38E-08	5E-07	1.08E-13	1E-11
Sb-125	2.00E-07	1E-04	4.45E-08	5E-07	2.40E-13	1E-11
I-131	7.37E-08	1E-04	1.67E-08	1E-06	1.10E-13	1E-12
I-133	9.04E-08	1E-04	1.98E-08	5E-07	8.46E-14	1E-10
I-135	2.86E-07	1E-04	6.17E-08	5E-07	1.01E-13	1E-11
Xe-131m	2.90E-06	1E-04	7.29E-07	1E-05	--------	-----
Xe-133	1.66E-07	1E-04	5.20E-08	1E-05	--------	-----
Xe-133m	5.18E-07	1E-04	1.23E-07	1E-05	--------	-----
Xe-135	7.98E-08	1E-04	1.89E-08	1E-05	--------	-----
Xe-135m	6.77E-08	1E-04	1.49E-08	1E-05	--------	-----
Xe-137	2.28E-07	1E-04	5.06E-08	1E-05	--------	-----
Xe-138	2.19E-07	1E-04	5.14E-08	1E-05	--------	-----
Cs-134	6.88E-08	1E-04	1.50E-08	5E-07	9.94E-14	1E-11
Cs-137	4.56E-08	1E-04	9.90E-09	5E-07	1.11E-13	1E-11
Ba-139	3.15E-07	1E-04	7.91E-08	5E-07	3.81E-13	1E-11
Ba-140	3.76E-07	1E-04	8.24E-08	5E-07	4.12E-13	1E-11
La-140	1.92E-08	1E-04	4.08E-09	5E-07	3.40E-14	1E-11
Ce-141	1.10E-07	1E-04	2.83E-08	5E-07	1.53E-13	1E-11
Ce-144	2.42E-06	1E-04	2.01E-07	5E-07	4.95E-13	1E-11
Gross Alpha	--------	-----	(1) 1.00E-07	1E-07	(1) 3.51E-15	1E-11

(1) Sample analyses performed by a contractor laboratory.

(2) These LLD calculations contain a default weekly continuous sample volume of 2.85E+8 cc. Therefore, grab sample LLD values reflect a different volume (ie; 10 cuft or 2.83E+5 cc).

(3) The calculated LLD's, except those denoted by (1), are from a counter/detector calibration on 09/02/08. These values are typical for other counter/detectors used for effluent counting at BVPS.

(4) Based on counting 50 ml of the water that was bubbled through a 20 liter air sample.

Radioactive Effluent Release Report

Calendar Year - 2008
Table 5A
Assessment Of Radiation Doses

		Unit 1 Liquid Effluents									
		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Calendar Year	
	Batch Releases	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit
	Bone	7.69E-03	0.1538	1.39E-03	0.0278	6.85E-03	0.1370	1.40E-02	0.2800	2.99E-02	0.2993
O	Liver	1.60E-02	0.3200	8.89E-03	0.1778	1.81E-02	0.3620	2.72E-02	0.5430	7.01E-02	0.7014
R	Total Body	1.02E-02	0.6800	7.66E-03	0.5107	1.07E-02	0.7127	1.75E-02	1.1660	4.60E-02	1.5347
G	Thyroid	2.32E-03	0.0464	5.92E-03	0.1184	2.61E-03	0.0522	3.05E-03	0.0610	1.39E-02	0.1390
A	Kidney	8.64E-03	0.1728	7.36E-03	0.1472	1.12E-02	0.2240	1.38E-02	0.2760	4.10E-02	0.4100
N	Lung	3.33E-03	0.0666	6.08E-03	0.1216	3.21E-03	0.0642	4.89E-03	0.0978	1.75E-02	0.1751
(1)	GI-LLI	7.16E-03	0.1432	1.06E-02	0.2120	1.36E-02	0.2720	1.16E-02	0.2310	4.29E-02	0.4291

		Unit 1 Gaseous Effluents									
		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Calendar Year	
	Batch & Continuous Releases	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit
(2)	Gamma Air	2.89E-07	0.0000	1.36E-09	0.0000	1.30E-06	0.0000	0.00E+00	0.0000	1.59E-06	0.0000
(2)	Beta Air	1.36E-09	0.0000	6.80E-12	0.0000	1.95E-09	0.0000	0.00E+00	0.0000	3.32E-09	0.0000
	Bone	0.00E+00	0.0000	9.03E-06	0.0001	0.00E+00	0.0000	0.00E+00	0.0000	9.03E-06	0.0001
O	Liver	9.81E-02	1.3080	3.90E-02	0.5200	1.93E-02	0.2573	2.25E-02	0.3000	1.79E-01	1.1927
R	Total Body	9.81E-02	1.3080	3.90E-02	0.5200	1.93E-02	0.2573	2.25E-02	0.3000	1.79E-01	1.1927
G	Thyroid	9.81E-02	1.3080	3.90E-02	0.5200	1.93E-02	0.2573	2.25E-02	0.3000	1.79E-01	1.1927
A	Kidney	9.81E-02	1.3080	3.90E-02	0.5200	1.93E-02	0.2573	2.25E-02	0.3000	1.79E-01	1.1927
N	Lung	9.81E-02	1.3080	3.90E-02	0.5200	1.93E-02	0.2573	2.25E-02	0.3000	1.79E-01	1.1927
(3)	GI-LLI	9.81E-02	1.3080	3.90E-02	0.5200	1.93E-02	0.2573	2.25E-02	0.3000	1.79E-01	1.1927

(1) These doses are listed in mrem; they are calculated for the maximum individual for all batch liquid effluents

(2) These doses are listed in mrad; they are calculated at the site boundary for batch & continuous gaseous effluents (0.4 miles NW)

(3) These doses are listed in mrem; they are calculated for the most likely exposed real individual (child) via all real pathways at 0.89 miles NW.

Limits used for calculation of percent (%) are from ODCM procedure 1/2-ODC-3.03, Attachment H Control 3.11.1.2, Attachment L Control 3.11.2.2, and Attachment M Control 3.11.2.3 (considered to be the design objectives).

Radioactive Effluent Release Report

Calendar Year - 2008
Table 5B
Assessment Of Radiation Doses

		Unit 2 Liquid Effluents									
		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Calendar Year	
	Batch Releases	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit
	Bone	7.69E-03	0.1538	1.39E-03	0.0278	6.85E-03	0.1370	1.40E-02	0.2800	2.99E-02	0.2993
O	Liver	1.60E-02	0.3200	8.89E-03	0.1778	1.81E-02	0.3620	2.72E-02	0.5430	7.01E-02	0.7014
R	Total Body	1.02E-02	0.6800	7.66E-03	0.5107	1.07E-02	0.7127	1.75E-02	1.1660	4.60E-02	1.5347
G	Thyroid	2.32E-03	0.0464	5.92E-03	0.1184	2.61E-03	0.0522	3.05E-03	0.0610	1.39E-02	0.1390
A	Kidney	8.64E-03	0.1728	7.36E-03	0.1472	1.12E-02	0.2240	1.38E-02	0.2760	4.10E-02	0.4100
N	Lung	3.33E-03	0.0666	6.08E-03	0.1216	3.21E-03	0.0642	4.89E-03	0.0978	1.75E-02	0.1751
(1)	GI-LLI	7.16E-03	0.1432	1.06E-02	0.2120	1.36E-02	0.2720	1.16E-02	0.2310	4.29E-02	0.4291

		Unit 2 Gaseous Effluents									
		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Calendar Year	
	Batch & Continuous Releases	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit
(2)	Gamma Air	2.89E-07	0.0000	1.34E-05	0.0003	1.30E-06	0.0000	0.00E+00	0.0000	1.50E-05	0.0001
(2)	Beta Air	1.36E-09	0.0000	4.79E-06	0.0000	1.95E-09	0.0000	0.00E+00	0.0000	4.79E-06	0.0000
	Bone	0.00E+00	0.0000	3.97E-05	0.0005	0.00E+00	0.0000	0.00E+00	0.0000	3.97E-05	0.0003
O	Liver	2.54E-03	0.0339	2.48E-03	0.0331	2.36E-03	0.0315	2.68E-03	0.0357	1.01E-02	0.0671
R	Total Body	2.54E-03	0.0339	2.48E-03	0.0331	2.36E-03	0.0315	2.68E-03	0.0357	1.01E-02	0.0671
G	Thyroid	2.54E-03	0.0339	2.48E-03	0.0331	2.36E-03	0.0315	2.68E-03	0.0357	1.01E-02	0.0671
A	Kidney	2.54E-03	0.0339	2.48E-03	0.0331	2.36E-03	0.0315	2.68E-03	0.0357	1.01E-02	0.0671
N	Lung	2.54E-03	0.0339	2.48E-03	0.0331	2.36E-03	0.0315	2.68E-03	0.0357	1.01E-02	0.0671
(3)	GI-LLI	2.54E-03	0.0339	2.48E-03	0.0331	2.36E-03	0.0315	2.68E-03	0.0357	1.01E-02	0.0671

(1) These doses are listed in mrem; they are calculated for the maximum individual for all batch liquid effluents

(2) These doses are listed in mrad; they are calculated at the site boundary for batch & continuous gaseous effluents (0.4 miles NW)

(3) These doses are listed in mrem; they are calculated for the most likely exposed real individual (child) via all real pathways at 0.89 miles NW.

Limits used for calculation of percent (%) are from ODCM procedure 1/2-ODC-3.03, Attachment H Control 3.11.1.2, Attachment L Control 3.11.2.2, and Attachment M Control 3.11.2.3 (considered to be the design objectives).

Radioactive Effluent Release Report

Calendar Year - 2008
Table 6

Effluent Monitoring Instrumentation Channels Not Returned To Operable Status Within 30 Days
[RM-1DA-100] - Unit 1 Auxiliary Feed Pump Bay Drain Monitor On 11/16/08 this monitor was removed from service to perform the eighteen (18) month calibration. The installed Model 843-32 detector failed calibration requirements, and several attempts to calibrate new detectors (that were located from old stock and other nuclear power plants) were also unsuccessful. The thirty (30) day criteria was exceeded due to performance of model 843-32 detectors that are no longer manufactured. An upgraded detector (Model 843-32R) was purchased (which required an updated calibration geometry), and subsequent changes were made to applicable engineering documents, calculation packages and procedures. The monitor was calibrated and returned to operable status on 02/05/09. This condition and associated Corrective Actions are detailed in BVPS Condition Report No. CR08-50435, CR08-50765, CR08-50899, CR09-52947, CR09-52964 and BVPS-SAP Order Number 200197646-0700. As required by ODCM procedure 1/2-ODC-3.03, "Controls for RETS and REMP Programs", (as referenced in procedure Attachment E, Control 3.3.3.9, Table 3.3-12, Action 24), effluent releases via this pathway may continue provided grab samples are analyzed once per 12 hours. However, SINCE this liquid effluent pathway was diverted to the Tunnel Sump / Liquid Radwaste Treatment System on 11/16/08 (and remained diverted until the monitor was returned to operable status on 02/05/09), THEN there were no liquid releases through this effluent pathway. Therefore, grab sampling was not required.
[2RMQ-RQ303] - Unit 2 Waste Gas Storage Vault Vent Noble Gas Activity Monitor On 04/25/08 this monitor was removed from service due to a stuck check source. The thirty (30) day criteria was exceeded due to availability of replacement solenoid, and an apparent misinterpretation of the required due date to return the monitor to Operable status. This condition and associated Corrective Actions are detailed in BVPS Condition Report No. CR09-56073, and BVPS-SAP Order Number 200197646-0800. As required by ODCM procedure 1/2-ODC-3.03, "Controls for RETS and REMP Programs", (as referenced in procedure Attachment F, Control 3.3.3.10, Table 3.3-13, Action 29), effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and analyzed for gross radioactivity within 24 hours. A total of 102 grab samples were obtained and analyzed until the monitor was returned to operable status on 05/29/08. All gamma spectrometry analyses of these samples were less than LLD.

Radioactive Effluent Release Report

Calendar Year - 2008

Table 7

Total Dose Commitments, Total Effective Dose Equivalents and Population Doses

Total Dose Commitment From All Facility Releases To Members of the Public 40 CFR 190.10(a) Environmental Doses				
Organ	(1) Effluent Dose (mrem)	(2) Direct Radiation Dose (mrem)	Total Dose (mrem)	% of ODCM or 40 CFR 190 Limit
Bone	5.99E-02	0.00E+00	5.99E-02	0.24%
Liver	3.29E-01	0.00E+00	3.29E-01	1.32%
Total Body	2.81E-01	0.00E+00	2.81E-01	1.12%
Thyroid	2.17E-01	0.00E+00	2.17E-01	0.29%
Kidney	2.71E-01	0.00E+00	2.71E-01	1.08%
Lung	2.24E-01	0.00E+00	2.24E-01	0.90%
GI-LLI	2.75E-01	0.00E+00	2.75E-01	1.10%

(1) The cumulative dose contributions from liquid and gaseous effluents were determined in accordance with the applicable CONTROLS & SURVEILLANCE REQUIREMENTS listed in ODCM procedure 1/2-ODC-3.03. The dose commitment limits for 40 CFR 190 MEMBERS OF THE PUBLIC (ODCM 1/2-ODC-3.03 Control 3.11.4.1) are as follows:
a) < or = 25 mrem / calendar year (for the total body, or any organ except the thyroid)
b) < or = 75 mrem / calendar year (for the thyroid)

(2) The dose contribution listed for the total body is for Direct Radiation. This was calculated by comparing offsite TLD exposure at the ODCM controlling location (0.8 miles NW; Midland, PA) to TLD exposure at the REMP control location (16.5 miles SSW; Weirton, WV).

Compliance to 100 mrem Limit of 10 CFR 20.1301 For Total Effective Dose Equivalent

Pursuant to 10 CFR 20.1301(a)(1), the Total Effective Dose Equivalent from licensed operation to the maximum individual during the report period, is 3.20 mrem. This is a summation of Direct Radiation Exposure (calculated by comparing the maximum of all perimeter TLD exposures to TLD exposure at the REMP control location) plus Effluent Doses (calculated per the ODCM).

Members of the Public Doses Due To Their Activities Inside The Site Boundary

The radiation doses for MEMBER(S) OF THE PUBLIC due to their activities inside the site boundary are not greater than the doses listed in this table to show compliance with 40 CFR Part 190 or 10 CFR 20.1301. Evaluations have shown that exposure time for individuals not occupationally associated with the plant site is minimal in comparison to the exposure time considered for the dose calculation at or beyond the site boundary. Therefore, a separate assessment of radiation doses from radioactive effluents to MEMBER(S) OF THE PUBLIC, due to their activities inside the site boundary, is not necessary for this report period.

0-50 Mile Population Doses From Liquid and Gaseous Effluents

0-50 mile Total Population Dose from liquid and gaseous effluents =	546	man-mrem (Total Body)
0-50 mile Average Population Dose from liquid and gaseous effluents =	0.0001365	man-mrem (Total Body)

Radioactive Effluent Release Report

Calendar Year - 2008
Table 8

Offsite Dose Calculation Manual Surveillance Deficiencies

Failure to Change-Out Weekly Filter Media on Gaseous Effluent Monitors

ODCM procedure 1/2-ODC-3.03 "Controls for RETS and REMP Programs", Attachment K, Surveillance Requirement 4.11.2.1.2, Table 4.11-2 requires weekly sampling (i.e.; change-out) of the particulate filter paper charcoal cartridge.

Contrary to this requirement, the DRMS filter media (for all five of the continuous gaseous effluent pathways) ran for a 14-day period (04/02/08 - 04/16/08) instead of the required 7-day period (04/02/08 - 04/09/08). SINCE this is a Surveillance Deficiency of ODCM procedure 1/2-ODC-3.03, Attachment K, Surveillance Requirement 4.11.2.1.2, Table 4.11-2, THEN annotation is required in the 2008 Radioactive Effluent Release Report per the reporting requirements of ODCM procedure 1/2-ODC-3.03, Attachment U, Control 6.9.3.

The five continuous gaseous effluent pathways that were not changed-out per the ODCM requirement are as follows:

1) VV-2, Unit 2 SLCRS Unfiltered Pathway [2HVS-RQ101]
2) CV-2, Unit 2 SLCRS Filtered Pathway [2HVS-RQ109]
3) DV-2, Unit 2 Decontamination Building Vent Pathway [2RMQ-RQ301]
4) WV-2, Unit 2 Waste Gas storage Vault Vent Pathway [2RMQ-RQ303]
5) CB-2, Unit 2 Condensate Polishing Building Vent Pathway [2HVL-RQ112]

There were no consequences to the health and safety of the public by failing to obtain the samples on the required date. Specifically, no samples were lost, and a follow-up review of the sample analyses provided assurance that the effluent activity of the short-lived radionuclide of interest (e.g.; I-131 with half-life = 8.04 days) was not underestimated as a result of exceeding the normal sample period. This condition and associated Corrective Actions are detailed in BVPS Condition Report No. CR08-38484, and BVPS-SAP Order Number 200197646-0500.

Failure to Obtain a Grab Sample From an Inoperable Gaseous Effluent Monitor

ODCM procedure 1/2-ODC-3.03 "Controls for RETS and REMP Programs", Attachment F, Control 3.3.3.10, Table 3.3-13, Action 29 requires that effluent releases may continue via this pathway provided grab samples are taken at least once per 12 hours.

Contrary to this requirement, a grab sample for the radiation monitor on Unit 2 Condensate Polishing Building Vent Pathway [2HVL-RQ112] was missed during the inoperable period. The timeline of the condition indicated that on 10/23/08 the monitor was declared inoperable and the required once per shift grab samples were initiated. On 11/06/08 at 1610 hours the monitor was prematurely declared operable following repair, valve line-ups and set point verifications and the ODCM actions listed above were prematurely exited. On 11/07/08 at 0430 hours it was noted that the operations surveillance associated with the monitor was overdue, and the monitor was again declared inoperable. In summary, since the monitor had been prematurely declared operable, then there was a failure to obtain a grab sample during an inoperable period.

Sampling resumed until the monitor was properly returned to operable status on 11/07/08. This condition and associated Corrective Actions are detailed in BVPS Condition Report No. CR08-49089, and BVPS-SAP Order Number 200197646-0680.

Radioactive Effluent Release Report

Calendar Year - 2008

Table 9

Unit 1 and 2 Offsite Dose Calculation Manual Changes (Description)
There were no changes made to the Unit 1 and 2 Offsite Dose Calculation Manual during this report period.

Beaver Valley Power Station - Units 1 & 2

Radioactive Effluent Release Report

Calendar Year - 2008
Attachment 1
Joint Frequency Distribution Tables

Attachment 1

As specified in the ODCM, an annual summary of hourly meteorological data (in the form of joint frequency distribution) is provided for the calendar year. In summary the joint frequency distributions for 2008 are similar to recent years. During 2008 there was a slight shift towards more unstable and correspondingly less neutral hours than in recent years. This was probably caused by a combination of normal year-to-year variation and a change in the nature of the ground around the tower from weeds and grass in previous years to just dirt in 2008. It should be returned to a more natural state in 2009.

Meteorological Data Recovery

The Meteorological Data Recovery for the calendar year met the minimum requirement of at-least 90% (as specified in Section 5 of Revision 1 to Regulatory Guide 1.23, Meteorological Monitoring Programs for Nuclear Power Plants). The actual Meteorological Data Recovery is shown in the following table:

PERCENT RECOVERY OF INDIVIDUAL METEOROLOGICAL PARAMETERS
99.5% = Wind Speed 35'
99.5% = Wind Speed 150'
97.6% = Wind Speed 500'
99.5% = Wind Direction 35'
99.5% = Wind Direction 150'
96.0% = Wind Direction 500'
99.5% = Delta Temperature (150' - 35') 1P
99.5% = Delta Temperature (500' - 35') 2P
99.5% = Temperature 35'
99.5% = Precipitation
99% = Average Recovery of Individual Meteorological Parameters
PERCENT RECOVERY OF COMPOSITE VARIABLES
99.5% = Wind Speed 35', Wind Direction 35', Delta Temperature 1P
99.5% = Wind Speed 150', Wind Direction 150', Delta Temperature 1P
97.7% = Wind Speed 500', Wind Direction 500', Delta Temperature 2P
99.2% = Average Recovery of Composite Variables

Attachment 1 Clarification

Hourly meteorological data is not provided for specific periods of Abnormal Gaseous Release during the calendar quarters (as indicated in Regulatory Guide 1.21), for the following reasons:

1) All routine Gaseous Releases for the calendar year were determined to be within design objectives, where as, the ODCM Dose Limits and the ODCM Dose Rate Limits are considered to be the design objectives.

2) There were no Abnormal Gaseous Releases during the calendar year.

For a copy of the hourly meteorological data during the calendar quarters, contact Ms. Jennifer Powell-Campbell at 724-682-4209.

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

Calendar Year – 2008
Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35
Stability Class A Delta Temperature Extremely Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	17	49	0	0	0	0	66
NNE	22	39	0	0	0	0	61
NE	15	20	0	0	0	0	35
ENE	19	36	0	0	0	0	55
E	6	23	0	0	0	0	29
ESE	18	33	0	0	0	0	51
SE	19	23	0	0	0	0	42
SSE	9	15	0	0	0	0	24
S	7	18	1	0	0	0	26
SSW	5	41	7	1	0	0	54
SW	14	73	30	1	0	0	118
WSW	21	139	40	3	0	0	203
W	20	182	33	1	0	0	236
WNW	24	101	21	3	0	0	149
NW	17	61	5	1	0	0	84
NNW	22	50	1	0	0	0	73
Total	255	903	138	10	0	0	1306

Calm Hours not Included above for :	**Total Period**	16
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	1306
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

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Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35
Stability Class B Delta Temperature Moderately Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	2	8	0	0	0	0	10
NNE	7	5	0	0	0	0	12
NE	10	4	0	0	0	0	14
ENE	5	2	0	0	0	0	7
E	7	4	0	0	0	0	11
ESE	4	2	0	0	0	0	6
SE	1	1	0	0	0	0	2
SSE	3	0	0	0	0	0	3
S	2	2	0	0	0	0	4
SSW	3	1	1	0	0	0	5
SW	3	8	7	0	0	0	18
WSW	6	13	8	1	0	0	28
W	7	17	14	0	0	0	38
WNW	4	21	5	1	0	0	31
NW	7	15	1	0	0	0	23
NNW	6	17	0	0	0	0	23
Total	77	120	36	2	0	0	235

Calm Hours not Included above for :	**Total Period**	16
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	235
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

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Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35
Stability Class C Delta Temperature Slightly Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	11	13	0	0	0	0	24
NNE	5	3	0	0	0	0	8
NE	12	3	0	0	0	0	15
ENE	12	4	0	0	0	0	16
E	3	3	0	0	0	0	6
ESE	5	1	0	0	0	0	6
SE	3	1	0	0	0	0	4
SSE	0	0	0	0	0	0	0
S	2	4	0	0	0	0	6
SSW	2	6	3	0	0	0	11
SW	4	14	6	0	0	0	24
WSW	12	20	3	1	0	0	36
W	12	16	13	0	0	0	41
WNW	7	12	6	0	0	0	25
NW	6	14	2	0	0	0	22
NNW	8	10	0	0	0	0	18
Total	104	124	33	1	0	0	262

Calm Hours not Included above for :	Total Period	16
Variable Direction Hours for:	Total Period	0
Invalid Hours for:	Total Period	45
Valid Hours for this Stability Class for:	Total Period	262
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

Calendar Year – 2008
Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35
Stability Class D Delta Temperature Neutral

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	69	57	0	0	0	0	126
NNE	105	21	0	0	0	0	126
NE	89	16	0	0	0	0	105
ENE	112	60	0	0	0	0	172
E	76	30	0	0	0	0	106
ESE	30	4	0	0	0	0	34
SE	37	6	0	0	0	0	43
SSE	35	13	0	0	0	0	48
S	30	36	2	0	0	0	68
SSW	54	58	21	0	0	0	133
SW	58	175	108	4	1	0	346
WSW	70	221	135	21	2	0	449
W	70	270	126	11	0	0	477
WNW	75	177	24	0	0	0	276
NW	102	140	10	0	0	0	252
NNW	69	83	3	0	0	0	155
Total	1081	1367	429	36	3	0	2916

Calm Hours not Included above for :	Total Period	16
Variable Direction Hours for:	Total Period	0
Invalid Hours for:	Total Period	45
Valid Hours for this Stability Class for:	Total Period	2916
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

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Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35
Stability Class E Delta Temperature Slightly Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	49	14	0	0	0	0	63
NNE	66	5	0	0	0	0	71
NE	131	12	0	0	0	0	143
ENE	161	52	0	0	0	0	213
E	135	14	0	0	0	0	149
ESE	89	2	0	0	0	0	91
SE	117	1	0	0	0	0	118
SSE	98	14	0	0	0	0	112
S	173	60	8	0	0	0	241
SSW	156	109	13	2	0	0	280
SW	84	93	21	2	0	0	200
WSW	44	51	30	4	0	0	129
W	46	46	24	1	0	0	117
WNW	44	29	2	0	0	0	75
NW	72	25	0	0	0	0	97
NNW	57	7	0	0	0	0	64
Total	1522	534	98	9	0	0	2163

Calm Hours not Included above for :	Total Period	16
Variable Direction Hours for:	Total Period	0
Invalid Hours for:	Total Period	45
Valid Hours for this Stability Class for:	Total Period	2163
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

Calendar Year – 2008
Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)
Page 6 of 8

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35
Stability Class F Delta Temperature Moderately Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	10	0	0	0	0	0	10
NNE	19	1	0	0	0	0	20
NE	40	2	0	0	0	0	42
ENE	51	0	0	0	0	0	51
E	104	0	0	0	0	0	104
ESE	180	0	0	0	0	0	180
SE	243	0	0	0	0	0	243
SSE	174	0	0	0	0	0	174
S	126	7	0	0	0	0	133
SSW	69	14	0	0	0	0	83
SW	35	0	1	0	0	0	36
WSW	13	0	1	0	0	0	14
W	6	3	5	0	0	0	14
WNW	9	0	0	0	0	0	9
NW	11	1	0	0	0	0	12
NNW	9	1	0	0	0	0	10
Total	1099	29	7	0	0	0	1135

Calm Hours not Included above for :	**Total Period**	16
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	1135
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

Calendar Year – 2008
Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)
Page 7 of 8

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35
Stability Class G Delta Temperature Extremely Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	7	0	0	0	0	0	7
NNE	10	1	0	0	0	0	11
NE	11	0	0	0	0	0	11
ENE	29	0	0	0	0	0	29
E	69	1	0	0	0	0	70
ESE	134	0	0	0	0	0	134
SE	243	0	0	0	0	0	243
SSE	83	0	0	0	0	0	83
S	50	2	0	0	0	0	52
SSW	28	1	0	0	0	0	29
SW	10	1	0	0	0	0	11
WSW	13	0	0	0	0	0	13
W	1	0	0	0	0	0	1
WNW	2	0	0	0	0	0	2
NW	7	0	0	0	0	0	7
NNW	3	0	0	0	0	0	3
Total	700	6	0	0	0	0	706

Calm Hours not Included above for :	**Total Period**	16
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	706
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

Calendar Year – 2008
Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)

Hours at Each Wind Speed and Direction

Summary of All Stability Classes

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP35P **Direction:** DI35P **Lapse:** DT150-35

Delta Temperature

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	165	141	0	0	0	0	306
NNE	234	75	0	0	0	0	309
NE	308	57	0	0	0	0	365
ENE	389	154	0	0	0	0	543
E	400	75	0	0	0	0	475
ESE	460	42	0	0	0	0	502
SE	663	32	0	0	0	0	695
SSE	402	42	0	0	0	0	444
S	390	129	11	0	0	0	530
SSW	317	230	45	3	0	0	595
SW	208	364	173	7	1	0	753
WSW	179	444	217	30	2	0	872
W	162	534	215	13	0	0	924
WNW	165	340	58	4	0	0	567
NW	222	256	18	1	0	0	497
NNW	174	168	4	0	0	0	346
Total	4838	3083	741	58	3	0	8723

Calm Hours not Included above for :	**Total Period**	16
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	8723
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

Calendar Year – 2008
Attachment 1

Part 2: Joint Frequency Distribution Tables (150ft)
Page 1 of 8

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35
Stability Class A Delta Temperature Extremely Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	6	42	34	0	0	0	82
NNE	5	29	22	2	0	0	58
NE	5	18	6	1	0	0	30
ENE	2	30	23	0	0	0	55
E	0	28	16	0	0	0	44
ESE	1	17	24	3	0	0	45
SE	3	19	31	5	0	0	58
SSE	0	12	10	2	0	0	24
S	1	11	35	2	0	0	49
SSW	1	9	32	6	2	0	50
SW	9	20	48	11	1	0	89
WSW	14	40	65	10	2	0	131
W	14	92	115	48	10	3	282
WNW	9	55	65	45	3	1	178
NW	11	34	27	3	0	0	75
NNW	2	30	24	0	0	0	56
Total	83	486	577	138	18	4	1306

Calm Hours not Included above for :	**Total Period**	3
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	1306
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

Radioactive Effluent Release Report

Calendar Year – 2008
Attachment 1

Part 2: Joint Frequency Distribution Tables (150ft)
Page 2 of 8

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35
Stability Class B Delta Temperature Moderately Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	1	10	3	0	0	0	14
NNE	1	9	2	0	0	0	12
NE	1	5	1	0	0	0	7
ENE	0	10	3	1	0	0	14
E	1	5	2	1	0	0	9
ESE	1	3	2	0	0	0	6
SE	3	5	0	0	0	0	8
SSE	0	1	0	0	0	0	1
S	0	3	1	0	0	0	4
SSW	1	4	2	1	0	0	8
SW	3	3	6	3	0	0	15
WSW	4	5	6	2	1	0	18
W	1	10	12	17	7	0	47
WNW	2	7	13	10	1	0	33
NW	4	8	8	0	0	0	20
NNW	2	8	9	0	0	0	19
Total	25	96	70	35	9	0	235

Calm Hours not Included above for :	**Total Period**	3
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	235
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35
Stability Class C Delta Temperature Slightly Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	2	9	9	0	0	0	20
NNE	2	9	3	0	0	0	14
NE	1	8	1	0	0	0	10
ENE	1	10	4	1	0	0	16
E	0	6	1	0	0	0	7
ESE	0	3	1	1	0	0	5
SE	0	6	1	0	0	0	7
SSE	1	1	2	0	0	0	4
S	0	1	7	0	0	0	8
SSW	1	6	5	1	0	0	13
SW	0	4	10	3	0	0	17
WSW	4	7	7	0	1	0	19
W	9	17	14	17	2	0	59
WNW	2	12	10	6	0	0	30
NW	1	8	8	1	0	0	18
NNW	2	8	5	0	0	0	15
Total	26	115	88	30	3	0	262

Calm Hours not Included above for :	**Total Period**	3
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	262
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)
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Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35
Stability Class D Delta Temperature Neutral

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	36	82	25	0	0	0	143
NNE	33	63	20	1	0	0	117
NE	38	44	7	0	0	0	89
ENE	22	107	48	4	0	0	181
E	19	57	15	0	0	0	91
ESE	12	28	8	0	0	0	48
SE	16	26	8	0	0	0	50
SSE	9	24	14	0	0	0	47
S	12	38	38	3	0	0	91
SSW	7	36	60	12	0	0	115
SW	25	83	121	36	2	1	268
WSW	28	80	160	65	15	3	351
W	37	86	280	184	47	6	640
WNW	30	114	156	56	4	0	360
NW	27	92	53	6	0	0	178
NNW	30	88	27	2	0	0	147
Total	381	1048	1040	369	68	10	2916

Calm Hours not Included above for :	**Total Period**	3
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	2916
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35
Stability Class E Delta Temperature Slightly Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	38	29	7	0	0	0	74
NNE	57	32	4	0	0	0	93
NE	76	77	3	0	0	0	156
ENE	61	141	40	1	0	0	243
E	46	51	18	0	0	0	115
ESE	19	29	12	0	0	0	60
SE	27	30	5	0	0	0	62
SSE	26	35	12	0	0	0	73
S	34	69	70	12	0	0	185
SSW	52	99	76	9	3	0	239
SW	71	75	71	9	2	0	228
WSW	47	58	39	11	3	0	158
W	28	65	39	42	7	2	183
WNW	18	94	45	4	0	0	161
NW	17	43	5	0	0	0	65
NNW	27	43	4	0	0	0	74
Total	644	970	450	88	15	2	2169

Calm Hours not Included above for :	**Total Period**	3
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	2169
Total Hours for Period		8784

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Part 2: Joint Frequency Distribution Tables (150ft)
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Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35
Stability Class F Delta Temperature Moderately Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	77	13	0	0	0	0	90
NNE	114	18	1	0	0	0	133
NE	112	55	0	0	0	0	167
ENE	56	54	10	0	0	0	120
E	26	17	0	0	0	0	43
ESE	12	13	1	0	0	0	26
SE	12	4	1	0	0	0	17
SSE	14	12	3	0	0	0	29
S	28	21	4	0	0	0	53
SSW	57	43	7	0	0	0	107
SW	86	49	10	1	0	0	146
WSW	48	26	1	0	0	0	75
W	23	15	1	4	2	0	45
WNW	12	17	1	0	0	0	30
NW	18	5	1	0	0	0	24
NNW	28	5	1	0	0	0	34
Total	723	367	42	5	2	0	1139

Calm Hours not Included above for :	**Total Period**	3
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	1139
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35
Stability Class G Delta Temperature Extremely Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	32	3	0	0	0	0	35
NNE	93	38	0	0	0	0	131
NE	77	39	1	0	0	0	117
ENE	25	39	2	0	0	0	66
E	18	11	0	0	0	0	29
ESE	13	9	0	0	0	0	22
SE	10	4	0	0	0	0	14
SSE	6	12	0	0	0	0	18
S	11	26	2	0	0	0	39
SSW	39	40	5	0	0	0	84
SW	52	17	1	0	0	0	70
WSW	18	9	1	0	0	0	28
W	11	3	1	0	0	0	15
WNW	12	2	0	0	0	0	14
NW	15	4	0	0	0	0	19
NNW	7	1	0	0	0	0	8
Total	439	257	13	0	0	0	709

Calm Hours not Included above for :	Total Period	3
Variable Direction Hours for:	Total Period	0
Invalid Hours for:	Total Period	45
Valid Hours for this Stability Class for:	Total Period	709
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)

Hours at Each Wind Speed and Direction

Summary of All Stability Classes

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP150P **Direction:** DI150P **Lapse:** DT150-35

Delta Temperature

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	192	188	78	0	0	0	458
NNE	305	198	52	3	0	0	558
NE	310	246	19	1	0	0	576
ENE	167	391	130	7	0	0	695
E	110	175	52	1	0	0	338
ESE	58	102	48	4	0	0	212
SE	71	94	46	5	0	0	216
SSE	56	97	41	2	0	0	196
S	86	169	157	17	0	0	429
SSW	158	237	187	29	5	0	616
SW	246	251	267	63	5	1	833
WSW	163	225	279	88	22	3	780
W	123	288	462	312	75	11	1271
WNW	85	301	290	121	8	1	806
NW	93	194	102	10	0	0	399
NNW	98	183	70	2	0	0	353
Total	2321	3339	2280	665	115	16	8736

Calm Hours not Included above for :	**Total Period**	3
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	45
Valid Hours for this Stability Class for:	**Total Period**	8736
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 3: Joint Frequency Distribution Tables (500ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35
Stability Class A Delta Temperature Extremely Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	0	1	5	0	0	0	6
NNE	0	1	3	0	0	0	4
NE	0	1	3	0	0	0	4
ENE	0	2	2	0	0	0	4
E	0	0	3	0	0	0	3
ESE	0	0	7	0	0	0	7
SE	0	1	5	7	0	0	13
SSE	0	0	2	1	0	0	3
S	0	0	6	0	0	0	6
SSW	0	1	1	0	0	0	2
SW	0	2	1	0	0	0	3
WSW	0	0	1	0	0	0	1
W	0	3	3	2	1	0	9
WNW	0	5	4	3	3	0	15
NW	0	1	1	0	1	0	3
NNW	0	0	2	0	0	0	2
Total	0	18	49	13	5	0	85

Calm Hours not Included above for :	Total Period	4
Variable Direction Hours for:	Total Period	0
Invalid Hours for:	Total Period	522
Valid Hours for this Stability Class for:	Total Period	85
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 3: Joint Frequency Distribution Tables (500ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35
Stability Class B Delta Temperature Moderately Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	0	2	8	0	0	0	10
NNE	0	1	3	0	0	0	4
NE	0	1	2	0	0	0	3
ENE	0	1	3	2	0	0	6
E	0	1	4	0	0	0	5
ESE	0	0	5	3	0	0	8
SE	0	0	7	2	1	0	10
SSE	0	0	1	2	0	0	3
S	0	0	1	0	0	0	1
SSW	0	0	1	3	0	0	4
SW	0	0	4	3	0	0	7
WSW	0	0	3	2	0	0	5
W	1	2	10	1	2	0	16
WNW	0	2	9	8	5	1	25
NW	0	2	6	2	0	0	10
NNW	0	2	5	1	0	0	8
Total	1	14	72	29	8	1	125

Calm Hours not Included above for :	**Total Period**	4
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	522
Valid Hours for this Stability Class for:	**Total Period**	125
Total Hours for Period		8784

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Part 3: Joint Frequency Distribution Tables (500ft)
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Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35
Stability Class C Delta Temperature Slightly Unstable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	0	3	13	3	0	0	19
NNE	0	2	5	1	0	0	8
NE	1	1	1	0	0	0	3
ENE	0	6	5	1	0	0	12
E	0	2	4	2	0	0	8
ESE	0	5	4	2	0	0	11
SE	0	1	6	2	1	0	10
SSE	0	1	2	0	0	0	3
S	0	0	0	3	0	0	3
SSW	0	1	9	2	2	0	14
SW	0	4	9	6	1	0	20
WSW	0	2	13	9	5	0	29
W	1	11	17	5	3	2	39
WNW	2	8	14	7	7	0	38
NW	0	3	7	2	0	0	12
NNW	0	1	4	1	0	0	6
Total	4	51	113	46	19	2	235

Calm Hours not Included above for :	Total Period	4
Variable Direction Hours for:	Total Period	0
Invalid Hours for:	Total Period	522
Valid Hours for this Stability Class for:	Total Period	235
Total Hours for Period		8784

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Part 3: Joint Frequency Distribution Tables (500ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35
Stability Class D Delta Temperature Neutral

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	14	82	152	33	0	0	281
NNE	17	53	26	22	1	0	119
NE	17	42	19	11	1	0	90
ENE	15	46	54	35	3	0	153
E	14	71	105	18	1	0	209
ESE	15	81	85	33	4	0	218
SE	6	43	68	22	2	0	141
SSE	7	19	55	21	1	0	103
S	5	22	67	55	13	4	166
SSW	11	26	76	117	31	7	268
SW	10	34	146	216	53	6	465
WSW	14	52	133	196	52	38	485
W	19	67	220	343	203	62	914
WNW	10	48	205	216	61	23	563
NW	9	32	140	75	7	0	263
NNW	11	47	151	25	1	0	235
Total	194	765	1702	1438	434	140	4673

Calm Hours not Included above for :	Total Period	4
Variable Direction Hours for:	Total Period	0
Invalid Hours for:	Total Period	522
Valid Hours for this Stability Class for:	Total Period	4673
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 3: Joint Frequency Distribution Tables (500ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35
Stability Class E Delta Temperature Slightly Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	15	16	29	14	1	0	75
NNE	13	19	18	8	0	0	58
NE	24	25	16	2	0	0	67
ENE	13	32	47	6	1	0	99
E	23	40	56	10	0	0	129
ESE	33	39	40	10	2	0	124
SE	29	30	44	25	7	1	136
SSE	16	24	39	15	8	1	103
S	21	26	50	68	25	3	193
SSW	11	12	58	86	33	6	206
SW	29	30	53	112	33	3	260
WSW	39	58	36	21	5	1	160
W	44	79	91	36	8	7	265
WNW	24	48	44	9	0	2	127
NW	24	19	26	6	0	0	75
NNW	14	22	17	8	0	0	61
Total	372	519	664	436	123	24	2138

Calm Hours not Included above for :	**Total Period**	4
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	522
Valid Hours for this Stability Class for:	**Total Period**	2138
Total Hours for Period		8784

Beaver Valley Power Station – Units 1 & 2

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Part 3: Joint Frequency Distribution Tables (500ft)

Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35
Stability Class F Delta Temperature Moderately Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	10	4	6	2	0	0	22
NNE	8	9	2	0	0	0	19
NE	18	18	2	0	0	0	38
ENE	13	49	24	3	0	0	89
E	13	44	20	0	0	0	77
ESE	19	40	12	0	0	0	71
SE	18	31	11	5	0	0	65
SSE	19	29	11	6	0	0	65
S	16	20	42	20	0	0	98
SSW	15	20	24	21	1	0	81
SW	21	21	20	23	4	1	90
WSW	20	37	10	2	0	0	69
W	18	23	17	2	0	0	60
WNW	16	26	7	1	0	0	50
NW	12	7	4	1	0	0	24
NNW	6	3	1	0	0	0	10
Total	242	381	213	86	5	1	928

Calm Hours not Included above for :	**Total Period**	4
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	522
Valid Hours for this Stability Class for:	**Total Period**	928
Total Hours for Period		8784

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Part 3: Joint Frequency Distribution Tables (500ft)
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Hours at Each Wind Speed and Direction

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00
Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35
Stability Class G Delta Temperature Extremely Stable

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	1	0	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	1	4	0	0	0	0	5
ESE	2	3	1	0	0	0	6
SE	1	6	1	0	0	0	8
SSE	3	2	0	1	0	0	6
S	4	7	5	2	0	0	18
SSW	3	4	5	6	0	0	18
SW	3	0	1	0	0	0	4
WSW	2	1	0	0	0	0	3
W	2	1	0	0	0	0	3
WNW	1	1	0	0	0	0	2
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Total	23	29	13	9	0	0	74

Calm Hours not Included above for :	**Total Period**	4
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	522
Valid Hours for this Stability Class for:	**Total Period**	74
Total Hours for Period		8784

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Part 3: Joint Frequency Distribution Tables (500ft)

Hours at Each Wind Speed and Direction

Summary of All Stability Classes

Total Period

Period of Record = 1/1/2008 00:00 - 12/31/2008 23:00

Elevation: **Speed:** SP500P **Direction:** DI500P **Lapse:** DT500-35

Delta Temperature

Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	39	108	213	52	1	0	413
NNE	38	85	57	31	1	0	212
NE	61	88	43	13	1	0	206
ENE	41	136	135	47	4	0	363
E	51	162	192	30	1	0	436
ESE	69	168	154	48	6	0	445
SE	54	112	142	63	11	1	383
SSE	45	75	110	46	9	1	286
S	46	75	171	148	38	7	485
SSW	40	64	174	235	67	13	593
SW	63	91	234	360	91	10	849
WSW	75	150	196	230	62	39	752
W	85	186	358	389	217	71	1306
WNW	53	138	283	244	76	26	820
NW	45	64	184	86	8	0	387
NNW	31	75	180	35	1	0	322
Total	836	1777	2826	2057	594	168	8258

Calm Hours not Included above for :	**Total Period**	4
Variable Direction Hours for:	**Total Period**	0
Invalid Hours for:	**Total Period**	522
Valid Hours for this Stability Class for:	**Total Period**	8258
Total Hours for Period		8784