FENOC

FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
Route 168
P.O. Box 4
Shippingport, PA 15077-0004

Lew W. Myers
Senior Vice President

724-682-5234
Fax: 724-643-8069

L-02-034
March 29, 2002

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

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Annual Radioactive Effluent Release Report for 2001

Reference: 1) FENOC; Beaver Valley Power Station Unit 1 and Unit 2 Technical Specification 6.9.3, Annual Radioactive Effluent Release Report

2) USNRC; Regulatory Guide 1.21 - Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants, Revision 1, June 1974

3) FENOC; BV-1 and 2 Offsite Dose Calculation Manual, Appendix E Report 6.9.1.11

The Annual Radioactive Effluent Release Report is hereby submitted for year 2001 for Beaver Valley Power Station (BVPS) Units 1 and 2 in accordance with the requirements of Reference (1). This report also contains the information required by References (2) and (3).

This report is considered a single submittal for the two unit site. This report combines those sections that are common to both units at the site. However, where the two units have separate radwaste systems, the report does specify the releases of radioactive material from each unit. In reference to this, Unit 1 and Unit 2 have shared radwaste systems for gaseous elevated releases and for liquid releases. The report format is summarized in the index.

The following is a summary of the liquid and gaseous effluent control program at BVPS during 2001:

- Units 1 and 2 discharged 2.93E6 liters of liquid waste (undiluted volume). The total activity discharged from the site was 315 curies of tritium, and 0.114 curies of fission

IE19

and activation products. The Unit 1 or 2 Total Body Dose for the year was 0.0323 mrem, or 1.08% of the 3 mrem per unit annual limit. The Unit 1 or 2 Highest Organ (Liver) Dose for the year was 0.0422 mrem, or 0.422% of the 10 mrem per unit annual limit.

- Units 1 and 2 discharged 1.44E4 cu. ft. of stored gaseous radwaste. The total activity discharged from all site gaseous releases was 250 curies of tritium, and 5.35 curies of fission and activation gases. The Unit 1 or 2 Highest Gamma Air Dose for the year was 0.142 mrad, or 1.42% of the 10 mrad per unit annual limit. The Unit 1 or 2 Highest Beta Air Dose for the year was 0.0514 mrad, or 0.257% of the 20 mrad per unit annual limit. The Unit 1 or 2 Highest Organ (Thyroid) Dose for the year was 0.828 mrem, or 5.52% of the 15 mrem per unit annual limit.

- There were no abnormal liquid releases during the report period.

- There was one abnormal gaseous release during the report period. This involved a leak of 108 cu. ft. of gas space (4.15E-4 curies) from a Unit 1 Gas Storage Tank to the environment via a monitored effluent release pathway. This release had no measurable impact on offsite dose totals.

- There was one Effluent Monitoring Instrumentation Channel (RM-LW-104) not returned to OPERABLE status within 30 days in 2001. This condition is described in the Annual Radioactive Effluent Release Report (ARERR) Table 6.

- There was one ODCM Surveillance Deficiency in 2001. It involved the interruption of continuous filter and charcoal sample collection during a calibration of effluent radiation monitor RM-GW-109. This condition is described in ARERR Table 8.

If there are any questions concerning this report, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Corrective Action at 724-682-5284.

Sincerely,

Lew W. Myers

Lew W. Myers

Enclosure

c: United States Nuclear Regulatory Commission
Regional Administrator, Region I
475 Allendale Road
King of Prussia, PA 19406

United States Nuclear Regulatory Commission
Resident Inspector
Beaver Valley Power Station

American Nuclear Insurers Library
Town Center, Suite 300S
29 South Main Street
West Hartford, CT 06107-2445

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

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

FENOC

Beaver Valley Power Station - Units 1 & 2

Annual

Radioactive Effluent Release Report

Calendar Year - 2001

FENOC
Beaver Valley Power Station - Units 1 & 2

Annual Radioactive Effluent Release Report

Calendar Year - 2001
Index

Table No.	Title	Page
	Supplemental Information Page	1
Table 1A	Gaseous Effluents - Summation Of All Releases	2
Table 1B-EB	Gaseous Effluents - Elevated Batch Releases	3
Table 1B-EC	Gaseous Effluents - Elevated Continuous Releases	4
Table 1C-GB1	Gaseous Effluents - Ground Level Batch Releases (Unit 1)	5
Table 1C-GC1	Gaseous Effluents - Ground Level Continuous Releases (Unit 1)	6
Table 1C-GB2	Gaseous Effluents - Ground Level Batch Releases (Unit 2)	7
Table 1C-GC2	Gaseous Effluents - Ground Level Continuous Releases (Unit 2)	8
Table 2A	Liquid Effluents - Summation Of All Releases	9
Table 2B-B	Liquid Effluents - Batch Releases	10
Table 2B-C	Liquid Effluents - Continuous Releases	11
Table 3A	Solid Waste And Irradiated Fuel Shipments (Part 1 of 3)	12
Table 3B	Solid Waste And Irradiated Fuel Shipments (Part 2 of 3)	13
Table 3C	Solid Waste And Irradiated Fuel Shipments (Part 3 of 3)	14
Table 4	Lower Limits Of Detectability	15
Table 5A	Assessment Of Radiation Doses (Unit 1)	16
Table 5B	Assessment Of Radiation Doses (Unit 2)	17
Table 6	Effluent Monitoring Instrumentation Channels Not Returned To Operable Status Within 30 Days	18
Table 7	Total Dose Commitments, Total Effective Dose Equivalents and Population Doses	19
Table 8	Offsite Dose Calculation Manual Surveillance Deficiencies	20
Table 9	Unit 1 and 2 Offsite Dose Calculation Manual Changes (Description)	21
Attachment 1	Joint Frequency Distribution Tables	

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL# A9.690E
HP Form A5.1
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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		19	21	21	19	80
2. Total time period for batch releases	minutes	5049	4565	7200	4243	21057
3. Maximum time period for a batch release	minutes	995	1097	1015	942	1097
4. Average time period for batch releases	minutes	266	217	343	223	263
5. Minimum time period for a batch release	minutes	75	52	79	28	28
6. Average river flow during release periods	cuft/sec	47167	40500	13433	18033	29783
b. Gaseous Batch Releases						
1. Number of batch releases		5	16	12	15	48
2. Total time period for batch releases	minutes	438	18059	4922	13440	36859
3. Maximum time period for a batch release	minutes	167	9185	960	46800	46800
4. Average time period for batch releases	minutes	88	1129	410	896	768
5. Minimum time period for a batch release	minutes	5	40	1	60	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	1	1
2. Total activity released	Curies	0.00E+00	0.00E+00	0.00E+00	4.15E-04	4.15E-04

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.2
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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. Total release	Ci	1.99E-01	4.62E+00	5.03E-01	2.71E-02	5.35E+00	2.65E+01
2. Average release rate for period	uCi/sec	2.53E-02	5.86E-01	6.38E-02	3.43E-03	1.70E-01	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
B. Iodines							
1. Total iodine - 131	Ci	0.00E+00	0.00E+00	6.09E-05	0.00E+00	6.09E-05	2.83E+01
2. Average release rate for period	uCi/sec	0.00E+00	0.00E+00	7.73E-06	0.00E+00	1.93E-06	
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	2.42E-05	1.28E-04	1.27E-04	1.08E-05	2.90E-04	3.00E+01
2. Average release rate for period	uCi/sec	3.07E-06	1.62E-05	1.61E-05	1.37E-06	9.19E-06	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
4. Gross alpha radioactivity	Ci	9.53E-07	9.77E-07	1.18E-06	LLD	3.11E-06	
D. Tritium							
1. Total release	Ci	4.37E+01	5.75E+01	7.82E+01	7.01E+01	2.50E+02	3.29E+01
2. Average release rate for period	uCi/sec	5.55E+00	7.30E+00	9.92E+00	8.90E+00	7.92E+00	
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, and D.2 is the average amount of seconds per calendar quarter (7.88E+06 seconds).

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.3
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	NR	LLD	LLD	1.17E-03	1.17E-03
krypton-85	Ci	NR	1.04E-01	1.43E-03	2.52E-02	1.31E-01
krypton-85m	Ci	NR	LLD	LLD	LLD	LLD
krypton-87	Ci	NR	LLD	LLD	LLD	LLD
krypton-88	Ci	NR	LLD	LLD	LLD	LLD
xenon-131m	Ci	NR	2.50E-03	LLD	LLD	2.50E-03
xenon-133	Ci	NR	2.09E-01	LLD	6.82E-04	2.10E-01
xenon-133m	Ci	NR	2.01E-03	LLD	LLD	2.01E-03
xenon-135	Ci	NR	1.28E-04	LLD	LLD	1.28E-04
xenon-135m	Ci	NR	LLD	LLD	LLD	LLD
xenon-138	Ci	NR	LLD	LLD	LLD	LLD
unidentified	Ci	NR	NONE	NONE	NONE	NONE
Total for period	Ci	ND	3.18E-01	1.43E-03	2.71E-02	3.46E-01
2. Iodines						
iodine-131	Ci	NR	LLD	LLD	LLD	LLD
iodine-133	Ci	NR	LLD	LLD	LLD	LLD
iodine-135	Ci	NR	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	ND	ND	ND
3. Particulates						
chromium-51	Ci	NR	LLD	LLD	LLD	LLD
manganese-54	Ci	NR	LLD	LLD	LLD	LLD
iron-59	Ci	NR	LLD	LLD	LLD	LLD
cobalt-57	Ci	NR	LLD	LLD	LLD	LLD
cobalt-58	Ci	NR	1.23E-05	LLD	LLD	1.23E-05
cobalt-60	Ci	NR	LLD	LLD	LLD	LLD
zinc-65	Ci	NR	LLD	LLD	LLD	LLD
strontium-89	Ci	NR	LLD	LLD	LLD	LLD
strontium-90	Ci	NR	LLD	LLD	LLD	LLD
molybdenum-99	Ci	NR	LLD	LLD	LLD	LLD
cesium-134	Ci	NR	LLD	LLD	LLD	LLD
cesium-137	Ci	NR	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	NR	LLD	LLD	LLD	LLD
cerium-141	Ci	NR	LLD	LLD	LLD	LLD
cerium-144	Ci	NR	LLD	LLD	LLD	LLD
unidentified	Ci	NR	NONE	NONE	NONE	NONE
Total for period	Ci	ND	1.23E-05	ND	ND	1.23E-05

LLD = Below the Lower Limit of Detectability, in uCi/cc (Table 4).
ND = None Detected
NR = No Releases

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.4
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	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	7.17E-02	4.09E-01	LLD	4.81E-01
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	7.17E-02	4.09E-01	ND	4.81E-01
2. Iodines						
iodine-131	Ci	LLD	LLD	1.22E-06	LLD	1.22E-06
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	1.22E-06	ND	1.22E-06
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

FENOC
Beaver Valley Power Station - Unit 1

RTL # A9.690E
HP Form A5.5
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	3.81E-02	9.27E-02	LLD	1.31E-01
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	3.81E-02	9.27E-02	ND	1.31E-01
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

FENOC
Beaver Valley Power Station - Unit 1

RTL # A9.690E
HP Form A5.6
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	4.19E+00	LLD	LLD	4.19E+00
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	1.99E-01	LLD	LLD	LLD	1.99E-01
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	1.99E-01	4.19E+00	ND	ND	4.39E+00
2. Iodines						
iodine-131	Ci	LLD	LLD	5.97E-05	LLD	5.97E-05
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	5.97E-05	ND	5.97E-05
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	9.94E-05	7.62E-05	LLD	1.76E-04
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
zirconium/niobium-97	Ci	LLD	LLD	2.19E-05	LLD	2.19E-05
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	6.05E-06	LLD	6.05E-06
cesium-137	Ci	LLD	LLD	1.41E-05	1.08E-05	2.49E-05
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	2.09E-05	LLD	LLD	LLD	2.09E-05
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	2.09E-05	9.94E-05	1.18E-04	1.08E-05	2.49E-04

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

ND = None Detected

FENOC
Beaver Valley Power Station - Unit 2

RTL # A9.690E
HP Form A5.7
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	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						
beryllium-7	Ci	LLD	LLD	LLD	LLD	LLD
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-56	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
zirconium/niobium-97	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

FENOC
Beaver Valley Power Station - Unit 2

RTL # A9.690E
HP Form A5.8
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	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	6.38E-07	LLD	LLD	LLD	6.38E-07
cobalt-58	Ci	2.68E-06	1.60E-05	2.81E-06	LLD	2.15E-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	5.75E-06	LLD	5.75E-06
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	3.32E-06	1.60E-05	8.56E-06	ND	2.79E-05

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

ND = None Detected

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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	4.09E-02	1.51E-02	2.71E-02	3.05E-02	1.14E-01	2.60E+01
2. Average diluted concentration	uCi/ml	9.06E-08	2.89E-08	3.17E-08	7.88E-08	5.12E-08	
3. Percent of applicable limit	%	1.63E+00	6.04E-01	1.08E+00	1.22E+00	1.14E+00	
B. Tritium							
1. Total release	Ci	8.48E+01	6.32E+01	9.62E+01	7.11E+01	3.15E+02	2.50E+01
2. Average diluted concentration	uCi/ml	1.88E-04	1.21E-04	1.12E-04	1.84E-04	1.42E-04	
3. Percent of applicable limit	%	1.88E+00	1.21E+00	1.12E+00	1.84E+00	1.42E+00	
C. Dissolved and entrained gases							
1. Total release	Ci	1.31E-04	1.57E-04	7.71E-05	5.96E-06	3.71E-04	2.70E+01
2. Average diluted concentration	uCi/ml	2.89E-10	3.00E-10	9.00E-11	1.54E-11	1.67E-10	
3. Percent of applicable limit	%	1.45E-04	1.50E-04	4.50E-05	7.71E-06	8.36E-05	
D. Gross alpha radioactivity (total release)	Ci	7.08E-07	2.87E-07	4.28E-07	LLD	1.42E-06	2.89E+01
E. Volume of waste released (prior to dilution)	liters	7.40E+05	6.12E+05	9.70E+05	6.10E+05	2.93E+06	1.12E+01
F. Volume of dilution water used	liters	4.50E+08	5.22E+08	8.55E+08	3.86E+08	2.21E+09	2.29E+01

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)

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.10
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	1.96E-04	4.78E-05	1.09E-04	9.19E-05	4.45E-04
iron-55	Ci	1.66E-02	6.23E-03	4.43E-03	7.00E-03	3.42E-02
iron-59	Ci	1.75E-04	LLD	LLD	LLD	1.75E-04
cobalt-57	Ci	LLD	LLD	2.19E-06	7.56E-05	7.78E-05
cobalt-58	Ci	6.16E-03	2.96E-03	2.68E-03	8.89E-03	2.07E-02
cobalt-60	Ci	2.29E-03	6.09E-04	2.30E-03	1.55E-03	6.75E-03
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	4.06E-07	LLD	LLD	LLD	4.06E-07
strontium-90	Ci	2.60E-07	3.30E-07	1.10E-07	1.78E-07	8.78E-07
zirconium/niobium-95	Ci	3.25E-04	1.19E-04	2.56E-05	1.33E-06	4.71E-04
zirconium/niobium-97	Ci	5.60E-03	1.26E-03	4.39E-03	3.78E-03	1.50E-02
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
technetium-99m	Ci	LLD	LLD	LLD	LLD	LLD
tin-113	Ci	1.59E-05	3.70E-05	LLD	LLD	5.29E-05
tin-117m	Ci	LLD	LLD	1.22E-05	LLD	1.22E-05
silver-110m	Ci	5.68E-03	1.24E-03	5.57E-03	5.56E-03	1.80E-02
antimony-122	Ci	8.83E-07	9.92E-07	LLD	LLD	1.88E-06
antimony-124	Ci	1.08E-03	3.38E-04	3.46E-03	1.63E-03	6.50E-03
antimony-125	Ci	2.31E-03	1.50E-03	3.14E-03	1.82E-03	8.77E-03
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	1.76E-04	3.16E-04	3.80E-04	9.11E-06	8.81E-04
cesium-137	Ci	2.87E-04	4.59E-04	6.25E-04	5.26E-05	1.42E-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	4.09E-02	1.51E-02	2.71E-02	3.05E-02	1.14E-01
2. Dissolved and entrained gases						
argon-41	Ci	1.12E-04	LLD	LLD	LLD	1.12E-04
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	1.85E-05	1.57E-04	7.71E-05	5.96E-06	2.59E-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	1.31E-04	1.57E-04	7.71E-05	5.96E-06	3.71E-04

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

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.11
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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)

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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		4.62E+01 m3	4.40E+02 m3	0.00E+00 % (1)
b. Volume Buried		1.66E+00 m3	0.00E+00 m3	0.00E+00 % (1)
c. Total Activity		7.06E+02 Ci	4.00E-02 Ci	3.00E+01 %
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)		Percent (%)	Percent (%)	
H-3		0.49 %	10.30 %	
C-14		0.29 %	9.07 %	
Cr-51		0.20 %	0.00 %	
Mn-54		1.98 %	0.08 %	
Fe-55		19.00 %	68.90 %	
Fe-59		0.05 %	0.00 %	
Co-57		0.32 %	0.00 %	
Co-58		32.00 %	0.06 %	
Co-60		13.30 %	9.60 %	
Ni-59		0.16 %	0.00 %	
Ni-63		18.60 %	0.42 %	
Zn-65		0.03 %	0.00 %	
Sr-90		0.03 %	0.00 %	
Nb-95		0.51 %	0.08 %	
Zr-95		0.40 %	0.00 %	
Ag-110m		0.82 %	0.01 %	
Sn-113		0.05 %	0.00 %	
Sb-124		0.23 %	0.01 %	
Sb-125		0.90 %	0.03 %	
Cs-134		4.06 %	0.18 %	
Cs-137		6.50 %	0.49 %	
Ce-144/Pr-144		0.07 %	0.66 %	
Pu-241		0.02 %	0.12 %	
3. Number of Shipments		9	29	
a. Type of Container Used	LSA	4	4	
	Type A	0	0	
	Type B	5	0	
	Large Quantity	0	0	
	Limited Quantity	0	25	
b. Solidification Agent Used	Cement	0	0	
	Urea Formaldehyde	0	0	
	None	9	29	
c. Mode of Transport	Truck	9	29	
	Rail	0	0	
d. Final Destination	Erwin, TN	6	0	
	Oak Ridge, TN	3	17	
	Richland, WA	0	12	
e. Waste Class per 10 CFR Part 61	Class A	5	29	
	Class B	4	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.

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.13
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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		3.59E+02 m3	4.15E+02 m3	0.00E+00 % (1)
b. Volume Buried		5.29E+01 m3	3.26E+01 m3	0.00E+00 % (1)
c. Total Activity		1.94E+00 Ci	2.42E-01 Ci	3.00E+01 %
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)		Percent (%)	Percent (%)	
H-3		0.32 %	1.37 %	
C-14		0.16 %	0.45 %	
Cr-51		0.00 %	0.00 %	
Mn-54		0.58 %	0.58 %	
Fe-55		4.06 %	16.10 %	
Co-57		0.00 %	0.02 %	
Co-58		86.20 %	15.30 %	
Co-60		2.09 %	11.70 %	
Ni-59		0.03 %	0.14 %	
Ni-63		1.48 %	8.21 %	
Sr-90		0.01 %	0.16 %	
Nb-95		0.04 %	0.11 %	
Zr-95		0.00 %	0.00 %	
Tc-99		0.01 %	0.08 %	
Ag-110m		0.02 %	0.10 %	
Sb-124		0.00 %	0.00 %	
Sb-125		0.02 %	0.34 %	
I-129		0.03 %	0.08 %	
Cs-134		1.84 %	5.77 %	
Cs-137		2.92 %	39.40 %	
Ce-144/Pr-144		0.00 %	0.00 %	
Pu-241		0.02 %	0.15 %	
3. Number of Shipments		13	10	
a. Type of Container Used	LSA	13	10	
	Type A	0	0	
	Type B	0	0	
	Large Quantity	0	0	
b. Solidification Agent Used	Cement	0	0	
	Urea Formaldehyde	0	0	
	None	13	10	
c. Mode of Transport	Truck	13	10	
	Rail	0	0	
	Other	0	0	
d. Final Destination	Oak Ridge, TN	11	10	
	Richland, WA	2	0	
e. Waste Class per 10 CFR Part 61	Class A	13	10	
	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.

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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	0.00E+00 % (1)
b. Volume Buried		0.00E+00 m3	0.00E+00 m3	0.00E+00 % (1)
c. Total Activity		0.00E+00 Ci	0.00E+00 Ci	0.00E+00 %
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.

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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) 1.00E-06	1E-05	--------	-----
Na-24	1.19E-07	1E-04	2.48E-08	5E-07	1.71E-13	1E-11
Ar-41	1.14E-07	1E-04	2.38E-08	5E-07	--------	-----
Cr-51	1.04E-06	1E-04	2.20E-07	5E-07	8.65E-13	1E-11
Mn-54	5.45E-08	1E-04	1.13E-08	5E-07	1.08E-13	1E-11
Fe-55	--------	-----	(1) 1.00E-06	1E-06	--------	-----
Fe-59	1.74E-07	1E-04	3.62E-08	5E-07	2.48E-13	1E-11
Co-57	7.34E-08	1E-04	1.73E-08	5E-07	7.66E-14	1E-11
Co-58	5.34E-08	1E-04	1.11E-08	5E-07	2.59E-13	1E-11
Co-60	1.80E-07	1E-04	3.75E-08	5E-07	1.49E-13	1E-11
Zn-65	1.73E-07	1E-04	3.60E-08	5E-07	2.47E-13	1E-11
Kr-85	3.36E-05	1E-04	6.97E-06	1E-05	--------	-----
Kr-85m	8.48E-08	1E-04	1.92E-08	1E-05	--------	-----
Kr-87	1.77E-07	1E-04	3.71E-08	1E-05	--------	-----
Kr-88	2.20E-07	1E-04	4.81E-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	1.33E-07	1E-04	2.78E-08	5E-07	1.92E-13	1E-11
Nb-95	7.14E-08	1E-04	1.48E-08	5E-07	9.98E-14	1E-11
Nb-97	1.10E-07	1E-04	2.27E-08	5E-07	8.79E-14	1E-11
Zr-95	1.80E-07	1E-04	3.74E-08	5E-07	2.52E-13	1E-11
Mo-99	7.29E-08	1E-04	1.67E-08	5E-07	8.58E-14	1E-11
Tc-99m	7.11E-08	1E-04	1.63E-08	5E-07	8.37E-14	1E-11
Ag-110m	1.14E-07	1E-04	2.36E-08	5E-07	9.13E-14	1E-11
Sb-124	1.24E-07	1E-04	2.58E-08	5E-07	1.81E-13	1E-11
Sb-125	2.46E-07	1E-04	5.13E-08	5E-07	3.35E-13	1E-11
I-131	8.81E-08	1E-04	1.85E-08	1E-06	1.65E-13	1E-12
I-133	1.32E-07	1E-04	2.74E-08	5E-07	1.21E-13	1E-10
I-135	2.73E-07	1E-04	5.70E-08	5E-07	5.93E-13	1E-11
Xe-131m	2.94E-06	1E-04	6.58E-07	1E-05	--------	-----
Xe-133	1.95E-07	1E-04	5.29E-08	1E-05	--------	-----
Xe-133m	6.54E-07	1E-04	1.41E-07	1E-05	--------	-----
Xe-135	7.16E-08	1E-04	1.54E-08	1E-05	--------	-----
Xe-135m	1.47E-07	1E-04	3.04E-08	1E-05	--------	-----
Xe-137	2.25E-07	1E-04	4.69E-08	1E-05	--------	-----
Xe-138	2.92E-07	1E-04	6.25E-08	1E-05	--------	-----
Cs-134	9.32E-08	1E-04	1.93E-08	5E-07	1.63E-13	1E-11
Cs-137	1.04E-07	1E-04	2.15E-08	5E-07	1.02E-13	1E-11
Ba-139	2.82E-07	1E-04	6.30E-08	5E-07	4.29E-13	1E-11
Ba-140	3.86E-07	1E-04	8.01E-08	5E-07	4.01E-13	1E-11
La-140	1.01E-07	1E-04	2.09E-08	5E-07	2.06E-13	1E-11
Ce-141	1.04E-07	1E-04	2.37E-08	5E-07	1.56E-13	1E-11
Ce-144	5.49E-07	1E-04	1.27E-07	5E-07	6.79E-13	1E-11
Gross Alpha	--------	-----	(1) 1.00E-07	1E-07	(1) 3.51E-15	1E-11

(1) Some of these sample analyses are 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 10/12/01. 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.

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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
ORGAN (1)	Bone	5.75E-03	0.1150	7.31E-03	0.1462	7.84E-03	0.1568	9.46E-04	0.0189	2.18E-02	0.2185
	Liver	1.12E-02	0.2240	1.37E-02	0.2740	1.48E-02	0.2960	2.47E-03	0.0494	4.22E-02	0.4217
	Total Body	8.63E-03	0.5753	1.04E-02	0.6933	1.12E-02	0.7467	2.07E-03	0.1380	3.23E-02	1.0767
	Thyroid	1.73E-03	0.0346	1.33E-03	0.0266	1.78E-03	0.0356	1.20E-03	0.0240	6.04E-03	0.0604
	Kidney	4.80E-03	0.0960	5.40E-03	0.1080	6.05E-03	0.1209	1.57E-03	0.0314	1.78E-02	0.1782
	Lung	2.83E-03	0.0566	2.75E-03	0.0550	3.28E-03	0.0656	1.39E-03	0.0278	1.03E-02	0.1025
	GI-LLI	3.26E-03	0.0652	1.96E-03	0.0392	2.73E-03	0.0546	2.17E-03	0.0434	1.01E-02	0.1012

		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)	Beta Air	0.00E+00	0.0000	5.11E-02	0.5110	3.18E-04	0.0032	5.87E-09	0.0000	5.14E-02	0.2571
(2)	Gamma Air	0.00E+00	0.0000	1.42E-01	2.8400	1.07E-04	0.0021	1.15E-06	0.0000	1.42E-01	1.4211
ORGAN (3)	Bone	3.18E-04	0.0042	2.06E-05	0.0003	3.65E-04	0.0049	1.36E-05	0.0002	7.18E-04	0.0048
	Liver	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	Total Body	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	Thyroid	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.43E-01	3.2400	8.28E-01	5.5200
	Kidney	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	Lung	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	GI-LLI	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133

(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 mi 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 mi NW.

Limits used for calculation of percent (%) are from ODCM Appendix C CONTROLS 3.11.1.2, 3.11.2.2 and 3.11.2.3 (considered to be the design objectives).

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	5.75E-03	0.1150	7.31E-03	0.1462	7.84E-03	0.1568	9.46E-04	0.0189	2.18E-02	0.2185
O	Liver	1.12E-02	0.2240	1.37E-02	0.2740	1.48E-02	0.2960	2.47E-03	0.0494	4.22E-02	0.4217
R	Total Body	8.63E-03	0.5753	1.04E-02	0.6933	1.12E-02	0.7467	2.07E-03	0.1380	3.23E-02	1.0767
G	Thyroid	1.73E-03	0.0346	1.33E-03	0.0266	1.78E-03	0.0356	1.20E-03	0.0240	6.04E-03	0.0604
A	Kidney	4.80E-03	0.0960	5.40E-03	0.1080	6.05E-03	0.1209	1.57E-03	0.0314	1.78E-02	0.1782
N	Lung	2.83E-03	0.0566	2.75E-03	0.0550	3.28E-03	0.0656	1.39E-03	0.0278	1.03E-02	0.1025
(1)	GI-LLI	3.26E-03	0.0652	1.96E-03	0.0392	2.73E-03	0.0546	2.17E-03	0.0434	1.01E-02	0.1012

		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)	Beta Air	6.71E-03	0.0671	5.25E-09	0.0000	4.81E-10	0.0000	5.87E-09	0.0000	6.71E-03	0.0336
(2)	Gamma Air	2.03E-03	0.0406	6.25E-07	0.0000	9.57E-08	0.0000	1.15E-06	0.0000	2.03E-03	0.0203
	Bone	3.25E-06	0.0000	2.32E-06	0.0000	3.09E-05	0.0004	5.80E-07	0.0000	3.71E-05	0.0002
O	Liver	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
R	Total Body	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
G	Thyroid	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
A	Kidney	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
N	Lung	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
(3)	GI-LLI	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667

(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 mi 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 mi NW.

Limits used for calculation of percent (%) are from ODCM Appendix C CONTROLS 3.11.1.2, 3.11.2.2 and 3.11.2.3 (considered to be the design objectives).

Effluent Monitoring Instrumentation Channels Not Returned To Operable Status Within 30 Days

(RM-LW-104) - Unit 1 Liquid Waste Effluents Monitor

On September 7, 2001, this monitor was removed from service due to a high background. Prior to this date, maintaining a low background was also an ongoing problem. For example, several repeat decontaminations of the monitor's detector well were performed in an effort to reduce the monitor backround, but were unsuccessful. Therefore, a Work Order (No. 01-015345-000) was prepared to purchase and install a new sampler volume assembly. This monitor could not be returned to service within 30 days because of parts availability. Specifically, the original supplier of the sampler volume assembly was no longer in business. A new supplier was located, and the monitor was returned to OPERABLE status on December 24, 2001. This condition and associated Corrective Actions are detailed in BVPS Condition Report No. 01-6928.

As required by BV-1 and 2 ODCM Appendix C Control 3.3.3.9 (Table 3.3-12, Action Statement 23), independent sampling, and independent verification of release rate calculations and discharge valving was performed for each applicable batch liquid discharge during the period that this monitor was not OPERABLE.

Annual Radioactive Effluent Release Report

Table 7
Total Dose Commitments, Total Effective Dose Equivalents and Population Doses

2001 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	4.44E-02	2.00E-01	2.44E-01	0.98%
Liver	1.34E+00	2.00E-01	1.54E+00	6.17%
Total Body	1.47E+00	2.00E-01	1.67E+00	6.66%
Thyroid	1.27E+00	2.00E-01	1.47E+00	1.96%
Kidney	1.29E+00	2.00E-01	1.49E+00	5.97%
Lung	1.28E+00	2.00E-01	1.48E+00	5.91%
GI-LLI	1.28E+00	2.00E-01	1.48E+00	5.91%

(1) The cumulative dose contributions from liquid and gaseous effluents were determined in accordance with the applicable CONTROLS & SURVEILLANCE REQUIREMENTS listed in Appendix C of the ODCM. The dose commitment limits for 40 CFR 190 MEMBERS OF THE PUBLIC (ODCM Appendix C 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).

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 would be the same as those doses reported in the above table to show compliance with 40 CFR Part 190.10(a). Evaluations have shown that the 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.

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 10.99 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).

0-50 Mile Population Doses From Liquid and Gaseous Effluents

The 0-50 mile Total Population Dose from liquid and gaseous effluents is 0.801 man-rem (Total Body)
The 0-50 mile Average Population Dose from liquid and gaseous effluents is 0.000225 mrem (Total Body)

Annual Radioactive Effluent Release Report

Calendar Year - 2001
Table 8

Offsite Dose Calculation Manual Surveillance Deficiencies

As specified by BV-1 and 2 ODCM Appendix C Control 3.11.2.1 Table 4.11-2, and Appendix C Control 3.3.3.10 Table 3.3-13 Action 32, collection of particulate and charcoal samples from the Gaseous Waste/Process Vent Effluent Pathway is required on a continuous frequency.

Contrary to this, continuous particulate and charcoal sampling from the Unit 1/2 Gaseous Waste Process Vent Effluent Pathway was interrupted for the period June 20, 2001 1300 hours through June 21, 2001 1110 hours. The cause of this condition was determined to be a program or process weakness, inadequate work coordination and weak error detection practices while performing calibrations of gaseous effluent radiation monitors.

There were no safety implications to the health and safety of the general public as a result of the failure to continuously collect these samples for the period noted above. There were no abnormal indications on any of the OPERABLE particulate or gaseous effluent channels during this period. This condition and associated Corrective Actions, are documented in BVPS Condition Report No. 01-3740.

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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.

FENOC
Beaver Valley Power Station - Units 1 & 2

Annual Radioactive Effluent Release Report

Calendar Year - 2001
Attachment 1
Joint Frequency Distribution Tables

Attachment 1
An annual summary of hourly meteorological data, in the form of joint frequency distribution, is provided for the calendar year as specified in the ODCM.

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 Gaseous Releases for the calendar year were determined to be within design objectives. where as, the ODCM Dose and Dose Rate Limits are considered to be the design objectives, 2) Although there was one Abnormal Gaseous Releases during the calendar year, it's consequences had no measurable impact on the design objectives described above. For a copy of the hourly meteorological data during the calendar quarters, contact Mr. Anthony T. Lonnett at 724-682-5860.

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	10	43	0	0	0	0	53
NNE	15	36	0	0	0	0	51
NE	24	21	0	0	0	0	45
ENE	12	22	0	0	0	0	34
E	13	22	0	0	0	0	35
ESE	14	18	0	0	0	0	32
SE	21	17	0	0	0	0	38
SSE	20	29	0	0	0	0	49
S	6	41	2	0	0	0	49
SSW	9	70	10	0	0	0	89
SW	13	78	32	0	0	0	123
WSW	5	59	19	1	0	0	84
W	13	126	16	0	0	0	155
WNW	11	77	9	0	0	0	97
NW	23	67	3	0	0	0	93
NNW	14	72	4	0	0	0	90
TOTAL	223	798	95	1	0	0	1117

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	6	8	0	0	0	0	14
NNE	6	2	0	0	0	0	8
NE	2	0	0	0	0	0	2
ENE	2	2	0	0	0	0	4
E	2	2	0	0	0	0	4
ESE	1	2	0	0	0	0	3
SE	1	0	0	0	0	0	1
SSE	4	5	0	0	0	0	9
S	1	2	1	0	0	0	4
SSW	7	6	4	0	0	0	17
SW	3	18	13	0	0	0	34
WSW	5	17	10	1	0	0	33
W	3	23	4	0	0	0	30
WNW	4	15	9	0	0	0	28
NW	9	10	1	0	0	0	20
NNW	3	10	1	0	0	0	14
TOTAL	59	122	43	1	0	0	225

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	4	6	0	0	0	0	10
NNE	6	1	0	0	0	0	7
NE	3	0	0	0	0	0	3
ENE	4	1	0	0	0	0	5
E	1	2	0	0	0	0	3
ESE	5	1	0	0	0	0	6
SE	2	1	0	0	0	0	3
SSE	1	1	0	0	0	0	2
S	3	9	2	0	0	0	14
SSW	5	9	2	0	0	0	16
SW	6	18	15	4	0	0	43
WSW	4	17	7	0	0	0	28
W	7	23	6	0	0	0	36
WNW	4	21	3	0	0	0	28
NW	6	16	3	0	0	0	25
NNW	11	9	2	0	0	0	22
TOTAL	72	135	40	4	0	0	251

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	69	58	0	0	0	0	127
NNE	42	12	0	0	0	0	54
NE	80	10	0	0	0	0	90
ENE	60	32	0	0	0	0	92
E	44	9	0	0	0	0	53
ESE	30	7	0	0	0	0	37
SE	34	5	0	0	0	0	39
SSE	42	6	0	0	0	0	48
S	37	44	3	0	0	0	84
SSW	55	55	20	1	0	0	131
SW	76	238	131	11	0	0	456
WSW	66	274	93	11	0	0	444
W	57	221	68	0	0	0	346
WNW	82	162	27	0	0	0	271
NW	88	178	18	0	0	0	284
NNW	69	97	5	0	0	0	171
TOTAL	931	1408	365	23	0	0	2727

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED (MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	85	11	1	0	0	0	97
NNE	74	12	0	0	0	0	86
NE	126	13	0	0	0	0	139
ENE	175	24	0	0	0	0	199
E	130	17	0	0	0	0	147
ESE	100	7	0	0	0	0	108
SE	94	2	0	0	0	0	96
SSE	135	8	0	0	0	0	143
S	137	28	2	0	0	0	167
SSW	117	82	6	0	0	0	205
SW	78	119	18	3	0	0	218
WSW	47	96	20	3	0	0	166
W	44	84	15	2	0	0	145
WNW	56	38	0	1	0	0	95
NW	92	43	2	0	0	0	137
NNW	82	22	0	0	0	0	104
TOTAL	1572	606	64	9	0	0	2252

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	18	1	0	0	0	0	19
NNE	22	3	0	0	0	0	25
NE	53	0	0	0	0	0	54
ENE	67	0	0	0	0	0	67
E	111	0	0	0	0	0	111
ESE	207	0	0	0	0	0	207
SE	270	1	0	0	0	0	273
SSE	173	3	0	0	0	0	176
S	168	12	0	0	0	0	180
SSW	61	21	0	0	0	0	82
SW	32	9	2	3	0	0	46
WSW	20	2	0	1	0	0	23
W	12	7	0	0	0	0	19
WNW	13	2	1	0	0	0	16
NW	15	2	0	0	0	0	17
NNW	17	0	0	0	0	0	17
TOTAL	1259	63	3	4	0	0	1332

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	13	1	0	0	0	0	14
NNE	11	0	0	0	0	0	11
NE	12	0	0	0	0	0	12
ENE	27	0	0	0	0	0	27
E	87	0	0	0	0	0	87
ESE	143	0	0	0	0	0	143
SE	247	0	0	0	0	0	247
SSE	127	0	0	0	0	0	127
S	84	5	0	0	0	0	89
SSW	32	4	1	0	0	0	37
SW	16	0	2	0	0	0	18
WSW	11	3	0	0	1	0	15
W	7	1	0	0	0	0	8
WNW	1	0	0	0	0	0	1
NW	7	0	0	0	0	0	7
NNW	8	0	0	0	0	0	8
TOTAL	833	14	3	0	1	0	851

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	205	128	1	0	0	0	334
NNE	176	66	0	0	0	0	242
NE	300	44	0	0	0	0	345
ENE	347	81	0	0	0	0	428
E	388	52	0	0	0	0	440
ESE	500	35	0	0	0	0	536
SE	669	26	0	0	0	0	697
SSE	502	52	0	0	0	0	554
S	436	141	10	0	0	0	587
SSW	286	247	43	1	0	0	577
SW	224	480	213	21	0	0	938
WSW	158	468	149	17	1	0	793
W	143	485	109	2	0	0	739
WNW	171	315	49	1	0	0	536
NW	240	316	27	0	0	0	583
NNW	204	210	12	0	0	0	426
TOTAL	4949	3146	613	42	1	0	8755

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	4	34	33	0	0	0	71
NNE	5	16	25	3	0	0	49
NE	4	14	15	0	0	0	33
ENE	2	30	17	1	0	0	50
E	1	22	17	1	0	0	41
ESE	0	18	19	0	0	0	37
SE	1	28	31	1	0	0	61
SSE	1	33	27	1	0	0	62
S	1	22	41	2	0	0	66
SSW	1	16	39	8	0	0	64
SW	0	20	41	9	0	0	70
WSW	4	30	48	9	0	0	91
W	2	57	73	21	3	0	156
WNW	3	45	66	25	1	0	140
NW	6	35	20	4	1	0	66
NNW	2	31	27	0	0	0	60
TOTAL	37	451	539	85	5	0	1117

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	7	2	0	0	0	10
NNE	0	5	3	0	0	0	8
NE	1	3	1	0	0	0	5
ENE	0	2	4	0	0	0	6
E	0	4	1	0	0	0	5
ESE	0	3	0	0	0	0	3
SE	0	2	2	1	0	0	5
SSE	1	4	3	0	0	0	8
S	2	4	4	1	0	0	11
SSW	1	3	10	0	0	0	14
SW	3	5	11	4	0	0	23
WSW	2	8	13	4	1	0	28
W	5	17	11	9	1	0	43
WNW	0	8	14	8	2	0	32
NW	3	2	6	1	0	0	12
NNW	1	7	4	0	0	0	12
TOTAL	20	84	89	28	4	0	225

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	9	4	0	0	0	16
NNE	3	6	0	0	0	0	9
NE	0	3	0	0	0	0	3
ENE	1	3	1	0	0	0	5
E	0	3	2	0	0	0	5
ESE	0	2	0	0	0	0	2
SE	1	4	2	0	0	0	7
SSE	1	3	2	0	0	0	6
S	1	6	10	1	0	0	18
SSW	0	4	6	2	0	0	12
SW	1	1	14	5	0	0	21
WSW	4	9	8	5	4	0	30
W	1	14	25	6	2	0	48
WNW	5	12	12	8	1	0	38
NW	0	5	8	5	0	0	18
NNW	5	6	1	1	0	0	13
TOTAL	26	90	95	33	7	0	251

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	20	59	38	0	0	0	117
NNE	26	46	14	4	0	0	90
NE	26	26	5	1	0	0	58
ENE	22	66	23	3	0	0	114
E	21	24	8	0	0	0	53
ESE	14	18	8	0	0	0	40
SE	10	37	10	0	0	0	57
SSE	12	29	6	1	0	0	48
S	21	39	38	5	0	0	103
SSW	20	35	54	16	0	0	125
SW	22	66	143	32	5	0	268
WSW	39	105	170	47	13	0	374
W	29	118	248	156	26	3	580
WNW	17	127	187	67	1	0	399
NW	23	106	64	8	0	0	201
NNW	21	57	21	1	0	0	100
TOTAL	343	958	1037	341	45	3	2727

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	38	36	8	1	0	0	83
NNE	63	42	2	0	0	0	107
NE	92	90	7	1	0	0	190
ENE	60	152	36	0	0	0	248
E	46	76	15	0	0	0	137
ESE	14	23	14	0	0	0	51
SE	26	29	7	2	0	0	64
SSE	17	41	15	0	0	0	73
S	26	49	32	4	0	0	111
SSW	38	69	38	5	0	0	150
SW	51	74	70	11	0	0	206
WSW	50	102	60	8	5	0	225
W	29	70	115	30	5	4	253
WNW	18	101	57	6	1	1	184
NW	24	66	16	0	0	0	106
NNW	24	38	2	0	0	0	64
TOTAL	616	1058	494	68	11	5	2252

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	74	24	1	0	0	0	99
NNE	130	35	0	0	0	0	165
NE	146	68	0	0	0	0	214
ENE	62	34	1	0	0	0	97
E	20	13	0	0	0	0	33
ESE	12	9	1	0	0	0	22
SE	19	10	0	0	0	0	29
SSE	18	11	4	0	0	0	33
S	30	28	9	0	0	0	67
SSW	67	63	9	0	0	0	139
SW	98	57	12	2	2	0	171
WSW	58	42	7	0	1	0	108
W	28	19	4	4	0	0	55
WNW	16	11	1	1	0	0	29
NW	20	5	0	1	0	0	26
NNW	33	12	0	0	0	0	45
TOTAL	831	441	49	8	3	0	1332

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED (MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	32	5	0	0	0	0	37
NNE	66	30	0	0	0	0	96
NE	91	37	0	0	0	0	128
ENE	26	12	1	0	0	0	39
E	19	7	0	0	0	0	26
ESE	7	5	0	0	0	0	12
SE	15	18	1	0	0	0	34
SSE	16	13	3	0	0	0	32
S	23	29	2	0	0	0	54
SSW	68	59	3	0	0	0	130
SW	68	40	4	1	0	0	113
WSW	37	24	7	0	0	1	69
W	17	10	2	0	0	0	29
WNW	13	3	0	0	0	0	16
NW	18	0	1	0	0	0	19
NNW	16	1	0	0	0	0	17
TOTAL	532	293	24	1	0	1	851

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	172	174	86	1	0	0	433
NNE	293	180	44	7	0	0	524
NE	360	241	28	2	0	0	631
ENE	173	299	83	4	0	0	559
E	107	149	43	1	0	0	300
ESE	47	78	42	0	0	0	167
SE	72	128	53	4	0	0	257
SSE	66	134	60	2	0	0	262
S	104	177	136	13	0	0	430
SSW	195	249	159	31	0	0	634
SW	243	263	295	64	7	0	872
WSW	194	320	313	73	24	1	925
W	111	305	478	226	37	7	1164
WNW	72	307	337	115	6	1	838
NW	94	219	115	19	1	0	448
NNW	102	152	55	2	0	0	311
TOTAL	2405	3375	2327	564	75	9	8755

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	0	0	0	0
NNE	0	0	0	1	0	0	1
NE	0	0	3	2	0	0	5
ENE	0	2	4	0	0	0	6
E	0	0	1	1	0	0	2
ESE	0	0	2	0	0	0	2
SE	0	1	11	1	0	0	13
SSE	0	0	3	0	0	0	3
S	0	0	1	0	0	0	1
SSW	0	1	0	0	0	0	1
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	1	0	0	0	1
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	0	4	26	5	0	0	35

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	6	0	0	0	6
NNE	0	0	1	1	0	0	2
NE	0	2	4	0	0	0	6
ENE	0	1	5	0	0	0	6
E	0	0	6	0	0	0	6
ESE	0	1	4	2	0	0	7
SE	0	4	8	0	0	0	12
SSE	0	0	5	0	0	0	5
S	0	1	6	2	0	0	9
SSW	0	1	1	0	0	0	2
SW	0	0	0	0	0	0	0
WSW	0	1	3	1	0	0	5
W	0	1	2	0	0	0	3
WNW	0	0	1	1	0	0	2
NW	0	0	2	0	0	0	2
NNW	0	0	1	0	0	0	1
TOTAL	0	12	55	7	0	0	74

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	4	13	2	0	0	19
NNE	0	1	4	3	0	0	8
NE	0	2	5	1	0	0	8
ENE	0	3	11	0	0	0	14
E	0	4	4	0	0	0	8
ESE	0	5	7	2	0	0	14
SE	0	4	7	3	0	0	14
SSE	0	7	13	0	0	0	20
S	0	3	9	1	0	0	13
SSW	1	0	10	2	0	0	13
SW	0	0	7	4	0	0	11
WSW	0	1	13	4	0	0	18
W	0	4	13	2	1	0	20
WNW	0	6	6	12	5	0	29
NW	0	3	12	4	0	0	19
NNW	0	0	10	0	0	0	10
TOTAL	1	47	144	40	6	0	238

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	11	63	127	28	1	0	230
NNE	8	38	39	11	2	0	98
NE	28	48	12	14	3	0	105
ENE	14	47	28	19	3	0	111
E	10	59	66	10	0	0	145
ESE	13	44	71	31	1	0	160
SE	15	45	53	43	9	2	167
SSE	15	40	57	20	1	1	134
S	15	31	88	60	6	1	201
SSW	10	32	97	122	24	4	289
SW	19	35	149	273	76	12	564
WSW	12	70	201	194	40	31	548
W	19	72	233	301	123	38	786
WNW	15	63	266	183	80	10	617
NW	12	45	186	89	11	1	344
NNW	10	35	135	36	3	0	219
TOTAL	226	767	1808	1434	383	100	4718

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	14	30	46	29	1	0	120
NNE	24	20	15	10	0	0	69
NE	23	29	13	2	0	0	67
ENE	38	51	31	8	0	0	128
E	35	74	30	6	0	0	145
ESE	25	53	43	6	1	0	128
SE	29	46	39	21	3	0	138
SSE	20	48	34	28	5	0	135
S	23	37	72	52	10	0	194
SSW	27	37	54	44	14	0	176
SW	36	49	69	122	44	3	323
WSW	52	86	50	28	7	3	226
W	43	81	69	25	8	1	227
WNW	21	62	45	14	1	0	143
NW	28	25	14	10	1	0	78
NNW	13	26	26	11	0	0	76
TOTAL	451	754	650	416	95	7	2373

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	10	20	6	0	0	0	36
NNE	14	20	4	1	0	0	39
NE	22	18	6	0	0	0	47
ENE	22	24	17	0	0	0	63
E	25	30	14	0	0	0	69
ESE	19	29	14	1	0	0	63
SE	27	32	16	8	0	0	83
SSE	15	50	23	17	0	0	105
S	13	26	35	18	0	0	92
SSW	19	33	39	16	0	0	107
SW	17	30	60	40	13	0	160
WSW	20	48	21	0	0	0	89
W	25	53	27	5	0	0	110
WNW	18	27	3	1	0	0	49
NW	11	18	5	0	0	0	34
NNW	11	8	4	0	0	0	23
TOTAL	288	466	294	107	13	0	1169

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	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	1	0	0	0	0	0	1
E	1	1	0	0	0	0	2
ESE	4	3	1	0	0	0	8
SE	1	2	1	1	0	0	5
SSE	4	10	5	0	0	0	19
S	0	9	11	9	0	0	29
SSW	0	7	6	7	0	0	20
SW	0	3	3	2	0	0	8
WSW	1	1	0	0	0	0	2
W	0	0	0	0	0	0	0
WNW	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	14	36	27	19	0	0	96

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	35	117	198	59	2	0	411
NNE	46	79	63	27	2	0	217
NE	74	99	43	19	3	0	239
ENE	75	128	96	27	3	0	329
E	71	168	121	17	0	0	377
ESE	61	135	142	42	2	0	382
SE	72	134	135	77	12	2	432
SSE	54	155	140	65	6	1	421
S	51	107	222	142	16	1	539
SSW	57	111	207	191	38	4	608
SW	72	117	288	441	133	15	1066
WSW	85	207	288	227	47	34	888
W	87	211	345	333	132	39	1147
WNW	55	158	321	211	86	10	841
NW	51	91	219	103	12	1	477
NNW	34	69	176	47	3	0	329
TOTAL	980	2086	3004	2028	497	107	8703

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

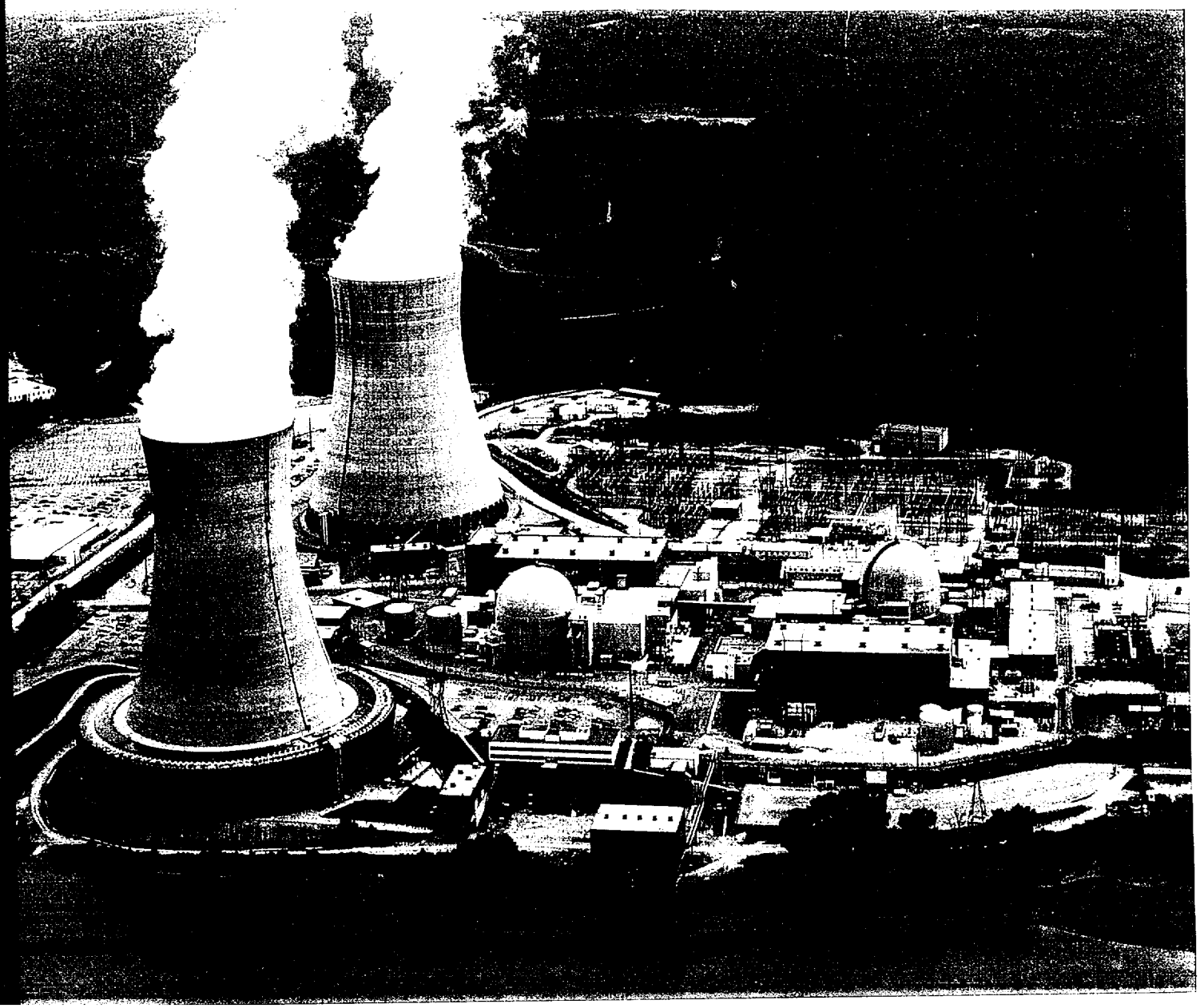
FENOC

Beaver Valley Power Station - Units 1 & 2

Annual

Radioactive Effluent Release Report

Calendar Year - 2001



FENOC
FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
Route 168
P.O. Box 4
Shippingport, PA 15077-0004

Lew W. Myers
Senior Vice President

724-682-5234
Fax: 724-643-8069

L-02-034
March 29, 2002

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

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Annual Radioactive Effluent Release Report for 2001

Reference: 1) FENOC; Beaver Valley Power Station Unit 1 and Unit 2 Technical Specification 6.9.3, Annual Radioactive Effluent Release Report

2) USNRC; Regulatory Guide 1.21 - Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants, Revision 1, June 1974

3) FENOC; BV-1 and 2 Offsite Dose Calculation Manual, Appendix E Report 6.9.1.11

The Annual Radioactive Effluent Release Report is hereby submitted for year 2001 for Beaver Valley Power Station (BVPS) Units 1 and 2 in accordance with the requirements of Reference (1). This report also contains the information required by References (2) and (3).

This report is considered a single submittal for the two unit site. This report combines those sections that are common to both units at the site. However, where the two units have separate radwaste systems, the report does specify the releases of radioactive material from each unit. In reference to this, Unit 1 and Unit 2 have shared radwaste systems for gaseous elevated releases and for liquid releases. The report format is summarized in the index.

The following is a summary of the liquid and gaseous effluent control program at BVPS during 2001:

- Units 1 and 2 discharged 2.93E6 liters of liquid waste (undiluted volume). The total activity discharged from the site was 315 curies of tritium, and 0.114 curies of fission

and activation products. The Unit 1 or 2 Total Body Dose for the year was 0.0323 mrem, or 1.08% of the 3 mrem per unit annual limit. The Unit 1 or 2 Highest Organ (Liver) Dose for the year was 0.0422 mrem, or 0.422% of the 10 mrem per unit annual limit.

- Units 1 and 2 discharged 1.44E4 cu. ft. of stored gaseous radwaste. The total activity discharged from all site gaseous releases was 250 curies of tritium, and 5.35 curies of fission and activation gases. The Unit 1 or 2 Highest Gamma Air Dose for the year was 0.142 mrad, or 1.42% of the 10 mrad per unit annual limit. The Unit 1 or 2 Highest Beta Air Dose for the year was 0.0514 mrad, or 0.257% of the 20 mrad per unit annual limit. The Unit 1 or 2 Highest Organ (Thyroid) Dose for the year was 0.828 mrem, or 5.52% of the 15 mrem per unit annual limit.

- There were no abnormal liquid releases during the report period.

- There was one abnormal gaseous release during the report period. This involved a leak of 108 cu. ft. of gas space (4.15E-4 curies) from a Unit 1 Gas Storage Tank to the environment via a monitored effluent release pathway. This release had no measurable impact on offsite dose totals.

- There was one Effluent Monitoring Instrumentation Channel (RM-LW-104) not returned to OPERABLE status within 30 days in 2001. This condition is described in the Annual Radioactive Effluent Release Report (ARERR) Table 6.

- There was one ODCM Surveillance Deficiency in 2001. It involved the interruption of continuous filter and charcoal sample collection during a calibration of effluent radiation monitor RM-GW-109. This condition is described in ARERR Table 8.

If there are any questions concerning this report, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Corrective Action at 724-682-5284.

Sincerely,

Lew W. Myers

Lew W. Myers

Enclosure

c: United States Nuclear Regulatory Commission
Regional Administrator, Region I
475 Allendale Road
King of Prussia, PA 19406

United States Nuclear Regulatory Commission
Resident Inspector
Beaver Valley Power Station

American Nuclear Insurers Library
Town Center, Suite 300S
29 South Main Street
West Hartford, CT 06107-2445

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

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

c: A. T. Lonnett (w/o report)
R. A. Moore (w/o report)
A. E. Castagnacci (w/o report)
J. R. Sipp (w/o report)
F. J. Lipchick
D. S. Batina (for CNRB distribution)
M. E. O'Reilly (w/o report)
Central File - *Keywords: Annual Radioactive Effluent Release Report*

Reference:
NPD3SHP:2923
CR 01-3740
CR 01-6661
CR 01-6928

FENOC

Beaver Valley Power Station - Units 1 & 2

Annual

Radioactive Effluent Release Report

Calendar Year - 2001

FENOC
Beaver Valley Power Station - Units 1 & 2

Annual Radioactive Effluent Release Report

Calendar Year - 2001
Index

Table No.	Title	Page
	Supplemental Information Page	1
Table 1A	Gaseous Effluents - Summation Of All Releases	2
Table 1B-EB	Gaseous Effluents - Elevated Batch Releases	3
Table 1B-EC	Gaseous Effluents - Elevated Continuous Releases	4
Table 1C-GB1	Gaseous Effluents - Ground Level Batch Releases (Unit 1)	5
Table 1C-GC1	Gaseous Effluents - Ground Level Continuous Releases (Unit 1)	6
Table 1C-GB2	Gaseous Effluents - Ground Level Batch Releases (Unit 2)	7
Table 1C-GC2	Gaseous Effluents - Ground Level Continuous Releases (Unit 2)	8
Table 2A	Liquid Effluents - Summation Of All Releases	9
Table 2B-B	Liquid Effluents - Batch Releases	10
Table 2B-C	Liquid Effluents - Continuous Releases	11
Table 3A	Solid Waste And Irradiated Fuel Shipments (Part 1 of 3)	12
Table 3B	Solid Waste And Irradiated Fuel Shipments (Part 2 of 3)	13
Table 3C	Solid Waste And Irradiated Fuel Shipments (Part 3 of 3)	14
Table 4	Lower Limits Of Detectability	15
Table 5A	Assessment Of Radiation Doses (Unit 1)	16
Table 5B	Assessment Of Radiation Doses (Unit 2)	17
Table 6	Effluent Monitoring Instrumentation Channels Not Returned To Operable Status Within 30 Days	18
Table 7	Total Dose Commitments, Total Effective Dose Equivalents and Population Doses	19
Table 8	Offsite Dose Calculation Manual Surveillance Deficiencies	20
Table 9	Unit 1 and 2 Offsite Dose Calculation Manual Changes (Description)	21
Attachment 1	Joint Frequency Distribution Tables	

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL# A9.690E
HP Form A5.1
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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		19	21	21	19	80
2. Total time period for batch releases	minutes	5049	4565	7200	4243	21057
3. Maximum time period for a batch release	minutes	995	1097	1015	942	1097
4. Average time period for batch releases	minutes	266	217	343	223	263
5. Minimum time period for a batch release	minutes	75	52	79	28	28
6. Average river flow during release periods	cuft/sec	47167	40500	13433	18033	29783
b. Gaseous Batch Releases						
1. Number of batch releases		5	16	12	15	48
2. Total time period for batch releases	minutes	438	18059	4922	13440	36859
3. Maximum time period for a batch release	minutes	167	9185	960	46800	46800
4. Average time period for batch releases	minutes	88	1129	410	896	768
5. Minimum time period for a batch release	minutes	5	40	1	60	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	1	1
2. Total activity released	Curies	0.00E+00	0.00E+00	0.00E+00	4.15E-04	4.15E-04

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.2
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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. Total release	Ci	1.99E-01	4.62E+00	5.03E-01	2.71E-02	5.35E+00	2.65E+01
2. Average release rate for period	uCi/sec	2.53E-02	5.86E-01	6.38E-02	3.43E-03	1.70E-01	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
B. Iodines							
1. Total iodine - 131	Ci	0.00E+00	0.00E+00	6.09E-05	0.00E+00	6.09E-05	2.83E+01
2. Average release rate for period	uCi/sec	0.00E+00	0.00E+00	7.73E-06	0.00E+00	1.93E-06	
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	2.42E-05	1.28E-04	1.27E-04	1.08E-05	2.90E-04	3.00E+01
2. Average release rate for period	uCi/sec	3.07E-06	1.62E-05	1.61E-05	1.37E-06	9.19E-06	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
4. Gross alpha radioactivity	Ci	9.53E-07	9.77E-07	1.18E-06	LLD	3.11E-06	
D. Tritium							
1. Total release	Ci	4.37E+01	5.75E+01	7.82E+01	7.01E+01	2.50E+02	3.29E+01
2. Average release rate for period	uCi/sec	5.55E+00	7.30E+00	9.92E+00	8.90E+00	7.92E+00	
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, and D.2 is the average amount of seconds per calendar quarter (7.88E+06 seconds).

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.3
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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	NR	LLD	LLD	1.17E-03	1.17E-03
krypton-85	Ci	NR	1.04E-01	1.43E-03	2.52E-02	1.31E-01
krypton-85m	Ci	NR	LLD	LLD	LLD	LLD
krypton-87	Ci	NR	LLD	LLD	LLD	LLD
krypton-88	Ci	NR	LLD	LLD	LLD	LLD
xenon-131m	Ci	NR	2.50E-03	LLD	LLD	2.50E-03
xenon-133	Ci	NR	2.09E-01	LLD	6.82E-04	2.10E-01
xenon-133m	Ci	NR	2.01E-03	LLD	LLD	2.01E-03
xenon-135	Ci	NR	1.28E-04	LLD	LLD	1.28E-04
xenon-135m	Ci	NR	LLD	LLD	LLD	LLD
xenon-138	Ci	NR	LLD	LLD	LLD	LLD
unidentified	Ci	NR	NONE	NONE	NONE	NONE
Total for period	Ci	ND	3.18E-01	1.43E-03	2.71E-02	3.46E-01
2. Iodines						
iodine-131	Ci	NR	LLD	LLD	LLD	LLD
iodine-133	Ci	NR	LLD	LLD	LLD	LLD
iodine-135	Ci	NR	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	ND	ND	ND
3. Particulates						
chromium-51	Ci	NR	LLD	LLD	LLD	LLD
manganese-54	Ci	NR	LLD	LLD	LLD	LLD
iron-59	Ci	NR	LLD	LLD	LLD	LLD
cobalt-57	Ci	NR	LLD	LLD	LLD	LLD
cobalt-58	Ci	NR	1.23E-05	LLD	LLD	1.23E-05
cobalt-60	Ci	NR	LLD	LLD	LLD	LLD
zinc-65	Ci	NR	LLD	LLD	LLD	LLD
strontium-89	Ci	NR	LLD	LLD	LLD	LLD
strontium-90	Ci	NR	LLD	LLD	LLD	LLD
molybdenum-99	Ci	NR	LLD	LLD	LLD	LLD
cesium-134	Ci	NR	LLD	LLD	LLD	LLD
cesium-137	Ci	NR	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	NR	LLD	LLD	LLD	LLD
cerium-141	Ci	NR	LLD	LLD	LLD	LLD
cerium-144	Ci	NR	LLD	LLD	LLD	LLD
unidentified	Ci	NR	NONE	NONE	NONE	NONE
Total for period	Ci	ND	1.23E-05	ND	ND	1.23E-05

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

ND = None Detected

NR = No Releases

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	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	7.17E-02	4.09E-01	LLD	4.81E-01
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	7.17E-02	4.09E-01	ND	4.81E-01
2. Iodines						
iodine-131	Ci	LLD	LLD	1.22E-06	LLD	1.22E-06
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	1.22E-06	ND	1.22E-06
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

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	3.81E-02	9.27E-02	LLD	1.31E-01
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	3.81E-02	9.27E-02	ND	1.31E-01
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

FENOC
Beaver Valley Power Station - Unit 1

RTL # A9.690E
HP Form A5.6
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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	4.19E+00	LLD	LLD	4.19E+00
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	1.99E-01	LLD	LLD	LLD	1.99E-01
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	1.99E-01	4.19E+00	ND	ND	4.39E+00
2. Iodines						
iodine-131	Ci	LLD	LLD	5.97E-05	LLD	5.97E-05
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
Total for period	Ci	ND	ND	5.97E-05	ND	5.97E-05
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	9.94E-05	7.62E-05	LLD	1.76E-04
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
zirconium/niobium-97	Ci	LLD	LLD	2.19E-05	LLD	2.19E-05
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	6.05E-06	LLD	6.05E-06
cesium-137	Ci	LLD	LLD	1.41E-05	1.08E-05	2.49E-05
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	2.09E-05	LLD	LLD	LLD	2.09E-05
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	2.09E-05	9.94E-05	1.18E-04	1.08E-05	2.49E-04

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

ND = None Detected

FENOC
Beaver Valley Power Station - Unit 2

RTL # A9.690E
HP Form A5.7
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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	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						
beryllium-7	Ci	LLD	LLD	LLD	LLD	LLD
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-56	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
zirconium/niobium-97	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

FENOC
Beaver Valley Power Station - Unit 2

RTL # A9.690E
HP Form A5.8
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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	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	6.38E-07	LLD	LLD	LLD	6.38E-07
cobalt-58	Ci	2.68E-06	1.60E-05	2.81E-06	LLD	2.15E-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	5.75E-06	LLD	5.75E-06
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	3.32E-06	1.60E-05	8.56E-06	ND	2.79E-05

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

ND = None Detected

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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	4.09E-02	1.51E-02	2.71E-02	3.05E-02	1.14E-01	2.60E+01
2. Average diluted concentration	uCi/ml	9.06E-08	2.89E-08	3.17E-08	7.88E-08	5.12E-08	
3. Percent of applicable limit	%	1.63E+00	6.04E-01	1.08E+00	1.22E+00	1.14E+00	
B. Tritium							
1. Total release	Ci	8.48E+01	6.32E+01	9.62E+01	7.11E+01	3.15E+02	2.50E+01
2. Average diluted concentration	uCi/ml	1.88E-04	1.21E-04	1.12E-04	1.84E-04	1.42E-04	
3. Percent of applicable limit	%	1.88E+00	1.21E+00	1.12E+00	1.84E+00	1.42E+00	
C. Dissolved and entrained gases							
1. Total release	Ci	1.31E-04	1.57E-04	7.71E-05	5.96E-06	3.71E-04	2.70E+01
2. Average diluted concentration	uCi/ml	2.89E-10	3.00E-10	9.00E-11	1.54E-11	1.67E-10	
3. Percent of applicable limit	%	1.45E-04	1.50E-04	4.50E-05	7.71E-06	8.36E-05	
D. Gross alpha radioactivity (total release)	Ci	7.08E-07	2.87E-07	4.28E-07	LLD	1.42E-06	2.89E+01
E. Volume of waste released (prior to dilution)	liters	7.40E+05	6.12E+05	9.70E+05	6.10E+05	2.93E+06	1.12E+01
F. Volume of dilution water used	liters	4.50E+08	5.22E+08	8.55E+08	3.86E+08	2.21E+09	2.29E+01

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)

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.10
12/1999

Annual Radioactive Effluent Release Report
Calendar Year - 2001
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	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	1.96E-04	4.78E-05	1.09E-04	9.19E-05	4.45E-04
iron-55	Ci	1.66E-02	6.23E-03	4.43E-03	7.00E-03	3.42E-02
iron-59	Ci	1.75E-04	LLD	LLD	LLD	1.75E-04
cobalt-57	Ci	LLD	LLD	2.19E-06	7.56E-05	7.78E-05
cobalt-58	Ci	6.16E-03	2.96E-03	2.68E-03	8.89E-03	2.07E-02
cobalt-60	Ci	2.29E-03	6.09E-04	2.30E-03	1.55E-03	6.75E-03
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	4.06E-07	LLD	LLD	LLD	4.06E-07
strontium-90	Ci	2.60E-07	3.30E-07	1.10E-07	1.78E-07	8.78E-07
zirconium/niobium-95	Ci	3.25E-04	1.19E-04	2.56E-05	1.33E-06	4.71E-04
zirconium/niobium-97	Ci	5.60E-03	1.26E-03	4.39E-03	3.78E-03	1.50E-02
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
technetium-99m	Ci	LLD	LLD	LLD	LLD	LLD
tin-113	Ci	1.59E-05	3.70E-05	LLD	LLD	5.29E-05
tin-117m	Ci	LLD	LLD	1.22E-05	LLD	1.22E-05
silver-110m	Ci	5.68E-03	1.24E-03	5.57E-03	5.56E-03	1.80E-02
antimony-122	Ci	8.83E-07	9.92E-07	LLD	LLD	1.88E-06
antimony-124	Ci	1.08E-03	3.38E-04	3.46E-03	1.63E-03	6.50E-03
antimony-125	Ci	2.31E-03	1.50E-03	3.14E-03	1.82E-03	8.77E-03
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	1.76E-04	3.16E-04	3.80E-04	9.11E-06	8.81E-04
cesium-137	Ci	2.87E-04	4.59E-04	6.25E-04	5.26E-05	1.42E-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	4.09E-02	1.51E-02	2.71E-02	3.05E-02	1.14E-01
2. Dissolved and entrained gases						
argon-41	Ci	1.12E-04	LLD	LLD	LLD	1.12E-04
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	1.85E-05	1.57E-04	7.71E-05	5.96E-06	2.59E-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	1.31E-04	1.57E-04	7.71E-05	5.96E-06	3.71E-04

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

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.11
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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)

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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		4.62E+01 m3	4.40E+02 m3	0.00E+00 % (1)
b. Volume Buried		1.66E+00 m3	0.00E+00 m3	0.00E+00 % (1)
c. Total Activity		7.06E+02 Ci	4.00E-02 Ci	3.00E+01 %
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)		Percent (%)	Percent (%)	
H-3		0.49 %	10.30 %	
C-14		0.29 %	9.07 %	
Cr-51		0.20 %	0.00 %	
Mn-54		1.98 %	0.08 %	
Fe-55		19.00 %	68.90 %	
Fe-59		0.05 %	0.00 %	
Co-57		0.32 %	0.00 %	
Co-58		32.00 %	0.06 %	
Co-60		13.30 %	9.60 %	
Ni-59		0.16 %	0.00 %	
Ni-63		18.60 %	0.42 %	
Zn-65		0.03 %	0.00 %	
Sr-90		0.03 %	0.00 %	
Nb-95		0.51 %	0.08 %	
Zr-95		0.40 %	0.00 %	
Ag-110m		0.82 %	0.01 %	
Sn-113		0.05 %	0.00 %	
Sb-124		0.23 %	0.01 %	
Sb-125		0.90 %	0.03 %	
Cs-134		4.06 %	0.18 %	
Cs-137		6.50 %	0.49 %	
Ce-144/Pr-144		0.07 %	0.66 %	
Pu-241		0.02 %	0.12 %	
3. Number of Shipments		9	29	
a. Type of Container Used	LSA	4	4	
	Type A	0	0	
	Type B	5	0	
	Large Quantity	0	0	
	Limited Quantity	0	25	
b. Solidification Agent Used	Cement	0	0	
	Urea Formaldehyde	0	0	
	None	9	29	
c. Mode of Transport	Truck	9	29	
	Rail	0	0	
d. Final Destination	Erwin, TN	6	0	
	Oak Ridge, TN	3	17	
	Richland, WA	0	12	
e. Waste Class per 10 CFR Part 61	Class A	5	29	
	Class B	4	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.

FENOC
Beaver Valley Power Station - Units 1 & 2

RTL # A9.690E
HP Form A5.13
12/1999

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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		3.59E+02 m3	4.15E+02 m3	0.00E+00 % (1)
b. Volume Buried		5.29E+01 m3	3.26E+01 m3	0.00E+00 % (1)
c. Total Activity		1.94E+00 Ci	2.42E-01 Ci	3.00E+01 %
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)		Percent (%)	Percent (%)	
H-3		0.32 %	1.37 %	
C-14		0.16 %	0.45 %	
Cr-51		0.00 %	0.00 %	
Mn-54		0.58 %	0.58 %	
Fe-55		4.06 %	16.10 %	
Co-57		0.00 %	0.02 %	
Co-58		86.20 %	15.30 %	
Co-60		2.09 %	11.70 %	
Ni-59		0.03 %	0.14 %	
Ni-63		1.48 %	8.21 %	
Sr-90		0.01 %	0.16 %	
Nb-95		0.04 %	0.11 %	
Zr-95		0.00 %	0.00 %	
Tc-99		0.01 %	0.08 %	
Ag-110m		0.02 %	0.10 %	
Sb-124		0.00 %	0.00 %	
Sb-125		0.02 %	0.34 %	
I-129		0.03 %	0.08 %	
Cs-134		1.84 %	5.77 %	
Cs-137		2.92 %	39.40 %	
Ce-144/Pr-144		0.00 %	0.00 %	
Pu-241		0.02 %	0.15 %	
3. Number of Shipments		13	10	
a. Type of Container Used	LSA	13	10	
	Type A	0	0	
	Type B	0	0	
	Large Quantity	0	0	
b. Solidification Agent Used	Cement	0	0	
	Urea Formaldehyde	0	0	
	None	13	10	
c. Mode of Transport	Truck	13	10	
	Rail	0	0	
	Other	0	0	
d. Final Destination	Oak Ridge, TN	11	10	
	Richland, WA	2	0	
e. Waste Class per 10 CFR Part 61	Class A	13	10	
	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.

Annual Radioactive Effluent Release Report

Calendar Year - 2001

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	0.00E+00 % (1)
b. Volume Buried		0.00E+00 m3	0.00E+00 m3	0.00E+00 % (1)
c. Total Activity		0.00E+00 Ci	0.00E+00 Ci	0.00E+00 %
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.

Annual Radioactive Effluent Release Report

Calendar Year - 2001

Table 4
Lower Limits Of Detectability (LLD)

Nuclide	RWDA-G 1000 cc Gas Grab Sample (3) Calculated LLD (uCi/cc)	RWDA-G 1000 cc Gas Grab Sample ODCM Required LLD (uCi/cc)	RWDA-L 1000 ml Liquid Grab Sample (3) Calculated LLD (uCi/ml)	RWDA-L 1000 ml Liquid Grab Sample ODCM Required LLD (uCi/ml)	Filter Paper / Charcoal Continuous Effluent Sample (3) Calculated (2) LLD (uCi/cc)	Filter Paper / Charcoal Continuous Effluent Sample ODCM Required LLD (uCi/cc)
H-3	(4) 1.00E-06	1E-06	(1) 1.00E-06	1E-05	--------	-----
Na-24	1.19E-07	1E-04	2.48E-08	5E-07	1.71E-13	1E-11
Ar-41	1.14E-07	1E-04	2.38E-08	5E-07	--------	-----
Cr-51	1.04E-06	1E-04	2.20E-07	5E-07	8.65E-13	1E-11
Mn-54	5.45E-08	1E-04	1.13E-08	5E-07	1.08E-13	1E-11
Fe-55	--------	-----	(1) 1.00E-06	1E-06	--------	-----
Fe-59	1.74E-07	1E-04	3.62E-08	5E-07	2.48E-13	1E-11
Co-57	7.34E-08	1E-04	1.73E-08	5E-07	7.66E-14	1E-11
Co-58	5.34E-08	1E-04	1.11E-08	5E-07	2.59E-13	1E-11
Co-60	1.80E-07	1E-04	3.75E-08	5E-07	1.49E-13	1E-11
Zn-65	1.73E-07	1E-04	3.60E-08	5E-07	2.47E-13	1E-11
Kr-85	3.36E-05	1E-04	6.97E-06	1E-05	--------	-----
Kr-85m	8.48E-08	1E-04	1.92E-08	1E-05	--------	-----
Kr-87	1.77E-07	1E-04	3.71E-08	1E-05	--------	-----
Kr-88	2.20E-07	1E-04	4.81E-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	1.33E-07	1E-04	2.78E-08	5E-07	1.92E-13	1E-11
Nb-95	7.14E-08	1E-04	1.48E-08	5E-07	9.98E-14	1E-11
Nb-97	1.10E-07	1E-04	2.27E-08	5E-07	8.79E-14	1E-11
Zr-95	1.80E-07	1E-04	3.74E-08	5E-07	2.52E-13	1E-11
Mo-99	7.29E-08	1E-04	1.67E-08	5E-07	8.58E-14	1E-11
Tc-99m	7.11E-08	1E-04	1.63E-08	5E-07	8.37E-14	1E-11
Ag-110m	1.14E-07	1E-04	2.36E-08	5E-07	9.13E-14	1E-11
Sb-124	1.24E-07	1E-04	2.58E-08	5E-07	1.81E-13	1E-11
Sb-125	2.46E-07	1E-04	5.13E-08	5E-07	3.35E-13	1E-11
I-131	8.81E-08	1E-04	1.85E-08	1E-06	1.65E-13	1E-12
I-133	1.32E-07	1E-04	2.74E-08	5E-07	1.21E-13	1E-10
I-135	2.73E-07	1E-04	5.70E-08	5E-07	5.93E-13	1E-11
Xe-131m	2.94E-06	1E-04	6.58E-07	1E-05	--------	-----
Xe-133	1.95E-07	1E-04	5.29E-08	1E-05	--------	-----
Xe-133m	6.54E-07	1E-04	1.41E-07	1E-05	--------	-----
Xe-135	7.16E-08	1E-04	1.54E-08	1E-05	--------	-----
Xe-135m	1.47E-07	1E-04	3.04E-08	1E-05	--------	-----
Xe-137	2.25E-07	1E-04	4.69E-08	1E-05	--------	-----
Xe-138	2.92E-07	1E-04	6.25E-08	1E-05	--------	-----
Cs-134	9.32E-08	1E-04	1.93E-08	5E-07	1.63E-13	1E-11
Cs-137	1.04E-07	1E-04	2.15E-08	5E-07	1.02E-13	1E-11
Ba-139	2.82E-07	1E-04	6.30E-08	5E-07	4.29E-13	1E-11
Ba-140	3.86E-07	1E-04	8.01E-08	5E-07	4.01E-13	1E-11
La-140	1.01E-07	1E-04	2.09E-08	5E-07	2.06E-13	1E-11
Ce-141	1.04E-07	1E-04	2.37E-08	5E-07	1.56E-13	1E-11
Ce-144	5.49E-07	1E-04	1.27E-07	5E-07	6.79E-13	1E-11
Gross Alpha	--------	-----	(1) 1.00E-07	1E-07	(1) 3.51E-15	1E-11

(1) Some of these sample analyses are 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 10/12/01. 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.

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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
ORGAN (1)	Bone	5.75E-03	0.1150	7.31E-03	0.1462	7.84E-03	0.1568	9.46E-04	0.0189	2.18E-02	0.2185
	Liver	1.12E-02	0.2240	1.37E-02	0.2740	1.48E-02	0.2960	2.47E-03	0.0494	4.22E-02	0.4217
	Total Body	8.63E-03	0.5753	1.04E-02	0.6933	1.12E-02	0.7467	2.07E-03	0.1380	3.23E-02	1.0767
	Thyroid	1.73E-03	0.0346	1.33E-03	0.0266	1.78E-03	0.0356	1.20E-03	0.0240	6.04E-03	0.0604
	Kidney	4.80E-03	0.0960	5.40E-03	0.1080	6.05E-03	0.1209	1.57E-03	0.0314	1.78E-02	0.1782
	Lung	2.83E-03	0.0566	2.75E-03	0.0550	3.28E-03	0.0656	1.39E-03	0.0278	1.03E-02	0.1025
	GI-LLI	3.26E-03	0.0652	1.96E-03	0.0392	2.73E-03	0.0546	2.17E-03	0.0434	1.01E-02	0.1012

		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)	Beta Air	0.00E+00	0.0000	5.11E-02	0.5110	3.18E-04	0.0032	5.87E-09	0.0000	5.14E-02	0.2571
(2)	Gamma Air	0.00E+00	0.0000	1.42E-01	2.8400	1.07E-04	0.0021	1.15E-06	0.0000	1.42E-01	1.4211
ORGAN (3)	Bone	3.18E-04	0.0042	2.06E-05	0.0003	3.65E-04	0.0049	1.36E-05	0.0002	7.18E-04	0.0048
	Liver	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	Total Body	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	Thyroid	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.43E-01	3.2400	8.28E-01	5.5200
	Kidney	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	Lung	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133
	GI-LLI	2.63E-01	3.5067	1.60E-01	2.1333	1.62E-01	2.1600	2.42E-01	3.2267	8.27E-01	5.5133

(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 mi 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 mi NW.

Limits used for calculation of percent (%) are from ODCM Appendix C CONTROLS 3.11.1.2, 3.11.2.2 and 3.11.2.3 (considered to be the design objectives).

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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
ORGAN (1)	Bone	5.75E-03	0.1150	7.31E-03	0.1462	7.84E-03	0.1568	9.46E-04	0.0189	2.18E-02	0.2185
	Liver	1.12E-02	0.2240	1.37E-02	0.2740	1.48E-02	0.2960	2.47E-03	0.0494	4.22E-02	0.4217
	Total Body	8.63E-03	0.5753	1.04E-02	0.6933	1.12E-02	0.7467	2.07E-03	0.1380	3.23E-02	1.0767
	Thyroid	1.73E-03	0.0346	1.33E-03	0.0266	1.78E-03	0.0356	1.20E-03	0.0240	6.04E-03	0.0604
	Kidney	4.80E-03	0.0960	5.40E-03	0.1080	6.05E-03	0.1209	1.57E-03	0.0314	1.78E-02	0.1782
	Lung	2.83E-03	0.0566	2.75E-03	0.0550	3.28E-03	0.0656	1.39E-03	0.0278	1.03E-02	0.1025
	GI-LLI	3.26E-03	0.0652	1.96E-03	0.0392	2.73E-03	0.0546	2.17E-03	0.0434	1.01E-02	0.1012

		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)	Beta Air	6.71E-03	0.0671	5.25E-09	0.0000	4.81E-10	0.0000	5.87E-09	0.0000	6.71E-03	0.0336
(2)	Gamma Air	2.03E-03	0.0406	6.25E-07	0.0000	9.57E-08	0.0000	1.15E-06	0.0000	2.03E-03	0.0203
ORGAN (3)	Bone	3.25E-06	0.0000	2.32E-06	0.0000	3.09E-05	0.0004	5.80E-07	0.0000	3.71E-05	0.0002
	Liver	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
	Total Body	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
	Thyroid	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
	Kidney	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
	Lung	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667
	GI-LLI	1.61E-01	2.1467	1.06E-01	1.4133	1.01E-01	1.3467	6.20E-02	0.8267	4.30E-01	2.8667

(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 mi 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 mi NW.

Limits used for calculation of percent (%) are from ODCM Appendix C CONTROLS 3.11.1.2, 3.11.2.2 and 3.11.2.3 (considered to be the design objectives).

Annual Radioactive Effluent Release Report

Calendar Year - 2001
Table 6

Effluent Monitoring Instrumentation Channels Not Returned To Operable Status Within 30 Days

(RM-LW-104) - Unit 1 Liquid Waste Effluents Monitor

On September 7, 2001, this monitor was removed from service due to a high background. Prior to this date, maintaining a low background was also an ongoing problem. For example, several repeat decontaminations of the monitor's detector well were performed in an effort to reduce the monitor backround, but were unsuccessful. Therefore, a Work Order (No. 01-015345-000) was prepared to purchase and install a new sampler volume assembly. This monitor could not be returned to service within 30 days because of parts availability. Specifically, the original supplier of the sampler volume assembly was no longer in business. A new supplier was located, and the monitor was returned to OPERABLE status on December 24, 2001. This condition and associated Corrective Actions are detailed in BVPS Condition Report No. 01-6928.

As required by BV-1 and 2 ODCM Appendix C Control 3.3.3.9 (Table 3.3-12, Action Statement 23), independent sampling, and independent verification of release rate calculations and discharge valving was performed for each applicable batch liquid discharge during the period that this monitor was not OPERABLE.

Annual Radioactive Effluent Release Report

Calendar Year - 2001

Table 7
Total Dose Commitments, Total Effective Dose Equivalents and Population Doses

2001 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	4.44E-02	2.00E-01	2.44E-01	0.98%
Liver	1.34E+00	2.00E-01	1.54E+00	6.17%
Total Body	1.47E+00	2.00E-01	1.67E+00	6.66%
Thyroid	1.27E+00	2.00E-01	1.47E+00	1.96%
Kidney	1.29E+00	2.00E-01	1.49E+00	5.97%
Lung	1.28E+00	2.00E-01	1.48E+00	5.91%
GI-LLI	1.28E+00	2.00E-01	1.48E+00	5.91%

(1) The cumulative dose contributions from liquid and gaseous effluents were determined in accordance with the applicable CONTROLS & SURVEILLANCE REQUIREMENTS listed in Appendix C of the ODCM. The dose commitment limits for 40 CFR 190 MEMBERS OF THE PUBLIC (ODCM Appendix C 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).

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 would be the same as those doses reported in the above table to show compliance with 40 CFR Part 190.10(a). Evaluations have shown that the 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.

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 10.99 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).

0-50 Mile Population Doses From Liquid and Gaseous Effluents

The 0-50 mile Total Population Dose from liquid and gaseous effluents is 0.801 man-rem (Total Body)
The 0-50 mile Average Population Dose from liquid and gaseous effluents is 0.000225 mrem (Total Body)

Annual Radioactive Effluent Release Report

Calendar Year - 2001
Table 8

Offsite Dose Calculation Manual Surveillance Deficiencies

As specified by BV-1 and 2 ODCM Appendix C Control 3.11.2.1 Table 4.11-2, and Appendix C Control 3.3.3.10 Table 3.3-13 Action 32, collection of particulate and charcoal samples from the Gaseous Waste/Process Vent Effluent Pathway is required on a continuous frequency.

Contrary to this, continuous particulate and charcoal sampling from the Unit 1/2 Gaseous Waste Process Vent Effluent Pathway was interrupted for the period June 20, 2001 1300 hours through June 21, 2001 1110 hours. The cause of this condition was determined to be a program or process weakness, inadequate work coordination and weak error detection practices while performing calibrations of gaseous effluent radiation monitors.

There were no safety implications to the health and safety of the general public as a result of the failure to continuously collect these samples for the period noted above. There were no abnormal indications on any of the OPERABLE particulate or gaseous effluent channels during this period. This condition and associated Corrective Actions, are documented in BVPS Condition Report No. 01-3740.

Annual Radioactive Effluent Release Report

Calendar Year - 2001
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.

FENOC
Beaver Valley Power Station - Units 1 & 2

Annual Radioactive Effluent Release Report

Calendar Year - 2001
Attachment 1
Joint Frequency Distribution Tables

Attachment 1
An annual summary of hourly meteorological data, in the form of joint frequency distribution, is provided for the calendar year as specified in the ODCM.

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 Gaseous Releases for the calendar year were determined to be within design objectives. where as, the ODCM Dose and Dose Rate Limits are considered to be the design objectives, 2) Although there was one Abnormal Gaseous Releases during the calendar year, it's consequences had no measurable impact on the design objectives described above. For a copy of the hourly meteorological data during the calendar quarters, contact Mr. Anthony T. Lonnett at 724-682-5860.

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	10	43	0	0	0	0	53
NNE	15	36	0	0	0	0	51
NE	24	21	0	0	0	0	45
ENE	12	22	0	0	0	0	34
E	13	22	0	0	0	0	35
ESE	14	18	0	0	0	0	32
SE	21	17	0	0	0	0	38
SSE	20	29	0	0	0	0	49
S	6	41	2	0	0	0	49
SSW	9	70	10	0	0	0	89
SW	13	78	32	0	0	0	123
WSW	5	59	19	1	0	0	84
W	13	126	16	0	0	0	155
WNW	11	77	9	0	0	0	97
NW	23	67	3	0	0	0	93
NNW	14	72	4	0	0	0	90
TOTAL	223	798	95	1	0	0	1117

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	6	8	0	0	0	0	14
NNE	6	2	0	0	0	0	8
NE	2	0	0	0	0	0	2
ENE	2	2	0	0	0	0	4
E	2	2	0	0	0	0	4
ESE	1	2	0	0	0	0	3
SE	1	0	0	0	0	0	1
SSE	4	5	0	0	0	0	9
S	1	2	1	0	0	0	4
SSW	7	6	4	0	0	0	17
SW	3	18	13	0	0	0	34
WSW	5	17	10	1	0	0	33
W	3	23	4	0	0	0	30
WNW	4	15	9	0	0	0	28
NW	9	10	1	0	0	0	20
NNW	3	10	1	0	0	0	14
TOTAL	59	122	43	1	0	0	225

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	4	6	0	0	0	0	10
NNE	6	1	0	0	0	0	7
NE	3	0	0	0	0	0	3
ENE	4	1	0	0	0	0	5
E	1	2	0	0	0	0	3
ESE	5	1	0	0	0	0	6
SE	2	1	0	0	0	0	3
SSE	1	1	0	0	0	0	2
S	3	9	2	0	0	0	14
SSW	5	9	2	0	0	0	16
SW	6	18	15	4	0	0	43
WSW	4	17	7	0	0	0	28
W	7	23	6	0	0	0	36
WNW	4	21	3	0	0	0	28
NW	6	16	3	0	0	0	25
NNW	11	9	2	0	0	0	22
TOTAL	72	135	40	4	0	0	251

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	69	58	0	0	0	0	127
NNE	42	12	0	0	0	0	54
NE	80	10	0	0	0	0	90
ENE	60	32	0	0	0	0	92
E	44	9	0	0	0	0	53
ESE	30	7	0	0	0	0	37
SE	34	5	0	0	0	0	39
SSE	42	6	0	0	0	0	48
S	37	44	3	0	0	0	84
SSW	55	55	20	1	0	0	131
SW	76	238	131	11	0	0	456
WSW	66	274	93	11	0	0	444
W	57	221	68	0	0	0	346
WNW	82	162	27	0	0	0	271
NW	88	178	18	0	0	0	284
NNW	69	97	5	0	0	0	171
TOTAL	931	1408	365	23	0	0	2727

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	85	11	1	0	0	0	97
NNE	74	12	0	0	0	0	86
NE	126	13	0	0	0	0	139
ENE	175	24	0	0	0	0	199
E	130	17	0	0	0	0	147
ESE	100	7	0	0	0	0	108
SE	94	2	0	0	0	0	96
SSE	135	8	0	0	0	0	143
S	137	28	2	0	0	0	167
SSW	117	82	6	0	0	0	205
SW	78	119	18	3	0	0	218
WSW	47	96	20	3	0	0	166
W	44	84	15	2	0	0	145
WNW	56	38	0	1	0	0	95
NW	92	43	2	0	0	0	137
NNW	82	22	0	0	0	0	104
TOTAL	1572	606	64	9	0	0	2252

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	18	1	0	0	0	0	19
NNE	22	3	0	0	0	0	25
NE	53	0	0	0	0	0	54
ENE	67	0	0	0	0	0	67
E	111	0	0	0	0	0	111
ESE	207	0	0	0	0	0	207
SE	270	1	0	0	0	0	273
SSE	173	3	0	0	0	0	176
S	168	12	0	0	0	0	180
SSW	61	21	0	0	0	0	82
SW	32	9	2	3	0	0	46
WSW	20	2	0	1	0	0	23
W	12	7	0	0	0	0	19
WNW	13	2	1	0	0	0	16
NW	15	2	0	0	0	0	17
NNW	17	0	0	0	0	0	17
TOTAL	1259	63	3	4	0	0	1332

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	13	1	0	0	0	0	14
NNE	11	0	0	0	0	0	11
NE	12	0	0	0	0	0	12
ENE	27	0	0	0	0	0	27
E	87	0	0	0	0	0	87
ESE	143	0	0	0	0	0	143
SE	247	0	0	0	0	0	247
SSE	127	0	0	0	0	0	127
S	84	5	0	0	0	0	89
SSW	32	4	1	0	0	0	37
SW	16	0	2	0	0	0	18
WSW	11	3	0	0	1	0	15
W	7	1	0	0	0	0	8
WNW	1	0	0	0	0	0	1
NW	7	0	0	0	0	0	7
NNW	8	0	0	0	0	0	8
TOTAL	833	14	3	0	1	0	851

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 35 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP 35P DIRECTION:DI 35P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	205	128	1	0	0	0	334
NNE	176	66	0	0	0	0	242
NE	300	44	0	0	0	0	345
ENE	347	81	0	0	0	0	428
E	388	52	0	0	0	0	440
ESE	500	35	0	0	0	0	536
SE	669	26	0	0	0	0	697
SSE	502	52	0	0	0	0	554
S	436	141	10	0	0	0	587
SSW	286	247	43	1	0	0	577
SW	224	480	213	21	0	0	938
WSW	158	468	149	17	1	0	793
W	143	485	109	2	0	0	739
WNW	171	315	49	1	0	0	536
NW	240	316	27	0	0	0	583
NNW	204	210	12	0	0	0	426
TOTAL	4949	3146	613	42	1	0	8755

PERIODS OF CALM(HOURS): 4
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	4	34	33	0	0	0	71
NNE	5	16	25	3	0	0	49
NE	4	14	15	0	0	0	33
ENE	2	30	17	1	0	0	50
E	1	22	17	1	0	0	41
ESE	0	18	19	0	0	0	37
SE	1	28	31	1	0	0	61
SSE	1	33	27	1	0	0	62
S	1	22	41	2	0	0	66
SSW	1	16	39	8	0	0	64
SW	0	20	41	9	0	0	70
WSW	4	30	48	9	0	0	91
W	2	57	73	21	3	0	156
WNW	3	45	66	25	1	0	140
NW	6	35	20	4	1	0	66
NNW	2	31	27	0	0	0	60
TOTAL	37	451	539	85	5	0	1117

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	7	2	0	0	0	10
NNE	0	5	3	0	0	0	8
NE	1	3	1	0	0	0	5
ENE	0	2	4	0	0	0	6
E	0	4	1	0	0	0	5
ESE	0	3	0	0	0	0	3
SE	0	2	2	1	0	0	5
SSE	1	4	3	0	0	0	8
S	2	4	4	1	0	0	11
SSW	1	3	10	0	0	0	14
SW	3	5	11	4	0	0	23
WSW	2	8	13	4	1	0	28
W	5	17	11	9	1	0	43
WNW	0	8	14	8	2	0	32
NW	3	2	6	1	0	0	12
NNW	1	7	4	0	0	0	12
TOTAL	20	84	89	28	4	0	225

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	9	4	0	0	0	16
NNE	3	6	0	0	0	0	9
NE	0	3	0	0	0	0	3
ENE	1	3	1	0	0	0	5
E	0	3	2	0	0	0	5
ESE	0	2	0	0	0	0	2
SE	1	4	2	0	0	0	7
SSE	1	3	2	0	0	0	6
S	1	6	10	1	0	0	18
SSW	0	4	6	2	0	0	12
SW	1	1	14	5	0	0	21
WSW	4	9	8	5	4	0	30
W	1	14	25	6	2	0	48
WNW	5	12	12	8	1	0	38
NW	0	5	8	5	0	0	18
NNW	5	6	1	1	0	0	13
TOTAL	26	90	95	33	7	0	251

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	20	59	38	0	0	0	117
NNE	26	46	14	4	0	0	90
NE	26	26	5	1	0	0	58
ENE	22	66	23	3	0	0	114
E	21	24	8	0	0	0	53
ESE	14	18	8	0	0	0	40
SE	10	37	10	0	0	0	57
SSE	12	29	6	1	0	0	48
S	21	39	38	5	0	0	103
SSW	20	35	54	16	0	0	125
SW	22	66	143	32	5	0	268
WSW	39	105	170	47	13	0	374
W	29	118	248	156	26	3	580
WNW	17	127	187	67	1	0	399
NW	23	106	64	8	0	0	201
NNW	21	57	21	1	0	0	100
TOTAL	343	958	1037	341	45	3	2727

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	38	36	8	1	0	0	83
NNE	63	42	2	0	0	0	107
NE	92	90	7	1	0	0	190
ENE	60	152	36	0	0	0	248
E	46	76	15	0	0	0	137
ESE	14	23	14	0	0	0	51
SE	26	29	7	2	0	0	64
SSE	17	41	15	0	0	0	73
S	26	49	32	4	0	0	111
SSW	38	69	38	5	0	0	150
SW	51	74	70	11	0	0	206
WSW	50	102	60	8	5	0	225
W	29	70	115	30	5	4	253
WNW	18	101	57	6	1	1	184
NW	24	66	16	0	0	0	106
NNW	24	38	2	0	0	0	64
TOTAL	616	1058	494	68	11	5	2252

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED (MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	74	24	1	0	0	0	99
NNE	130	35	0	0	0	0	165
NE	146	68	0	0	0	0	214
ENE	62	34	1	0	0	0	97
E	20	13	0	0	0	0	33
ESE	12	9	1	0	0	0	22
SE	19	10	0	0	0	0	29
SSE	18	11	4	0	0	0	33
S	30	28	9	0	0	0	67
SSW	67	63	9	0	0	0	139
SW	98	57	12	2	2	0	171
WSW	58	42	7	0	1	0	108
W	28	19	4	4	0	0	55
WNW	16	11	1	1	0	0	29
NW	20	5	0	1	0	0	26
NNW	33	12	0	0	0	0	45
TOTAL	831	441	49	8	3	0	1332

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED (MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	32	5	0	0	0	0	37
NNE	66	30	0	0	0	0	96
NE	91	37	0	0	0	0	128
ENE	26	12	1	0	0	0	39
E	19	7	0	0	0	0	26
ESE	7	5	0	0	0	0	12
SE	15	18	1	0	0	0	34
SSE	16	13	3	0	0	0	32
S	23	29	2	0	0	0	54
SSW	68	59	3	0	0	0	130
SW	68	40	4	1	0	0	113
WSW	37	24	7	0	0	1	69
W	17	10	2	0	0	0	29
WNW	13	3	0	0	0	0	16
NW	18	0	1	0	0	0	19
NNW	16	1	0	0	0	0	17
TOTAL	532	293	24	1	0	1	851

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 150 FT VERSUS
DELTA TEMPERATURE 150-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP150P DIRECTION:DI150P LAPSE:DT150-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	172	174	86	1	0	0	433
NNE	293	180	44	7	0	0	524
NE	360	241	28	2	0	0	631
ENE	173	299	83	4	0	0	559
E	107	149	43	1	0	0	300
ESE	47	78	42	0	0	0	167
SE	72	128	53	4	0	0	257
SSE	66	134	60	2	0	0	262
S	104	177	136	13	0	0	430
SSW	195	249	159	31	0	0	634
SW	243	263	295	64	7	0	872
WSW	194	320	313	73	24	1	925
W	111	305	478	226	37	7	1164
WNW	72	307	337	115	6	1	838
NW	94	219	115	19	1	0	448
NNW	102	152	55	2	0	0	311
TOTAL	2405	3375	2327	564	75	9	8755

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 5

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	0	0	0	0
NNE	0	0	0	1	0	0	1
NE	0	0	3	2	0	0	5
ENE	0	2	4	0	0	0	6
E	0	0	1	1	0	0	2
ESE	0	0	2	0	0	0	2
SE	0	1	11	1	0	0	13
SSE	0	0	3	0	0	0	3
S	0	0	1	0	0	0	1
SSW	0	1	0	0	0	0	1
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	1	0	0	0	1
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	0	4	26	5	0	0	35

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	6	0	0	0	6
NNE	0	0	1	1	0	0	2
NE	0	2	4	0	0	0	6
ENE	0	1	5	0	0	0	6
E	0	0	6	0	0	0	6
ESE	0	1	4	2	0	0	7
SE	0	4	8	0	0	0	12
SSE	0	0	5	0	0	0	5
S	0	1	6	2	0	0	9
SSW	0	1	1	0	0	0	2
SW	0	0	0	0	0	0	0
WSW	0	1	3	1	0	0	5
W	0	1	2	0	0	0	3
WNW	0	0	1	1	0	0	2
NW	0	0	2	0	0	0	2
NNW	0	0	1	0	0	0	1
TOTAL	0	12	55	7	0	0	74

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	4	13	2	0	0	19
NNE	0	1	4	3	0	0	8
NE	0	2	5	1	0	0	8
ENE	0	3	11	0	0	0	14
E	0	4	4	0	0	0	8
ESE	0	5	7	2	0	0	14
SE	0	4	7	3	0	0	14
SSE	0	7	13	0	0	0	20
S	0	3	9	1	0	0	13
SSW	1	0	10	2	0	0	13
SW	0	0	7	4	0	0	11
WSW	0	1	13	4	0	0	18
W	0	4	13	2	1	0	20
WNW	0	6	6	12	5	0	29
NW	0	3	12	4	0	0	19
NNW	0	0	10	0	0	0	10
TOTAL	1	47	144	40	6	0	238

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	11	63	127	28	1	0	230
NNE	8	38	39	11	2	0	98
NE	28	48	12	14	3	0	105
ENE	14	47	28	19	3	0	111
E	10	59	66	10	0	0	145
ESE	13	44	71	31	1	0	160
SE	15	45	53	43	9	2	167
SSE	15	40	57	20	1	1	134
S	15	31	88	60	6	1	201
SSW	10	32	97	122	24	4	289
SW	19	35	149	273	76	12	564
WSW	12	70	201	194	40	31	548
W	19	72	233	301	123	38	786
WNW	15	63	266	183	80	10	617
NW	12	45	186	89	11	1	344
NNW	10	35	135	36	3	0	219
TOTAL	226	767	1808	1434	383	100	4718

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED (MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	14	30	46	29	1	0	120
NNE	24	20	15	10	0	0	69
NE	23	29	13	2	0	0	67
ENE	38	51	31	8	0	0	128
E	35	74	30	6	0	0	145
ESE	25	53	43	6	1	0	128
SE	29	46	39	21	3	0	138
SSE	20	48	34	28	5	0	135
S	23	37	72	52	10	0	194
SSW	27	37	54	44	14	0	176
SW	36	49	69	122	44	3	323
WSW	52	86	50	28	7	3	226
W	43	81	69	25	8	1	227
WNW	21	62	45	14	1	0	143
NW	28	25	14	10	1	0	78
NNW	13	26	26	11	0	0	76
TOTAL	451	754	650	416	95	7	2373

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	10	20	6	0	0	0	36
NNE	14	20	4	1	0	0	39
NE	22	18	6	0	0	0	47
ENE	22	24	17	0	0	0	63
E	25	30	14	0	0	0	69
ESE	19	29	14	1	0	0	63
SE	27	32	16	8	0	0	83
SSE	15	50	23	17	0	0	105
S	13	26	35	18	0	0	92
SSW	19	33	39	16	0	0	107
SW	17	30	60	40	13	0	160
WSW	20	48	21	0	0	0	89
W	25	53	27	5	0	0	110
WNW	18	27	3	1	0	0	49
NW	11	18	5	0	0	0	34
NNW	11	8	4	0	0	0	23
TOTAL	288	466	294	107	13	0	1169

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	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	1	0	0	0	0	0	1
E	1	1	0	0	0	0	2
ESE	4	3	1	0	0	0	8
SE	1	2	1	1	0	0	5
SSE	4	10	5	0	0	0	19
S	0	9	11	9	0	0	29
SSW	0	7	6	7	0	0	20
SW	0	3	3	2	0	0	8
WSW	1	1	0	0	0	0	2
W	0	0	0	0	0	0	0
WNW	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	14	36	27	19	0	0	96

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57

BEAVER VALLEY JOINT FREQUENCY DISTRIBUTION
WIND SPEED AND DIRECTION 500 FT VERSUS
DELTA TEMPERATURE 500-35FT
JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

SITE: BEAVER VALLEY UNIT: ONE

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD = 01010101-01123124
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP500P DIRECTION:DI500P LAPSE:DT500-

WIND DIRECTION	WIND SPEED(MPH) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	35	117	198	59	2	0	411
NNE	46	79	63	27	2	0	217
NE	74	99	43	19	3	0	239
ENE	75	128	96	27	3	0	329
E	71	168	121	17	0	0	377
ESE	61	135	142	42	2	0	382
SE	72	134	135	77	12	2	432
SSE	54	155	140	65	6	1	421
S	51	107	222	142	16	1	539
SSW	57	111	207	191	38	4	608
SW	72	117	288	441	133	15	1066
WSW	85	207	288	227	47	34	888
W	87	211	345	333	132	39	1147
WNW	55	158	321	211	86	10	841
NW	51	91	219	103	12	1	477
NNW	34	69	176	47	3	0	329
TOTAL	980	2086	3004	2028	497	107	8703

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION 0
HOURS OF MISSING DATA: 57