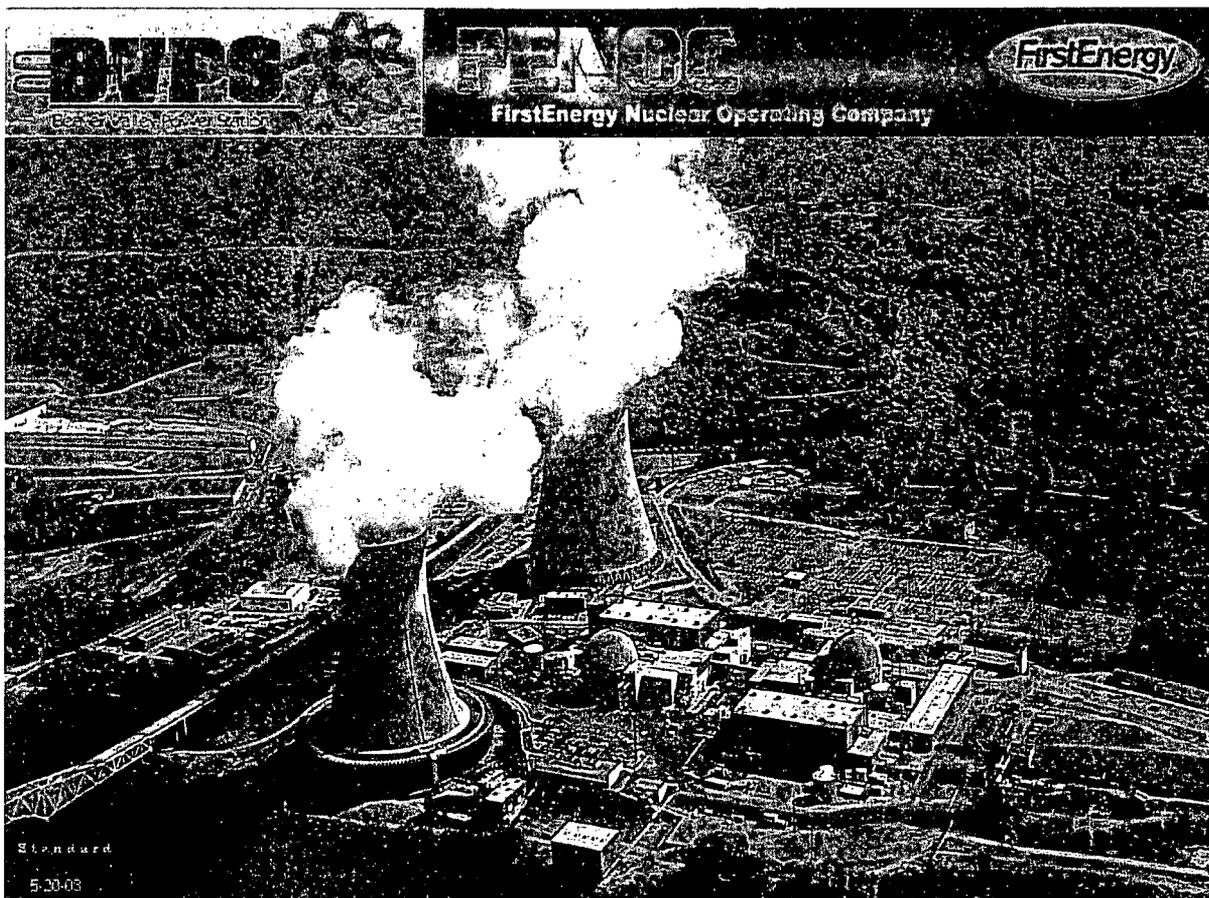


# FIRSTENERGY NUCLEAR OPERATING COMPANY BEAVER VALLEY POWER STATION



**2007 RADIOACTIVE EFFLUENT RELEASE REPORT**  
**AND**  
**2007 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**  
  
**UNITS NO. 1 AND 2**  
**LICENSES DPR-66 AND NPF-73**

**BEAVER VALLEY POWER STATION  
ENVIRONMENTAL & CHEMISTRY SECTION**

**Technical Report Approval:**

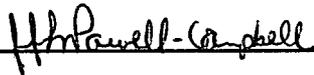
**2007 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**

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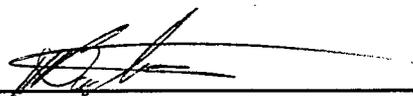
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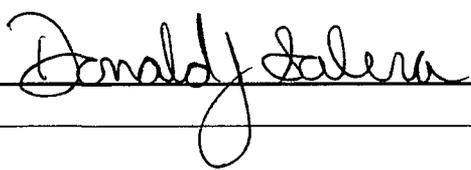
**UNITS NO. 1 AND 2**

**LICENSES DPR-66 AND NPF-73**

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Prepared by: Anthony T. Lonnett  Date: 4-7-08

Reviewed by: Michael D. Banko III  Date: 4-15-08

Approved by: Donald J. Salera  Date: 4-16-08

Subject: **Beaver Valley Power Station, Unit Nos. 1 and 2**  
**BV-1 Docket No. 50-334, License No. DPR-66**  
**BV-2 Docket No. 50-412, License No. NPF-73**  
**Radioactive Effluent Release Report for 2007, and**  
**Annual Radiological Environmental Operating Report for 2007**

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BVPS Document Control, RTL A9.690E

BVRC - *Keywords: Radioactive Effluent Release Report,  
Annual Radiological Environmental Operating Report*

**I. Overall Summary of BVPS Effluent and Environmental Programs:**

**Report Submittal:** This document is a combined submittal of the Radioactive Effluent Release Report (RERR), and the Annual Radiological Environmental Operating Report (AREOR). The RERR (also referred to as the RETS Report) is provided as Enclosure 2. The AREOR (also referred to as the Annual REMP Report) is provided as Enclosure 3.

This report has been produced in color to provide clarity for the reader. Specifically, items in **BLUE** are highlighted to indicate changes in information from that provided in previous reports. Also, all graphs provided with this report are shown in color and should not be reproduced (from the report) by methods that provide only black and white results.

This report is comprised of results from the RETS and REMP programs that are described in the BVPS Unit 1 and Unit 2 Offsite Dose Calculation Manual (ODCM) and are summarized as follows:

- **RETS Program and Report Results:** The Controls for the Radiological Effluent Technical Specification (RETS) Program are outlined in ODCM procedure 1/2-ODC-3.03, *Controls for RETS and REMP Programs*. The RETS Controls were followed throughout the report period. Adherence to the RETS Controls (e.g.; sampling, analysis and offsite dose projection requirements), along with adherence to more restrictive Administrative Controls delineated in site implementing procedures, demonstrate the proficiency of radioactive effluent control at BVPS. Also, results of the sample analyses, coupled with the offsite dose projections demonstrate that BVPS operations should not produce any adverse affect on the surrounding environment.
- **REMP Program and Report Results:** The Controls for the Radiological Environmental Monitoring Program (REMP) are outlined in ODCM procedure 1/2-ODC-3.03, *Controls for RETS and REMP Programs*. The REMP Controls were followed throughout the report period. Adherence to the REMP Controls (e.g.; sampling and analysis requirements) demonstrated the proficiency of radiological environmental monitoring. Also, results of the various environmental sample media validate the offsite dose projections made in accordance with the RETS Controls. In summary, the results demonstrate that BVPS operations did not adversely affect the surrounding environment.

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**II: Detailed Summary of Enclosure 2 - RETS Report (RERR) for 2007:**

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

- BVPS Integrated Technical Specifications, Administrative Control 5.6.2
- ODCM procedure 1/2-ODC-3.03, "*Controls for RETS and REMP Programs*", Attachment U, Control 6.9.3
- BVPS procedure 1/2-ENV-01.05, "*Compliance with Regulatory Guide 1.21 and Technical Specifications*"
- NUREG-1301, "*Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors, Generic Letter 89-01, Supplement No.1, April 1991*"
- Regulatory Guide 1.21, "*Measuring Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Material in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants, Revision 1, June 1974*"
- BVPS Condition Report No. CR07-27729, letter NPD3NRE:0480 and SAP Order No. 200197646-0250&370 are associated with reporting of an abnormal liquid release to the Onsite Groundwater, and subsequent record retention per 10CFR 50.75(g).
- BVPS Condition Report No. CR07-18914, letter NPD3NRE:0428, and SAP Order 200197646-0350 are associated with reporting the detection of Licensed Radioactive Material (LRM) in the Unit 1 Component Cooling System, and subsequent record retention per 10CFR 50.75(g).
- BVPS Condition Report No. CR07-18914 & CR07-19457, letter NPD3NRE:0428, and SAP Order 200197646-0360 are associated with reporting the detection of LRM in the Unit 2 Primary Component Cooling System, and subsequent record retention per 10CFR 50.75(g).
- BVPS SAP Order 200197646-0420 is associated with reporting the changes made to the ODCM (i.e.; ODCM Change 24) during 2007.

**Summary of the BVPS RETS Program for Liquid and Gaseous Effluent Control**

- **Onsite Groundwater Monitoring:** Twenty-four (24) onsite monitoring wells were sampled during 2007. Tritium results from fifteen (15) wells were  $\leq 440$  pCi/l. Seven (7) wells were  $> 440$  pCi/l, but  $\leq 2000$  pCi/l. Two (2) wells were  $> 2000$  pCi/l, but  $\leq 20,000$  pCi/l, and no wells were  $> 20,000$  pCi/l. All gamma spectrometry analyses were  $< \text{LLD}$ . Communication was made to local, state & federal agencies for exceeding 2000 pCi/l for H-3. No adverse effect has been detected in the offsite groundwater, drinking water and surface water samples. See Enclosure 2, page iii, page iv, page v, and page 1 for additional details.
- **Onsite Spills:** There were no onsite spills  $> 100$  gallons during the calendar year.
- **Decommissioning File Update:** Three items were added to the site decommissioning files in accordance with 10CFR50.75(g). These items included discovery of Licensed Radioactive Material (LRM) in the Unit 1 Component Cooling System, the Unit 2 Primary Component Cooling System, and the Onsite Groundwater. See Enclosure 2, page iv for additional details.
- **Abnormal Liquid Releases:** There was one (1) abnormal liquid releases during the report period. The release of  $4.96\text{E-}4$  Curies of Tritium was considered abnormal, because it represented an unplanned release to the Onsite Groundwater. The release was well within the offsite dose limits specified in the ODCM. The details associated with this release are described in Enclosure 2, page iii.
- **Abnormal Gaseous Releases:** There were no abnormal gaseous releases during the report period.
- **Liquid Radwaste Treatment System:** The BVPS site operates with the concept of a shared Liquid Radwaste Treatment System, even though each Unit has its own system of ion-exchange vessels. Using this concept allowed either Unit to process liquid waste at the Unit of origin, or at the other Unit. Typically, when Unit 1 or Unit 2 high level liquid waste was processed (e.g.; coolant recovery waste) it was performed at Unit 1, because that system has an additional carbon pre-conditioning filter (50 cubic feet).
- **Gaseous Radwaste Treatment System:** The BVPS site operates with the concept of a shared Gaseous Radwaste Treatment System, even though each Unit has its own system of charcoal delay beds and storage/decay tanks. Using this concept allowed either Unit to process gaseous waste at the Unit of origin, or at the other Unit. Typically, when Unit 1 or Unit 2 went to a shutdown condition, the gaseous waste was transferred for storage and decay at Unit 2 because that system has 4 additional storage tanks.
- **Lower Limits of Detectability (LLD):** All a-priori calculated LLD met the minimum requirements specified in the ODCM. Details are provided in Enclosure 2, Table 4.

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- **Effluent Monitoring Channels Inoperable >30 Days:** There was no Effluent Monitoring Instrumentation Channels not returned to Operable status within 30 days during this report period.
- **ODCM Surveillance Deficiencies:** There was no ODCM Surveillance Deficiency during the report period.
- **ODCM Changes:** There was one (1) change made to the ODCM during the report period. The major reason for the ODCM change was to support implementation of the Integrated Technical Specification (Amendments 278/161). The ODCM changes maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR 50. Also, the ODCM changes will not impact the accuracy or reliability of effluent dose or alarm setpoint calculation. Detailed descriptions of the ODCM changes are provided in Enclosure 2, Table 9 and Attachment 2.
- **Meteorological Data Recovery:** The Meteorological Data Recovery for the calendar year met the minimum requirement of at-least 90%, as specified in Section 5 of Revision 1 to Regulatory Guide 1.23, Meteorological Monitoring Programs for Nuclear Power Plants. Details are provided in Enclosure 2, Attachment 1.
- **Total Population Dose vs Natural Background:** The 0-50 mile total and average population doses were calculated using liquid and gaseous release quantities and real time meteorology. The average population dose is based on 4 million people within 0-50 miles of the BVPS site. The following comparison to natural background radiation demonstrates that BVPS operations did not adversely affect the surrounding environment:

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

0.0001211 mrem = BVPS Average Individual Dose for the year

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

- **Trends of Release Activity and Offsite Dose:** The graphs on the following pages provide a comparison of the following information:
  - Total dose relative to 40CFR190.10(a) and 10CFR20.1301(a)(1)
  - Liquid release activity of fission and activation products
  - Liquid release activity of tritium
  - Liquid tritium inventory reduction
  - Liquid release offsite dose projections
  - Gaseous release activity of fission and activation gasses
  - Gaseous release activity of particulates and radioiodines
  - Gaseous release activity of tritium
  - Gaseous release offsite dose projections

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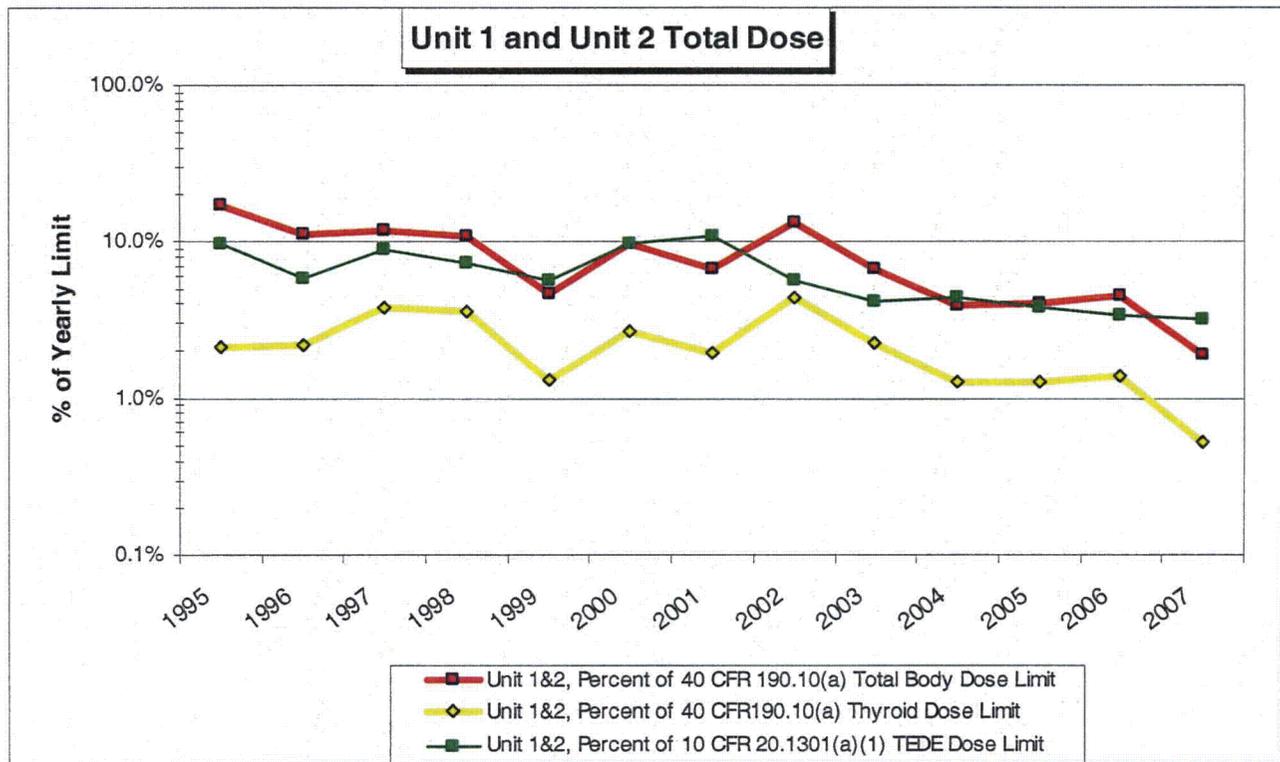
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- **Trends of Total Dose:** The following graph provides a comparison of the ODCM dose projections from all facility releases and direct radiation exposures to show compliance with Member of the Public dose limits from 10 CFR 20.1301 and 40 CFR Part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

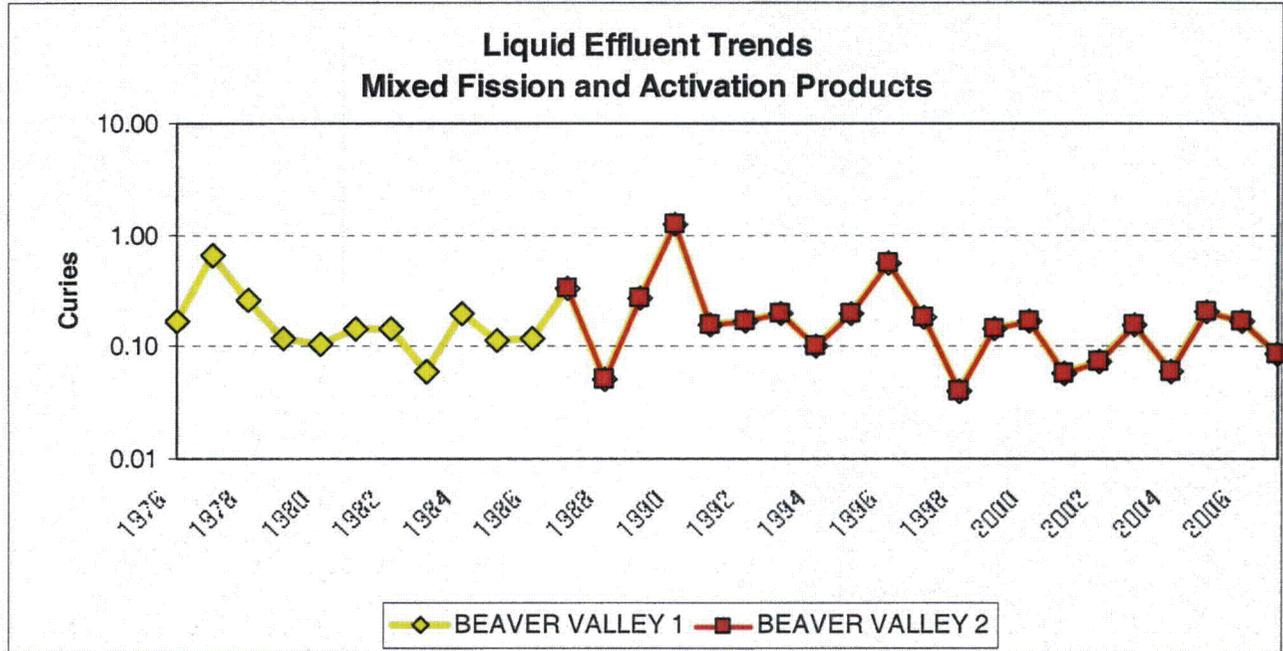
**40 CFR 190.10(a)**  
**0.474 mrem = Total Body Dose, or**  
**1.90% of the 25 mrem annual limit**

**40 CFR 190.10(a)**  
**0.397 mrem = Thyroid Dose, or**  
**0.53% of the 75 mrem annual limit**

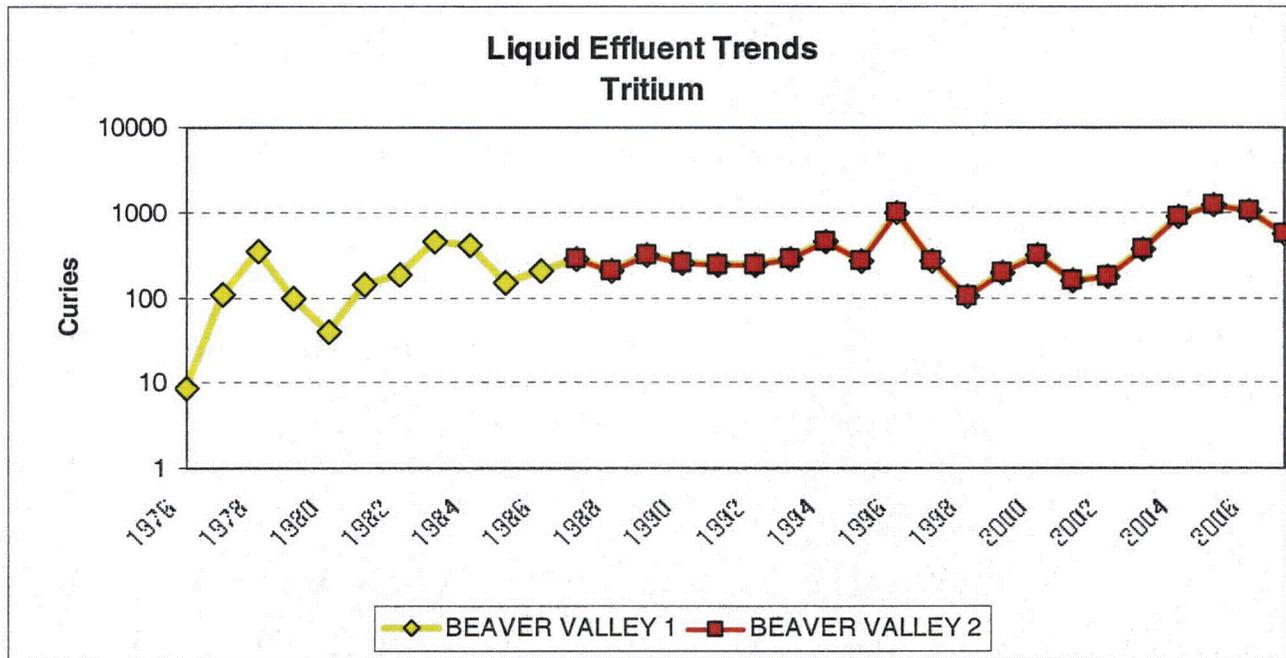
**10 CFR 20.1301(a)(1)**  
**3.24 mrem = Total Effective Dose Equivalent, or**  
**3.24% of the 100 mrem annual limit**



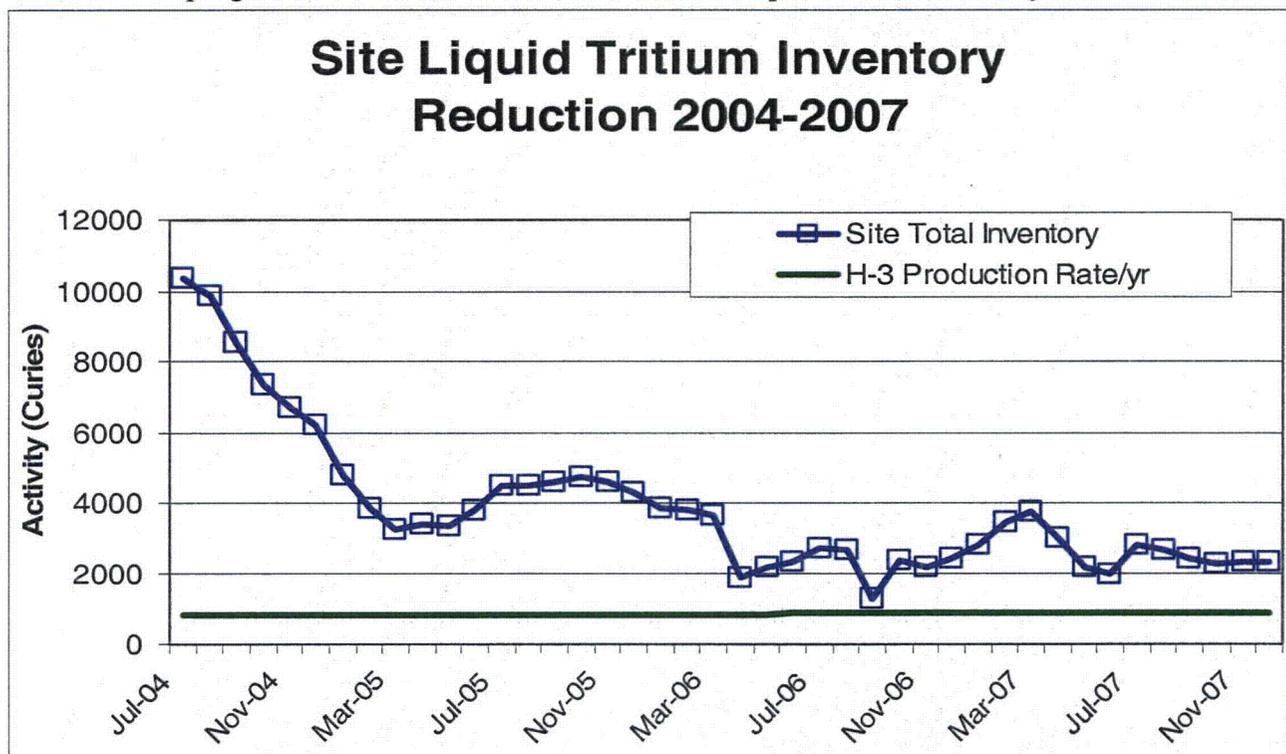
- **Liquid Release Activity (Fission and Activation Products):** The total mixed fission and activation product (particulate) radioactivity discharged from the site was 0.172 Curies.



- Liquid Release Tritium Activity:** The total tritium radioactivity discharged from the site was 1100 Curies.



- Liquid Tritium Inventory Reduction:** In July 2004, the site initiated an Action Plan to reduce the site liquid tritium inventory. This effort will ensure future offsite dose (due to evaporation of tritiated water from the spent fuel pools) is reduced. The following graph shows progress made toward the reduction of site liquid tritium inventory.



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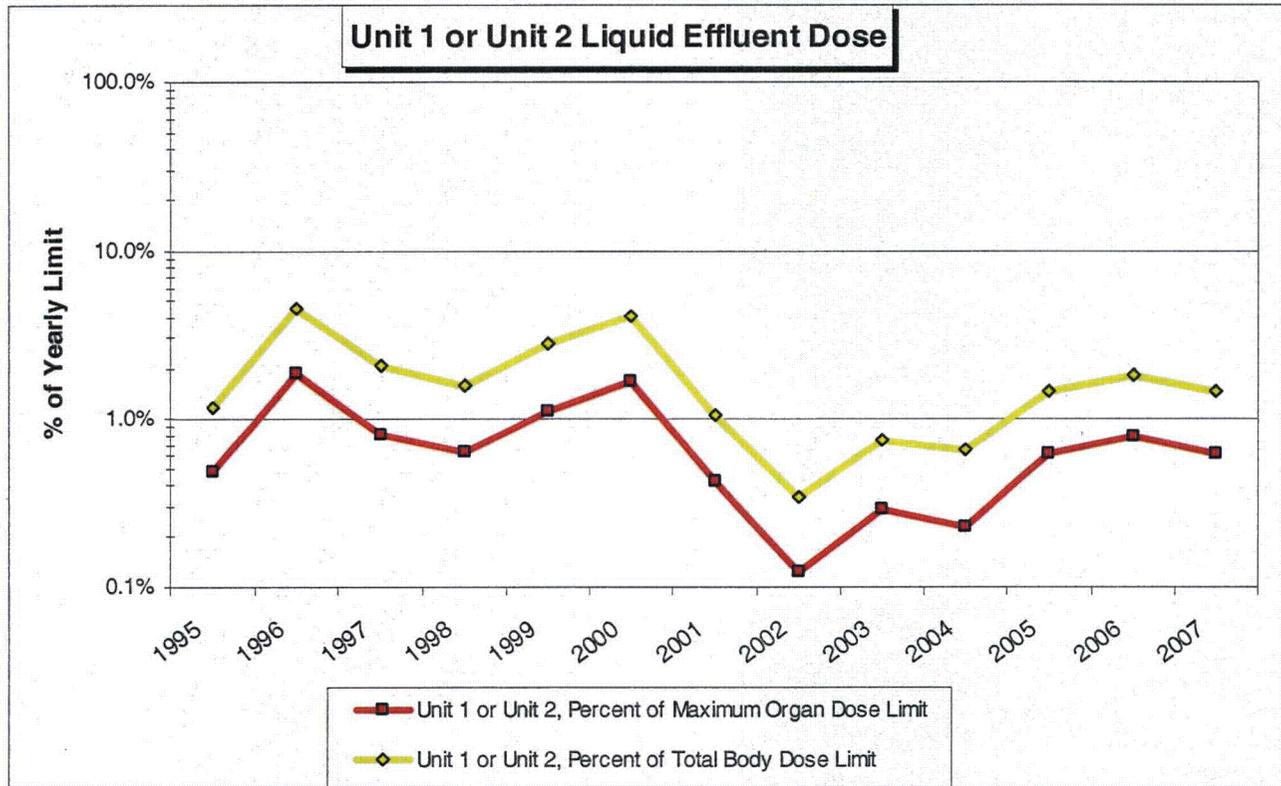
- **Liquid Release Offsite Dose Projections:** The following offsite dose projections were calculated to the maximum individual per 10 CFR 50, Appendix I and the ODCM. The projections use ODCM default flow rates for the receiving water (Ohio River). The projections were performed prior to release authorization, and are summarized as follows:

**10 CFR Part 50, Appendix I**  
**0.0437 mrem = Unit 1 Total Body Dose, or**  
**1.457% of the 3 mrem annual limit**

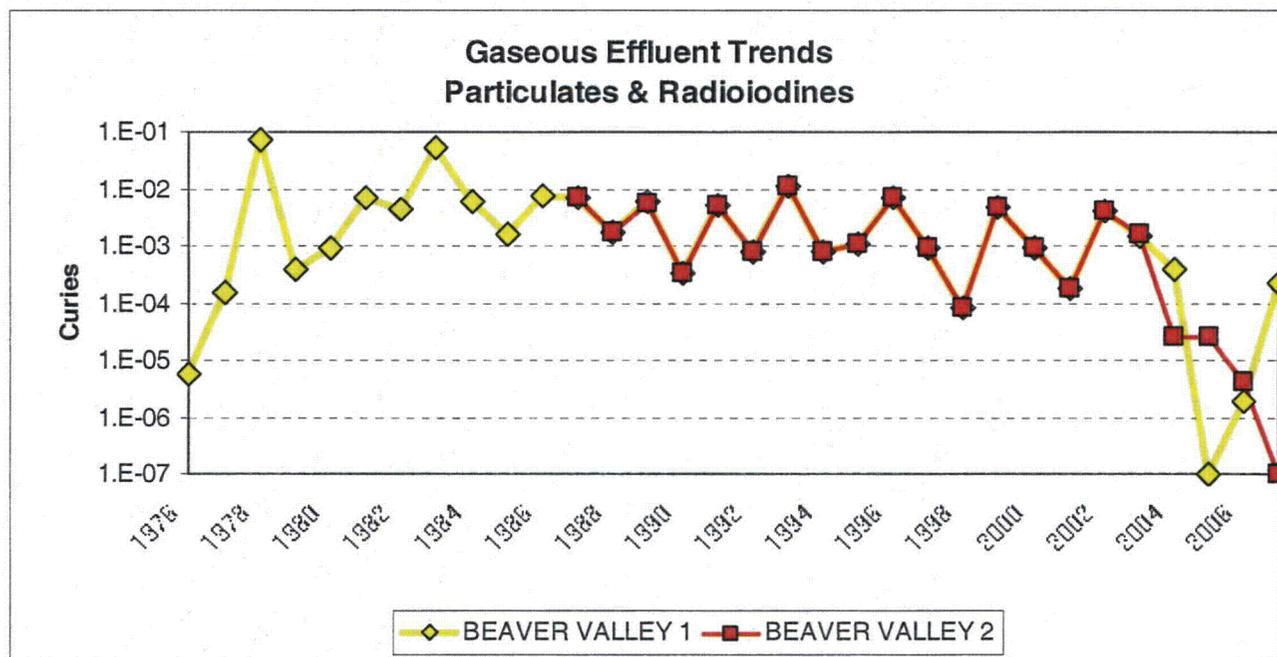
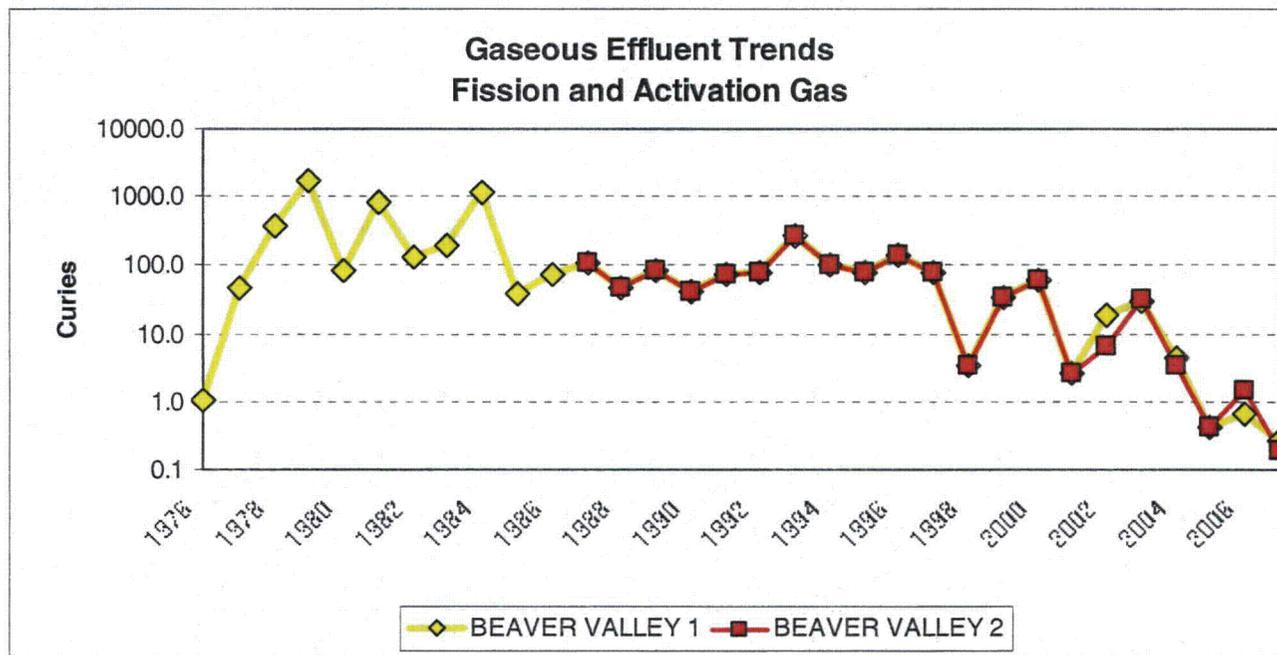
**10 CFR Part 50, Appendix I**  
**0.0630 mrem = Unit 1 Highest Organ Dose, or**  
**0.630% of the 10 mrem annual limit**

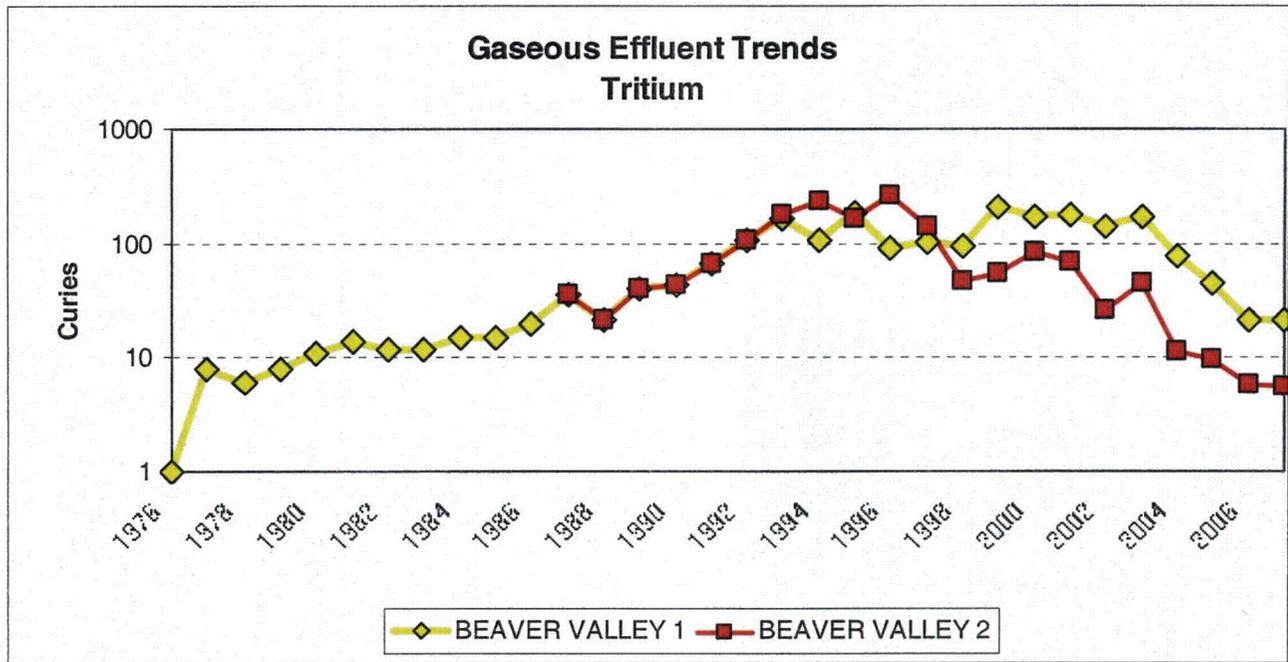
**10 CFR Part 50, Appendix I**  
**0.0437 mrem = Unit 2 Total Body Dose, or**  
**1.457% of the 3 mrem annual limit**

**10 CFR Part 50, Appendix I**  
**0.0630 mrem = Unit 2 Highest Organ Dose, or**  
**0.630% of the 10 mrem annual limit**



- Gaseous Release Activity:** The total radioactivity discharged from all site gaseous releases was 0.464 Curies of fission and activation gases, 0.000000249 Curies of Iodine-131, 0.000219 Curies of particulates with half-lives >8 days, no detectable gross alpha, and 26.8 Curies of tritium.



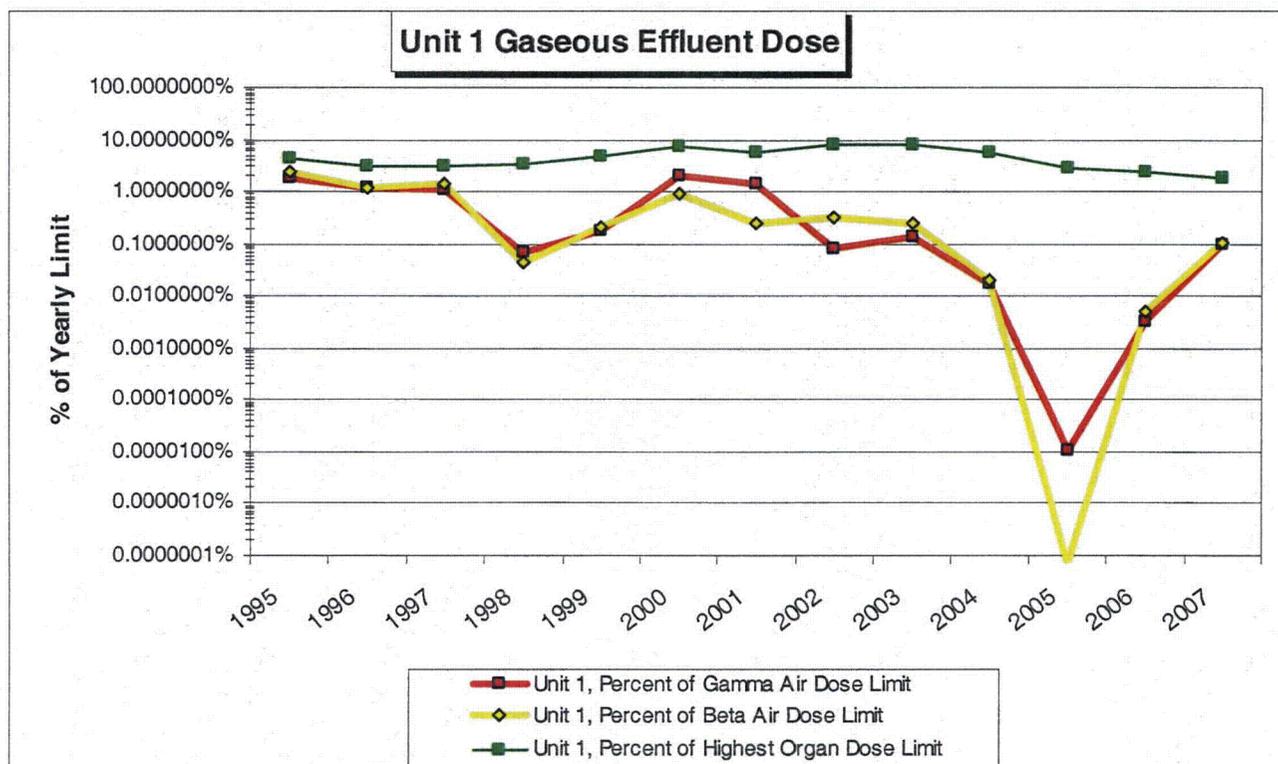


- Unit 1 Gaseous Release Offsite Dose Projections:** The following offsite dose projections were calculated to the maximum individual per 10 CFR 50, Appendix I and the ODCM. The projections use ODCM default meteorological parameters for the atmospheric conditions surrounding the plant site. The offsite dose projections during the report period were performed prior to release authorization, and are summarized as follows:

10 CFR Part 50, Appendix I  
 0.0095 mrad = Unit 1 Gamma Air Dose, or  
 0.0952% of the 10 mrad annual limit

10 CFR Part 50, Appendix I  
 0.0216 mrad = Unit 1 Beta Air Dose, or  
 0.1081% of the 20 mrad annual limit

10 CFR Part 50, Appendix I  
 0.2800 mrem = Unit 1 Highest Organ Dose, or  
 1.8667% of the 15 mrem annual limit



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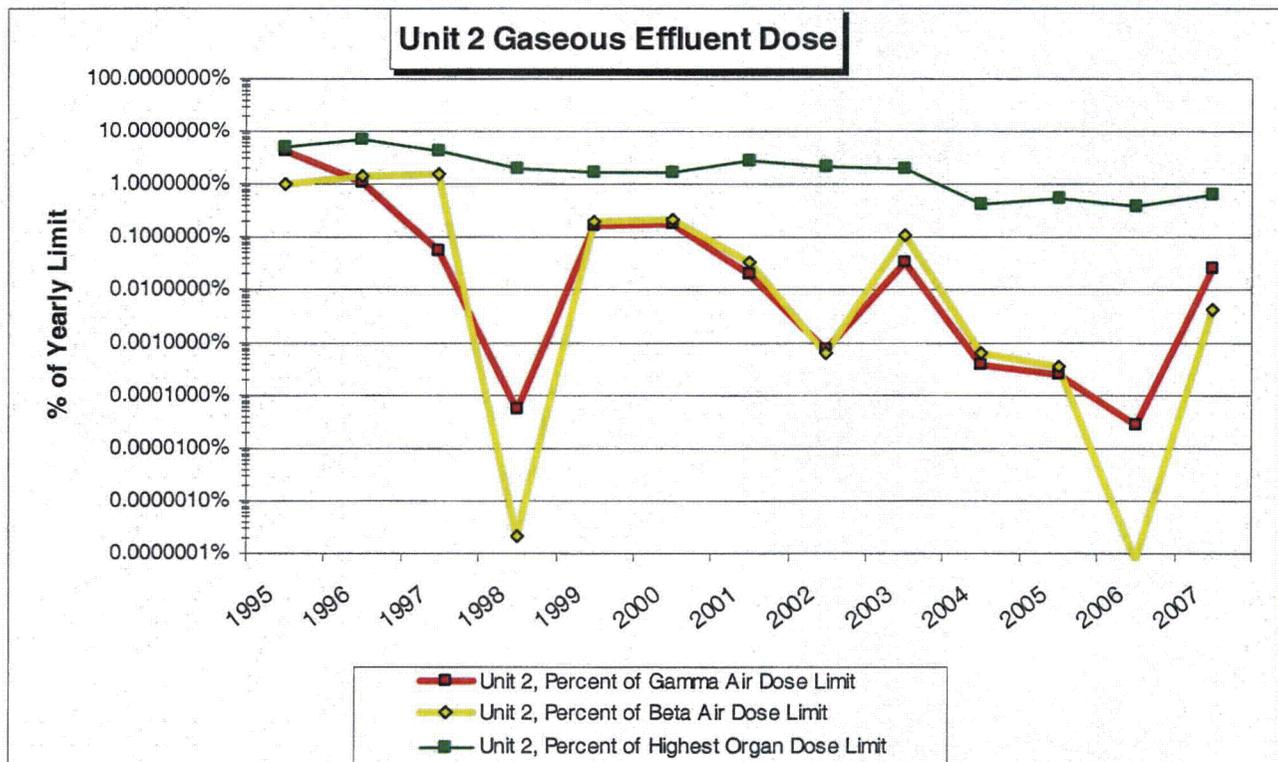
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- Unit 2 Gaseous Release Offsite Dose Projections:** The following offsite dose projections were calculated to the maximum individual per 10 CFR 50, Appendix I and the ODCM. The projections use ODCM default meteorological parameters for the atmospheric conditions surrounding the plant site. The offsite dose projections during the report period were performed prior to release authorization, and are summarized as follows:

**10 CFR Part 50, Appendix I**  
**0.0025 mrad = Unit 2 Gamma Air Dose, or**  
**0.0252% of the 10 mrad annual limit**

**10 CFR Part 50, Appendix I**  
**0.0009 mrad = Unit 2 Beta Air Dose, or**  
**0.0044% of the 20 mrad annual limit**

**10 CFR Part 50, Appendix I**  
**0.0946 mrem = Unit 2 Highest Organ Dose, or**  
**0.6309% of the 15 mrem annual limit**



### III. Detailed Summary of Enclosure 3 - Annual REMP Report (AREOR) for 2007:

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

- ODCM procedure 1/2-ODC-3.03, Attachment T, Control 6.9.2, "*Controls for RETS and REMP Programs*"
- BVPS procedure 1/2-ENV-01.05, "*Compliance with Regulatory Guide 1.21 and Technical Specifications*"
- BVPS procedure 1/2-ENV-02.01, "*Description of Overall Radiological Environmental Monitoring Program*"
- NUREG-1301, "*Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors, Generic Letter 89-01, Supplement No.1, April 1991*"
- Regulatory Guide 1.21, "*Measuring Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Material in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants, Revision 1, June 1974*"
- BVPS SAP Order No. 200197646-0320 is associated with interruption of doe goat milk sampling.
- BVPS SAP Order No. 200197646-0330 is associated with interruption of air particulate and iodine sampling.
- BVPS SAP Order No. 200197646-0340 is associated with unusually low gross beta analyses for air particulate filter media.
- BVPS Condition Report No. CR07-22429 and SAP Order No. 200197646-0380 are associated with excess foliage and other challenges at the air particulate and iodine sample stations.
- BVPS SAP Order No. 200197646-0390 is associated with interruption of automatic drinking water sampling.
- BVPS SAP Order No. 200197646-0400 is associated with an evaluation of TLD trends.
- BVPS SAP Order No. 200197646-0410 is associated with adding a radiological fundamentals discussion to the introduction section of the AREOR.
- BVPS SAP Order No. 200197646-0430 is associated with surface water I-131 analysis above the reporting level.

**Summary of the BVPS REMP Program for Determination of Environmental Impact**

- **Sample Media and Analyses:** Results for drinking water, surface water, precipitation, groundwater, shoreline stream sediment, fish, cow milk, goat milk, feedstuff, foodcrops, air particulate and air radioiodine media remained consistent with previous data. TLDs have shown a step increase since 2001, but that was evaluated and determined to be from a change in TLD field holder. Minor increases and decreases were noted in most sample media, and any positive results attributable to the BVPS operation were consistent with station data of authorized radioactive discharges, and were within limits permitted by the operating license and the ODCM. Other radioactivity detected was attributable to naturally occurring radionuclides, previous nuclear weapons tests, other man-made sources, and to the normal statistical fluctuation for activities near the Lower Limit of Detection (LLD). With exception to identification of Cobalt-58 and Cobalt-60 in the shoreline stream near the outfall facility and the increase in TLD data, the pre-operational values were not exceeded during the report period.
- **Deviations from Normal Milk Sampling & Analysis Schedule:** The Bi-weekly Doe Goat milk sampling was interrupted during the report period. Although the Doe Goats could not be sampled during that period, the minimum sampling and requirements were still met. This issue is documented in SAP Order 200197646-0320.
- **Deviations from Normal Drinking Water Sampling and Analysis Schedule:** The automatic drinking water sampling station at East Liverpool, OH was interrupted during the report period. This issue is documented in SAP Order 200197646-390.
- **Deviations from Normal Air Particulate & Iodine Sampling and Analysis Schedule:** The air particulate and iodine sampling station at Brunton Dairy Farm was interrupted during the report period. This issue is documented in SAP Order 200197646-330.
- **Excess Foliage at Air Particulate & Iodine Sample Stations:** Evaluations of REMP Air Sampling Stations were performed to ensure the intent of the applicable criteria are met with regard to (1) collection of air from prevailing winds, and (2) maintenance of the general area in the vicinity of the air sampling equipment. Results of the evaluation and associated Corrective Actions are documented in CR07-22429 and SAP Order 200197646-0380.
- **Population Dose - Liquid Releases:** The calculated 0-50 mile population dose from liquid releases was 241 man-mrem. This population dose compares favorably to the 552 man-mrem dose for the previous year.
- **Population Dose - Gaseous Releases:** The calculated 0-50 mile population dose from gaseous releases was 243 man-mrem. This population dose compares to the 103 man-mrem dose for the previous year.

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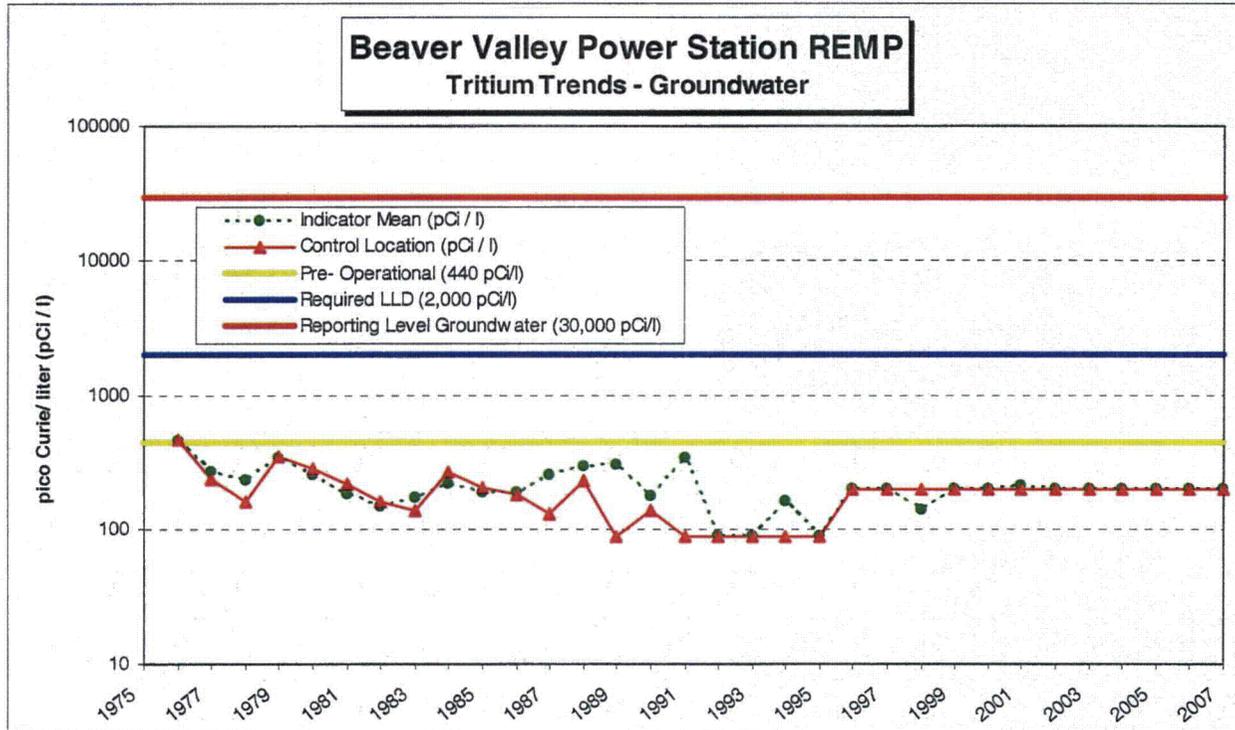
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- **Land Use Census Results:** Highlights from the most recent Land Use Census are documented in letter NPD3NRE:0460, dated August 31, 2007 and are summarized as follows:
  - 1) **Nearest Resident:** The nearest resident has not changed since the previous census. The location is at 211 Ferry Hill Road, Shippingport PA (0.406 miles NE).
  - 2) **Nearest Garden:** The nearest garden >500 square feet has not changed since the previous census. The location is at 238 State Route 168, Hookstown PA (0.760 miles SSW).
  - 3) **Nearest Dairy Cow:** The nearest dairy cow milked has not changed since the previous census. The location is still at **Searight Dairy**, 948 McCleary Road, RD 1, Hookstown PA (2.097 miles SSW).
  - 4) **Nearest Doe Goat:** The nearest doe goat milked has changed since the previous census. The previous location was at **Moore Farm**, 982 State Route 168, Hookstown PA (2.120 miles SW), but that owner sold the herd in 2007. The nearest location is now at the **Collins Farm**, 289 Calhoun Road, Aliquippa PA (3.547 miles SE).
  - 5) **Nearest Beef Cattle:** The nearest beef cattle location has not changed since the previous census. The location is still at 105 Shippingport Road, Shippingport PA (1.405 miles ENE).
  - 6) **2008 Dairy Cow Sampling Locations:** Using the results of the 2007 Land Use Census, the 2008 dairy cow milk sampling locations will remain at the same locations used in 2007. The locations are; **Searight Dairy**, 948 McCleary Road, RD1, Hookstown PA (2.097 miles SSW), **Halstead Dairy**, 104 Tellish Drive, Hookstown PA (5.079 miles SSW), **Brunton Dairy**, 3681 Ridge Road, Aliquippa PA (6.158 miles SE), and **Weindsheimer Dairy**, RD 1 Burgettstown PA (10.476 miles SSW).
  - 7) **2008 Doe Goat Sampling Locations:** Using the results of the 2007 Land Use Census, the 2008 doe goat milk sampling locations will be reduced to only one (1) of the two (2) locations used in 2007. The only remaining location is at **Collins Farm**, 289 Calhoun Road, Aliquippa PA (3.547 miles, SE).
  - 8) **D/Q for Milch Animal Locations:** None of the 2007 milch animal sampling locations experienced a >20% increase in deposition parameter (D/Q).
  - 9) **D/Q for Offsite Dose Determination:** There was no adverse effect on the current ODCM methodology used for offsite dose determination from effluent releases. Specifically, a linear regression analysis of D/Q did not yield any valid locations where the offsite dose could have increased >20% more than the offsite dose previously calculated using current ODCM methodology.
  - 10) **D/Q Historical Comparison:** There was no adverse trend in D/Q when comparing data to the ODCM default D/Q values, which validates that there was no adverse effect on the current ODCM methodology used for offsite dose determination from effluent releases. Specifically, the linear regression analysis of D/Q did not yield any valid locations where the offsite dose could have increased >20% more than the offsite dose previously calculated using current ODCM methodology. Therefore, a change in ODCM Receptor location was not required.

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RTL A9.690E  
Enclosure 1

- **Groundwater Monitoring:** A total of six (6) offsite ground water samples were collected and analyzed for Tritium and by gamma spectrometry during the report period. The samples were collected on a semi-annual basis from three (3) locations within four (4) miles of the site. The locations included one (1) well in Shippingport PA, one (1) well in Hookstown PA, and one (1) well in Georgetown PA. No gamma-emitting radionuclides were detected in the analyses. Also all tritium results were less than LLD. The following graph shows that offsite groundwater tritium is less than the pre-operational value.



- **Split Sample Program (Inter-laboratory Comparison, Part 1 of 2):** BVPS shared split sample data with the Pennsylvania Department of Environmental Protection (PADEP) in support of the nuclear power plant monitoring program. The shared media and number of locations are typically comprised of; milk (1), surface water (3), river sediment (1), fish (1), foodcrops (2), co-located air particulate/air iodine (4), and TLD (24). The split sample program is coordinated by the state, and the results are not provided with this report.
- **Spike Sample Program (Inter-laboratory Comparison, Part 2 of 2):** Spiked samples were provided by an independent laboratory and then analyzed by the REMP contractor laboratory. The samples were provided throughout the report period and included water samples, milk samples, filter paper samples and charcoal cartridge samples. All one-hundred-twelve (112) analyses performed by the contractor laboratory on the spiked samples met the NRC comparison criteria.

**Beaver Valley Power Station - Units 1 & 2**

**2007 Radioactive Effluent Release Report**

FirstEnergy Nuclear Operating Company  
**FENOC**

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

# Radioactive Effluent Release Report

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

## Radioactive Effluent Release Report

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### Abnormal Release Summary

**Abnormal Liquid Releases:** There was one (1) abnormal liquid release during the report period. The details of this release are included in this report per the requirements of Technical Specification 5.6.2, ODCM procedure 1/2-ODC-3.03 Attachment U Control 6.9.3, and implementing procedure 1/2-ENV-01.05. The release activity of  $4.96E-4$  Curies of Tritium was considered an Abnormal Release, because it represented an unplanned release to the Onsite Groundwater. The release was quantified via RWDA-L-1-AUG-07-02, RWDA-L-1-SEP-07-02, and RWDA-L-1-OCT-07-01 using sample concentrations from the Onsite Groundwater Monitoring Protection Program (Wells MW-12S and MW-12D), which were initially sampled during the period 08/27/07 thru 09/06/07. The projected Offsite Dose consequence for this release was negligible in comparison to ODCM Limits. Specifically, the Total Body Dose was  $3.90E-5$  mrem, and the Highest Organ (Liver) Dose was  $3.90E-5$  mrem. See page iv, page v, and page 1 of this report for additional details. This condition and associated Corrective Actions are documented in Condition Report CR07-27729 and SAP Order No. 200197646-0250.

**Abnormal Gas Releases:** None

## Radioactive Effluent Release Report

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

Summary of Onsite Spills (>100 gallons): None

Summary of Items added to Decommissioning Files per 10CFR50.75(g) Files: Three Items

Item 1 of 3 (Unit 1 CCR System): In April 2007, the Unit 1 Component Cooling System (CCR) was found to be contaminated with Licensed Radioactive Material (LRM). SINCE the UFSAR lists this system as non-radioactive, THEN the cost to decommission could be significantly greater than anticipated at plant construction. Therefore, a record of this contamination is required to be maintained per the requirements of 10CFR50.75(g). The LRM contamination (Cs-137 and H-3) in the Unit 1 CCR System is not from an active RCS pressure boundary leakage, but most likely occurred during a re-fill of this system from the Primary Grade Water System in 1999. SINCE there is potential for an unplanned or uncontrolled release of LRM from this system to the environment, THEN undetected leakage could result in an "Abnormal Release". To eliminate future reportability, the LRM in these systems was quantified per the release limits set forth in 10CFR Part 20, 10CFR Part 50, 40CFR Part 190, Technical Specification 5.5.2, and ODCM procedure 1/2-ODC-3.03. This condition and associated Corrective Actions are described in CR07-18914, letter NPD3NRE:0428, and SAP Order 200197646-0350.

Item 2 of 3 (Unit 2 CCP System): In April 2007, the Unit 2 Primary Component Cooling System (CCP) was found to be contaminated with Licensed Radioactive Material (LRM). SINCE the UFSAR lists this system as non-radioactive, THEN the cost to decommission could be significantly greater than anticipated at plant construction. Therefore, a record of this contamination is required to be maintained per the requirements of 10CFR50.75(g). The LRM contamination (H-3) in the Unit 2 CCP System is not from an active RCS pressure boundary leakage, but most likely occurred during a re-fill of this system from the Primary Grade Water System in 2006. SINCE there is potential for an unplanned or uncontrolled release of LRM from this system to the environment, THEN undetected leakage could result in an "Abnormal Release". To eliminate future reportability, the LRM in this system was quantified per the release limits set forth in 10CFR Part 20, 10CFR Part 50, 40CFR Part 190, Technical Specification 5.5.2, and ODCM procedure 1/2-ODC-3.03. This condition and associated Corrective Actions are described in CR07-18914, CR07-19457, letter NPD3NRE:0428, and SAP Order 200197646-0360.

Item 3 of 3 (Onsite Groundwater): In October 2007, the onsite groundwater was found to be contaminated with Licensed Radioactive Material (LRM). SINCE the UFSAR does not consider the onsite groundwater to be radioactive, THEN the cost to decommission the site could be significantly greater than anticipated at plant construction. Therefore, a record of this contamination is required to be maintained per the requirements of 10CFR50.75(g). SINCE the results for onsite groundwater samples were >2,000 pCi/liter, but <20,000 pCi/liter, THEN communications were made to offsite local, state and federal agencies. This was determined to be a potential "Abnormal Release" and is documented as such (see page iii, page v, and page 1 of this report for additional details). This condition and associated Corrective Actions are documented in CR07-27729, letter NPD3NRE:0480 and SAP Order 200197646-0370.

# Radioactive Effluent Release Report

Calendar Year - 2007

Results of Onsite Groundwater Monitoring Protection Program

## Summary of Onsite Groundwater Sample Results

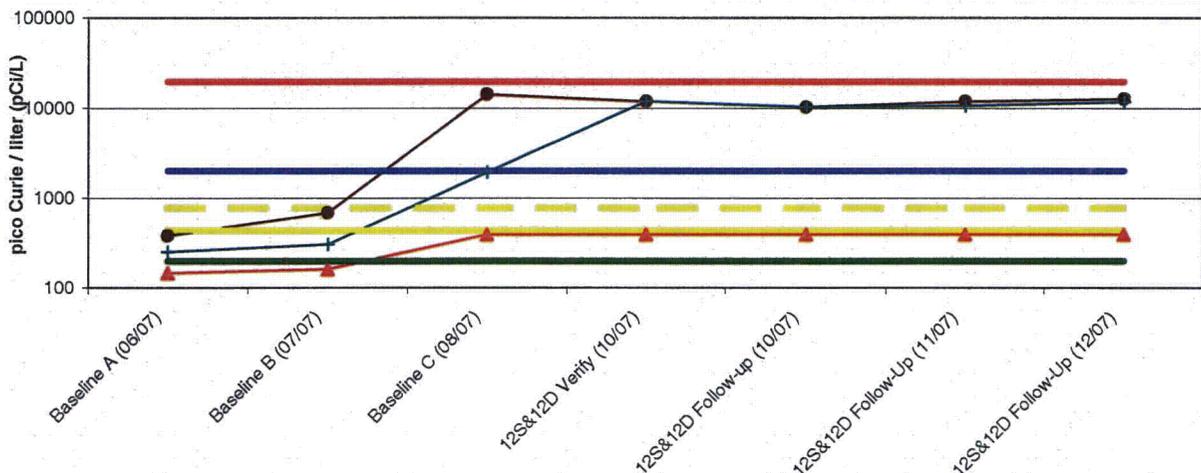
	2007 H-3 Maximum (pCi/l)	2007 H-3 Minimum (pCi/l)	2007 H-3 Average (pCi/l)	Typical H-3 LLD (pCi/l)	Required H-3 LLD (pCi/l)	Pre Operational Mean For H-3 (pCi/l)	Are Any H-3 Analyses Greater Than The Pre Operational Mean For H-3 ?	NEI and FENOC Reporting Level For H-3 (pCi/l)	EPA Reporting Level For H-3 (pCi/l)
1st Quarter:	NA	NA	NA	<200	<2000	440	No	2000	20000
2nd Quarter (Baseline A):	378	145	252	<200	<2000	440	No	2000	20000
3rd Quarter (Baseline B):	691	162	308	<200	<2000	440	Yes	2000	20000
3rd Quarter (Baseline C):	14371	179	1959	<200	<2000	440	Yes	2000	20000
4th Quarter (12S&12D):	12766	9414	11133	<200	<2000	440	Yes	2000	20000

**H-3 Summary:** Twenty-four (24) onsite monitoring wells were sampled during 2007 and analyzed for H-3. Results from fifteen (15) wells were  $\leq 440$  pCi/l. Results from seven (7) wells were  $>440$  pCi/l, but  $\leq 2000$  pCi/l. Results from two (2) wells (MW-12S & MW-12D) were  $>2000$  pCi/l, but  $\leq 20,000$  pCi/l. Results from no wells were  $>20,000$  pCi/l. SINCE the NEI/FENOC communication level was reached for MW-12S & MW-12D, THEN notification to local, state & federal agencies was performed on 10/08/07. No adverse effect to the offsite environment has been detected at this time, because all offsite groundwater, drinking water and surface water samples were  $\leq 440$  pCi/l (BVPS pre-operational mean). See page iii, page iv, and page 1 of this report for additional details.

**Principal Gamma Emmitter Summary:** Twenty-four (24) onsite monitoring wells were sampled during 2007, and analyzed for Principal Gamma Emitters. The results showed no positive indication of Licensed Radioactive Material (LRM) in any of the analyses.

**BVPS (2007 Baseline)**  
**Onsite Groundwater Monitoring H-3 Results**  
 $<200$  pCi/l = Typical LLD  
 $440$  pCi/L = Pre-Operational Mean  
 $800$  pCi/L = Pre-Operational Max  
 $2,000$  pCi/L = NRC Required LLD (NEI Communication Level)  
 $20,000$  pCi/L = EPA Reporting Level

- Max of All GWM Indicator Wells
- + Avg of All GWM Indicator Wells
- ▲ MW-10: (67.0' deep) Upgradient Location
- Typical LLD H-3 (<200 pCi/L)
- Pre-Operational Mean H-3 (440 pCi/L)
- Pre-Operational Maximum H-3 (800 pCi/L)
- NRC Required LLD H-3 (2,000 pCi/L)
- EPA Reporting Level H-3 (20,000 pCi/L)



# Radioactive Effluent Release Report

Calendar Year - 2007

Supplemental Information Page

<b>FACILITY:</b> B.V.P.S. Units 1 and 2	<b>LICENSEE:</b> 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 Permissible 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
<b>a. Liquid Batch Releases</b>						
1. Number of batch releases		38	38	54	43	173
2. Total time period for batch releases	minutes	12808	17046	24968	19116	73938
3. Maximum time period for a batch release	minutes	1401	2805	1345	2884	2884
4. Average time period for batch releases	minutes	337	449	462	445	427
5. Minimum time period for a batch release	minutes	193	207	205	205	193
6. Average river flow during release periods	cuft/sec	77867	35233	14367	43600	42767
<b>b. Gaseous Batch Releases</b>						
1. Number of batch releases		8	10	15	14	47
2. Total time period for batch releases	minutes	217	430	5389	10359	16395
3. Maximum time period for a batch release	minutes	167	167	1816	5302	5302
4. Average time period for batch releases	minutes	27	43	359	740	349
5. Minimum time period for a batch release	minutes	50	15	1	41	1
<b>c. Abnormal Liquid Releases</b>						
1. Number of releases		NONE	NONE	1	NONE	1
2. Total activity released	Curies	0.00E+00	0.00E+00	4.96E-04	0.00E+00	4.96E-04
<b>d. Abnormal Gaseous Releases</b>						
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

**Beaver Valley Power Station - Units 1 & 2****Enclosure 2, Page 2 of 21****Radioactive Effluent Release Report**

Calendar Year - 2007

Table 1A

**Gaseous Effluents - Summation Of All Releases**

	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year	Total Error, %
<b>A. Fission &amp; Activation Gases</b>							
1. Site Total release	Ci	5.43E-03	0.00E+00	4.54E-01	4.62E-03	4.64E-01	26.5%
1a. Unit 1 Gases	Ci	2.72E-03	0.00E+00	2.67E-01	2.31E-03	2.72E-01	
1b. Unit 2 Gases	Ci	2.72E-03	0.00E+00	1.86E-01	2.31E-03	1.91E-01	
2. Average release rate for period	uCi/sec	6.89E-04	0.00E+00	5.76E-02	5.86E-04	1.47E-02	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
<b>B. Iodines</b>							
1. Site Total iodine - 131	Ci	0.00E+00	0.00E+00	2.49E-07	0.00E+00	2.49E-07	28.3%
1a. Unit 1 iodine - 131	Ci	0.00E+00	0.00E+00	1.25E-07	0.00E+00	1.25E-07	
1b. Unit 2 iodine - 131	Ci	0.00E+00	0.00E+00	1.25E-07	0.00E+00	1.25E-07	
2. Average release rate for period	uCi/sec	0.00E+00	0.00E+00	3.16E-08	0.00E+00	7.90E-09	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
<b>C. Particulates</b>							
1. Particulates with half-lives > 8 days	Ci	0.00E+00	0.00E+00	1.28E-04	9.15E-05	2.19E-04	30.0%
1a. Unit 1 Particulates	Ci	0.00E+00	0.00E+00	1.28E-04	9.15E-05	2.19E-04	
1b. Unit 2 Particulates	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average release rate for period	uCi/sec	0.00E+00	0.00E+00	1.62E-05	1.16E-05	6.96E-06	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
<b>D. Gross Alpha</b>							
1. Site Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	30.0%
1a. Unit 1 Gross alpha	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1b. Unit 2 Gross alpha	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average release rate for period	uCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	
<b>E. Tritium</b>							
1. Site Total release	Ci	5.86E+00	8.17E+00	6.54E+00	6.20E+00	2.68E+01	32.9%
1a. Unit 1 Tritium	Ci	4.79E+00	5.05E+00	6.11E+00	5.12E+00	2.11E+01	
1b. Unit 2 Tritium	Ci	1.07E+00	3.12E+00	4.31E-01	1.08E+00	5.70E+00	
2. Average release rate for period	uCi/sec	7.44E-01	1.04E+00	8.30E-01	7.87E-01	8.49E-01	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	N/A	

N/A = Not Applicable

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

**Radioactive Effluent Release Report**  
 Calendar Year - 2007  
 Table 1B-EB  
 Gaseous Effluents - Elevated Batch Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
<b>1. Fission gases</b>						
argon-41	Ci	LLD	LLD	8.93E-03	7.36E-06	8.94E-03
krypton-85	Ci	LLD	LLD	1.23E-03	4.44E-03	5.67E-03
krypton-85m	Ci	LLD	LLD	1.50E-03	LLD	1.50E-03
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	8.30E-02	1.69E-04	8.32E-02
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	6.80E-02	LLD	6.80E-02
xenon-135m	Ci	LLD	LLD	6.57E-03	LLD	6.57E-03
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	ND	1.69E-01	4.62E-03	1.74E-01
<b>2. Iodines</b>						
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
<b>3. Particulates</b>						
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	Ci	LLD	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-57	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-58	Ci	LLD	LLD	LLD	LLD	LLD
cobalt-60	Ci	LLD	LLD	LLD	LLD	LLD
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
Total for period	Ci	ND	ND	ND	ND	ND

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

ND = None Detected

## Radioactive Effluent Release Report

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Table 1B-EC

Gaseous Effluents - Elevated Continuous Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
<b>1. Fission gases</b>						
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	5.43E-03	LLD	9.98E-02	LLD	1.05E-01
xenon-133m	Ci	LLD	LLD	6.92E-03	LLD	6.92E-03
xenon-135	Ci	LLD	LLD	1.50E-02	LLD	1.50E-02
xenon-135m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
<b>Total for period</b>	Ci	5.43E-03	ND	1.22E-01	ND	1.27E-01
<b>2. Iodines</b>						
iodine-131	Ci	LLD	LLD	2.49E-07	LLD	2.49E-07
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
<b>Total for period</b>	Ci	ND	ND	2.49E-07	ND	2.49E-07
<b>3. Particulates</b>						
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
<b>Total for period</b>	Ci	ND	ND	ND	ND	ND

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

ND = None Detected

## Radioactive Effluent Release Report

Calendar Year - 2007

Table 1C-GB1

Gaseous Effluents - Ground Level Batch Releases (Unit 1)

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
<b>1. Fission gases</b>						
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	1.22E-01	LLD	1.22E-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
<b>Total for period</b>	<b>Ci</b>	<b>ND</b>	<b>ND</b>	<b>1.22E-01</b>	<b>ND</b>	<b>1.22E-01</b>
<b>2. Iodines</b>						
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
<b>Total for period</b>	<b>Ci</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>
<b>3. Particulates</b>						
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	4.58E-06	LLD	4.58E-06
cobalt-60	Ci	LLD	LLD	3.06E-07	LLD	3.06E-07
zinc-65	Ci	LLD	LLD	LLD	LLD	LLD
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
molybdenum-99	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	3.06E-07	LLD	3.06E-07
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
<b>Total for period</b>	<b>Ci</b>	<b>ND</b>	<b>ND</b>	<b>5.19E-06</b>	<b>ND</b>	<b>5.19E-06</b>

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

ND = None Detected

## Radioactive Effluent Release Report

Calendar Year - 2007

Table 1C-GC1

Gaseous Effluents - Ground Level Continuous Releases (Unit 1)

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
<b>1. Fission gases</b>						
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
<b>Total for period</b>	CI	ND	ND	ND	ND	ND
<b>2. Iodines</b>						
iodine-131	CI	LLD	LLD	LLD	LLD	LLD
iodine-133	CI	LLD	LLD	LLD	LLD	LLD
iodine-135	CI	LLD	LLD	LLD	LLD	LLD
<b>Total for period</b>	CI	ND	ND	ND	ND	ND
<b>3. Particulates</b>						
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	8.40E-05	6.22E-05	1.46E-04
cobalt-60	CI	LLD	LLD	1.33E-05	9.32E-06	2.26E-05
zinc-65	CI	LLD	LLD	2.01E-05	1.47E-05	3.48E-05
zirconium/niobium-95	CI	LLD	LLD	5.28E-06	4.76E-06	1.00E-05
zirconium/niobium-97	CI	LLD	LLD	LLD	LLD	LLD
molybdenum-99	CI	LLD	LLD	LLD	LLD	LLD
cesium-134	CI	LLD	LLD	LLD	LLD	LLD
cesium-137	CI	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	CI	LLD	LLD	LLD	LLD	LLD
cerium-141	CI	LLD	LLD	LLD	4.77E-07	4.77E-07
cerium-144	CI	LLD	LLD	LLD	LLD	LLD
unidentified	CI	NONE	NONE	NONE	NONE	NONE
<b>Total for period</b>	CI	ND	ND	1.23E-04	9.15E-05	2.14E-04

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

ND = None Detected

**Radioactive Effluent Release Report**

Calendar Year - 2007

Table 1C-GB2

Gaseous Effluents - Ground Level Batch Releases (Unit 2)

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
<b>1. Fission gases</b>						
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
<b>2. Iodines</b>						
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
<b>3. Particulates</b>						
beryllium-7	Ci	LLD	LLD	LLD	LLD	LLD
chromium-51	Ci	LLD	LLD	LLD	LLD	LLD
manganese-54	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

## Radioactive Effluent Release Report

Calendar Year - 2007

Table 1C-GC2

Gaseous Effluents - Ground Level Continuous Releases (Unit 2)

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
<b>1. Fission gases</b>						
argon-41	Ci	LLD	LLD	4.07E-02	LLD	4.07E-02
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	LLD	LLD	LLD	LLD
krypton-87	Ci	LLD	LLD	LLD	LLD	LLD
krypton-88	Ci	LLD	LLD	LLD	LLD	LLD
xenon-131m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	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
<b>Total for period</b>	<b>Ci</b>	<b>ND</b>	<b>ND</b>	<b>4.07E-02</b>	<b>ND</b>	<b>4.07E-02</b>
<b>2. Iodines</b>						
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
iodine-133	Ci	LLD	LLD	LLD	LLD	LLD
iodine-135	Ci	LLD	LLD	LLD	LLD	LLD
<b>Total for period</b>	<b>Ci</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>
<b>3. Particulates</b>						
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
zirconium/niobium-95	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	LLD	LLD
barium/lanthanum-140	Ci	LLD	LLD	LLD	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD	LLD
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
<b>Total for period</b>	<b>Ci</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>

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

ND = None Detected

**Beaver Valley Power Station - Units 1 & 2****Enclosure 2, Page 9 of 21****Radioactive Effluent Release Report**

Calendar Year - 2007

Table 2A

## Liquid Effluents - Summation Of All Releases

	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year	Total Error, %
<b>A. Fission &amp; activation products</b>							
1. Total release (excl. H-3, gas & alpha)	Ci	5.53E-02	1.60E-02	6.69E-02	3.36E-02	1.72E-01	26.1%
2. Average diluted concentration	uCi/ml	5.26E-08	1.01E-08	1.94E-08	2.04E-08	2.22E-08	
3. Percent of applicable limit	%	2.21E+00	6.38E-01	2.68E+00	1.35E+00	1.72E+00	
<b>B. Tritium</b>							
1. Total release	Ci	1.18E+02	1.57E+02	7.09E+02	1.17E+02	1.10E+03	25.0%
2. Average diluted concentration	uCi/ml	1.13E-04	1.00E-04	2.05E-04	7.08E-05	1.43E-04	
3. Percent of applicable limit	%	1.13E+00	1.00E+00	2.05E+00	7.08E-01	1.43E+00	
<b>C. Dissolved and entrained gases</b>							
1. Total release	Ci	ND	9.38E-05	ND	2.39E-04	3.32E-04	27.0%
2. Average diluted concentration	uCi/ml		5.96E-11		1.45E-10	4.30E-11	
3. Percent of applicable limit	%		2.98E-05		7.24E-05	2.15E-05	
<b>D. Gross alpha radioactivity (total release)</b>							
	Ci	LLD	LLD	LLD	LLD	LLD	28.9%
<b>E. Volume of waste released (prior to dilution)</b>							
	liters	1.97E+06	2.09E+06	3.16E+06	2.20E+06	9.42E+06	11.2%
<b>F. Volume of dilution water used</b>							
	liters	1.05E+09	1.57E+09	3.45E+09	1.65E+09	7.71E+09	22.9%

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

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

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

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

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

## Beaver Valley Power Station - Units 1 &amp; 2

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## Radioactive Effluent Release Report

Calendar Year - 2007

Table 2B-B

Liquid Effluents - Batch Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
<b>1. Fission and activation products</b>						
beryllium-7	Ci	LLD	LLD	2.66E-05	LLD	2.66E-05
sodium-24	Ci	LLD	LLD	LLD	LLD	LLD
chromium-51	Ci	LLD	3.74E-04	9.15E-04	4.78E-04	1.77E-03
manganese-54	Ci	4.05E-05	1.04E-04	1.19E-04	LLD	2.63E-04
iron-55	Ci	1.40E-02	3.75E-03	1.63E-02	2.60E-03	3.66E-02
iron-59	Ci	LLD	LLD	LLD	1.14E-04	1.14E-04
cobalt-57	Ci	1.27E-04	2.11E-06	2.20E-05	LLD	1.51E-04
cobalt-58	Ci	1.72E-02	4.14E-03	1.84E-03	8.28E-03	3.15E-02
cobalt-60	Ci	3.04E-03	1.67E-03	7.75E-03	2.60E-03	1.51E-02
zinc-65	Ci	LLD	3.86E-04	2.04E-03	8.43E-04	3.27E-03
strontium-89	Ci	LLD	LLD	LLD	LLD	LLD
strontium-90	Ci	LLD	LLD	LLD	LLD	LLD
zirconium/niobium-95	Ci	2.83E-05	LLD	LLD	3.37E-05	6.20E-05
zirconium/niobium-97	Ci	4.25E-05	5.83E-06	4.27E-05	5.89E-05	1.50E-04
molybdenum-99/technetium-99m	Ci	LLD	LLD	LLD	LLD	LLD
tin-113	Ci	LLD	LLD	LLD	LLD	LLD
silver-110m	Ci	1.74E-03	4.81E-04	3.01E-03	4.89E-04	5.72E-03
antimony-122	Ci	LLD	LLD	LLD	LLD	LLD
antimony-124	Ci	1.20E-03	LLD	2.33E-04	2.41E-03	3.84E-03
antimony-125	Ci	1.65E-02	4.71E-03	3.46E-02	1.54E-02	7.12E-02
iodine-131	Ci	LLD	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	2.38E-05	2.38E-05
cesium-137	Ci	1.37E-03	3.34E-04	5.62E-05	3.14E-04	2.08E-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
<b>Total for period</b>	<b>Ci</b>	<b>5.53E-02</b>	<b>1.60E-02</b>	<b>6.69E-02</b>	<b>3.36E-02</b>	<b>1.72E-01</b>
<b>2. Dissolved and entrained gases</b>						
krypton-85	Ci	LLD	LLD	LLD	LLD	LLD
xenon-133	Ci	LLD	9.38E-05	LLD	2.34E-04	3.28E-04
xenon-133m	Ci	LLD	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	4.61E-06	4.61E-06
unidentified	Ci	NONE	NONE	NONE	NONE	NONE
<b>Total for period</b>	<b>Ci</b>	<b>ND</b>	<b>9.38E-05</b>	<b>ND</b>	<b>2.39E-04</b>	<b>3.32E-04</b>

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

## Beaver Valley Power Station - Units 1 &amp; 2

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## Radioactive Effluent Release Report

Calendar Year - 2007

Table 2B-C

Liquid Effluents - Continuous Releases

Nuclides released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Calendar Year
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## 1. Fission and activation products

beryllium-7	Ci	N/A	N/A	N/A	N/A	N/A
sodium-24	Ci	N/A	N/A	N/A	N/A	N/A
chromium-51	Ci	N/A	N/A	N/A	N/A	N/A
manganese-54	Ci	N/A	N/A	N/A	N/A	N/A
iron-55	Ci	N/A	N/A	N/A	N/A	N/A
iron-59	Ci	N/A	N/A	N/A	N/A	N/A
cobalt-57	Ci	N/A	N/A	N/A	N/A	N/A
cobalt-58	Ci	N/A	N/A	N/A	N/A	N/A
cobalt-60	Ci	N/A	N/A	N/A	N/A	N/A
zinc-65	Ci	N/A	N/A	N/A	N/A	N/A
strontium-89	Ci	N/A	N/A	N/A	N/A	N/A
strontium-90	Ci	N/A	N/A	N/A	N/A	N/A
zirconium/niobium-95	Ci	N/A	N/A	N/A	N/A	N/A
zirconium/niobium-97	Ci	N/A	N/A	N/A	N/A	N/A
molybdenum-99	Ci	N/A	N/A	N/A	N/A	N/A
technetium-99m	Ci	N/A	N/A	N/A	N/A	N/A
ruthenium-103	Ci	N/A	N/A	N/A	N/A	N/A
silver-110m	Ci	N/A	N/A	N/A	N/A	N/A
antimony-124	Ci	N/A	N/A	N/A	N/A	N/A
antimony-125	Ci	N/A	N/A	N/A	N/A	N/A
iodine-131	Ci	N/A	N/A	N/A	N/A	N/A
iodine-133	Ci	N/A	N/A	N/A	N/A	N/A
cesium-134	Ci	N/A	N/A	N/A	N/A	N/A
cesium-137	Ci	N/A	N/A	N/A	N/A	N/A
barium/lanthanum-140	Ci	N/A	N/A	N/A	N/A	N/A
cerium-141	Ci	N/A	N/A	N/A	N/A	N/A
cerium-144	Ci	N/A	N/A	N/A	N/A	N/A
unidentified	Ci	N/A	N/A	N/A	N/A	N/A
Total for period	Ci	N/A	N/A	N/A	N/A	N/A

## 2. Dissolved and entrained gases

argon-41	Ci	N/A	N/A	N/A	N/A	N/A
xenon-133	Ci	N/A	N/A	N/A	N/A	N/A
xenon-133m	Ci	N/A	N/A	N/A	N/A	N/A
xenon-135	Ci	N/A	N/A	N/A	N/A	N/A
unidentified	Ci	N/A	N/A	N/A	N/A	N/A
Total for period	Ci	N/A	N/A	N/A	N/A	N/A

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

## Radioactive Effluent Release Report

Calendar Year - 2007

Table 3A

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

<b>A. Solid Waste Shipped Offsite For Burial Or Disposal (Not irradiated fuel)</b>			
<b>1. Type of Waste (Spent resins, Filter Sludges, Evaporator Bottoms, Oil)</b>	<b>1st Half</b>	<b>2nd Half</b>	<b>Estimated Total Error</b>
a. Volume Shipped	7.00E+00 m3	4.48E+00 m3	0.0% (1)
b. Volume Buried	1.23E+00 m3	7.93E-01 m3	0.0% (1)
c. Total Activity	2.84E+02 Ci	2.99E+02 Ci	30.0%
<b>2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)</b>	<b>Percent (%)</b>	<b>Percent (%)</b>	
H-3	0.06 %	1.17 %	
C-14	0.01 %	0.08 %	
Cr-51	0.08 %	0.00 %	
Mn-54	0.54 %	0.11 %	
Fe-55	16.20 %	7.81 %	
Co-57	0.23 %	0.03 %	
Co-58	3.37 %	0.04 %	
Co-60	19.60 %	21.50 %	
NI-59	0.28 %	0.37 %	
NI-63	43.10 %	50.90 %	
Zn-65	14.60 %	2.53 %	
Sr-90	0.00 %	0.07 %	
Ag-110m	0.06 %	0.18 %	
Sb-124	0.03 %	0.01 %	
Sb-125	0.16 %	0.43 %	
Cs-134	0.40 %	2.15 %	
Cs-137	1.20 %	12.40 %	
Ce-144/Pr-144	0.01 %	0.01 %	
Am-241	0.01 %	0.00 %	
Pu-241	0.01 %	0.04 %	
<b>3. Number of Shipments</b>	<b>3</b>	<b>2</b>	
a. Type of Container Used	LSA	1	1
	Type A	0	0
	Type B	2	1
	Large Quantity	0	0
b. Solidification Agent Used	Cement	0	0
	Urea Formaldehyde	0	0
	None	3	2
c. Mode of Transport	Truck	3	2
	Rail	0	0
d. Final Destination	Erwin, TN	3	2
	Oak Ridge, TN	0	0
e. Waste Class per 10 CFR Part 61	Class A	1	1
	Class B	2	0
	Class C	0	1
	> 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.

## Beaver Valley Power Station - Units 1 &amp; 2

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## Radioactive Effluent Release Report

Calendar Year - 2007

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	1.77E+02 m3	5.14E+02 m3	0.0% (1)
b. Volume Buried	6.23E+01 m3	2.24E+01 m3	0.0% (1)
c. Total Activity	1.80E-02 Ci	2.66E-01 Ci	30.0%
2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)	Percent (%)	Percent (%)	
H-3	1.00 %	1.91 %	
C-14	0.43 %	1.49 %	
Cr-51	0.33 %	4.05 %	
Mn-54	1.71 %	1.77 %	
Fe-55	17.40 %	12.70 %	
Co-57	0.16 %	0.07 %	
Co-58	45.20 %	17.30 %	
Co-60	9.86 %	10.70 %	
Fe-59	0.07 %	1.93 %	
Ni-59	0.16 %	1.33 %	
Ni-63	9.43 %	8.76 %	
Sr-90	0.02 %	0.00 %	
Zn-65	0.54 %	16.60 %	
Nb-95	3.21 %	1.71 %	
Zr-95	1.77 %	2.04 %	
Mo-99	0.00 %	1.20 %	
Tc-99	0.02 %	0.00 %	
Ru-103	0.00 %	0.11 %	
Rh-105	0.17 %	2.50 %	
Ag-110m	0.02 %	1.24 %	
Sn-113	0.05 %	0.10 %	
Sn-117m	0.00 %	1.24 %	
Sb-124	0.00 %	1.20 %	
Sb-125	1.18 %	0.05 %	
I-129	0.02 %	1.20 %	
Cs-134	0.77 %	0.01 %	
Cs-137	6.33 %	1.37 %	
Ce-144/Pr-144	0.00 %	1.20 %	
Pu-238	0.00 %	1.20 %	
U-234	0.00 %	1.20 %	
Pu-238	0.00 %	1.20 %	
Cm-242	0.00 %	1.20 %	
Pu-241	0.12 %	1.36 %	
3. Number of Shipments	3	11	
a. Type of Container Used	LSA	3	11
	Type A	0	0
	Type B	0	0
	Large Quantity	0	0
b. Solidification Agent Used	Cement	0	0
	Urea Formaldehyde	0	0
	None	3	11
c. Mode of Transport	Truck	3	11
	Rail	0	0
	Other	0	0
d. Final Destination	Oak Ridge, TN	3	11
	Wampum, PA	0	0
e. Waste Class per 10 CFR Part 61	Class A	3	11
	Class B	0	1
	Class C	0	1
	> 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 &lt;0.01 % are not shown on this table. Data is available upon request

**Beaver Valley Power Station - Units 1 & 2**

**Radioactive Effluent Release Report**

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Table 3C

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

<b>A. Solid Waste Shipped Offsite For Burial Or Disposal (Not irradiated fuel)</b>				
<b>1. Type of Waste (Irradiated components, Control Rods, etc)</b>		<b>1st Half</b>	<b>2nd Half</b>	<b>Estimated Total Error</b>
a. Volume Shipped		0.00E+00 m3	0.00E+00 m3	0.0% (1)
b. Volume Buried		0.00E+00 m3	0.00E+00 m3	0.0% (1)
c. Total Activity		0.00E+00 Ci	0.00E+00 Ci	0.0%
<b>2. Estimate of Major Nuclide Composition by Type of Waste On This Table (2)</b>		<b>Percent (%)</b>	<b>Percent (%)</b>	
<b>3. Number of Shipments</b>		<b>0</b>	<b>0</b>	
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>B. No Irradiated Fuel Shipments</b>				

(1) Since container volumes are provided by the burial site, a calculational error of zero is assumed.

(2) Percent values for any nuclide that are <0.01 % are not shown on this table. Data is available upon request.

## Radioactive Effluent Release Report

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Table 4

Lower Limits Of Detectability (LLD)

Nuclide	RWDA-G 1000 cc Gas Grab Sample		RWDA-L 1000 ml Liquid Grab Sample		Filter Paper / Charcoal Continuous Effluent Sample	
	(3) Calculated LLD (uCi/cc)	ODCM Required LLD (uCi/cc)	(3) Calculated LLD (uCi/ml)	ODCM Required LLD (uCi/ml)	(3) Calculated (2) LLD (uCi/cc)	ODCM Required LLD (uCi/cc)
H-3	(4) 1.00E-06	1E-06	1.00E-06	1E-05	-----	----
Na-24	2.71E-08	1E-04	5.53E-09	5E-07	1.47E-13	1E-11
Ar-41	1.42E-07	1E-04	2.91E-08	5E-07	-----	----
Cr-51	9.10E-07	1E-04	1.91E-07	5E-07	7.55E-13	1E-11
Mn-54	7.90E-08	1E-04	1.61E-08	5E-07	1.86E-13	1E-11
Fe-55	-----	----	(1) 1.00E-06	1E-06	-----	----
Fe-59	1.25E-07	1E-04	2.56E-08	5E-07	2.13E-13	1E-11
Co-57	7.73E-08	1E-04	1.85E-08	5E-07	7.28E-14	1E-11
Co-58	1.10E-07	1E-04	2.23E-08	5E-07	1.82E-13	1E-11
Co-60	1.06E-07	1E-04	2.16E-08	5E-07	1.28E-13	1E-11
Zn-65	2.49E-07	1E-04	5.09E-08	5E-07	6.69E-14	1E-11
Kr-85	3.26E-05	1E-04	6.66E-06	1E-05	-----	----
Kr-85m	9.41E-08	1E-04	2.15E-08	1E-05	-----	----
Kr-87	1.93E-07	1E-04	3.98E-08	1E-05	-----	----
Kr-88	2.42E-07	1E-04	5.33E-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	1.92E-07	1E-04	3.93E-08	5E-07	5.22E-14	1E-11
Nb-95	1.27E-07	1E-04	2.58E-08	5E-07	2.72E-14	1E-11
Nb-97	9.24E-08	1E-04	1.88E-08	5E-07	1.07E-13	1E-11
Zr-95	1.31E-07	1E-04	2.66E-08	5E-07	1.54E-13	1E-11
Mo-99	7.41E-08	1E-04	1.72E-08	5E-07	7.94E-14	1E-11
Tc-99m	7.23E-08	1E-04	1.67E-08	5E-07	7.74E-14	1E-11
Ag-110m	9.60E-08	1E-04	1.95E-08	5E-07	1.12E-13	1E-11
Sb-124	1.28E-07	1E-04	2.61E-08	5E-07	9.91E-14	1E-11
Sb-125	3.28E-07	1E-04	6.77E-08	5E-07	3.37E-13	1E-11
I-131	1.02E-07	1E-04	2.12E-08	1E-06	1.64E-13	1E-12
I-133	1.49E-07	1E-04	3.05E-08	5E-07	1.36E-13	1E-10
I-135	3.94E-07	1E-04	8.05E-08	5E-07	1.68E-13	1E-11
Xe-131m	3.72E-06	1E-04	8.40E-07	1E-05	-----	----
Xe-133	2.24E-07	1E-04	6.31E-08	1E-05	-----	----
Xe-133m	7.16E-07	1E-04	1.55E-07	1E-05	-----	----
Xe-135	8.69E-08	1E-04	1.87E-08	1E-05	-----	----
Xe-135m	1.45E-07	1E-04	2.95E-08	1E-05	-----	----
Xe-137	2.55E-07	1E-04	5.25E-08	1E-05	-----	----
Xe-138	2.55E-07	1E-04	4.82E-08	1E-05	-----	----
Cs-134	1.36E-07	1E-04	2.77E-08	5E-07	2.23E-14	1E-11
Cs-137	1.69E-07	1E-04	3.44E-08	5E-07	1.76E-13	1E-11
Ba-139	4.47E-07	1E-04	1.01E-07	5E-07	6.16E-13	1E-11
Ba-140	4.27E-07	1E-04	8.70E-08	5E-07	4.92E-13	1E-11
La-140	1.78E-07	1E-04	3.62E-08	5E-07	1.78E-13	1E-11
Ce-141	1.47E-07	1E-04	3.40E-08	5E-07	1.56E-13	1E-11
Ce-144	5.28E-07	1E-04	1.36E-07	5E-07	4.84E-13	1E-11
Gross Alpha	-----	----	(1) 1.00E-07	1E-07	(1) 3.51E-15	1E-11

(1) Sample analyses performed by a contractor laboratory.

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

(3) The calculated LLD's, except those denoted by (1), are from a counter/detector calibration on 08/27/07. 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.

## Beaver Valley Power Station - Unit 1

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## Radioactive Effluent Release Report

Calendar Year - 2007

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
		O	Bone	2.28E-02	0.4560	5.49E-03	0.1098	1.83E-03	0.0366	6.04E-03	0.1208
R	Liver	3.34E-02	0.6680	9.35E-03	0.1870	7.60E-03	0.1520	1.26E-02	0.2520	6.30E-02	0.6295
G	Total Body	2.27E-02	1.5133	6.40E-03	0.4267	5.56E-03	0.3707	9.06E-03	0.6040	4.37E-02	1.4573
A	Thyroid	2.34E-03	0.0468	1.63E-03	0.0326	3.65E-03	0.0730	3.61E-03	0.0722	1.12E-02	0.1123
N	Kidney	1.05E-02	0.2100	4.41E-03	0.0882	5.85E-03	0.1170	6.84E-03	0.1368	2.76E-02	0.2760
(1)	Lung	5.99E-03	0.1198	2.55E-03	0.0510	3.89E-03	0.0778	3.90E-03	0.0780	1.63E-02	0.1633
	GI-LLI	5.11E-03	0.1022	3.13E-03	0.0626	6.62E-03	0.1324	5.44E-03	0.1088	2.03E-02	0.2030

		Unit 1 Gaseous Effluents									
		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Calendar Year	
Batch & Continuous Releases		Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit
		(2)	Gamma Air	0.00E+00	0.0000	1.94E-08	0.0000	1.42E-04	0.0028	9.38E-03	0.1876
(2)	Beta Air	0.00E+00	0.0000	9.14E-11	0.0000	4.18E-04	0.0042	2.12E-02	0.2120	2.16E-02	0.1081
O	Bone	0.00E+00	0.0000	0.00E+00	0.0000	5.59E-05	0.0007	4.17E-04	0.0056	4.73E-04	0.0032
R	Liver	4.71E-02	0.6280	7.13E-02	0.9507	7.54E-02	1.0053	8.63E-02	1.1507	2.80E-01	1.8673
G	Total Body	4.71E-02	0.6280	7.13E-02	0.9507	7.54E-02	1.0053	8.63E-02	1.1507	2.80E-01	1.8673
A	Thyroid	4.71E-02	0.6280	7.13E-02	0.9507	7.54E-02	1.0053	8.62E-02	1.1493	2.80E-01	1.8667
N	Kidney	4.71E-02	0.6280	7.13E-02	0.9507	7.54E-02	1.0053	8.62E-02	1.1493	2.80E-01	1.8667
(3)	Lung	4.71E-02	0.6280	7.13E-02	0.9507	7.55E-02	1.0060	8.66E-02	1.1547	2.80E-01	1.8697
	GI-LLI	4.71E-02	0.6280	7.13E-02	0.9507	7.54E-02	1.0053	8.63E-02	1.1507	2.80E-01	1.8673

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

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

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

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

### Radioactive Effluent Release Report

Calendar Year - 2007

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
	O R G A N (1)	Bone	2.28E-02	0.4560	5.49E-03	0.1098	1.83E-03	0.0366	6.04E-03	0.1208	3.62E-02
Liver		3.34E-02	0.6680	9.35E-03	0.1870	7.60E-03	0.1520	1.26E-02	0.2520	6.30E-02	0.6295
Total Body		2.27E-02	1.5133	6.40E-03	0.4267	5.56E-03	0.3707	9.06E-03	0.6040	4.37E-02	1.4573
Thyroid		2.34E-03	0.0468	1.63E-03	0.0326	3.65E-03	0.0730	3.61E-03	0.0722	1.12E-02	0.1123
Kidney		1.05E-02	0.2100	4.41E-03	0.0882	5.85E-03	0.1170	6.84E-03	0.1368	2.76E-02	0.2760
Lung		5.99E-03	0.1198	2.55E-03	0.0510	3.89E-03	0.0778	3.90E-03	0.0780	1.63E-02	0.1633
GI-LLI		5.11E-03	0.1022	3.13E-03	0.0626	6.62E-03	0.1324	5.44E-03	0.1088	2.03E-02	0.2030

		Unit 2 Gaseous Effluents									
		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Calendar Year	
Batch & Continuous Releases		Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit	Dose	% of ODCM Limit
	(2)	Gamma Air	0.00E+00	0.0000	1.94E-08	0.0000	1.41E-06	0.0000	2.52E-03	0.0504	2.52E-03
(2)	Beta Air	0.00E+00	0.0000	9.14E-11	0.0000	6.64E-09	0.0000	8.87E-04	0.0089	8.87E-04	0.0044
O R G A N (3)	Bone	0.00E+00	0.0000	0.00E+00	0.0000	0.00E+00	0.0000	3.98E-10	0.0000	3.98E-10	0.0000
	Liver	1.03E-02	0.1373	6.30E-02	0.8400	2.00E-02	0.2667	1.34E-03	0.0179	9.46E-02	0.6309
	Total Body	1.03E-02	0.1373	6.30E-02	0.8400	2.00E-02	0.2667	1.34E-03	0.0179	9.46E-02	0.6309
	Thyroid	1.03E-02	0.1373	6.30E-02	0.8400	2.00E-02	0.2667	1.34E-03	0.0179	9.46E-02	0.6309
	Kidney	1.03E-02	0.1373	6.30E-02	0.8400	2.00E-02	0.2667	1.34E-03	0.0179	9.46E-02	0.6309
	Lung	1.03E-02	0.1373	6.30E-02	0.8400	2.00E-02	0.2667	1.34E-03	0.0179	9.46E-02	0.6309
	GI-LLI	1.03E-02	0.1373	6.30E-02	0.8400	2.00E-02	0.2667	1.34E-03	0.0179	9.46E-02	0.6309

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

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

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

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

**Radioactive Effluent Release Report**  
Calendar Year - 2007  
Table 6

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

All Effluent Monitoring Instrumentation Channels

(as required by procedure 1/2-ODC-3.03 of the Offsite Dose Calculation Manual)

were returned to Operable Status within 30 days

during this report period.

## Radioactive Effluent Release Report

Calendar Year - 2007

Table 7

Total Dose Commitments, Total Effective Dose Equivalents and Population Doses

Total Dose Commitment From All Facility Releases To Members of the Public 40 CFR 190.10(a) Environmental Doses				
Organ	(1) Effluent Dose (mrem)	(2) Direct Radiation Dose (mrem)	Total Dose (mrem)	% of ODCM or 40 CFR 190 Limit
Bone	7.28E-02	0.00E+00	7.28E-02	0.29%
Liver	5.01E-01	0.00E+00	5.01E-01	2.00%
Total Body	4.74E-01	0.00E+00	4.74E-01	1.90%
Thyroid	3.97E-01	0.00E+00	3.97E-01	0.53%
Kidney	4.30E-01	0.00E+00	4.30E-01	1.72%
Lung	4.08E-01	0.00E+00	4.08E-01	1.63%
GI-LLI	4.15E-01	0.00E+00	4.15E-01	1.66%

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

(2) The dose contribution listed for the total body is for Direct Radiation. This was calculated by comparing offsite TLD exposure at the ODCM controlling location (0.75 miles NW; Midland, PA) to TLD exposure at the REMP control location (16.40 miles SSW; Weirton, WV).

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

Pursuant to 10 CFR 20.1301(a)(1), the Total Effective Dose Equivalent from licensed operation to the maximum individual during the report period, is **3.24 mrem**. This is a summation of Direct Radiation Exposure (calculated by comparing the maximum of all perimeter TLD exposures to TLD exposure at the REMP control location) plus Effluent Doses (calculated per the ODCM).

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

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

**0-50 Mile Population Doses From Liquid and Gaseous Effluents**

0-50 mile Total Population Dose from liquid and gaseous effluents = 484 man-mrem (Total Body)  
 0-50 mile Average Population Dose from liquid and gaseous effluents = 0.0001211 man-mrem (Total Body)

## **Radioactive Effluent Release Report**

**Calendar Year - 2007**

**Table 8**

### Offsite Dose Calculation Manual Surveillance Deficiencies

There were no ODCM related Surveillances Deficiencies

(as required by procedure 1/2-ODC-3.03 of the Offsite Dose Calculation Manual)

during this report period.

This is regarding all required ODCM Surveillances associated with

monitoring, sampling & analysis and offsite dose projection.

# Radioactive Effluent Release Report

Calendar Year - 2007

Table 9

## Unit 1 and 2 Offsite Dose Calculation Manual Changes (Description)

There was one change made to the Offsite Dose Calculation Manual (ODCM) during the report period. See Attachment 2 of this report for a complete copy of the ODCM. For information, that attachment includes ODCM procedure 1/2-ODC-1.01, "Index, Matrix and History of ODCM Changes", which provides a complete description of the changes, and the change justifications. A brief description of the changes are as follows:

### Change (24) to the ODCM (Effective: June 2007)

#### 1) Procedure 1/2-ODC-1.01 (Rev 6), "ODCM: Index, Matrix and History of ODCM Changes"

- Updated the History of ODCM Changes to include this change.
- Revised Technical Specification (TS) references via Integrated TS upgrade (TS Amendments 278/161).

#### 2) Procedure 1/2-ODC-3.03 (Rev 6), "ODCM: Controls for RETS and REMP Programs"

- Revised Technical Specification (TS) references via Integrated TS upgrade (TS Amendments 278/161).
- Attachment D: Incorporated transfer of Unit 2 Noble Gas Effluent Steam Monitors from TS-LCO 3.3.3.1.
- Attachment E: Clarified applicability for Tank Level Indicating Devices.
- Attachment E: Added Action 25A for Inoperable Primary Flow Rate Measurement Device.
- Attachment F: Clarified Functional Location Numbers of Sampler Flow Rate Monitors.
- Attachment J: Updated Outside Liquid Storage Tank Limits.

## Beaver Valley Power Station - Units 1 &amp; 2

## Radioactive Effluent Release Report

Calendar Year - 2007

Attachment 1

Joint Frequency Distribution Tables

## Attachment 1

As specified in the Offsite Dose Calculation Manual (ODCM), an annual summary of hourly meteorological data (in the form of joint frequency distribution) is provided for the calendar year. In summary, 2007 joint frequency distribution data is similar to previous years, and close to long-term normals for the site area.

## Meteorological Data Recovery

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

## PERCENT RECOVERY OF INDIVIDUAL METEOROLOGICAL PARAMETERS

100% = Wind Speed 35'

100% = Wind Speed 150'

100% = Wind Speed 500'

100% = Wind Direction 35'

98.2% = Wind Direction 150'

100% = Wind Direction 500'

100% = Delta Temperature (150' - 35' ) 1P

99.9% = Delta Temperature (500' - 35' ) 2P

100% = Temperature 35'

100% = Precipitation

**99.8% = Average Recovery of Individual Meteorological Parameters**

## PERCENT RECOVERY OF COMPOSITE VARIABLES

100% = Wind Speed 35', Wind Direction 35', Delta Temperature 1P

99.4% = Wind Speed 150', Wind Direction 150', Delta Temperature 1P

100% = Wind Speed 500', Wind Direction 500', Delta Temperature 2P

**99.9% = Average Recovery of Composite Variables**

## Attachment 1 Clarification

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

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

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

For a copy of the hourly meteorological data during the calendar quarters, contact Mr. Anthony T. Lonnett at 724-682-4223.

**Enclosure 2, Attachment 1 (Part 1 of 3)**

Beaver Valley Power Station – Units 1 & 2

**Radioactive Effluent Release Report**

Calendar Year – 2007

Attachment 1

Part 1: Joint Frequency Distribution Tables (35ft)

Page 1 of 8

**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35

Summary of All Stability Classes Delta Temperature

<u>Wind Direction</u>	<u>Wind Speed (mph)</u>						<u>Total</u>
	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	
N	209	132	1	0	0	0	342
NNE	225	50	0	0	0	0	276
NE	346	45	0	0	0	0	391
ENE	369	174	0	0	0	0	544
E	376	91	0	0	0	0	471
ESE	559	14	0	0	0	0	587
SE	642	11	0	0	0	0	692
SSE	430	17	0	0	0	0	464
S	371	90	0	0	0	0	463
SSW	299	202	12	0	0	0	515
SW	247	349	173	17	0	0	786
WSW	176	411	227	21	0	0	836
W	161	518	248	3	0	0	930
WNW	170	275	48	1	0	0	494
NW	237	273	19	0	0	0	529
NNW	240	189	6	0	0	0	435
<b>Total</b>	<b>5057</b>	<b>2841</b>	<b>734</b>	<b>42</b>	<b>0</b>	<b>0</b>	<b>8755</b>

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 8674  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 1 of 3)**

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Part 1: Joint Frequency Distribution Tables (35ft)  
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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35  
 Stability Class G Delta Temperature Extremely Stable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	2	0	0	0	0	0	2
NNE	12	0	0	0	0	0	12
NE	10	0	0	0	0	0	10
ENE	18	1	0	0	0	0	19
E	55	0	0	0	0	0	55
ESE	143	0	0	0	0	0	148
SE	202	0	0	0	0	0	208
SSE	93	0	0	0	0	0	98
S	45	3	0	0	0	0	49
SSW	42	1	0	0	0	0	43
SW	17	1	0	0	0	0	18
WSW	11	0	0	0	0	0	11
W	1	0	0	0	0	0	1
WNW	9	0	0	0	0	0	9
NW	10	0	0	0	0	0	10
NNW	1	0	0	0	0	0	1
<b>Total</b>	<b>671</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>694</b>

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 677  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 1 of 3)**

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Part 1: Joint Frequency Distribution Tables (35ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35  
 Stability Class F Delta Temperature Moderately Stable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>&gt; 25</u>	<u>Total</u>
N	16	0	0	0	0	0	16
NNE	16	0	0	0	0	0	16
NE	30	0	0	0	0	0	30
ENE	54	1	0	0	0	0	56
E	102	0	0	0	0	0	105
ESE	248	0	0	0	0	0	257
SE	265	0	0	0	0	0	295
SSE	189	0	0	0	0	0	197
S	118	5	0	0	0	0	124
SSW	49	13	0	0	0	0	63
SW	26	2	1	0	0	0	29
WSW	10	0	1	0	0	0	11
W	6	1	0	0	0	0	7
WNW	7	1	0	0	0	0	8
NW	15	0	0	0	0	0	15
NNW	11	0	0	0	0	0	11
<b>Total</b>	<b>1162</b>	<b>23</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1240</b>

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 1187  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 1 of 3)**

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Part 1: Joint Frequency Distribution Tables (35ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35  
 Stability Class E Delta Temperature Slightly Stable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	92	13	0	0	0	0	105
NNE	85	8	0	0	0	0	94
NE	144	2	0	0	0	0	146
ENE	144	37	0	0	0	0	181
E	133	20	0	0	0	0	154
ESE	115	2	0	0	0	0	117
SE	119	1	0	0	0	0	123
SSE	102	2	0	0	0	0	108
S	158	20	0	0	0	0	178
SSW	146	91	2	0	0	0	240
SW	107	98	39	3	0	0	247
WSW	60	60	28	4	0	0	152
W	53	45	18	0	0	0	116
WNW	55	20	0	0	0	0	75
NW	86	32	0	0	0	0	118
NNW	111	15	0	0	0	0	126
<b>Total</b>	<b>1710</b>	<b>466</b>	<b>87</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>2280</b>

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 2270  
 Total Hours for the Period 8760

Beaver Valley Power Station – Units 1 & 2

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Part 1: Joint Frequency Distribution Tables (35ft)

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## Hours at Each Wind Speed and Direction

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35  
 Stability Class D Delta Temperature Neutral

### Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	79	51	1	0	0	0	131
NNE	81	15	0	0	0	0	96
NE	121	21	0	0	0	0	142
ENE	122	83	0	0	0	0	205
E	56	37	0	0	0	0	93
ESE	27	2	0	0	0	0	29
SE	31	1	0	0	0	0	32
SSE	32	4	0	0	0	0	36
S	43	33	0	0	0	0	76
SSW	56	53	7	0	0	0	116
SW	83	211	110	13	0	0	417
WSW	80	286	170	17	0	0	554
W	94	342	172	3	0	0	611
WNW	90	186	28	1	0	0	305
NW	106	167	16	0	0	0	289
NNW	91	106	5	0	0	0	202
Total	1192	1598	509	34	0	0	3334

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 3333  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 1 of 3)**

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Part 1: Joint Frequency Distribution Tables (35ft)  
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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35  
 Stability Class C Delta Temperature Slightly Unstable

Wind Direction	Wind Speed (mph)						Total
	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	
N	11	7	0	0	0	0	18
NNE	7	4	0	0	0	0	11
NE	9	0	0	0	0	0	9
ENE	6	5	0	0	0	0	11
E	4	7	0	0	0	0	11
ESE	2	0	0	0	0	0	2
SE	4	0	0	0	0	0	4
SSE	3	0	0	0	0	0	3
S	0	9	0	0	0	0	9
SSW	0	9	0	0	0	0	9
SW	4	11	8	0	0	0	23
WSW	2	21	12	0	0	0	35
W	2	40	25	0	0	0	67
WNW	3	22	5	0	0	0	30
NW	5	16	0	0	0	0	21
NNW	6	5	1	0	0	0	12
<b>Total</b>	<b>68</b>	<b>156</b>	<b>51</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>275</b>

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 275  
 Total Hours for the Period 8760

Beaver Valley Power Station – Units 1 & 2

# Radioactive Effluent Release Report

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Part 1: Joint Frequency Distribution Tables (35ft)

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## Hours at Each Wind Speed and Direction

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35  
 Stability Class B Delta Temperature Moderately Unstable

### Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	5	6	0	0	0	0	11
NNE	4	1	0	0	0	0	5
NE	7	3	0	0	0	0	10
ENE	4	2	0	0	0	0	6
E	3	4	0	0	0	0	7
ESE	4	1	0	0	0	0	5
SE	6	1	0	0	0	0	7
SSE	2	1	0	0	0	0	3
S	3	1	0	0	0	0	4
SSW	1	9	1	0	0	0	11
SW	3	12	9	0	0	0	24
WSW	3	16	7	0	0	0	26
W	2	31	12	0	0	0	45
WNW	2	13	4	0	0	0	19
NW	5	14	2	0	0	0	21
NNW	4	8	0	0	0	0	12
Total	58	123	35	0	0	0	216

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 216  
 Total Hours for the Period 8760

Beaver Valley Power Station – Units 1 & 2

# Radioactive Effluent Release Report

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Part 1: Joint Frequency Distribution Tables (35ft)

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## Hours at Each Wind Speed and Direction

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP35P Direction: DI35P Lapse: DT150-35  
 Stability Class A Delta Temperature Extremely Unstable

### Wind Speed (mph)

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	4	55	0	0	0	0	59
NNE	20	22	0	0	0	0	42
NE	25	19	0	0	0	0	44
ENE	21	45	0	0	0	0	66
E	23	23	0	0	0	0	46
ESE	20	9	0	0	0	0	29
SE	15	8	0	0	0	0	23
SSE	9	10	0	0	0	0	19
S	4	19	0	0	0	0	23
SSW	5	26	2	0	0	0	33
SW	7	14	6	1	0	0	28
WSW	10	28	9	0	0	0	47
W	3	59	21	0	0	0	83
WNW	4	33	11	0	0	0	48
NW	10	44	1	0	0	0	55
NNW	16	55	0	0	0	0	71
<b>Total</b>	<b>196</b>	<b>469</b>	<b>50</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>716</b>

Number of Calm Hours for this Table 81  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 5  
 Number of Valid Hours for this Table 716  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 2 of 3)**

Beaver Valley Power Station – Units 1 & 2

**Radioactive Effluent Release Report**

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Part 2: Joint Frequency Distribution Tables (150ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period

Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35

Summary of All Stability Classes Delta Temperature

Wind Direction	Wind Speed (mph)						Total
	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	
N	248	180	88	4	0	0	520
NNE	349	190	62	5	0	0	606
NE	339	230	25	1	0	0	595
ENE	191	320	182	31	0	0	724
E	105	143	72	2	0	0	322
ESE	42	84	29	1	0	0	156
SE	58	72	23	0	0	0	153
SSE	53	99	23	1	0	0	176
S	101	145	109	5	0	0	361
SSW	212	219	116	9	0	0	556
SW	278	240	261	67	6	0	852
WSW	173	205	240	102	17	0	737
W	132	288	460	368	61	2	1311
WNW	102	242	247	143	19	1	754
NW	108	184	99	12	1	0	404
NNW	136	173	68	1	0	0	378
<b>Total</b>	<b>2627</b>	<b>3014</b>	<b>2104</b>	<b>752</b>	<b>104</b>	<b>3</b>	<b>8605</b>

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 8604  
 Total Hours for the Period 8760

Beaver Valley Power Station – Units 1 & 2  
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Part 2: Joint Frequency Distribution Tables (150ft)  
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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35  
 Stability Class G Delta Temperature Extremely Stable

Wind Speed (mph)

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>&gt; 25</u>	<u>Total</u>
N	44	2	0	0	0	0	46
NNE	74	25	0	0	0	0	99
NE	64	33	1	0	0	0	98
ENE	26	17	2	0	0	0	45
E	18	4	0	0	0	0	22
ESE	9	9	1	0	0	0	19
SE	9	5	1	0	0	0	15
SSE	6	9	1	0	0	0	16
S	20	16	1	0	0	0	37
SSW	44	31	3	0	0	0	78
SW	56	25	6	0	0	0	87
WSW	26	16	3	0	0	0	45
W	20	4	0	0	0	0	24
WNW	10	10	0	0	0	0	20
NW	18	3	0	0	0	0	21
NNW	16	0	0	0	0	0	16
<b>Total</b>	<b>460</b>	<b>209</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>688</b>

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 688  
 Total Hours for the Period 8760

Beaver Valley Power Station – Units 1 & 2

# Radioactive Effluent Release Report

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Part 2: Joint Frequency Distribution Tables (150ft)

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## Hours at Each Wind Speed and Direction

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35  
 Stability Class F Delta Temperature Moderately Stable

### Wind Speed (mph)

Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	95	17	0	0	0	0	112
NNE	149	21	0	0	0	0	170
NE	128	50	0	0	0	0	178
ENE	60	26	6	0	0	0	92
E	27	10	0	0	0	0	37
ESE	8	6	0	0	0	0	14
SE	16	8	1	0	0	0	25
SSE	14	6	0	0	0	0	20
S	30	22	2	0	0	0	55
SSW	86	54	5	0	0	0	145
SW	100	40	18	0	0	0	158
WSW	43	18	2	0	0	0	63
W	19	14	1	1	0	0	35
WNW	13	7	0	0	0	0	20
NW	23	3	0	0	0	0	26
NNW	37	10	0	0	0	0	47
Total	848	312	35	1	0	0	1197

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 1196  
 Total Hours for the Period 8760

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)

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## Hours at Each Wind Speed and Direction

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35  
 Stability Class E Delta Temperature Slightly Stable

### Wind Speed (mph)

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	62	41	11	1	0	0	115
NNE	92	51	5	1	0	0	149
NE	106	69	2	0	0	0	177
ENE	70	139	46	5	0	0	260
E	40	45	18	0	0	0	103
ESE	15	17	10	0	0	0	42
SE	22	25	4	0	0	0	51
SSE	25	31	4	1	0	0	61
S	33	49	36	1	0	0	119
SSW	63	76	43	1	0	0	183
SW	86	81	91	10	1	0	269
WSW	62	47	56	15	4	0	184
W	39	74	52	31	4	0	200
WNW	36	85	27	7	1	0	156
NW	25	57	8	0	0	0	90
NNW	31	46	10	0	0	0	87
<b>Total</b>	<b>807</b>	<b>933</b>	<b>423</b>	<b>73</b>	<b>10</b>	<b>0</b>	<b>2246</b>

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 2246  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 2 of 3)**

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35  
 Stability Class D Delta Temperature Neutral

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	40	65	30	1	0	0	136
NNE	29	60	24	1	0	0	114
NE	36	54	14	1	0	0	105
ENE	31	91	76	19	0	0	217
E	20	52	23	1	0	0	96
ESE	10	22	7	0	0	0	39
SE	10	12	5	0	0	0	27
SSE	7	33	8	0	0	0	48
S	18	37	39	2	0	0	96
SSW	18	48	43	6	0	0	115
SW	31	81	130	48	5	0	295
WSW	39	113	140	74	12	0	378
W	49	141	324	269	48	2	833
WNW	39	108	159	104	13	1	424
NW	34	99	76	10	1	0	220
NNW	45	76	36	1	0	0	158
<b>Total</b>	<b>456</b>	<b>1092</b>	<b>1134</b>	<b>537</b>	<b>79</b>	<b>3</b>	<b>3301</b>

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 3301  
 Total Hours for the Period 8760

Beaver Valley Power Station – Units 1 & 2

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Part 2: Joint Frequency Distribution Tables (150ft)

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## Hours at Each Wind Speed and Direction

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35  
 Stability Class C Delta Temperature Slightly Unstable

### Wind Speed (mph)

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	3	10	5	1	0	0	19
NNE	1	3	2	0	0	0	6
NE	2	1	0	0	0	0	3
ENE	0	7	6	2	0	0	15
E	0	9	4	0	0	0	13
ESE	0	0	0	0	0	0	0
SE	0	2	2	0	0	0	4
SSE	1	2	0	0	0	0	3
S	0	2	8	1	0	0	11
SSW	0	2	8	0	0	0	10
SW	0	6	7	2	0	0	15
WSW	0	5	12	6	1	0	24
W	1	15	28	27	3	0	74
WNW	2	9	19	12	0	0	42
NW	3	4	4	1	0	0	12
NNW	3	8	3	0	0	0	14
<b>Total</b>	16	85	108	52	4	0	265

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 265  
 Total Hours for the Period 8760

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Part 2: Joint Frequency Distribution Tables (150ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35  
 Stability Class B Delta Temperature Moderately Unstable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	1	12	2	0	0	0	15
NNE	2	4	3	1	0	0	10
NE	2	3	1	0	0	0	6
ENE	2	7	1	0	0	0	10
E	0	6	1	0	0	0	7
ESE	0	7	1	0	0	0	8
SE	1	1	3	0	0	0	5
SSE	0	3	1	0	0	0	4
S	0	3	3	0	0	0	6
SSW	1	6	3	2	0	0	12
SW	1	5	4	5	0	0	15
WSW	1	2	10	2	0	0	15
W	1	14	14	15	4	0	48
WNW	0	8	12	8	1	0	29
NW	2	3	3	1	0	0	9
NNW	0	8	3	0	0	0	11
<b>Total</b>	14	92	65	34	5	0	210

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 210  
 Total Hours for the Period 8760

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Part 2: Joint Frequency Distribution Tables (150ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP150P Direction: DI150P Lapse: DT150-35  
 Stability Class A Delta Temperature Extremely Unstable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	3	33	40	1	0	0	77
NNE	2	26	28	2	0	0	58
NE	1	20	7	0	0	0	28
ENE	2	33	45	5	0	0	85
E	0	17	26	1	0	0	44
ESE	0	23	10	1	0	0	34
SE	0	19	7	0	0	0	26
SSE	0	15	9	0	0	0	24
S	0	16	20	1	0	0	37
SSW	0	2	11	0	0	0	13
SW	4	2	5	2	0	0	13
WSW	2	4	17	5	0	0	28
W	3	26	41	25	2	0	97
WNW	2	15	30	12	4	0	63
NW	3	15	8	0	0	0	26
NNW	4	25	16	0	0	0	45
<b>Total</b>	<b>26</b>	<b>291</b>	<b>320</b>	<b>55</b>	<b>6</b>	<b>0</b>	<b>698</b>

Number of Calm Hours for this Table 1  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 155  
 Number of Valid Hours for this Table 698  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 3 of 3)**

Beaver Valley Power Station – Units 1 & 2

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Part 3: Joint Frequency Distribution Tables (500ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: DI500P Lapse: DT500-35

Summary of All Stability Classes Delta Temperature

Wind Direction	Wind Speed (mph)						Total
	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	
N	110	140	191	91	5	0	537
NNE	77	111	68	38	3	0	297
NE	73	137	50	21	3	0	284
ENE	86	184	114	81	7	0	472
E	97	225	194	55	1	0	572
ESE	79	152	107	23	6	0	367
SE	77	152	101	41	12	1	384
SSE	70	96	88	43	6	0	303
S	51	97	143	115	13	0	419
SSW	56	96	135	167	26	0	480
SW	61	90	179	283	158	15	786
WSW	85	154	170	203	75	18	705
W	78	186	317	385	252	70	1290
WNW	71	157	288	259	109	22	906
NW	60	129	171	111	14	4	490
NNW	92	140	184	48	1	0	466
<b>Total</b>	<b>1223</b>	<b>2246</b>	<b>2500</b>	<b>1964</b>	<b>691</b>	<b>130</b>	<b>8758</b>

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 8754  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 3 of 3)**

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

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: D1500P Lapse: DT500-35  
 Stability Class G Delta Temperature Extremely Stable

Wind Direction	Wind Speed (mph)						Total
	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	> 25	
N	0	1	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	3	0	0	0	0	3
ENE	0	1	0	0	0	0	1
E	4	4	2	0	0	0	10
ESE	6	4	0	0	0	0	10
SE	2	2	7	0	0	0	11
SSE	6	1	5	1	1	0	14
S	2	7	4	7	1	0	21
SSW	3	6	4	5	1	0	19
SW	0	1	1	11	9	0	22
WSW	0	0	1	1	0	0	2
W	0	0	1	1	0	0	2
WNW	0	0	0	1	0	0	1
NW	0	2	0	0	0	0	2
NNW	1	3	0	0	0	0	4
<b>Total</b>	<b>24</b>	<b>35</b>	<b>25</b>	<b>27</b>	<b>12</b>	<b>0</b>	<b>123</b>

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 123  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 3 of 3)**

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Part 3: Joint Frequency Distribution Tables (500ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: DI500P Lapse: DT500-35  
 Stability Class F Delta Temperature Moderately Stable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	34	20	6	7	1	0	68
NNE	25	25	8	0	0	0	58
NE	10	34	3	2	0	0	49
ENE	28	33	8	0	0	0	69
E	25	42	7	1	0	0	75
ESE	23	30	13	0	0	0	66
SE	20	42	14	8	0	0	84
SSE	17	30	15	11	2	0	75
S	20	22	24	7	2	0	75
SSW	18	23	13	13	0	0	67
SW	18	17	15	17	4	0	71
WSW	26	25	6	3	0	0	60
W	15	18	19	9	0	0	61
WNW	12	24	12	5	1	0	54
NW	10	25	5	1	0	0	41
NNW	28	13	3	2	0	0	46
Total	329	423	171	86	10	0	1019

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 1019  
 Total Hours for the Period 8760

**Enclosure 2, Attachment 1 (Part 3 of 3)**

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Part 3: Joint Frequency Distribution Tables (500ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: DI500P Lapse: DT500-35  
 Stability Class E Delta Temperature Slightly Stable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	46	23	32	31	1	0	133
NNE	36	25	19	8	0	0	88
NE	26	40	5	6	1	0	78
ENE	33	69	19	14	1	0	136
E	38	71	39	10	0	0	158
ESE	33	55	28	8	1	0	125
SE	42	45	22	14	7	1	131
SSE	40	33	33	21	3	0	130
S	20	36	29	49	6	0	140
SSW	28	35	37	67	14	0	181
SW	31	40	43	65	71	3	253
WSW	42	64	28	19	7	2	162
W	44	90	62	37	13	6	254
WNW	29	62	45	17	6	0	159
NW	30	41	19	15	0	0	106
NNW	35	39	23	3	0	0	101
<b>Total</b>	<b>553</b>	<b>768</b>	<b>483</b>	<b>384</b>	<b>131</b>	<b>12</b>	<b>2335</b>

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 2331  
 Total Hours for the Period 8760

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Part 3: Joint Frequency Distribution Tables (500ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: DI500P Lapse: DT500-35  
 Stability Class D Delta Temperature Neutral

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	30	89	127	49	3	0	298
NNE	16	47	33	23	3	0	122
NE	37	57	31	12	2	0	139
ENE	25	69	69	55	5	0	223
E	30	96	122	38	1	0	287
ESE	17	55	60	14	5	0	151
SE	13	48	51	18	5	0	135
SSE	7	30	30	10	0	0	77
S	9	32	79	48	4	0	172
SSW	7	31	79	82	11	0	210
SW	12	32	120	190	74	12	440
WSW	17	62	131	179	68	16	473
W	19	78	233	337	239	64	970
WNW	30	71	224	232	100	22	679
NW	19	59	144	91	14	4	331
NNW	28	82	151	42	1	0	304
<b>Total</b>	<b>316</b>	<b>938</b>	<b>1684</b>	<b>1420</b>	<b>535</b>	<b>118</b>	<b>5011</b>

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 5011  
 Total Hours for the Period 8760

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Part 3: Joint Frequency Distribution Tables (500ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: DI500P Lapse: DT500-35  
 Stability Class C Delta Temperature Slightly Unstable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	0	5	14	4	0	0	23
NNE	0	12	5	6	0	0	23
NE	0	3	2	1	0	0	6
ENE	0	9	11	4	1	0	25
E	0	7	13	2	0	0	22
ESE	0	6	3	0	0	0	9
SE	0	12	5	0	0	0	17
SSE	0	1	5	0	0	0	6
S	0	0	6	4	0	0	10
SSW	0	1	2	0	0	0	3
SW	0	0	0	0	0	0	0
WSW	0	3	4	1	0	0	8
W	0	0	2	1	0	0	3
WNW	0	0	7	4	2	0	13
NW	0	2	3	4	0	0	9
NNW	0	3	7	1	0	0	11
<b>Total</b>	0	64	89	32	3	0	188

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 188  
 Total Hours for the Period 8760

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Part 3: Joint Frequency Distribution Tables (500ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: DI500P Lapse: DT500-35  
 Stability Class B Delta Temperature Moderately Unstable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>≥ 25</u>	<u>Total</u>
N	0	2	10	0	0	0	12
NNE	0	2	2	1	0	0	5
NE	0	0	8	0	0	0	8
ENE	0	3	6	3	0	0	12
E	0	4	9	2	0	0	15
ESE	0	2	2	1	0	0	5
SE	0	2	2	1	0	0	5
SSE	0	1	0	0	0	0	1
S	0	0	1	0	0	0	1
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>16</b>	<b>40</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>65</b>

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 65  
 Total Hours for the Period 8760

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Part 3: Joint Frequency Distribution Tables (500ft)

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**Hours at Each Wind Speed and Direction**

Period of Record = 1/1/2007 00:00 - 12/31/2007 23:00 Total Period  
 Elevation: Speed: SP500P Direction: DI500P Lapse: DT500-35  
 Stability Class A Delta Temperature Extremely Unstable

**Wind Speed (mph)**

<u>Wind Direction</u>	<u>1 - 4</u>	<u>4 - 8</u>	<u>8 - 13</u>	<u>13 - 19</u>	<u>19 - 25</u>	<u>&gt; 25</u>	<u>Total</u>
N	0	0	2	0	0	0	2
NNE	0	0	1	0	0	0	1
NE	0	0	1	0	0	0	1
ENE	0	0	1	5	0	0	6
E	0	1	2	2	0	0	5
ESE	0	0	1	0	0	0	1
SE	0	1	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
<b>Total</b>	0	2	8	7	0	0	17

Number of Calm Hours for this Table 4  
 Number of Variable Direction Hours for this Table 0  
 Number of Invalid Hours 2  
 Number of Valid Hours for this Table 17  
 Total Hours for the Period 8760

**Beaver Valley Power Station - Units 1 & 2**

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Attachment 2

Unit 1 and 2 Offsite Dose Calculation Manual Changes

**Attachment 2**

**Attached is a complete copy of the Offsite Dose Calculation Manual (ODCM) that includes revision bars in the page margins. It should be noted that only the pages changed in 2007 include a reference to the month/year (06/2007) that the changes were implemented. The changes implemented in 2007 are included in the following:**

**Change (24) of the ODCM (Effective: June, 2007)**

**Attachment 2 Clarification**

**A complete copy of the ODCM has been provided to the following offices to comply with the submittal requirements of Technical Specification Administrative Control 5.5.1, and SAP Order 200197646-0420:**

**United States Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001**

**United States Nuclear Regulatory Commission  
Regional Administrator  
475 Allendale Road  
King of Prussia, PA 19406**

**For a complete copy of the ODCM, contact Mr. Anthony T Lonnett at 724-682-4223.**