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10 CFR 50.36a (a)(2)

February 11, 2009

SVPLTR #09-0006

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

Dresden Nuclear Power Station, Units 1, 2, and 3
Facility Operating License No. DPR-2
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-010, 50-237 and 50-249

Subject: Corrections to Dresden Nuclear Power Station Annual Radioactive Effluent Release Reports for 2004, 2005, 2006, and 2007 and Annual Radiological Environmental Operating Reports for 2004, 2005, and 2006

References:

1) Letter from D. Bost (Exelon Generation Company, LLC) to U. S. NRC, "Dresden Nuclear Power Station 2004 Radioactive Effluent Release Report and Offsite Dose Calculation Manual Changes," dated April 29, 2005

2) Letter from D. Bost (Exelon Generation Company, LLC) to U. S. NRC, "Dresden Nuclear Power Station 2005 Radioactive Effluent Release Report and Offsite Dose Calculation Manual Changes," dated April 28, 2006

3) Letter from D. Bost (Exelon Generation Company, LLC) to U. S. NRC, "Correction to Dresden Nuclear Power Station 2006 Radioactive Effluent Release Report," dated September 20, 2007

4) Letter from D. Wozniak (Exelon Generation Company, LLC) to U. S. NRC, "Dresden Nuclear Power Station 2007 Radioactive Effluent Release Report and Offsite Dose Calculation Manual," dated April 29, 2008

5) Letter from D. Bost (Exelon Generation Company, LLC) to U. S. NRC, "Dresden Nuclear Power Station Annual Radiological Environmental Operating Report for 2004," dated May 13, 2005

6) Letter from D. Bost (Exelon Generation Company, LLC) to U. S. NRC, "Dresden Nuclear Power Station Annual Radiological Environmental Operating Report for 2005," dated May 5, 2006

7) Letter from D. Bost (Exelon Generation Company, LLC) to U. S. NRC, "2006 Annual Radiological Environmental Operating Report," dated May 15, 2007

IE48
IE25
NRR

The Dresden Nuclear Power Station (DNPS) Units 2/3 Chimney flow indication was found to be inaccurate in 2008, due to fouling of its flow elements. Further investigation showed that this issue began in April 2004, which resulted in non-conservative reporting of station effluents and calculated offsite doses for this period. This affected the data reported in the Annual Radioactive Effluent Release Reports for the calendar years 2004, 2005, 2006, and 2007 (References 1-4) and the Annual Radiological Environmental Operating Reports for the calendar years 2004, 2005, and 2006 (References 5-7). Due to a change in reporting requirements to reflect regulatory guidance, the data reported in the 2007 Annual Radiological Environmental Operating Report was not affected.

This submittal revises values for activity released in Units 2/3 Chimney effluents, corrects several minor errors in other station gaseous effluents that were discovered during data review, and revises reported offsite doses. Units 2/3 Chimney effluents are re-calculated using maximum system design flow rate, which is higher than actual flow rate and results in conservative activity release determinations and dose calculations. Several minor technical, typographical and rounding errors are also corrected. Revision bars in the right margins indicate the changes.

While the inaccurate flow indication resulted in the under-estimation of station gaseous effluents, actual station effluents were not affected. Offsite dose calculated using conservative values for activity released demonstrate that DNPS did not exceed or approach any limits contained in station or regulatory guidance or requirements. This event is captured in the station's Corrective Action Program.

These corrections are submitted in accordance with Sections 6.9.A.4 and 5.6.3, "Radioactive Effluent Release Report," of the DNPS Unit 1 and Units 2 and 3 Technical Specifications, respectively and 10 CFR 50.36a(a)(2), "Technical specifications on effluents from nuclear power reactors."

There are no regulatory commitments contained within this letter.

Should you have any questions concerning this letter, please contact Mr. Stephen Taylor, Dresden Regulatory Assurance Manager, at (815) 416-2800.

Respectfully,

David B. Wozniak
Site Vice President
Dresden Nuclear Power Station

Attachments:

A) Corrections to DNPS 2004 Annual Radioactive Effluent Release Report
B) Corrections to DNPS 2004 Annual Radiological Environmental Operating Report
C) Corrections to DNPS 2005 Annual Radioactive Effluent Release Report
D) Corrections to DNPS 2005 Annual Radiological Environmental Operating Report
E) Corrections to DNPS 2006 Annual Radioactive Effluent Release Report
F) Corrections to DNPS 2006 Annual Radiological Environmental Operating Report
G) Corrections to DNPS 2007 Annual Radioactive Effluent Release Report

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector- Dresden Nuclear Power Station (W/O Enclosures)

Attachment A
Corrections to DNPS
2004 Annual Radioactive Effluent Release Report

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2004

DOCKET NUMBERS: 50-010/50-237/50-249

1. Regulatory Limits

a. For Noble Gases:

Dose Rate

1) Less than 500 mrem/year to the whole body.
2) Less than 3000 mrem/year to the skin.

Dose Gamma Radiation

1) Less than or equal to 5 mrad/quarter.
2) Less than or equal to 10 mrad/year.

Beta Radiation

1) Less than or equal to 10 mrad/quarter.
2) Less than or equal to 20 mrad/year.

b.,c. For Iodine-131, for Iodine-133, and for all radionuclides in particulate form with half-lives greater than 8 days:

Dose Rate

1) Less than 1500 mrem/year.

Dose

1) Less than or equal to 7.5 mrem/quarter to any organ.
2) Less than or equal to 15 mrem/year to any organ.

d. For Liquid:

1) Less than or equal to 1.5 mrem to the whole body during any calendar quarter.
2) Less than or equal to 5 mrem to any organ during any calendar quarter.
3) Less than or equal to 3 mrem to the whole body during any calendar year.
4) Less than or equal to 10 mrem to any organ during any calendar year.

2. Maximum Permissible Concentration

a., b., c. For fission and activation gases, iodines and particulates with half-lives greater than 8 days, allowable dose rates are calculated by solving equations 10-1 and 10-2 from the Offsite Dose Calculation Manual (ODCM).

d. For liquid effluents, allowable release limits are calculated by solving equations 10-3 and 10-4 from the ODCM.

3. Average Energy

The average energy of fission and activation gases was calculated for the gaseous effluents released from the site. The average energy is based on the percentage of each noble gas nuclide present and its average energy per disintegration ($\bar{E}$ in MeV/dis) for gamma and beta emissions separately.

$\bar{E}_{GAMMA}$ = 7.16E-01 MeV/dis
$\bar{E}_{BETA}$ = 4.85E-01 MeV/dis

4. Measurement and Approximations of Total Radioactivity

a. Fission and Activation Gases:
b. Iodines:
c. Particulates:

The Units 2/3 and Unit 1 Chimneys, Units 2/3 Reactor Building Vent and Unit 1 Chemical Cleaning Building effluents are continually sampled for iodines and particulates. These samples are changed weekly and analyzed by gamma isotopic. The particulate filters are composited and sent to a vendor for gross alpha, Sr-89/90, and Fe-55 analysis. Noble gas grab samples are obtained weekly and analyzed by gamma spectroscopy. Tritium samples are obtained monthly and analyzed by liquid scintillation.

For the Units 2/3 Chimney and Units 2/3 Reactor Building Vent effluents, the average flow at the release points is used to calculate the Curies released. For the Unit 1 Chimney and Unit 1 Chemical Cleaning Building effluents, the design basis flows are used to calculate Curies released.

d. Liquid Effluents:

The river discharge tanks are analyzed for gamma-emitting nuclides by gamma spectroscopy and for tritium by liquid scintillation prior to discharge. A representative portion of this sample is saved and composited with other discharges that occur during the sampling period. The composite is sent to a vendor for analyses of gross alpha, Fe-55, and Sr-89/90.

The tank volumes and activities are used to calculate the diluted activity released at the discharge point from batch discharges.

e. Less than the Lower Limit of Detection (<LLD)

Samples are analyzed such that the ODCM LLD requirements are met. When a nuclide is not detected then <LLD is reported.

f. Equipment Out of Service

(1) The Unit 3 Service Water Effluent Radiation Monitor was out of service from November 22, 2004 and remained inoperable at the end of 2004. The monitor was declared inoperable due to low sample flow through the monitor. This inoperability was not corrected in a timely manner due to excessive lead time for replacement parts, the repair of a crack discovered in the sample header, and the development and implementation of an engineering modification to improve monitor sample flow. Contingency grab sampling and analysis was performed as required during the monitor's inoperability. The monitor was returned to operable status on April 9, 2005. This inoperability of greater than 30 days is being reported per Dresden ODCM Section 12.2.A.1.3.

(2) In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition began in late April 2004.

4. Measurement and Approximations of Total Radioactivity (continued)

g. Estimation of Data/Corrections:

(1) On June 9, 2004 a Radioactive Material (RAM) and Radiological Environmental Monitoring Program (REMP) Self Assessment identified that gamma isotopic analyses were not being performed using adequate a priori LLD verifications as required by the Dresden ODCM. This resulted in several cases where the a posteriori Minimum Detectable Activity (MDA) for Xe-138 was greater than the ODCM LLD of 1.00E-05 μCi/ml. This occurred in three Unit 2 Service Water grab samples (on April 20, 2004; May 18, 2004; and May 25, 2004) and one Unit 3 Service Water grab sample (on April 20, 2004). No noble gases were detected in any Service Water samples during 2004. Because other gases that would be seen in an effluent mixture with longer half-lives were not detected (like Xe-135), and Xe-138 is not normally detected in Service Water effluents, it is determined that no release of Xe-138 occurred.

(2) On November 30, 2004 Liquid Radwaste Discharge 04-003 was discharged to the environment and the Xe-138 LLD was not met due to excessive delay in the analysis. This was discovered on December 2, 2004 during additional review of the River Discharge Card. No noble gases were detected in any Liquid Radwaste Discharge samples during 2004. Xe-138 was not identified during the analysis of discharge 04-003, and the calculated a posteriori MDA for Xe-138 of the release was 1.96E-04 μCi/ml. Because other gases that would be seen in an effluent mixture with longer half-lives were not detected (like Xe-135), and Xe-138 is not normally detected in Liquid Radwaste Discharge effluents, it is determined that no release of Xe-138 occurred.

(3) On December 9, 2004 Liquid Radwaste Discharge 04-010 was discharged to the environment. ODCM requirements for the discharge were met for the discharge, but the records for the tritium analysis for the release could not be located afterward. This was discovered on December 23, 2004 during administrative processing of the River Discharge Card, and attempts to locate the documentation were unsuccessful. For reporting purposes, the discharge tritium concentration was estimated using the average of reactor water tritium concentrations of Unit 2 (7.82E-03 μCi/ml) and Unit 3 (8.37E-03 μCi/ml) from the monthly reactor water tritium analysis performed on December 22, 2004, for a result of 8.10E-03 μCi/ml. Reactor water tritium concentration was used due to the long half-life of tritium, the negligible impact radwaste processing has on the isotope, and to provide a conservative estimate of the discharge's activity. This value was also comparable to the tritium concentration of the previous discharge (8.05E-03 μCi/ml).

(4) In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition began in late April 2004. Per the ODCM, if 2/3 Main Chimney actual system flow rate is not available, the design flow rate of 1.25E+10 cc/min can be used. This flow rate is conservative because it is higher than the actual value. This flow rate was applied to 2/3 Main Chimney noble gas, particulate, iodine, and tritium measurements for April through December 2004. Units 2 and 3 gland seal and offgas effluent activity release calculations were not affected because they do not use the 2/3 Main Chimney flow rate meter.

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2004

DOCKET NUMBERS: 50-010/50-237/50-249

SUMMATION OF ALL GASEOUS RELEASES

	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. FISSION & ACTIVATION GASES						
1. Total Release	Ci	3.62E+01	3.43E+01	3.89E+01	1.38E+01	20.8%
2. Average Release Rate for the Period	µCi/sec	4.61E+00	4.36E+00	4.89E+00	1.73E+00	
3. Percent of Technical Specification Limit	%	*	*	*	*	
B. IODINES						
1. Total Iodine-131	Ci	8.10E-04	1.31E-03	1.49E-03	8.29E-04	15.7%
2. Average Release Rate of I-131 for the Period	µCi/sec	1.03E-04	1.67E-04	1.87E-04	1.04E-04	
3. Percent of Technical Specification Limit	%	*	*	*	*	
4. Total Iodine-131, Iodine-133 and Iodine-135	Ci	3.39E-03	5.87E-03	7.45E-03	3.08E-03	
C. PARTICULATES						
1. Particulates with half-lives > 8 days	Ci	1.59E-03	1.79E-03	2.00E-03	1.40E-03	21.5%
2. Average Release Rate for the Period	µCi/sec	2.02E-04	2.27E-04	2.52E-04	1.76E-04	
3. Percent of Technical Specification Limit	%	*	*	*	*	
4. Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. TRITIUM						
1. Total Release	Ci	5.62E+00	1.02E+01	1.04E+01	5.89E+00	7.62%
2. Average Release Rate for the Period	µCi/sec	7.14E-01	1.30E+00	1.31E+00	7.41E-01	
3. Percent of Technical Specification Limit	%	*	*	*	*	

*The information is contained in the Radiological Impact on Man section of the report. Total airborne release data are provided which include fission and activation gases, iodines, particulates, and tritium.

DRESDEN NUCLEAR POWER STATION
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D2/3 REACTOR BUILDING VENT | GASEOUS EFFLUENTS | DOCKET NUMBERS: 50-237/50-249

	GROUND LEVEL RELEASES
XX	SEMI-ELEVATED RELEASES
	ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci	*	*	*	*	*
Kr-85	Ci	*	*	*	*	*
Kr-85m	Ci	*	*	*	*	*
Kr-87	Ci	*	*	*	*	*
Kr-88	Ci	*	*	*	*	*
Xe-133	Ci	*	*	*	3.16E-06	3.16E-06
Xe-133m	Ci	*	*	*	*	*
Xe-135	Ci	5.48E-05	*	*	2.05E-05	7.54E-05
Xe-135m	Ci	*	*	*	*	*
Xe-138	Ci	*	*	*	*	*
TOTAL	Ci	5.48E-05	None	None	2.37E-05	7.85E-05
IODINES						
I-131	Ci	2.92E-05	3.74E-06	6.84E-07	2.01E-05	5.38E-05
I-133	Ci	1.40E-04	*	4.43E-06	2.33E-05	1.68E-04
I-135	Ci	1.12E-04	*	*	*	1.12E-04
TOTAL	Ci	2.81E-04	3.74E-06	5.11E-06	4.34E-05	3.33E-04
PARTICULATES						
Fe-55	Ci	3.27E-05	4.06E-05	1.31E-04	8.06E-05	2.85E-04
Sr-89	Ci	*	*	*	*	*
Sr-90	Ci	*	*	*	*	*
Be-7	Ci	*	*	*	*	*
Cr-51	Ci	2.88E-06	*	*	1.21E-05	1.50E-05
Mn-54	Ci	1.52E-04	7.76E-05	2.48E-04	1.10E-04	5.88E-04
Co-57	Ci	*	*	*	*	*
Co-58	Ci	4.24E-06	*	5.21E-05	5.35E-06	6.17E-05
Fe-59	Ci	*	2.86E-06	1.14E-05	4.43E-06	1.86E-05
Co-60	Ci	1.85E-04	7.21E-05	2.34E-04	1.73E-04	6.65E-04
Zn-65	Ci	2.45E-04	*	1.04E-04	1.36E-04	4.84E-04
Sr-85	Ci	*	*	*	*	*
Nb-95	Ci	*	*	*	*	*
Mo-99	Ci	*	*	1.94E-05	2.02E-06	2.14E-05
Ru-103	Ci	*	6.52E-07	*	*	6.52E-07
Cd-109	Ci	*	*	*	*	*
Ag-110m	Ci	*	*	*	2.82E-06	2.82E-06
Sn-113	Ci	*	*	*	*	*
Sn-117m	Ci	*	*	*	*	*
Sb-124	Ci	*	*	*	*	*
Cs-137	Ci	1.88E-05	*	*	2.01E-06	2.08E-05
Ba-133	Ci	*	*	*	*	*
Ba-140	Ci	*	*	*	*	*
Ce-141	Ci	*	*	*	*	*
Ce-144	Ci	*	*	*	*	*
Hg-203	Ci	*	*	*	*	*
TOTAL	Ci	6.41E-04	1.94E-04	8.00E-04	5.29E-04	2.16E-03

* The activity of this nuclide is less than the LLD.

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
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D2/3 MAIN CHIMNEY | GASEOUS EFFLUENTS | DOCKET NUMBERS: 50-237/50-249

_____ GROUND LEVEL RELEASES
_____ SEMI-ELEVATED RELEASES
XX ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci	3.76E+00	3.69E+00	3.73E+00	2.27E+00	1.35E+01
Kr-85	Ci	*	*	*	*	*
Kr-85m	Ci	9.60E-01	7.81E-01	8.26E-01	4.88E-01	3.05E+00
Kr-87	Ci	2.71E+00	6.90E-01	2.00E+00	3.78E-01	5.78E+00
Kr-88	Ci	2.45E+00	1.10E+00	1.10E+00	6.11E-01	5.26E+00
Xe-131m	Ci	*	*	*	*	*
Xe-133	Ci	1.30E+00	7.50E-01	7.64E-01	4.77E-01	3.29E+00
Xe-133m	Ci	*	*	*	*	*
Xe-135	Ci	7.75E+00	1.50E+01	1.59E+01	3.83E+00	4.25E+01
Xe-135m	Ci	3.84E+00	2.47E+00	2.97E+00	1.16E+00	1.04E+01
Xe-138	Ci	1.35E+01	9.77E+00	1.16E+01	4.57E+00	3.94E+01
TOTAL	Ci	3.62E+01	3.43E+01	3.89E+01	1.38E+01	1.23E+02
IODINES						
I-131	Ci	7.81E-04	1.31E-03	1.49E-03	8.09E-04	4.39E-03
I-133	Ci	2.32E-03	4.16E-03	5.11E-03	2.18E-03	1.38E-02
I-135	Ci	*	3.93E-04	8.49E-04	5.46E-05	1.30E-03
TOTAL	Ci	3.10E-03	5.86E-03	7.44E-03	3.04E-03	1.94E-02
PARTICULATES						
Fe-55	Ci	8.82E-06	6.26E-05	4.23E-06	*	7.57E-05
Be-7	Ci	*	*	*	*	*
Cr-51	Ci	*	*	*	*	*
Mn-54	Ci	9.67E-05	1.70E-04	1.40E-04	1.42E-04	5.49E-04
Co-57	Ci	*	*	*	*	*
Co-58	Ci	*	*	*	*	*
Fe-59	Ci	5.05E-05	*	*	*	5.05E-05
Co-60	Ci	1.28E-04	2.76E-04	1.66E-04	2.07E-04	7.77E-04
Zn-65	Ci	*	1.19E-05	*	*	1.19E-05
Sr-85	Ci	*	*	*	*	*
Y-88	Ci	*	*	*	*	*
Sr-89	Ci	1.53E-04	1.55E-04	1.79E-04	1.37E-04	6.24E-04
Sr-90	Ci	*	*	*	*	*
Zr-95	Ci	*	*	*	*	*
Mo-99	Ci	9.62E-06	*	3.22E-05	1.15E-05	5.33E-05
Ru-103	Ci	*	*	*	*	*
Cd-109	Ci	*	*	*	*	*
Ag-110m	Ci	4.20E-06	1.96E-05	3.56E-06	2.33E-06	2.97E-05
Sn-113	Ci	*	*	*	*	*
Sn-117m	Ci	*	*	*	*	*
Cs-136	Ci	*	*	*	*	*
Cs-137	Ci	2.62E-07	4.22E-06	*	*	4.48E-06
Ba-140	Ci	4.88E-04	6.48E-04	6.73E-04	2.94E-04	2.10E-03
Hg-203	Ci	*	*	*	*	*
Ce-141	Ci	*	*	*	*	*
Ce-144	Ci	*	*	*	*	*
TOTAL	Ci	9.40E-04	1.35E-03	1.20E-03	7.93E-04	4.28E-03

* The activity of this nuclide is less than the LLD.

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2004

DOCKET NUMBER: 50-237

RADIOLOGICAL IMPACT ON MAN*

UNIT 2

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	1.51E-04 (e)	1.28E-04 (e)	1.22E-04 (e)	8.11E-05 (e)	10.0 mrad	4.83E-04 (e)
Beta Air (mrad)	10.0 mrad	1.12E-05 (e)	1.06E-05 (e)	1.08E-05 (e)	5.40E-06 (e)	20.0 mrad	3.80E-05 (e)
Total Body (mrem)	2.5 mrem	1.27E-04 (e)	9.64E-05 (e)	9.22E-05 (e)	6.12E-05 (e)	5.0 mrem	3.64E-04 (e)
Skin (mrem)	7.5 mrem	1.27E-04 (e)	1.07E-04 (e)	1.03E-04 (e)	6.72E-05 (e)	15.0 mrem	4.05E-04 (e)
Organ (mrem)	7.5 mrem	5.14E-04 (c)	2.26E-03 (c)	5.39E-03 (c)	3.48E-03 (c)	15.0 mrem	1.15E-02 (c)
Critical Organ		Lung	Thyroid	Thyroid	Thyroid		Thyroid

2. Liquid Releases

	Maximum Doses from Aquatic Effluents					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	4.26E-07 (a)	3.89E-09 (c)	0.00E+00 (e)	9.06E-05 (c)	3.0 mrem	9.07E-05 (c)
Organ (mrem)	5.0 mrem	6.67E-07 (t)	5.52E-08 (a)	0.00E+00 (e)	1.19E-04 (a)	10.0 mrem	1.19E-04 (a)
Critical Organ		Liver	GI_LLI	None	GI_LLI		GI_LLI

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2004

DOCKET NUMBER: 50-249

RADIOLOGICAL IMPACT ON MAN*

UNIT 3

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	6.28E-04 (e)	4.58E-04 (e)	5.53E-04 (e)	1.98E-04 (e)	10.0 mrad	1.84E-03 (e)
Beta Air (mrad)	10.0 mrad	4.21E-05 (e)	3.36E-05 (e)	4.34E-05 (e)	1.29E-05 (e)	20.0 mrad	1.32E-04 (e)
Total Body (mrem)	2.5 mrem	4.74E-04 (e)	3.45E-04 (e)	4.17E-04 (e)	1.49E-04 (e)	5.0 mrem	1.39E-03 (e)
Skin (mrem)	7.5 mrem	5.21E-04 (e)	3.82E-04 (e)	4.64E-04 (e)	1.64E-04 (e)	15.0 mrem	1.53E-03 (e)
Organ (mrem)	7.5 mrem	1.24E-03 (c)	8.31E-03 (c)	7.10E-03 (c)	3.57E-03 (c)	15.0 mrem	1.97E-02 (c)
Critical Organ		Thyroid	Thyroid	Thyroid	Thyroid		Thyroid

2. Liquid Releases

	Maximum Doses from Aquatic Effluents					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	0.00E+00 (e)	0.00E+00 (e)	1.33E-04 (c)	9.41E-05 (c)	3.0 mrem	2.27E-04 (c)
Organ (mrem)	5.0 mrem	0.00E+00 (e)	0.00E+00 (e)	1.33E-04 (c)	1.39E-04 (a)	10.0 mrem	2.51E-04 (c)
Critical Organ		None	None	GI_LLI	GI_LLI		Liver

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

Attachment B
Corrections to DNPS
2004 Annual Radiological Environmental Operating Report

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

Measured concentrations of noble gases, radioiodine, and particulate radioactivity released in gaseous effluents to the atmosphere during the year are listed in Table 1.1-1. A total of 1.23E+02 curies of noble gases with a maximum quarterly average release rate of 4.89E+00 μCi/sec were released from Dresden Units 1, 2, and 3.

A total of 4.44E-03 curies of I-131 were released during the year with a maximum quarterly average release rate of 1.87E-04 μCi/sec.

A total of 6.78E-03 curies of beta-gamma emitters were released as airborne particulate matter with a maximum quarterly average release rate of 2.52E-04 μCi/sec. Alpha emitting radionuclides were below LLD for the period. Also, 3.22E+01 curies of tritium were released with a maximum quarterly average release rate of 1.31E+00 μCi/sec.

1.2 Liquids Released to Illinois River

Measured concentrations and isotopic composition of radioactivity released in liquid effluents during the year are listed in Table 1.2-1.

A total of 4.39E+06 liters of radioactive liquid wastes containing 1.06E-02 curies of fission and activation products (excluding tritium, noble gases, and gross alpha) were discharged from the station. These wastes were released at a maximum quarterly average diluted concentration of 1.65E-08 μCi/ml from all units. During the same period, 1.95E+01 curies of tritium were released with a maximum quarterly average diluted concentration of 3.03E-05 μCi/ml. Alpha-emitting radionuclides were below LLD.

2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck to the Barnwell disposal facility, the Envirocare disposal facility or to waste processors. For more detail, refer to the Dresden Station 2004 Annual Radioactive Effluent Release Report.

3.0 DOSE TO MAN

3.1 Gaseous Effluent Pathways

3.1.1 Noble Gases

To demonstrate compliance with the applicable regulations regarding public radiation dose due to gaseous effluents from Dresden Station, measured isotopic composition and release rates from the station and "average meteorological data" are used. Assumed "average meteorological data" uses a ten-year average (1/1/1978 - 12/31/1987) for Dresden Station.

3.1.1.1 Gamma Air Dose Rates

Offsite gamma air and total body doses are shown in Table 3.1-1 and were calculated based on measured release rates, isotopic composition of the noble gases, and average meteorological data for the period.

Based on measured effluents and average meteorological data, the maximum total body dose (from all units) to an individual is calculated to be 1.75E-03 mrem (Table 3.1-1) for the year, with an occupancy or shielding factor of 0.7 included. The maximum gamma air dose based on measured effluents and average meteorological data was 2.32E-03 mrad (Table 3.1-1).

3.1.1.2 Beta Air and Skin Dose Rates

The range of beta particles in air is relatively small (on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for the purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin, and clothing covering sensitive tissues. For the purposes of this report the skin is assumed to have a thickness of 0.07 mm and an occupancy factor of 1.0 is used. The skin dose from beta and gamma radiation based on measured effluents and average meteorological data for the year was 1.94E-03 mrem (Table 3.1-1).

The maximum offsite beta air dose based on measured effluents and average meteorological data for the year was 1.70E-04 mrad (Table 3.1-1).

3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The radioiodine, I-131, released during the routine operation of the station, may be made available to man resulting in a dose to the thyroid. The principle pathway of interest for the radionuclide is ingestion of radioiodine in milk. Calculations made in previous years indicate that contributions to doses from inhalation of I-131 and I-133 and from ingestion of I-133 in milk are negligible.

3.1.2.1 Dose to Thyroid

The hypothetical thyroid dose to a maximum exposed individual living near the station via ingestion of milk was calculated. The radionuclide considered was I-131 and the source of the milk was taken to be the nearest dairy farm with the cows pastured May through October. The maximum thyroid dose is calculated to be 3.20E-02 mrem during the year (Table 3.1-1 [child]).

3.2 Liquid Effluent Pathways

The three principal pathways for potential dose to man from liquid waste effluents are ingestion of potable water, ingesting aquatic foods, and exposure while on the shoreline. Not all of these pathways are applicable at a given time or station, but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC-developed equations* were used to calculate the doses to the whole body, lower GI tract, thyroid, bone and skin; specific parameters for use in the equations are given in the Dresden Station Offsite Dose Calculation Manual. The maximum total body dose and organ dose for the year was 3.18E-04 mrem (child) and 3.70E-04 mrem (child/adult), respectively (Table 3.2-1).

3.3 Assessment of Dose to Member of Public

During the period January to December, 2004, Dresden Station did not exceed the following limits as shown in Table 3.1-1 and Table 3.2-1 (based on average meteorological data):

- The RETS limits on dose or dose commitment to a member of the public due to radioactive materials in liquid effluents from each reactor unit (1.5 mrem to the total body or 5 mrem to any organ during any calendar quarter; 3 mrem to the total body or 10 mrem to any organ during any calendar year).

- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (5 mrad for gamma radiation or 10 mrad for beta radiation during any calendar quarter; 10 mrad for gamma radiation or 20 mrad for beta radiation during any calendar year).

- The RETS limits on dose to a member of the public due to Iodine-131, Iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from each reactor unit (7.5 mrem to any organ during any calendar quarter; 15 mrem to any organ during any calendar year).

* Nuclear Regulatory Commission, Regulatory Guide 1.109 (Rev. 1).

Table 1.1-1

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2004

DOCKET NUMBERS: 50-010/50-237/50-249

SUMMATION OF ALL GASEOUS RELEASES

	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. FISSION & ACTIVATION GASES						
Total Release	Ci	3.62E+01	3.43E+01	3.89E+01	1.38E+01	20.8%
Average Release Rate for the Period	µCi/sec	4.61E+00	4.36E+00	4.89E+00	1.73E+00	
Percent of Technical Specification Limit	%	*	*	*	*	
B. IODINES						
Total Iodine-131	Ci	8.10E-04	1.31E-03	1.49E-03	8.29E-04	15.7%
Average Release Rate of I-131 for the Period	µCi/sec	1.03E-04	1.67E-04	1.87E-04	1.04E-04	
Percent of Technical Specification Limit	%	*	*	*	*	
Total Iodine-131, Iodine-133 and Iodine-135	Ci	3.39E-03	5.87E-03	7.45E-03	3.08E-03	
C. PARTICULATES						
Particulates with half-lives > 8 days	Ci	1.59E-03	1.79E-03	2.00E-03	1.40E-03	21.5%
Average Release Rate for the Period	µCi/sec	2.02E-04	2.27E-04	2.52E-04	1.76E-04	
Percent of Technical Specification Limit	%	*	*	*	*	
Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. TRITIUM						
Total Release	Ci	5.62E+00	1.02E+01	1.04E+01	5.89E+00	7.62%
Average Release Rate for the Period	µCi/sec	7.14E-01	1.30E+00	1.31E+00	7.41E-01	
Percent of Technical Specification Limit	%	*	*	*	*	

*The information is contained in the Radiological Impact on Man section of the report. Total airborne release data are provided which include fission and activation gases, iodines, particulates, and tritium.

Table 3.1-1

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2004

DOCKET NUMBERS: 50-010, 50-237, 50-249

RADIOLOGICAL IMPACT ON MAN*

UNIT 1

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	10.0 mrad	0.00E+00 (e)
Beta Air (mrad)	10.0 mrad	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	20.0 mrad	0.00E+00 (e)
Total Body (mrem)	2.5 mrem	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	5.0 mrem	0.00E+00 (e)
Skin (mrem)	7.5 mrem	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	0.00E+00 (e)	15.0 mrem	0.00E+00 (e)
Organ (mrem)	7.5 mrem	2.30E-06 (c,t)	9.68E-06 (a)	1.12E-05 (c)	7.86E-04 (i,c)	15.0 mrem	8.01E-04 (c)
Critical Organ		Lung	GI_LLI	Liver	Liver (i) Bone (c)		Liver

UNIT 2

2. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	1.51E-04 (e)	1.28E-04 (e)	1.22E-04 (e)	8.11E-05 (e)	10.0 mrad	4.83E-04 (e)
Beta Air (mrad)	10.0 mrad	1.12E-05 (e)	1.06E-05 (e)	1.08E-05 (e)	5.40E-06 (e)	20.0 mrad	3.80E-05 (e)
Total Body (mrem)	2.5 mrem	1.27E-04 (e)	9.64E-05 (e)	9.22E-05 (e)	6.12E-05 (e)	5.0 mrem	3.64E-04 (e)
Skin (mrem)	7.5 mrem	1.27E-04 (e)	1.07E-04 (e)	1.03E-04 (e)	6.72E-05 (e)	15.0 mrem	4.05E-04 (e)
Organ (mrem)	7.5 mrem	5.14E-04 (c)	2.26E-03 (c)	5.39E-03 (c)	3.48E-03 (c)	15.0 mrem	1.15E-02 (c)
Critical Organ		Lung	Thyroid	Thyroid	Thyroid		Thyroid

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

Table 3.1-1 (continued)

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2004

RADIOLOGICAL IMPACT ON MAN*

UNIT 3

3. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	6.28E-04 (e)	4.58E-04 (e)	5.53E-04 (e)	1.98E-04 (e)	10.0 mrad	1.84E-03 (e)
Beta Air (mrad)	10.0 mrad	4.21E-05 (e)	3.36E-05 (e)	4.34E-05 (e)	1.29E-05 (e)	20.0 mrad	1.32E-04 (e)
Total Body (mrem)	2.5 mrem	4.74E-04 (e)	3.45E-04 (e)	4.17E-04 (e)	1.49E-04 (e)	5.0 mrem	1.39E-03 (e)
Skin (mrem)	7.5 mrem	5.21E-04 (e)	3.82E-04 (e)	4.64E-04 (e)	1.64E-04 (e)	15.0 mrem	1.53E-03 (e)
Organ (mrem)	7.5 mrem	1.24E-03 (c)	8.31E-03 (c)	7.10E-03 (c)	3.57E-03 (c)	15.0 mrem	1.97E-02 (c)
Critical Organ		Thyroid	Thyroid	Thyroid	Thyroid		Thyroid

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

Table 3.3-1 (continued)

DRESDEN STATION UNIT TWO

10 CFR 20 COMPLIANCE ASSESSMENT

PERIOD OF ASSESSMENT 01/01/04 TO 12/31/04

CALCULATED 09/18/08

1. 10 CFR 20.1301 (a)(1) Compliance

Total Effective Dose Equivalent,	mrem/yr	3.36E+00
10 CFR 20.1301 (a)(1) limit	mrem/yr	100.0
	% of limit	3.36

Compliance Summary - 10CFR20

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	% of Limit
TEDE	1.08E+00	8.75E-01	8.32E-01	5.79E-01	3.36

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

DRESDEN STATION UNIT TWO

10 CFR 20 COMPLIANCE ASSESSMENT

PERIOD OF ASSESSMENT 01/01/04 TO 12/31/04

CALCULATED 09/18/08

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body	Plume	3.64E-04		
(DDE)	Skyshine	3.36E+00		
	Ground	1.75E-03		
	Total	3.36E+00	25.0	13.45
Organ Dose	Thyroid	5.07E-03	75.0	0.01
(CDE)	Gonads	2.97E-03	25.0	0.01
	Breast	2.93E-03	25.0	0.01
	Lung	2.97E-03	25.0	0.01
	Marrow	2.96E-03	25.0	0.01
	Bone	2.96E-03	25.0	0.01
	Remainder	3.05E-03	25.0	0.01
	CEDE	3.05E-03		
	TEDE	3.36E+00	100.0	3.36

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

DRESDEN STATION UNIT THREE

10 CFR 20 COMPLIANCE ASSESSMENT

PERIOD OF ASSESSMENT 01/01/04 TO 12/31/04

CALCULATED 09/18/08

1. 10 CFR 20.1301 (a)(1) Compliance

Total Effective Dose Equivalent,	mrem/yr	3.67E+00
10 CFR 20.1301 (a)(1) limit	mrem/yr	100.0
	% of limit	3.67

Compliance Summary - 10CFR20

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	% of Limit
TEDE	1.00E+00	1.02E+00	1.09E+00	5.57E-01	3.67

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

DRESDEN STATION UNIT THREE

10 CFR 20 COMPLIANCE ASSESSMENT

PERIOD OF ASSESSMENT 01/01/04 TO 12/31/04

CALCULATED 09/18/08

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body	Plume	1.39E-03		
(DDE)	Skyshine	3.66E+00		
	Ground	4.80E-03		
	Total	3.67E+00	25.0	14.66
Organ Dose	Thyroid	8.40E-03	75.0	0.01
(CDE)	Gonads	5.20E-03	25.0	0.02
	Breast	5.11E-03	25.0	0.02
	Lung	5.33E-03	25.0	0.02
	Marrow	5.17E-03	25.0	0.02
	Bone	5.14E-03	25.0	0.02
	Remainder	5.41E-03	25.0	0.02
	CEDE	5.35E-03		
	TEDE	3.67E+00	100.0	3.67

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.4-1

Table deleted.

Table 3.4-1 (continued)

Table deleted.

Table 3.4-1 (continued)

Table deleted.

Attachment C
Corrections to DNPS
2005 Annual Radioactive Effluent Release Report

4. Measurement and Approximations of Total Radioactivity (continued)

f. Equipment Out of Service (continued)

(4) In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition affected the entirety of 2005.

g. Estimation of Data/Corrections:

(1) On April 20, 2005 continuous iodine and particulate monitoring of the Units 2/3 Main Chimney was interrupted from 1417 to 1830. The backup noble gas monitor output during this time was reviewed and no significant fluctuation was seen. It is estimated that the particulate and iodine concentrations during the interruption are equal to the particulate and iodine concentrations during the balance of that weekly collection period.

(2) On June 14, 2005 the particulate filter in the Units 2/3 Main Chimney SPING monitor was found to be out of position in the sample stream. This resulted in an inaccurate particulate sample collection (specifically volume measurement) for the sampling period of 0905 on June 8, 2005 to 1115 on June 14, 2005. Iodine sample collection and continuous noble gas monitoring were not affected. The ratio of Ba-139 detected on both the iodine cartridge and the particulate filter was used to estimate the Sr-89 released during the collection period, which is the only nuclide attributed to particulate monitoring of this point during this time period. Based on the estimated sample volume collected by the particulate filter, all of the required Lower Limits of Detection were met for particulate monitoring.

(3) In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition began in late April 2004. Per the ODCM, if 2/3 Main Chimney actual system flow rate is not available, the design flow rate of 1.25E+10 cc/min can be used. This flow rate is conservative because it is higher than the actual value. This flow rate was applied to 2/3 Main Chimney noble gas, particulate, iodine, and tritium measurements for the entirety of 2005. Units 2 and 3 gland seal and offgas effluent activity release calculations were not affected because they do not use the 2/3 Main Chimney flow rate meter.

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2005

DOCKET NUMBERS: 50-010/50-237/50-249

SUMMATION OF ALL GASEOUS RELEASES

	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. FISSION & ACTIVATION GASES						
1. Total Release	Ci	2.35E+01	2.22E+01	1.66E+01	1.07E+01	24.5%
2. Average Release Rate for the Period	µCi/sec	3.03E+00	2.83E+00	2.09E+00	1.34E+00	
3. Percent of Technical Specification Limit	%	*	*	*	*	
B. IODINES						
1. Total Iodine-131	Ci	2.37E-04	3.75E-04	3.44E-04	3.31E-04	26.0%
2. Average Release Rate of I-131 for the Period	µCi/sec	3.04E-05	4.77E-05	4.32E-05	4.16E-05	
3. Percent of Technical Specification Limit	%	*	*	*	*	
4. Total Iodine-131, Iodine-133 and Iodine-135	Ci	9.64E-04	1.63E-03	1.85E-03	1.11E-03	
C. PARTICULATES						
1. Particulates with half-lives > 8 days	Ci	1.01E-03	7.78E-04	6.85E-04	9.90E-04	29.0%
2. Average Release Rate for the Period	µCi/sec	1.29E-04	9.89E-05	8.62E-05	1.25E-04	
3. Percent of Technical Specification Limit	%	*	*	*	*	
4. Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. TRITIUM						
1. Total Release	Ci	3.17E+00	1.90E+01	7.22E+00	6.15E+00	7.62%
2. Average Release Rate for the Period	µCi/sec	4.08E-01	2.42E+00	9.09E-01	7.74E-01	
3. Percent of Technical Specification Limit	%	*	*	*	*	

*The information is contained in the Radiological Impact on Man section of the report. Total airborne release data are provided which include fission and activation gases, iodines, particulates, and tritium.

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2005

D1 MAIN CHIMNEY | GASEOUS EFFLUENTS | DOCKET NUMBER: 50-010

_____ GROUND LEVEL RELEASES
_____ SEMI-ELEVATED RELEASES
XX ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci	*	*	*	*	*
Kr-85	Ci	*	*	*	*	*
Kr-85m	Ci	*	*	*	*	*
Kr-87	Ci	*	*	*	*	*
Kr-88	Ci	*	*	*	*	*
Xe-133	Ci	*	*	*	*	*
Xe-133m	Ci	*	*	*	*	*
Xe-135	Ci	*	*	*	*	*
Xe-135m	Ci	*	*	*	*	*
Xe-138	Ci	*	*	*	*	*
TOTAL	Ci	*	*	*	*	*
IODINES						
I-131	Ci	*	*	*	*	*
I-133	Ci	*	*	*	*	*
I-135	Ci	*	*	*	*	*
TOTAL	Ci	*	*	*	*	*
PARTICULATES						
Fe-55	Ci	*	*	*	*	*
Sr-89	Ci	*	*	*	*	*
Sr-90	Ci	*	*	*	*	*
Cr-51	Ci	*	*	*	*	*
Mn-54	Ci	3.66E-06	1.33E-06	9.72E-07	1.06E-06	7.02E-06
Co-57	Ci	*	*	*	*	*
Co-58	Ci	*	*	*	*	*
Fe-59	Ci	*	*	*	*	*
Co-60	Ci	1.77E-06	3.08E-07	1.58E-06	2.59E-06	6.25E-06
Zn-65	Ci	*	*	*	*	*
Sr-85	Ci	*	*	*	*	*
Zr-95	Ci	*	*	*	*	*
Mo-99	Ci	*	*	*	*	*
Ru-103	Ci	*	*	*	*	*
Cd-109	Ci	*	*	*	*	*
Ag-110m	Ci	*	*	*	*	*
Sn-113	Ci	*	*	*	*	*
Sb-124	Ci	*	*	*	*	*
Sb-125	Ci	*	*	*	*	*
Cs-134	Ci	*	*	*	*	*
Cs-136	Ci	*	*	*	*	*
Cs-137	Ci	*	1.75E-07	1.84E-06	*	2.01E-06
Ba-133	Ci	*	*	*	*	*
Ba-140	Ci	*	*	*	*	*
Ce-141	Ci	*	*	*	*	*
Ce-144	Ci	*	*	*	*	*
TOTAL	Ci	5.43E-06	1.81E-06	4.39E-06	3.65E-06	1.53E-05

* The activity of this nuclide is less than the LLD.

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2005

D2/3 MAIN CHIMNEY | GASEOUS EFFLUENTS | DOCKET NUMBERS: 50-237/50-249

_____ GROUND LEVEL RELEASES
_____ SEMI-ELEVATED RELEASES
XX ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci	4.78E+00	3.78E+00	3.84E+00	1.51E+00	1.39E+01
Kr-85	Ci	*	*	*	*	*
Kr-85m	Ci	9.01E-01	7.04E-01	6.91E-01	3.35E-01	2.63E+00
Kr-87	Ci	6.12E-01	5.88E-01	4.98E-01	3.02E-01	2.00E+00
Kr-88	Ci	1.03E+00	9.56E-01	9.09E-01	4.31E-01	3.33E+00
Xe-131m	Ci	*	*	*	*	*
Xe-133	Ci	1.07E+00	2.28E+00	7.33E-01	3.51E-01	4.43E+00
Xe-133m	Ci	*	*	*	*	*
Xe-135	Ci	4.98E+00	4.31E+00	2.39E+00	2.80E+00	1.45E+01
Xe-135m	Ci	2.07E+00	1.97E+00	1.55E+00	1.03E+00	6.61E+00
Xe-138	Ci	8.09E+00	7.66E+00	5.98E+00	3.92E+00	2.57E+01
TOTAL	Ci	2.35E+01	2.22E+01	1.66E+01	1.07E+01	7.30E+01
IODINES						
I-131	Ci	2.37E-04	3.75E-04	3.44E-04	3.21E-04	1.28E-03
I-133	Ci	7.03E-04	1.22E-03	1.25E-03	7.77E-04	3.95E-03
I-135	Ci	2.44E-05	3.60E-05	2.53E-04	*	3.13E-04
TOTAL	Ci	9.64E-04	1.63E-03	1.85E-03	1.10E-03	5.54E-03
PARTICULATES						
Fe-55	Ci	*	*	*	*	*
Sr-89	Ci	1.09E-04	1.57E-04	1.79E-04	1.01E-04	5.46E-04
Sr-90	Ci	*	*	*	*	*
Cr-51	Ci	*	*	*	*	*
Mn-54	Ci	2.79E-04	8.31E-05	1.04E-04	1.28E-04	5.95E-04
Co-57	Ci	*	*	*	*	*
Co-58	Ci	1.08E-05	*	*	*	1.08E-05
Fe-59	Ci	8.40E-06	*	*	2.64E-05	3.48E-05
Co-60	Ci	2.02E-04	7.24E-05	1.41E-04	1.41E-04	5.56E-04
Zn-65	Ci	*	*	*	*	*
Sr-85	Ci	*	*	*	*	*
Y-88	Ci	*	*	*	*	*
Zr-95	Ci	*	*	*	*	*
Mo-99	Ci	*	*	*	*	*
Ru-103	Ci	*	*	*	*	*
Cd-109	Ci	*	*	*	*	*
Ag-110m	Ci	*	*	*	5.29E-06	5.29E-06
Sn-113	Ci	*	*	*	*	*
Sn-117m	Ci	*	*	*	*	*
Cs-136	Ci	*	*	*	*	*
Cs-137	Ci	3.68E-06	*	*	*	3.68E-06
Ba-140	Ci	2.35E-04	2.45E-04	1.95E-04	2.59E-04	9.33E-04
Hg-203	Ci	*	*	*	*	*
Ce-141	Ci	*	*	*	8.86E-06	8.86E-06
Ce-144	Ci	*	*	*	*	*
TOTAL	Ci	8.47E-04	5.57E-04	6.19E-04	6.70E-04	2.69E-03

* The activity of this nuclide is less than the LLD.

DRESDEN NUCLEAR POWER STATION
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CHEMICAL CLEANING BUILDING GASEOUS EFFLUENTS DOCKET NUMBERS: 50-010/50-237/50-249

_____ GROUND LEVEL RELEASES
XX SEMI-ELEVATED RELEASES
_____ ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci	*	*	*	*	*
Kr-85	Ci	*	*	*	*	*
Kr-85m	Ci	*	*	*	*	*
Kr-87	Ci	*	*	*	*	*
Kr-88	Ci	*	*	*	*	*
Xe-133	Ci	*	*	*	*	*
Xe-133m	Ci	*	*	*	*	*
Xe-135	Ci	*	*	*	*	*
Xe-135m	Ci	*	*	*	*	*
Xe-138	Ci	*	*	*	*	*
TOTAL	Ci	*	*	*	*	*
IODINES						
I-131	Ci	*	*	*	*	*
I-133	Ci	*	*	*	*	*
I-135	Ci	*	*	*	*	*
TOTAL	Ci	*	*	*	*	*
PARTICULATES						
Fe-55	Ci	*	*	*	*	*
Sr-89	Ci	*	*	*	*	*
Sr-90	Ci	*	*	*	*	*
Cr-51	Ci	*	*	*	*	*
Mn-54	Ci	2.60E-06	4.32E-07	1.26E-06	2.73E-07	4.57E-06
Co-57	Ci	*	*	*	*	*
Co-58	Ci	*	*	*	*	*
Fe-59	Ci	*	*	*	*	*
Co-60	Ci	3.40E-07	*	8.29E-07	1.28E-06	2.44E-06
Zn-65	Ci	*	*	*	*	*
Sr-85	Ci	*	*	*	*	*
Zr-95	Ci	*	*	*	*	*
Mo-99	Ci	*	*	*	*	*
Ru-103	Ci	*	*	*	*	*
Ag-110m	Ci	*	*	*	*	*
Sn-113	Ci	*	*	*	*	*
Sb-124	Ci	*	*	*	*	*
Sb-125	Ci	*	*	*	*	*
Cs-134	Ci	*	*	*	*	*
Cs-136	Ci	*	*	*	*	*
Cs-137	Ci	*	*	*	*	*
Ba-133	Ci	*	*	*	*	*
Ba-140	Ci	*	*	*	*	*
Ce-141	Ci	*	*	*	*	*
Ce-144	Ci	*	*	*	*	*
TOTAL	Ci	2.94E-06	4.32E-07	2.09E-06	1.55E-06	7.01E-06

* The activity of this nuclide is less than the LLD.

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
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DOCKET NUMBER: 50-237

RADIOLOGICAL IMPACT ON MAN*

UNIT 2

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	1.73E-04 (e)	1.46E-04 (e)	1.14e-04 (e)	7.47E-05 (e)	10.0 mrad	5.08E-04 (e)
Beta Air (mrad)	10.0 mrad	1.13E-05 (e)	1.01E-05 (e)	7.34E-06 (e)	5.06E-06 (e)	20.0 mrad	3.37E-05 (e)
Total Body (mrem)	2.5 mrem	1.31E-04 (e)	1.10e-04 (e)	8.57E-05 (e)	5.63E-05 (e)	5.0 mrem	3.83E-04 (e)
Skin (mrem)	7.5 mrem	1.43E-04 (e)	1.21e-04 (e)	9.40E-05 (e)	6.20E-05 (e)	15.0 mrem	4.21E-04 (e)
Organ (mrem)	7.5 mrem	4.32E-04 (c)	2.96E-03 (c)	5.75E-03 (c)	2.86E-03 (c)	15.0 mrem	1.20E-02 (c)
Critical Organ		Lung	Thyroid	Thyroid	Thyroid		Thyroid

2. Liquid Releases

	Maximum Doses from Aquatic Effluents					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	5.98E-05 (c)	0.00E+00 (e)	1.30E-09 (c)	3.04E-05 (c)	3.0 mrem	9.01E-05 (c)
Organ (mrem)	5.0 mrem	4.67E-04 (a)	0.00E+00 (e)	1.39E-08 (a)	4.63E-05 (a)	10.0 mrem	5.14E-04 (a)
Critical Organ		GI_LLI	None	GI_LLI	GI_LLI		GI_LLI

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2005

DOCKET NUMBER: 50-249

RADIOLOGICAL IMPACT ON MAN*

UNIT 3

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	3.31E-04 (e)	3.03E-04 (e)	2.71E-04 (e)	1.42E-04 (e)	10.0 mrad	1.05E-03 (e)
Beta Air (mrad)	10.0 mrad	2.00E-05 (e)	1.85E-05 (e)	1.51E-05 (e)	9.12E-06 (e)	20.0 mrad	6.27E-05 (e)
Total Body (mrem)	2.5 mrem	2.50E-04 (e)	2.29E-04 (e)	2.04E-04 (e)	1.07E-04 (e)	5.0 mrem	7.89E-04 (e)
Skin (mrem)	7.5 mrem	2.73E-04 (e)	2.50E-04 (e)	2.22E-04 (e)	1.17E-04 (e)	15.0 mrem	8.62E-04 (e)
Organ (mrem)	7.5 mrem	3.39E-04 (c)	4.85E-03 (c)	4.16E-03 (c)	1.70E-03 (c)	15.0 mrem	1.08E-02 (c)
Critical Organ		Lung	Thyroid	Thyroid	Thyroid		Thyroid

2. Liquid Releases

	Maximum Doses from Aquatic Effluents					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	9.66E-05 (c)	0.00E+00 (e)	0.00E+00 (e)	4.32E-05 (c)	3.0 mrem	1.40E-04 (c)
Organ (mrem)	5.0 mrem	7.99E-04 (a)	0.00E+00 (e)	0.00E+00 (e)	5.61E-05 (a)	10.0 mrem	8.55E-04 (a)
Critical Organ		GI_LLI	None	None	GI_LLI		GI_LLI

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

Table 1.1-1

GASEOUS EFFLUENTS SUMMATION OF ALL GASEOUS RELEASES

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
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		Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A.	FISSION & ACTIVATION GASES						
1.	Total Release	Ci	2.35E+01	2.22E+01	1.66E+01	1.07E+01	24.5%
2.	Average Release Rate for the Period	µCi/sec	3.03E+00	2.83E+00	2.09E+00	1.34E+00	
3.	Percent of Technical Specification Limit	%	*	*	*	*	
B.	IODINES						
1.	Total Iodine-131	Ci	2.37E-04	3.75E-04	3.44E-04	3.31E-04	26.0%
2.	Average Release Rate of I-131 for the Period	µCi/sec	3.04E-05	4.77E-05	4.32E-05	4.16E-05	
3.	Percent of Technical Specification Limit	%	*	*	*	*	
4.	Total Iodine-131, Iodine -133, and Iodine-135	Ci	9.64E-04	1.63E-03	1.85E-03	1.11E-03	
C.	PARTICULATES						
1.	Particulates with half-lives > 8 days	Ci	1.01E-03	7.78E-04	6.85E-04	9.90E-04	29.0%
2.	Average Release Rate for the Period	µCi/sec	1.29E-04	9.89E-05	8.62E-05	1.25E-04	
3.	Percent of Technical Specification Limit	%	*	*	*	*	
4.	Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D.	TRITIUM						
1.	Total Release	Ci	3.17E+00	1.90E+01	7.22E+00	6.15E+00	7.62%
2.	Average Release Rate for the Period	µCi/sec	4.08E-01	2.42E+00	9.09E-01	7.74E-01	
3.	Percent of Technical Specification Limit	%	*	*	*	*	

*The information is contained in the Radiological Impact on Man section of the report. Total airborne release data are provided which include fission and activation gases, iodines, particulates, and tritium.

Table 3.1-1

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2005

DOCKET NUMBERS: 50-010, 50-237, 50-249

RADIOLOGICAL IMPACT ON MAN*

UNIT 1

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	10.0 mrad	0.00E+00 (e)
Beta Air (mrad)	10.0 mrad	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	20.0 mrad	0.00E+00 (e)
Total Body (mrem)	2.5 mrem	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	5.0 mrem	0.00E+00 (e)
Skin (mrem)	7.5 mrem	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	15.0 mrem	0.00E+00 (e)
Organ (mrem)	7.5 mrem	3.77E-06(t)	1.83E-06(c)	9.08E-06(c)	7.90E-04(i,c)	15.0 mrem	8.00E-04 (c)
Critical Organ		Lung	Liver	Liver	Liver (i) Bone (c)		Liver

UNIT 2

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	1.73E-04 (e)	1.46E-04 (e)	1.14E-04 (e)	7.47E-05 (e)	10.0 mrad	5.08E-04 (e)
Beta Air (mrad)	10.0 mrad	1.13E-05 (e)	1.01E-05 (e)	7.34E-06 (e)	5.06E-06 (e)	20.0 mrad	3.37E-05 (e)
Total Body (mrem)	2.5 mrem	1.31E-04 (e)	1.10E-04 (e)	8.57E-05 (e)	5.63E-05 (e)	5.0 mrem	3.83E-04 (e)
Skin (mrem)	7.5 mrem	1.43E-04 (e)	1.21E-04 (e)	9.40E-05 (e)	6.20E-05 (e)	15.0 mrem	4.21E-04 (e)
Organ (mrem)	7.5 mrem	4.32E-04 (c)	2.96E-03 (c)	5.75E-03 (c)	2.86E-03 (c)	15.0 mrem	1.20E-02 (c)
Critical Organ		Lung	Thyroid	Thyroid	Thyroid		Thyroid

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

Table 3.1-1 (continued)

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 AND 3 RADIOACTIVE EFFLUENT RELEASE REPORT
January Through December 2005

DOCKET NUMBERS: 50-010, 50-237, 50-249

RADIOLOGICAL IMPACT ON MAN*

UNIT 3

1. Airborne Releases

	Maximum Doses from Airborne Releases					Yearly Obj.	Annual Dose
	Quarterly Obj.	1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	3.31E-04 (e)	3.03E-04 (e)	2.71E-04 (e)	1.42E-04 (e)	10.0 mrad	1.05E-03 (e)
Beta Air (mrad)	10.0 mrad	2.00E-05 (e)	1.85E-05 (e)	1.51E-05 (e)	9.12E-06 (e)	20.0 mrad	6.27E-05 (e)
Total Body (mrem)	2.5 mrem	2.50E-04 (e)	2.29E-04 (e)	2.04E-04 (e)	1.07E-04 (e)	5.0 mrem	7.89E-04 (e)
Skin (mrem)	7.5 mrem	2.73E-04 (e)	2.50E-04 (e)	2.22E-04 (e)	1.17E-04 (e)	15.0 mrem	8.62E-04 (e)
Organ (mrem)	7.5 mrem	3.39E-04 (c)	4.85E-03 (c)	4.16E-03 (c)	1.70E-03 (c)	15.0 mrem	1.08E-02 (c)
Critical Organ		Lung	Thyroid	Thyroid	Thyroid		Thyroid

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

Table 3.3-1 (continued)

10 CFR 20 COMPLIANCE ASSESSMENT

DRESDEN STATION UNIT TWO

PERIOD OF ASSESSMENT 01/01/05 TO 12/31/05

CALCULATED 12/02/08

1. 10 CFR 20.1301 (a)(1) Compliance

Total Effective Dose Equivalent,	mrem/yr	3.50E+00
10 CFR 20.1301 (a)(1) limit	mrem/yr	100.0
	% of limit	3.50

Compliance Summary - 10CFR20

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	% of Limit
TEDE	1.01E+00	7.72E-01	8.96e-01	8.19E-01	3.50

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

10 CFR 20 COMPLIANCE ASSESSMENT

DRESDEN STATION UNIT TWO

PERIOD OF ASSESSMENT 01/01/05 TO 12/31/05

CALCULATED 12/02/08

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body	Plume	3.83E-04		
(DDE)	Skyshine	3.49E+00		
	Ground	9.45E-04		
	Total	3.49E+00	25.0	13.97
Organ Dose	Thyroid	4.95E-03	75.0	0.01
(CDE)	Gonads	4.59E-03	25.0	0.02
	Breast	4.49E-03	25.0	0.02
	Lung	4.51E-03	25.0	0.02
	Marrow	4.52E-03	25.0	0.02
	Bone	4.52E-03	25.0	0.02
	Remainder	4.69E-03	25.0	0.02
	CEDE	4.59E-03		
	TEDE	3.50E+00	100.0	3.50

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

10 CFR 20 COMPLIANCE ASSESSMENT

DRESDEN STATION UNIT THREE

PERIOD OF ASSESSMENT 01/01/05 TO 12/31/05

CALCULATED 06/27/08

1. 10 CFR 20.1301 (a)(1) Compliance

Total Effective Dose Equivalent,	mrem/yr	3.71E+00
10 CFR 20.1301 (a)(1) limit	mrem/yr	100.0
	% of limit	3.71

Compliance Summary - 10CFR20

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	% of Limit
TEDE	1.07E+00	7.19E-01	1.07E+00	8.49E-01	3.71

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

10 CFR 20 COMPLIANCE ASSESSMENT

DRESDEN STATION UNIT THREE

PERIOD OF ASSESSMENT 01/01/05 TO 12/31/05

CALCULATED 06/27/08

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body	Plume	7.89E-04		
(DDE)	Skyshine	3.70E+00		
	Ground	9.29E-04		
	Total	3.71E+00	25.0	14.82
Organ Dose	Thyroid	4.70E-03	75.0	0.01
(CDE)	Gonads	4.31E-03	25.0	0.02
	Breast	4.14E-03	25.0	0.02
	Lung	4.16E-03	25.0	0.02
	Marrow	4.19E-03	25.0	0.02
	Bone	4.18E-03	25.0	0.02
	Remainder	4.46E-03	25.0	0.02
	CEDE	4.30E-03		
	TEDE	3.71E+00	100.0	3.71

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.4-1

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES BASED ON CONCURRENT METEOROLOGICAL DATA

Table deleted.

Attachment D
Corrections to DNPS
2005 Annual Radiological Environmental Operating Report

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

Measured concentrations of noble gases, radioiodine, and particulate radioactivity with half-lives greater than eight days released to the atmosphere during the year, are listed in Table 1.1-1. A total of 7.30E+01 curies of noble gases with a maximum quarterly average release rate of 3.03E+00 µCi/sec were released from Dresden Units 1, 2, and 3.

A total of 1.29E-03 curies of I-131 were released during the year with a maximum average quarterly release rate of 4.77E-05 µCi/sec.

A total of 3.46E-03 curies of particulate activity with half lives greater than eight days were released as airborne particulate matter with a maximum average release rate of 1.29E-04 µCi/sec. Alpha-emitting radionuclides were below LLD for the period. Also, 3.56E+01 curies of tritium were released with a maximum quarterly average release rate of 2.42E+00 µCi/sec.

1.2 Liquids Released to Illinois River

Measured concentrations and isotopic composition of radioactivity released in liquid effluents during the year are listed in Table 1.2-1.

A total of 2.67E+06 liters of radioactive liquid waste containing 5.99E-03 curies of fission and activation products (excluding tritium, noble gases and gross alpha) were discharged from the station. These wastes were released at a maximum quarterly diluted average concentration of 3.38E-08 µCi/ml from all units. During the same period, 1.17E+01 curies of tritium were released with a maximum quarterly average diluted concentration of 4.38E-05 µCi/ml. Alpha-emitting radionuclides were below LLD.

2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck to the Barnwell disposal facility, the Envirocare disposal facility or to waste processors. For more detail, refer the Dresden Station 2005 Annual Radioactive Effluent Release Report.

3.0 DOSE TO MAN

3.1 Gaseous Effluent Pathways

3.1.1 Noble Gases

To demonstrate compliance with the applicable regulations regarding public radiation dose due to gaseous effluents from Dresden Stations, measured isotopic composition and release rates from the station and "historical meteorological data" are used. Assumed "historical meteorological data" use a ten-year average (1/1/1978-12/31/1987) for Dresden Station.

3.1.1.1 Gamma Air and Total Body Dose

Offsite Gamma air and total body dose rates are shown in Table 3.1-1 and were calculated based on measured released rate, isotopic composition of the noble gases, and average meteorological data for the period.

Based on measured effluents and historical meteorological data, the maximum total body dose (from all units) to an individual is calculated to be 1.17E-03 mrem for the year (Table 3.1-1) for the year, with an occupancy or shielding factor of 0.7 included. The maximum gamma air dose based on measured effluents and historical meteorological data was 1.56E-03 mrad (Table 3.1-1).

3.1.1.2 Beta Air and Skin Dose

The range of beta particles in air is relatively small

(on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin and clothing covering sensitive tissues. For purposes of this report the skin is assumed to have a thickness of 7.0 mg/cm^2 and an occupancy factor of 1.0 is used. The skin dose from beta and gamma radiation based on measured effluents and historical meteorological data for the year was 1.28E-03 mrem (Table 3.1-1).

The maximum offsite beta air dose based on measured effluents and historical meteorological data for the year was 9.64E-05 mrad (Table 3.1-1).

3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The radioiodine, I-131, released during routine operation of the station, may be made available to man resulting in a dose to the thyroid. The principal pathway of interest for this radionuclide is ingestion of radioiodine in milk. Calculations made in previous years indicate that contributions to doses from inhalation of I-131 and I-133, and from ingestion of I-133 in milk are negligible.

3.1.2.1 Dose to Thyroid

The hypothetical thyroid dose to the maximum exposed individual living near the station via ingestion of milk was calculated. The radionuclide considered was I-131 and the source of milk was taken to be the nearest dairy farm with the cows pastured from May through October. The maximum thyroid dose did not exceed 2.36E-02 mrem during the year (Table 3.1-1[child]).

3.2 Liquid Effluent Pathways

The three principal pathways for potential dose to man from liquid waste effluents are ingestion of potable water, ingesting aquatic foods, and exposure while on the shoreline. Not all of these pathways are applicable at a given time or station, but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC developed equations* were used to calculate the doses to the whole body, lower GI tracts, thyroid, bone, and skin; specific parameters for use in the equations are given in the Dresden Station Offsite Dose Calculation Manual. The maximum whole body and organ dose for the year was 2.30E-04 mrem (child) and 1.37E-03 mrem (adult), respectively (Table 3.2-1).

3.3 Assessment of Dose to Member of Public

During the period January to December, 2005, Dresden Station did not exceed the following limits as shown in Table 3.1-1 and Table 3.2-1 (based on historical meteorological data), and

- The RETS limits on dose or dose commitment to a member of the public due to radioactive materials in liquid effluents from each reactor unit (1.5 mrem to the total body or 5 mrem to any organ during any calendar year; 3 mrem to the total body or 10 mrem to any organ during the calendar year).

- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (5 mrad for gamma radiation or 10 mrad for beta radiation during any calendar quarter; 10 mrad for gamma radiation or 20 mrad for beta radiation during a calendar year).

- The RETS limits on dose to a member of the public due to Iodine-131, Iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from each reactor unit (7.5 mrem to any organ during any calendar quarter; 15 mrem to any organ during any calendar year).

- The 10CFR20 limit on Total Effective Dose Equivalent to individual members of the public (100 mrem) during any

Attachment E
Corrections to DNPS
2006 Annual Radioactive Effluent Release Report

EFFLUENT AND WASTE DISPOSAL SUMMARY ANNUAL REPORT, SUPPLEMENTAL INFORMATION

Facility: Dresden Nuclear Power Station Units 1,2,3 Licensee: Exelon Nuclear

4. Measurement and Approximations of Total Radioactivity

a. Fission and Activation Gases:
b. Iodines:
c. Particulates:

The Units 2/3 and Unit 1 Chimneys, Units 2/3 Reactor Building Vent, and Chemical Cleaning Building effluents are continually sampled for iodines and particulates. These samples are changed weekly and analyzed by gamma spectroscopy. The particulate filters are composited and sent to a vendor for gross alpha, Sr-89, Sr-90, and Fe-55 analysis. Noble gas grab samples of the Chimneys and Vent are obtained weekly and analyzed by gamma spectroscopy. Contributing streams of the Units 2/3 Chimney and 2/3 Reactor Building Vent are also sampled and analyzed by gamma spectroscopy. Tritium samples of the Chimneys and Vent are obtained monthly and analyzed by liquid scintillation.

For the Units 2/3 Chimney and Units 2/3 Reactor Building Vent effluents, the measured flow at the release points is used to calculate the curies released. For the Unit 1 Chimney and Chemical Cleaning Building effluents, the design basis flows are used to calculate curies released.

d. Liquid Effluents:

The river discharge tank is analyzed for gamma-emitting nuclides by gamma spectroscopy and for tritium by liquid scintillation prior to discharge. A representative portion of this sample is saved and composited with other discharges that occur during the sampling period. The composite is sent to a vendor for analyses of gross alpha, Sr-89, Sr-90, and Fe-55.

The tank volumes and activities are used to calculate the diluted activity released at the discharge point from batch discharges.

e. Estimated Total Errors

The estimated total errors were calculated as the square root of the sum of the squares of significant errors present in the sampling and analysis process.

f. Less than the Lower Limit of Detection (<LLD)

Samples are analyzed such that the ODCM LLD requirements are met. When a nuclide is not detected, then <LLD is reported.

g. Estimation of Data/Corrections:

The Units 2/3 Main Chimney particulate and iodine sampling and noble gas monitoring were interrupted from 1056 on October 26, 2006 until 1400 on October 27, 2006. Radioactive noble gases measured at the monitor are determined to be less than detectable based on measurements for the current month and the previous three months. The particulate and iodine activities are determined by averaging the measured concentrations for the balance of the month and applying these averages to the time period that sampling was interrupted.

In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition began in late April 2004. Per the ODCM, if 2/3 Main Chimney actual system flow rate is not available, the design flow rate of 1.25E+10 cc/min can be used. This flow rate is conservative because it is higher than the actual value. This flow rate was applied to 2/3 Main Chimney noble gas, particulate, iodine, and tritium measurements for the entirety of 2006. Units 2 and 3 gland seal and offgas effluent activity release calculations were not affected because they do not use the 2/3 Main Chimney flow rate meter.

DRESDEN NUCLEAR POWER STATION
2006 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
January through December 2006

EFFLUENT AND WASTE DISPOSAL SUMMARY ANNUAL REPORT 2006
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

DOCKET NUMBERS: 50-010/50-237/50-249

	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. Fission & activation gases						
1. Total release	Ci	9.75E+00	8.44E+00	6.59E+01	1.78E+02	1.24E+01
2. Average release rate for period	µCi/sec	1.25E+00	1.07E+00	8.29E+00	2.24E+01	
3. Percent of Technical specification limit	%	*	*	*	*	
B. Iodines						
1. Total iodine-131	Ci	1.36E-04	2.32E-04	2.90E-04	2.87E-04	3.08E+01
2. Average release rate for period (I-131)	µCi/sec	1.75E-05	2.95E-05	3.64E-05	3.61E-05	
3. Percent of technical specification limit	%	*	*	*	*	
C. Particulates						
1. Particulates with half-lives > 8 days	Ci	6.40E-04	3.92E-04	1.29E-03	3.42E-03	2.80E+01
2. Average release rate for period	µCi/sec	8.23E-05	4.99E-05	1.62E-04	4.30E-04	
3. Percent of technical specification limit	%	*	*	*	*	
4. Gross alpha radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. Tritium						
1. Total release	Ci	5.62E+00	7.02E+00	1.56E+01	4.12E+00	7.55E+00
2. Average release rate for period	µCi/sec	7.22E-01	8.93E-01	1.96E+00	5.18E-01	
3. Percent of technical specification Limit	%	*	*	*	*	

* Applicable limits have been removed from the Technical Specifications. The comparison to ODCM limits is contained in the Radiological Impact on Man section of the report. Total airborne release data are provided which include fission and activation gases, iodines, particulates, and tritium.

DRESDEN NUCLEAR POWER STATION
2006 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
January through December 2006

EFFLUENT AND WASTE DISPOSAL SUMMARY ANNUAL REPORT 2006

UNITS 2/3 MAIN CHIMNEY | GASEOUS EFFLUENTS | DOCKET NUMBERS: 50-237/50-249

_____ GROUND LEVEL RELEASES
_____ SEMI-ELEVATED RELEASES
XX ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci	2.42E-01	2.08E-01	2.00E+01	3.66E+01	5.71E+01
Kr-85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-85m	Ci	1.76E-01	9.49E-02	3.33E+00	9.57E+00	1.32E+01
Kr-87	Ci	2.90E-01	2.83E-01	7.19E+00	2.30E+01	3.07E+01
Kr-88	Ci	2.28E-01	1.97E-01	8.86E+00	2.80E+01	3.73E+01
Xe-131m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	4.56E-01	2.85E-01	2.04E+00	4.20E+00	6.98E+00
Xe-133m	Ci	<LLD	<LLD	1.32E-01	3.02E-01	4.34E-01
Xe-135	Ci	2.54E+00	1.53E+00	1.72E+01	4.98E+01	7.11E+01
Xe-135m	Ci	1.19E+00	1.20E+00	1.54E+00	1.98E+00	5.90E+00
Xe-138	Ci	4.63E+00	4.64E+00	5.58E+00	7.50E+00	2.23E+01
TOTAL	Ci	9.75E+00	8.44E+00	6.59E+01	1.61E+02	2.45E+02
IODINES						
I-131	Ci	1.36E-04	2.32E-04	2.90E-04	2.76E-04	9.34E-04
I-133	Ci	6.16E-04	9.21E-04	1.53E-03	1.05E-03	4.12E-03
I-135	Ci	8.97E-06	<LLD	<LLD	<LLD	8.97E-06
TOTAL	Ci	7.61E-04	1.15E-03	1.82E-03	1.32E-03	5.06E-03
PARTICULATES						
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-89	Ci	2.28E-04	1.11E-05	<LLD	6.74E-05	3.07E-04
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	5.63E-05	4.69E-05	2.03E-04	9.81E-04	1.29E-03
Co-57	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	2.77E-05	1.14E-04	1.42E-04
Fe-59	Ci	<LLD	<LLD	<LLD	2.72E-04	2.72E-04
Co-60	Ci	8.19E-05	1.16E-04	4.02E-04	1.18E-03	1.78E-03
Zn-65	Ci	<LLD	4.54E-06	1.77E-04	2.96E-04	4.77E-04
Sr-85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Y-88	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Zr-95	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	2.49E-05	1.63E-04	1.29E-04	3.16E-04
Ru-103	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	3.20E-05	1.40E-05	4.60E-05
Sn-113	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sn-117m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-136	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	1.58E-04	1.68E-04	2.49E-04	1.43E-04	7.17E-04
Hg-203	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
TOTAL	Ci	5.24E-04	3.71E-04	1.25E-03	3.20E-03	5.35E-03

DRESDEN NUCLEAR POWER STATION
2006 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
January through December 2006

EFFLUENT AND WASTE DISPOSAL SUMMARY ANNUAL REPORT 2006

CHEMICAL CLEANING BUILDING GASEOUS EFFLUENTS DOCKET NUMBERS: 50-010/50-237/50-249

	GROUND LEVEL RELEASES
XX	SEMI-ELEVATED RELEASES
	ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci					
Kr-85	Ci					
Kr-85m	Ci					
Kr-87	Ci					
Kr-88	Ci					
Xe-133	Ci					
Xe-133m	Ci					
Xe-135	Ci					
Xe-135m	Ci					
Xe-138	Ci					
TOTAL	Ci	None	None	None	None	None
IODINES						
I-131	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
I-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
TOTAL	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
PARTICULATES						
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-89	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	1.42E-07	<LLD	<LLD	1.42E-07
Co-57	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	2.72E-07	9.76E-07	6.48E-07	<LLD	1.90E-06
Zn-65	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Zr-95	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ru-103	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sn-113	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sb-124	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sb-125	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-136	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
TOTAL	Ci	2.72E-07	1.12E-06	6.48E-07	<LLD	2.04E-06

RADIOLOGICAL IMPACT ON MAN*

B. UNIT 2 Docket Number: 50-237

1. Airborne Releases

	Quarterly Limit	Maximum Doses from Airborne Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	6.13E-05 (e)	6.16E-05 (e)	1.50E-03 (e)	3.81E-03 (e)	10.0 mrad	5.43E-03 (e)
Beta Air (mrad)	10.0 mrad	4.17E-06 (e)	3.96E-06 (e)	1.02E-04 (e)	5.34E-04 (e)	20.0 mrad	6.39E-04 (e)
Total Body (mrem)	2.5 mrem	4.62E-05 (e)	4.64E-05 (e)	1.78E-03 (e)	5.36E-03 (e)	5.0 mrem	7.21E-03 (e)
Skin (mrem)	7.5 mrem	5.09E-05 (e)	5.10E-05 (e)	1.25E-03 (e)	3.26E-03 (e)	15.0 mrem	4.61E-03 (e)
Organ (mrem)	7.5 mrem	5.16E-04 (a)	4.51E-03 (c)	9.84E-03 (c)	1.83E-03 (c)	15.0 mrem	1.66E-02 (c)
Critical Organ		GI LLI	Thyroid	Thyroid	Thyroid		Thyroid

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air	5.0 mrad	1.23E-03	1.23E-03	3.00E-02	7.62E-02	10.0 mrad	5.43E-02
Beta Air	10.0 mrad	4.17E-05	3.96E-05	1.02E-03	5.34E-03	20.0 mrad	3.20E-03
Total Body	2.5 mrem	1.85E-03	1.86E-03	7.12E-02	2.14E-01	5.0 mrem	1.44E-01
Skin	7.5 mrem	6.79E-04	6.80E-04	1.67E-02	4.35E-02	15.0 mrem	3.07E-02
Organ	7.5 mrem	6.88E-03	6.01E-02	1.31E-01	2.44E-02	15.0 mrem	1.11E-01

2. Liquid Releases

	Quarterly Limit	Maximum Doses from Liquid Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	1.36E-05 (c)	2.52E-05 (a)	8.40E-05 (a)	4.53E-05 (a)	3.0 mrem	1.66E-04 (a)
Organ (mrem)	5.0 mrem	1.97E-05 (a)	3.60E-05 (c)	1.30E-04 (t)	8.29E-05 (a)	10.0 mrem	2.60E-04 (a)
Critical Organ		GI LLI	Liver	Liver	Liver		Liver

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body	1.5 mrem	9.07E-04	1.68E-03	5.60E-03	3.02E-03	3.0 mrem	5.53E-03
Organ	5.0 mrem	3.94E-04	7.20E-04	2.60E-03	1.66E-03	10.0 mrem	2.60E-03

3. Direct Radiation

The calculated direct radiation exposure to a member of the public due to Unit 2 turbine building skyshine was 4.14E+00 mrem during 2006.

4. Total Dose Assessment

The maximum calculated Total Effective Dose Equivalent exposure to a member of the public as the result of Unit 2 operations during 2006 is 4.15E+00 mrem. The maximum calculated Committed Effective Dose Equivalent exposure to a member of the public as the result of Unit 2 operations during 2006 is 6.39E-03 mrem.

*The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

RADIOLOGICAL IMPACT ON MAN*

C. UNIT 3 DOCKET NUMBER: 50-249

1. Airborne Releases

	Quarterly Limit	Maximum Doses from Airborne Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	1.20E-04 (e)	1.11E-04 (e)	1.08E-04 (e)	1.47E-04 (e)	10.0 mrad	4.87E-04 (e)
Beta Air (mrad)	10.0 mrad	8.47E-06 (e)	7.24E-06 (e)	6.38E-06 (e)	8.12E-06 (e)	20.0 mrad	3.02E-05 (e)
Total Body (mrem)	2.5 mrem	9.09E-05 (e)	8.36E-05 (e)	8.18E-05 (e)	1.11E-04 (e)	5.0 mrem	3.67E-04 (e)
Skin (mrem)	7.5 mrem	1.00E-04 (e)	9.18E-05 (e)	8.92E-05 (e)	1.21E-04 (e)	15.0 mrem	4.02E-04 (e)
Organ (mrem)	7.5 mrem	5.60E-04 (a)	3.83E-03 (c)	8.69E-03 (c)	1.87E-03 (c)	15.0 mrem	1.48E-02 (c)
Critical Organ		GI LLI	Thyroid	Thyroid	Thyroid		Thyroid

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air	5.0 mrad	2.40E-03	2.22E-03	2.16E-03	2.94E-03	10.0 mrad	4.87E-03
Beta Air	10.0 mrad	8.47E-05	7.24E-05	6.38E-05	8.12E-05	20.0 mrad	1.51E-04
Total Body	2.5 mrem	3.64E-03	3.34E-03	3.27E-03	4.44E-03	5.0 mrem	7.34E-03
Skin	7.5 mrem	1.33E-03	1.22E-03	1.19E-03	1.61E-03	15.0 mrem	2.68E-03
Organ	7.5 mrem	7.47E-03	5.11E-02	1.16E-01	2.49E-02	15.0 mrem	9.87E-02

2. Liquid Releases

	Quarterly Limit	Maximum Doses from Liquid Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	1.45E-05 (c)	2.52E-05 (a)	8.40E-05 (a)	5.03E-05 (a)	3.0 mrem	1.72E-04 (a)
Organ (mrem)	5.0 mrem	2.03E-05 (a)	3.60E-05 (c)	1.30E-04 (t)	8.78E-05 (a)	10.0 mrem	2.66E-04 (a)
Critical Organ		GI LLI	Liver	Liver	Liver		Liver

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body	1.5 mrem	9.67E-04	1.68E-03	5.60E-03	3.35E-03	3.0 mrem	5.73E-03
Organ	5.0 mrem	4.06E-04	7.20E-04	2.60E-03	1.76E-03	10.0 mrem	2.66E-03

3. Direct Radiation

The maximum calculated direct radiation exposure to a member of the public due to Unit 3 turbine building skyshine was 4.08E+00 mrem during 2006.

4. Total Dose Assessment

The maximum calculated Total Effective Dose Equivalent exposure to a member of the public as the result of Unit 3 operations during 2006 is 4.08E+00 mrem. The maximum calculated Committed Effective Dose Equivalent exposure to a member of the public as the result of Unit 3 operations during 2006 is 5.73E-03 mrem.

*The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

RADIOLOGICAL IMPACT ON MAN*

DOCKET NUMBERS: 50-010/50-237/50-249

D. 40CFR190 Compliance

The General Electric Morris Operation (GEMO) facility is physically located near Dresden Station and is considered in the evaluation of the uranium fuel cycle on members of the public in the general environment for 40CFR190 compliance. The sum of the maximum doses from the units at Dresden Station is 8.23E+00 mrem. Per the 2006 GEMO 10CFR72.44(d)(3) report, the maximum dose that could be received from that facility is calculated to be 4.25E-01 mrem. A conservative estimate of the maximum dose to a member of the public in the general environment as a result of the uranium fuel cycle in the area surrounding Dresden Station is 8.66E+00 mrem, and the dose limits of 40CFR190 (annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ) are not approached or exceeded.

E. Equipment Out of Service

1. The Unit 3 Service Water Effluent Radiation Monitor was out of service from 0449 on March 27, 2006 until 1320 on April 26, 2006. The monitor was declared inoperable when the sample pump tripped. The monitor was out of service for greater than 30 days due to difficulty locating the cause of the pump trip. Contingency grab sampling and analysis was performed as required during the monitor's inoperability. This inoperability of greater than 30 days is being reported per Dresden ODCM Section 12.2.A.1.3.

2. The Units 2/3 Main Chimney particulate and iodine sampling and noble gas monitoring were interrupted from 1056 on October 26, 2006 until 1400 on October 27, 2006. Primary monitoring equipment was inoperable for a planned surveillance and backup monitoring equipment was left in purge mode due to personnel error, rendering on-line sampling and monitoring inoperable. Contingency sampling was not performed because the station was not aware of the condition. Monitoring was restored immediately upon discovery of the event.

3. In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition affected the entirety of 2006.

Attachment F
Corrections to DNPS
2006 Annual Radiological Environmental Operating Report

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

Measured concentrations of noble gases, radioiodine, and particulate radioactivity with half-lives greater than eight days released to the atmosphere during the year, are listed in Table 1.1-1. A total of 2.62E+02 curies of noble gases with a maximum quarterly average release rate of 2.24E+01 µCi/sec were released from Dresden Units 1, 2, and 3.

A total of 9.45E-04 curies of I-131 were released during the year with a maximum average quarterly release rate of 3.64E-05 µCi/sec.

A total of 5.74E-03 curies of particulate activity with half lives greater than eight days were released as airborne particulate matter with a maximum quarterly average release rate of 4.30E-04 µCi/sec. Alpha-emitting radionuclides were below LLD for the period. Also, 3.24E+01 curies of tritium were released with a maximum quarterly average release rate of 1.96E+00 µCi/sec.

1.2 Liquids Released to Illinois River

Measured concentrations and isotopic composition of radioactivity released in liquid effluents during the year are listed in Table 1.2-1.

A total of 8.45E+06 liters of radioactive liquid waste containing 3.13E-02 curies of fission and activation products (excluding tritium, noble gases and gross alpha) were discharged from the station. These wastes were released at a maximum quarterly diluted average concentration of 6.40E-08 µCi/ml from the station. During the same period, 1.10E+01 curies of tritium were released with a maximum quarterly average diluted concentration of 4.64E-05 µCi/ml. Alpha-emitting radionuclides were below LLD.

2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck to the Barnwell disposal facility, the Envirocare disposal facility or to waste processors. For more detail, refer the Dresden Station 2006 Annual Radioactive Effluent Release Report.

3.0 DOSE TO MAN

3.1 Gaseous Effluent Pathways

3.1.1 Noble Gases

To demonstrate compliance with the applicable regulations regarding public radiation dose due to gaseous effluents from Dresden Station, measured isotopic composition and release rates from the station and "historical meteorological data" are used. Assumed "historical meteorological data" use a ten-year average (1/1/1978-12/31/1987) for Dresden Station.

3.1.1.1 Gamma Air and Total Body Dose

Offsite Gamma air and total body dose rates are shown in Table 3.1-1 and were calculated based on measured released rate, isotopic composition of the noble gases, and average meteorological data for the period.

Based on measured effluents and historical meteorological data, the maximum total body dose (from all units) to an individual is calculated to be 7.58E-03 mrem for the year (Table 3.1-1) for the year, with an occupancy or shielding factor of 0.7 included. The maximum gamma air dose based on measured effluents and historical meteorological data was 5.92E-03 mrad (Table 3.1-1).

3.1.1.2 Beta Air and Skin Dose

The range of beta particles in air is relatively small

(on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin and clothing covering sensitive tissues. For purposes of this report the skin is assumed to have a thickness of 7.0 mg/cm^2 and an occupancy factor of 1.0 is used. The skin dose from beta and gamma radiation based on measured effluents and historical meteorological data for the year was 5.01E-03 mrem (Table 3.1-1).

The maximum offsite beta air dose based on measured effluents and historical meteorological data for the year was 6.69E-04 mrad (Table 3.1-1).

3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The radioiodine, I-131, released during routine operation of the station, may be made available to man resulting in a dose to the thyroid. The principal pathway of interest for this radionuclide is ingestion of radioiodine in milk. Calculations made in previous years indicate that contributions to doses from inhalation of I-131 and I-133, and from ingestion of I-133 in milk are negligible.

3.1.2.1 Dose to Thyroid

The hypothetical thyroid dose to the maximum exposed individual living near the station via ingestion of milk was calculated. The radionuclide considered was I-131 and the source of milk was taken to be the nearest dairy farm with the cows pastured from May through October. The maximum thyroid dose did not exceed 3.22E-02 mrem during the year (Table 3.1-1[child]).

3.2 Liquid Effluent Pathways

The three principal pathways for potential dose to man from liquid waste effluents are ingestion of potable water, ingesting aquatic foods, and exposure while on the shoreline. Not all of these pathways are applicable at a given time or station, but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC developed equations* were used to calculate the doses to the whole body, lower GI tracts, thyroid, bone, and skin; specific parameters for use in the equations are given in the Dresden Station Offsite Dose Calculation Manual. The maximum whole body and organ dose for the year was 3.38E-04 mrem and 5.26E-04 mrem, respectively (adult, Table 3.2-1).

3.3 Assessment of Dose to Member of Public

During the period January to December, 2006, Dresden Station did not exceed the following limits as shown in Table 3.1-1 and Table 3.2-1 (based on historical meteorological data) and

- The RETS limits on dose or dose commitment to a member of the public due to radioactive materials in liquid effluents from each reactor unit (1.5 mrem to the total body or 5 mrem to any organ during any calendar year; 3 mrem to the total body or 10 mrem to any organ during the calendar year).

- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (5 mrad for gamma radiation or 10 mrad for beta radiation during any calendar quarter; 10 mrad for gamma radiation or 20 mrad for beta radiation during a calendar year).

- The RETS limits on dose to a member of the public due to Iodine-131, Iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from each reactor unit (7.5 mrem to any organ during any calendar quarter; 15 mrem to any organ during any calendar year).

- The 10CFR20 limit on Total Effective Dose Equivalent to individual members of the public (100 mrem) during any calendar year.

Table 1.1-1

GASEOUS EFFLUENTS SUMMATION OF ALL GASEOUS RELEASES

DRESDEN NUCLEAR POWER STATION
January Through December 2006

DOCKET NUMBERS: 50-010/50-237/50-249

	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. Fission & activation gases						
1. Total release	Ci	9.75E+00	8.44E+00	6.59E+01	1.78E+02	1.24E+01
2. Average release rate for period	µCi/sec	1.25E+00	1.07E+00	8.29E+00	2.24E+01	
B. Iodines						
1. Total iodine-131	Ci	1.36E-04	2.32E-04	2.90E-04	2.87E-04	3.08E+01
2. Average release rate for period (I-131)	µCi/sec	1.75E-05	2.95E-05	3.64E-05	3.61E-05	
C. Particulates						
1. Particulates with half-lives > 8 days	Ci	6.40E-04	3.92E-04	1.29E-03	3.42E-03	2.80E+01
2. Average release rate for period	µCi/sec	8.23E-05	4.99E-05	1.62E-04	4.30E-04	
3. Gross alpha radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. Tritium						
1. Total release	Ci	5.62E+00	7.02E+00	1.56E+01	4.12E+00	7.55E+00
2. Average release rate for period	µCi/sec	7.22E-01	8.93E-01	1.96E+00	5.18E-01	

Table 3.1-1

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

DRESDEN NUCLEAR POWER STATION
January Through December 2006

DOCKET NUMBERS: 50-010/50-237/50-249

1. Unit 1

	Quarterly Limit	Maximum Doses from Airborne Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	10.0 mrad	0.00E+00 (e)
Beta Air (mrad)	10.0 mrad	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	20.0 mrad	0.00E+00 (e)
Total Body (mrem)	2.5 mrem	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	5.0 mrem	0.00E+00 (e)
Skin (mrem)	7.5 mrem	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	0.00E+00(e)	15.0 mrem	0.00E+00 (e)
Organ (mrem)	7.5 mrem	2.17E-06(c)	6.17E-06(t)	4.81E-06(c)	7.84E-04(i,c)	15.0 mrem	7.94E-04 (c)
Critical Organ		Lung	GI_LLI	GI_LLI	Liver (i) Bone (c)		Liver

2. Unit 2

	Quarterly Limit	Maximum Doses from Airborne Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	6.13E-05 (e)	6.16E-05 (e)	1.50E-03 (e)	3.81E-03 (e)	10.0 mrad	5.43E-03 (e)
Beta Air (mrad)	10.0 mrad	4.17E-06 (e)	3.96E-06 (e)	1.02E-04 (e)	5.34E-04 (e)	20.0 mrad	6.39E-04 (e)
Total Body (mrem)	2.5 mrem	4.62E-05 (e)	4.64E-05 (e)	1.78E-03 (e)	5.36E-03 (e)	5.0 mrem	7.21E-03 (e)
Skin (mrem)	7.5 mrem	5.09E-05 (e)	5.10E-05 (e)	1.25E-03 (e)	3.26E-03 (e)	15.0 mrem	4.61E-03 (e)
Organ (mrem)	7.5 mrem	5.16E-04 (a)	4.51E-03 (c)	9.84E-03 (c)	1.83E-03 (c)	15.0 mrem	1.66E-02 (c)
Critical Organ		GI_LLI	Thyroid	Thyroid	Thyroid		Thyroid

3. Unit 3

	Quarterly Limit	Maximum Doses from Airborne Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	1.20E-04 (e)	1.11E-04 (e)	1.08E-04 (e)	1.47E-04 (e)	10.0 mrad	4.87E-04 (e)
Beta Air (mrad)	10.0 mrad	8.47E-06 (e)	7.24E-06 (e)	6.38E-06 (e)	8.12E-06 (e)	20.0 mrad	3.02E-05 (e)
Total Body (mrem)	2.5 mrem	9.09E-05 (e)	8.36E-05 (e)	8.18E-05 (e)	1.11E-04 (e)	5.0 mrem	3.67E-04 (e)
Skin (mrem)	7.5 mrem	1.00E-04 (e)	9.18E-05 (e)	8.92E-05 (e)	1.21E-04 (e)	15.0 mrem	4.02E-04 (e)
Organ (mrem)	7.5 mrem	5.60E-04 (a)	3.83E-03 (c)	8.69E-03 (c)	1.87E-03 (c)	15.0 mrem	1.48E-02 (c)
Critical Organ		GI_LLI	Thyroid	Thyroid	Thyroid		Thyroid

* The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value.

Table 3.3-1 (continued)

10 CFR 20 COMPLIANCE ASSESSMENT

DRESDEN STATION UNIT TWO

PERIOD OF ASSESSMENT 01/01/06 TO 12/31/06

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body	Plume	7.21E-03		
(DDE)	Skyshine	4.14E+00		
	Ground	9.57E-04		
	Total	4.14E+00	25.0	16.57
Organ Dose	Thyroid	6.74E-03	75.0	0.01
(CDE)	Gonads	6.37E-03	25.0	0.03
	Breast	6.33E-03	25.0	0.03
	Lung	6.34E-03	25.0	0.03
	Marrow	6.36E-03	25.0	0.03
	Bone	6.35E-03	25.0	0.03
	Remainder	6.44E-03	25.0	0.03
	CEDE	6.39E-03		
	TEDE	4.15E+00	100.0	4.15

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

10 CFR 20 COMPLIANCE ASSESSMENT

DRESDEN STATION UNIT THREE

PERIOD OF ASSESSMENT 01/01/06 TO 12/31/06

1. 10 CFR 20.1301 (a)(1) Compliance

Total Effective Dose Equivalent,	mrem/yr	4.08E+00
10 CFR 20.1301 (a)(1) limit	mrem/yr	100.0
	% of limit	4.08

Compliance Summary - 10CFR20

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	% of Limit
TEDE	1.07E+00	1.08E+00	1.09E+00	8.48E-01	4.08

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.3-1 (continued)

10 CFR 20 COMPLIANCE ASSESSMENT

DRESDEN STATION UNIT THREE

PERIOD OF ASSESSMENT 01/01/06 TO 12/31/06

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body	Plume	3.67E-04		
(DDE)	Skyshine	4.08E+00		
	Ground	1.28E-03		
	Total	4.08E+00	25.0	16.31
Organ Dose	Thyroid	6.02E-03	75.0	0.01
(CDE)	Gonads	5.71E-03	25.0	0.02
	Breast	5.67E-03	25.0	0.02
	Lung	5.68E-03	25.0	0.02
	Marrow	5.69E-03	25.0	0.02
	Bone	5.68E-03	25.0	0.02
	Remainder	5.77E-03	25.0	0.02
	CEDE	5.73E-03		
	TEDE	4.08E+00	100.0	4.08

RESULTS BASED UPON: ODCM ANNEX REVISION 1.1 JULY 1994
ODCM SOFTWARE VERSION 1.1 January 1995
ODCM DATABASE VERSION 1.1 January 1995

Table 3.4-1

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES BASED ON CONCURRENT METEOROLOGICAL DATA

Table deleted.

Attachment G
Corrections to DNPS
2007 Annual Radioactive Effluent Release Report

EFFLUENT AND WASTE DISPOSAL SUMMARY ANNUAL REPORT, SUPPLEMENTAL INFORMATION

Facility: Dresden Nuclear Power Station Units 1,2,3 Licensee: Exelon Nuclear

4. Measurement and Approximations of Total Radioactivity

a. Fission and Activation Gases:
b. Iodines:
c. Particulates:

The Units 2/3 and Unit 1 Chimneys, Units 2/3 Reactor Building Vent, and Chemical Cleaning Building effluents are continually sampled for iodines and particulates. These samples are changed weekly and analyzed by gamma spectroscopy. The particulate filters are composited and sent to a vendor for gross alpha, Sr-89, Sr-90, and Fe-55 analysis. Noble gas grab samples of the Chimneys and Vent are obtained weekly and analyzed by gamma spectroscopy. Contributing streams of the Units 2/3 Chimney and 2/3 Reactor Building Vent are also sampled and analyzed by gamma spectroscopy. Tritium samples of the Chimneys and Vent are obtained monthly and analyzed by liquid scintillation.

For the Units 2/3 Chimney and Units 2/3 Reactor Building Vent effluents, the measured flow at the release points is used to calculate the curies released. For the Unit 1 Chimney and Chemical Cleaning Building effluents, the design basis flows are used to calculate curies released.

d. Liquid Effluents:

The river discharge tank is analyzed for gamma-emitting nuclides by gamma spectroscopy and for tritium by liquid scintillation prior to discharge. A representative portion of this sample is saved and composited with other discharges that occur during the sampling period. The composite is sent to a vendor for analyses of gross alpha, Sr-89, Sr-90, and Fe-55.

The tank volumes and activities are used to calculate the diluted activity released at the discharge point from batch discharges.

e. Estimated Total Errors

The estimated total errors were calculated as the square root of the sum of the squares of significant errors present in the sampling and analysis process.

f. Less than the Lower Limit of Detection (<LLD)

Samples are analyzed such that the ODCM LLD requirements are met. When a nuclide is not detected, then <LLD is reported.

g. Estimation of Data/Corrections:

The Units 2/3 Main Chimney particulate and iodine sampling was interrupted on July 21, 2007 from 1415 to 1800 due to personnel error (inadvertent mis-positioning of a flow control switch). The particulate and iodine activities are determined by applying the measured concentrations for the balance of the sampling period to the time period that sampling was interrupted.

In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition began in late April 2004. Per the ODCM, if 2/3 Main Chimney actual system flow rate is not available, the design flow rate of 1.25E+10 cc/min can be used. This flow rate is conservative because it is higher than the actual value. This flow rate was applied to 2/3 Main Chimney noble gas, particulate, iodine, and tritium measurements for the entirety of 2007. Units 2 and 3 gland seal and offgas effluent activity release calculations were not affected because they do not use the 2/3 Main Chimney flow rate meter.

DRESDEN NUCLEAR POWER STATION
2007 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
January through December 2007

EFFLUENT AND WASTE DISPOSAL SUMMARY ANNUAL REPORT 2007
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

DOCKET NUMBERS: 50-010/50-237/50-249

	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. Fission & activation gases						
1. Total release	Ci	1.76E+02	8.90E+01	2.59E+01	2.37E+01	1.31E+01
2. Average release rate for period	µCi/sec	2.27E+01	1.13E+01	3.25E+00	2.98E+00	
3. Percent of Technical specification limit	%	*	*	*	*	
B. Iodines						
1. Total iodine-131	Ci	1.84E-04	4.94E-04	5.46E-04	4.07E-04	2.60E+01
2. Average release rate for period (I-131)	µCi/sec	2.37E-05	6.28E-05	6.87E-05	5.12E-05	
3. Percent of technical specification limit	%	*	*	*	*	
C. Particulates						
1. Particulates with half-lives > 8 days	Ci	3.63E-04	9.05E-04	1.07E-03	1.38E-03	2.94E+01
2. Average release rate for period	µCi/sec	4.67E-05	1.15E-04	1.35E-04	1.74E-04	
3. Percent of technical specification limit	%	*	*	*	*	
4. Gross alpha radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. Tritium						
1. Total release	Ci	4.99E+00	6.58E+00	4.90E+00	4.58E+00	7.56E+00
2. Average release rate for period	µCi/sec	6.42E-01	8.36E-01	6.16E-01	5.76E-01	
3. Percent of technical specification Limit	%	*	*	*	*	

* Applicable limits have been removed from the Technical Specifications. The comparison to ODCM limits is contained in the Radiological Impact on Man section of this report. Total airborne release data are provided which include fission and activation gases, iodines, particulates, and tritium.

DRESDEN NUCLEAR POWER STATION
2007 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
January through December 2007

EFFLUENT AND WASTE DISPOSAL SUMMARY ANNUAL REPORT 2007

UNITS 2/3 MAIN CHIMNEY | GASEOUS EFFLUENTS | DOCKET NUMBERS: 50-237/50-249

_____ GROUND LEVEL RELEASES
_____ SEMI-ELEVATED RELEASES
XX ELEVATED RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	1st QTR	2nd QTR	3rd QTR	4th QTR	TOTAL
FISSION GASES						
Ar-41	Ci	3.18E+01	8.65E+00	6.08E-01	4.94E-01	4.16E+01
Kr-85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-85m	Ci	1.11E+01	5.39E+00	2.01E-01	2.14E-01	1.69E+01
Kr-87	Ci	2.73E+01	1.11E+01	4.24E-01	4.06E-01	3.92E+01
Kr-88	Ci	3.23E+01	1.48E+01	3.01E-01	2.50E-01	4.77E+01
Xe-131m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	5.21E+00	3.20E+00	6.56E-01	6.72E-01	9.74E+00
Xe-133m	Ci	3.94E-01	1.79E-01	<LLD	<LLD	5.73E-01
Xe-135	Ci	5.69E+01	3.40E+01	8.67E+00	1.06E+01	1.10E+02
Xe-135m	Ci	2.66E+00	2.06E+00	2.10E+00	2.28E+00	9.09E+00
Xe-138	Ci	8.73E+00	7.47E+00	1.29E+01	8.77E+00	3.79E+01
TOTAL	Ci	1.76E+02	8.68E+01	2.59E+01	2.37E+01	3.13E+02
IODINES						
I-131	Ci	1.84E-04	4.93E-04	5.43E-04	3.91E-04	1.61E-03
I-133	Ci	6.93E-04	1.93E-03	2.20E-03	9.58E-04	5.77E-03
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
TOTAL	Ci	8.77E-04	2.42E-03	2.74E-03	1.35E-03	7.38E-03
PARTICULATES						
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-89	Ci	1.01E-04	1.88E-04	9.80E-05	1.44E-04	5.32E-04
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	5.38E-05	1.58E-04	1.59E-04	1.59E-04	5.30E-04
Co-57	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	7.46E-06	7.46E-06
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	7.51E-05	2.09-04	2.11E-04	1.87E-04	6.81E-04
Zn-65	Ci	<LLD	1.62E-05	<LLD	4.00E-05	5.62E-05
Sr-85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Y-88	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Zr-95	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	5.10E-06	<LLD	5.10E-06
Ru-103	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	5.75E-06	1.90E-05	<LLD	2.47E-05
Sn-113	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Sn-117m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	8.54E-05	2.53E-04	5.67E-04	4.72E-04	1.38E-03
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD
TOTAL	Ci	3.16E-04	8.30E-04	1.06E-03	1.01E-03	3.21E-03

DRESDEN NUCLEAR POWER STATION
2007 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
January through December 2007

RADIOLOGICAL IMPACT ON MAN*

B. UNIT 2 Docket Number: 50-237

1. Airborne Releases

	Quarterly Limit	Maximum Doses from Airborne Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	3.98E-03 (e)	1.22E-03 (e)	1.30E-04 (e)	5.98E-05 (e)	10.0 mrad	5.39E-03 (e)
Beta Air (mrad)	10.0 mrad	3.01E-04 (e)	9.36E-05 (e)	9.16E-06 (e)	4.83E-06 (e)	20.0 mrad	4.09E-04 (e)
Total Body (mrem)	2.5 mrem	6.06E-03 (e)	1.86E-03 (e)	9.78E-05 (e)	4.51E-05 (e)	5.0 mrem	8.00E-03 (e)
Skin (mrem)	7.5 mrem	3.34E-03 (e)	1.02E-03 (e)	1.08E-04 (e)	5.02E-05 (e)	15.0 mrem	4.52E-03 (e)
Organ (mrem)	7.5 mrem	9.25E-05 (c)	1.81E-03 (c)	1.20E-03 (c)	5.09E-04 (c)	15.0 mrem	3.61E-03 (c)
Critical Organ		Lung	Thyroid	Thyroid	Thyroid		Thyroid

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air	5.0 mrad	7.96E-02	2.44E-02	2.60E-03	1.20E-03	10.0 mrad	5.39E-02
Beta Air	10.0 mrad	3.01E-03	9.36E-04	9.16E-05	4.83E-05	20.0 mrad	2.05E-03
Total Body	2.5 mrem	2.42E-01	7.44E-02	3.91E-03	1.80E-03	5.0 mrem	1.60E-01
Skin	7.5 mrem	4.45E-02	1.36E-02	1.44E-03	6.69E-04	15.0 mrem	3.01E-02
Organ	7.5 mrem	1.23E-03	2.41E-02	1.60E-02	6.79E-03	15.0 mrem	2.41E-02

2. Liquid Releases

	Quarterly Limit	Maximum Doses from Liquid Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	8.13E-06 (a)	None	None	9.88E-04 (c)	3.0 mrem	9.96E-04 (c)
Organ (mrem)	5.0 mrem	1.41E-05 (a)	None	None	9.98E-04 (c)	10.0 mrem	1.01E-03 (c)
Critical Organ		Liver	None	None	Liver		Liver

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body	1.5 mrem	5.42E-04	0.00E+00	0.00E+00	6.59E-02	3.0 mrem	3.32E-02
Organ	5.0 mrem	2.82E-04	0.00E+00	0.00E+00	2.00E-02	10.0 mrem	1.01E-02

3. Direct Radiation

The calculated direct radiation exposure to a member of the public due to Unit 2 turbine building skyshine was 3.96E+00 mrem during 2007.

4. Total Dose Assessment

The maximum calculated Total Effective Dose Equivalent exposure to a member of the public as the result of Unit 2 operations during 2007 is 3.97E+00 mrem. The maximum calculated Committed Effective Dose Equivalent exposure to a member of the public as the result of Unit 2 operations during 2007 is 1.65E-03 mrem.

*The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

RADIOLOGICAL IMPACT ON MAN*

C. UNIT 3 DOCKET NUMBER: 50-249

Airborne Releases

	Quarterly Limit	Maximum Doses from Airborne Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air (mrad)	5.0 mrad	1.70E-04 (e)	6.24E-04 (e)	3.43E-04 (e)	3.08E-04 (e)	10.0 mrad	1.45E-03 (e)
Beta Air (mrad)	10.0 mrad	9.49E-06 (e)	8.14E-05 (e)	2.48E-05 (e)	2.49E-05 (e)	20.0 mrad	1.36E-04 (e)
Total Body (mrem)	2.5 mrem	1.28E-04 (e)	9.46E-04 (e)	2.59E-04 (e)	2.32E-04 (e)	5.0 mrem	1.25E-03 (e)
Skin (mrem)	7.5 mrem	1.39E-04 (e)	5.34E-04 (e)	2.86E-04 (e)	2.58E-04 (e)	15.0 mrem	1.22E-03 (e)
Organ (mrem)	7.5 mrem	5.29E-04 (a)	3.60E-03 (c)	5.02E-03 (c)	2.32E-03 (c)	15.0 mrem	1.13E-02 (c)
Critical Organ		GI LLI	Thyroid	Thyroid	Thyroid		Thyroid

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Gamma Air	5.0 mrad	3.40E-03	1.25E-02	6.86E-03	6.16E-03	10.0 mrad	1.45E-02
Beta Air	10.0 mrad	9.49E-05	8.14E-04	2.48E-04	2.49E-04	20.0 mrad	6.80E-04
Total Body	2.5 mrem	5.12E-03	3.78E-02	1.04E-02	9.28E-03	5.0 mrem	2.50E-02
Skin	7.5 mrem	1.85E-03	7.12E-03	3.81E-03	3.44E-03	15.0 mrem	8.13E-03
Organ	7.5 mrem	7.05E-03	4.80E-02	6.69E-02	3.09E-02	15.0 mrem	7.53E-02

1. Liquid Releases

	Quarterly Limit	Maximum Doses from Liquid Releases				Yearly Limit	Annual Dose
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body (mrem)	1.5 mrem	8.13E-06 (a)	None	None	1.21E-05 (c)	3.0 mrem	1.97E-05 (c)
Organ (mrem)	5.0 mrem	1.41E-05 (a)	None	None	2.23E-05 (c)	10.0 mrem	3.47E-05 (c)
Critical Organ		Liver	None	None	Bone		Liver

	Quarterly Limit	Percentage of Quarterly Limit				Yearly Limit	Percentage of Annual Limit
		1st QTR	2nd QTR	3rd QTR	4th QTR		
Total Body	1.5 mrem	5.42E-04	0.00E+00	0.00E+00	8.07E-04	3.0 mrem	6.57E-04
Organ	5.0 mrem	2.82E-04	0.00E+00	0.00E+00	4.46E-04	10.0 mrem	3.47E-04

2. Direct Radiation

The maximum calculated direct radiation exposure to a member of the public due to Unit 3 turbine building skyshine was 4.30E+00 mrem during 2007.

3. Total Dose Assessment

The maximum calculated Total Effective Dose Equivalent exposure to a member of the public as the result of Unit 3 operations during 2007 is 4.30E+00 mrem. The maximum calculated Committed Effective Dose Equivalent exposure to a member of the public as the result of Unit 3 operations during 2007 is 3.70E-03 mrem.

*The doses reported include abnormal and unmonitored releases. These doses are the highest among the four analyzed receptors as described in parentheses [(i)=infant, (c)=child, (t)=teenager, (a)=adult, (e)=every receptor has the same value].

RADIOLOGICAL IMPACT ON MAN*

DOCKET NUMBERS: 50-010/50-237/50-249

D. 40CFR190 Compliance

The General Electric Morris Operation (GEMO) facility is physically located near Dresden Station and is considered in the evaluation of the uranium fuel cycle on members of the public in the general environment for 40CFR190 compliance. The sum of the maximum doses from the units at Dresden Station is 8.27E+00 mrem. Per the 2007 GEMO 10CFR72.44(d)(3) report, the maximum dose that could be received from that facility is calculated to be 4.26E-01 mrem. A conservative estimate of the maximum dose to a member of the public in the general environment as a result of the uranium fuel cycle in the area surrounding Dresden Station is 8.70E+00 mrem, and the dose limits of 40CFR190 (annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ) are not approached or exceeded.

E. Equipment Out of Service

The Units 2/3 Main Chimney particulate and iodine sampling and noble gas monitoring were interrupted on July 21, 2007 from 1415 to 1800. A switch controlling flow to the in-service monitoring and sampling equipment was mis-positioned due to personnel error, rendering on-line particulate and iodine sampling and noble gas monitoring inoperable. During this time, continuous particulate and iodine sampling was not performed as required by the ODCM. Compensatory noble gas sampling was not required due to the short duration. Monitoring was restored immediately upon discovery of the event. The particulate and iodine activity released during this event is determined as described in section 4.g of this report.

In May 2008, the 2/3 Main Chimney system flow rate meter was found to be indicating lower than actual flow rate due to plugging of the sensor probe. Review of historical 2/3 Main Chimney flow data indicates this condition affected the entirety of 2007.