

## REGULATORY LIMITS

## Gaseous Effluents - Dose

This Specification is provided to ensure that the dose at the unrestricted area boundary from gaseous effluents from the units on site will be within the annual dose limits of 10 CFR Part 20 for unrestricted areas. The annual dose limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an unrestricted area to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.106(b)). In the one case where effluent monitoring equipment is not used, i.e., the burning of contaminated oil in the heating boilers, administrative controls are imposed to limit concentration in the heating boiler stack to less than 10 CFR Part 20 Appendix B, Table II, Column 1 and the contribution to overall dose to less than 0.1 percent of the total station annual release. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the unrestricted area boundary to less than or equal to 500 mrem/year to the total body or to not less than or equal to 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to not less than or equal to 1500 mrem/year for the nearest cow to the plant. For purposes of calculating doses resulting from airborne releases, the main chimney is considered to be an elevated release point and the reactor building vent stack is considered to be a mixed mode release point.

## Dose, Noble Gases

This Specification is provided to implement the requirements of Sections II.B, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Conditions For Operation implement the guides set forth in Section II.3 of Appendix I. The statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I is to be shown by calculational procedures based on models and data such that the actual exposure of an individual through the appropriate pathways is unlikely to be substantially underestimated. The dose calculations established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents will be consistent with the methodology provided in Regulatory Guide

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1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. The ODCM equations provide for determining the air doses at the unrestricted boundary based upon the historical average atmospheric conditions. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.111.

#### Dose, Radioiodines, Radioactive Material in Particulate Form and Radionuclides Other than Noble Gases

This specification is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Conditions for Operation are the guides set forth in Section II.C of Appendix I. The statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as reasonably achievable." The ODCM calculational methods specified in the surveillance requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methods approved by NRC for calculating the doses due to the actual release rates of the subject materials are required to be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I", Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate specifications for radioiodines, radioactive material in particulate form and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man, in the unrestricted area. The pathways which were examined in

the development of these specifications were: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man and 3) deposition onto grassy areas where milk animals graze with consumption of the milk by man.

#### Gaseous Waste Treatment

The OPERABILITY of the gaseous waste treatment which reduces amounts or concentrations of radioactive materials ensures that the system will be available for use whenever gaseous effluents require treatment prior to release to the environment. The requirement that the appropriate portions of this system be operable when specified provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as reasonably achievable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and design objective Section II.D of Appendix I to 10 CFR Part 50.

#### Explosive Gas Mixture

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the off gas system is minimized in conformance with the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50.

### LIQUID EFFLUENTS

#### Concentration

This specification is provided to ensure the concentration of radioactive materials released in liquid waste effluents from the site to unrestricted areas will be less than the concentration levels specified in 10 CFR Part 20, Appendix B, Table II, Column 2. The concentration limit for noble gases, MPC in air (submersion), was converted to an equivalent concentration in water using the International Commission on Radiological Protection (ICRP) Publication 2.

#### Dose

This specification is provided to implement the requirements of Sections II.A, III.A and IV.A of Appendix I, 10 CFR Part 50.

The Limiting Condition for Operation implements the guides set forth in Section II.A of Appendix I. The statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as reasonably achievable". The dose calculations in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I", Revision 1, October 1977 and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I", April 1977. NUREG-0113 provides methods for dose calculations with Reg Guide 1.109 and 1.113.

#### Liquid Waste Treatment

The operability of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment prior to release to the environment. The requirement that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as reasonably achievable". This specification implements the requirements of 10 CFR Part 50 and design objective Section II.D of Appendix I to 10 CFR Part 50.

#### Mechanical Vacuum Pump

The purpose of isolating the mechanical vacuum line is to limit release of activity from the main condenser. During an accident, fission products would be transported from the reactor through the main steam line to the main condenser. The fission product radioactivity would be sensed by the main steamline radioactivity monitors which initiate isolation.

## MAXIMUM PERMISSIBLE CONCENTRATIONS (MPC)

The concentration of radioactive materials released in gaseous and liquid effluents from the site to unrestricted areas will be less than the concentration levels specified in 10 CFR Part 20, Appendix B, Columns 1 and 2. The concentration limit for noble gases, MPC in air (submersion), was converted to an equivalent concentration in water using the International Commission on Radiological Protection (ICRP) Publication 2.

MAXIMUM PERMISSIBLE CONCENTRATION OF DISSOLVED  
OR ENTRAINED NOBLE GASES RELEASED FROM  
THE SITE TO UNRESTRICTED AREAS  
IN LIQUID WASTE

NUCLIDE	MPC( $\mu$ Ci/ml)*
Kr-85m	$2 \times 10^{-4}$
Kr-85	$5 \times 10^{-4}$
Kr-87	$4 \times 10^{-5}$
Kr-88	$9 \times 10^{-5}$
Ar-41	$7 \times 10^{-5}$
Xe-131m	$7 \times 10^{-4}$
Xe-133m	$5 \times 10^{-4}$
Xe-133	$6 \times 10^{-4}$
Xe-135m	$2 \times 10^{-4}$
Xe-135	$2 \times 10^{-4}$

\* Computed from Equation 20 of ICRP Publication 2 (1959), adjusted for infinite cloud submersion in water, and  $R = 0.0$ . rem/week, density = 1.0 g/cc and  $P_w/P_t = 1.0$ .

## 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 fission gas nuclide present and its respective average energy per disintegration (E in MeV/dis) for gamma and beta emissions separately.

$$\bar{E}_G = 2.60E-01 \text{ MeV/dis}$$

$$\bar{E}_B = 3.02E-01 \text{ MeV/dis}$$

MEASUREMENTS AND APPROXIMATIONS

- A. Fission and activation gases: The D-1 chimney, D2/3 chimney and D2/3 Reactor Vent are sampled weekly via a grab sample. The samples are analyzed for specific isotopes present in the release using a Hyper-Pure Germanium (HP Ge) Spectrometry System. Tritium is sampled monthly via a grab sample on the D-1 chimney, D2/3 Chimney, and D2/3 Reactor vent and analyzed using a Liquid Scintillation Counter. Krypton-85 is estimated in the D2/3 chimney using a recoil or non-recoil calculation using the fission per second plot and the sum of Kr-85m, Kr-87, Kr-88, Xe-133, Xe-135, and Xe 138 activities present in Reactor Off-Gas.
- B. Iodine and Particulate: Iodine and particulate samples from the D-1 Chimney, D2/3 Chimney and the D2/3 Reactor Vents are collected for a maximum seven day period. These samples are analyzed for specific nuclides present in the release using a HP Ge spectrometry system. When iodine or particulate samples are not used for reporting the release rate due to management decision that the sample may not be representative, an average of the preceding sample and the following sample is used to calculate the release. A monthly composite of the particulate samples is sent to a vendor to be analyzed for Sr-89, Sr-90, and Gross Alpha activity.
- C. Liquid Effluents: Prior to a release, duplicate grab samples are collected from each batch and analyzed for gross activity using a gas flow proportional counter. Radioactive waste batch discharges are also analyzed for specific isotopes present in the release using a HP Ge spectrometry system. A composite of all batches for the month is sent to a vendor to be analyzed for Sr-89, Sr-90, Fe-55, H-3, and Gross Alpha activity. A sample of each Low Pressure Coolant Injection (LPCI) system is analyzed each month for specific isotopes present in the release using a HP Ge spectrometry system. A sample of each LPCI system is sent each month to a vendor to be analyzed for Sr-89, Sr-90, Fe-55, H-3, and Gross Alpha activity.
- D. Estimation of Overall Errors: The methods used for estimating overall errors associated with radioactivity measurements vary with discharge path and form of isotopes. Factors that contribute to the error include such items as calibration of counting equipment, counting statistics, sampling error, discharge volume, and flow rate monitors.
- E. Estimation of Vendor Analyzed Information: The vendor analyzed data for Sr-89, Sr-90, Fe-55, H-3, and Gross Alpha was previously projected, where applicable, for the months of May and June using April data. The vendor analyzed liquid radwaste composite sample for May was lost due to personnel error, DVR 12-2/3-89-88 and LER 89-017-0. The activity levels for April were used to estimate the release for May. The data in this corrected Effluent Report reflects final vendor analyzed information.

DRESDEN NUCLEAR POWER STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

January Through June 1989

GASEOUS EFFLUENTS

Docket Numbers: 50-10  
50-237  
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SUMMATION OF ALL RELEASES

	UNIT	1st QUARTER	2nd QUARTER	EST. TOTAL ERROR, %
<b>A. FISSION AND ACTIVATION GASES</b>				
1. Total Release	Ci	1.54 E01	7.46 E00	7.31
2. Average Release Rate for Period	uCi/sec	1.98 E00	9.49 E-01	
3. Percent of Technical Specification Limit	%	*	*	
<b>B. IODINES</b>				
1. Total Iodine-131	Ci	8.86 E-04	1.01 E-03	9.51
2. Average Release Rate of I-131 for Period	uCi/sec	1.14 E-04	1.28 E-04	
3. Percent of Technical Specification Limit	%	*	*	
4. Total Iodine-131, Iodine-133, and Iodine-135	Ci	1.20 E-02	1.65 E-02	
<b>C. PARTICULATES</b>				
1. Particulates with half-lives > 8 days	Ci	5.53 E-01	5.16 E-01	8.09
2. Average Release Rate for Period	uCi/sec	7.11 E-02	6.56 E-02	
3. Percent of Technical Specification Limit	%	*	*	
4. Gross Alpha Radioactivity	Ci	MDL	MDL	
<b>D. TRITIUM</b>				
1. Total Release	Ci	3.12 E00	3.97 E00	7.89
2. Average Release Rate for Period	uCi/sec	4.01 E-01	5.05 E-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 is provided which includes fission and activation gases, iodines, particulates, and tritium.

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EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT  
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D1 Chimney GASEOUS EFFLUENTS

GROUND LEVEL RELEASES

Docket Number 50-10

SEMI-ELEVATED RELEASES

xx ELEVATED RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
FISSION GASES	Ci				
Xe-138	Ci	*	*		
Xe-135m	Ci	*	*		
Kr-87	Ci	*	*		
Kr-88	Ci	*	*		
Kr-85m	Ci	*	*		
Kr-85	Ci	*	*		
Xe-135	Ci	*	*		
Xe-133	Ci	*	*		
Others:	Ci				
TOTAL	Ci			None	None
IODINES					
I-131	Ci	*	*		
I-133	Ci	*	*		
I-135	Ci	*	*		
TOTAL	Ci			None	None
PARTICULATES					
Sr-89	Ci	*	*		
Sr-90	Ci	*	*		
Cr-51	Ci	*	*		
Mn-54	Ci	9.44 E-06	2.82 E-06		
Co-58	Ci	*	*		
Fe-59	Ci	*	*		
Co-60	Ci	1.64 E-05	1.77 E-06		
Zr-95	Ci	*	*		
Nb-95	Ci	*	*		
Ru-103	Ci	*	*		
Ag-110m	Ci	*	*		
Sb-124	Ci	*	*		
I-131	Ci	*	*		
Cs-134	Ci	*	*		
Cs-136	Ci	*	*		
Cs-137	Ci	1.55 E-05	2.25 E-05		
Ba-140	Ci	*	*		
Ce-141	Ci	*	*		
Ce-144	Ci	*	*		
Zn-65	Ci	*	*		
Ba-133	Ci	*	*		
Sb-125	Ci	*	*		
Others:	Ci				
	Ci				
	Ci				
	Ci				
	Ci				
TOTAL	Ci	4.13 E-05	2.71 E-05	None	None

\* See Table for MDL of Each Nuclide

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TABLE OF MINIMUM DETECTABLE LEVELS  
FOR GASEOUS EFFLUENTS

D1 Chimney GASEOUS EFFLUENTS      AVERAGE FLOW 50,000 cfm

	MDL (uCi/cc)	% OF TIME < MDL
1. FISSION GASES		
Xe-138	4.16 E-08	100.0
Xe-135m	1.29 E-07	100.0
Kr-87	3.03 E-08	100.0
Kr-88	5.21 E-08	100.0
Kr-85m	1.78 E-08	100.0
Kr-85	4.43 E-06	100.0
Xe-135	1.52 E-08	100.0
Xe-133	4.32 E-08	100.0
Others:		
2. IODINES		
I-131	5.34 E-14	100.0
I-133	5.57 E-14	100.0
I-135	1.19 E-13	100.0
3. PARTICULATES		
Sr-89	3.1 E-11	100.0
Sr-90	6.9 E-12	100.0
Cr-51	4.20 E-13	100.0
Mn-54	5.27 E-14	43.6
Co-58	4.83 E-14	100.0
Fe-59	7.58 E-14	100.0
Co-60	1.26 E-13	30.4
Zr-95	9.09 E-14	100.0
Nb-95	4.96 E-14	100.0
Ru-103	4.95 E-14	100.0
Ag-110m	5.12 E-14	100.0
Sb-124	5.86 E-14	100.0
I-131	5.15 E-14	100.0
Cs-134	5.73 E-14	100.0
Cs-136	5.49 E-14	100.0
Cs-137	6.21 E-14	42.0
Ba-140	1.91 E-13	100.0
Ce-141	7.64 E-14	100.0
Ce-144	3.27 E-13	100.0
Zn-65	9.03 E-14	100.0
Ba-133	6.93 E-14	100.0
Sb-125	1.39 E-13	100.0
Others:		
Gross Alpha	9.4 E-12	100.0
4. TRITIUM		
H-3	5.84 E-07	0

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
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D2/3 Chimney GASEOUS EFFLUENTS

GROUND LEVEL RELEASES

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SEMI-ELEVATED RELEASES

xx ELEVATED RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
FISSION GASES	Ci				
Xe-138	Ci	*	*		
Xe-135m	Ci	1.49 E00	*		
Kr-87	Ci	*	*		
Kr-88	Ci	*	*		
Kr-85m	Ci	*	*		
Kr-85	Ci	2.91 E-03	2.86 E-03		
Xe-135	Ci	1.38 E01	6.42 E00		
Xe-133	Ci	*	*		
Others:	Ci				
TOTAL	Ci	1.53 E01	6.42 E00	None	None
IODINES					
I-131	Ci	7.49 E-04	6.43 E-04		
I-133	Ci	3.78 E-03	3.92 E-03		
I-135	Ci	5.87 E-03	5.87 E-03		
TOTAL	Ci	1.04 E-02	1.04 E-02	None	None
PARTICULATES					
Sr-89	Ci	4.77 E-01	4.61 E-01		
Sr-90	Ci	5.17 E-04	1.32 E-03		
Cr-51	Ci	*	*		
Mn-54	Ci	6.52 E-05	6.28 E-05		
Co-58	Ci	*	*		
Fe-59	Ci	*	*		
Co-60	Ci	1.67 E-04	1.94 E-04		
Zr-95	Ci	*	*		
Nb-95	Ci	*	*		
Ru-103	Ci	*	*		
Ag-110m	Ci	*	*		
Sb-124	Ci	*	*		
I-131	Ci	7.64 E-05	6.24 E-05		
Cs-134	Ci	*	*		
Cs-136	Ci	*	*		
Cs-137	Ci	3.14 E-05	7.73 E-06		
Ba-140	Ci	6.77 E-04	6.51 E-04		
Ce-141	Ci	*	*		
Ce-144	Ci	*	*		
Zn-65	Ci	*	*		
Ba-133	Ci	*	*		
Sb-125	Ci	*	*		
Others:	Ci				
TOTAL	Ci	4.79 E-01	4.63 E-01	None	None

\* See Table for MDL of Each Nuclide



DRESDEN NUCLEAR POWER STATION  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
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D2/3 Reactor Building Vent GASEOUS EFFLUENTS

GROUND LEVEL RELEASES

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xx SEMI-ELEVATED RELEASES

ELEVATED RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
FISSION GASES	Ci				
Xe-138	Ci	*	*		
Xe-135m	Ci	*	*		
Kr-87	Ci	*	*		
Kr-88	Ci	*	*		
Kr-85m	Ci	*	*		
Kr-85	Ci	*	*		
Xe-135	Ci	8.64 E-02	1.04 E00		
Xe-133	Ci	*	*		
Others:	Ci				
TOTAL	Ci	8.64 E-02	1.04 E00	None	None
IODINES					
I-131	Ci	5.18 E-05	2.60 E-04		
I-133	Ci	1.05 E-04	2.12 E-03		
I-135	Ci	1.34 E-03	3.58 E-03		
TOTAL	Ci	1.50 E-03	5.96 E-03	None	None
PARTICULATES					
Sr-89	Ci	6.98 E-02	3.88 E-02		
Sr-90	Ci	7.50 E-04	1.39 E-03		
Cr-51	Ci	6.43 E-04	4.42 E-03		
Mn-54	Ci	4.87 E-04	1.55 E-03		
Co-58	Ci	6.54 E-05	7.18 E-04		
Fe-59	Ci	6.69 E-05	8.80 E-04		
Co-60	Ci	1.80 E-03	5.07 E-03		
Zr-95	Ci	*	*		
Nb-95	Ci	*	*		
Ru-103	Ci	*	*		
Ag-110m	Ci	6.74 E-06	4.11 E-05		
Sb-124	Ci	*	*		
I-131	Ci	9.39 E-06	4.64 E-05		
Cs-134	Ci	*	*		
Cs-136	Ci	*	*		
Cs-137	Ci	1.43 E-05	*		
Ba-140	Ci	2.49 E-05	1.61 E-04		
Ce-141	Ci	*	*		
Ce-144	Ci	*	*		
Zn-65	Ci	1.68 E-05	1.78 E-04		
Ba-133	Ci	*	*		
Sb-125	Ci	*	*		
Others:	Ci				
TOTAL	Ci	7.37 E-02	5.33 E-02	None	None

\* See Table for MDL of Each Nuclide



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D2 Isolation Condenser GASEOUS EFFLUENTS

xx GROUND LEVEL RELEASES

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SEMI-ELEVATED RELEASES

ELEVATED RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
FISSION GASES	Ci				
Xe-138	Ci			*	
Xe-135m	Ci			*	
Kr-87	Ci			*	
Kr-88	Ci			*	
Kr-85m	Ci			*	
Kr-85	Ci			*	
Xe-135	Ci			*	
Xe-133	Ci			*	
Others:	Ci				
TOTAL	Ci	None	None		None
IODINES					
I-131	Ci			*	
I-133	Ci			*	
I-135	Ci			*	
TOTAL	Ci	None	None		None
PARTICULATES					
Sr-89	Ci			*	
Sr-90	Ci			*	
Cr-51	Ci			*	
Mn-54	Ci			2.32 E-06	
Co-58	Ci			*	
Fe-59	Ci			*	
Co-60	Ci			2.86 E-06	
Zr-95	Ci			*	
Nb-95	Ci			*	
Ru-103	Ci			*	
Ag-110m	Ci			*	
Sb-124	Ci			*	
I-131	Ci			*	
Cs-134	Ci			*	
Cs-136	Ci			*	
Cs-137	Ci			*	
Ba-140	Ci			*	
Ce-141	Ci			*	
Ce-144	Ci			*	
Zn-65	Ci			*	
Ba-133	Ci			*	
Sb-125	Ci			*	
Others:	Ci				
TOTAL	Ci	None	None	5.18 E-06	None

\* See Table for MDL of Each Nuclide

DRESDEN NUCLEAR POWER STATION  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

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LIQUID EFFLUENTS

SUMMATION OF ALL RELEASES

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	UNIT	1st QUARTER	2nd QUARTER	EST. TOTAL ERROR, %
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. Total Release (not incl. tritium, gases, alpha)	Ci	3.25 E-01	1.19 E-01	5.58
2. Average Diluted Conc. During Period	uCi/mL	6.12 E-08	7.93 E-09	
3. Percent of Applicable Limit	%	★	★	
<b>B. TRITIUM</b>				
1. Total Release	Ci	4.05 E00	4.70 E00	7.75
2. Average Diluted Conc. During Period	uCi/mL	7.63 E-07	3.13 E-07	
3. Percent of Applicable Limit	%	★	★	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. Total Release	Ci	1.07 E-04	1.29 E-04	5.58
2. Average Diluted Conc. During Period	uCi/mL	3.20 E-11	8.60 E-12	
3. Percent of Applicable Limit	%	★	★	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. Total Release	Ci	4.61 E-03	3.56 E-03	15.1
<b>E. VOLUME OF WASTE RELEASED (prior to dilution)</b>				
	liters	7.95 E06	6.39 E06	5.00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	liters	5.31 E09	1.50 E10	5.00

★ The information is contained in the Radiological Impact on Man section of this report. Total liquid release data is provided which includes fission and activation products, tritium, and dissolved and entrained gases.

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DRESDEN NUCLEAR POWER STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

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Radwaste LIQUID EFFLUENTS

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1. Number of Batch Releases: 157
2. Total Time Period for Batch Releases: 48,335 min
3. Maximum Time Period for a Batch Release: 403 min
4. Average Time Period for Batch Releases: 308 min
5. Minimum Time Period for a Batch Release: 190 min
6. Average Stream Flow During Periods of Release of Effluent into a Flowing Stream: 4.16 E05 L/min

CONTINUOUS MODE

BATCH MODE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
Sr-89	Ci			*	*
Sr-90	Ci			3.70 E-04	6.32 E-05
Ar-41	Ci			*	*
Mn-54	Ci			5.91 E-02	3.67 E-02
Co-58	Ci			1.87 E-03	1.45 E-04
Fe-59	Ci			6.04 E-03	1.09 E-03
Co-60	Ci			1.66 E-01	6.53 E-02
Zn-65	Ci			5.30 E-05	*
Ru-103	Ci			*	*
Sb-122	Ci			*	*
Sb-124	Ci			7.03 E-02	3.93 E-05
I-131	Ci			*	*
I-133	Ci			*	*
I-135	Ci			*	3.80 E-05
Cs-134	Ci			*	2.61 E-05
Cs-137	Ci			1.15 E-02	1.06 E-02
Ba-140	Ci			*	*
La-140	Ci			*	*
Ce-141	Ci			*	*
Others: Cr-51	Ci			1.47 E-03	1.47 E-04
Fe-55	Ci			3.32 E-03	5.52 E-03
Rb-88	Ci			*	2.62 E-04
Nb-95	Ci			1.11 E-05	*
Tc-99m	Ci			*	6.57 E-06
As-76	Ci			*	3.31 E-05
Cs-138	Ci			9.49 E-06	*
Hf-181	Ci			1.27 E-05	*
(above)					
Total For Period	Ci	NONE	NONE	3.20 E-01	1.19 E-01
Xe-133	Ci			7.87 E-05	3.47 E-05
Xe-135	Ci			9.10 E-05	7.69 E-05
Kr-88	Ci			*	1.74 E-05

\* See Table for MDL of Each Nuclide

## DRESDEN NUCLEAR POWER STATION

January Through June 1989

TABLE OF MINIMUM DETECTABLE LEVELS  
FOR LIQUID EFFLUENTSDocket Numbers:  
50-10  
50-237  
50-249Radwaste LIQUID EFFLUENTS TOTAL GALLONS RELEASED 3.40 E06

	MDL (uCi/mL)	% OF GALLONS < MDL
Sr-89	1.5 E-08	100.0
Sr-90	4.3 E-08	15.3
Ar-41	2.71 E-08	100.0
Mn-54	5.04 E-08	0
Co-58	4.98 E-08	72.0
Fe-59	8.11 E-08	38.6
Co-60	1.18 E-07	0
Zn-65	9.97 E-08	99.4
Ru-103	6.04 E-08	100.0
Sb-122	7.31 E-08	100.0
Sb-124	4.87 E-08	86.1
I-131	5.62 E-08	100.0
I-133	5.34 E-08	100.0
I-135	9.15 E-08	99.4
Cs-134	5.51 E-08	99.4
Cs-137	4.04 E-08	1.99
Ba-140	2.11 E-07	100.0
La-140	3.82 E-08	100.0
Ce-141	9.33 E-08	100.0
Xe-133	1.53 E-07	96.9
Xe-135	5.13 E-08	94.5
Cr-51	4.81 E-07	100.0
Fe-55	5.2 E-07	35.6
Nb-95	Not Determined	99.4
Kr-88	1.71 E-07	99.4
Hf-181	Not Determined	99.4
Cs-138	Not Determined	99.4
Tc-99m	4.63 E-08	99.1
As-76	Not Determined	98.6
Rb-88	Not Determined	99.4
H-3	4.1 E-06	0
Gross Alpha	1.7 E-08	0

DREEDEN NUCLEAR POWER STATION

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT

January Through June 1989

Containment Cooling Service Water LIQUID EFFLUENTS

Docket Numbers: 50-237  
50-249

1. Number of Batch Releases: 89
2. Total Time Period for Batch Releases: 110 min
3. Maximum Time Period for a Batch Release: 1.24 min
4. Average Time Period for Batch Releases: 1.24 min
5. Minimum Time Period for a Batch Release: 1.24 min
6. Average Stream Flow During Periods of Release of Effluent into a Flowing Stream: 2.38 E06 L/min

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
Sr-89	Ci			*	*
Sr-90	Ci			*	*
Ar-41	Ci			*	*
Mn-54	Ci			8.90 E-07	2.95 E-05
Co-58	Ci			*	*
Fe-59	Ci			*	*
Co-60	Ci			1.52 E-05	1.29 E-04
Zn-65	Ci			*	*
Ru-103	Ci			*	*
Sb-122	Ci			*	*
Sb-124	Ci			*	*
I-131	Ci			*	*
I-133	Ci			*	*
I-135	Ci			*	*
Cs-134	Ci			3.42 E-07	3.65 E-05
Cs-137	Ci			9.36 E-06	9.18 E-05
Ba-140	Ci			*	*
La-140	Ci			*	*
Ce-141	Ci			*	*
Others: Cr-51	Ci			*	*
Fe-55	Ci			*	*
	Ci				
	Ci				
(above)					
Total For Period	Ci	None	None	2.58 E-05	2.87 E-04
Xe-133	Ci			*	*
Xe-135	Ci			*	*

\* See Table for MDL of Each Nuclide

## DRESDEN NUCLEAR POWER STATION

January Through June 1989TABLE OF MINIMUM DETECTABLE LEVELS  
FOR LIQUID EFFLUENTSDocket Numbers:  
50-237  
50-249Containment Cooling Service Water LIQUID EFFLUENTS TOTAL GALLONS RELEASED 3.86 E05

	MDL (uCi/ml.)	% OF GALLONS < MDL
Sr-89	1.5 E-07	100.0
Sr-90	4.3 E-08	100.0
Ar-41	2.71 E-08	100.0
Mn-54	5.04 E-08	69.7
Co-58	4.98 E-08	100.0
Fe-59	8.11 E-08	100.0
Co-60	1.18 E-07	0
Zn-65	9.97 E-08	100.0
Ru-103	6.04 E-08	100.0
Sb-122	7.31 E-08	100.0
Sb-124	4.87 E-08	100.0
I-131	5.62 E-08	100.0
I-133	5.34 E-08	100.0
I-135	9.15 E-08	100.0
Cs-134	5.51 E-08	87.6
Cs-137	4.04 E-08	29.2
Ba-140	2.11 E-07	100.0
La-140	3.82 E-08	100.0
Ce-141	9.33 E-08	100.0
Xe-133	1.53 E-07	100.0
Xe-135	5.13 E-08	100.0
Cr-51	4.81 E-07	100.0
Fe-55	5.2 E-07	100.0
H-3	4.1 E-06	56.2
Gross Alpha	1.7 E-08	0

DRESDEN NUCLEAR POWER STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

January Through June 1989

Docket Numbers:

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

50-10  
50-237  
50-249

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

Est Tot.  
Error, %

1. Type of Waste	Unit	6-month period	
a. Spent resins, filter sludges, evaporator bottoms, etc.	m <sup>3</sup>	3.08 E02	12.4
	Ci	1.60 E03	
b. Dry compressible waste, contaminated equip., etc.	m <sup>3</sup>	1.15 E03	16.6
	Ci	2.39 E01	
c. Irradiated components, control rods, etc.	m <sup>3</sup>	0	
	Ci	0	
d. Other (describe)	m <sup>3</sup>	0	
	Ci	0	

2. Estimate of Major Nuclide Composition (by type of waste)

		%	Ci
a.	Co-60	67.2 %	1.08 E03
	Fe-55	18.9 %	3.02 E02
	Mn-54	12.1 %	1.94 E02
	Ni-63	0.805%	1.29 E01
	Other	0.995%	1.59 E01
b.	Co-60	26.6 %	6.36 E00
	Fe-55	63.1 %	1.51 E01
	Mn-54	7.99 %	1.91 E00
	Ce-137	0.981%	2.34 E-01
	Other	1.329%	3.18 E-01

3. Solid Waste Disposition

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
43	Motor freight (exclusive use only)	Barnwell, SC
12	Motor freight (exclusive use only)	Richland, WA
9	Motor freight (exclusive use only)	SEG, Oak Ridge, TN
6	Motor freight (exclusive use only)	Westinghouse DDR Madison, PA
5	Motor freight (exclusive use only)	CNSI, Channahon, IL

B. IRRADIATED FUEL SHIPMENTS (Disposition)

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
None		

## DRESDEN NUCLEAR POWER STATION

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

January Through June 1989

Docket Numbers:

50-10

50-237

50-249

## ABNORMAL RELEASES

## A. LIQUID

1. Number of Releases: One on 25 March 89, LER 89-1-050249.  
Contaminated demineralized water was used for makeup water to the Isolation Condenser to cool the Unit 3 reactor subsequent to a reactor scram.

2. Total Activity Released:

Nuclide	Activity (Ci)
Mn - 54	1.76 E-03
Co - 58	1.82 E-05
Fe - 59	6.66 E-05
Co - 60	3.63 E-03
Total	5.47 E-03

## B. GASEOUS

1. Number of Releases: One on 4 March 89, LER 89-12-050237.  
Contaminated demineralized water was used for makeup water to the Isolation Condenser to cool the Unit 2 reactor subsequent to a reactor scram.

2. Total Activity Released:

Nuclide	Activity (Ci)
Mn - 54	2.32 E-06
Co - 60	2.86 E-06
Total	5.18 E-06

DRESDEN NUCLEAR POWER STATION DOCKET NOS. 50-10, 50-237, 50-249

RADIOLOGICAL IMPACT ON MAN

DRESDEN UNIT ONE

1989 ANNUAL REPORT

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

PERIOD OF RELEASE -- 01/01/89 TO 12/31/89 CALCULATED 12/19/89

INFANT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (MRAD)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
BETA AIR (MRAD)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
TOT. BODY (MREM)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
SKIN (MREM)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
ORGAN (MREM)	3.93E-05 (SE )	2.58E-05 (SE )	1.64E-05 (SE )	4.31E-06 (SE )	7.97E-05 (SE )
	LIVER	LIVER	LIVER	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I  
INFANT RECEPTOR

	% OF APP. I					YRLY OBJ	% OF APP. I
	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
GAMMA AIR (MRAD)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (MRAD)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (MREM)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
		LIVER	LIVER	LIVER	LIVER		LIVER

RESULTS BASED UPON  
UDCM REVISION 11  
UPDATE 08204  
FEBRUARY 1986

DRESDEN UNIT ONE

1989 ANNUAL REPORT

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

ADULT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (MRAD)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
BETA AIR (MRAD)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
TOT. BODY (MREM)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
SKIN (MREM)	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )	0.00E+00 ( )
ORGAN (MREM)	3.60E-05 (SE )	3.23E-05 (SE )	1.81E-05 (SE )	8.36E-06 (SE )	9.44E-05 (SE )
	LIVER	LIVER	LIVER	BI-LI1	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I  
ADULT RECEPTOR

	DTRLY OBJ	----- 2 OF APP I, -----				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
GAMMA AIR (MRAD)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (MRAD)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (MREM)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
		LIVER	LIVER	LIVER	BI-LI1		LIVER

RESULTS BASED UPON  
DDCM REVISION 11  
UPDATE 05204  
FEBRUARY 1986

DRESDEN UNIT TWO

1989 ANNUAL REPORT

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

INFANT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (MRAD)	1.18E-05 (NE )	1.02E-04 (NE )	1.65E-06 (NE )	3.00E-05 (NE )	1.45E-04 (NE )
BETA AIR (MRAD)	1.97E-06 (N )	2.47E-04 (NNE )	3.91E-07 (N )	5.17E-06 (N )	2.55E-04 (NNE )
TOT. BODY (MREM)	5.12E-06 (NE )	4.26E-05 (NE )	7.79E-07 (NE )	1.30E-05 (NE )	6.14E-05 (NE )
SKIN (MREM)	1.05E-05 (NE )	2.65E-04 (NNE )	1.70E-06 (NE )	2.68E-05 (NE )	3.03E-04 (NNE )
ORGAN (MREM)	1.50E-02 (NNE )	3.19E-02 (NNE )	1.03E-02 (NNE )	3.99E-03 (NNE )	6.08E-02 (NNE )
	LUNG	LUNG	THYROID	THYROID	LUNG

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I  
INFANT RECEPTOR

	QTRLY OBJ	% OF APP. I				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
GAMMA AIR (MRAD)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (MRAD)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (MREM)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (MREM)	7.5	0.20	0.43	0.14	0.05	15.0	0.41
		LUNG	LUNG	THYROID	THYROID		LUNG

RESULTS BASED UPON  
OUCM REVISION 11  
UPDATE CS204  
FEBRUARY 1986

DRESDEN UNIT TWO

1989 ANNUAL REPORT

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

ADULT RECEPTOR

TYPE	1ST	2ND	3RD	4TH	ANNUAL
	QUARTER JAN-MAR	QUARTER APR-JUN	QUARTER JUL-SEP	QUARTER OCT-DEC	
GAMMA AIR (MRAD)	1.18E-05 (NE )	1.02E-04 (NE )	1.85E-06 (NE )	3.00E-05 (NE )	1.45E-04 (NE )
BETA AIR (MRAD)	1.97E-06 (N )	2.47E-04 (NNE )	3.91E-07 (N )	5.17E-06 (N )	2.55E-04 (NNE )
TOT. BODY (MREM)	5.12E-06 (NE )	4.26E-05 (NE )	7.79E-07 (NE )	1.30E-05 (NE )	6.14E-05 (NE )
SKIN (MREM)	1.05E-05 (NE )	2.65E-04 (NNE )	1.70E-06 (NE )	2.68E-05 (NE )	3.03E-04 (NNE )
ORGAN (MREM)	1.50E-02 (NNE )	1.64E-01 (NNE )	1.13E-02 (NNE )	4.50E-03 (NNE )	1.91E-01 (NNE )
	LUNG	BONE	THYROID	THYROID	BONE

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I  
ADULT RECEPTOR

	QTRLY OBJ	----- % OF APP. I. -----				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
GAMMA AIR (MRAD)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (MRAD)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (MREM)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (MREM)	7.5	0.20	2.19	0.15	0.08	15.0	1.27
		LUNG	BONE	THYROID	THYROID		BONE

RESULTS BASED UPON  
OCDM REVISION 11  
UPDATE CS204  
FEBRUARY 1986

DRESDEN UNIT TWO  
 INFANT RECEPTOR

1989 ANNUAL REPORT  
 MAXIMUM DOSES (MREM) RESULTING FROM LIQUID EFFLUENTS  
 PERIOD OF RELEASE - 01/01/89 TO 12/31/89 - CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	1.30E-04	5.65E-05	2.54E-05	2.13E-05	2.33E-04
INTERNAL ORGAN	2.09E-04	1.33E-04	9.77E-05	9.98E-05	5.13E-04
	BONE	LIVER	LIVER	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989  
 COMPLIANCE STATUS - 10 CFR 50 APP. I

	QTRLY OBJ	----- % OF APP I, -----				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
TOTAL BODY (MREM)	1.5	0.01	0.00	0.00	0.00	3.0	0.01
CRIT. ORGAN (MREM)	5.0	0.00	0.00	0.00	0.00	10.0	0.01
		BONE	LIVER	LIVER	LIVER		LIVER

RESULTS BASED UPON  
 ODCM REVISION 11  
 UPDATE CS204  
 FEBRUARY 1986

DRESDEN UNIT TWO  
 INFANT RECEPTOR

1989 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	1.30E-04	5.65E-05	2.54E-05	2.13E-05	2.33E-04
INTERNAL ORGAN	2.09E-04	1.33E-04	9.77E-05	9.98E-05	5.13E-04
	BONE	LIVER	LIVER	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 (MREM)	0.006
INTERNAL ORGAN	4.0 (MREM)	0.013
		LIVER

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON  
 DDGM REVISION 11  
 UPDATE CS204  
 FEBRUARY 1986

DRESDEN UNIT TWO  
ADULT RECEPTOR

1989 ANNUAL REPORT  
MAXIMUM DOSES (MREM) RESULTING FROM LIQUID EFFLUENTS  
PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	2.41E-04	1.84E-04	1.61E-04	1.69E-04	7.54E-04
INTERNAL ORGAN	3.37E-04	2.74E-04	2.43E-04	2.56E-04	1.11E-03
	LIVER	LIVER	LIVER	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I

	QTRLY OBJ	----- % OF APP I, -----				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NDV		
TOTAL BODY (MREM)	1.5	0.02	0.01	0.01	0.01	3.0	0.03
CRIT. ORGAN (MREM)	5.0	0.01	0.01	0.00	0.01	10.0	0.01
		LIVER	LIVER	LIVER	LIVER		LIVER

RESULTS BASED UPON  
DDCM REVISION 11  
UPDATE CS204  
FEBRUARY 1986

DRESDEN UNIT TWO  
ADULT RECEPTOR

1989 ANNUAL REPORT  
PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	4.44E-05	2.40E-05	1.36E-05	1.34E-05	9.55E-05
INTERNAL ORGAN	1.31E-04	5.14E-05	3.22E-05	2.47E-05	2.39E-04
	GI-LLI	GI-LLI	GI-LLI	GI-LLI	GI-LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 (MREM)	0.002
INTERNAL ORGAN	4.0 (MREM)	0.006
		GI-LLI

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON  
ODCM REVISION 11  
UPDATE CS204  
FEBRUARY 1986

DRESDEN UNIT THREE

1989 ANNUAL REPORT  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89  
 INFANT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (MRAD)	2.20E-04 (NE )	7.00E-05 (NE )	3.02E-05 (NE )	1.44E-04 (NE )	4.65E-04 (NE )
BETA AIR (MRAD)	6.13E-05 (NNE )	4.13E-05 (NNE )	6.37E-06 (N )	2.54E-05 (N )	1.33E-04 (NNE )
TOT. BODY (MREM)	9.39E-05 (NE )	2.94E-05 (NE )	1.27E-05 (NE )	6.24E-05 (NE )	1.98E-04 (NE )
SKIN (MREM)	2.15E-04 (NE )	8.46E-05 (NE )	2.78E-05 (NE )	1.29E-04 (NE )	4.57E-04 (NE )
ORGAN (MREM)	2.07E-02 (NNE )	3.88E-02 (NNE )	7.57E-02 (NNE )	2.87E-02 (NNE )	1.53E-01 (NNE )
	LUNG	BONE	THYROID	THYROID	LUNG

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I  
 INFANT RECEPTOR

	QTRLY OBJ	% OF APP. I.				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
GAMMA AIR (MRAD)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (MRAD)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (MREM)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (MREM)	7.5	0.28	0.52	1.01	0.38	15.0	1.02
		LUNG	BONE	THYROID	THYROID	LUNG	

RESULTS BASED UPON  
 ODCM REVISION 11  
 UPDATE CS204  
 FEBRUARY 1986

DRESDEN UNIT THREE

1989 ANNUAL REPORT

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

ADULT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (MRAD)	2.20E-04 (NE )	7.00E-05 (NE )	3.02E-05 (NE )	1.44E-04 (NE )	4.65E-04 (NE )
BETA AIR (MRAD)	6.13E-05 (NNE )	4.13E-05 (NNE )	6.37E-05 (N )	2.54E-05 (N )	1.33E-04 (NNE )
TOT. BODY (MREM)	9.39E-05 (NE )	2.94E-05 (NE )	1.27E-05 (NE )	6.24E-05 (NE )	1.98E-04 (NE )
SKIN (MREM)	2.15E-04 (NE )	8.46E-05 (NE )	2.78E-05 (NE )	1.29E-04 (NE )	4.57E-04 (NE )
ORGAN (MREM)	1.60E-02 (NE )	4.97E-01 (NNE )	8.34E-02 (NNE )	3.20E-02 (NNE )	6.08E-01 (NNE )
	BONE	BONE	THYROID	THYROID	BONE

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I  
ADULT RECEPTOR

	QTRLY OBJ	----- % OF APP I. -----				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
GAMMA AIR (MRAD)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (MRAD)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (MREM)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (MREM)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (MREM)	7.5	0.21	6.63	1.11	0.43	15.0	4.05
		BONE	BONE	THYROID	THYROID		BONE

RESULTS BASED UPON  
ODCM REVISION 11  
UPDATE CB204  
FEBRUARY 1986

DRESDEN UNIT THREE  
INFANT RECEPTOR

1989 ANNUAL REPORT  
MAXIMUM DOSES (MREM) RESULTING FROM LIQUID EFFLUENTS  
PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	1.13E-04	6.40E-05	2.55E-05	2.14E-05	2.24E-04
INTERNAL ORGAN	1.77E-04	1.49E-04	9.91E-05	1.00E-04	5.10E-04
	BONE	LIVER	LIVER	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989  
COMPLIANCE STATUS - 10 CFR 50 APP. I

	QTRLY OBJ	----- % OF APP. I. -----				YRLY OBJ	% OF APP. I
		1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
TOTAL BODY (MREM)	1.5	0.01	0.00	0.00	0.00	3.0	0.01
CRIT. ORGAN (MREM)	5.0	0.00	0.00	0.00	0.00	10.0	0.01
		BONE	LIVER	LIVER	LIVER		LIVER

RESULTS BASED UPON  
DDCM REVISION 11  
UPDATE CS204  
FEBRUARY 1986

DRESDEN UNIT THREE  
 INFANT RECEPTOR

1989 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	1.13E-04	6.40E-05	2.55E-05	2.14E-05	2.24E-04
INTERNAL ORGAN	1.77E-04	1.49E-04	9.91E-05	1.00E-04	5.10E-04
	BONE	LIVER	LIVER	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 (MREM)	0.006
INTERNAL ORGAN	4.0 (MREM)	0.013
		LIVER

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE  
 COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER  
 FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON  
 ODCM REVISION 11  
 UPDATE CS204  
 FEBRUARY 1986

DRESDEN UNIT THREE  
ADULT RECEPTOR

1989 ANNUAL REPORT  
MAXIMUM DOSES (MREM) RESULTING FROM LIQUID EFFLUENTS  
PERIOD OF RELEASE - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	2.12E-04	2.05E-04	1.64E-04	1.71E-04	7.51E-04
INTERNAL ORGAN	2.98E-04	3.05E-04	2.47E-04	2.58E-04	1.11E-03
	LIVER	LIVER	LIVER	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 10 CFR 50 APP. I

QTRLY OBJ	----- % OF APP I. -----				YRLY OBJ	% OF APP. I
	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-NOV		
TOTAL BODY (MREM)	1.5	0.01	0.01	0.01	3.0	0.03
CRIT. ORGAN (MREM)	5.0	0.01	0.01	0.00	10.0	0.01
	LIVER	LIVER	LIVER	LIVER	LIVER	LIVER

RESULTS BASED UPON  
DDCM REVISION 11  
UPDATE CS204  
FEBRUARY 1986

DRESDEN UNIT THREE  
ADULT RECEPTOR

1989 ANNUAL REPORT  
PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
PERIOD OF RELEASE - 01/01/89 TO 12/31/89. CALCULATED 12/19/89

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	3.86E-05	2.71E-05	1.38E-05	1.35E-05	9.30E-05
INTERNAL ORGAN	1.17E-04	5.80E-05	3.22E-05	2.47E-05	2.32E-04
	GI-LLI	GI-LLI	GI-LLI	GI-LLI	GI-LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1989

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 (MREM)	0.002
INTERNAL ORGAN	4.0 (MREM)	0.006
		GI-LLI

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON  
ODCM REVISION 11  
UPDATE DS204  
FEBRUARY 1986

DRESDEN

1989 ANNUAL REPORT  
 BWR TURBINE N-16 "SKYSHINE" DOSES TO NEAREST RESIDENT  
 PRODUCTION PERIOD - 01/01/89 TO 12/31/89 CALCULATED 12/19/89

NEAREST RESIDENT (UNITS 2 & 3) : 966 m  
 FISHING ACTIVITY LOCATION : 610 m

	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
POWER (Mwe-hr)	2.14E+06	2.54E+06	3.07E+06	2.22E+06	9.98E+06
NEAREST RESIDENT WHOLE BODY DOSES (MREM) :					
FISHING DOSE	3.42E-02	4.05E-02	4.90E-02	3.54E-02	1.59E-01
AT-HOME DOSE	1.47E-02	1.75E-02	2.11E-02	1.52E-02	6.85E-02
TOTAL DOSE	4.89E-02	5.80E-02	7.01E-02	5.06E-02	2.28E-01

THIS IS A REPORT FOR CALENDAR YEAR 1989

RESULTS BASED UPON  
 ODCM REVISION 11  
 UPDATE CS204  
 FEBRUARY 1986

DRESDEN NUCLEAR POWER STATION DOCKET NOS. 50-10, 50-237, 50-249

METEOROLOGICAL DATA

(Includes hourly data for Abnormal Release dates on the 4th and 25th of March, 1989)

ZR03/727

24 of 24

CECO DRESDEN STATION

January-June 1989

35 ft. WIND SPEED and WIND DIRECTION

150-35 ft. DIFFERENTIAL TEMPERATURE

NUMBER OF OBSERVATIONS = 4214

SPEED CLASS	DIRECTION CLASS																STABILITY CLASS								
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.02	.02	.02	.00	.00	.12	.12							
MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.05	.00	.00	.00	.07		.07						
9 SU	.05	.00	.00	.00	.00	.00	.02	.00	.07	.05	.00	.02	.02	.00	.02	.00	.26			.26					
N	.07	.21	.21	.12	.19	.14	.12	.09	.21	.09	.14	.14	.19	.05	.28	.09	2.37				2.37				
3 SS	.40	.14	.36	.45	.31	.36	.24	.36	.26	.21	.12	.19	.17	.21	.36	.12	4.25					4.25			
MS	.26	.09	.09	.09	.12	.17	.05	.31	.33	.38	.31	.19	.17	.21	.33	.14	3.25						3.25		
ES	.00	.00	.02	.02	.00	.02	.02	.09	.14	.21	.26	.17	.09	.07	.09	.09	1.33							1.33	
																									11.65
EU	.55	.26	.07	.02	.26	.07	.19	.07	.17	.14	.05	.12	.43	.33	.62	.64	3.99	3.99							
MU	.07	.17	.09	.09	.09	.17	.14	.05	.05	.05	.14	.24	.14	.12	.05	.02	1.68		1.68						
4 SU	.12	.14	.00	.12	.12	.07	.14	.14	.24	.17	.05	.12	.09	.14	.02	.05	1.73			1.73					
N	.59	.88	1.09	1.68	1.61	.69	.55	.36	.59	.38	.31	.57	.33	.59	.50	1.02	11.75				11.75				
7 SS	.50	.81	.88	.71	1.38	1.28	.62	.97	1.19	.83	.47	.50	1.19	1.12	.71	.64	13.79					13.79			
MS	.07	.07	.05	.00	.17	.66	.17	.31	.59	.59	.85	.52	.12	.33	.05	.17	4.72						4.72		
ES	.02	.00	.00	.00	.02	.00	.02	.05	.05	.12	.09	.00	.02	.02	.00	.02	.45							.45	
																									38.11
EU	.31	.40	.40	.12	.17	.09	.38	.47	.52	.12	.17	.21	.62	1.12	1.28	.97	7.36	7.36							
MU	.02	.05	.05	.24	.19	.07	.07	.09	.09	.07	.02	.21	.12	.07	.07	.02	1.47		1.47						
8 SU	.19	.02	.12	.21	.07	.12	.05	.07	.09	.09	.07	.17	.09	.14	.12	.14	1.78			1.78					
N	1.33	.57	1.04	.88	.97	.93	.40	.69	.90	.57	.69	.71	1.00	1.19	.74	1.50	14.10				14.10				
1 SS	.12	.09	.14	.09	.24	.93	.52	.71	1.26	.97	.97	.64	1.21	.81	.43	.26	9.40					9.40			
2 MS	.00	.00	.00	.00	.00	.00	.02	.05	.05	.07	.07	.07	.00	.02	.00	.00	.36						.36		
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							.00	
																									14.46
EU	.12	.07	.17	.00	.02	.26	.07	.24	.33	.24	.21	.19	.31	.57	.28	.19	3.27	3.27							
1 MU	.19	.02	.02	.00	.00	.00	.00	.05	.07	.12	.17	.12	.00	.07	.09	.07	1.00		1.00						
2 SU	.02	.05	.07	.00	.00	.02	.00	.09	.07	.05	.07	.00	.05	.05	.07	.28	.90			.90					
N	.17	.26	.43	.02	.19	.38	.36	.66	.52	.59	.38	.21	.52	.45	.33	.36	5.84				5.84				
1 SS	.00	.00	.00	.00	.00	.05	.05	.26	.66	.78	.43	.14	.33	.14	.02	.00	2.87					2.87			
8 MS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00						.00		
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							.00	
																									13.88
EU	.00	.00	.00	.00	.00	.00	.00	.00	.09	.07	.14	.05	.09	.19	.05	.00	.69	.69							
1 MU	.00	.02	.00	.00	.00	.00	.00	.00	.02	.02	.00	.00	.02	.00	.00	.00	.09		.09						
9 SU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.02	.00	.00	.05			.05					
N	.00	.00	.02	.00	.00	.00	.07	.00	.33	.05	.09	.00	.24	.07	.00	.00	.88				.88				
2 SS	.00	.00	.00	.00	.00	.00	.05	.02	.02	.02	.00	.02	.00	.00	.00	.00	.14					.14			
4 MS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00						.00		
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							.00	
																									1.85
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
2 MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00						
5 SU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.02			.02					
N	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				.00				
3 SS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.02					.02			
1 MS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00						.00		
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							.00	
																									.05



CECo DRESDEN STATION  
 300 ft. WIND SPEED and WIND DIRECTION  
 January-June 1989  
 300-35 ft. DIFFERENTIAL TEMPERATURE  
 NUMBER OF OBSERVATIONS = 4260

SPEED CLASS	DIRECTION CLASS																STABILITY CLASS								
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9 SU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
- N	.05	.00	.02	.12	.09	.05	.09	.05	.02	.12	.05	.07	.14	.02	.05	.05	.99			.99					
3 SS	.02	.07	.05	.05	.07	.05	.00	.14	.09	.16	.09	.19	.07	.07	.00	.05	1.17				1.17				
MS	.02	.00	.00	.00	.02	.00	.02	.00	.00	.02	.00	.02	.02	.00	.09	.00	.23						.23		
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00						.00		
																								.00	2.39
EU	.02	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.09	.09								
MU	.07	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.21		.21						
4 SU	.07	.09	.09	.05	.00	.07	.02	.09	.00	.00	.00	.02	.02	.07	.12	.05	.68			.68					
- N	.14	.31	.19	.56	.33	.49	.38	.42	.54	.38	.45	.61	.38	.40	.28	.28	6.13			6.13					
7 SS	.09	.09	.19	.31	.12	.12	.21	.35	.45	.33	.35	.45	.19	.23	.19	.23	3.90				3.90				
MS	.00	.02	.09	.02	.07	.00	.00	.07	.12	.09	.14	.14	.12	.12	.05	.05	1.10					1.10			
ES	.00	.00	.00	.02	.02	.00	.00	.00	.07	.07	.02	.02	.05	.00	.00	.00	.28						.28		
																								.28	12.39
EU	.16	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.02	.00	.05	.16	.42	.42								
MU	.16	.05	.05	.00	.05	.00	.02	.00	.00	.00	.00	.02	.05	.09	.21	.31	1.01								
8 SU	.09	.14	.14	.19	.12	.02	.16	.05	.02	.07	.05	.02	.14	.19	.31	.19	1.90			1.90					
- N	.92	.70	.85	1.78	1.17	.63	.61	.75	.87	.63	.59	.80	.75	.63	.49	1.06	13.24				13.24				
1 SS	.31	.47	.47	.59	.73	.40	.42	.52	.59	.42	.42	.49	.77	.33	.47	.23	7.63				7.63				
2 MS	.02	.09	.14	.07	.05	.05	.16	.23	.09	.09	.14	.45	.33	.12	.19	.09	2.32					2.32			
ES	.00	.00	.02	.00	.00	.00	.02	.07	.00	.00	.07	.02	.02	.12	.00	.00	.35						.35		
																								.35	26.88
EU	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.07	.05	.00	.40								
1 MU	.02	.07	.05	.00	.02	.00	.07	.00	.02	.00	.02	.00	.60	.16	.28	.09	.82			.82					
3 SU	.05	.09	.09	.16	.02	.09	.09	.14	.09	.05	.07	.00	.07	.21	.14	.07	1.46			1.46					
- N	1.43	.61	1.27	1.29	.66	.85	.31	.80	.80	.47	.75	.80	1.34	1.60	1.13	1.08	15.16				15.16				
1 SS	.28	.61	.40	.21	.52	1.01	.75	1.06	1.13	1.22	.75	.89	1.34	.96	.87	.68	12.68				12.68				
8 MS	.16	.09	.14	.00	.00	.21	.52	.14	.28	.38	.49	.54	.28	.09	.26	.12	3.71					3.71			
ES	.00	.00	.00	.00	.00	.00	.02	.02	.05	.12	.07	.09	.05	.02	.05	.49							.49		
																								.49	34.72
EU	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.05								
1 MU	.00	.05	.09	.06	.00	.09	.00	.09	.00	.02	.02	.00	.02	.00	.00	.40	.40			.40					
9 SU	.00	.02	.05	.00	.07	.09	.05	.02	.00	.09	.02	.07	.07	.00	.02	.02	.61			.61					
- N	.45	.49	.26	.12	.47	.38	.26	.52	.54	.73	.54	.40	.54	.94	.63	.40	7.65				7.65				
2 SS	.38	.16	.02	.02	.12	.33	.42	.28	1.17	1.36	.82	.56	1.08	.80	.28	.05	7.86				7.86				
4 MS	.12	.05	.07	.00	.00	.02	.02	.05	.21	.12	.19	.05	.05	.02	.00	.12	1.08					1.08			
ES	.02	.00	.00	.00	.00	.00	.02	.00	.00	.02	.02	.02	.00	.00	.00	.02	.14						.14		
																								.14	17.79
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00								
2 MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02	.00	.00	.00	.00	.05	.05			.05					
5 SU	.02	.02	.00	.00	.00	.00	.00	.00	.05	.02	.09	.07	.02	.00	.00	.26	.26			.26					
- N	.09	.16	.49	.00	.00	.00	.09	.21	.40	.12	.16	.76	.38	.40	.14	.12	3.03				3.03				
3 SS	.12	.00	.00	.00	.00	.00	.02	.09	.35	.49	.42	.21	.16	.09	.05	.02	2.04					2.04			
1 MS	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.05								
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00						.00		
																								.00	5.42



CECO DRESDEN NUCLEAR POWER STATION  
METEOROLOGICAL DATA

DATE		...WIND SPEED....			.WIND DIRECTION.			...WIND SIGNA...			TEMP	...DIFF T...			.....DEW POINT.....			PRECIP
MM-DD-YY	HH	35	150	300	35	150	300	35	150	300	35	150	300	35	150	300	10	
3-4-89	1	7.3	12.1	17.0	110	117	128	7	4	3	37.1	.1	1.4	35.7	35.3	36.0	.00	
3-4-89	2	6.1	10.1	13.5	120	129	141	26	15	6	38.4	.6	2.2	37.2	37.1	38.3	.00	
3-4-89	3	7.0	11.5	16.6	140	154	165	12	8	7	40.9	1.0	2.0	39.8	40.3	40.7	.00	
3-4-89	4	5.5	9.9	15.5	164	177	187	13	8	4	42.4	.2	.9	41.1	41.2	41.0	.00	
3-4-89	5	7.6	12.3	18.1	150	168	181	10	4	4	43.0	.4	1.4	41.6	41.7	42.1	.00	
3-4-89	6	7.8	11.4	15.5	159	167	173	16	11	5	44.4	.1	.5	43.2	43.0	42.7	.00	
3-4-89	7	6.7	10.1	13.7	177	181	184	29	20	14	43.9	.2	.4	42.8	42.7	42.1	.00	
3-4-89	8	4.8	8.4	12.6	192	205	209	22	11	5	42.3	.5	1.0	41.3	41.3	41.2	.00	
3-4-89	9	5.2	9.8	14.7	233	229	223	28	19	13	42.4	.4	1.2	999.0	41.4	41.4	.00	
3-4-89	10	7.5	11.7	15.6	268	268	267	9	10	11	42.7	-.3	-.1	999.0	41.1	40.5	.00	
3-4-89	11	6.7	9.4	11.8	261	263	265	7	6	7	42.5	-.5	-.4	41.7	40.3	39.8	.00	
3-4-89	12	7.8	11.0	12.7	255	252	250	8	8	8	42.3	-.7	-1.0	41.2	40.0	39.0	.00	
3-4-89	13	11.0	14.1	15.8	264	264	263	4	4	4	38.8	-.9	-1.9	36.6	35.7	34.3	.00	
3-4-89	14	10.1	13.6	15.0	280	280	277	9	7	6	36.0	-.8	-1.9	32.9	32.1	30.9	.00	
3-4-89	15	13.9	19.3	21.1	289	288	285	6	4	4	33.3	-.8	-1.6	29.4	28.3	27.3	.00	
3-4-89	16	12.9	18.1	20.0	287	286	283	8	6	6	31.6	-.8	-1.4	27.7	26.5	25.7	.00	
3-4-89	17	12.6	17.7	19.3	289	288	286	6	5	4	30.4	-.8	-1.5	26.6	25.3	24.6	.00	
3-4-89	18	9.3	12.7	14.2	295	294	293	11	10	8	30.2	-.8	-1.4	27.3	25.9	25.5	.00	
3-4-89	19	9.0	12.2	13.9	303	302	299	13	13	13	30.6	-.9	-1.5	27.0	25.8	25.1	.00	
3-4-89	20	12.5	16.6	17.9	339	339	337	6	6	6	28.8	-1.0	-1.6	25.1	24.5	24.1	.00	
3-4-89	21	12.1	15.8	17.5	337	337	335	5	5	4	27.4	-1.0	-1.6	22.3	21.8	21.1	.00	
3-4-89	22	13.5	17.9	20.0	340	340	338	4	3	3	26.0	-1.0	-1.6	19.9	19.8	18.6	.00	
3-4-89	23	13.0	17.4	18.9	347	348	347	7	7	6	25.0	-1.0	-1.6	19.0	19.1	17.9	.00	
3-4-89	24	11.9	16.4	18.3	360	2	1	7	6	5	24.2	-1.0	-1.6	19.1	19.1	18.1	.00	
																	TOTAL	.00

CECO DRESDEN NUCLEAR POWER STATION  
METEOROLOGICAL DATA

DATE		WIND SPEED			WIND DIRECTION			WIND SIGNA...			TEMP	DIFF T...			DEW POINT			PRECIP
MM-DD-YY	HH	35	150	300	35	150	300	35	150	300	35	150	300	35	150	300	10	
3-25-89	1	10.4	15.7	21.5	197	198	197	4	3	3	51.8	.0	.2	42.2	41.0	41.3	.00	
3-25-89	2	9.4	14.6	20.3	215	213	211	13	10	8	51.2	.0	.1	44.2	43.0	43.1	.00	
3-25-89	3	10.2	15.9	21.8	230	227	225	3	2	3	50.1	.2	.5	44.6	43.6	43.5	.00	
3-25-89	4	8.7	15.0	20.3	234	237	238	3	2	2	48.6	.6	1.2	44.0	43.3	42.9	.00	
3-25-89	5	6.1	12.3	16.8	233	239	249	7	7	9	46.7	1.2	2.4	42.6	42.1	41.3	.00	
3-25-89	6	9.0	14.7	19.1	283	281	278	12	8	6	45.8	.3	.2	40.4	39.6	38.7	.00	
3-25-89	7	8.4	12.2	15.1	279	278	277	8	7	5	43.5	-.5	-.8	39.0	37.9	37.4	.00	
3-25-89	8	7.0	9.3	11.0	288	288	290	8	8	9	44.9	-1.1	-1.5	39.2	38.2	37.2	.00	
3-25-89	9	6.6	7.8	8.5	307	307	310	23	20	18	49.4	-1.6	-2.3	39.7	38.8	37.6	.00	
3-25-89	10	8.1	10.0	10.2	346	347	345	11	10	9	53.9	-1.7	-2.7	40.5	39.6	38.5	.00	
3-25-89	11	6.4	7.9	8.4	7	7	5	20	15	12	58.5	-1.7	-3.0	42.1	41.3	40.1	.00	
3-25-89	12	4.4	5.4	5.8	61	34	53	45	68	28	62.2	-.8	-2.4	41.3	40.9	39.6	.00	
3-25-89	13	4.1	4.9	5.1	72	75	78	48	41	33	64.7	-1.1	-2.3	40.6	40.1	38.9	.00	
3-25-89	14	6.3	7.3	7.5	71	74	77	56	48	47	65.4	-1.1	-2.5	40.8	40.0	39.0	.00	
3-25-89	15	12.3	15.0	16.1	92	92	89	8	7	5	61.3	-1.4	-2.6	41.6	40.5	39.7	.00	
3-25-89	16	8.5	11.1	12.5	69	70	68	10	8	7	58.9	-1.1	-2.2	40.8	39.8	39.0	.00	
3-25-89	17	8.6	12.2	13.8	66	67	65	6	5	3	56.0	-.8	-1.7	40.3	39.2	41.5	.00	
3-25-89	18	6.9	9.4	11.3	67	70	70	6	4	4	53.3	-.6	-1.4	40.0	38.9	38.3	.00	
3-25-89	19	5.2	7.2	8.3	69	72	71	8	6	4	49.7	-.5	-1.2	39.6	38.4	38.0	.00	
3-25-89	20	5.6	7.5	8.1	75	75	70	10	7	5	45.8	-.6	-1.2	38.3	37.2	36.9	.00	
3-25-89	21	6.1	8.0	9.7	72	74	70	10	6	4	42.3	-.7	-1.1	36.5	35.4	34.9	.00	
3-25-89	22	8.9	12.1	14.4	97	93	86	6	4	5	39.7	-.6	-.7	35.0	33.9	33.4	.00	
3-25-89	23	5.1	7.0	8.7	93	88	82	11	7	5	38.7	-.5	-.8	34.5	33.5	33.1	.00	
3-25-89	24	7.1	9.4	11.9	97	93	87	5	6	7	38.3	-.6	-.8	34.4	33.4	32.9	.00	
TOTAL																	.00	