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May 13, 2011

SVPLTR # 11-0022

U. S. Nuclear Regulatory Commission
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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: Dresden Nuclear Power Station 2010 Annual Radiological Environmental Operating Report

Enclosed is the Exelon Dresden Nuclear Power Station 2010 Annual Radiological Environmental Operating Report, submitted in accordance with Section 6.9.A.3 of the Unit 1 Dresden Nuclear Power Station Technical Specifications and Section 5.6.2, "Annual Radiological Environmental Operating Report," of the Units 2 and 3 Technical Specifications. This report provides the results of the radiological environmental monitoring program for the 2010 calendar year.

In addition, Appendix F of the report contains the results of groundwater monitoring conducted in accordance with Exelon's Radiological Groundwater Protection Program, which is a voluntary program implemented in 2006. This information is being reported in accordance with a nuclear industry initiative.

Should you have any questions concerning this letter, please contact Dennis Leggett, Regulatory Assurance Manager, at (815) 416-2800.

Respectfully,

Shane Marik

Shane Marik
Acting Site Vice President
Dresden Nuclear Power Station

Attachment - Annual Radiological Environmental Operating Report

cc: Regional Administrator - NRC Region III
NRC Senior Resident - Dresden Nuclear Power Station

FSME20
IE47
FSME
NRR

Docket No: 50-010
50-237
50-249

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 and 3

Annual Radiological
Environmental Operating Report

1 January Through 31 December 2010

Prepared By

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Morris, IL 60450

May 2011

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Dresden Nuclear Power Station (DNPS) by Exelon covers the period 1 January 2010 through 31 December 2010. During that time period, 1,936 analyses were performed on 1,801 samples. In assessing all the data gathered for this report it was concluded that the operation of DNPS had no adverse radiological impact on the environment.

Surface water samples were analyzed for concentrations of gross beta, tritium and gamma emitting nuclides. Ground water samples were analyzed for concentrations of tritium and gamma emitting nuclides. No anthropogenic gamma emitting nuclides were detected. Gross beta and tritium activities detected were consistent with those detected in previous years.

Fish (commercially and recreationally important species), and sediment samples were analyzed for concentrations of gamma emitting nuclides. No fission or activation products were detected in fish. Cesium-137 was detected in one sediment sample at a concentration consistent with levels observed in previous years. No plant-produced fission or activation products were found in sediment.

Air particulate samples were analyzed for concentrations of gross beta and gamma emitting nuclides. Gross beta results at the indicator locations were consistent with those at the control location. No fission or activation products were detected.

High sensitivity I-131 analyses were performed on weekly air samples. All results were less than the minimum detectable activity.

Cow milk samples were analyzed for concentrations of I-131 and gamma emitting nuclides. All I-131 results were below the minimum detectable activity. Concentrations of naturally occurring K-40 were found. No fission or activation products were found.

Food product samples were analyzed for concentrations of gamma emitting nuclides. No fission or activation products were detected.

Environmental gamma radiation measurements were performed quarterly using thermoluminescent dosimeters. Levels detected were consistent with those observed in previous years.

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II. Introduction

The Dresden Nuclear Power Station (DNPS), consisting of one retired reactor and two operating boiling water reactors owned and operated by Exelon Corporation, is located in Grundy County, Illinois. Unit No. 1 went critical in 1960 and was retired in 1978. Unit No. 2 went critical on 16 June 1970. Unit No. 3 went critical on 02 November 1971. The site is located in northern Illinois, approximately 12 miles southwest of Joliet, Illinois at the confluence of the Des Plaines and Kankakee Rivers where they form the Illinois River.

This report covers those analyses performed by Teledyne Brown Engineering (TBE), Mirion Technologies, and Environmental Inc. Midwest Laboratory (EIML) on samples collected during the period 1 January 2010 through 31 December 2010.
An assessment of the station's radioactive effluent monitoring results and radiation dose via the principle pathways of exposure resulting from plant emissions of radioactivity including the maximum noble gas gamma and beta air doses in the unrestricted area, an annual summary of meteorological conditions including wind speed, wind direction, and atmospheric stability, and the result of the 40CFR190 uranium fuel cycle dose analysis for the calendar year are published in the station's Annual Radioactive Effluent Release Report.

A. Objective of the Radiological Environmental Monitoring Program (REMP)

The objectives of the REMP are to:

1. Provide data on measurable levels of radiation and radioactive materials in the site environs.

2. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.

B. Implementation of the Objectives

The implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.

2. Establishing baseline radiological data of media within those pathways.

3. Continuously monitoring those media before and during Station operation to assess Station radiological effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Samples for the DNPS REMP were collected for Exelon Nuclear by EIML. This section describes the general collection methods used by EIML to obtain environmental samples for the DNPS REMP in 2010. Sample locations and descriptions can be found in Table B–1 and Figures B–1 and B-2, Appendix B. The collection methods used by EIML are listed in Table B-2.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, ground water, fish, and sediment. Samples were collected from three surface water locations (D-21, D-52 and D-57) and composited for analysis. Control locations were D-52 and D-57. Samples were collected quarterly or more frequently from two well water locations (D-23 and D-35). All samples were collected in new unused plastic bottles, which were rinsed with source water prior to collection. Fish samples comprising the flesh of channel catfish, largemouth bass, common carp and freshwater drum were collected semiannually at two locations, D-28 and D-46 (Control). Sediment samples composed of recently deposited substrate were collected at one location semiannually, D-27.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulate, airborne iodine, milk, and food products. Airborne iodine and particulate samples were collected at thirteen locations (D-01, D-02, D-03, D-04, D-07, D-08, D-10, D-12, D-14, D-45, D-53, D-55 and D-56). The control location was D-12. Airborne iodine and particulate samples were obtained at each location, using a vacuum pump with charcoal and glass fiber filters attached. The pumps were run continuously and sampled air at the rate of approximately one cubic foot per minute. The air filters and air iodine samples were replaced weekly and sent to the laboratory for analysis.

Milk samples were collected biweekly at one control location (D-25) from May through October, and monthly from November through April. There are no milking animals within 10 km of the site. All samples were collected in new unused two gallon plastic bottles from the bulk tank at each location, preserved with sodium bisulfite, and shipped promptly to the laboratory.

Food products were collected annually in September at five locations (D-Control, D-Quad 1, D-Quad 2, D-Quad 3, and D-Quad 4). The control location was D-Control. Various types of samples were collected and placed in new unused plastic bags, and sent to the laboratory for analysis.

Ambient Gamma Radiation

Direct radiation measurements were made using CaF_2 and LiF thermoluminescent dosimeters (TLD). Each location consisted of 2 TLD sets. The TLD locations were placed on and around the DNPS site as follows:

An inner ring consisting of 16 locations (D-101, D-102, D-103, D-104, D-105, D-106, D-107, D-108, D-109, D-110, D-111, D-112A, D-113, D-114, D-115 and D-116) at or near the site boundary.

An outer ring consisting of 16 locations (D-201, D-202, D-203, D-204, D-205, D-206, D-207, D-208, D-209, D-210, D-211, D-212, D-213, D-214, D-215 and D-216) approximately 5 to 10 km from the site.

An other set consisting of TLDs at the 12 air sampler locations (D-01, D-02, D-03, D-04, D-07, D-08, D-10, D-14, D-45, D-53, D-55, and D-56).

The balance of one location (D-12) representing the control area.

Two TLDs – each comprised of two CaF_2 and two LiF thermoluminescent phosphors enclosed in plastic – were placed at each location. The TLDs were exchanged quarterly and sent to Mirion Technologies for analysis.

B. Sample Analysis

This section describes the general analytical methodologies used by TBE and EIML to analyze the environmental samples for radioactivity for the DNPS REMP in 2010. The analytical procedures used by the laboratories are listed in Table B-2.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of beta emitters in surface water and air particulates.

2. Concentrations of gamma emitters in ground and surface water, air particulates, milk, fish, sediment and vegetation.

3. Concentrations of tritium in ground and surface water.

4. Concentrations of I-131 in air and milk.

5. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

For the purpose of this report, Dresden Nuclear Power Station was considered operational at initial criticality. In addition, data were compared to previous years' operational data for consistency and trending. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) was defined as the smallest concentration of radioactive material in a sample that would yield a net count (above background) that would be detected with only a 5% probability of falsely concluding that a blank observation represents a "real" signal. The LLD was intended as a before the fact estimate of a system (including instrumentation, procedure and sample type) and not as an after the fact criteria for the presence of activity. All analyses were designed to achieve the required DNPS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is calculated the same as the LLD with the exception that the measurement is an after the fact estimate of the presence of activity.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample was calculated by subtracting background activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations may result in sample activity being lower than the background activity effecting a negative number. An MDC was reported in all cases where positive activity was not detected.

Gamma spectroscopy results for each type of sample were grouped as follows:

For ground and surface water and vegetation 12 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, I-131, Cs-134, Cs-137, Ba-140, and La-140 were reported.

For fish, sediment, air particulate and milk 11 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, Cs-134, Cs-137, Ba-140 and La-140 were reported.

Means and standard deviations of the results were calculated. The standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty.

D. Program Exceptions

For 2010 the DNPS REMP had a sample recovery rate in excess of 99%. Sample anomalies and missed samples are listed in the tables below:

Table D-1 LISTING OF SAMPLE ANOMALIES

Sample Type	Location Code	Collection Date	Reason
AP/I	D-07	03/05/10 – 03/12/10	Low reading of 152.0 hours on 03/12/10 due to power loss, likely due to lightning strike.
AP/I	D-07	03/12/10 – 03/19/10	Low reading of 98.7 hours on 03/19/10 due to recent power restoration on 03/15/10.
AP/I	D-07	03/26/10 – 04/02/10	Low run time of 169.1 hours; cause is unknown.
AP/I	D-02	04/23/10 – 04/30/10	Low run time of 169.3 hours due to electrical outage.
AP/I	D-03	04/23/10 – 04/30/10	Low run time of 169.6 hours due to electrical outage.
AP/I	D-07	04/23/10 – 04/30/10	Low run time of 167.5 hours due to electrical outage.
AP/I	D-01	05/21/10 – 05/28/10	Estimated collection time of 165.7 hours due to failed timer. Timer was replaced.
SW	D-21	05/28/10 – 06/25/10	Composite sampler was out of service due to pump failure. Grab samples drawn 06/17/10 – 08/03/10 and added to composite until sampler was repaired.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
SW	D-21	06/25/10 – 07/30/10	Composite sampler was out of service due to pump failure. Grab samples drawn 06/17/10 – 08/03/10 and added to composite until sampler was repaired.
AP/I	D-03	07/23/10 – 07/30/10	Low run time of 37.1 hours; cause is unknown.
AP/I	D-03	08/13/10 – 08/20/10	Low run time of 136.0 hours; cause is unknown.
AP/I	D-04	08/13/10 – 08/20/10	Estimated collection time of 167.5 hours due to failed timer. Timer was replaced.
AP/I	D-03	08/20/10 – 08/27/10	Low run time of 152.0 hours; cause is unknown. Timer was replaced.
AP/I	D-03	08/27/10 – 09/03/10	Low run time of 135.0 hours; cause is unknown.
AP/I	D-03	09/10/10 – 09/17/10	Low run time of 134.0 hours; cause is unknown. Second timer installed in parallel for troubleshooting, which indicated timers were accurate and previous low readings were due to power interruptions.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
TLD	D-214	07/01/10 – 10/01/10	TLDs D-214-1 and D-214-2 were missing during quarterly exchange, likely due to removal by utility pole inspection crew.

Each program exception was reviewed to understand the causes of the program exception. Sampling and maintenance errors were reviewed with the personnel involved to prevent recurrence. Occasional equipment

breakdowns and power outages were unavoidable.

The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

E. Program Changes

There were no program changes for 2010.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were composited or taken weekly and composited for analysis at three locations (D-21, D-52, and D-57). Of these locations only D-21 located downstream, could be affected by Dresden's effluent releases. The following analyses were performed:

Gross Beta

Monthly composites from all locations were analyzed for concentrations of gross beta (Table C–I.1, Appendix C). The values ranged from <3.8 to 15.7 pCi/l. Concentrations detected were consistent with those detected in previous years (Figures C-1, C–2, and C–3, Appendix C).

Tritium

Quarterly composites from all locations were analyzed for tritium activity (Table C–I.2, Appendix C). The indicator values ranged from <159 to 246 pCi/L. Control values ranged from <157 to 1,030 pCi/L. Concentrations detected were consistent with those detected in previous years (Figures C–4, C–5, and C-6, Appendix C).

Gamma Spectrometry

Monthly composites from all locations were analyzed for gamma emitting nuclides (Table C–I.3, Appendix C). No nuclides were detected, and all required LLDs were met.

2. Ground Water

Quarterly or more frequent grab samples were collected at two locations (D-23 and D-35). These locations could be affected by Dresden's effluent releases and by sources upstream on the Kankakee River. The following analyses were performed:

Tritium

All samples were analyzed for tritium activity (Table C–II.1, Appendix C). D-35 values ranged from <160 to <178 pCi/L. D-23 values ranged from 216 to 400 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C–7, Appendix C).

Gamma Spectrometry

All samples were analyzed for gamma emitting nuclides (Table C–II.2, Appendix C). No nuclides were detected, and all required LLDs were met.

3. Fish

Fish samples comprised of channel catfish, largemouth bass, common carp and freshwater drum were collected at two locations (D-28 and D-46) semiannually. Location D-28 could be affected by Dresden's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma emitting nuclides (Table C–III.1, Appendix C). Naturally occurring K-40 was found at all stations and ranged from 2,980 to 4,640 pCi/kg wet. No fission or activation products were detected.

4. Sediment

Aquatic sediment samples were collected at one location (D-27) semiannually. This downstream location could be affected by Dresden's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from the location were analyzed for gamma emitting nuclides (Table C–IV.1, Appendix C). Cesium-137 was detected in one sample at a concentration of 57 pCi/kg dry. The activity detected was consistent with those detected in previous years and is likely due to fallout from above-ground nuclear weapons testing. No other fission or activation products were detected.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from 13 locations on a weekly basis. The 13 locations were separated into four groups: On-site samplers (D-01, D-02, D-03), Near-field samplers within 4 km of the site (D-04, D-07, D-45, D-53 and D-56), Far-field samplers between 4 and 10 km from the site (D-08, D-10, D-14 and D-55) and the Control sampler between 10 and 30 km from the site (D-12). The following analyses were performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C–V.1 and C–V.2, Appendix C).

Detectable gross beta activity was observed at all locations. Comparison of results among the four groups aid in determining the effects, if any, resulting from the operation of DNPS. The results from the On-Site locations ranged from 6 to 47 E–3 pCi/m^3 with a mean of 18 E–3 pCi/m^3. The results from the Near-Field locations ranged from 6 to 40 E–3 pCi/m^3 with a mean of 18 E–3 pCi/m^3. The results from the Far-Field locations ranged from 6 to 40 E–3 pCi/m^3 with a mean of 19 E–3 pCi/m^3. The results from the Control location ranged from 8 to 40 E–3 pCi/m^3 with a mean of 19 E–3 pCi/m^3. Comparison of the 2010 air particulate data with previous years data indicate no effects from the operation of DNPS. In addition a comparison of the weekly mean values for 2010 indicate no notable differences among the four groups (Figures C–8 through C-14, Appendix C).

Gamma Spectrometry

Samples were composited quarterly and analyzed for gamma emitting nuclides (Table C–V.3, Appendix C). Naturally occurring Be-7 due to cosmic ray activity was detected in all 52 samples and ranged from 46.1 to 122 E–3 pCi/m^3. K-40 was also detected in 3 samples. The concentration ranged from 25.0 to 43.5 E–3 pCi/ m^3. No anthropogenic nuclides were detected, and all required LLDs were met.

b. Airborne Iodine

Continuous air samples were collected from 13 locations (D-01, D-02, D-03, D-04, D-07, D-08, D-10, D-12, D-14, D-45, D-53, D-55 and D-56) and analyzed weekly for I-131 (Table C–VI.1, Appendix C). Only naturally occuring nuclides were detected, and all required LLDs were met.

2. Terrestrial

a. Milk

There are no indicator locations within 10 kilometers of the station. Samples were collected from one control location (D-25) biweekly May through October and monthly November through April. The following analyses were performed:

Iodine-131

Milk samples from the location were analyzed for concentrations of I-131 (Table C–VII.1, Appendix C). No nuclides were detected, and all required LLDs were met.

Gamma Spectrometry

Each milk sample was analyzed for concentrations of gamma emitting nuclides (Table C–VII.2, Appendix C).

Naturally occurring K-40 activity was found in all nineteen samples. The activities ranged from 1,070 to 1,480 pCi/l. No other nuclides were detected, and all required LLDs were met.

b. Food Products

Food product samples were collected at five locations (D-Control, D-Quad 1, D-Quad 2, D-Quad 3 and D-Quad 4) when available. Four locations, (D-Quad 1, D-Quad 2, D-Quad 3 and D-Quad 4) could be affected by Dresden's effluent releases. The following analysis was performed:

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C–VIII.1, Appendix C). Only naturally occurring nuclides were detected, and all required LLDs were met.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Global Dosimetry 110 Environmental (CaF_2 and LiF) thermoluminescent dosimeters. Forty-five TLD locations were established around the site. Results of TLD measurements are listed in Tables C–IX.1 to C–IX.3, Appendix C.

Most TLD measurements were below 30 mR/quarter, with a range of 19 to 33 mR/quarter. A comparison of the Inner Ring, Outer Ring, and Other locations' data to the Control Location data, indicate that the ambient gamma radiation levels from the Control location (D-12-01, D-12-02) were comparable.

D. Land Use Survey

A Land Use Survey conducted on 03 August 2010 around the Dresden Nuclear Power Station (DNPS) was performed by EIML for Exelon Nuclear to comply with Section 12.6.2 of the Dresden Offsite Dose Calculation Manual (ODCM). The purpose of the survey was to document the nearest resident or industrial facility, milk producing animal, and livestock in each of the sixteen 22 ½ degree sectors within 10 km around the site. There were no changes required to the DNPS REMP as a result of this survey. The results of this survey are summarized below.

Distance in Miles from the DNPS Reactor Buildings			
Sector	Residence Miles	Livestock Miles	Milk Farm Miles
A N	1.5	1.4	-
B NNE	0.8	6.0	-
C NE	0.8	5.8	-
D ENE	0.7	1.7	-
E E	1.1	-	-
F ESE	1.0	-	-
G SE	0.6	-	-
H SSE	0.5	-	-
J S	0.5	-	16.0
K SSW	3.3	-	-
L SW	3.6	-	11.4
M WSW	5.8	-	-
N W	3.5	0.5	-
P WNW	3.7	0.5	-
Q NW	2.6	0.5	-
R NNW	0.8	1.0	-

E. Errata Data

There was no errata data discovered in 2010.

F. Summary of Results – Inter-Laboratory Comparison Program

The primary laboratory analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation and water matrices (Appendix D). The PE samples, supplied by Analytics Inc., Environmental Resource Associates (ERA) and DOE's Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

   Analytics' evaluation report provides a ratio of laboratory results and Analytics' known value. Since flag values are not assigned by Analytics, TBE-ES evaluates the reported ratios based on internal QC requirements, which are based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

   ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, NELAC, state specific PT program requirements or ERA's SOP for the Generation of

Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

MAPEP's evaluation report provides an acceptance range with associated flag values.

The MAPEP defines three levels of performance: Acceptable (flag = "A"), Acceptable with Warning (flag = "W"), and Not Acceptable (flag = "N"). Performance is considered acceptable when a mean result for the specified analyte is ± 20% of the reference value. Performance is acceptable with warning when a mean result falls in the range from ±20% to ±30% of the reference value (i.e., 20% < bias < 30%). If the bias is greater than 30%, the results are deemed not acceptable.

For the primary laboratory, 16 out of 18 analytes met the specified acceptance criteria. Two analytes did not meet the specified acceptance criteria for the following reason:

1. Teledyne Brown Engineering's ERA November 2010 Sr-89 in water result of 77.8 pCi/L was higher than the known value of 68.5 pCi/L, resulting in a found to known ratio of 1.14. NCR 10-09 was initiated to investigate this failure. Since the ratio of 1.14 fell within an acceptance range of 20%, Teledyne considers this an acceptable result.

2. Teledyne Brown Engineering's ERA November 2010 Zn-65 in water result of 11.0 pCi/L was lower than the known value of 102 pCi/L. NCR 10-09 was initiated to investigate this failure. The Zn-65 result of 111 was incorrectly reported as 11.0.

For the secondary laboratory, Environmental, Inc., 14 out of 14 analytes met the specified acceptance criteria.

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2010

NAME OF FACILITY: DRESDEN **DOCKET NUMBER:** 50-010 50-237 & 50-249
LOCATION OF FACILITY: MORRIS, IL **REPORTING PERIOD:** ANNUAL 2010

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GR-B	36	4	8.8 (11/12) (5.1/14.5)	9.3 (24/24) (4.1/15.7)	9.6 (12/12) (4.1/15.7)	D-57 CONTROL KANKAKEE RIVER AT WILL ROAD(CONTROL) 2.0 MILES SE OF SITE	0
	H-3	12	2000	217 (3/4) (189/246)	631 (2/8) (231/1030)	631 (2/4) (231/1030)	D-57 CONTROL KANKAKEE RIVER AT WILL ROAD(CONTROL) 2.0 MILES SE OF SITE	0
	GAMMA	36						
	MN-54		15	<LLD	<LLD	-		0
	CO-58		15	<LLD	<LLD	-		0
	FE-59		30	<LLD	<LLD	-		0
	CO-60		15	<LLD	<LLD	-		0
	ZN-65		30	<LLD	<LLD	-		0
	NB-95		15	<LLD	<LLD	-		0

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2010

NAME OF FACILITY: DRESDEN **DOCKET NUMBER:** 50-010 **50-237 & 50-249**
LOCATION OF FACILITY: MORRIS, IL **REPORTING PERIOD:** ANNUAL 2010

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0
GROUND WATER (PCI/LITER)	H-3	16	2000	301 (12/16) (216/400)	NA	301 (12/12) (216/400)	D-23 INDICATOR THORSEN WELL 0.7 MILES S OF SITE	0
	GAMMA	16						
	MN-54		15	<LLD	NA	-		0

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NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010		50-237 & 50-249
LOCATION OF FACILITY:	MORRIS, IL			REPORTING PERIOD:		ANNUAL 2010		
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CO-58		15	<LLD	NA	-		0
	FE-59		30	<LLD	NA	-		0
	CO-60		15	<LLD	NA	-		0
	ZN-65		30	<LLD	NA	-		0
	NB-95		15	<LLD	NA	-		0
	ZR-95		30	<LLD	NA	-		0
	I-131		15	<LLD	NA	-		0
	CS-134		15	<LLD	NA	-		0

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2010

NAME OF FACILITY: DRESDEN **DOCKET NUMBER:** 50-010 50-237 & 50-249
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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CS-137		18	<LLD	NA	-		0
	BA-140		60	<LLD	NA	-		0
	LA-140		15	<LLD	NA	-		0
FISH (PCI/KG WET)	GAMMA	8						
	MN-54		130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2010

NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010		50-237 & 50-249
LOCATION OF FACILITY:	MORRIS, IL			REPORTING PERIOD:		ANNUAL 2010		
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FISH (PCI/KG WET)	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0
	CS-137		150	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
SEDIMENT (PCI/KG DRY)	GAMMA	2						
	MN-54		NA	<LLD	NA	-		0
	CO-58		NA	<LLD	NA	-		0

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NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010		50-237 & 50-249
LOCATION OF FACILITY:	MORRIS, IL			REPORTING PERIOD:		ANNUAL 2010		
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	FE-59		NA	<LLD	NA	-		0
	CO-60		NA	<LLD	NA	-		0
	ZN-65		NA	<LLD	NA	-		0
	NB-95		NA	<LLD	NA	-		0
	ZR-95		NA	<LLD	NA	-		0
	CS-134		150	<LLD	NA	-		0
	CS-137		180	57 (1/2)	NA	57 (1/2)	D-27 INDICATOR DRESDEN LOCK AND DAM - DOWNSTREAM 0.8 MILES NW OF SITE	0
	BA-140		NA	<LLD	NA	-		0

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NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010		50-237 & 50-249
LOCATION OF FACILITY:	MORRIS, IL			REPORTING PERIOD:		ANNUAL 2010		
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	LA-140		NA	<LLD	NA	-		0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	676	10	18 (621/624) (6/47)	19 (49/52) (8/40)	19 (51/52) (8/40)	D-08 INDICATOR PRAIRIE PARK 3.8 MILES SW OF SITE	0
	GAMMA	52						
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010		50-237 & 50-249
LOCATION OF FACILITY:	MORRIS, IL			REPORTING PERIOD:		ANNUAL 2010		
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		50	<LLD	<LLD	-		0
	CS-137		60	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	676	70	<LLD	<LLD	-		0
MILK (PCI/LITER)	I-131	19	1	NA	<LLD	-		0
	GAMMA MN-54	19	NA	NA	<LLD	-		0

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NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010		50-237 & 50-249
LOCATION OF FACILITY:	MORRIS, IL			REPORTING PERIOD:		ANNUAL 2010		
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	CO-58		NA	NA	<LLD	-		0
	FE-59		NA	NA	<LLD	-		0
	CO-60		NA	NA	<LLD	-		0
	ZN-65		NA	NA	<LLD	-		0
	NB-95		NA	NA	<LLD	-		0
	ZR-95		NA	NA	<LLD	-		0
	CS-134		15	NA	<LLD	-		0
	CS-137		18	NA	<LLD	-		0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	BA-140		60	NA	<LLD	-		0
	LA-140		15	NA	<LLD	-		0
VEGETATION (PCI/KG WET)	GAMMA	10						
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2010

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LOCATION OF FACILITY: MORRIS, IL **REPORTING PERIOD:** ANNUAL 2010

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	ZR-95		NA	<LLD	<LLD	-		0
	I-131		60	<LLD	<LLD	-		0
	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	358	NA	24 (350/350) (19/33)	22 (8/8) (19/25)	30 (4/4) (28/32)	D-201-1 INDICATOR 4.8 MILES N	0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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APPENDIX B

LOCATION DESIGNATION, DISTANCE & DIRECTION, AND SAMPLE COLLECTION & ANALYTICAL METHODS

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TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2010

Location	Location Description	Distance & Direction From Site
A. Surface Water		
D-21	Illinois River at EJ&E Bridge (indicator)	1.4 miles WNW
D-52	DesPlaines River, Upstream (control)	1.1 miles ESE
D-57	Kankakee River at Will Road (control)	2.0 miles SE
B. Ground/Well Water		
D-23	Thorsen Well (indicator)	0.7 miles S
D-35	Dresden Lock and Dam (indicator)	0.8 miles NW
C. Milk - bi-weekly / monthly		
D-25	Biros Farm (control)	11.3 miles SW
D. Air Particulates / Air Iodine		
D-01	Onsite 1 (indicator)	0.8 miles NW
D-02	Onsite 2 (indicator)	0.3 miles NNE
D-03	Onsite 3 (indicator)	0.4 miles S
D-04	Collins Road (indicator)	0.8 miles W
D-07	Clay Products (indicator)	2.6 miles S
D-08	Prairie Park (indicator)	3.8 miles SW
D-10	Goose Lake Village (indicator)	3.5 miles SSW
D-12	Lisbon (control)	10.5 miles NW
D-14	Channahon (indicator)	3.7 miles NE
D-45	McKinley Woods Road (indicator)	1.7 miles ENE
D-53	Grundy County Road (indicator)	2.1 miles SSE
D-55	Ridge Road (indicator)	4.3 miles N
D-56	Wildfeather (indicator)	1.7 miles SE
E. Fish		
D-28	Dresden Pool of Illinois River, Downstream (indicator)	0.9 miles NNW
D-46	DesPlaines River, Upstream (control)	1.2 miles ESE
F. Sediment		
D-27	Dresden Lock and Dam, Downstream (indicator)	0.8 miles NW
G. Vegetation		
Quadrant 1	Chris Locknar	2.8 miles NE
Quadrant 2	Robert Pagliano	3.2 miles SSE
Quadrant 3	Jim Bloom	3.9 miles SSW
Quadrant 4	J.D. Carmichael	1.6 miles NNW
Control	Glasscock Farm	12.8 miles ENE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2010

Location	Location Description	Distance & Direction From Site
H. Environmental Dosimetry - TLD		
Inner Ring		
D-101-1 and -2		1.0 miles N
D-102-1 and -2		1.3 miles NNE
D-103-1 and -2		1.2 miles NE
D-104-1 and -2		1.7 miles ENE
D-105-1 and -2		1.5 miles E
D-106-1 and -2		1.1 miles ESE
D-107-1 and -2		1.4 miles SE
D-108-1 and -2		1.9 miles SSE
D-109-1 and -2		0.8 miles S
D-110-3 and -4		0.9 miles SSW
D-111-1 and -2		0.6 miles SW
D-112a-1 and -2		0.7 miles WSW
D-113-1 and -2		0.9 miles W
D-114-1 and -2		0.9 miles WNW
D-115-1 and -2		0.8 miles NW
D-116-1 and -2		1.0 miles NNW
Outer Ring		
D-201-1 and -2		4.8 miles N
D-202-1 and -2		5.1 miles NNE
D-203-1 and -2		4.7 miles NE
D-204-1 and -2		5.0 miles ENE
D-205-1 and -2		4.0 miles E
D-206-1 and -2		3.5 miles ESE
D-207-1 and -2		4.2 miles SE
D-208-1 and -2		4.9 miles SSE
D-209-1 and -2		4.1 miles S
D-210-1 and -2		4.9 miles SSW
D-211-1 and -2		4.8 miles SW
D-212-3 and -4		6.0 miles WSW
D-213-1 and -2		4.5 miles W
D-214-1 and -2		5.0 miles WNW
D-215-1 and -2		4.8 miles NW
D-216-1 and -2		4.9 miles NNW
Other		
D-01-1 and -2	Onsite 1	0.8 miles NW
D-02-1 and -2	Onsite 2	0.3 miles NNE
D-03-1 and -2	Onsite 3	0.4 miles S
D-04-1 and -2	Collins Road	0.8 miles W
D-07-1 and -2	Clay Products	2.6 miles S
D-08-1 and -2	Prairie Park	3.8 miles SW
D-10-1 and -2	Goose Lake Village	3.5 miles SSW
D-14-1 and -2	Channahon	3.7 miles NE
D-45-1 and -2	McKinley Woods Road	1.7 miles ENE
D-53-1 and -2	Grundy County Road	2.1 miles SSE
D-55-1 and -2	Ridge Road	4.3 miles N
D-56-1 and -2	Wildfeather	1.7 miles SE
Control		
D-12-1 and -2	Lisbon	10.5 miles NW

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Dresden Nuclear Power Station, 2010

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite sample or monthly composite from weekly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual TBE, TBE-2023 Compositing of samples EIML-COMP-01 procedure for compositing water and milk samples	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis
Surface Water	Gross Beta	Monthly composite sample or monthly composite from weekly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual TBE, TBE-2023 Compositing of samples EIML-COMP-01 procedure for compositing water and milk samples	2 gallon	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Surface Water	Tritium	Quarterly composite of monthly composite samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual TBE, TBE-2023 Compositing of samples EIML-COMP-01 procedure for compositing water and milk samples	500 ml	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Ground Water	Gamma Spectroscopy	Quarterly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis
Ground Water	Tritium	Quarterly grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	500 ml	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Fish	Gamma Spectroscopy	Samples collected twice annually via electroshocking or other techniques	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1000 grams (wet)	TBE-2007 Gamma emitting radioisotope analysis
Sediment	Gamma Spectroscopy	Semi-annual grab samples	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	500 grams (dry)	TBE, TBE-2007 Gamma emitting radioisotope analysis

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Dresden Nuclear Power Station, 2010

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Dredging Spoils	Gamma Spectroscopy	Annual grab samples if dredging occurred within 1 mile of Dresden Station during the year.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	500 grams (dry)	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Particulates	Gross Beta	One-week of continuous air sampling through glass fiber filter paper	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2023 Compositing of samples Env. Inc., AP-03 Procedure for compositing air particulate filters for gamma spectroscopic analysis	13 filters	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Iodine	Gamma Spectroscopy	One- or two-week composite of continuous air sampling through charcoal filter	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2007 Gamma emitting radioisotope analysis
Milk	I-131	Bi-weekly grab sample May through October. Monthly all other times	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 gallon	TBE, TBE-2012 Radioiodine in various matrices
Milk	Gamma Spectroscopy	Bi-weekly grab sample May through October. Monthly all other times	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis
Food Products	Gamma Spectroscopy	Annual grab samples.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	1000 grams	TBE, TBE-2007 Gamma emitting radioisotope analysis
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two Mirion Technologies TLDs, with two CaF_2 elements and two LiF elements in each TLD.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 dosimeters	Mirion Technologies

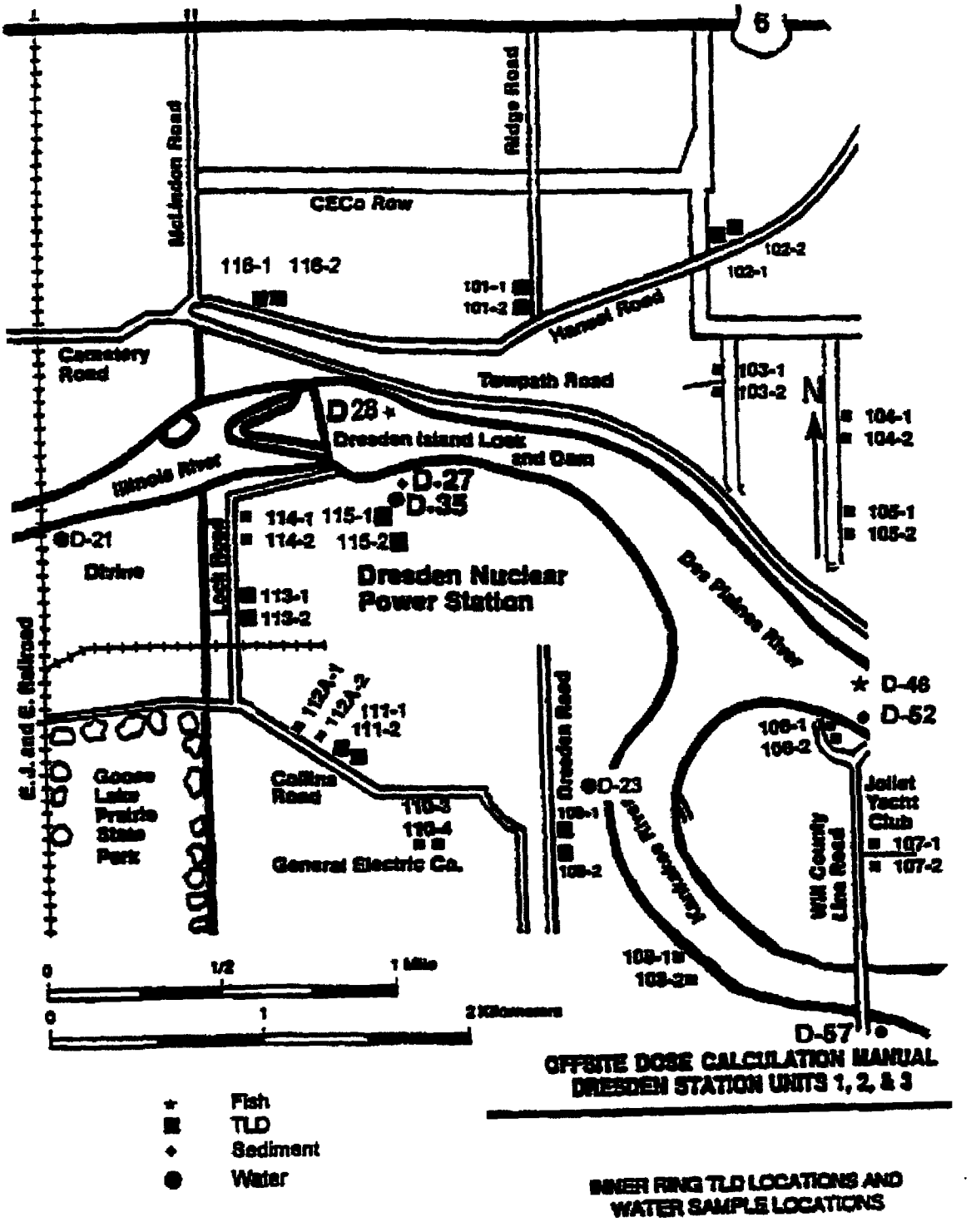

Figure B-1
Dresden Station Inner Ring TLD Locations, Fish, Water, and Sediment Location, 2010

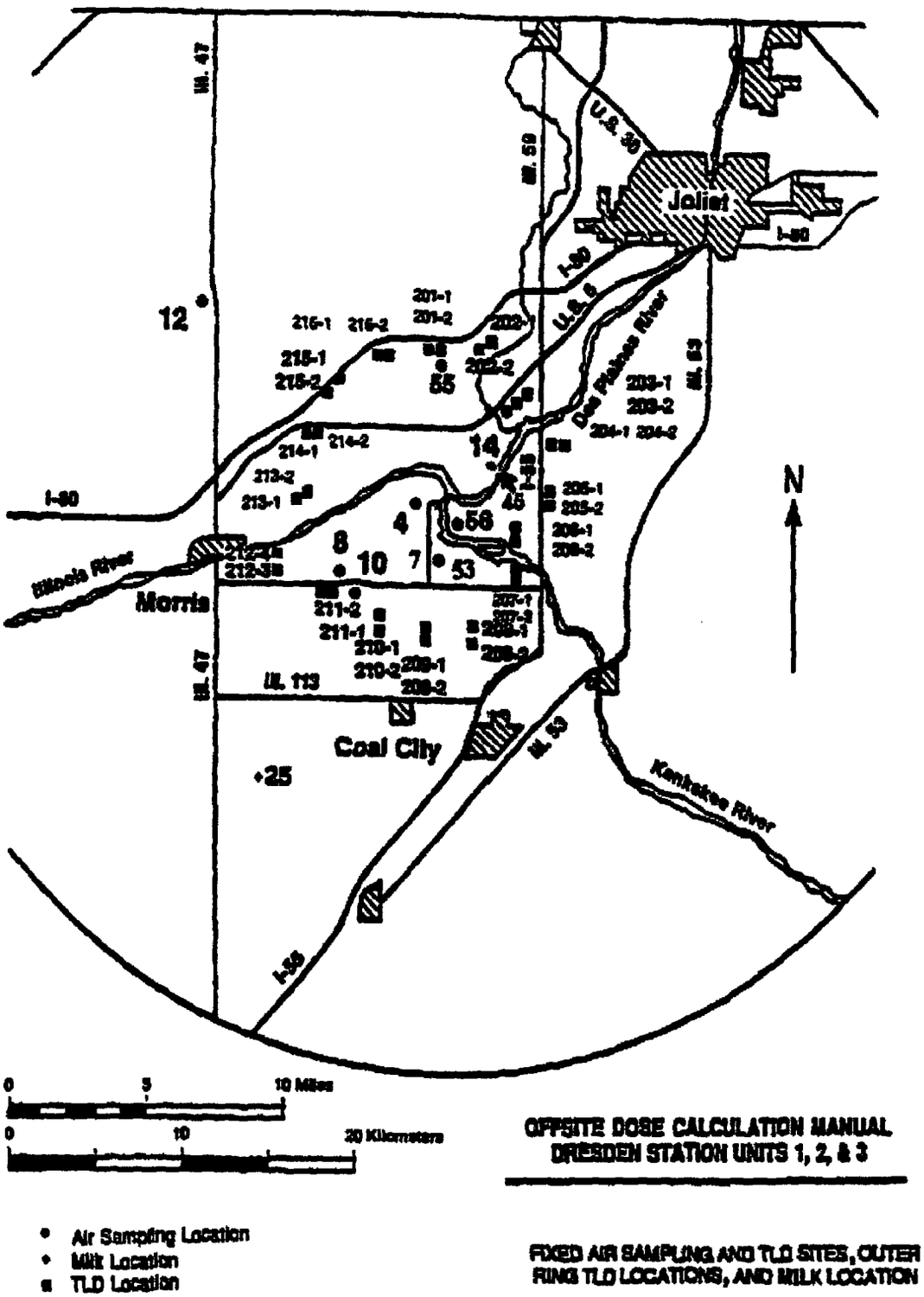

Figure B-2
Dresden Station Fixed Air Sampling and TLD Sites, Outer Ring TLD Locations and Milk Location, 2010

APPENDIX C

DATA TABLES AND FIGURES
PRIMARY LABORATORY

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TABLE C-I.1 **CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
01/01/10 - 01/29/10	9.3 ± 2.6	5.8 ± 2.5	4.2 ± 2.2
02/05/10 - 02/26/10	12.6 ± 2.6	9.5 ± 2.7	9.5 ± 2.5
03/05/10 - 03/26/10	7.2 ± 2.6	10.0 ± 3.0	7.4 ± 2.3
04/02/10 - 04/30/10	< 3.8	7.9 ± 1.6	9.2 ± 1.5
05/07/10 - 05/28/10	7.4 ± 2.6	12.1 ± 3.2	8.0 ± 2.8
06/04/10 - 06/25/10	7.4 ± 2.2 (1)	7.1 ± 2.3	14.6 ± 3.1
07/03/10 - 07/30/10	14.5 ± 3.0 (1)	7.7 ± 2.6	11.9 ± 3.0
08/06/10 - 08/27/10	5.1 ± 2.3	10.9 ± 2.7	6.0 ± 2.4
09/03/10 - 09/24/10	9.4 ± 2.4	8.3 ± 2.3	12.8 ± 3.1
10/01/10 - 10/29/10	9.9 ± 2.5	8.9 ± 2.5	4.1 ± 2.2
11/05/10 - 11/26/10	5.2 ± 2.1	10.4 ± 2.4	12.4 ± 2.5
12/03/10 - 12/31/10	8.6 ± 3.3	9.6 ± 3.1	15.7 ± 4.0
MEAN	8.8 ± 5.7	9.0 ± 3.5	9.6 ± 7.8

TABLE C-I.2 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
01/01/10 - 03/26/10	189 ± 121	< 178	< 177
04/02/10 - 06/25/10	< 159	< 162	< 157
07/03/10 - 09/24/10	246 ± 134	< 199	231 ± 132
09/24/10 - 12/31/10	216 ± 109	< 159	1030 ± 169
MEAN	217 ± 57	-	631 ± 1130

* THE MEAN AND 2 STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES
(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-21	01/01/10 - 01/29/10	< 7	< 6	< 11	< 4	< 12	< 7	< 12	< 10	< 5	< 7	< 29	< 8
	01/29/10 - 02/26/10	< 5	< 7	< 12	< 6	< 12	< 5	< 11	< 9	< 6	< 7	< 27	< 8
	02/26/10 - 03/26/10	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 8	< 1	< 2	< 15	< 5
	03/26/10 - 04/30/10	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 9	< 1	< 1	< 15	< 4
	04/30/10 - 05/28/10	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 9	< 1	< 2	< 15	< 5
	06/04/10 - 06/25/10 (1)	< 6	< 6	< 11	< 5	< 12	< 5	< 9	< 9	< 6	< 6	< 24	< 7
	06/25/10 - 07/30/10 (1)	< 5	< 5	< 10	< 5	< 12	< 6	< 8	< 15	< 5	< 5	< 35	< 11
	07/30/10 - 08/27/10	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 1	< 2	< 18	< 5
	08/27/10 - 09/24/10	< 4	< 5	< 8	< 6	< 10	< 4	< 9	< 13	< 4	< 6	< 28	< 9
	09/24/10 - 10/29/10	< 4	< 4	< 9	< 4	< 9	< 4	< 7	< 11	< 4	< 4	< 26	< 9
	10/29/10 - 11/26/10	< 4	< 4	< 11	< 5	< 8	< 6	< 8	< 9	< 4	< 6	< 27	< 9
	11/26/10 - 12/31/10	< 5	< 6	< 14	< 5	< 11	< 6	< 11	< 11	< 5	< 6	< 27	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-52	01/01/10 - 01/29/10	< 5	< 5	< 12	< 4	< 11	< 7	< 8	< 8	< 5	< 5	< 23	< 8
	02/05/10 - 02/26/10	< 6	< 7	< 13	< 8	< 17	< 8	< 13	< 12	< 7	< 8	< 37	< 10
	03/05/10 - 03/26/10	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 7	< 1	< 1	< 13	< 4
	04/02/10 - 04/30/10	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 11	< 2	< 2	< 19	< 6
	05/07/10 - 05/28/10	< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 11	< 2	< 2	< 18	< 6
	06/04/10 - 06/25/10	< 4	< 5	< 12	< 5	< 12	< 6	< 10	< 8	< 5	< 6	< 26	< 9
	07/03/10 - 07/30/10	< 3	< 3	< 7	< 3	< 6	< 4	< 7	< 9	< 3	< 3	< 19	< 5
	08/06/10 - 08/27/10	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 9	< 1	< 2	< 15	< 5
	09/03/10 - 09/24/10	< 3	< 4	< 8	< 3	< 8	< 4	< 7	< 11	< 3	< 4	< 25	< 8
	10/01/10 - 10/29/10	< 4	< 4	< 9	< 5	< 10	< 5	< 7	< 13	< 5	< 4	< 29	< 11
	11/05/10 - 11/26/10	< 4	< 6	< 8	< 5	< 12	< 6	< 11	< 12	< 6	< 7	< 26	< 7
	12/03/10 - 12/31/10	< 5	< 7	< 13	< 8	< 13	< 5	< 12	< 11	< 6	< 6	< 31	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-57	01/01/10 - 01/29/10	< 6	< 8	< 12	< 7	< 14	< 5	< 10	< 9	< 5	< 6	< 29	< 8
	01/29/10 - 02/26/10	< 4	< 4	< 7	< 4	< 8	< 4	< 7	< 7	< 4	< 4	< 18	< 7
	02/26/10 - 03/26/10	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 19	< 6
	03/26/10 - 04/30/10	< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 13	< 2	< 2	< 20	< 6
	04/30/10 - 05/28/10	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 2	< 2	< 17	< 5
	05/28/10 - 06/25/10	< 4	< 4	< 9	< 4	< 7	< 4	< 7	< 7	< 4	< 4	< 20	< 5
	06/25/10 - 07/30/10	< 3	< 4	< 9	< 3	< 7	< 4	< 7	< 10	< 3	< 3	< 23	< 9
	07/30/10 - 08/27/10	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 6
	08/27/10 - 09/24/10	< 3	< 6	< 10	< 4	< 10	< 5	< 9	< 15	< 4	< 5	< 28	< 9
	09/24/10 - 10/29/10	< 5	< 4	< 11	< 5	< 9	< 5	< 9	< 12	< 4	< 4	< 29	< 11
	10/29/10 - 11/26/10	< 5	< 4	< 9	< 5	< 11	< 5	< 8	< 10	< 5	< 5	< 25	< 9
	11/26/10 - 12/31/10	< 5	< 5	< 14	< 5	< 13	< 7	< 10	< 12	< 6	< 7	< 30	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.1 **CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-23	D-35
01/08/10 - 01/08/10	267 ± 116	< 168
02/12/10 - 02/12/10	311 ± 118	
03/12/10 - 03/12/10	297 ± 113	
04/09/10 - 04/09/10	363 ± 118	< 160
05/14/10 - 05/14/10	228 ± 116	
06/11/10 - 06/11/10	400 ± 118	
07/09/10 - 07/09/10	351 ± 116	< 160
08/13/10 - 08/13/10	216 ± 118	
09/10/10 - 09/10/10	360 ± 126	
10/08/10 - 10/08/10	238 ± 117	< 178
11/12/10 - 11/12/10	264 ± 114	
12/10/10 - 12/10/10	317 ± 111	
MEAN	301 ± 119	-

TABLES C-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-23	01/08/10 - 01/08/10	< 3	< 4	< 8	< 3	< 7	< 4	< 6	< 15	< 3	< 3	< 30	< 10
	02/12/10 - 02/12/10	< 4	< 4	< 9	< 4	< 8	< 4	< 9	< 12	< 4	< 4	< 26	< 9
	03/12/10 - 03/12/10	< 5	< 4	< 9	< 4	< 9	< 5	< 9	< 12	< 5	< 5	< 27	< 7
	04/09/10 - 04/09/10	< 3	< 3	< 6	< 3	< 5	< 3	< 6	< 8	< 3	< 3	< 18	< 7
	05/14/10 - 05/14/10	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 16	< 5
	06/11/10 - 06/11/10	< 5	< 4	< 9	< 4	< 10	< 5	< 8	< 11	< 5	< 5	< 26	< 8
	07/09/10 - 07/09/10	< 5	< 5	< 11	< 5	< 10	< 6	< 8	< 9	< 5	< 5	< 24	< 7
	08/13/10 - 08/13/10	< 3	< 4	< 8	< 3	< 7	< 4	< 6	< 8	< 3	< 3	< 23	< 8
	09/10/10 - 09/10/10	< 4	< 5	< 9	< 4	< 8	< 4	< 7	< 10	< 4	< 4	< 26	< 8
	10/08/10 - 10/08/10	< 6	< 5	< 10	< 4	< 8	< 6	< 10	< 9	< 5	< 4	< 24	< 6
	11/12/10 - 11/12/10	< 4	< 5	< 9	< 4	< 9	< 5	< 7	< 11	< 4	< 4	< 25	< 7
	12/10/10 - 12/10/10	< 7	< 6	< 13	< 7	< 14	< 7	< 9	< 11	< 5	< 5	< 26	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-35	01/08/10 - 01/08/10	< 3	< 4	< 9	< 3	< 7	< 3	< 6	< 14	< 3	< 4	< 28	< 11
	04/09/10 - 04/09/10	< 3	< 3	< 7	< 3	< 6	< 4	< 5	< 9	< 3	< 3	< 21	< 6
	07/09/10 - 07/09/10	< 4	< 5	< 10	< 4	< 9	< 5	< 8	< 8	< 4	< 4	< 22	< 8
	10/08/10 - 10/08/10	< 5	< 4	< 10	< 6	< 10	< 5	< 8	< 8	< 5	< 6	< 26	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-28												
Freshwater Drum	05/17/10	< 31	< 47	< 127	< 33	< 76	< 48	< 84	< 33	< 41	< 914	< 241
Largemouth Bass	05/17/10	< 50	< 66	< 170	< 50	< 73	< 65	< 127	< 47	< 56	< 1120	< 333
Largemouth Bass	10/11/10	< 72	< 74	< 144	< 82	< 153	< 93	< 129	< 67	< 73	< 375	< 139
Channel catfish	10/12/10	< 18	< 17	< 44	< 23	< 47	< 15	< 31	< 19	< 20	< 101	< 14
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-46												
Common Carp	05/17/10	< 40	< 44	< 100	< 38	< 75	< 57	< 76	< 27	< 32	< 891	< 263
Largemouth Bass	05/17/10	< 55	< 73	< 177	< 35	< 109	< 80	< 139	< 49	< 55	< 1350	< 458
Channel catfish	10/11/10	< 63	< 49	< 128	< 56	< 134	< 84	< 94	< 52	< 64	< 334	< 121
Largemouth Bass	10/11/10	< 70	< 78	< 148	< 84	< 163	< 89	< 129	< 72	< 76	< 422	< 131
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IV.1 **CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PC/KG DRY ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-27	05/28/10	< 25	< 32	< 83	< 28	< 63	< 26	< 62	< 26	< 39	< 432	< 136
	10/08/10	< 40	< 36	< 78	< 39	< 77	< 47	< 64	< 33	57 ± 34	< 226	< 63
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION	GROUP I			GROUP II				
PERIOD	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56
01/01/10 - 01/08/10	33 ± 4	25 ± 4	27 ± 4	30 ± 4	31 ± 4	29 ± 4	28 ± 4	30 ± 4
01/08/10 - 01/15/10	26 ± 5	28 ± 5	26 ± 5	31 ± 5	24 ± 4	22 ± 4	25 ± 5	28 ± 5
01/15/10 - 01/22/10	23 ± 4	42 ± 5	30 ± 4	28 ± 4	28 ± 4	24 ± 4	25 ± 4	26 ± 4
01/22/10 - 01/29/10	15 ± 4	17 ± 4	23 ± 5	17 ± 4	17 ± 4	17 ± 4	20 ± 5	20 ± 5
01/29/10 - 02/05/10	27 ± 5	28 ± 5	25 ± 5	28 ± 5	27 ± 5	26 ± 5	27 ± 5	28 ± 5
02/05/10 - 02/12/10	14 ± 4	15 ± 4	14 ± 4	10 ± 4	19 ± 4	18 ± 4	16 ± 4	13 ± 4
02/12/10 - 02/19/10	15 ± 4	17 ± 4	17 ± 4	16 ± 4	20 ± 4	16 ± 4	19 ± 4	15 ± 4
02/19/10 - 02/26/10	20 ± 4	20 ± 4	22 ± 4	22 ± 4	17 ± 4	24 ± 4	22 ± 4	22 ± 4
02/26/10 - 03/05/10	8 ± 4	9 ± 4	7 ± 4	12 ± 4	10 ± 4	12 ± 4	13 ± 4	8 ± 4
03/05/10 - 03/12/10	12 ± 4	14 ± 4	18 ± 4	9 ± 4	14 ± 5	(1) 14 ± 4	16 ± 4	16 ± 4
03/12/10 - 03/19/10	8 ± 4	10 ± 4	10 ± 4	12 ± 4	16 ± 6	(1) 12 ± 4	8 ± 4	11 ± 4
03/19/10 - 03/26/10	18 ± 5	13 ± 5	17 ± 5	15 ± 5	17 ± 5	16 ± 5	18 ± 5	12 ± 5
03/26/10 - 04/02/10	17 ± 5	14 ± 4	19 ± 5	16 ± 4	15 ± 4	(1) 15 ± 4	13 ± 4	19 ± 5
04/02/10 - 04/09/10	8 ± 4	7 ± 4	6 ± 4	10 ± 4	10 ± 4	9 ± 4	8 ± 4	11 ± 4
04/09/10 - 04/16/10	20 ± 5	20 ± 4	18 ± 4	18 ± 4	21 ± 4	24 ± 5	20 ± 4	22 ± 5
04/16/10 - 04/23/10	10 ± 4	12 ± 4	14 ± 4	13 ± 4	14 ± 4	11 ± 4	12 ± 4	13 ± 4
04/23/10 - 04/30/10	14 ± 4	12 ± 4	(1) 14 ± 4	(1) 13 ± 4	12 ± 4	(1) 14 ± 4	12 ± 4	15 ± 4
04/30/10 - 05/07/10	7 ± 4	11 ± 4	9 ± 4	10 ± 4	11 ± 4	12 ± 5	11 ± 4	6 ± 4
05/07/10 - 05/14/10	8 ± 4	9 ± 4	7 ± 3	7 ± 3	10 ± 4	9 ± 4	10 ± 4	12 ± 4
05/14/10 - 05/21/10	10 ± 4	11 ± 4	13 ± 4	16 ± 4	15 ± 4	12 ± 4	12 ± 4	12 ± 4
05/21/10 - 05/28/10	13 ± 4	(1) 14 ± 4	14 ± 4	17 ± 4	16 ± 4	16 ± 4	15 ± 4	17 ± 4
05/28/10 - 06/04/10	9 ± 6	11 ± 6	12 ± 6	12 ± 6	< 8	12 ± 6	11 ± 6	10 ± 6
06/04/10 - 06/11/10	16 ± 4	14 ± 4	15 ± 4	14 ± 4	16 ± 4	14 ± 4	10 ± 4	14 ± 4
06/11/10 - 06/18/10	12 ± 4	15 ± 4	11 ± 4	12 ± 4	11 ± 4	13 ± 4	11 ± 4	13 ± 4
06/18/10 - 06/25/10	13 ± 4	12 ± 4	12 ± 4	14 ± 4	16 ± 4	13 ± 4	17 ± 4	12 ± 4
06/25/10 - 07/03/10	9 ± 3	10 ± 3	13 ± 4	10 ± 3	12 ± 4	12 ± 4	11 ± 4	13 ± 4
07/03/10 - 07/09/10	16 ± 5	21 ± 5	21 ± 5	20 ± 5	20 ± 5	18 ± 5	18 ± 5	21 ± 5
07/09/10 - 07/16/10	21 ± 4	21 ± 4	20 ± 4	22 ± 4	24 ± 4	20 ± 4	21 ± 4	21 ± 4
07/16/10 - 07/23/10	20 ± 4	20 ± 4	20 ± 5	20 ± 4	20 ± 5	20 ± 4	12 ± 4	21 ± 5
07/23/10 - 07/30/10	13 ± 4	15 ± 4	47 ± 19	(1) 14 ± 4	14 ± 4	15 ± 4	14 ± 4	21 ± 5
07/30/10 - 08/06/10	17 ± 4	20 ± 5	22 ± 5	20 ± 5	25 ± 5	22 ± 5	18 ± 4	21 ± 5
08/06/10 - 08/13/10	23 ± 4	31 ± 5	23 ± 4	20 ± 4	26 ± 4	28 ± 4	25 ± 4	26 ± 4
08/13/10 - 08/20/10	24 ± 5	20 ± 5	24 ± 6	(1) 22 ± 5	(1) 22 ± 5	23 ± 5	20 ± 5	28 ± 5
08/20/10 - 08/27/10	17 ± 5	17 ± 4	16 ± 4	(1) 16 ± 4	17 ± 5	20 ± 5	18 ± 5	17 ± 5
08/27/10 - 09/03/10	19 ± 4	21 ± 4	22 ± 5	(1) 20 ± 4	19 ± 4	20 ± 4	15 ± 4	16 ± 4
09/03/10 - 09/10/10	12 ± 4	12 ± 4	15 ± 4	13 ± 4	16 ± 4	14 ± 4	13 ± 4	13 ± 4
09/10/10 - 09/17/10	17 ± 4	19 ± 4	26 ± 6	(1) 19 ± 4	18 ± 4	18 ± 4	21 ± 4	13 ± 4
09/17/10 - 09/24/10	18 ± 4	22 ± 5	15 ± 4	19 ± 4	21 ± 5	24 ± 5	22 ± 5	20 ± 4
09/24/10 - 10/01/10	13 ± 4	14 ± 4	16 ± 4	13 ± 4	17 ± 4	18 ± 4	18 ± 4	15 ± 4
10/01/10 - 10/08/10	16 ± 4	18 ± 4	18 ± 4	14 ± 4	14 ± 4	17 ± 5	18 ± 4	17 ± 4
10/08/10 - 10/15/10	36 ± 5	35 ± 5	36 ± 5	36 ± 5	39 ± 5	38 ± 5	39 ± 6	40 ± 6
10/15/10 - 10/22/10	21 ± 4	17 ± 4	17 ± 4	19 ± 4	17 ± 4	20 ± 4	16 ± 4	20 ± 4
10/22/10 - 10/29/10	14 ± 4	15 ± 4	13 ± 4	15 ± 4	16 ± 4	16 ± 4	10 ± 4	15 ± 4
10/29/10 - 11/05/10	13 ± 3	12 ± 3	12 ± 3	16 ± 3	11 ± 3	13 ± 3	13 ± 3	12 ± 3
11/05/10 - 11/12/10	23 ± 5	21 ± 4	18 ± 4	18 ± 4	23 ± 5	20 ± 4	20 ± 4	22 ± 5
11/12/10 - 11/19/10	24 ± 5	22 ± 5	25 ± 5	24 ± 5	23 ± 5	19 ± 4	19 ± 5	21 ± 5
11/19/10 - 11/26/10	20 ± 5	20 ± 5	24 ± 5	22 ± 5	21 ± 5	25 ± 5	20 ± 4	20 ± 4
11/26/10 - 12/03/10	26 ± 4	28 ± 4	23 ± 4	32 ± 4	31 ± 4	29 ± 4	24 ± 4	27 ± 4
12/03/10 - 12/10/10	26 ± 5	26 ± 5	26 ± 5	29 ± 5	25 ± 5	28 ± 5	27 ± 5	33 ± 5
12/10/10 - 12/17/10	25 ± 4	29 ± 4	22 ± 4	31 ± 4	29 ± 4	26 ± 4	21 ± 4	27 ± 4
12/17/10 - 12/24/10	31 ± 4	32 ± 4	34 ± 4	38 ± 4	35 ± 4	28 ± 4	35 ± 4	32 ± 4
12/24/10 - 12/31/10	14 ± 4	16 ± 4	12 ± 4	12 ± 4	12 ± 4	17 ± 4	14 ± 4	15 ± 4
MEAN	17 ± 14	18 ± 15	19 ± 15	18 ± 14	19 ± 13	19 ± 12	18 ± 13	19 ± 14

* THE MEAN AND 2 STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES.

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION	GROUP III				GROUP IV
PERIOD	D-08	D-10	D-14	D-55	D-12
01/01/10 - 01/08/10	27 ± 4	31 ± 4	26 ± 4	28 ± 4	25 ± 4
01/08/10 - 01/15/10	31 ± 5	26 ± 5	23 ± 4	26 ± 5	26 ± 5
01/15/10 - 01/22/10	33 ± 4	30 ± 4	30 ± 4	32 ± 4	29 ± 4
01/22/10 - 01/29/10	22 ± 5	19 ± 5	17 ± 4	18 ± 4	21 ± 5
01/29/10 - 02/05/10	27 ± 5	28 ± 5	25 ± 5	22 ± 5	26 ± 5
02/05/10 - 02/12/10	16 ± 4	15 ± 4	15 ± 4	17 ± 4	14 ± 4
02/12/10 - 02/19/10	23 ± 5	16 ± 4	16 ± 4	18 ± 4	14 ± 4
02/19/10 - 02/26/10	24 ± 4	23 ± 4	22 ± 4	21 ± 4	19 ± 4
02/26/10 - 03/05/10	8 ± 4	7 ± 4	6 ± 4	8 ± 4	8 ± 4
03/05/10 - 03/12/10	16 ± 4	11 ± 4	12 ± 4	10 ± 4	11 ± 4
03/12/10 - 03/19/10	10 ± 4	11 ± 4	11 ± 4	13 ± 4	10 ± 4
03/19/10 - 03/26/10	18 ± 5	14 ± 5	15 ± 5	19 ± 5	22 ± 6
03/26/10 - 04/02/10	21 ± 5	19 ± 5	14 ± 4	10 ± 4	18 ± 5
04/02/10 - 04/09/10	8 ± 4	6 ± 4	7 ± 4	6 ± 4	< 6
04/09/10 - 04/16/10	21 ± 4	20 ± 4	20 ± 4	21 ± 5	18 ± 4
04/16/10 - 04/23/10	14 ± 4	12 ± 4	12 ± 4	11 ± 4	11 ± 4
04/23/10 - 04/30/10	18 ± 4	14 ± 4	14 ± 4	13 ± 4	15 ± 4
04/30/10 - 05/07/10	10 ± 4	10 ± 4	< 6	8 ± 4	< 6
05/07/10 - 05/14/10	9 ± 4	9 ± 4	12 ± 4	9 ± 4	10 ± 4
05/14/10 - 05/21/10	12 ± 4	12 ± 4	11 ± 4	14 ± 4	13 ± 4
05/21/10 - 05/28/10	14 ± 4	13 ± 4	13 ± 4	15 ± 4	15 ± 4
05/28/10 - 06/04/10	< 9	10 ± 6	13 ± 6	9 ± 6	< 9
06/04/10 - 06/11/10	14 ± 4	10 ± 4	16 ± 4	15 ± 4	13 ± 4
06/11/10 - 06/18/10	17 ± 4	11 ± 4	9 ± 4	11 ± 4	11 ± 4
06/18/10 - 06/25/10	13 ± 4	13 ± 4	13 ± 4	18 ± 4	14 ± 4
06/25/10 - 07/03/10	13 ± 4	12 ± 4	12 ± 4	12 ± 4	13 ± 4
07/03/10 - 07/09/10	16 ± 5	21 ± 5	16 ± 5	21 ± 5	19 ± 5
07/09/10 - 07/16/10	21 ± 4	20 ± 4	19 ± 4	22 ± 4	19 ± 4
07/16/10 - 07/23/10	22 ± 5	20 ± 4	21 ± 5	21 ± 5	21 ± 5
07/23/10 - 07/30/10	15 ± 4	14 ± 4	18 ± 5	14 ± 4	17 ± 5
07/30/10 - 08/06/10	21 ± 5	20 ± 5	21 ± 5	21 ± 5	22 ± 5
08/06/10 - 08/13/10	25 ± 4	26 ± 4	23 ± 4	27 ± 4	21 ± 4
08/13/10 - 08/20/10	23 ± 5	24 ± 5	20 ± 5	25 ± 5	23 ± 5
08/20/10 - 08/27/10	18 ± 5	16 ± 5	18 ± 5	16 ± 4	16 ± 4
08/27/10 - 09/03/10	22 ± 4	23 ± 5	18 ± 4	21 ± 4	22 ± 4
09/03/10 - 09/10/10	10 ± 4	14 ± 4	14 ± 4	13 ± 4	14 ± 4
09/10/10 - 09/17/10	19 ± 4	21 ± 4	17 ± 4	21 ± 4	19 ± 4
09/17/10 - 09/24/10	23 ± 5	22 ± 5	18 ± 4	23 ± 5	22 ± 5
09/24/10 - 10/01/10	18 ± 4	17 ± 4	16 ± 4	18 ± 4	16 ± 4
10/01/10 - 10/08/10	13 ± 4	17 ± 4	14 ± 4	20 ± 5	20 ± 5
10/08/10 - 10/15/10	40 ± 6	36 ± 5	34 ± 5	37 ± 5	40 ± 6
10/15/10 - 10/22/10	19 ± 4	17 ± 4	20 ± 4	24 ± 4	18 ± 4
10/22/10 - 10/29/10	12 ± 4	15 ± 4	17 ± 4	17 ± 4	22 ± 5
10/29/10 - 11/05/10	13 ± 3	13 ± 3	10 ± 3	12 ± 3	11 ± 3
11/05/10 - 11/12/10	18 ± 4	19 ± 4	22 ± 5	22 ± 5	19 ± 4
11/12/10 - 11/19/10	21 ± 5	24 ± 5	21 ± 5	21 ± 5	20 ± 5
11/19/10 - 11/26/10	21 ± 5	26 ± 5	18 ± 4	27 ± 5	13 ± 4
11/26/10 - 12/03/10	27 ± 4	30 ± 4	25 ± 4	29 ± 4	27 ± 4
12/03/10 - 12/10/10	28 ± 5	32 ± 5	26 ± 5	27 ± 5	27 ± 5
12/10/10 - 12/17/10	26 ± 4	27 ± 4	24 ± 4	27 ± 4	27 ± 4
12/17/10 - 12/24/10	35 ± 4	36 ± 4	31 ± 4	30 ± 4	36 ± 4
12/24/10 - 12/31/10	15 ± 4	16 ± 4	14 ± 4	20 ± 4	16 ± 4
MEAN	19 ± 14	19 ± 15	18 ± 12	19 ± 14	19 ± 13

* THE MEAN AND 2 STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES.

TABLE C-V.2 **MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

GROUP I - ON-SITE LOCATIONS				GROUP II - NEAR-FIELD LOCATIONS				GROUP III - FAR-FIELD LOCATIONS				GROUP IV - CONTROL LOCATION			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
01/01/10 - 01/29/10	15	42	26 ± 14	01/01/10 - 01/29/10	17	31	25 ± 9	01/01/10 - 01/29/10	17	33	26 ± 11	01/01/10 - 01/29/10	21	29	25 ± 6
01/29/10 - 02/26/10	14	28	20 ± 10	01/29/10 - 02/26/10	10	28	20 ± 10	01/29/10 - 02/26/10	15	28	20 ± 9	01/29/10 - 02/26/10	14	26	18 ± 12
02/26/10 - 04/02/10	7	19	13 ± 8	02/26/10 - 04/02/10	8	19	13 ± 6	02/26/10 - 04/02/10	6	21	12 ± 9	02/26/10 - 04/02/10	8	22	14 ± 12
04/02/10 - 04/30/10	6	20	13 ± 9	04/02/10 - 04/30/10	8	24	14 ± 9	04/02/10 - 04/30/10	6	21	14 ± 10	04/09/10 - 04/30/10	11	18	14 ± 7
04/30/10 - 05/28/10	7	14	11 ± 5	04/30/10 - 05/28/10	6	17	12 ± 6	04/30/10 - 05/28/10	8	15	11 ± 4	05/07/10 - 05/28/10	10	15	13 ± 5
05/28/10 - 07/03/10	9	16	12 ± 4	05/28/10 - 07/03/10	10	17	13 ± 4	05/28/10 - 07/03/10	9	18	13 ± 5	06/04/10 - 07/03/10	11	14	13 ± 3
07/03/10 - 07/30/10	13	47	21 ± 17	07/03/10 - 07/30/10	12	24	19 ± 7	07/03/10 - 07/30/10	14	22	19 ± 6	07/03/10 - 07/30/10	17	21	19 ± 4
07/30/10 - 09/03/10	16	31	21 ± 8	07/30/10 - 09/03/10	15	28	21 ± 7	07/30/10 - 09/03/10	16	27	21 ± 6	07/30/10 - 09/03/10	16	23	21 ± 6
09/03/10 - 10/01/10	12	26	17 ± 9	09/03/10 - 10/01/10	13	24	17 ± 7	09/03/10 - 10/01/10	10	23	18 ± 7	09/03/10 - 10/01/10	14	22	18 ± 7
10/01/10 - 10/29/10	13	36	21 ± 18	10/01/10 - 10/29/10	10	40	22 ± 20	10/01/10 - 10/29/10	12	40	22 ± 19	10/01/10 - 10/29/10	18	40	25 ± 20
10/29/10 - 12/03/10	12	28	21 ± 10	10/29/10 - 12/03/10	11	32	21 ± 11	10/29/10 - 12/03/10	10	30	21 ± 11	10/29/10 - 12/03/10	11	27	18 ± 13
12/03/10 - 12/31/10	12	34	24 ± 14	12/03/10 - 12/31/10	12	38	26 ± 16	12/03/10 - 12/31/10	14	36	26 ± 14	12/03/10 - 12/31/10	16	36	26 ± 17
01/01/10 - 12/31/10	6	47	18 ± 15	01/01/10 - 12/31/10	6	40	18 ± 13	01/01/10 - 12/31/10	6	40	19 ± 14	01/01/10 - 12/31/10	8	40	19 ± 13

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-01	01/01/10 - 04/02/10	< 2	< 3	< 8	< 3	< 7	< 4	< 8	< 3	< 2	< 131	< 63
	04/02/10 - 07/03/10	< 4	< 3	< 9	< 4	< 7	< 4	< 6	< 3	< 3	< 37	< 15
	07/03/10 - 10/01/10	< 3	< 4	< 8	< 3	< 9	< 4	< 9	< 3	< 3	< 113	< 46
	10/01/10 - 12/31/10	< 2	< 2	< 4	< 2	< 4	< 3	< 4	< 2	< 2	< 26	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-02	01/01/10 - 04/02/10	< 3	< 4	< 8	< 4	< 10	< 6	< 7	< 3	< 3	< 172	< 85
	04/02/10 - 07/03/10	< 3	< 5	< 12	< 4	< 8	< 5	< 8	< 4	< 4	< 46	< 18
	07/03/10 - 10/01/10	< 2	< 2	< 6	< 2	< 5	< 3	< 5	< 2	< 1	< 63	< 22
	10/01/10 - 12/31/10	< 2	< 2	< 3	< 2	< 4	< 2	< 3	< 1	< 2	< 20	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-03	01/01/10 - 04/02/10	< 3	< 4	< 10	< 3	< 6	< 4	< 7	< 2	< 2	< 126	< 47
	04/02/10 - 07/03/10	< 3	< 3	< 6	< 3	< 6	< 5	< 6	< 4	< 3	< 46	< 17
	07/03/10 - 10/01/10	< 3	< 5	< 9	< 3	< 9	< 5	< 8	< 4	< 4	< 122	< 31
	10/01/10 - 12/31/10	< 3	< 4	< 9	< 3	< 8	< 3	< 7	< 4	< 3	< 33	< 14
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-04	01/01/10 - 04/02/10	< 4	< 5	< 12	< 4	< 7	< 6	< 10	< 3	< 3	< 187	< 81
	04/02/10 - 07/03/10	< 4	< 5	< 14	< 3	< 6	< 3	< 6	< 4	< 4	< 55	< 20
	07/03/10 - 10/01/10	< 3	< 3	< 9	< 2	< 5	< 3	< 4	< 2	< 2	< 88	< 34
	10/01/10 - 12/31/10	< 2	< 2	< 7	< 2	< 4	< 1	< 4	< 2	< 2	< 30	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-07	01/01/10 - 04/02/10	< 3	< 2	< 9	< 3	< 7	< 3	< 7	< 3	< 2	< 147	< 58
	04/02/10 - 07/03/10	< 4	< 4	< 10	< 5	< 12	< 6	< 8	< 4	< 3	< 62	< 21
	07/03/10 - 10/01/10	< 2	< 5	< 15	< 4	< 9	< 4	< 7	< 3	< 3	< 114	< 42
	10/01/10 - 12/31/10	< 2	< 2	< 6	< 3	< 7	< 3	< 5	< 2	< 2	< 30	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-08	01/01/10 - 04/02/10	< 2	< 4	< 11	< 2	< 6	< 4	< 7	< 3	< 2	< 119	< 60
	04/02/10 - 07/03/10	< 3	< 4	< 8	< 3	< 9	< 5	< 6	< 3	< 2	< 39	< 17
	07/03/10 - 10/01/10	< 3	< 4	< 10	< 5	< 8	< 5	< 5	< 3	< 3	< 119	< 44
	10/01/10 - 12/31/10	< 4	< 3	< 8	< 3	< 7	< 4	< 5	< 3	< 3	< 37	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-10	01/01/10 - 04/02/10	< 2	< 4	< 11	< 3	< 7	< 3	< 6	< 3	< 2	< 124	< 42
	04/02/10 - 07/03/10	< 3	< 5	< 11	< 4	< 9	< 5	< 9	< 3	< 4	< 57	< 14
	07/03/10 - 10/01/10	< 3	< 3	< 7	< 2	< 6	< 4	< 6	< 2	< 2	< 67	< 27
	10/01/10 - 12/31/10	< 3	< 3	< 7	< 2	< 8	< 3	< 5	< 3	< 3	< 36	< 16
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-12	01/01/10 - 04/02/10	< 4	< 5	< 17	< 3	< 9	< 5	< 8	< 3	< 3	< 183	< 62
	04/02/10 - 07/03/10	< 3	< 5	< 10	< 4	< 7	< 5	< 8	< 3	< 4	< 51	< 24
	07/03/10 - 10/01/10	< 2	< 3	< 9	< 3	< 8	< 4	< 7	< 3	< 2	< 81	< 21
	10/01/10 - 12/31/10	< 2	< 2	< 6	< 3	< 7	< 3	< 5	< 2	< 2	< 29	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-14	01/01/10 - 04/02/10	< 3	< 4	< 13	< 3	< 9	< 4	< 7	< 3	< 2	< 145	< 43
	04/02/10 - 07/03/10	< 3	< 3	< 9	< 4	< 8	< 3	< 5	< 3	< 4	< 57	< 22
	07/03/10 - 10/01/10	< 3	< 4	< 11	< 3	< 7	< 4	< 7	< 3	< 3	< 95	< 41
	10/01/10 - 12/31/10	< 2	< 3	< 7	< 3	< 6	< 3	< 4	< 2	< 2	< 32	< 15
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-45	01/01/10 - 04/02/10	< 4	< 4	< 13	< 2	< 7	< 5	< 10	< 3	< 2	< 191	< 72
	04/02/10 - 07/03/10	< 4	< 5	< 13	< 3	< 10	< 6	< 10	< 4	< 3	< 68	< 16
	07/03/10 - 10/01/10	< 4	< 4	< 8	< 3	< 7	< 4	< 8	< 3	< 3	< 108	< 31
	10/01/10 - 12/31/10	< 3	< 4	< 9	< 2	< 8	< 4	< 6	< 3	< 3	< 41	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-53	01/01/10 - 04/02/10	< 3	< 3	< 11	< 3	< 6	< 4	< 6	< 3	< 2	< 93	< 47
	04/02/10 - 07/03/10	< 4	< 4	< 12	< 3	< 9	< 4	< 9	< 4	< 4	< 56	< 27
	07/03/10 - 10/01/10	< 2	< 4	< 9	< 2	< 5	< 4	< 5	< 2	< 2	< 79	< 31
	10/01/10 - 12/31/10	< 2	< 3	< 4	< 3	< 5	< 2	< 4	< 2	< 2	< 27	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-55	01/01/10 - 04/02/10	< 4	< 6	< 16	< 2	< 8	< 6	< 8	< 3	< 3	< 171	< 70
	04/02/10 - 07/03/10	< 4	< 4	< 14	< 4	< 9	< 5	< 6	< 4	< 4	< 64	< 16
	07/03/10 - 10/01/10	< 3	< 3	< 8	< 3	< 7	< 4	< 8	< 3	< 3	< 91	< 30
	10/01/10 - 12/31/10	< 3	< 3	< 6	< 3	< 6	< 4	< 6	< 3	< 3	< 41	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-56	01/01/10 - 04/02/10	< 4	< 6	< 16	< 5	< 9	< 6	< 9	< 4	< 4	< 199	< 42
	04/02/10 - 07/03/10	< 3	< 4	< 11	< 4	< 8	< 5	< 8	< 3	< 3	< 41	< 27
	07/03/10 - 10/01/10	< 2	< 4	< 10	< 2	< 7	< 4	< 6	< 3	< 3	< 82	< 41
	10/01/10 - 12/31/10	< 2	< 2	< 2	< 2	< 3	< 1	< 4	< 1	< 2	< 21	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I			GROUP II				
	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56
01/01/10 - 01/08/10	< 26	< 49	< 49	< 48	< 49	< 48	< 26	< 60
01/08/10 - 01/15/10	< 30	< 29	< 30	< 30	< 42	< 36	< 15	< 35
01/15/10 - 01/22/10	< 43	< 24	< 43	< 43	< 43	< 36	< 31	< 31
01/22/10 - 01/29/10	< 14	< 25	< 26	< 26	< 26	< 36	< 57	< 56
01/29/10 - 02/05/10	< 32	< 32	< 18	< 32	< 32	< 33	< 32	< 32
02/05/10 - 02/12/10	< 28	< 38	< 38	< 38	< 38	< 30	< 30	< 30
02/12/10 - 02/19/10	< 23	< 23	< 23	< 10	< 23	< 28	< 27	< 27
02/19/10 - 02/26/10	< 14	< 26	< 26	< 26	< 26	< 28	< 28	< 27
02/26/10 - 03/05/10	< 21	< 21	< 21	< 21	< 12	< 36	< 35	< 35
03/05/10 - 03/12/10	< 15	< 28	< 27	< 27	< 30 (1)	< 29	< 29	< 29
03/12/10 - 03/19/10	< 29	< 29	< 29	< 29	< 25 (1)	< 28	< 24	< 24
03/19/10 - 03/26/10	< 13	< 24	< 24	< 24	< 24	< 30	< 29	< 29
03/26/10 - 04/02/10	< 26	< 26	< 26	< 26	< 36 (1)	< 28	< 28	< 28
04/02/10 - 04/09/10	< 30	< 30	< 30	< 30	< 15	< 36	< 35	< 35
04/09/10 - 04/16/10	< 30	< 29	< 29	< 29	< 28	< 27	< 26	< 26
04/16/10 - 04/23/10	< 6	< 11	< 11	< 11	< 11	< 14	< 14	< 14
04/23/10 - 04/30/10	< 26	< 27 (1)	< 27 (1)	< 26	< 38 (1)	< 27	< 29	< 29
04/30/10 - 05/07/10	< 16	< 30	< 30	< 30	< 30	< 42	< 39	< 39
05/07/10 - 05/14/10	< 22	< 22	< 22	< 22	< 30	< 5	< 12	< 12
05/14/10 - 05/21/10	< 14	< 26	< 26	< 26	< 26	< 39	< 38	< 38
05/21/10 - 05/28/10	< 24 (1)	< 25	< 25	< 24	< 30	< 35	< 13	< 34
05/28/10 - 06/04/10	< 20	< 36	< 36	< 36	< 36	< 34	< 32	< 32
06/04/10 - 06/11/10	< 49	< 50	< 50	< 49	< 51	< 33	< 32	< 32
06/11/10 - 06/18/10	< 17	< 31	< 31	< 31	< 32	< 26	< 26	< 25
06/18/10 - 06/25/10	< 24	< 24	< 24	< 24	< 26	< 24	< 24	< 13
06/25/10 - 07/03/10	< 22	< 29	< 28	< 29	< 29	< 37	< 36	< 36
07/03/10 - 07/09/10	< 17	< 40	< 40	< 40	< 40	< 45	< 44	< 44
07/09/10 - 07/16/10	< 15	< 24	< 24	< 24	< 24	< 27	< 26	< 26
07/16/10 - 07/23/10	< 27	< 15	< 27	< 27	< 27	< 26	< 26	< 26
07/23/10 - 07/30/10	< 16	< 26	< 65 (1)	< 26	< 26	< 26	< 26	< 26
07/30/10 - 08/06/10	< 31	< 17	< 31	< 31	< 31	< 42	< 38	< 38
08/06/10 - 08/13/10	< 19	< 44	< 35	< 35	< 35	< 49	< 48	< 48
08/13/10 - 08/20/10	< 21	< 21	< 26 (1)	< 9 (1)	< 21	< 23	< 22	< 22
08/20/10 - 08/27/10	< 28	< 28	< 28 (1)	< 28	< 16	< 23	< 22	< 22
08/27/10 - 09/03/10	< 26	< 26	< 33 (1)	< 26	< 11	< 25	< 25	< 25
09/03/10 - 09/10/10	< 17	< 40	< 40	< 40	< 41	< 40	< 38	< 38
09/10/10 - 09/17/10	< 29	< 29	< 36 (1)	< 29	< 45	< 35	< 35	< 36
09/17/10 - 09/24/10	< 14	< 25	< 25	< 25	< 26	< 19	< 18	< 18
09/24/10 - 10/01/10	< 46	< 46	< 46	< 46	< 44	< 36	< 39	< 39
10/01/10 - 10/08/10	< 25	< 46	< 46	< 46	< 46	< 52	< 47	< 46
10/08/10 - 10/15/10	< 58	< 58	< 58	< 56	< 58	< 51	< 51	< 51
10/15/10 - 10/22/10	< 42	< 42	< 42	< 42	< 48	< 40	< 39	< 17
10/22/10 - 10/29/10	< 27	< 27	< 27	< 27	< 32	< 44	< 43	< 42
10/29/10 - 11/05/10	< 52	< 52	< 52	< 50	< 67	< 61	< 60	< 25
11/05/10 - 11/12/10	< 44	< 44	< 44	< 44	< 50	< 22	< 51	< 50
11/12/10 - 11/19/10	< 34	< 34	< 34	< 34	< 39	< 36	< 36	< 19
11/19/10 - 11/26/10	< 33	< 33	< 33	< 33	< 50	< 65	< 28	< 64
11/26/10 - 12/03/10	< 44	< 44	< 44	< 44	< 60	< 65	< 64	< 27
12/03/10 - 12/10/10	< 50	< 50	< 50	< 50	< 50	< 50	< 51	< 51
12/10/10 - 12/17/10	< 35	< 64	< 64	< 64	< 66	< 62	< 60	< 60
12/17/10 - 12/24/10	< 67	< 67	< 67	< 67	< 59	< 69	< 69	< 38
12/24/10 - 12/31/10	< 36	< 60	< 60	< 60	< 62	< 60	< 59	< 59
MEAN	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP III				GROUP IV
	D-08	D-10	D-14	D-55	D-12
01/01/10 - 01/08/10	< 20	< 48	< 48	< 60	< 47
01/08/10 - 01/15/10	< 45	< 45	< 36	< 36	< 45
01/15/10 - 01/22/10	< 15	< 35	< 36	< 32	< 36
01/22/10 - 01/29/10	< 15	< 36	< 36	< 57	< 36
01/29/10 - 02/05/10	< 35	< 35	< 35	< 33	< 35
02/05/10 - 02/12/10	< 23	< 24	< 24	< 30	< 24
02/12/10 - 02/19/10	< 29	< 29	< 30	< 28	< 29
02/19/10 - 02/26/10	< 25	< 25	< 26	< 28	< 25
02/26/10 - 03/05/10	< 30	< 30	< 31	< 36	< 30
03/05/10 - 03/12/10	< 30	< 30	< 30	< 30	< 30
03/12/10 - 03/19/10	< 17	< 28	< 28	< 24	< 28
03/19/10 - 03/26/10	< 32	< 32	< 32	< 30	< 32
03/26/10 - 04/02/10	< 36	< 15	< 37	< 28	< 36
04/02/10 - 04/09/10	< 28	< 28	< 27	< 36	< 28
04/09/10 - 04/16/10	< 28	< 28	< 29	< 27	< 12
04/16/10 - 04/23/10	< 10	< 10	< 10	< 14	< 10
04/23/10 - 04/30/10	< 36	< 35	< 15	< 27	< 35
04/30/10 - 05/07/10	< 50	< 50	< 51	< 42	< 51
05/07/10 - 05/14/10	< 30	< 30	< 13	< 13	< 30
05/14/10 - 05/21/10	< 34	< 34	< 34	< 39	< 35
05/21/10 - 05/28/10	< 30	< 30	< 35	< 35	< 30
05/28/10 - 06/04/10	< 40	< 40	< 40	< 33	< 40
06/04/10 - 06/11/10	< 51	< 51	< 33	< 27	< 51
06/11/10 - 06/18/10	< 34	< 34	< 34	< 26	< 34
06/18/10 - 06/25/10	< 26	< 26	< 24	< 24	< 26
06/25/10 - 07/03/10	< 31	< 31	< 31	< 37	< 31
07/03/10 - 07/09/10	< 22	< 22	< 22	< 45	< 22
07/09/10 - 07/16/10	< 22	< 22	< 22	< 26	< 22
07/16/10 - 07/23/10	< 38	< 38	< 38	< 26	< 38
07/23/10 - 07/30/10	< 27	< 27	< 27	< 26	< 27
07/30/10 - 08/06/10	< 18	< 42	< 42	< 39	< 42
08/06/10 - 08/13/10	< 44	< 43	< 44	< 49	< 44
08/13/10 - 08/20/10	< 16	< 16	< 16	< 23	< 16
08/20/10 - 08/27/10	< 22	< 22	< 22	< 23	< 22
08/27/10 - 09/03/10	< 21	< 21	< 21	< 25	< 21
09/03/10 - 09/10/10	< 32	< 32	< 32	< 40	< 32
09/10/10 - 09/17/10	< 19	< 45	< 45	< 35	< 45
09/17/10 - 09/24/10	< 33	< 32	< 33	< 19	< 33
09/24/10 - 10/01/10	< 41	< 18	< 41	< 36	< 42
10/01/10 - 10/08/10	< 68	< 68	< 70	< 52	< 67
10/08/10 - 10/15/10	< 58	< 56	< 58	< 51	< 28
10/15/10 - 10/22/10	< 48	< 48	< 41	< 40	< 48
10/22/10 - 10/29/10	< 32	< 32	< 25	< 44	< 32
10/29/10 - 11/05/10	< 67	< 67	< 64	< 61	< 67
11/05/10 - 11/12/10	< 52	< 52	< 52	< 52	< 52
11/12/10 - 11/19/10	< 39	< 39	< 37	< 36	< 39
11/19/10 - 11/26/10	< 50	< 50	< 65	< 65	< 50
11/26/10 - 12/03/10	< 60	< 60	< 65	< 65	< 60
12/03/10 - 12/10/10	< 50	< 49	< 52	< 28	< 50
12/10/10 - 12/17/10	< 63	< 63	< 64	< 62	< 64
12/17/10 - 12/24/10	< 63	< 63	< 69	< 69	< 63
12/24/10 - 12/31/10	< 68	< 68	< 70	< 59	< 68
MEAN	-	-	-	-	-

TABLE C-VII.1 **CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	CONTROL FARM D-25
01/08/10	< 0.2
02/04/10	< 0.6
03/04/10	< 0.7
04/01/10	< 0.5
05/06/10	< 0.9
05/20/10	< 0.6
06/04/10	< 0.5
06/17/10	< 0.9
07/03/10	< 0.7
07/15/10	< 0.6
07/29/10	< 0.6
08/11/10	< 0.9
08/26/10	< 0.9
09/09/10	< 0.7
09/23/10	< 0.6
10/07/10	< 0.7
10/21/10	< 1.0
11/04/10	< 0.8
12/02/10	< 0.4
MEAN	-

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
D-25	01/08/10	< 8	< 8	< 16	< 9	< 18	< 11	< 13	< 7	< 7	< 30	< 12
	02/04/10	< 5	< 6	< 11	< 6	< 14	< 6	< 11	< 5	< 5	< 23	< 7
	03/04/10	< 4	< 4	< 10	< 5	< 9	< 5	< 8	< 4	< 5	< 21	< 6
	04/01/10	< 7	< 7	< 16	< 6	< 13	< 8	< 12	< 7	< 7	< 36	< 9
	05/06/10	< 8	< 8	< 13	< 9	< 15	< 8	< 16	< 7	< 9	< 47	< 15
	05/20/10	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 2	< 2	< 32	< 8
	06/04/10	< 6	< 8	< 20	< 9	< 17	< 8	< 11	< 6	< 8	< 40	< 14
	06/17/10	< 5	< 5	< 11	< 4	< 10	< 6	< 11	< 5	< 6	< 38	< 10
	07/03/10	< 5	< 5	< 13	< 5	< 11	< 6	< 9	< 5	< 5	< 25	< 7
	07/15/10	< 8	< 7	< 16	< 6	< 15	< 7	< 12	< 7	< 8	< 31	< 8
	07/29/10	< 5	< 6	< 12	< 5	< 11	< 6	< 10	< 5	< 5	< 48	< 14
	08/11/10	< 6	< 6	< 15	< 6	< 14	< 6	< 9	< 6	< 6	< 39	< 7
	08/26/10	< 5	< 5	< 12	< 5	< 13	< 6	< 9	< 4	< 5	< 46	< 13
	09/09/10	< 6	< 7	< 17	< 7	< 13	< 7	< 12	< 6	< 6	< 53	< 14
	09/23/10	< 5	< 5	< 13	< 7	< 12	< 5	< 10	< 5	< 6	< 24	< 8
	10/07/10	< 6	< 6	< 12	< 7	< 14	< 7	< 10	< 5	< 6	< 30	< 10
	10/21/10	< 5	< 4	< 10	< 6	< 11	< 4	< 8	< 4	< 5	< 23	< 7
	11/04/10	< 6	< 7	< 17	< 9	< 16	< 7	< 12	< 5	< 6	< 39	< 14
	12/02/10	< 7	< 7	< 17	< 9	< 16	< 8	< 12	< 6	< 6	< 44	< 13
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VIII.1 **CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
D-CONTROL													
Cabbage	09/11/10	< 11	< 11	< 32	< 14	< 25	< 11	< 20	< 51	< 10	< 10	< 98	< 23
Sweet potatoes	09/11/10	< 11	< 15	< 39	< 18	< 32	< 14	< 26	< 55	< 11	< 13	< 111	< 28
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 1													
Cabbage	09/05/10	< 10	< 11	< 23	< 12	< 23	< 13	< 20	< 43	< 9	< 11	< 87	< 23
Potatoes	09/11/10	< 11	< 13	< 29	< 17	< 31	< 15	< 19	< 58	< 11	< 14	< 97	< 26
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 2													
Cabbage	09/05/10	< 10	< 11	< 29	< 11	< 27	< 13	< 18	< 46	< 9	< 11	< 79	< 29
Beets	09/11/10	< 11	< 10	< 31	< 14	< 26	< 11	< 20	< 45	< 9	< 10	< 84	< 20
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 3													
Broccoli	09/05/10	< 12	< 12	< 30	< 14	< 28	< 13	< 22	< 49	< 10	< 11	< 99	< 25
Potatoes	09/11/10	< 11	< 11	< 30	< 15	< 27	< 13	< 20	< 47	< 11	< 11	< 97	< 24
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 4													
Cabbage	09/05/10	< 11	< 14	< 30	< 14	< 26	< 14	< 27	< 52	< 10	< 13	< 115	< 31
Potatoes	09/11/10	< 8	< 10	< 22	< 11	< 21	< 10	< 16	< 37	< 8	< 9	< 75	< 20
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-01-1	26.0 ± 3.3	28	26	24	26
D-01-2	25.3 ± 4.4	26	26	22	27
D-02-1	25.8 ± 3.4	28	24	25	26
D-02-2	26.8 ± 3.8	28	27	24	28
D-03-1	22.0 ± 1.6	22	23	21	22
D-03-2	22.3 ± 1.0	23	22	22	22
D-04-1	25.8 ± 1.0	26	26	25	26
D-04-2	24.5 ± 1.2	25	24	24	25
D-07-1	24.8 ± 4.1	27	22	25	25
D-07-2	22.8 ± 4.4	24	22	20	25
D-08-1	25.0 ± 5.2	26	22	24	28
D-08-2	24.3 ± 1.0	24	25	24	24
D-10-1	24.3 ± 2.5	26	24	23	24
D-10-2	25.0 ± 2.8	25	24	24	27
D-12-1	23.0 ± 3.3	23	21	23	25
D-12-2	21.5 ± 3.8	23	23	19	21
D-14-1	22.5 ± 3.5	22	21	22	25
D-14-2	23.5 ± 3.8	22	24	22	26
D-45-1	26.0 ± 0.0	26	26	26	26
D-45-2	26.0 ± 2.8	26	28	25	25
D-53-1	22.0 ± 2.3	23	21	21	23
D-53-2	20.0 ± 2.8	20	19	19	22
D-55-1	25.8 ± 1.9	26	25	27	25
D-55-2	24.3 ± 3.0	25	22	25	25
D-56-1	21.8 ± 3.4	22	20	21	24
D-56-2	24.0 ± 12.1	22	33	21	20
D-101-1	26.5 ± 4.2	26	27	24	29
D-101-2	23.5 ± 2.6	23	25	22	24
D-102-1	26.8 ± 3.0	26	26	26	29
D-102-2	27.0 ± 3.7	26	28	25	29
D-103-1	23.8 ± 2.5	24	24	22	25
D-103-2	23.5 ± 1.2	24	24	23	23
D-104-1	26.0 ± 1.6	27	26	26	25
D-104-2	24.8 ± 2.5	26	23	25	25
D-105-1	24.8 ± 1.0	25	25	25	24
D-105-2	24.8 ± 1.9	24	25	24	26
D-106-1	23.0 ± 2.3	22	24	22	24
D-106-2	21.5 ± 2.6	22	20	23	21
D-107-1	20.0 ± 2.3	21	19	21	19
D-107-2	21.3 ± 3.0	22	20	20	23
D-108-1	25.8 ± 3.4	26	25	24	28
D-108-2	22.5 ± 4.8	25	20	21	24
D-109-1	25.3 ± 3.0	24	26	24	27
D-109-2	25.3 ± 2.5	25	27	25	24
D-110-3	27.3 ± 2.5	26	27	27	29
D-110-4	29.3 ± 1.9	28	29	30	30
D-111-1	27.5 ± 3.8	26	28	26	30
D-111-2	25.8 ± 2.5	26	27	24	26
D-113-1	22.5 ± 3.8	25	21	21	23
D-113-2	23.8 ± 1.0	24	24	23	24
D-114-1	22.5 ± 2.6	21	23	22	24
D-114-2	23.0 ± 1.6	23	23	22	24
D-115-1	25.3 ± 3.0	26	26	23	26

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-115-2	25.5 ± 2.0	26	26	24	26
D-116-1	27.5 ± 3.5	27	27	26	30
D-116-2	26.8 ± 4.4	26	26	25	30
D-201-1	29.8 ± 3.4	29	30	28	32
D-201-2	29.0 ± 2.3	28	30	28	30
D-202-1	26.0 ± 2.8	28	25	25	26
D-202-2	24.5 ± 2.6	25	23	24	26
D-203-1	23.5 ± 2.6	23	24	22	25
D-203-2	23.3 ± 5.0	24	26	20	23
D-204-1	21.5 ± 6.0	20	20	20	26
D-204-2	22.0 ± 4.9	24	24	19	21
D-205-1	25.3 ± 3.8	24	25	24	28
D-205-2	23.8 ± 5.3	26	21	22	26
D-206-1	23.8 ± 1.9	24	23	23	25
D-206-2	25.3 ± 4.4	26	22	26	27
D-207-1	22.5 ± 1.2	22	22	23	23
D-207-2	24.5 ± 2.0	24	24	24	26
D-208-1	21.3 ± 1.0	22	21	21	21
D-208-2	21.8 ± 2.5	22	23	20	22
D-209-1	20.0 ± 1.6	21	19	20	20
D-209-2	21.5 ± 2.6	23	20	21	22
D-210-1	23.3 ± 1.9	24	24	23	22
D-210-2	25.8 ± 3.4	24	26	25	28
D-211-1	25.8 ± 1.9	27	26	25	25
D-211-2	24.8 ± 1.0	25	25	24	25
D-212-3	22.5 ± 3.8	23	21	21	25
D-212-4	22.5 ± 2.6	24	23	22	21
D-213-1	21.5 ± 2.6	22	23	20	21
D-213-2	20.8 ± 1.0	21	21	20	21
D-214-1	28.3 ± 1.2	28	28	(1)	29
D-214-2	28.0 ± 2.0	27	28	(1)	29
D-215-1	28.0 ± 4.3	28	27	26	31
D-215-2	28.0 ± 3.7	27	29	26	30
D-216-1	25.0 ± 5.2	24	26	22	28
D-216-2	26.5 ± 2.6	27	26	25	28
D-112A-1	23.5 ± 2.6	25	22	23	24
D-112A-2	23.0 ± 4.9	23	20	23	26

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.2 MEAN QUARTERLY TLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER
STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	24.7 ± 3.6	24.6 ± 4.8	24.7 ± 4.5	23.0 ± 0.0
APR-JUN	24.5 ± 5.4	24.2 ± 5.9	24.0 ± 6.0	22.0 ± 2.8
JUL-SEP	23.8 ± 4.1	23.0 ± 5.0	23.2 ± 4.1	21.0 ± 5.7
OCT-DEC	25.7 ± 5.6	25.4 ± 6.7	24.8 ± 3.9	23.0 ± 5.7

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	128	19	30	24.6 ± 4.9
OUTER RING	126	19	32	24.3 ± 5.8
OTHER	96	19	33	24.2 ± 4.8
CONTROL	8	19	25	22.3 ± 3.7

INNER RING STATIONS - D-101-1, D-101-2, D-102-1, D-102-2, D-103-1, D-103-2, D-104-1, D-104-2, D-105-1, D-105-2, D-106-1, D-106-2, D-107-1, D-107-2, D-108-1, D-108-2, D-109-1, D-109-2, D-110-3, D-110-4, D-111-1, D-111-2, D-112A-1, D-112A-2, D-113-1, D-113-2, D-114-1, D-114-2, D-115-1, D-115-2, D-116-1, D-116-2

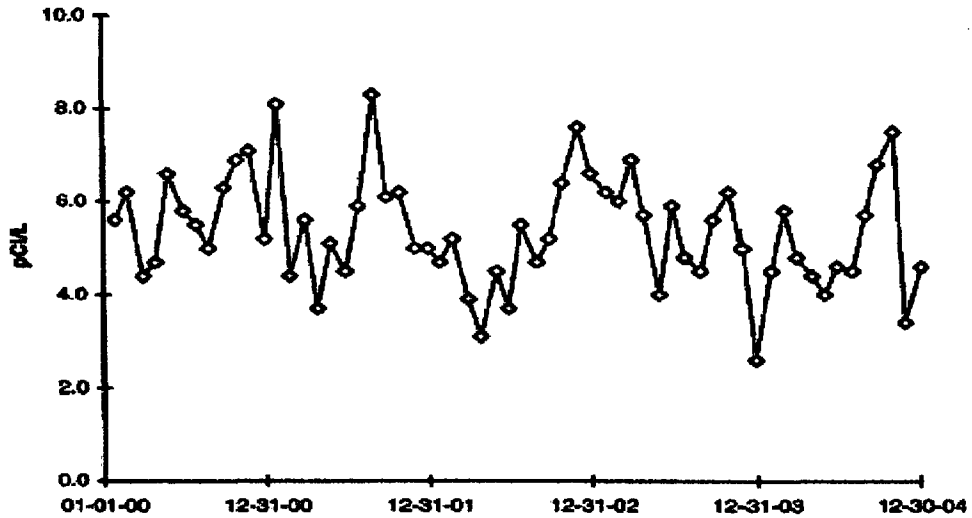
OUTER RING STATIONS - D-201-1, D-201-2, D-202-1, D-202-2, D-203-1, D-203-2, D-204-1, D-204-2, D-205-1, D-205-2, D-206-1, D-206-2, D-207-1, D-207-2, D-208-1, D-208-2, D-209-1, D-209-2, D-210-1, D-210-2, D-211-1, D-211-2, D-212-3, D-212-4, D-213-1, D-213-2, D-214-1, D-214-2, D-215-1, D-215-2, D-216-1, D-216-2

OTHER STATIONS - D-01-1, D-01-2, D-02-1, D-02-2, D-03-1, D-03-2, D-04-1, D-04-2, D-07-1, D-07-2, D-08-1, D-08-2, D-10-1, D-10-2, D-14-1, D-14-2, D-45-1, D-45-2, D-53-1, D-53-2, D-55-1, D-55-2, D-56-1, D-56-2

CONTROL STATIONS - D-12-1, D-12-2

FIGURE C-1
SURFACE WATER - GROSS BETA - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-51 Dresden Lock & Dam



D-52 (C) DesPlaines River

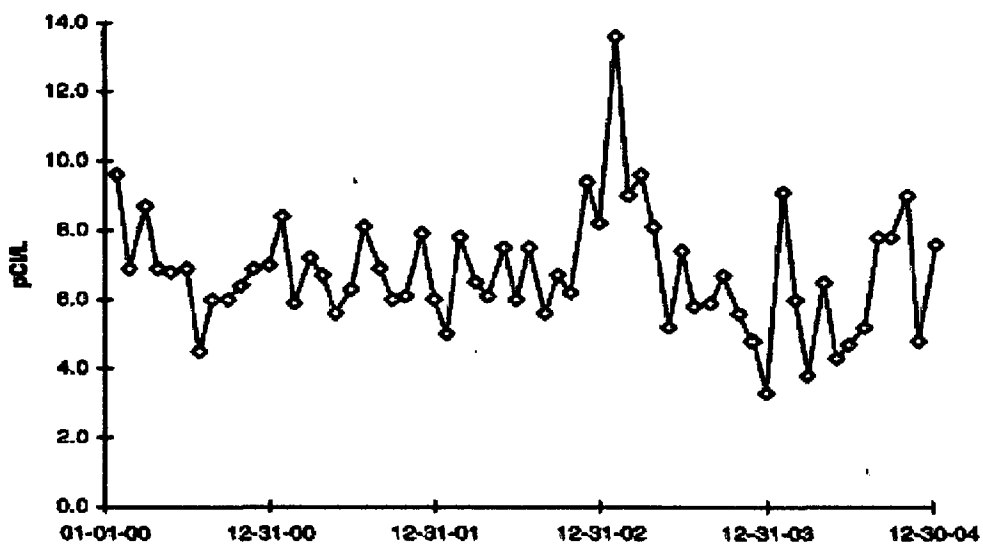
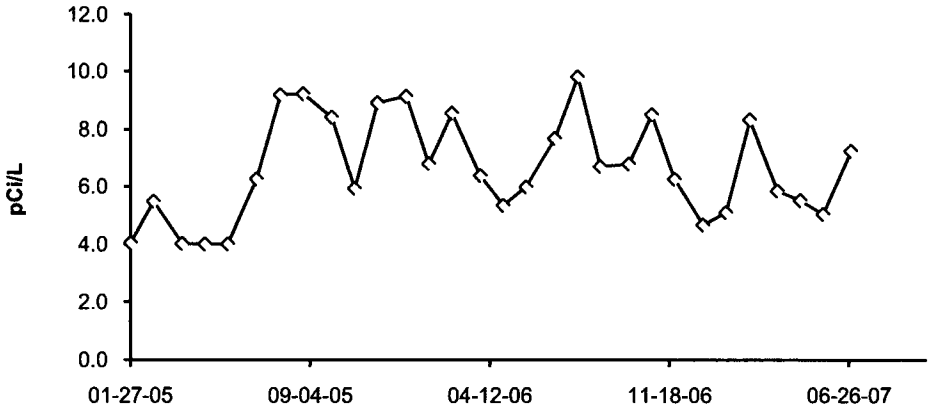
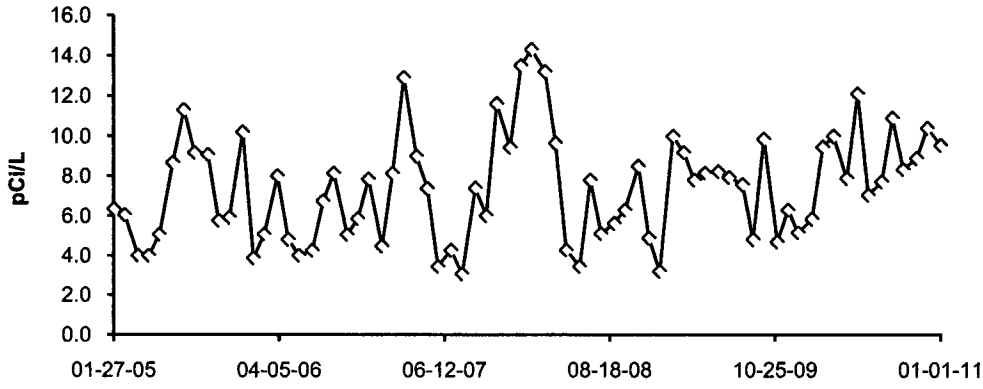


FIGURE C-1 (cont.)
SURFACE WATER - GROSS BETA - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-51 Dresden Lock & Dam



D-52 (C) DesPlaines River



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

D-51 LOCATION REMOVED FROM PROGRAM JUNE 29, 2007 AND REPLACED WITH D-21

FIGURE C-2
SURFACE WATER - GROSS BETA - STATION D-54 (C)
COLLECTED IN THE VICINITY OF DNPS, 2002 - 2004

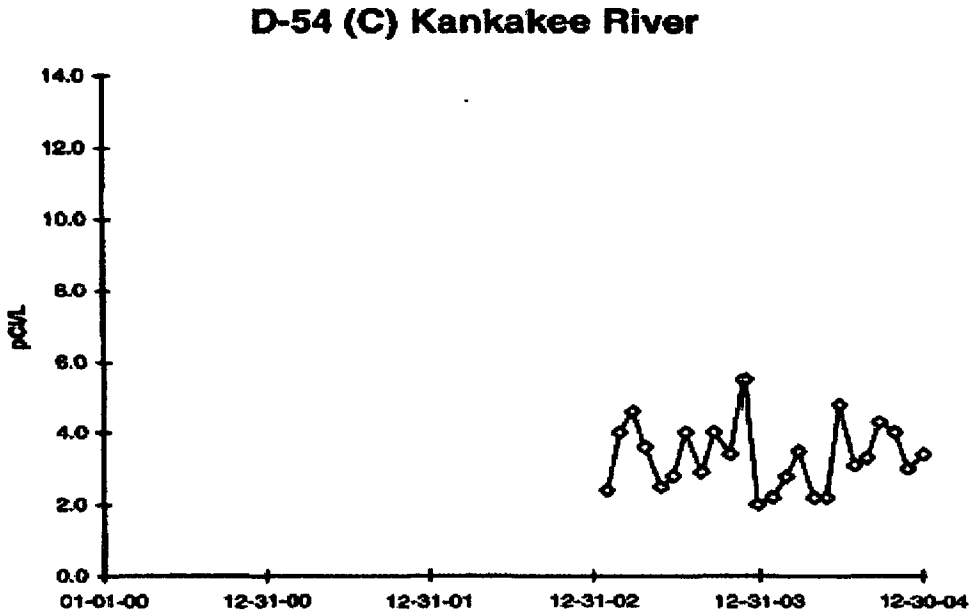
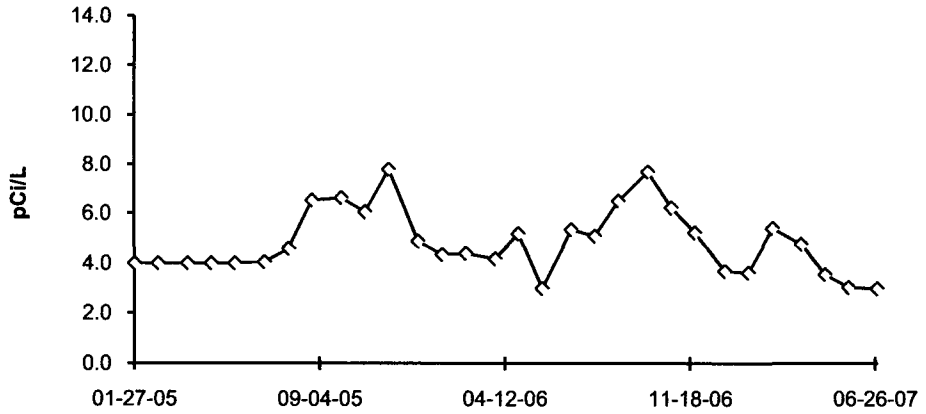
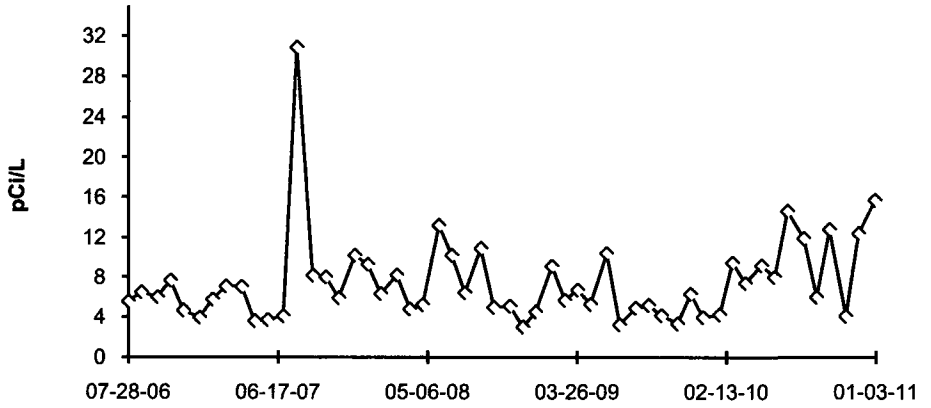


FIGURE C-2 (cont.)
SURFACE WATER - GROSS BETA - STATION D-54 (C) and D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-54 (C) Kankakee River



D-57 (C) Kankakee River

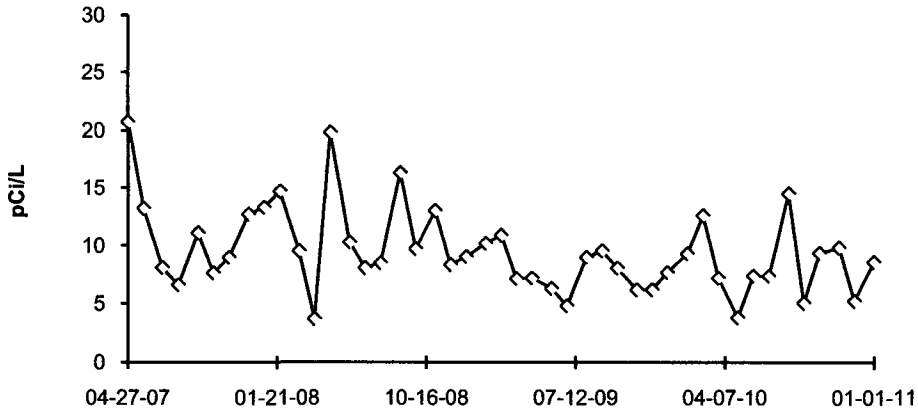


DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

D-54 LOCATION REMOVED FROM PROGRAM JUNE 28, 2007 AND REPLACED WITH D-57

FIGURE C-3
SURFACE WATER - GROSS BETA - STATION D-21
COLLECTED IN THE VICINITY OF DNPS, 2007 - 2010

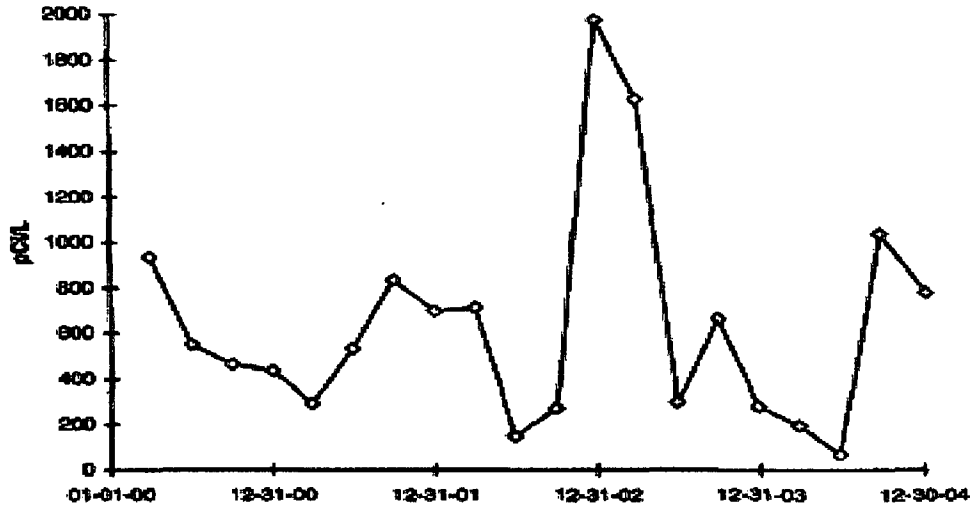
D-21 Illinois River



D-21 PLACED INTO SERVICE ON MARCH 30, 2007, REPLACED D-51

FIGURE C-4
SURFACE WATER - TRITIUM - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-51 Dresden Lock & Dam



D-52 (C) Des Plaines River

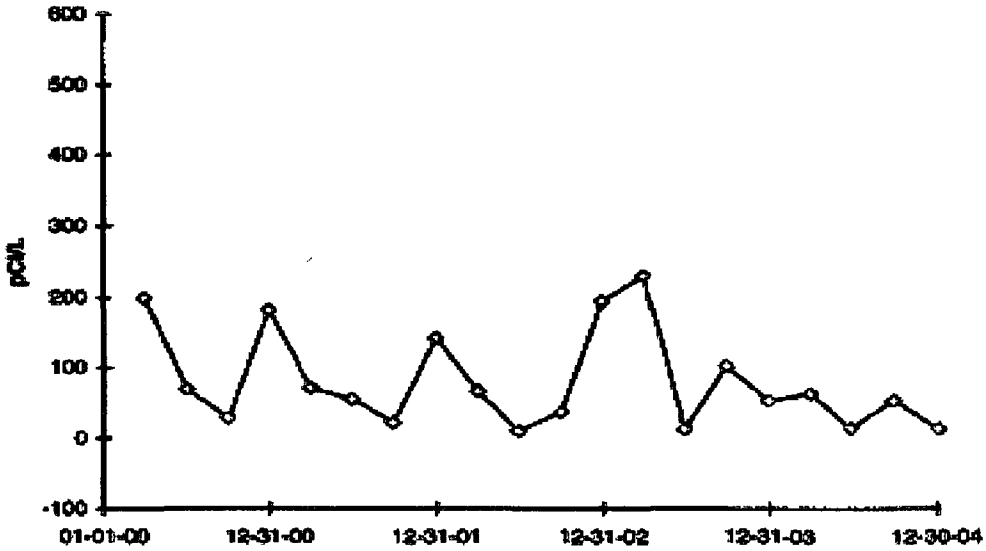
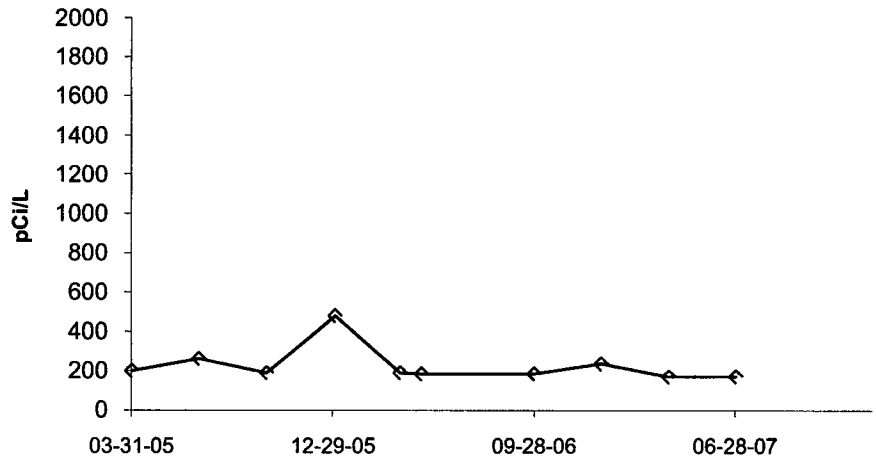
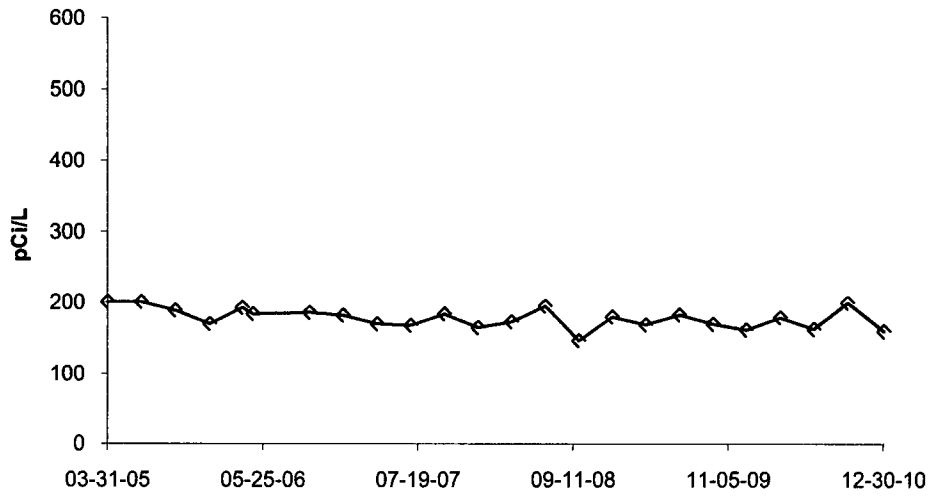


FIGURE C-4 (cont.)
SURFACE WATER - TRITIUM - STATIONS D-51 and D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-51 Dresden Lock & Dam



D-52 (C) Des Plaines River



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

D-51 LOCATION REMOVED FROM PROGRAM JUNE 29, 2007 AND REPLACED WITH D-21

FIGURE C-5
SURFACE WATER - TRITIUM - STATION D-54 (C)
COLLECTED IN THE VICINITY OF DNPS, 2002 - 2004

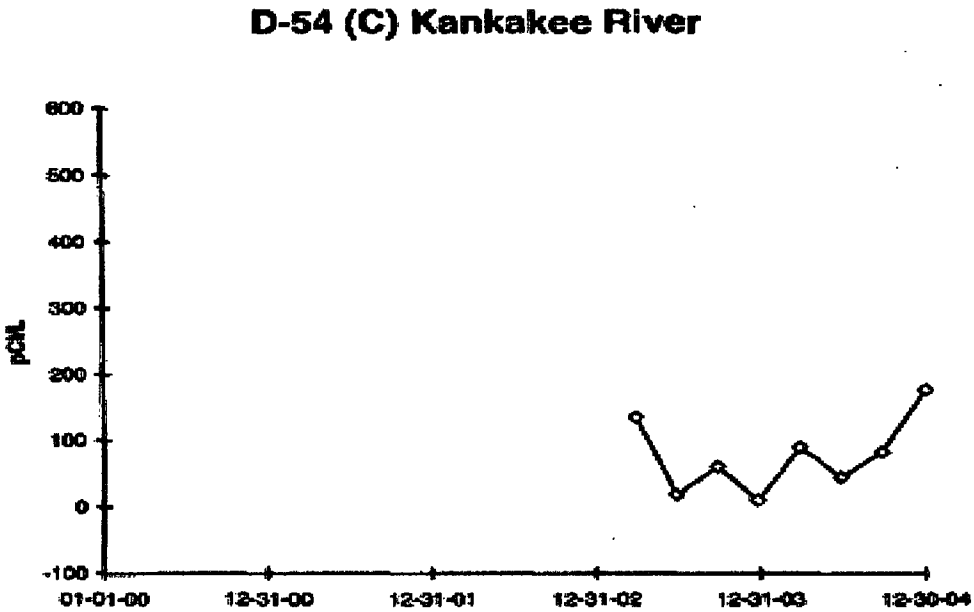
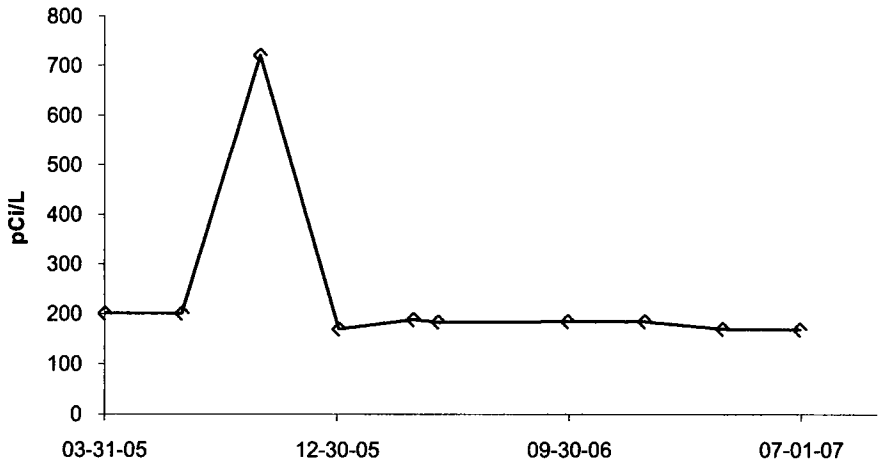


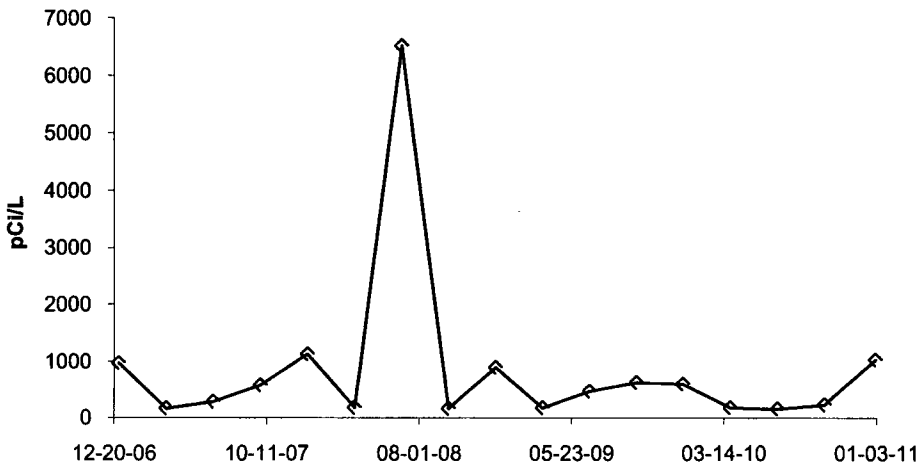
FIGURE C-5 (cont.)
SURFACE WATER - TRITIUM - STATION D-54 (C) AND D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-54 (C) Kankakee River



Location shared with Braidwood Station (BD-10).

D-57 (C) Kankakee River

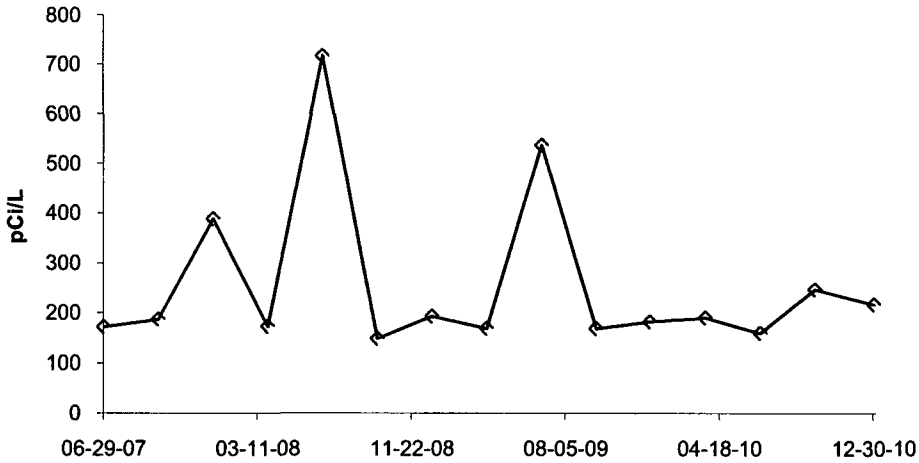


DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

D-57 NEW STATION JULY 24, 2006. REPLACED D-54 ON JUNE 28, 2007

FIGURE C-6
SURFACE WATER - TRITIUM - STATION D-21
COLLECTED IN THE VICINITY OF DNPS, 2007 - 2010

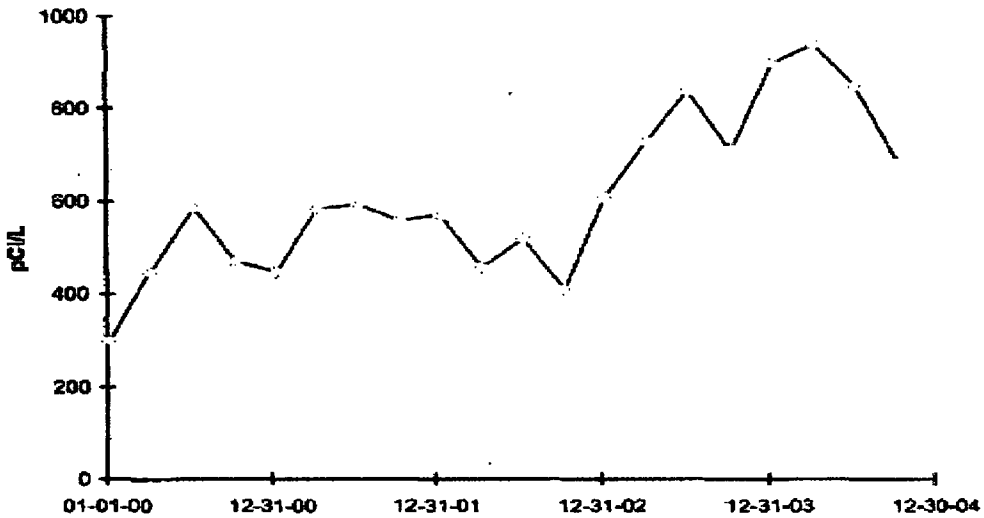
D-21 Illinois River



D-21 REPLACED D-51JUNE 29, 2007

FIGURE C-7
GROUND WATER - TRITIUM - STATIONS D-23 and D-35 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-23 Thorsen



D-35 Dresden Lock and Dam

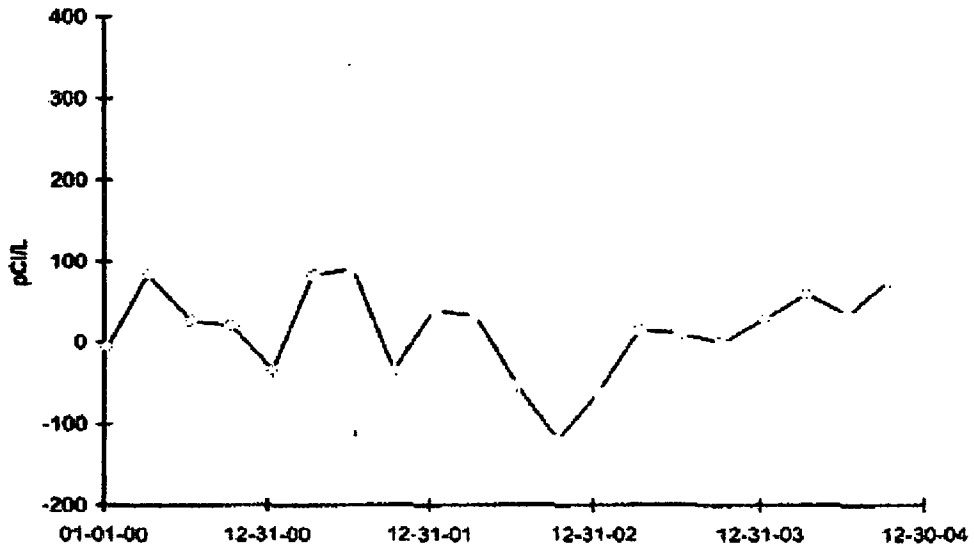
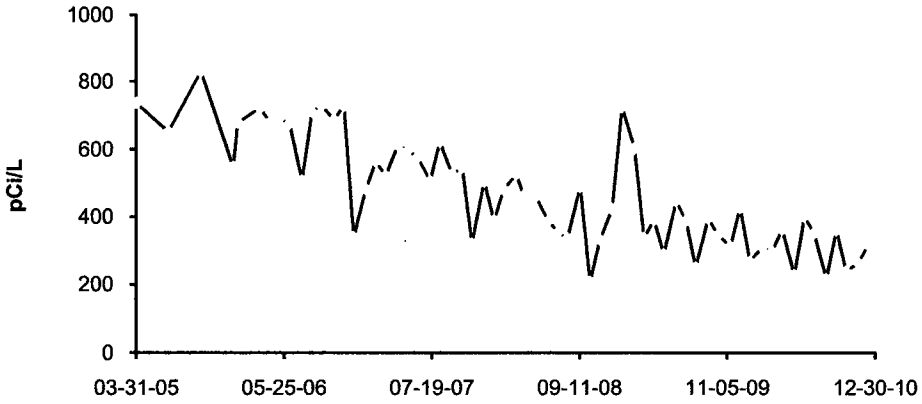
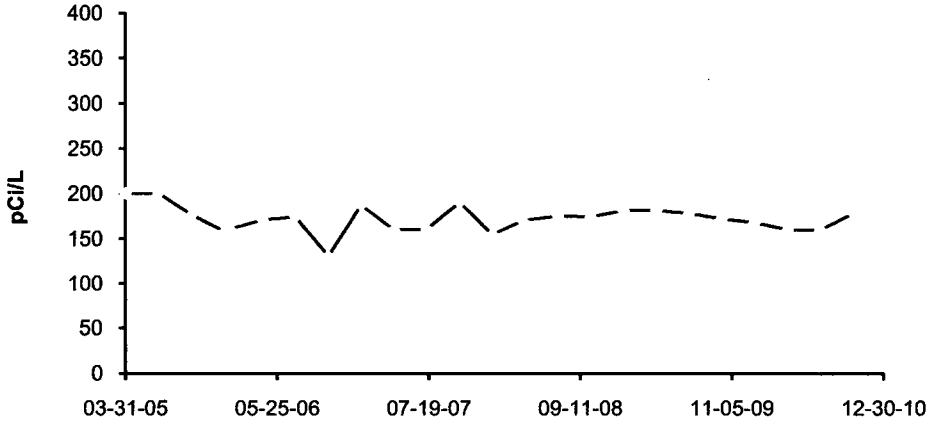


FIGURE C-7 (cont.)
GROUND WATER - TRITIUM - STATIONS D-23 and D-35 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-23 Thorsen



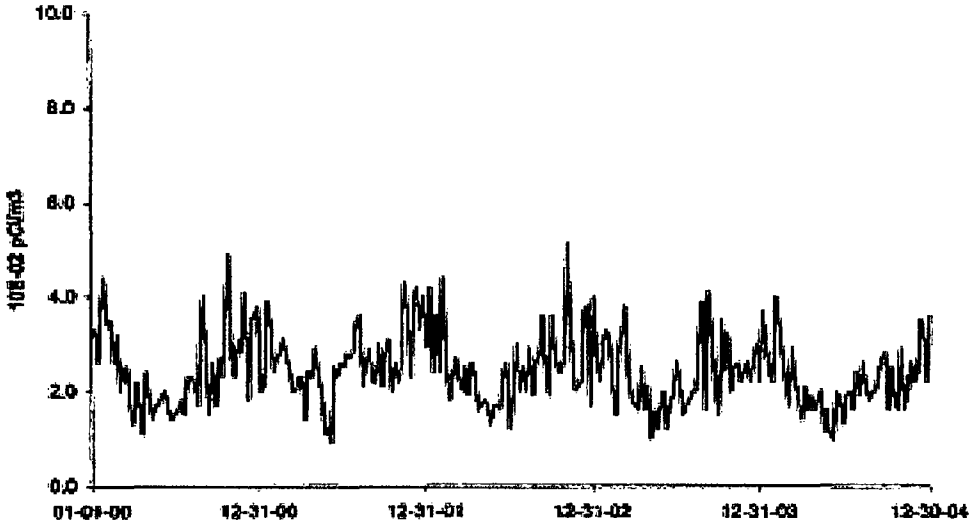
D-35 Dresden Lock and Dam



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

FIGURE C-8
AIR PARTICULATES - GROSS BETA - STATIONS D-01 and D-02 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-01 Onsite Station 1



D-02 Onsite Station 2

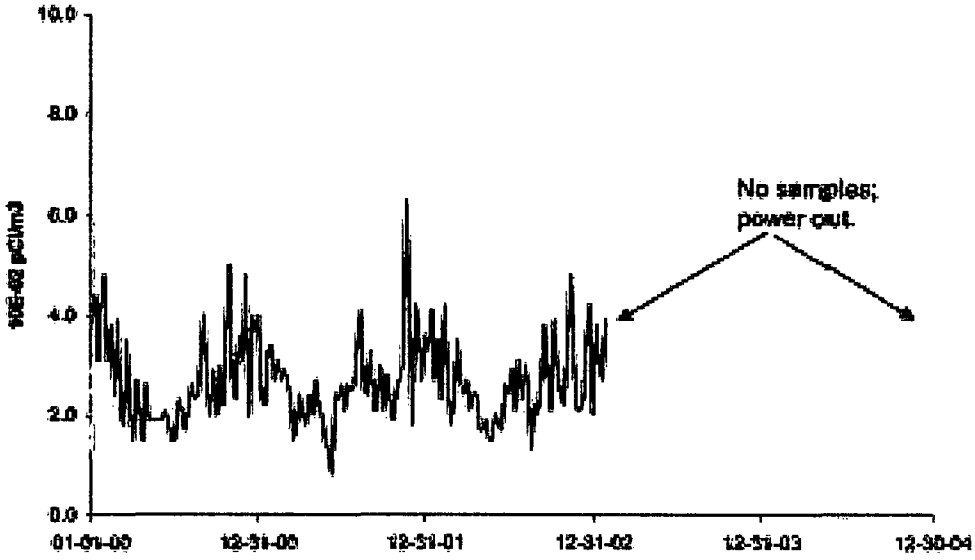
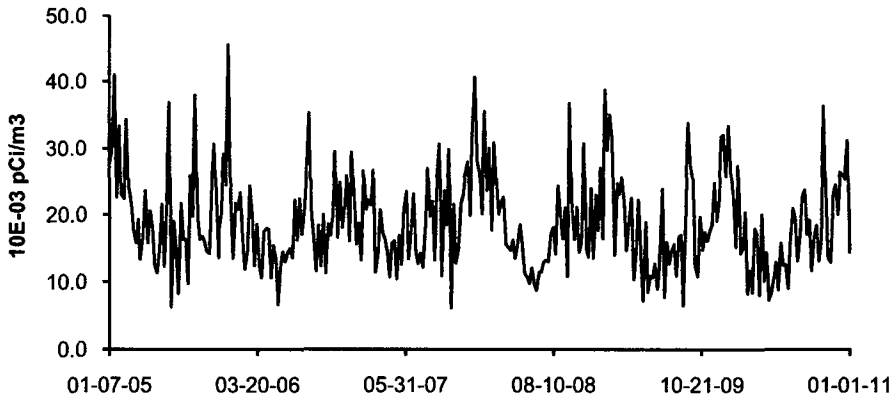
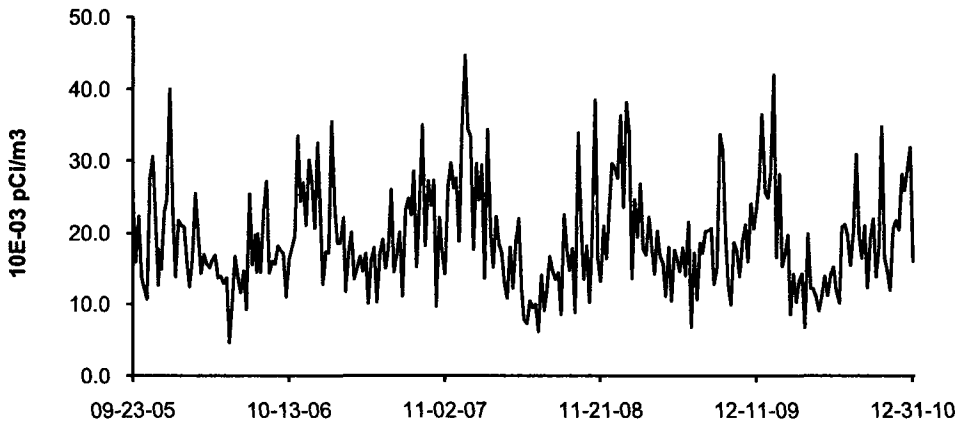


FIGURE C-8 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-01 and D-02 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-01 Onsite Station 1



D-02 Onsite Station 2

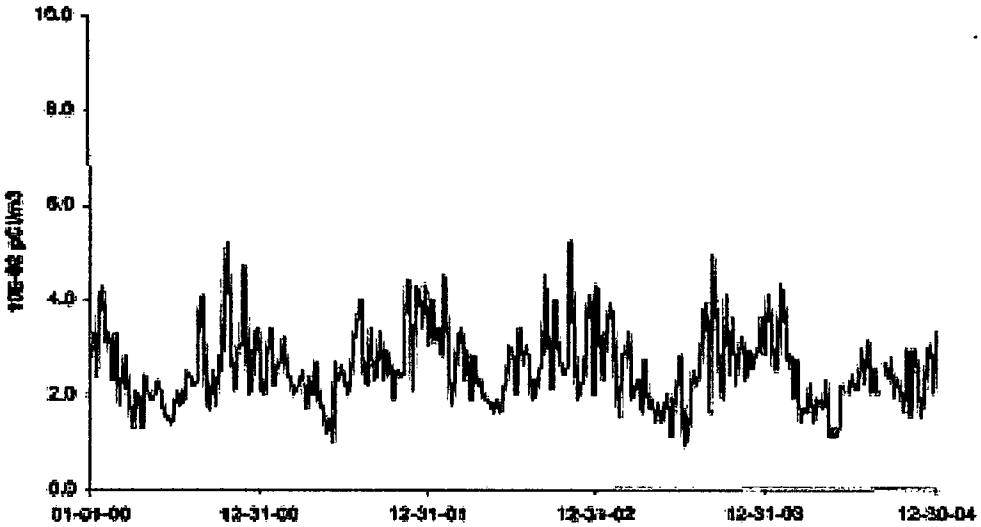


D-02 No samples; power was restored on 09-16-05.

DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

FIGURE C-9
AIR PARTICULATES - GROSS BETA - STATIONS D-03 and D-04 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-03 Onsite Station 3



D-04 Collins Road

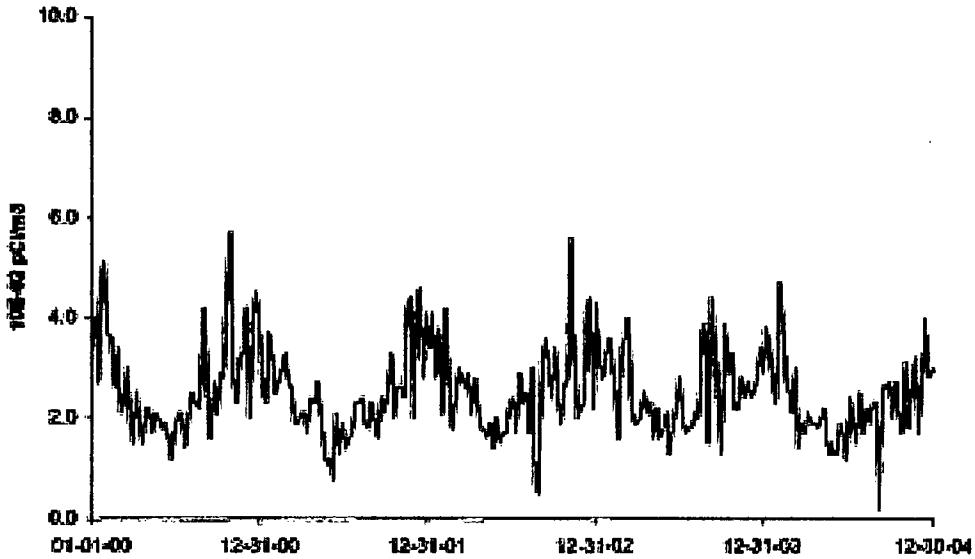
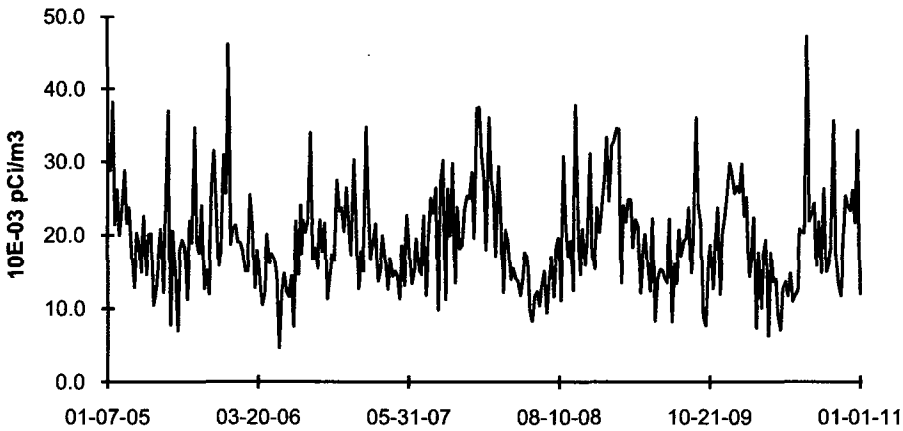
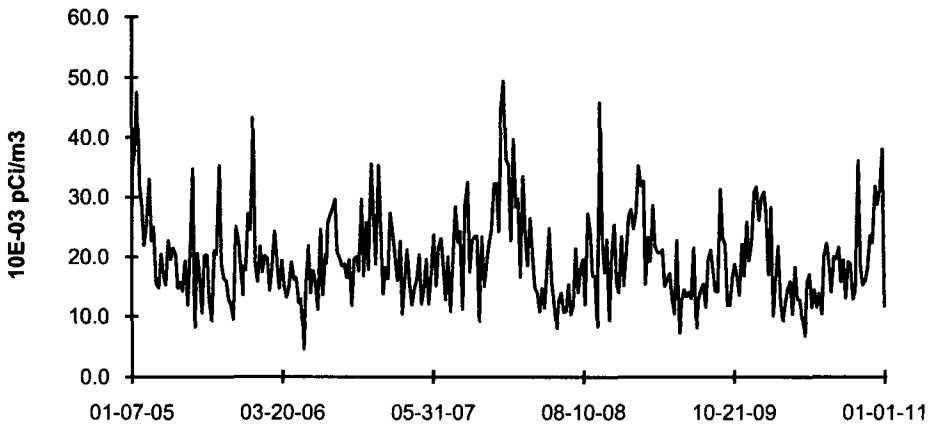


FIGURE C-9 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-03 and D-04 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-03 Onsite Station 3



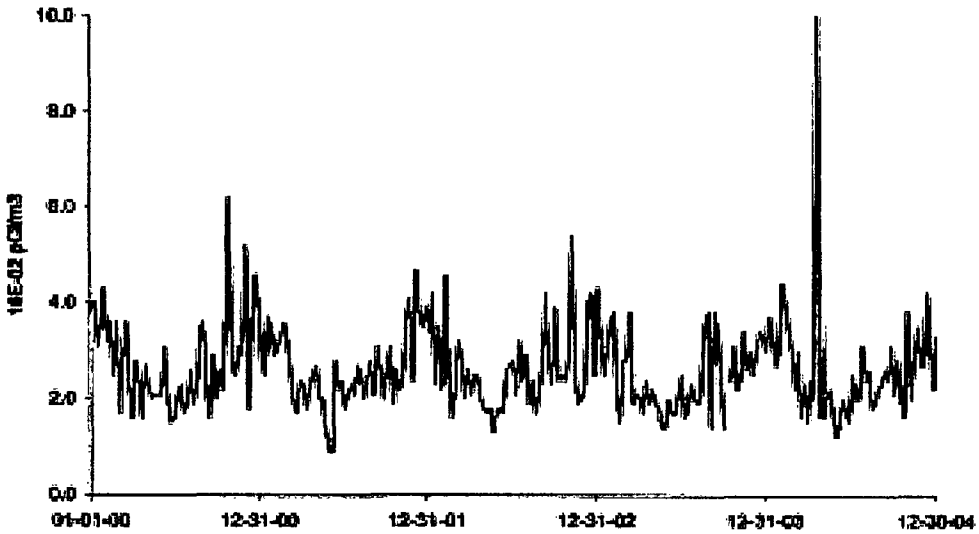
D-04 Collins Road



DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

FIGURE C-10
AIR PARTICULATES - GROSS BETA - STATIONS D-07 and D-12 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-07 Clay Products



D-12 (C) Lisbon

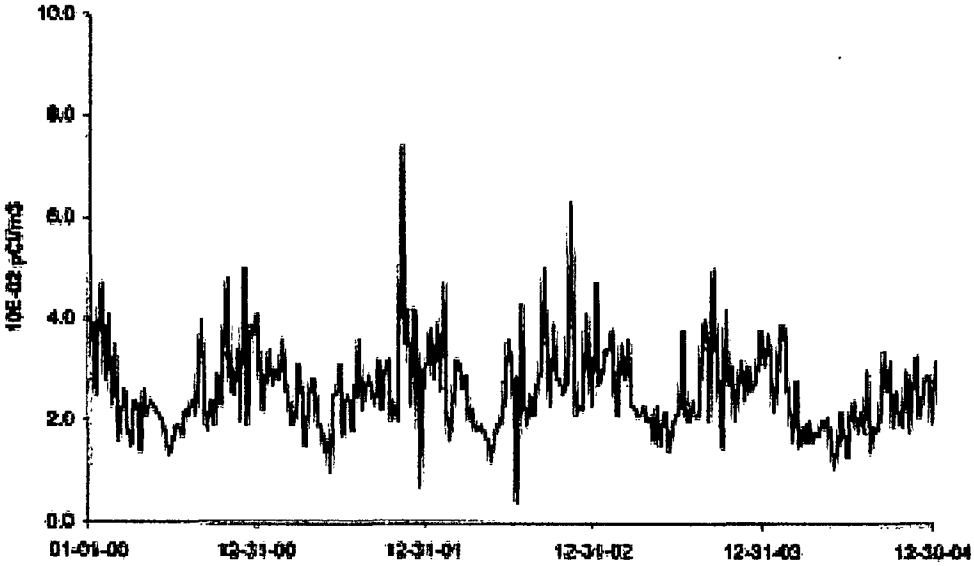
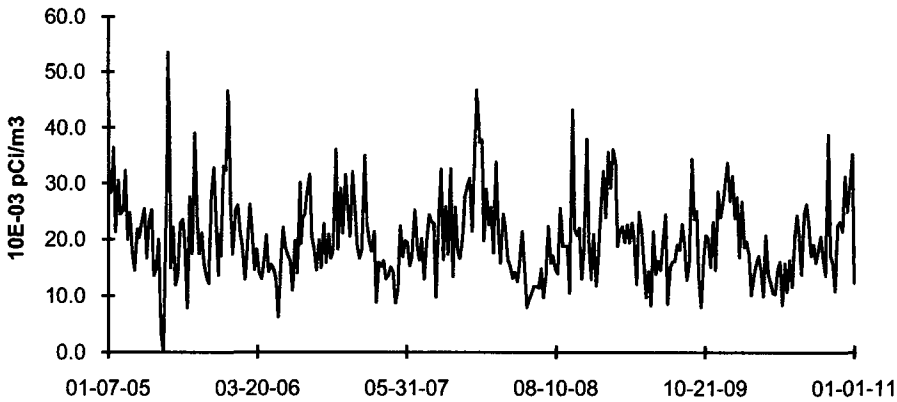


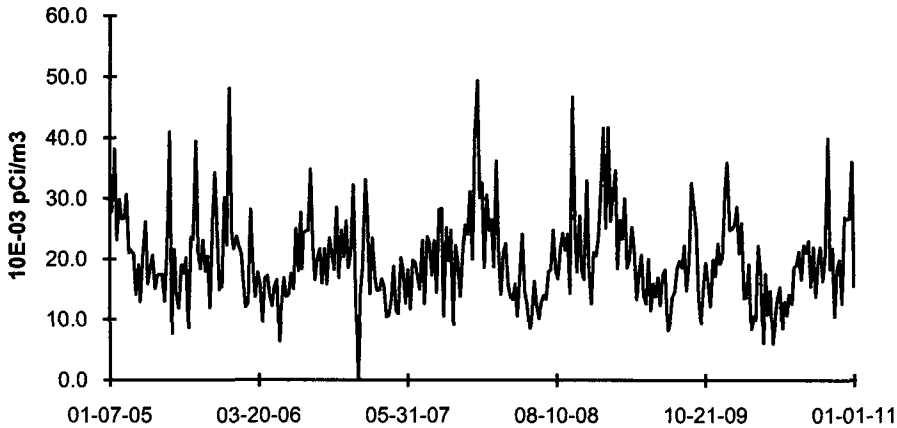
FIGURE C-10 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-07 and D-12 (C) COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-07 Clay Products



06/10/05 - 06/17/05 no sample due to pump malfunction

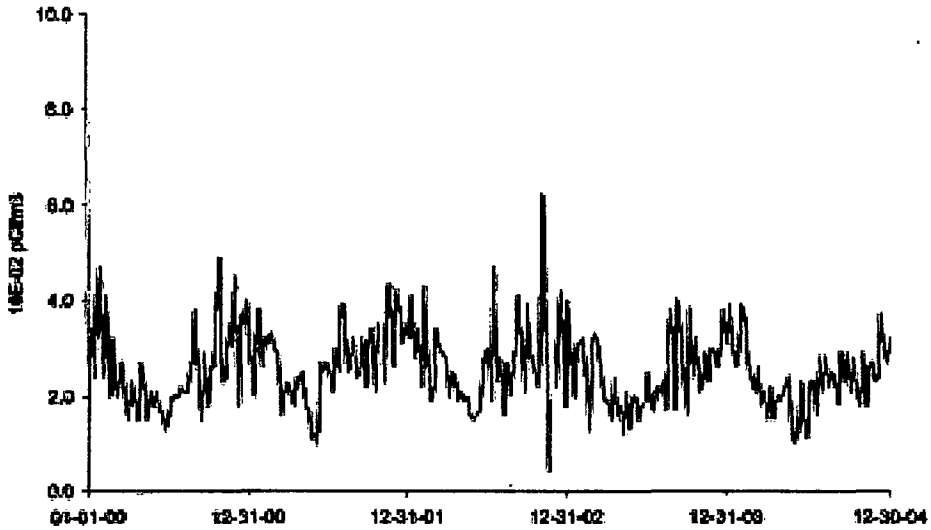
D-12 (C) Lisbon



DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

FIGURE C-11
AIR PARTICULATES - GROSS BETA - STATIONS D-45 and D-53 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2004

D-45 McKinley Woods Road



D-53 Grundy County Road

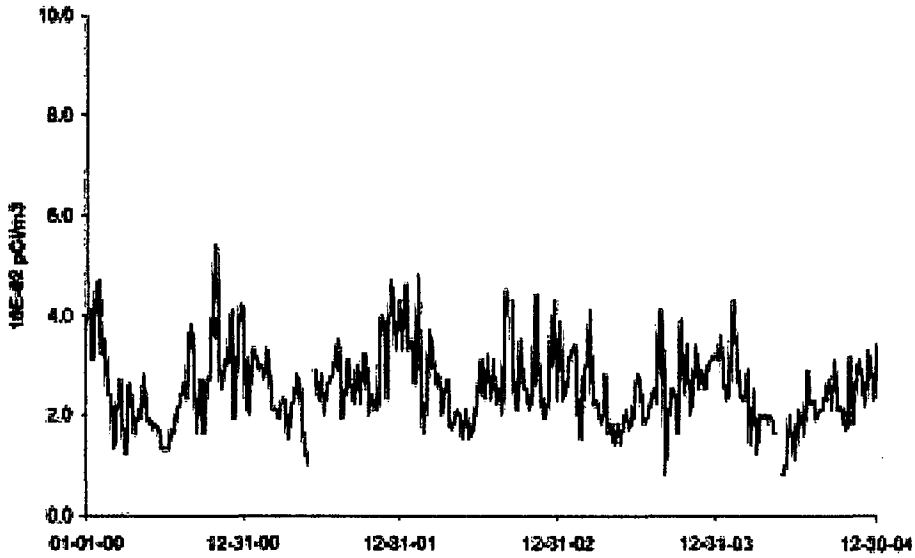
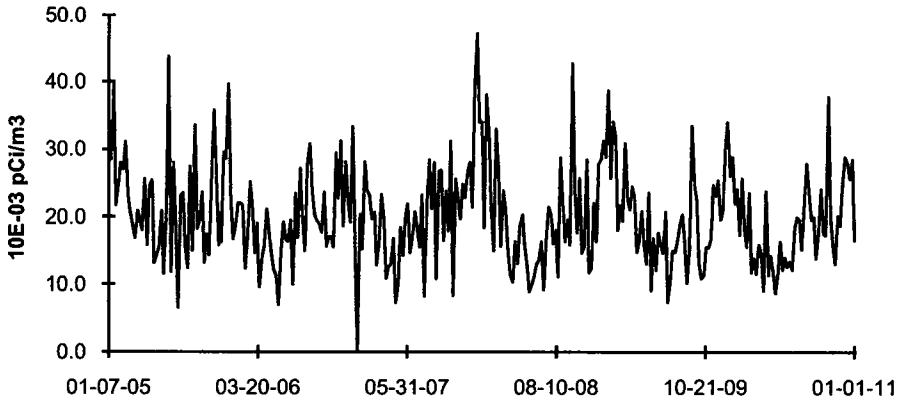
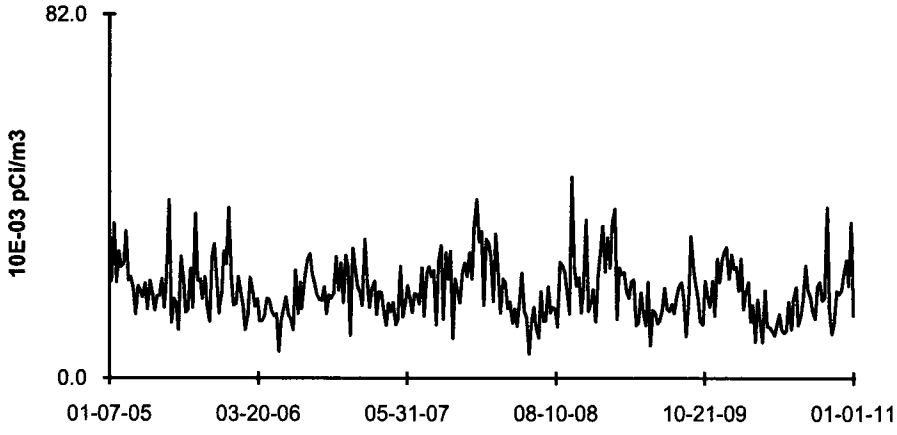


FIGURE C-11 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS D-45 and D-53 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-45 McKinley Woods Road



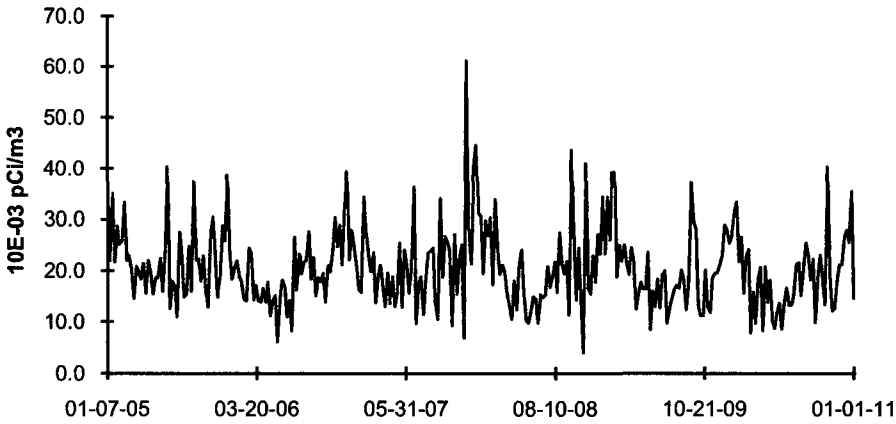
D-53 Grundy County Road



DUE TO VENDOR CHANGE, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

FIGURE C-12
AIR PARTICULATES - GROSS BETA - STATIONS D-08 and D-10 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-08 Prairie Park



D-10 Goose Lake Village

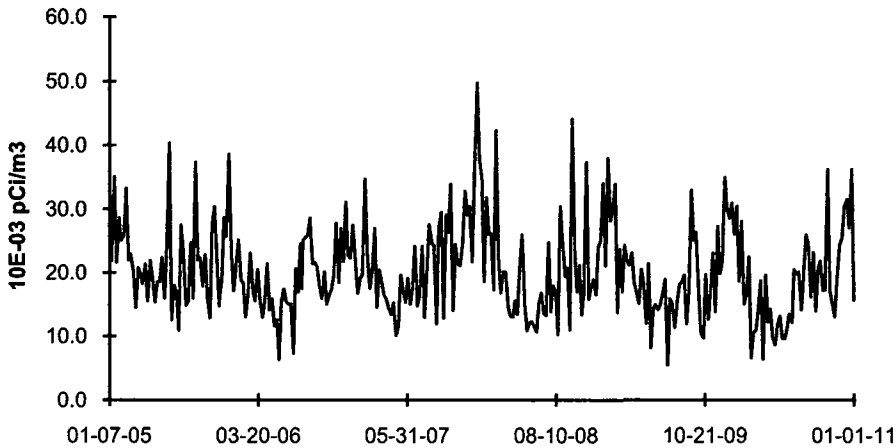
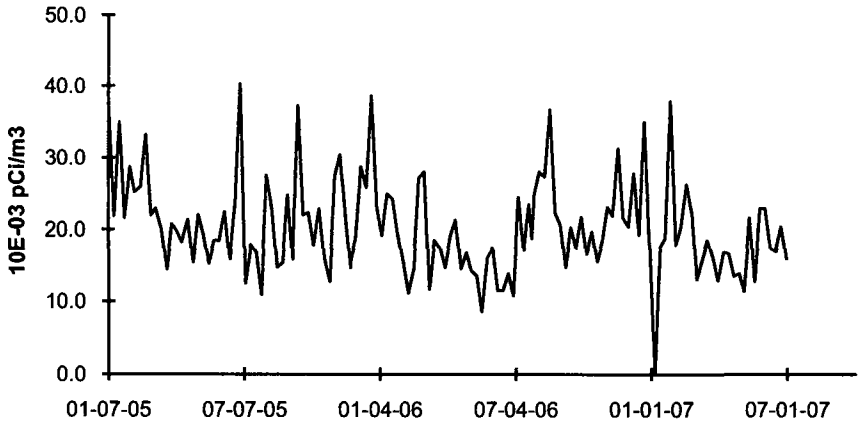
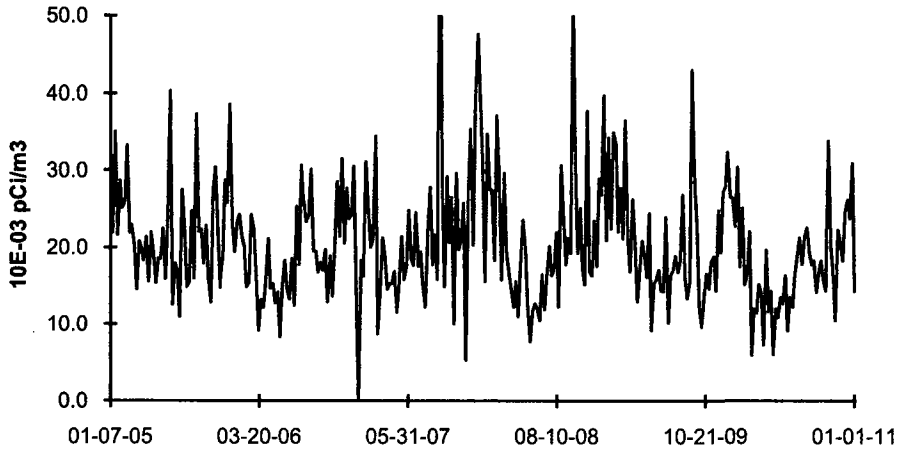


FIGURE C-13
AIR PARTICULATES - GROSS BETA - STATIONS D-13 and D-14 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2010

D-13 Minooka



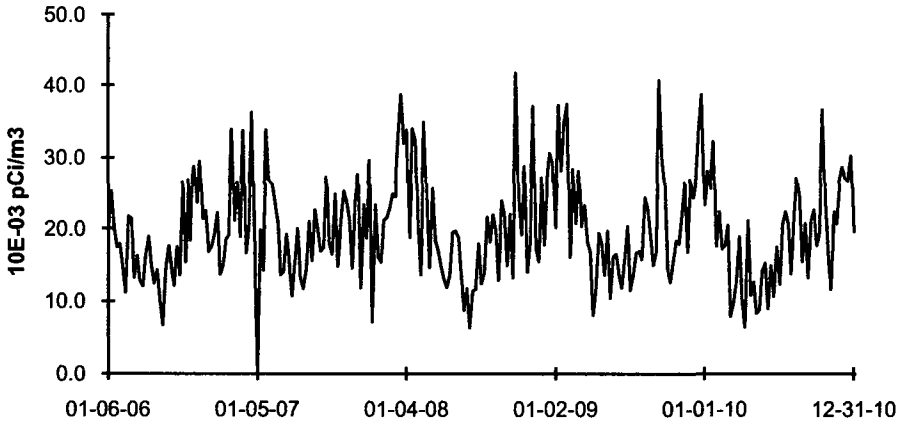
D-14 Channahon



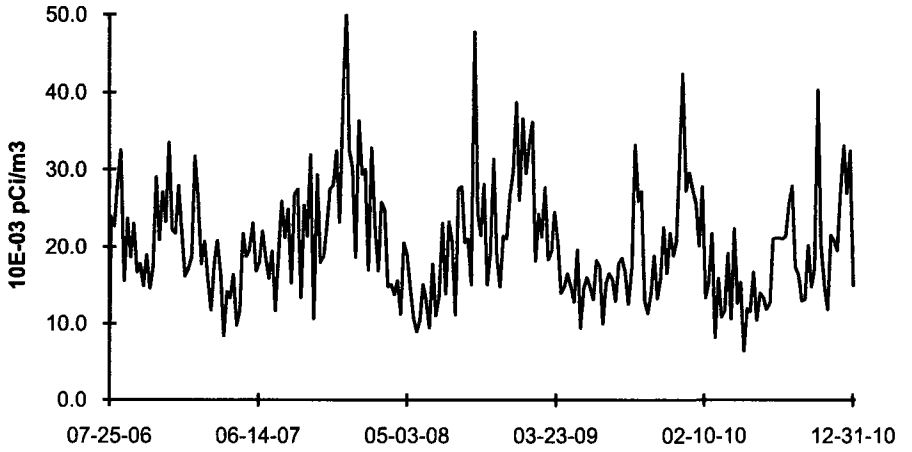
D-13 TAKEN OUT OF SERVICE JUNE 29, 2007 AND REPLACED WITH D-55

FIGURE C-14
AIR PARTICULATES - GROSS BETA - STATIONS D-55 and D-56 COLLECTED IN THE VICINITY OF DNPS, 2006-2010

D-55 Ridge Road



D-56 Wildfeather



D-55 NEW STATION DECEMBER 30, 2005 REPLACED D-13 JUNE 29, 2007
D-56 NEW STATION JULY 25, 2006

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APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

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TABLE D-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2010
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2010	E6978-396	Milk	Sr-89	pCi/L	89.3	92.8	0.96	A
			Sr-90	pCi/L	13.8	12.7	1.09	A
	E6979-396	Milk	I-131	pCi/L	65.2	74.0	0.88	A
			Ce-141	pCi/L	241	261	0.92	A
			Cr-51	pCi/L	388	361	1.07	A
			Cs-134	pCi/L	157	178	0.88	A
			Cs-137	pCi/L	150	158	0.95	A
			Co-58	pCi/L	143	143	1.00	A
			Mn-54	pCi/L	202	207	0.98	A
			Fe-59	pCi/L	146	137	1.07	A
			Zn-65	pCi/L	247	254	0.97	A
			Co-60	pCi/L	177	183	0.97	A
	E6981-396	AP	Ce-141	pCi	211	185	1.14	A
			Cr-51	pCi	304	255	1.19	A
			Cs-134	pCi	142	125	1.14	A
			Cs-137	pCi	131	111	1.18	A
			Co-58	pCi	119	101	1.18	A
			Mn-54	pCi	162	146	1.11	A
			Fe-59	pCi	110	97	1.14	A
			Zn-65	pCi	217	179	1.21	W
			Co-60	pCi	145	129	1.12	A
	E6980-396	Charcoal	I-131	pCi	80.2	85.6	0.94	A
June 2010	E7132-396	Milk	Sr-89	pCi/L	82.0	93.4	0.88	A
			Sr-90	pCi/L	15.8	16.7	0.95	A
	E7133-396	Milk	I-131	pCi/L	83.5	96.9	0.86	A
			Ce-141	pCi/L	107	110	0.97	A
			Cr-51	pCi/L	325	339	0.96	A
			Cs-134	pCi/L	114	126	0.90	A
			Cs-137	pCi/L	144	150	0.96	A
			Co-58	pCi/L	92.3	101	0.91	A
			Mn-54	pCi/L	165	169	0.98	A
			Fe-59	pCi/L	121	119	1.02	A
			Zn-65	pCi/L	197	206	0.96	A
			Co-60	pCi/L	190	197	0.96	A
	E7135-396	AP	Ce-141	pCi	88.4	91.6	0.97	A
			Cr-51	pCi	292	282	1.04	A
			Cs-134	pCi	101	105	0.96	A
			Cs-137	pCi	132	125	1.06	A
			Co-58	pCi	87.3	84.0	1.04	A
			Mn-54	pCi	150	140	1.07	A
			Fe-59	pCi	105	98.6	1.06	A
			Zn-65	pCi	168	171	0.98	A
			Co-60	pCi	170	163	1.04	A
	E7134-396	Charcoal	I-131	pCi	76.4	79.9	0.96	A

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2010
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
September 2010	E7229-396	Milk	Sr-89	pCi/L	85.0	92.8	0.92	A
			Sr-90	pCi/L	12.6	14.7	0.86	A
	E7230-396	Milk	I-131	pCi/L	80.2	94.1	0.85	A
			Ce-141	pCi/L	130	130	1.00	A
			Cr-51	pCi/L	235	234	1.00	A
			Cs-134	pCi/L	83.2	93.0	0.89	A
			Cs-137	pCi/L	95.1	94.5	1.01	A
			Co-58	pCi/L	77.3	73.7	1.05	A
			Mn-54	pCi/L	121	119	1.02	A
			Fe-59	pCi/L	96.4	91.1	1.06	A
			Zn-65	pCi/L	216	204	1.06	A
			Co-60	pCi/L	172	171	1.01	A
	E7232-396	AP	Ce-141	pCi	122	119	1.03	A
			Cr-51	pCi	228	214	1.07	A
			Cs-134	pCi	79.9	85.3	0.94	A
			Cs-137	pCi	93.8	86.7	1.08	A
			Co-58	pCi	71.5	67.6	1.06	A
			Mn-54	pCi	113	110	1.03	A
			Fe-59	pCi	73.8	83.6	0.88	A
			Zn-65	pCi	186	187	0.99	A
			Co-60	pCi	163	157	1.04	A
	E7231-396	Charcoal	I-131	pCi/L	62.3	59.9	1.04	A
December 2010	E7375-396	Milk	Sr-89	pCi/L	92.7	98.0	0.95	A
			Sr-90	pCi/L	13.5	13.5	1.00	A
	E7376-396	Milk	I-131	pCi/L	87.9	96.9	0.91	A
			Ce-141	pCi/L	not provided by Analytics for this study			
			Cr-51	pCi/L	389	456	0.85	A
			Cs-134	pCi/L	137	157	0.87	A
			Cs-137	pCi/L	172	186	0.92	A
			Co-58	pCi/L	84.3	90.2	0.93	A
			Mn-54	pCi/L	120	120	1.00	A
			Fe-59	pCi/L	134	131	1.02	A
			Zn-65	pCi/L	162	174	0.93	A
			Co-60	pCi/L	284	301	0.94	A
	E7378-396	AP	Ce-141	pCi	not provided by Analytics for this study			
			Cr-51	pCi	387	365	1.06	A
			Cs-134	pCi	135	126	1.07	A
			Cs-137	pCi	157	149	1.05	A
			Co-58	pCi	73.6	72.3	1.02	A
			Mn-54	pCi	88.7	96	0.92	A
			Fe-59	pCi	127	105	1.21	W
			Zn-65	pCi	151	139	1.09	A
			Co-60	pCi	249	241	1.03	A

TABLE D-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2010
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2010	E7377-396	Charcoal	I-131	pCi	79.6	84.2	0.95	A

(a) Teledyne Brown Engineering reported result.

(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to Analytics results.

(d) Analytics evaluation based on TBE internal QC limits: A= Acceptable. Reported result falls within ratio limits of 0.80-1.20. W-Acceptable with warning. Reported result falls within 0.70-0.80 or 1.20-1.30. N = Not Acceptable. Reported result falls outside the ratio limits of < 0.70 and > 1.30.

TABLE D-2 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2010
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
May 2010	RAD-81	Water	Sr-89	pCi/L	64.4	60.4	48.6 - 68.2	A
			Sr-90	pCi/L	37.8	41.3	30.4 - 47.4	A
			Ba-133	pCi/L	66.4	65.9	54.9 - 72.5	A
			Cs-134	pCi/L	66.43	71.6	58.4 - 78.8	A
			Cs-137	pCi/L	137.33	146	131 - 163	A
			Co-60	pCi/L	83.33	84.5	76.0 - 95.3	A
			Zn-65	pCi/L	177	186	167 - 219	A
			Gr-A	pCi/L	26.37	32.9	16.9 - 42.6	A
			Gr-B	pCi/L	28.77	37.5	24.7 - 45.0	A
			I-131	pCi/L	26.27	26.4	21.9 - 31.1	A
			H-3	pCi/L	12967	12400	10800 - 13600	A
November 2010	RAD-83	Water	Sr-89	pCi/L	77.8	68.5	55.8 - 76.7	N (1)
			Sr-90	pCi/L	39.3	43.0	31.7 - 49.3	A
			Ba-133	pCi/L	70.3	68.9	57.5 - 75.8	A
			Cs-134	pCi/L	39.9	43.2	34.5 - 47.5	A
			Cs-137	pCi/L	117	123	111 - 138	A
			Co-60	pCi/L	53.5	53.4	48.1 - 61.3	A
			Zn-65	pCi/L	11.0	102	91.8 - 122	N (2)
			Gr-A	pCi/L	35.1	42.3	21.9 - 53.7	A
			Gr-B	pCi/L	35.5	36.6	24.0 - 44.2	A
			I-131	pCi/L	27.9	27.5	22.9 - 32.3	A
			H-3	pCi/L	13233	12900	11200 - 14200	A

(1) Sr-89 TBE to known ratio of 1.14 fell within acceptable range of ± 20%. No action required. NCR 10-09

(2) Zn-65 result of 111 was incorrectly reported as 11.0. No action required. NCR 10-09

(a) Teledyne Brown Engineering reported result.

(b) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for Error. Reported result falls within the Control Limits and outside of the Warning Limit.

TABLE D-3 **DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)**
TELEDYNE BROWN ENGINEERING, 2010
(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2010	10-MaW22	Water	Cs-134	Bq/L	-0.0942		(1)	A
			Cs-137	Bq/L	58.5	60.6	42.4 - 78.8	A
			Co-57	Bq/L	27.2	28.3	19.8 - 36.8	A
			Co-60	Bq/L	0.0226		(1)	A
			H-3	Bq/L	104	90.8	63.6 - 118.0	A
			Mn-54	Bq/L	26.6	26.9	18.8 - 35.0	A
			Sr-90	Bq/L	0.1029		(1)	A
			Zn-65	Bq/L	42.0	40.7	28.5 - 52.9	A
	10-GrW22	Water	Gr-A	Bq/L	0.5173	0.676	0.00 - 1.352	A
			Gr-B	Bq/L	3.98	3.09	1.55 - 4.64	A
	10-MaS22	Soil	Cs-134	Bq/kg	665	733	513 - 953	A
			Cs-137	Bq/kg	800	779	545 - 1013	A
			Co-57	Bq/kg	508	522	365 - 679	A
			Co-60	Bq/kg	648	622	435 - 809	A
			Mn-54	Bq/kg	893	849	594 - 1104	A
			K-40	Bq/kg	597	559	391 - 727	A
			Sr-90	Bq/kg	221	288	202 - 374	W
			Zn-65	Bq/kg	-4.97		(1)	A
	10-RdF22	AP	Cs-134	Bq/sample	1.81	2.13	1.49 - 2.77	A
			Cs-137	Bq/sample	1.70	1.53	1.07 - 1.99	A
			Co-57	Bq/sample	0.0056		(1)	A
			Co-60	Bq/sample	2.65	2.473	1.731 - 3.215	A
			Mn-54	Bq/sample	3.70	3.02	2.11 - 3.93	W
			Sr-90	Bq/sample	0.0523		(1)	A
			Zn-65	Bq/sample	-0.0627		(1)	A
	10-GrF22	AP	Gr-A	Bq/sample	0.1533	0.0427	0.00 - 0.854	A
			Gr-B	Bq/sample	1.240	1.29	0.65 - 1.94	A
	10-RdV22	Vegetation	Cs-134	Bq/sample	4.48	4.39	3.07 - 5.71	A
			Cs-137	Bq/sample	3.43	3.06	2.14 - 3.98	A
			Co-57	Bq/sample	-0.0117		(1)	A
			Co-60	Bq/sample	3.55	3.27	2.29 - 4.25	A
			Mn-54	Bq/sample	0.007		(1)	A
			Sr-90	Bq/sample	-0.0002		(1)	A
			Zn-65	Bq/sample	8.12	7.10	4.97 - 9.23	A
September 2010	10-MaW23	Water	Cs-134	Bq/L	27.1	31.4	22.0 - 40.8	A
			Cs-137	Bq/L	41.8	44.2	30.9 - 57.5	A
			Co-57	Bq/L	33.2	36.0	25.2 - 46.8	A
			Co-60	Bq/L	26.5	28.3	19.8 - 36.8	A
			H-3	Bq/L	500	453.4	317.4 - 589.4	A
			Mn-54	Bq/L	0.024		(1)	A
			Sr-90	Bq/L	8.10	8.3	5.8 - 10.8	A
			Zn-65	Bq/L	30.8	31.0	21.7 - 40.3	A
	10-GrW23	Water	Gr-A	Bq/L	2.36	1.92	0.58 - 3.26	A
			Gr-B	Bq/L	6.37	4.39	2.20 - 6.59	A

TABLE D-3 **DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)**
TELEDYNE BROWN ENGINEERING, 2010
(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
September 2010	10-MaS23	Soil	Cs-134	Bq/kg	837	940	658 - 1222	A
			Cs-137	Bq/kg	680	670	469 - 871	A
			Co-57	Bq/kg	2.78		(1)	A
			Co-60	Bq/kg	350	343	240 - 446	A
			Mn-54	Bq/kg	853	820	574 - 1066	A
			K-40	Bq/kg	721	699	489 - 909	A
			Sr-90	Bq/kg	2.24		(1)	A
			Zn-65	Bq/kg	287	265	186 - 345	A
	10-RdF23	AP	Cs-134	Bq/sample	2.31	2.98	2.09 - 3.87	W
			Cs-137	Bq/sample	-0.025		(1)	A
			Co-57	Bq/sample	3.64	4.08	2.86 - 5.380	A
			Co-60	Bq/sample	2.81	2.92	2.04 - 3.80	A
			Mn-54	Bq/sample	3.19	3.18	2.23- 4.13	A
			Sr-90	Bq/sample	1.01	1.01	0.71 - 1.31	A
			Zn-65	Bq/sample	0.0310		(1)	A
	10-GrF23	AP	Gr-A	Bq/sample	0.004		(1)	A
			Gr-B	Bq/sample	0.473	0.50	0.25 - 0.75	A
	10-RdV23	Vegetation	Cs-134	Bq/sample	4.90	4.79	3.35 - 6.23	A
			Cs-137	Bq/sample	6.78	5.88	4.12 - 7.64	A
			Co-57	Bq/sample	10.2	8.27	5.79 - 10.75	W
			Co-60	Bq/sample	0.00		(1)	A
			Mn-54	Bq/sample	7.36	6.287	4.401 - 8.173	A
			Sr-90	Bq/sample	2.53	2.63	1.84 - 3.42	A
			Zn-65	Bq/sample	6.40	5.3900	3.77 - 7.01	A

(1) False positive test.

(a) Teledyne Brown Engineering reported result.

(b) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) DOE/MAPEP evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

APPENDIX E

ERRATA DATA

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There is no errata data for 2010.

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APPENDIX F

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

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Docket No: 50-010
50-237
50-249

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 and 3

Annual Radiological
Groundwater Protection Program Report

1 January Through 31 December 2010

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon SM
Nuclear

Dresden Nuclear Power Station
Norris, IL 60450

May 2011

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Appendices

Appendix A Location Designation

Tables

Table A-1 Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2010

Figures

Security-Related Information: Maps of the Dresden Nuclear Power Station have been withheld from public disclosure under 10CFR2.390 and N.J.S.A. 47:1A-1.1

Appendix B Data Tables

Tables

Table B-I.1 Concentrations of Tritium and Strontium in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2010.

Table B-I.2 Concentrations of Gamma Emitters in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2010.

Table B-II.1 Concentrations of Tritium and Strontium in Surface Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2010.

Table B-II.2 Concentrations of Gamma Emitters in Surface Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2010.

I. Summary and Conclusions

Dresden Station is situated on approximately 600 acres of land that borders the Illinois River to the north and the Kankakee River to the east. This land is referred to as the owner-controlled area. The Dresden power plant itself takes up a small parcel of the owner-controlled area and is surrounded by a security fence. The security fence defines what is known as the Protected Area (PA).

The Dresden power plant has experienced a number of leaks from underground lines and spills from above ground systems containing radioactive water over its 40-year history. These incidents have created a number of areas of localized contamination within the PA. Isotopic analyses of groundwater in many of these areas show measurable concentrations of tritium (H-3).

Dresden participated in a fleetwide hydrogeologic investigation in during the summer of 2006 in an effort to characterized groundwater movement at each site. This investigation also compiled a list of the historic spills and leaks. Combining the tritium concentration in a locally contaminated area with the speed and direction of groundwater in the vicinity can produce a contaminated groundwater plume projection. If the plume of contaminated groundwater passes through the path of a groundwater monitoring well, it can be anticipated that the tritium concentration in this well will increase to some maximum concentration, then decrease over time.

The fleetwide Hydrogeologic Investigation Report (HIR) shows that groundwater movement on the Dresden site is very slow. In addition, there is a confining rock layer, the Maquoketa Shale layer, about 55 feet below the surface that impedes groundwater movement below this depth.

Dresden has a domestic water system that is supplied by two deep wells (1500 feet deep) that were installed about 50 years ago south of the P.A. Samples taken from domestic water supply and have never shown any detectable tritium concentration.

Tritium has a half-life of 12.3 years. This means that 40 years from now 90% of the tritium on site today will have decayed away to more stable elements.
Given the limited volume of contaminated groundwater on site, radioactive decay, slow groundwater movement, and dilution effects the conclusion of the HIR is that the operation of Dresden Nuclear Power Station had no adverse radiological impact on the environment. As a result there is little potential for contaminated groundwater on site to affect off-site drinking water.

II. Introduction

Radiological Groundwater Monitoring Program (RGPP):

Dresden has a Radiological Groundwater Monitoring Program (RGPP) that provides long-term monitoring intended to verify the fleet-wide hydrogeologic study conclusions. Dresden uses developed groundwater wells and surface water sample points in the RGPP.

The Dresden RGPP was established in 2006 and there have been no significant changes to this program. This program does not impact the operation of the plant and is independent of the REMP.

Developed groundwater wells are wells that were installed specifically for monitoring groundwater. These wells are equipped with screens and are properly sealed near the surface to avoid surface water intrusion. The wells were designed in accordance with appropriate codes and developed in accordance with appropriate standards and procedures. Dresden has groundwater monitoring wells identified as "shallow" (depths from 15 to 35 feet), "Intermediate" (depths from 35 to 55 feet) and "deep" (depths beyond 100 feet). All wells installed to a depth greater than 100 feet ("deep" wells) were found to be dry and removed from the RGPP. Surface water sample points are identified sample locations in the station's canals and cooling pond.

There are 70 sampling points in the RGPP:

*Dresden has 39 developed groundwater monitoring wells within the Protected Area. Some of these wells form a ring just inside the security fence and the remaining wells were installed near underground plant system piping that contains radioactive water.

*Dresden has 25 developed groundwater monitoring wells outside the P.A. the majority of which form a ring just within the perimeter of the property.

*Dresden has 6 surface water monitoring locations on the owner-controlled area sampled as part of the Dresden RGPP. These consist of one sample from each of the 5 different canals and one sample from the cooling pond.

The Dresden site-specific RGPP procedure identifies the historic 'events' that would affect the individual RGPP sample results. This procedure identifies threshold values for each sample point, which if exceeded, could be an indication of a new spill from an above ground system or a new leak in an underground pipe containing tritiated water.

The RGPP sample points are currently sampled on a frequency of twice per year.

During 2010, there were 276 analyses that were performed on 138 samples from 70 sampling points.

Supplemental Radiological Groundwater Monitoring Program:

Dresden also has a Supplemental Radiological Groundwater Monitoring Program that provides short-term monitoring of a limited selection of monitoring points, mostly within the PA, intended to identify relatively rapid changes in the groundwater tritium concentrations.

Sentinel Wells, sometimes referred to as "baby wells" are wells that were installed to monitor local shallow groundwater; typically in associated with a historic underground pipe leak. These wells are not constructed to code or developed to a standard. Most sentinel wells are from 6 to 12 feet deep and consist of 2" PVC pipe without screens.

Dresden has two basic storm water runoff sewer systems within the P.A: one sewer-system routes to the east, then north, and discharges into the Unit 1 intake canal, the second sewer-system routes to the west, then north, through a large Oil/Water Separator, and discharges to the hot canal. Both the Unit 1 intake canal and the hot canal eventually route to the cooling pond.

A. Objectives of the RGPP

The Objective of the RGPP is to provide long-term monitoring intended to verify the fleet-wide hydrogeologic study conclusions. The objective of the site-specific RGPP is to provide indication of short-term changes to groundwater tritium concentrations within the PA.

If isotopic results of groundwater samples exceed the thresholds specified in this procedure it could be an indication of a new spill from an above ground system or a new leak in an underground pipe containing tritiated water.

Specific Objectives include:

1. Perform routine water sampling and radiological analysis of water from selected locations.

2. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.

3. Regularly assess analytical results to identify adverse trends.

4. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

1. Dresden Nuclear Power Station will continue to perform routine sampling and radiological analysis of water from selected locations.

2. Dresden Nuclear Power Station has implemented procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.

3. Dresden Nuclear Power Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

4. If an adverse trend in groundwater monitoring analytical results is identified, further investigation will be undertaken. If the investigation identifies a leak or unidentified spill, corrective actions will be implemented.

C. Program Description

Dresden has a Radiological Groundwater Monitoring Program (RGPP) that provides long-term monitoring intended to verify the fleet-wide hydrogeologic study conclusions. Dresden uses 70 developed groundwater wells and surface water sample points in the RGPP.

1. Sample Collection

   Sample locations can be found in Table A–1, Appendix A.

   <u>Groundwater and Surface Water</u>

   Water samples are collected in accordance with the schedule delineated in the Dresden site-specific RGPP procedures. Analytical laboratories are subject to internal quality assurance programs, industry crosscheck programs, as well as nuclear industry audits. Station personnel review and evaluate the analytical results.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (3He). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by Teledyne Brown Engineers (TBE) to analyze the environmental samples for radioactivity for the Dresden Nuclear Power Station RGPP in 2010.
In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of gamma emitters in groundwater and surface water.
2. Concentrations of tritium and strontium in groundwater and surface water.

B. Data Interpretation

The radiological data collected prior to Dresden Nuclear Power Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Dresden Nuclear Power Station was considered operational at initial criticality. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

   The Lower Limit of Detection (LLD) is the minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

   The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.
   Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus ± the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

   Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.
   Gamma spectroscopy results for each type of sample were grouped as follows:

   For groundwater and surface water 14 nuclides, Be-7, K-40, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, I-131, Cs-134, Cs-137, Ba-140 and La-140 were reported.

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Environmental Radiological Monitoring for Dresden Nuclear Power Nuclear Power Station, Commonwealth Edison Company, Annual Report 1986, May 1987.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others. Additional detail may be found by consulting references (CRA 2006).

a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research, and weapons production continue to influence tritium concentrations in the

environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected worldwide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at stations throughout the U.S. from 1960 up to and including 2006. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons.

Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations in Midwest precipitation have typically been below 100 pCi/L since around 1980.

Tritium concentrations in wells may still be above the 200-pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Tritium concentrations are routinely measured in large surface water bodies, including Lake Michigan and the Mississippi River. Illinois surface water data were typically less than 100 pCi/L.

The radio-analytical laboratory is counting tritium results to an Exelon specified LLD of 200 pCi/L. Typically, the lowest positive measurement will be reported within a range of 40 – 240 pCi/L or 140 ± 100 pCi/L. These sample results cannot be distinguished as different from background at this

concentration.

IV. Results and Discussion

Dresden Station initiated a Radiological Groundwater Protection Program (RGPP) in 2006.

A. Groundwater Results

Groundwater

Samples were collected from on-site wells throughout the year in accordance with Dresden's RGPP. Analytical results and anomalies are discussed below.

Tritium

Inside the Protected Area:

Of the 39 developed groundwater-monitoring wells inside the Protected Area, a little more than half (23 wells) show some level of tritium contamination ranging from just above LLD to 77,400 pCi/L. Although tritium is detected in a large number of these wells, it is important to note that the majority were installed in areas of historic spills or close to piping containing tritiated water (Table B–I.1, Appendix B).

Outside the Protected Area:

Of the 25 developed groundwater-monitoring wells on station property outside the Protected Area, 4 wells have a tritium concentration at or just slightly above the level of detectability (181 pCi/L to 632 pCi/L).

Three of the four wells with detectable tritium were installed in a cluster just north of the Protected Area near a historic Radwaste line break. The concentration of tritium in one of these wells reached a maximum of 76,000 pCi/L in March of 2002. The tritium concentration has been trending down and all three are now very near the lower limit of detectability.

One of the four wells with detectable tritium is about 200 yards south of the security access Check Point adjacent to the cold canal. It is believed that the tritium concentration in the cold canal is influenced by an upstream source. The tritium concentration reached a maximum of 784

pCi/L in late 2005 and has been trending down since.

Gamma Emitters

No gamma emitting nuclides were detected (Table B–I.2, Appendix B).

B. Surface Water Results

Surface Water

Samples were collected from six surface water locations throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from all locations were analyzed for tritium activity (Table B-II.1, Appendix B). Tritium values ranged from the detection limit to 544 pCi/l. The measurable concentrations of tritium are from an upstream source.

Gamma Emitters

No gamma emitting nuclides were detected (Table B–II.2, Appendix B).

C. Drinking Water Well Survey

No drinking water well surveys were conducted in 2010.

D. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE and Environmental Inc. (Midwest Labs) are presented in the AREOR.

E. Leaks, Spills, and Releases

On November 27, 2010 a hose fitting ruptured that was connected to a portable storage tank containing tritium-contaminated groundwater collected from an on-site excavation. The rupture was caused by freezing and leakage was stopped the same day. An estimated 1.12E+04 gallons containing 1.12E-04 curies of tritium was released to the environment.

F. Trends

The tritium concentration in the water found near the 2004 HPCI leak is traveling to the west. Wells in the vicinity show that tritium levels have been trending down slightly.

G. Investigations

No investigations were performed in 2010.

H. Actions Taken

1. Compensatory Actions

   A groundwater collection and treatment system was used during the excavation and replacement of the underground Unit 3 Low Pressure Coolant Injection (LPCI) suction line. As with the groundwater collection and treatment systems employed during the excavation work associated with the 2004, 2006, and 2009 leak repairs, the groundwater was processed through the RadWaste System.

2. Actions to Recover/Reverse Plumes

   No actions were taken in 2010 by Dresden Station in an effort to reverse plume movement.

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APPENDIX A

LOCATION DISTANCE

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TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2010

Site	Site Type	Location
DSP-105	Monitoring Well	30 feet east of the east wall of the EM Shop
DSP-106	Monitoring Well	65 feet east of east wall of EM Shop
DSP-107	Monitoring Well	9 feet east of the east Unit 1 Fuel Pool wall
DSP-108	Monitoring Well	40 ft east of the Unit 1 Sphere
DSP-117	Monitoring Well	Northeast of Unit 1 Sphere; 825 feet west of Ross Bridge
DSP-121	Monitoring Well	72 feet north of 2/3 Intake Canal fence
DSP-122	Monitoring Well	50 feet north of the Radwaste Tank Farm
DSP-123	Monitoring Well	Northeast corner of the Unit 1 Off-gas Building
DSP-124	Monitoring Well	9 feet south of Floor Drain Collector Tank
DSP-125	Monitoring Well	Northeast corner of the Unit 2/3A CST
DSP-126	Monitoring Well	21 feet northwest of the northwest bend in road behind Training Building
DSP-147	Monitoring Well	325 feet west of Telemetry Bridge
DSP-148	Monitoring Well	130 feet southeast of the Flow Regulating Station building
DSP-149R	Monitoring Well	35 feet south by southwest of the 138 KV yard fence
DSP-150	Monitoring Well	85 feet east of the northeast corner of the Unit 1 Spent Fuel Pool pad
DSP-151	Monitoring Well	65 feet north of the northeast corner of the Storeroom
DSP-152	Monitoring Well	210 feet south by southeast of the southeast corner of Maintenance Garage
DSP-153	Monitoring Well	150 feet east of the southeast corner of liquid hydrogen tank farm fence
DSP-154	Monitoring Well	33 feet west of the track; 165 feet east of the Security Checkpoint
DSP-156	Monitoring Well	70 feet east by northeast of the northwest corner of 138 KV yard fence
DSP-157-I	Monitoring Well	25 feet south of the south edge of the Employee Parking lot
DSP-157-S	Monitoring Well	25 feet south of the south edge of the Employee Parking lot
DSP-158-I	Monitoring Well	53 feet west of the Kankakee River; 33 feet west of the cinder track
DSP-158-S	Monitoring Well	50 feet west of the Kankakee River; 33 feet west of the cinder track
DSP-159-I	Monitoring Well	250 feet west of the Thorsen house; 450 ft south of the plant access gate
DSP-159-S	Monitoring Well	251 feet west of the Thorsen house; 450 ft south of the plant access gate
MW-DN-101-I	Monitoring Well	60 feet north of the Unit 1 Diesel Fuel Storage
MW-DN-101-S	Monitoring Well	60 feet north of the Unit 1 Diesel Fuel Storage
MW-DN-102-I	Monitoring Well	12 feet south of the southeast corner of the MUDS Building
MW-DN-102-S	Monitoring Well	13 feet south of the southeast corner of the MUDS Building
MW-DN-103-I	Monitoring Well	280 feet west of the northwest corner of N-GET Building
MW-DN-103-S	Monitoring Well	281 feet west of the northwest corner of N-GET Building
MW-DN-104-S	Monitoring Well	50 feet north of Radwaste Tank Farm
MW-DN-105-S	Monitoring Well	65 feet north of the northeast corner of the Storeroom
MW-DN-106-S	Monitoring Well	75 feet north of the 2/3 Intake Canal fence; east of the Unit 1 Intake Canal
MW-DN-107-S	Monitoring Well	15 feet west by southwest of the Unit 1 CST
MW-DN-108-I	Monitoring Well	7 feet southwest of the southwest corner of the Unit 1 Cribhouse
MW-DN-109-I	Monitoring Well	8 feet north of Chemistry Building
MW-DN-109-S	Monitoring Well	8 feet north of Chemistry Building
MW-DN-110-I	Monitoring Well	25 feet west of the Waste Water Treatment (WWT) Building
MW-DN-110-S	Monitoring Well	25 feet west of the Waste Water Treatment (WWT) Building
MW-DN-111-S	Monitoring Well	9 feet east of the Floor Drain Collector Tank
MW-DN-112-I	Monitoring Well	100 feet south of the Chemistry Building
MW-DN-112-S	Monitoring Well	100 feet south of the Chemistry Building
MW-DN-113-I	Monitoring Well	90 feet west of the southwest corner of the Administration Building
MW-DN-113-S	Monitoring Well	91 feet west of the southwest corner of the Administration Building
MW-DN-114-I	Monitoring Well	50 feet east of the Unit 1 Clean Demineralized Water Tank
MW-DN-114-S	Monitoring Well	8 feet southwest of the Radiation protection Dept west access doors
MW-DN-115-I	Monitoring Well	11 feet south of Instrument Maintenance Shop
MW-DN-115-S	Monitoring Well	12 feet south of Instrument Maintenance Shop
MW-DN-116-I	Monitoring Well	75 feet south of the Calgon Building roll-up door
MW-DN-116-S	Monitoring Well	75 feet south of the Calgon Building roll-up door
MW-DN-117-I	Monitoring Well	35 feet east by northeast of the Unit 1 Stack
MW-DN-118-S	Monitoring Well	Southeast corner of the Unit 1 Fuel Pool
MW-DN-119-I	Monitoring Well	20 feet east by northeast of the Unit 1 Sewage Ejector Building
MW-DN-119-S	Monitoring Well	21 feet east by northeast of the Unit 1 Sewage Ejector Building
MW-DN-120-I	Monitoring Well	45 feet north by northeast of the Ross Bridge railing
MW-DN-120-S	Monitoring Well	46 feet north by northeast of the Ross Bridge railing
MW-DN-121-S	Monitoring Well	7 feet west of the dirt road; 42 feet east of the 345KV yard fence
MW-DN-122-I	Monitoring Well	150 feet north of Collins Road; northeast of the G.E. Fuel Storage Facility
MW-DN-122-S	Monitoring Well	150 feet north of Collins Road; northeast of the G.E. Fuel Storage Facility
MW-DN-123-I	Monitoring Well	400 feet west of the Thorsen house; west of the Cold Canal

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2010

Site	Site Type	Location
MW-DN-123-S	Monitoring Well	400 feet west of the Thorsen house; west of the Cold Canal
MW-DN-124-I	Monitoring Well	10 feet south of the liquid nitrogen inerting tanks
MW-DN-124-S	Monitoring Well	10 feet south of the liquid nitrogen inerting tanks
SW-DN-101	Surface Water	Unit 2/3 Intake (DSP50) at the Ross Bridge
SW-DN-102	Surface Water	Unit 2/3 Discharge (DSP20) at the Telemetry Bridge
SW-DN-103	Surface Water	Unit 2/3 Return Canal at the Discharge to the Intake Canal
SW-DN-104	Surface Water	Cold Canal (DSP34A) at the Cooling Tower walkway bridge
SW-DN-105	Surface Water	Hot Canal (DSP34B) at the Cooling Tower walkway bridge
SW-DN-106	Surface Water	Cooling Pond - Pool II at the east side of the Covered Bridge

APPENDIX B

DATA TABLES

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TABLE B-I.1 CONCENTRATIONS OF TRITIUM AND STRONTIUM IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
DN-DSP-105	04/30/10	< 177	
DN-DSP-105	09/30/10	< 188	< 0.8
DN-DSP-106	04/30/10	3050 ± 360	
DN-DSP-106	09/30/10	3260 ± 392	< 0.7
DN-DSP-107	04/30/10	5590 ± 612	
DN-DSP-107	09/30/10	4630 ± 526	< 0.6
DN-DSP-108	04/29/10	1200 ± 184	
DN-DSP-108	09/30/10	962 ± 172	< 0.8
DN-DSP-117	05/03/10	< 171	
DN-DSP-117	10/04/10	< 174	< 0.7
DN-DSP-121	05/03/10	< 172	
DN-DSP-121	10/04/10	< 176	< 0.9
DN-DSP-122	04/28/10	3780 ± 433	
DN-DSP-122	09/29/10	2510 ± 317	< 0.7
DN-DSP-123	04/29/10	9610 ± 1010	
DN-DSP-123	09/30/10	8280 ± 889	< 0.7
DN-DSP-124	04/27/10	7820 ± 832	
DN-DSP-124	10/01/10	2200 ± 289	< 0.9
DN-DSP-125	04/30/10	< 176	
DN-DSP-125	10/01/10	361 ± 131	< 0.9
DN-DSP-126	05/04/10	< 173	
DN-DSP-126	10/05/10	< 174	< 1.0
DN-DSP-147	05/05/10	< 175	
DN-DSP-147	10/06/10	< 173	< 0.8
DN-DSP-148	05/05/10	181 ± 117	
DN-DSP-148	10/04/10	316 ± 125	< 0.8
DN-DSP-149R	05/05/10	344 ± 123	
DN-DSP-149R	10/04/10	632 ± 131	< 0.7
DN-DSP-150	04/29/10	< 176	
DN-DSP-150	09/30/10	< 189	< 0.8
DN-DSP-151	04/29/10	< 176	
DN-DSP-151	09/30/10	< 189	< 0.6
DN-DSP-152	05/03/10	< 173	
DN-DSP-152	10/05/10	< 171	< 0.8
DN-DSP-153	05/04/10	< 157	
DN-DSP-153	10/05/10	< 170	< 0.6
DN-DSP-154	05/04/10	< 156	
DN-DSP-154	10/05/10	< 173	< 0.8
DN-DSP-156	05/05/10	359 ± 115	
DN-DSP-156	10/04/10	265 ± 117	< 0.7
DN-DSP-157I	05/04/10	< 177	
DN-DSP-157I	10/05/10	< 169	< 0.7
DN-DSP-157S	05/04/10	< 155	
DN-DSP-157S	10/05/10	< 167	< 0.8
DN-DSP-158I	05/03/10	< 179	
DN-DSP-158I	10/05/10	< 169	< 0.8
DN-DSP-158S	05/03/10	< 156	
DN-DSP-158S	10/05/10	< 169	< 0.8
DN-DSP-159I	05/05/10	< 177	
DN-DSP-159I	10/06/10	311 ± 119	< 0.7
DN-DSP-159S	05/05/10	< 178	

TABLE B-I.1 CONCENTRATIONS OF TRITIUM AND STRONTIUM IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
DN-DSP-159S	10/06/10	< 168	< 0.8
MW-DN-101I	04/29/10	1140 ± 169	
MW-DN-101I	09/29/10	741 ± 156	< 0.7
MW-DN-101S	04/29/10	< 164	
MW-DN-101S	09/29/10	< 162	< 0.6
MW-DN-102I	04/27/10	214 ± 110	
MW-DN-102I	09/28/10	230 ± 131	< 0.7
MW-DN-102S	04/27/10	< 163	
MW-DN-102S	09/28/10	< 189	< 0.7
MW-DN-103I	05/04/10	< 172	
MW-DN-103I	10/06/10	< 180	< 0.8
MW-DN-103S	05/04/10	< 170	
MW-DN-103S	10/06/10	< 173	< 0.8
MW-DN-104S	04/28/10	< 166	
MW-DN-104S	09/29/10	521 ± 138	< 0.7
MW-DN-105S	04/29/10	< 166	
MW-DN-105S	09/30/10	< 200	3.8 ± 0.4
MW-DN-106S	05/03/10	< 175	
MW-DN-106S	10/04/10	< 178	< 0.8
MW-DN-108I	04/28/10	< 162	
MW-DN-108I	09/29/10	< 196	< 0.6
MW-DN-109I	04/28/10	< 162	
MW-DN-109I	09/28/10	< 189	< 0.8
MW-DN-109S	04/28/10	< 167	
MW-DN-109S	09/28/10	< 199	< 0.9
MW-DN-110I	04/28/10	178 ± 108	
MW-DN-110I	09/29/10	< 196	< 0.7
MW-DN-110S	04/28/10	< 160	
MW-DN-110S	09/29/10	< 163	< 0.8
MW-DN-111S	04/27/10	922 ± 150	
MW-DN-111S	10/01/10	892 ± 146	< 0.7
MW-DN-112I	04/27/10	1390 ± 193	
MW-DN-112I	09/28/10	1290 ± 184	< 0.7
MW-DN-112S	04/27/10	< 167	
MW-DN-112S	09/28/10	< 161	< 0.9
MW-DN-113I	04/27/10	< 173	
MW-DN-113I	09/28/10	< 164	< 0.7
MW-DN-113S	04/27/10	< 174	
MW-DN-113S	09/28/10	< 163	< 0.9
MW-DN-114I	04/30/10	5870 ± 640	
MW-DN-114I	10/01/10	6140 ± 659	< 0.8
MW-DN-114S	04/30/10	1570 ± 219	
MW-DN-114S	10/01/10	1340 ± 189	< 0.9
MW-DN-115I	04/30/10	185 ± 116	
MW-DN-115I	09/30/10	356 ± 113	< 0.6
MW-DN-115S	04/30/10	< 173	
MW-DN-115S	09/30/10	237 ± 110	< 0.8
MW-DN-116I	04/28/10	3650 ± 420	
MW-DN-116I	09/29/10	1460 ± 195	< 0.7
MW-DN-116S	04/28/10	282 ± 119	
MW-DN-116S	09/29/10	337 ± 114	< 0.9

TABLE B-I.1 CONCENTRATIONS OF TRITIUM AND STRONTIUM IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
MW-DN-117I	04/29/10	< 177	
MW-DN-118S	04/30/10	929 ± 153	
MW-DN-118S	09/30/10	3980 ± 438	< 0.7
MW-DN-119I	04/29/10	576 ± 128	
MW-DN-119I	09/29/10	461 ± 134	< 0.9
MW-DN-119S	04/29/10	< 161	
MW-DN-119S	09/29/10	< 189	< 0.6
MW-DN-120I	05/03/10	< 171	
MW-DN-120I	10/04/10	< 176	< 0.8
MW-DN-120S	05/03/10	< 175	
MW-DN-120S	10/04/10	< 174	< 0.8
MW-DN-121S	05/05/10	< 173	
MW-DN-121S	10/06/10	< 176	< 1.0
MW-DN-122I	05/05/10	< 171	
MW-DN-122I	10/06/10	< 175	< 0.9
MW-DN-122S	05/05/10	< 172	
MW-DN-122S	10/06/10	< 178	< 0.8
MW-DN-123I	05/05/10	< 173	
MW-DN-123I	10/06/10	< 160	< 0.7
MW-DN-123S	05/05/10	< 171	
MW-DN-123S	10/06/10	< 153	< 0.8
MW-DN-124I	04/30/10	73200 ± 6400	
MW-DN-124I	10/01/10	77400 ± 7750	< 0.7
MW-DN-124S	04/30/10	51200 ± 5140	
MW-DN-124S	10/01/10	819 ± 160	< 0.9

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
DN-DSP-105	09/30/10	< 41	< 39	< 4	< 4	< 9	< 5	< 10	< 5	< 8	< 14	< 4	< 5	< 32	< 12
DN-DSP-106	09/30/10	< 44	< 62	< 5	< 4	< 9	< 3	< 9	< 5	< 8	< 14	< 4	< 4	< 32	< 10
DN-DSP-107	09/30/10	< 43	< 86	< 5	< 5	< 12	< 5	< 9	< 5	< 9	< 15	< 4	< 3	< 30	< 9
DN-DSP-108	09/30/10	< 38	< 34	< 4	< 4	< 9	< 4	< 7	< 4	< 7	< 14	< 4	< 4	< 28	< 7
DN-DSP-117	10/04/10	< 36	< 36	< 3	< 4	< 9	< 3	< 7	< 4	< 7	< 12	< 3	< 3	< 27	< 7
DN-DSP-121	10/04/10	< 31	< 53	< 3	< 4	< 9	< 3	< 6	< 4	< 7	< 12	< 3	< 3	< 27	< 9
DN-DSP-122	09/29/10	< 44	< 109	< 5	< 5	< 10	< 5	< 12	< 5	< 10	< 14	< 4	< 5	< 34	< 9
DN-DSP-123	09/30/10	< 41	< 41	< 4	< 4	< 11	< 4	< 10	< 5	< 8	< 14	< 4	< 4	< 31	< 7
DN-DSP-124	10/01/10	< 41	< 38	< 4	< 5	< 9	< 4	< 8	< 4	< 8	< 15	< 4	< 5	< 30	< 7
DN-DSP-125	10/01/10	< 44	< 42	< 5	< 5	< 9	< 5	< 9	< 5	< 8	< 14	< 4	< 5	< 29	< 12
DN-DSP-126	10/05/10	< 40	< 85	< 4	< 5	< 11	< 4	< 8	< 5	< 8	< 15	< 4	< 4	< 33	< 11
DN-DSP-147	10/06/10	< 43	< 103	< 5	< 5	< 11	< 5	< 10	< 5	< 8	< 14	< 5	< 5	< 35	< 10
DN-DSP-148	10/04/10	< 39	< 35	< 4	< 4	< 9	< 4	< 9	< 4	< 8	< 15	< 4	< 4	< 34	< 9
DN-DSP-149R	10/04/10	< 37	< 73	< 4	< 4	< 8	< 4	< 7	< 4	< 7	< 14	< 4	< 4	< 29	< 8
DN-DSP-150	09/30/10	< 42	< 41	< 4	< 4	< 8	< 4	< 9	< 4	< 8	< 13	< 4	< 4	< 30	< 8
DN-DSP-151	09/30/10	< 42	< 69	< 4	< 3	< 9	< 4	< 7	< 5	< 7	< 14	< 4	< 4	< 29	< 8
DN-DSP-152	10/05/10	< 42	< 46	< 4	< 5	< 8	< 4	< 9	< 5	< 7	< 15	< 4	< 5	< 33	< 9
DN-DSP-153	10/05/10	< 44	< 37	< 4	< 4	< 10	< 4	< 8	< 4	< 8	< 14	< 4	< 4	< 31	< 9
DN-DSP-154	10/05/10	< 36	< 35	< 4	< 4	< 9	< 4	< 7	< 5	< 6	< 14	< 4	< 4	< 30	< 10
DN-DSP-156	10/04/10	< 32	< 36	< 3	< 4	< 10	< 4	< 7	< 4	< 6	< 14	< 3	< 4	< 25	< 11
DN-DSP-157I	10/05/10	< 37	< 32	< 4	< 4	< 11	< 4	< 8	< 5	< 8	< 13	< 3	< 4	< 27	< 9
DN-DSP-157S	10/05/10	< 33	< 29	< 3	< 3	< 8	< 4	< 7	< 4	< 7	< 13	< 4	< 3	< 26	< 8
DN-DSP-158I	10/05/10	< 39	< 75	< 4	< 5	< 9	< 4	< 8	< 5	< 8	< 14	< 4	< 4	< 34	< 12
DN-DSP-158S	10/05/10	< 41	< 42	< 5	< 5	< 13	< 5	< 8	< 5	< 9	< 14	< 5	< 6	< 36	< 13
DN-DSP-159I	10/06/10	< 41	< 50	< 4	< 5	< 10	< 4	< 9	< 5	< 9	< 13	< 4	< 5	< 30	< 10
DN-DSP-159S	10/06/10	< 42	< 38	< 4	< 4	< 9	< 4	< 9	< 5	< 7	< 13	< 4	< 4	< 30	< 8
MW-DN-101I	09/29/10	< 32	< 38	< 3	< 3	< 7	< 3	< 6	< 4	< 6	< 11	< 3	< 3	< 24	< 7
MW-DN-101S	09/29/10	< 40	< 35	< 5	< 5	< 10	< 4	< 9	< 5	< 8	< 14	< 4	< 5	< 34	< 11
MW-DN-102I	09/28/10	< 36	< 73	< 3	< 4	< 9	< 4	< 8	< 4	< 7	< 13	< 3	< 4	< 27	< 10
MW-DN-102S	09/28/10	< 37	< 79	< 4	< 4	< 10	< 4	< 8	< 5	< 7	< 13	< 4	< 4	< 26	< 10
MW-DN-103I	10/06/10	< 37	< 65	< 4	< 4	< 8	< 5	< 8	< 4	< 8	< 11	< 4	< 4	< 27	< 6
MW-DN-103S	10/06/10	< 41	< 93	< 5	< 6	< 10	< 5	< 11	< 5	< 9	< 14	< 4	< 5	< 31	< 13
MW-DN-104S	09/29/10	< 47	< 100	< 5	< 4	< 11	< 5	< 10	< 5	< 10	< 13	< 4	< 5	< 34	< 12
MW-DN-105S	09/30/10	< 47	< 38	< 5	< 5	< 10	< 4	< 9	< 6	< 8	< 14	< 4	< 4	< 30	< 9
MW-DN-106S	10/04/10	< 37	< 85	< 4	< 4	< 11	< 4	< 8	< 5	< 8	< 13	< 4	< 5	< 30	< 9

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-DN-108I	09/29/10	< 43	< 34	< 4	< 4	< 9	< 3	< 8	< 5	< 7	< 14	< 4	< 4	< 30	< 8
MW-DN-109I	09/28/10	< 45	< 45	< 5	< 6	< 12	< 5	< 9	< 5	< 9	< 15	< 4	< 5	< 35	< 10
MW-DN-109S	09/28/10	< 38	< 92	< 4	< 4	< 10	< 4	< 10	< 5	< 8	< 14	< 4	< 5	< 34	< 9
MW-DN-110I	09/29/10	< 42	< 82	< 4	< 5	< 9	< 5	< 8	< 5	< 8	< 15	< 4	< 5	< 31	< 10
MW-DN-110S	09/29/10	< 45	< 49	< 4	< 4	< 9	< 5	< 6	< 4	< 8	< 13	< 4	< 4	< 35	< 9
MW-DN-111S	10/01/10	< 41	< 94	< 4	< 5	< 8	< 5	< 8	< 5	< 8	< 11	< 4	< 5	< 28	< 6
MW-DN-112I	09/28/10	< 38	< 42	< 4	< 4	< 9	< 4	< 8	< 5	< 7	< 14	< 4	< 4	< 29	< 7
MW-DN-112S	09/28/10	< 44	< 36	< 5	< 5	< 9	< 5	< 8	< 5	< 7	< 15	< 4	< 4	< 30	< 10
MW-DN-113I	09/28/10	< 50	< 38	< 4	< 4	< 8	< 4	< 9	< 5	< 7	< 14	< 4	< 4	< 31	< 11
MW-DN-113S	09/28/10	< 35	< 39	< 4	< 5	< 11	< 4	< 10	< 6	< 9	< 15	< 4	< 5	< 35	< 10
MW-DN-114I	10/01/10	< 40	< 28	< 5	< 4	< 9	< 4	< 9	< 5	< 8	< 11	< 4	< 5	< 29	< 8
MW-DN-114S	10/01/10	< 44	< 55	< 4	< 5	< 8	< 4	< 10	< 5	< 8	< 12	< 4	< 5	< 29	< 9
MW-DN-115I	09/30/10	< 42	< 87	< 5	< 5	< 10	< 5	< 10	< 4	< 9	< 15	< 4	< 5	< 27	< 10
MW-DN-115S	09/30/10	< 43	< 43	< 5	< 4	< 9	< 4	< 9	< 5	< 8	< 13	< 4	< 4	< 28	< 7
MW-DN-116I	09/29/10	< 37	< 77	< 3	< 4	< 9	< 4	< 8	< 4	< 7	< 14	< 4	< 4	< 30	< 9
MW-DN-116S	09/29/10	< 42	< 90	< 5	< 5	< 10	< 4	< 9	< 5	< 7	< 13	< 4	< 4	< 30	< 9
MW-DN-118S	09/30/10	< 45	< 88	< 4	< 5	< 11	< 4	< 9	< 6	< 9	< 15	< 5	< 5	< 34	< 11
MW-DN-119I	09/29/10	< 39	< 39	< 4	< 4	< 8	< 3	< 6	< 4	< 7	< 13	< 4	< 4	< 27	< 8
MW-DN-119S	09/29/10	< 39	< 36	< 4	< 5	< 9	< 5	< 7	< 5	< 7	< 15	< 4	< 4	< 29	< 9
MW-DN-120I	10/04/10	< 36	< 38	< 4	< 4	< 10	< 4	< 8	< 5	< 8	< 15	< 3	< 4	< 29	< 9
MW-DN-120S	10/04/10	< 41	< 38	< 4	< 4	< 10	< 4	< 9	< 5	< 8	< 14	< 4	< 5	< 31	< 11
MW-DN-121S	10/06/10	< 40	< 49	< 4	< 5	< 9	< 5	< 10	< 5	< 9	< 14	< 4	< 4	< 28	< 11
MW-DN-122I	10/06/10	< 34	< 33	< 4	< 4	< 10	< 4	< 8	< 5	< 6	< 12	< 3	< 4	< 27	< 8
MW-DN-122S	10/06/10	< 55	< 107	< 5	< 5	< 10	< 5	< 9	< 6	< 10	< 15	< 5	< 5	< 34	< 12
MW-DN-123I	10/06/10	< 38	< 64	< 5	< 4	< 11	< 4	< 8	< 5	< 7	< 14	< 4	< 3	< 28	< 8
MW-DN-123S	10/06/10	< 58	< 54	< 6	< 6	< 16	< 7	< 13	< 6	< 12	< 14	< 5	< 6	< 40	< 13
MW-DN-124I	10/01/10	< 49	< 41	< 4	< 4	< 11	< 4	< 7	< 5	< 8	< 13	< 4	< 4	< 31	< 6
MW-DN-124S	10/01/10	< 38	< 38	< 4	< 4	< 8	< 4	< 7	< 5	< 8	< 14	< 4	< 4	< 30	< 8

TABLE B-II.1 CONCENTRATIONS OF TRITIUM AND STRONTIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
SW-DN-101	05/03/10	< 171	
SW-DN-101	10/04/10	315 ± 117	< 0.9
SW-DN-102	05/03/10	< 173	
SW-DN-102	10/04/10	340 ± 121	< 0.7
SW-DN-103	05/03/10	< 171	
SW-DN-103	10/04/10	335 ± 118	< 0.6
SW-DN-104	05/04/10	< 175	
SW-DN-104	10/04/10	372 ± 126	< 0.8
SW-DN-105	05/04/10	< 157	
SW-DN-105	10/04/10	387 ± 127	< 0.6
SW-DN-106	05/04/10	< 159	
SW-DN-106	10/04/10	544 ± 128	< 0.9

TABLE B-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2010**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
SW-DN-101	10/04/10	< 37	< 35	< 4	< 5	< 8	< 4	< 8	< 4	< 7	< 14	< 3	< 5	< 31	< 9
SW-DN-102	10/04/10	< 40	< 38	< 4	< 4	< 8	< 4	< 8	< 4	< 7	< 14	< 4	< 4	< 31	< 8
SW-DN-103	10/04/10	< 37	< 41	< 4	< 4	< 10	< 5	< 10	< 4	< 8	< 15	< 4	< 4	< 28	< 10
SW-DN-104	10/04/10	< 40	< 40	< 4	< 4	< 11	< 4	< 9	< 5	< 8	< 15	< 4	< 5	< 33	< 11
SW-DN-105	10/04/10	< 42	< 39	< 4	< 4	< 10	< 5	< 8	< 4	< 8	< 15	< 4	< 4	< 31	< 6
SW-DN-106	10/04/10	< 42	< 42	< 5	< 3	< 8	< 4	< 7	< 5	< 8	< 13	< 4	< 5	< 31	< 9