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DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 and 3

Annual Radiological
Environmental Operating Report

1 January through 31 December 2016

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Dresden Nuclear Power Station (DNPS) of Exelon covers the period 1 January 2016 through 31 December 2016. During that time period 2,044 analyses were performed on 1,909 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.

In 2016, the Dresden Generating Station released to the environment through the radioactive effluent liquid and gaseous pathways approximately 6.35E+01 curies of fission and activation gasses, 2.93E+01 curies of Carbon-14 (C-14) and approximately 6.88E+00 curies of tritium. The dose from both liquid and gaseous effluents was conservatively calculated for the Maximum Exposed Member of the Public. The results of those calculations and their comparison to the allowable limits are excerpted from the Dresden Generating Station 2016 Annual Radioactive Effluent Release Report (Radiological Impact on Man, starting at page 79):

1. Doses to a Member of the Public due to Liquid Releases in 2016 (from 01/01/2016 to 12/31/2016):

   UNITS 1, 2, 3
   Total Body: 1.38E-06 mrem
   Bone: 1.38E-06 mrem

   UNIT 1
   Total Body: 5.11E-08 mrem
   Bone: 5.11E-08 mrem

   UNIT 2
   Total Body: 6.62E-07 mrem
   Organ: 6.62E-07 mrem

   UNIT 3
   Total Body: 6.62E-07 mrem
   Organ: 6.62E-07 mrem

   The above annual liquid dose values are reported per Dresden-site (UNITS 1,2,3) as well as per each individual reactor unit (UNIT 1, UNIT 2, UNIT 3). Regulatory annual liquid dose limits are listed on page 1 section 1.d.3) and section 1.d.4), of the 2016 Annual Radioactive Effluent Release Report as well as in Dresden ODCM. The above annual liquid dose values are well below any regulatory limits.

2. Doses to a Member of the Public due to Gaseous Releases in 2016 (from 01/01/2016 to 12/31/2016):

UNITS 1, 2, 3
Gamma air (fission and activation gases): 3.32E-03 mrad
Beta air (fission and activation gases): 7.91E-04 mrad
Total Body (noble gases): 2.51E-03 mrem
Skin (noble gases): 4.30E-03 mrem
Organ - bone (radioiodines/tritium/particulates): 9.34E-02 mrem

UNIT 1
Gamma air (fission and activation gases): N/A
Beta air (fission and activation gases): N/A
Total Body (noble gases): N/A
Skin (noble gases): N/A
Organ - bone (radioiodines/tritium/particulates): 1.87E-03 mrem

UNIT 2
Gamma air (fission and activation gases): 8.75E-04 mrad
Beta air (fission and activation gases): 2.08E-04 mrad
Total Body (noble gases): 6.64E-04 mrem
Skin (noble gases): 1.13E-03 mrem
Organ - bone (radioiodines/tritium/particulates): 4.51E-02 mrem

UNIT 3
Gamma air (fission and activation gases): 2.45E-03 mrad
Beta air (fission and activation gases): 5.83E-04 mrad
Total Body (noble gases): 1.84E-03 mrem
Skin (noble gases): 3.17E-03 mrem
Organ - bone (radioiodines/tritium/particulates): 4.72E-02 mrem

The above annual gaseous dose values are reported per Dresden-site (UNITS 1,2,3) as well as per each individual reactor unit (UNIT 1, UNIT 2, UNIT 3). Regulatory annual gaseous dose limits are listed on page 1 section 1.a. and section 1.b.c., of the 2016 Annual Radioactive Effluent Release Report as well as in Dresden ODCM. The above annual gaseous dose values are well below any regulatory limits.

3. Doses to a Member of the Public due to Direct Radiation in 2016 (from 01/01/2016 to 12/31/2016):

UNITS 1, 2, 3
Total Body (skyshine): 8.79E+00 mrem

UNIT 1
Total Body (skyshine): N/A

UNIT 2
Total Body (skyshine): 4.58E+00 mrem

UNIT 3
Total Body (skyshine): 4.21E+00 mrem

The above annual direct dose values are reported per Dresden-site (UNITS 1,2,3) as well as per each individual reactor unit (UNIT 1, UNIT 2, UNIT 3). These numbers are calculated per ODCM methodologies, and are used to demonstrate compliance with 40CFR190 total dose limit requirements listed on page 1 section 1.e, of the 2016 Annual Radioactive Effluent Release Report as well as in Dresden ODCM.

4. Total body doses to the population and average doses to individuals in the population from all receiving-water-related-pathways are not applicable to Dresden Station. No downstream drinking water pathway exist within the specified distance of 10 kilometers (6.2 miles).

5. Total body doses to the population and average doses to individuals in the population from gaseous effluents to a distance of 50 miles from the site are not applicable to Dresden Station.

6. Doses from liquid and gaseous effluent to members of the public due to their activities inside the site boundary for the report period are not applicable to Dresden Station. Any member of the public who is onsite for a significant period of time is issued an Optical Stimulated Luminescent Dosimeter (OSLD) to monitor direct radiation exposure.

7. Liquid and Gaseous Effluent Radiation Monitors and Instrumentation Unavailability for the Period Beyond the Requirements of the ODCM, Including Sampling Deviation: For the report period, there was one radiation monitor that exceeded its ODCM allowed inoperability time of 30 days. The Unit 2 Service Water rad monitor was non-functional for 31 days from 4/6/16 to 5/7/16. Issue Report 2667212 was written to describe the event and to track corrective actions. Compensatory sampling was in place from the time the monitor was considered non-functional until it was returned to functional status. The rad monitor was initially declared non-functional due to repeated failure and multiple replacements of the of the pump/motor/gearbox combination. Troubleshooting activities were performed throughout the ODCM allowed inoperability time, as a team of individuals determined potential causes of the pump problems, and then worked to systematically determine the actual cause. It was determined that the seal purge line was plugged, which lead to a successful pump replacement and pump run. The U2 Service Water rad monitor was restored to functional status on 5/7/16.

8. 40 CFR 190 / 10 CFR 72 Compliance:

The General Electric Hitachi Nuclear Energy Morris Operation (GEH Morris Operation) facility is physically located near Dresden Station, hence it is considered in the evaluation of the uranium fuel cycle on members of the public in the general environment.

Dresden decommissioning activities (Unit 1) and operations (Units 2 and 3) resulted in a maximum 9.34E-02 mrem organ dose and 8.79E+00 mrem total body dose. The Radiological Environmental Monitoring Program (REMP) direct radiation monitoring at or near the site boundary demonstrates that total body dose calculations to account for skyshine as found in the ODCM are conservative.

No effluents were released from the Dresden Independent Spent Fuel Storage Installations (ISFSIs) during 2016. REMP direct radiation monitoring at or near the site boundary demonstrates that the ISFSIs do not result in measurable dose to the public.

According to the 2016 GEH Morris Operation 10 CFR 72.44(d)(3) report, dated 2/24/2017, for the 2016 calendar year, the maximum dose at their site boundary from direct radiation exposure was 4.10E-01 mrem. The maximum organ dose from site activities was 1.20E-07 mrem for 2016.

Maximum combined total body dose from Dresden Station and GEH Morris Operation activities was 9.20E+00 mrem during 2016, which was 36.80 % of the 40 CFR 190 limit of 25 mrem.

Maximum combined organ dose from Dresden and GEH Morris Operation activities was 9.34E-02 mrem during 2016. This was 0.37 % of the 40 CFR 190 limit of 25 mrem to any organ. The combined thyroid dose was 2.63E-02 mrem. This was 0.04 % of the 40 CFR 190 limit of 75 mrem.

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 both sediment samples in 2016 at levels slightly higher than the level of detection.

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 Iodine-131 (I-131) analyses were performed on weekly air samples. All results were less than the minimum detectable activity for I-131.

Cow milk samples were analyzed for concentrations of I-131 and gamma-emitting nuclides. All I-131 results were less than the minimum detectable activity. No fission or activation products were detected. 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 Optically Stimulated Luminescent Dosimetry (OSLD). The relative comparison to control locations remains valid.

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) and Landauer on samples collected during the period 1 January 2016 through 31 December 2016.

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 Environmental Incorporated Midwest Laboratory (EIML). This section describes the general collection methods used by EIML to obtain environmental samples for the DNPS REMP in 2016. Sample locations and descriptions can be found in Appendix B, Table B–1 and Figures B–1 and B-2. 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 (SW), ground water (GW), fish (FI) and sediment (SS). 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 freshwater drum, largemouth bass, common carp, channel catfish, and golden redhorse 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 and airborne iodine (AP/AI). Airborne iodine and particulate samples were collected at fourteen 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, D-56 and D-58). 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.

Terrestrial Environment

Milk (M) samples are typically collected biweekly at one control location (D-25) from May through October and monthly from November through April. Other than D-25, there are no additional milking animals within 10 km (6.2 miles) of the site. All milk samples from D-25 were collected in

new unused two gallon plastic bottles from the bulk tank, preserved with sodium bisulfite and shipped promptly to the laboratory. Food products (FL) were collected annually in August 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

Each location consisted of two OSLD sets. The OSLD locations were placed on and around the DNPS site as follows:

An inner ring consisting of 17 locations (D-58, 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 (3.1 to 6.2 miles) from the site.

Other locations consisting of OSLD sets at the 13 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, D-56 and D-58).

The balance of one location (D-12) represents the control area OSLD set.

The OSLDs were exchanged quarterly and sent to Landauer 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 2016. The analytical procedures used by the laboratories are listed in Appendix B 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 groundwater, surface water, and vegetation twelve nuclides, 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.

For fish, sediment, air particulate and milk eleven 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 2016 the DNPS REMP had a sample recovery rate of approximately 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
M	D-25	01/07/16	Milk sample not available; farmer "resting" cows. Collector looked diligently for fresh, leafy vegetation; none available. Local hay substituted for fresh, leafy vegetation
AP/AI	D-08	04/29/16	No apparent reason for low reading of 164.3; pump and timer running
AP/AI	D-03	05/06/16	No apparent reason for low reading of 144.4; pump and timer running
AP/AI	D-08	05/13/16	Low reading of 158.4 hours; collector replaced timer
AP/AI	D-08	06/03/16	No apparent reason for low reading of 133.8 hours
AP/AI	D-08	06/10/16	Low timer reading of 132.0 hours; collector noticed pump cycling on and off; replaced pump
AP/AI	D-45	07/01/16	No apparent reason for low timer reading of 145.3 hours
AP/AI	D-45	07/08/16	No apparent reason for low timer reading of 155.8 hours
AP/AI	D-01	07/15/16	Pump not running; timer reading = 165.4 hours; flow rate of 62 based on average of 4 previous weeks

Table D-1 LISTING OF SAMPLE ANOMALIES (cont'd)

Sample Type	Location Code	Collection Date	Reason
AP/AI	D-45	07/15/16	No apparent reason for low timer reading of 145.8 hours
AP/AI	D-45	07/22/16	No apparent reason for low timer reading of 139.0 hours
AP/AI	D-01	07/29/16	Low reading of 63.5 hours possibly due to storms in area
AP/AI	D-45	07/29/16	Low reading of 76.3 hours due to pump malfunction; collector placed new pump
AP/AI	D-45	08/05/16	Low reading of 63.8 hours due to pump malfunction; corroded connection repaired on 08/03/16
AP/AI	D-03	08/12/16	AP/AI filters light; collector discovered loose hose; reconnected
AP/AI	D-53	08/12/16	Low reading of 47.9 hours due to recent power restoration; collector placed new AP/AI on 08/10/16 @13:30 hours
AP/AI	D-01, D-03	09/30/16	Access issues; unable to obtain samples; samples collected 10/03/16

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
SW	D-52	01/22/16	No sample; water frozen
AP/AI	D-56	02/26/16	Pump off, run time = 14.9 hours; filter and cartridge white; collector replaced pump
AP/AI	D-01	07/22/16	No power to sampler. NOTE: Power restored 07/27/16; collector verified pump is running properly
AP/AI	D-53	07/22/16	No power to sampler; work on transformer at location
AP/AI	D-53	07/29/16	No power to sampler; work on transformer at location

Table D-2 LISTING OF MISSED SAMPLES (cont'd)

Sample Type	Location Code	Collection Date	Reason
AP/AI	D-53	08/05/16	No power to sampler; work on transformer at location
OSLD	D-103-2	09/30/16	OSLD found missing at quarterly exchange; collector place new 4th quarter OSLD
SW	D-52	12/16/16	No sample; water frozen
SW	D-52	12/23/16	No sample; water frozen

Each program exception was reviewed to understand the causes of the program exception. No sampling or maintenance errors were identified during the reporting period. 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 in 2016.

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). Gross Beta was detected in 36 of 36 samples. The values ranged from

3.1 to 12.1 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). Three samples at indicator station D-21 were positive for tritium at concentrations ranging from 282 to 666 pCi/L. Four samples at control station D-57 were positive for tritium. The values ranged from 242 to 1,270 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). Tritium was detected in 12 of 16 samples. The concentrations ranged from 354 to 636 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 common carp, freshwater drum, largemouth bass, channel catfish, and golden redhorse 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). Only naturally-occurring nuclides (not shown on the tables) were found at both locations. 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 (Cs-137) was found in both samples. The concentrations ranged from 153 pCi/kg dry to 218 pCi/kg dry.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from fourteen locations on a weekly basis. The fourteen locations were separated into four groups: On-site samplers (D-01, D-02 and D-03), Near-field samplers within 3.1 miles of the site (D-04, D-07, D-45, D-53, D-56 and D-58), Far-field samplers between 5 and 10 km (3.1 and 6.2 miles) from the site (D-08, D-10, D-14 and D-55) and the Control sampler between 10 and 30 km (6.2 and 18.6 miles) 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 37E-3 pCi/m^3 with a mean of 16E-3 pCi/m^3. The results from the Near-Field locations ranged from 5 to 40E-3 pCi/m^3 with a mean of 17E-3 pCi/m^3. The results from the Far-Field locations ranged from 6 to 41 E-3 pCi/m^3 with a mean of 16E–3 pCi/m^3. The results from the Control location ranged from 8 to 36E-3 pCi/m^3 with a mean of 16E-3 pCi/m^3. Comparison of the 2016 air particulate data with previous year's data indicate no effects from the operation of DNPS. In addition a comparison of the weekly mean values for 2016 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). Only naturally-occurring nuclides (not shown on the tables) were found in these composite samples. No anthropogenic nuclides were detected and all required LLDs were met. These samples were consistent with historical quarterly results. All other nuclides were less than the MDC.

b. Airborne Iodine

Continuous air samples were collected from fourteen 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, D-56 and D-58) and analyzed weekly for I-131 (Table C–VI.1, Appendix C). All results were less than the MDC for I-131.

2. Terrestrial

a. Milk

Milk (M) samples are typically collected biweekly at one control location (D-25) from May through October and monthly from November through April. Other than D-25, there are no additional milking animals within 10 kilometers (6.2 miles) of the site. The following analyses were

performed:

Iodine-131

Milk samples from location D-25 were analyzed for concentrations of I-131 (Table C–VII.1, Appendix C). No I-131 was detected and the LLD was met.

Gamma Spectrometry

Milk samples from location D-25 were analyzed for concentrations of gamma-emitting nuclides (Table C–VII.2, Appendix C).

Only naturally-occurring nuclides (not shown on the tables) were found in all samples. No other gamma-emitting 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 two locations were analyzed for gamma-emitting nuclides (Table C–VIII.1, Appendix C). No nuclides were detected and all required LLDs were met.

C. Ambient Gamma Radiation

Forty-six OSLD locations were established around the site. Results of OSLD measurements are listed in Tables C–IX.1 to C–IX.3, Appendix C.

Most OSLD measurements were below 30 mrem/quarter, with a range of 18.2 to 71.4 mrem/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 and D-12-02) were comparable.

D. Land Use Survey

A Land Use Survey conducted on September 16, 2016 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 (6.2 miles) 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 is no errata data for 2016.

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 TBE laboratory, 156 out of 160 analyses performed met the specified acceptance criteria. Four analyses (Milk - Sr-90, Vegetation - Sr-90, and Water - H-3 samples) did not meet the specified acceptance criteria for the following reasons and were addressed through the TBE Corrective Action Program.

Note: The Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP) samples are created to mimic conditions found at DOE sites which do not resemble typical environmental samples obtained at commercial nuclear power facilities.

1. Teledyne Brown Engineering's MAPEP March 2016 air particulate cross check sample is now being provided to TBE by Analytics. MAPEP's policy is to evaluate as failed non-reported nuclides that were reported in the previous study. NCR 16-14

   1a. Since the Sr-90 was reported in the previous MAPEP study but not in this study MAPEP evaluated the Sr-90 for Soil as failed. NCR 16-14

   1b. The MAPEP March 2016 Sr-90 in vegetation was evaluated as failing a false positive test. In reviewing the data that was reported vs the data in LIMS, it was found that the error was incorrectly reported as 0.023 rather than the correct value of 0.230. If the value had been reported with the activity and correct uncertainty of 0.301 ± 0.230, MAPEP would have evaluated the result as acceptable. NCR 16-14

2. Teledyne Brown Engineering's Analytics' March 2016 milk Sr-90 result of 15 ± .125 pCi/L was higher than the known value of 11.4 pCi/L with a ratio of 1.32. The upper ratio of 1.30 (acceptable with warning) was exceeded. After an extensive review of the data it is believed the technician did not rinse the filtering apparatus properly and some cross contamination from one of the internal laboratory spike samples may have been transferred to the analytics sample. We feel the issue is specific to the March 2016 Analytics sample. NCR 16-26

3. Teledyne Brown Engineering's ERA November 2016 sample for H-3 in water was evaluated as failing. A result of 918 pCi/L was reported incorrectly due to a data entry issue. If the correct value of 9180 had been reported, ERA would have evaluated the result as acceptable. NCR 16-34

4. Teledyne Brown Engineering's Analytics' December 2016 milk Sr-90 sample result of 14.7 ± .26 pCi/L was higher than the known value of 10 pCi/L with a ratio of 1.47. The upper ratio of 1.30 (acceptable with warning) was exceeded. The technician entered the wrong aliquot into the LIMS system. To achieve a lower error term TBE uses a larger aliquot of 1.2L (Normally we use .6L for client samples). If the technician had entered an aliquot of 1.2L into the LIMS system, the result would have been 12.2 pCi/L, which would have been considered acceptable. NCR 16-35

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2016

NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010, 50-237 & 50-249		
LOCATION OF FACILITY:	MORRIS IL			REPORTING PERIOD:		2016		
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	GR-B	34	4	*6.1*	*7*	*8.7*	D-52 CONTROL	0
(PCI/LITER)				*(11/11)*	*(23/23)*	*(12/12)*	DESPLAINES RIVER - UPSTREAM	
				3.9 - 9.9	*3.1 - 12.1*	*5.5 - 12.1*	1.1 MILES ESE OF SITE	
	H-3	10	2000	*584*	*941*	*941*	D-57 CONTROL	0
				(2/3)	*(3/7)*	*(3/3)*	KANKAKEE RIVER AT WILL ROAD(CONTROL)	
				501 - 666	*544 - 1270*	*544 - 1270*	2.0 MILES SE OF SITE	
	GAMMA	34						
	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
	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	H-3	16	2000	472	*NA*	472	D-23 INDICATOR	0
(PCI/LITER)				(12/16)		(12/12)	THORSEN WELL	
				354 - 636		*354 - 636*	0.7 MILES S OF SITE	
	GAMMA	16						
	MN-54		15	<LLD	*NA*	-		0
	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
	CS-137		18	<LLD	*NA*	-		0
	BA-140		60	<LLD	*NA*	-		0
	LA-140		15	<LLD	*NA*	-		0

(M) *The Mean Values are calculated using the positive values.* ***(F)*** *Fraction of detectable measurement are indicated in parentheses*

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2016

NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010, 50-237 & 50-249		
LOCATION OF FACILITY:	MORRIS IL			REPORTING PERIOD:		2016		
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
FISH	GAMMA	8						
(PCI/KG WET)	*MN-54*		130	<LLD	*NA*	-		0
	CO-58		130	<LLD	*NA*	-		0
	FE-59		260	<LLD	*NA*	-		0
	CO-60		130	<LLD	*NA*	-		0
	ZN-65		260	<LLD	*NA*	-		0
	NB-95		*NA*	<LLD	*NA*	-		0
	ZR-95		*NA*	<LLD	*NA*	-		0
	CS-134		130	<LLD	*NA*	-		0
	CS-137		150	<LLD	*NA*	-		0
	BA-140		*NA*	<LLD	*NA*	-		0
	LA-140		*NA*	<LLD	*NA*	-		0
SEDIMENT	GAMMA	2						
(PCI/KG DRY)	*MN-54*		*NA*	<LLD	*NA*	-		0
	CO-58		*NA*	<LLD	*NA*	-		0
	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	185 (2/2) *153 - 218*	*NA*	185 (2/2) *153 - 218*	D-27 INDICATOR DRESDEN LOCK AND DAM - DOWNSTREAM 0.8 MILES NW OF SITE	0
	BA-140		*NA*	<LLD	*NA*	-		0
	LA-140		*NA*	<LLD	*NA*	-		0
AIR PARTICULATE	GR-B	725	10	16 (670/673) *5 - 249*	16 (52/53) *8 - 36*	20 (50/50) *8 - 249*	D-53 INDICATOR GRUDY COUNTY ROAD 2.1 MILES SSE OF SITE	0
(PCI/TOTAL)								

(M) *The Mean Values are calculated using the positive values.* ***(F)*** *Fraction of detectable measurement are indicated in parentheses*

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2016

NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:	50-010, 50-237 & 50-249			
LOCATION OF FACILITY:	MORRIS IL			REPORTING PERIOD:	2016			
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
AIR PARTICULATE	GAMMA	56						
(PCI/TOTAL)	*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
	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	GAMMA	725						
(PCI/TOTAL)	*I-131*		70	<LLD	<LLD	-		0
MILK	I-131 (LOW LVL)	19	1	NA	<LLD	-		0
(PCI/LITER)								
	GAMMA	19						
	MN-54		*NA*	NA	<LLD	-		0
	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
	BA-140		60	NA	<LLD	-		0
	LA-140		15	NA	<LLD	-		0

(M) *The Mean Values are calculated using the positive values.* ***(F)*** *Fraction of detectable measurement are indicated in parentheses*

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2016

NAME OF FACILITY:	DRESDEN			DOCKET NUMBER:		50-010, 50-237 & 50-249		
LOCATION OF FACILITY:	MORRIS IL			REPORTING PERIOD:		2016		
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
VEGETATION	**GAMMA**	13						
(PCI/KG WET)	*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
	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	**OSLD-QUARTERLY**	367	*NA*	24.3	21.9	38.9	D-214-2 INDICATOR	0
(MILLI-ROENTGEN/QTR.)				(359/359)	(8/8)	(4/4)		
				18.2 - 71.4	*19.6 - 23.8*	*24.9 - 71.4*	5.0 MILES WNW	

(M) *The Mean Values are calculated using the positive values.* ***(F)*** *Fraction of detectable measurement are indicated in parentheses*

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APPENDIX B

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

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2016

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 at Will Road, 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, Dresden Road (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)	11.4 miles SW
D.	Air Particulates / Air Iodine	
D-01	Onsite Station 1 (indicator)	0.8 miles NW
D-02	Onsite Station 2 (indicator)	0.3 miles NNE
D-03	Onsite Station 3 (indicator)	0.4 miles S
D-04	Collins Road, on Station property(indicator)	0.8 miles W
D-07	Clay Products, Dresden Road (indicator)	2.6 miles S
D-08	Jugtown Road, Prairie Parks (indicator)	3.8 miles SW
D-10	Goose Lake Road, Goose Lake Village (indicator)	3.5 miles SSW
D-12	Quarry Road, Lisbon (control)	10.5 miles NW
D-14	Center Street, Channahon (indicator)	3.7 miles NE
D-45	McKinley Woods Road, Channahon (indicator)	1.7 miles ENE
D-53	Will Road, Hollyhock (indicator)	2.1 miles SSE
D-55	Ridge Road, Minooka (indicator)	4.3 miles N
D-56	Will Road, Wildfeather (indicator)	1.7 miles SE
D-58	Will Road, Marina (indicator)	1.1 miles ESE
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	Illinois River at Dresden Lock and Dam, Downstream (indicator)	0.8 miles NW
G.	Vegetation	
Quadrant 1	26726 & 26819 McKinley Woods Road	1.7 miles ENE
Quadrant 2	3985 N. Will Road	2.1 miles SSE
Quadrant 3	3250 Perch Court	2.5 miles SSW
Quadrant 4	4740 Cemetery Road	2.1 miles W
Control	2035 Old Mazon Road	11 miles SW

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2016

Location	Location Description	Distance & Direction From Site
H. Environmental Dosimetry - OSLD		
Inner Ring		
D-58-1 and -2		1.1 miles ESE
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 Locations		
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, on Station property	0.8 miles W
D-07-1 and -2	Clay Products, Dresden Road	2.6 miles S
D-08-1 and -2	Jugtown Road, Prairie Parks	3.8 miles SW
D-10-1 and -2	Goose Lake Road, Goose Lake Village	3.5 miles SSW
D-14-1 and -2	Center Street, Channahon	3.7 miles NE
D-45-1 and -2	McKinley Woods Road, Channahon	1.7 miles ENE
D-53-1 and -2	Will Road, Hollyhock	2.1 miles SSE
D-55-1 and -2	Ridge Road, Minooka	4.3 miles N
D-56-1 and -2	Will Road, Wildfeather	1.7 miles SE
D-58-1 and -2	Will Road, Marina	1.1 miles ESE
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, 2016

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, 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, 2016

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
OSLD	Optically Stimulated Luminescence Dosimetry	Quarterly OSLDs comprised of two Al_2O_3:C Landauer Incorporated elements.	EIML-SPM-1, Environmental Incorporated Midwest Laboratory Sampling Procedures Manual	2 dosimeters at each location	Landauer Incorporated

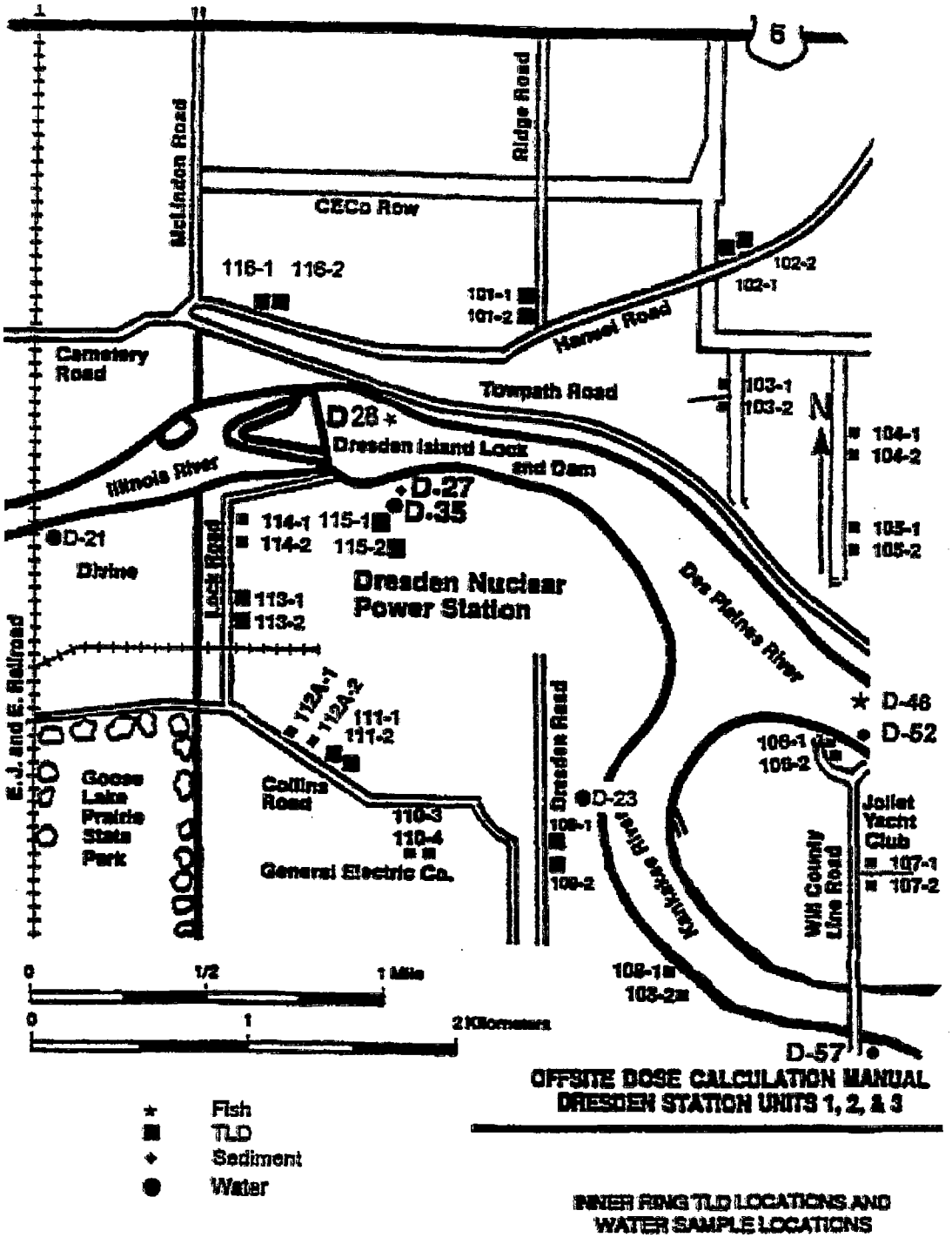

Figure B-1
Dresden Station Inner Ring OSLD Locations, Fish, Water, and Sediment Location, 2016

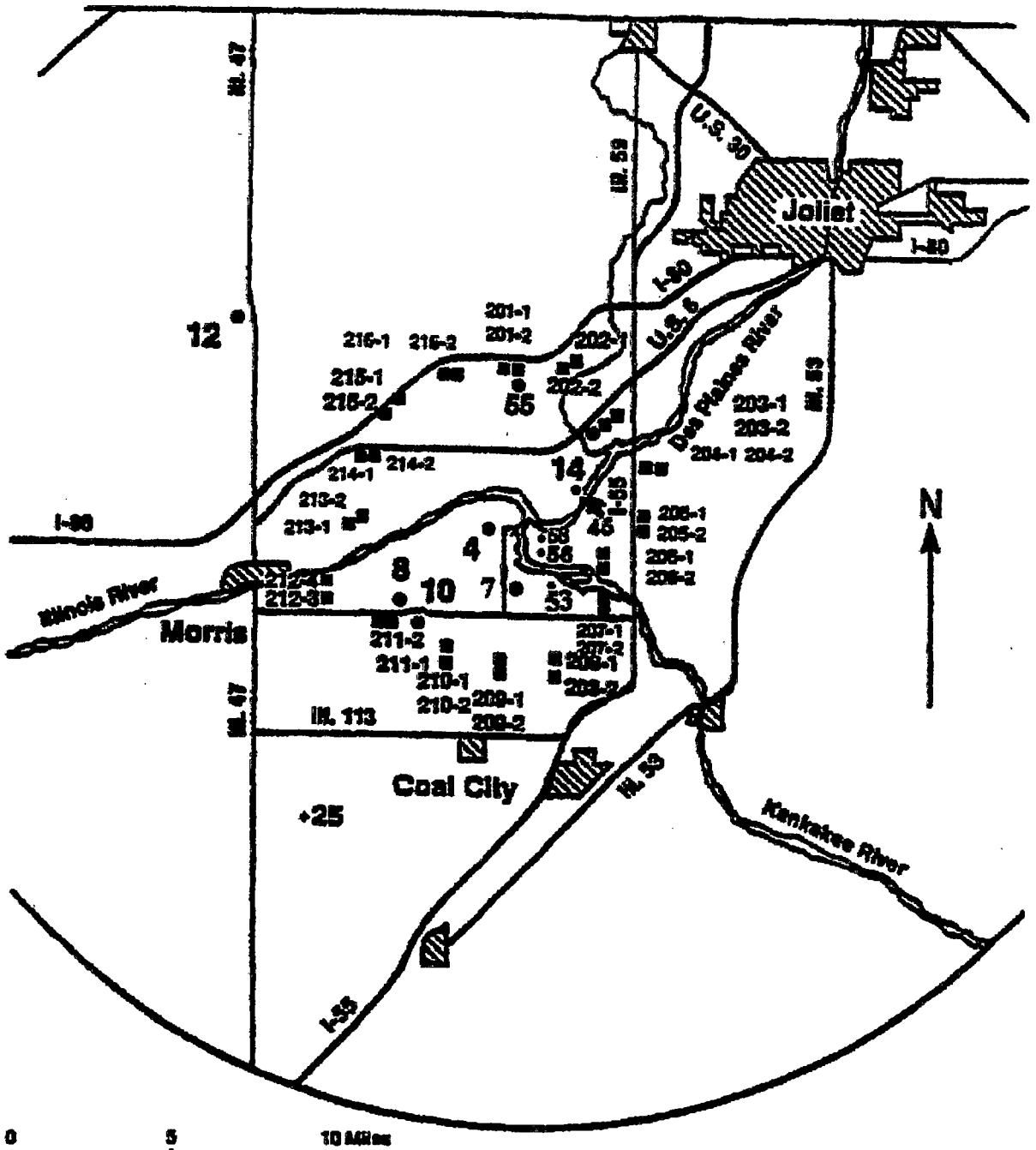

Figure B-2
Dresden Station Fixed Air Sampling and
OSLD Sites, Outer Ring OSLD Locations and Milk Location, 2016

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APPENDIX C

DATA TABLES AND FIGURES

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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, 2016**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
12/26/15 - 01/29/16	6.3 ± 2.2	7.5 ± 2.4	5.4 ± 2.0
01/29/16 - 02/26/16	3.9 ± 2.0	7.4 ± 2.4	6.7 ± 2.3
02/26/16 - 03/25/16	6.8 ± 2.3	10.3 ± 2.7	8.4 ± 2.4
03/25/16 - 04/29/16	9.9 ± 2.8	12.1 ± 3.1	4.8 ± 2.3
04/29/16 - 05/27/16	4.8 ± 2.1	7.8 ± 2.4	3.3 ± 2.0
05/27/16 - 06/24/16	5.1 ± 2.1	10.0 ± 2.5	3.1 ± 1.9
06/24/16 - 07/29/16	6.6 ± 2.2	5.5 ± 2.2	4.1 ± 2.0
07/29/16 - 08/26/16	6.3 ± 1.9	6.9 ± 2.2	7.3 ± 2.1
08/26/16 - 09/30/16	5.5 ± 2.1	9.3 ± 2.4	3.4 ± 1.8
09/30/16 - 10/28/16	5.9 ± 2.1	12.1 ± 2.5	6.1 ± 2.1
10/28/16 - 11/25/16	4.5 ± 1.9	9.5 ± 2.4	4.9 ± 2.0
11/25/16 - 12/30/16	7.3 ± 2.5	6.2 ± 2.4	4.6 ± 2.0
MEAN ± 2 STD DEV	6.1 ± 3.1	8.7 ± 4.4	5.2 ± 3.4

Table C-I.2 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
12/26/15 - 03/25/16	282 ± 120	< 171	242 ± 118
03/25/16 - 06/24/16	< 169	< 171	544 ± 130
06/24/16 - 09/30/16	501 ± 144	< 194	1270 ± 196
09/30/16 - 12/30/16	666 ± 153	< 197	1010 ± 175
MEAN ± 2 STD DEV	483 ± 385	-	767 ± 922

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

Table C-I.3

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF PCI/LITER + 2 SIGMA

SITE	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	12/26/15 - 01/29/16	< 6	< 8	< 14	< 7	< 14	< 7	< 13	< 10	< 5	< 8	< 34	< 8
	01/29/16 - 02/26/16	< 4	< 4	< 11	< 4	< 9	< 5	< 9	< 8	< 4	< 5	< 24	< 8
	02/26/16 - 03/25/16	< 4	< 4	< 7	< 3	< 8	< 4	< 6	< 6	< 4	< 4	< 17	< 7
	03/25/16 - 04/29/16	< 7	< 9	< 14	< 8	< 16	< 8	< 15	< 11	< 8	< 6	< 31	< 13
	04/29/16 - 05/27/16	< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 10	< 2	< 2	< 19	< 5
	05/27/16 - 06/24/16	< 3	< 5	< 11	< 4	< 10	< 4	< 9	< 15	< 4	< 5	< 27	< 9
	06/24/16 - 07/29/16	< 5	< 5	< 11	< 5	< 12	< 6	< 9	< 13	< 5	< 5	< 32	< 10
	07/29/16 - 08/26/16	< 5	< 5	< 13	< 3	< 12	< 5	< 11	< 14	< 4	< 5	< 36	< 14
	08/26/16 - 09/30/16	< 7	< 7	< 15	< 10	< 18	< 9	< 13	< 13	< 7	< 8	< 42	< 15
	09/30/16 - 10/28/16	< 5	< 4	< 11	< 4	< 10	< 5	< 8	< 13	< 4	< 5	< 29	< 9
	10/28/16 - 11/25/16	< 7	< 7	< 14	< 7	< 15	< 7	< 13	< 12	< 8	< 7	< 33	< 10
	11/25/16 - 12/30/16	< 8	< 8	< 14	< 7	< 13	< 8	< 14	< 14	< 7	< 7	< 32	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-52	01/02/16 - 01/29/16	< 7	< 8	< 13	< 8	< 15	< 8	< 10	< 13	< 7	< 7	< 35	< 8
	02/05/16 - 02/26/16	< 4	< 4	< 9	< 5	< 9	< 4	< 7	< 8	< 4	< 4	< 17	< 7
	03/04/16 - 03/25/16	< 3	< 3	< 6	< 3	< 7	< 3	< 5	< 5	< 3	< 3	< 13	< 4
	04/01/16 - 04/29/16	< 5	< 4	< 14	< 7	< 15	< 7	< 12	< 11	< 5	< 6	< 28	< 9
	05/06/16 - 05/27/16	< 2	< 3	< 7	< 3	< 5	< 3	< 5	< 12	< 2	< 2	< 23	< 7
	06/03/16 - 06/24/16	< 4	< 4	< 11	< 5	< 11	< 5	< 8	< 14	< 4	< 5	< 30	< 8
	07/01/16 - 07/29/16	< 6	< 6	< 14	< 5	< 11	< 7	< 12	< 14	< 5	< 6	< 37	< 9
	08/05/16 - 08/26/16	< 6	< 5	< 12	< 6	< 10	< 6	< 10	< 15	< 4	< 5	< 31	< 15
	09/02/16 - 09/30/16	< 6	< 6	< 10	< 5	< 10	< 6	< 11	< 10	< 5	< 6	< 25	< 9
	10/07/16 - 10/28/16	< 5	< 6	< 11	< 4	< 11	< 6	< 10	< 13	< 4	< 5	< 39	< 11
	11/04/16 - 11/25/16	< 7	< 6	< 16	< 10	< 14	< 7	< 12	< 13	< 7	< 9	< 36	< 10
	12/02/16 - 12/30/16	< 4	< 5	< 11	< 6	< 9	< 5	< 9	< 13	< 4	< 5	< 30	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-57	12/26/15 - 01/29/16	< 8	< 7	< 15	< 7	< 17	< 7	< 11	< 12	< 8	< 8	< 39	< 12
	01/29/16 - 02/26/16	< 3	< 4	< 8	< 4	< 7	< 4	< 7	< 8	< 3	< 4	< 19	< 5
	02/26/16 - 03/25/16	< 5	< 5	< 11	< 5	< 9	< 6	< 9	< 7	< 5	< 6	< 23	< 8
	03/25/16 - 04/29/16	< 7	< 6	< 15	< 8	< 15	< 8	< 14	< 11	< 7	< 7	< 35	< 13
	04/29/16 - 05/27/16	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 21	< 6
	05/27/16 - 06/24/16	< 5	< 6	< 9	< 5	< 11	< 4	< 8	< 14	< 5	< 6	< 33	< 7
	06/24/16 - 07/29/16	< 5	< 5	< 11	< 6	< 10	< 5	< 9	< 12	< 4	< 5	< 32	< 9
	07/29/16 - 08/26/16	< 6	< 5	< 11	< 6	< 12	< 7	< 8	< 14	< 5	< 6	< 30	< 10
	08/26/16 - 09/30/16	< 7	< 6	< 16	< 7	< 15	< 8	< 12	< 12	< 6	< 9	< 30	< 10
	09/30/16 - 10/28/16	< 5	< 5	< 11	< 5	< 10	< 7	< 12	< 15	< 5	< 6	< 37	< 12
	10/28/16 - 11/25/16	< 4	< 4	< 7	< 3	< 12	< 3	< 10	< 7	< 5	< 3	< 23	< 7
	11/25/16 - 12/30/16	< 6	< 7	< 12	< 5	< 11	< 7	< 12	< 11	< 6	< 7	< 31	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-II.1 **CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-23	D-35
01/15/16 - 01/15/16	636 ± 139	< 182
02/12/16 - 02/12/16	540 ± 144	
03/11/16 - 03/11/16	461 ± 139	
04/08/16 - 04/08/16	484 ± 140	< 196
05/13/16 - 05/13/16	455 ± 129	
06/10/16 - 06/10/16	568 ± 143	
07/08/16 - 07/08/16	507 ± 130	< 171
08/12/16 - 08/12/16	385 ± 132	
09/09/16 - 09/09/16	356 ± 132	
10/14/16 - 10/14/16	391 ± 132	< 191
11/11/16 - 11/11/16	354 ± 138	
12/09/16 - 12/09/16	531 ± 140	
MEAN ± 2 STD DEV	472 ± 178	-

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

Tables C-II.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	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	01/15/16 - 01/15/16	< 7	< 8	< 16	< 7	< 16	< 8	< 12	< 13	< 7	< 8	< 35	< 10
	02/12/16 - 02/12/16	< 5	< 4	< 11	< 5	< 10	< 4	< 9	< 11	< 4	< 5	< 25	< 8
	03/11/16 - 03/11/16	< 7	< 8	< 14	< 6	< 15	< 8	< 10	< 12	< 6	< 8	< 31	< 7
	04/08/16 - 04/08/16	< 7	< 5	< 15	< 6	< 16	< 5	< 13	< 14	< 6	< 6	< 40	< 11
	05/13/16 - 05/13/16	< 5	< 5	< 10	< 5	< 10	< 6	< 9	< 9	< 5	< 6	< 26	< 9
	06/10/16 - 06/10/16	< 4	< 5	< 8	< 6	< 9	< 5	< 9	< 10	< 5	< 6	< 23	< 9
	07/08/16 - 07/08/16	< 9	< 10	< 20	< 14	< 15	< 11	< 18	< 15	< 8	< 11	< 46	< 12
	08/12/16 - 08/12/16	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 16	< 5
	09/09/16 - 09/09/16	< 6	< 6	< 12	< 6	< 11	< 7	< 11	< 10	< 6	< 6	< 28	< 9
	10/14/16 - 10/14/16	< 6	< 7	< 14	< 7	< 15	< 7	< 12	< 10	< 7	< 8	< 24	< 8
	11/11/16 - 11/11/16	< 6	< 7	< 13	< 7	< 13	< 6	< 9	< 10	< 6	< 6	< 26	< 11
	12/09/16 - 12/09/16	< 6	< 6	< 9	< 5	< 9	< 7	< 11	< 11	< 6	< 6	< 30	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-35	01/15/16 - 01/15/16	< 8	< 6	< 16	< 8	< 18	< 9	< 15	< 14	< 9	< 7	< 38	< 8
	04/08/16 - 04/08/16	< 4	< 5	< 10	< 5	< 11	< 6	< 10	< 14	< 5	< 7	< 31	< 10
	07/08/16 - 07/08/16	< 7	< 6	< 15	< 6	< 14	< 6	< 11	< 12	< 7	< 9	< 29	< 8
	10/14/16 - 10/14/16	< 6	< 5	< 9	< 7	< 12	< 5	< 8	< 8	< 5	< 6	< 27	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-III.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF PCI/KG WET + 2 SIGMA

SITE	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	*PREDIAOR*											
Largemouth Bass	05/11/16	< 53	< 35	< 88	< 43	< 107	< 43	< 84	< 42	< 51	< 246	< 65
Largemouth Bass	10/12/16	< 51	< 58	< 110	< 56	< 95	< 51	< 101	< 46	< 42	< 224	< 53
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-28	*BOTTOM FEEDER*											
Freshwater Drum	05/11/16	< 36	< 40	< 69	< 41	< 91	< 33	< 59	< 31	< 45	< 198	< 69
Common Carp	10/12/16	< 31	< 41	< 82	< 36	< 90	< 41	< 60	< 37	< 38	< 158	< 58
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-46	*PREDATOR*											
Largemouth Bass	05/11/16	< 61	< 64	< 110	< 51	< 145	< 67	< 107	< 52	< 64	< 292	< 92
Largemouth Bass	10/12/16	< 68	< 81	< 169	< 53	< 168	< 77	< 154	< 70	< 85	< 312	< 98
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-46	*BOTTOM FEEDER*											
Channel Catfish	05/11/16	< 33	< 38	< 76	< 32	< 90	< 46	< 71	< 40	< 41	< 224	< 69
Golden Redhorse	10/12/16	< 51	< 46	< 117	< 49	< 94	< 55	< 106	< 49	< 57	< 265	< 81
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-IV.1

CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF PCI/KG DRY ± 2 SIGMA

SITE	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	05/13/16	< 106	< 104	< 263	< 105	< 251	< 132	< 183	< 95	218 ± 89	< 661	< 191
	10/14/16	< 65	< 65	< 127	< 64	< 131	< 72	< 112	< 63	153 ± 65	< 293	< 87
MEAN ± 2 STD DEV		-	-	-	-	-	-	-	-	185 ± 91	-	-

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

Table C-V.1

CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

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	D-58
01/02/16 - 01/08/16	17 ± 5	18 ± 5	15 ± 4	23 ± 5	19 ± 5	16 ± 4	21 ± 5	16 ± 4	18 ± 5
01/08/16 - 01/15/16	22 ± 4	23 ± 4	22 ± 4	27 ± 5	23 ± 4	17 ± 4	24 ± 4	18 ± 4	22 ± 4
01/15/16 - 01/22/16	18 ± 4	20 ± 4	21 ± 4	20 ± 5	20 ± 4	22 ± 5	16 ± 4	17 ± 4	21 ± 4
01/22/16 - 01/29/16	15 ± 4	12 ± 4	13 ± 4	17 ± 4	14 ± 4	14 ± 4	14 ± 4	15 ± 4	15 ± 4
01/29/16 - 02/05/16	16 ± 4	18 ± 4	18 ± 4	22 ± 4	20 ± 4	16 ± 4	18 ± 4	17 ± 4	20 ± 4
02/05/16 - 02/12/16	13 ± 4	14 ± 4	20 ± 4	16 ± 4	18 ± 4	19 ± 4	17 ± 4	13 ± 4	18 ± 4
02/12/16 - 02/19/16	18 ± 4	16 ± 4	18 ± 4	16 ± 4	16 ± 4	20 ± 4	17 ± 4	14 ± 4	18 ± 4
02/19/16 - 02/26/16	9 ± 4	9 ± 4	8 ± 3	9 ± 4	8 ± 4	10 ± 4	9 ± 4	*(1)*	10 ± 4
02/26/16 - 03/04/16	17 ± 4	14 ± 4	14 ± 4	16 ± 4	12 ± 4	18 ± 4	14 ± 4	16 ± 4	14 ± 4
03/04/16 - 03/11/16	13 ± 4	16 ± 4	15 ± 4	14 ± 4	11 ± 4	18 ± 4	11 ± 4	15 ± 4	13 ± 4
03/11/16 - 03/18/16	11 ± 4	7 ± 3	11 ± 4	11 ± 4	8 ± 4	10 ± 4	11 ± 4	10 ± 4	12 ± 4
03/18/16 - 03/25/16	12 ± 4	12 ± 4	11 ± 4	10 ± 4	9 ± 4	14 ± 4	14 ± 4	10 ± 4	10 ± 4
03/25/16 - 04/01/16	9 ± 4	6 ± 3	10 ± 4	11 ± 4	11 ± 4	9 ± 4	10 ± 4	6 ± 4	8 ± 4
04/01/16 - 04/08/16	14 ± 4	13 ± 4	18 ± 4	12 ± 4	16 ± 4	15 ± 4	16 ± 4	13 ± 4	18 ± 4
04/08/16 - 04/15/16	11 ± 4	8 ± 4	10 ± 4	10 ± 4	10 ± 4	10 ± 4	9 ± 4	11 ± 4	10 ± 4
04/15/16 - 04/22/16	15 ± 4	20 ± 5	22 ± 5	25 ± 5	18 ± 4	22 ± 4	18 ± 4	19 ± 4	17 ± 4
04/22/16 - 04/29/16	16 ± 4	13 ± 4	14 ± 4	12 ± 4	13 ± 4	13 ± 4	12 ± 4	13 ± 4	13 ± 4
04/29/16 - 05/06/16	9 ± 4	6 ± 3	9 ± 4	5 ± 3	7 ± 3	7 ± 3	8 ± 4	7 ± 4	10 ± 4
05/06/16 - 05/13/16	13 ± 4	8 ± 4	12 ± 4	10 ± 4	10 ± 4	13 ± 4	9 ± 4	9 ± 4	11 ± 4
05/13/16 - 05/20/16	14 ± 4	14 ± 4	12 ± 4	13 ± 4	15 ± 4	11 ± 4	12 ± 4	13 ± 4	12 ± 4
05/20/16 - 05/27/16	17 ± 4	19 ± 4	14 ± 4	18 ± 4	18 ± 4	20 ± 4	17 ± 4	20 ± 4	18 ± 4
05/27/16 - 06/03/16	14 ± 4	18 ± 4	17 ± 4	22 ± 4	18 ± 4	19 ± 4	17 ± 4	18 ± 4	17 ± 4
06/03/16 - 06/10/16	10 ± 3	9 ± 3	13 ± 4	14 ± 4	11 ± 3	17 ± 4	13 ± 4	12 ± 4	16 ± 4
06/10/16 - 06/17/16	16 ± 4	16 ± 4	14 ± 3	13 ± 4	14 ± 4	19 ± 4	15 ± 4	13 ± 4	14 ± 4
06/17/16 - 06/24/16	14 ± 4	13 ± 4	16 ± 4	17 ± 4	16 ± 4	15 ± 4	15 ± 4	14 ± 4	17 ± 4
06/24/16 - 07/01/16	17 ± 4	15 ± 4	14 ± 3	16 ± 4	15 ± 4	12 ± 4	14 ± 4	16 ± 4	14 ± 4
07/01/16 - 07/08/16	16 ± 4	11 ± 4	12 ± 4	14 ± 4	13 ± 4	15 ± 4	15 ± 4	17 ± 4	15 ± 4
07/08/16 - 07/15/16	15 ± 4	15 ± 4	19 ± 4	18 ± 4	19 ± 4	16 ± 4	19 ± 8	19 ± 4	16 ± 4
07/15/16 - 07/22/16	*(1)*	16 ± 4	18 ± 4	19 ± 4	14 ± 4	16 ± 5	*(1)*	19 ± 4	19 ± 4
07/22/16 - 07/29/16	22 ± 8	16 ± 4	17 ± 4	17 ± 4	19 ± 4	13 ± 6	*(1)*	19 ± 4	22 ± 4
07/29/16 - 08/05/16	22 ± 4	23 ± 4	19 ± 4	25 ± 5	20 ± 4	32 ± 10	*(1)*	25 ± 5	21 ± 4
08/05/16 - 08/12/16	18 ± 4	17 ± 4	< 4 *(1)*	18 ± 4	15 ± 4	20 ± 4	22 ± 11	13 ± 4	18 ± 4
08/12/16 - 08/13/16	10 ± 4	12 ± 4	13 ± 4	17 ± 4	17 ± 4	15 ± 4	13 ± 4	17 ± 4	17 ± 4
08/19/16 - 08/26/16	14 ± 4	13 ± 4	12 ± 4	13 ± 4	11 ± 4	14 ± 4	13 ± 4	11 ± 4	12 ± 4
08/26/16 - 09/02/16	14 ± 4	8 ± 3	9 ± 3	10 ± 4	11 ± 4	10 ± 4	10 ± 3	9 ± 3	7 ± 3
09/02/16 - 09/09/16	18 ± 4	15 ± 4	17 ± 4	14 ± 4	15 ± 4	15 ± 4	13 ± 4	12 ± 4	14 ± 4
09/09/16 - 09/16/16	15 ± 4	15 ± 4	18 ± 4	14 ± 4	11 ± 4	16 ± 4	11 ± 4	15 ± 4	15 ± 4
09/16/16 - 09/23/16	20 ± 4	22 ± 4	20 ± 4	25 ± 5	22 ± 4	23 ± 5	19 ± 4	21 ± 4	23 ± 4
09/23/16 - 09/30/16	15 ± 3	14 ± 4	13 ± 3	14 ± 4	15 ± 4	14 ± 4	15 ± 4	14 ± 4	20 ± 4
09/30/16 - 10/07/16	23 ± 7	14 ± 4	20 ± 7	17 ± 4	17 ± 4	14 ± 4	13 ± 4	14 ± 4	13 ± 4
10/07/16 - 10/14/16	21 ± 5	17 ± 4	22 ± 4	16 ± 4	19 ± 4	21 ± 4	16 ± 4	18 ± 4	18 ± 4
10/14/16 - 10/21/16	14 ± 4	17 ± 4	14 ± 4	14 ± 4	14 ± 4	20 ± 4	11 ± 3	15 ± 4	14 ± 4
10/21/16 - 10/28/16	12 ± 4	10 ± 4	12 ± 4	14 ± 4	10 ± 4	11 ± 4	10 ± 4	11 ± 4	12 ± 4
10/28/16 - 11/04/16	22 ± 5	27 ± 5	21 ± 4	22 ± 4	25 ± 5	26 ± 5	24 ± 5	26 ± 5	22 ± 4
11/04/16 - 11/11/16	28 ± 5	26 ± 5	27 ± 5	24 ± 5	27 ± 5	25 ± 5	24 ± 5	24 ± 5	24 ± 5
11/11/16 - 11/18/16	37 ± 6	31 ± 5	35 ± 6	38 ± 6	37 ± 6	40 ± 6	40 ± 6	38 ± 6	38 ± 6
11/18/16 - 11/25/16	11 ± 3	14 ± 4	12 ± 3	13 ± 4	11 ± 3	15 ± 4	14 ± 4	12 ± 4	11 ± 3
11/25/16 - 12/02/16	21 ± 4	23 ± 4	26 ± 5	22 ± 4	20 ± 4	21 ± 4	23 ± 5	21 ± 4	18 ± 4
12/02/16 - 12/09/16	14 ± 4	14 ± 4	17 ± 4	15 ± 4	12 ± 4	10 ± 3	11 ± 4	16 ± 4	10 ± 3
12/09/16 - 12/16/16	26 ± 5	19 ± 4	28 ± 5	17 ± 4	24 ± 5	22 ± 5	22 ± 5	25 ± 5	23 ± 5
12/16/16 - 12/23/16	18 ± 4	19 ± 4	19 ± 4	18 ± 4	19 ± 4	16 ± 4	22 ± 5	23 ± 5	22 ± 4
12/23/16 - 12/30/16	20 ± 4	17 ± 4	21 ± 4	21 ± 4	16 ± 4	19 ± 4	19 ± 4	18 ± 4	19 ± 4
MEAN ± 2 STD DEV	16 ± 10	15 ± 11	16 ± 11	17 ± 11	16 ± 11	17 ± 12	16 ± 11	16 ± 11	16 ± 10

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

Table C-V.1

CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

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
01/02/16 - 01/08/16	22 ± 5	18 ± 5	25 ± 5	17 ± 4	21 ± 5
01/08/16 - 01/15/16	19 ± 4	24 ± 5	21 ± 4	19 ± 4	21 ± 4
01/15/16 - 01/22/16	21 ± 4	22 ± 5	19 ± 4	16 ± 4	20 ± 4
01/22/16 - 01/29/16	14 ± 4	16 ± 4	14 ± 4	13 ± 4	15 ± 4
01/29/16 - 02/05/16	20 ± 4	23 ± 4	19 ± 4	21 ± 4	20 ± 4
02/05/16 - 02/12/16	15 ± 4	13 ± 4	18 ± 4	13 ± 4	16 ± 4
02/12/16 - 02/19/16	14 ± 4	14 ± 4	17 ± 4	16 ± 4	14 ± 4
02/19/16 - 02/26/16	10 ± 4	7 ± 3	9 ± 4	13 ± 4	10 ± 4
02/26/16 - 03/04/16	12 ± 4	15 ± 4	12 ± 4	16 ± 4	16 ± 4
03/04/16 - 03/11/16	15 ± 4	14 ± 4	15 ± 4	12 ± 4	14 ± 4
03/11/16 - 03/18/16	9 ± 4	8 ± 4	8 ± 4	9 ± 4	8 ± 4
03/18/16 - 03/25/16	11 ± 4	11 ± 4	10 ± 4	10 ± 4	10 ± 4
03/25/16 - 04/01/16	9 ± 4	10 ± 4	9 ± 4	8 ± 4	8 ± 4
04/01/16 - 04/08/16	18 ± 4	17 ± 4	12 ± 4	20 ± 4	15 ± 4
04/08/16 - 04/15/16	10 ± 4	11 ± 4	7 ± 4	9 ± 4	12 ± 4
04/15/16 - 04/22/16	19 ± 4	18 ± 4	19 ± 4	18 ± 4	18 ± 4
04/22/16 - 04/29/16	13 ± 4	12 ± 4	16 ± 4	12 ± 4	10 ± 4
04/29/16 - 05/06/16	11 ± 4	< 5	6 ± 3	6 ± 4	8 ± 4
05/06/16 - 05/13/16	11 ± 4	11 ± 4	13 ± 4	10 ± 4	10 ± 4
05/13/16 - 05/20/16	11 ± 4	13 ± 4	9 ± 4	14 ± 4	10 ± 4
05/20/16 - 05/27/16	13 ± 4	15 ± 4	14 ± 4	14 ± 4	17 ± 4
05/27/16 - 06/03/16	17 ± 5	17 ± 4	15 ± 4	19 ± 4	18 ± 4
06/03/16 - 06/10/16	13 ± 4	15 ± 4	13 ± 4	13 ± 4	13 ± 4
06/10/16 - 06/17/16	15 ± 4	12 ± 4	16 ± 4	20 ± 4	21 ± 5
06/17/16 - 06/24/16	16 ± 4	19 ± 4	14 ± 4	16 ± 4	19 ± 4
06/24/16 - 07/01/16	12 ± 4	15 ± 4	13 ± 4	14 ± 4	12 ± 3
07/01/16 - 07/08/16	17 ± 4	14 ± 4	11 ± 4	13 ± 4	14 ± 4
07/08/16 - 07/15/16	19 ± 4	17 ± 4	19 ± 4	16 ± 4	21 ± 4
07/15/16 - 07/22/16	19 ± 4	12 ± 4	18 ± 4	20 ± 4	16 ± 4
07/22/16 - 07/29/16	19 ± 4	22 ± 4	19 ± 4	22 ± 4	16 ± 4
07/29/16 - 08/05/16	23 ± 4	26 ± 5	21 ± 4	25 ± 5	22 ± 4
08/05/16 - 08/12/16	18 ± 4	20 ± 4	17 ± 4	21 ± 4	16 ± 4
08/12/16 - 08/13/16	16 ± 4	14 ± 4	14 ± 4	11 ± 4	< 26
08/19/16 - 08/26/16	11 ± 4	12 ± 4	14 ± 4	16 ± 4	11 ± 3
08/26/16 - 09/02/16	10 ± 4	10 ± 4	12 ± 4	9 ± 4	8 ± 4
09/02/16 - 09/09/16	16 ± 4	14 ± 4	18 ± 4	13 ± 4	17 ± 4
09/09/16 - 09/16/16	14 ± 4	17 ± 4	10 ± 4	16 ± 4	12 ± 4
09/16/16 - 09/23/16	18 ± 4	22 ± 4	23 ± 4	23 ± 5	21 ± 4
09/23/16 - 09/30/16	17 ± 4	13 ± 4	13 ± 4	17 ± 4	16 ± 4
09/30/16 - 10/07/16	17 ± 4	14 ± 4	14 ± 4	14 ± 4	16 ± 4
10/07/16 - 10/14/16	17 ± 4	17 ± 4	20 ± 4	17 ± 4	21 ± 4
10/14/16 - 10/21/16	16 ± 4	14 ± 4	14 ± 4	15 ± 4	15 ± 4
10/21/16 - 10/28/16	12 ± 4	10 ± 4	10 ± 4	8 ± 4	11 ± 4
10/28/16 - 11/04/16	24 ± 5	24 ± 5	24 ± 5	23 ± 5	21 ± 4
11/04/16 - 11/11/16	21 ± 4	23 ± 4	21 ± 4	24 ± 5	25 ± 5
11/11/16 - 11/18/16	41 ± 6	33 ± 6	40 ± 6	39 ± 6	36 ± 6
11/18/16 - 11/25/16	12 ± 4	11 ± 3	13 ± 4	15 ± 4	14 ± 4
11/25/16 - 12/02/16	23 ± 5	22 ± 4	23 ± 5	21 ± 4	18 ± 4
12/02/16 - 12/09/16	11 ± 4	12 ± 4	14 ± 4	14 ± 4	11 ± 4
12/09/16 - 12/16/16	22 ± 5	22 ± 5	23 ± 5	26 ± 5	23 ± 4
12/16/16 - 12/23/16	22 ± 4	21 ± 4	21 ± 4	17 ± 4	22 ± 4
12/23/16 - 12/30/16	23 ± 5	18 ± 4	21 ± 4	17 ± 4	15 ± 4
MEAN ± 2 STD DEV	16 ± 11	16 ± 10	16 ± 12	16 ± 11	16 ± 11

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION
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, 2016

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
01/02/16 - 01/29/16	12	23	18 ± 7	01/02/16 - 01/29/16	14	27	19 ± 7	01/02/16 - 01/29/16	13	25	19 ± 7	01/02/16 - 01/29/16	15	21	19 ± 6
01/29/16 - 03/04/16	8	20	15 ± 7	01/29/16 - 03/04/16	8	22	16 ± 7	01/29/16 - 03/04/16	7	23	15 ± 8	01/29/16 - 03/04/16	10	20	15 ± 7
03/04/16 - 04/01/16	6	16	11 ± 6	03/04/16 - 04/01/16	6	18	11 ± 5	03/04/16 - 04/01/16	8	15	11 ± 5	03/04/16 - 04/01/16	8	14	10 ± 5
04/01/16 - 04/29/16	8	22	15 ± 8	04/01/16 - 04/29/16	9	25	14 ± 8	04/01/16 - 04/29/16	7	20	14 ± 8	04/01/16 - 04/29/16	10	18	14 ± 7
04/29/16 - 06/03/16	6	19	13 ± 8	04/29/16 - 06/03/16	5	22	13 ± 10	04/29/16 - 06/03/16	6	19	13 ± 7	04/29/16 - 06/03/16	8	18	13 ± 10
06/03/16 - 07/01/16	9	17	14 ± 5	06/03/16 - 07/01/16	11	19	15 ± 4	06/03/16 - 07/01/16	12	20	15 ± 5	06/03/16 - 07/01/16	12	21	16 ± 10
07/01/16 - 07/29/16	11	22	16 ± 6	07/01/16 - 07/29/16	13	22	17 ± 5	07/01/16 - 07/29/16	11	22	17 ± 6	07/01/16 - 07/29/16	14	21	17 ± 5
07/29/16 - 09/02/16	8	23	15 ± 10	07/29/16 - 09/02/16	7	32	16 ± 11	07/29/16 - 09/02/16	9	26	16 ± 11	07/29/16 - 09/02/16	8	22	15 ± 11
09/02/16 - 09/30/16	13	22	17 ± 5	09/02/16 - 09/30/16	11	25	16 ± 8	09/02/16 - 09/30/16	10	23	16 ± 8	09/02/16 - 09/30/16	12	21	17 ± 7
09/30/16 - 11/04/16	10	27	18 ± 10	09/30/16 - 11/04/16	10	26	16 ± 10	09/30/16 - 11/04/16	8	24	16 ± 10	09/30/16 - 11/04/16	11	21	17 ± 8
11/04/16 - 12/02/16	11	37	24 ± 17	11/04/16 - 12/02/16	11	40	24 ± 19	11/04/16 - 12/02/16	11	41	24 ± 17	11/04/16 - 12/02/16	14	36	23 ± 20
12/02/16 - 12/30/16	14	28	19 ± 9	12/02/16 - 12/30/16	10	25	18 ± 9	12/02/16 - 12/30/16	11	26	19 ± 9	12/02/16 - 12/30/16	11	23	18 ± 11
01/02/16 - 12/30/16	6	37	16 ± 11	01/02/16 - 12/30/16	5	40	16 ± 11	01/02/16 - 12/30/16	6	41	16 ± 11	01/02/16 - 12/30/16	8	36	16 ± 11

Table C-V.3

CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

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

SITE	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	01/02/16 - 04/01/16	< 2	< 3	< 9	< 2	< 5	< 4	< 7	< 2	< 2	< 74	< 28
	04/01/16 - 07/01/16	< 3	< 3	< 7	< 3	< 6	< 4	< 4	< 2	< 2	< 29	< 15
	07/01/16 - 09/30/16	< 3	< 3	< 8	< 3	< 6	< 3	< 5	< 3	< 3	< 18	< 6
	10/03/16 - 12/30/16	< 2	< 3	< 6	< 3	< 6	< 2	< 4	< 2	< 3	< 16	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-02	01/02/16 - 04/01/16	< 2	< 3	< 7	< 3	< 5	< 3	< 6	< 2	< 2	< 66	< 11
	04/01/16 - 07/01/16	< 3	< 3	< 7	< 4	< 7	< 3	< 6	< 3	< 3	< 38	< 11
	07/01/16 - 09/30/16	< 2	< 2	< 5	< 3	< 6	< 2	< 4	< 2	< 2	< 12	< 5
	09/30/16 - 12/30/16	< 2	< 3	< 5	< 3	< 6	< 3	< 4	< 3	< 2	< 17	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-03	01/02/16 - 04/01/16	< 2	< 3	< 6	< 2	< 5	< 2	< 4	< 2	< 2	< 45	< 21
	04/01/16 - 07/01/16	< 4	< 3	< 7	< 3	< 8	< 3	< 6	< 4	< 3	< 33	< 14
	07/01/16 - 09/30/16	< 2	< 2	< 4	< 2	< 5	< 2	< 4	< 2	< 2	< 12	< 5
	10/03/16 - 12/30/16	< 2	< 2	< 5	< 3	< 7	< 3	< 4	< 2	< 2	< 10	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-04	01/02/16 - 04/01/16	< 1	< 3	< 8	< 2	< 5	< 2	< 5	< 2	< 2	< 55	< 24
	04/01/16 - 07/01/16	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 2	< 1	< 23	< 10
	07/01/16 - 09/30/16	< 3	< 3	< 6	< 2	< 6	< 2	< 4	< 3	< 2	< 14	< 6
	09/30/16 - 12/30/16	< 2	< 2	< 3	< 2	< 4	< 2	< 4	< 2	< 2	< 14	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-07	01/02/16 - 04/01/16	< 2	< 2	< 7	< 3	< 5	< 2	< 4	< 2	< 2	< 69	< 13
	04/01/16 - 07/01/16	< 2	< 3	< 6	< 3	< 5	< 3	< 5	< 2	< 2	< 19	< 10
	07/01/16 - 09/30/16	< 2	< 2	< 4	< 2	< 5	< 2	< 4	< 2	< 2	< 10	< 4
	09/30/16 - 12/30/16	< 3	< 2	< 7	< 2	< 5	< 2	< 5	< 2	< 2	< 18	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-08	01/02/16 - 04/01/16	< 3	< 4	< 9	< 2	< 5	< 4	< 6	< 3	< 3	< 69	< 24
	04/01/16 - 07/01/16	< 3	< 3	< 8	< 3	< 6	< 3	< 5	< 3	< 2	< 21	< 13
	07/01/16 - 09/30/16	< 2	< 2	< 4	< 2	< 6	< 2	< 4	< 2	< 2	< 13	< 6
	09/30/16 - 12/30/16	< 3	< 3	< 6	< 4	< 6	< 3	< 6	< 4	< 3	< 20	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-10	01/02/16 - 04/01/16	< 4	< 5	< 15	< 5	< 9	< 5	< 11	< 4	< 3	< 116	< 46
	04/01/16 - 07/01/16	< 3	< 4	< 7	< 2	< 8	< 4	< 6	< 3	< 3	< 37	< 17
	07/01/16 - 09/30/16	< 2	< 3	< 6	< 2	< 6	< 3	< 4	< 3	< 2	< 14	< 4
	09/30/16 - 12/30/16	< 2	< 3	< 4	< 3	< 7	< 2	< 3	< 2	< 2	< 13	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-V.3

CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

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

SITE	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-12	01/02/16 - 04/01/16	< 2	< 3	< 8	< 2	< 6	< 4	< 6	< 3	< 3	< 67	< 23
	04/01/16 - 07/01/16	< 2	< 2	< 4	< 2	< 5	< 2	< 3	< 2	< 2	< 24	< 7
	07/01/16 - 09/30/16	< 2	< 2	< 4	< 3	< 6	< 3	< 3	< 2	< 2	< 14	< 5
	09/30/16 - 12/30/16	< 3	< 3	< 4	< 2	< 4	< 2	< 4	< 2	< 2	< 17	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-14	01/02/16 - 04/01/16	< 2	< 2	< 8	< 3	< 6	< 3	< 4	< 2	< 2	< 51	< 19
	04/01/16 - 07/01/16	< 2	< 3	< 6	< 3	< 5	< 2	< 7	< 3	< 2	< 33	< 14
	07/01/16 - 09/30/16	< 3	< 4	< 8	< 5	< 11	< 4	< 7	< 4	< 4	< 22	< 10
	09/30/16 - 12/30/16	< 2	< 2	< 6	< 3	< 4	< 2	< 3	< 2	< 3	< 12	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-45	01/02/16 - 04/01/16	< 3	< 5	< 10	< 4	< 10	< 4	< 8	< 4	< 4	< 101	< 32
	04/01/16 - 07/01/16	< 3	< 4	< 6	< 3	< 6	< 3	< 7	< 3	< 4	< 40	< 17
	07/01/16 - 09/30/16	< 3	< 3	< 5	< 3	< 8	< 2	< 5	< 3	< 3	< 15	< 5
	09/30/16 - 12/30/16	< 4	< 5	< 11	< 6	< 10	< 5	< 9	< 5	< 5	< 27	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-53	01/02/16 - 04/01/16	< 2	< 3	< 9	< 2	< 5	< 3	< 4	< 2	< 2	< 65	< 18
	04/01/16 - 07/01/16	< 3	< 3	< 6	< 3	< 5	< 3	< 4	< 2	< 2	< 27	< 11
	07/01/16 - 09/30/16	< 4	< 2	< 9	< 4	< 9	< 4	< 6	< 3	< 3	< 18	< 9
	09/30/16 - 12/30/16	< 2	< 2	< 3	< 2	< 5	< 2	< 3	< 2	< 2	< 12	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-55	01/02/16 - 04/01/16	< 3	< 3	< 9	< 2	< 7	< 4	< 5	< 3	< 2	< 69	< 26
	04/01/16 - 07/01/16	< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 2	< 1	< 22	< 11
	07/01/16 - 09/30/16	< 3	< 2	< 6	< 2	< 5	< 3	< 4	< 3	< 2	< 13	< 4
	09/30/16 - 12/30/16	< 2	< 2	< 6	< 3	< 6	< 3	< 4	< 2	< 2	< 12	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-56	01/02/16 - 04/01/16	< 5	< 7	< 14	< 5	< 12	< 6	< 10	< 4	< 4	< 115	< 60
	04/01/16 - 07/01/16	< 3	< 3	< 6	< 3	< 6	< 3	< 5	< 2	< 2	< 39	< 14
	07/01/16 - 09/30/16	< 3	< 3	< 6	< 3	< 9	< 4	< 5	< 5	< 4	< 23	< 6
	09/30/16 - 12/30/16	< 3	< 3	< 6	< 4	< 8	< 3	< 5	< 3	< 3	< 19	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-58	01/02/16 - 04/01/16	< 2	< 3	< 7	< 2	< 7	< 4	< 5	< 3	< 3	< 81	< 37
	04/01/16 - 07/01/16	< 3	< 3	< 11	< 2	< 8	< 3	< 6	< 3	< 2	< 45	< 19
	07/01/16 - 09/30/16	< 2	< 2	< 6	< 2	< 5	< 3	< 4	< 2	< 2	< 13	< 4
	09/30/16 - 12/30/16	< 2	< 2	< 4	< 3	< 6	< 2	< 4	< 2	< 2	< 13	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-VI.1

CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

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	D-58
01/02/16 - 01/08/16	< 57	< 56	< 58	< 59	< 51	< 59	< 56	< 56	< 24
01/08/16 - 01/15/16	< 24	< 23	< 24	< 24	< 40	< 35	< 14	< 33	< 34
01/15/16 - 01/22/16	< 55	< 54	< 55	< 58	< 21	< 67	< 66	< 66	< 66
01/22/16 - 01/29/16	< 39	< 39	< 40	< 16	< 40	< 46	< 44	< 44	< 44
01/29/16 - 02/05/16	< 11	< 26	< 26	< 26	< 27	< 30	< 27	< 29	< 29
02/05/16 - 02/12/16	< 44	< 42	< 42	< 42	< 17	< 23	< 46	< 46	< 47
02/12/16 - 02/19/16	< 59	< 58	< 57	< 59	< 64	< 63	< 61	< 59	< 32
02/19/16 - 02/26/16	< 26	< 26	< 10	< 26	< 26	< 29	< 23	*(1)*	< 23
02/26/16 - 03/04/16	< 39	< 40	< 38	< 39	< 22	< 25	< 44	< 47	< 46
03/04/16 - 03/11/16	< 37	< 34	< 34	< 35	< 14	< 44	< 45	< 45	< 44
03/11/16 - 03/18/16	< 11	< 29	< 29	< 30	< 30	< 32	< 13	< 32	< 31
03/18/16 - 03/25/16	< 15	< 35	< 35	< 35	< 35	< 45	< 37	< 39	< 37
03/25/16 - 04/01/16	< 17	< 46	< 43	< 44	< 45	< 61	< 30	< 60	< 58
04/01/16 - 04/08/16	< 19	< 42	< 42	< 42	< 43	< 39	< 47	< 50	< 49
04/08/16 - 04/15/16	< 49	< 50	< 19	< 50	< 49	< 23	< 45	< 49	< 46
04/15/16 - 04/22/16	< 6	< 19	< 17	< 18	< 17	< 25	< 22	< 23	< 23
04/22/16 - 04/29/16	< 23	< 23	< 23	< 23	< 10	< 32	< 25	< 26	< 25
04/29/16 - 05/06/16	< 42	< 42	< 49	< 42	< 18	< 25	< 47	< 47	< 46
05/06/16 - 05/13/16	< 55	< 56	< 56	< 57	< 23	< 65	< 68	< 65	< 27
05/13/16 - 05/20/16	< 42	< 18	< 42	< 42	< 42	< 43	< 44	< 44	< 17
05/20/16 - 05/27/16	< 65	< 65	< 27	< 65	< 65	< 56	< 56	< 55	< 19
05/27/16 - 06/03/16	< 62	< 63	< 24	< 64	< 63	< 66	< 34	< 64	< 63
06/03/16 - 06/10/16	< 26	< 65	< 68	< 66	< 66	< 66	< 38	< 38	< 36
06/10/16 - 06/17/16	< 63	< 64	< 33	< 65	< 63	< 59	< 59	< 59	< 57
06/17/16 - 06/24/16	< 69	< 66	< 69	< 69	< 25	< 57	< 59	< 58	< 56
06/24/16 - 07/01/16	< 65	< 26	< 62	< 64	< 68	< 65	< 55	< 54	< 53
07/01/16 - 07/08/16	< 49	< 50	< 50	< 50	< 32	< 58	< 51	< 18	< 51
07/08/16 - 07/15/16	< 27	< 62	< 62	< 61	< 66	< 61	< 67	< 58	< 57
07/15/16 - 07/22/16	*(1)*	< 63	< 26	< 64	< 64	< 67	*(1)*	< 63	< 62
07/22/16 - 07/29/16	< 65	< 25	< 23	< 24	< 26	< 42	*(1)*	< 18	< 8
07/29/16 - 08/05/16	< 61	< 63	< 27	< 62	< 62	< 67	*(1)*	< 24	< 23
08/05/16 - 08/12/16	< 29	< 69	< 70	< 69	< 69	< 59	< 95	< 20	< 54
08/12/16 - 08/13/16	< 45	< 45	< 46	< 45	< 41	< 54	< 18	< 52	< 52
08/19/16 - 08/26/16	< 35	< 36	< 35	< 38	< 20	< 60	< 64	< 62	< 27
08/26/16 - 09/02/16	< 60	< 54	< 25	< 54	< 53	< 22	< 46	< 46	< 48
09/02/16 - 09/09/16	< 46	< 46	< 47	< 24	< 46	< 46	< 44	< 45	< 18
09/09/16 - 09/16/16	< 16	< 35	< 36	< 34	< 34	< 55	< 54	< 54	< 22
09/16/16 - 09/23/16	< 53	< 50	< 51	< 25	< 57	< 52	< 51	< 50	< 22
09/23/16 - 09/30/16	< 17	< 47	< 19	< 48	< 48	< 45	< 55	< 56	< 54
09/30/16 - 10/07/16	< 64	< 20	< 69	< 38	< 38	< 55	< 51	< 51	< 51
10/07/16 - 10/14/16	< 14	< 32	< 31	< 31	< 32	< 32	< 46	< 45	< 43
10/14/16 - 10/21/16	< 16	< 37	< 36	< 36	< 36	< 21	< 36	< 38	< 38
10/21/16 - 10/28/16	< 54	< 54	< 56	< 53	< 22	< 25	< 53	< 54	< 51
10/28/16 - 11/04/16	< 18	< 51	< 50	< 48	< 51	< 55	< 51	< 53	< 28
11/04/16 - 11/11/16	< 15	< 36	< 37	< 37	< 36	< 35	< 37	< 38	< 37
11/11/16 - 11/18/16	< 20	< 37	< 37	< 37	< 36	< 19	< 45	< 46	< 45
11/18/16 - 11/25/16	< 20	< 47	< 46	< 47	< 47	< 37	< 37	< 38	< 14
11/25/16 - 12/02/16	< 16	< 43	< 43	< 43	< 43	< 17	< 38	< 38	< 37
12/02/16 - 12/09/16	< 16	< 44	< 43	< 44	< 43	< 53	< 29	< 28	< 27
12/09/16 - 12/16/16	< 11	< 26	< 27	< 28	< 27	< 46	< 41	< 41	< 40
12/16/16 - 12/23/16	< 48	< 47	< 45	< 48	< 36	< 39	< 39	< 39	< 13
12/23/16 - 12/30/16	< 25	< 55	< 56	< 54	< 54	< 66	< 45	< 47	< 44
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, 2016

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
01/02/16 - 01/08/16	< 53	< 53	< 28	< 57	< 51
01/08/16 - 01/15/16	< 16	< 40	< 40	< 35	< 39
01/15/16 - 01/22/16	< 63	< 64	< 65	< 27	< 63
01/22/16 - 01/29/16	< 19	< 47	< 47	< 43	< 46
01/29/16 - 02/05/16	< 11	< 29	< 30	< 31	< 29
02/05/16 - 02/12/16	< 62	< 58	< 58	< 48	< 56
02/12/16 - 02/19/16	< 62	< 64	< 26	< 60	< 62
02/19/16 - 02/26/16	< 12	< 29	< 30	< 25	< 29
02/26/16 - 03/04/16	< 53	< 51	< 53	< 48	< 52
03/04/16 - 03/11/16	< 40	< 40	< 39	< 21	< 37
03/11/16 - 03/18/16	< 31	< 28	< 30	< 35	< 28
03/18/16 - 03/25/16	< 16	< 45	< 44	< 38	< 45
03/25/16 - 04/01/16	< 43	< 42	< 43	< 60	< 44
04/01/16 - 04/08/16	< 14	< 38	< 39	< 54	< 39
04/08/16 - 04/15/16	< 57	< 57	< 56	< 47	< 56
04/15/16 - 04/22/16	< 11	< 25	< 25	< 23	< 24
04/22/16 - 04/29/16	< 15	< 33	< 33	< 25	< 34
04/29/16 - 05/06/16	< 44	< 45	< 44	< 49	< 45
05/06/16 - 05/13/16	< 35	< 34	< 33	< 64	< 33
05/13/16 - 05/20/16	< 66	< 65	< 64	< 43	< 68
05/20/16 - 05/27/16	< 60	< 59	< 60	< 54	< 63
05/27/16 - 06/03/16	< 66	< 54	< 53	< 69	< 54
06/03/16 - 06/10/16	< 33	< 68	< 66	< 37	< 66
06/10/16 - 06/17/16	< 21	< 59	< 59	< 62	< 70
06/17/16 - 06/24/16	< 64	< 63	< 62	< 24	< 63
06/24/16 - 07/01/16	< 64	< 62	< 63	< 21	< 63
07/01/16 - 07/08/16	< 59	< 60	< 59	< 53	< 60
07/08/16 - 07/15/16	< 53	< 53	< 53	< 60	< 54
07/15/16 - 07/22/16	< 65	< 55	< 55	< 63	< 58
07/22/16 - 07/29/16	< 27	< 27	< 19	< 19	< 26
07/29/16 - 08/05/16	< 60	< 60	< 61	< 24	< 59
08/05/16 - 08/12/16	< 61	< 62	< 60	< 55	< 62
08/12/16 - 08/13/16	< 41	< 40	< 22	< 53	< 67
08/19/16 - 08/26/16	< 46	< 48	< 44	< 57	< 42
08/26/16 - 09/02/16	< 51	< 48	< 53	< 53	< 51
09/02/16 - 09/09/16	< 57	< 57	< 56	< 46	< 59
09/09/16 - 09/16/16	< 33	< 32	< 34	< 54	< 32
09/16/16 - 09/23/16	< 59	< 20	< 58	< 52	< 60
09/23/16 - 09/30/16	< 51	< 42	< 45	< 56	< 46
09/30/16 - 10/07/16	< 55	< 53	< 56	< 53	< 28
10/07/16 - 10/14/16	< 32	< 12	< 32	< 44	< 31
10/14/16 - 10/21/16	< 45	< 44	< 46	< 38	< 46
10/21/16 - 10/28/16	< 63	< 63	< 64	< 55	< 64
10/28/16 - 11/04/16	< 43	< 43	< 44	< 53	< 41
11/04/16 - 11/11/16	< 34	< 13	< 35	< 37	< 33
11/11/16 - 11/18/16	< 40	< 40	< 39	< 46	< 40
11/18/16 - 11/25/16	< 37	< 35	< 37	< 37	< 34
11/25/16 - 12/02/16	< 38	< 37	< 39	< 38	< 36
12/02/16 - 12/09/16	< 55	< 53	< 54	< 28	< 27
12/09/16 - 12/16/16	< 49	< 48	< 48	< 40	< 16
12/16/16 - 12/23/16	< 37	< 37	< 38	< 38	< 20
12/23/16 - 12/30/16	< 33	< 62	< 64	< 46	< 61
MEAN	-	-	-	-	-

Table C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF PCI/LITER + 2 SIGMA

COLLECTION PERIOD	CONTROL FARM D-25
01/07/16	< 49 *(1)*
02/04/16	< 0.5
03/03/16	< 0.7
04/07/16	< 0.7
05/04/16	< 0.5
05/19/16	< 0.7
06/02/16	< 0.9
06/16/16	< 0.8
06/29/16	< 0.4
07/13/16	< 0.7
07/28/16	< 0.8
08/10/16	< 0.7
08/24/16	< 0.7
09/08/16	< 0.4
09/22/16	< 0.6
10/06/16	< 0.7
10/20/16	< 0.7
11/02/16	< 0.8
11/30/16	< 0.7
MEAN	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-VII.2

CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF PCI/LITER + 2 SIGMA

SITE	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	01/07/16	*(1)*	< 41	< 33	< 92	< 56	< 95	< 37	< 62	< 30	< 40	< 177	< 57
	02/04/16		< 7	< 6	< 20	< 7	< 18	< 7	< 12	< 6	< 8	< 34	< 11
	3/3/2016		< 9	< 9	< 20	< 9	< 18	< 8	< 16	< 7	< 9	< 41	< 14
	04/07/16		< 9	< 9	< 20	< 4	< 21	< 9	< 17	< 9	< 8	< 43	< 13
	05/04/16		< 7	< 8	< 15	< 7	< 16	< 8	< 12	< 7	< 8	< 31	< 6
	05/19/16		< 4	< 5	< 11	< 5	< 9	< 5	< 9	< 3	< 5	< 45	< 12
	06/02/16		< 5	< 7	< 13	< 6	< 14	< 6	< 12	< 6	< 6	< 37	< 10
	06/16/16		< 10	< 12	< 23	< 12	< 26	< 12	< 18	< 10	< 9	< 47	< 15
	06/29/16		< 7	< 9	< 16	< 9	< 13	< 6	< 11	< 7	< 7	< 45	< 13
	07/13/16		< 7	< 8	< 17	< 8	< 18	< 7	< 10	< 8	< 9	< 46	< 12
	07/28/16		< 7	< 10	< 19	< 8	< 17	< 10	< 11	< 7	< 8	< 48	< 15
	08/10/16		< 6	< 8	< 15	< 6	< 16	< 7	< 12	< 7	< 7	< 35	< 9
	08/24/16		< 6	< 7	< 16	< 6	< 14	< 8	< 12	< 7	< 8	< 38	< 11
	09/08/16		< 7	< 8	< 19	< 7	< 16	< 6	< 10	< 6	< 8	< 31	< 10
	09/22/16		< 7	< 9	< 15	< 9	< 18	< 7	< 14	< 6	< 9	< 32	< 10
	10/06/16		< 8	< 7	< 19	< 8	< 20	< 9	< 16	< 8	< 8	< 34	< 10
	10/20/16		< 5	< 6	< 14	< 5	< 12	< 6	< 10	< 5	< 5	< 47	< 15
	11/02/16		< 7	< 8	< 17	< 7	< 14	< 7	< 12	< 7	< 8	< 30	< 11
	11/30/16		< 7	< 5	< 15	< 6	< 15	< 7	< 10	< 5	< 5	< 31	< 9
	MEAN		-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-VIII.1

CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	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	08/25/16	< 21	< 20	< 43	< 23	< 45	< 21	< 43	< 59	< 19	< 20	< 113	< 38
Potatoes	08/25/16	< 19	< 19	< 53	< 20	< 47	< 23	< 42	< 58	< 20	< 20	< 143	< 45
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 1													
Potatoes	08/26/16	< 27	< 29	< 61	< 31	< 62	< 34	< 51	< 52	< 29	< 32	< 138	< 26
Rhubarb leaves	08/26/16	< 20	< 18	< 52	< 23	< 40	< 24	< 35	< 57	< 21	< 23	< 138	< 32
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 2													
Beets	08/19/16	< 35	< 37	< 72	< 38	< 66	< 37	< 62	< 46	< 31	< 38	< 167	< 63
Horseradish	08/19/16	< 34	< 37	< 81	< 37	< 70	< 43	< 64	< 58	< 32	< 34	< 147	< 46
Kohlrabi greens	08/19/16	< 34	< 38	< 59	< 41	< 88	< 37	< 72	< 59	< 36	< 42	< 178	< 31
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 3													
Beets	08/26/16	< 12	< 12	< 28	< 15	< 26	< 13	< 21	< 44	< 12	< 12	< 76	< 24
Brussels sprouts	08/26/16	< 13	< 13	< 31	< 13	< 36	< 16	< 25	< 37	< 15	< 14	< 70	< 15
Onions	08/26/16	< 27	< 26	< 67	< 32	< 56	< 29	< 46	< 27	< 27	< 25	< 120	< 36
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 4													
Beets	08/19/16	< 19	< 19	< 46	< 17	< 48	< 24	< 37	< 34	< 19	< 21	< 87	< 24
Cabbage	08/19/16	< 13	< 12	< 26	< 12	< 31	< 12	< 20	< 60	< 11	< 13	< 56	< 14
Carrots	08/19/16	< 27	< 26	< 56	< 25	< 57	< 28	< 49	< 18	< 28	< 25	< 160	< 38
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-IX.1 **QUARTERLY OSLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2016**

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-01-1	26.3 ± 2.0	26.0	27.5	25.1	26.5
D-01-2	25.7 ± 2.0	24.4	26.4	25.3	26.6
D-02-1	26.5 ± 4.0	26.1	24.7	25.7	29.3
D-02-2	27.6 ± 5.1	30.1	26.0	24.9	29.4
D-03-1	21.1 ± 3.6	21.2	19.7	19.9	23.6
D-03-2	21.8 ± 1.2	22.5	21.4	21.1	22.0
D-04-1	25.1 ± 1.7	24.1	25.8	24.7	25.8
D-04-2	25.1 ± 2.0	24.7	25.9	23.8	25.9
D-07-1	24.6 ± 3.7	24.2	24.2	22.7	27.1
D-07-2	24.3 ± 1.4	23.5	24.1	25.2	24.4
D-08-1	25.4 ± 2.3	23.7	25.6	26.3	25.9
D-08-2	24.8 ± 4.1	23.6	23.5	24.2	27.8
D-10-1	25.0 ± 2.3	24.8	26.6	24.7	23.9
D-10-2	25.1 ± 2.4	25.2	25.4	23.5	26.4
D-12-1	22.4 ± 2.0	21.5	22.2	21.9	23.8
D-12-2	21.4 ± 2.8	19.6	22.1	21.0	22.8
D-14-1	23.2 ± 1.9	23.2	22.0	24.3	23.2
D-14-2	24.1 ± 2.5	23.8	23.6	23.1	25.9
D-45-1	25.7 ± 0.7	25.3	26.0	25.6	26.0
D-45-2	26.0 ± 2.2	26.9	25.7	24.5	26.7
D-53-1	21.8 ± 3.3	21.3	20.6	21.1	24.2
D-53-2	21.1 ± 3.2	20.4	20.9	19.7	23.4
D-55-1	24.7 ± 3.5	25.4	23.3	23.3	26.9
D-55-2	23.9 ± 1.6	22.9	24.2	23.8	24.8
D-56-1	21.2 ± 4.5	21.1	18.9	20.5	24.3
D-56-2	22.3 ± 3.6	20.9	22.4	21.1	24.8
D-58-1	20.8 ± 1.9	21.0	19.9	20.2	22.0
D-58-2	21.5 ± 3.9	21.8	21.9	18.8	23.5
D-101-1	25.6 ± 1.4	26.4	25.8	25.6	24.7
D-101-2	23.1 ± 3.5	21.4	23.4	22.1	25.4
D-102-1	26.7 ± 1.9	27.9	26.8	25.6	26.6
D-102-2	25.7 ± 1.6	25.5	24.9	25.7	26.8
D-103-1	23.9 ± 1.6	23.6	23.3	23.7	25.1
D-103-2	23.2 ± 2.1	22.0	24.0	*(1)*	23.5
D-104-1	25.1 ± 2.6	24.8	24.5	24.0	26.9
D-104-2	26.5 ± 2.7	26.5	26.2	24.9	28.2
D-105-1	24.4 ± 2.6	23.8	25.4	22.8	25.4
D-105-2	25.3 ± 2.8	24.5	24.8	24.5	27.4
D-106-1	23.3 ± 4.0	25.5	20.9	22.6	24.1
D-106-2	20.6 ± 3.3	19.7	21.4	18.8	22.5
D-107-1	22.4 ± 3.3	20.3	22.1	24.2	22.9
D-107-2	21.3 ± 1.8	21.2	21.2	20.2	22.4
D-108-1	25.4 ± 2.7	24.5	24.9	24.9	27.4
D-108-2	23.0 ± 4.0	21.5	22.8	21.9	25.9
D-109-1	25.1 ± 3.8	22.7	24.6	25.9	27.1
D-109-2	25.4 ± 3.6	23.0	25.8	25.5	27.3
D-110-3	29.2 ± 1.1	28.6	29.6	28.8	29.7
D-110-4	28.6 ± 2.5	28.0	28.8	27.3	30.2
D-111-1	25.6 ± 5.3	24.3	23.7	24.9	29.5
D-111-2	25.5 ± 3.2	24.4	24.2	25.7	27.7
D-113-1	21.5 ± 1.8	21.4	21.7	20.3	22.5
D-113-2	22.6 ± 1.8	22.6	21.3	23.3	23.1
D-114-1	22.0 ± 2.5	20.8	22.1	21.3	23.7
D-114-2	21.9 ± 3.1	20.6	21.0	22.0	24.1

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-IX.1 **QUARTERLY OSLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2016**

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-115-1	24.8 ± 2.5	23.9	25.3	23.7	26.3
D-115-2	25.5 ± 2.7	26.3	24.0	24.6	26.9
D-116-1	26.8 ± 3.5	27.6	24.7	26.1	28.7
D-116-2	27.6 ± 2.4	27.5	27.7	26.2	29.1
D-201-1	28.5 ± 3.1	27.4	29.0	27.1	30.4
D-201-2	28.7 ± 2.8	28.6	28.6	27.0	30.4
D-202-1	26.5 ± 2.7	25.3	26.5	25.9	28.4
D-202-2	25.1 ± 4.7	24.0	23.7	24.1	28.6
D-203-1	24.7 ± 3.7	23.0	24.2	24.2	27.3
D-203-2	23.8 ± 2.7	23.2	23.8	22.5	25.7
D-204-1	21.8 ± 3.5	19.5	22.1	21.7	23.7
D-204-2	21.4 ± 4.5	19.1	21.8	20.2	24.3
D-205-1	21.7 ± 0.5	21.6	21.8	21.4	22.0
D-205-2	22.0 ± 3.6	21.2	22.1	20.2	24.4
D-206-1	24.4 ± 1.9	23.5	24.4	24.0	25.7
D-206-2	24.8 ± 2.6	23.0	25.5	24.6	26.0
D-207-1	22.0 ± 1.9	21.9	22.0	20.9	23.2
D-207-2	22.6 ± 2.0	23.4	22.4	21.2	23.2
D-208-1	21.3 ± 2.1	21.7	20.4	20.5	22.6
D-208-2	20.4 ± 4.0	20.8	19.7	18.2	23.0
D-209-1	20.2 ± 2.4	19.9	19.0	19.9	21.8
D-209-2	20.4 ± 2.4	19.6	20.5	19.5	22.1
D-210-1	23.2 ± 0.8	22.7	23.4	23.1	23.6
D-210-2	23.3 ± 4.0	23.4	21.4	22.4	26.0
D-211-1	24.0 ± 1.3	24.0	23.7	23.3	24.8
D-211-2	24.8 ± 1.8	24.6	24.6	24.0	26.1
D-212-3	23.1 ± 3.1	22.2	25.4	22.2	22.6
D-212-4	21.8 ± 2.8	20.4	22.5	20.8	23.4
D-213-1	21.4 ± 3.4	19.3	20.7	22.4	23.0
D-213-2	20.8 ± 1.7	20.3	20.5	20.2	22.0
D-214-1	29.4 ± 6.7	27.8	34.4	27.2	28.3
D-214-2	38.9 ± 43.6	28.5	71.4	24.9	30.8
D-215-1	28.7 ± 2.4	28.3	27.6	28.3	30.4
D-215-2	27.1 ± 2.9	26.6	26.2	26.4	29.3
D-216-1	24.7 ± 0.3	24.8	24.7	24.5	24.8
D-216-2	26.3 ± 2.2	25.2	25.8	26.4	27.8
D-112A-1	23.1 ± 2.2	22.6	22.3	22.9	24.7
D-112A-2	22.1 ± 2.0	21.4	21.6	21.7	23.6

TABLE C-IX.2 MEAN QUARTERLY OSLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	23.8 ± 5.1	23.3 ± 5.7	24.0 ± 4.4	20.6 ± 2.7
APR-JUN	23.9 ± 4.7	25.3 ± 18.0	23.9 ± 4.7	22.2 ± 0.1
JUL-SEP	23.7 ± 4.8	23.1 ± 5.3	23.5 ± 3.9	21.5 ± 1.3
OCT-DEC	25.7 ± 4.7	25.5 ± 5.7	25.6 ± 3.7	23.3 ± 1.4

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR DRESDEN NUCLEAR POWER STATION, 2016

RESULTS IN UNITS OF MREM/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	135	18.8	30.2	24.3 ± 5.1
OUTER RING	128	18.2	71.4	24.3 ± 10.3
OTHER	96	18.9	30.1	24.3 ± 4.4
CONTROL	8	19.6	23.8	21.9 ± 2.5

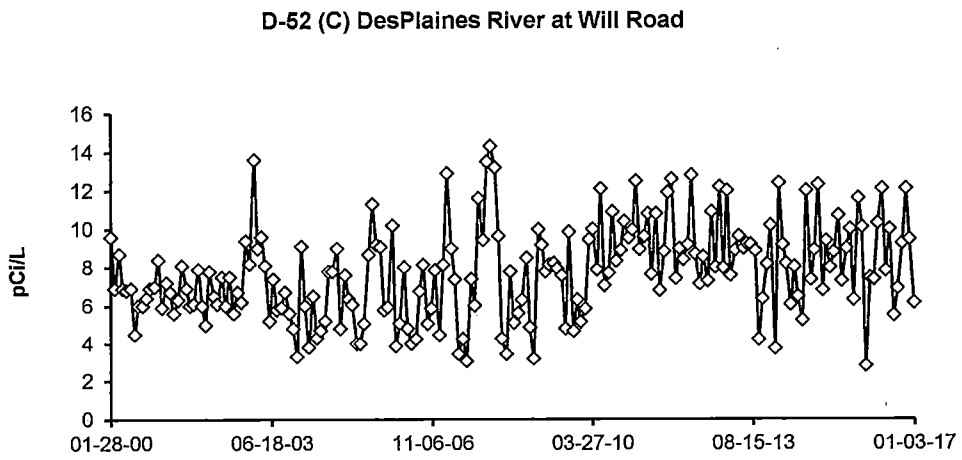
INNER RING STATIONS - D-101-1, D-101-2, D-102-1, D-102-2, D-103-1, D-103-2, D-104-1, D-104-2, D-105-1, D-105-2, D-106-1, D-106-2, D-107-1, D-107-2, D-108-1, D-108-2, D-109-1, D-109-2, D-110-3, D-110-4, D-111-1 D-111-2, D-112A-1, D-112A-2, D-113-1, D-113-2, D-114-1, D-114-2, D-115-1, D-115-2, D-116-1, D-116-2., D-58-1, D-58-2,

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

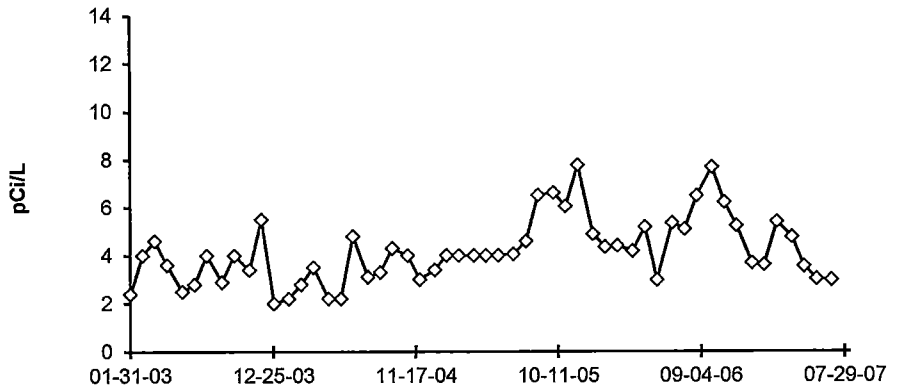
FIGURE C-1
SURFACE WATER - GROSS BETA - STATION
D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016



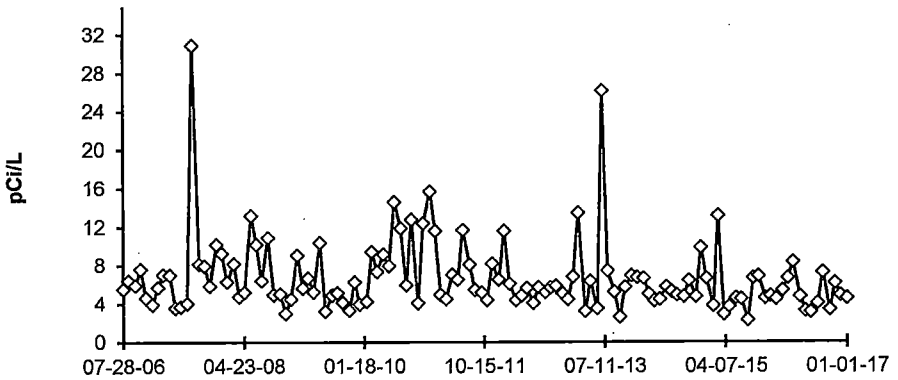
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

FIGURE C-2
SURFACE WATER - GROSS BETA - STATION D-54 (C) and D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2003 - 2016

D-54 (C) Kankakee River



D-57 (C) Kankakee River at Will Road

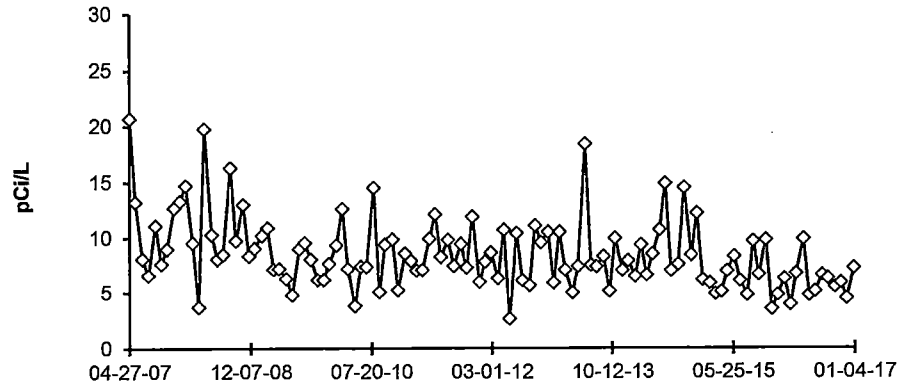


DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

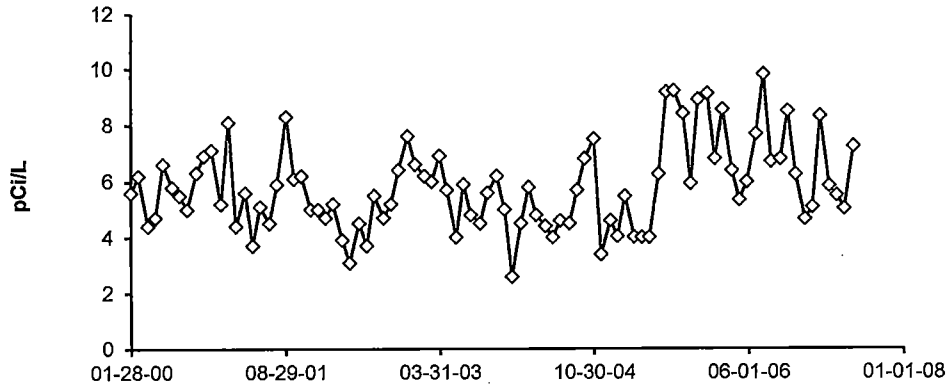
D-54 LOCATION REMOVED FROM PROGRAM JUNE 28, 2007 AND REPLACED WITH D-57

FIGURE C-3
SURFACE WATER - GROSS BETA - STATIONS D-21 and D-51
COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016

D-21 Illinois River at EJ&E Bridge



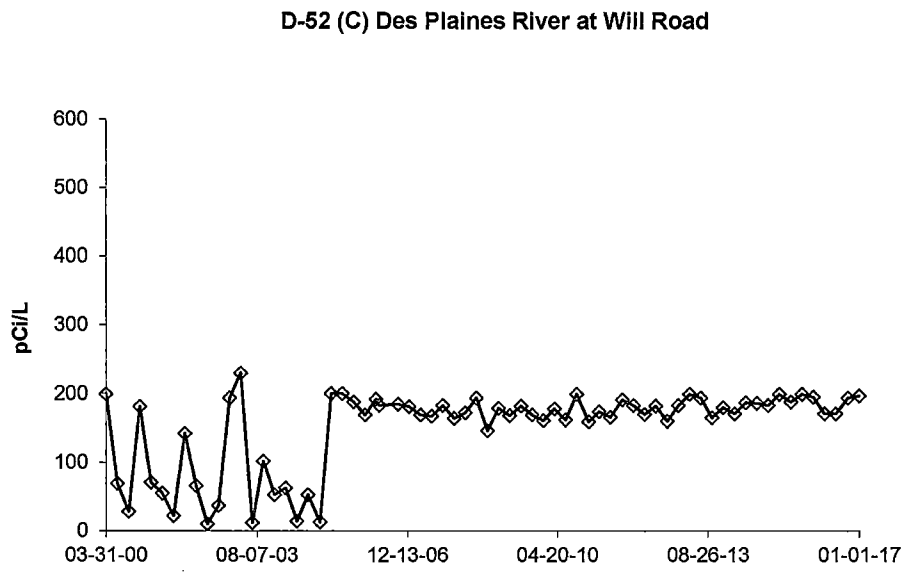
D-51 Dresden Lock & Dam



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

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

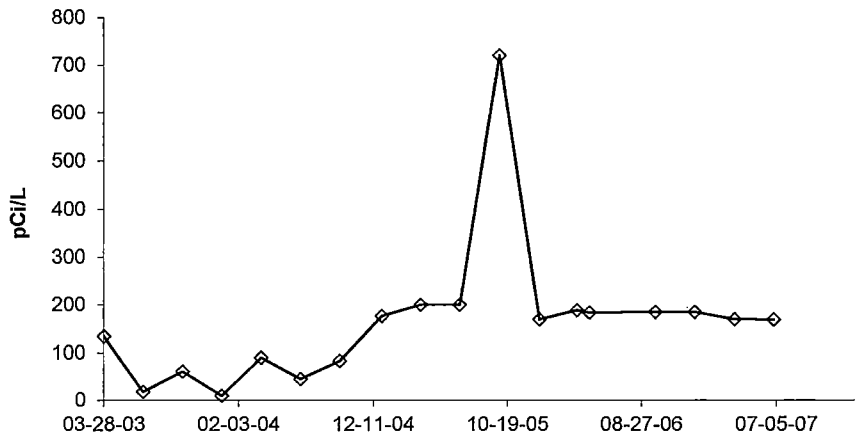
FIGURE C-4
SURFACE WATER - TRITIUM - STATION
D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016



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

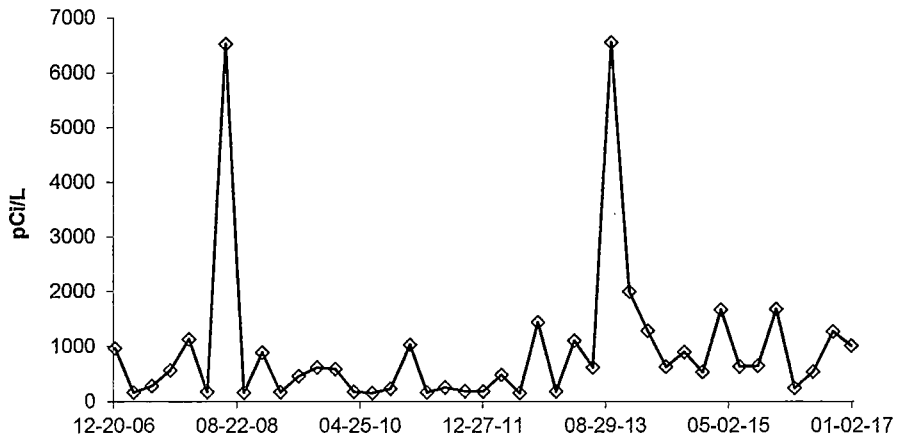
FIGURE C-5
SURFACE WATER - TRITIUM - STATION D-54 (C) AND D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2003 - 2016

D-54 (C) Kankakee River



Location shared with Braidwood Station (BD-10).

D-57 (C) Kankakee River at Will Road

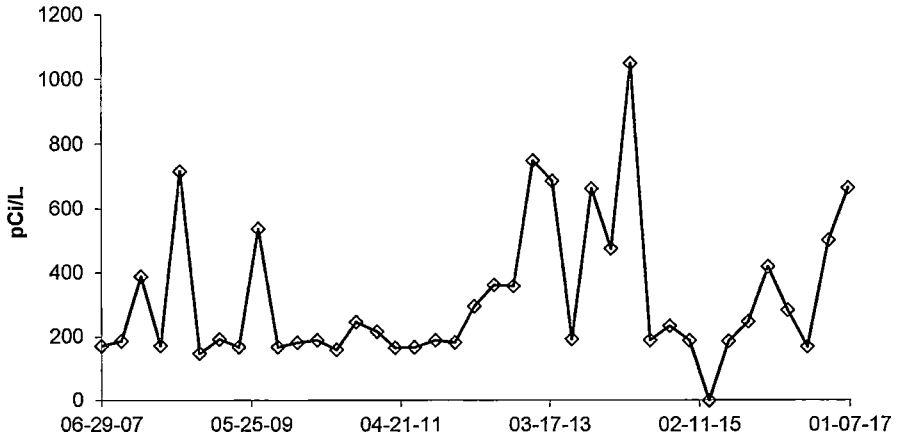


DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

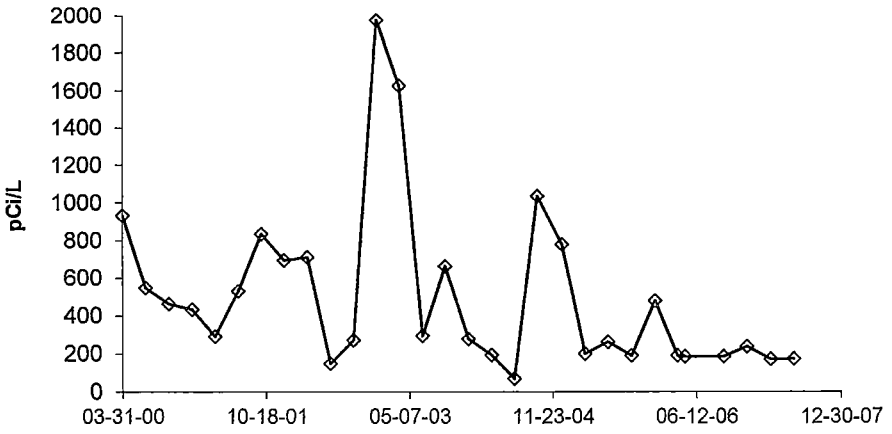
D-57 NEW STATION JULY 24, 2006. REPLACED D-54 ON JUNE 28, 2007

FIGURE C-6
SURFACE WATER - TRITIUM - STATIONS D-21 and D-51
COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016

D-21 Illinois River at EJ&E Bridge



D-51 Dresden Lock & Dam

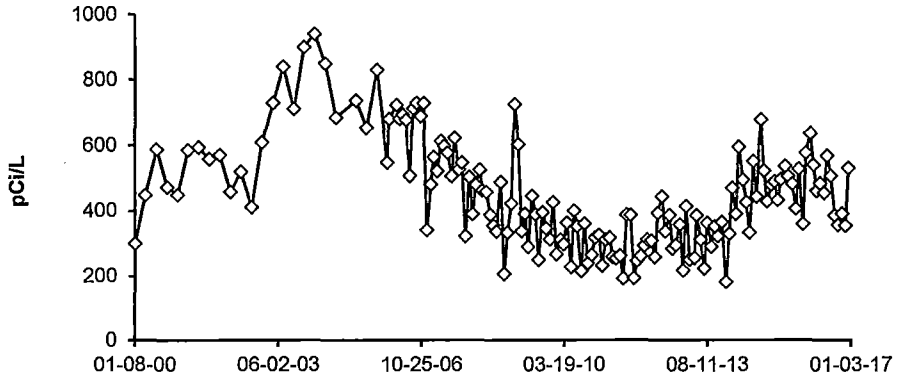


D-21 REPLACED D-51 JUNE 29, 2007

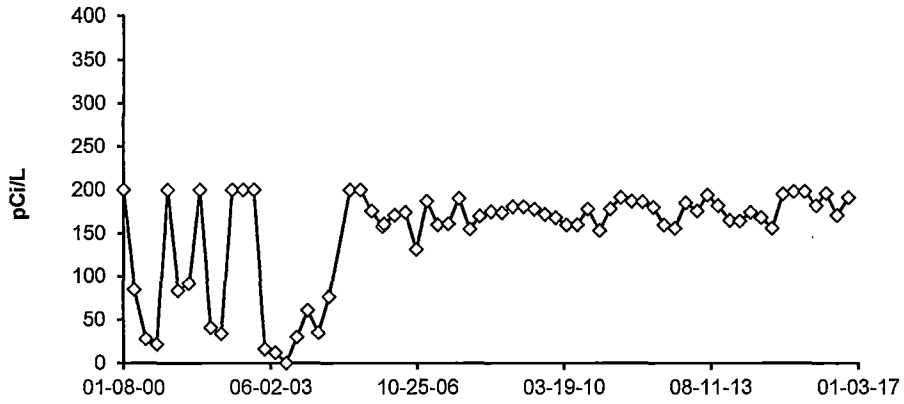
D-51 LOCATION REMOVED FROM PROGRAM JUNE 29, 2007 AND REPLACED WITH D-21

FIGURE C-7
GROUND WATER - TRITIUM - STATIONS D-23 and D-35 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016

D-23 Thorsen Well



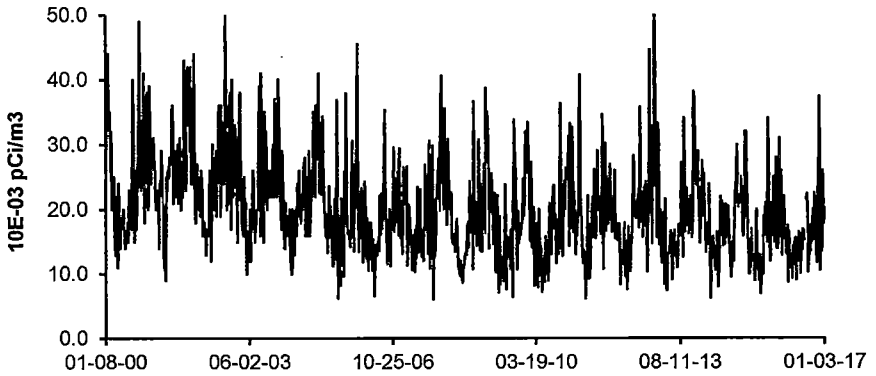
D-35 Dresden Lock and Dam



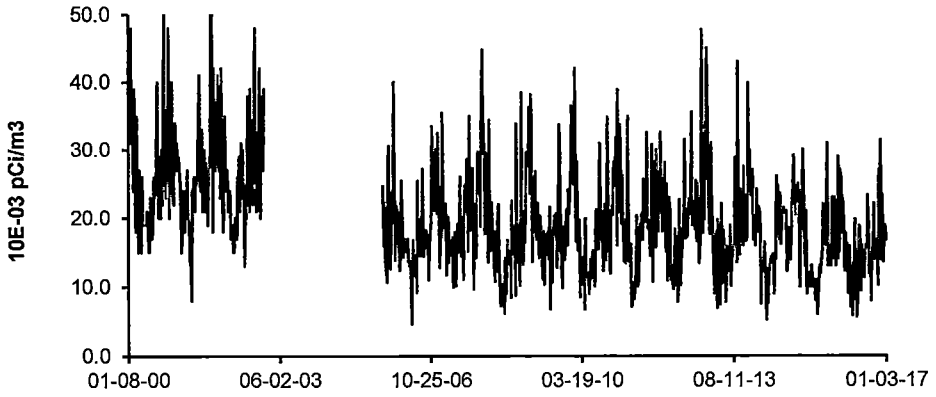
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MCD VALUES AFTER JULY 2005

FIGURE C-8
AIR PARTICULATES - GROSS BETA - STATIONS D-01 and D-02 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016

D-01 Onsite Station 1



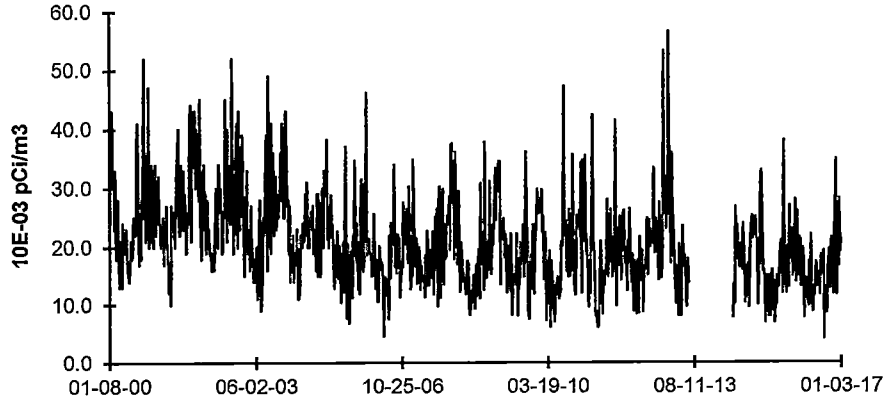
D-02 Onsite Station 2



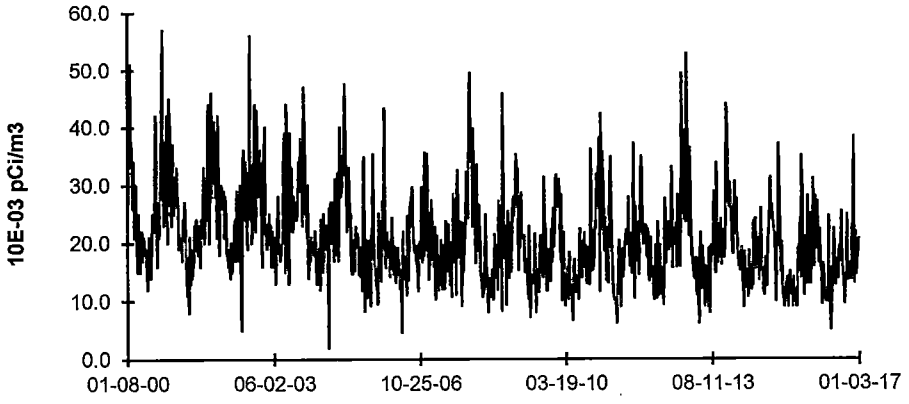
D-02 No samples; power was restored on 09-16-05.

FIGURE C-9
AIR PARTICULATES - GROSS BETA - STATIONS D-03 and D-04 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016

D-03 Onsite Station 3



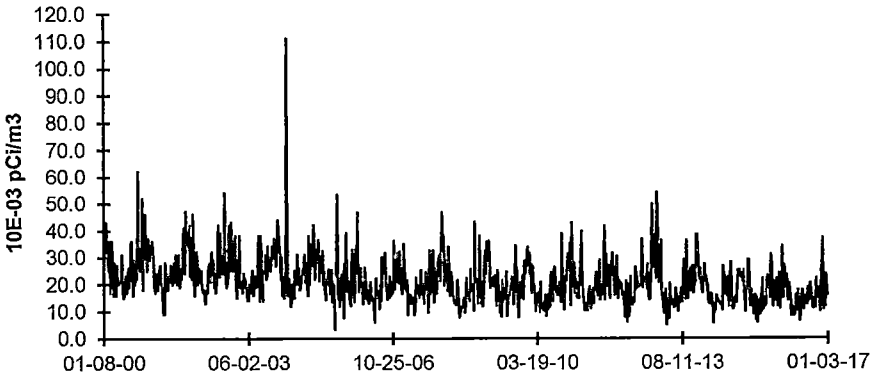
D-04 Collins Road on Station Property



D-03 No samples; power was restored on 07-04-14.

FIGURE C-10
AIR PARTICULATES - GROSS BETA - STATIONS D-07 and D-12 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016

D-07 Clay Products, Dresden Road



D-12 (C), Quarry Road, Lisbon

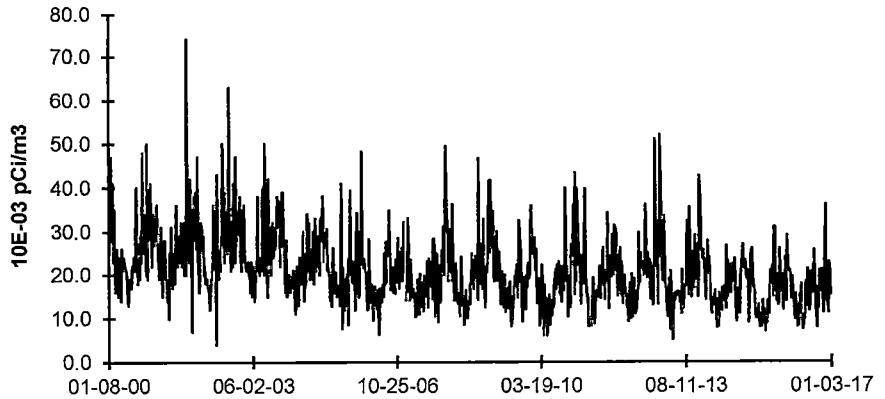
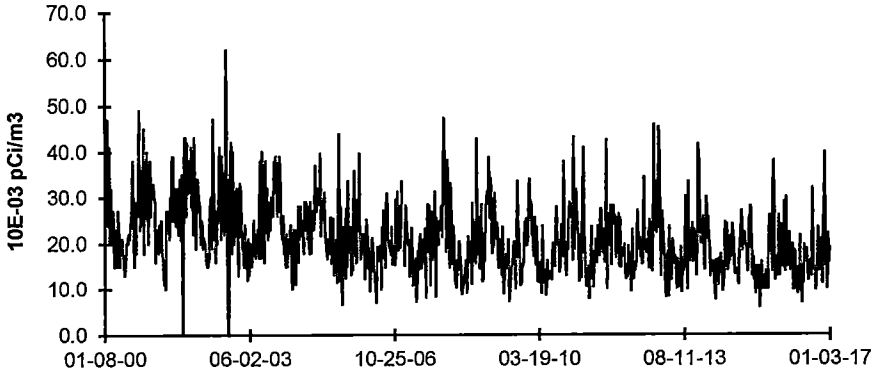


FIGURE C-11
AIR PARTICULATES - GROSS BETA - STATIONS D-45 and D-53 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2016

D-45 McKinley Woods Road, Channahon



D-53 Will Road, Hollyhock

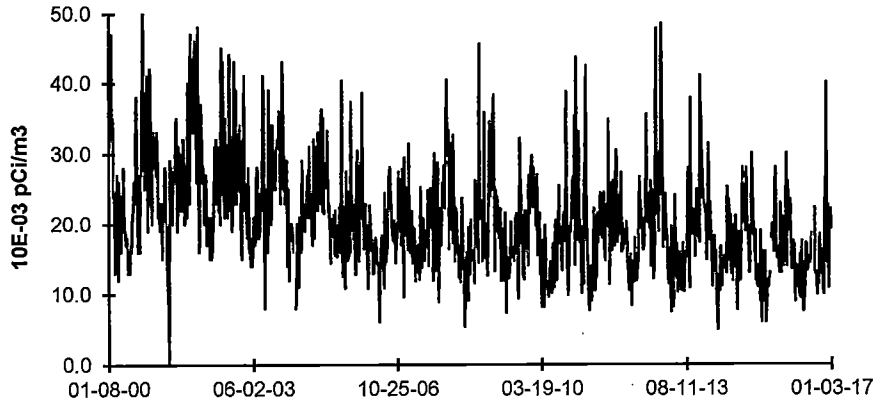
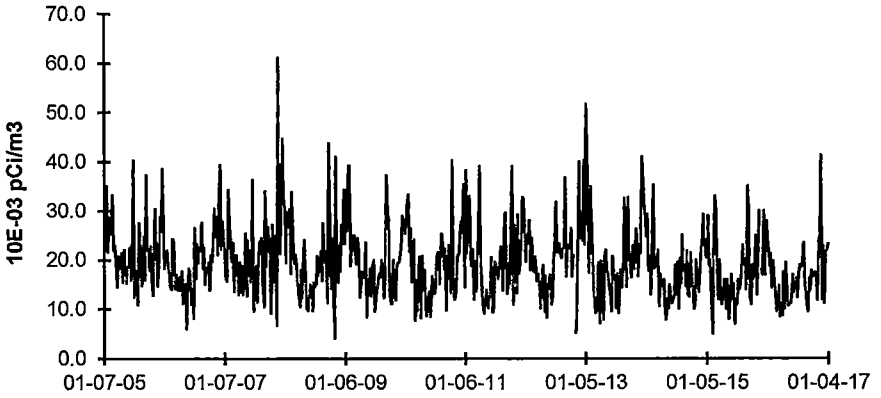


FIGURE C-12
AIR PARTICULATES - GROSS BETA - STATIONS D-08 and D-10 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2016

D-08 Jugtown Road, Prairie Parks



D-10 Goose Lake Road, Goose Lake Village

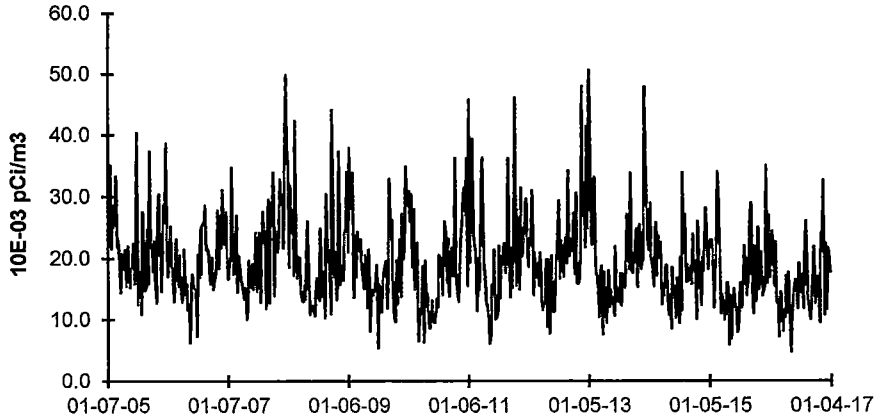
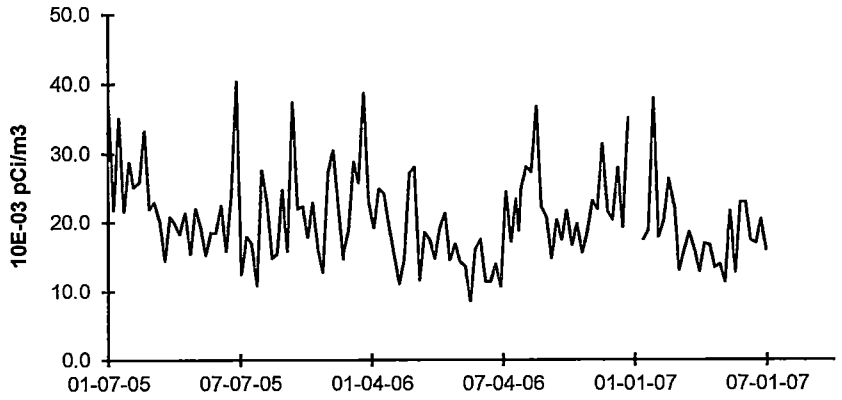
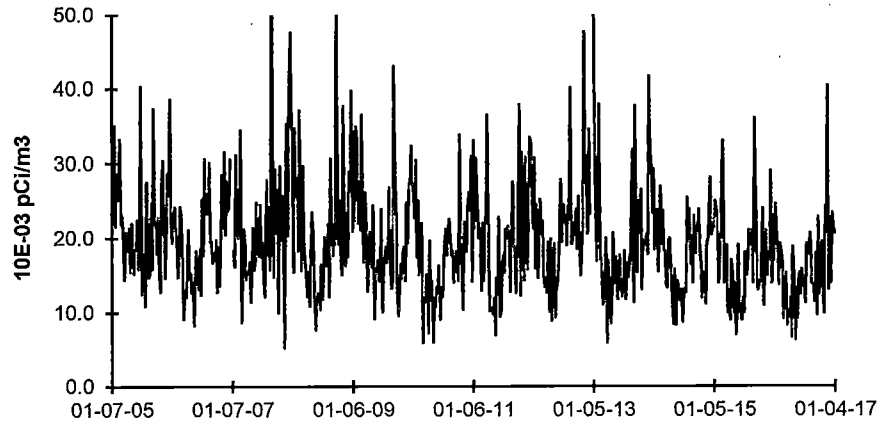


FIGURE C-13
AIR PARTICULATES - GROSS BETA - STATIONS D-13 and D-14 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2016

D-13 Minooka



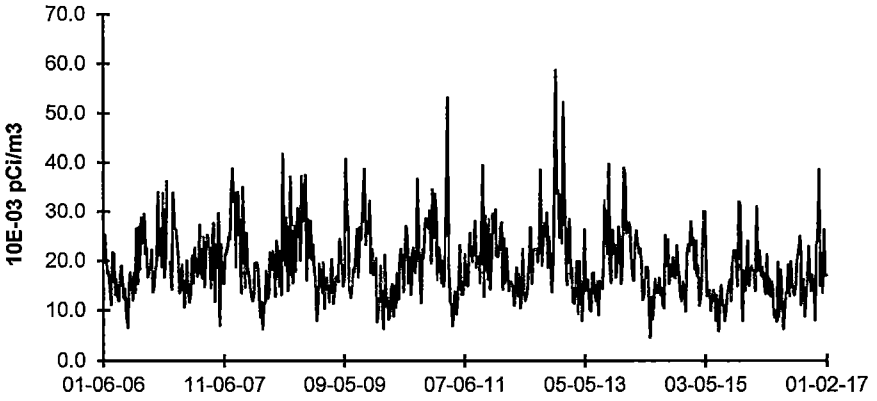
D-14 Center Street, Channahon



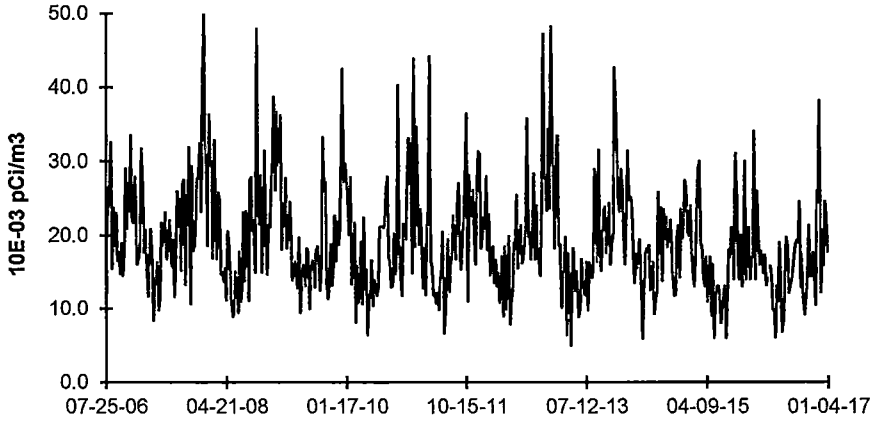
D-13 TAKEN OUT OF SERVICE JUNE 29, 2007 AND REPLACED WITH D-55

FIGURE C-14
AIR PARTICULATES - GROSS BETA - STATIONS D-55 and D-56 COLLECTED IN THE VICINITY OF DNPS, 2006-2016

D-55 Ridge Road, Minooka

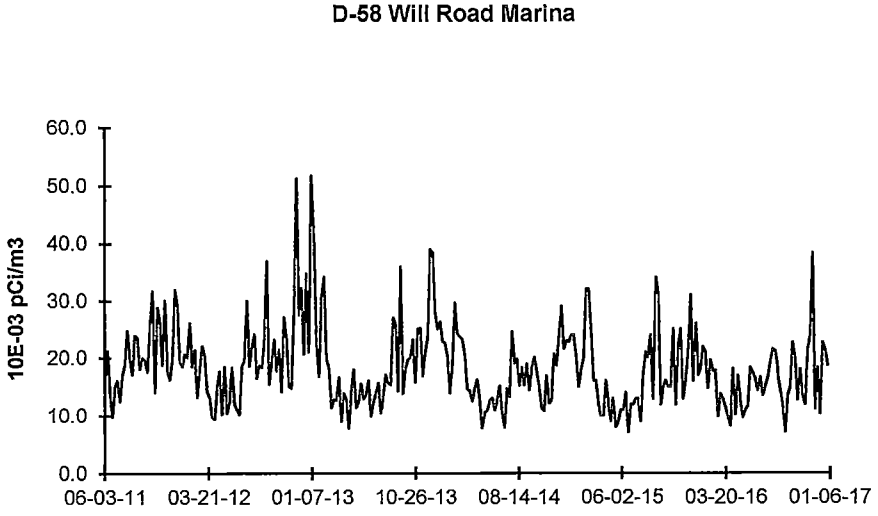


D-56 Will Road, Wildfeather



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

FIGURE C-15
AIR PARTICULATES - GROSS BETA - STATION D-58
COLLECTED IN THE VICINITY OF DNPS, 2011-2016



D-58 NEW STATION IN MAY OF 2011

APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

TABLE D-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2016	E11476	Milk	Sr-89	pCi/L	97	86.7	1.12	A
			Sr-90	pCi/L	15	11.4	1.32	N(2)
	E11477	Milk	I-131	pCi/L	85.9	82.2	1.05	A
			Ce-141	pCi/L	106	98.4	1.08	A
			Cr-51	pCi/L	255	243	1.05	A
			Cs-134	pCi/L	134	130	1.03	A
			Cs-137	pCi/L	174	161	1.08	A
			Co-58	pCi/L	123	117	1.05	A
			Mn-54	pCi/L	141	117	1.21	W
			Fe-59	pCi/L	152	131	1.16	A
			Zn-65	pCi/L	193	179	1.08	A
			Co-60	pCi/L	259	244	1.06	A
	E11479	AP	Ce-141	pCi	69	81.1	0.85	A
			Cr-51	pCi	242	201	1.20	W
			Cs-134	pCi	98.1	107.0	0.92	A
			Cs-137	pCi	136	133	1.02	A
			Co-58	pCi	91.9	97	0.95	A
			Mn-54	pCi	98.6	96.2	1.02	A
			Fe-59	pCi	98.8	108	0.91	A
			Zn-65	pCi	131	147	0.89	A
			Co-60	pCi	209	201	1.04	A
	E11478	Charcoal	I-131	pCi	85.3	88.3	0.97	A
	E11480	Water	Fe-55	pCi/L	1800	1666	1.08	A
June 2016	E11537	Milk	Sr-89	pCi/L	94.4	94.4	1.00	A
			Sr-90	pCi/L	13.4	15.4	0.87	A
	E11538	Milk	I-131	pCi/L	96.8	94.5	1.02	A
			Ce-141	pCi/L	129	139	0.93	A
			Cr-51	pCi/L	240	276	0.87	A
			Cs-134	pCi/L	157	174	0.90	A
			Cs-137	pCi/L	117	120	0.98	A
			Co-58	pCi/L	131	142	0.92	A
			Mn-54	pCi/L	128	125	1.02	A
			Fe-59	pCi/L	132	122	1.08	A
			Zn-65	pCi/L	235	235	1.00	A
			Co-60	pCi/L	169	173	0.98	A
June 2016	E11539	Charcoal	I-131	pCi	86.1	89.4	0.96	A
	E11540	AP	Ce-141	pCi	105	99.8	1.05	A
			Cr-51	pCi	216	198.0	1.09	A
			Cs-134	pCi	113	125	0.90	A
			Cs-137	pCi	94.5	86.6	1.09	A
			Co-58	pCi	101	102	0.99	A
			Mn-54	pCi	88.8	90.2	0.98	A
			Fe-59	pCi	82	87.5	0.94	A
			Zn-65	pCi	174	169	1.03	A
			Co-60	pCi	143	124	1.15	A
	E11541	Water	Fe-55	pCi/L	164	186	0.88	A

TABLE D-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
September 2016	E11609	Milk	Sr-89	pCi/L	90	90.9	0.99	A
			Sr-90	pCi/L	13.3	13.7	0.97	A
	E11610	Milk	I-131	pCi/L	80.4	71.9	1.12	A
			Ce-141	pCi/L	81.3	93	0.87	A
			Cr-51	pCi/L	198	236	0.84	A
			Cs-134	pCi/L	122	136	0.90	A
			Cs-137	pCi/L	119	119	1.00	A
			Co-58	pCi/L	92.2	97.4	0.95	A
			Mn-54	pCi/L	156	152	1.03	A
			Fe-59	pCi/L	97.5	90.6	1.08	A
			Zn-65	pCi/L	189	179	1.06	A
			Co-60	pCi/L	131	135	0.97	A
	E11611	Charcoal	I-131	pCi	52.4	59.9	0.87	A
	E11612	AP	Ce-141	pCi	67.5	63.6	1.06	A
			Cr-51	pCi	192	161.0	1.19	A
			Cs-134	pCi	91.4	92.6	0.99	A
			Cs-137	pCi	93.9	80.8	1.16	A
			Co-58	pCi	66	66.4	0.99	A
			Mn-54	pCi	104	104	1.00	A
			Fe-59	pCi	60.5	61.8	0.98	A
			Zn-65	pCi	140	122	1.15	A
			Co-60	pCi	119	91.9	1.29	W
	E11613	Water	Fe-55	pCi/L	1990	1670	1.19	A
	E11614	Soil	Ce-141	pCi/g	0.153	0.175	0.87	A
			Cr-51	pCi/g	0.482	0.441	1.09	A
			Cs-134	pCi/g	0.270	0.254	1.06	A
			Cs-137	pCi/g	0.313	0.299	1.05	A
			Co-58	pCi/g	0.177	0.182	0.97	A
			Mn-54	pCi/g	0.340	0.285	1.19	A
			Fe-59	pCi/g	0.206	0.17	1.21	W
			Zn-65	pCi/g	0.388	0.335	1.16	A
			Co-60	pCi/g	0.284	0.252	1.13	A
December 2016	E11699	Milk	Sr-89	pCi/L	95	74.2	1.28	W
			Sr-90	pCi/L	14.7	10	1.47	N(3)
	E11700	Milk	I-131	pCi/L	97.5	97.4	1.00	A
			Ce-141	pCi/L	136	143	0.95	A
			Cr-51	pCi/L	247	280	0.88	A
			Cs-134	pCi/L	164	178	0.92	A
			Cs-137	pCi/L	120	126	0.95	A
			Co-58	pCi/L	139	146	0.95	A
			Mn-54	pCi/L	126	129	0.98	A
			Fe-59	pCi/L	114	125	0.91	A
			Zn-65	pCi/L	237	244	0.97	A
			Co-60	pCi/L	168	178	0.94	A
	E11701	Charcoal	I-131	pCi	95.6	98	0.98	A

TABLE D-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2016	E11702	AP	Ce-141	pCi	91.7	97.7	0.94	A
			Cr-51	pCi	210	192.0	1.09	A
			Cs-134	pCi	122	122	1.00	A
			Cs-137	pCi	93.9	86.4	1.09	A
			Co-58	pCi	92	100	0.92	A
			Mn-54	pCi	93.7	88.5	1.06	A
			Fe-59	pCi	84.9	84.5	1.00	A
			Zn-65	pCi	176	167	1.05	A
			Co-60	pCi	151	122	1.24	W
	E11702	AP	Sr-89	pCi	79.1	92	0.86	A
			Sr-90	pCi	10	12.5	0.80	A
	E11703	Water	Fe-55	pCi/L	2180	1800	1.21	W

(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.

(2) NCR 16-26 was initiated

(3) NCR 16-35 was initiated

TABLE D-2

DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2016	16-MaW34	Water	Am-241	Bq/L	0.008		(1)	A
			Ni-63	Bq/L	12.4	12.3	8.6-16.0	A
			Pu-238	Bq/L	1.4900	1.2440	0.871-1.617	A
			Pu-239/240	Bq/L	0.729	0.641	0.449-0.833	A
	16-MaS34	Soil	Ni-63	Bq/kg	1140	1250.0	875-1625	A
			Sr-90	Bq/kg	8.15		(1)	A
	16-RdF34	AP	U-234/233	Bq/sample	0.1620	0.1650	0.116-0.215	A
			U-238	Bq/sample	0.163	0.172	0.120-0.224	A
	16-GrF34	AP	Gr-A	Bq/sample	0.608	1.20	0.36-2.04	A
			Gr-B	Bq/sample	0.8060	0.79	0.40-1.19	A
	16-RdV34	Vegetation	Cs-134	Bq/sample	10.10	10.62	7.43-13.81	A
			Cs-137	Bq/sample	6.0	5.62	3.93-7.31	A
			Co-57	Bq/sample	13.3000	11.8	8.3-15.3	A
			Co-60	Bq/sample	0.013		(1)	A
			Mn-54	Bq/sample	0.0150		(1)	A
			Sr-90	Bq/sample	0.301		(1)	N(4)
			Zn-65	Bq/sample	10.500	9.6	6.7-12.5	A
September 2016	16-MaW35	Water	Am-241	Bq/L	0.626	0.814	.570-1058	W
			Ni-63	Bq/L	12.4	17.2	12.0-22.4	A
			Pu-238	Bq/L	1.23	1.13	0.79-1.47	W
			Pu-239/240	Bq/L	0.0318	0.013	(1)	A
	16-MaS35	Soil	Ni-63	Bq/kg	724	990	693-1287	A
			Sr-90	Bq/kg	747	894	626-1162	A
	16-RdF35	AP	U-234/233	Bq/sample	0.160	0.15	0.105-0.195	A
			U-238	Bq/sample	0.157	0.156	0.109-0.203	A
	16-RdV35	Vegetation	Cs-134	Bq/sample	-0.103		(1)	A
			Cs-137	Bq/sample	5.64	5.54	3.88-7.20	A
			Co-57	Bq/sample	7.38	6.81	4.77-8.85	A
			Co-60	Bq/sample	4.81	4.86	3.40-6.32	A
			Mn-54	Bq/sample	7.4	7.27	5.09-9.45	A
			Sr-90	Bq/sample	0.774	0.80	0.56-1.04	A
			Zn-65	Bq/sample	5.46	5.4	3.78-7.02	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.

(4)NCR 16-14 was initiated

TABLE D-3

ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Limits	Evaluation (c)
May 2016	RAD-105	Water	Sr-89	pCi/L	48.9	48.2	37.8 - 55.6	A
			Sr-90	pCi/L	25.0	28.5	20.7 - 33.1	A
			Ba-133	pCi/L	53.1	58.8	48.7 - 64.9	A
			Cs-134	pCi/L	40.9	43.3	34.6 - 47.6	A
			Cs-137	pCi/L	84.8	78.4	70.6 - 88.9	A
			Co-60	pCi/L	108	102	91.8 - 114	A
			Zn-65	pCi/L	226	214	193 - 251	A
			Gr-A	pCi/L	38.9	62.7	32.9 - 77.8	A
			Gr-B	pCi/L	41.9	39.2	26.0 - 46.7	A
			I-131	pCi/L	24.1	26.6	22.1 - 31.3	A
			U-Nat	pCi/L	4.68	4.64	3.39 - 5.68	A
			H-3	pCi/L	7720	7840	6790 - 8620	A
November 2016	RAD-107	Water	Sr-89	pCi/L	43.0	43.3	33.4-50.5	A
			Sr-90	pCi/L	30.0	33.6	24.6-38.8	A
			Ba-133	pCi/L	47.8	54.9	45.4-60.7	A
			Cs-134	pCi/L	72.9	81.8	67.0-90.0	A
			Cs-137	pCi/L	189	210	189-233	A
			Co-60	pCi/L	58.4	64.5	58.0-73.4	A
			Zn-65	pCi/L	243	245	220-287	A
			Gr-A	pCi/L	37.2	68.4	35.9-84.5	A
			Gr-B	pCi/L	35.1	33.9	22.1-41.6	A
			I-131	pCi/L	23.5	26.3	21.9-31.0	A
			U-Nat	pCi/L	49.2	51.2	41.6-56.9	A
			H-3	pCi/L	918	9820	8540-10800	N(5)
	MRAD-25	AP	Gr-A	pCi/Filter	56.8	71.2	23.9-111	A

(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. N=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.

(5) NCR 16-34 was initiated

APPENDIX E

ERRATA DATA

There was no errata data for 2016.