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DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 and 3

Annual Radiological
Environmental Operating Report

1 January Through 31 December 2015

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Dresden Nuclear Power Station (DNPS) by Exelon covers the period 1 January 2015 through 31 December 2015. During that time period 2,029 analyses were performed on 1,892 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 2015, the Dresden Generating Station released to the environment through the radioactive effluent liquid and gaseous pathways approximately 1.71E+02 curies of fission and activation gasses, 2.78E+01 curies of Carbon-14 and approximately 1.01E+01 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 2015 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 2015 (from 01/01/2015 to 12/31/2015):

   UNITS 1,2,3
   Total Body: 2.38E-04 mrem
   Organ: 3.69E-04 mrem

   UNIT 1
   Total Body: N/A
   Organ: N/A

   UNIT 2
   Total Body: 1.20E-06 mrem
   Organ: 1.20E-06 mrem

   UNIT 3
   Total Body: 2.37E-04 mrem
   Organ: 3.69E-04 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 2015 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 2015 (from 01/01/2015 to 12/31/2015):

UNITS 1,2,3
Gamma air (fission and activation gases): 3.64E-03 mrad
Beta air (fission and activation gases): 9.26E-04 mrad
Total Body (noble gases): 2.46E-03 mrem
Skin (noble gases): 4.34E-03 mrem
Organ - thyroid (radioiodines/tritium/particulates): 2.00E-01 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 - liver (radioiodines/tritium/particulates): 2.71E-03 mrem

UNIT 2
Gamma air (fission and activation gases): 9.71E-04 mrad
Beta air (fission and activation gases): 3.71E-04 mrad
Total Body (noble gases): 6.65E-04 mrem
Skin (noble gases): 1.20E-03 mrem
Organ - thyroid (radioiodines/tritium/particulates): 9.26E-02 mrem

UNIT 3
Gamma air (fission and activation gases): 2.67E-03 mrad
Beta air (fission and activation gases): 5.55E-04 mrad
Total Body (noble gases): 1.79E-03 mrem
Skin (noble gases): 3.15E-03 mrem
Organ - thyroid (radioiodines/tritium/particulates): 1.08E-01 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 2015 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 2015 (from 01/01/2015 to 12/31/2015):

UNITS 1,2,3
Total Body (skyshine): 8.64E+00 mrem

UNIT 1
Total Body (skyshine): N/A

UNIT 2
Total Body (skyshine): 4.19E+00 mrem

UNIT 3
Total Body (skyshine): 4.45E+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 2015 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 (6.2miles).

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: None

8. 40CFR190 / 10CFR72 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 2.05E-01 mrem organ dose and 8.64E+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 2015. 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 2015 GEH Morris Operation 10CFR72.44(d)(3) report, dated 2/22/2016, for the 2015 calendar year, the maximum dose at their site boundary from direct radiation exposure was 4.11E-01 mrem. The maximum organ dose from site activities was 1.33E-02 mrem for 2015.

Maximum combined total body dose from Dresden Station and GEH Morris Operation activities was 9.27E+00 mrem during 2015, which was 37.09 % of the 40CFR190 limit of 25 mrem.

Maximum combined organ dose from Dresden and GEH Morris Operation activities was 2.18E-01 mrem during 2015. This was 0.87 % of the 40CFR190 limit of 25 mrem to any organ. The combined thyroid dose was 2.13E-01 mrem. This was 0.28 % of the 40CFR190 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 not detected in 2015. No fission or activation products were found in sediment.

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

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

Cow milk samples were analyzed for concentrations of I-131 and gamma emitting nuclides due to the cows being sold. 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). Beginning in 2012, Exelon changed the type of dosimetry used for the Radiological Environmental Monitoring Program (REMP). Optically Stimulated Luminescent Dosimetry were deployed and Thermoluminescent Dosimetry (TLD) were discontinued. This change may result in a step change in readings, up or down, depending on site characteristics. The relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct radiation).

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 2015 through 31 December 2015.

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 2015. 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 common carp, river carpsucker, largemouth bass, channel catfish, and smallmouth buffalo 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 September at five locations (D-Control, D-Quad 1, D-Quad 2, D-Quad 3 and D-Quad 4). The control location was D-Control. Various types of samples were collected and placed in new unused plastic bags and sent to the laboratory for analysis.

Ambient Gamma Radiation

Beginning in 2012, Exelon changed the type of dosimetry used for the Radiological Environmental Monitoring Program (REMP). Optically Stimulated Luminescent Dosimetry (OSLD) were deployed and Thermoluminescent Dosimetry (TLD) were discontinued. This change may result in a step change in readings, up or down, depending on site characteristics. The relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct 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 2015. 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 2015 the DNPS REMP had a sample recovery rate of approximately 98%. Sample anomalies and missed samples are listed in the tables below:

Table D-1 LISTING OF SAMPLE ANOMALIES

Sample Type	Location Code	Collection Date	Reason
AP/I	D-01, 02, 03, 04, 07, 08, 10	06/26/15	Low readings due to power outages from storms in area.
AP/I	D-53	07/03/15	No apparent reason for low reading of 153.4 hours
SW	D-21	07/31/15	Compositor out-of-service; grab sample taken.
AP/I	D-01	08/14/15	Low reading of 149.3 hours due to timer malfunction; timer replaced.
AP/I	D-01	08/21/15	Low reading of 140 hours; pump found not running. Pump restarted itself while collector was present. Collector let pump run for 20 minutes before leaving site.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
AP/I	D-04	08/21/15	Charcoal cartridge from D-04 (08/07/15 to 08/14/15) found in D-01 holder. Charcoal was inadvertently placed back in field at D-01 on 08/14/15. Two week runtime of 335 hours. EIML Non-conformance report #58 generated.
AP/I	D-01	08/28/15	No apparent reason for low reading of 155.3 hours.
AP/I	D-03	09/04/15	No apparent reason for low reading of 155.3 hours
AP/I	D-07	09/04/15	Pump found off but warm; full collection period on timer and filter appeared to have similar particulate collection to other locations. Estimated flow rate = 60 cfh for calculations. Pump replaced.
AP/I	D-02	10/23/15	Timer malfunction; collector replaced timer. Estimated time @ 167.8 hours based on previous weeks' time.
AP/I	D-08	11/13/15	No power to sampler; wire detached due to storms/high winds; POC* notified. Estimated flow rate = 60 cfh for calculations based on previous 4 weeks' readings. **POC = Point of Contact (Dresden ODCM Chemist)*
AP/I	D-10	11/13/15	Low reading of 160.5 hours possibly due to power outages from storms/high winds in the area.
AP/I	D-08	11/27/15	Low reading of 163.0 hours due to recent power restoration.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
AP/I	D-04	12/26/15	Pump malfunction; estimated flow rate of 60 cfh based on previous 4 weeks' readings.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
M	D-25	01/01/15–03/31/15	No samples; farmer sold cows.
OSLD	D-116-2	01/09/15	OSLD found missing during quarterly exchange*. Collector placed new 1st quarter OSLD. **Reported as missed sample in 2014 AREOR.*
OSLD	D-104-1	06/05/15	OSLD found missing during monthly check. Collector placed Spare #2307.
OSLD	D-111-1 D-201-1	07/03/15	OSLDs found missing during quarterly exchange. Collector placed new 3rd quarter OSLDs.
OSLD	D-206-1	07/03/15	OSLD lost in transit to vendor for analysis.
AP/I	D-53	07/31/15	Low reading of 158.5 due to power outage. ComEd working at substation; power turned off.
AP/I	D-04	08/14/15	Charcoal found missing during shipment. Charcoal located on 08/21/15 (see below).

Table D-2 LISTING OF MISSED SAMPLES (continued)

Sample Type	Location Code	Collection Date	Reason
AP/I	D-01	08/21/15	Collector found charcoal cartridge from D-04 (08/07/15 to 08/14/15) in holder at D-01; no sample for week for D-01 cartridge. EIML on-conformance report #58 generated.
AP/I	D-03	09/11/15	AP filter found white; hose found disconnected. No flow through sampler for week. Timer malfunction; timer replaced.
VE	D-QUAD-2, 3, Control	09/24/15	After diligent search of quadrants, no root or broad leaf vegetables available.
AP/I	D-03	10/30/15	Pump running in reverse; particulate matter on inside of filter and charcoal; Estimated flow of 60 cfh.
OSLD	D-209-2	11/06/15	OSLD found missing during monthly visual check. Collector placed spare #1 000097492 Ex000683145.
AP/I	D-08	11/20/15	No power to sampler; POC* notified. **POC = Point of Contact (Dresden ODCM Chemist)*
M	D-25	12/04/15	Farmer not milking at this time; no sample available.
OSLD	D-07-2, D-203-2	12/29/15	OSLDs found missing during quarterly exchange. Collector placed new 1st quarter OSLDs.

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

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

E. Program Changes

There were no program changes in 2015.

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 33 of 36 samples. The values ranged from 3.5 to 13.2 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 211 to 419 pCi/L. Four samples at control station D-57 were positive for tritium. The values ranged from 639 to 1,680 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 359 to 577 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, river carpsucker, largemouth bass, channel catfish, and smallmouth buffalo were collected at two locations (D-28 and D-46) semiannually. Location D-28 could be affected by Dresden's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma emitting nuclides (Table C–III.1, Appendix C). Naturally occurring K-40 was found at 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). No fission or activation products were detected.

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 38 E-3 pCi/m^3 with a mean of 17 E-3 pCi/m^3. The results from the Near-Field locations ranged from 6 to 38 E-3 pCi/m^3 with a mean of 17 E-3 pCi/m^3. The results from the Far-Field locations ranged from 6 to 36 E-3 pCi/m^3 with a mean of 17 E–3 pCi/m^3. The results from the Control location ranged from 7 to 31 E-3 pCi/m^3 with a mean of 16 E-3 pCi/m^3. Comparison of the 2015 air particulate data with previous years data indicate no effects from the operation of DNPS. In addition a comparison of the weekly mean values for 2015 indicate no notable differences among the four groups (Figures C–8 through C-14, Appendix C).

Gamma Spectrometry

Samples were composited quarterly and analyzed for gamma emitting nuclides (Table C–V.3, Appendix C). Naturally occurring Be-7 was detected at levels consistent with previous years. 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).

Naturally occurring K-40 activity was 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

Beginning in 2012, Exelon changed the type of dosimetry used for the Radiological Environmental Monitoring Program (REMP). Optically Stimulated Luminescent Dosimetry (OSLD) were deployed and Thermoluminescent Dosimetry (TLD) were discontinued. This change may result in a step change in readings, up or down, depending on site characteristics. The relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct 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 20.1 to 41.6 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-12-01and D-12-02) were comparable.

D. Land Use Survey

A Land Use Survey conducted on August 22, 2015 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	-

E. Errata Data

There is no errata data for 2015.

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, 129 out of 139 analyses performed met the specified acceptance criteria. Ten analyses (AP - Cr-51, U-234/233, Gr A, Sr-90; Soil Sr-90; Water - Ni-3, Sr-89, Sr-90, U natural; Vegetation Sr-90 samples) did not meet the specified acceptance criteria for the following reasons:

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 Analytics' June 2015 air particulate Cr-51 result of 323 ± 45.5 pCi was higher than the known value of 233 pCi with a ratio of 1.39. The upper ratio of 1.30 (acceptable with warning) was exceeded. The air particulate sample is counted at a distance above the surface of the detector to avoid detector summing which could alter the results. Chromium-51 has the shortest half-life (27.7 days) and the lowest gamma energy (320.08 keV) of this mixed nuclide sample. Additionally, Cr-51 has only one gamma energy and also has a low intensity (9.38 gamma photons produced per 100 disintegrations). This geometry produces a larger error for the Cr-51 and other gamma emitters as any distance from the detector decreases the counting rate and the probability of accurately detecting the nuclide energy. Taking into consideration the uncertainty, the activity of Cr-51 overlaps with the known value at a ratio of 1.19, which would statistically be considered acceptable. NCR 15-18

2. Teledyne Brown Engineering's MAPEP March 2015 soil Sr-90 result of 286 Total Bq/kg was lower than the known value of 653 Bq/kg, exceeding the lower acceptance range of 487 Bq/kg. The failure was due to incomplete digestion of the sample. Incomplete digestion of samples causes some of the sample to be left behind and is not present in the digested sample utilized for analysis. The procedure has been updated to include a more robust digestion using stirring during the heating phase. The MAPEP September 2014 soil Sr-90 series prior to this study was evaluated as acceptable with a result of 694 and an acceptance range of 601 – 1115 Bq/kg. The MAPEP September 2015 series soil Sr-90 after this study was evaluated as acceptable with a result of 429 and an acceptance range of 298 – 553 Bq/kg. We feel the issue is specific to the March 2015 MAPEP sample. NCR 15-13

3. Teledyne Brown Engineering's MAPEP March 2015 air particulate U-234/233 result of 0.0211 ± 0.0120 Bq/sample was higher than the known value of 0.0155 Bq/sample, exceeding the upper acceptance range of 0.0202 Bq/sample. Although evaluated as a failure, taking into consideration the uncertainty, TBE's result would overlap with the known value, which is statistically considered acceptable. MAPEP spiked the sample with significantly more U-238 activity (a found to known ratio of 0.96) than the normal U-234/233. Due to the extremely low activity, it was difficult to quantify the U-234/233. NCR 15-13

4. Teledyne Brown Engineering's MAPEP March 2015 air particulate gross alpha result of 0.448 Bq/sample was lower than the known value of 1.77 Bq/sample, exceeding the lower acceptance range of 0.53 Bq/sample. The instrument efficiency used for gross alpha is determined using a non-attenuated alpha standard. The MAPEP filter has the alphas embedded in the filter, requiring an attenuated efficiency. When samples contain alpha particles that are embedded in the sample media, due to the size of the alpha particle, some of the alpha particles are absorbed by the media and cannot escape to be counted. When the sample media absorbs the alpha particles this is known as self-absorption or attenuation. The calibration must include a similar configuration/media to correct for the attenuation. In order to correct the low bias, TBE will create an attenuated efficiency for MAPEP air particulate filters. The MAPEP September series air particulate gross alpha result of 0.47 Bq/sample was evaluated as acceptable with a range of 0.24 – 1.53 Bq/sample. Unlike the MAPEP samples, air particulate Gross alpha analyses for power plants are not evaluated as a direct count sample. Power plant air particulate filters for gross

alpha go through an acid digestion process prior to counting and the digested material is analyzed. NCR 15-13

5. Teledyne Brown Engineering's MAPEP September water Ni-63 result of 11.8 ± 10.8 Bq/L was higher than the known value of 8.55 Bq/L, exceeding the upper acceptance range of 11.12 Bq/L. The Ni-63 half-life is approximately 100 years. Nickel-63 is considered to be a "soft" or low energy beta emitter, which means that the beta energy is very low. The maximum beta energy for Ni-63 is approximately 65 keV, much lower than other more common nuclides such as Co-60 (maximum beta energy of 1549 keV). The original sample was run with a 10 mL aliquot which was not sufficient for the low level of Ni-63 in the sample. The rerun aliquot of 30 mL produced an acceptable result of 8.81 Bq/L. NCR 15-21

6. Teledyne Brown Engineering's MAPEP September air particulate Sr-90 result of 1.48 Bq/sample was lower than the known value of 2.18 Bq/sample, exceeding the lower acceptance range of 1.53 Bq/sample. In the past, MAPEP has added substances (unusual compounds found in DOE complexes) to various matrices that have resulted in incomplete removal of the isotope of interest for the laboratories analyzing the cross checks. TBE suspects that this may be the cause of this error. Many compounds, if not properly accounted for or removed in the sample matrix, can cause interferences to either indicate lower activity or higher activity. TBE will no longer analyze the air particulate Sr-90 through MAPEP but will participate in the Analytics cross check program to perform both Sr-89 and Sr-90 in the air particulate matrix. NCR 15-21

7. Teledyne Brown Engineering's MAPEP September vegetation Sr-90 result of 0.386 Bq/sample was lower than the known value of 1.30 Bq/sample, exceeding the lower acceptance range of 0.91 Bq/sample. In the past, MAPEP has added substances (unusual compounds found in DOE complexes) to various matrices that have resulted in incomplete removal of the isotope of interest for the laboratories analyzing the cross checks. TBE suspects that this maybe the cause of this error. Many compounds, if not properly accounted for or removed in the sample matrix, can cause interferences to either indicate lower activity or higher activity. Results from previous performance evaluations were reviewed and shown to be acceptable. NCR 15-21

8. & 9. Teledyne Brown Engineering's ERA May water Sr-89/90 results of 45.2 and 28.0 pCi/L, respectively were lower than the known values of 63.2 and 41.9 pCi/L, respectively, exceeding the lower acceptance limits of 51.1 and 30.8 pCi/L, respectively. The yields

were on the high side of the TBE acceptance range, which indicates the present of excess calcium contributed to the yield, resulting in low results. NCR 15-09

10. Teledyne Brown Engineering's ERA November water Uranium natural result of 146.9 pCi/L was higher than the known value of 56.2 pCi/L, exceeding the upper acceptance limit of 62.4 pCi/L. The technician failed to dilute the original sample, but used the entire 12 mL sample. When the results were recalculated without the dilution and using the 12 mL aliquot, the result of 57.16 agreed with the assigned value of 56.2. NCR 15-19

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2015

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2015**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GR-B	36	4	6.4 (12/12) (3.5/9.8)	7.4 (21/24) (3.7/13.2)	8.9 (11/12) (6.3/11.6)	D-52 CONTROL DESPLAINES RIVER - UPSTREAM 1.1 MILES ESE OF SITE	0
	H-3	12	2000	292 (3/4) (211/419)	1159 (4/8) (639/1680)	1159 (4/4) (639/1680)	D-57 CONTROL KANKAKEE RIVER AT WILL ROAD(CONTROL) 2.0 MILES SE OF SITE	0
	GAMMA	36						
	MN-54		15	<LLD	<LLD	-		0
	CO-58		15	<LLD	<LLD	-		0
	FE-59		30	<LLD	<LLD	-		0
	CO-60		15	<LLD	<LLD	-		0
	ZN-65		30	<LLD	<LLD	-		0
	NB-95		15	<LLD	<LLD	-		0

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

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SURFACE WATER (PCI/LITER)	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0
GROUND WATER (PCI/LITER)	H-3	16	2000	477 (12/16) (359/577)	NA	477 (12/12) (359/577)	D-23 INDICATOR THORSEN WELL 0.7 MILES S OF SITE	0
	GAMMA MN-54	16	15	<LLD	NA	-		0

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GROUND WATER (PCI/LITER)	CO-58		15	<LLD	NA	-		0
	FE-59		30	<LLD	NA	-		0
	CO-60		15	<LLD	NA	-		0
	ZN-65		30	<LLD	NA	-		0
	NB-95		15	<LLD	NA	-		0
	ZR-95		30	<LLD	NA	-		0
	I-131		15	<LLD	NA	-		0
	CS-134		15	<LLD	NA	-		0

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GROUND WATER (PCI/LITER)	CS-137		18	<LLD	NA	-		0
	BA-140		60	<LLD	NA	-		0
	LA-140		15	<LLD	NA	-		0
FISH (PCI/KG WET)	GAMMA	8						
	MN-54		130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0

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FISH (PCI/KG WET)	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0
	CS-137		150	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
SEDIMENT (PCI/KG DRY)	GAMMA	2						
	MN-54		NA	<LLD	NA	-		0
	CO-58		NA	<LLD	NA	-		0

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SEDIMENT (PCI/KG DRY)	FE-59		NA	<LLD	NA	-		0
	CO-60		NA	<LLD	NA	-		0
	ZN-65		NA	<LLD	NA	-		0
	NB-95		NA	<LLD	NA	-		0
	ZR-95		NA	<LLD	NA	-		0
	CS-134		150	<LLD	NA	-		0
	CS-137		180	<LLD	NA	-		0
	BA-140		NA	<LLD	NA	-		0

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SEDIMENT (PCI/KG DRY)	LA-140		NA	<LLD	NA	-		0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	724	10	17 (671/672) (6/38)	16 (52/52) (7/31)	18 (50/51) (7/35)	D-08 INDICATOR PRAIRIE PARK 3.8 MILES SW OF SITE	0
	GAMMA	56						
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
AIR PARTICULATE (E-3 PCI/CU.METER)	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	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 (E-3 PCI/CU.METER)	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		50	<LLD	<LLD	-		0
	CS-137		60	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	724	70	<LLD	<LLD	-		0
MILK (PCI/LITER)	I-131	17	NA	NA	<LLD	-		0
	GAMMA MN-54	17	NA	NA	<LLD	-		0

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2015

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2015**

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
MILK (PCI/LITER)	CO-58		NA	NA	<LLD	-		0
	FE-59		NA	NA	<LLD	-		0
	CO-60		NA	NA	<LLD	-		0
	ZN-65		NA	NA	<LLD	-		0
	NB-95		NA	NA	<LLD	-		0
	ZR-95		NA	NA	<LLD	-		0
	CS-134		60	NA	<LLD	-		0
	CS-137		80	NA	<LLD	-		0

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2015

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2015**

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
MILK (PCI/LITER)	BA-140		NA	NA	<LLD	-		0
	LA-140		NA	NA	<LLD	-		0
VEGETATION (PCI/KG WET)	GAMMA	4						
	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

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

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR DRESDEN NUCLEAR POWER STATION, 2015

NAME OF FACILITY: DRESDEN **DOCKET NUMBER: 50-010 50-237 & 50-249**
LOCATION OF FACILITY: MORRIS IL **REPORTING PERIOD: ANNUAL 2015**

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 (PCI/KG WET)	ZR-95		NA	<LLD	<LLD	-		0
	I-131		60	<LLD	<LLD	-		0
	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
DIRECT RADIATION (MILLIREM/QTR.)	OSLD-QUARTERLY	361	NA	28.9 (353/353) (20.1/41.6)	27.1 (8/8) (24.1/32.9)	34.1 (4/4) (30/41.4)	D-215-1 INDICATOR 4.8 MILES NW	0

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

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APPENDIX B

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

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TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2015

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	Chris Locknar	2.8 miles NE
Quadrant 2	Robert Pagliano	3.2 miles SSE
Quadrant 3	Jim Bloom	3.9 miles SSW
Quadrant 4	J.D. Carmichael	1.6 miles NNW
Control	Glasscock Farm	12.8 miles ENE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2015

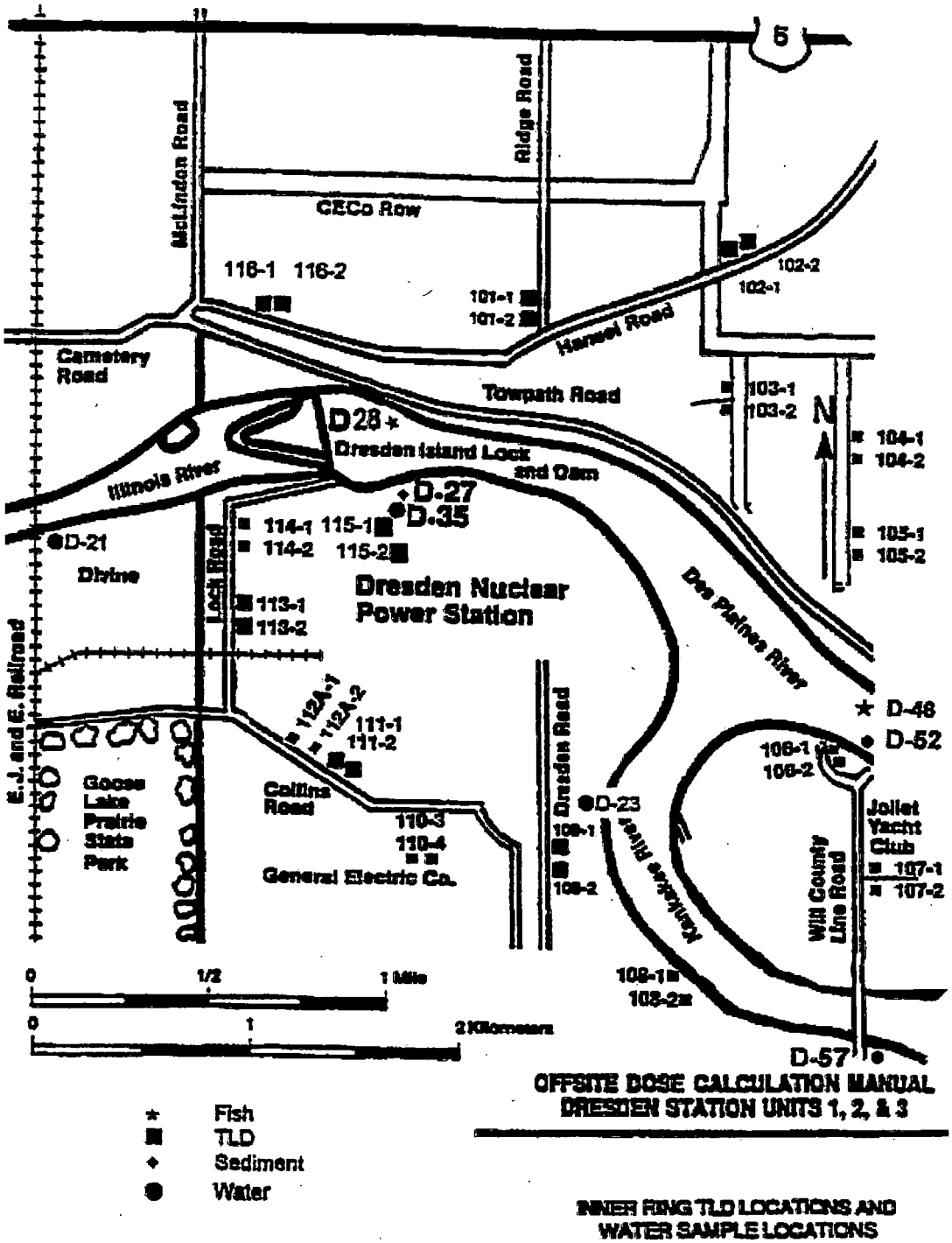
Location	Location Description	Distance & Direction From Site
H. Environmental Dosimetry - OSLD		
Inner Ring		
D-58-1 and -2		1.1 miles ESE
D-101-1 and -2		1.0 miles N
D-102-1 and -2		1.3 miles NNE
D-103-1 and -2		1.2 miles NE
D-104-1 and -2		1.7 miles ENE
D-105-1 and -2		1.5 miles E
D-106-1 and -2		1.1 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, 2015

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, 2015

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



OFFSITE DOSE CALCULATION MANUAL
DRESDEN STATION UNITS 1, 2, & 3

INNER RING TLD LOCATIONS AND
WATER SAMPLE LOCATIONS

Figure B-1
Dresden Station Inner Ring OSLD Locations, Fish, Water, and Sediment Location, 2015

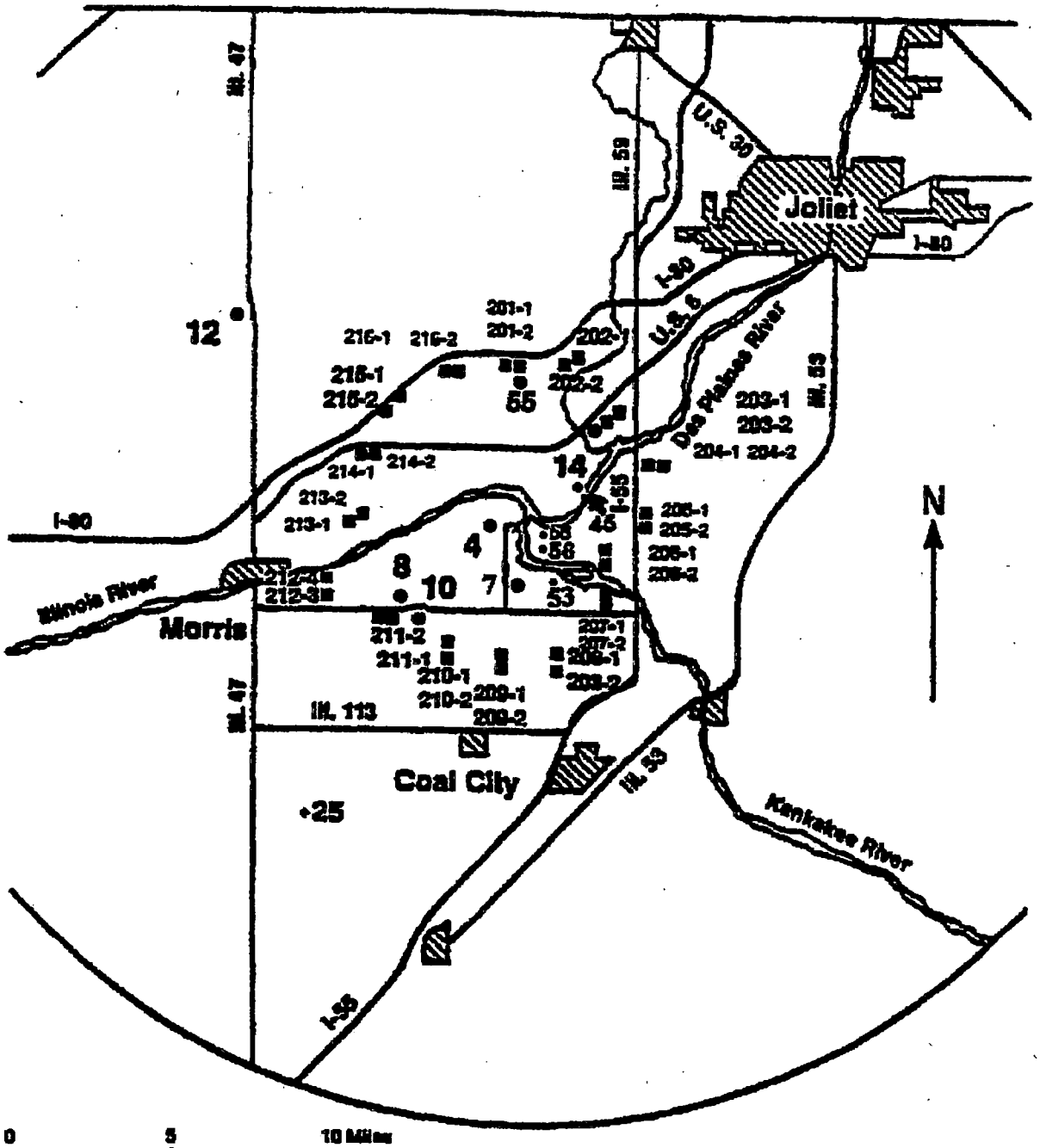


Figure B-2
Dresden Station Fixed Air Sampling and
OSLD Sites, Outer Ring OSLD Locations and Milk Location, 2015

APPENDIX C

DATA TABLES AND FIGURES
PRIMARY LABORATORY

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Table C-I.1 **CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
01/02/15 - 01/30/15	5.9 ± 2.1	6.8 ± 2.2	3.8 ± 1.8
02/06/15 - 02/27/15	4.9 ± 2.0	9.4 ± 2.7	13.2 ± 2.8
03/06/15 - 03/27/15	5.1 ± 2.4	8.0 ± 2.9	< 2.9
04/02/15 - 04/24/15	7.0 ± 2.2	8.8 ± 2.5	3.7 ± 1.9
05/01/15 - 05/29/15	8.3 ± 2.6	10.7 ± 3.1	4.6 ± 2.3
06/05/15 - 06/26/15	6.1 ± 1.8	7.3 ± 2.7	4.5 ± 2.0
07/03/15 - 07/31/15	4.8 ± 2.0 (1)	9.0 ± 2.4	< 2.3
08/07/15 - 08/28/15	9.7 ± 2.7	10.0 ± 2.7	6.7 ± 2.4
09/04/15 - 09/25/15	6.7 ± 2.0	6.3 ± 2.0	6.9 ± 2.1
10/02/15 - 10/30/15	9.8 ± 2.6	11.6 ± 2.7	4.6 ± 2.2
11/06/15 - 11/27/15	3.5 ± 1.7	10.1 ± 2.6	4.8 ± 2.1
12/04/15 - 12/26/15	4.8 ± 1.9	< 2.8	4.5 ± 2.0
MEAN	6.4 ± 4.2	8.9 ± 3.4	5.9 ± 5.8

Table C-I.2 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-21	D-52	D-57
01/02/15 - 03/27/15	211 ± 133	< 199	1670 ± 227
04/02/15 - 06/26/15	< 186	< 188	639 ± 150
07/03/15 - 09/25/15	247 ± 133	< 199	646 ± 158
10/02/15 - 12/26/15	419 ± 142	< 195	1680 ± 235
MEAN	292 ± 222	-	1159 ± 1192

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

Table C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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	12/26/14 - 01/30/15	< 5	< 5	< 10	< 5	< 9	< 5	< 8	< 12	< 4	< 4	< 29	< 9
	01/30/15 - 02/27/15	< 4	< 4	< 7	< 4	< 7	< 4	< 8	< 9	< 4	< 4	< 22	< 6
	02/27/15 - 03/27/15	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 12	< 2	< 2	< 19	< 5
	03/27/15 - 04/24/15	< 3	< 3	< 8	< 3	< 6	< 3	< 6	< 13	< 3	< 3	< 25	< 8
	04/24/15 - 05/29/15	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 6	< 2	< 2	< 12	< 5
	05/29/15 - 06/26/15	< 4	< 5	< 10	< 4	< 5	< 4	< 8	< 10	< 5	< 4	< 25	< 8
	06/26/15 - 07/31/15 (1)	< 4	< 5	< 11	< 6	< 11	< 6	< 9	< 12	< 5	< 5	< 29	< 8
	07/31/15 - 08/28/15	< 7	< 5	< 21	< 10	< 15	< 9	< 14	< 11	< 6	< 6	< 44	< 4
	08/28/15 - 09/25/15	< 7	< 8	< 13	< 8	< 15	< 8	< 12	< 12	< 7	< 7	< 37	< 14
	09/25/15 - 10/30/15	< 4	< 3	< 8	< 4	< 8	< 4	< 6	< 8	< 3	< 3	< 21	< 8
	10/30/15 - 11/27/15	< 4	< 4	< 8	< 4	< 9	< 5	< 9	< 10	< 4	< 5	< 28	< 6
	11/27/15 - 12/26/15	< 4	< 5	< 8	< 4	< 8	< 5	< 7	< 14	< 5	< 4	< 33	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-52	01/02/15 - 01/30/15	< 4	< 4	< 9	< 4	< 5	< 4	< 7	< 10	< 3	< 4	< 25	< 7
	02/06/15 - 02/27/15	< 4	< 3	< 7	< 3	< 7	< 4	< 7	< 8	< 3	< 4	< 17	< 5
	03/06/15 - 03/27/15	< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 13	< 2	< 2	< 21	< 6
	04/02/15 - 04/24/15	< 2	< 2	< 6	< 2	< 5	< 2	< 4	< 11	< 2	< 2	< 19	< 7
	05/01/15 - 05/29/15	< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 8	< 2	< 2	< 14	< 5
	06/05/15 - 06/26/15	< 4	< 4	< 13	< 4	< 11	< 7	< 10	< 12	< 5	< 5	< 37	< 6
	07/03/15 - 07/31/15	< 6	< 6	< 13	< 6	< 12	< 6	< 9	< 12	< 5	< 6	< 31	< 11
	08/07/15 - 08/28/15	< 5	< 8	< 17	< 8	< 11	< 7	< 12	< 12	< 7	< 6	< 26	< 12
	09/04/15 - 09/25/15	< 8	< 7	< 13	< 6	< 17	< 8	< 12	< 13	< 7	< 7	< 34	< 14
	10/02/15 - 10/30/15	< 5	< 5	< 10	< 5	< 9	< 5	< 9	< 10	< 5	< 4	< 27	< 8
	11/06/15 - 11/27/15	< 4	< 4	< 9	< 4	< 9	< 5	< 8	< 11	< 4	< 4	< 23	< 7
	12/04/15 - 12/26/15	< 4	< 3	< 9	< 4	< 7	< 4	< 8	< 12	< 4	< 4	< 25	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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-57	12/26/14 - 01/30/15	< 3	< 5	< 11	< 5	< 10	< 4	< 9	< 12	< 5	< 4	< 26	< 9
	01/30/15 - 02/27/15	< 5	< 5	< 10	< 4	< 9	< 5	< 9	< 12	< 4	< 5	< 26	< 9
	02/27/15 - 03/27/15	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 10	< 1	< 1	< 15	< 5
	03/27/15 - 04/24/15	< 3	< 4	< 7	< 3	< 6	< 3	< 6	< 14	< 3	< 3	< 29	< 9
	04/24/15 - 05/29/15	< 2	< 2	< 6	< 2	< 5	< 3	< 4	< 7	< 2	< 2	< 16	< 6
	05/29/15 - 06/26/15	< 6	< 7	< 15	< 7	< 16	< 7	< 12	< 15	< 6	< 8	< 39	< 14
	06/26/15 - 07/31/15	< 4	< 4	< 9	< 4	< 9	< 5	< 7	< 8	< 4	< 4	< 21	< 7
	07/31/15 - 08/28/15	< 7	< 7	< 13	< 6	< 11	< 8	< 11	< 12	< 5	< 6	< 34	< 11
	08/28/15 - 09/25/15	< 6	< 8	< 9	< 4	< 12	< 6	< 13	< 10	< 5	< 6	< 34	< 10
	09/25/15 - 10/30/15	< 4	< 4	< 7	< 4	< 7	< 4	< 7	< 10	< 4	< 4	< 22	< 6
	10/30/15 - 11/27/15	< 4	< 5	< 10	< 6	< 10	< 6	< 10	< 13	< 5	< 5	< 32	< 11
	11/27/15 - 12/26/15	< 4	< 6	< 12	< 6	< 11	< 6	< 10	< 14	< 4	< 6	< 36	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-II.1 **CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	D-23	D-35
01/09/15 - 01/09/15	429 ± 119	< 156
02/13/15 - 02/13/15	480 ± 141	
03/13/15 - 03/13/15	489 ± 142	
04/10/15 - 04/10/15	433 ± 146	< 195
05/06/15 - 05/06/15	496 ± 145	
06/12/15 - 06/12/15	536 ± 135	
07/10/15 - 07/10/15	505 ± 146	< 198
08/14/15 - 08/14/15	483 ± 137	
09/11/15 - 09/11/15	406 ± 131	
10/09/15 - 10/09/15	528 ± 148	< 198
11/13/15 - 11/13/15	359 ± 142	
12/11/15 - 12/11/15	577 ± 141	
MEAN	477 ± 122	-

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, 2015**

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	01/09/15 - 01/09/15	< 10	< 9	< 24	< 9	< 17	< 10	< 20	< 12	< 8	< 10	< 48	< 14
	02/13/15 - 02/13/15	< 3	< 4	< 8	< 3	< 7	< 4	< 8	< 12	< 5	< 5	< 26	< 4
	03/13/15 - 03/13/15	< 8	< 6	< 16	< 7	< 16	< 7	< 14	< 14	< 7	< 6	< 40	< 14
	04/10/15 - 04/10/15	< 4	< 4	< 9	< 4	< 8	< 5	< 8	< 11	< 4	< 3	< 28	< 7
	05/06/15 - 05/06/15	< 4	< 4	< 8	< 4	< 7	< 4	< 7	< 12	< 4	< 4	< 27	< 7
	06/12/15 - 06/12/15	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 14	< 3	< 3	< 27	< 9
	07/10/15 - 07/10/15	< 6	< 6	< 13	< 6	< 12	< 6	< 10	< 10	< 6	< 6	< 25	< 7
	08/14/15 - 08/14/15	< 7	< 6	< 13	< 4	< 11	< 6	< 9	< 9	< 6	< 7	< 26	< 7
	09/11/15 - 09/11/15	< 7	< 6	< 14	< 8	< 14	< 7	< 14	< 11	< 7	< 6	< 30	< 9
	10/09/15 - 10/09/15	< 7	< 7	< 14	< 7	< 17	< 8	< 15	< 12	< 8	< 8	< 32	< 11
	11/13/15 - 11/13/15	< 5	< 4	< 13	< 6	< 10	< 6	< 9	< 10	< 7	< 5	< 23	< 9
	12/11/15 - 12/11/15	< 6	< 4	< 20	< 8	< 11	< 4	< 13	< 8	< 7	< 7	< 32	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-35	01/09/15 - 01/09/15	< 7	< 8	< 13	< 8	< 16	< 7	< 16	< 11	< 7	< 8	< 32	< 10
	04/10/15 - 04/10/15	< 4	< 6	< 11	< 4	< 7	< 5	< 7	< 11	< 4	< 4	< 30	< 10
	07/10/15 - 07/10/15	< 5	< 5	< 10	< 4	< 11	< 7	< 8	< 8	< 4	< 6	< 26	< 8
	10/06/15 - 10/06/15	< 6	< 8	< 14	< 6	< 12	< 7	< 12	< 14	< 6	< 7	< 35	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-III.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015

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												
Common Carp	05/05/15	< 57	< 68	< 128	< 57	< 109	< 64	< 96	< 44	< 55	< 906	< 153
River Carpsucker	05/05/15	< 62	< 90	< 158	< 61	< 140	< 84	< 144	< 67	< 69	< 1021	< 363
Common Carp	10/22/15	< 44	< 58	< 130	< 57	< 125	< 73	< 103	< 60	< 63	< 376	< 122
Largemouth Bass	10/22/15	< 63	< 82	< 186	< 85	< 106	< 75	< 94	< 57	< 70	< 430	< 72
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-46												
Channel Catfish	05/05/15	< 65	< 91	< 172	< 73	< 140	< 80	< 116	< 63	< 74	< 977	< 317
Largemouth Bass	05/05/15	< 62	< 68	< 174	< 58	< 131	< 92	< 139	< 60	< 64	< 983	< 291
Common Carp	10/22/15	< 60	< 56	< 107	< 52	< 84	< 56	< 95	< 59	< 56	< 400	< 110
Smallmouth Buffalo	10/22/15	< 60	< 84	< 173	< 95	< 131	< 94	< 108	< 82	< 98	< 444	< 165
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-IV.1 **CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PC/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	05/01/15	< 96	< 101	< 225	< 112	< 236	< 125	< 192	< 92	< 113	< 1044	< 303
	10/06/15	< 86	< 93	< 219	< 110	< 216	< 111	< 159	< 76	< 98	< 469	< 158
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-V.1 **CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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

COLLECTION	GROUP I			GROUP II					
PERIOD	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
01/02/15 - 01/09/15	21 ± 4	24 ± 5	25 ± 5	23 ± 4	21 ± 4	22 ± 4	21 ± 4	24 ± 5	24 ± 5
01/09/15 - 01/16/15	25 ± 5	25 ± 5	22 ± 5	22 ± 5	25 ± 5	20 ± 4	21 ± 4	19 ± 4	24 ± 5
01/16/15 - 01/23/15	23 ± 5	24 ± 5	21 ± 4	18 ± 4	16 ± 4	19 ± 4	17 ± 4	15 ± 4	20 ± 4
01/23/15 - 01/30/15	17 ± 4	10 ± 4	10 ± 4	10 ± 4	10 ± 4	14 ± 4	13 ± 4	13 ± 4	15 ± 4
01/30/15 - 02/06/15	16 ± 4	17 ± 4	18 ± 4	18 ± 4	18 ± 4	14 ± 4	16 ± 4	17 ± 4	18 ± 4
02/06/15 - 02/13/15	19 ± 4	19 ± 4	17 ± 4	22 ± 4	18 ± 4	25 ± 5	20 ± 4	23 ± 4	20 ± 4
02/13/15 - 02/20/15	32 ± 5	28 ± 5	30 ± 5	37 ± 6	29 ± 5	26 ± 5	30 ± 5	29 ± 5	32 ± 5
02/20/15 - 02/27/15	32 ± 5	30 ± 5	33 ± 5	32 ± 5	29 ± 5	28 ± 5	24 ± 5	30 ± 5	32 ± 5
02/27/15 - 03/06/15	23 ± 5	20 ± 4	24 ± 5	18 ± 4	18 ± 4	20 ± 4	21 ± 4	19 ± 4	25 ± 5
03/06/15 - 03/13/15	19 ± 4	13 ± 4	16 ± 4	15 ± 4	12 ± 4	13 ± 4	16 ± 4	18 ± 4	16 ± 4
03/13/15 - 03/20/15	15 ± 4	21 ± 5	16 ± 4	20 ± 5	18 ± 4	17 ± 4	19 ± 4	14 ± 4	16 ± 4
03/20/15 - 03/27/15	10 ± 4	9 ± 4	15 ± 4	11 ± 4	12 ± 4	12 ± 4	12 ± 4	13 ± 4	12 ± 4
03/27/15 - 04/02/15	15 ± 5	12 ± 4	7 ± 4	11 ± 4	13 ± 4	15 ± 4	13 ± 4	17 ± 5	10 ± 4
04/02/15 - 04/10/15	11 ± 3	10 ± 3	14 ± 3	9 ± 3	9 ± 3	9 ± 3	11 ± 3	11 ± 3	10 ± 3
04/10/15 - 04/17/15	17 ± 5	12 ± 4	15 ± 4	10 ± 4	16 ± 5	12 ± 4	14 ± 4	15 ± 4	16 ± 4
04/17/15 - 04/24/15	13 ± 4	11 ± 4	11 ± 4	13 ± 4	16 ± 4	15 ± 4	13 ± 4	17 ± 4	12 ± 4
04/24/15 - 05/01/15	12 ± 4	10 ± 4	8 ± 4	12 ± 4	7 ± 3	10 ± 4	9 ± 4	9 ± 4	9 ± 4
05/01/15 - 05/06/15	13 ± 5	13 ± 5	15 ± 5	14 ± 5	15 ± 5	15 ± 5	19 ± 5	16 ± 5	13 ± 5
05/06/15 - 05/15/15	9 ± 3	10 ± 3	8 ± 3	9 ± 3	6 ± 3	6 ± 3	6 ± 3	6 ± 3	8 ± 3
05/15/15 - 05/22/15	11 ± 3	10 ± 3	15 ± 4	14 ± 4	13 ± 3	13 ± 3	12 ± 3	11 ± 3	9 ± 3
05/22/15 - 05/29/15	20 ± 4	11 ± 3	16 ± 4	15 ± 4	14 ± 4	16 ± 4	16 ± 4	13 ± 4	11 ± 3
05/29/15 - 06/05/15	11 ± 4	8 ± 4	9 ± 4	11 ± 4	9 ± 4	10 ± 4	9 ± 4	13 ± 4	11 ± 4
06/05/15 - 06/12/15	12 ± 4	11 ± 4	14 ± 4	13 ± 4	16 ± 4	13 ± 4	16 ± 4	12 ± 4	14 ± 4
06/12/15 - 06/19/15	9 ± 3	6 ± 3	7 ± 3	9 ± 3	10 ± 3	10 ± 3	6 ± 3	8 ± 3	7 ± 3
06/19/15 - 06/26/15	13 ± 4 (1)	8 ± 4 (1)	11 ± 4 (1)	14 ± 4 (1)	22 ± 8 (1)	12 ± 4	9 ± 4	10 ± 4	12 ± 4
06/26/15 - 07/03/15	7 ± 3	11 ± 4	10 ± 3	12 ± 4	11 ± 4	10 ± 4	12 ± 4 (1)	12 ± 4	12 ± 4
07/03/15 - 07/10/15	10 ± 4	13 ± 4	15 ± 4	11 ± 4	15 ± 4	14 ± 4	11 ± 4	13 ± 4	13 ± 4
07/10/15 - 07/17/15	12 ± 3	12 ± 3	14 ± 4	9 ± 3	12 ± 3	10 ± 3	12 ± 3	6 ± 3	13 ± 4
07/17/15 - 07/24/15	10 ± 4	14 ± 4	13 ± 4	9 ± 4	13 ± 4	10 ± 4	13 ± 4	12 ± 4	9 ± 4
07/24/15 - 07/31/15	19 ± 4	14 ± 4	17 ± 4	15 ± 4	21 ± 4	21 ± 5	(1)	18 ± 4	17 ± 4
07/31/15 - 08/07/15	16 ± 4	22 ± 5	20 ± 4	19 ± 4	23 ± 5	26 ± 5	18 ± 4	17 ± 4	21 ± 4
08/07/15 - 08/14/15	21 ± 5 (1)	21 ± 4	21 ± 4	19 ± 4	20 ± 4	19 ± 4	20 ± 4	21 ± 4	20 ± 4
08/14/15 - 08/21/15	(1)	19 ± 4	20 ± 4	24 ± 5	20 ± 4	21 ± 4	20 ± 4	21 ± 4	24 ± 5
08/21/15 - 08/28/15	15 ± 4	16 ± 4	12 ± 4	14 ± 4	15 ± 4	14 ± 4	16 ± 4	14 ± 4	13 ± 4
08/28/15 - 09/04/15	34 ± 6	24 ± 5	38 ± 6 (1)	35 ± 6	31 ± 5 (1)	33 ± 6	26 ± 5	31 ± 5	34 ± 6
09/04/15 - 09/11/15	29 ± 5	31 ± 5	(1)	28 ± 5	28 ± 5	38 ± 6	28 ± 5	26 ± 5	31 ± 5
09/11/15 - 09/18/15	15 ± 4	13 ± 4	15 ± 4	18 ± 4	15 ± 4	23 ± 4	18 ± 4	16 ± 4	12 ± 4
09/18/15 - 09/25/15	12 ± 4	15 ± 4	12 ± 4	11 ± 4	12 ± 4	12 ± 4	15 ± 4	14 ± 4	15 ± 4
09/25/15 - 10/02/15	21 ± 4	16 ± 4	20 ± 4	21 ± 4	21 ± 4	17 ± 4	16 ± 4	20 ± 4	16 ± 4
10/02/15 - 10/09/15	16 ± 4	13 ± 4	16 ± 4	15 ± 4	14 ± 4	17 ± 4	15 ± 4	13 ± 4	15 ± 4
10/09/15 - 10/16/15	18 ± 5	17 ± 4	13 ± 4	13 ± 4	15 ± 4	13 ± 4	13 ± 4	15 ± 4	15 ± 4
10/16/15 - 10/23/15	25 ± 5	23 ± 5 (1)	27 ± 5	28 ± 5	22 ± 5	26 ± 5	23 ± 5	30 ± 5	25 ± 5
10/23/15 - 10/30/15	15 ± 4	14 ± 4	(1)	13 ± 4	12 ± 4	13 ± 4	13 ± 4	14 ± 4	12 ± 4
10/30/15 - 11/06/15	17 ± 4	19 ± 4	18 ± 4	17 ± 4	17 ± 4	20 ± 4	18 ± 4	17 ± 4	22 ± 4
11/06/15 - 11/13/15	28 ± 5	23 ± 5	23 ± 5	25 ± 5	24 ± 5	24 ± 5	21 ± 5	21 ± 5	25 ± 5
11/13/15 - 11/20/15	14 ± 4	13 ± 4	15 ± 4	13 ± 4	11 ± 4	15 ± 4	14 ± 4	14 ± 4	13 ± 4
11/20/15 - 11/27/15	14 ± 4	19 ± 4	17 ± 4	22 ± 4	17 ± 4	17 ± 4	17 ± 4	17 ± 4	16 ± 4
11/27/15 - 12/04/15	15 ± 4	14 ± 4	16 ± 4	17 ± 4	17 ± 4	15 ± 4	17 ± 4	17 ± 4	21 ± 4
12/04/15 - 12/11/15	31 ± 5	29 ± 5	28 ± 5	31 ± 5	34 ± 5	29 ± 5	30 ± 5	34 ± 5	31 ± 5
12/11/15 - 12/18/15	16 ± 4	15 ± 4	14 ± 4	16 ± 4	15 ± 4	14 ± 4	14 ± 3	14 ± 4	16 ± 4
12/18/15 - 12/26/15	26 ± 4	27 ± 4	26 ± 4	28 ± 5 (1)	27 ± 5	30 ± 5	26 ± 5	26 ± 4	26 ± 4
12/26/15 - 01/02/16	13 ± 4	26 ± 5	18 ± 5	19 ± 5	21 ± 5	15 ± 4	19 ± 5	20 ± 5	17 ± 5
MEAN	17 ± 13	17 ± 13	17 ± 13	17 ± 14	17 ± 13	17 ± 13	16 ± 11	17 ± 12	17 ± 14

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

Table C-V.1 **CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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

COLLECTION	GROUP III				GROUP IV
PERIOD	D-08	D-10	D-14	D-55	D-12
01/02/15 - 01/09/15	29 ± 5	23 ± 4	25 ± 5	24 ± 5	20 ± 4
01/09/15 - 01/16/15	19 ± 4	23 ± 5	24 ± 5	17 ± 4	19 ± 4
01/16/15 - 01/23/15	20 ± 4	21 ± 4	23 ± 5	19 ± 4	21 ± 4
01/23/15 - 01/30/15	11 ± 4	12 ± 4	14 ± 4	11 ± 4	9 ± 4
01/30/15 - 02/06/15	< 5	18 ± 4	16 ± 4	13 ± 4	16 ± 4
02/06/15 - 02/13/15	20 ± 4	20 ± 4	20 ± 4	20 ± 4	16 ± 4
02/13/15 - 02/20/15	33 ± 5	34 ± 5	30 ± 5	30 ± 5	25 ± 5
02/20/15 - 02/27/15	30 ± 5	31 ± 5	33 ± 5	30 ± 5	26 ± 5
02/27/15 - 03/06/15	18 ± 4	22 ± 4	14 ± 4	21 ± 4	21 ± 4
03/06/15 - 03/13/15	12 ± 4	11 ± 4	16 ± 4	13 ± 4	17 ± 4
03/13/15 - 03/20/15	20 ± 5	14 ± 4	19 ± 4	13 ± 4	16 ± 4
03/20/15 - 03/27/15	12 ± 4	13 ± 4	10 ± 4	14 ± 4	11 ± 4
03/27/15 - 04/02/15	11 ± 4	10 ± 4	13 ± 4	10 ± 4	10 ± 4
04/02/15 - 04/10/15	12 ± 3	11 ± 3	9 ± 3	13 ± 3	10 ± 3
04/10/15 - 04/17/15	16 ± 4	16 ± 4	17 ± 4	14 ± 4	12 ± 4
04/17/15 - 04/24/15	13 ± 4	16 ± 4	15 ± 4	13 ± 4	13 ± 4
04/24/15 - 05/01/15	10 ± 4	6 ± 3	10 ± 4	8 ± 3	8 ± 4
05/01/15 - 05/06/15	16 ± 5	14 ± 5	14 ± 5	13 ± 5	11 ± 4
05/06/15 - 05/15/15	8 ± 3	7 ± 3	7 ± 3	6 ± 3	8 ± 3
05/15/15 - 05/22/15	12 ± 3	12 ± 3	10 ± 3	12 ± 3	8 ± 3
05/22/15 - 05/29/15	17 ± 4	15 ± 4	19 ± 4	15 ± 4	14 ± 4
05/29/15 - 06/05/15	12 ± 4	12 ± 4	10 ± 4	11 ± 4	9 ± 4
06/05/15 - 06/12/15	15 ± 4	12 ± 4	11 ± 4	11 ± 4	12 ± 4
06/12/15 - 06/19/15	7 ± 3	8 ± 3	9 ± 3	8 ± 3	7 ± 3
06/19/15 - 06/26/15	12 ± 4 (1)	9 ± 4 (1)	12 ± 4	11 ± 4	11 ± 4
06/26/15 - 07/03/15	11 ± 4	14 ± 4	10 ± 4	13 ± 4	9 ± 3
07/03/15 - 07/10/15	16 ± 4	16 ± 4	18 ± 4	15 ± 4	14 ± 4
07/10/15 - 07/17/15	14 ± 4	12 ± 4	15 ± 4	16 ± 4	14 ± 4
07/17/15 - 07/24/15	15 ± 4	16 ± 4	16 ± 4	12 ± 4	11 ± 4
07/24/15 - 07/31/15	18 ± 4	22 ± 4	21 ± 5	19 ± 4	19 ± 4
07/31/15 - 08/07/15	23 ± 5	18 ± 4	19 ± 4	22 ± 4	21 ± 4
08/07/15 - 08/14/15	19 ± 4	14 ± 4	19 ± 4	22 ± 5	18 ± 4
08/14/15 - 08/21/15	20 ± 4	20 ± 4	21 ± 5	19 ± 4	22 ± 5
08/21/15 - 08/28/15	14 ± 4	16 ± 4	14 ± 4	15 ± 4	15 ± 4
08/28/15 - 09/04/15	35 ± 6	27 ± 5	36 ± 6	32 ± 6	31 ± 6
09/04/15 - 09/11/15	31 ± 5	29 ± 5	27 ± 5	31 ± 5	31 ± 5
09/11/15 - 09/18/15	13 ± 4	15 ± 4	16 ± 4	17 ± 4	17 ± 4
09/18/15 - 09/25/15	11 ± 4	11 ± 4	13 ± 4	8 ± 4	14 ± 4
09/25/15 - 10/02/15	19 ± 4	22 ± 4	14 ± 4	18 ± 4	20 ± 4
10/02/15 - 10/09/15	16 ± 4	13 ± 4	14 ± 4	14 ± 4	13 ± 4
10/09/15 - 10/16/15	17 ± 4	17 ± 4	18 ± 4	16 ± 4	15 ± 4
10/16/15 - 10/23/15	25 ± 5	25 ± 5	24 ± 5	24 ± 5	26 ± 5
10/23/15 - 10/30/15	13 ± 4	15 ± 4	11 ± 4	15 ± 4	16 ± 4
10/30/15 - 11/06/15	20 ± 4	19 ± 4	18 ± 4	18 ± 4	16 ± 4
11/06/15 - 11/13/15	30 ± 6 (1)	21 ± 5 (1)	21 ± 5	19 ± 5	20 ± 5
11/13/15 - 11/20/15	(1)	14 ± 4	15 ± 4	18 ± 5	12 ± 4
11/20/15 - 11/27/15	18 ± 4 (1)	15 ± 4	18 ± 4	18 ± 4	17 ± 4
11/27/15 - 12/04/15	17 ± 4	16 ± 4	17 ± 4	14 ± 4	15 ± 4
12/04/15 - 12/11/15	30 ± 5	35 ± 6	29 ± 5	31 ± 5	24 ± 5
12/11/15 - 12/18/15	17 ± 4	16 ± 4	14 ± 4	18 ± 4	14 ± 4
12/18/15 - 12/26/15	28 ± 5	27 ± 5	23 ± 4	22 ± 4	29 ± 5
12/26/15 - 01/02/16	24 ± 5	17 ± 4	17 ± 5	18 ± 5	21 ± 5
MEAN	18 ± 14	17 ± 13	17 ± 12	17 ± 12	16 ± 12

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

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, 2015**

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
01/02/15 - 01/30/15	10	25	20 ± 11	01/02/15 - 01/30/15	10	25	19 ± 9	01/02/15 - 01/30/15	11	29	20 ± 11	01/02/15 - 01/30/15	9	21	17 ± 10
01/30/15 - 02/27/15	16	33	24 ± 14	01/30/15 - 02/27/15	14	37	24 ± 12	01/30/15 - 02/27/15	13	34	25 ± 14	01/30/15 - 02/27/15	16	26	21 ± 11
02/27/15 - 04/02/15	7	24	16 ± 10	02/27/15 - 04/02/15	10	25	15 ± 7	02/27/15 - 04/02/15	10	22	14 ± 8	02/27/15 - 04/02/15	10	21	15 ± 9
04/02/15 - 05/01/15	8	17	12 ± 5	04/02/15 - 05/01/15	7	17	12 ± 6	04/02/15 - 05/01/15	6	17	12 ± 6	04/02/15 - 05/01/15	8	13	11 ± 5
05/01/15 - 05/29/15	8	20	12 ± 7	05/01/15 - 05/29/15	6	19	12 ± 8	05/01/15 - 05/29/15	6	19	12 ± 8	05/01/15 - 05/29/15	8	14	10 ± 6
05/29/15 - 07/03/15	6	14	10 ± 5	05/29/15 - 07/03/15	6	22	11 ± 6	05/29/15 - 07/03/15	7	15	11 ± 4	05/29/15 - 07/03/15	7	12	9 ± 4
07/03/15 - 07/31/15	10	19	13 ± 5	07/03/15 - 07/31/15	6	21	13 ± 7	07/03/15 - 07/31/15	12	22	16 ± 5	07/03/15 - 07/31/15	11	19	14 ± 6
07/31/15 - 09/04/15	12	38	21 ± 14	07/31/15 - 09/04/15	13	35	22 ± 12	07/31/15 - 09/04/15	14	36	21 ± 13	07/31/15 - 09/04/15	15	31	21 ± 12
09/04/15 - 10/02/15	12	31	18 ± 13	09/04/15 - 10/02/15	11	38	20 ± 14	09/04/15 - 10/02/15	8	31	18 ± 15	09/04/15 - 10/02/15	14	31	21 ± 15
10/02/15 - 10/30/15	13	27	18 ± 10	10/02/15 - 10/30/15	12	30	17 ± 11	10/02/15 - 10/30/15	11	25	17 ± 9	10/02/15 - 10/30/15	13	26	18 ± 11
10/30/15 - 12/04/15	13	28	18 ± 8	10/30/15 - 12/04/15	11	25	18 ± 8	10/30/15 - 12/04/15	14	30	18 ± 7	10/30/15 - 12/04/15	12	20	16 ± 6
12/04/15 - 01/02/16	13	31	22 ± 13	12/04/15 - 01/02/16	14	34	23 ± 14	12/04/15 - 01/02/16	14	35	23 ± 13	12/04/15 - 01/02/16	14	29	22 ± 12
01/02/15 - 01/02/16	6	38	17 ± 13	01/02/15 - 01/02/16	6	38	17 ± 13	01/02/15 - 01/02/16	6	36	17 ± 13	01/02/15 - 01/02/16	7	31	16 ± 12

Table C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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	01/02/15 - 04/02/15	< 2	< 3	< 11	< 3	< 7	< 3	< 6	< 2	< 3	< 66	< 38
	04/02/15 - 07/03/15	< 3	< 5	< 12	< 3	< 8	< 4	< 9	< 4	< 4	< 126	< 29
	07/03/15 - 10/02/15	< 3	< 4	< 12	< 3	< 7	< 4	< 7	< 3	< 2	< 96	< 48
	10/02/15 - 01/02/16	< 2	< 2	< 5	< 3	< 4	< 2	< 4	< 2	< 2	< 19	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-02	01/02/15 - 04/02/15	< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 2	< 2	< 67	< 19
	04/02/15 - 07/03/15	< 3	< 3	< 11	< 4	< 9	< 4	< 7	< 3	< 3	< 62	< 52
	07/03/15 - 10/02/15	< 4	< 4	< 13	< 4	< 10	< 6	< 9	< 4	< 3	< 106	< 49
	10/02/15 - 01/02/16	< 3	< 3	< 6	< 2	< 7	< 3	< 5	< 3	< 3	< 31	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-03	01/02/15 - 04/02/15	< 2	< 2	< 7	< 2	< 5	< 3	< 5	< 2	< 2	< 81	< 31
	04/02/15 - 07/03/15	< 2	< 3	< 7	< 2	< 7	< 3	< 7	< 2	< 3	< 105	< 33
	07/03/15 - 10/02/15	< 2	< 2	< 7	< 2	< 4	< 2	< 5	< 2	< 2	< 69	< 20
	10/02/15 - 01/02/16	< 5	< 5	< 12	< 4	< 10	< 5	< 10	< 4	< 4	< 50	< 14
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-04	01/02/15 - 04/02/15	< 3	< 3	< 8	< 2	< 7	< 3	< 5	< 2	< 2	< 88	< 41
	04/02/15 - 07/03/15	< 2	< 3	< 9	< 2	< 7	< 3	< 5	< 2	< 2	< 73	< 34
	07/03/15 - 10/02/15	< 3	< 5	< 11	< 2	< 9	< 4	< 7	< 3	< 3	< 77	< 43
	10/02/15 - 01/02/16	< 3	< 3	< 3	< 3	< 6	< 3	< 5	< 3	< 3	< 29	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-07	01/02/15 - 04/02/15	< 2	< 3	< 7	< 1	< 5	< 3	< 5	< 2	< 2	< 70	< 24
	04/02/15 - 07/03/15	< 4	< 6	< 16	< 4	< 12	< 5	< 8	< 4	< 4	< 118	< 42
	07/03/15 - 10/02/15	< 3	< 4	< 9	< 3	< 4	< 3	< 5	< 3	< 2	< 76	< 26
	10/02/15 - 01/02/16	< 2	< 3	< 6	< 2	< 5	< 3	< 4	< 2	< 2	< 27	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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-08	01/02/15 - 04/02/15	< 3	< 4	< 11	< 3	< 7	< 5	< 8	< 3	< 4	< 112	< 56
	04/02/15 - 07/03/15	< 3	< 3	< 12	< 3	< 8	< 4	< 7	< 3	< 3	< 76	< 46
	07/03/15 - 10/02/15	< 2	< 3	< 11	< 2	< 7	< 4	< 8	< 2	< 2	< 82	< 33
	10/02/15 - 01/02/16	< 4	< 4	< 8	< 4	< 6	< 5	< 7	< 4	< 3	< 43	< 18
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-10	01/02/15 - 04/02/15	< 2	< 3	< 8	< 2	< 5	< 3	< 6	< 2	< 2	< 87	< 44
	04/02/15 - 07/03/15	< 3	< 5	< 12	< 4	< 9	< 6	< 8	< 4	< 4	< 122	< 49
	07/03/15 - 10/02/15	< 4	< 4	< 14	< 3	< 7	< 5	< 11	< 4	< 3	< 137	< 37
	10/02/15 - 01/02/16	< 2	< 2	< 4	< 2	< 4	< 2	< 5	< 2	< 2	< 27	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-12	01/02/15 - 04/02/15	< 3	< 4	< 11	< 3	< 8	< 4	< 8	< 3	< 3	< 130	< 38
	04/02/15 - 07/03/15	< 2	< 4	< 10	< 2	< 7	< 3	< 4	< 2	< 2	< 75	< 40
	07/03/15 - 10/02/15	< 2	< 3	< 10	< 3	< 7	< 4	< 6	< 3	< 3	< 78	< 39
	10/02/15 - 01/02/16	< 2	< 2	< 6	< 2	< 6	< 2	< 4	< 2	< 2	< 21	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-14	01/02/15 - 04/02/15	< 2	< 2	< 7	< 2	< 5	< 3	< 5	< 2	< 1	< 70	< 28
	04/02/15 - 07/03/15	< 1	< 2	< 5	< 2	< 3	< 2	< 3	< 1	< 1	< 39	< 20
	07/03/15 - 10/02/15	< 2	< 2	< 5	< 2	< 6	< 3	< 4	< 2	< 2	< 59	< 25
	10/02/15 - 01/02/16	< 2	< 4	< 9	< 4	< 6	< 3	< 4	< 3	< 3	< 34	< 16
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-45	01/02/15 - 04/02/15	< 2	< 3	< 10	< 3	< 6	< 3	< 6	< 2	< 2	< 86	< 39
	04/02/15 - 07/03/15	< 2	< 3	< 7	< 2	< 4	< 3	< 5	< 2	< 2	< 68	< 34
	07/03/15 - 10/02/15	< 3	< 3	< 7	< 3	< 5	< 3	< 6	< 3	< 2	< 80	< 29
	10/02/15 - 01/02/16	< 2	< 3	< 6	< 2	< 6	< 3	< 5	< 2	< 2	< 26	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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-53	01/02/15 - 04/02/15	< 2	< 2	< 9	< 2	< 7	< 3	< 7	< 2	< 1	< 78	< 34
	04/02/15 - 07/03/15	< 2	< 3	< 7	< 2	< 5	< 3	< 4	< 2	< 2	< 56	< 28
	07/03/15 - 10/02/15	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 3	< 1	< 68	< 36
	10/02/15 - 01/02/16	< 2	< 3	< 7	< 2	< 6	< 2	< 4	< 3	< 2	< 27	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-55	01/02/15 - 04/02/15	< 3	< 4	< 9	< 3	< 6	< 4	< 7	< 2	< 3	< 110	< 41
	04/02/15 - 07/03/15	< 2	< 2	< 6	< 2	< 5	< 3	< 4	< 2	< 2	< 66	< 31
	07/03/15 - 10/02/15	< 3	< 2	< 8	< 3	< 8	< 4	< 5	< 3	< 2	< 86	< 28
	10/02/15 - 01/02/16	< 5	< 4	< 10	< 5	< 11	< 5	< 8	< 4	< 4	< 43	< 22
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-56	01/02/15 - 04/02/15	< 2	< 4	< 9	< 2	< 6	< 3	< 6	< 3	< 2	< 99	< 34
	04/02/15 - 07/03/15	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 2	< 1	< 55	< 23
	07/03/15 - 10/02/15	< 2	< 3	< 9	< 3	< 5	< 3	< 6	< 2	< 2	< 74	< 30
	10/02/15 - 01/02/16	< 2	< 3	< 7	< 3	< 6	< 3	< 5	< 3	< 2	< 24	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-
D-58	01/02/15 - 04/02/15	< 4	< 6	< 17	< 4	< 10	< 7	< 11	< 4	< 4	< 179	< 68
	04/02/15 - 07/03/15	< 3	< 3	< 10	< 3	< 7	< 4	< 6	< 2	< 2	< 88	< 38
	07/03/15 - 10/02/15	< 3	< 4	< 10	< 2	< 6	< 3	< 6	< 2	< 2	< 58	< 33
	10/02/15 - 01/02/16	< 3	< 3	< 6	< 2	< 7	< 3	< 5	< 3	< 2	< 29	< 13
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-VI.1 **CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

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

COLLECTION	GROUP I			GROUP II					
PERIOD	D-01	D-02	D-03	D-04	D-07	D-45	D-53	D-56	D-58
01/02/15 - 01/09/15	< 14	< 38	< 38	< 37	< 38	< 41	< 47	< 47	< 47
01/09/15 - 01/16/15	< 36	< 36	< 36	< 36	< 31	< 31	< 33	< 33	< 33
01/16/15 - 01/23/15	< 9	< 24	< 24	< 24	< 25	< 25	< 27	< 26	< 26
01/23/15 - 01/30/15	< 64	< 64	< 64	< 64	< 23	< 49	< 47	< 18	< 47
01/30/15 - 02/06/15	< 15	< 40	< 40	< 40	< 40	< 52	< 47	< 47	< 20
02/06/15 - 02/13/15	< 30	< 68	< 68	< 68	< 69	< 68	< 60	< 60	< 60
02/13/15 - 02/20/15	< 16	< 40	< 40	< 40	< 41	< 32	< 43	< 43	< 43
02/20/15 - 02/27/15	< 36	< 15	< 36	< 36	< 36	< 34	< 39	< 39	< 39
02/27/15 - 03/06/15	< 20	< 45	< 45	< 45	< 45	< 42	< 49	< 49	< 49
03/06/15 - 03/13/15	< 28	< 28	< 11	< 28	< 29	< 33	< 36	< 36	< 36
03/13/15 - 03/20/15	< 28	< 62	< 62	< 62	< 62	< 40	< 62	< 62	< 62
03/20/15 - 03/27/15	< 46	< 45	< 45	< 46	< 46	< 49	< 53	< 52	< 52
03/27/15 - 04/02/15	< 16	< 43	< 43	< 42	< 44	< 47	< 40	< 39	< 39
04/02/15 - 04/10/15	< 69	< 69	< 69	< 69	< 30	< 51	< 58	< 58	< 58
04/10/15 - 04/17/15	< 51	< 52	< 52	< 51	< 70	< 67	< 67	< 20	< 27
04/17/15 - 04/24/15	< 69	< 69	< 69	< 69	< 29	< 66	< 66	< 66	< 66
04/24/15 - 05/01/15	< 47	< 48	< 48	< 48	< 41	< 38	< 37	< 37	< 37
05/01/15 - 05/06/15	< 66	< 65	< 65	< 66	< 55	< 30	< 69	< 69	< 69
05/06/15 - 05/15/15	< 52	< 52	< 52	< 37	< 39	< 20	< 29	< 29	< 29
05/15/15 - 05/22/15	< 69	< 69	< 69	< 70	< 69	< 65	< 70	< 61	< 61
05/22/15 - 05/29/15	< 27	< 27	< 27	< 27	< 68	< 66	< 66	< 66	< 66
05/29/15 - 06/05/15	< 50	< 51	< 50	< 53	< 51	< 44	< 44	< 66	< 66
06/05/15 - 06/12/15	< 25	< 27	< 27	< 27	< 43	< 21	< 21	< 44	< 43
06/12/15 - 06/19/15	< 61	< 62	< 62	< 59	< 58	< 62	< 24	< 63	< 63
06/19/15 - 06/26/15	< 54 (1)	< 54 (1)	< 54 (1)	< 53 (1)	< 59 (1)	< 53	< 21	< 51	< 51
06/26/15 - 07/03/15	< 69	< 30	< 68	< 69	< 69	< 67	< 56 (1)	< 51	< 51
07/03/15 - 07/10/15	< 59	< 23	< 59	< 59	< 59	< 69	< 68	< 68	< 68
07/10/15 - 07/17/15	< 55	< 55	< 55	< 55	< 65	< 45	< 44	< 43	< 24
07/17/15 - 07/24/15	< 39	< 39	< 39	< 39	< 15	< 39	< 43	< 41	< 43
07/24/15 - 07/31/15	< 67	< 68	< 68	< 67	< 45	< 53	(1)	< 50	< 22
07/31/15 - 08/07/15	< 60	< 59	< 59	< 59	< 23	< 28	< 52	< 51	< 51
08/07/15 - 08/14/15	< 55 (1)	< 40	< 38	< 50 (1)	< 40	< 15	< 34	< 35	< 35
08/14/15 - 08/21/15	< 53 (1)	< 68	< 61	< 53 (1)	< 64	< 65	< 68	< 65	< 68
08/21/15 - 08/28/15	< 68	< 63	< 61	< 63	< 25	< 47	< 44	< 44	< 44
08/28/15 - 09/04/15	< 50	< 49	< 54	< 50	< 19	< 21	< 42	< 42	< 43
09/04/15 - 09/11/15	< 65	< 66	(1)	< 22	< 51 (1)	< 70	< 69	< 68	< 28
09/11/15 - 09/18/15	< 27	< 64	< 54 (1)	< 64	< 65	< 51	< 48	< 48	< 19
09/18/15 - 09/25/15	< 66	< 27	< 67	< 67	< 67	< 54	< 53	< 29	< 54
09/25/15 - 10/02/15	< 17	< 40	< 40	< 40	< 40	< 26	< 63	< 63	< 65
10/02/15 - 10/09/15	< 37	< 68	< 68	< 68	< 68	< 54	< 51	< 18	< 52
10/09/15 - 10/16/15	< 16	< 37	< 38	< 38	< 38	< 48	< 20	< 47	< 48
10/16/15 - 10/23/15	< 46	< 47 (1)	< 46	< 46	< 21	< 64	< 26	< 62	< 62
10/23/15 - 10/30/15	< 26	< 62	(1)	< 62	< 63	< 46	< 44	< 18	< 45
10/30/15 - 11/06/15	< 21	< 50	< 51	< 50	< 50	< 38	< 34	< 34	< 35
11/06/15 - 11/13/15	< 17	< 43	< 43	< 43	< 44	< 39	< 49	< 49	< 50
11/13/15 - 11/20/15	< 29	< 69	< 67	< 69	< 68	< 25	< 62	< 59	< 61
11/20/15 - 11/27/15	< 25	< 66	< 66	< 66	< 66	< 61	< 57	< 24	< 59
11/27/15 - 12/04/15	< 18	< 44	< 46	< 44	< 46	< 51	< 45	< 45	< 47
12/04/15 - 12/11/15	< 45	< 46	< 46	< 46	< 64	< 36	< 34	< 34	< 26
12/11/15 - 12/18/15	< 63	< 34	< 63	< 65	< 65	< 60	< 63	< 65	< 65
12/18/15 - 12/26/15	< 10	< 25	< 26	< 56 (1)	< 26	< 13	< 27	< 25	< 26
12/26/15 - 01/02/16	< 44	< 43	< 44	< 44	< 19	< 20	< 36	< 36	< 38
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, 2015**

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

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

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-VII.1 **CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	FARM D-25
01/06/15 (1)	
02/06/15 (1)	
03/06/15 (1)	
04/02/15	< 0.4
05/06/15	< 0.6
05/21/15	< 0.7
06/04/15	< 0.9
06/18/15	< 0.7
07/01/15	< 0.8
07/16/15	< 0.3
07/30/15	< 0.6
08/13/15	< 0.8
08/27/15	< 0.6
09/10/15	< 0.6
09/24/15	< 0.4
10/08/15	< 0.7
10/22/15	< 0.3
11/05/15	< 0.5
12/04/15 (1)	
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, 2015**

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	01/06/15 (1)											
	02/06/15 (1)											
	03/06/15 (1)											
	04/02/15	< 8	< 9	< 18	< 7	< 17	< 10	< 16	< 8	< 9	< 59	< 9
	05/06/15	< 3	< 3	< 8	< 3	< 7	< 3	< 6	< 3	< 3	< 28	< 9
	05/21/15	< 8	< 8	< 14	< 9	< 18	< 10	< 16	< 7	< 8	< 52	< 12
	06/04/15	< 9	< 7	< 24	< 11	< 22	< 10	< 14	< 7	< 8	< 42	< 14
	06/18/15	< 6	< 9	< 15	< 5	< 16	< 7	< 11	< 6	< 8	< 37	< 13
	07/01/15	< 6	< 6	< 15	< 8	< 12	< 6	< 10	< 6	< 6	< 36	< 10
	07/16/15	< 9	< 7	< 15	< 8	< 14	< 8	< 14	< 7	< 7	< 49	< 11
	07/30/15	< 6	< 6	< 15	< 6	< 14	< 6	< 13	< 6	< 6	< 38	< 15
	08/13/15	< 9	< 9	< 18	< 8	< 20	< 9	< 14	< 9	< 9	< 48	< 13
	08/27/15	< 8	< 7	< 15	< 12	< 26	< 10	< 17	< 6	< 9	< 39	< 11
	09/10/15	< 6	< 6	< 15	< 8	< 15	< 6	< 12	< 5	< 7	< 25	< 9
	09/24/15	< 8	< 6	< 20	< 6	< 20	< 8	< 11	< 8	< 8	< 36	< 12
	10/08/15	< 6	< 6	< 15	< 6	< 14	< 7	< 12	< 6	< 7	< 31	< 6
	10/22/15	< 7	< 7	< 17	< 8	< 15	< 7	< 13	< 7	< 7	< 32	< 5
	11/05/15	< 6	< 7	< 18	< 7	< 16	< 7	< 11	< 5	< 7	< 29	< 7
	12/04/15 (1)											
	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, 2015**

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													
	09/24/15 (1)												
	09/24/15 (1)												
	MEAN												
D-QUAD 1													
Cabbage	09/24/15	< 20	< 18	< 51	< 17	< 36	< 18	< 34	< 52	< 18	< 21	< 101	< 37
Turnips	09/24/15	< 25	< 27	< 74	< 29	< 71	< 25	< 48	< 55	< 19	< 27	< 132	< 23
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 2													
	09/24/15 (1)												
	09/24/15 (1)												
	MEAN												
D-QUAD 3													
	09/24/15 (1)												
	09/24/15 (1)												
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
D-QUAD 4													
Broccoli	09/24/15	< 21	< 24	< 56	< 18	< 53	< 22	< 38	< 54	< 20	< 24	< 115	< 26
Carrots	09/24/15	< 18	< 14	< 35	< 15	< 42	< 18	< 32	< 40	< 14	< 18	< 79	< 27
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-IX.1 QUARTERLY OSLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2015

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	29.9 ± 6.3	34.3	29.6	28.5	27.0
D-01-2	29.5 ± 6.2	34.0	28.0	28.9	27.0
D-02-1	29.6 ± 8.5	35.6	27.4	29.3	26.0
D-02-2	31.9 ± 6.4	36.3	32.1	29.6	29.4
D-03-1	26.2 ± 10.3	33.6	24.0	25.5	21.8
D-03-2	25.8 ± 6.2	30.3	24.8	24.8	23.2
D-04-1	30.6 ± 7.0	35.6	29.9	29.2	27.5
D-04-2	29.4 ± 6.3	33.0	27.8	30.9	25.9
D-07-1	28.6 ± 9.0	35.3	26.0	27.0	26.0
D-07-2	29.9 ± 9.0	35.0	26.6	28.1	(1)
D-08-1	29.9 ± 10.0	37.0	27.5	29.3	25.6
D-08-2	29.3 ± 9.5	35.4	28.3	29.6	23.9
D-10-1	28.7 ± 8.4	34.7	25.6	28.4	26.1
D-10-2	29.9 ± 4.8	33.4	28.2	29.3	28.6
D-12-1	27.4 ± 7.7	32.9	26.8	25.7	24.1
D-12-2	26.9 ± 7.8	32.7	24.7	25.4	24.6
D-14-1	25.8 ± 6.9	30.8	25.0	23.5	23.7
D-14-2	27.9 ± 6.4	32.6	26.5	26.6	25.7
D-45-1	30.5 ± 6.1	34.7	29.9	29.9	27.4
D-45-2	32.3 ± 6.0	36.7	30.5	31.4	30.4
D-53-1	25.9 ± 9.6	32.9	25.0	22.7	22.9
D-53-2	25.0 ± 9.4	31.4	24.8	23.7	20.1
D-55-1	28.6 ± 6.8	33.2	28.3	27.8	25.0
D-55-2	29.3 ± 6.3	33.8	28.5	28.6	26.4
D-56-1	25.1 ± 7.1	30.3	24.1	23.3	22.6
D-56-2	25.3 ± 6.2	29.8	24.7	23.6	23.0
D-58-1	25.9 ± 6.7	30.7	24.0	25.7	23.2
D-58-2	24.5 ± 5.9	28.7	23.1	24.2	21.9
D-101-1	30.2 ± 6.2	34.5	29.2	30.0	27.2
D-101-2	27.8 ± 9.4	34.4	26.5	26.7	23.4
D-102-1	30.7 ± 8.4	36.2	27.1	31.6	27.8
D-102-2	30.8 ± 5.8	34.6	30.6	30.6	27.5
D-103-1	29.2 ± 9.8	36.3	27.9	27.7	25.0
D-103-2	29.9 ± 8.5	35.3	26.3	31.1	26.7
D-104-1	30.1 ± 10.1	35.9	(1)	28.1	26.4
D-104-2	32.0 ± 9.4	37.9	33.0	30.0	26.9
D-105-1	29.1 ± 8.7	35.2	29.2	26.0	26.0
D-105-2	30.6 ± 8.6	37.0	27.6	28.8	29.1
D-106-1	27.7 ± 8.1	33.7	25.8	26.2	25.0
D-106-2	25.7 ± 9.4	32.7	23.7	23.4	23.0
D-107-1	26.3 ± 9.7	33.4	24.8	24.4	22.5
D-107-2	26.2 ± 7.9	31.9	24.2	25.5	23.1
D-108-1	30.5 ± 10.2	38.1	28.7	27.5	27.8
D-108-2	28.2 ± 10.3	35.7	25.8	27.1	24.2
D-109-1	29.3 ± 10.1	36.1	26.2	29.9	24.8
D-109-2	29.2 ± 9.5	35.9	28.3	27.7	24.7
D-110-3	33.0 ± 5.9	37.4	31.5	31.3	31.6
D-110-4	33.0 ± 5.0	36.1	31.9	30.2	33.6

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-IX.1 QUARTERLY OSLD RESULTS FOR DRESDEN NUCLEAR POWER STATION, 2015

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
D-111-1	32.4 ± 11.9	39.2	(1)	29.9	28.1
D-111-2	30.1 ± 7.8	35.8	27.7	27.7	29.0
D-113-1	26.8 ± 9.9	34	22.8	25.4	24.8
D-113-2	28.0 ± 9.1	34.6	24.8	27.1	25.3
D-114-1	26.6 ± 10.2	33.8	25.5	25.3	21.8
D-114-2	27.7 ± 10.3	35.3	24.5	26.5	24.6
D-115-1	29.0 ± 10.8	36.9	27.5	26.8	24.7
D-115-2	30.4 ± 8.0	36.4	28.2	28.7	28.2
D-116-1	31.6 ± 10.2	39.1	29.0	30.0	28.1
D-116-2	31.3 ± 9.2	38.0	29.0	30.2	27.9
D-201-1	33.9 ± 9.2	39.2	(1)	31.2	31.3
D-201-2	33.3 ± 10.5	40.8	30.0	33.0	29.4
D-202-1	31.6 ± 6.9	36.7	30.4	29.4	29.8
D-202-2	28.9 ± 7.5	34.3	27.7	27.6	25.8
D-203-1	28.7 ± 5.8	32.6	27.6	28.7	25.7
D-203-2	28.9 ± 6.8	32.8	27.2	26.6	(1)
D-204-1	27.4 ± 7.8	32.8	26.6	26.5	23.6
D-204-2	26.1 ± 9.1	32.6	23.2	25.7	22.8
D-205-1	26.8 ± 7.2	31.7	27.1	25.1	23.3
D-205-2	27.8 ± 9.8	35.1	25.4	25.8	24.9
D-206-1	28.7 ± 11.6	35.0	(1)	27.4	23.6
D-206-2	28.9 ± 8.1	34.9	26.7	26.6	27.3
D-207-1	26.2 ± 11.9	35.1	23.1	23.8	22.9
D-207-2	26.7 ± 9.4	33.7	24.6	23.7	24.9
D-208-1	26.3 ± 9.8	33.6	23.9	24.3	23.3
D-208-2	25.2 ± 10.0	32.4	23.4	24.1	20.8
D-209-1	25.6 ± 11.1	33.6	21.4	24.8	22.4
D-209-2	26.5 ± 13.5	34.2	21.9	23.3	(1)
D-210-1	29.1 ± 9.0	35.7	27.6	27.3	25.6
D-210-2	29.5 ± 11.1	37.5	27.4	28.4	24.7
D-211-1	31.1 ± 10.0	38.5	29.6	28.5	27.8
D-211-2	30.4 ± 9.3	37.0	28.8	29.5	26.1
D-212-3	27.1 ± 8.3	33.1	23.5	26.4	25.5
D-212-4	27.8 ± 11.7	36.2	25.9	26.1	22.8
D-213-1	25.4 ± 12.7	34.8	23.4	22.6	20.8
D-213-2	25.8 ± 10.4	33.4	24.2	23.5	21.9
D-214-1	32.3 ± 12.1	40.7	29.1	32.4	26.9
D-214-2	33.6 ± 10.7	40.0	36.1	29.6	28.8
D-215-1	34.1 ± 10.2	41.4	31.5	33.3	30.0
D-215-2	31.7 ± 8.9	37.6	30.1	32.2	27.0
D-216-1	29.5 ± 10.2	36.8	28.6	27.4	25.1
D-216-2	32.9 ± 11.7	41.6	29.7	31.1	29.3
D-112A-1	27.9 ± 9.4	34.8	26.8	24.8	25.2
D-112A-2	27.3 ± 11.5	35.2	26.2	26.1	21.5

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.2 MEAN QUARTERLY OSLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR DRESDEN NUCLEAR POWER STATION, 2015

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

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	35.3 ± 4.4	35.8 ± 5.8	33.7 ± 4.1	32.8 ± 0.3
APR-JUN	27.1 ± 5.1	26.9 ± 6.5	27.2 ± 4.4	25.8 ± 3.0
JUL-SEP	27.7 ± 4.5	27.4 ± 6.1	27.5 ± 5.2	25.6 ± 0.4
OCT-DEC	25.9 ± 5.5	25.5 ± 5.7	25.4 ± 5.0	24.4 ± 0.7

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR DRESDEN NUCLEAR POWER STATION, 2015

RESULTS IN UNITS OF MREM/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	134	21.5	39.2	29.0 ± 8.9
OUTER RING	124	20.8	41.6	29.0 ± 10.1
OTHER	95	20.1	37.0	28.5 ± 7.8
CONTROL	8	24.1	32.9	27.1 ± 7.2

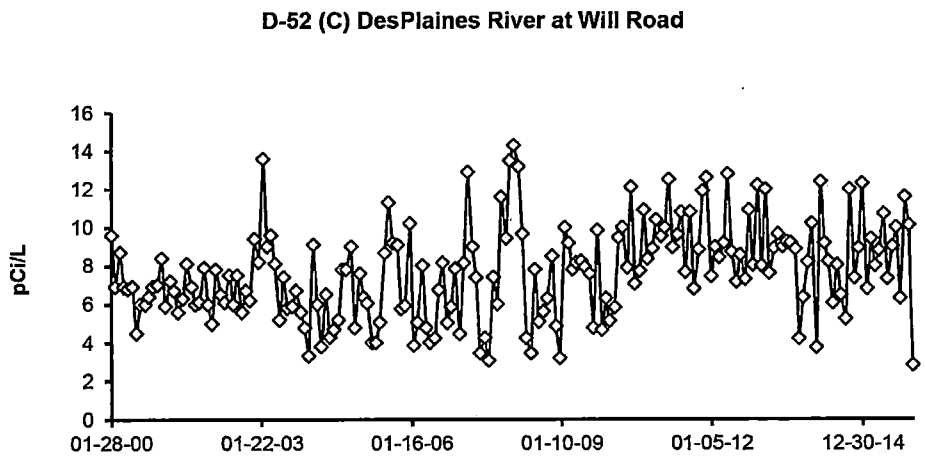
INNER RING STATIONS - D-101-1, D-101-2, D-102-1, D-102-2, D-103-1, D-103-2, D-104-1, D-104-2, D-105-1, D-105-2, D-106-1, D-106-2, D-107-1, D-107-2, D-108-1, D-108-2, D-109-1, D-109-2, D-110-3, D-110-4, D-111-1, D-111-2, D-112A-1, D-112A-2, D-113-1, D-113-2, D-114-1, D-114-2, D-115-1, D-115-2, D-116-1,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

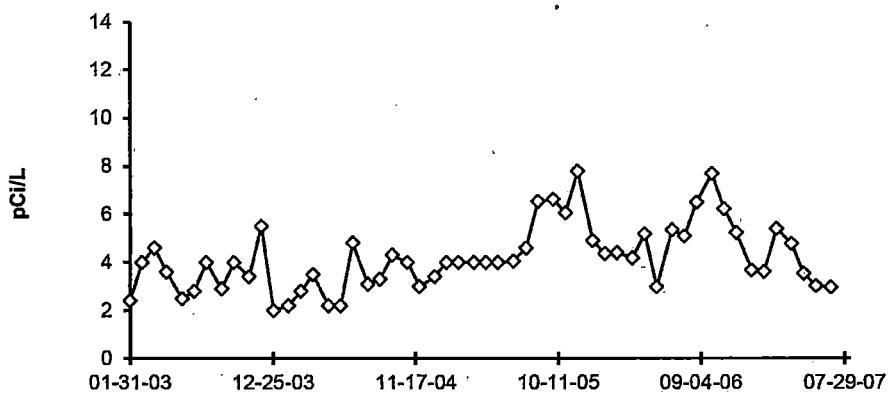
FIGURE C-1
SURFACE WATER - GROSS BETA - STATION
D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015



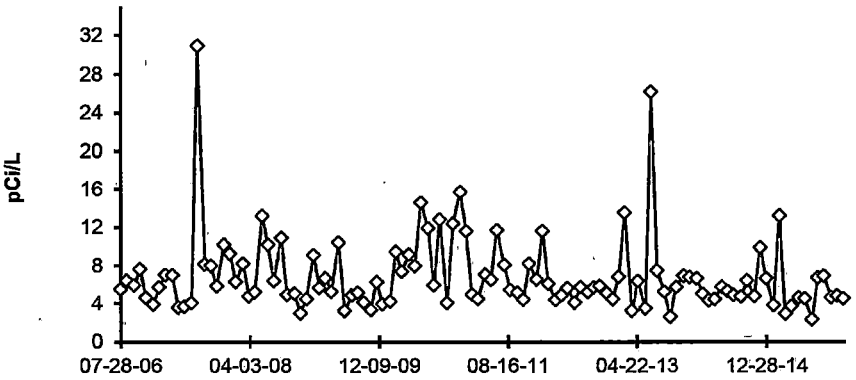
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

FIGURE C-2
SURFACE WATER - GROSS BETA - STATION D-54 (C) and D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2003 - 2015

D-54 (C) Kankakee River



D-57 (C) Kankakee River at Will Road

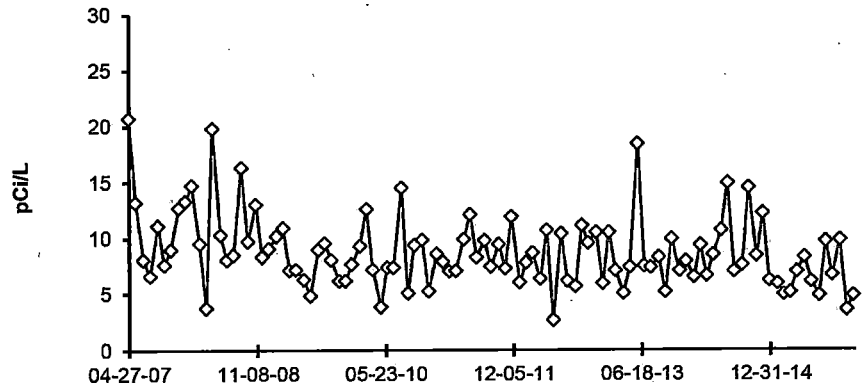


DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

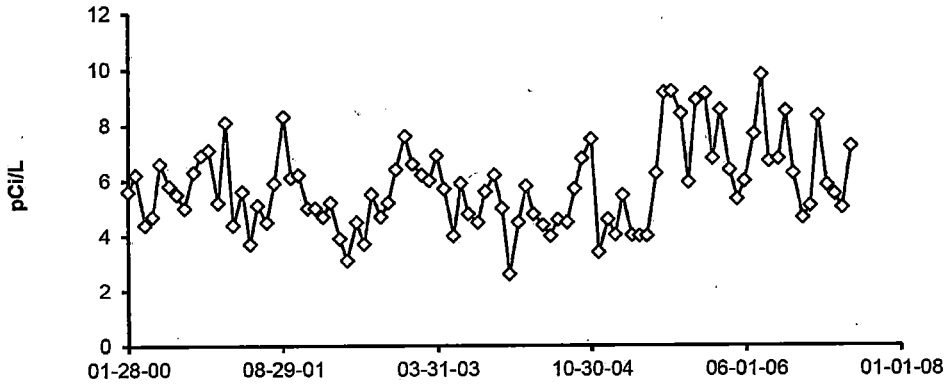
D-54 LOCATION REMOVED FROM PROGRAM JUNE 28, 2007 AND REPLACED WITH D-57

FIGURE C-3
SURFACE WATER - GROSS BETA - STATIONS D-21 and D-51 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015

D-21 Illinois River at EJ&E Bridge



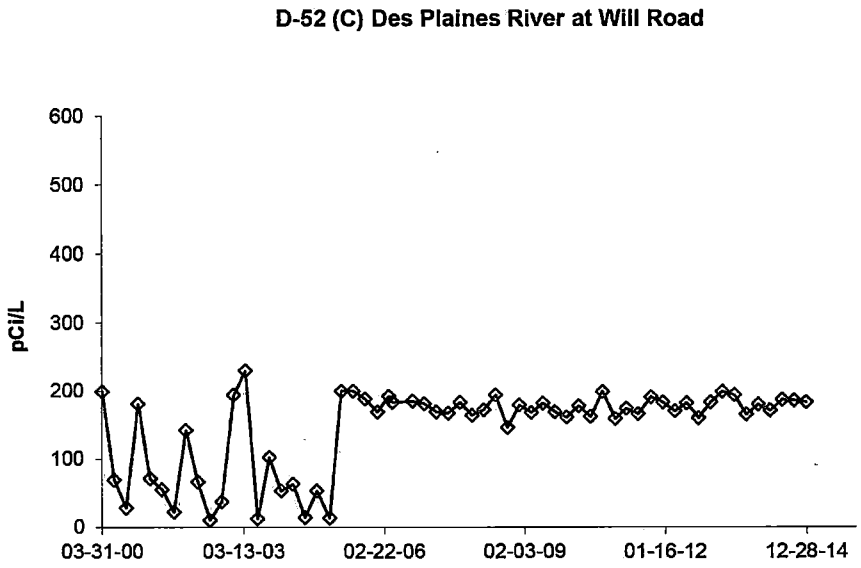
D-51 Dresden Lock & Dam



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

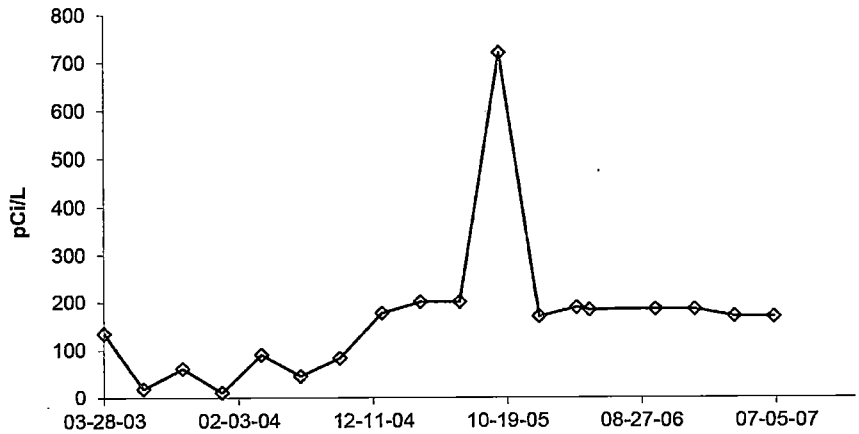
FIGURE C-4
SURFACE WATER - TRITIUM - STATION
D-52 (C) COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015



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

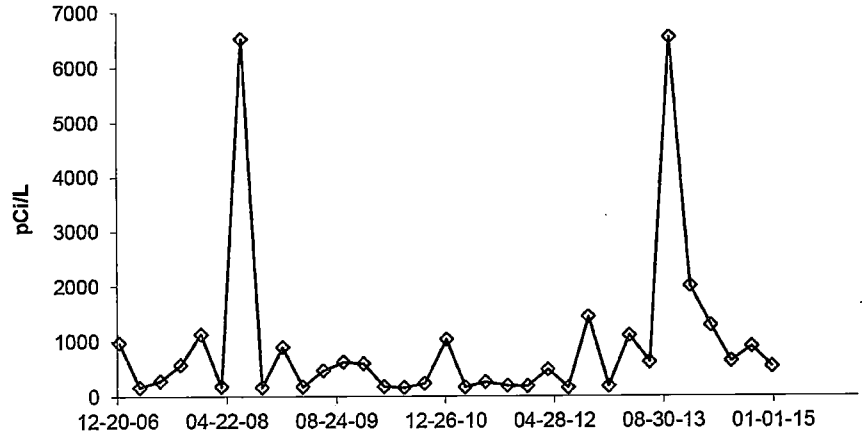
FIGURE C-5
SURFACE WATER - TRITIUM - STATION D-54 (C) AND D-57 (C) COLLECTED IN THE VICINITY OF DNPS, 2003 - 2015

D-54 (C) Kankakee River



Location shared with Braidwood Station (BD-10).

D-57 (C) Kankakee River at Will Road

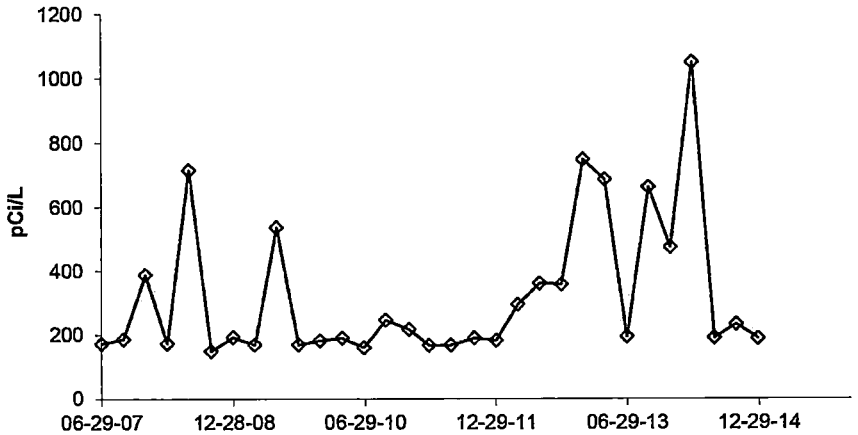


DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

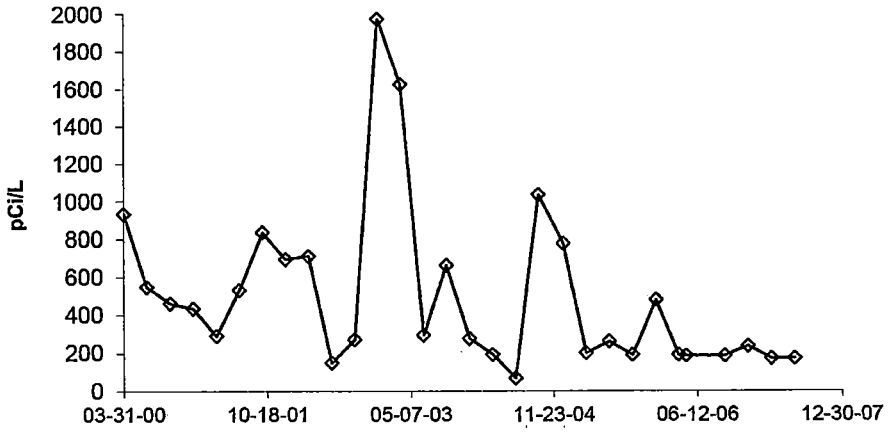
D-57 NEW STATION JULY 24, 2006. REPLACED D-54 ON JUNE 28, 2007

FIGURE C-6
SURFACE WATER - TRITIUM - STATIONS D-21 and D-51 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015

D-21 Illinois River at EJ&E Bridge



D-51 Dresden Lock & Dam

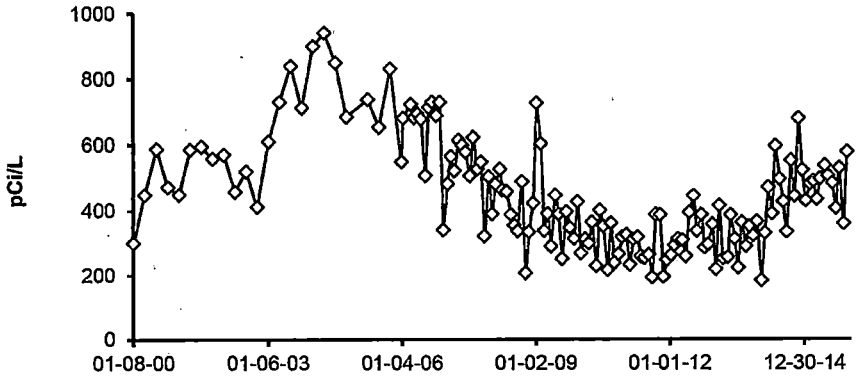


D-21 REPLACED D-51 JUNE 29, 2007

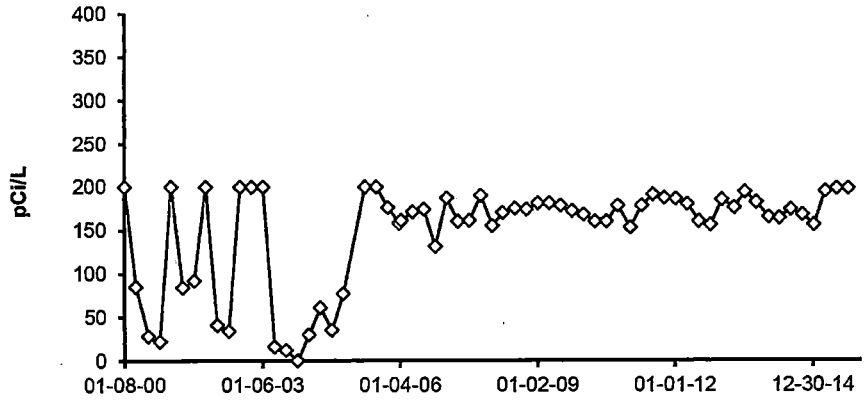
D-51 LOCATION REMOVED FROM PROGRAM JUNE 29, 2007 AND REPLACED WITH D-21

FIGURE C-7
GROUND WATER - TRITIUM - STATIONS D-23 and D-35 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015

D-23 Thorsen Well



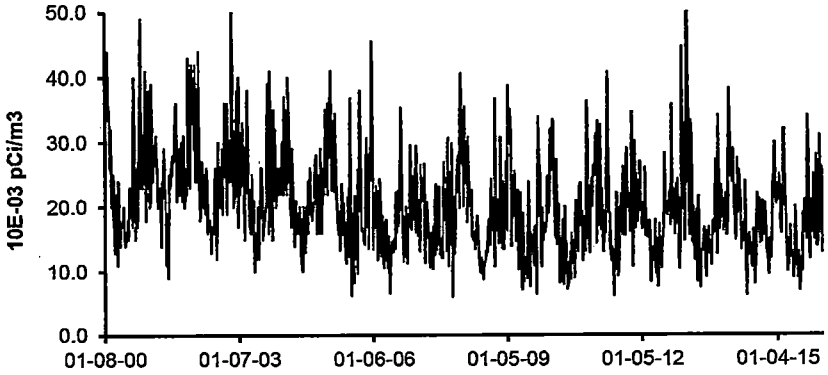
D-35 Dresden Lock and Dam



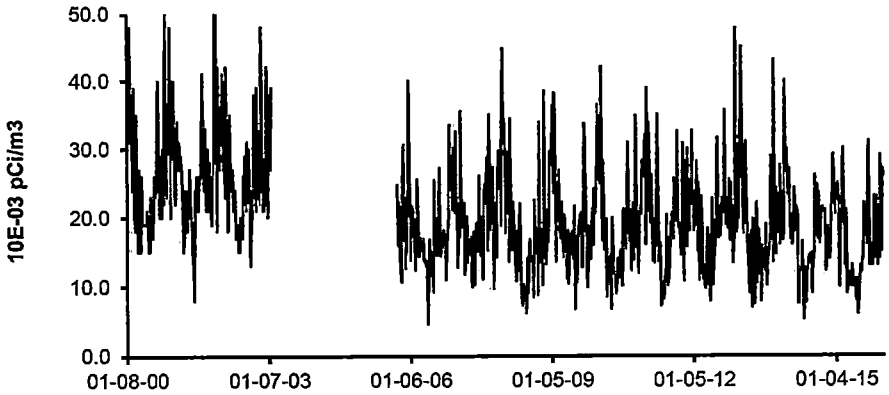
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY 2005

FIGURE C-8
AIR PARTICULATES - GROSS BETA - STATIONS D-01 and D-02 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015

D-01 Onsite Station 1



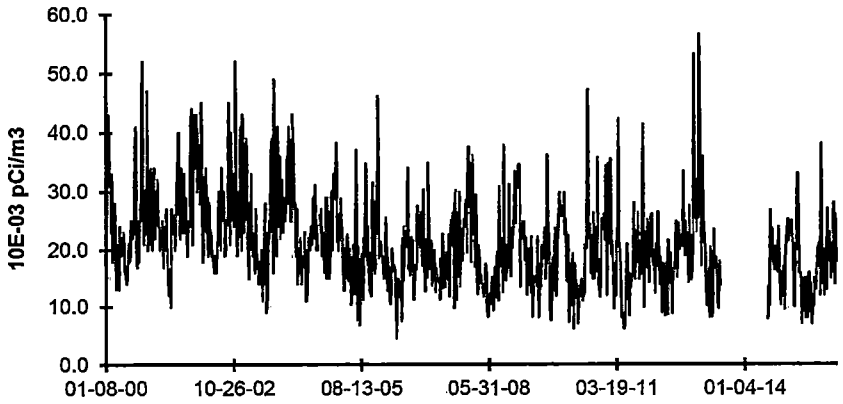
D-02 Onsite Station 2



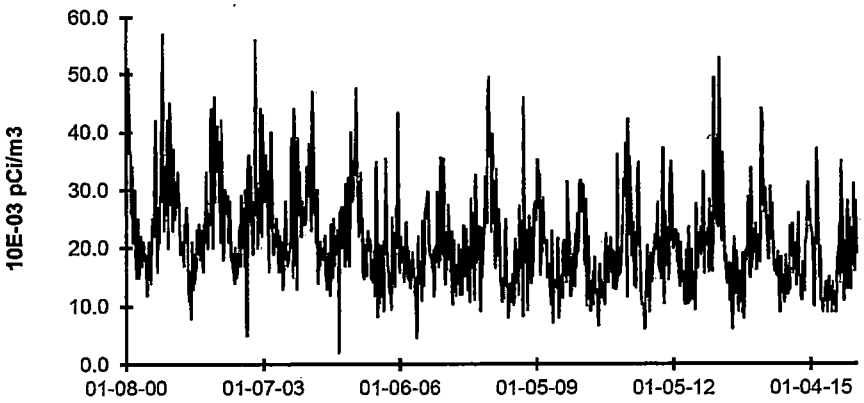
D-02 No samples; power was restored on 09-16-05.

FIGURE C-9
AIR PARTICULATES - GROSS BETA - STATIONS D-03 and D-04 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015

D-03 Onsite Station 3



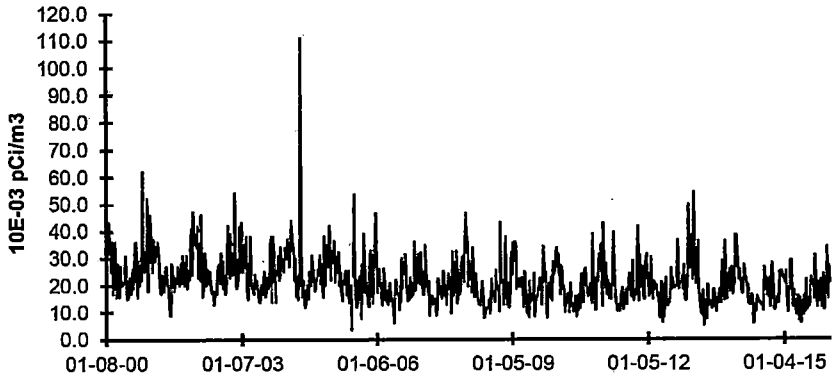
D-04 Collins Road on Station Property



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 - 2015

D-07 Clay Products, Dresden Road



D-12 (C), Quarry Road, Lisbon

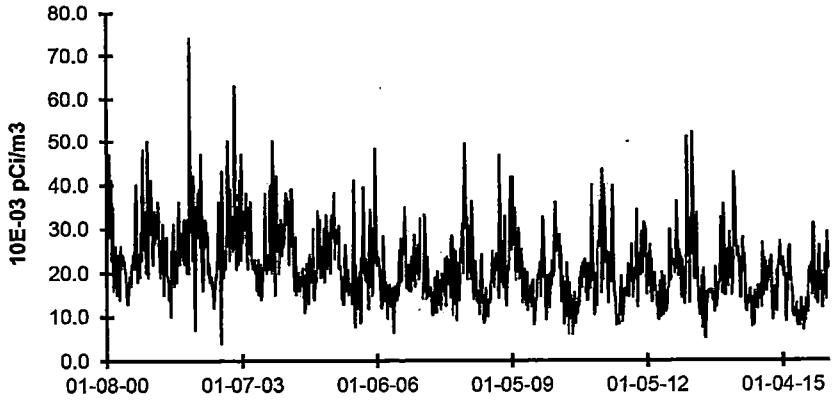
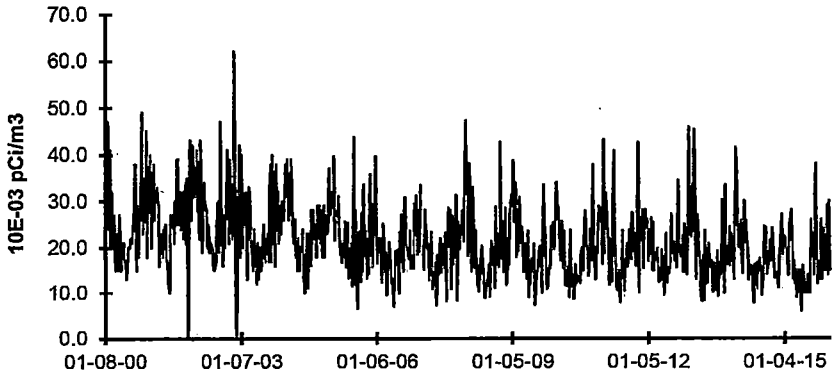


FIGURE C-11
AIR PARTICULATES - GROSS BETA - STATIONS D-45 and D-53 COLLECTED IN THE VICINITY OF DNPS, 2000 - 2015

D-45 McKinley Woods Road, Channahon



D-53 Will Road, Hollyhock

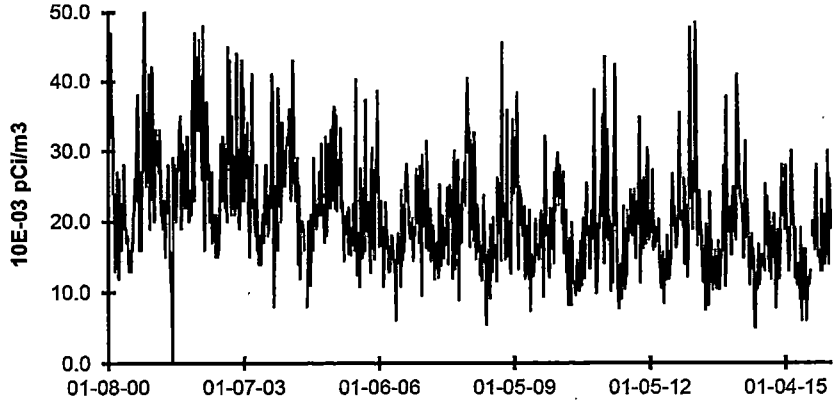
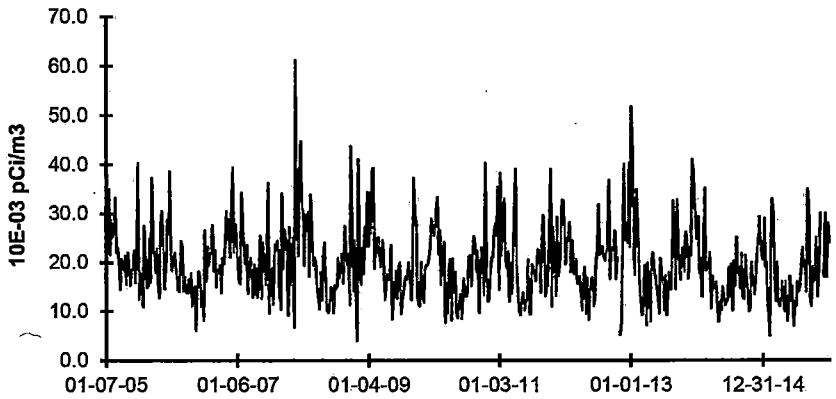


FIGURE C-12
AIR PARTICULATES - GROSS BETA - STATIONS D-08 and D-10 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2015

D-08 Jugtown Road, Prairie Parks



D-10 Goose Lake Road, Goose Lake Village

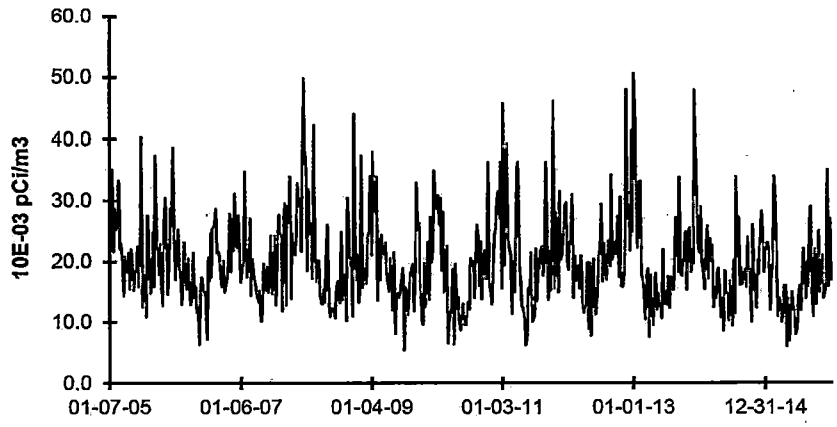
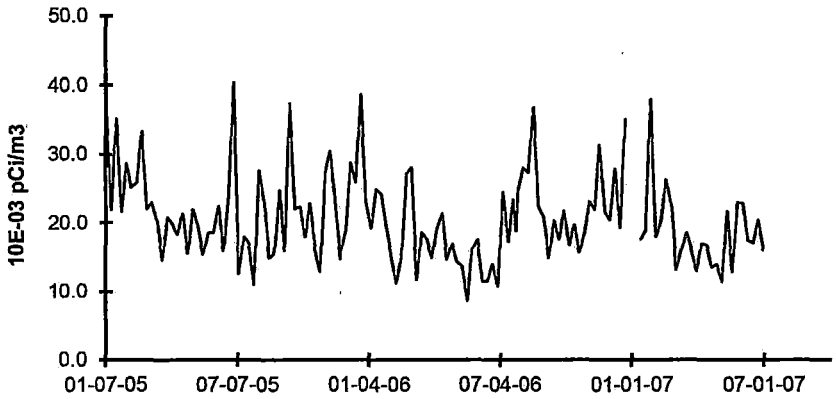
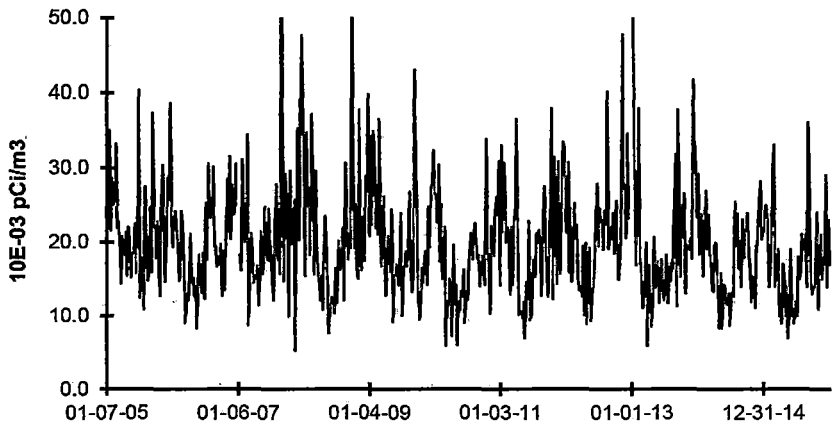


FIGURE C-13
AIR PARTICULATES - GROSS BETA - STATIONS D-13 and D-14 COLLECTED IN THE VICINITY OF DNPS, 2005 - 2015

D-13 Minooka



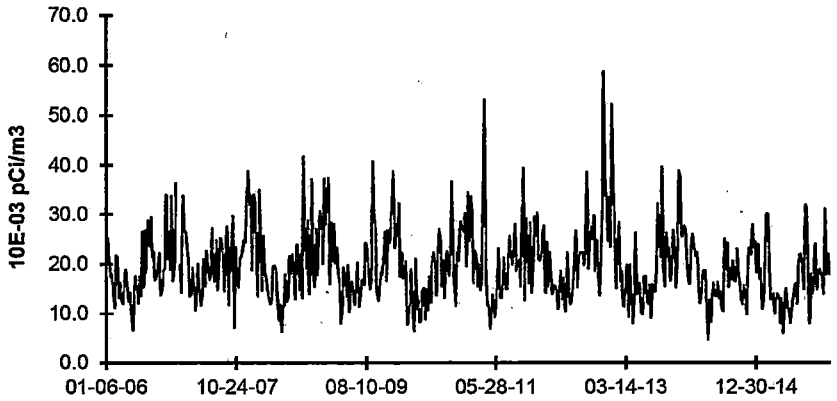
D-14 Center Street, Channahon



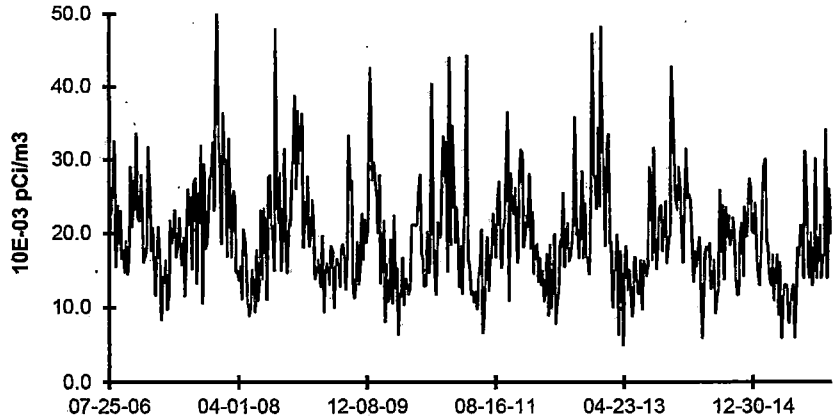
D-13 TAKEN OUT OF SERVICE JUNE 29, 2007 AND REPLACED WITH D-55

FIGURE C-14
AIR PARTICULATES - GROSS BETA - STATIONS D-55 and D-56 COLLECTED IN THE VICINITY OF DNPS, 2006-2015

D-55 Ridge Road, Minooka



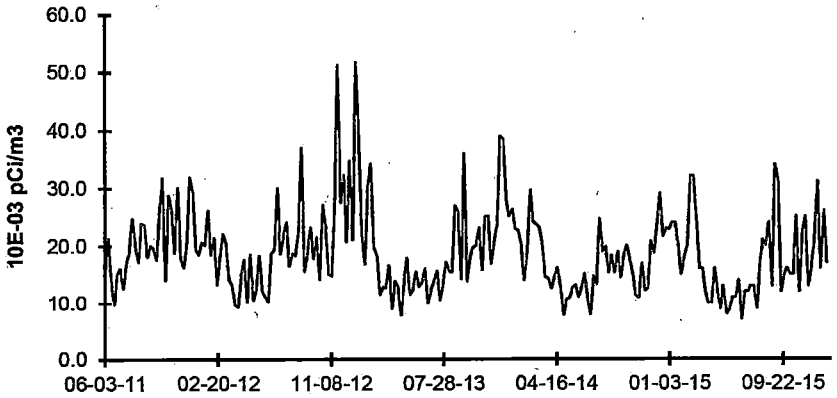
D-56 Will Road, Wildfeather



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, 2011-2015

D-58 Will Road Marina



D-58 NEW STATION IN MAY OF 2011

APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

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TABLE D-3.1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2015	E11181	Milk	Sr-89	pCi/L	88.9	97.2	0.91	A
			Sr-90	pCi/L	12.2	17.4	0.70	W
	E11182	Milk	I-131	pCi/L	61.3	65.1	0.94	A
			Ce-141	pCi/L	104	113	0.92	A
			Cr-51	pCi/L	265	276	0.96	A
			Cs-134	pCi/L	138	154	0.90	A
			Cs-137	pCi/L	205	207	0.99	A
			Co-58	pCi/L	178	183	0.97	A
			Mn-54	pCi/L	187	188	0.99	A
			Fe-59	pCi/L	182	177	1.03	A
			Zn-65	pCi/L	345	351	0.98	A
			Co-60	pCi/L	379	405	0.94	A
	E11184	AP	Ce-141	pCi	107	85.0	1.26	W
			Cr-51	pCi	261	224	1.17	A
			Cs-134	pCi	74.6	77.0	0.97	A
			Cs-137	pCi	99.6	102	0.98	A
			Co-58	pCi	99.8	110	0.91	A
			Mn-54	pCi	99.2	96.9	1.02	A
			Fe-59	pCi	109	119	0.92	A
			Zn-65	pCi	188	183	1.03	A
			Co-60	pCi	200	201	1.00	A
	E11183	Charcoal	I-131	pCi	82.9	85.4	0.97	A
	E11185	Water	Fe-55	pCi/L	1950	1900	1.03	A
June 2015	E11234	Milk	Sr-89	pCi/L	94.9	92.6	1.02	A
			Sr-90	pCi/L	14.3	12.7	1.13	A
	E11238	Milk	I-131	pCi/L	93.2	95.9	0.97	A
			Ce-141	pCi/L	Not provided for this study			
			Cr-51	pCi/L	349	276	1.26	W
			Cs-134	pCi/L	165	163	1.01	A
			Cs-137	pCi/L	143	125	1.14	A
			Co-58	pCi/L	82.0	68.4	1.20	A
			Mn-54	pCi/L	113	101	1.12	A
			Fe-59	pCi/L	184	151	1.22	W
			Zn-65	pCi/L	269	248	1.08	A
			Co-60	pCi/L	208	193	1.08	A
	E11237	AP	Ce-141	pCi	Not provided for this study			
			Cr-51	pCi	323	233	1.39	N (1)
			Cs-134	pCi	139	138	1.01	A
			Cs-137	pCi	111	106	1.05	A
			Co-58	pCi	54.0	57.8	0.93	A
			Mn-54	pCi	96.8	84.9	1.14	A
			Fe-59	pCi	162	128	1.27	W
			Zn-65	pCi	198	210	0.94	A
			Co-60	pCi	178	163	1.09	A
	E11236	Charcoal	I-131	pCi	93.9	80	1.17	A

TABLE D-3.1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2015	E11238	Water	Fe-55	pCi/L	1890	1790	1.06	A
September 2015	E11289	Milk	Sr-89	pCi/L	95.7	99.1	0.97	A
			Sr-90	pCi/L	15.4	16.4	0.94	A
	E11290	Milk	I-131	pCi/L	94.9	99.9	0.95	A
			Ce-141	pCi/L	228	213	1.07	A
			Cr-51	pCi/L	499	538	0.93	A
			Cs-134	pCi/L	208	212	0.98	A
			Cs-137	pCi/L	270	255	1.06	A
			Co-58	pCi/L	275	263	1.05	A
			Mn-54	pCi/L	320	290	1.10	A
			Fe-59	pCi/L	255	226	1.13	A
			Zn-65	pCi/L	392	353	1.11	A
			Co-60	pCi/L	350	330	1.06	A
	E11292	AP	Ce-141	pCi	104	85.1	1.22	W
			Cr-51	pCi	262	215	1.22	W
			Cs-134	pCi	86.1	84.6	1.02	A
			Cs-137	pCi	93	102	0.91	A
			Co-58	pCi	106	105	1.01	A
			Mn-54	pCi	117	116	1.01	A
			Fe-59	pCi	94.8	90.2	1.05	A
			Zn-65	pCi	160	141	1.13	A
			Co-60	pCi	146	132	1.11	A
	E11291	Charcoal	I-131	pCi	85.9	81.7	1.05	A
	E11293	Water	Fe-55	pCi/L	2090	1800	1.16	A
	E11294	Soil	Ce-141	pCi/kg	209	222	0.94	A
			Cr-51	pCi/kg	463	560	0.83	A
			Cs-134	pCi/kg	231	221	1.05	A
			Cs-137	pCi/kg	311	344	0.90	A
			Co-58	pCi/kg	245	274	0.89	A
			Mn-54	pCi/kg	297	302	0.98	A
			Fe-59	pCi/kg	248	235	1.06	A
			Zn-65	pCi/kg	347	368	0.94	A
			Co-60	pCi/kg	328	344	0.95	A
December 2015	E11354	Milk	Sr-89	pCi/L	96.2	86.8	1.11	A
			Sr-90	pCi/L	14.8	12.5	1.18	A
	E11355	Milk	I-131	pCi/L	95.1	91.2	1.04	A
			Ce-141	pCi/L	117	129	0.91	A
			Cr-51	pCi/L	265	281	0.94	A
			Cs-134	pCi/L	153	160	0.96	A
			Cs-137	pCi/L	119	115	1.03	A
			Co-58	pCi/L	107	110	0.97	A
			Mn-54	pCi/L	153	145	1.06	A
			Fe-59	pCi/L	117	108	1.08	A
			Zn-65	pCi/L	261	248	1.05	A
			Co-60	pCi/L	212	213	1.00	A

TABLE D-3.1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2015	E11357	AP	Ce-141	pCi	89.9	84.0	1.07	A
			Cr-51	pCi	215	184	1.17	A
			Cs-134	pCi	103	105	0.98	A
			Cs-137	pCi	76.6	74.8	1.02	A
			Co-58	pCi	76.2	71.9	1.06	A
			Mn-54	pCi	91.4	94.4	0.97	A
			Fe-59	pCi	78.6	70.3	1.12	A
			Zn-65	pCi	173	162	1.07	A
			Co-60	pCi	138	139	0.99	A
	E11422	AP	Sr-89	pCi	98.0	96.9	1.01	A
			Sr-90	pCi	10.0	14.0	0.71	W
	E11356	Charcoal	I-131	pCi	74.9	75.2	1.00	A
	E11358	Water	Fe-55	pCi/L	2160	1710	1.26	W
	E11353	Soil	Ce-141	pCi/kg	252	222	1.14	A
			Cr-51	pCi/kg	485	485	1.00	A
			Cs-134	pCi/kg	319	277	1.15	A
			Cs-137	pCi/kg	292	276	1.06	A
			Co-58	pCi/kg	193	190	1.02	A
			Mn-54	pCi/kg	258	250	1.03	A
			Fe-59	pCi/kg	218	186	1.17	A
			Zn-65	pCi/kg	457	429	1.07	A
			Co-60	pCi/kg	381	368	1.04	A

(1) AP Cr-51 - Cr-51 has the shortest half-life and the weakest gamma energy of the mixed nuclide sample, which produces a large error. Taking into account the error, the lowest value would be 119% of the reference value, which would be considered acceptable. NCR 15-18

(a) Teledyne Brown Engineering reported result.

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

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

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

TABLE D-3.2 **DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)**
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide*	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2015	15-MaW32	Water	Am-241	Bq/L	0.632	0.654	0.458 - 0.850	A
			Ni-63	Bq/L	2.5		(1)	A
			Pu-238	Bq/L	0.0204	0.0089	(2)	A
			Pu-239/240	Bq/L	0.9	0.8	0.582 - 1.082	A
	15-MaS32	Soil	Ni-63	Bq/kg	392	448.0	314 - 582	A
			Sr-90	Bq/kg	286	653	487 - 849	N (3)
	15-RdF32	AP	Sr-90	Bq/sample	-0.0991		(1)	A
			U-234/233	Bq/sample	0.0211	0.0155	0.0109 - 0.0202	N (3)
			U-238	Bq/sample	0.095	0.099	0.069 - 0.129	A
	15-GrF32	AP	Gr-A	Bq/sample	0.448	1.77	0.53 - 3.01	N (3)
			Gr-B	Bq/sample	0.7580	0.75	0.38 - 1.13	A
	15-RdV32	Vegetation	Cs-134	Bq/sample	8.08	7.32	5.12 - 9.52	A
			Cs-137	Bq/sample	11.6	9.18	6.43 - 11.93	W
			Co-57	Bq/sample	-0.0096		(1)	A
			Co-60	Bq/sample	6.53	5.55	3.89 - 7.22	A
			Mn-54	Bq/sample	0.0058		(1)	A
			Sr-90	Bq/sample	0.999	1.08	0.76 - 1.40	A
			Zn-65	Bq/sample	-0.108		(1)	A
September 2015	15-MaW33	Water	Am-241	Bq/L	1.012	1.055	0.739 - 1.372	A
			Ni-63	Bq/L	11.8	8.55	5.99 - 11.12	N (4)
			Pu-238	Bq/L	0.727	0.681	0.477 - 0.885	A
			Pu-239/240	Bq/L	0.830	0.900	0.630 - 1.170	A
	15-MaS33	Soil	Ni-63	Bq/kg	635	682	477 - 887	A
			Sr-90	Bq/kg	429	425	298 - 553	A
	15-RdF33	AP	Sr-90	Bq/sample	1.48	2.18	1.53 - 2.83	N (4)
			U-234/233	Bq/sample	0.143	0.143	0.100 - 0.186	A
			U-238	Bq/sample	0.149	0.148	0.104 - 0.192	A
	15-GrF33	AP	Gr-A	Bq/sample	0.497	0.90	0.27 - 1.53	A
			Gr-B	Bq/sample	1.34	1.56	0.78 - 2.34	A
	15-RdV33	Vegetation	Cs-134	Bq/sample	6.10	5.80	4.06 - 7.54	A
			Cs-137	Bq/sample	0.0002		(1)	A
			Co-57	Bq/sample	8.01	6.62	4.63 - 8.61	W
			Co-60	Bq/sample	4.97	4.56	3.19 - 5.93	A
			Mn-54	Bq/sample	8.33	7.68	5.38 - 9.98	A
			Sr-90	Bq/sample	0.386	1.30	0.91 - 1.69	N (4)
			Zn-65	Bq/sample	6.07	5.46	3.82 - 7.10	A

(1) False positive test.

(2) Sensitivity evaluation.

(3) Soil Sr-90 - incomplete digestion of the sample resulted in low results; AP U-234/233 - extremely low activity was difficult to quantify AP Gr-A - the MAPEP filter has the activity embedded in the filter. To corrected the low bias, TBE will create an attenuated efficiency for MAPEP samples. NCR 15-13

(4) Water Ni-63 extremely low activity was difficult to quantify; AP & Vegetation Sr-90 was lost during separation, possible from substance added by MAPEP NCR 15-21.

(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.

TABLE D-3.3 ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2015
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Limits	Evaluation (c)
May 2015	RAD-101	Water	Sr-89	pCi/L	45.2	63.2	51.1 - 71.2	N (1)
			Sr-90	pCi/L	28.0	41.9	30.8 - 48.1	N (1)
			Ba-133	pCi/L	80.6	82.5	63.9 - 90.8	A
			Cs-134	pCi/L	71.7	75.7	61.8 - 83.3	A
			Cs-137	pCi/L	187	189	170 - 210	A
			Co-60	pCi/L	85.7	84.5	76.0 - 95.3	A
			Zn-65	pCi/L	197	203	183 - 238	A
			Gr-A	pCi/L	26.1	42.6	22.1 - 54.0	A
			Gr-B	pCi/L	28.8	32.9	21.3 - 40.6	A
			I-131	pCi/L	23.5	23.8	19.7 - 28.3	A
			U-Nat	pCi/L	6.19	6.59	4.99 - 7.83	A
			H-3	pCi/L	3145	3280	2770 - 3620	A
	MRAD-22	Filter	Gr-A	pCi/filter	28.3	62.2	20.8 - 96.6	A
November 2015	RAD-103	Water	Sr-89	pCi/L	40.9	35.7	26.7 - 42.5	A
			Sr-90	pCi/L	29.3	31.1	22.7 - 36.1	A
			Ba-133	pCi/L	31.5	32.5	25.9 - 36.7	A
			Cs-134	pCi/L	59.65	62.3	50.6 - 68.5	A
			Cs-137	pCi/L	156	157	141 - 175	A
			Co-60	pCi/L	70.6	71.1	64.0 - 80.7	A
			Zn-65	pCi/L	145	126	113 - 149	A
			Gr-A	pCi/L	38.2	51.6	26.9 - 64.7	A
			Gr-B	pCi/L	42.0	36.6	24.1 - 44.2	A
			I-131	pCi/L	24.8	26.3	21.9 - 31.0	A
			U-Nat	pCi/L	146.90	56.2	45.7 - 62.4	N (2)
			H-3	pCi/L	21100	21300	18700 - 23400	A
	MRAD-23	Filter	Gr-A	pCi/filter	Lost during processing			

(1) Yield on the high side of our acceptance range indicates possibility of calcium interference. NCR 15-09

(2) Technician failed to dilute original sample. If diluted, the result would have been 57.1, which fell within the acceptance limits. NCR 15-19

(a) Teledyne Brown Engineering reported result.

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

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

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APPENDIX E

ERRATA DATA

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There is no errata data for 2015.

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APPENDIX F

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

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

DRESDEN NUCLEAR POWER STATION
UNITS 1, 2 and 3

Annual Radiological
Groundwater Protection Program Report

1 January Through 31 December 2015

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon Generation.

Dresden Nuclear Power Station
Morris, IL 60450

May 2016

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Appendices

ARGPPR Appendix A — Location Designation

Tables

Table A-1 — Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Dresden Nuclear Power Station, 2015

Figures

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

ARGPPR Appendix B — Data Tables

Tables

Table B-I.1 — Concentrations of Tritium, Strontium, Gross Alpha and Gross Beta in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2015.

Table B-I.2 — Concentrations of Gamma Emitters in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2015.

Table B-I.3 — Concentrations of Hard-To-Detects in Groundwater Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2015.

Table B-II.1 — Concentrations of Tritium in Surface Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2015.

Table B-II.2 — Concentrations of Gamma Emitters in Surface Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2015.

Table B-III.1 — Concentrations of Tritium in Precipitation Water Samples Collected in the Vicinity of Dresden Nuclear Power Station, 2015.

I. Summary and Conclusions

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

The Dresden power plant has experienced leaks from underground lines and spills from systems containing radioactive water over its 50 year history. These incidents have created a number of areas of localized contamination within the PA. The liquid scintillation analyses of groundwater in many of these areas show measurable concentrations of tritium (H-3).

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

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

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

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

II. Introduction

Radiological Groundwater Monitoring Program (RGPP):

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

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

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

There are 96 sampling points in the RGPP:

Dresden has 47 developed groundwater monitoring wells within the Protected Area (PA). Some of these wells form a ring just inside the security fence and the remaining wells were installed near underground plant system piping that contains radioactive water.

Dresden has 30 developed groundwater monitoring wells outside the PA the majority of which form a ring just within the perimeter of the property.

Dresden has 12 surface water monitoring locations on the owner-controlled area sampled as part of the Dresden RGPP.

Dresden has 4 precipitation water monitoring locations sampled as part of the Dresden RGPP. An additional 8 locations were studied in 2011 through 2012, but only 4 locations are currently permanently a part of the RGPP program.

Dresden has 1 sentinel well and 2 CST leak detection valves. These 3 sampling points are not constructured to code or developed to a standard. These sampling points are idle and only used for qualitative troubleshooting.

The Dresden site-specific RGPP procedure identifies the historic 'events' that would affect the individual RGPP sample results. This procedure identifies threshold values for each sample point, which if exceeded, could be an indication of a new spill from an above ground system or a new leak in an underground pipe containing tritiated water. The RGPP sample points are currently sampled on a frequency determined by the well detection category in accordance with site document EN-DR-408-4160, Dresden RGPP Reference Material. During 2015, there were 580 analyses that were performed on 270 samples from 80 sampling points.

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

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

A. Objectives of the RGPP

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

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

Specific Objectives include:

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

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

3. Regularly assess analytical results to identify adverse trends.

4. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

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

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

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

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

C. Program Description

Dresden has a Radiological Groundwater Monitoring Program (RGPP) that provides long-term monitoring intended to verify the fleet-wide hydrogeologic study conclusions. Dresden uses 89 developed groundwater wells and surface water sample points in the RGPP.

1. Sample Collection

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

<u>Groundwater and Surface Water</u>

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

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most

common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

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

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

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

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by Teledyne Brown Engineers (TBE) to analyze the environmental samples for radioactivity for the Dresden Nuclear Power Station RGPP in 2015.

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

1. Concentrations of gamma emitters in groundwater and surface

water.

2. Concentrations of strontium in groundwater.

3. Concentrations of tritium in groundwater, surface water and precipitation water.

4. Concentrations of gross alpha and gross beta in groundwater.

5. Concentrations of Am-241 in groundwater.

6. Concentrations of Cm-242 and Cm-243/244 in groundwater.

7. Concentrations of Pu-238 and Pu-239/240 in groundwater.

8. Concentrations of U-233/234, U-235 and U-238 in groundwater.

9. Concentrations of Fe-55 in groundwater.

10. Concentrations of Ni-63 in groundwater.

B. Data Interpretation

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

1. Lower Limit of Detection and Minimum Detectable Concentration

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

2. Laboratory Measurements Uncertainty

   The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

   Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes

from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus ± the estimated sample standard deviation as TPU that is obtained by propagating all sources of analytical uncertainty in measurements.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

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

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

C. Background Analysis

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

1. Background Concentrations of Tritium

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

a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper

atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

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

b. Precipitation Data

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

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

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

c. Surface Water Data

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

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

IV. Results and Discussion

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

A. Groundwater Results

Groundwater

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

Tritium

Following historic ground tritium-contamination events at Dresden Station (EN-DR-408-4160, Revision 4, Attachment 3), routine sampling and analyses continue, both inside and outside the protected areas.

Low level tritium was detected from January through December 2015 in

several sampling and testing locations (Table B-I.1, Appendix B); however, overall tritium concentrations have been trending down.

The vast majority of these locations showed a range of tritium contamination from LLD to values less than 20,000 pCi/L.

MD-11, MW-DN-124I, MW-DN-124S, and MW-DN-126S are the only 4 locations with tritium concentrations above 20,000 pCi/L. The highest level ever reached during calendar year 2015 was 1,000,000 pCi/L by MD-11 (sample collected on 2/17/2015).

It is important to note that wells that exceed the United States Environmental Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L were due to the 2014 2/3B CST Leak. The exceedances are located within Station property, and do not serve as a drinking water source.

Strontium

Samples were collected and analyzed for strontium-89 and strontium-90 activity (Table B-I.1, Appendix B). Strontium-89 was not detected in any of the samples. Strontium-90 was detected in two samples at location MW-DN-105S. The concentrations were 1.2 and 1.3 pCi/L.

Gross Alpha and Gross Beta (dissolved and suspended)

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater samples during the second quarter of 2014 (Table B-I.1, Appendix B). Gross Alpha (dissolved) was detected at two groundwater locations. The concentrations were 4.3 and 5.2 pCi/L. Gross Alpha (suspended) was detected at one groundwater location at a concentration of 3.2 pCi/L. Gross Beta (dissolved) was detected at 31 of the groundwater locations. The concentrations ranged from 2.3 to 46.0 pCi/L. Gross Beta (suspended) was not detected at any of the groundwater locations. The concentrations of Gross Alpha and Gross Beta, which are slightly above detectable levels, are considered to be background and are not the result of plant effluents.

Gamma Emitters

Naturally-occurring K-40 was detected in one sample. No other gamma emitting nuclides were detected (Table B-I.2, Appendix B).

Hard-To-Detects

Hard-To-Detect analyses were performed on two groundwater locations to establish background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-233/234, U-235 and U-238. The isotopes U-233/234 and U-238 were detected at one of the two groundwater monitoring locations. The concentration of U-234 was 0.71 pCi/L and the concentration U-238 was 0.26 pCi/L (Table B-I.3, Appendix B). The concentrations detected are considered background.

All other hard-to-detect nuclides were not detected at concentrations greater than their respective MDCs.

B. Surface Water Results

Surface Water

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

Tritium

Samples from all locations were analyzed for tritium activity (Table B-II.1, Appendix B). Tritium values ranged from the detection limit to 2,270 pCi/l. The measurable concentrations of tritium are from an upstream source.

Strontium

Samples were not analyzed for strontium activity (Table B-II.1. Appendix B).

Gross Alpha and Gross Beta (dissolved and suspended)

Samples were not analyzed for Gross Alpha and Gross Beta in 2015.

Gamma Emitters

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

Hard-To-Detects

Samples were not analyzed for Hard-To-Detect analyses in 2015.

C. Precipitation Water Results

Precipitation Water

Samples were collected from 4 precipitation water locations throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from 4 locations were analyzed for tritium activity (Table B-III.1, Appendix B). Tritium was not detected in any samples.

D. Drinking Water Well Survey

No drinking water well surveys were conducted in 2015.

E. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE are presented in the AREOR.

F. Leaks, Spills, and Releases

No leaks, spills, and releases occurred in 2015.

G. Trends

Overall, tritium concentrations are decreasing across the Station. The Station continued to implement the tritium monitoring plan with monthly/quarterly sampling of a subset of shallow and intermediate aquifer wells, sewage treatment plant water, and storm sewer water.

An elevated concentration persists in the area of the Condensate Storage Tanks (Event 20 in EN-DR-408-4160, Revision 4, Attachment 3). Two remediation wells were installed in August 2015 to pump tritiated water out of the ground, and active remediation started in December 2015.

H. Investigations

No investigations performed in 2015.

I. Actions Taken

1. Compensatory Actions

None.

2. Actions to Recover/Reverse Plumes

In August 2015, two remediation wells were installed by the CSTs. The intent is to pump tritiated water out of the ground. The water is processed through the liquid radwaste system. Active remediation was initiated since December 2015.

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APPENDIX A

LOCATION DISTANCE

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TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2015

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

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Dresden Nuclear Power Station, 2015

Site	Site Type	Location
MW-DN-122-I	Monitoring Well	150 feet north of Collins Road; northeast of the G.E. Fuel Storage Facility
MW-DN-122-S	Monitoring Well	150 feet north of Collins Road; northeast of the G.E. Fuel Storage Facility
MW-DN-123-I	Monitoring Well	400 feet west of the Thorsen house; west of the Cold Canal
MW-DN-123-S	Monitoring Well	400 feet west of the Thorsen house; west of the Cold Canal
MW-DN-124-I	Monitoring Well	10 feet south of the liquid nitrogen inerting tanks
MW-DN-124-S	Monitoring Well	10 feet south of the liquid nitrogen inerting tanks
MW-DN-125-S	Monitoring Well	40 feet east of 2/3 B CST
MW-DN-126-S	Monitoring Well	15 feet south of fence around Unit 2/3 A CST and B CST (outside of fence)
MW-DN-127-S	Monitoring Well	20 feet south of Unit 3 HRSS
MW-DN-134-S	Monitoring Well	20-ft North of Mausoleum Building
MW-DN-135-S	Monitoring Well	20-ft East of Mausoleum Building
MW-DN-136-S	Monitoring Well	14.5-ft South of Mausoleum Building
MW-DN-137-S	Monitoring Well	20-ft West of Mausoleum Building
MW-DN-140-S	Monitoring Well	East of MW-DN-104S at SW corner outside of 2/3 crib house
MW-DN-141-S	Monitoring Well	North of 'A' Waste Tank next to 2/3 main chimney
MW-DN-MD-11	Monitoring Well	Piping located between Condensate Storage Tanks.
DSP-131	Surface Water	Storm water – 35 ft NE of the Unit 2/3 heating boiler 150,000 gallon diesel fuel storage tank. 15 ft W of the hot canal fence – underneath Security Block
DSP-132	Surface Water	Storm water – 150 ft NE of the Unit 1 Sphere. The sewer is in the middle of the road with a solid cover (no slots). There are two other sewers in the vicinity with solid covers on them, but both have the word "SANITARY" on the cover. The sewer is 66 ft SE of the Unit 1 diesel fuel transfer shed.
SW-DN-101	Surface Water	Unit 2/3 Intake (DSP50) at the Ross Bridge
SW-DN-102	Surface Water	Unit 2/3 Discharge (DSP20) at the Telemetry Bridge
SW-DN-103	Surface Water	Unit 2/3 Return Canal at the Discharge to the Intake Canal
SW-DN-104	Surface Water	Cold Canal (DSP34A) at the Cooling Tower walkway bridge
SW-DN-105	Surface Water	Hot Canal (DSP34B) at the Cooling Tower walkway bridge
SW-DN-106	Surface Water	Cooling Pond - Pool II at the east side of the Covered Bridge
FW-1	Precipitation	40 feet southwest of Unit 2/3 Off-gas Filter Building access door; north end of guardrail
FW-2	Precipitation	50 feet East of Chem Feed Trailer
FW-3	Precipitation	South of Stock Truck Bay rollup door
FW-4	Precipitation	Southeast corner of Unit 3 RB Interlock
FW-5	Precipitation	East of Unit 2/3 Intake Ross barrier
FW-6	Precipitation	North of Unit 1 Chimney
FW-7	Precipitation	Southeast of Unit 2 TB Trackway
FW-8	Precipitation	Southwest corner of 2/3 CST on fence
FW-9	Precipitation	South of MUDS Building on Security fence
FW-10	Precipitation	At the fence at the northwest corner of the SBO Building
FW-11	Precipitation	30 feet east of the east wall of the EM shop; at the stanchion for RGPP well DSP-105
FW-12	Precipitation	60 feet southeast of the southwest corner of the Admin Building; on the security fence

ARGPPR APPENDIX B

DATA TABLES

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TABLE B-I.1 **CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE		H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
CBG	11/30/15	Original	18500 ± 1890						
CBG	11/30/15	Recount	15100 ± 1560						
CBG	11/30/15	Rerun	14700 ± 1520						
DSP-105	02/25/15		< 164						
DSP-105	06/03/15		< 171	< 7.2	< 0.8	< 1.9	< 0.9	6.3 ± 1.3	< 1.5
DSP-105	09/16/15		< 195						
DSP-105	12/17/15		< 193						
DSP-106	02/25/15		1920 ± 240						
DSP-106	06/03/15		2180 ± 269	< 8.5	< 0.7	< 1.6	< 0.9	4.6 ± 1.1	< 1.5
DSP-106	09/16/15		1830 ± 242						
DSP-106	12/17/15		1760 ± 241						
DSP-107	02/25/15		2410 ± 288						
DSP-107	06/03/15		2260 ± 274	< 7.8	< 0.7	< 1.7	< 0.9	5.6 ± 1.2	< 1.5
DSP-107	09/15/15		1810 ± 241						
DSP-107	12/16/15		1990 ± 263						
DSP-108	02/25/15		635 ± 133						
DSP-108	06/03/15		665 ± 153	< 8.3	< 0.8	< 5.8	< 0.9	15.0 ± 1.9	< 1.5
DSP-108	09/15/15		500 ± 147						
DSP-108	12/16/15		589 ± 146						
DSP-122	02/24/15		1610 ± 211						
DSP-122	06/01/15		933 ± 168						
DSP-122	09/14/15		883 ± 167						
DSP-122	11/16/15		1150 ± 185						
DSP-123	02/25/15		1290 ± 182						
DSP-123	06/02/15		1490 ± 204	< 9.1	< 0.7	< 2.8	< 0.9	15.8 ± 1.9	< 1.5
DSP-123	09/15/15		1100 ± 175						
DSP-123	12/16/15		1310 ± 199						
DSP-124	03/02/15		1350 ± 189						
DSP-124	06/09/15		2360 ± 291						
DSP-124	09/17/15		2540 ± 310						
DSP-124	12/18/15		2500 ± 311						
DSP-125	02/17/15		7780 ± 785						
DSP-125	06/09/15		2720 ± 326	< 7.0	< 0.6	< 35.4	< 0.9	44.6 ± 5.6	< 3.9
DSP-125	09/16/15		1810 ± 240						
DSP-125	11/30/15		1950 ± 255						
DSP-125	06/16/15		< 190						
DSP-131	02/24/15		302 ± 129						
DSP-131	06/01/15		293 ± 135						
DSP-131	09/14/15		< 190						
DSP-131	12/16/15		305 ± 135						
DSP-132	02/24/15		2140 ± 261						
DSP-132	06/01/15		3630 ± 411						
DSP-132	09/15/15		3880 ± 442						
DSP-132	11/19/15	Original	230 ± 134						
DSP-132	11/19/15	Recount	297 ± 132						
DSP-132	11/19/15	Rerun	308 ± 133						
DSP-133	06/15/15		< 195						
DSP-133	11/17/15		< 195						
DSP-147	06/15/15		< 190						
DSP-148	03/03/15		237 ± 121						
DSP-148	06/16/15		< 191						
DSP-148	09/11/15		193 ± 126						
DSP-148	12/15/15		< 192						
DSP-149R	03/03/15		489 ± 138						
DSP-149R	06/16/15		388 ± 135						
DSP-149R	09/11/15		326 ± 134						
DSP-149R	12/15/15		494 ± 144						

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE		H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
DSP-150	03/02/15		< 173						
DSP-150	06/03/15		< 189						
DSP-150	09/16/15		< 194						
DSP-150	12/17/15		< 189						
DSP-151	03/02/15		< 187						
DSP-151	06/03/15		< 187						
DSP-151	09/16/15		< 193						
DSP-151	12/17/15		< 192						
DSP-154	06/15/15		< 189						
DSP-156	03/03/15		< 175						
DSP-156	06/16/15		230 ± 132						
DSP-156	09/11/15	Original	193 ± 126						
DSP-156	09/11/15	Recount	238 ± 130						
DSP-156	12/15/15		< 193						
DSP-157I	06/16/15		< 188						
DSP-157S	06/16/15		< 190						
DSP-159I	06/16/15		243 ± 134						
DSP-159S	06/16/15		< 192						
MD-11	02/17/15		1000000 ± 103000						
MD-11	11/30/15		800000 ± 74700	< 5.2	< 0.6	< 1.0	< 0.7	26.9 ± 1.7	< 1.4
MW-DN-101I	02/24/15		726 ± 151						
MW-DN-101I	06/02/15		813 ± 162	< 7.8	< 0.6	< 1.3	< 0.9	10.6 ± 1.3	< 1.5
MW-DN-101I	09/15/15		612 ± 152						
MW-DN-101I	12/16/15		653 ± 149						
MW-DN-101S	02/24/15		< 178						
MW-DN-101S	06/02/15		< 179	< 7.7	< 0.7	4.3 ± 2.4	< 1.0	15.6 ± 2.8	< 1.6
MW-DN-101S	09/15/15		< 195						
MW-DN-101S	12/16/15		< 193						
MW-DN-102I	03/13/15		< 182						
MW-DN-102I	06/09/15		< 168	< 6.2	< 0.6	< 4.1	< 0.4	9.2 ± 1.6	< 1.6
MW-DN-102I	09/17/15		< 195						
MW-DN-102I	12/18/15		< 191						
MW-DN-102S	03/13/15		< 185						
MW-DN-102S	06/09/15		< 173	< 5.6	< 0.6	< 28.3	< 2.1	46.0 ± 18.7	< 3.8
MW-DN-102S	09/17/15		< 190						
MW-DN-102S	12/18/15		< 194						
MW-DN-103I	06/16/15		< 192						
MW-DN-103S	06/16/15		< 190						
MW-DN-104S	02/24/15		< 178						
MW-DN-104S	06/01/15		< 186						
MW-DN-104S	09/14/15	Original	320 ± 135						
MW-DN-104S	09/14/15	Recount	202 ± 131						
MW-DN-104S	09/14/15	Rerun	420 ± 135						
MW-DN-104S	11/16/15	Original	452 ± 143						
MW-DN-104S	11/16/15	Recount	406 ± 145						
MW-DN-104S	11/16/15	Rerun	472 ± 143						
MW-DN-105S	03/02/15		< 176	< 1.9	1.3 ± 0.0				
MW-DN-105S	06/03/15		< 182	< 7.4	< 0.7				
MW-DN-105S	09/16/15		< 191	< 4.5	< 0.7				
MW-DN-105S	12/17/15	Original	< 193	< 4.8	1.2 ± 1.0				
MW-DN-105S	12/17/15	Recount			1.2 ± 1.0				
MW-DN-106S	06/16/15		< 183						
MW-DN-107S	02/16/15		186 ± 120						
MW-DN-107S	06/08/15		< 174						
MW-DN-107S	09/17/15		267 ± 136						
MW-DN-107S	11/30/15		< 191						
MW-DN-108I	02/24/15		< 177						

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE		H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
MW-DN-108I	06/02/15		< 172	< 7.6	< 0.8	< 1.9	< 1.2	19.3 ± 1.9	< 1.5
MW-DN-108I	09/15/15		< 195						
MW-DN-108I	11/23/15		< 191						
MW-DN-108I	12/18/15		< 188						
MW-DN-109I	02/18/15		< 177						
MW-DN-109I	06/01/15		518 ± 143	< 7.6	< 0.6	< 3.8	< 0.5	7.9 ± 1.2	< 1.4
MW-DN-109I	09/14/15		< 190						
MW-DN-109I	11/16/15		< 199						
MW-DN-109S	02/18/15		< 177						
MW-DN-109S	06/01/15		296 ± 133	< 7.3	< 0.6	< 2.0	< 0.5	13.7 ± 2.8	< 1.4
MW-DN-109S	09/14/15		< 196						
MW-DN-109S	11/16/15		< 199						
MW-DN-110I	02/18/15		< 177						
MW-DN-110I	06/01/15		< 181						
MW-DN-110I	09/14/15		< 194						
MW-DN-110I	11/16/15		< 196						
MW-DN-110S	02/18/15		< 177						
MW-DN-110S	06/01/15		< 184						
MW-DN-110S	09/14/15		< 191						
MW-DN-110S	11/16/15		< 198						
MW-DN-111S	03/02/15		< 156						
MW-DN-111S	06/09/15		182 ± 116						
MW-DN-111S	09/17/15		< 193						
MW-DN-111S	12/18/15		< 185						
MW-DN-112I	02/18/15		< 178						
MW-DN-112I	06/01/15		< 183						
MW-DN-112I	09/14/15		< 196						
MW-DN-112I	11/16/15		< 197						
MW-DN-112S	02/18/15		< 175						
MW-DN-112S	06/01/15		< 187						
MW-DN-112S	09/14/15		< 192						
MW-DN-112S	11/16/15		< 195						
MW-DN-113I	02/17/15		< 172						
MW-DN-113I	06/08/15		< 174	< 6.8	< 0.6	< 1.5	< 0.4	4.8 ± 1.2	< 1.6
MW-DN-113I	09/17/15		< 197						
MW-DN-113I	12/18/15		< 187						
MW-DN-113S	02/17/15		< 177						
MW-DN-113S	06/08/15		< 177	< 8.4	< 0.6	< 1.5	3.2 ± #	6.5 ± 1.2	< 1.7
MW-DN-113S	09/17/15		< 192						
MW-DN-113S	12/18/15		< 186						
MW-DN-114I	02/16/15		6040 ± 645						
MW-DN-114I	06/08/15		8260 ± 873						
MW-DN-114I	09/16/15		7630 ± 812						
MW-DN-114I	12/17/15	Original	< 187						
MW-DN-114I	12/17/15	Recount	< 191						
MW-DN-114S	02/16/15		< 185						
MW-DN-114S	06/08/15		< 172						
MW-DN-114S	09/16/15		< 196						
MW-DN-114S	12/17/15	Original	10700 ± 1110						
MW-DN-114S	12/17/15	Recount	10900 ± 1140						
MW-DN-114S	12/17/15	Rerun	11600 ± 1200						
MW-DN-115I	03/02/15		471 ± 124						
MW-DN-115I	06/03/15		471 ± 142						
MW-DN-115I	09/16/15		330 ± 133						
MW-DN-115I	12/17/15		343 ± 133						
MW-DN-115S	03/02/15		< 180						
MW-DN-115S	06/03/15		< 177						

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE		H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
MW-DN-115S	09/16/15		< 189						
MW-DN-115S	12/17/15		< 190						
MW-DN-116I	02/24/15		266 ± 132						
MW-DN-116I	06/02/15		336 ± 135	< 6.1	< 0.6	< 4.2	< 0.5	23.6 ± 2.2	< 1.4
MW-DN-116I	09/15/15		< 189						
MW-DN-116I	11/23/15		288 ± 132						
MW-DN-116I	12/22/15		493 ± 140						
MW-DN-116S	02/24/15		214 ± 127						
MW-DN-116S	06/02/15		243 ± 127	< 6.4	< 0.7	5.2 ± 1.8	< 0.5	11.6 ± 1.5	< 1.4
MW-DN-116S	09/15/15		< 188						
MW-DN-116S	11/23/15		396 ± 138						
MW-DN-116S	12/22/15		186 ± 123						
MW-DN-117I	12/16/15		< 185						
MW-DN-117IR	09/15/15		< 191	< 2.3	< 0.6	< 0.9	< 0.7	14.7 ± 1.5	< 1.8
MW-DN-118S	02/25/15		316 ± 135						
MW-DN-118S	06/03/15		561 ± 146	< 5.4	< 0.8	< 0.9	< 0.5	7.9 ± 1.3	< 1.4
MW-DN-118S	09/15/15		217 ± 127						
MW-DN-118S	12/16/15		307 ± 131						
MW-DN-119I	02/25/15		< 187						
MW-DN-119I	06/02/15		< 183	< 5.2	< 0.5	< 3.2	< 0.5	28.9 ± 2.4	< 1.4
MW-DN-119I	09/16/15		< 191						
MW-DN-119I	12/16/15		< 188						
MW-DN-119S	02/25/15		< 191						
MW-DN-119S	06/02/15		< 181	< 5.3	< 0.6	< 5.0	< 0.5	21.0 ± 3.1	< 1.4
MW-DN-119S	09/16/15		< 189						
MW-DN-119S	12/16/15		< 187						
MW-DN-122I	06/15/15		< 195						
MW-DN-122S	06/15/15		< 193						
MW-DN-124I	02/16/15		37700 ± 3790						
MW-DN-124I	06/09/15		33700 ± 3410	< 7.2	< 0.6	< 4.1	< 1.3	24.9 ± 4.0	< 3.9
MW-DN-124I	09/17/15		34100 ± 3460						
MW-DN-124I	12/18/15		32800 ± 3320						
MW-DN-124S	02/16/15		20200 ± 2050						
MW-DN-124S	06/09/15		8790 ± 926	< 5.8	< 0.5	< 5.8	< 1.3	36.7 ± 4.6	< 3.9
MW-DN-124S	09/17/15		6080 ± 661						
MW-DN-124S	12/18/15		4090 ± 463						
MW-DN-125S	02/17/15		< 189						
MW-DN-125S	06/08/15		< 177	< 5.8	< 0.7	< 1.4	< 1.9	< 2.5	< 3.6
MW-DN-125S	09/17/15		< 193						
MW-DN-125S	12/18/15		< 187						
MW-DN-126S	02/16/15		21000 ± 2140						
MW-DN-126S	06/08/15		5380 ± 585	< 7.5	< 0.6	< 6.7	< 1.3	16.5 ± 4.0	< 3.9
MW-DN-126S	09/17/15	Original	8740 ± 926						
MW-DN-126S	09/17/15	Recount	7730 ± 819						
MW-DN-126S	09/17/15	Rerun	8130 ± 857						
MW-DN-126S	11/30/15		4080 ± 461						
MW-DN-127S	02/16/15		1070 ± 171						
MW-DN-127S	06/08/15		670 ± 139	< 6.5	< 0.7	< 1.1	< 1.3	2.3 ± 1.0	< 2.5
MW-DN-127S	09/17/15		199 ± 129						
MW-DN-127S	12/18/15	Original	524 ± 141						
MW-DN-127S	12/18/15	Recount	614 ± 148						
MW-DN-134S	03/02/15		< 156						
MW-DN-134S	06/15/15		< 195	< 6.2	< 0.7	< 3.8	< 0.3	12.6 ± 1.8	< 1.4
MW-DN-134S	09/11/15		< 193						
MW-DN-134S	11/18/15		< 197						
MW-DN-135S	03/02/15		< 153						
MW-DN-135S	06/15/15		< 195	< 6.7	< 0.8	< 1.7	< 0.3	8.8 ± 1.4	< 1.4

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
MW-DN-135S	09/11/15	< 191						
MW-DN-135S	11/18/15	< 195						
MW-DN-136S	03/02/15	< 152						
MW-DN-136S	06/15/15	< 193	< 4.1	< 0.8	< 6.5	< 0.3	23.4 ± 3.8	< 1.4
MW-DN-136S	09/11/15	< 186						
MW-DN-136S	11/18/15	< 195						
MW-DN-137S	03/02/15	< 157						
MW-DN-137S	09/11/15	< 187						
MW-DN-137S	11/18/15	< 192	< 5.6	< 0.7	< 5.6	< 0.4	26.2 ± 2.2	< 1.4
MW-DN-140S	02/24/15	367 ± 137						
MW-DN-140S	06/02/15	747 ± 157						
MW-DN-140S	09/14/15	534 ± 143						
MW-DN-140S	11/16/15	762 ± 154						
MW-DN-141S	02/24/15	681 ± 158						
MW-DN-141S	06/02/15	3640 ± 409	< 5.3	< 0.5	< 1.3	< 0.5	25.8 ± 2.0	< 1.4
MW-DN-141S	09/14/15	3050 ± 364						
MW-DN-141S	11/16/15	3200 ± 377						

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
DSP-105	02/25/15	< 49	< 98	< 5	< 5	< 12	< 5	< 12	< 6	< 9	< 14	< 5	< 5	< 33	< 10
DSP-105	06/03/15	< 31	< 63	< 3	< 3	< 8	< 4	< 6	< 4	< 6	< 10	< 3	< 4	< 22	< 8
DSP-105	09/16/15	< 58	< 107	< 6	< 7	< 16	< 7	< 16	< 9	< 12	< 12	< 7	< 7	< 35	< 13
DSP-105	12/17/15	< 40	< 41	< 4	< 5	< 9	< 4	< 6	< 5	< 7	< 13	< 4	< 5	< 31	< 8
DSP-106	02/25/15	< 42	< 108	< 5	< 6	< 11	< 4	< 9	< 5	< 8	< 14	< 4	< 5	< 31	< 7
DSP-106	06/03/15	< 31	< 68	< 3	< 3	< 7	< 3	< 6	< 4	< 6	< 7	< 3	< 3	< 17	< 6
DSP-106	09/16/15	< 71	< 148	< 5	< 5	< 12	< 8	< 14	< 6	< 15	< 14	< 6	< 7	< 29	< 10
DSP-106	12/17/15	< 41	< 69	< 4	< 4	< 8	< 3	< 6	< 5	< 8	< 15	< 3	< 4	< 28	< 7
DSP-107	02/25/15	< 41	< 79	< 5	< 5	< 11	< 5	< 10	< 4	< 8	< 13	< 4	< 5	< 30	< 12
DSP-107	06/03/15	< 28	< 27	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 7	< 3	< 3	< 17	< 6
DSP-107	09/15/15	< 44	< 61	< 7	< 6	< 16	< 5	< 12	< 7	< 9	< 11	< 5	< 6	< 35	< 11
DSP-107	12/16/15	< 33	< 74	< 3	< 4	< 8	< 4	< 8	< 4	< 7	< 13	< 3	< 3	< 26	< 10
DSP-108	02/25/15	< 41	< 35	< 4	< 4	< 8	< 4	< 7	< 4	< 8	< 13	< 4	< 4	< 29	< 8
DSP-108	06/03/15	< 44	< 78	< 4	< 5	< 12	< 4	< 9	< 5	< 8	< 13	< 5	< 4	< 32	< 9
DSP-108	09/15/15	< 58	< 73	< 7	< 7	< 15	< 7	< 17	< 8	< 16	< 13	< 7	< 9	< 35	< 14
DSP-108	12/16/15	< 39	< 88	< 4	< 5	< 10	< 5	< 10	< 5	< 9	< 15	< 5	< 4	< 32	< 12
DSP-123	02/25/15	< 44	< 45	< 4	< 5	< 10	< 5	< 10	< 6	< 9	< 14	< 4	< 4	< 31	< 10
DSP-123	06/02/15	< 38	< 76	< 3	< 4	< 8	< 3	< 7	< 4	< 7	< 10	< 3	< 4	< 24	< 8
DSP-123	09/15/15	< 53	< 55	< 6	< 6	< 15	< 6	< 13	< 7	< 10	< 11	< 5	< 6	< 31	< 11
DSP-123	12/16/15	< 40	< 46	< 4	< 4	< 10	< 4	< 8	< 5	< 8	< 14	< 4	< 4	< 30	< 11
DSP-125	06/09/15	< 17	< 31	< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 6	< 2	< 2	< 13	< 4
DSP-126	06/16/15	< 40	< 33	< 4	< 4	< 10	< 4	< 8	< 4	< 8	< 14	< 4	< 4	< 30	< 10
DSP-131	06/01/15	< 48	< 49	< 5	< 5	< 12	< 6	< 11	< 6	< 10	< 15	< 5	< 5	< 36	< 12
DSP-132	06/01/15	< 36	< 47	< 4	< 4	< 10	< 4	< 10	< 5	< 8	< 13	< 4	< 4	< 29	< 13
DSP-133	06/15/15	< 46	< 88	< 5	< 5	< 12	< 6	< 11	< 7	< 9	< 15	< 5	< 5	< 31	< 12
DSP-133	11/17/15	< 32	< 73	< 3	< 3	< 6	< 3	< 7	< 3	< 6	< 6	< 3	< 4	< 18	< 6
DSP-147	06/15/15	< 40	< 79	< 4	< 5	< 10	< 4	< 9	< 5	< 9	< 15	< 4	< 4	< 29	< 9
DSP-154	06/15/15	< 41	< 79	< 4	< 5	< 12	< 4	< 11	< 5	< 8	< 14	< 4	< 4	< 29	< 10
DSP-157I	06/16/15	< 40	< 94	< 4	< 5	< 10	< 5	< 9	< 5	< 8	< 14	< 4	< 4	< 30	< 10
DSP-157S	06/16/15	< 46	< 73	< 5	< 6	< 12	< 6	< 8	< 5	< 9	< 13	< 5	< 6	< 40	< 10
DSP-159I	06/16/15	< 33	< 41	< 3	< 4	< 10	< 4	< 7	< 4	< 8	< 13	< 4	< 3	< 28	< 11
DSP-159S	06/16/15	< 16	< 15	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 1	< 2	< 13	< 5
MD-11	11/30/15	< 42	< 40	< 4	< 5	< 10	< 5	< 9	< 5	< 8	< 12	< 4	< 4	< 28	< 8
MW-DN-101I	02/24/15	< 37	< 72	< 4	< 4	< 10	< 5	< 9	< 5	< 8	< 13	< 4	< 4	< 30	< 10
MW-DN-101I	06/02/15	< 47	< 83	< 4	< 5	< 10	< 4	< 12	< 5	< 9	< 15	< 4	< 5	< 32	< 10
MW-DN-101I	09/15/15	< 75	< 71	< 8	< 6	< 12	< 5	< 18	< 7	< 9	< 11	< 6	< 8	< 44	< 11
MW-DN-101I	12/16/15	< 37	< 72	< 4	< 4	< 9	< 4	< 8	< 5	< 7	< 15	< 4	< 4	< 29	< 8
MW-DN-101S	02/24/15	< 35	< 73	< 4	< 4	< 8	< 4	< 8	< 4	< 7	< 13	< 4	< 4	< 27	< 7
MW-DN-101S	06/02/15	< 42	< 82	< 4	< 5	< 9	< 4	< 8	< 4	< 8	< 14	< 4	< 4	< 27	< 9
MW-DN-101S	09/15/15	< 71	< 109	< 8	< 7	< 14	< 9	< 18	< 7	< 13	< 14	< 6	< 9	< 40	< 10
MW-DN-101S	12/16/15	< 44	< 75	< 4	< 4	< 10	< 5	< 8	< 5	< 8	< 15	< 4	< 5	< 31	< 13

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-DN-102I	06/09/15	< 15	< 28	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 5	< 2	< 2	< 11	< 4
MW-DN-102S	06/09/15	< 22	< 21	< 2	< 3	< 5	< 2	< 4	< 3	< 4	< 7	< 2	< 2	< 16	< 5
MW-DN-103I	06/16/15	< 16	< 15	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 2	< 2	< 14	< 5
MW-DN-103S	06/16/15	< 16	< 35	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 1	< 2	< 13	< 5
MW-DN-106S	06/16/15	< 13	< 24	< 1	< 1	< 3	< 1	< 3	< 1	< 3	< 6	< 1	< 1	< 12	< 4
MW-DN-108I	02/24/15	< 42	< 42	< 4	< 4	< 10	< 4	< 8	< 5	< 8	< 12	< 4	< 4	< 28	< 10
MW-DN-108I	06/02/15	< 42	< 44	< 3	< 5	< 9	< 5	< 8	< 5	< 8	< 13	< 4	< 5	< 27	< 12
MW-DN-108I	09/15/15	< 58	< 150	< 7	< 7	< 15	< 9	< 13	< 7	< 11	< 15	< 6	< 9	< 33	< 14
MW-DN-108I	12/18/15	< 50	< 53	< 5	< 5	< 11	< 3	< 10	< 6	< 8	< 15	< 5	< 6	< 36	< 10
MW-DN-109I	06/01/15	< 40	< 44	< 4	< 4	< 12	< 4	< 7	< 5	< 8	< 14	< 4	< 5	< 32	< 9
MW-DN-109S	06/01/15	< 36	< 34	< 4	< 3	< 7	< 3	< 8	< 4	< 7	< 11	< 3	< 3	< 29	< 8
MW-DN-113I	06/08/15	< 24	< 56	< 2	< 3	< 6	< 3	< 5	< 3	< 5	< 8	< 2	< 3	< 17	< 5
MW-DN-113S	06/08/15	< 19	< 41	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 6	< 2	< 2	< 13	< 4
MW-DN-116I	02/24/15	< 21	< 19	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 15	< 4
MW-DN-116I	06/02/15	< 30	< 20	< 3	< 4	< 7	< 3	< 6	< 3	< 6	< 10	< 3	< 3	< 22	< 8
MW-DN-116I	09/15/15	< 53	< 71	< 6	< 6	< 13	< 8	< 13	< 7	< 11	< 13	< 6	< 8	< 38	< 11
MW-DN-116I	12/22/15	< 62	< 68	< 7	< 7	< 15	< 7	< 17	< 8	< 14	< 15	< 7	< 8	< 42	< 13
MW-DN-116S	02/24/15	< 19	< 20	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 15	< 5
MW-DN-116S	06/02/15	< 35	< 76	< 3	< 3	< 9	< 3	< 6	< 4	< 6	< 12	< 4	< 4	< 23	< 7
MW-DN-116S	09/15/15	< 66	< 57	< 6	< 7	< 13	< 5	< 13	< 6	< 11	< 13	< 7	< 6	< 40	< 11
MW-DN-116S	12/22/15	< 41	< 36	< 5	< 5	< 11	< 4	< 10	< 5	< 8	< 12	< 5	< 6	< 25	< 5
MW-DN-117I	12/16/15	< 28	< 57	< 3	< 3	< 8	< 3	< 6	< 3	< 6	< 10	< 3	< 3	< 22	< 8
MW-DN-117IR	09/15/15	< 60	< 77	< 6	< 7	< 14	< 7	< 13	< 7	< 12	< 12	< 7	< 7	< 34	< 12
MW-DN-118S	02/25/15	< 14	< 32	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 14	< 1	< 1	< 21	< 6
MW-DN-118S	06/03/15	< 49	< 107	< 4	< 4	< 10	< 5	< 8	< 5	< 8	< 15	< 4	< 5	< 33	< 10
MW-DN-118S	09/15/15	< 60	< 89	< 6	< 7	< 16	< 7	< 15	< 7	< 13	< 13	< 6	< 7	< 36	< 11
MW-DN-118S	12/16/15	< 23	< 43	< 2	< 3	< 6	< 2	< 5	< 3	< 4	< 8	< 2	< 2	< 17	< 5
MW-DN-119I	06/02/15	< 49	< 59	< 6	< 6	< 13	< 6	< 12	< 7	< 11	< 15	< 5	< 6	< 40	< 11
MW-DN-119S	06/02/15	< 36	< 36	< 4	< 5	< 8	< 4	< 9	< 4	< 7	< 11	< 4	< 4	< 27	< 8
MW-DN-122I	06/15/15	< 13	< 13	< 1	< 1	< 3	< 1	< 3	< 1	< 3	< 6	< 1	< 1	< 12	< 4
MW-DN-122S	06/15/15	< 17	< 27	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 8	< 2	< 2	< 15	< 4
MW-DN-124I	06/09/15	< 26	183 ± 35	< 3	< 3	< 6	< 3	< 6	< 3	< 5	< 7	< 3	< 3	< 17	< 6
MW-DN-124I	12/18/15	< 38	< 40	< 4	< 4	< 8	< 3	< 7	< 5	< 8	< 15	< 4	< 4	< 30	< 8
MW-DN-124S	06/09/15	< 21	< 43	< 2	< 3	< 5	< 3	< 5	< 3	< 4	< 7	< 2	< 2	< 16	< 5
MW-DN-124S	12/18/15	< 23	< 22	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 8	< 2	< 2	< 16	< 4
MW-DN-125S	06/08/15	< 23	< 23	< 3	< 3	< 5	< 2	< 5	< 3	< 5	< 8	< 2	< 2	< 18	< 5
MW-DN-126S	06/08/15	< 20	< 25	< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 6	< 2	< 2	< 14	< 5
MW-DN-127S	06/08/15	< 18	< 15	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 6	< 2	< 2	< 14	< 4
MW-DN-134S	06/15/15	< 15	< 12	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 7	< 1	< 1	< 14	< 4
MW-DN-135S	06/15/15	< 17	< 26	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 8	< 1	< 2	< 15	< 5
MW-DN-136S	06/15/15	< 40	< 30	< 4	< 4	< 11	< 4	< 9	< 5	< 8	< 14	< 4	< 5	< 28	< 9

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-DN-137S	11/18/15	< 30	< 67	< 4	< 3	< 8	< 4	< 9	< 4	< 6	< 7	< 4	< 4	< 17	< 6
MW-DN-141S	06/02/15	< 42	< 43	< 4	< 4	< 9	< 4	< 7	< 5	< 7	< 14	< 4	< 4	< 36	< 6

TABLE B-I.3

CONCENTRATIONS OF HARD TO DETECTS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE		Am-241	Cm-242	Cm-243/244	Pu-238	Pu-239/240	U-234	U-235	U-238	Fe-55	Ni-63
MW-DN-124I	06/09/15		< 0.17	< 0.03	< 0.12	< 0.04	< 0.10	< 0.09	< 0.09	< 0.05	< 139	< 3.6
MW-DN-124S	06/09/15	Original	< 0.07	< 0.07	< 0.04	< 0.09	< 0.07	0.52 ± 0.21	< 0.11	< 0.09	< 164	< 2.9
MW-DN-124S	06/09/15	Recount						0.55 ± 0.22	< 0.03	0.26 ± 0.14		
MW-DN-124S	06/09/15	Rerun						0.71 ± 0.25	< 0.06	0.26 ± 0.15		

TABLE B-II.1 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3
CBE	12/17/15	< 188
SW-DN-101	03/03/15	373 ± 117
SW-DN-101	06/15/15	< 192
SW-DN-101	09/11/15	< 185
SW-DN-101	11/17/15	2070 ± 267
SW-DN-101	11/17/15	1720 ± 237
SW-DN-101	11/17/15	2270 ± 288
SW-DN-101	12/14/15	1120 ± 178
SW-DN-102	03/03/15	312 ± 114
SW-DN-102	06/15/15	526 ± 149
SW-DN-102	09/11/15	327 ± 129
SW-DN-102	11/17/15	789 ± 153
SW-DN-102	11/17/15	701 ± 158
SW-DN-102	11/17/15	1060 ± 175
SW-DN-103	03/03/15	337 ± 115
SW-DN-103	06/15/15	346 ± 141
SW-DN-103	09/11/15	< 189
SW-DN-103	11/17/15	1090 ± 177
SW-DN-103	11/17/15	929 ± 171
SW-DN-103	11/17/15	1170 ± 186
SW-DN-104	03/03/15	438 ± 122
SW-DN-104	06/15/15	596 ± 154
SW-DN-104	09/11/15	395 ± 140
SW-DN-104	11/17/15	1200 ± 186
SW-DN-104	11/17/15	946 ± 171
SW-DN-104	11/17/15	1520 ± 219
SW-DN-105	03/03/15	370 ± 117
SW-DN-105	06/15/15	< 194
SW-DN-105	09/11/15	< 189
SW-DN-105	11/17/15	1270 ± 193
SW-DN-105	11/17/15	1190 ± 189
SW-DN-105	11/17/15	1440 ± 209
SW-DN-106	03/03/15	396 ± 119
SW-DN-106	06/15/15	609 ± 154
SW-DN-106	09/11/15	848 ± 160
SW-DN-106	09/11/15	928 ± 164
SW-DN-106	09/11/15	817 ± 158

TABLE B-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
SW-DN-101	06/15/15	< 19	< 17	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 18	< 6
SW-DN-102	06/15/15	< 18	< 37	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 6
SW-DN-103	06/15/15	< 14	< 16	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 1	< 1	< 14	< 5
SW-DN-104	06/15/15	< 39	< 81	< 4	< 4	< 9	< 4	< 7	< 4	< 8	< 14	< 4	< 4	< 29	< 11
SW-DN-105	06/15/15	< 15	< 28	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 8	< 1	< 1	< 14	< 4
SW-DN-106	06/15/15	< 15	< 13	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 7	< 1	< 1	< 14	< 5

TABLE B-III.1 **CONCENTRATIONS OF TRITIUM IN PRECIPITATION WATER SAMPLES COLLECTED IN THE VICINITY OF DRESDEN NUCLEAR POWER STATION, 2015**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3
FW-1	06/01/15	< 190
FW-10	06/02/15	< 188
FW-11	06/03/15	< 182
FW-12	06/08/15	< 175