

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF HEALTH

OFFICE OF RADIOLOGICAL HEALTH
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**ENVIRONMENTAL
RADIATION
MONITORING
PROGRAM**

**2015
ANNUAL REPORT**



ACKNOWLEDGEMENTS

The Office of Radiological Health acknowledges the following organizations and agencies that provide assistance to the Radiological Environmental Monitoring Program:

- Babcock & Wilcox
- Department of Agriculture and Consumer Services
 - Office of Dairy and Foods
- Department of Conservation and Recreation
 - Division of State Parks
- Department of Emergency Management
 - Preparedness Division
 - Recovery and Mitigation Division
- Department of General Services
 - Division of Consolidated Laboratory Services (DCLS)
- Dominion Virginia Power
- Newport News Shipbuilding
- Norfolk Naval Shipyard

PREFACE

The Office of Radiological Health (ORH) conducts an extensive environmental monitoring program in order to characterize radiological conditions around certain fixed nuclear facilities in the Commonwealth of Virginia. This program provides an independent assessment of each facility's compliance with applicable federal and state regulations as they related to offsite release limits. Each of these fixed nuclear facilities has its own routine surveillance program. The objectives of ORH's environmental monitoring program include:

- a) Providing information useful in assessing the adequacy of programs designed to protect the public;
- b) Meeting the requirements of regulatory agencies;
- c) Verifying radionuclide containment and plant waste management practices;
- d) Meeting legal liability obligations; and
- e) Providing public assurance and acceptance (NCRP, 1976)*.

In addition to these stated objectives, ORH has identified other objectives such as;

- a) Maintenance of a database containing background radionuclide levels and trends to assist with the assessment of other environmental data;
- b) Identification of radiological releases not associated with the licensed facility; and
- c) Maintenance of equipment and procedures used in emergency preparedness and response activities.

This report is distributed to the licensee, as well as state and local agencies, which have a direct interest in the results. This report is available for download at:

<http://www.vdh.virginia.gov/epidemiology/radiologicalhealth/Environmental/>

Readers are invited to submit any comments or questions regarding this report to the Office of Radiological Health.

*NCRP (2006) National Council on Radiation Protection and Measurements, *Environmental Radiation Measurements* (1976) - Report No. 050, National Council on Radiation Protection and Measurements, Washington.

**VIRGINIA DEPARTMENT OF HEALTH
ENVIRONMENTAL RADIATION SURVEILLANCE DATA
ANNUAL REPORT 2015**

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SAMPLING PROGRAM

AIR PARTICULATE AND RADIOGAS

Stationary air samplers are utilized at the Surry and North Anna Power Stations. In addition, a third stationary air sampler is located at Pocahontas State Park which serves as a control site. Pumps run approximately 168 hours per week at an average flow rate of 115 cubic feet per hour. All samplers are continuously equipped with a charcoal filter and an air particulate filter which are analyzed weekly for gross beta and gamma activity with special emphasis on Iodine-131 retention. All stations, except the control site, are collocated with utility air samplers.

There is one air sampler located onsite at Babcock & Wilcox Technologies. This air pump is equipped with air particulate filters and runs approximately 168 hours per week with an average flow rate of 70 cubic feet per hour. Samples from this location are obtained quarterly and undergo gross alpha analysis

FISH

Fish samples are collected biannually in Lake Anna near the North Anna Power Station and from the discharge canal at Surry Power Station. Each sample consists of approximately one kilogram of flesh from a variety of fish species. All fish samples are counted for gamma activity with data based on wet weight.

MILK

Raw milk samples are collected quarterly from a dairy near each power station. Each sample consists of one gallon of raw milk with no preservatives added. Raw milk is a primary indicator of radioiodine incorporation in the food chain. Samples are analyzed for gamma activity and Strontium-89 & 90. Milk samples are further radiochemically separated for Iodine-131.

SHELLFISH

Shellfish are indicators of incorporation of radioactivity in the food chain. Selected species are collected as a part of the environmental surveillance program around Surry Power Station (SPS). Samples consist of one kilogram of flesh and are collected annually approximately 0.5 mile off the mouth of the SPS discharge canal in the James River. All shellfish samples are counted for gamma activity with data based on activity per unit of wet weight.

SILT

Silt is an indicator of radioactive deposition in sediment. Samples are collected biannually next to the Waste Treatment Building at North Anna Power Station and from the discharge canal at Surry Power Station. Silt is also collected quarterly at the Norfolk Naval Shipyard on the Elizabeth River and at Newport News Shipbuilding on the James River. Silt samples are counted for gross alpha and/or beta activity depending on collection location. Selected silt samples are further analyzed for gamma activity. Data is based on activity per unit of dry weight.

SOIL

Two soil samples are collected annually at the Babcock & Wilcox facility. Samples are collected from a ball field on the facility's eastern boundary and from Riverside Park. Samples obtained undergo alpha analysis.

VEGETATION

Green leafy vegetation can serve as an indicator of incorporation of radioactivity in the food chain. Samples are collected biannually from home gardens or small farms located near each nuclear power station. Samples typically consist of approximately one kilogram of a broad leaf plant species such as kale, cabbage or turnip greens. When leafy vegetation is unavailable, tall grass or similar plants may be substituted. Vegetation is counted for gamma activity with data based on activity per unit wet weight.

In addition to vegetation collected near each nuclear power station, samples are collected annually from two sites at Babcock & Wilcox. Samples consist of approximately one kilogram of grass or a broad leaf plant species collected from the ball field at the eastern site boundary and from Riverside Park. These samples undergo alpha analysis.

SURFACE WATER

Surface water is collected weekly near the discharge point at each nuclear power facility. Automatic sampling units designed to pull three aliquots of water per day operate continuously throughout the week. All water collected is composited and tested to provide data on radioactive effluents. In addition to the samples collected near the power stations, control sites on Lake Anna and the James River are also tested on a weekly basis.

Surface water is also collected quarterly on the James River at Newport News Shipbuilding (NNSB) and on the Elizabeth River at the Norfolk Naval Shipyard (NNSY) to ensure that operations at these facilities result in minimal radioactive effluents.

Two surface water samples are collected annually from the James River at Babcock & Wilcox. Samples are collected from the ball field at the eastern site boundary and from Riverside Park. Samples undergo uranium separation followed by alpha counting.

AMBIENT GAMMA EXPOSURE

Ambient gamma exposure readings are collected using optically stimulated luminescence dosimeters (OSL) located strategically around each power station. There are a total of twelve OSL sample locations at North Anna Power Station and fourteen sites at Surry Power Station. One control OSL station is located at Pocahontas State Park. The OSL's are processed quarterly for net exposure by ORH staff using a Landauer microStar system. This analysis results in a millirem/quarter reading.

REPORTING PENDING SAMPLE ANALYSIS RESULTS

When sample data fields in this report indicate that results have not yet been performed or reported by DCLS at the time of report publication, then the report will be updated once those results are made available.

Sources of Radioactivity in the Environment

Naturally occurring or background radioactivity is found virtually everywhere within the environment. The decay of primordial terrestrial sources, such as uranium and thorium, is one contributing factor to this background radioactivity. Other sources are continually produced in our upper atmosphere through the interaction of atoms with cosmic rays.

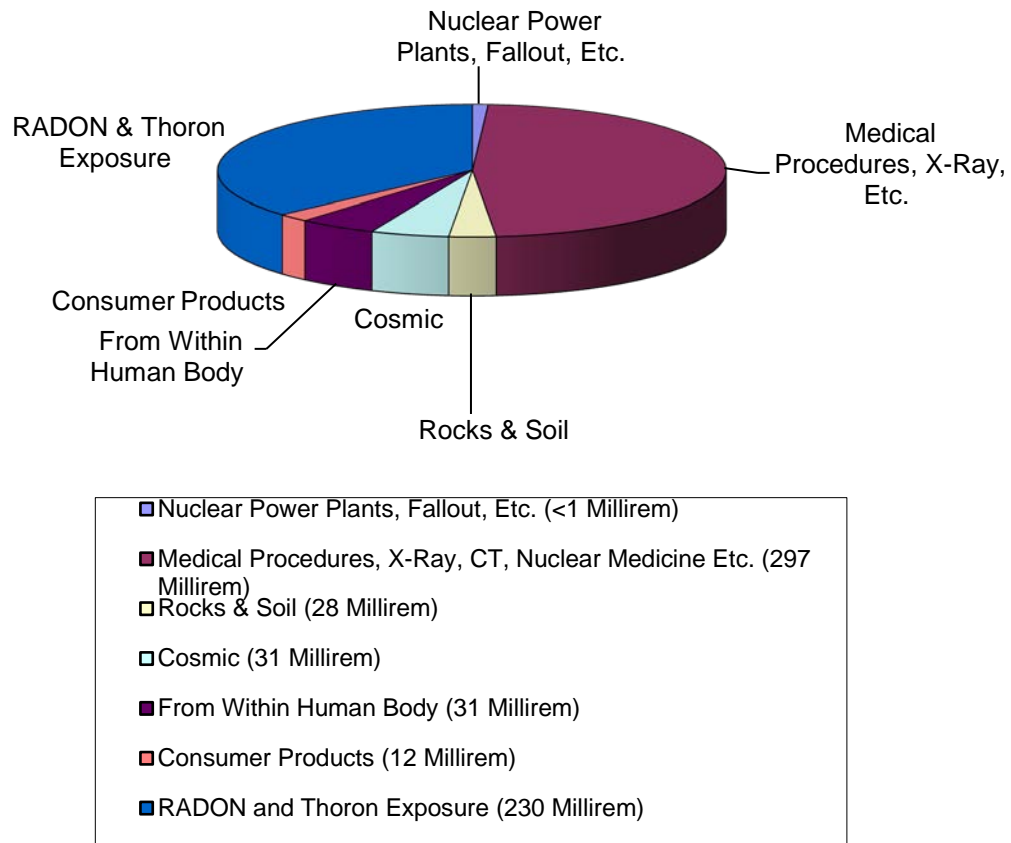
Environmental radiation levels are also influenced by human practices. The use of radioactive materials in the healing arts, uranium mining and milling operations, and nuclear power generation all are potentially contributing factors. In addition, background radiation levels were altered by residual fallout from nuclear weapons testing. The United States ceased atmospheric testing following adoption of the 1963 Nuclear Test Ban Treaty. Only long-lived fallout radionuclides currently remain.

Dose to the Public

The primary source of natural radiation dose received by the general public is due to radon exposure (see Figure 1 next page). The average individual receives approximately 230 millirem/year from radon and less than 1 millirem/year from nuclear facilities; another 81 millirem/year are received from natural sources and approximately 297 mrem/year from medical procedures. The total average whole body dose nationwide is approximately 620 mrem/year.

Inherent in all standards for radiation control is the philosophy of limiting exposure to levels. This principle is termed "AS LOW AS REASONABLY ACHIEVABLE" (ALARA). In practice, this philosophy continues to result in very low average doses to the public from the nuclear facilities cited earlier. The environmental monitoring program maintained by the Office of Radiological Health continues to verify compliance to these standards.

FIGURE 1: Sources of Radiation Exposure



Source: National Council on Radiation Protection & Measurement; Estimated Annual Dose of 620 Millirem for an average person in the U.S.A.

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Sampling Locations

Sampling Locations for Surry Nuclear Power Station



Photo courtesy of Dominion Power

LOCATION		TYPE	FREQUENCY
<u>Milk</u>			
M-66	Surry County - W.B. Epps Dairy	Raw	Quarterly
<u>Air</u>			
A-20	Surry Power Station	Air Particulate	Weekly
A-44	Jamestown State Park - Historical Site	Air Particulate	Weekly
<u>Charcoal Filter</u>			
C-20	Surry Power Station	Release Gas	Weekly
C-44	Jamestown State Park - Historical Site	Release Gas	Weekly
<u>Dosimeters</u>			
D-20	Surry Power Station	Gamma in Air	Quarterly
D-41	Surry Lebanon Baptist Church	Gamma in Air	Quarterly
D-42	Surry County - Lawnes Creek	Gamma in Air	Quarterly
D-43	Surry County - Route 628	Gamma in Air	Quarterly
D-44	Jamestown State Park - Historical Site	Gamma in Air	Quarterly
D-45	Newport News - Lee Hall	Gamma in Air	Quarterly
D-73	Naval Weapons Station - Enlisted Quarters	Gamma in Air	Quarterly
D-76	Newport News - Fort Eustis	Gamma in Air	Quarterly
D-77	Williamsburg - Busch Gardens	Gamma in Air	Quarterly
D-78	Williamsburg - Williamsburg Airport	Gamma in Air	Quarterly
D-79	Surry County - Scotland Wharf	Gamma in Air	Quarterly
D-80	Surry County - Bacon's Castle	Gamma in Air	Quarterly
D-81	Surry County – Alliance	Gamma in Air	Quarterly
D-82	Surry County - Hog Point	Gamma in Air	Quarterly
<u>Silt</u>			
S-17	James River - 1/2 Mile Off Discharge Canal	Silt	2x per year
<u>Fish</u>			
F-17	James River - 1/2 Mile Off Discharge Canal	Edible Fish	2x per year
R-17	James River – Various Locations	Shellfish	Annually
<u>Surface Water</u>			
W-19	Surry Discharge Canal	Surface Water	Weekly
W-79	James River – Scotland Wharf *	Surface Water	Weekly
W-79A	James River – Robious Landing	Surface Water	Weekly
<u>Vegetation</u>			
V-96D	Surry County - local farms	Edible Vegetation	2x per year

* As of 5/22/15, sampling location was moved to W-79A.

Sampling Locations for North Anna Nuclear Power Station



Photo courtesy of Dominion Power

LOCATION	TYPE	FREQUENCY
<u>Milk</u>		
M-29 Louisa County - Lakeside Dairy	Raw	Quarterly
<u>Air</u>		
A-88 Louisa County Route 700/North Anna Power Station	Air Particulate	Weekly
A-86 Louisa County – Bumpass Volunteer Fire	Air Particulate	Weekly
<u>Charcoal Filter</u>		
C-88 Louisa County Route 700/North Anna Power Station	Release Gas	Weekly
C-86 Louisa County – Bumpass Volunteer Fire	Release Gas	Weekly
<u>Dosimeters</u>		
D-35 NAPS	Gamma in Air	Quarterly
D-50 Louisa County – Mineral	Gamma in Air	Quarterly
D-51 Louisa County - Wares Crossroads	Gamma in Air	Quarterly
D-52 Spotsylvania - Good Hope Church	Gamma in Air	Quarterly
D-53 Spotsylvania - Route 614	Gamma in Air	Quarterly
D-54 Louisa County - Frederick's Hall	Gamma in Air	Quarterly
D-84 Louisa County - Route 685	Gamma in Air	Quarterly
D-85 Spotsylvania Co. - Route 713	Gamma in Air	Quarterly
D-86 Louisa County – Bumpass Volunteer Fire	Gamma in Air	Quarterly
D-87 Spotsylvania Co. - Levy	Gamma in Air	Quarterly
D-88 Louisa Co. - Rt. 700 (near station)	Gamma in Air	Quarterly
D-89 Louisa County - Aspen Hill	Gamma in Air	Quarterly
<u>Fish</u>		
F-24 North Anna Lake - Second Cooling Lagoon	Edible Fish	2x per year
<u>Soil</u>		
S-24 NAPS Waste Treatment shoreline soil	Soil	2x per year
<u>Surface Water</u>		
W-27 Lake Anna - Route 522	Surface Water	Weekly
W-33 North Anna Discharge Canal	Surface Water	Weekly
<u>Vegetation</u>		
V-98 Louisa County – local farms	Edible Vegetation	2x per year

Sampling Locations - Babcock & Wilcox

SAMPLE	LOCATION	TYPE	FREQUENCY
<u>AIR</u>			
A-101	Eastern Site Boundary Ball field	Air Particulate	Quarterly
<u>SURFACE WATER</u>			
W-101	Eastern Site Boundary Ball field	Surface Water	Annually
W-102A	James River Riverside Park	Surface Water	Annually
<u>SOIL</u>			
S-101	Eastern Site Boundary Ball field	Soil	Annually
S-102A	James River Riverside Park	Soil	Annually
<u>VEGETATION</u>			
V-101	Eastern Site Boundary Ball field	Grass	Annually
V-102	James River Riverside Park	Grass	Annually

Other Sampling Locations in Virginia

	LOCATION	TYPE	FREQUENCY
	<u>Air</u>		
	<i>Control/naturally occurring background</i>		
A-40	Pocahontas State Park	Air Particulate	Weekly
	<u>Charcoal Filter</u>		
	<i>Control/naturally occurring background</i>		
C-40	Pocahontas State Park	Air Particulate	Weekly
	<u>Dosimeters</u>		
	<i>Control/naturally occurring background</i>		
D-40	Pocahontas State Park	Air Gamma	Quarterly
	<u>Silt</u>		
S-15	James River - NNSB - Pier 1	Silt	Quarterly
S-16	James River - NNSB- Shipway 11	Silt	Quarterly
S-18	Elizabeth River - NNSY - Drydock #8	Silt	Quarterly
S-19	Elizabeth River - NNSY - Drydock #4	Silt	Quarterly
S-20	Elizabeth River - NNSY - Wet Slip #1	Silt	Quarterly
	<u>Surface Water</u>		
W-15	James River - NNSB- Pier 1	Surface Water	Quarterly
W-16	James River - NNSB- Shipway 11	Surface Water	Quarterly
W-37	Elizabeth River - NNSY - Drydock #8	Surface Water	Quarterly
W-38	Elizabeth River - NNSY - Drydock #4	Surface Water	Quarterly
W-39	Elizabeth River - NNSY - Wet Slip #1	Surface Water	Quarterly

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**MINIMUM
DETECTABLE
ACTIVITY
"MDA"**

Minimum Detectable Activity (MDA), as used in this report, is defined as the lowest level of radioactivity that can be consistently and accurately detected in a given sample.

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Analytical Results

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Pocahontas State Park (Control)

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
1	A-40	12/15/14	-	1/5/15	0.03	+/-	0.004
2	A-40	1/5/15	-	1/12/15	0.06	+/-	0.01
3	A-40	1/12/15	-	1/20/15	0.06	+/-	0.01
4	A-40	1/20/15	-	1/26/15	0.03	+/-	0.01
5	A-40	1/26/15	-	2/2/15	0.04	+/-	0.01
6	A-40	2/2/15	-	2/9/15	0.03	+/-	0.005
7 ¹	A-40	2/9/15	-	2/16/15		+/-	
8 ²	A-40	2/16/15	-	2/23/15		+/-	
9	A-40	2/23/15	-	3/2/15	0.04	+/-	0.006
10	A-40	3/2/15	-	3/9/15	0.05	+/-	0.008
11 ³	A-40	3/9/15	-	3/16/15		+/-	
12	A-40	3/16/15	-	3/23/15	0.02	+/-	0.003
13	A-40	3/23/15	-	3/30/15	0.04	+/-	0.006
14	A-40	3/30/15	-	4/6/15	0.04	+/-	0.007
15	A-40	4/6/15	-	4/13/15	0.03	+/-	0.005
16	A-40	4/13/15	-	4/20/15	0.03	+/-	0.005
17	A-40	4/20/15	-	4/27/15	0.04	+/-	0.007
18	A-40	4/27/15	-	5/4/15	0.07	+/-	0.010
19	A-40	5/4/15	-	5/11/15	0.08	+/-	0.01

¹ Due to holiday and/or winter weather, no samples were collected.

² Due to equipment maintenance, no samples were collected.

³ Due to the deployment of the mobile lab, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

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Location: Pocahontas State Park (Control) - continued

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
20	A-40	5/11/15	-	5/18/15	0.07	+/-	0.01
21	A-40	5/18/15	-	5/26/15	0.06	+/-	0.01
22	A-40	5/26/15	-	6/1/15	0.06	+/-	0.01
23 ⁴	A-40	6/1/15	-	6/8/15		+/-	
24	A-40	6/8/15	-	6/15/15	0.04	+/-	0.01
25	A-40	6/15/15	-	6/22/15	0.02	+/-	0.001
26 ⁵	A-40	6/22/15	-	6/29/15		+/-	
27	A-40	6/29/15	-	7/6/15	0.01	+/-	0.0004
28	A-40	7/6/15	-	7/13/15	0.01	+/-	0.0008
29	A-40	7/13/15	-	7/20/15	0.02	+/-	0.001
30	A-40	7/20/15	-	7/27/15	0.01	+/-	0.001
31	A-40	7/27/15	-	8/3/15	0.01	+/-	0.001
32 ⁶	A-40	8/3/15	-	8/10/15		+/-	
33	A-40	8/10/15	-	8/17/15	0.01	+/-	0.001
34	A-40	8/17/15	-	8/24/15	0.04	+/-	0.002
35	A-40	8/24/15	-	8/31/15	0.03	+/-	0.002
36	A-40	8/31/15	-	9/8/15	0.02	+/-	0.001
37 ⁷	A-40	9/8/15	-	9/14/15		+/-	

⁴ Due to participation in EPA training, no samples were collected.

⁵ Due to equipment installation and holiday, no samples were collected.

⁶ On 8/10/15, the air sampler at this location was found to be off due to the tripping of the ground fault circuit interrupter after 66 hours of collection time. The sample results are considered invalid.

⁷ Due to participation in VA HAZMAT Conference, no samples were collected.

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Location: Pocahontas State Park (Control) - continued

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
38	A-40	9/14/15	-	9/21/15	0.02	+/-	0.001
39	A-40	9/21/15	-	9/28/15	0.01	+/-	0.001
40	A-40	9/28/15	-	10/5/15	0.005	+/-	0.0005
41	A-40	10/5/15	-	10/13/15	0.06	+/-	0.01
42	A-40	10/13/15	-	10/19/15	0.12	+/-	0.02
43	A-40	10/19/15	-	10/26/15	0.07	+/-	0.01
44 ⁸	A-40	10/26/15	-	11/2/15		+/-	
45	A-40	11/2/15	-	11/9/15	0.06	+/-	0.01
46	A-40	11/9/15	-	11/16/15	0.11	+/-	0.02
47 ⁹	A-40	11/16/15	-	11/23/15		+/-	
48	A-40	11/23/15	-	11/30/15	0.04	+/-	0.01
49 ¹⁰	A-40	11/30/15	-	12/8/15		+/-	
50	A-40	12/8/15	-	12/14/15	0.06	+/-	0.01
51 ¹¹	A-40	12/14/15	-	12/21/15		+/-	
52 ¹²	A-40	12/21/15	-	12/28/15		+/-	

⁸ Due to equipment maintenance and calibrations, no samples were collected.

⁹ Due to the holiday, no samples were collected.

¹⁰ Due to a controlled hunt in the area, no samples were collected.

¹¹ Due to the holiday, no samples were collected.

¹² Due to a trip of the external power supply, sample was not analyzed.

Virginia Department of Health
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Location: Surry Power Station (Onsite)

Week #	Station	Start	Date		Stop	Gross Beta Activity pCi/meter ³		
1	A-20	12/15/14	-	1/5/15	0.03	+/-	0.004	
2	A-20	1/5/15	-	1/12/15	0.04	+/-	0.01	
3	A-20	1/12/15	-	1/20/15	0.03	+/-	0.00	
4	A-20	1/20/15	-	1/26/15	0.02	+/-	0.003	
5	A-20	1/26/15	-	2/2/15	0.04	+/-	0.01	
6	A-20	2/2/15	-	2/9/15	0.03	+/-	0.005	
7 ¹	A-20	2/9/15	-	2/16/15		+/-		
8 ²	A-20	2/16/15	-	2/23/15		+/-		
9	A-20	2/23/15	-	3/2/15	0.04	+/-	0.006	
10	A-20	3/2/15	-	3/9/15	0.04	+/-	0.007	
11 ³	A-20	3/9/15	-	3/16/15		+/-		
12	A-20	3/16/15	-	3/23/15	0.02	+/-	0.003	
13	A-20	3/23/15	-	3/30/15	0.03	+/-	0.005	
14	A-20	3/30/15	-	4/6/15	0.03	+/-	0.005	
15	A-20	4/6/15	-	4/13/15	0.03	+/-	0.004	
16	A-20	4/13/15	-	4/20/15	0.03	+/-	0.004	
17	A-20	4/20/15	-	4/27/15	0.03	+/-	0.005	
18	A-20	4/27/15	-	5/4/15	0.05	+/-	0.007	
19	A-20	5/4/15	-	5/11/15	0.04	+/-	0.006	

¹ Due to holiday and/or winter weather, no samples were collected.

² Due to equipment maintenance, no samples were collected.

³ Due to the deployment of the mobile lab, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

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Location: Surry Power Station (Onsite) - *continued*

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
20	A-20	5/11/15	-	5/18/15	0.06	+/-	0.01
21	A-20	5/18/15	-	5/26/15	0.04	+/-	0.01
22	A-20	5/26/15	-	6/1/15	0.04	+/-	0.01
23 ⁴	A-20	6/1/15	-	6/8/15		+/-	
24	A-20	6/8/15	-	6/15/15	0.03	+/-	0.00
25	A-20	6/15/15	-	6/22/15	0.01	+/-	0.001
26 ⁵	A-20	6/22/15	-	6/29/15		+/-	
27	A-20	6/29/15	-	7/7/15	0.01	+/-	0.0005
28	A-20	7/7/15	-	7/14/15	0.01	+/-	0.0010
29	A-20	7/14/15	-	7/20/15	0.01	+/-	0.001
30	A-20	7/20/15	-	7/27/15	0.01	+/-	0.001
31	A-20	7/27/15	-	8/3/15	0.01	+/-	0.001
32	A-20	8/3/15	-	8/10/15	0.02	+/-	0.001
33	A-20	8/10/15	-	8/17/15	0.01	+/-	0.001
34	A-20	8/17/15	-	8/24/15	0.02	+/-	0.002
35	A-20	8/24/15	-	8/31/15	0.02	+/-	0.001
36	A-20	8/31/15	-	9/8/15	0.01	+/-	0.001
37 ⁶	A-20	9/8/15	-	9/14/15		+/-	

⁴ Due to participation in EPA training, no samples were collected.

⁵ Due to equipment installation and holiday, no samples were collected.

⁶ Due to participation in VA HAZMAT Conference, no samples were collected.

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Location: Surry Power Station (Onsite) - *continued*

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
38	A-20	9/14/15	-	9/21/15	0.01	+/-	0.001
39	A-20	9/21/15	-	9/28/15	0.01	+/-	0.001
40	A-20	9/28/15	-	10/5/15	0.004	+/-	0.0005
41	A-20	10/5/15	-	10/13/15	0.05	+/-	0.01
42	A-20	10/13/15	-	10/19/15	0.05	+/-	0.01
43	A-20	10/19/15	-	10/26/15	0.05	+/-	0.01
44 ⁷	A-20	10/26/15	-	11/2/15		+/-	
45	A-20	11/2/15	-	11/9/15	0.04	+/-	0.01
46	A-20	11/9/15	-	11/16/15	0.07	+/-	0.01
47 ⁸	A-20	11/16/15	-	11/23/15		+/-	
48	A-20	11/23/15	-	11/30/15	0.04	+/-	0.01
49	A-20	11/30/15	-	12/8/15	0.06	+/-	0.01
50	A-20	12/8/15	-	12/14/15	0.07	+/-	0.01
51 ⁹	A-20	12/14/15	-	12/21/15		+/-	
52	A-20	12/21/15	-	12/28/15	0.02	+/-	0.003

⁷ Due to equipment maintenance and calibrations, no samples were collected.

⁸ Due to the holiday, no samples were collected.

⁹ Due to the holiday, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Jamestown State Park & Historical Site

Week #	Station	Start	Date		Stop	Gross Beta Activity pCi/meter ³		
1	A-44	12/15/14	-	1/5/15	0.02	+/-	0.003	
2	A-44	1/5/15	-	1/12/15	0.05	+/-	0.01	
3	A-44	1/12/15	-	1/20/15	0.02	+/-	0.00	
4	A-44	1/20/15	-	1/26/15	0.02	+/-	0.003	
5	A-44	1/26/15	-	2/2/15	0.04	+/-	0.01	
6	A-44	2/2/15	-	2/9/15	0.03	+/-	0.005	
7 ¹	A-44	2/9/15	-	2/16/15		+/-		
8 ²	A-44	2/16/15	-	2/23/15		+/-		
9	A-44	2/23/15	-	3/2/15	0.04	+/-	0.006	
10	A-44	3/2/15	-	3/9/15	0.04	+/-	0.006	
11 ³	A-44	3/9/15	-	3/16/15		+/-		
12	A-44	3/16/15	-	3/23/15	0.02	+/-	0.003	
13	A-44	3/23/15	-	3/30/15	0.03	+/-	0.005	
14	A-44	3/30/15	-	4/6/15	0.04	+/-	0.006	
15	A-44	4/6/15	-	4/13/15	0.03	+/-	0.004	
16	A-44	4/13/15	-	4/20/15	0.03	+/-	0.004	
17	A-44	4/20/15	-	4/27/15	0.03	+/-	0.005	
18	A-44	4/27/15	-	5/4/15	0.03	+/-	0.006	
19	A-44	5/4/15	-	5/11/15	0.04	+/-	0.006	

¹ Due to holiday and/or winter weather, no samples were collected.

² Due to equipment maintenance, no samples were collected.

³ Due to the deployment of the mobile lab, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Jamestown State Park & Historical Site - *continued*

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
20	A-44	5/11/15	-	5/18/15	0.07	+/-	0.01
21	A-44	5/18/15	-	5/26/15	0.05	+/-	0.01
22	A-44	5/26/15	-	6/1/15	0.04	+/-	0.01
23 ⁴	A-44	6/1/15	-	6/8/15		+/-	
24	A-44	6/8/15	-	6/15/15	0.03	+/-	0.00
25	A-44	6/15/15	-	6/22/15	0.01	+/-	0.001
26 ⁵	A-44	6/22/15	-	6/29/15		+/-	
27	A-44	6/29/15	-	7/7/15	0.01	+/-	0.0005
28	A-44	7/7/15	-	7/14/15	0.01	+/-	0.0010
29	A-44	7/14/15	-	7/20/15	0.02	+/-	0.001
30	A-44	7/20/15	-	7/27/15	0.01	+/-	0.001
31	A-44	7/27/15	-	8/3/15	0.01	+/-	0.001
32	A-44	8/3/15	-	8/10/15	0.01	+/-	0.001
33	A-44	8/10/15	-	8/17/15	0.01	+/-	0.001
34	A-44	8/17/15	-	8/24/15	0.03	+/-	0.001
35	A-44	8/24/15	-	8/31/15	0.02	+/-	0.002
36	A-44	8/31/15	-	9/8/15	0.01	+/-	0.001
37 ⁶	A-44	9/8/15	-	9/14/15		+/-	

⁴ Due to participation in EPA training, no samples were collected.

⁵ Due to equipment installation and holiday, no samples were collected.

⁶ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Jamestown State Park & Historical Site - *continued*

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
38	A-44	9/14/15	-	9/21/15	0.01	+/-	0.001
39	A-44	9/21/15	-	9/28/15	0.01	+/-	0.001
40	A-44	9/28/15	-	10/5/15	0.003	+/-	0.0004
41	A-44	10/5/15	-	10/13/15	0.04	+/-	0.01
42	A-44	10/13/15	-	10/19/15	0.06	+/-	0.01
43	A-44	10/19/15	-	10/26/15	0.05	+/-	0.01
44 ⁷	A-44	10/26/15	-	11/2/15		+/-	
45	A-44	11/2/15	-	11/9/15	0.03	+/-	0.0004
46	A-44	11/9/15	-	11/16/15	0.06	+/-	0.01
47 ⁸	A-44	11/16/15	-	11/23/15		+/-	
48	A-44	11/23/15	-	11/30/15	0.04	+/-	0.005
49	A-44	11/30/15	-	12/8/15	0.05	+/-	0.01
50	A-44	12/8/15	-	12/14/15	0.06	+/-	0.01
51 ⁹	A-44	12/14/15	-	12/21/15		+/-	
52	A-44	12/21/15	-	12/28/15	0.02	+/-	0.003

⁷ Due to equipment maintenance and calibrations, no samples were collected.

⁸ Due to the holiday, no samples were collected.

⁹ Due to the holiday, no samples were collected.

Virginia Department of Health

AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Bumpass Volunteer Fire Station

Week #	Station	Start	Date		Stop	Gross Beta Activity pCi/meter ³		
1	A-86	12/15/14	-	1/5/15	0.03	+/-	0.004	
2	A-86	1/5/15	-	1/12/15	0.04	+/-	0.01	
3 ¹	A-86	1/12/15	-	1/20/15		+/-		
4	A-86	1/20/15	-	1/26/15	0.03	+/-	0.01	
5	A-86	1/26/15	-	2/2/15	0.04	+/-	0.01	
6	A-86	2/2/15	-	2/9/15	0.03	+/-	0.005	
7 ²	A-86	2/9/15	-	2/16/15		+/-		
8 ³	A-86	2/16/15	-	2/23/15		+/-		
9	A-86	2/23/15	-	3/2/15	0.05	+/-	0.006	
10	A-86	3/2/15	-	3/9/15	0.05	+/-	0.007	
11 ⁴	A-86	3/9/15	-	3/16/15		+/-		
12	A-86	3/16/15	-	3/23/15	0.02	+/-	0.003	
13	A-86	3/23/15	-	3/30/15	0.03	+/-	0.005	
14	A-86	3/30/15	-	4/6/15	0.05	+/-	0.008	
15	A-86	4/6/15	-	4/13/15	0.03	+/-	0.005	
16	A-86	4/13/15	-	4/20/15	0.04	+/-	0.006	
17	A-86	4/20/15	-	4/27/15	0.05	+/-	0.007	
18	A-86	4/27/15	-	5/4/15	0.13	+/-	0.018	
19	A-86	5/4/15	-	5/11/15	0.06	+/-	0.009	

¹ Due to VDOT's use of power receptacles, no sample results were available.

² Due to holiday and/or winter weather, no samples were collected.

³ Due to equipment maintenance, no samples were collected.

⁴ Due to the deployment of the mobile lab, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Bumpass Volunteer Fire Station - *continued*

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
20	A-86	5/11/15	-	5/18/15	0.12	+/-	0.02
21	A-86	5/18/15	-	5/26/15	0.00	+/-	0.00
22	A-86	5/26/15	-	6/1/15	0.05	+/-	0.01
23 ⁵	A-86	6/1/15	-	6/8/15		+/-	
24	A-86	6/8/15	-	6/15/15	0.06	+/-	0.01
25	A-86	6/15/15	-	6/22/15	0.02	+/-	0.002
26 ⁶	A-86	6/22/15	-	6/29/15		+/-	
27	A-86	6/29/15	-	7/6/15	0.01	+/-	0.0004
28	A-86	7/6/15	-	7/13/15	0.01	+/-	0.0008
29	A-86	7/13/15	-	7/20/15	0.02	+/-	0.002
30	A-86	7/20/15	-	7/27/15	0.01	+/-	0.001
31	A-86	7/27/15	-	8/3/15	0.02	+/-	0.001
32	A-86	8/3/15	-	8/10/15	0.02	+/-	0.001
33	A-86	8/10/15	-	8/17/15	0.02	+/-	0.001
34	A-86	8/17/15	-	8/24/15	0.07	+/-	0.003
35	A-86	8/24/15	-	8/31/15	0.03	+/-	0.002
36	A-86	8/31/15	-	9/8/15	0.02	+/-	0.001
37 ⁷	A-86	9/8/15	-	9/14/15		+/-	

⁵ Due to participation in EPA training, no samples were collected.

⁶ Due to equipment installation and holiday, no samples were collected.

⁷ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Bumpass Volunteer Fire Station - *continued*

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
38	A-86	9/14/15	-	9/21/15	0.02	+/-	0.001
39	A-86	9/21/15	-	9/28/15	0.01	+/-	0.001
40	A-86	9/28/15	-	10/5/15	0.006	+/-	0.0006
41	A-86	10/5/15	-	10/13/15	0.07	+/-	0.01
42	A-86	10/13/15	-	10/19/15	0.15	+/-	0.02
43	A-86	10/19/15	-	10/26/15	0.06	+/-	0.01
44 ⁸	A-86	10/26/15	-	11/2/15		+/-	
45	A-86	11/2/15	-	11/9/15	0.06	+/-	0.01
46	A-86	11/9/15	-	11/16/15	0.08	+/-	0.01
47 ⁹	A-86	11/16/15	-	11/23/15		+/-	
48	A-86	11/23/15	-	11/30/15	0.04	+/-	0.01
49	A-86	11/30/15	-	12/8/15	0.08	+/-	0.01
50	A-86	12/8/15	-	12/14/15	0.06	+/-	0.01
51 ¹⁰	A-86	12/14/15	-	12/21/15		+/-	
52	A-86	12/21/15	-	12/28/15	0.02	+/-	0.003

⁸ Due to equipment maintenance and calibrations, no samples were collected.

⁹ Due to the holiday, no samples were collected.

¹⁰ Due to the holiday, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Route 700

Week #	Station	Start	Date		Stop	Gross Beta Activity pCi/meter ³		
1	A-88	12/15/14	-	1/5/15	0.03	+/-	0.004	
2	A-88	1/5/15	-	1/12/15	0.06	+/-	0.01	
3	A-88	1/12/15	-	1/20/15	0.05	+/-	0.01	
4	A-88	1/20/15	-	1/26/15	0.03	+/-	0.01	
5	A-88	1/26/15	-	2/2/15	0.05	+/-	0.01	
6	A-88	2/2/15	-	2/9/15	0.04	+/-	0.006	
7 ¹	A-88	2/9/15	-	2/16/15		+/-		
8 ²	A-88	2/16/15	-	2/23/15		+/-		
9	A-88	2/23/15	-	3/2/15	0.05	+/-	0.007	
10	A-88	3/2/15	-	3/9/15	0.06	+/-	0.006	
11 ³	A-88	3/9/15	-	3/16/15		+/-		
12	A-88	3/16/15	-	3/23/15	0.02	+/-	0.003	
13	A-88	3/23/15	-	3/30/15	0.04	+/-	0.005	
14	A-88	3/30/15	-	4/6/15	0.04	+/-	0.006	
15	A-88	4/6/15	-	4/13/15	0.03	+/-	0.004	
16	A-88	4/13/15	-	4/20/15	0.03	+/-	0.005	
17	A-88	4/20/15	-	4/27/15	0.04	+/-	0.006	
18	A-88	4/27/15	-	5/4/15	0.07	+/-	0.010	
19	A-88	5/4/15	-	5/11/15	0.09	+/-	0.01	

¹ Due to holiday and/or winter weather, no samples were collected.

² Due to equipment maintenance, no samples were collected.

³ Due to the deployment of the mobile lab, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Route 700 - continued

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
20	A-88	5/11/15	-	5/18/15	0.06	+/-	0.01
21	A-88	5/18/15	-	5/26/15	0.05	+/-	0.01
22	A-88	5/26/15	-	6/1/15	0.05	+/-	0.01
23 ⁴	A-88	6/1/15	-	6/8/15		+/-	
24	A-88	6/8/15	-	6/15/15	0.04	+/-	0.01
25	A-88	6/15/15	-	6/22/15	0.02	+/-	0.002
26 ⁵	A-88	6/22/15	-	6/29/15		+/-	
27	A-88	6/29/15	-	7/6/15	0.01	+/-	0.0004
28	A-88	7/6/15	-	7/13/15	0.01	+/-	0.0007
29	A-88	7/13/15	-	7/20/15	0.02	+/-	0.001
30	A-88	7/20/15	-	7/27/15	0.01	+/-	0.001
31	A-88	7/27/15	-	8/3/15	0.01	+/-	0.001
32	A-88	8/3/15	-	8/10/15	0.02	+/-	0.001
33	A-88	8/10/15	-	8/17/15	0.01	+/-	0.001
34	A-88	8/17/15	-	8/24/15	0.04	+/-	0.002
35	A-88	8/24/15	-	8/31/15	0.02	+/-	0.001
36	A-88	8/31/15	-	9/8/15	0.01	+/-	0.001
37 ⁶	A-88	9/8/15	-	9/14/15		+/-	

⁴ Due to participation in EPA training, no samples were collected.

⁵ Due to equipment installation and holiday, no samples were collected.

⁶ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health
AIR PARTICULATE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Route 700 - continued

Week #	Station	Date		Stop	Gross Beta Activity		
		Start			pCi/meter ³		
38	A-88	9/14/15	-	9/21/15	0.01	+/-	0.001
39	A-88	9/21/15	-	9/28/15	0.01	+/-	0.001
40	A-88	9/28/15	-	10/5/15	0.006	+/-	0.0006
41	A-88	10/5/15	-	10/13/15	0.06	+/-	0.01
42	A-88	10/13/15	-	10/19/15	0.10	+/-	0.01
43	A-88	10/19/15	-	10/26/15	0.05	+/-	0.01
44 ⁷	A-88	10/26/15	-	11/2/15		+/-	
45	A-88	11/2/15	-	11/9/15	0.06	+/-	0.01
46	A-88	11/9/15	-	11/16/15	0.07	+/-	0.01
47 ⁸	A-88	11/16/15	-	11/23/15		+/-	
48	A-88	11/23/15	-	11/30/15	0.04	+/-	0.01
49	A-88	11/30/15	-	12/8/15	0.06	+/-	0.01
50	A-88	12/8/15	-	12/14/15	0.06	+/-	0.01
51 ⁹	A-88	12/14/15	-	12/21/15		+/-	
52	A-88	12/21/15	-	12/28/15	0.02	+/-	0.003

⁷ Due to equipment maintenance and calibrations, no samples were collected.

⁸ Due to the holiday, no samples were collected.

⁹ Due to the holiday, no samples were collected.

Virginia Department of Health

AMBIENT GAMMA EXPOSURE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Station	Quarter	Net Exposure Rate		
			mR/Std Qtr	+/-	2 S.D.
Pocahontas State Park	D-40	1 st	39.57	+/-	12.58
Pocahontas State Park	D-40	2 nd	31.27	+/-	5.59
Pocahontas State Park	D-40	3 rd	54.04	+/-	7.35
Pocahontas State Park	D-40	4 th	38.25	+/-	12.37
Surry Power Station	D-20	1 st	24.54	+/-	9.91
Surry Power Station	D-20	2 nd	21.30	+/-	4.62
Surry Power Station	D-20	3 rd	32.77	+/-	5.72
Surry Power Station	D-20	4 th	23.93	+/-	9.78
North Anna Power Station	D-35	1 st	33.69	+/-	11.61
North Anna Power Station	D-35	2 nd	27.18	+/-	5.21
North Anna Power Station	D-35	3 rd	42.08	+/-	6.49
North Anna Power Station	D-35	4 th	32.93	+/-	11.48
Surry – Lebanon Baptist Church	D-41	1 st	23.65	+/-	9.73
Surry – Lebanon Baptist Church	D-41	2 nd	15.60	+/-	3.95
Surry – Lebanon Baptist Church	D-41	3 rd	29.04	+/-	5.39
Surry – Lebanon Baptist Church	D-41	4 th	19.23	+/-	8.77
Surry – Lawnes Creek	D-42	1 st	27.13	+/-	10.42
Surry – Lawnes Creek	D-42	2 nd	21.45	+/-	4.63
Surry – Lawnes Creek	D-42	3 rd	38.37	+/-	6.19
Surry – Lawnes Creek	D-42	4 th	26.37	+/-	10.27
Surry – Route 628	D-43	1 st	24.83	+/-	9.97
Surry – Route 628	D-43	2 nd	18.99	+/-	4.36
Surry – Route 628	D-43	3 rd	32.89	+/-	5.74
Surry – Route 628	D-43	4 th	22.79	+/-	9.55
Jamestown – Historical site	D-44	1 st	29.46	+/-	10.86
Jamestown – Historical site	D-44	2 nd	17.99	+/-	4.24
Jamestown – Historical site	D-44	3 rd	38.03	+/-	6.17
Jamestown – Historical site	D-44	4 th	21.97	+/-	9.38
Newport News - Lee Hall	D-45	1 st	33.49	+/-	11.57
Newport News - Lee Hall	D-45	2 nd	27.18	+/-	5.21
Newport News - Lee Hall	D-45	3 rd	41.88	+/-	6.47
Newport News - Lee Hall	D-45	4 th	32.89	+/-	11.47
Louisa County - Mineral	D-50	1 st	27.89	+/-	10.56
Louisa County - Mineral	D-50	2 nd	24.92	+/-	4.99
Louisa County - Mineral	D-50	3 rd	33.69	+/-	5.80
Louisa County - Mineral	D-50	4 th	30.91	+/-	11.12
Louisa County – Wares Crossroads	D-51	1 st	25.23	+/-	10.05
Louisa County – Wares Crossroads	D-51	2 nd	19.66	+/-	4.43
Louisa County – Wares Crossroads	D-51	3 rd	34.58	+/-	5.88
Louisa County – Wares Crossroads	D-51	4 th	21.48	+/-	9.27

Virginia Department of Health

AMBIENT GAMMA EXPOSURE

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Station	Quarter	Net Exposure Rate mR/Std Qtr +/- 2 S.D.		
Louisa County – Good Hope Church	D-52	1 st	30.31	+/-	11.01
Louisa County – Good Hope Church	D-52	2 nd	24.92	+/-	4.99
Louisa County – Good Hope Church	D-52	3 rd	44.34	+/-	6.66
Louisa County – Good Hope Church	D-52	4 th	22.59	+/-	9.51
Spotsylvania Route 614	D-53	1 st	27.02	+/-	10.40
Spotsylvania Route 614	D-53	2 nd	20.91	+/-	4.57
Spotsylvania Route 614	D-53	3 rd	32.91	+/-	5.74
Spotsylvania Route 614	D-53	4 th	25.86	+/-	10.17
Louisa County – Fred Hall	D-54	1 st	24.54	+/-	9.91
Louisa County – Fred Hall	D-54	2 nd	20.29	+/-	4.50
Louisa County – Fred Hall	D-54	3 rd	31.83	+/-	5.64
Louisa County – Fred Hall	D-54	4 th	24.96	+/-	9.99
Naval Weapons Station – 1	D-73	1 st	23.49	+/-	9.69
Naval Weapons Station – 1	D-73	2 nd	21.36	+/-	4.62
Naval Weapons Station – 1	D-73	3 rd	29.75	+/-	5.45
Naval Weapons Station – 1	D-73	4 th	26.71	+/-	10.34
Newport News – Fort Eustis	D-76	1 st	27.09	+/-	10.41
Newport News – Fort Eustis	D-76	2 nd	20.22	+/-	4.50
Newport News – Fort Eustis	D-76	3 rd	36.49	+/-	6.04
Newport News – Fort Eustis	D-76	4 th	24.76	+/-	9.95
Williamsburg – Busch Gardens	D-77	1 st	29.84	+/-	10.92
Williamsburg – Busch Gardens	D-77	2 nd	24.02	+/-	4.90
Williamsburg – Busch Gardens	D-77	3 rd	40.92	+/-	6.40
Williamsburg – Busch Gardens	D-77	4 th	29.59	+/-	10.88
Williamsburg – Airport	D-78	1 st	22.86	+/-	9.56
Williamsburg – Airport	D-78	2 nd	23.73	+/-	4.87
Williamsburg – Airport	D-78	3 rd	28.25	+/-	5.31
Williamsburg – Airport	D-78	4 th	25.57	+/-	10.11
Surry – Scotland Wharf ¹	D-79	1 st		+/-	
Surry – Scotland Wharf	D-79	2 nd	21.21	+/-	4.61
Surry – Scotland Wharf	D-79	3 rd	32.04	+/-	5.66
Surry – Scotland Wharf	D-79	4 th	25.28	+/-	10.06
Surry – Bacon's Castle	D-80	1 st	23.72	+/-	9.74
Surry – Bacon's Castle	D-80	2 nd	20.09	+/-	4.48
Surry – Bacon's Castle	D-80	3 rd	27.36	+/-	5.23
Surry – Bacon's Castle	D-80	4 th	16.91	+/-	8.22
Surry – Alliance	D-81	1 st	24.45	+/-	9.89
Surry – Alliance	D-81	2 nd	19.60	+/-	4.43
Surry – Alliance	D-81	3 rd	33.15	+/-	5.76
Surry – Alliance	D-81	4 th	20.87	+/-	9.14

¹ D-79, 1st quarter, was found missing at change out.

Virginia Department of Health

AMBIENT GAMMA EXPOSURE

January 1, 2015 through December 31, 2015

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Location	Station	Quarter	Net Exposure Rate mR/Std Qtr +/- 2 S.D.		
Surry – Hog Point	D-82	1 st	24.25	+/-	9.85
Surry – Hog Point	D-82	2 nd	19.98	+/-	4.47
Surry – Hog Point	D-82	3 rd	33.62	+/-	5.80
Surry – Hog Point	D-82	4 th	26.24	+/-	10.24
Louisa County – Route 685	D-84	1 st	26.20	+/-	10.24
Louisa County – Route 685	D-84	2 nd	24.67	+/-	4.97
Louisa County – Route 685	D-84	3 rd	32.70	+/-	5.72
Louisa County – Route 685	D-84	4 th	29.75	+/-	10.91
Spotsylvania – Route 713	D-85	1 st	24.68	+/-	9.94
Spotsylvania – Route 713	D-85	2 nd	21.01	+/-	4.58
Spotsylvania – Route 713	D-85	3 rd	32.61	+/-	5.71
Spotsylvania – Route 713	D-85	4 th	24.32	+/-	9.86
Louisa County – Bumpass Fire Dept.	D-86	1 st	29.55	+/-	10.87
Louisa County – Bumpass Fire Dept.	D-86	2 nd	24.79	+/-	4.98
Louisa County – Bumpass Fire Dept.	D-86	3 rd	35.66	+/-	5.97
Louisa County – Bumpass Fire Dept.	D-86	4 th	28.50	+/-	10.68
Spotsylvania – Levy	D-87	1 st	31.68	+/-	11.26
Spotsylvania – Levy	D-87	2 nd	24.78	+/-	4.98
Spotsylvania – Levy	D-87	3 rd	38.63	+/-	6.22
Spotsylvania – Levy	D-87	4 th	30.11	+/-	10.97
Louisa County – Route 700	D-88	1 st	32.66	+/-	11.43
Louisa County – Route 700	D-88	2 nd	25.17	+/-	5.02
Louisa County – Route 700	D-88	3 rd	45.92	+/-	6.78
Louisa County – Route 700	D-88	4 th	30.20	+/-	10.99
Louisa County – Aspen Hill	D-89	1 st	32.17	+/-	11.34
Louisa County – Aspen Hill	D-89	2 nd	27.54	+/-	10.50
Louisa County – Aspen Hill	D-89	3 rd	46.53	+/-	6.82
Louisa County – Aspen Hill	D-89	4 th	33.55	+/-	11.58
Radiological Health	Control 1	1 st	8.90	+/-	5.97
Radiological Health	Control 1	2 nd	18.57	+/-	4.31
Radiological Health	Control 1	3 rd	16.66	+/-	4.08
Radiological Health	Control 1	4 th	14.65	+/-	7.65
Radiological Health	Control 2	1 st	3.16	+/-	6.31
Radiological Health	Control 2	2 nd	20.04	+/-	4.48
Radiological Health	Control 2	3 rd	16.24	+/-	4.03
Radiological Health	Control 2	4 th	16.24	+/-	8.06

Virginia Department of Health

FISH

January 1, 2015 through December 31, 2015

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Location Type of fish	Date Collected	Isotope	pCi/gram
Bi-Annual North Anna Second Cooling Lagoon F-24	4/21/15	Ba-140	<MDA
		Cs-134	<MDA
		Cs-137	0.01+/-0.01
		Co-58	<MDA
		Co-60	<MDA
		I-131	<MDA
		Fe-59	<MDA
		Mn-54	<MDA
		Ru-106	<MDA
		Ag-110M	<MDA
		Zn-65	<MDA
		Nb-95	<MDA
Bi-Annual North Anna ¹ Second Cooling Lagoon F-24	11/9/15	Ba-140	
		Cs-134	
		Cs-137	
		Co-58	
		Co-60	
		I-131	
		Fe-59	
		Mn-54	
		Ru-106	
		Ag-110M	
		Zn-65	
		Nb-95	

¹ Results have not been received from DCLS for the reporting period.

Virginia Department of Health

FISH

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location Type of fish	Date Collected	Isotope	pCi/gram
Surry Discharge Canal	4/6/15	Ba-140	<MDA
		Cs-134	<MDA
		Cs-137	<MDA
		Co-58	<MDA
		Co-60	<MDA
		I-131	<MDA
		Fe-59	<MDA
		Mn-54	<MDA
		Ru-106	<MDA
		Ag-110M	<MDA
		Zn-65	<MDA
		Nb-95	<MDA
Surry ² Discharge Canal	10/19/15	Ba-140	
		Cs-134	
		Cs-137	
		Co-58	
		Co-60	
		I-131	
		Fe-59	
		Mn-54	
		Ru-106	
		Ag-110M	
		Zn-65	
		Nb-95	

² Results have not been received from DCLS for the reporting period.

Virginia Department of Health

SHELLFISH

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location Type of fish	Date Collected	Isotope	pCi/gram
Surry Power Station R-17 (Clams and Oysters)	3/9/15	Ba-140	<MDA
		Cs-134	<MDA
		Cs-137	<MDA
		Co-58	<MDA
		Co-60	<MDA
		I-131	<MDA
		Fe-59	<MDA
		Mn-54	<MDA
		Ru-106	<MDA
		Ag-110M	<MDA
		Zn-65	<MDA
		Nb-95	<MDA

Virginia Department of Health Milk¹

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Louisa County - Lakeside Dairy M-29			
1 st Quarter Date: 1/21/15		2 nd Quarter Date: 4/8/15	
Isotope	Results - pCi/liter	Isotope	Results - pCi/liter
Ba	<MDA	Ba	<MDA
Cs-134	<MDA	Cs-134	<MDA
Cs-137	<MDA	Cs-137	<MDA
K-40*	1.7+/-0.1	K-40*	1.6 +/- 0.1
I-131	0.0+/-0.7	I-131	0.2 +/- 0.4
Sr-89	<MDA	Sr-89	<MDA
Sr-90	0.5+/-0.5	Sr-90	<MDA
3 rd Quarter Date: 7/1/15		4 th Quarter Date:	
Isotope	Results - pCi/liter	Isotope	Results - pCi/liter
Ba	<MDA	Ba	
Cs-134	<MDA	Cs-134	
Cs-137	<MDA	Cs-137	
K-40*	1.6 +/- 0.1	K-40*	
I-131	0 +/- 0.6	I-131	
Sr-89	<MDA	Sr-89	
Sr-90	0.8 +/- 0.4	Sr-90	
Surry County - Epps Dairy M-66			
1 st Quarter Date: 1/6/15		2 nd Quarter Date: 4/1/15	
Isotope	Results - pCi/liter	Isotope	Results - pCi/liter
Ba	<MDA	Ba	<MDA
Cs-134	<MDA	Cs-134	<MDA
Cs-137	<MDA	Cs-137	<MDA
K-40*	1.4 +/- 0.01	K-40*	1.6 +/- 0.1
I-131	0.0 +/-0.3	I-131	0 +/- 0.03
Sr-89	<MDA	Sr-89	<MDA
Sr-90	0.2+/-0.3	Sr-90	0.7 +/- 0.4
3 rd Quarter Date: 7/2/15		4 th Quarter Date:	
Isotope	Results - pCi/liter	Isotope	Results - pCi/liter
Ba	<MDA	Ba	
Cs-134	<MDA	Cs-134	
Cs-137	<MDA	Cs-137	
K-40*	1.5 +/- 0.1	K-40*	
I-131	0 +/- 0.6	I-131	
Sr-89	<MDA	Sr-89	
Sr-90	1.7 +/- 0.5	Sr-90	

*K-40 data is reported in units of grams/liter.

¹ Results for the 4th quarter have not been received from DCLS.

Virginia Department of Health
Gamma & Radiogas in Air
January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Pocahontas State Park (Control)

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
1	C-40	12/15/14	-	1/5/15	<MDA	<MDA	<MDA
2	C-40	1/5/15	-	1/12/15	<MDA	<MDA	<MDA
3	C-40	1/12/15	-	1/20/15	2.34E-2	<MDA	<MDA
4 ¹	C-40	1/20/15	-	1/26/15			
5	C-40	1/26/15	-	2/2/15	<MDA	<MDA	2.30E-2
6	C-40	2/2/15	-	2/9/15	<MDA	<MDA	<MDA
7 ²	C-40	2/9/15	-	2/16/15			
8 ³	C-40	2/16/15	-	2/23/15			
9	C-40	2/23/15	-	3/2/15	3.00E-2	<MDA	<MDA
10	C-40	3/2/15	-	3/9/15	<MDA	<MDA	<MDA
11 ⁴	C-40	3/9/15	-	3/16/15			
12	C-40	3/16/15	-	3/23/15	<MDA	<MDA	<MDA
13	C-40	3/23/15	-	3/30/15	<MDA	<MDA	<MDA
14	C-40	3/30/15	-	4/6/15	<MDA	<MDA	<MDA
15	C-40	4/6/15	-	4/13/15	<MDA	<MDA	<MDA
16	C-40	4/13/15	-	4/20/15	<MDA	2.74E-2	<MDA
17	C-40	4/20/15	-	4/27/15	<MDA	<MDA	<MDA
18	C-40	4/27/15	-	5/4/15	<MDA	<MDA	<MDA
19	C-40	5/4/15	-	5/11/15	<MDA	<MDA	<MDA
20	C-40	5/11/15	-	5/18/15	<MDA	<MDA	<MDA
21	C-40	5/18/15	-	5/26/15	<MDA	<MDA	<MDA

¹ Due to equipment malfunction, no results are available.

² Due to holiday and/or winter weather, no samples were collected.

³ Due to equipment maintenance, no samples were collected.

⁴ Due to deployment of the mobile laboratory, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Pocahontas State Park (Control) - continued

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
22	C-40	5/26/15	-	6/1/15	<MDA	<MDA	<MDA
23 ⁵	C-40	6/1/15	-	6/8/15			
24	C-40	6/8/15	-	6/15/15	<MDA	<MDA	<MDA
25	C-40	6/15/15	-	6/22/15			
26 ⁶	C-40	6/22/15	-	6/29/15			
27	C-40	6/29/15	-	7/6/15	<MDA	<MDA	<MDA
28	C-40	7/6/15	-	7/13/15	<MDA	<MDA	<MDA
29	C-40	7/13/15	-	7/20/15	<MDA	<MDA	<MDA
30	C-40	7/20/15	-	7/27/15	<MDA	<MDA	<MDA
31	C-40	7/27/15	-	8/3/15	<MDA	<MDA	<MDA
32 ⁷	C-40	8/3/15	-	8/10/15			
33	C-40	8/10/15	-	8/17/15	<MDA	<MDA	<MDA
34	C-40	8/17/15	-	8/24/15	<MDA	<MDA	<MDA
35	C-40	8/24/15	-	8/31/15	<MDA	<MDA	<MDA
36	C-40	8/31/15	-	9/8/15	<MDA	<MDA	<MDA
37 ⁸	C-40	9/8/15	-	9/14/15			
38	C-40	9/14/15	-	9/21/15	<MDA	<MDA	<MDA
39	C-40	9/21/15	-	9/28/15	<MDA	<MDA	<MDA
40	C-40	9/28/15	-	10/5/15	<MDA	<MDA	<MDA
41	C-40	10/5/15	-	10/13/15	7.24E-2	<MDA	<MDA

⁵ Due to participation in EPA training, no samples were collected.

⁶ Due to equipment installation and holiday, no samples were collected.

⁷ On 8/10/15, air sampler was found offline to tripping of the ground fault circuit interrupter. Results were deemed considered invalid.

⁸ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health

Gamma & Radiogas in Air

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ANNUAL REPORT 2015

Location: Pocahontas State Park (Control) - *continued*

Week #	Station	Date		Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start	Ended			
42	C-40	10/13/15	- 10/19/15	<MDA	<MDA	<MDA
43	C-40	10/19/15	- 10/26/15	5.40E-2	<MDA	<MDA
44 ⁹	C-40	10/26/15	- 11/2/15			
45	C-40	11/2/15	- 11/9/15	2.90E-2	<MDA	<MDA
46	C-40	11/9/15	- 11/16/15	4.44E-2	<MDA	<MDA
47 ¹⁰	C-40	11/16/15	- 11/23/15			
48	C-40	11/23/15	- 11/30/15	<MDA	<MDA	<MDA
49 ¹¹	C-40	11/30/15	- 12/8/15			
50	C-40	12/8/15	- 12/14/15	<MDA	<MDA	<MDA
51 ¹²	C-40	12/14/15	- 12/21/15			
52 ¹³	C-40	12/21/15	- 12/28/15			

⁹ Due to equipment maintenance and calibrations, no samples were collected.

¹⁰ Due to the holiday, no samples were collected.

¹¹ Due to a controlled hunt in the area, no samples were collected.

¹² Due to the holiday, no samples were collected.

¹³ Due to a trip of the external power supply, sample was not collected.

Virginia Department of Health Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Surry Power Station (Onsite)

Week #	Station	Date		Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start	Ended			
1	C-20	12/15/14	-	1/5/15	<MDA	<MDA
2	C-20	1/5/15	-	1/12/15	<MDA	<MDA
3	C-20	1/12/15	-	1/20/15	<MDA	<MDA
4 ¹	C-20	1/20/15	-	1/26/15		
5	C-20	1/26/15	-	2/2/15	<MDA	<MDA
6	C-20	2/2/15	-	2/9/15	<MDA	<MDA
7 ²	C-20	2/9/15	-	2/16/15		
8 ³	C-20	2/16/15	-	2/23/15		
9	C-20	2/23/15	-	3/2/15	<MDA	<MDA
10	C-20	3/2/15	-	3/9/15	<MDA	<MDA
11 ⁴	C-20	3/9/15	-	3/16/15		
12	C-20	3/16/15	-	3/23/15	<MDA	<MDA
13	C-20	3/23/15	-	3/30/15	<MDA	<MDA
14	C-20	3/30/15	-	4/6/15	<MDA	<MDA
15	C-20	4/6/15	-	4/13/15	<MDA	<MDA
16	C-20	4/13/15	-	4/20/15	<MDA	<MDA
17	C-20	4/20/15	-	4/27/15	<MDA	<MDA
18	C-20	4/27/15	-	5/4/15	<MDA	<MDA
19	C-20	5/4/15	-	5/11/15	<MDA	<MDA
20	C-20	5/11/15	-	5/18/15	<MDA	<MDA
21	C-20	5/18/15	-	5/26/15	<MDA	<MDA

¹ Due to equipment malfunction, no results are available.

² Due to holiday and/or winter weather, no samples were collected.

³ Due to equipment maintenance, no samples were collected.

⁴ Due to deployment of the mobile laboratory, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Surry Power Station (Onsite) - *continued*

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
22	C-20	5/26/15	-	6/1/15	<MDA	<MDA	<MDA
23 ⁵	C-20	6/1/15	-	6/8/15			
24	C-20	6/8/15	-	6/15/15	<MDA	<MDA	<MDA
25	C-20	6/15/15	-	6/22/15	<MDA	<MDA	<MDA
26 ⁶	C-20	6/22/15	-	6/29/15			
27	C-20	6/29/15	-	7/7/15	<MDA	<MDA	<MDA
28	C-20	7/7/15	-	7/14/15	<MDA	<MDA	<MDA
29	C-20	7/14/15	-	7/20/15	<MDA	<MDA	<MDA
30	C-20	7/20/15	-	7/27/15	<MDA	<MDA	<MDA
31	C-20	7/27/15	-	8/3/15	<MDA	<MDA	<MDA
32	C-20	8/3/15	-	8/10/15	<MDA	<MDA	<MDA
33	C-20	8/10/15	-	8/17/15	<MDA	<MDA	<MDA
34	C-20	8/17/15	-	8/24/15	<MDA	<MDA	<MDA
35	C-20	8/24/15	-	8/31/15	<MDA	<MDA	<MDA
36	C-20	8/31/15	-	9/8/15	<MDA	<MDA	<MDA
37 ⁷	C-20	9/8/15	-	9/14/15			
38	C-20	9/14/15	-	9/21/15	<MDA	<MDA	<MDA
39	C-20	9/21/15	-	9/28/15	<MDA	<MDA	<MDA
40	C-20	9/28/15	-	10/5/15	3.20E-2	2.70E-2	<MDA
41	C-20	10/5/15	-	10/13/15	5.62E-2	<MDA	<MDA

⁵ Due to participation in EPA training, no samples were collected.

⁶ Due to equipment installation and holiday, no samples were collected.

⁷ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Surry Power Station (Onsite) - *continued*

Week #	Station	Date		Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start	Ended			
42	C-20	10/13/15	- 10/19/15	<MDA	<MDA	<MDA
43	C-20	10/19/15	- 10/26/15	<MDA	<MDA	<MDA
44 ⁸	C-20	10/26/15	- 11/2/15			
45	C-20	11/2/15	- 11/9/15	<MDA	<MDA	<MDA
46	C-20	11/9/15	- 11/16/15	<MDA	<MDA	<MDA
47 ⁹	C-20	11/16/15	- 11/23/15			
48	C-20	11/23/15	- 11/30/15	<MDA	<MDA	<MDA
49	C-20	11/30/15	- 12/8/15	<MDA	<MDA	<MDA
50	C-20	12/8/15	- 12/14/15	3.94E-2	<MDA	<MDA
51 ¹⁰	C-20	12/14/15	- 12/21/15			
52	C-20	12/21/15	- 12/28/15	<MDA	<MDA	<MDA

⁸ Due to equipment maintenance and calibrations, no samples were collected.

⁹ Due to the holiday, no samples were collected.

¹⁰ Due to the holiday, no samples were collected.

Virginia Department of Health Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

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Location: Jamestown State Park & Historical Site

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
1	C-44	12/15/14	-	1/5/15	<MDA	<MDA	<MDA
2	C-44	1/5/15	-	1/12/15	<MDA	<MDA	<MDA
3	C-44	1/12/15	-	1/20/15	<MDA	<MDA	<MDA
4 ¹	C-44	1/20/15	-	1/26/15			
5	C-44	1/26/15	-	2/2/15	<MDA	<MDA	<MDA
6	C-44	2/2/15	-	2/9/15	<MDA	<MDA	<MDA
7 ²	C-44	2/9/15	-	2/16/15			
8 ³	C-44	2/16/15	-	2/23/15			
9	C-44	2/23/15	-	3/2/15	<MDA	<MDA	<MDA
10	C-44	3/2/15	-	3/9/15	<MDA	<MDA	<MDA
11 ⁴	C-44	3/9/15	-	3/16/15			
12	C-44	3/16/15	-	3/23/15	<MDA	<MDA	<MDA
13	C-44	3/23/15	-	3/30/15	<MDA	<MDA	<MDA
14	C-44	3/30/15	-	4/6/15	<MDA	<MDA	<MDA
15	C-44	4/6/15	-	4/13/15	<MDA	<MDA	<MDA
16	C-44	4/13/15	-	4/20/15	<MDA	<MDA	<MDA
17	C-44	4/20/15	-	4/27/15	<MDA	<MDA	<MDA
18	C-44	4/27/15	-	5/4/15	<MDA	<MDA	<MDA
19	C-44	5/4/15	-	5/11/15	<MDA	<MDA	<MDA
20	C-44	5/11/15	-	5/18/15	<MDA	<MDA	<MDA
21	C-44	5/18/15	-	5/26/15	<MDA	<MDA	<MDA

¹ Due to equipment malfunction, no results are available.

² Due to holiday and/or winter weather, no samples were collected.

³ Due to equipment maintenance, no samples were collected.

⁴ Due to deployment of the mobile laboratory, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

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Location: Jamestown State Park & Historical Site - *continued*

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
22	C-44	5/26/15	-	6/1/15	<MDA	<MDA	<MDA
23 ⁵	C-44	6/1/15	-	6/8/15			
24	C-44	6/8/15	-	6/15/15	<MDA	<MDA	<MDA
25	C-44	6/15/15	-	6/22/15	<MDA	<MDA	<MDA
26 ⁶	C-44	6/22/15	-	6/29/15			
27	C-44	6/29/15	-	7/7/15	<MDA	<MDA	<MDA
28	C-44	7/7/15	-	7/14/15	<MDA	<MDA	<MDA
29	C-44	7/14/15	-	7/20/15	<MDA	<MDA	<MDA
30	C-44	7/20/15	-	7/27/15	<MDA	<MDA	<MDA
31	C-44	7/27/15	-	8/3/15	<MDA	<MDA	<MDA
32	C-44	8/3/15	-	8/10/15	<MDA	<MDA	<MDA
33	C-44	8/10/15	-	8/17/15	<MDA	<MDA	<MDA
34	C-44	8/17/15	-	8/24/15	<MDA	<MDA	<MDA
35	C-44	8/24/15	-	8/31/15	<MDA	<MDA	<MDA
36	C-44	8/31/15	-	9/8/15	<MDA	<MDA	<MDA
37 ⁷	C-44	9/8/15	-	9/14/15			
38	C-44	9/14/15	-	9/21/15	<MDA	<MDA	<MDA
39	C-44	9/21/15	-	9/28/15	<MDA	<MDA	<MDA
40	C-44	9/28/15	-	10/5/15	<MDA	<MDA	<MDA
41	C-44	10/5/15	-	10/13/15	3.10E-2	<MDA	<MDA

⁵ Due to participation in EPA training, no samples were collected.

⁶ Due to equipment installation and holiday, no samples were collected.

⁷ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health Gamma & Radiogas in Air

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Location: Jamestown State Park & Historical Site - *continued*

Week #	Station	Date		Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start	Ended			
42	C-44	10/13/15	- 10/19/15	3.16E-2	<MDA	<MDA
43	C-44	10/19/15	- 10/26/15	1.86E-2	<MDA	<MDA
44 ⁸	C-44	10/26/15	- 11/2/15			
45	C-44	11/2/15	- 11/9/15	1.26E-2	<MDA	<MDA
46	C-44	11/9/15	- 11/16/15	<MDA	<MDA	<MDA
47 ⁹	C-44	11/16/15	- 11/23/15			
48	C-44	11/23/15	- 11/30/15	<MDA	<MDA	<MDA
49	C-44	11/30/15	- 12/8/15	<MDA	<MDA	<MDA
50	C-44	12/8/15	- 12/14/15	<MDA	<MDA	<MDA
51 ¹⁰	C-44	12/14/15	- 12/21/15			
52	C-44	12/21/15	- 12/28/15	<MDA	<MDA	<MDA

⁸ Due to equipment maintenance and calibrations, no samples were collected.

⁹ Due to the holiday, no samples were collected.

¹⁰ Due to the holiday, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air
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Location: Louisa County / Bumpass Volunteer Fire Station

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
1	C-86	12/15/14	-	1/5/15	<MDA	<MDA	<MDA
2	C-86	1/5/15	-	1/12/15	8.35E-2	<MDA	<MDA
3 ¹	C-86	1/12/15	-	1/20/15			
4 ²	C-86	1/20/15	-	1/26/15			
5	C-86	1/26/15	-	2/2/15	<MDA	<MDA	<MDA
6	C-86	2/2/15	-	2/9/15	<MDA	<MDA	<MDA
7 ³	C-86	2/9/15	-	2/16/15			
8 ⁴	C-86	2/16/15	-	2/23/15			
9	C-86	2/23/15	-	3/2/15	<MDA	<MDA	<MDA
10	C-86	3/2/15	-	3/9/15	<MDA	<MDA	<MDA
11 ⁵	C-86	3/9/15	-	3/16/15			
12	C-86	3/16/15	-	3/23/15	<MDA	<MDA	<MDA
13	C-86	3/23/15	-	3/30/15	<MDA	<MDA	<MDA
14	C-86	3/30/15	-	4/6/15	<MDA	<MDA	<MDA
15	C-86	4/6/15	-	4/13/15	<MDA	<MDA	<MDA
16	C-86	4/13/15	-	4/20/15	<MDA	<MDA	<MDA
17	C-86	4/20/15	-	4/27/15	<MDA	<MDA	<MDA
18	C-86	4/27/15	-	5/4/15	<MDA	<MDA	<MDA
19	C-86	5/4/15	-	5/11/15	<MDA	<MDA	<MDA
20	C-86	5/11/15	-	5/18/15	<MDA	<MDA	<MDA
21	C-86	5/18/15	-	5/26/15	<MDA	<MDA	<MDA

¹ Due to VDOT using power receptacles, no sample results available.

² Due to equipment malfunction, no results are available.

³ Due to holiday and/or winter weather, no samples were collected.

⁴ Due to equipment maintenance, no samples were collected.

⁵ Due to deployment of the mobile laboratory, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Bumpass Volunteer Fire Station - *continued*

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
22	C-86	5/26/15	-	6/1/15	<MDA	<MDA	<MDA
23 ⁶	C-86	6/1/15	-	6/8/15			
24	C-86	6/8/15	-	6/15/15	<MDA	<MDA	<MDA
25	C-86	6/15/15	-	6/22/15	<MDA	<MDA	<MDA
26 ⁷	C-86	6/22/15	-	6/29/15			
27	C-86	6/29/15	-	7/6/15	<MDA	<MDA	<MDA
28	C-86	7/6/15	-	7/13/15	<MDA	<MDA	<MDA
29	C-86	7/13/15	-	7/20/15	<MDA	<MDA	<MDA
30	C-86	7/20/15	-	7/27/15	<MDA	<MDA	<MDA
31	C-86	7/27/15	-	8/3/15	<MDA	<MDA	<MDA
32	C-86	8/3/15	-	8/10/15	<MDA	<MDA	<MDA
33	C-86	8/10/15	-	8/17/15	<MDA	<MDA	<MDA
34	C-86	8/17/15	-	8/24/15	<MDA	<MDA	<MDA
35	C-86	8/24/15	-	8/31/15	<MDA	<MDA	<MDA
36	C-86	8/31/15	-	9/8/15	<MDA	<MDA	<MDA
37 ⁸	C-86	9/8/15	-	9/14/15			
38	C-86	9/14/15	-	9/21/15	<MDA	<MDA	<MDA
39	C-86	9/21/15	-	9/28/15	<MDA	<MDA	<MDA
40	C-86	9/28/15	-	10/5/15	<MDA	<MDA	<MDA
41	C-86	10/5/15	-	10/13/15	<MDA	<MDA	<MDA

⁶ Due to participation in EPA training, no samples were collected.

⁷ Due to equipment installation and holiday, no samples were collected.

⁸ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Bumpass Volunteer Fire Station - *continued*

Week #	Station	Date		Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start	Ended			
42	C-86	10/13/15	- 10/19/15	<MDA	<MDA	<MDA
43	C-86	10/19/15	- 10/26/15	<MDA	<MDA	<MDA
44 ⁹	C-86	10/26/15	- 11/2/15			
45	C-86	11/2/15	- 11/9/15	1.18E-2	<MDA	<MDA
46	C-86	11/9/15	- 11/16/15	1.65E-2	<MDA	<MDA
47 ¹⁰	C-86	11/16/15	- 11/23/15			
48	C-86	11/23/15	- 11/30/15	1.30E-2	<MDA	<MDA
49	C-86	11/30/15	- 12/8/15	8.19E-2	<MDA	<MDA
50	C-86	12/8/15	- 12/14/15	<MDA	<MDA	<MDA
51 ¹¹	C-86	12/14/15	- 12/21/15			
52	C-86	12/21/15	- 12/28/15	<MDA	<MDA	<MDA

⁹ Due to equipment maintenance and calibrations, no samples were collected.

¹⁰ Due to the holiday, no samples were collected.

¹¹ Due to the holiday, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air
January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Route 700

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
1	C-88	12/15/14	-	1/5/15	<MDA	<MDA	<MDA
2	C-88	1/5/15	-	1/12/15	<MDA	<MDA	<MDA
3	C-88	1/12/15	-	1/20/15	2.94E-2	<MDA	<MDA
4 ¹	C-88	1/20/15	-	1/26/15			
5	C-88	1/26/15	-	2/2/15	<MDA	<MDA	<MDA
6	C-88	2/2/15	-	2/9/15	<MDA	<MDA	<MDA
7 ²	C-88	2/9/15	-	2/16/15			
8 ³	C-88	2/16/15	-	2/23/15			
9	C-88	2/23/15	-	3/2/15	<MDA	<MDA	<MDA
10	C-88	3/2/15	-	3/9/15	<MDA	<MDA	<MDA
11 ⁴	C-88	3/9/15	-	3/16/15			
12	C-88	3/16/15	-	3/23/15	<MDA	<MDA	<MDA
13	C-88	3/23/15	-	3/30/15	<MDA	<MDA	<MDA
14	C-88	3/30/15	-	4/6/15	<MDA	<MDA	<MDA
15	C-88	4/6/15	-	4/13/15	<MDA	<MDA	<MDA
16	C-88	4/13/15	-	4/20/15	<MDA	<MDA	<MDA
17	C-88	4/20/15	-	4/27/15	<MDA	<MDA	<MDA
18	C-88	4/27/15	-	5/4/15	<MDA	<MDA	<MDA
19	C-88	5/4/15	-	5/11/15	<MDA	<MDA	<MDA
20	C-88	5/11/15	-	5/18/15	<MDA	<MDA	<MDA
21	C-88	5/18/15	-	5/26/15	<MDA	<MDA	<MDA

¹ Due to equipment malfunction, no results are available.

² Due to holiday and/or winter weather, no samples were collected.

³ Due to equipment maintenance, no samples were collected.

⁴ Due to deployment of the mobile laboratory, no samples were collected.

Virginia Department of Health
Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Route 700 - continued

Week #	Station	Date			Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start		Ended			
22	C-88	5/26/15	-	6/1/15	<MDA	<MDA	<MDA
23 ⁵	C-88	6/1/15	-	6/8/15			
24	C-88	6/8/15	-	6/15/15	<MDA	<MDA	<MDA
25	C-88	6/15/15	-	6/22/15	<MDA	<MDA	<MDA
26 ⁶	C-88	6/22/15	-	6/29/15			
27	C-88	6/29/15	-	7/6/15	<MDA	<MDA	<MDA
28	C-88	7/6/15	-	7/13/15	<MDA	<MDA	<MDA
29	C-88	7/13/15	-	7/20/15	<MDA	<MDA	<MDA
30	C-88	7/20/15	-	7/27/15	<MDA	<MDA	<MDA
31	C-88	7/27/15	-	8/3/15	<MDA	2.98E-2	<MDA
32	C-88	8/3/15	-	8/10/15	<MDA	<MDA	<MDA
33	C-88	8/10/15	-	8/17/15	<MDA	<MDA	<MDA
34	C-88	8/17/15	-	8/24/15	<MDA	<MDA	<MDA
35	C-88	8/24/15	-	8/31/15	<MDA	<MDA	<MDA
36	C-88	8/31/15	-	9/8/15	<MDA	<MDA	<MDA
37 ⁷	C-88	9/8/15	-	9/14/15			
38	C-88	9/14/15	-	9/21/15	<MDA	<MDA	<MDA
39	C-88	9/21/15	-	9/28/15	<MDA	<MDA	<MDA
40	C-88	9/28/15	-	10/5/15	<MDA	<MDA	<MDA
41	C-88	10/5/15	-	10/13/15	<MDA	<MDA	<MDA

⁵ Due to participation in EPA training, no samples were collected.

⁶ Due to equipment installation and holiday, no samples were collected.

⁷ Due to participation in VA HAZMAT Conference, no samples were collected.

Virginia Department of Health

Gamma & Radiogas in Air

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location: Louisa County / Route 700 - continued

Week #	Station	Date		Cs-134 Activity pCi/meter ³	Cs-137 Activity pCi/meter ³	I-131 Activity pCi/meter ³
		Start	Ended			
42	C-88	10/13/15	- 10/19/15	<MDA	<MDA	<MDA
43	C-88	10/19/15	- 10/26/15	6.64E-2	<MDA	<MDA
44 ⁸	C-88	10/26/15	- 11/2/15			
45	C-88	11/2/15	- 11/9/15	<MDA	<MDA	<MDA
46	C-88	11/9/15	- 11/16/15	<MDA	<MDA	<MDA
47 ⁹	C-88	11/16/15	- 11/23/15			
48	C-88	11/23/15	- 11/30/15	<MDA	<MDA	<MDA
49	C-88	11/30/15	- 12/8/15	5.61E-2	<MDA	<MDA
50	C-88	12/8/15	- 12/14/15	<MDA	<MDA	<MDA
51 ¹⁰	C-88	12/14/15	- 12/21/15			
52	C-88	12/21/15	- 12/28/15	4.52E-2	<MDA	<MDA

⁸ Due to equipment maintenance and calibrations, no samples were collected.

⁹ Due to the holiday, no samples were collected.

¹⁰ Due to the holiday, no samples were collected.

Virginia Department of Health
Silt¹

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Date collected	Gross Beta pCi/gram of Silt
James River Pier 1 Newport News Shipyard S-15	3/24/15	19.2 +/- 4.5
	6/17/15	31.6 +/- 5.4
	9/15/15	
	12/11/15	

¹ Results for the 3rd and 4th quarters have not been received from DCLS.

Virginia Department of Health
Silt¹

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Date collected	Gross Beta pCi/gram of Silt
James River Shipway 11 Newport News Shipyard S-16	3/24/15	13.6 +/- 4.0
	N/A ²	
	9/15/15	
	12/11/15	

¹ Results for the 3rd and 4th quarters have not been received from DCLS.

² Sample area had been dredged and sample could not be collected.

Virginia Department of Health
Silt¹

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Elizabeth River – Dry Dock #8 Norfolk Naval Shipyard S-18
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Quarter	Date collected	Gamma Activity – pCi/gram (wet)				Gross Beta pCi/gram (DRY)	Gross Alpha pCi/gram (DRY)
		Cs-134	Cs-137	Co-58	C0-60		
1 st	3/24/15	<MDA	0.02 +/- 0.01	<MDA	<MDA	26.2 +/- 4.9	13.1 +/- 8.0
2 nd	6/17/15	<MDA	0.02 +/- 0.01	<MDA	<MDA	31.5 +/- 5.4	18.2 +/- 8.5
3 rd	9/15/15						
4 th	12/16/15						

Elizabeth River – Dry Dock #4 Norfolk Naval Shipyard S-19
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Quarter	Date collected	Gamma Activity – pCi/gram (wet)				Gross Beta pCi/gram (DRY)	Gross Alpha pCi/gram (DRY)
		Cs-134	Cs-137	Co-58	C0-60		
1 st	3/24/15	<MDA	0.02 +/- 0.01	<MDA	<MDA	27.3 +/- 5.1	17.6 +/- 8.6
2 nd	6/17/15	<MDA	0.02 +/- 0.01	<MDA	<MDA	28.2 +/- 5.2	21.4 +/- 9.2
3 rd	9/15/15						
4 th	12/16/15						

¹ Results for the 3rd and 4th quarters have not been received from DCLS.

Virginia Department of Health
Silt²

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Elizabeth River – Wet slip #1 Norfolk Naval Shipyard S-20							
Quarter	Date collected	Gamma Activity – pCi/gram (wet)				Gross Beta pCi/gram (DRY)	Gross Alpha pCi/gram (DRY)
		Cs-134	Cs-137	Co-58	Co-60		
1 st	3/24/15	<MDA	0.02 +/- 0.01	<MDA	<MDA	25.0 +/- 4.8	11.3 +/- 6.0
2 nd	6/17/15	<MDA	0.03 +/- 0.01	<MDA	<MDA	29.1 +/- 5.1	13.7 +/- 7.2
3 rd	9/15/15						
4 th	12/16/15						

² Results for the 3rd and 4th quarters have not been received from DCLS.

Virginia Department of Health

Silt

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

James River – Surry Power Station Discharge Canal S-17

Quarter	Date collected	Gamma Activity – pCi/gram (wet)				Gross Beta pCi/gram (DRY)
		Cs-134	Cs-137	Co-58	Co-60	
1 st	2/23/15	<MDA	<MDA	<MDA	<MDA	5.0 +/- 3.5
2 nd	N/A					
3 rd	8/11/15	<MDA	<MDA	<MDA	<MDA	5.8 +/- 3.3
4 th	N/A					

North Anna Power Station Waste Treatment S-24

Quarter	Date collected	Gamma Activity – pCi/gram (wet)				Gross Beta pCi/gram (DRY)
		Cs-134	Cs-137	Co-58	Co-60	
1 st	N/A					
2 nd	4/29/15	<MDA	<MDA	<MDA	<MDA	2.3 +/- 2.1
3 rd	N/A					
4 th	N/A*					

N/A: Sample was not collected this quarter.

*** No sample provided by Dominion for second half of year.**

Note: Silt samples are collected bi-annually.

Virginia Department of Health
SURFACE WATER¹
January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

James River – Pier 1
Newport News Shipyard W-15

Qtr	Date collected	Gamma Activity – pCi/liter						Gross Beta pCi/liter
		Ba-140	Cs-137	I-131	Mn-54	Zn-65	Zr95/Nb95	
1 st	3/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	141.3 +/- 39.2
2 nd	6/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	176.8 +/- 30.2
3 rd	9/15/15							
4 th	12/11/15							

James River – Shipway #11
Newport News Shipyard W-16

Qtr	Date collected	Gamma Activity – pCi/liter						Gross Beta pCi/liter
		Ba-140	Cs-137	I-131	Mn-54	Zn-65	Zr95/Nb95	
1 st	3/25/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	121.4 +/- 39.4
2 nd	6/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	202.4 +/- 32.3
3 rd	9/15/15							
4 th	12/11/15							

¹ Results for the 3rd and 4th quarters have not been received from DCLS.

Virginia Department of Health
SURFACE WATER²
January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Elizabeth River – Dry Dock #4
Norfolk Naval Shipyard W-37

Qtr	Date collected	Gamma Activity – pCi/liter						Gross Beta	Gross Alpha
		Ba-140	Cs-137	I-131	Mn-54	Zn-65	Zr95/Nb95		
1 st	3/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	173.1 +/- 42.3	9.5 +/- 114.3
2 nd	6/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	220.1 +/- 31	0 +/- 22.6
3 rd	9/15/15								
4 th	12/16/15								

Elizabeth River – Wet Slip #1
Norfolk Naval Shipyard W-38

Qtr	Date collected	Gamma Activity – pCi/liter						Gross Beta	Gross Alpha
		Ba-140	Cs-137	I-131	Mn-54	Zn-65	Zr95/Nb95		
1 st	3/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	149.2 +/- 41.5	0.0 +/- 68.9
2 nd	6/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	193.6 +/- 31.8	12.3 +/- 24
3 rd	9/15/15								
4 th	12/16/15								

² Results for the 3rd and 4th quarters have not been received from DCLS.

Virginia Department of Health
SURFACE WATER³
January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Elizabeth River – Dry Dock #8 Norfolk Naval Shipyard W-39
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Qtr	Date collected	Gamma Activity – pCi/liter						Gross Beta	Gross Alpha
		Ba-140	Cs-137	I-131	Mn-54	Zn-65	Zr95/Nb95		
1 st	3/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	157.1 +/- 42.4	0.0 +/- 94.3
2 nd	6/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	211 +/- 32.1	3.4 +/- 26.4
3 rd	9/15/15								
4 th	12/16/15								

³ Results for the 3rd and 4th quarters have not been received from DCLS.

Virginia Department of Health
SURFACE WATER

January 1, 2015 through December 31, 2015

Surry Power Station – Discharge Canal - W-19

Gamma, Beta, and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb 95	Gross Beta	H3 Activity
1/5/15	No sample collected										
1/12/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
1/20/15 ^D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	66.7 +/- 34.9	
1/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
1/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
2/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		450 +/- 43
2/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
2/16/15	No sample collected										
2/23/15	No sample collected										
3/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
3/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		676 +/- 53
3/16/15	No sample collected										
3/23/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
3/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		676 +/- 52
4/6/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
4/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
4/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		601 +/- 52
4/27/15	No sample collected										
5/4/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
5/11/15 ^D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	35.1 +/- 10.8	
5/11/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		676 +/- 53
5/18/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2027 +/- 90
5/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2102 +/- 96
6/1/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
6/8/15	No sample collected										
6/15/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		976 +/- 60
6/22/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		526 +/- 43
6/29/15	No sample collected										
7/7/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
7/14/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		976 +/- 60
7/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		751 +/- 52
7/27/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
8/3/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1727 +/- 80
8/3/15 ^D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	103.2 +/- 13.9	
8/10/15 ¹	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		8634 +/- 185
8/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1051 +/- 59
8/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		826 +/- 60
8/31/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		751 +/- 52
9/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		901 +/- 60
9/14/15	No sample collected										
9/21/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		300 +/- 30
9/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		751 +/- 54
10/5/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		300 +/- 61
10/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		976 +/- 60
10/19/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3754 +/- 109
10/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30

¹ The sample result indicated a release may have been in progress. Surry Power Station was contacted and a release permit was obtained.

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Surry Power Station – Discharge Canal - W-19 (continued)

Gamma, Beta, and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb-95	Gross Beta	H3 Activity
11/2/15	No sample collected										
11/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1877 +/- 85
11/16/15 ^{D2}											
11/16/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		450 +/- 42
11/23/15	No sample collected										
11/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1126 +/- 67
12/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1426 +/- 74
12/14/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
12/21/15	No sample collected										
12/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		526 +/- 43

D = sample analyzed by DCLS

² 4th quarter results have not been received from DCLS.

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North Anna River - W-27 / baseline
Gamma, Beta and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb-95	Gross Beta	H3 Activity
1/5/15	No sample collected										
1/12/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
1/20/15D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	1.6 +/- 0.7	
1/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
1/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
2/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		300 +/- 30
2/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1276 +/- 74
2/16/15	No sample collected										
2/23/15	No sample collected										
3/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
3/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		75 +/- 30
3/16/15	No sample collected										
3/23/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
3/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		233 +/- 100
4/6/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		300 +/- 30
4/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
4/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
4/27/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
5/4/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
5/11/15D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	2.7 +/- 0.6	
5/11/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1201 +/- 75
5/18/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		450 +/- 42
5/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1802 +/- 86
6/1/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		751 +/- 52
6/8/15	No sample collected										
6/15/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1126 +/- 30
6/22/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1276 +/- 74
6/29/15	No sample collected										
7/6/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1577 +/- 74
7/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2027 +/- 85
7/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2928 +/- 103
7/27/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2402 +/- 95
8/3/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2778 +/- 100
8/3/15D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	2.5 +/- 0.3	
8/10/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3153 +/- 113
8/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3228 +/- 111
8/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3303 +/- 112
8/31/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2703 +/- 99
9/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2928 +/- 108
9/14/15	No sample collected										
9/21/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2928 +/- 109
9/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3228 +/- 117
10/5/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 31
10/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2402 +/- 100
10/19/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2778 +/- 104
10/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2778 +/- 104

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North Anna River - W-27 / baseline (*continued*)

Gamma, Beta and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb-95	Gross Beta	H3 Activity
11/2/15	No sample collected										
11/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2703 +/- 104
11/16/15 ¹											
11/16/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		1727 +/- 79
11/23/15	No sample collected										
11/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2402 +/- 95
12/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2102 +/- 90
12/14/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2177 +/- 95
12/21/15	No sample collected										
12/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		826 +/- 52

D = sample analyzed by DCLS

¹ 4th quarter results have not been received from DCLS.

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North Anna Power Station – Discharge Canal - W-33

Gamma, Beta and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb 95	Gross Beta	H3 Activity
1/5/15	No sample collected										
1/12/15	No sample collected										
1/20/15D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	3.9 +/- 3.2	
1/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		5706 +/- 157
1/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4204 +/- 135
2/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4955 +/- 151
2/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		5931 +/- 163
2/16/15	No sample collected										
2/23/15	No sample collected										
3/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4129 +/- 139
3/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		5931 +/- 161
3/16/15	No sample collected										
3/23/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4505 +/- 138
3/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		5105 +/- 148
4/6/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4655 +/- 140
4/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4880 +/- 144
4/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4880 +/- 147
4/27/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4655 +/- 144
5/4/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4429 +/- 137
5/11/15D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	10.9 +/- 1.4	
5/11/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4730 +/- 143
5/18/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4129 +/- 131
5/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		5255 +/- 148
6/1/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3604 +/- 148
6/8/15	No sample collected										
6/15/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4129 +/- 134
6/22/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3754 +/- 128
6/29/15	No sample collected										
7/6/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4354 +/- 127
7/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4054 +/- 124
7/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4580 +/- 134
7/27/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3679 +/- 116
8/3/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3829 +/- 121
8/3/15D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	3.0 +/- 1.0	
8/10/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4955 +/- 141
8/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4580 +/- 129
8/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4204 +/- 131
8/31/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3979 +/- 127
9/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4429 +/- 134
9/14/15	No sample collected										
9/21/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3529 +/- 124
9/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4354 +/- 136
10/5/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3979 +/- 126
10/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3754 +/- 124
10/19/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		4279 +/- 131
10/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3604 +/- 120

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North Anna Power Station – Discharge Canal - W-33 (*continued*)

Gamma, Beta and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb 95	Gross Beta	H3 Activity
11/2/15	No sample collected										
11/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3604 +/- 120
11/16/15 ^{D2}											
11/16/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3228 +/- 112
11/23/15	No sample collected										
11/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3303 +/- 262
12/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3303 +/- 117
12/14/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		2928 +/- 109
12/21/15	No sample collected										
12/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		3003 +/- 113

D = sample analyzed by DCLS

² 4th quarter results have not been received from DCLS.

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Surry Power Station – Scotland Wharf/Robious Landing-W-79A

Gamma, Beta and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb 95	Gross Beta	H3 Activity
1/5/15	No sample collected										
1/12/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
1/20/15 ^D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	28.6 +/- 33.4	
1/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
1/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
2/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
2/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
2/16/15	No sample collected										
2/23/15	No sample collected										
3/2/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		375 +/- 43
3/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		375 +/- 43
3/16/15	No sample collected										
3/23/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
3/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
4/6/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		450 +/- 42
4/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
4/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
4/27/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
5/4/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
5/11/15 ^{D1}	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	1.9 +/- 1	
5/11/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		375 +/- 43
5/18/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
5/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		375 +/- 33
6/1/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
6/8/15	No sample collected										
6/15/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30
6/22/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		75 +/- 30
6/29/15	No sample collected										
7/6/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
7/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
7/20/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		450 +/- 42
7/27/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
8/3/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		601 +/- 43
8/3/15 ^D	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	2.3 +/- 9.1	
8/10/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		826 +/- 60
8/17/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		300 +/- 30
8/24/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		676 +/- 52
8/31/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		150 +/- 30
9/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
9/14/15	No sample collected										
9/21/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
9/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
10/5/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
10/13/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		<MDA
10/19/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		901 +/- 60
10/26/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA		225 +/- 30

¹ Samples collected from new control site W-79A, James River@Robious Landing.

Virginia Department of Health

SURFACE WATER

January 1, 2015 through December 31, 2015

Surry Power Station – Scotland Wharf/Robious Landing-W-79A (*continued*)

Gamma, Beta and Tritium Activity – pCi/liter

Date	Ba-140	Cs-134	Cs-137	Co-58	Co-60	I-131	Mn-54	Zn-65	Zr/Nb 95	Gross Beta	H3 Activity
11/2/15	No sample collected										
11/9/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	300 +/-	30
11/16/15 ²											
11/16/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	300 +/-	30
11/23/15	No sample collected										
11/30/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	150 +/-	30
12/8/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	375 +/-	43
12/14/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	
12/21/15	No sample collected										
12/28/15	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	<MDA	450 +/-	43

D = Sample analyzed by DCLS

² 4th quarter results have not been received from DCLS.

Virginia Department of Health VEGETATION¹

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Date collected	Type	Isotope	Results pCi/Gram (wet weight)
Surry County Private garden V-96	5/18/15	Mixed Greens (Cabbage)	I-131 Cs-134 Cs-137	<MDA <MDA 0.01 +/- 0.01
	9/22/15	Mixed Greens	I-131 Cs-134 Cs-137	
Louisa County Private Garden V-98	5/7/15	Mixed Greens	I-131 Cs-134 Cs-137	<MDA <MDA <MDA
	9/21/15	Mixed Greens (Cabbage)	I-131 Cs-134 Cs-137	

Note: Vegetation is collected bi-annually when available.

¹ Results for the 3rd quarter have not been received from DCLS.

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF HEALTH

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BABCOCK & WILCOX

Virginia Department of Health

Babcock & Wilcox

AIR PARTICULATE COMPOSITE SAMPLES

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Eastern Site Boundary – Ball field A-101						
Quarter	Start	Date		Gross Alpha Activity		
		Stop		pCi/meter ³		
1 st	1/14/15	-	1/20/15	0.001	+/-	0.0004
2 nd	4/8/15	-	4/14/15	0.0004	+/-	0.0004
3 rd	7/8/15	-	7/14/15	0.0006	+/-	0.0002
4 th	10/7/15	-	10/13/15	0.001	+/-	0.0005

SOIL²

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Date	Distance & Direction	Type	Alpha Activity
				pCi/gram
Eastern Site Boundary Ball field S-101	9/23/15	Site Boundary	Soil	+/-
James River Shoreline Near Six Mile Bridge "control" S-102a	9/23/15	1.5 miles SW	Soil	+/-

Note: Uranium separation followed by alpha counting.

² Results for Soil samples have not been received from DCLS.

Virginia Department of Health

Babcock & Wilcox

SURFACE WATER³

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Date	Distance & Direction	Alpha Activity pCi/gram
James River Shoreline Near Ball field at eastern site boundary W-101	9/23/15	Approx. 3 miles downstream	+/-
James River Shoreline Near Six Mile Bridge "control" W-102	9/23/15	Approx 1.5 Miles upstream	+/-

VEGETATION⁴

January 1, 2015 through December 31, 2015

ANNUAL REPORT 2015

Location	Date	Type	Distance & Direction	Alpha Activity pCi/gram
Eastern site boundary Ball field V-101	9/23/15	Vegetation	Approx. 3 miles downstream	+/-
James River Shoreline off Rt. 460 "control" V-102	9/23/15	Vegetation	Approx 4.5 Miles SW	+/-

Note: Uranium separation followed by alpha counting.

³ Results for Surface Water samples have not been received from DCLS.

⁴ Results for Vegetation samples have not been received from DCLS.

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**EMERGENCY
PREPAREDNESS**

EMERGENCY PREPAREDNESS

The Office of Radiological Health (ORH) located within the Virginia Department of Health (VDH) is one of the lead response agencies for emergencies involving the potential or actual release of radioactive materials. Overall, state level emergency response is described in the Commonwealth of Virginia Radiological Emergency Response Plan (COVERERP), which is developed and maintained by the Virginia Department of Emergency Management (VDEM). In addition to generic guidelines for responding to any major radiological emergency, the response procedures contain segments addressing response to several specific types of radiological incidents. This includes sections which provide information needed for response to Licensee and Transportation accidents. Other sections contain background information and response guidance for accidents at fixed nuclear facilities. Plans are also being developed to respond to possible radiological terrorist attacks, which may include detonation of a radiological dispersion device (RDD aka “dirty bomb”), an improvised nuclear device (IND), or a military grade nuclear warhead.

When responding to any radiological emergency, the primary tasks of the Office of Radiological Health are to locate, identify, and predict the impact of any radioactive materials released to the environment. Based on the predicted or known impact, ORH then recommends appropriate measures to protect the public. ORH would also be tasked with helping to supervise the cleanup of radiological contamination and ensuring the proper disposal of radioactive waste. An ORH duty officer maintains 24-hour coverage to provide initial assessment/assistance for local responders and may also initiate the mobilization/deployment of other trained staff to respond to a radiological emergency when needed.

Under the provisions of current Federal Emergency Management Agency (FEMA) regulations, ORH conducts or participates in periodic drills that are designed to provide team training and to test emergency plans and procedures. The scope of these drills ranges from receiving and acknowledging simulated emergency communications to full-scale team deployment.

Federal regulations for commercial nuclear power generating facilities stipulate that a full-scale exercise involving appropriate local government participation and testing all significant response elements must be conducted and evaluated every other year. Because there are two such facilities, Surry and North Anna Nuclear Power Stations, Commonwealth of Virginia agencies will perform exercise activities on a yearly basis, alternating between the sites each year.