

July 28, 2011

Mr. Mark Roberts  
U.S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 19406

**SUBJECT: ORISE CONTRACT NO. DE-AC05-06OR23100**  
**ANALYTICAL RESULTS FOR FIVE SOIL SAMPLES ASSOCIATED WITH THE AREVA**  
**SITE IN LYNCHBURG, VIRGINIA**  
**(INSPECTION REPORT #070-1201/2011-003) [RFTA NO. 11-001]**  
**DCN: 2049-LR-01-0**

Dear Mr. Roberts:

The Oak Ridge Institute for Science and Education (ORISE) received five soil samples associated with the Areva Site in Lynchburg, Virginia on July 8, 2011. The samples were analyzed for gross alpha activity, gross beta activity, and by gamma spectroscopy in accordance with NRC Form 303 that accompanied the samples. Per our phone conversation on July 19, 2011, the gamma emitting isotopes reported are uranium-235, uranium-238, total uranium, cobalt-60, cesium-137, and thorium-232. The sample identifications are listed in Table 1. The gross alpha and gross beta data are presented in Table 2 and the gamma spectroscopy data are presented in Table 3. The pertinent procedure references are provided in the respective tables.

ORISE's quality control (QC) requirements were met for these analyses. The QC files are available for your review upon request.

My contact information is listed below. You may also contact Dale Condra at 865.241.3242 with any questions or comments.

Sincerely,



Wade Ivey, Manager  
Laboratory

WPI/RDC:bf

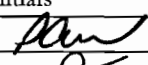

Enclosures

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Distribution approval and concurrence:	Initials
Technical Management Team Member	
Quality Manager	

**TABLE 1**  
**SAMPLE IDENTIFICATIONS**  
**AND COLLECTION DATA**  
**AREVA SITE**  
**LYNCHBURG, VIRGINIA**

<b>ORISE Sample ID</b>	<b>NRC Region I Sample ID</b>	<b>Collection Date</b>	<b>Collection Time</b>
2049S0001	1	6/21/11	NA <sup>a</sup>
2049S0002	2	6/21/11	NA
2049S0003	3	6/21/11	NA
2049S0004	4	6/21/11	NA
2049S0005	5	6/21/11	NA

<sup>a</sup>No collection time provided on NRC Form 303.

**TABLE 2**  
**GROSS ALPHA AND GROSS BETA CONCENTRATIONS**  
**IN SOIL SAMPLES**  
**BY GROSS ALPHA AND BETA FOR VARIOUS MATRICES**  
**AP1, REVISION 17**  
**AREVA SITE**  
**LYNCHBURG, VIRGINIA**

ORISE Sample ID	NRC Region I Sample ID	Radionuclide Concentrations, TPU <sup>a</sup> , and MDCs <sup>b</sup> (pCi/g)	
		Gross Alpha	Gross Beta
2049S0001	1	22.6 ± 4.6 , 4.4	26.4 ± 3.3 , 4.1
2049S0002	2	6.3 ± 3.1 , 4.3	14.5 ± 2.7 , 3.8
2049S0003	3	21.2 ± 4.3 , 4.1	30.5 ± 3.2 , 3.8
2049S0004	4	4.9 ± 2.9 , 4.3	14.9 ± 2.8 , 3.9
2049S0005	5	33.8 ± 5.5 , 4.3	72.7 ± 4.4 , 4.0

<sup>a</sup>Uncertainties represent the 95% confidence level, based on total propagated uncertainties.

<sup>b</sup>The MDCs appear after the commas.

TABLE 3  
CONCENTRATIONS OF URANIUM ISOTOPES  
IN SOIL SAMPLES  
BY GAMMA SPECTROSCOPY CP1, REVISION 17  
AREVA SITE  
LYNCHBURG, VIRGINIA

ORISE Sample ID	NRC Region I Sample ID	Radionuclide Concentrations, TPU <sup>a</sup> , and MDCs <sup>b</sup> (pCi/g)					
		Co-60	Cs-137	Th-232 by Ac-228	U-238 by Th-234	U-235	Total U <sup>c</sup>
2049S0001	1	0.06 ± 0.04 , 0.08	0.00 <sup>d</sup> ± 0.04 , 0.06	1.33 ± 0.18 , 0.14	1.28 ± 0.29 , 0.73	0.09 ± 0.17 , 0.29	3.3 ± 3.7
2049S0002	2	0.02 ± 0.05 , 0.09	0.04 ± 0.02 , 0.04	0.50 ± 0.10 , 0.15	0.68 ± 0.27 , 0.71	-0.06 ± 0.13 , 0.23	-0.7 ± 2.8
2049S0003	3	-0.01 ± 0.04 , 0.07	0.00 ± 0.03 , 0.06	1.03 ± 0.16 , 0.17	7.20 ± 0.65 , 1.00	0.30 ± 0.08 , 0.18	14.0 ± 1.9
2049S0004	4	-0.02 ± 0.04 , 0.06	0.04 ± 0.01 , 0.02	0.31 ± 0.07 , 0.10	0.51 ± 0.17 , 0.44	0.09 ± 0.12 , 0.20	2.6 ± 2.6
2049S0005	5	0.00 ± 0.04 , 0.07	0.06 ± 0.02 , 0.03	0.41 ± 0.08 , 0.11	47.4 ± 3.2 , 1.4	3.11 ± 0.24 , 0.21	118.0 ± 6.1

<sup>a</sup>Uncertainties represent the 95% confidence level, based on total propagated uncertainties.

<sup>b</sup>The MDCs appear after the commas.

<sup>c</sup>Total U is calculated by (U-235\*21.7) + U-235 + U-238.

<sup>d</sup>Zero values are due to rounding or net counts totaled zero in region of interest.