

November 9, 2010

Mr. John Nicholson  
U. S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 60532-4351

**SUBJECT:       ORISE CONTRACT NO. DE-AC05-06OR23100**  
**LETTER REPORT FOR ANALYTICAL RESULTS FOR FIFTEEN SOIL**  
**SAMPLES FROM ABB, INC., WINDSOR, CONNECTICUT**  
**[TAC NO. U01836/U01837] (RFTA NO. 11-001)**  
**DCN: 2016-LR-04-0**


Dear Mr. Nicholson:

The Oak Ridge Institute for Science and Education (ORISE) received 15 soil samples on October 20, 2010 from ABB, Inc. in Windsor, Connecticut. The samples were analyzed according to the 303 form supplied with the samples except for Gross Alpha which was removed from the request for analysis by an e-mail from Laurie Kauffman on October 28, 2010. After reviewing the preliminary results of the gamma spectroscopy (GS), you decided that alpha spectroscopy analysis was not required. The sample identification numbers are presented in Table 1 and the gamma spectroscopy results for the requested radionuclides are provided in Table 2. The requested detection limit of 0.1 pCi/g for thorium-232 (Th-232) was not met for a majority of the samples. The Th-232 concentration was statistically positive above the requested detection limit for the samples, but it was determined that longer sample count times to further reduce the detection limit were not necessary. The pertinent procedure reference is included with the data table.

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 Wade Ivey at 865.576.9184 with any questions or comments.

Sincerely,



Dale Condra, Manager  
Laboratory

RDC:WPI:fr

Enclosures

c:     T. Carter, NRC/FSME/DWMIEP T-8F5                     File 2016  
       T. Patterson, NRC/FSME/TWTN 8D42

Electronic:     S. Roberts, ORISE                                 T. Vitkus, ORISE

Distribution approval and concurrence :		Initials
Technical Review		ENB
Quality Review		AB

**TABLE 1. SAMPLE IDENTIFICATIONS AND COLLECTIONS INFORMATION  
ABB, INC. WINDOR CONNECTICUT**

<b>ORISE Sample ID</b>	<b>NRC Region I Sample ID</b>	<b>Collection Date</b>	<b>Collection Time</b>
2016S0088	ABB-10-8-1	10/10/10	13:45
2016S0089	ABB-10-8-2	10/10/10	13:50
2016S0090	ABB-10-8-3	10/10/10	14:00
2016S0091	ABB-10-8-4	10/10/10	14:05
2016S0092	ABB-10-8-5	10/10/10	14:15
2016S0093	ABB-10-8-6	10/10/10	14:20
2016S0094	ABB-10-8-7	10/10/10	14:25
2016S0095	ABB-10-8-8	10/10/10	14:40
2016S0096	ABB-10-8-9	10/10/10	14:30
2016S0097	ABB-10-8-10	10/10/10	14:50
2016S0098	ABB-10-8-11	10/10/10	14:55
2016S0099	ABB-10-13-1	10/13/10	14:30
2016S0100	ABB-10-13-2	10/13/10	14:40
2016S0101	ABB-10-13-3	10/13/10	14:55
2016S0102	ABB-10-14-4	10/13/10	14:50

**TABLE 2. CONCENTRATIONS OF SELECTED GAMMA EMITTERS IN SOIL SAMPLES BY GAMMA SPECTROSCOPY CP1, REVISION 17  
ABB, INC. WINDSOR CONNECTICUT**

NRC Region I Sample ID	Radionuclide Concentrations (pCi/g dry weight)					
	Th-232 by Ac-228	Ra-226 by Pb-214	Co-60	U-238 by Th-234	U-235	Total U <sup>a</sup>
ABB-10-8-1	0.85 ± 0.13 <sup>b</sup> , 0.13 <sup>c</sup>	0.68 ± 0.07, 0.07	0.02 ± 0.05, 0.08	0.74 ± 0.27, 0.75	0.03 ± 0.13, 0.25	1.51 ± 0.56
ABB-10-8-2	0.77 ± 0.13, 0.13	0.66 ± 0.07, 0.07	-0.04 ± 0.05, 0.08	0.64 ± 0.28, 0.93	0.27 ± 0.19, 0.32	1.55 ± 0.59
ABB-10-8-3	0.77 ± 0.11, 0.11	0.64 ± 0.05, 0.05	0.00 <sup>d</sup> ± 0.04, 0.06	1.03 ± 0.25, 0.59	0.22 ± 0.06, 0.15	2.28 ± 0.50
ABB-10-8-4	0.78 ± 0.12, 0.13	0.57 ± 0.06, 0.06	0.03 ± 0.03, 0.06	0.86 ± 0.25, 0.74	0.08 ± 0.11, 0.22	1.80 ± 0.51
ABB-10-8-5	0.73 ± 0.12, 0.14	0.56 ± 0.06, 0.07	-0.01 ± 0.05, 0.07	0.65 ± 0.26, 0.67	0.04 ± 0.12, 0.24	1.34 ± 0.53
ABB-10-8-6	0.86 ± 0.14, 0.13	0.70 ± 0.08, 0.07	-0.01 ± 0.05, 0.09	0.73 ± 0.27, 0.80	0.20 ± 0.19, 0.32	1.66 ± 0.57
ABB-10-8-7	0.90 ± 0.14, 0.11	0.62 ± 0.05, 0.05	-0.01 ± 0.04, 0.06	0.85 ± 0.24, 0.66	0.01 ± 0.15, 0.25	1.71 ± 0.50
ABB-10-8-8	0.69 ± 0.11, 0.13	0.58 ± 0.06, 0.05	0.03 ± 0.03, 0.07	0.38 ± 0.70, 0.81	0.07 ± 0.12, 0.23	0.80 ± 1.40
ABB-10-8-9	0.74 ± 0.12, 0.15	0.56 ± 0.06, 0.07	-0.03 ± 0.05, 0.07	0.58 ± 0.24, 0.68	0.06 ± 0.13, 0.25	1.22 ± 0.50
ABB-10-8-10	0.76 ± 0.13, 0.12	0.58 ± 0.07, 0.07	0.02 ± 0.05, 0.09	0.40 ± 0.26, 0.82	0.13 ± 0.19, 0.31	0.93 ± 0.55
ABB-10-8-11	0.78 ± 0.12, 0.12	0.66 ± 0.06, 0.05	0.01 ± 0.04, 0.06	0.64 ± 0.22, 0.62	0.05 ± 0.15, 0.25	1.33 ± 0.46
ABB-10-13-1	1.58 ± 0.21, 0.17	0.89 ± 0.08, 0.07	-0.02 ± 0.06, 0.09	0.86 ± 0.31, 0.89	0.15 ± 0.10, 0.24	1.87 ± 0.63
ABB-10-13-2	0.91 ± 0.13, 0.10	0.55 ± 0.06, 0.06	0.03 ± 0.04, 0.07	0.63 ± 0.34, 0.83	0.02 ± 0.12, 0.23	1.28 ± 0.69
ABB-10-13-3	0.94 ± 0.14, 0.15	0.78 ± 0.07, 0.08	0.03 ± 0.05, 0.09	0.73 ± 0.30, 0.82	0.11 ± 0.14, 0.28	1.57 ± 0.62
ABB-10-14-4	0.96 ± 0.16, 0.16	0.61 ± 0.07, 0.08	0.01 ± 0.05, 0.09	0.70 ± 0.28, 0.98	-0.02 ± 0.21, 0.32	1.38 ± 0.60

<sup>a</sup>Total uranium is calculated using U-238\*2 + U-235.

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

<sup>c</sup>MDCs are after the commas.

<sup>d</sup>Zero values are due to rounding or sample and background being equal.