

August 9, 2010

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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 17 SOIL SAMPLES FROM
ABB, INC., WINDSOR, CONNECTICUT
[INSPECTION REPORT NO. 060021706/2010003] (RFTA NO. 10-001) 03003754
DCN: 2016-LR-01-0

Dear Mr. Nicholson:

The Oak Ridge Institute for Science and Education (ORISE) received 17 soil samples on June 16, 2010 from ABB, Inc in Windsor, Connecticut. The samples were analyzed according to the 303 form supplied with the samples. After discussing the results of the gamma spectroscopy (GS) by phone on June 25, 2010, you selected six samples to be analyzed by alpha spectroscopy (AS) for uranium isotopic concentrations. The sample identification numbers are presented in Table 1. The gamma spectroscopy results for the requested radionuclides are provided in Table 2. The requested minimum detectable concentration (MDC) for thorium-232 (Th-232) was not met. However, a statistically positive concentration of Th-232 above the calculated MDC was detected in every sample. The uranium isotopic results are in Table 3. The pertinent procedure references are included with the data 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 Wade Ivey at 865.576.9184 with any questions or comments.

Sincerely,



Dale Condra, Manager
Laboratory

RDC:WPI:bf

Enclosures

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NMSS/RGNI MATERIALS-004

Distribution approval and concurrence :	Initials
Technical Review	TJC
Quality Review	TLB

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TABLE 1
SAMPLE IDENTIFICATIONS
AND COLLECTION INFORMATION
ABB, INC.
WINDSOR, CONNECTICUT

ORISE Sample ID	NRC Region I Sample ID	Collection Date	Collection Time
2016S0001	ABB-10-1-1	06/15/2010	9:59
2016S0002	ABB-10-1-2	06/15/2010	10:05
2016S0003	ABB-10-1-3	06/15/2010	10:12
2016S0004	ABB-10-1-4	06/15/2010	10:18
2016S0005	ABB-10-1-5	06/15/2010	10:23
2016S0006	ABB-10-1-6	06/15/2010	10:27
2016S0007	ABB-10-1-7	06/15/2010	10:33
2016S0008	ABB-10-1-8	06/15/2010	10:40
2016S0009	ABB-10-1-9	06/15/2010	10:48
2016S0010	ABB-10-1-10	06/15/2010	10:53
2016S0011	ABB-10-1-11	06/15/2010	10:58
2016S0012	ABB-10-1-12	06/15/2010	11:03
2016S0013	ABB-10-1-13	06/15/2010	11:07
2016S0014	ABB-10-1-14	06/15/2010	11:12
2016S0015	ABB-10-1-15	06/15/2010	11:19
2016S0016	ABB-10-1-16	06/15/2010	11:23
2016S0017	ABB-10-1-17	06/15/2010	11:28

TABLE 2

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

ORISE Sample ID	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 ^{a,b}
2016S0001	ABB-10-1-1	0.65 ± 0.13 ^c , 0.16 ^d	0.62 ± 0.07 , 0.08	-0.04 ± 0.06 , 0.10	0.80 ± 0.35 , 0.95	-0.03 ± 0.22 , 0.34	1.57 ± 0.73
2016S0002	ABB-10-1-2	0.62 ± 0.10 , 0.11	0.46 ± 0.05 , 0.06	0.01 ± 0.04 , 0.06	0.51 ± 0.23 , 0.70	0.04 ± 0.14 , 0.24	1.06 ± 0.48
2016S0003	ABB-10-1-3	0.66 ± 0.12 , 0.15	0.52 ± 0.05 , 0.05	0.01 ± 0.03 , 0.06	0.87 ± 0.26 , 0.71	-0.01 ± 0.10 , 0.20	1.73 ± 0.53
2016S0004	ABB-10-1-4	0.74 ± 0.12 , 0.14	0.51 ± 0.06 , 0.08	0.03 ± 0.04 , 0.08	0.77 ± 0.31 , 0.74	-0.05 ± 0.13 , 0.24	1.49 ± 0.63
2016S0005	ABB-10-1-5	0.70 ± 0.12 , 0.14	0.56 ± 0.06 , 0.07	0.02 ± 0.04 , 0.08	0.62 ± 0.29 , 0.96	0.02 ± 0.19 , 0.30	1.26 ± 0.61
2016S0006	ABB-10-1-6	0.63 ± 0.11 , 0.13	0.46 ± 0.05 , 0.06	-0.02 ± 0.05 , 0.07	0.51 ± 0.05 , 0.66	-0.08 ± 0.16 , 0.26	0.94 ± 0.19
2016S0007	ABB-10-1-7	0.65 ± 0.12 , 0.15	0.52 ± 0.06 , 0.07	-0.03 ± 0.05 , 0.07	0.62 ± 0.07 , 0.85	-0.02 ± 0.13 , 0.25	1.22 ± 0.19
2016S0008	ABB-10-1-8	0.94 ± 0.17 , 0.16	0.70 ± 0.08 , 0.09	0.02 ± 0.06 , 0.11	0.54 ± 0.38 , 1.10	0.22 ± 0.09 , 0.27	5.5 ± 2.0
2016S0009	ABB-10-1-9	0.88 ± 0.15 , 0.17	0.61 ± 0.07 , 0.09	0.06 ± 0.05 , 0.10	0.92 ± 0.40 , 1.00	1.04 ± 0.13 , 0.25	24.5 ± 2.9
2016S0010	ABB-10-1-10	0.87 ± 0.12 , 0.10	0.63 ± 0.05 , 0.06	0.01 ± 0.03 , 0.06	0.85 ± 0.25 , 0.64	0.93 ± 0.10 , 0.18	22.0 ± 2.2
2016S0011	ABB-10-1-11	0.57 ± 0.19 , 0.41	0.69 ± 0.07 , 0.07	-0.01 ± 0.05 , 0.08	0.77 ± 0.98 , 1.70	1.57 ± 0.16 , 0.29	36.4 ± 3.6
2016S0012	ABB-10-1-12	0.93 ± 0.15 , 0.16	0.71 ± 0.07 , 0.07	0.02 ± 0.05 , 0.08	0.75 ± 0.30 , 0.82	0.10 ± 0.14 , 0.27	1.60 ± 0.62
2016S0013	ABB-10-1-13	0.85 ± 0.14 , 0.13	0.63 ± 0.07 , 0.07	0.03 ± 0.05 , 0.08	0.91 ± 0.31 , 0.81	0.26 ± 0.20 , 0.33	2.08 ± 0.65
2016S0014	ABB-10-1-14	1.07 ± 0.15 , 0.10	0.74 ± 0.06 , 0.05	0.02 ± 0.04 , 0.07	0.81 ± 0.27 , 0.78	0.10 ± 0.16 , 0.28	1.72 ± 0.56
2016S0015	ABB-10-1-15	1.04 ± 0.16 , 0.15	0.73 ± 0.07 , 0.06	0.02 ± 0.03 , 0.06	0.82 ± 0.29 , 0.90	0.89 ± 0.10 , 0.18	21.0 ± 2.2
2016S0016	ABB-10-1-16	0.90 ± 0.15 , 0.14	0.62 ± 0.07 , 0.08	0.00 ^e ± 0.05 , 0.09	0.82 ± 0.30 , 1.00	0.08 ± 0.21 , 0.34	1.72 ± 0.64
2016S0017	ABB-10-1-17	0.86 ± 0.14 , 0.15	0.70 ± 0.07 , 0.07	-0.03 ± 0.06 , 0.09	0.92 ± 0.33 , 0.84	0.31 ± 0.09 , 0.23	8.0 ± 2.0

^aTotal uranium is calculated using U-238*2 + U-235 for samples S0001-S0007, S0012-S0014, and S0016

^bTotal uranium is calculated using U-238 + U-235 + (21.7*U-235) for samples S0008-S0011, S0015, and S0017

^cUncertainties represent the 95% confidence level, based on total propagated uncertainties.

^dMDCs are after the commas.

^eZero values are due to rounding.

TABLE 3
CONCENTRATIONS OF URANIUM
IN SOIL SAMPLES
BY ALPHA SPECTROSCOPY
AP11, REVISION 5; CP2, REVISION 15
ABB, INC.
WINDSOR, CONNECTICUT

ORISE Sample ID	NRC Region I Sample ID	Radionuclide Concentrations (pCi/g dry weight)			
		U-234	U-235	U-238	Total U ^a
2016S0009	ABB-10-1-9	22.5 ± 1.8 ^b , 0.0 ^{c,d}	0.77 ± 0.10 , 0.01	0.77 ± 0.10 , 0.02	24.0 ± 1.8
2016S0010	ABB-10-1-10	27.4 ± 2.2 , 0.0	1.02 ± 0.13 , 0.02	1.02 ± 0.12 , 0.03	29.4 ± 2.2
2016S0011	ABB-10-1-11	45.3 ± 3.7 , 0.0	1.61 ± 0.18 , 0.03	0.88 ± 0.11 , 0.02	47.8 ± 3.7
2016S0013	ABB-10-1-13	2.01 ± 0.20 , 0.01	0.07 ± 0.03 , 0.01	0.79 ± 0.10 , 0.01	2.87 ± 0.23
2016S0015	ABB-10-1-15	22.5 ± 1.8 , 0.0	0.77 ± 0.10 , 0.01	0.83 ± 0.10 , 0.02	24.1 ± 1.8
2016S0017	ABB-10-1-17	6.33 ± 0.55 , 0.03	0.25 ± 0.05 , 0.03	0.69 ± 0.09 , 0.02	7.28 ± 0.56

^aTotal uranium is calculated using U-234 + U-235 + U-238.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

^cMDCs are after the commas.

^dZero values are due to rounding.