

May 11, 2011

Mr. Bruce Watson, CHP  
Chief, Reactor Decommissioning Branch  
U.S. Nuclear Regulatory Commission  
MailStop: T-7E18  
Rockville, Maryland 20852

**SUBJECT: REPORT FOR ANALYSES OF FIVE SOIL SAMPLES FROM NUCLEAR FUEL SERVICES, ERWIN, TENNESSEE  
[INSPECTION REPORT NUMBER 70/143-2011-001] [RFTA NO. 11-001]  
DCN: 2039-LR-01-0**

Dear Mr. Watson:

The Oak Ridge Institute for Science and Education (ORISE) received five soil samples from Nuclear Fuel Services on February 16, 2011. The samples were analyzed by gamma spectroscopy (GS) as requested in your e-mail on April 21, 2011. Sample identification and collection data for the samples in this report are presented in Table 1. The GS data are provided in Table 2. The pertinent procedure references are provided in each specific table. ORISE received four additional samples from the NFS site. Two samples were received on December 7, 2010 and two were received on March 12, 2011. Per your e-mail, ORISE is holding the samples until further instruction from you.

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,

*Wade P. Ivey for*  
Dale Condra, Manager  
Laboratory

RDC:WPI:bf

Enclosures

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**TABLE 1**  
**SAMPLE IDENTIFICATIONS**  
**AND COLLECTION DATA**  
**NUCLEAR FUEL SERVICES**  
**ERWIN, TENNESSEE**

<b>ORISE Sample ID</b>	<b>NRC Region II Sample ID</b>	<b>Collection Date</b>	<b>Collection Time</b>
2039S0003	0670-AX-XA	12/3/2010	10:12
2039S0004	0676-AX-XA	12/3/2010	13:50
2039S0005	0686-CX-XA	12/2/2010	14:31
2039S0006	0689-BX-XA	12/3/2010	15:01
2039S0007	0701-BX-XA	12/2/2010	14:55

**TABLE 2**  
**CONCENTRATIONS OF SELECTED GAMMA EMITTERS**  
**IN SOIL SAMPLES**  
**BY GAMMA SPECTROSCOPY**  
**CP1, REVISION 17**  
**NUCLEAR FUEL SERVICES**  
**ERWIN, TENNESSEE**

ORISE Sample ID	NRC Region II Sample ID	Radionuclide Concentrations, TPU's, and MDCs (pCi/g)						
		Am-241	Th-228 by Pb-212	Th-232 by Ac-228	Total Th <sup>a</sup>	U-238 by Th-234	U-235	Total U <sup>b</sup>
2039S0003	0670-AX-XA	-0.02 ± 0.08 <sup>c</sup> , 0.16 <sup>d</sup>	1.64 ± 0.13, 0.08	1.75 ± 0.21, 0.16	3.39 ± 0.25	2.17 ± 0.39, 1.10	0.31 ± 0.09, 0.27	4.7 ± 0.8
2039S0004	0676-AX-XA	-0.02 ± 0.07, 0.13	1.40 ± 0.11, 0.07	1.37 ± 0.17, 0.11	2.77 ± 0.20	13.41 ± 0.99, 0.77	2.28 ± 0.18, 0.20	29.1 ± 2.0
2039S0005	0686-CX-XA	0.07 ± 0.03, 0.09	1.40 ± 0.11, 0.05	1.50 ± 0.18, 0.13	2.90 ± 0.21	0.85 ± 0.26, 0.82	0.20 ± 0.06, 0.16	1.9 ± 0.5
2039S0006	0689-BX-XA	-0.03 ± 0.07, 0.13	0.97 ± 0.09, 0.07	1.01 ± 0.15, 0.13	1.98 ± 0.17	1.64 ± 0.34, 0.93	0.18 ± 0.07, 0.22	3.5 ± 0.7
2039S0007	0701-BX-XA	0.00 <sup>e</sup> ± 0.04, 0.08	0.88 ± 0.07, 0.05	0.89 ± 0.12, 0.09	1.77 ± 0.14	0.81 ± 0.20, 0.48	0.11 ± 0.04, 0.14	1.7 ± 0.4

<sup>a</sup>Total Th is the sum of Th-228 + Th-232.

<sup>b</sup>Total U is the sum of U-235 + (2\*U-238).

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

<sup>d</sup>The MDCs are after the comma.

<sup>e</sup>Zero value is due to rounding or the sample and background counts being equal.