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November 16, 2006

Mr. Robert Evans  
U.S. Nuclear Regulatory Commission  
Region IV: DNMS: NMLB  
Suite 400  
611 Ryan Plaza Drive  
Arlington, TX 76011

**SUBJECT: INTERIM REPORT OF ANALYTICAL RESULTS FOR SWIPE, SOIL,  
AND WATER SAMPLES COLLECTED OCTOBER 3 THROUGH  
OCTOBER 5, 2006 FROM PATHFINDER GENERATING PLANT,  
SIOUX FALLS, SOUTH DAKOTA  
(INSPECTION REPORT #030-05004/06-001) [RFTA NO. 06-001]**

Dear Mr. Evans:

The Oak Ridge Institute for Science and Education (ORISE) received six swipe, 10 soil, and two water samples for analysis from the Pathfinder Generating Station, Sioux Falls, South Dakota on October 6, 2006. The swipes were analyzed for gross alpha and gross beta activity by low background alpha/beta counting methods (AP1, Revision 14; CP3, Revision 2). The gross alpha Minimum Detectable Concentration (MDC) is 8.9 pCi/smear and the gross beta MDC is 15 pCi/smear. The gross alpha and gross beta concentrations of all smears were below the MDC for each analysis. The soil and water samples were analyzed by gamma spectroscopy (GS). After the decay of radon and its progeny, none of the contaminants of interest were detected in the water samples. Six of the soil samples were requested to be analyzed for isotopic uranium by alpha spectroscopy (AS). Your request for radium-226 by AS could not be completed in time for this report due to problems with the analytical procedure. The sample identifications for the soil and water samples are in Table 1, the GS results are in Table 2, and the AS results for isotopic uranium are in Table 3.

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

License No. 22-08799-02  
Docket No. 030-05004

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:km

Enclosures

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**TABLE 1**

**SAMPLE IDENTIFICATIONS  
AND COLLECTION DATA  
PATHFINDER GENERATING PLANT  
SIOUX FALLS, SOUTH DAKOTA**

<b>ORISE Sample ID</b>	<b>NRC Region IV Sample ID</b>	<b>Collection Date</b>	<b>Collection Time</b>
1721R0001	13-18	10/5/2006	2:45-3:08 PM
1721S0001	1	10/3/2006	2:35 PM
1721S0002	2	10/3/2006	2:15 PM
1721S0003	3	10/3/2006	2:20 PM
1721S0004	4	10/3/2006	2:25 PM
1721S0005	5	10/3/2006	2:45 PM
1721S0006	6	10/3/2006	2:50 PM
1721S0007	8	10/4/2006	3:40 PM
1721S0008	9	10/4/2006	3:50 PM
1721S0009	10	10/5/2006	12:00 PM
1721S0010	11	10/5/2006	12:20 PM
1721W0001	7	10/3/2006	2:30 PM
1721W0002	12	10/4/2006	3:07 PM

**TABLE 2**

**CONCENTRATIONS OF SELECTED GAMMA EMITTING  
RADIONUCLIDES  
IN SOIL SAMPLES  
BY SAMPLE PREPARATION SP3, REVISION 4  
AND GAMMA SPECTROSCOPY CP1, REVISION 15  
PATHFINDER GENERATING PLANT  
SIOUX FALLS, SOUTH DAKOTA**

ORISE Sample ID	NRC Region IV Sample ID	Radionuclide Concentrations (pCi/g) <sup>a</sup>		
		Ra-226 by Pb-214	U235	U-238 by Th-234
1721S0001	1	0.77 ± 0.11 <sup>b</sup>	0.01 ± 0.11	0.84 ± 0.48
1721S0002	2	109.9 ± 4.5	0.02 ± 0.65	-0.4 ± 2.6
1721S0003	3	92.2 ± 3.9	-0.15 ± 0.63	0.7 ± 2.0
1721S0004	4	66.3 ± 2.9	0.88 ± 0.59	2.2 ± 2.1
1721S0005	5	6.77 ± 0.35	0.40 ± 0.25	6.3 ± 1.3
1721S0006	6	5.07 ± 0.25	0.44 ± 0.18	4.68 ± 0.82
1721S0007	8	1.48 ± 0.11	0.05 ± 0.14	1.48 ± 0.62
1721S0008	9	8.09 ± 0.41	0.15 ± 0.28	5.0 ± 1.0
1721S0009	10	130.9 ± 5.4	0.14 ± 0.64	0.8 ± 2.4
1721S0010	11	1.68 ± 0.16	0.11 ± 0.15	1.49 ± 0.99

<sup>a</sup>The average MDCs for these radionuclides range from 0.06 pCi/g for Ra-226 by Pb-214 to 3.7 pCi/g for U-238 by Th-234.

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

**TABLE 3**  
**CONCENTRATIONS OF URANIUM**  
**IN SOIL SAMPLES**  
**BY ALPHA SPECTROSCOPY**  
**AP11, REVISION 3; CP2, REVISION 12**  
**PATHFINDER GENERATING PLANT**  
**SIOUX FALLS, SOUTH DAKOTA**

ORISE Sample ID	NRC Region IV Sample ID	Radionuclide Concentrations (pCi/g) <sup>a</sup>			
		U-234	U-235	U-238	Total U <sup>b</sup>
1721S0001	1	0.45 ± 0.06 <sup>c</sup>	0.04 ± 0.02	0.50 ± 0.07	0.99 ± 0.10
1721S0002	2	1.83 ± 0.18	0.06 ± 0.02	0.89 ± 0.11	2.78 ± 0.21
1721S0003	3	1.12 ± 0.12	0.04 ± 0.02	0.70 ± 0.09	1.86 ± 0.15
1721S0004	4	1.04 ± 0.11	0.02 ± 0.02	0.63 ± 0.08	1.69 ± 0.14
1721S0007	8	1.17 ± 0.12	0.08 ± 0.03	1.24 ± 0.13	2.49 ± 0.18
1721S0009	10	1.57 ± 0.15	0.08 ± 0.03	1.26 ± 0.13	2.91 ± 0.20

<sup>a</sup>The average MDCs for these radionuclides range from 0.01 pCi/g to 0.04 pCi/g.

<sup>b</sup>Total uranium is calculated using the equation U-234 + U-235 + U-238.

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