

April 28, 2006

Mr. William Snell
U.S. Nuclear Regulatory Commission
Region III
2443 Warrenville Road
Lisle, IL 60532-4351

SUBJECT: ANALYTICAL RESULTS FOR EIGHT WATER SAMPLES IN BATCH THREE FROM THE VICINITY OF THE BYRON GENERATING STATION, BYRON, ILLINOIS [INSPECTION REPORT NO. 050-00454/2006-003] (RFTA NO. 06-001)

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received eight water samples in Batch Three on April 20, 2006 that were collected in the vicinity of the Byron Generating Station in Byron, Illinois. The samples were analyzed for tritium using a liquid scintillation analyzer (Procedures AP2, Revision 15 and CP4, Revision 3). The chain of custody identified two water samples to be analyzed by gamma spectroscopy (GS) (Procedure CP1, Revision 15). The sample identifications and collection data are presented in Table 1. The GS data are presented in Table 2. The tritium data are presented in Table 3.

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:ar

Enclosures

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TABLE 1

**SAMPLE IDENTIFICATIONS
AND COLLECTION DATA
BYRON GENERATING STATION
BYRON, ILLINOIS**

ORISE Sample ID	NRC Region III Sample ID	Collection Date	Collection Time
1689W0063	BY-06-3-01	4/11/2006	9:55am
1689W0064	BY-06-3-02	4/11/2006	11:00am
1689W0065	BY-06-3-03	4/11/2006	9:25am
1689W0066	BY-06-3-04	4/11/2006	10:45am
1689W0067	BY-06-3-05	4/11/2006	9:15am
1689W0068	BY-06-3-06	4/11/2006	10:25am
1689W0069	BY-06-3-07	4/11/2006	10:35am
1689W0070	BY-06-3-08	4/11/2006	9:40am

TABLE 2

CONCENTRATIONS OF SELECTED
GAMMA EMITTING RADIONUCLIDES
IN SELECTED WATER SAMPLES
BY GAMMA SPECTROSCOPY CP1, REVISION 15
BYRON GENERATING STATION
BYRON, ILLINOIS

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations ^a (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1689W0064	BY-06-3-02	0.7 ± 2.9 ^b	2.1 ± 3.1	-1.3 ± 3.3	6.8 ± 3.7
1689W0069	BY-06-3-07	-0.4 ± 2.2	-0.2 ± 2.3	-3.2 ± 3.4	2.3 ± 2.2

^aThe range of MDCs for the selected radionuclides is 3.5 pCi/L to 5.5 pCi/L.

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

TABLE 3

**CONCENTRATIONS OF TRITIUM
IN WATER SAMPLES
BY LIQUID SCINTILLATION ANALYSIS
AP2, REVISION 15; CP4, REVISION 3
BYRON GENERATING STATION
BYRON, ILLINOIS**

ORISE Sample ID	NRC Region III Sample ID	Tritium Concentrations, TPUs, and MDCs^a (pCi/L)
1689W0063	BY-06-3-01	-90 ± 110 ^b (200)
1689W0064	BY-06-3-02	-140 ± 110 (200)
1689W0065	BY-06-3-03	-130 ± 110 (200)
1689W0066	BY-06-3-04	-40 ± 120 (200)
1689W0067	BY-06-3-05	-70 ± 110 (200)
1689W0068	BY-06-3-06	-150 ± 110 (200)
1689W0069	BY-06-3-07	-140 ± 110 (200)
1689W0070	BY-06-3-08	-80 ± 110 (200)

^aMDCs are in parenthesis.

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



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