

ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

June 30, 2006

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

SUBJECT: INTERIM REPORT OF ANALYTICAL RESULTS FOR EIGHTEEN WATER SAMPLES, BATCH TWO, FROM THE VICINITY OF THE ZION GENERATING STATION, ZION, ILLINOIS [INSPECTION REPORT NO. 050-00295/2006-001] (RFTA NO. 06-001)

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received Batch Two, consisting of 18 water samples, on June 23, 2006. These samples were collected in the vicinity of the Zion Generating Station in Zion, Illinois. The 18 water samples were analyzed for tritium to an average minimum detection concentration of 180 pCi/L using a liquid scintillation analyzer. The chain of custody identified three water samples to be analyzed by gamma spectroscopy (GS). One water sample was identified to be analyzed for total radiostrontium, iron-55, nickel-63, americium-241, and plutonium alpha isotopic analysis. 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. The pertinent procedure references are provided in the specific tables.

ORISE's Quality Control (QC) requirements were met for these analyses. The QC files are available for your review upon request. As more analytical data becomes available, additional interim letter reports or a final report will be issued as requested analyses are completed.

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

Enclosure

c: B. Watson, NMSS/DWMEP/DD/SP 7E18
E. Knox-Davin, NRC/NMSS/TWFN 8A23
G. Bonano, NRC Region III
E. Abelquist, ORISE
S. Kirk, ORISE
File 1701

Distribution approval and concurrence :	Initials
Technical Management Team Member	WCA for JSK
Quality Manager	MAB for Ann Payne

Voice: 865.241.3242

Fax: 865.241.3248

E-mail: CondraD@ora.gov

TABLE 1

SAMPLE IDENTIFICATIONS
AND COLLECTION DATA
ZION GENERATING STATION
ZION, ILLINOIS

ORISE Sample ID	NRC Region III Sample ID	Collection Time	Collection Date
1701W0007	Z-06-2-01	5/26/2006	11:02 AM
1701W0008	Z-06-2-02	5/26/2006	1:40 PM
1701W0009	Z-06-2-03	5/26/2006	9:53 AM
1701W0010	Z-06-2-04	5/26/2006	12:30 PM
1701W0011	Z-06-2-05	5/25/2006	10:58 AM
1701W0012	Z-06-2-06	5/25/2006	2:22 PM
1701W0013	Z-06-2-07	5/24/2006	12:55 PM
1701W0014	Z-06-2-08	5/24/2006	2:00 PM
1701W0015	Z-06-2-09	5/26/2006	4:00 PM
1701W0016	Z-06-2-10	5/26/2006	1:15 PM
1701W0017	Z-06-2-11	5/26/2006	8:45 AM
1701W0018	Z-06-2-12	5/25/2006	11:23 AM
1701W0019	Z-06-2-13	5/24/2006	2:35 PM
1701W0020	Z-06-2-14	5/25/2006	9:15 AM
1701W0021	Z-06-2-15	5/24/2006	11:35 AM
1701W0022	Z-06-2-16	5/24/2006	10:14 AM
1701W0023	Z-06-2-17	5/26/2006	2:48 PM
1701W0024	Z-06-2-18	5/26/2006	11:00 AM

TABLE 2

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

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations ^a (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1701W0008	Z-06-2-02	1.4 ± 3.5 ^b	4.6 ± 2.8	3.0 ± 2.9	4.5 ± 7.1
1701W0016	Z-06-2-10	-1.5 ± 5.5	1.4 ± 4.3	1.4 ± 4.7	-1.4 ± 4.0
1701W0024	Z-06-2-18	-0.9 ± 3.7	1.6 ± 3.2	1.5 ± 3.2	0.6 ± 2.9

^aThe range of MDCs for the selected radionuclides is 4.4 pCi/L to 9.3 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
ZION GENERATING STATION
ZION, ILLINOIS

ORISE Sample ID	NRC Region III Sample ID	Tritium Concentrations, TPUs, and MDCs ^a (pCi/L)			
1701W0007	Z-06-2-01	240 ^b	±	110	(190)
1701W0008	Z-06-2-02	260	±	120	(190)
1701W0009	Z-06-2-03	40	±	110	(190)
1701W0010	Z-06-2-04	60	±	110	(190)
1701W0011	Z-06-2-05	130	±	110	(190)
1701W0012	Z-06-2-06	170	±	110	(190)
1701W0013	Z-06-2-07	100	±	110	(190)
1701W0014	Z-06-2-08	80	±	110	(190)
1701W0015	Z-06-2-09	70	±	110	(190)
1701W0016	Z-06-2-10	30	±	110	(190)
1701W0017	Z-06-2-11	20	±	110	(190)
1701W0018	Z-06-2-12	40	±	110	(190)
1701W0019	Z-06-2-13	-70	±	100	(190)
1701W0020	Z-06-2-14	60	±	110	(190)
1701W0021	Z-06-2-15	30	±	100	(180)
1701W0022	Z-06-2-16	80	±	110	(180)
1701W0023	Z-06-2-17	120	±	110	(180)
1701W0024	Z-06-2-18	60	±	100	(180)

^aMDCs are in parentheses.

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