

ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

April 24, 2006

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

**SUBJECT: ANALYTICAL RESULTS FOR 22 WATER SAMPLES, BATCH THREE,
FROM THE VICINITY OF THE BRAIDWOOD GENERATING STATION,
BRAIDWOOD, ILLINOIS [INSPECTION REPORT NO. 05000456/2006-003]
(RFTA NO. 06-001)**

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received 22 water samples, Batch Three, on April 12 that were collected in the vicinity of the Braidwood Generating Station in Braidwood, Illinois. The samples were not logged into the database until Friday April 14, 2006 because the lab staff was unsure of the inspection report sequence. After a phone call with you and Gene Bonano on April 14, 2006 the samples were logged into the database and sample processing was initiated. The 22 water samples were analyzed for tritium to a minimum detectable concentration of 200 pCi/L using a liquid scintillation analyzer (Procedures AP2, Revision 15 and CP4, Revision 3). The chain of custody identified the 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

c: T. McLaughlin, NRC/NMSS/TWFFN 7F27
E. Knox-Davin, NRC/NMSS/TWFFN 8A23
G. Bonano, NRC Region III

E. Abelquist, ORISE
S. Kirk, ORISE
File 1691

| Distribution approval and concurrence : | Initials |
|---|----------|
| Technical Management Team Member | SK |
| Quality Manager | LTP |

Voice: 865.241.3242

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TABLE 1

**SAMPLE IDENTIFICATIONS
AND COLLECTION DATA
BRAIDWOOD NUCLEAR GENERATING STATION
BRAIDWOOD, ILLINOIS**

| ORISE Sample ID | NRC Region III Sample ID | Collection Date |
|------------------------|---------------------------------|------------------------|
| 1691W0088 | BD-06-3-01 | 03/29/2006 |
| 1691W0089 | BD-06-3-02 | 04/03/2006 |
| 1691W0090 | BD-06-3-03 | 03/28/2006 |
| 1691W0091 | BD-06-3-04 | 04/03/2006 |
| 1691W0092 | BD-06-3-05 | 04/03/2006 |
| 1691W0093 | BD-06-3-06 | 04/04/2006 |
| 1691W0094 | BD-06-3-07 | 04/04/2006 |
| 1691W0095 | BD-06-3-08 | 03/08/2006 |
| 1691W0096 | BD-06-3-09 | 03/28/2006 |
| 1691W0097 | BD-06-3-10 | 03/28/2006 |
| 1691W0098 | BD-06-3-11 | 04/04/2006 |
| 1691W0099 | BD-06-3-12 | 04/03/2006 |
| 1691W0100 | BD-06-3-13 | 03/30/2006 |
| 1691W0101 | BD-06-3-14 | 03/28/2006 |
| 1691W0102 | BD-06-3-15 | 03/30/2006 |
| 1691W0103 | BD-06-3-16 | 03/30/2006 |
| 1691W0104 | BD-06-3-17 | 03/30/2006 |
| 1691W0105 | BD-06-3-18 | 03/30/2006 |
| 1691W0106 | BD-06-3-19 | 04/03/2006 |
| 1691W0107 | BD-06-3-20 | 04/03/2006 |
| 1691W0108 | BD-06-3-21 | 04/03/2006 |
| 1691W0109 | BD-06-3-22 | 04/03/2006 |

TABLE 2

**CONCENTRATIONS OF SELECTED
GAMMA EMITTING RADIONUCLIDES
IN A SELECTED WATER SAMPLES
BY GAMMA SPECTROSCOPY CP1, REVISION 15
BRAIDWOOD NUCLEAR GENERATING STATION
BRAIDWOOD, ILLINOIS**

| ORISE Sample ID | NRC Region III Sample ID | Radionuclide Concentrations ^a (pCi/L) | | | |
|--------------------|-----------------------------|--|-----------|------------|------------|
| | | Co-58 | Co-60 | Cs-134 | Cs-137 |
| 1691W0097 | BD-06-3-10 | 2.6 ± 2.4 ^b | 1.5 ± 3.2 | -1.0 ± 3.4 | -0.6 ± 2.9 |
| 1691W0107 | BD-06-3-20 | -0.1 ± 2.9 | 1.2 ± 2.8 | -0.4 ± 3.0 | -0.1 ± 5.4 |

^aThe range of MDCs for the selected radionuclides is 4.9 pCi/L to 6.0 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
BRAIDWOOD NUCLEAR GENERATING STATION
BRAIDWOOD, ILLINOIS**

| ORISE Sample ID | NRC Region III Sample ID | Tritium Concentrations, TPUs, and MDCs ^a (pCi/L) | | | |
|-----------------|--------------------------|---|---|------------------|-------|
| 1691W0088 | BD-06-3-01 | -60 | ± | 110 ^b | (200) |
| 1691W0089 | BD-06-3-02 | -50 | ± | 110 | (200) |
| 1691W0090 | BD-06-3-03 | -80 | ± | 110 | (200) |
| 1691W0091 | BD-06-3-04 | -120 | ± | 110 | (200) |
| 1691W0092 | BD-06-3-05 | -10 | ± | 110 | (200) |
| 1691W0093 | BD-06-3-06 | -70 | ± | 110 | (200) |
| 1691W0094 | BD-06-3-07 | -80 | ± | 110 | (200) |
| 1691W0095 | BD-06-3-08 | -80 | ± | 110 | (200) |
| 1691W0096 | BD-06-3-09 | -90 | ± | 110 | (200) |
| 1691W0097 | BD-06-3-10 | -40 | ± | 110 | (200) |
| 1691W0098 | BD-06-3-11 | -80 | ± | 110 | (200) |
| 1691W0099 | BD-06-3-12 | -100 | ± | 110 | (200) |
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| 1691W0102 | BD-06-3-15 | 20 | ± | 110 | (200) |
| 1691W0103 | BD-06-3-16 | -80 | ± | 110 | (200) |
| 1691W0104 | BD-06-3-17 | -50 | ± | 110 | (200) |
| 1691W0105 | BD-06-3-18 | -30 | ± | 110 | (200) |
| 1691W0106 | BD-06-3-19 | -120 | ± | 110 | (200) |
| 1691W0107 | BD-06-3-20 | -90 | ± | 110 | (200) |
| 1691W0108 | BD-06-3-21 | -50 | ± | 110 | (200) |
| 1691W0109 | BD-06-3-22 | 0 ^c | ± | 110 | (200) |

^aMDCs are in parenthesis.

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

^cZero values are due to rounding.

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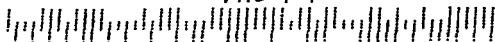
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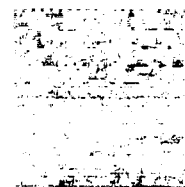
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