



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, ILLINOIS 60532-4352

June 7, 2006

MEMORANDUM TO: Steven K. Orth, Team Leader  
Plant Support Team  
Division of Reactor Safety

FROM: Jamnes L. Cameron, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

*See 27. 71. Cam for  
James 06/07/06*

SUBJECT: ANALYTICAL RESULTS OF WATER SAMPLES FROM THE  
VICINITY OF THE BYRON NUCLEAR POWER STATION  
(BATCH BY-2006-02)

By letter dated April 27, 2006, (ML061220683), we received the results of the analysis of 41 water samples from the NRC's contract laboratory, the Oak Ridge Institute for Science and Education (ORISE). These were samples collected by Exelon personnel from February 3 to March 29, 2006, in the vicinity of the Byron Nuclear Power Station and provided to Region III for analysis for tritium. The licensee collected separate samples for their analysis at the same time they collected the samples for the NRC.

We have reviewed the analysis results from ORISE and compared the results with the licensee's results for their samples. The enclosed Table provides the results of the analyses and an assessment of how they compared. The comparison was based on the Confirmatory Measurements Program criteria provided in Inspection Procedure 84750, "Radioactive Waste Treatment, and Effluent and Environmental Monitoring," dated March 15, 1994. There was "agreement" in the results between the ORISE and licensee analyses for all 41 samples. Six samples were also analyzed for gamma emitting nuclides. No radioactivity was identified in the samples in excess of the minimum detectable concentrations for cobalt-58, cobalt-60, cesium-134, or cesium-137.

Enclosure: As Stated

CONTACT: William G. Snell, DNMS  
630-829-9871

<b>Tritium Sample Results</b>										
<b>Byron Generating Station</b>										
#	Collection Date	NRC Sample ID	Tritium pCi/L $\pm$ uncertainty		MDC	Licensee Sample ID	Tritium pCi/L $\pm$ uncertainty		Ratio: Licensee to NRC	Result
1	02/03/2006	BY-06-2-01	40900	1500	400	BYWW-750	40727	552	1.00	Agreement
2	02/03/2006	BY-06-2-02	36200	1300	400	BYWW-751	37895	523	1.05	Agreement
3	02/03/2006	BY-06-2-03	81500	2500	400	BYWW-736	80123	756	0.98	Agreement
4	02/03/2006	BY-06-2-04	1650	310	400	BYWW-737	1843	138	1.12	Agreement
5	02/03/2006	BY-06-2-05	29400	1200	400	BYWW-738	29162	460	0.99	Agreement
6	02/03/2006	BY-06-2-06	< MDC		400	BYWW-752	<400		n/a	Agreement
7	02/16/2006	BY-06-2-07	< MDC		200	BYWW-816	<200		n/a	Agreement
8	02/16/2006	BY-06-2-08	< MDC		200	BYWW-817	<200		n/a	Agreement
9	02/28/2006	BY-06-2-09	< MDC		200	BYWW-1008	<200		n/a	Agreement
10	02/28/2006	BY-06-2-10	< MDC		200	BYWW-1009	<200		n/a	Agreement
11	02/28/2006	BY-06-2-11	< MDC		200	BYWW-1010	<200		n/a	Agreement
12	02/28/2006	BY-06-2-12	< MDC		200	BYWW-1011	<200		n/a	Agreement
13	02/28/2006	BY-06-2-13	< MDC		200	BYWW-1012	<200		n/a	Agreement
14	02/28/2006	BY-06-2-14	< MDC		200	BYWW-1013	<200		n/a	Agreement
15	02/28/2006	BY-06-2-15	< MDC		200	BYWW-1014	<200		n/a	Agreement
16	02/28/2006	BY-06-2-16	< MDC		200	BYWW-1015	<200		n/a	Agreement
17	02/28/2006	BY-06-2-17	< MDC		200	BYWW-1016	<200		n/a	Agreement
18	02/28/2006	BY-06-2-18	< MDC		200	BYWW-1017	<200		n/a	Agreement
19	03/08/2006	BY-06-2-19	< MDC		400	BYWW-1266	<400		n/a	Agreement
20	03/08/2006	BY-06-2-20	< MDC		400	BYWW-1267	<400		n/a	Agreement
21	03/08/2006	BY-06-2-21	< MDC		400	BYWW-1268	<400		n/a	Agreement
22	03/07/2006	BY-06-2-22	< MDC		400	BYWW-1269	<400		n/a	Agreement
23	03/23/2006	BY-06-2-23	< MDC		400	BYWW-1585	<400		n/a	Agreement
24	03/24/2006	BY-06-2-24	< MDC		400	BYWW-1586	<400		n/a	Agreement
25	03/24/2006	BY-06-2-25	< MDC		400	BYWW-1587	<400		n/a	Agreement

#	Collection Date	NRC Sample ID	Tritium pCi/L ± uncertainty		MDC	Licensee Sample ID	Tritium pCi/L ± uncertainty		Ratio: Licensee to NRC	Result
26	03/24/2006	BY-06-2-26	< MDC		400	BYWW-1588	<400		n/a	Agreement
27	03/24/2006	BY-06-2-27	< MDC		400	BYWW-1589	<400		n/a	Agreement
28	03/24/2006	BY-06-2-28	< MDC		400	BYWW-1590	<400		n/a	Agreement
29	03/24/2006	BY-06-2-29	< MDC		400	BYWW-1591	<400		n/a	Agreement
30	03/23/2006	BY-06-2-30	< MDC		400	BYWW-1592	<400		n/a	Agreement
31	03/23/2006	BY-06-2-31	< MDC		400	BYWW-1593	<400		n/a	Agreement
32	03/29/2006	BY-06-2-32	< MDC		440	BYWW-1754	<440		n/a	Agreement
33	03/29/2006	BY-06-2-33	< MDC		440	BYWW-1755	<440		n/a	Agreement
34	03/27/2006	BY-06-2-34	< MDC		440	BYWW-1679	<440		n/a	Agreement
35	03/29/2006	BY-06-2-35	< MDC		440	BYWW-1752	<440		n/a	Agreement
36	03/29/2006	BY-06-2-36	< MDC		440	BYWW-1756	<440		n/a	Agreement
37	03/28/2006	BY-06-2-37	3270	400	440	BYWW-1680	3602	195	1.10	Agreement
38	03/29/2006	BY-06-2-38	< MDC		440	BYWW-1757	<440		n/a	Agreement
39	03/29/2006	BY-06-2-39	< MDC		440	BYWW-1758	<440		n/a	Agreement
40	03/29/2006	BY-06-2-40	< MDC		440	BYWW-1759	<440		n/a	Agreement
41	03/29/2006	BY-06-2-41	3350	400	440	BYWW-1753	3817	202	1.14	Agreement