

December 17, 2013

Mr. Lionel Rodriguez  
U.S. Nuclear Regulatory Commission  
Region III  
2443 Warrenville Road  
Suite 2010  
Lisle, IL 60532-4351

**SUBJECT: ORISE CONTRACT NO. DE-AC05-06OR23100  
LETTER REPORT FOR ANALYTICAL RESULTS FOR FIVE SWIPE SAMPLES  
FROM THE NORTHERN BIOMEDICAL RESEARCH FACILITY,  
MUSKEGON, MICHIGAN  
[DOCKET NO. 030-34005; LICENSE NO. 21-26687-01] (RFTA NO. 13-001)  
DCN: 5230-LR-01-0**

Dear Mr. Rodriguez:

Oak Ridge Associated Universities (ORAU), under the Oak Ridge Institute for Science and Education (ORISE) contract, received five swipe samples on December 10, 2013 from the Northern Biomedical Research Facility in Norton Shores, Michigan. The samples were analyzed for tritium and carbon-14 according to the NRC Form 303 supplied with the samples. The sample identification numbers are presented in Table 1 and the tritium and carbon-14 results are provided in Table 2. The pertinent procedure references are included with the data tables.

ORAU'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 Forrest Smith at 865.574.9802 with any questions or comments.

Sincerely,



Wade Ivey, Manager  
Laboratory

WPI:km

Enclosures

c: T. Carter, NRC/FSME/DWMEP T-8F5  
S. Nesmith, NRC/FSME/PBPA/TWFN 8A23

Electronic: S. Roberts, ORAU      T. Vitkus, ORAU  
File 5230

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Distribution approval and concurrence:	Initials
Technical Review	DAE
Quality Review	AT
Group Manager Review	WPI

**TABLE 1**

**SAMPLE IDENTIFICATIONS  
AND COLLECTION INFORMATION  
NORTHERN BIOMEDICAL RESEARCH  
MUSKEGON, MICHIGAN**

<b>ORAU/ORISE Sample ID</b>	<b>NRC Sample ID</b>	<b>Collection Date</b>	<b>Collection Time</b>
5230R0001	NBR-13-1-01	12/5/13	11:20
5230R0002	NBR-13-1-02	12/5/13	11:26
5230R0003	NBR-13-1-03	12/5/13	11:35
5230R0004	NBR-13-1-04	12/5/13	11:43
5230R0005	NBR-13-1-05	12/5/13	11:57

**TABLE 2**

**CONCENTRATIONS OF TRITIUM AND CARBON-14  
IN SWIPE SAMPLES  
BY LIQUID SCINTILLATION  
AP2, REVISION 19, AP9, REVISION 5, AND CP4, REVISION 4  
NORTHERN BIOMEDICAL RESEARCH  
MUSKEGON, MICHIGAN**

ORAU/ORISE Sample ID	NRC Sample ID	Radionuclide Concentrations, TPU <sup>s</sup> <sup>a</sup> , and MDCs <sup>b</sup> (dpm/swipe)	
		H-3	C-14
5230R0001	NBR-13-1-01	5.9 ± 4.4 , 7.1	1.9 ± 2.8 , 4.7
5230R0002	NBR-13-1-02	2.6 ± 4.2 , 7.1	-1.0 ± 2.6 , 4.7
5230R0003	NBR-13-1-03	4.1 ± 4.3 , 7.1	2.0 ± 2.8 , 4.7
5230R0004	NBR-13-1-04	4.8 ± 4.3 , 7.1	1.3 ± 2.7 , 4.7
5230R0005	NBR-13-1-05	0.7 ± 4.1 , 7.1	-0.5 ± 2.7 , 4.7

<sup>a</sup>Uncertainties represent the 95% confidence level based on counting statistics.

<sup>b</sup>The MDCs are after the comma.