

Independent Environmental
Assessment and Verification

January 25, 2006

Mr. Jim Kottan
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

**SUBJECT: REPORT FOR ANALYSIS OF CONCRETE SAMPLES FROM THE
YANKEE NUCLEAR POWER STATION, ROWE, MASSACHUSETTS
[INSPECTION NO. 50-029/2005-002] [RFTA NO. 06-001]**

Dear Mr. Kottan:

The Oak Ridge Institute for Science and Education (ORISE) received two concrete samples on December 14, 2005 from the Yankee Nuclear Power Station in Rowe, Massachusetts. The sample identifications and sampling dates are in Table 1. The concrete samples were analyzed by gamma spectroscopy (GS) (Procedure CP1, Revision 15). The concrete samples were also analyzed by liquid scintillation analysis for tritium (H-3) and carbon-14 (C-14) (Procedure AP6, Revision 15; Procedure CP4, Revision 3) and for total radiostrontium (Sr) by gas-flow proportional counting (Procedure AP4, Revision 13; Procedure CP3, Revision 2). The GS results are presented in Table 2. The results for H-3, C-14, and Sr have been combined and are presented in Table 3.

The completion of the analyses and this letter were delayed due to the receipt of rush analysis requests associated with other Nuclear Regulatory Commission projects.

ESSAP's Quality Control (QC) requirements were met for these analyses. The QC files are available for your review upon request.

Mr. Jim Kottan

-2-

January 25, 2006

My contact information is listed below or you may contact Wade Ivey at 865.576.9184 should you have any questions.

Sincerely,



Dale Condra
Laboratory Manager

RDC:WPI:ar

Enclosures

cc: T. McLaughlin, NRC/NMSS/TWFFN 7F27
E. Knox-Davin, NRC/NMSS/TWFFN 8A23
J. Hickman, NRC/DWMEP/TWFFN 7F27
E. Abelquist, ORISE/IEAV
S. Kirk, ORISE/IEAV
W. Adams, ORISE/IEAV
File 1672

Distribution approval and concurrence :	Initials
Technical Management Team Member	SK
Quality Manager	ATP

Voice: 865.241.3242

Fax: 865.241.3248

E-mail: condrad@orau.gov

TABLE 1

**SAMPLE IDENTIFICATIONS
AND COLLECTION DATA
YANKEE NUCLEAR POWER STATION
ROWE, MASSACHUETTS**

ORISE Sample ID	NRC Region I Sample ID	Collection Date	Collection Time
1672M0002	FHI-CB-02-02-ST2	12/13/2005	8:35
1672M0003	FHI-CB-02-06-ST2	12/13/2005	8:35

TABLE 2

**CONCENTRATIONS OF SELECTED
GAMMA EMITTING RADIONUCLIDES
IN CONCRETE SAMPLES
BY GAMMA SPECTROSCOPY CP1, REVISION 15
YANKEE NUCLEAR POWER STATION
ROWE, MASSACHUSETTS**

ORISE Sample ID	NRC Region I Sample ID	Radionuclide Concentrations (pCi/g dry weight) ^a						
		Co-60	Ag-108m	Sb-125	Cs-137	Eu-152	Eu-154	Eu-155
1672M0002	FHI-CB-02-02-ST2	0.01 ± 0.04 ^b	0.00 ^c ± 0.02	0.01 ± 0.06	-0.02 ± 0.04	0.00 ± 0.07	-0.19 ± 0.28	0.02 ± 0.06
1672M0003	FHI-CB-02-06-ST2	0.03 ± 0.04	0.00 ± 0.02	-0.04 ± 0.06	0.02 ± 0.04	-0.01 ± 0.07	0.07 ± 0.16	0.07 ± 0.07

^aThe range of MDCs for the selected radionuclide is 0.04pCi/g to 0.25 pCi/g.

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

^cZero values are due to rounding.

TABLE 3

CONCENTRATIONS OF SELECTED BETA EMITTERS
 IN CONCRETE SAMPLES
 YANKEE NUCLEAR POWER STATION
 ROWE, MASSACHUSETTS

ORISE Sample ID	NRC Region I Sample ID	Radionuclide Concentrations, TPU _s , and MDC _s ^a (pCi/g)		
		H-3 ^b	C-14 ^b	Sr-90 ^c
1672M0002	FHI-CB-02-02-ST2	6.6 ± 1.7 ^d (2.5)	1.63 ± 0.89 (1.5)	0.00 ± 0.12 (0.22)
1672M0003	FHI-CB-02-06-ST2	4.8 ± 1.6 (2.5)	0.79 ± 0.86 (1.4)	0.07 ± 0.12 (0.21)

^aMDCs are in parenthesis.

^bAnalyzed by Procedures AP6, Revision 15 and CP4, Revision 3.

^cAnalyzed by Procedures AP4, Revision 13 and CP3, Revision 2.

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