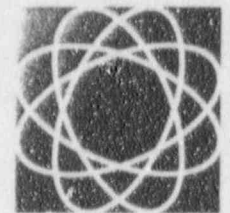


70-903

211 East Ocean Blvd.  
Suite 227  
Long Beach, CA 90802

Long Beach (310) 499-4927  
FAX (310) 499-4943



**Radiation Technical  
SERVICES**  
California Division

September 23, 1993

John F. Byrne <sup>9/27</sup>  
Project Manager, National Park Service  
Appalachian National Scenic Trail  
Harpers Ferry Center  
Harpers Ferry WV 25425



cc  
Nuclear Services  
Austin NRC

Bill Zilly

Dear John:

Regarding the activities at Nuclear Lake in Pawling, New York, and Nuclear Regulatory Commission letter dated June 15, 1993 (Subject: Review Comments on "Underwater Investigation of Nuclear Lake"), the following information is submitted.

Instrumentation used during the lake dive was not intended to quantify radiation levels sub-surface, but was used at the suggestion of Oak Ridge Institute personnel. The sole function of the instrumentation was as a precautionary measurement in the event drums, pipe, etc. were located. Therefore, calibration was to a Cs-137 standard. Copies of calibration certificates are attached to this letter.

During the dam reconstruction phase, the water level in Nuclear Lake was lowered significantly, exposing large portions of the lake bottom. Technicians from Radiation Technical Services, Inc. were able to walk down many areas and remove various materials as listed below. In addition, the technicians located an outfall pipe which may have been used to discharge waste from the UNC facility as described in "Nuclear Lake Dam - A Resource in Question".

Samples were removed from the outfall pipe exit area, in addition to the outfall pipe screen and a 55 gallon drum top. The samples were analyzed by gamma-spectroscopy. A copy of the results are attached.

Inventory of items removed from Nuclear Lake bottom

- 2 - 55 gallon drum tops
- 1 - paint can
- 1 - metal ring (5" diameter)
- 1 - outfall hose screen
- 2 - metal boat anchors
- 40 - tin and / or aluminum drink cans
- 1 - 2' copper rod
- 4 - 3' (1/2" diameter) steel pipe
- 1 - large metal nut
- 12 - miscellaneous metal scraps

9403230182 930923  
PDR ADDCK 07000903  
C PDR

NH10

Mr. Byrne  
September 23, 1993  
page two

All material removed was surveyed using Ludlum Model 3 instruments with 44-2 (NaI(Tl)) detectors and Ludlum Model 2 with Geiger-Mueller Pancake Probe friskers. No detectable activity above background was found.

Surveys on this material were completed by RTS technicians Bairl and Bidwell.

Again, the intent of the dive was to investigate allegations of various items having been thrown into the lake over the operational life of the facility, and to investigate results of the GPR and Magnometry studies. Any other use of the information or conclusions drawn using this information should be performed with caution and bearing in mind the intent and extent of the tasks performed.

If you have any other questions, or if the NRC requests further information, please call me at 1-800-336-3741.

Sincerely,

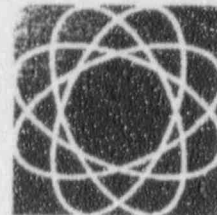
A handwritten signature in dark ink, appearing to read "AJG", followed by a horizontal line extending to the right.

Andrew J. Gross  
President

5215 Essen Lane, Suite 7  
Baton Rouge, LA 70809

(504)769-9972  
(504)769-9843 (fax)

LA Business & Technology Center  
 S. Stadium Drive  
 Louisiana State University  
 Baton Rouge, LA 70803-6100  
 1-800-336-3741  
 Baton Rouge (504) 388-4670  
 FAX (504) 388-3973



**Radiation Technical**  
 SERVICES

X-Ref: USDA\_930616.01-03

Date Rec: 6/16/93

Date Ret: 6/17/93

Client: U.S.D.A.  
 Johnson City Eng. Office  
 Johnson City, NY 13790  
 Attn: Abe Repine

Phone:  
 Fax:

P.O.#: Nuclear Lake Dam  
 Project

Request: (3) Solid Samples

Analysis: Gamma-Spectroscopy

Decay to: N/A

September 23, 1993

Three (3) solid sample(s) weighed, processed, and analyzed by gamma-spectroscopy. Sample(s) analyzed using an Aptic FP-6300 16K Channel Multi-Channel Analyzer. Instrumentation was calibrated and response tested to a mixed gamma standard traceable to the NIST. The results reported below are in picoCuries per gram.

Client Sample I.D.	RTS Sample I.D.	Th-234 (pCi/g)	Cs-137 (pCi/g)
1 outfall pipe exit	RTS01944.LXXXXIII	N/A	0.4250
Drum Tops	RTS01945.LXXXXIII	3.475	0.4507
Outfall Pipe screen*	RTS01946.LXXXXIII	N/A	N/A

\* No gamma-emitting isotopes within acceptable statistical limits.

**QUALITY SCIENCE ⇒ QUALITY SERVICE**

U.S.D.A.

September 23, 1993

Page 2

- " < " indicates activity is less than Minimum Detectable Activity (MDA)
- All other detected peaks are either daughter products of the isotopes listed, or are otherwise naturally occurring.

Detector Calibration:

- Aptec FP-6300 MCA w/ (HP) Ge Detector
- 18 % Nominal Efficiency.
- 16 K Channels / 0 - 2.5 MeV Range
- Calibrated: 9/93 - Energy/Resolution/Efficiency
- NIST Traceable Standard for Cal. and Response Test
- Resolution at 1332 keV - 2.14 KeV FWHM, 4.00 KeV FWTM

Methodology:

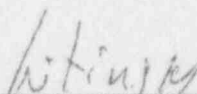
- RTS-003, General Lab Procedures
- Gamma Spectroscopy, Standard Methods
- Marinelli 4 $\pi$  Geometry

Sample Disposition: Return to client for disposal

Performed by:

  
Kevin Vizinat, Sr. Technician

Reviewed by:

  
Lydia Litinsky, Lab Director

Note: RTS Inc., assumes no liability, except for the cost of analysis, for any use of results provided to the client. Results reflect concentrations for this specific sample only. Sampling is performed by the client, using client's procedures and techniques.

**QUALITY SCIENCE  $\Rightarrow$  QUALITY SERVICE**



### CERTIFICATE OF CALIBRATION

**LUDLUM MEASUREMENTS, INC.**  
 POST OFFICE BOX 810 PH. 915-235-6494  
 501 OAK STREET FAX NO. (915) 235-4672  
 SWEETWATER, TEXAS 79556, U. S. A.

CUSTOMER RADIATION TECHNICAL SERVICES ORDER NO. 16019A  
 Mfg. LUDLUM Model 3 Serial No. 93053  
 Mfg. LUDLUM Det. Model 44-2 Serial No. PK09-193  
 Cal. Date 10-12-92 Cal. Due Date 10-12-93 Cal. Interval 1YR METERFACE 202-514  
 Check mark (✓) applies to applicable instr. and/or detector IAW mfg. spec. T 80 °F RH 45 % Alt 707.8 mm Hg  
 F/S Resp. ck  Reset ck.  Audio ck.  Meter Zeroed  Window Operation  Background subtract  
 Alarm Setting ck.  Mechanical ck.  Bat. ck. (Min. Volt) 2.2 VDC Det. Oper. V 750 / at 34 MV  
 Instrument Volt Set 750 V Threshold Dial \_\_\_\_\_ Input Sens 34 mV.  Input Sens Linearity  
 New Instrument Instrument Received:  Within Toler. + -10%  10-20%  Out Toler.  Requiring Repair  
 HV Readout (2 points) Ref./Inst. \_\_\_\_\_ V Ref./Inst. \_\_\_\_\_ V

#### COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M. 549 in which the front of probe faces source.

RANGE MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT METER READING *	INSTRUMENT REC'D "AS FOUND READING"
X <u>100</u>	<u>2000 nR/hr</u>	<u>20</u>	
X <u>"</u>	<u>500 "</u>	<u>5</u>	
X <u>10</u>	<u>300 " 31300cpm</u>	<u>20</u>	
X <u>"</u>	<u>50 "</u>	<u>5</u>	
X <u>1</u>	<u>3130 cpm</u>	<u>20</u>	
X <u>"</u>	<u>783 "</u>	<u>5</u>	
X <u>0.1</u>	<u>313 "</u>	<u>20</u>	
X <u>"</u>	<u>78.3 "</u>	<u>5</u>	
X _____	_____	_____	
X _____	_____	_____	

\*Uncertainty within + -10% C. F. within + -30% X1, X0.1 Range(s) Calibrated Electronically

Digital Readout	Reference Cal. Point	Instrument Meter Reading	"As Found Reading"
/ / / / /		/ / / / /	/ / / / /
Log Scale	/ / / / /	/ / / / /	/ / / / /

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of MIL-STD-45622A and ANSI N323-1978

Cs137 Gamma s/n 1162, G112, M585, 5105, 5604, T879  Neutron Am-241 Be s/n T-904 State of Texas Calibration License No. 1A-1969  
 Alpha s/n \_\_\_\_\_  Beta s/n \_\_\_\_\_  Other \_\_\_\_\_  
 M-500 s/n 54680  Oscilloscope s/n \_\_\_\_\_  Multimeter s/n 46710

Calibrated By: [Signature] Date 10-12-92  
 Reviewed By: [Signature] Date 10-13-92

