Appendix A
Radiation Work Permit

RADIATION WORK PERMIT (RWP)

RWP #: WR-01 Regular X Extended

SECTION I

Contract # GA-00367	Date: 08/10/2000	Time: 0700
Location/Project: Walter Reed		Bldg. 40
Exposure Category: (D&D) Demolition Waste Processing CHAR		

Job Description: Decontamination of rooms. Perform final release survey

Estimated Start Date: 08/10/2000 Estimated End Date: 09/08/2000

SECTION II

Existing Radiological Conditions:

Radiation Survey No. N/A Airborne Survey No. N/A Contamination Survey No. N/A

Existing General Area Radiation Level(s):	Existing General Contamination Levels:	Airborne DAC Level(s):
.005 (mR/hr/γ)		
_____ mrad/hr/corrected β	<10 dpm/100cm² α	<10 % P
_____ mrem/hr/η	<1,000 dpm/100cm² βγ	N/A % H_3
Existing Maximum Radiation Level(s):	**Existing Maximum Contamination Level(s)**	**Hot Particle?**
.007 (mR/hr/γ)		
_____ mrad/hr/corrected β	<10 dpm/100cm² α	Yes (No)
_____ mrem/hr/η	<1,000 dpm/100cm² βγ	

Remarks: Rooms # 6R, R2 R1 & R1 are posted "Contaminated Area". All other rooms are "clean".

SECTION III

Radiological Limits:

Maximum Allowed WB Exposure Rate (η): 5 (mr/hr) or mrem/hr

Corrected : _____ mrad/hr Maximum Extremity Exposure Rate: 5 mr/hr

Maximum Allowed Contamination Level : 100 dpm/100cm² α : 10,000 dpm/100cm² βγ

Maximum Allowed Airborne Concentration Level: 10 % DAC

Remarks: _____

Industrial Hygiene/Safety Concerns: Heat stress, lead based paint. ~70sf loose asbestos floor tiles. Remove by hand. No Aggressive removal Allowed

RADIATION WORK PERMIT (RWP)

RWP #: WR-01 Regular ☒ Extended ☐

SECTION IV

WORKER REQUIREMENTS

CLOTHING:	DOSIMETRY:	INSTRUCTIONS:	RESPIRATORY:
☐ Coveralls	☒ TLD	☒ Contact HP for Line Breaks	☒ FFNP (1)
☐ Lab Coat	☐ Film Badge	☒ Protect Cuts	☐ FFAL
☐ Cloth Hood	☐ SRD	☒ Pre-Job Briefing	☐ SCBA
☒ Paper Coveralls (2)	☒ Standard	☒ Post-Job Briefing	☐ PAPR
☐ Plastic Suit	☐ Elbows	☒ Contact HP Prior to Work In New Areas	☐ Dust Mask
☐ Plastic Booties	☐ Gonad Pack	☐ Modesty Required	☐ Half Face
☒ Rubber Shoe Covers (1)	☐ Hot Cell Entry	☒ Site Specific Instructions	☐ Bubble Hood
☐ Canvas Shoe Covers	☐ Extremity	☒ Equipment Monitor at Job End	
☐ Cotton Gloves	☐ Head Pack	☒ Clean Up Work Area During and After Job	Cartridges:
☒ Rubber Gloves (4)	☐ Special	☒ Eating, Drinking, Smoking, Chewing Prohibited	☒ Particulate (1)
☒ Leather Gloves (1)	☐ Knees	☒ Frisk Upon Exiting Contaminated Area	☐ Vapor
☐ Beta Goggles/Face Shield	☐ Varying Field	☒ Have Prescribed HP Coverage or Stop Work	☐ Combination
☐ Extra	☐ Upper Field	Exit Area Immediately	☐ Other
☐ Other Clothing	☐ Ground Field Alarming	Upon Emergency or Injury.	
	☐ Dosimtery	Notify HP Immediately	
	☐ None		
Stay Time (Heat Stress, Radiaton, Exposure Limits, etc.): 1 hrs.			

Special Instructions: (1) As per HP Supervisor
(1) When working in "contaminated Area"

SECTION V

Health Physics Requirements

1. Job Coverage: Continuous ☐ Intermittent ☒ Start ☒ End of Job ☒
2. Air Sampling: General Area ☐ Breathing Zone ☒ Lapel ☐ AgZ ☐
   Tritium/C-14 ☐ Particulate ☒ Charcoal ☐ LoVol ☒ HiVol ☐
3. Exposure Rate Surveys: Start of Job ☒ Continuous Monitoring ☐ Area Monitoring ☐
   Intermittent Monitoring ☒ End of Job ☒
4. Contamination Surveys: Start of Job ☒ Continuous Monitoring ☐
   Intermittent Monitoring ☒ End of Job ☒
5. Is the ALARA Consideration Complete and Attached? Yes No Why? _____
6. Other: _____

SECTION VI

Personnel Authorized to Perform Work & Acceptance of Responsibility
*My signature verifies that I have read and fully understand the RWP Requirements

Date	Name (Print)	Signature*	SSN	HPS Init	Year Dose to Date (Rem) TEDE	TODE	LDE	SDE WB	SDE EX
8/10/00	Charles O. Russo		428-27-1406		0	0	0	0	0
8/10/00	NANCY R. MOREY		480-72-2115		0	0	0	0	0
8/10/00	David A. Davis		260-25-1007		0	0	0	0	0
8/10/00	Dan Spencer		190544551		0	0	0	0	0
8/10/00	Gary Nason		025361959		0	0	0	0	0
8-21-00	Phil Wagner		569-41-3969		0	0	0	0	0
8-21-00	Chris Warren		568-29-3984		0	0	0	0	0

H	Approvals/Reviews	I	Termination
Technician Generating RWP: Dan Spencer Date/Time: 08/10/00 0700		Date: 9-12-00 Time: 0900	
Industrial Hygiene Approval: Dan Spencer Date/Time: 08/10/00 0700		Health Physics Rep: Dan Spencer 9-12-00	
HP Supervisor Approval: Dan Spencer Date/Time: 08/10/00 0700		Reason: (Job Complete) RWP Revision	
RSO Manager Approval: Dan Spencer Date/Time: 08/10/00 0700		HP Supervisor Review: Dan Spencer 9-12-00	

Appendix B
Waste Profile Sample Report

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Date: 29-Aug-00

WATER REGD

Thomas Dias
New World Technology
1236 Concannon Blvd.
Livermore, CA 94550

Phone: 1-925-443-7967
Fax: 1-925-443-0119

Work Order: 0008178
Project: GA00367

Dear Thomas Dias,

Barringer Laboratories received 1 sample on 08/15/00 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these test results, please feel free to call.

8/29/00

Michael Howard
Radiochemistry Laboratory Manager

8/29/00

J.R. Ritenour
Project Manager

Date: 29-Aug-00

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Sample Receipt Checklist

Client Name	**New World Technology**	Date and Time Received	**15-Aug-00**
Work Order	**0008178**	Received By	**NSW**
Carrier	**FedEx**	Checklist Created By	**NSW**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Coolers and samples screened for radioactivity?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated tests?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	Temp: 1212°
VOA vials have less than pea-sized headspace?	Yes ☐	No ☐	No VOA vials ☑
Was pH acceptable upon receipt?	Yes ☑	No ☐	
Was pH left unadjusted?	Yes ☑	No ☐	Preservative: Lot#:

Comments:

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Client: New World Technology
Project: GA00367
Work Order: 0008178
Date Received: 8/15/00
Temp Received: 1212°C

SAMPLE SUMMARY

Lab Sample ID	Client Sample ID	Tag Number	Collection Date	Matrix	Bottle and Preservation
0008178-01A	WR-01		8/14/00 2:00:00 PM	Solid	1000g gamma jar, unpreserved

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Client: New World Technology
Project: GA00367
Work Order: 0008178

CASE NARRATIVE

All reported values in this report have been rounded to the correct number of significant figures. All calculations have been performed before applying significant figures, therefore, not all calculations may be reproducible with the results printed in this report.

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Date: 29-Aug-

CLIENT SAMPLE REPOR

Client: **New World Technology**
Work Order: **0008178**
Project: **GA00367**

Client Sample ID: **WR-01**
Tag Number:

Lab Sample ID: **0008178-01A**
Date Collected: **08/14/2000**
Matrix: **Solid**

Analyte	CAS#	Method	Result	± 2 sigma	Limit	Qual	Unit	DF	Prepped	Analyzed	Analyst	Bat
Cesium-137, total	10045-97-3	EPA 901.1	150	± 5.7	0.3		pCi/g	1	08/15/2000	08/17/2000	LLC	A894
Strontium-89/90, total	11-10-9	EPA 905.0/SM704	120	± 3.2	2		pCi/g	1	08/15/2000	08/29/2000	MTC	P651

Qualifiers:
ND - Not detected at the reporting limit
B - Analyte detected in method blank
Z - Sample > 10 times blank result
J - Analyte detected below reporting limit
L - Contract/Client reporting limit exceeded
M - Maximum contaminant level exceeded
E - Value above quantitation range
R - RPD outside accepted recovery limits
X - Duplicate sample(s) < 5 times limit
S - Spike outside accepted recovery limits
Y - Unspiked sample > 4 times amount spiked

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Date: 29-Aug-

BATCH QC SUMMARY REPOR

Client: **New World Technology** Batch ID: **A8943** Sample ID: **0008178-01ADUP** Method: **EPA 901.1** Prepped: **8/15/00**
Work Order: **0008178** **Sample Duplicate** Seq No: **172544** Unit: **pCi/g** Analyzed: **8/17/00**
Project: **GA00367** Run ID: **GAMMASPEC_000817A** Matrix: **Solid** Analyst: **LLC**

Analyte	Result ± 2 sigma	Limit	SpikeVal	SpikeRefVal	%REC	LowLimit	HighLimit	DupRefVal ± 2 sigma	RPD/RER	RPDLimit	Qual
Cesium-137, total	150 ± 5.7	0.3						150 ± 5.7	0.00	1.00	

Client: **New World Technology** Batch ID: **A8943** Sample ID: **LCS1-BLI#3644** Method: **EPA 901.1** Prepped:
Work Order: **0008178** **Laboratory Control Spike** Seq No: **172542** Unit: **pCi/g** Analyzed: **8/17/00**
Project: **GA00367** Run ID: **GAMMASPEC_000817A** Matrix: **Soil** Analyst: **LLC**

Analyte	Result ± 2 sigma	Limit	SpikeVal	SpikeRefVal	%REC	LowLimit	HighLimit	DupRefVal ± 2 sigma	RPD/RER	RPDLimit	Qual
Cesium-137, total	62 ± 2.5	0.8	60		103	81	119				

Client: **New World Technology** Batch ID: **P6513** Sample ID: **0007284-01ADUP** Method: **EPA 905.0/SM704** Prepped: **7/31/00**
Work Order: **0008178** **Sample Duplicate** Seq No: **179137** Unit: **pCi/g** Analyzed: **8/29/00**
Project: **GA00367** Run ID: **GFPC_000829A** Matrix: **Soil** Analyst: **MTC**

Analyte	Result ± 2 sigma	Limit	SpikeVal	SpikeRefVal	%REC	LowLimit	HighLimit	DupRefVal ± 2 sigma	RPD/RER	RPDLimit	Qual
Strontium-89/90, total	0.010 ± 0.090	0.2						0.090 ± 0.10	0.42	1.00	

Client: **New World Technology** Batch ID: **P6513** Sample ID: **LCS1-6513** Method: **EPA 905.0/SM704** Prepped:
Work Order: **0008178** **Laboratory Control Spike** Seq No: **179146** Unit: **pCi/L** Analyzed: **8/29/00**
Project: **GA00367** Run ID: **GFPC_000829A** Matrix: **Aqueous** Analyst: **MTC**

Analyte	Result ± 2 sigma	Limit	SpikeVal	SpikeRefVal	%REC	LowLimit	HighLimit	DupRefVal ± 2 sigma	RPD/RER	RPDLimit	Qual
Strontium-89/90, total	40 ± 1.4	1	42		95	82	118				

Client: **New World Technology** Batch ID: **P6513** Sample ID: **MB1-6513** Method: **EPA 905.0/SM704** Prepped:
Work Order: **0008178** **Method Blank** Seq No: **179147** Unit: **pCi/L** Analyzed: **8/29/00**
Project: **GA00367** Run ID: **GFPC_000829A** Matrix: **Aqueous** Analyst: **MTC**

Analyte	Result ± 2 sigma	Limit	SpikeVal	SpikeRefVal	%REC	LowLimit	HighLimit	DupRefVal ± 2 sigma	RPD/RER	RPDLimit	Qual
Strontium-89/90, total	0.27 ± 0.43	0.8									

Qualifiers:

ND - Not detected at the reporting limit
J - Analyte detected below quantitation limit
E - Value above quantitation range
R - RPD outside accepted recovery limits
X - Duplicate sample(s) < 5 times limit
S - Spike recovery outside accepted recovery limits
Y - Unspiked sample > 4 times amount spiked
B - Analyte detected in the associated method blank
Z - Sample > 10 times blank result

0008178

New World Technology

Chain of Custody

Project Name: Walter Reed

Project #: GA00367

P.O.#: 2079

Sampler: Dan Spiuzza

Notes:

Analysis Required

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	# of Containers	γ Spec	Total Sr-90 Strontium								Remarks	Check if RUSH
WR-01	8-14-00	1400		X				1	X	X								γ Spec Sr 90	X

Name of Shipper	Airbill No.	Date	Time	Sample Relinquished By:	Date	Time	Sample Received By:	Date	Time
Fed Ex	840567419788	8-15-00	0600	Dan Spiuzza	8-15-00	0600			

Received by (Lab)	Date	Time	Condition on receipt
[illegible]	8/15/00	0900	Good

Turnaround Time Requested: (please circle): Normal (Rush)

(Rush TAT is subject to Client approval and Laboratory surcharge)

Report Results By: (Date) 8-16-00

Rush results requested by: (please circle): Phone (Fax)

Report Results To: Dan Spiuzza NWT

Address: 448 Commerce Way Livermore, CA 94550

Telephone (414) 848-7024 **Fax:** (925) 443-0119

Type: (please circle) Haz (Rad) Mixed Unknown

Disposal By: (please circle) (Lab) Client Contractor

White Copy – (Original) Retain with Samples Yellow Copy - Customer Pink Copy - Retain for Project Files

Appendix C
Air Sample Data

Air Sample Identification Record

Project/Location: Walter Reed AIR Bldg. 40 Basement

Sample ID:	Date	Location	Initial Count α Results in μCi/ml	Initial Count βγ Results in μCi/ml	Decayed Count α Results in μCi/ml	Decayed Count βγ Results in μCi/ml	# of Hours Decayed	α Half-Life in Minutes	βγ Half-Life in Minutes
AS-001	08/14/2000	General Area During Wire Brushing of Contaminated Surfaces	1.18E-10	1.58E-10	5.50E-11	6.94E-11	1	54	51
AS-002	08/15/2000	General Area During Wire Brushing of Contaminated Surfaces	1.91E-10	2.46E-10	1.16E-10	1.41E-10	0.5	42	37
AS-003	08/16/2000	General Area During Wire Brushing of Contaminated Surfaces	2.36E-10	2.98E-10	1.68E-10	2.20E-10	0.5	61	68
AS-004	08/17/2000	General Area During Wire Brushing of Contaminated Surfaces	4.56E-11	6.59E-11	2.81E-11	4.19E-11	0.5	43	46
AS-005	08/18/2000	General Area During Wire Brushing of Contaminated Surfaces	3.54E-11	5.99E-11	2.22E-11	4.10E-11	0.5	45	55
AS-006	08/22/2000	General Area During Sand Blasting of Contaminated Surfaces	2.79E-11	4.80E-11	1.35E-11	2.20E-11	1	57	53
AS-007	08/23/2000	General Area During Sand Blasting of Contaminated Surfaces	5.80E-11	7.71E-11	3.98E-11	4.81E-11	0.5	55	44
AS-008	08/24/2000	General Area During Sand Blasting of Contaminated Surfaces	2.20E-10	2.97E-10	1.60E-10	2.09E-10	0.5	65	59
AS-009	08/25/2000	General Area During Sand Blasting of Contaminated Surfaces	3.76E-11	7.24E-11	2.55E-11	5.06E-11	0.5	54	58
AS-010	08/28/2000	General Area During Sand Blasting of Contaminated Surfaces	4.37E-12	9.55E-12	3.02E-12	6.93E-12	0.5	56	65
AS-011	08/29/2000	General Area During Sand Blasting of Contaminated Surfaces	2.49E-10	3.08E-10	1.52E-10	1.88E-10	0.5	42	42
AS-012	08/30/2000	General Area During Sand Blasting of Contaminated Surfaces	5.64E-12	1.56E-11	3.87E-12	1.12E-11	0.5	55	63
AS-013	08/31/2000	General Area During Sandblasting of Contaminated Surfaces	8.03E-11	1.66E-10	5.77E-11	1.13E-10	0.5	63	54
AS-014	09/01/2000	General Area During Sandblasting of Contaminated Surfaces	1.46E-11	3.17E-11	1.11E-11	2.49E-11	0.5	78	86
AS-015	09/02/2000	General Area During Sand Blasting of Contaminated Surfaces	3.39E-10	5.17E-10	1.41E-10	2.08E-10	1	48	46
AS-016	09/04/2000	General Area During Sand Blasting of Contaminated Surfaces	2.54E-10	3.03E-10	1.46E-10	1.66E-10	0.5	37	34
AS-017	09/05/2000	General Area During Sand Blasting of Contaminated Surfaces	8.61E-11	1.25E-10	5.89E-11	8.57E-11	0.5	55	56
AS-018	09/06/2000	General Area During Sand Blasting of Contaminated Surfaces	6.10E-11	8.98E-11	3.71E-11	5.16E-11	0.5	42	37
AS-019	09/07/2000	General Area During Sand Blasting of Contaminated Surfaces	6.06E-11	9.83E-11	3.58E-11	5.20E-11	0.5	39	33
AS-020	09/08/2000	General Area During Sand Blasting of Contaminated Surfaces	7.41E-11	9.93E-11	4.15E-11	5.40E-11	0.5	36	34

Appendix D
Bioassay Samples Report

Date:	20-Sep-00
Lab ID:	03-00117-14

NWT ANALYTICAL LABORATORY REPORT

448 Commerce Way, Livermore CA 94550 **Phone: (925) 443-7967**
Fax: (925) 443-0119

Client: Walter Reed Army Institute For Research
Contact: Dan Spicuzza **Title:** Project Manager
Analysis: LSC
Comment: Bioassay Results

Sample #	Sample ID	Count Time (min)	Activity (DPM)	BKG (DPM)	Net Activity (DPM)*	Counting error(+/-)	Comment
1	Spicuzza (Entrance	3	13	14	N D	***	< 13 dpm
2	Russo (Entrance)	3	17	14	N D	***	< 13 dpm
3	Davis (Entrance)	3	12	14	N D	***	< 13 dpm
4	Morey (Entrance)	3	12	14	N D	***	< 13 dpm
5	Nason (Entrance)	3	18	14	N D	***	< 13 dpm
6	Warren (Entrance)	3	11	14	N D	***	< 13 dpm
7	Wagner (Entrance)	3	14	14	N D	***	< 13 dpm
8	Morey (Exit)	3	14	14	N D	***	< 13 dpm
9	Nason (Exit)	3	14	14	N D	***	< 13 dpm
10	Spicuzza (Exit)	3	13	14	N D	***	< 13 dpm
11	Russo (Exit)	3	11	14	N D	***	< 13 dpm
12	Davis (Exit)	3	13	14	N D	***	< 13 dpm
13	Warren (Exit)	3	13	14	N D	***	< 13 dpm
14	Wagner (Exit)	3	13	14	N D	***	< 13 dpm

***ND - No activity detected above natural background**
****(+/-) values are at 95% confidence level**
***** Activity is Less than the limit of detection**

Reviewed By: Daniel M. Spicuzza
Title: NWT Project Manager
Date: 09/20/2000

Appendix E
Instrumentation Calibration And Performance Check Data

Designer and Manufacturer of Scientific and Industrial Instruments

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
POST OFFICE BOX 810 PH. 915-235-5494
501 OAK STREET FAX NO. 915-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER NEW WORLD TECHNOLOGY ORDER NO. 245821/246886

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 133178

Mfg. ______ Model ______ Serial No. ______

Cal. Date 3-Apr-00 Cal Due Date 3-Apr-01 Cal. Interval 1 Year Meterface 202-016

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 71 °F RH 30 % Alt 704.8 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 2.2 VDC
☐ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☑ Calibrated in accordance with LMI SOP 14.9 rev 12/19/89.

Instrument Volt Set 695 V Input Sens. 38 mV Det. Oper. ______ V at ______ mV Threshold Dial Ratio ______ = ______ mV

☐ HV Readout (2 points) Ref./Inst. ______ / ______ V Ref./Inst. ______ / ______ V

COMMENTS:

ORIGINAL

RECEIVED APR 0 6 2000

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
5000	4000 uR/hr	3700	4000
5000	1000 uR/hr	1000	1050
500	400 uR/hr = 72700 cpm	370	400
500	100 uR/hr	100	100
250	200 uR/hr = 36600 cpm	190	200
250	100 uR/hr	100	105
50	7270 cpm	41	40
50	1810 cpm	10	10
25	3660 cpm	20	20
25	910 cpm	5	5

*Uncertainty within ± 10% C.F. within ± 20% 50, 25 **Range(s) Calibrated Electronically**

Digital Readout: REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	Log Scale: REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*

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 ANSI/NCSL Z540-1-1994 and ANSI N323-1978

State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources:

Cs-137 Gamma S/N ☐ 1162 ☐ G112 ☑ M565 ☐ 5105 ☐ T1008 ☐ T879 ☐ E552 ☐ E551 ☐ Neutron Am-241 Be S/N T-304

☐ Alpha S/N ______ ☐ Beta S/N ______ ☐ Other ______

☑ m 500 S/N 54683 ☐ Oscilloscope S/N ______ ☑ Multimeter S/N 70602489

Calibrated By: Duaine Jackson Date 3-Apr-00

Reviewed By: Rhonda Harris Date 4 Apr 00

FORM C22A 12/29/1999

☐ Passed Dielectric (Hi-Pot) and Continuity Test

COPY

New World Technology *Bringing you the Technology of the New World*

Phone: 925-443-7967 Fax: 925-443-0119

Certificate of Calibration

Customer: NWT Order No:

Mfg: Ludlum Model: 2224 Serial No: 143048

Mfg: Ludlum Det. Model: 43-68 / 43-37 Serial No: 147960 | 126793 - 147964 | 128623

Cal. Date: 6-3-00 Due Date 6-3-01 Cal. Interval: 1yr

			Operating		Input V1	β- 7 mV
Det. Bkg:			Voltage:	1,600	Input V2	α- 140 mV
Temp.:	72		Reset:	ok	Threshold1	β- 3.5 mV
Bat. Check:	ok		Audio:	ok	Threshold2	α 120
Threshold:	3.5 mV		Bat. Voltage:		Window 1	β- 50 mV
HV set:	1,600	500	Mechanical:	ok	Window 2	NA
HV reading:	1,600	500	Bkg Subtract:	NA		
Alarm Check:	NA					

Check mark applies to applicable instrument and or detector.

Instrument Received: Within Tolerance (+/- 10%) [X] 10 to 20% [ ] Out of Tolerance [ ] Requires Repair [ ]

Comments:

43-68 - 100cm² 43-37 - 450cm²

Range / Multiplier	Reference Point PPM	Instrument Reading CPM	Probe SN:	α-cpm	β-cpm	eff%
1	100	100	126793	9412	27,898	20/13
	400	400	Bkg	1	155	~~20~~/
10	1,000	1,000	147960	9748	25694	20/12
	4,000	4,000	Bkg	3	206	
100	10,000	10,000				
	40,000	40,000	147964	6195	23,424	13/11
1,000	100,000	100,000	Bkg	3	193	
	400,000	400,000				
Th-230 α	47,575 dpm		128623	7584	25231	16/11
C-14 β⁻	222,000 dpm			17	278	
	NWT Procedure:					

Sources & Instruments:

[ ] Gamma sn: [✓] Beta sn: HH-779 [ ] Other:

[✓] Alpha sn: 564-38-2

[✓] Pulser sn: 81071 [ ] Oscilloscope sn: [ ] Multimeter:

Calibrated by: Hal Hardsworth Date: 6-3-00

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST 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-45662A and ANSI N323-1978.

ORIGINAL

New World Technology *Bringing you the Technology of the New World*

Phone: 925-443-7967 Fax: 925-443-0119

Certificate of Calibration

Customer: NWT Order No:

Mfg: Ludlum Model: 2224 Serial No: 143040

Mfg: Ludlum Det. Model: 43-68, 43-37 Serial No: 147960 | 126793 - 147964 | 128623

Cal. Date: 6-3-00 Due Date 6-3-01 Cal. Interval: 1yr

			Operating		Input V1	α - 140 mV
Det. Bkg:			Voltage:	1600	Input V2	β - 7 mV
Temp.:	72		Reset:	ok	Threshold1	α - 120 mV
Bat. Check:	ok		Audio:	ok	Threshold2	β 3.5 mV
Threshold:	3.5 mV		Bat. Voltage:		Window 1	β - 50 mV
HV set:	500 V	1500	Mechanical:	ok	Window 2	NA
HV reading:	500	1500	Bkg Subtract:	NA		
Alarm Check:	NA	NA				

Check mark applies to applicable instrument and or detector.

Instrument Received: Within Tolerance (+/- 10%) [X] 10 to 20% [ ] Out of Tolerance [ ] Requires Repair [ ]

Comments:

Range Multiplier	Reference Point PPM	Instrument Reading CPM	Probe SN:	Additional Data α - cpm	β - cpm	%eff
1	100	100	147960	9,663	25182	20/11
	400	400	Bkg	2	231	
10	1,000	1,000	126793	8354	27,698	18/12
	4,000	4,000	Bkg			
100	10,000	10,000	147964	5250	21,748	11/10
	40,000	40,000	Bkg	1	243	
1,000	100,000	100,000	128623	5855	23,971	12/11
	400,000	400,000	Bkg	8	242	
α - Th-230	47,575 dpm					
β - C-14	222,000 dpm					
	NWT Procedure:					

Sources & Instruments:

[ ] Gamma sn: [✓] Beta sn: HH-779 [ ] Other:

[✓] Alpha sn: 564-38-2

[✓] Pulser sn: 8107 [ ] Oscilloscope sn: [ ] Multimeter:

Calibrated by: Mel Wadsworth Date: 6-3-00

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST 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-45662A and ANSI N323-1978.

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
724/733-1900 Fax: 724/327-8189

CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION

Customer Name: GTS INSTRUMENT SERVICES
Customer Address: 2045 Rt. 286
Pittsburgh, PA 15239

Customer P.O.#
Work Order #

INSTRUMENT INFORMATION

Instrument Manufacturer Ludlum
Model 2929 Serial Number 95575 (356)
External Probe(s) 43-10-1 Serial # 096688 (235)

Calibration Method ~~99~~ Pulser s/n 101500
~~230~~ Tc s/n S1256
Th s/n 11623

INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response Before Calib.	Instrument Response After Calib.	Comment
1	BETA				All Calibrations Btn. + & - 10%
2	0.1 MIN	40K CPM		4,000 CPM	BETA:
3					Input Sensitivity ≅ 4mV
4	1	40K		40,066	^{99}Tc Efficiency ≅ 13.4%
5					
6	10	40K		400,726	ALPHA:
7					Input Sensitivity ≅ 170mV
8	ALPHA				^{230}Th Efficiency = 23.7%
9	0.1 MIN	40K		4,000	
10					High Voltage = 800 Volts
11	1	40K		40,066	3.24 on dial
12					
13	10	40K		400,743	See attached sheet for additional information
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: [signature] (Signed)
Calibration Date: 03-09-00
Next Calibration Due: 03-09-01

I certify that the above information is correct:

Administrative Coordinator — 03-09-00 Date

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
724/733-1900 Fax 724/327-8189

ELECTRONIC CALIBRATION

Electronic Calibration

1. Test Instrument: SEE
2. Pulse Rate: CAL
3. Amplitude: CALT
4. Time Period: L
5. Time Base
6. Counting Time
7. High Voltage
8. Counts

Background Determination

9. Instrument Model: 2929/4310-1
10. Serial Number: 95575/096688
11. Location: PGH PA
12. Date: 3-9-00
13. Time: 1345
14. Test By: RZM
15. Time Period: 1
16. Time Base: x10
17. Counting Time: 10MIN
18. Purge Time: N/A
19. Type of Radiation: [X] Alpha [ ] Beta
20. Background: 0.6 @ 800 V

Efficiency Determination

21. Source & S/N: Th230 #11623
22. Source DPM: 17400
23. Time Base: x1
24. Time Period: 1
25. Counting Time: 1MIN
26. Average Count Rate $\left(\frac{\text{sum total A}}{10}\right)$ = 416.5 CPM
27. $2\sigma\left(2\sqrt{\text{average count rate}}\right)$ = 128.3
28. Chi Square Number $\left(\frac{\text{sum total C}}{\text{line 26}}\right)$ = 5.1
29. Chi Square Fit (2-22) = [X] Yes

If "NO" Contact Foreman [ ] No

30. Net Count Rate (line 26-line 20) 415.9
31. Efficiency:

$\frac{\text{Net CPM (line 30)}}{\text{Source DPM (line 22)}} \times 100 =$ 23.7%

Trial #	CPM (A)	Difference from Ave. Count (B)	Difference Squared (C)
1	4068	48.5	2352.3
2	4078	38.5	1482.3
3	4110	6.5	42.3
4	4227	110.5	12210.3
5	4117	0.5	0.3
6	4136	19.5	380.3
7	4135	18.5	342.3
8	4129	12.5	156.3
9	4054	62.5	3906.3
10	4111	5.5	30.3

TOTAL
A 4116
B n/
C 2929

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
724/733-1900 Fax 724/327-8189

ELECTRONIC CALIBRATION

Electronic Calibration

1. Test Instrument	SEE	5. Time Base	
2. Pulse Rate	Cal	6. Counting Time	
3. Amplitude	CERT	7. High Voltage	
4. Time Period	↳	8. Counts	

Background Determination

9. Instrument Model	2929/4310-1	15. Time Period	1
10. Serial Number	95575/096688	16. Time Base	x10
11. Location	Forty Fort	17. Counting Time	10MIN
12. Date	3-9-00	18. Purge Time	N/A
13. Time	1400	19. Type of Radiation	[ ] Alpha [X] Beta
14. Test By	RRM	20. Background	57.1 @ 800 V

Efficiency Determination

21. Source & S/N	Tc^{99} S-1256	26. Average Count Rate $\left(\frac{\text{sum total A}}{10}\right)$	= 1969.8 CPM
22. Source DPM	14260		
23. Time Base	x1	27. 2 σ $(2\sqrt{\text{average count rate}})$	= 88.8
24. Time Period	1	28. Chi Square Number $\left(\frac{\text{sum total C}}{\text{line 26}}\right)$	= 2.4
25. Counting Time	1MIN	29. Chi Square Fit (2-22)	= [X] Yes
		If "NO" Contact Foreman	[ ] No
		30. Net Count Rate (line 26-line 20)	1912.7
		31. Efficiency: Net CPM (line 30) / Source DPM (line 22) X 100	= 13.4%

Trial #	CPM (A)	Difference from Ave. Count (B)	Difference Squared (C)
1	1978	8.2	67.2
2	1957	12.8	163.8
3	2000	30.2	912.0
4	1937	32.8	1075.8
5	1977	7.2	51.8
6	1933	36.8	1354.2
7	1967	2.8	7.8
8	1963	6.8	46.2
9	1998	28.2	795.2
10	1988	18.2	331.2

TOTAL
A 1969
B n/a
C 4880

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
724/733-1900 Fax: 724/327-8189

CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION

Customer Name: GTS Instrument Ser.
Customer Address:

Customer P.O.#
Work Order #

INSTRUMENT INFORMATION

Instrument Manufacturer EBERLINE
Model RAP-1 Serial Number 1192 (270)
External Probe(s) ____ Serial # ____

Calibration Method KURZ 505-9A-02-B
S/N MDI 1176K

INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response Before Calib.	Instrument Response After Calib.	Comment
1					±10%
2		2CFM		2CFM	Flow meter reads 60 LPM
3					to bottom of ball
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: James Christopher (Signed)
Calibration Date: 8-3-00
Next Calibration Due: 2-3-01

I certify that the above information is correct:

Administrative Coordinator Date

CERTIFICATE OF BETA STANDARD SOURCE

Radionuclide: Tc-99 Half-life: $(2.14 \pm 0.05) \times 10^5$ y

Customer: SAFETY SPECIALISTS, INC P.O. No.: 7693

Catalog No.: 200-1 Source No.: 201-62-2 Reference Date: OCT 1, 1987

Contained Radioactivity: 0.01019 μCi

Description of Source

a. Capsule type: A
b. Nature of active deposit: EVAPORATED METALLIC SALTS
c. Active diameter: 22.2 mm.
d. Backing: 0.01 " STAINLESS STEEL
e. Cover: 0.9 mg/cm² MYLAR

Radioimpurities

NONE DETECTED

Method of Calibration

The source was assayed using

( ) Beta scintillation spectrometry.
( ) Liquid scintillation counter.
( ) Internal gas flow proportional counter.
(✓) Large area low beta background counter.
( ) Gamma spectrometry, integrating under the _____ Mev. peak(s). The branching ratio(s) used was/were _____ gamma rays per decay.
( ) The source was prepared from a weighed aliquot of solution whose activity in uCi/gram was determined by the method above.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ± 1.9 %
b. Random uncertainty
   1. In assay: ± 1.4 %
   2. In weighing(s): ± _____ %
c. Total Uncertainty: ± 3.3 % at the 99% confidence level.

NBS Traceability

This calibration is implicitly traceable to the National Bureau of Standards.

Notes

1. Nuclear data were taken from "Table of Isotopes", Seventh Edition, edited by C. Michael Lederer et al.
2. IPL participates in an NBS measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NBS certification) of Standard Reference Materials. (As in NRC Regulatory Guide 4.15)

M Hill

Quality Control

ISOTOPE PRODUCTS LABORATORIES
1800 No. Keystone St., Burbank, California 91504
(818) 843-7000

CERTIFICATE OF ALPHA STANDARD SOURCE

Radionuclide: Th-230 Half-life: $(8.0 \pm 0.3) \times 10^4$ y

Customer: SAFETY SPECIALISTS P.O. No.: 8036

Catalog No.: AP-200 Source No.: 210-62-3 Reference Date: JAN 1, 1988

Contained Radioactivity: 0.00453 μCi

Description of Source

a. Capsule type: A-1

b. Nature of active deposit: ELECTRO DEPOSITED + DIFFUSION BONDED

c. Active diameter: 5 mm THORIUM OXIDE

d. Backing: PLATINUM

e. Cover: NONE

RadioImpurities

SEE ATTACHED

Method of Calibration

The source was assayed using

( ) Alpha spectrometry with a surface barrier detector.

(✓) An internal gas flow proportional counter.

( ) Large area low alpha background counter.

( ) Gamma Spectrometry, integrating under the _____ Mev. peak(s). The branching ratio(s) used was/were _____ gamma rays per decay.

( ) The source was prepared from a weight aliquot of solution whose activity in uCi/gram was determined by the method above.

Uncertainty of Measurement

a. Systematic uncertainty of standard/efficiency: ± 2.0 %

b. Random uncertainty

1. In assay: ± 1.3 %
2. In weighing(s): ± _____ %

c. Total Uncertainty: ± 3.3 % at the 99% confidence level.

NBS Traceability

This calibration is implicitly traceable to the National Bureau of Standards.

Notes

1. Nuclear data were taken from "Table of Isotopes", Seventh Edition, edited by C. Michael Lederer et al.
2. IPL participates in an NBS measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NBS certification) of Standard Reference Materials. (As in NRC Regulatory Guide 4.15)

Quality Control

ISOTOPE PRODUCTS LABORATORIES
1800 No. Keystone St., Burbank, California 91504
(818) 843-7000

COPY

New World Technology *Bringing you the Technology of the New World*

Phone: 925-443-7967 **Fax**: 925-443-0119

Certificate of Calibration

Customer: NWT Order No:

Mfg: Ludlum Model: 2224 Serial No: 143048

Mfg: Ludlum Det. Model: 43-68 / 43-37 Serial No: 147960/126793 - 147964/128623

Cal. Date: 6-3-00 Due Date 6-3-01 Cal. Interval: 1yr

			Operating		Input V1	β- 7 mV
Det. Bkg:			Voltage:	1,600	Input V2	α- 140 mV
Temp.:	72		Reset:	ok	Threshold1	β- 3.5 mV
Bat. Check:	ok		Audio:	ok	Threshold2	α 120
Threshold:	3.5 mV		Bat. Voltage:		Window 1	β- 50 mV
HV set:	1,600	500	Mechanical:	ok	Window 2	NA
HV reading:	1,600	500	Bkg Subtract:	NA		
Alarm Check:	NA					

Check mark applies to applicable instrument and or detector.

Instrument Received: Within Tolerance (+/- 10%) [X] 10 to 20% [ ] Out of Tolerance [ ] Requires Repair [ ]

Comments:

43-68 - 100cm² 43-37 - 450cm²

Range Multiplier	Reference Point PPM	Instrument Reading CPM	Additional Data: Probe SN:	α-cpm	β- cpm	eff%
1	100	100	126793	9412	27,898	20/13
	400	400	Bkg	1	155	~~20~~/
10	1,000	1,000	147960	~~9748~~	25694	20/12
	4,000	4,000	Bkg	3	206	
100	10,000	10,000				
	40,000	40,000	147964	6195	23,424	13/11
1,000	100,000	100,000	Bkg	3	193	
	400,000	400,000				
Th-230 α	47,575 dpm		128623	7584	25231	16/11
C-14 β-	222,000 dpm			17	278	
	NWT Procedure:					

Sources & Instruments:

[ ] Gamma sn: [✓] Beta sn: HH-779 [ ] Other:

[✓] Alpha sn: 564-38-2 [ ]

[✓] Pulser sn: 81071 [ ] Oscilloscope sn: [ ] Multimeter:

Calibrated by: Hal Knodsworth Date: 6-3-00

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST 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-45662A and ANSI N323-1978.

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Phone: 925-443-7967 **Fax**: 925-443-0119

Certificate of Calibration

Customer: NWT Order No:

Mfg: Ludlum Model: 2224 Serial No: 143040

Mfg: Ludlum Det. Model: 43-68, 43-37 Serial No: 147960 | 126793 - 147964 | 128623

Cal. Date: 6-3-00 Due Date 6-3-01 Cal. Interval: 1yr

			Operating		Input V1	α - 140 mV
Det. Bkg:			Voltage:	1600	Input V2	β - 7 mV
Temp.:	72		Reset:	ok	Threshold1	α - 120 mV
Bat. Check:	ok		Audio:	ok	Threshold2	β 3.5 mV
Threshold:	3.5 mV		Bat. Voltage:		Window 1	β - 50 mV
HV set:	500 V	1500	Mechanical:	ok	Window 2	NA
HV reading:	500	1500	Bkg Subtract:	NA		
Alarm Check:	NA	NA				

Check mark applies to applicable instrument and or detector.

Instrument Received: Within Tolerance (+/- 10%) [X] 10 to 20% [ ] Out of Tolerance [ ] Requires Repair [ ]

Comments:

Range Multiplier	Reference Point PPM	Instrument Reading CPM	Probe SN:	Additional Data α-cpm	β-cpm	%eff
1	100	100	147960	9,663	25182	20/11
	400	400	Bkg	2	231	
10	1,000	1,000	126793	8354	27,698	18/12
	4,000	4,000	Bkg			
100	10,000	10,000	147964	5250	21,748	11/10
	40,000	40,000	Bkg	1	243	
1,000	100,000	100,000	128623	5855	23,971	12/11
	400,000	400,000	Bkg	8	242	
α - Th-230	47,575 dpm					
β - C-14	222,000 dpm					
	NWT Procedure:					

Sources & Instruments:

[ ] Gamma sn: [✓] Beta sn: HH-779 [ ] Other:

[✓] Alpha sn: 564-38-2

[✓] Pulser sn: 8107 [ ] Oscilloscope sn: [ ] Multimeter:

Calibrated by: Mel Wadsworth Date: 6-3-00

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST 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-45662A and ANSI N323-1978.

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Phone: 925-443-7967 Fax: 925-443-0119

Certificate of Calibration

Customer: New World Technology Company Order No: verbal

Mfg: Ludlum Model: 3 Serial No: 32397

Mfg: Ludlum Det. Model: 44-9 Serial No: PR151143

Cal. Date: August 2, 2000 Due Date August 2, 2001 Cal. Interval: yearly

Check mark applies to applicable instrument and or detector.

[X] Det. Bkg: ~50 cpm [X] Det. Operating Voltage: HV= 900 volts

Temp: 75 Hum: 55 % F/S Resp. Chk: OK Zero Reset Chk: OK Audio Chk: OK

Bat. Chk: OK Bat. Voltage: 3.0 Inst. Voltage set: input 37 mV HV = 900 v

Threshold: 37 mV Input Voltage: >37 mV

HV Readout (2 points): Ref/Inst: 700 / 700 Ref/Inst: 900 / 900

Alarm Setting Chk: NA Window Operation: NA Background Subtract: NA Mechanical Chk: OK

Field Change Status:

Repair Instrument Received: Within Tolerance (+/-10%) [X] 10 to 20% [ ] Out of Tolerance [ ] Required Repair [X]

Comments: Instrument calibrates OK. 7.02 nCi at 0.5 cm from detector face yields 4000 cpm = 26% (4pi) = 52% (2pi) = OK. As received instrument needed HV repair. New HV diode installed, intrument then calibrates OK.

Range Multiplier	Reference Point (ppm)	Instrument Reading (cpm)
	500	500
X0.1	2000	2000
	5000	5000
X1	20,000	20,000
	50,000	50,000
X10	200,000	200,000
	500,000	500,000
X100	1,000,000	1,000,000

Sources & Instruments:

[ ] Gamma sn: —

[ ] Alpha sn: —

[X] Pulser sn: 500/# 4773i

[X] Beta sn: 93TC22-Ø1364 [X] Other: Fluke HV Probe #810

[ ] Oscilloscope sn: —

[X] Multimeter Fluke : # 5090c125

Calibrated by: Kenneth C. Limson, MS, CHP Date: August 2, 2000

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST 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-45662A and ANSI N323-1978.

COPY

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Phone: 925-443-7967 **Fax**: 925-443-0119

Certificate of Calibration

Customer: New World Technology Order No:

Mfg: Ludlum Model: 3 Serial No: 134115

Mfg: Ludlum Det. Model: 44-9 Serial No: PR 151135

Cal. Date: August 04, 2000 Due Date August 04, 2001 Cal. Interval: 1 Year

Check mark applies to applicable instrument and or detector.

[X] Det. Bkg: 50 cpm [X] Det. Operating Voltage: 900 Volts mV

Temp: 70 Hum: 45 % F/S Resp. Chk: OK Zero Reset Chk: OK Audio Chk: OK

Bat. Chk: GOOD Bat. Voltage: 2 X D-Cell Inst. Voltage set: 897 Volts

Threshold: >32 mV Input Voltage: >32 mV

HV Readout (2 points): Ref/Inst: 800 Volts / 897 Volts Ref/Inst: N/A / N/A

Alarm Setting Chk: N/A Window Operation: N/A Background Subtract: N/A Mechanical Chk: OK

Field Change Status:

Repair Instrument Received: Within Tolerance (+/-10%) [X] 10 to 20% [ ] Out of Tolerance [ ] Requires Repair [ ]

Comments:

Range Multiplier	Reference Point	Instrument Reading
0.1	100	100
	500	500
1	1000	1000
	5000	5000
10	10000	10000
	50000	50000
100	100000	100000
	500000	500000
Tc-99	16,983 DPM	3000 CPM ~ 17.6 % 4-PI

Sources & Instruments:

[ ] Gamma sn: N/A [X] Beta sn: 61-127 [X] Other: HV-Probe

[ ] Alpha sn: N/A

[X] Pulser sn: 106407 [ ] Oscilloscope sn: N/A [X] Multimeter: 8021B

Calibrated by: *Shawn Cavalieri* Date: August 04, 2000

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST 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-45662A and ANSI N323-1978.

New World Technology *Bringing you the Technology of the New World*

Phone: 925-443-7967 **Fax**: 925-443-0119

Certificate of Calibration

Customer: New World Technology Order No:

Mfg: Ludlum Model: 2224 Serial No: 146713

Mfg: Ludlum Det. Model: 43-68 Serial No: PR148114

Cal. Date: August 30, 2000 Due Date August 30, 2001 Cal. Interval: 1 Year

Check mark applies to applicable instrument and or detector.

[X] Det. Bkg: 1 cpm Alpha / 139 cpm Beta cpm [X] Det. Operating Voltage: 1100 to 1800 V

Temp: 69 Hum: 40 % F/S Resp. Chk: N/A Zero Reset Chk: OK Audio Chk: OK

Bat. Chk: Good Bat. Voltage: 2 X D Cell Inst. Voltage set: 1600 V

Threshold: See Comments mV Input Voltage: 500 mV

HV Readout (2 points): Ref/Inst: 500 V / 500 V Ref/Inst: 1600 V / 1600 V

Alarm Setting Chk: N/A Window Operation: OK Background Subtract: N/A Mechanical Chk: OK

Field Change Status:

Repair Instrument Received: Within Tolerance (+/-10%) [X] 10 to 20% [ ] Out of Tolerance [ ] Requires Repair [ ]

Comments:
Alpha Threshold Set @ 120 mV, Beta Threshold Set @ 3.5 mV, Beta Window Set @ 50 mV

Range Multiplier	Reference Point: Analog-Digital		Instrument Reading	
1	100 CPM	100 CPM	100 CPM	100 CPM
	400	400	400	400
10	1,000	1,000	1,000	1,000
	4,000	4,000	4,000	4,000
100	10,000	10,000	10,000	10,000
	40,000	40,000	40,000	40,000
1000	100,000	100,000	100,000	100,000
	400,000	400,000	400,000	400,000
C-14	222,000 DPM		22,139 CPM ~ 9.9 % 4 PI	
Th-230	7450 DPM		805 CPM ~ 10.8 % 4 PI	

Sources & Instruments:

[ ] Gamma sn: N/A [X] Beta sn: HH-779 [X] Other: HV Probe

[X] Alpha sn: 11300 [ ]

[X] Pulser sn: 81071 [ ] Oscilloscope sn: N/A [X] Multimeter Fluke 83

Calibrated by: *Shawn Cavalieri* Date: August 30, 2000

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST 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-45662A and ANSI N323-1978.

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOURCE

Radionuclide:	Th-230	Customer:	NEW WORLD TECHNOLOGY
Half Life:	(7.54 ± 0.03) x 10^4 years	P.O.No.:	1367
Catalog No.:	LDS-230	Reference Date:	1 May 98 12:00 PST.
Source No.:	564-33-1	Contained Radioactivity:	3.979 nCi (147.2 Bq)
		Surface Emission rate (in 2π) :	4222 alphas/min

Description of Source

a. Capsule type:	LDS
b. Nature of active deposit:	Th-230 incorporated into an anodized layer
c. Active diameter/volume:	10 cm x 10 cm
d. Backing:	Aluminum
e. Cover:	None

Radioimpurities

None detected

Method of Calibration

This source was assayed using a windowless internal gas flow proportional counter.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	± 3.0%
b. Random uncertainty in assay:	± 1.4%
c. Random uncertainty in weighing(s):	± 0.0%
d. Total uncertainty at the 99% confidence level:	± 3.3%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source

Notes

1. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

QUALITY CONTROL

Sept 98
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 N. KEYSTONE STREET
BURBANK, CALIFORNIA 91504
818·843·7000 FAX 818·843·6168

IPL Ref. No.: 564-33

CERTIFICATE OF CALIBRATION
BETA STANDARD SOURCE

Radionuclide:	Tc-99	Customer:	NEW WORLD TECHNOLOGY
Half Life:	(2.13 ± 0.05) x 10^5 years	P.O.No.:	1367
Catalog No.:	EAB-099	Reference Date:	1 May 98 12:00 PST.
Source No.:	564-13-3	Contained Radioactivity:	14.74 nCi (545.4 Bq)
		Surface Emission rate (in 2π) :	16030 betas/min

Description of Source

a. Capsule type:	LDS
b. Nature of active deposit:	Tc-99 incorporated into an anodized layer
c. Active diameter/volume:	10 cm x 10 cm
d. Backing:	Aluminum
e. Cover:	None

Radioimpurities

None detected

Method of Calibration

This source was assayed using a windowless internal gas flow proportional counter.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	± 3.0%
b. Random uncertainty in assay:	± 1.3%
c. Random uncertainty in weighing(s):	± 0.0%
d. Total uncertainty at the 99% confidence level:	± 3.3%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source

Notes

1. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

QUALITY CONTROL

5 MAY 98
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 N. KEYSTONE STREET
BURBANK, CALIFORNIA 91504
818·843·7000 FAX 818·843·6168

IPL Ref. No.: 564-13

New World Technology
Chi-Squared Test of Reliability Data Sheet

Project/Location:	Walter Reed Army Institute For Research					
Instrument Model:	2929			Instrument Serial No.	95575	
Last Calibration Date:	03/09/2000			Background Count Rate:	66	C_B
Detector Model:	43-10-1			Detector Serial No.:	O96688	
Today's Date:	08/07/2000			Data Collected by:	David Davis	
Source ID: Tc-99	Activity	7830 DPM				
10398/89	CPM	CPM				
Count Number	(Gross) C_G	(Net) C_I		$(C_I - \overline{c})$	$(C_I - \overline{c})^2$	
1	1562	1496		3.2	10.2	
2	1589	1523		30.2	912.04	
3	1579	1513		20.2	408.04	
4	1567	1501		8.2	67.24	
5	1534	1468		-24.8	615.0	
6	1585	1519		26.2	686.4	
7	1515	1449		-43.8	1918.4	
8	1548	1482		-10.8	116.6	
9	1588	1522		29.2	852.6	
10	1521	1455		-37.8	1428.8	
Total	15588	14928		SUM	7015.6	$\Sigma(C_I - c)^2$
Mean Count: $\overline{c}$		1492.8				
Chi Squared Value (C^2):	4.70	3.33 - 16.9				
Calculations Completed by: David Davis					Date:	08/07/2000
Reviewed by: Dan Spicuzza					Date:	08/07/2000

New World Technology
Background Determination Data Sheet

Project/Location:	Walter Reed Army Instutute for Research				
Instrument Model:	2929		Instrument Serial No.	95575	
Last Calibration Date:	03/09/2000				
Detector Model:	43-10-1		Detector Serial No.:	O96688	
Today's Date:	08/07/2000		Data Collected by:	David Davis	
X	Alpha		Beta-Gamma		Other
Remarks:	Background Determination				

Count Number	Count (x)	$(x - \bar{x})$		$(x - \bar{x})^2$
1	0	-0.1		0.01
2	0	-0.1		0.01
3	0	-0.1		0.01
4	0	-0.1		0.01
5	1	0.9		0.81
6	0	-0.1		0.01
7	0	-0.1		0.01
8	0	-0.1		0.01
9	0	-0.1		0.01
10	0	-0.1		0.01
Total	1		SUM	0.9
Mean Count: $\bar{x}$	0.1		Variance:	0.10
Standard Deviation (σ)	0.32			
Background Count Rate:		0.1	CPM + -	0.63 CPM
Calculations Completed by:		Dan Spicuzza		

New World Technology
Background Determination Data Sheet

Project/Location:	Walter Reed Army Instutute for Research				
Instrument Model:	2929		Instrument Serial No.	95575	
Last Calibration Date:	03/09/2000				
Detector Model:	43-10-1		Detector Serial No.:	O96688	
Today's Date:	08/07/2000		Data Collected by:	David Davis	
	Alpha	X	Beta-Gamma		Other
Remarks: Background Determination					

Count Number	Count (x)	$(x - \bar{x})$		$(x - \bar{x})^2$
1	55	-11.5		132.25
2	66	-0.5		0.25
3	59	-7.5		56.25
4	83	16.5		272.25
5	62	-4.5		20.25
6	64	-2.5		6.25
7	62	-4.5		20.25
8	84	17.5		306.25
9	77	10.5		110.25
10	53	-13.5		182.25
Total	665		SUM	1106.5
Mean Count: $\bar{x}$	66.5		Variance:	122.94
Standard Deviation (σ)	8.15			
Background Count Rate:		66.5	CPM + -	16.31 CPM
Calculations Completed by:		Dan Spicuzza		

LUDLUM MODEL 2929
DAILY 10 MINUTE BACKGROUND AND EFFICIENCY

For: August,2000

Instrument ID: 95575

Detector ID: O96688

Sources Used:			Activity:	
Alpha S/N:	Th-230 1037/89	Activity:	12,800	DPM
Beta S/N:	Tc-99 1039/89	Activity:	7,830	DPM

Acceptable Range of Background:				
	0	CPM to	1	CPM α
	50	CPM to	82	CPM βγ

Date	10-Minute Background (CPM)		2-min α Source Counts	Eff. α	2- min βγ Source Counts	Eff. βγ	Initials
	α	βγ					
08/08/2000	0.1	57	1563	12	1532	19	DAD
08/09/2000	0.1	59	1575	12	1553	19	DMS
08/10/2000	0.1	55	1589	12	1562	19	DMS
08/11/2000	0.3	62	1652	13	1640	20	DAD
08/14/2000	0.6	65	1610	13	1616	20	DAD
08/15/2000	0.4	66	1605	13	1546	19	DAD
08/16/2000	0.2	66	1590	12	1572	19	DAD
08/17/2000	0.3	62	1626	13	1543	19	DAD
08/18/2000	0.7	63	1623	13	1630	20	DAD
08/22/2000	0.6	66	1596	12	1649	20	DAD
08/23/2000	0.8	64	1576	12	1599	20	DAD
08/24/2000	0.3	66	1592	12	1630	20	DAD
08/25/2000	0.3	58	1560	12	1557	19	CR
08/28/2000	0.5	66	1632	13	1641	20	DAD
08/29/2000	0.7	67	1678	13	1597	20	DAD
08/30/2000	0.4	64	1625	13	1548	19	DAD
08/31/2000	0.3	63	1559	12	1662	20	DAD
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

LUDLUM MODEL 2929
DAILY 10 MINUTE BACKGROUND AND EFFICIENCY

For:	September, 2000						
Instrument ID:	95575			Detector ID:	O96688		
Sources Used:		Alpha S/N:	Th-230 1037/89		Activity:	12,800	DPM
		Beta S/N:	Tc-99 1039/89		Activity:	7,830	DPM
Acceptable Range of Background:				0	CPM to	1	CPM α
				50	CPM to	82	CPM βγ

Date	10-Minute Background (CPM)		2-min α Source Counts	Eff. α	2- min βγ Source Counts	Eff. βγ	Initials
	α	βγ					
09/01/2000	0.2	66	1655	13	1616	20	DAD
09/02/2000	0.5	66	1683	13	1640	20	DAD
09/04/2000	0.4	65	1596	12	1646	20	DAD
09/05/2000	0.4	62	1600	12	1650	20	DAD
09/06/2000	0.4	72	1643	13	1632	20	DAD
09/07/2000	0.3	64	1643	13	1582	19	DAD
09/08/2000	0.2	65	1650	13	1596	20	DAD
09/09/2000	0.2	63	1689	13	1651	20	DAD
09/10/2000	0.5	68	1657	13	1613	20	DAD

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: Walter Reed Army Institute For Research

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D	SOURCE ACTIVITY (DPM)	BACKGROUND µR/hr	READING µR/hr	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
08/07/2000	19	133178	N	04/03/2001	Cs-137	2,477,520	4	300	N/A	P	DMS
08/08/2000	19	133178	N	04/03/2001	173-6-18	2,477,520	4	320	N/A	P	DMS
08/09/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	DMS
08/10/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	DMS
08/11/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
08/14/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
08/15/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
08/16/2000	19	133178	N	04/03/2001	"	2,477,520	4	310	N/A	P	CR
08/17/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
08/18/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
08/22/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
08/23/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
08/24/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
08/25/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
08/28/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
08/29/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
08/30/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
08/31/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
09/01/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
09/02/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
09/04/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
09/05/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
09/06/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	CR
09/07/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	CR
09/08/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	DAD
09/09/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	DAD
09/10/2000	19	133178	N	04/03/2001	"	2,477,520	4	300	N/A	P	DAD
09/11/2000	19	133178	N	04/03/2001	"	2,477,520	4	320	N/A	P	DAD

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: Walter Reed Army Institute For Research

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D	SOURCE ACTIVITY (DPM)	BACKGROUND CPM	READING CPM	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
08/07/2000	3/44-9	134115/151135	N	08/04/2001	Tc-99	7,830	50	1200	15	P	DMS
08/08/2000	3/44-9	134115/151135	N	08/04/2001	1039/89	7,830	50	1200	15	P	DMS
08/09/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	DMS
08/10/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	DMS
08/11/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/14/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/15/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/16/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/17/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/18/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/22/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/23/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/24/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/25/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/28/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/29/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/30/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
08/31/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
09/01/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
09/02/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
09/04/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
09/05/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
09/06/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
09/07/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	CR
09/08/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	DAD
09/09/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	DAD
09/10/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	DAD
09/11/2000	3/44-9	134115/151135	N	08/04/2001	"	7,830	50	1200	15	P	DAD

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: Walter Reed Army Institute For Research

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D	SOURCE ACTIVITY (DPM)	BACKGROUND CPM	READING CPM	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
08/07/2000	3/44-9	32397/151143	N	08/02/2001	Tc-99	7,830	50	1200	15	P	DMS
08/08/2000	3/44-9	32397/151143	N	08/02/2001	1039/89	7,830	50	1200	15	P	DMS
08/09/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	DMS
08/10/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	DMS
08/11/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/14/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/15/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/16/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/17/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/18/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/22/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/23/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/24/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/25/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/28/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/29/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/30/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
08/31/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
09/01/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
09/02/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
09/04/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
09/05/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
09/06/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
09/07/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	CR
09/08/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	DAD
09/09/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	DAD
09/10/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	DAD
09/11/2000	3/44-9	32397/151143	N	08/02/2001	"	7,830	50	1200	15	P	DAD

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

Project: Walter Reed Army Institute For Research

DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D	SOURCE ACTIVITY (DPM)	BACKGROUND CPM	READING CPM	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
08/07/2000	2224/43-37	143040/128963	N	06/03/2001	Th-230	8,833	4	800	9	P	DMS
08/08/2000	2224/43-37	143040/128963	N	06/03/2001	564-33-1	8,833	4	800	9	P	DMS
08/09/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	5	800	9	P	DMS
08/10/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	5	800	9	P	DMS
08/11/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
08/14/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	3	700	8	P	CR
08/15/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	700	8	P	CR
08/16/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
08/17/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	5	800	9	P	CR
08/18/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
08/22/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	6	700	8	P	CR
08/23/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
08/24/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
08/25/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
08/28/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	5	700	8	P	CR
08/29/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
08/30/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	700	8	P	CR
08/31/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	CR
09/01/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	5	800	9	P	CR
09/02/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	6	800	9	P	CR
09/04/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	700	8	P	CR
09/05/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	8	800	9	P	CR
09/06/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	6	800	9	P	CR
09/07/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	5	800	9	P	CR
09/08/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	5	800	9	P	DAD
09/09/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	800	9	P	DAD
09/10/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	700	8	P	DAD
09/11/2000	2224/43-37	143040/128963	N	06/03/2001	"	8,833	4	700	8	P	DAD

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

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DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D	SOURCE ACTIVITY (DPM)	BACKGROUND	READING	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
08/07/2000	2224/43-37	143040/128623	N	06/03/2001	Tc-99	32,723	1000	4200	10	P	DMS
08/08/2000	2224/43-37	143040/128623	N	06/03/2001	564-13-3	32,723	1000	4200	10	P	DMS
08/09/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	DMS
08/10/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	DMS
08/11/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/14/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/15/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/16/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/17/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/18/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/22/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/23/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/24/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/25/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/28/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/29/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/30/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
08/31/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
09/01/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
09/02/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
09/04/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
09/05/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
09/06/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
09/07/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	CR
09/08/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	DAD
09/09/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	DAD
09/10/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	DAD
09/11/2000	2224/43-37	143040/128623	N	06/03/2001	"	32,723	1000	4200	10	P	DAD

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

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DATE	MODEL/TYPE (Meter/Detector)	S/N (Meter/Detector)	PHYSICAL DAMAGE Y/N	CAL. DUE DATE	SOURCE I.D	SOURCE ACTIVITY (DPM)	BACKGROUND CPM	READING CPM	EFF. %	PASS/ FAIL (P/F)	TECH. INIT.
08/07/2000	2224/43-68	143048/147960	N	06/03/2001	Th-230	8,833	4	800	9	P	DMS
08/08/2000	2224/43-68	143048/147960	N	06/03/2001	564-33-1	8,833	4	800	9	P	DMS
08/09/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	DMS
08/10/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	DMS
08/11/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	4	800	9	P	CR
08/14/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
08/15/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
08/16/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	700	8	P	CR
08/17/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	4	700	8	P	CR
08/18/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
08/22/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
08/23/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	6	800	9	P	CR
08/24/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	700	8	P	CR
08/25/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
08/28/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	3	800	9	P	CR
08/29/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	4	800	9	P	CR
08/30/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
08/31/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	700	8	P	CR
09/01/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	4	700	8	P	CR
09/02/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
09/04/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	6	800	9	P	CR
09/05/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	800	9	P	CR
09/06/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	5	700	8	P	CR
09/07/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	3	800	9	P	CR
09/08/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	4	800	9	P	DAD
09/09/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	3	800	9	P	DAD
09/10/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	6	800	9	P	DAD
09/11/2000	2224/43-68	143048/147960	N	06/03/2001	"	8,833	6	800	9	P	DAD

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08/07/2000	2224/43-68	143048/147960	N	06/03/2001	Tc-99	32,723	200	4000	12	P	DMS
08/08/2000	2224/43-68	143048/147960	N	06/03/2001	564-13-3	32,723	200	4200	12	P	DMS
08/09/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	DMS
08/10/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4100	12	P	DMS
08/11/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/14/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4200	12	P	CR
08/15/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/16/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/17/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4100	12	P	CR
08/18/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/22/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/23/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/24/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4200	12	P	CR
08/25/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/28/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/29/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/30/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/31/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4100	12	P	CR
09/01/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/02/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/04/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/05/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/06/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/07/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/08/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4100	12	P	DAD
09/09/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	DAD
09/10/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	DAD
09/11/2000	2224/43-68	143048/147960	N	06/03/2001	"	32,723	200	4000	12	P	DAD

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08/07/2000	2224/43-68	143040/126793	N	06/03/2001	Th-230	8,833	4	800	9	P	DMS
08/08/2000	2224/43-68	143040/126793	N	06/03/2001	564-33-1	8,833	4	800	9	P	DMS
08/09/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	DMS
08/10/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	DMS
08/11/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
08/14/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
08/15/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	4	800	9	P	CR
08/16/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	CR
08/17/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	4	800	9	P	CR
08/18/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
08/22/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	6	700	8	P	CR
08/23/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	6	800	9	P	CR
08/24/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	CR
08/25/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
08/28/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	4	700	8	P	CR
08/29/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	CR
08/30/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
08/31/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	4	700	8	P	CR
09/01/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	CR
09/02/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
09/04/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	900	10	P	CR
09/05/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
09/06/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	CR
09/07/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	CR
09/08/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	DAD
09/09/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	800	9	P	DAD
09/10/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	DAD
09/11/2000	2224/43-68	143040/126793	N	06/03/2001	"	8,833	5	700	8	P	DAD

DAILY INSTRUMENT PERFORMANCE TEST LOG SHEET

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08/07/2000	2224/43-68	143040/126793	N	06/03/2001	Tc-99	32,723	200	4200	12	P	DMS
08/08/2000	2224/43-68	143040/126793	N	06/03/2001	564-13-3	32,723	200	4200	12	P	DMS
08/09/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4200	12	P	DMS
08/10/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	DMS
08/11/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/14/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/15/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/16/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/17/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/18/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/22/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4100	12	P	CR
08/23/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/24/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/25/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/28/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/29/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4200	12	P	CR
08/30/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
08/31/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/01/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/02/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4200	12	P	CR
09/04/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/05/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4200	12	P	CR
09/06/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/07/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	CR
09/08/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4200	12	P	DAD
09/09/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	DAD
09/10/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	DAD
09/11/2000	2224/43-68	143040/126793	N	06/03/2001	"	32,723	200	4000	12	P	DAD

Appendix F
Room R3 Vent Hole Concrete Sample Report

Date: 22-Sep-00

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Thomas Dias
New World Technology
1236 Concannon Blvd.
Livermore, CA 94550

Phone: 1-925-443-7967
Fax: 1-925-443-0119

Work Order: 0009021
Project: Walter Reed

Dear Thomas Dias,

Barringer Laboratories received 1 sample on 09/05/00 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these test results, please feel free to call.

9/22/00

Michael Howard
Radiochemistry Laboratory Manager

9/22/00

J.R. Ritenour
Project Manager

Date: 22-Sep-00

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Sample Receipt Checklist

Client Name	**New World Technology**	Date and Time Received	**05-Sep-00**
Work Order	**0009021**	Received By	**NSW**
Carrier	**FedEx**	Checklist Created By	**NSW**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Coolers and samples screened for radioactivity?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated tests?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	Temp: 12°C
VOA vials have less than pea-sized headspace?	Yes ☐	No ☐	No VOA vials ☑
Was pH acceptable upon receipt?	Yes ☑	No ☐	
Was pH left unadjusted?	Yes ☑	No ☐	Preservative: Lot#:

Comments:

Date: 22-Sep-00

Barringer Laboratories, Inc.

15000 W 6th Avenue Suite 300 Golden, Colorado 80401-5047 (800) 654-0506 (303) 277-1687 Fax (303) 277-1689

Client: New World Technology
Project: Walter Reed
Work Order: 0009021

CASE NARRATIVE

All reported values in this report have been rounded to the correct number of significant figures. All calculations have been performed before applying significant figures, therefore, not all calculations may be reproducible with the results printed in this report.

Barringer Laboratories, Inc.

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Date: 22-Sep-00

CLIENT SAMPLE REPORT

Client: **New World Technology**
Work Order: **0009021**
Project: **Walter Reed**

Client Sample ID: **WR-R3C**
Tag Number:

Lab Sample ID: **0009021-01A**
Date Collected: **09/01/2000**
Matrix: **Solid**

Analyte	CAS#	Method	Result ± 2 sigma	Limit	Qual	Unit	DF	Prepped	Analyzed	Analyst	Batch
Actinium-228, total	14331-83-0	EPA 901.1	0.81	0.4		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Bismuth-214, total	14733-03-0	EPA 901.1	0.29	0.2		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Cesium-137, total	10045-97-3	EPA 901.1	0.11	0.09		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Cobalt-60, total	10198-40-0	EPA 901.1	1.2	0.07		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Europium-152, total	14683-23-9	EPA 901.1	12	0.3		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Europium-154, total	15585-10-1	EPA 901.1	0.81	0.2		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Lead-212, total	15092-94-1	EPA 901.1	0.72	0.2		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Lead-214, total	15067-28-4	EPA 901.1	0.24	0.2		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Potassium-40, total	13966-00-2	EPA 901.1	2.6	0.3		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Thallium-208, total	14913-50-9	EPA 901.1	0.30	0.09		pCi/g	1	09/06/2000	09/18/2000	LLC	A9852
Strontium-89/90, total	11-10-9	EPA 905.0/SM704	-0.26 ± 1.0	2		pCi/g	1	09/06/2000	09/21/2000	MTC	P6931

Qualifiers:
ND - Not detected at the reporting limit
B - Analyte detected in method blank
Z - Sample > 10 times blank result
J - Analyte detected below reporting limit
L - Contract/Client reporting limit exceeded
M - Maximum contaminant level exceeded
E - Value above quantitation range
R - RPD outside accepted recovery limits
X - Duplicate sample(s) < 5 times limit
S - Spike outside accepted recovery limits
Y - Unspiked sample > 4 times amount spiked

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Date: 22-Sep-00

BATCH QC SUMMARY REPORT

Clilient: **New World Technology**
Work Order: **0009021**
Project: **Walter Reed**

Batch ID: **P6931**

Method Blank

Sample ID: **MB1-6931** Method: **EPA 905.0/SM704** Prepped:
Seq No: **192565** Unit: **pCi/L** Analyzed: **9/21/00**
Run ID: **GFPC_000921C** Matrix: **Aqueous** Analyst: **MTC**

Analyte	Result ± 2 sigma	Limit	SpikeVal	SpikeRefVal	%REC	LowLimit	HighLimit	DupRefVal	± 2 sigma	RPD/RER	RPDLimit	Qual
Stitrontium-89/90, total	0.27 ± 0.52	0.9										

Qualifiers:

ND - Not detected at the reporting limit
J - Analyte detected below quantitation limit
E - Value above quantitation range
R - RPD outside accepted recovery limits
X - Duplicate sample(s) < 5 tlmes limit
S - Spike recovery outside accepted recovery limits
Y - Unspiked sample > 4 times amount spiked
B - Analyte detected in the associated method blank
Z - Sample > 10 times blank result

New World Technology

Chain of Custody

0009021

Project Name: Walter Reed

Project #: 6A00367

Analysis Required

P.O.#: NA

Sampler: Charles Russo

Notes:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	# of Containers	Gamma Spec	Total Uranium								Remarks	Check if RUSH
WR-R3C	9-1-00	1100		X				1	X	X									
										N/A									

Name of Shipper	Airbill No.	Date	Time	Sample Relinquished By	Date	Time	Sample Received By	Date	Time
Fed Ex	844525131348	9-1-00	1300	[signature]	9-1-00	1200	Nicole White	9/5/00	1000

Received by (Lab)	Date	Time	Condition on receipt

Turnaround Time Requested: (please circle): (Normal) Rush

(Rush TAT is subject to Client approval and Laboratory surcharge)

Report Results By: (Date) ____________

Rush results requested by: (please circle): Phone Fax

Report Results To: Dan Spiewak

Address: NWT 448 Commerce Way Livermore, CA 94550

Telephone: (925) 443-7967 **Fax:** (925) 443-0119

Type: (please circle) Haz Rad Mixed (Unknown)

Disposal By: (please circle) (Lab) Client Contractor

White Copy – (Original) Retain with Samples Yellow Copy - Customer Pink Copy - Retain for Project Files