Alcoa Technology

Alcoa Technical Center
100 Technical Drive
Alcoa Center, PA 15069-0001 USA
Tel: 1 724 337 5300

2006 August 28

P-3

Ms. Kathleen Dolce Modes
Senior Health Physicist
Nuclear Materials Safety Branch
Division of Nuclear Materials Security
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406-1415

CERTIFIED MAIL

RE: License No. 37-07653-02
Docket No. 030-06172

Dear Ms. Modes:

This is in reference to your letter dated August 10, 2005 regarding the final decommissioning of the Alcoa Research Laboratory (ARL). In that letter you expressed concern over the adequacy of the surveys performed in 2004 to demonstrate doses from residual contamination from past activities (going back as far as the Manhattan Project) would be less than 25 mrem per year and as low as reasonably achievable. Following receipt of your letter, we performed detailed research into past activities at the ARL. Follow-up surveys were also performed to provide assurance that the ARL meets the criteria for unrestricted release.

Enclosed please find our responses to your specific questions followed by records of follow-up surveys performed in July, 2006. Your questions will appear in bold type. Our responses are in normal type. The attached documentation is not intended to support decommissioning by itself; rather, it should be considered as an addendum to our original request dated October 16, 2003.

I trust you will find our response adequate to continue with final decommissioning of the Alcoa Research Facility and amendment of our license. Should you have questions or require additional information, please contact Jamie Mackay at (724) 337-5401. For technical questions regarding the actual surveys, please contact Glenn Marshall of Philotechnics at (865) 285-3018.

Sincerely,

Jamie K. Mackay
Manager – EHS Resources
Alcoa Technical Center
Alcoa Inc.

Dr. Mohammad A. Zaidi
Executive Vice President
Market Strategy, Technology, & Quality
Alcoa Inc.

JKM/pag
Enclosure

REC'D IN LAT 9/5/2006

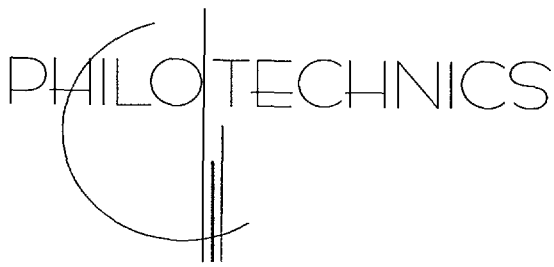
139366
NMSS/RGN1 MATERIALS-002

Alcoa Research Laboratory

600 Freeport Road
New Kensington, PA 15168

Addendum to Final Status Survey Plan and Report

Prepared by



August 2006

Cheryl A. Walker
Project Manager, Philotechnics

Glenn R. Marshall, CHP
Health Physicist, Philotechnics

Response to NRC Questions

1. **Your amendment request should have been signed by a management representative rather than the Radiation Safety Officer. Please submit a letter signed by a management representative indicating that management has reviewed the amendment request and concurs in the statements and representations contained therein. Note also that a management representative should sign for all future correspondence that requests a change in your license.**

   Future correspondence regarding license amendment or termination will be signed by a member of the management team having signature authority for Alcoa.

2. **You are requesting to release for unrestricted use the Alcoa Research Laboratory site located at 600 Freeport Road, New Kensington, Pennsylvania. This site was first authorized to use licensed material in 1958. The site was removed from the license in 1971 and added to the license in 1978. Based on our records, we noted that Alcoa was authorized to use the following at this facility:**

Unsealed Radioactive Material	Foil Sources	Sealed Sources
Tritium	Tritium	Cobalt-60
Strontium-90	Nickel-63	Krypton-85
Any byproduct material with atomic numbers 1-83		Strontium-90
		Cesium-137
		Promethium-147
		Thallium-204
		Amerecium-241

As part of this review, we note an inspection conducted on September 28, 1961 identified Ag-110, Al-26, Co-60, Cs-137, Mn-54, Na-22, Ni-63, P-32, Sc-46, Sr-90, U-238, Zn-65, and H-3 stored at this site. Please provide a listing of the long-lived (half-lives greater than 120 days) radionuclides that were used as part of the unsealed material with atomic numbers 1 through 83 at this site. The historical site assessment should identify all long-lived radionuclides.

A review of historical records indicates the following long-lived (>120 days) radionuclides may have been used in unsealed form prior to 1971: Al-26, Co-60, Cs-137, Fe-55, H-3, Mn-54, Na-22, Ni-63, Sr-90, Tl-204, Zn-65, Cd-109, Ca-45, and Sb-125. Additionally, U-238 was identified in the basement of Building 29 during the 1940s.

3. **Please indicate if any of the sealed sources used at this site had leak test results exceeding 0.005 microcuries.**

   All available leak test records indicate less than 0.005 microcuries.

4. **In your Final Status Survey Plan and Report, you provided copies of the portable gauges leak tests. Please provide the last leak test records for the other sealed sources used at this site.**

   Copies of the last leak test records for each of the sources used at this site are attached. All records indicate less than 0.005 microcuries.

5. **The Final Status Survey Plan and Report included in your letter dated June 21, 2005 indicated that licensed materials were used in the mezzanine level of Building 44. Specifically, radioactive material was used in Room 600 (high level chem. Lab, metallographic prep lab and dark room), Room 604 (Isotope Storage Room), Room 606 (low level chem. Lab), Room 608 (tritium/electronics lab), and Room 614 (counting room). According to our records, radioactive material could have been used in Buildings 29, 44, and 51 at the ARL site. In an inspection record dated December 15, 1958, the inspector noted that in addition to the 5 rooms in Building 44, radioactive materials were being used at the following locations:**

   a. **A 10' x 15' laboratory in Building 29 that housed a gas handling system beneath a canopy-type hood. Waste from tritium experiments was vented from this laboratory.**
   b. **A 20' x 25' laboratory in Building 29 had a gas handling system for tritium experiments.**
   c. **A lathe in the press room in Building 29 was set aside for tool wear studies using radioactive materials (possibly cobalt-60).**
   d. **Gauges were used at the Alcoa Foil Mill. Please explain if the foil mill is located at the ARL.**

   Please ensure that all areas where licensed material was used or stored are properly surveyed following the guidance of NUREG-1757, Volumes 1 and 2.

   Parts a. and b.:
   Current and former employees were contacted in an effort to identify the locations of these systems:

   - Robert Gieger, Radiation Safety Officer at ARL for 38 years; retired from ARL in 1985. Mr. Geiger did not recall any tritium gas handling system in Building 29.

   - Marshall J. Bruno, current Alcoa Technical Center Employee; worked at ARL from 1963 to 1990. Mr. Bruno did not work with tritium gas systems but supplied names of individuals who worked at ARL during the time period (i.e. Thomas Jack)

   - Thomas H. Jack, retired in 1986; worked at ARL in the Radio Chemistry Group beginning 1953. The Radio Chemistry group was formed six to nine months before he started working at ARL. The Radio Chemistry group worked with tritium gas handling systems in the mezzanine area of building 44. He mentioned that he remembered them being on the interior wall of one room, identified as Room 604. He could not recall a tritium gas handling system in building 29.

- Additionally, attempts were made to contact Mr. John E. Lewis, the individual who responded to the Atomic Energy Commission's Compliance Inspection report dated 10/28/1958 in which the tritium gas handling systems were noted to be in building 29. Attempts to contact Mr. Lewis were unsuccessful.

All impacted areas of Building 44 were surveyed for tritium in 2004. Additionally, tritium smears were collected and analyzed during the follow-up survey on July 10, 2006. No tritium above trivial levels was detected. Alcoa's response to the 1958 inspection indicated the tritium work was moved from Building 29 to Building 44 shortly after the inspection was conducted. The experiments were conducted 48 years ago, and nearly four half-lives of tritium have elapsed. The default screening value for tritium is 1.2 E6 dpm/100 cm^2. We conducted a walk through of Building 29. Every room that could have been a laboratory (not clearly an office, utility room, washroom, or conference room) having dimensions anywhere near those stated in your question was surveyed for tritium. With the exception of trace amounts of a few dpm/100 cm^2, none was detected. We are confident there is no residual tritium that could cause a person occupying that building today to receive an annual dose in excess of 25 mrem.

Part c.:
Mr. Ronald H. Saylor, current Alcoa Technical Center Employee; Worked at ARL from 1981 – 1990 as an Electrical Maintenance Supervisor. Though he did not participate or have knowledge of tool wear studies, Mr. Saylor identified where the old press room and the machine shop were located in building 29.

No one who was contacted had any recollection of tool wear studies being performed in Building 29. The 1958 inspection report clearly indicates Co-60 was used, and that is consistent with what would be expected. The Press Room is a 65' x 26' room on the east side of Building 29. It is adjoined by the former machine shop, a 65' x 52' room. The inspection report indicated the tool wear studies were conducted in a containment area. Nearly eight half-lives have lapsed since this activity was conducted. In light of these facts, and to ensure nothing was missed, both rooms were surveyed as Class 3 areas. No areas of elevated activity were found during either the characterization survey or the final status survey. Because results of static counts were all less than 0.1 times the default screening value, and most were less than MDA, surveys for removable contamination were not required. A copy of the survey is attached.

Part d.:
The foil mill is not located at the ARL and is not included in this report.

6. **In your letter dated October 16, 2003, you requested to release the ARL for unrestricted use based on a radiological survey report dated October 1992. In this report, it was noted that uranium-238 was used in the basement of Building 29. In our response dated December 11, 2003, we explained that additional site specific information was needed that you should follow the guidance in NUREG 1757, Volume 1. In your latest letter dated June 21, 2005, there is no mention of the uranium-238 usage. According to a review of the license amendments, License No. 37-07653-02 did not authorize the use of**

uranium-238. Please provide an explanation as to the residual contamination remaining at the site and the potential for U-238 contamination.

Use of uranium-238 occurred during the Manhattan Project and appears to have been completed before licenses were issued by the Atomic Energy Commission. The portion of the Building 29 basement where U-238 work was performed was surveyed on July 11, 2006. Surveys consisted of surface scans for gross alpha and gross beta, static measurements for gross alpha and gross beta, large area wipes, and smears which were counted for gross alpha and gross beta. No areas of elevated radioactivity were noted. All survey results were below the default levels contained in NUREG 1757, Volume 1. A copy of the survey is attached for review.

7. **10 CFR 20.1402 requires, in part, that a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem per year. Appendix B of your Final Status Survey Plan and Report indicates that, for Am-241, the quantile value of TEDE is 1.99E+01 to 2.54E+01 mrem per year. This latter value exceeds the release criterion. Please explain how you meet 10 CFR 20.1402. On page 6 of your Final Status Survey Plan and Report, you report that the Am-241 was contained in special form capsules in three Troxler Model 24091 density gauges. If this was the only use for Am-241, a copy of the leak tests is acceptable and the D and D code is not needed. Please explain.**

   The Troxler gauge leak tests were re-examined. All records present indicated they were not leaking, and copies are included for review. However some records are missing. Troxler laboratories was contacted in an attempt to obtain records of the leak tests they performed upon receipt of the gauges from Alcoa, but they do not maintain records that far back. While we are confident none of the gauges leaked, there is no proof of this. The DandD code was re-run using 200 simulations (twice the default of 100), and the quantile value calculated is 20.7 to 24.7 mrem per year. This is below the criterion of 25 mrem per year.

8. **Your Final Status Survey Plan and Report provided copies of documents dated June 18, 1971 regarding survey results for the posted laboratories in Building 44. These surveys do not include surveys of equipment that was previously used in the posted radioactive material laboratories. Please provide your surveys for drain lines, ductwork, and equipment used in these laboratories. If you intend to re-submit the survey data included in your letter dated June 18, 1971, please be sure to show that these surveys are in compliance with the current decommissioning guidance in NUREG-1757 Volumes 1 and 2.**

   The survey performed in 1971 included smears of equipment, sinks and drains. The Final Status Survey performed in 2004 consisted of 100% scan of all surfaces, with special attention paid to sinks and drains. Static surveys were performed in random locations and wherever elevated scan readings were noted. At the time of that survey, laboratory equipment had been removed with permanent fixtures and utilities remaining, which were included in the 100% scan. Elevated readings were evaluated by static measurement.

Question #2 addressed the radionuclides used in the building. A few radionuclides, such as Mn-54, Fe-55, Cd-109, and Zn-65 may have been difficult to detect with the instrumentation used for the 2004 survey. Therefore follow-up surveys were conducted on July 10, 2006 in the Building 44 mezzanine. Because the surveys performed in 2004 demonstrated no removable radioactive contamination was present, follow-up surveys consisted of 100% scans with a GP-13 probe (100 cm^2 CsI gamma scintillator) and static readings in the same locations as those performed in 2004. Results of those surveys, which are attached, show the residual radioactivity is far below the lowest default screening value of 32,000 dpm/100 cm^2 (Mn-54).

After the survey in 2004, only one area remained that had any elevated reading: Location #23 in Room 600, the high level chemistry Lab. That location consisted of a spot less than 100 cm^2 that read 15,000 dpm with a beta-gamma detector. The area was investigated by gamma spectroscopy, which showed the DCGL for the most restrictive gamma emitter present, Cs-137, was not exceeded. However we later questioned that conclusion because it appeared the DCGL for Sr-90, a pure beta emitter, may have been exceeded. On July 10, 2006, we removed a piece of plastic baseboard molding from the spot where that elevated reading was obtained. The molding was contaminated to approximately 3100 dpm/100 cm2 on both sides. The residual contamination on the structure was determined to be 6840 dpm/100 cm^2, which is less than the DCGL for Sr-90. Further attempts to remove contamination by aggressive scrubbing and scraping were unsuccessful, indicating the contamination is fixed. The fact that the residual contamination was underneath the molding indicates the contaminant in question was in fact Cs-137 as indicated by gamma spectroscopy in 2004.

We are confident that the surveys performed in 1971, 2004, and 2006 clearly show the dose to an average member of the critical group would be much less than 25 mrem per year.

9. **Your Final Status Survey Plan and Report provides the results of your surveys, but does not provide the survey data matched to the survey location. Please provide the raw survey data and map or drawing divided into survey units.**

Telephone discussions between Kathleen Dolce Modes (NRC Region I) and Glenn Marshall (Philotechnics) indicated this question was primarily the result of a misunderstanding of the way in which the survey maps are created. We should have better indicated what was what on the drawings. The drawings included in the Final Status Survey plan and Report were created with AutoCad and are "unfolded" views of each room (i.e., the walls are folded out flat). The drawings were created in that manner to show both vertical and horizontal surfaces with the same level of detail and dimension as the floors.

10. **Please provide the total square footage of each building and the square footage for the areas where radioactive materials were either used or stored. Please complete the following table:**

	Building 29	Building 44	Building 51
Total square feet	77,402	65,080	35,173
Square feet of radioactive material areas	5889	2320	0

For example, in your Final Status Survey Plan and Report, you indicated that there was approximately 2400 square feet of laboratory space used for radioactive materials in Building 44 and that ARL occupied 14,126 acres. However, Attachment G to application dated March 28, 1961 indicated that the radioactive material use and storage area in building 44 was approximately 1600 square feet.

Facility drawings were reviewed to determine the total square footage of each building and the total area in each building that may have been impacted by use of radioactive materials. Those figures are shown in the table above.

11. **Please describe the specific uses (e.g., general office, laboratory, production, machining, etc,) of Buildings 29, 44, and 51.**

    All buildings were used for general offices and laboratory areas for research and pilot-scale development. There is a large boiler in the basement of Building 29 that was used to heat the buildings throughout the ARL. Currently the buildings are not used by Alcoa.

12. **Please describe the surrounding area at the ARL, such as "residential", "industrial", "mixed residential/commercial", etc.**

    Areas surrounding the ARL are residential.

13. **Please confirm that there were no outdoor areas affected by use of licensed materials at the ARL.**

    All work involving radioactive materials was performed inside Buildings 29 and 44, and no residual radioactivity was found other than what has already been described. No outdoor areas were affected by the use of licensed material at the ARL.

NDC SYSTEMS, 730 EAST CYPRESS AVENUE, MONROVIA, CALIFORNIA 91016 (818) 358-1871, TWX 910-585-3480

LEAK TEST CERTIFICATE

Owner: Aluminum Co. of America

Address: Alcoa Center, Pennsylvania

Model/Serial Number: Model 103, S/N 1637

Source Number 6071 LV

Manufacturer Amersham

Isotope Am-241

Strength 150mCi

Model Number AMCP1

Date of Test October 26, 1987

Results* <.0001 microcuries

Dated

October 26, 1987

Approved By:

Dr. J. Bert Fishman

*<.005 microcuries indicates non-leaking source.

KAY-RAY®INC.
INDUSTRIAL PROCESS CONTROL EQUIPMENT
516 West Campus Drive, Arlington Heights, Illinois 60004
Phone: (312)259-5600 Cable Address: KAYRAY Telex 28-2536

LEAK TEST CERTIFICATE

To: Alcoa

Date: 2/20/78

Ref:

KR Job No: 1978

This certifies that the source(s) listed below have been leak tested according to prevailing NRC standards, and radioactive contamination found to be less than .005μCi of Cesium 137.

Please retain this certificate for your files.

CERTIFICATION:

By: Gary Landt

Title: Source Loader

Date: 2/20/78

****

Source Serial No.	Source Holder Manufacturer	Source Holder Model No.	Source Holder Serial No.	Activity (mCi)	Date	By
6717	K-R	7062B	7951	100	2/20/78	G.L

SV-31 10/77

DENSITY AND LEVEL ...

ITES:

NUMBERED POINTS INDICATE AREAS TO BE WIPED FOR LEAK TEST.

ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

CHECK OPERATION OF SHUTTER WHEN LEAK TEST IS PERFORMED.

ER Alcoa Tech Center

AUGE LOCATION Bldg "B"

Alumina & Chemicals Pilot Plant

OURCE HEAD MOD. NO. 5191

AG NO D 4 - 2173

OURCE HEAD SER NO. B 1039

ACTIVITY 500 mCi ✓ CS137, ___ CO60

MEASURING INSTRUMENT Texas Nuclear

2652

LEAK TEST TYPE QT-1S comparative

RESULTS:

SHUTTER OPERATION - ✓ OK

✓ NEGATIVE; ___ POSITIVE; <0.00005 uci

Robert C. Keegan 1979 Feb 7

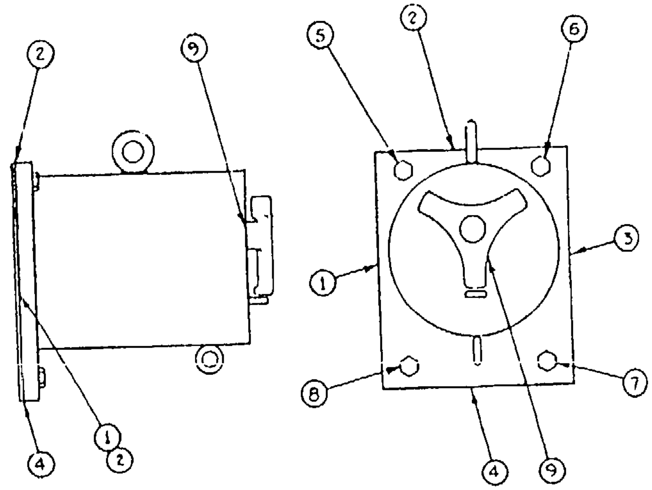
SIGNATURE (SIGN ONLY AFTER RESULTS ARE FILLED IN) DATE

Aluminum Company of America

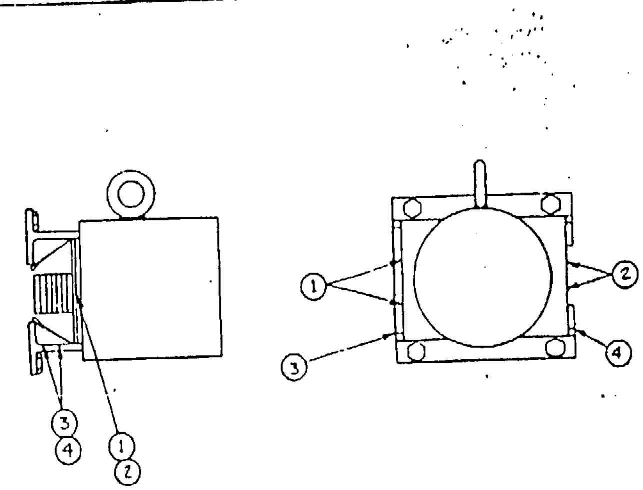
COMPANY NAME

Env. Health Dept ATC

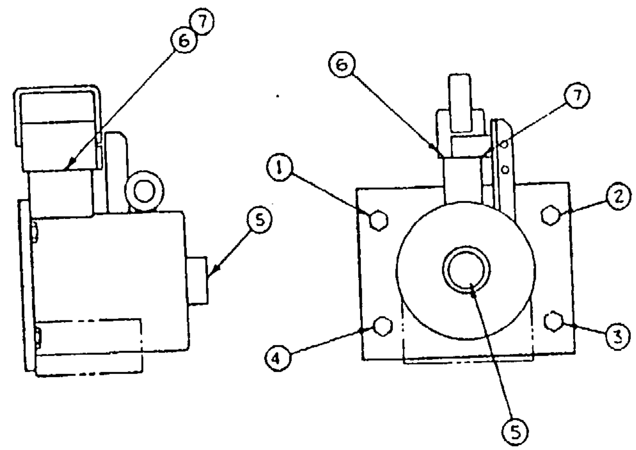
COMPANY ADDRESS



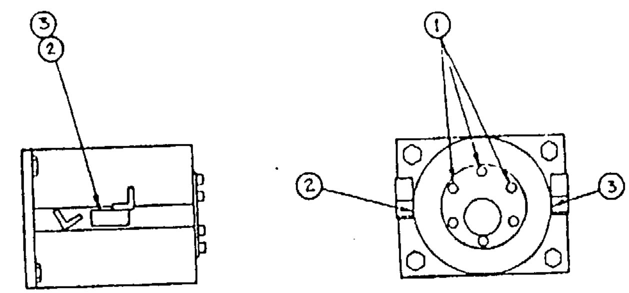
1, 2, 3, 4 - WIPE ALL AROUND GASKET
9 - WIPE ALL AROUND SHUTTER HANDLE
SOURCE HEAD NO. 5174, 5175, 5176



1, 2 - WIPE UP AND DOWN SHUTTER (AND/OR INSIDE EDGE OF HEAD IF EXPOSED).
3, 4 - WIPE ALL ALONG INSIDE EDGE.
SOURCE HEAD NO. 5189, 5190, 5191, 5192, 5193



5 - WIPE ALL AROUND PLUG(EXCEPT ON 5178 OR 5181).
6, 7 - WIPE ALL AROUND SHUTTER.
SOURCE HEAD NO. 5178, 5179, 5180, 5181, 5182, 5183



1 - WITH SHUTTER CLOSED, WIPE ALL AROUND SEAM AND BOLTS TO THE EXTENT THAT THEY ARE ACCESSIBLE.
2, 3 - WIPE ALL AROUND BOTH SHUTTER HANDLES.
SOURCE HEAD NO. 5188

WITH MAILABLE LEAK TEST KIT, MAIL TO:

TEXAS NUCLEAR
9101 HI WAY 183, AUSTIN TEXAS 78766
PHONE (512) 836-0801; TELEX: 77-6413

LEAK TEST CERTIFICATION

This is to certify that the product identified below was tested for radioactive leakage as shown:

Customer: ALCOA MINERALS OF JAMAICA
Alcoa Center, PA 15069

Product: TN 5203 Serial No.: B56

Isotope: Cs-137 Activity: 1000 mCi

Source Serial No.: MB-3989

Test Type: Lab Counting

Result: ____ Positive ✓ Negative: < 8.00 x 10E-5 uCi

Date: 12-89 Signature: Sharon Alexander
Leak Test Coordinator

This certificate should be maintained as a permanent record of the leak test of this product.

TEXAS NUCLEAR CORPORATION
RAMSEY ENGINEERING COMPANY
Post Office Box 9267
Austin, TX 78766
512/836-0801

Automation and Control Technology, Inc
650 Ackerman Road
P.O. Box 82186
Columbus, OH 43202-2186

ACT

RADIOLOGICAL INSPECTION REPORT

TEL: 614-261-2614
FAX: 614-261-2834

This is a report of the inspection made of your radioisotope device and should be retained in a permanent file along with all other records of licensing or registration, receipt, installation, servicing and transfer of your radioactive material. Your regulatory authority may wish to review this information. Check your license or local regulations carefully.

ALCOA TECH. CENTER
100 TECHNICAL DRIVE
ALCOA CENTER, PA 15069

ATTN: JIM SZALANSKI, RSO

PLANT SITE: ALCOA CENTER, PA

REPORT DATE: 08/17/01
LAB TEST DATE: 08/17/01
PERFORMED BY: C. BAYLES

Device Model	Device Serial Number	Source Serial Number	Isotope	Quan. (mCi)	Field Inspection Result				Lab. Test Result
					Source	Shutter	Performed By	Date	
-	-	S-437-A	SR90	300	-	-	C. BAYLES	08/17/01	NEG

POST SHIPMENT – PJ00121

Comments:

NOTES:

1. NanoCurie (nCi) = 0.001 microcurie (µCi) = 1E-6 millicurie (mCi).
2. The entry "Neg" in the source column means less than 0.5 nanocurie of removable contamination.
3. Any amount of detected activity greater than 0.5 nanocurie is expressed in nanocuries.
4. The entry 'OK" in the shutter column means the shutter mechanism and indicators, if any, are operating properly, labeling is in proper condition, and the external radiation levels are consistent with those specified for the device. Discrepancies are detailed in appropriate notes.
5. The presence of 5 nanocuries (0.005 µCi) or more of removable contamination is considered evidence that the source is leaking. Refer to your regulatory requirements regarding leakage or malfunction.

Charles B. Bayles
CORPORATE RADIATION SAFETY OFFICER

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

Leak Test Certificat

Certificate No. 06-22-98-0

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): C-2236, Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer: Fischer Tech
Radionuclide: ^{147}Pm
Source Model: TC-2000
Activity: 0.6mCi
Source Serial No.: D10709S

Installed In:
Type of Device: Beta Scope
Model No.: ATC-038
Manufacturer:
Serial No.:

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 05 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

XXX Analysis indicated less than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 12-22-98 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher

Date: 06-26-98

Twin City International, Inc.
795 Wurlitzer Dr., North Tonawanda, NY 14120
P.O. Box 248, Tonawanda, NY 14151-0248
716/692-8855 Fax 716/692-3265 Telex No. 9-1362

CUSTOMER: ALCOA
7th STREET ROAD RT 780
ALCOA CENTER, PA 15069

DATE: 12/17/91
P.O #: TC910837TC

cc: M Jackson D-SAFTY

Disposal Certification

We certify that the radioactive source(s) listed below have been discarded in the manner prescribed by current laws and regulations covering radioactive waste disposal.

Results: S = Satisfactory U = Unsatisfactory

Source I.D.	Serial #	Date purchased	Activity test results
PM147	D9770s	6/18/86	S
TL205	D7595s	6/18/86	S

(Serial number on Tl-204 source and platen looked like D9778s; this does not match up with any of Twin Cities serial numbers.)

No other certification is to be implied. Therefore, the above source(s) has/have not been released to the customer. Retain this certification in your files for inspection by regulatory agencies.

Kelly Abt

Kelly Abt
Source Inspector

RECEIVED
DEC 19 1991
902

ABB PROCESS AUTOMATION INC.
650 ACKERMAN ROAD
P.O. BOX 02650
COLUMBUS, OHIO 43202
TEL: 614-261-2000 TELEX: 246675
FAX: 614-261-2172

ASEA BROWN BOVERI

This is a report of the inspection made of your radioisotope device and should be retained in a permanent file along with all other records of licensing or registration, receipt, installation, servicing and transfer of your radioactive material. Your regulatory authority may wish to review this information. Check your license or local regulations carefully.

M/S
ALCOA TECH. CENTER

ALCOA CENTER, PA 15069

ATTN: MARK JACKSON/SR IND HYG/RSO
PLANT SITE: ALCOA CENTER, PA

REPORT DATE: 931012

LAB TEST DATE: 931011

PERFORMED BY: E. WYPASEK

Device Model	Device Serial Number	Source Serial Number	Isotope	Quan. (mCi)	Field Inspection Result				Lab Test Result
					Source	Shutter	Performed By	Date	
U-6	581294531	S-437-A	SR90	300	NEG	OK	J. HERCULES	931007	NEG
U-6	984142831	S-504-A	SR90	300	NEG	OK	J. HERCULES	931007	NEG

NOTES

1. NanoCurie (nCi) = .001 microCurie (μCi) = 10^{-6} milliCurie (mCi).
2. The entry "Neg" in the source column means less than 0.5 nanoCurie of removable contamination.
3. Any amount of detected activity greater than 0.5 nanoCurie is expressed in nanoCuries.
4. The entry "OK" in the shutter column means the shutter mechanism and indicators, if any, are operating properly, labeling is in proper condition, and the external radiation levels are consistent with those specified for the device. Discrepancies are detailed in appropriate notes.
5. The presence of 5 nanoCuries (.005 μCi) or more of removable contamination is considered evidence that the source is leaking. Refer to your regulatory requirements regarding leakage or malfunction.

Donald C. Stephens
DONALD C. STEPHENS
CORPORATE RADIATION SAFETY OFFICER

CUSTOMER COPY

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

Leak Test Certificate

Certificate No. 12-03-93-0

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer:
Radionuclide: ^{90}Sr
Source Model:

Activity: 25 uCi
Source Serial No.: 42096

Installed In:
Type of Device:
Model No.:

Manufacturer:
Serial No.:

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 02 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 06-01-94 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 12-03-93

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

Leak Test Certificate

Certificate No. 12-03-93-01

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer:
Radionuclide: ^{204}Tl
Source Model:

Activity: 150 uCi
Source Serial No.: 26354

Installed In:
Type of Device:
Model No.:

Manufacturer:
Serial No.:

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 01 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 06-01-94 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 12-03-93

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

Leak Test Certificate

Certificate No. 12-03-93-03

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer:
Radionuclide: ^{147}Pm
Source Model:

Activity: 900 uCi
Source Serial No.: 17186

Installed In:
Type of Device:
Model No.:

Manufacturer:
Serial No.:

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 03 by GTS INSTRUMENT SERVICES indicated the presence of <0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 06-01-94 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 12-03-93

AZIMUTH TECHNOLOGIES
SIX LANDMARK SQUARE
FOURTH FLOOR
STAMFORD, CT 06901
(203) 359-5706

WIPE TEST FOR:
Alcoa Aluminum

Alcoa Center, PA 15069

REASON FOR TEST: gauge installation

DESCRIPTION OF TEST: gauge S/N SP6406 source holder # 134

STANDARDIZATION INFORMATION:

STANDARD SOURCE	TODAY'S DATE	ACTIVITY OF SOURCE
Sr 90	12/15/89	0.001663 microcurie

WIPE TEST INFORMATION:

BLANK (10 min) COUNTS	STANDARD (10 min) COUNTS	WIPE TEST (10 min) COUNTS
216	18433	211

WIPE TEST DATE	WIPE TEST STATUS	WIPE TEST ACTIVITY
12/13/89	pass	0.0000 microcurie

ADDITIONAL COMMENTS: shutter test OK

MARK, 4-6-90

FOR FAG GAUGE

COPIES OF WIPE TEST & RADIATION SURVEY RESULTS; I DO NOT HAVE ORIGINALS; THEY SHOULD HAVE GONE TO YOU.

SIGNED: Dan J Popovich

DAN J. POPOVICH
RADIATION SAFETY OFFICER

AZIMUTH TECHNOLOGIES
SIX LANDMARK SQUARE
FOURTH FLOOR
STAMFORD, CT 06901
(203) 359-5706

WIPE TEST FOR:
Alcoa Aluminum

Alcoa Center, PA 15069

REASON FOR TEST: incoming package

DESCRIPTION OF TEST: Pm 147 S/N Br471

STANDARDIZATION INFORMATION:

STANDARD SOURCE	TODAY'S DATE	ACTIVITY OF SOURCE
Sr 90	12/15/89	0.001663 microcurie

WIPE TEST INFORMATION:

BLANK (10 min) COUNTS	STANDARD (10 min) COUNTS	WIPE TEST (10 min) COUNTS
216	18433	222

WIPE TEST DATE	WIPE TEST STATUS	WIPE TEST ACTIVITY
12/13/89	pass	0.0000 microcurie

ADDITIONAL COMMENTS:

SIGNED: Dan J Popovich

DAN J. POPOVICH
RADIATION SAFETY OFFICER

AZIMUTH TECHNOLOGIES
SIX LANDMARK SQUARE
FOURTH FLOOR
STAMFORD, CT 06901
(203) 359-5706

WIPE TEST FOR:
Alcoa Aluminum

Alcoa Center, PA 15069

REASON FOR TEST: gauge installation

DESCRIPTION OF TEST: gauge S/N SP6406 - source holder #128

STANDARDIZATION INFORMATION:

STANDARD SOURCE	TODAY'S DATE	ACTIVITY OF SOURCE
Sr 90	12/15/89	0.001663 microcurie

WIPE TEST INFORMATION:

BLANK (10 min) COUNTS	STANDARD (10 min) COUNTS	WIPE TEST (10 min) COUNTS
216	18433	238

WIPE TEST DATE	WIPE TEST STATUS	WIPE TEST ACTIVITY
12/13/89	pass	0.0000 microcurie

ADDITIONAL COMMENTS: shutter test OK

SIGNED: Dan J Popovich

DAN J. POPOVICH
RADIATION SAFETY OFFICER

AZIMUTH TECHNOLOGIES
SIX LANDMARK SQUARE
FOURTH FLOOR
STAMFORD, CT 06901
(203) 359-5706

WIPE TEST FOR:
Alcoa Aluminum

Alcoa Center, PA 15069

REASON FOR TEST: incoming package

DESCRIPTION OF TEST: Pm 147 S/N BR470

STANDARDIZATION INFORMATION:

STANDARD SOURCE	TODAY'S DATE	ACTIVITY OF SOURCE
Sr 90	12/15/89	0.001663 microcurie

WIPE TEST INFORMATION:

BLANK (10 min) COUNTS	STANDARD (10 min) COUNTS	WIPE TEST (10 min) COUNTS
216	18433	249

WIPE TEST DATE	WIPE TEST STATUS	WIPE TEST ACTIVITY
12/13/89	pass	0.0000 microcurie

ADDITIONAL COMMENTS:

SIGNED: Dan J Popovich

DAN J. POPOVICH
RADIATION SAFETY OFFICER

Leak Test Certificate

User ALCOA (LOGAN FERRY)

Gauge location ATC STORAGE

Source head Model No. 5174

Tag No. —

Source head Serial No. 994

Activity 2000 mCi Cs-137

Measuring instrument TN 2650 SP

RESULTS

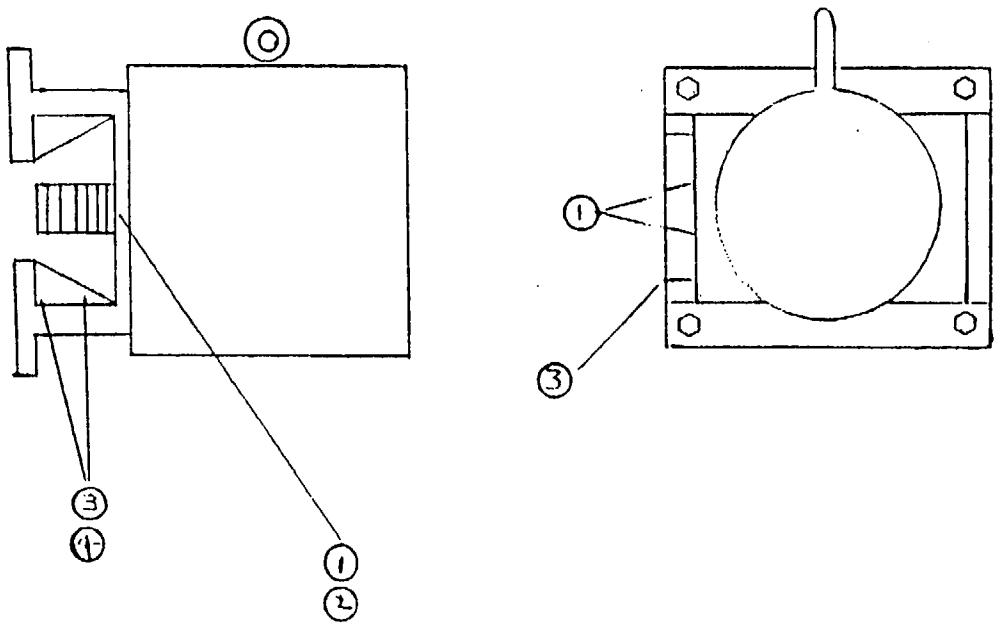
Shutter Operation ✓ OK

_____ Negative _____ Positive

_____ µCi

B.B. GEIGER 1982 JAN 21

Signature Date



1,2 - Wipe up and down shutter (and/or inside of edge of head if exposed).

3,4 - Wipe all along inside edge

KAY-RAY®INC.
INDUSTRIAL PROCESS CONTROL EQUIPMENT
516 West Campus Drive Arlington Heights, Illinois 60004
Phone: (312)259 5600 Cable Address: KAYRAY Telex 28 2536

LEAK TEST CERTIFICATE

To: ALUMINUM CO. OF AMERICA
Alcoa Technical Center
Alcoa Center, Pennsylvania 15069
Attn: Mr. Robert C. Geiger

Date: June 13, 1980
Ref: TC606804
KR Job No: 1978

This certifies that the source(s) listed below have been leak tested according to prevailing NRC standards, and radioactive contamination found to be less than .005μCi Cesium 137.

Please retain this certificate for your files.

CERTIFICATION:

By: B J Taillon

Title: Field Engineering Services

Date: June 13, 1980

****

Leak Test Serial No.	Source Holder Manufacturer	Source Holder Model No.	Source Holder Serial No.	Activity (mCi)	Date	By
11046	Kay-Ray	7062P	7951	100	6-80	D.L.

Trial Return received by Kay-Ray.

SV-31 4-79

Leak Test Certificate

User AEDP

gauge calibration

Gauge location BLDG B

ATC

Source head Model No. HH-8

Tag No. ——

Source head Serial No. 61458

Activity 300mc Cs-137

Measuring instrument TN 2650

RESULTS

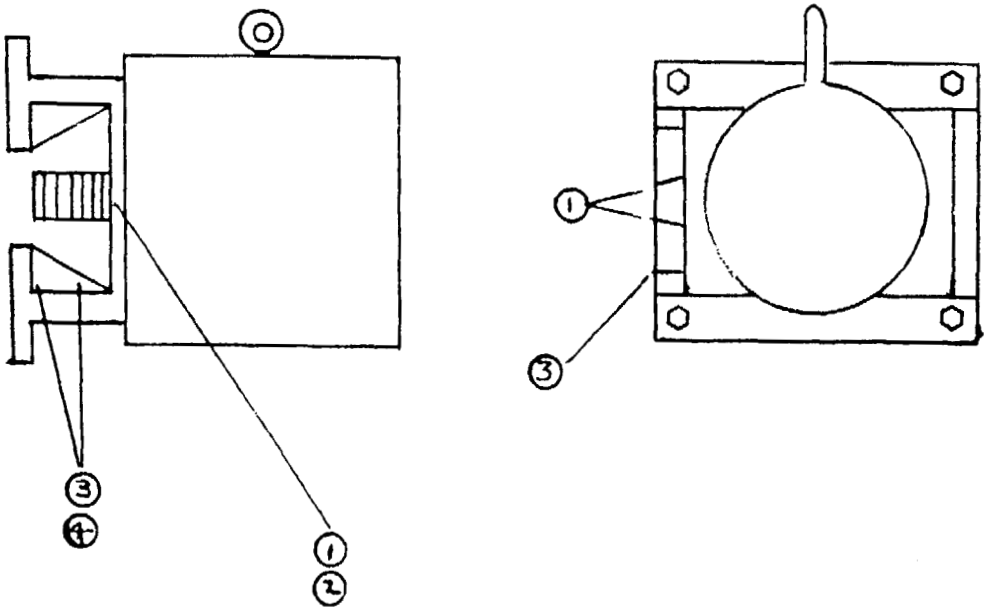
Shutter Operation ↘ OK

_____ Negative _____ Positive

<.0005 µCi

Robert C. Seagren 1978 Oct 18

Signature Date



1,2 - Wipe up and down shutter (and/or inside of edge of head if exposed).

3,4 - Wipe all along inside edge

Leak Test Certificate

User ATC

Gauge location Storage Rhyp Chem Bldg "C"

Source head Model No. ED6

Tag No. SN 65211

Source head Serial No. 65211

Activity 100 mCi Cs-137

Measuring instrument TN 2650 Sp SN 1042

RESULTS

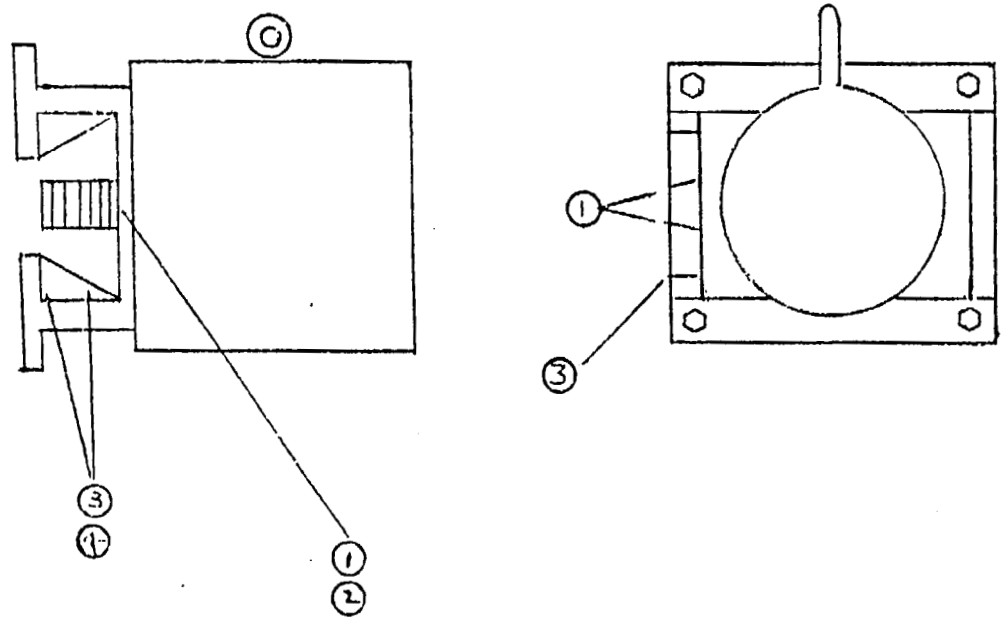
Shutter Operation ✓ OK

X Negative ____ Positive

<0.005 µCi

D. Degan
Signature

1980 Jun 24
Date



1,2 - Wipe up and down shutter (and/or inside of edge of head if exposed).

3,4 - Wipe all along inside edge

2 **OHMART RADIOACTIVE SOURCE LEAK TEST SERVICE**
The Ohmart Corporation, 4241 Allendorf Dr., Cincinnati 9, Ohio

Activity: 2.005 uc Test by: AE Date: 5-25-78

(new) Source: OK RE-WIPE REQUIRED DEFECTIVE

Alcoa Technical Center — Wa Ha. 4
Alcoa Center, Pa. 15069 — 5-18-78
ATTN: R.C. Geiger
SO# 49824 S/N C5711 ED-C
CS-137 100 MC

Can 4

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

Leak Test Certificate

Certificate No. 12-10-98-04

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): C-0123, Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer: NDC Systems
Radionuclide: 241 Am
Source Model: 103
Activity: 150mCi
Source Serial No.: 1637

Installed In:
Type of Device: Density Gauge
Model No.: ATC-036
Manufacturer:
Serial No.: AMCP1

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 04 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 06-10-99 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 12-24-98

Trex II Philotechnics, Ltd.

600 State Street
Clairton, PA 15025
Phone: (412) 233-1908
Fax: (412) 233-2213

031302-01 **Leak Test Certificate**

Alcoa Technology
Alcoa Technical Center
100 Technical Drive
Alcoa Center PA 15069-00

Contact: Laura Rosato
Phone: (724) 337-2025
Fax: (724) 337-1854
NRC License Number:
State License Number:

Device Serial Number: K1297
Device Model: G1533A-IQ
Device Manufacturer: Hewlett Packard

Source Serial Number: K1297
Source Model: G1533A-IQ
Source Manufacturer: Hewlett Packard

Type: Gas Chromatography **Isotope(s):** Ni-63 **Activity (mCi):**

Device Location: Return To Vendor **Performed by:** Chris Getty

Specimen Number: AL031202-1 **Date Performed:** 3/12/02 **Device Sticker:** ☐

Laboratory Use Only

Analyzed by:	James D. Alderson
Date Analyzed:	3/13/02
MDA (uCi):	4.64E-06
Detected Activity (uCi):	-1.56E-06
Instrument Type:	Gas Proportional Counter
Certificate Number:	031302-01

In the event that the analysis of this leak test specimen reveals the presence of activities greater than 0.005 uCi Affirex, Ltd. will notify the licensee and the appropriate regulatory agency.

James D. Alderson

Next Leak Test Due 9/12/02

Radiation Survey Philotechnics, Ltd.

600 State Street
Clairton, PA 15025
Phone: (412) 233-1908
Fax: (412) 233-2213

Alcoa Technology
Alcoa Technical Center
100 Technical Drive
Alcoa Center PA 15069-00

Contact: Laura Rosato
Phone: (724) 337-2025
Fax: (724) 337-1854
NRC License Number:
State License Number:

Device Serial Number: K1297
Device Model: G1533A-IQ
Device Manufacturer: Hewlett Packard

Source Serial Number: K1297
Source Model: G1533A-IQ
Source Manufacturer: Hewlett Packard

Type: Gas Chromatography **Isotope(s):** Ni-63 **Activity (mCi):**

Device Location: Return To Vendor **Surveyed by:** Chris Getty

Recommendations: **Date of Survey:** 3/12/02

None

Survey Data

Survey Meter

Serial Number:	B369Z
Manufacturer:	Bicron
Model:	Micro Rem
Calibration Date:	11/8/02

Survey Data

All of the data collected and displayed below are reported in mR/hr.

Contact:	0.005
30 cm:	0.005
1 meter:	0.005
Postings:	Not Applicable
Shutter Operability and Indicator Light:	Not Applicable

Chris Getty

Trex II Philotechnics, Ltd.

600 State Street
Clairton, PA 15025
Phone: (412) 233-1908
Fax: (412) 233-2213

031302-01

Leak Test Certificate

Alcoa Technology
Alcoa Technical Center
100 Technical Drive
Alcoa Center PA 15069-00

Contact: Laura Rosato
Phone: (724) 337-2025
Fax: (724) 337-1854
NRC License Number:
State License Number:

Device Serial Number: K1297
Device Model: G1533A-IQ
Device Manufacturer: Hewlett Packard

Source Serial Number: K1297
Source Model: G1533A-IQ
Source Manufacturer: Hewlett Packard

Type: Gas Chromatography **Isotope(s):** Ni-63 **Activity (mCi):**

Device Location: Return To Vendor **Performed by:** Chris Getty

Specimen Number: AL031202-1 **Date Performed:** 3/12/02 **Device Sticker:** ☐

Laboratory Use Only

Analyzed by:	James D. Alderson
Date Analyzed:	3/13/02
MDA (uCi):	4.64E-06
Detected Activity (uCi):	-1.56E-06
Instrument Type:	Gas Proportional Counter
Certificate Number:	031302-01

In the event that the analysis of this leak test specimen reveals the presence of activities greater than 0.005 uCi Afftrex, Ltd. will notify the licensee and the appropriate regulatory agency.

James D. Alderson

Next Leak Test Due 9/12/02

Radiation Survey Philotechnics, Ltd.

600 State Street
Clairton, PA 15025
Phone: (412) 233-1908
Fax: (412) 233-2213

Alcoa Technology
Alcoa Technical Center
100 Technical Drive
Alcoa Center PA 15069-00

Contact: Laura Rosato
Phone: (724) 337-2025
Fax: (724) 337-1854
NRC License Number:
State License Number:

Device Serial Number: K1297
Device Model: G1533A-IQ
Device Manufacturer: Hewlett Packard

Source Serial Number: K1297
Source Model: G1533A-IQ
Source Manufacturer: Hewlett Packard

Type: Gas Chromatography **Isotope(s):** Ni-63 **Activity (mCi):**

Device Location: Return To Vendor **Surveyed by:** Chris Getty

Recommendations: **Date of Survey:** 3/12/02

None

Survey Data

Survey Meter

Serial Number:	B369Z
Manufacturer:	Bicron
Model:	Micro Rem
Calibration Date:	11/8/02

Survey Data

All of the data collected and displayed below are reported in mR/hr.

Contact:	0.005
30 cm:	0.005
1 meter:	0.005
Postings:	Not Applicable
Shutter Operability and Indicator Light:	Not Applicable

Chris Getty

LEAK TEST CERTIFICATION

This is to certify that the product identified below was tested for radioactive leakage as shown:

Customer: ALCOA MINERALS OF JAMAICA
Alcoa Center, PA 15069

Product: TN 5204 Serial No.: B106

Isotope: Cs-137 Activity: 4000 mCi

Source Serial No.: MB-027

Test Type: Lab Counting

Result: ____ Positive ✓ Negative: < 8.0 X 10E-5 uCi

Date: 12-89 Signature: Sharon Alexander
Leak Test Coordinator

This certificate should be maintained as a permanent record of the leak test of this product.

TEXAS NUCLEAR CORPORATION
RAMSEY ENGINEERING COMPANY
Post Office Box 9267
Austin, TX 78766
512/836-0801

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

EHL
Bill Kratsch
Mike Easley

2045 Route 286
Pittsburgh, PA 15239-2839
(412) 733-1900 Fax: (412) 327-8189

Leak Test Information

^{63}Ni	15mCi	243
Source	Quantity	Unit

This source was leak tested on the date indicated below and analysis indicated less than 0.005 microcuries of removeable contamination.

10-24-96	10-24-96-03	04-24-97
Leak Test Date	Leak Test Certificate No.	Leak Test Due Date

COMPANY DATA

ompany Name: Aluminum Company of America
ddress (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
ttention:

Source Location (company name, address, contact): C-2216, Same
Telephone:

SOURCE DESCRIPTION

ource Manufacturer: Perkin Elmer
adionuclide: ^{63}Ni
ource Model: 204

Activity: 15mCi
Source Serial No.: 243

nstalled In:
ype of Device: Analytical G.C. -E.C.D.
lodel No.: ATC-27

Manufacturer:
Serial No.: Sigma 2000

SOURCE CERTIFICATION

his is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND ADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

nalysis of the leak test specimen No. 03 by GTS INSTRUMENT SERVICES indicated the resence of < 0.005uCi microcurie of Gross activity on Smear.

ursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 04-24-97 or within any other such time required by the governing regulatory agency.

his Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 10-31-96

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
(412) 733-1900 Fax: (412) 327-8189

Leak Test Information

^{63}Ni	15mCi	1645
Source	Quantity	Unit

This source was leak tested on the date indicated below and analysis indicated less than 0.005 microcuries of removeable contamination.

10-24-96	10-24-96-04	04-24-97
Leak Test Date	Leak Test Certificate No.	Leak Test Due Date

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): C-2214, Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer: Perkin Elmer
Radionuclide: ^{63}Ni
Source Model: 6000204
Activity: 15mCi
Source Serial No.: 1645

Installed In:
Type of Device: Analytical G.C.-E.C.D.
Model No.: ATC-34
Manufacturer:
Serial No.: 8500

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 04 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 04-24-97 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 10-31-96

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

Leak Test Certificate

Certificate No. 12-03-93-03

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer:
Radionuclide: ^{147}Pm
Source Model:

Activity: 900 uCi
Source Serial No.: 17186

Installed In:
Type of Device:
Model No.:

Manufacturer:
Serial No.:

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 03 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 06-01-94 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 12-03-93

KAY-RAY®INC.
INDUSTRIAL PROCESS CONTROL EQUIPMENT
516 West Campus Drive, Arlington Heights, Illinois 60004
Phone: (312)259-5600 Cable Address: KAYRAY Telex 28 2536

LEAK TEST CERTIFICATE

To: ALUMINUM CO. OF AMERICA
Alcoa Technical Center
Alcoa Center, Pennsylvania 15069
Attn: Mr. Robert C. Geiger

Date: June 13, 1980
Ref:
KR Job No: 1761

This certifies that the source(s) listed below have been leak tested according to prevailing NRC standards, and radioactive contamination found to be less than .005μCi Cesium 137.

Please retain this certificate for your files.

CERTIFICATION:

By: B J Taillon

Title: Field Engineering Services

Date: June 13, 1980

****

Leak Test Serial No.	Source Holder Manufacturer	Source Holder Model No.	Source Holder Serial No.	Activity (mCi)	Date	By
6303	Kay-Ray	7062P	7274	100	5-80	R.C.G.

SV-31 4-79

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

Leak Test Information

^{147}Pm	0.6mCi	D10709S
Source	Quantity	Unit

This source was leak tested on the date indicated below and analysis indicated less than 0.005 microcuries of removeable contamination.

06-22-98	06-22-98-05	12-22-98
Leak Test Date	Leak Test Certificate No.	Leak Test Due Date

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

Leak Test Certificate

Certificate No. 04-27-01-02

COMPANY DATA

Company Name: Alcoa
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention: Mike McGarvey

Source Location (company name, address, contact): C-0142, Same
Telephone: (724) 337-2761

SOURCE DESCRIPTION

Source Manufacturer: Industrial Nuclear US
Radionuclide: ^{90}Sr
Source Model:
Activity: 300mCi
Source Serial No.: S-347-1A

Installed In:
Type of Device: Measure can sheet thickness
Model No.: ATC-040
Manufacturer:
Serial No.:

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 02 by GTS INSTRUMENT SERVICES indicated the presence of <0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 10-26-01 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

BY: Kurt M. Myers

Date: 04-27-01

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

2045 Route 286
Pittsburgh, PA 15239-2839
(412) 733-1900 Fax: (412) 327-8189

Leak Test Information

^{90}Sr	300mCi	
Source	Quantity	Unit

This source was leak tested on the date indicated below and analysis indicated less than 0.005 microcuries of removeable contamination.

10-24-96	10-24-96-08	04-24-97
Leak Test Date	Leak Test Certificate No.	Leak Test Due Date

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): C-0142, Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer: Ind. Nuclear U.S.
Radionuclide: ^{90}Sr
Activity: 300mCi
Source Model:
Source Serial No.:

Installed In:
Type of Device: Measure Can Sheet Thickness
Manufacturer:
Model No.: ATC-40
Serial No.: INC NOC U-2

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 08 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 04-24-97 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 10-31-96

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

Leak Test Certificate

Certificate No. 12-10-98-01

COMPANY DATA

Company Name: Aluminum Company of America
Address (for issue of certificate): 100 Technical Drive, Alcoa Center, PA 15069
Attention:

Source Location (company name, address, contact): C-3214, Same
Telephone:

SOURCE DESCRIPTION

Source Manufacturer: Hewlett Packard
Radionuclide: ^{63}Ni
Source Model: 1880360520
Activity: 15mCi
Source Serial No.: C-0715

Installed In:
Type of Device: Analytical G.C.-E.C.D.
Model No.: ATC-003
Manufacturer:
Serial No.: 5830A

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT"

Analysis of the leak test specimen No. 01 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

☒ Analysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 06-10-99 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher
James Christopher

Date: 12-24-98

GTS Instrument Services
2045 Route 286
Pittsburgh, PA 15239-2839
412/733-1900 Fax: 412/327-8189

Leak Test Certificate

Certificate No. 06-22-98-02

COMPANY DATA

Company Name	Aluminum Company of America	Source Location	C-3214
Address (for issue of certificate)	100 Technical Drive Alcoa Center, PA 15069	(company name, address, contact)	Same
Attention:		Telephone	

SOURCE DESCRIPTION

Source Manufacturer	Hewlett Packard		
Radionuclide	^{63}Ni	Activity	15mCi
Source Model	1880360520	Source Serial No.	C-2282

Installed In:

Type of Device	Analytical G.C.-E.C.D.	Manufacturer	
Model No.	ATC-004	Serial No.	5830-A

SOURCE CERTIFICATION

This is to certify that the radiation source indicated above was leak tested in accordance with "INSTRUCTIONS AND RADIOLOGICAL PROTECTION PROCEDURES FOR USE OF THE GTS INSTRUMENT SERVICES LEAK TEST KIT".

Analysis of the leak test specimen No. 02 by GTS INSTRUMENT SERVICES indicated the presence of < 0.005uCi microcurie of Gross activity on Smear.

Pursuant to the results of this leak test, the following action is recommended:

☐ Analysis indicated **0.005 microcurie or more** of radioactivity on the leak test specimen. **IMMEDIATELY WITHDRAW THE SPECIMEN FROM USE.** Initiate corrective action (decontamination, and repair or disposal in accordance with applicable regulations) and file a report with the governing regulatory agency within the prescribed time period, if required.

XXXAnalysis indicated **less** than 0.005 microcurie of radioactivity on the leak test specimen. The sealed source may be used as authorized. This source must be leak tested again, on or before 12-22-98 or within any other such time required by the governing regulatory agency.

This Certificate is an essential record and should be maintained for inspection.

GTS INSTRUMENT SERVICES

By: James Christopher

James Christopher

Date: 06-26-98

Leak Test Certificate

User HTC

Gauge location PC x C (Storage)

Source head Model No. 5176

Tag No. 2455

Source head Serial No. B2611

Activity 4000 mCi Cs-137

Measuring instrument TN 2650 Sp

RESULTS

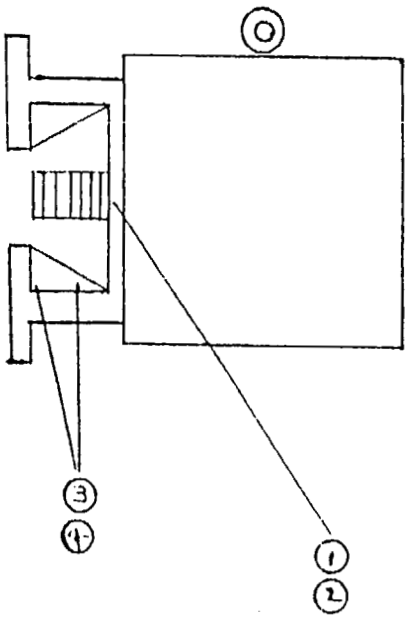
Shutter Operation ~~_____~~ OK

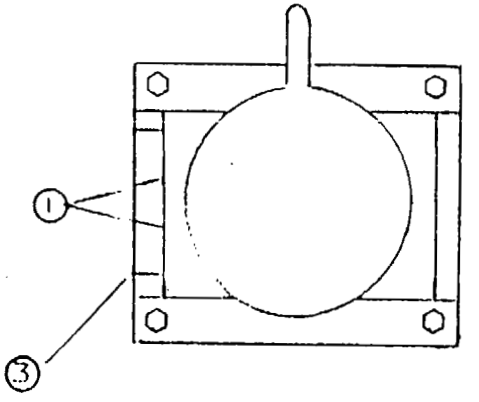
~~_____~~ Negative _____ Positive

_____ µCi

Bob Seiger 1982 JAN 20

Signature Date





1,2 - Wipe up and down shutter (and/or inside of edge of head if exposed).

3,4 - Wipe all along inside edge

DURATEK
GTS Instrument Services
2045 Route 286 Pittsburgh, PA 15239
412/733-1900 Fax 412/327-8189

September 3, 1992

Mr. Mark Jackson
Aluminum Company of America
100 Technical Way
Alcoa Center, PA 15069

Dear Mark:

The following is a list of the results obtained from the leak tests and smear tests you performed.

Counting equipment used: Baird Model SSC-4, Automatic Planchet Changer
with/ Baird Polyspec Research Nuclear Spectrometer
with/ Baird Preamplifier Model 942224

Date Counted: Leak Tests were counted on 08-28-92
Smears were counted on 09-01-92

Leak Test Results:

1B, Bottom Shelf right rear corner	186.5 DPM	8.40-05uCi
1A, Top Shelf right rear corner	15.5 DPM	6.99-06uCi
1C, Top Shelf right front corner	19.5 DPM	8.780-06uCi

Smear Test Results:

1A, Top Shelf, back	13.8 DPM	6.2E-6uCi
1B, Top Shelf, front	20.8 DPM	9.4E-6uCi
1C, Bottom Shelf, back	27.9 DPM	1.3E-5uCi

Leak Test Results performed by: James Christopher
James Christopher

Smear Test Results performed by:
Robert McCann

Leak Test Certificate

User ATC

Gauge location Storage

Source head Model No. 5192

Tag No. 1748

Source head Serial No. B1146

Activity 20mCi Cs-137

Measuring instrument TN 2650 Sp

RESULTS

Shutter Operation ✓ OK

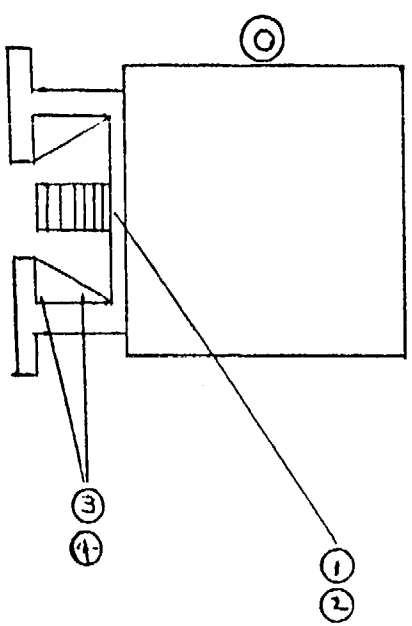
✓ Negative _____ Positive

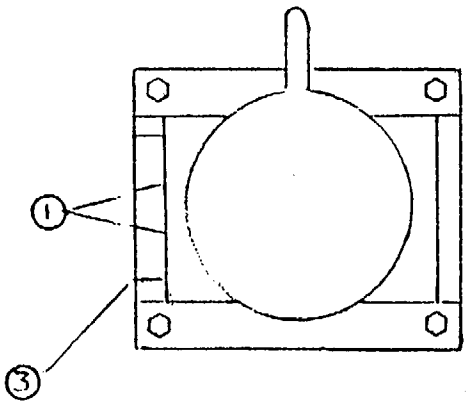
_____ µCi

Bob Geiger — Signature

JAN 1982 May 20 — Date ✓

For Disposal





1,2 - Wipe up and down shutter (and/or inside of edge of head if exposed).

3,4 - Wipe all along inside edge

Leak Test Certificate

User ATC

Gauge location (STORAGE) PCLP

Source head Model No. 5191

Tag No. 1757

Source head Serial No. B-925

Activity Cs-137 500mCi

Measuring instrument TN 2650 SPECIAL

RESULTS

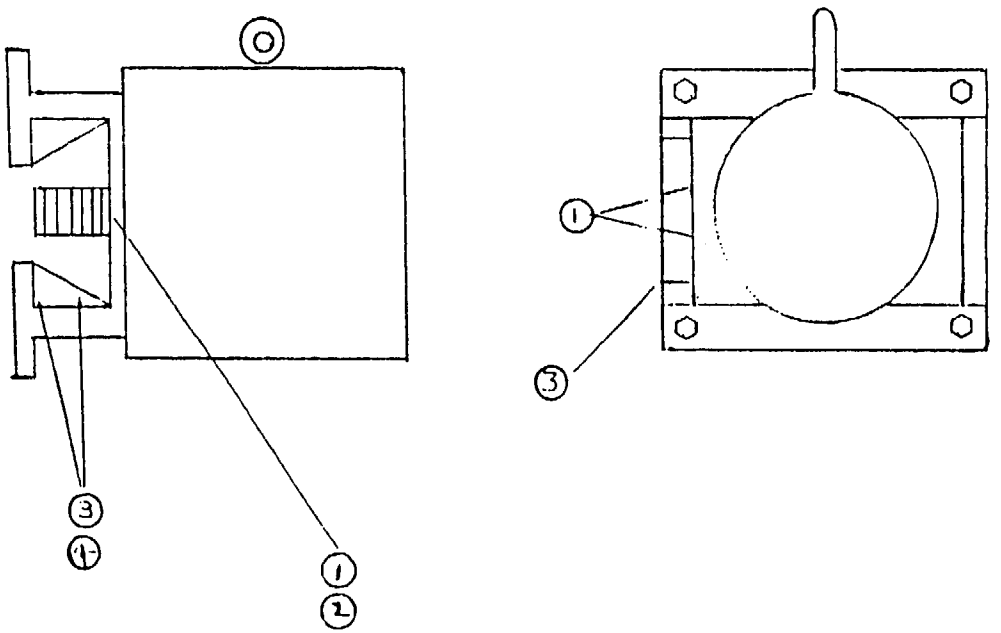
Shutter Operation ~ OK

___ Negative ___ Positive

< 0.005 µCi

Bob Geiger 1983 MAR 17

Signature Date



1,2 - Wipe up and down shutter (and/or inside of edge of head if exposed).

3,4 - Wipe all along inside edge

Issued 6/2/82

Radionuclide: 8.2 mCi CS 137/50 mCi Am 241
Source Serial: AC 4817
Inst. Model: 2401
Inst. Serial: 3145
Date of Wipe: 30-SEPT. 04
Individual's Name: D. HUDDLESTON
Telephone: 214-729-2281

PLEASE TYPE OR PRINT LEGIBLY –
THIS IS YOUR RETURN ADDRESS LABEL

Leak Test Analysis

Removable Activity

Beta Gamma	Alpha
0 µCi	0 µCi

Claudia Landers
Certification

Date: 9-9-80

- DALE HUDDLESTON
- ALCOA
- BOX 558
- PALESTINE, TX 75801

Troxler Electronic Laboratories, Inc., P.O. Box 12057, Research Triangle Park, N.C. 27709 919/549-8661 Telex 579474

NOTES

1. Follow procedures as outlined in your leak test kit instructions.
2. Fill out this form and the bag label with required information where applicable. Seal the filter paper in the plastic bag. Place the plastic bag and this form in the pre-addressed envelope.
3. Removable activity will be reported in µCi. A value of "0" indicates less than .00005 µCi.
4. Federal and state regulations require that sealed sources be removed from service and reports filed if removable activity is greater than .005 µCi.
5. Due to the potential hazard, Troxler recommends that an additional wipe be made if removable activity exceeds .0005 µCi.
6. You will be notified by telephone collect if the test yields greater than .001 µCi removable activity.

ORIGINAL

BOB,

FOR THE TROXLER DENSITY GAUGE.

DALE

TROXLER ELECTRONIC LABORATORIES, INC.
POST OFFICE BOX 12057
RESEARCH TRIANGLE PARK, N. C. 27709

LEAK TEST REPORT

CUSTOMER: ALCOA
Palestine, Texas

DATE OF TEST 12-18-75

SOURCE SERIAL NO.	GAUGE MODEL	GAUGE SERIAL NO.	RESULTS (10^{-12} curies) ALPHA	RESULTS (10^{-12} curies) BETA/GAMMA
RB-424	2401	948	15.52	31.13

COMMENTS: Less than 0.005 uc removable contamination.
Results given in picoCuries or 10^{-12} curies

EQUIPMENT: Nuclear Measurement Corporation, Model PCC-11T, gas flow internal proportional counter, 10% methane - 90% argon mixture.

Calibration of counter is made each day with calibrated standards of Americium^{241}, Cesium^{137} and Chlorine^{36} - each traceable to Bureau of Standards.

H. Keith Hix

Assistant Radiological Safety Officer
H. Keith Hix

Signed 8/12-14 Filed

Radionuclide: _____
Source Serial: AC-4738
Inst. Model: 2401
Inst. Serial: 3133
Date of Wipe: 81 DEC. 03
Individual's Name: J.R. SABAZIN
Telephone: 319-359-2892

PLEASE TYPE OR PRINT LEGIBLY –
THIS IS YOUR RETURN ADDRESS LABEL

- J.R. SABAZIN
- ALCOA Construction
- P.O. Box 972
- Bettendorf, IA. 52722

Leak Test Analysis

Removable Activity	
Beta Gamma	Alpha
0 µCi	0 µCi

Paula Bridges
Certification

Date: 12/10/81

NOTES

1. Follow procedures as defined in your leak test kit instructions.
2. Fill out this form and the bag label with required information where applicable. Seal the filter paper in the plastic bag. Place the plastic bag and this form in the pre-addressed envelope.
3. Removable activity will be reported in µCi. A value of "0" indicates less than .00005 µCi.
4. Federal and state regulations require that sealed sources be removed from service and reports filed if removable activity is greater than .005 µCi.
5. Due to the potential hazard, Troxler recommends that an additional wipe be made if removable activity exceeds .0005 µCi.
6. You will be notified by telephone collect if the test yields greater

ORIGINAL

R. C. Geiger

FROM A. J. POCIASK, JR.
CONSTRUCTION DEPARTMENT
PITTSBURGH OFFICE - 2

TO ALL CONSTRUCTION MANAGERS

October 2, 1975

RE: PROCEDURE FOR NUCLEAR TESTING EQUIPMENT STORAGE AND RADIATION DOSIMETRY REPORT FILING

There are currently in use at several Alcoa construction projects many Troxler nuclear surface moisture-density gauges. The question has been raised as to what should be done with this equipment once it is no longer needed at the construction site.

Attached are procedures outlining nuclear testing equipment storage and radiation dosimetry report filing answering this question. Please insert this information into your "Construction Managers Manual" in the section titled, Field Engineering Equipment Control System.

Alex J. Pociask Jr.

A. J. POCIASK, JR.

AJP/dh

Attachment

cc: J. W. DeWalt - Pittsburgh
F. W. Pollock - Pittsburgh
R. C. Geiger - Alcoa Technical Center
J. O. M. F. Hoeke - Pittsburgh

ALCOA

TROXLER ELECTRONIC LABORATORIES, INC.
POST OFFICE BOX 12057
RESEARCH TRIANGLE PARK, NC 27709

[illegible]

LEAK TEST REPORT

CUSTOMER: ALCOA
Massena, N.Y.

DATE OF TEST 6-4-75

BACKGROUND: ALPHA: 0 cpm BETA/GAMMA: 5 cpm

SOURCE SERIAL NO.	GAUGE MODEL	GAUGE SERIAL NO.	RESULTS ALPHA (cpm)	RESULTS BETA/GAMMA (cpm)
3443	2401	1739	0	0

COMMENTS:
Less than 0.005 μc removable contamination.

EQUIPMENT: Nuclear Measurement Corp., Model PCC-11T, gas flow internal proportional counter, 10% methane - 90% argon mixture.

CONVERSION FACTORS: 1 Alpha cpm = 8.78×10^{-7} μc; 1 Beta/Gamma cpm = 6.95×10^{-7} μc.

Assistant Radiological Safety Officer
H. Keith Hix

Philotechnics, Ltd.
118 Mitchell Road
Oak Ridge, TN 37830

ALCOA – ARL 29 Labs and 44-608, ^{3}H Survey

Attachment A - SMEAR SAMPLE DATA FORM

Contact Name (PRINT): Glenn Marshall Phone #: 865-285-3018	Project #: 5483 SURVEY LOCATION: ALCOA (PA)	DATE: 07-11-06
SMEARS NUMBERED: FROM 1 TO 47	RESULTS REQUIRED: DATE 07-31-06 TIME N/A	LSC OPERATOR: Cheryl Walker DATE COUNTED: 07-26-06

Vial #	Lab Only ^{3}H (dpm)	Lab Only $^{14}C/^{35}S$ (dpm)	Lab Only Gross Beta (cpm)	Location (if applicable)
1	45	N/A	N/A	29-259
2	47			29-259
3	47			29-251
4	42			29-251
5	41			29-243
6	46			29-243
7	33			29-225
8	43			29-225
9	58			29-217
10	68			29-217
11	54			29-209
12	75			29-209
13	54			29-210
14	57			29-210
15	49			29-224
16	24			29-224
17	44			29-228
18	57			29-228
19	40			29-230
20	52			29-230

COMMENTS: All samples counted for 1 minute. ^{3}H $DCGL_W$ not exceeded.

REVIEWED BY: Cheryl Walker DATE: 07-31-06

Philotechnics, Ltd.
118 Mitchell Road
Oak Ridge, TN 37830

ALCOA – ARL 29 Labs and 44-608, ^{3}H Survey

Attachment A - SMEAR SAMPLE DATA FORM

Contact Name (PRINT): Glenn Marshall Phone #: 865-285-3018	Project #: 5483 SURVEY LOCATION: ALCOA (PA)	DATE: 07-11-06
SMEARS NUMBERED: FROM 1 TO 47	RESULTS REQUIRED: DATE 07-31-06 TIME N/A	LSC OPERATOR: Cheryl Walker DATE COUNTED: 07-26-06

Vial #	Lab Only ^{3}H (dpm)	Lab Only $^{14}C/^{35}S$ (dpm)	Lab Only Gross Beta (cpm)	Location (if applicable)
21	53	N/A	N/A	29-240A
22	36			29-240
23	50			29-274
24	54			29-274
25	70			29-280
26	37			29-280
27	33			29-137
28	41			29-137
29	32			29-139
30	47			29-139
31	58			29-143
32	54			29-143
33	29			29-159
34	64			29-159
35	58			29-157
36	43			29-157
37	55			29-149
38	43			29-149
39	58			29-149
40	64			29-149

COMMENTS: All samples counted for 1 minute. ^{3}H $DCGL_W$ not exceeded.

REVIEWED BY: Cheryl Walker DATE: 07-31-06

Philotechnics, Ltd.
118 Mitchell Road
Oak Ridge, TN 37830

ALCOA – ARL 29 Labs and 44-608, ^{3}H Survey

Attachment A - SMEAR SAMPLE DATA FORM

Contact Name (PRINT): Glenn Marshall Phone #: 865-285-3018	Project #: 5483 SURVEY LOCATION: ALCOA (PA)	DATE: 07-11-06
SMEARS NUMBERED: FROM 1 TO 47	RESULTS REQUIRED: DATE 07-31-06 TIME N/A	LSC OPERATOR: Cheryl Walker DATE COUNTED: 07-26-06

Vial #	Lab Only ^{3}H (dpm)	Lab Only $^{14}C/^{35}S$ (dpm)	Lab Only Gross Beta (cpm)	Location (if applicable)
41	59	N/A	N/A	44-608
42	55			44-608
43	71			B1
44	84			B2
45	87			B3
46	69			B4
47	64			B5

COMMENTS: All samples counted for 1 minute. ^{3}H $DCGL_W$ not exceeded.

REVIEWED BY: Cheryl Walker DATE: 07-31-06

Philotechnics Ltd.
Characterization Survey Data Sheet
Beta Survey Results

Building: 29	Survey Unit 60	Page 1 of 2
Survey Unit Description: ARL Press Room/Tool Room		
Survey Completed by: Glenn Marshall		Date: 07/11/06
Survey Completed by: Cheryl Walker		Date: 07/11/06

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #1	2224	133676	03/23/07	959	432
	Probe Type: 43-89	Probe S/N 155801	TOTAL Eff: 10.4%	Count Time: 1 min.	

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #2	Selectra	450	05/16/07	791 dpm/100cm^2	715
	Probe Type: IBP19DD	Probe S/N K106	TOTAL Eff: 16.1%	Count Time: 1 min.	

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #3					
	Probe Type:	Probe S/N	TOTAL Eff:	Count Time:	

Comments:
Locations 1-8 surveyed with Instrument #1. Locations 9-22 surveyed with instrument #2.

Reviewed By: _____ Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building: 29	Survey Unit: 60	Page of
Survey Unit Description: ARL Press/Tool Rooms		
Survey Type (Check One): ☑ Characterization	☐ Remediation	☐ Final Status
Survey Completed By: Glenn Marshall	Date: 7/11/2006	
Survey Completed By: Cheryl Walker	Date: 7/11/2006	

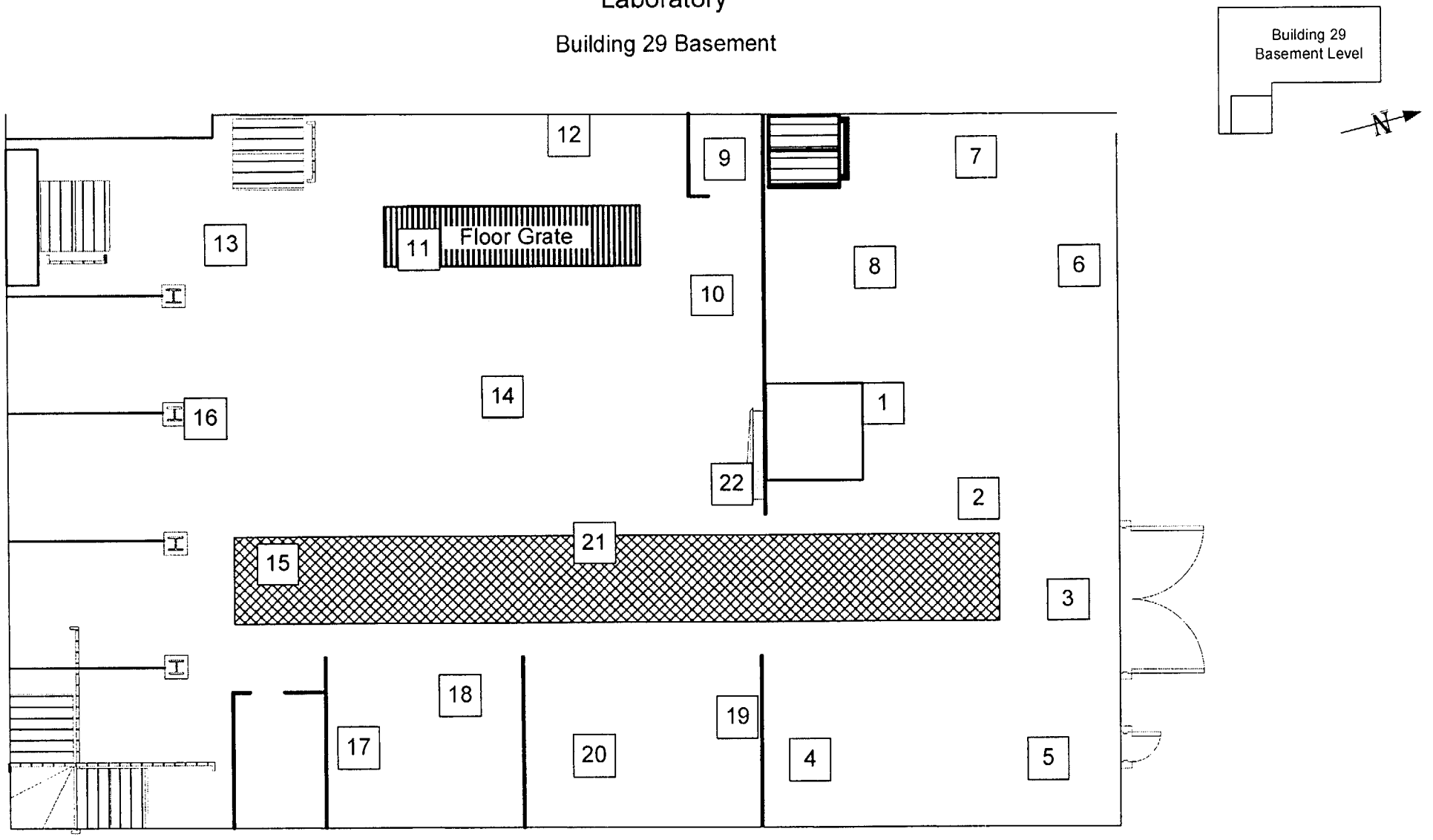
Background measured 5600 for most locations. See note for locations #8 and #9.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm²	Net γ Counts cpm/100cm²	Net γ Activity dpm/100cm²	N/A dpm/100cm²	N/A dpm/100cm²	
1	437	5	48	N/A		N/A
2	467	35	337	N/A		N/A
3	342	-90	-865	N/A		N/A
4	464	32	308	N/A		N/A
5	437	5	48	N/A		N/A
6	440	8	77	N/A		N/A
7	433	1	10	N/A		N/A
8	491	59	567	N/A		N/A
9	820	105	652	N/A		N/A
10	813	98	609	N/A		N/A
11	768	53	329	N/A		N/A
12	754	39	242	N/A		N/A
13	759	44	273	N/A		N/A
14	765	50	311	N/A		N/A
15	749	34	211	N/A		N/A
16	760	45	280	N/A		N/A
17	718	3	19	N/A		N/A
18	766	51	317	N/A		N/A
19	739	24	149	N/A		N/A
20	740	25	155	N/A		N/A
21	737	22	137	N/A		N/A
22	744	29	180	N/A		N/A

Reviewed By: Glenn R Marshall	Date: 7/31/06

ALCOA Research Laboratory

Building 29 Basement



Press Room / Tool Room

Philotechnics Ltd.
Final Survey Data Sheet
Beta Survey Results

Building: 29	Survey Unit 60	Page 1 of 2
Survey Unit Description: ARL Press Room/Tool Room		
Survey Completed by: Glenn Marshall		Date: 07/11/06
Survey Completed by: Cheryl Walker		Date: 07/11/06

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #1	Selectra	450	05/16/07	782 dpm/100cm^2	698
	Probe Type:	Probe S/N	TOTAL Eff:	Count Time:	
	!BP19DD	K106	16.1%	1 min.	

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #2					
	Probe Type:	Probe S/N	TOTAL Eff:	Count Time:	

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #3					
	Probe Type:	Probe S/N	TOTAL Eff:	Count Time:	

Comments:

Surveyed approximately 20% of area by direct scan. No elevated readings noted.

Direct measurements taken in locations indicated.

No smears collected because direct survey indicated all areas were less than 10% of DCGL for Co-60.

Reviewed By: Glenn Marshall Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building:	29	Survey Unit:	60	Page	of
Survey Unit Description:	ARL Press/Tool Rooms				
Survey Type (Check One):	☐ Characterization	☐ Remediation	☑ Final Status		
Survey Completed By:	Glenn Marshall	Date:	7/11/2006		
Survey Completed By:	Cheryl Walker	Date:	7/11/2006		

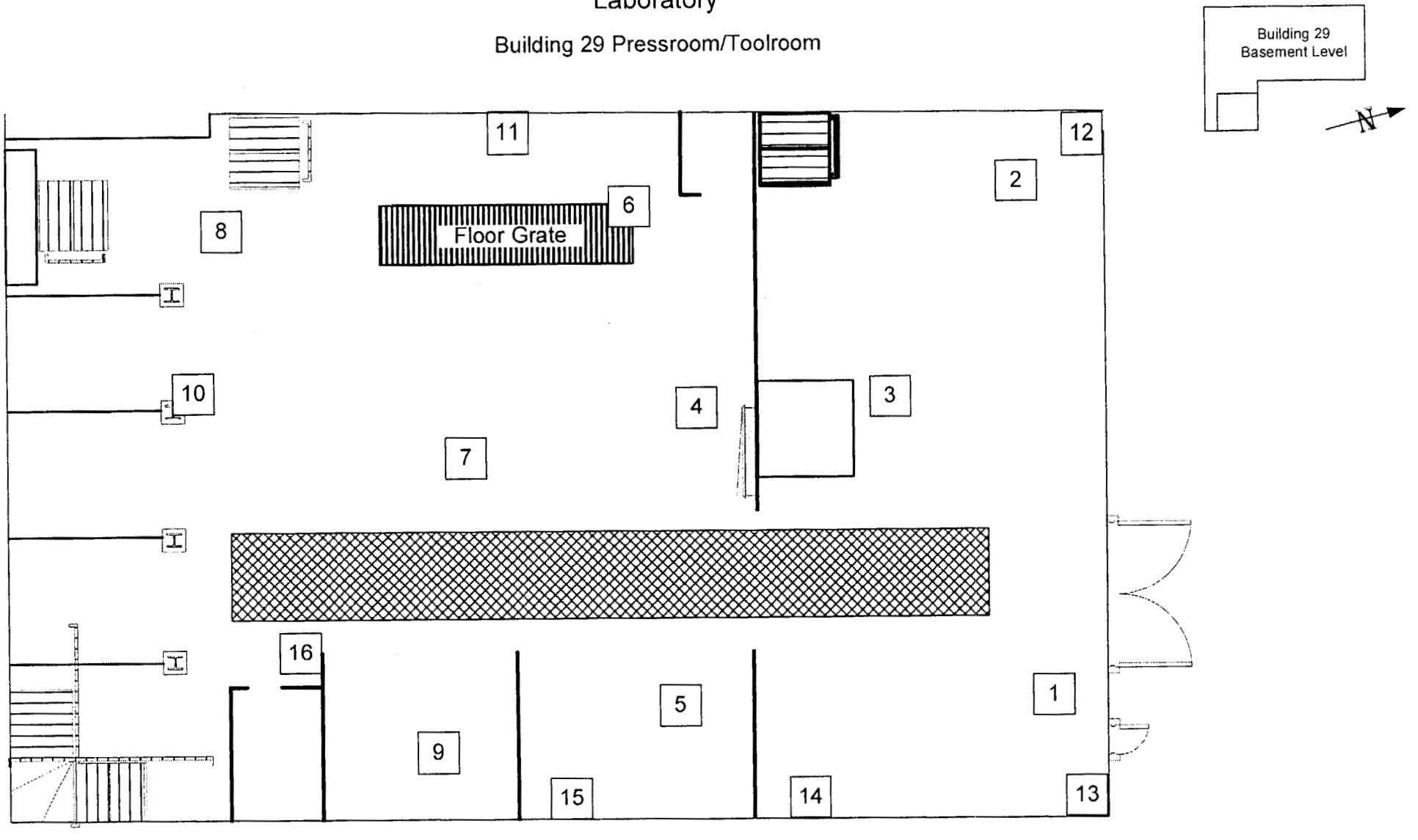
Background measured 5600 for most locations. See note for locations #8 and #9.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm²	Net γ Counts cpm/100cm²	Net γ Activity dpm/100cm²	N/A dpm/100cm²	N/A dpm/100cm²	
1	770	72	447	N/A		N/A
2	775	77	478	N/A		N/A
3	674	-24	-149	N/A		N/A
4	705	7	43	N/A		N/A
5	688	-10	-62	N/A		N/A
6	694	-4	-25	N/A		N/A
7	749	51	317	N/A		N/A
8	709	11	68	N/A		N/A
9	791	93	578	N/A		N/A
10	722	24	149	N/A		N/A
11	745	47	292	N/A		N/A
12	676	-22	-137	N/A		N/A
13	758	60	373	N/A		N/A
14	691	-7	-43	N/A		N/A
15	727	29	180	N/A		N/A
16	742	44	273	N/A		N/A

Reviewed By:	Glenn K Marshall	Date:	7/31/06

ALCOA Research Laboratory

Building 29 Pressroom/Toolroom



Press Room / Tool Room

Philotechnics Ltd.
Final Status Survey Data Sheet
Alpha Beta Survey Results

Building: 29	Survey Unit	U238 Processing Area	Page 1 of 2
Survey Unit Description	ARL – U238 Processing Area		
Survey Completed by: Glenn Marshall		Date: 07/11/06	
Survey Completed by: Cheryl Walker		Date: 07/11/06	

Inst. #1	Inst Type: Ludlum 2224	Inst. S/N 133676	Cal Due Date: 03/23/07	MDC: 123.4 dpm/100cm^2	BKG (cpm) 8
	Probe Type: 43-89	Probe S/N 155801	Inst Eff: 13.1% (alpha)	Count Time: 1 min.	

Inst. #2	Inst Type: Selectra	Inst. S/N 450	Cal Due Date: 05/16/07	MDC: 1001.6 dpm/100cm^2	BKG (cpm) 1157
	Probe Type: IBP19DD	Probe S/N K106	Inst Eff: 16.1%	Count Time: 1 min.	

Inst. #3	Inst Type: Ludlum 2929	Inst. S/N 132799	Cal Due Date: 06/16/07	MDC (dpm/100cm^2): α = 12.96 β^- = 125.01	BKG (cpm) α = 0, β^- = 54
	Probe Type: 43-10-1	Probe S/N PR136902	Inst Eff: α = 34.5%, β^- = 21.74%	Count Time: 1 min.	

Comments:

Background measured an average of 1157 cpm beta with the IBP19DD probe and 8 cpm alpha with the 43-89 probe.

Surveyed approximately 20% of area by scan. No elevated readings noted.

Glenn Marshall 7/31/06

Philotechnics Characterization and Final Survey Form

Building: 29	Survey Unit: U-238 Processing Area	Page 2 of 2
Survey Unit Description: ARL U238 Processing Area and Surrounding Bay		
Survey Type (Check One): ☐ Characterization ☐ Remediation ☑ Final Status		
Survey Completed By: Glenn Marshall	Date: 7/11/2006	
Survey Completed By: Cheryl Walker	Date: 7/11/2006	

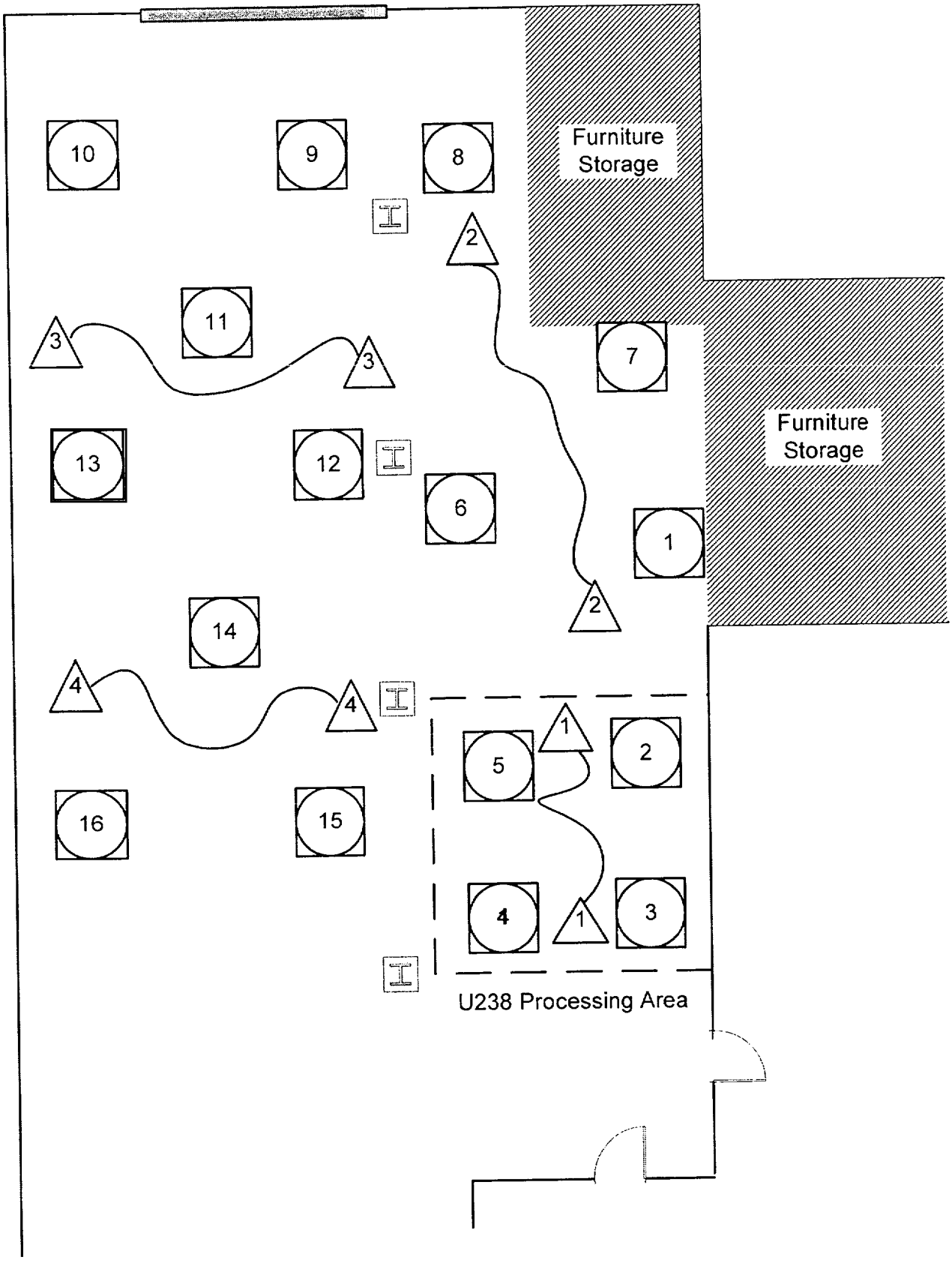
Smears were taken 7/11/06 and counted after return to Oak Ridge on 7/19/06.

Survey Location Code	Static Measurement Survey Results*			Static Measurement Survey Results*			Net Removable Activity	
	Gross β^- Counts cpm/100cm^2	Net β^- Counts cpm/100cm^2	Net β^- Activity dpm/100cm^2	Gross α Counts cpm/100cm^2	Net α Counts cpm/100cm^2	Net α Activity dpm/100cm^2	β^- dpm/100cm^2	α dpm/100cm^2
1	926	-231	-2,333	7	-1	-8	18	0
2	1005	-152	-1,535	7	-1	-8	-41	0
3	1087	-70	-707	7	-1	-8	-9	0
4	760	-397	-4,010	8	0	0	14	0
5	843	-314	-3,172	6	-2	-15	18	0
6	886	-271	-2,737	10	2	15	28	0
7	988	-169	-1,707	8	0	0	23	0
8	1058	-99	-1,000	9	1	8	37	0
9	1079	-78	-788	5	-3	-23	14	0
10	1131	-26	-263	7	-1	-8	0	0
11	906	-251	-2,535	9	1	8	-18	3
12	1101	-56	-566	6	-2	-15	-18	0
13	987	-170	-1,717	12	4	31	32	0
14	849	-308	-3,111	2	-6	-46	-37	0
15	1154	-3	-30	7	-1	-8	-41	0
16	1097	-60	-606	13	5	38	-5	3

Reviewed By: Glenn R Marshall Date: 7/31/06

☐ Characterization ☐ Remediation ☑ Final Status

ALCOA - Building 29 Basement (U238 Processing Area)



DandD Building Occupancy Scenario

DandD Version: 2.1.0
Run Date/Time: 3/20/2006 9:20:36 AM
Site Name: Alco Research Laboratories
Description: Basline Run for Am-241 Surfaces and Structures
FileName:C:\Documents and Settings\Owner\My Documents\Alcoa basline run Am-241.mcd

Options:

Implicit progeny doses NOT included with explicit parent doses
Nuclide concentrations are distributed among all progeny
Number of simulations: 200
Seed for Random Generation: 8718721
Averages used for behavioral type parameters

External Pathway is ON
Inhalation Pathway is ON
Secondary Ingestion Pathway is ON

Initial Activities:

Nuclide	Area of Contamination (m^2)	Distribution
241Am	UNLIMITED	CONSTANT(dpm/100 cm**2)
Justification for concentration: Run at Original		Value 2.40E+01

Chain Data:

Number of chains: **1**

Chain No. 1: **241Am**
Nuclides in chain: **13**

Nuclide	Chain Position	Half Life	First Parent	Fractional Yield	Second Parent	Fractional Yield	Ingestion CEDE Factor (Sv/Bq)	Inhalation CEDE Factor (Sv/Bq)	Surfac Dose R: Facto ((Sv/d)/(Bc
241Am	1	1.58E+05					9.84E-07	1.20E-04	2.37E-12
237Np	2	7.82E+08	1	1	0	0	1.20E-06	1.46E-04	2.48E-12

233Pa	3	2.70E+01	2	1	0	0	9.81E-10	2.58E-09	1.69E-11
233U	4	5.79E+07	3	1	0	0	7.81E-08	3.66E-05	6.18E-14
229Th	5	2.68E+06	4	1	0	0	9.54E-07	5.80E-04	7.38E-12
225Ra	6	1.48E+01	5	1	0	0	1.04E-07	2.10E-06	1.15E-12
225Ac	7	1.00E+01	6	1	0	0	3.00E-08	2.92E-06	1.37E-12
221Fr	Implicit		7	1			0.00E+00	0.00E+00	2.57E-12
217At	Implicit		7	1			0.00E+00	0.00E+00	2.61E-14
213Bi	Implicit		7	1			1.95E-10	4.63E-09	1.14E-11
213Po	Implicit		7	0.9784			0.00E+00	0.00E+00	0.00E+00
209Tl	Implicit		7	0.0216			0.00E+00	0.00E+00	1.64E-10
209Pb	Implicit		7	1			5.75E-11	2.56E-11	2.60E-14

Initial Concentrations:

Note: All reported values are the upper bound of the symmetric 95% confidence interval for the 0.9 quantile value

Nuclide	Surface Concentration (dpm/100 cm**2)
241Am	2.40E+01
237Np	0.00E+00
233Pa	0.00E+00
233U	0.00E+00
229Th	0.00E+00
225Ra	0.00E+00
225Ac	0.00E+00
221Fr	0.00E+00
217At	0.00E+00
213Bi	0.00E+00
213Po	0.00E+00
209Tl	0.00E+00
209Pb	0.00E+00

Model Parameters:

General Parameters:

Parameter Name	Description	Distribution
To:Time In Building	The time in the building during the occupancy period	CONSTANT(hr/week)
Default value used		Value 4.50E+01

Tto:Occupancy Period	The duration of the occupancy exposure period	CONSTANT(days)
Default value used		Value 3.65E+02
Vo:Breathing Rate	The average volumetric breathing rate during building occupancy for an 8-hour work day	CONSTANT(m**3/hr)
Default value used		Value 1.40E+00
RFo*:Resuspension Factor	Effective resuspension factor during the occupancy period = RFo * Fl	DERIVED(1/m)
Default value used		
GO*:Ingestion Rate	Effective secondary ingestion transfer rate of removable surface activity from building surfaces to the mouth during building occupancy = GO * Fl	DERIVED(m**2/hr)
Default value used		
Tstart:Start Time	The start time of the scenario in days	CONSTANT(days)
Default value used		Value 0.00E+00
Tend:End Time	The ending time of the scenario in days	CONSTANT(days)
Default value used		Value 3.65E+02
dt:Time Step Size	The time step size	CONSTANT(days)
Default value used		Value 3.65E+02
Pstep:Print Step Size	The time steps for the history file. Doses will be written to the history file every n time steps	CONSTANT(none)
Default value used		Value 1.00E+00
AOExt:External Exposure Area	Minimum surface area to which occupant is exposed via external radiation during occupancy period	CONSTANT(m**2)
Default value used		Value 1.00E+01
AOInh:Inhalation Exposure Area	Minimum surface area to which occupant is exposed via inhalation during occupancy period	CONSTANT(m**2)
Default value used		Value 1.00E+01
AOIng:Secondary Ingestion Exposure Area	Minimum surface area to which occupant is exposed via secondary ingestion during occupancy period	CONSTANT(m**2)
Default value used		Value 1.00E+01
AO:Exposure Area	Minimum surface area to which occupant is exposed during the occupancy period	DERIVED(m**2)
Default value used		
	Fraction of surface contamination available for resuspension and	CONSTANT(none)

Fl:Loose Fraction	ingestion	
Default value used		Value 1.00E-01
Rfo:Loose Resuspension Factor	Resuspension factor for loose contamination	CONTINUOUS LOGARITHMIC(1/m)
Default value used		Value Probability 9.12E-06 0.00E+00 1.10E-04 7.67E-01 1.46E-04 9.09E-01 1.62E-04 9.50E-01 1.85E-04 9.90E-01 1.90E-04 1.00E+00
GO:Loose Ingestion Rate	The secondary ingestion transfer rate of loose removable surface activity from building surfaces to the mouth during building occupancy	CONSTANT(m**2/hr)
Default value used		Value 1.10E-04

Correlation Coefficients:

None

Summary Results:

90.00% **of the** 200 **calculated TEDE values are <** 2.25E+01 **mrem/year .**
The 95 % Confidence Interval for the 0.9 **quantile value of TEDE is** 2.07E+01 **to** 2.47E+01 **mrem/year**

Detailed Results:

Note: All reported values are the upper bound of the symmetric 95% confidence interval for the 0.9 **quantile value**

Concentration at Time of Peak Dose:

Nuclide	Surface Concentration (dpm/100 cm**2)
241Am	2.40E+01
237Np	3.88E-06
233Pa	3.14E-06
233U	4.19E-12
229Th	9.14E-17
225Ra	7.23E-17
225Ac	6.12E-17

221Fr	6.12E-17
217At	6.12E-17
213Bi	6.12E-17
213Po	5.99E-17
209Tl	1.32E-18
209Pb	6.12E-17

Pathway Dose from All Nuclides (mrem)

All Pathways Dose	External	Inhalation	Secondary Ingestion
2.47E+01	9.24E-04	2.46E+01	1.01E-01

Radionuclide Dose through All Active Pathways (mrem)

Nuclide	All Pathways Dose
241Am	2.47E+01
237Np	4.86E-06
233Pa	9.46E-10
233U	1.31E-12
229Th	4.53E-16
225Ra	1.33E-18
225Ac	1.54E-18
221Fr	2.56E-21
217At	2.60E-23
213Bi	1.38E-20
213Po	0.00E+00
209Tl	3.52E-21
209Pb	5.44E-23
All Nuclides	2.47E+01

Dose from Each Nuclide through Each Active Pathway (mrem)

Nuclide	External	Inhalation	Secondary Ingestion
241Am	9.24E-04	2.46E+01	1.01E-01
237Np	1.56E-10	4.84E-06	2.00E-08
233Pa	8.63E-10	6.92E-11	1.32E-11
233U	4.21E-18	1.31E-12	1.41E-15

229Th	1.10E-20	4.53E-16	3.74E-19
225Ra	1.35E-21	1.30E-18	3.22E-20
225Ac	1.36E-21	1.53E-18	7.88E-21
221Fr	2.56E-21	0.00E+00	0.00E+00
217At	2.60E-23	0.00E+00	0.00E+00
213Bi	1.13E-20	2.42E-21	5.12E-23
213Po	0.00E+00	0.00E+00	0.00E+00
209Tl	3.52E-21	0.00E+00	0.00E+00
209Pb	2.59E-23	1.34E-23	1.51E-23

Philotechnics Ltd.
Final Status Survey Data Sheet
Gamma Survey Results

Building: 44	Survey Unit 600	Page 1 of 3
Survey Unit Description: ARL High Level Chem Lab		
Survey Completed by: Glenn Marshall		Date: 07/10/06
Survey Completed by: Cheryl Walker		Date: 07/10/06

Inst. #1	Inst Type: Electra	Inst. S/N 4807	Cal Due Date: 02/17/07	MDC: See comments below	BKG (cpm) 9930*
	Probe Type: GP13A	Probe S/N 333	Inst Eff: 15.5%	Count Time: 1 min.	*See comments

Inst. #2	Inst Type: Selectra	Inst. S/N 450	Cal Due Date: 05/16/07	MDC: 664.8 dpm/100cm^2	BKG (cpm) 500
	Probe Type: IBP19DD	Probe S/N K106	Inst Eff: 16.1%	Count Time: 1 min.	

Inst. #3	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Comments:

*Background ranged from 5680 cpm to 14200 cpm depending upon the type of material and level/height of the measurement being taken. Floor areas measured from 5680 cpm and 6120 cpm in the hallway and 7590 cpm inside the lab. General area background inside the lab measured 9930 cpm. Wall area background measurements ranged from 10100 cpm to 14200 cpm. The original survey report states those higher readings were contributed by naturally occurring isotopes and not considered unusual.

Location #23 measured 6840 dpm/100 cm^2 beta after rubber base molding was removed. Rubber base molding after removal measured 3105 dpm/100cm^2.

MDA for locations 1, 2, 6, 9, 12, 13, 14, 19, and 22 = 3011 dpm/100 cm^2

MDA for locations 8, 10, and 20 = 2282 dpm/100 cm^2

MDA for locations 3, 7, and 23 = 2368 dpm/100 cm^2

MDA for locations 4 and 5 = 2635 dpm/100 cm^2

MDA for location 18 = 3321 dpm/100 cm^2

MDA for locations 11 and 15 = 3066 dpm/100 cm^2

MDA for locations 16 and 17 = 3196 dpm/100 cm^2

MDA for location 21 = 3596 dpm/100 cm^2

Reviewed By: Glenn K Marshall Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building:	44	Survey Unit:	600	Page	of
Survey Unit Description:	ARL High Level Chem Lab				
Survey Type (Check One):	☐ Characterization	☐ Remediation	☑ Final Status		
Survey Completed By:	Glenn Marshall	Date:	7/10/2006		
Survey Completed By:	Cheryl Walker	Date:	7/10/2006		

Background ranged from 5680 cpm to 14200 cpm - see survey comments for details.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm²	Net γ Counts cpm/100cm²	Net γ Activity dpm/100cm²	N/A dpm/100cm²	N/A dpm/100cm²	
1	7130	-2,800	-18,065	N/A		N/A
2	7940	-1,990	-12,839	N/A		N/A
3	6860	740	4,774	N/A		N/A
4	7980	390	2,516	N/A		N/A
5	7320	-270	-1,742	N/A		N/A
6	8850	-1,080	-6,968	N/A		N/A
7	6890	770	4,968	N/A		N/A
8	6420	740	4,774	N/A		N/A
9	10500	570	3,677	N/A		N/A
10	6480	800	5,161	N/A		N/A
11	11300	1,000	6,452	N/A		N/A
12	7830	-2,100	-13,548	N/A		N/A
13	8570	-1,360	-8,774	N/A		N/A
14	9870	-60	-387	N/A		N/A
15	11200	900	5,806	N/A		N/A
16	11600	400	2,581	N/A		N/A
17	12200	1,000	6,452	N/A		N/A
18	12400	300	1,935	N/A		N/A
19	11000	1,070	6,903	N/A		N/A
20	3950	-1,730	-11,161	N/A		N/A
21	14000	-200	-1,290	N/A		N/A
22	10100	170	1,097	N/A		N/A
23	6640	520	3,355	N/A		N/A

Reviewed By: Glenn R Marshall Date: 7/31/06

Philotechnics Characterization and Final Survey Form

Building: 44	Survey Unit: 600	Page of

Survey Unit Description: ARL High Level Chem Lab (Baseboard)

Survey Type (Check One): ☐ Characterization ☑ Remediation ☐ Final Status

Survey Completed By:	Date:
Survey Completed By:	Date:

*Background = cpm for all locations shown on this page.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross Counts cpm/100cm^2	Net Counts cpm/100cm^2	Net Activity dpm/100cm^2	Beta Net Activity dpm/100cm2	Gamma Net Activity dpm/100cm2	
Rubber Base Molding	1250	500	3,106	N/A		N/A

Reviewed By: [illegible]	Date: 7/31/06

Philotechnics Ltd.
Final Status Survey Data Sheet
Gamma Survey Results

Building: 44	Survey Unit 604	Page 1 of 2
Survey Unit Description: ARL Isotope Storage Room		
Survey Completed by: Glenn Marshall		Date: 07/10/06
Survey Completed by: Cheryl Walker		Date: 07/10/06

Inst. #1	Inst Type: Electra	Inst. S/N 4807	Cal Due Date: 02/17/07	MDC: See Below	BKG (cpm) 7640*
	Probe Type: GP13A	Probe S/N 333	Inst Eff: 15.5%	Count Time: 1 min.	*See comments

Inst. #2	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Inst. #3	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Comments:

Background measured 5700 cpm for survey locations #2, 4, and 10. Background for locations #3, 7, 8 and 9 background measured 11100 cpm due to the proximity of the brick material that covered the survey points and the adjacent wall areas. Background outside the lab for locations #1, 5, and 6 measured 7640 cpm (block walls and proximity thereto).

The original survey report states higher background readings were contributed by naturally occurring isotopes and not considered unusual.

MDA varies based on location number due to varying background count rate.

Locations 1, 5, and 6: MDA = 2286 dpm/100 cm^2

Locations 3, 7, 8, and 9: MDA = 3182 dpm/100 cm^2

Locations 2, 4, and 10: MDA = 2643 dpm/100 cm^2

Reviewed By: [signature] Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building:	44	Survey Unit:	604	Page	of

Survey Unit Description: ARL Isotope Storage Room

Survey Type (Check One): ☐ Characterization ☐ Remediation ☑ Final Status

Survey Completed By:	Glenn Marshall	Date:	7/10/2006
Survey Completed By:	Cheryl Walker	Date:	7/10/2006

Background measured 5600 for most locations. See note for locations #8 and #9.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm^2	Net γ Counts cpm/100cm^2	Net γ Activity dpm/100cm^2	N/A dpm/100cm^2	N/A dpm/100cm^2	
1	8600	960	6,194	N/A		N/A
2	6060	360	2,323	N/A		N/A
3	8590	-2,410	-15,548	N/A		N/A
4	5920	220	1,419	N/A		N/A
5	8210	570	3,677	N/A		N/A
6	7090	-550	-3,548	N/A		N/A
7	11900	900	5,806	N/A		N/A
8	8840	-2,160	-13,935	N/A		N/A
9	7550	-3,450	-22,258	N/A		N/A
10	3780	-1,920	-12,387	N/A		N/A

Reviewed By: [signature] Date: 7/31/06

Philotechnics Ltd.
Final Status Survey Data Sheet
Gamma Survey Results

Building: 44	Survey Unit 605	Page 1 of 2
Survey Unit Description ARL North Lab		
Survey Completed by: Glenn Marshall		Date: 07/10/06
Survey Completed by: Cheryl Walker		Date: 07/10/06

Inst. #1	Inst Type: Electra	Inst. S/N 4807	Cal Due Date: 02/17/07	MDC: 2581 dpm/100cm^2	BKG (cpm) 7280
	Probe Type: GP13A	Probe S/N 333	Inst Eff: 15.5%	Count Time: 1 min.	

Inst. #2	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Inst. #3	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Comments:
Background measured 7280 cpm for all survey locations.

Reviewed By: Glenn Marshall Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building: 44	Survey Unit: 605	Page 2 of 2
Survey Unit Description: ARL North Lab		
Survey Type (Check One): ☐ Characterization ☐ Remediation ☑ Final Status		
Survey Completed By: Glenn Marshall	Date: 7/10/2006	
Survey Completed By: Cheryl Walker	Date: 7/10/2006	

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm²	Net γ Counts cpm/100cm²	Net γ Activity dpm/100cm²	N/A dpm/100cm²	N/A dpm/100cm²	
1	7010	-270	-1,742	N/A		N/A
2	6590	-690	-4,452	N/A		N/A
3	6340	-940	-6,065	N/A		N/A
4	6440	-840	-5,419	N/A		N/A
5	6510	-770	-4,968	N/A		N/A
6	6140	-1,140	-7,355	N/A		N/A
7	7610	330	2,129	N/A		N/A
8	7540	260	1,677	N/A		N/A
9	7830	550	3,548	N/A		N/A

Reviewed By: Glenn K Marshall Date: 7/31/06

Philotechnics Ltd.
Final Status Survey Data Sheet
Beta Survey Results

Building: 44	Survey Unit	Counting Room	Page 1 of 2
Survey Unit Description	ARL Counting Room		
Survey Completed by:	Glen Marshall	Date:	07/10/06
Survey Completed by:	Cheryl Walker	Date:	07/10/06

Inst. #1	Inst Type: Electra	Inst. S/N 4807	Cal Due Date: 02/17/07	MDC: See comments below	BKG (cpm) 3400*
	Probe Type: GP13A	Probe S/N 333	Inst Eff: 15.5%	Count Time: 1 min.	*See comments

Inst. #2	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Inst. #3	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Comments:

Background ranged from 4644 cpm to 5888 cpm depending upon the type of material and level/height of the measurement being taken. The floor area background measured 4644 cpm overall. Wall area background measured 5888 cpm. The original survey report states higher background readings were contributed by naturally occurring isotopes and not considered unusual.

MDA in locations 1-4 = 2065 dpm/100 cm^2

MDA in locations 5-9 = 2323 dpm/100 cm^2

Reviewed By: Glen R Marshall Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building:	44	Survey Unit:	Counting Room	Page	of
Survey Unit Description:	ARL Counting Room				
Survey Type (Check One):	☐ Characterization	☐ Remediation	☑ Final Status		
Survey Completed By:	Glenn Marshall	Date:	7/10/2006		
Survey Completed By:	Cheryl Walker	Date:	7/10/2006		

Background ranged from 4644 cpm to 5888 cpm - see survey comments for details.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm²	Net γ Counts cpm/100cm²	Net γ Activity dpm/100cm²	N/A dpm/100cm²	N/A dpm/100cm²	
1	4290	-354	-2,284	N/A		N/A
2	4770	126	813	N/A		N/A
3	5210	566	3,652	N/A		N/A
4	5120	476	3,071	N/A		N/A
5	6390	502	3,239	N/A		N/A
6	5490	-398	-2,568	N/A		N/A
7	6700	812	5,239	N/A		N/A
8	6390	502	3,239	N/A		N/A
9	4780	-1,108	-7,148	N/A		N/A

Reviewed By:	Glenn R Marshall	Date:	7/31/06

Philotechnics Ltd.
Final Status Survey Data Sheet
Gamma Survey Results

Building: 44	Survey Unit	Electronics Lab	Page 1 of 2
Survey Unit Description	ARL Electronics Lab		
Survey Completed by:	Glen Marshall	Date:	07/10/06
Survey Completed by:	Cheryl Walker	Date:	07/10/06

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #1	Electra	4807	02/17/07	See comments below	8600
	Probe Type: GP13A	Probe S/N 333	Inst Eff: 15.5%	Count Time: 1 min.	*See comments

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #2					
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #3					
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Comments:

Background measured 5600 cpm for survey locations #1-7, and 9. Location #8 background measured 8600 cpm due to the proximity of the brick material that covered the survey point wall and the adjacent wall area.

The original survey report states higher background readings were contributed by naturally occurring isotopes and not considered unusual.

MDA in locations 1, 2, 3, 4, 5, 6, 7, and 9 = 2266 dpm/100 cm^2

MDA in location 8 = 2803 dpm/100 cm^2

Reviewed By: Glenn Marshall Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building: 44	Survey Unit: Electronics Lab	Page 2 of 2
Survey Unit Description: ARL Electronics Lab		
Survey Type (Check One): ☐ Characterization	☐ Remediation	☑ Final Status
Survey Completed By: Glenn Marshall	Date: 7/10/2006	
Survey Completed By: Cheryl Walker	Date: 7/10/2006	

Background measured 5600 for most locations. See note for location #8.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm²	Net γ Counts cpm/100cm²	Net γ Activity dpm/100cm²	N/A dpm/100cm²	N/A dpm/100cm²	
1	4630	-970	-6,258	N/A		N/A
2	4850	-750	-4,839	N/A		N/A
3	5140	-460	-2,968	N/A		N/A
4	5770	170	1,097	N/A		N/A
5	4790	-810	-5,226	N/A		N/A
6	3800	-1,800	-11,613	N/A		N/A
7	4190	-1,410	-9,097	N/A		N/A
8	9090	490	3,161	N/A		N/A
9	5480	-120	-774	N/A		N/A

Reviewed By: [signature] Date: 7/31/06

Philotechnics Ltd.
Final Status Survey Data Sheet
Gamma Survey Results

Building: 44	Survey Unit	Low-Level Lab	Page 1 of 2
Survey Unit Description	ARL Low-Level Lab		
Survey Completed by:	Glenn Marshall	Date:	07/10/06
Survey Completed by:	Cheryl Walker	Date:	07/10/06

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #1	Electra	4807	02/17/07	2283.7 dpm/100cm^2	5690*
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	
	GP13A	333	15.5%	1 min.	*See comments

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #2					
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

	Inst Type:	Inst. S/N	Cal Due Date:	MDC:	BKG (cpm)
Inst. #3					
	Probe Type:	Probe S/N	Inst Eff:	Count Time:	

Comments:

Background measured 5690 cpm for survey locations #1-7. Locations #8 and #9 background measured 10300 cpm due to the proximity of the brick material that covered the survey points on the wall and the adjacent wall area. The original survey report states higher background readings were caused by naturally occurring isotopes and not considered unusual.

MDA in locations 1-7 = 2284 dpm/100 cm^2

MDA in locations 8 and 9 = 3066 dpm/100 cm^2

Reviewed By: _____ Date 7/31/06

Philotechnics Characterization and Final Survey Form

Building: 44	Survey Unit: Low-Level Lab	Page 2 of 2
Survey Unit Description: ARL Low-Level Lab		
Survey Type (Check One): ☐ Characterization ☐ Remediation ☑ Final Status		
Survey Completed By: Glenn Marshall	Date: 7/10/2006	
Survey Completed By: Cheryl Walker	Date: 7/10/2006	

Background measured 5690 for most locations. See note for locations #8 ad #9.

Survey Location Code	Static Measurement Survey Results*			Removable Activity		Exposure Rate
	Gross γ Counts cpm/100cm²	Net γ Counts cpm/100cm²	Net γ Activity dpm/100cm²	N/A dpm/100cm²	N/A dpm/100cm²	
1	4920	-770	-4,968	N/A		N/A
2	5540	-150	-968	N/A		N/A
3	5430	-260	-1,677	N/A		N/A
4	6120	430	2,774	N/A		N/A
5	6640	950	6,129	N/A		N/A
6	4670	-1,020	-6,581	N/A		N/A
7	4600	-1,090	-7,032	N/A		N/A
8	9930	-370	-2,387	N/A		N/A
9	10400	100	645	N/A		N/A

Reviewed By: [signature] Date: 7/31/06

This is to acknowledge the receipt of your letter/application dated

8/28/2006, and to inform you that the initial processing which includes an administrative review has been performed.

Amendment 37-07653-02

☒ There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

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A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 139366.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (RI)
(6-96)

Sincerely,
Licensing Assistance Team Leader