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INTERNATIONAL TECHNOLOGY CORPORATION

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0045476

Analytical Data Package Prepared For

# Westinghouse Hanford

OCT 1996 RECEIVED EDMC

Radiochemical Analysis By

## IT Analytical Services
*Richland Laboratory*

JUL 1994 RECEIVED SDLA

Sample Delivery Group Number: W0084

| WHC IDENTIFICATION NUMBER | ITAS RICHLAND ID NUMBER |
|---|---|
| B0C2W8 | 40608301 |
| B0C2W9 | 40608302 |
| B0C2X0 | 40608303 |
| B0C2X1 | 40608304 |
| B0C2X2 | 40608305 |
| B0C2X3 | 40608306 |
| B0C2X4 | 40608307 |
| B0C2X5 | 40608308 |
| B0C2X6 | 40608309 |
| B0C2X7 | 40608310 |
| B0C2X8 | 40608311 |
| B0C2X9 | 40608312 |
| B0C2Y0 | 40608313 |
| B0C2Y1 | 40608314 |
| B0C2Y2 | 40608315 |
| B0C2Y3 | 40608316 |
| B0C2Y4 | 40608317 |
| B0C2Y5 | 40608318 |
| B0C2Y6 | 40608319 |
| B0C2Y7 | 40608320 |

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

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# CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

July 18, 1994

Attention: J.A.Lerch

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| | | |
|---|---|---|
| SAF Number | : | 94-207 |
| Date SDG Closed | : | June 3, 1994 |
| Number of Samples | : | Twenty (20) |
| Sample Type | : | Soil |
| SDG Number | : | W0084 |
| Data Deliverable | : | Stand Alone |

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## I. Introduction

On June 3, 1994, twenty soil matrix samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

| ITAS-Richland ID | WHC ID | Matrix | Date of Receipt |
|---|---|---|---|
| 406083-01A | B0C2W8 | Soil | 6/03/94 |
| 406083-02A | B0C2W9 | Soil | 6/03/94 |
| 406083-03A | B0C2X0 | Soil | 6/03/94 |
| 406083-04A | B0C2X1 | Soil | 6/03/94 |
| 406083-05A | B0C2X2 | Soil | 6/03/94 |
| 406083-06A | B0C2X3 | Soil | 6/03/94 |
| 406083-07A | B0C2X4 | Soil | 6/03/94 |
| 406083-08A | B0C2X5 | Soil | 6/03/94 |
| 406083-09A | B0C2X6 | Soil | 6/03/94 |
| 406083-10A | B0C2X7 | Soil | 6/03/94 |

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| ITAS-Richland ID (cont.) | WHC ID | Matrix | Date of Receipt |
|---|---|---|---|
| 406083-11A | B0C2X8 | Soil | 6/03/94 |
| 406083-12A | B0C2X9 | Soil | 6/03/94 |
| 406083-13A | B0C2Y0 | Soil | 6/03/94 |
| 406083-14A | B0C2Y1 | Soil | 6/03/94 |
| 406083-15A | B0C2Y2 | Soil | 6/03/94 |
| 406083-16A | B0C2Y3 | Soil | 6/03/94 |
| 406083-17A | B0C2Y4 | Soil | 6/03/94 |
| 406083-18A | B0C2Y5 | Soil | 6/03/94 |
| 406083-19A | B0C2Y6 | Soil | 6/03/94 |
| 406083-20A | B0C2Y7 | Soil | 6/03/94 |

## II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

**Alpha Spectroscopy**
Thorium-230/232 by method ITAS-RD-3210
Uranium-234, 235, 238 by method ITAS-RD-3234
**Gamma Spectroscopy**
Gamma Scan by method ITAS-RD-3219

## III. Quality Control

The analytical results for each analysis performed under SDG W0084 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

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IV. Comments

Results from the initial radioactivity screening of these samples classified them as Category I with the exceptions of samples B0C2W9 and B0C2X8 which were Category II.

The samples were received without instruction as to which analyses were requested. The samples were logged for analyses listed in SAF 94-207 per WHC ROD 94-0146 received June 9, 1994.

Sample HEIS numbers were changed after receipt of the samples per WHC ROD 94-0160 (received June 21, 1994). Because the request for the change in the sample numbers was received more than two weeks after the receipt of the samples, not all of the paperwork reflect the requested changes, however, the final report and electronic data files do contain the modified sample numbers.

**Alpha Spectroscopy**

Thorium-230/232 by method ITAS-RD-3210
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2X7 and sample B0C2Y1) results are within contractual limits.

Uranium-234, 235, 238 by method ITAS-RD-3234
Sample B0C2X2 did not meet the target detection limit of 0.1 pCi/g due to a low tracer yield. The sample was recounted for 500 minutes and the target detection limit was met. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2Y0 and sample B0C2Y7) results are within contractual limits.

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**Gamma Spectroscopy**

Gamma Scan by method ITAS-RD-3219
Insufficient sample mass was received to fill a 200 ml counting geometry for samples B0C2X6, the duplicate of B0C2X6, B0C2X9, the duplicate of B0C2X9, B0C2Y0, the duplicate of B0C2Y0, B0C2Y1, B0C2Y2, B0C2Y3, and B0C2Y4. Where sample mass was insufficient to fill a 200 ml counting geometry, the samples were counted in a 25 ml counting geometry. Separate quality control samples (an LCS and a blank) were analyzed with the 25 ml geometry samples using the smaller volume containers. Detection limits for samples counted in 25 ml counting geometries were adjusted for the sample size analyzed. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2X6, sample B0C2X9, and sample B0C2Y0) results are within contractual limits.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Suzanne Gaines

Suzanne Gaines
Project Manager

9613497.0373

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

# SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608301 | MATRIX: | SOIL |
| CLIENT ID: | B0C2W8 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 3.47E+00 | 3.96E-01 | 5.72E-01 | 6.02E-02 | pCi/g | 91.10% | RD3210 |
| TH230 | 7.26E-01 | 1.10E-01 | 1.40E-01 | 1.89E-02 | pCi/g | 91.10% | RD3210 |
| TH232 | 9.13E-01 | 1.23E-01 | 1.64E-01 | 1.12E-02 | pCi/g | 91.10% | RD3210 |
| U-234 | 7.41E-01 | 2.00E-01 | 2.40E-01 | 5.43E-02 | pCi/g | 30.80% | RD3234 |
| U-235 | 3.83E-02 | 4.68E-02 | 4.73E-02 | 6.16E-02 | pCi/g | 30.80% | RD3234 |
| U-238DA | 7.94E-01 | 2.07E-01 | 2.51E-01 | 6.16E-02 | pCi/g | 30.80% | RD3234 |
| CS-137DA | -1.28E-03 | 2.04E-02 | 2.04E-02 | 3.40E-02 | pCi/g | N/A | RD3219 |
| EU-152 | 1.94E-02 | 5.29E-02 | 5.29E-02 | 9.15E-02 | pCi/g | N/A | RD3219 |
| EU-154 | -3.38E-02 | 8.61E-02 | 8.61E-02 | 1.47E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 7.30E-02 | 6.96E-02 | 7.00E-02 | 1.22E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.61E+01 | 9.59E-01 | 1.87E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.09E+00 | 1.91E-01 | 2.83E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 6.53E-01 | 7.90E-02 | 1.02E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.07E+00 | 1.82E-01 | 2.11E-01 | N/A | pCi/g | N/A | RD3219 |
| U-238DLP | 7.09E-01 | 6.25E-01 | 6.29E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -1.09E+00 | 9.37E-01 | 9.43E-01 | 1.47E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 16

9613497.0374

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## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608302 | MATRIX: | SOIL |
| CLIENT ID: | B0C2W9 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 3.43E+00 | 4.09E-01 | 5.85E-01 | 6.08E-02 | pCi/g | 84.20% | RD3210 |
| TH230 | 9.57E-01 | 1.31E-01 | 1.76E-01 | 1.22E-02 | pCi/g | 84.20% | RD3210 |
| TH232 | 1.30E+00 | 1.53E-01 | 2.20E-01 | 1.22E-02 | pCi/g | 84.20% | RD3210 |
| U-234 | 5.72E-01 | 2.07E-01 | 2.37E-01 | 9.27E-02 | pCi/g | 22.40% | RD3234 |
| U-235 | 1.57E-01 | 1.12E-01 | 1.16E-01 | 1.15E-01 | pCi/g | 22.40% | RD3234 |
| U-238DA | 6.80E-01 | 2.26E-01 | 2.65E-01 | 1.05E-01 | pCi/g | 22.40% | RD3234 |
| CS-137DA | 3.99E-02 | 2.34E-02 | 2.38E-02 | 4.60E-02 | pCi/g | N/A | RD3219 |
| EU-152 | 3.73E-02 | 6.70E-02 | 6.71E-02 | 1.19E-01 | pCi/g | N/A | RD3219 |
| EU-154 | 2.29E-02 | 1.07E-01 | 1.07E-01 | 1.92E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 5.42E-02 | 1.11E-01 | 1.11E-01 | 1.76E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.47E+01 | 1.05E+00 | 1.81E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.70E+00 | 2.20E-01 | 3.48E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 8.25E-01 | 1.20E-01 | 1.45E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.44E+00 | 2.97E-01 | 3.31E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -1.48E+00 | 1.08E+00 | 1.09E+00 | 1.62E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



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## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608303 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X0 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.91E+00 | 3.70E-01 | 5.10E-01 | 4.74E-02 | pCi/g | 91.40% | RD3210 |
| TH230 | 5.36E-01 | 9.68E-02 | 1.16E-01 | 1.99E-02 | pCi/g | 91.40% | RD3210 |
| TH232 | 9.23E-01 | 1.27E-01 | 1.69E-01 | 2.33E-02 | pCi/g | 91.40% | RD3210 |
| U-234 | 6.92E-01 | 1.60E-01 | 1.92E-01 | 5.90E-02 | pCi/g | 45.20% | RD3234 |
| U-235 | 4.45E-02 | 4.11E-02 | 4.17E-02 | 4.20E-02 | pCi/g | 45.20% | RD3234 |
| U-238DA | 6.87E-01 | 1.59E-01 | 1.91E-01 | 4.20E-02 | pCi/g | 45.20% | RD3234 |
| CS-137DA | -4.05E-03 | 1.98E-02 | 1.98E-02 | 3.38E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -3.96E-02 | 5.39E-02 | 5.41E-02 | 8.56E-02 | pCi/g | N/A | RD3219 |
| EU-154 | 2.30E-02 | 7.26E-02 | 7.26E-02 | 1.32E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 8.35E-02 | 6.69E-02 | 6.74E-02 | 1.19E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.09E+01 | 8.06E-01 | 1.35E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.05E+00 | 1.55E-01 | 2.57E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 5.18E-01 | 9.13E-02 | 1.05E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.18E+00 | 2.01E-01 | 2.33E-01 | N/A | pCi/g | N/A | RD3219 |
| U-238DLP | 8.13E-01 | 4.84E-01 | 4.91E-01 | 8.32E-01 | pCi/g | N/A | RD3219 |
| ZN-65 | -1.26E+00 | 8.15E-01 | 8.24E-01 | 1.18E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 16

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## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608304 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X1 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.69E+00 | 3.55E-01 | 4.80E-01 | 5.34E-02 | pCi/g | 93.00% | RD3210 |
| TH230 | 6.67E-01 | 1.08E-01 | 1.34E-01 | 1.17E-02 | pCi/g | 93.00% | RD3210 |
| TH232 | 9.49E-01 | 1.28E-01 | 1.72E-01 | 1.17E-02 | pCi/g | 93.00% | RD3210 |
| U-234 | 5.98E-01 | 1.64E-01 | 1.92E-01 | 6.63E-02 | pCi/g | 37.20% | RD3234 |
| U-235 | 6.35E-02 | 5.49E-02 | 5.59E-02 | 5.97E-02 | pCi/g | 37.20% | RD3234 |
| U-238DA | 5.08E-01 | 1.52E-01 | 1.73E-01 | 6.92E-02 | pCi/g | 37.20% | RD3234 |
| CS-137DA | -1.35E-02 | 2.16E-02 | 2.16E-02 | 3.52E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -1.42E-02 | 6.13E-02 | 6.13E-02 | 9.74E-02 | pCi/g | N/A | RD3219 |
| EU-154 | 3.28E-02 | 8.04E-02 | 8.05E-02 | 1.43E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 3.29E-02 | 8.57E-02 | 8.57E-02 | 1.36E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.00E+01 | 7.48E-01 | 1.25E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.06E+00 | 1.61E-01 | 2.62E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 6.41E-01 | 8.49E-02 | 1.06E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.08E+00 | 2.08E-01 | 2.34E-01 | N/A | pCi/g | N/A | RD3219 |
| U-238DLP | 1.41E+00 | 1.10E+00 | 1.11E+00 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | 1.01E-01 | 8.02E-01 | 8.02E-01 | 1.40E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 16

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## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608305 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X2 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.17E+00 | 3.07E-01 | 4.00E-01 | 5.80E-02 | pCi/g | 91.50% | RD3210 |
| TH230 | 7.88E-01 | 1.13E-01 | 1.46E-01 | 1.62E-02 | pCi/g | 91.50% | RD3210 |
| TH232 | 7.35E-01 | 1.09E-01 | 1.39E-01 | 1.62E-02 | pCi/g | 91.50% | RD3210 |
| U-234 | 5.21E-01 | 1.18E-01 | 1.38E-01 | 5.38E-02 | pCi/g | 25.40% | RD3234 |
| U-235 | 5.24E-03 | 1.34E-02 | 1.34E-02 | 3.14E-02 | pCi/g | 25.40% | RD3234 |
| U-238DA | 4.98E-01 | 1.15E-01 | 1.34E-01 | 4.82E-02 | pCi/g | 25.40% | RD3234 |
| K-40 | 1.38E+01 | 1.09E+00 | 1.76E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.28E+00 | 2.23E-01 | 3.19E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 7.43E-01 | 9.78E-02 | 1.23E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.13E+00 | 2.48E-01 | 2.72E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -3.44E-01 | 1.01E+00 | 1.01E+00 | 1.71E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 11

IT ANALYTICAL SERVICES
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## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608306 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X3 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.63E+00 | 3.50E-01 | 4.71E-01 | 4.77E-02 | pCi/g | 85.50% | RD3210 |
| TH230 | 6.59E-01 | 1.07E-01 | 1.33E-01 | 1.77E-02 | pCi/g | 85.50% | RD3210 |
| TH232 | 8.01E-01 | 1.18E-01 | 1.52E-01 | 1.77E-02 | pCi/g | 85.50% | RD3210 |
| U-234 | 9.28E-01 | 1.61E-01 | 2.06E-01 | 4.27E-02 | pCi/g | 60.20% | RD3234 |
| U-235 | 1.96E-02 | 2.40E-02 | 2.41E-02 | 3.15E-02 | pCi/g | 60.20% | RD3234 |
| U-238DA | 8.54E-01 | 1.54E-01 | 1.94E-01 | 3.90E-02 | pCi/g | 60.20% | RD3234 |
| K-40 | 1.38E+01 | 9.29E-01 | 1.67E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.99E+00 | 1.96E-01 | 2.80E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 5.21E-01 | 1.03E-01 | 1.16E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.03E+00 | 2.26E-01 | 2.49E-01 | N/A | pCi/g | N/A | RD3219 |

**Number of Results:** 10

9613497.0379

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(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608307 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X4 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 1.54E+00 | 2.59E-01 | 3.16E-01 | 4.38E-02 | pCi/g | 93.40% | RD3210 |
| TH230 | 7.97E-01 | 1.14E-01 | 1.48E-01 | 1.09E-02 | pCi/g | 93.40% | RD3210 |
| TH232 | 6.75E-01 | 1.05E-01 | 1.32E-01 | 1.63E-02 | pCi/g | 93.40% | RD3210 |
| U-234 | 4.77E-01 | 1.41E-01 | 1.60E-01 | 4.18E-02 | pCi/g | 40.00% | RD3234 |
| U-235 | 7.11E-02 | 5.50E-02 | 5.62E-02 | 4.75E-02 | pCi/g | 40.00% | RD3234 |
| U-238DA | 6.43E-01 | 1.64E-01 | 1.93E-01 | 4.75E-02 | pCi/g | 40.00% | RD3234 |
| CS-137DA | -3.51E-02 | 1.99E-02 | 2.02E-02 | 2.97E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -3.87E-03 | 5.15E-02 | 5.15E-02 | 8.38E-02 | pCi/g | N/A | RD3219 |
| EU-154 | -2.62E-02 | 7.56E-02 | 7.56E-02 | 1.24E-01 | pCi/g | N/A | RD3219 |
| EU-155 | -3.54E-02 | 7.37E-02 | 7.38E-02 | 1.15E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.05E+01 | 7.39E-01 | 1.29E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.39E+00 | 1.32E-01 | 1.91E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 4.18E-01 | 5.45E-02 | 6.87E-02 | 1.18E-01 | pCi/g | N/A | RD3219 |
| RA-228DA | 8.92E-01 | 1.66E-01 | 1.89E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -3.05E-01 | 7.56E-01 | 7.57E-01 | 1.25E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



682A-6-93

9613497.0380

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608308 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X5 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.88E+00 | 3.63E-01 | 5.00E-01 | 6.10E-02 | pCi/g | 88.80% | RD3210 |
| TH230 | 8.97E-01 | 1.23E-01 | 1.64E-01 | 1.93E-02 | pCi/g | 88.80% | RD3210 |
| TH232 | 1.14E+00 | 1.39E-01 | 1.94E-01 | 1.15E-02 | pCi/g | 88.80% | RD3210 |
| U-234 | 8.07E-01 | 2.10E-01 | 2.54E-01 | 7.22E-02 | pCi/g | 30.70% | RD3234 |
| U-235 | 8.11E-03 | 2.75E-02 | 2.75E-02 | 7.64E-02 | pCi/g | 30.70% | RD3234 |
| U-238DA | 7.01E-01 | 1.95E-01 | 2.31E-01 | 6.18E-02 | pCi/g | 30.70% | RD3234 |
| CS-137DA | 5.56E-02 | 3.65E-02 | 3.69E-02 | N/A | pCi/g | N/A | RD3219 |
| EU-152 | -1.88E-02 | 5.43E-02 | 5.43E-02 | 9.09E-02 | pCi/g | N/A | RD3219 |
| EU-154 | -3.43E-02 | 7.73E-02 | 7.74E-02 | 1.32E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 1.87E-02 | 7.73E-02 | 7.73E-02 | 1.22E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.41E+01 | 8.79E-01 | 1.66E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.62E+00 | 1.55E-01 | 2.25E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 5.28E-01 | 7.97E-02 | 9.56E-02 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 8.79E-01 | 2.09E-01 | 2.26E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -5.17E-02 | 7.90E-01 | 7.90E-01 | 1.35E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



682A-6-93

9613497.0381

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608309 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X6 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.52E+00 | 3.32E-01 | 4.47E-01 | 5.82E-02 | pCi/g | 92.40% | RD3210 |
| TH230 | 7.87E-01 | 1.13E-01 | 1.47E-01 | 1.86E-02 | pCi/g | 92.40% | RD3210 |
| TH232 | 8.49E-01 | 1.18E-01 | 1.55E-01 | 1.10E-02 | pCi/g | 92.40% | RD3210 |
| U-234 | 1.20E+00 | 3.15E-01 | 4.05E-01 | 1.32E-01 | pCi/g | 20.30% | RD3234 |
| U-235 | 5.98E-02 | 7.10E-02 | 7.22E-02 | 8.24E-02 | pCi/g | 20.30% | RD3234 |
| U-238DA | 1.15E+00 | 3.07E-01 | 3.92E-01 | 5.54E-02 | pCi/g | 20.30% | RD3234 |
| CS-137DA | 2.69E-02 | 6.91E-02 | 6.91E-02 | 1.24E-01 | pCi/g | N/A | RD3219 |
| EU-152 | -4.30E-02 | 1.58E-01 | 1.58E-01 | 2.67E-01 | pCi/g | N/A | RD3219 |
| EU-154 | -2.04E-01 | 2.41E-01 | 2.42E-01 | 3.76E-01 | pCi/g | N/A | RD3219 |
| EU-155 | -9.08E-02 | 1.84E-01 | 1.84E-01 | 3.11E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.61E+01 | 2.45E+00 | 2.93E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.41E+00 | 4.13E-01 | 4.78E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 6.01E-01 | 1.62E-01 | 1.72E-01 | 3.43E-01 | pCi/g | N/A | RD3219 |
| ZN-65 | -1.45E+00 | 2.82E+00 | 2.83E+00 | 4.81E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 14



682A-6-93

9613497.0382

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608310 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X7 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 3.03E+00 | 3.78E-01 | 5.27E-01 | 5.88E-02 | pCi/g | 86.20% | RD3210 |
| TH230 | 8.36E-01 | 1.21E-01 | 1.58E-01 | 1.19E-02 | pCi/g | 86.20% | RD3210 |
| TH232 | 1.05E+00 | 1.36E-01 | 1.86E-01 | 1.19E-02 | pCi/g | 86.20% | RD3210 |
| U-234 | 7.31E-01 | 1.41E-01 | 1.74E-01 | 3.84E-02 | pCi/g | 61.20% | RD3234 |
| U-235 | 4.62E-03 | 1.38E-02 | 1.38E-02 | 3.63E-02 | pCi/g | 61.20% | RD3234 |
| U-238DA | 7.91E-01 | 1.47E-01 | 1.83E-01 | 4.21E-02 | pCi/g | 61.20% | RD3234 |
| CS-137DA | -4.62E-03 | 2.15E-02 | 2.15E-02 | 3.67E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -3.02E-02 | 5.93E-02 | 5.94E-02 | 9.51E-02 | pCi/g | N/A | RD3219 |
| EU-154 | -2.74E-02 | 7.75E-02 | 7.76E-02 | 1.33E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 8.02E-02 | 6.78E-02 | 6.83E-02 | 1.21E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.48E+01 | 9.93E-01 | 1.78E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.60E+00 | 1.56E-01 | 2.23E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 5.06E-01 | 7.95E-02 | 9.42E-02 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.11E+00 | 2.01E-01 | 2.30E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -1.11E+00 | 8.60E-01 | 8.67E-01 | 1.32E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



682A-6-93

9613497.0383

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608311 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X8 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 3.66E+00 | 4.08E-01 | 5.99E-01 | 5.20E-02 | pCi/g | 94.90% | RD3210 |
| TH230 | 1.00E+00 | 1.30E-01 | 1.77E-01 | 1.15E-02 | pCi/g | 94.90% | RD3210 |
| TH232 | 1.17E+00 | 1.41E-01 | 1.98E-01 | 1.15E-02 | pCi/g | 94.90% | RD3210 |
| U-234 | 1.14E+00 | 2.48E-01 | 3.20E-01 | 7.12E-02 | pCi/g | 31.10% | RD3234 |
| U-235 | 3.86E-01 | 1.44E-01 | 1.59E-01 | 5.37E-02 | pCi/g | 31.10% | RD3234 |
| U-238DA | 7.69E-01 | 2.03E-01 | 2.45E-01 | 7.54E-02 | pCi/g | 31.10% | RD3234 |
| CS-137DA | -2.72E-02 | 2.60E-02 | 2.62E-02 | 4.13E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -3.40E-02 | 7.04E-02 | 7.05E-02 | 1.18E-01 | pCi/g | N/A | RD3219 |
| EU-154 | 5.22E-02 | 9.68E-02 | 9.69E-02 | 1.75E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 8.39E-02 | 9.65E-02 | 9.69E-02 | 1.69E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.72E+01 | 1.06E+00 | 2.03E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.84E+00 | 2.09E-01 | 3.53E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 8.93E-01 | 1.24E-01 | 1.53E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.41E+00 | 2.79E-01 | 3.12E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -1.90E+00 | 1.17E+00 | 1.19E+00 | 1.73E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



682A-6-93

9613497.0384

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608312 | MATRIX: | SOIL |
| CLIENT ID: | B0C2X9 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.35E+00 | 3.13E-01 | 4.17E-01 | 5.55E-02 | pCi/g | 94.70% | RD3210 |
| TH230 | 9.92E-01 | 1.24E-01 | 1.70E-01 | 1.56E-02 | pCi/g | 94.70% | RD3210 |
| TH232 | 8.45E-01 | 1.14E-01 | 1.51E-01 | 1.56E-02 | pCi/g | 94.70% | RD3210 |
| U-234 | 1.34E+00 | 2.81E-01 | 3.74E-01 | 8.27E-02 | pCi/g | 28.40% | RD3234 |
| U-235 | 2.69E-02 | 4.15E-02 | 4.18E-02 | 6.69E-02 | pCi/g | 28.40% | RD3234 |
| U-238DA | 1.02E+00 | 2.45E-01 | 3.09E-01 | 8.27E-02 | pCi/g | 28.40% | RD3234 |
| CS-137DA | 4.16E-02 | 4.81E-02 | 4.83E-02 | 9.16E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -9.90E-02 | 1.32E-01 | 1.33E-01 | 2.12E-01 | pCi/g | N/A | RD3219 |
| EU-154 | 4.47E-02 | 1.66E-01 | 1.66E-01 | 3.25E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 1.94E-02 | 1.22E-01 | 1.22E-01 | 2.12E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.28E+01 | 1.76E+00 | 2.18E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.87E+00 | 3.39E-01 | 3.87E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 7.33E-01 | 1.34E-01 | 1.53E-01 | 3.00E-01 | pCi/g | N/A | RD3219 |
| RA-228DA | 1.01E+00 | 3.48E-01 | 3.62E-01 | 7.48E-01 | pCi/g | N/A | RD3219 |
| U-238DLP | 1.38E+00 | 1.25E+00 | 1.26E+00 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -1.97E-01 | 2.06E+00 | 2.06E+00 | 3.55E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 16



682A-6-93

9613497.0385

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608313 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y0 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 3.40E+00 | 3.94E-01 | 5.67E-01 | 5.30E-02 | pCi/g | 86.90% | RD3210 |
| TH230 | 9.00E-01 | 1.24E-01 | 1.64E-01 | 1.74E-02 | pCi/g | 86.90% | RD3210 |
| TH232 | 1.04E+00 | 1.33E-01 | 1.82E-01 | 1.74E-02 | pCi/g | 86.90% | RD3210 |
| U-234 | 8.83E-01 | 1.74E-01 | 2.18E-01 | 4.24E-02 | pCi/g | 49.00% | RD3234 |
| U-235 | 2.42E-02 | 2.95E-02 | 2.98E-02 | 3.89E-02 | pCi/g | 49.00% | RD3234 |
| U-238DA | 8.58E-01 | 1.71E-01 | 2.13E-01 | 3.89E-02 | pCi/g | 49.00% | RD3234 |
| CS-137DA | -4.93E-02 | 8.18E-02 | 8.19E-02 | 1.28E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.25E+01 | 2.40E+00 | 2.70E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.16E+00 | 4.46E-01 | 4.96E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 8.74E-01 | 2.33E-01 | 2.49E-01 | N/A | pCi/g | N/A | RD3219 |

Number of Results: 10



682A-6-93

9613497.0386

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608314 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y1 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 1.94E+00 | 2.93E-01 | 3.73E-01 | 5.92E-02 | pCi/g | 90.60% | RD3210 |
| TH230 | 5.71E-01 | 9.73E-02 | 1.19E-01 | 1.89E-02 | pCi/g | 90.60% | RD3210 |
| TH232 | 7.16E-01 | 1.09E-01 | 1.38E-01 | 1.89E-02 | pCi/g | 90.60% | RD3210 |
| U-234 | 7.15E-01 | 1.83E-01 | 2.19E-01 | 7.20E-02 | pCi/g | 35.80% | RD3234 |
| U-235 | 4.47E-02 | 4.66E-02 | 4.72E-02 | 5.32E-02 | pCi/g | 35.80% | RD3234 |
| U-238DA | 6.62E-01 | 1.76E-01 | 2.08E-01 | 5.32E-02 | pCi/g | 35.80% | RD3234 |
| CS-137DA | 1.27E-02 | 4.41E-02 | 4.41E-02 | 7.86E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -4.50E-03 | 1.02E-01 | 1.02E-01 | 1.80E-01 | pCi/g | N/A | RD3219 |
| EU-154 | -1.88E-02 | 1.45E-01 | 1.45E-01 | 2.66E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 8.82E-02 | 1.37E-01 | 1.37E-01 | 2.17E-01 | pCi/g | N/A | RD3219 |
| K-40 | 9.29E+00 | 1.57E+00 | 1.82E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.19E+00 | 2.73E-01 | 2.98E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 6.58E-01 | 1.32E-01 | 1.48E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 1.21E+00 | 3.76E-01 | 3.94E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -6.03E-01 | 1.66E+00 | 1.67E+00 | 2.88E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



682A-6-93

9613497.0387

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608315 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y2 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 3.43E+00 | 4.10E-01 | 5.86E-01 | 4.92E-02 | pCi/g | 87.50% | RD3210 |
| TH230 | 8.85E-01 | 1.27E-01 | 1.67E-01 | 2.09E-02 | pCi/g | 87.50% | RD3210 |
| TH232 | 1.08E+00 | 1.41E-01 | 1.93E-01 | 2.44E-02 | pCi/g | 87.50% | RD3210 |
| U-234 | 1.20E+00 | 2.09E-01 | 2.78E-01 | 6.60E-02 | pCi/g | 18.60% | RD3234 |
| U-235 | 5.92E-02 | 4.77E-02 | 4.86E-02 | 5.07E-02 | pCi/g | 18.60% | RD3234 |
| U-238DA | 1.03E+00 | 1.93E-01 | 2.49E-01 | 6.60E-02 | pCi/g | 18.60% | RD3234 |
| CO-60 | -6.39E-03 | 1.06E-01 | 1.06E-01 | 1.89E-01 | pCi/g | N/A | RD3219 |
| CS-137DA | 3.32E-02 | 5.05E-02 | 5.06E-02 | 9.53E-02 | pCi/g | N/A | RD3219 |
| K-40 | 1.48E+01 | 2.11E+00 | 2.58E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 2.26E+00 | 3.31E-01 | 4.01E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 6.18E-01 | 2.01E-01 | 2.10E-01 | N/A | pCi/g | N/A | RD3219 |

**Number of Results:** 11



682A-6-93

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608316 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y3 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.84E+00 | 3.78E-01 | 5.14E-01 | 5.74E-02 | pCi/g | 85.80% | RD3210 |
| TH230 | 8.21E-01 | 1.24E-01 | 1.60E-01 | 1.27E-02 | pCi/g | 85.80% | RD3210 |
| TH232 | 9.81E-01 | 1.36E-01 | 1.82E-01 | 1.27E-02 | pCi/g | 85.80% | RD3210 |
| U-234 | 1.01E+00 | 1.97E-01 | 2.52E-01 | 7.14E-02 | pCi/g | 43.30% | RD3234 |
| U-235 | 3.30E-02 | 3.86E-02 | 3.89E-02 | 5.93E-02 | pCi/g | 43.30% | RD3234 |
| U-238DA | 1.08E+00 | 2.04E-01 | 2.64E-01 | 4.78E-02 | pCi/g | 43.30% | RD3234 |
| CS-137DA | 3.20E-02 | 4.21E-02 | 4.22E-02 | 7.87E-02 | pCi/g | N/A | RD3219 |
| K-40 | 1.12E+01 | 1.63E+00 | 1.98E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.29E+00 | 2.85E-01 | 3.13E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 3.87E-01 | 1.24E-01 | 1.30E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -1.75E+00 | 2.14E+00 | 2.14E+00 | 3.40E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 11

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608317 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y4 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 1.75E+00 | 2.80E-01 | 3.49E-01 | 6.28E-02 | pCi/g | 91.00% | RD3210 |
| TH230 | 5.94E-01 | 9.93E-02 | 1.22E-01 | 1.12E-02 | pCi/g | 91.00% | RD3210 |
| TH232 | 5.98E-01 | 9.97E-02 | 1.23E-01 | 1.67E-02 | pCi/g | 91.00% | RD3210 |
| U-234 | 7.17E-01 | 1.68E-01 | 2.02E-01 | 6.04E-02 | pCi/g | 42.60% | RD3234 |
| U-235 | 3.75E-02 | 3.91E-02 | 3.95E-02 | 4.46E-02 | pCi/g | 42.60% | RD3234 |
| U-238DA | 7.18E-01 | 1.68E-01 | 2.02E-01 | 5.51E-02 | pCi/g | 42.60% | RD3234 |
| CS-137DA | -6.92E-02 | 6.13E-02 | 6.16E-02 | 9.68E-02 | pCi/g | N/A | RD3219 |
| K-40 | 1.11E+01 | 1.57E+00 | 1.93E+00 | 3.59E+00 | pCi/g | N/A | RD3219 |
| RA-224DA | 1.01E+00 | 4.40E-01 | 4.51E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 4.31E-01 | 1.32E-01 | 1.39E-01 | 2.69E-01 | pCi/g | N/A | RD3219 |
| ZN-65 | -2.15E+00 | 2.05E+00 | 2.06E+00 | 3.18E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 11

9613497.0390

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608318 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y5 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.69E+00 | 3.68E-01 | 4.95E-01 | 3.41E-02 | pCi/g | 81.60% | RD3210 |
| TH230 | 6.82E-01 | 1.14E-01 | 1.41E-01 | 1.90E-02 | pCi/g | 81.60% | RD3210 |
| TH232 | 9.90E-01 | 1.37E-01 | 1.83E-01 | 1.28E-02 | pCi/g | 81.60% | RD3210 |
| U-234 | 5.97E-01 | 1.68E-01 | 1.96E-01 | 5.86E-02 | pCi/g | 35.40% | RD3234 |
| U-235 | 9.88E-03 | 2.37E-02 | 2.37E-02 | 5.37E-02 | pCi/g | 35.40% | RD3234 |
| U-238DA | 5.38E-01 | 1.60E-01 | 1.84E-01 | 5.86E-02 | pCi/g | 35.40% | RD3234 |
| CS-137DA | -1.46E-02 | 2.20E-02 | 2.21E-02 | 3.60E-02 | pCi/g | N/A | RD3219 |
| EU-152 | 4.74E-02 | 5.35E-02 | 5.37E-02 | 9.73E-02 | pCi/g | N/A | RD3219 |
| EU-154 | -5.13E-02 | 8.63E-02 | 8.65E-02 | 1.44E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 5.70E-02 | 7.66E-02 | 7.68E-02 | 1.34E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.10E+01 | 8.52E-01 | 1.39E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.45E+00 | 1.44E-01 | 2.05E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 4.42E-01 | 9.12E-02 | 1.01E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 8.54E-01 | 1.82E-01 | 2.01E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -5.87E-02 | 8.49E-01 | 8.49E-01 | 1.44E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



682A-6-93

9613497.0391

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608319 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y6 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 2.04E+00 | 3.01E-01 | 3.87E-01 | 5.91E-02 | pCi/g | 88.50% | RD3210 |
| TH230 | 1.04E+00 | 1.32E-01 | 1.81E-01 | 1.67E-02 | pCi/g | 88.50% | RD3210 |
| TH232 | 5.98E-01 | 9.97E-02 | 1.23E-01 | 1.67E-02 | pCi/g | 88.50% | RD3210 |
| U-234 | 6.73E-01 | 2.00E-01 | 2.35E-01 | 7.87E-02 | pCi/g | 28.20% | RD3234 |
| U-235 | 3.83E-02 | 5.13E-02 | 5.18E-02 | 8.33E-02 | pCi/g | 28.20% | RD3234 |
| U-238DA | 5.28E-01 | 1.77E-01 | 2.02E-01 | 6.73E-02 | pCi/g | 28.20% | RD3234 |
| CS-137DA | 1.22E-03 | 1.89E-02 | 1.89E-02 | 3.13E-02 | pCi/g | N/A | RD3219 |
| EU-152 | 2.77E-02 | 5.02E-02 | 5.03E-02 | 8.82E-02 | pCi/g | N/A | RD3219 |
| EU-154 | 1.79E-02 | 6.80E-02 | 6.80E-02 | 1.19E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 6.65E-02 | 6.28E-02 | 6.32E-02 | 1.06E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.09E+01 | 7.86E-01 | 1.34E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.29E+00 | 1.30E-01 | 1.83E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 3.98E-01 | 8.01E-02 | 8.94E-02 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 6.56E-01 | 1.60E-01 | 1.73E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -5.38E-01 | 7.95E-01 | 7.97E-01 | 1.30E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 15



682A-6-93

9613497.0392

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| LAB NAME: | ITAS-RICHLAND | SDG: | W0084 |
| LAB SAMPLE ID: | 40608320 | MATRIX: | SOIL |
| CLIENT ID: | B0C2Y7 | DATE RECEIVED: | 6/3/94 |

| ISOTOPE | RESULT | COUNTING ERROR (2s) | TOTAL ERROR (2s) | MDA | REPORT UNIT | YIELD | METHOD NUMBER |
|---|---|---|---|---|---|---|---|
| TH228 | 1.63E+00 | 2.81E-01 | 3.44E-01 | 4.96E-02 | pCi/g | 81.20% | RD3210 |
| TH230 | 6.54E-01 | 1.09E-01 | 1.35E-01 | 1.86E-02 | pCi/g | 81.20% | RD3210 |
| TH232 | 6.31E-01 | 1.07E-01 | 1.32E-01 | 1.86E-02 | pCi/g | 81.20% | RD3210 |
| U-234 | 6.28E-01 | 1.47E-01 | 1.75E-01 | 5.50E-02 | pCi/g | 48.60% | RD3234 |
| U-235 | 2.43E-02 | 2.97E-02 | 2.99E-02 | 3.91E-02 | pCi/g | 48.60% | RD3234 |
| U-238DA | 8.12E-01 | 1.67E-01 | 2.06E-01 | 3.91E-02 | pCi/g | 48.60% | RD3234 |
| CS-137DA | -3.07E-02 | 2.08E-02 | 2.10E-02 | 3.16E-02 | pCi/g | N/A | RD3219 |
| EU-152 | -1.11E-02 | 5.69E-02 | 5.69E-02 | 9.15E-02 | pCi/g | N/A | RD3219 |
| EU-154 | 5.80E-02 | 8.69E-02 | 8.70E-02 | 1.58E-01 | pCi/g | N/A | RD3219 |
| EU-155 | 1.75E-02 | 7.06E-02 | 7.06E-02 | 1.22E-01 | pCi/g | N/A | RD3219 |
| K-40 | 1.09E+01 | 8.25E-01 | 1.37E+00 | N/A | pCi/g | N/A | RD3219 |
| RA-224DA | 1.31E+00 | 1.68E-01 | 2.13E-01 | N/A | pCi/g | N/A | RD3219 |
| RA-226DA | 4.73E-01 | 7.55E-02 | 8.91E-02 | N/A | pCi/g | N/A | RD3219 |
| RA-228DA | 6.89E-01 | 2.04E-01 | 2.15E-01 | N/A | pCi/g | N/A | RD3219 |
| U-238DLP | 7.75E-01 | 7.35E-01 | 7.39E-01 | N/A | pCi/g | N/A | RD3219 |
| ZN-65 | -1.09E-01 | 7.77E-01 | 7.77E-01 | 1.33E+00 | pCi/g | N/A | RD3219 |

**Number of Results:** 16



682A-6-93

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INTERNATIONAL TECHNOLOGY CORPORATION

9413497.0393

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): ~~RDT~~ SEG 7/14/94 WHC W0084

NCM INITIATED BY (Name/Date): mmn 6-28-94

PARAMETER(S): U15

SAMPLE NUMBER(S) AFFECTED: 40608302, 05, 09, 12

MATRIX: soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

## NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): tryd < 30%
10. ☐ Comments/Explanation:

## NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 7/14/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613497.0394

523

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

## CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE mmm 6-28-94

tryd < 30%

☐ CORRECTIVE ACTION: INITIALS/DATE mmm 6-28-94

tr yd > 20%, MDA met on all, QC acceptable

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: M Kelley DATE: 6-28-94

RESPONSIBLE MANAGER: W Mackelwich DATE: 7/14/94

## QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cr DATE: 7/14/94

## CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

## NCM CLOSURE

QC COORDINATOR: Jodie Cr DATE: 7/14/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

004

519

INTERNATIONAL TECHNOLOGY CORPORATION

RC13497.0395

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0084

NCM INITIATED BY (Name/Date): MMM 7-7-94

PARAMETER(S): Uso

SAMPLE NUMBER(S) AFFECTED: 40609315, 19

MATRIX: soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

## NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): tr yds < 30%
10. ☐ Comments/Explanation:

## NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sung Davis 7/7/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613497.0396

519

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

## CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE MMM 7-7-94

Tryd <30% on 6083 19 + 18.9 on sample 608315

☐ CORRECTIVE ACTION: INITIALS/DATE MMM 7-7-94

MDA was met on all, QC yields in the 90% range, spike recovery acceptable, dups within 3σ.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 7-7-94

RESPONSIBLE MANAGER: W MacKay DATE: 7/14/94

## QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cor DATE: 7/14/94

## CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

## NCM CLOSURE

QC COORDINATOR: Jodie Cor DATE: 7/14/94

0047

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9613497.0397

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INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0084

NCM INITIATED BY (Name/Date): JRC/TKempema 7-13-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: Client Samples + QC in SDG W0084

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

## NONCONFORMANCE [check appropriate item(s)]:

1. ☒ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☒ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☒ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☒ insufficient sample
   - ☐ instrumentation ☒ other (see #10)
9. ☒ Other (specify): Cd 109 peak from Xrays reflected in Cave liner
10. ☒ Comments/Explanation: some isotopes meet MDA others do not Co58 + Fe59 the half life is too short + no MDA is given

## NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Garica 7/14/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613497.0398

527

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

## CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE JTK 7-13-94

insufficient sample for proper aliquot

☒ CORRECTIVE ACTION: INITIALS/DATE JTK 7-13-94

data accepted

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 7/13/94

RESPONSIBLE MANAGER: [signature] DATE: 7/14/94

## QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 7/14/94

## CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

## NCM CLOSURE

QC COORDINATOR: [signature] DATE: 7/14/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0050

9613497.0399

Westinghouse Hanford Company

# CHAIN OF CUSTODY

Custody Form Initiator: S. W. Petersen

Company Contact: S. W. Petersen  Telephone: 376-1273

Project Designation/Sampling Locations: Sitewide background for natural rad. in soils  Collection Date: 1991

Ice Chest No.: NA  Field Logbook No.: NA

Bill of Lading/Airbill No.: NA  Offsite Property No.:

Method of Shipment: Automobile

Shipped to: IT Labs, Richland, WA

Possible Sample Hazards/Remarks: Uncontaminated, background soil samples

406083

Sample Identification

| Sitewide background, natural radionuclides in soil | | |
|---|---|---|
| 01 B01414 9/12/91 | 18 B01470 10/8/91 | [redacted] |
| 2 B01418 9/24/91 | 19 B01473 10/8/91 | [redacted] |
| 3 B01419 9/24/91 | 20 B01480 10/8/91 | [redacted] |
| 4 B01420 9/24/91 | B01482 10/8/91 | [redacted] |
| 5 B01422 9/24/91 | B01484 10/8/91 | B014K0 9/13/90 |
| 6 B01425 9/24/91 | B01487 10/8/91 | B014K4 9/17/90 |
| 7 B01429 9/26/91 | B01489 10/8/91 | B014K5 9/18/90 |
| 8 B01433 9/26/91 | B01490 10/8/91 | B014K7 9/25/90 |
| 9 B01443 10/1/91 | B01491 10/8/91 | B01B71 11/20/91 |
| 10 B01447 10/1/91 | B01494 10/9/91 | B01B78 11/20/91 |
| 11 B01448 10/1/91 | B014C2 10/11/91 | B01B79 11/20/91 |
| 12 B01451 10/1/91 | B014C3 10/11/91 | B06141 1/27/92 |
| 13 B01458 10/3/91 | B014C8 10/11/91 | B06146 1/27/92 |
| 14 B01462 10/3/91 | B014F1 10/15/91 | [redacted] |
| 15 B01463 10/3/91 | B014F6 10/21/91 | B06153 2/4/92 |
| 16 B01465 10/3/91 | B014G1 10/21/91 | B06137 1/27/92 |
| 17 B01468 10/3/91 | B014G2 10/21/91 | B01CN1 10/12/91 |

THIS

UIS

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

| Relinquished by: | Received by: | Date/Time: |
|---|---|---|
| [signature] | [signature] | 6-3-94 13:25 |
| Relinquished by: | Received by: | Date/Time: |
| Relinquished by: | Received by: | Date/Time: |
| Relinquished by: | Received by: | Date/Time: |

Final Sample Disposition

| Disposal Method: | Disposed by: | Date/Time: |
|---|---|---|

Comments:

A-6000-407 (12

SDL W0084

9613497.0400

| Contractor Westinghouse Hanford Co. | OFF-SITE PROPERTY CONTROL | CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0573 #34 |
|---|---|---|

**PART I – TO BE COMPLETED BY ORIGINATOR**

| Department RCRA Permitting | Section | Unit |
|---|---|---|

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing vehicle ☒ Contractor ☐ Vendor

Shipped to IT Analytical Services, 2800 George Wash Way, Richland, WA 99352

Off-site Custodian: Tammy Heidelberg

Full Title:

| Quantity | Description (Include Serial and any Government Tag Numbers) | Original Cost |
|---|---|---|
| 46 | ½ pint jars of soil | |

☐ Classified ☐ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Samples require analyses not presently available on site.

RECEIVED
JUN 3 1994
PROPERTY RECORDS

*CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.*

| RM Clearance for Public Release: Will Mercer | RM Survey No. 168607 | Date 6-3-94 |
|---|---|---|
| Location of Property (Area & Bldg.) 200 E 2101-M | Contact Lisa Gray | Phone 376-3052 |
| Date Ready for Shipment | Cost Code to be Charged EA6B4 | Approximate Date This Property will be Returned N/A |
| Originated By Scott W. Peterson | Date 6-3-94 | Authorized By R C Brunck |
| Signature and Name of Property Control | Custodian Date | Property Management Approval |

**PART II – TO BE COMPLETED BY SHIPPING**

| Signature of Recipient | Return Order No. | Date Issued | Purchase Order No. | Date Issued |
|---|---|---|---|---|
| Date 6-3-94 13:25 | | | | |

**DISTRIBUTION**

0053

| By Originator | Shipping Operation – Sign all Copies and Forward to: |
|---|---|
| White, Green, Yellow, Pink – Property Management<br>Goldenrod – Retain | White – Property Management<br>Yellow – Retain<br>Green – Property Control Custodian (Issuing Office)<br>Pink – Originator |

54-3000-479 (09/89)

-9613497.0401

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

# SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-3-94 13:25 Client Name WHC

Project/Client # 94-207 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) no cooler / Box

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☐ No ☒
3. Custody Seals dated and signed? Yes ☐ No ☒
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☐ No ☒
7. Number of sample containers in cooler: 21
8. Samples have: ____ tape ____ hazard labels
   X custody seals X appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☐ No ☒

Sample temperature Room Temp

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Karen Ashtenburg Karen Ashtenburg Date/Time 6-3-94 13:25

FORM NO. LS-042, Rev.0, 2/94

- 9613497.0402

**INTERNATIONAL TECHNOLOGY CORPORATION**

Regional Office
2800 George Washington Way
Richland, Washington 99352

# SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-3-94 Client Name WHC

Project/Client # 94-207 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) no cooler / Box

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☐ No ☒
3. Custody Seals dated and signed? Yes ☐ No ☒
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☐ No ☒
7. Number of sample containers in cooler: 25
8. Samples have: ____ tape ____ hazard labels
   X custody seals X appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☐ No ☒

Sample temperature Room Temp.

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) NA
    Request for analysis #(s) NA
    Airbill # NA Carrier NA
12. Have any anomalies been identified above? Yes ☐ No ☐
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature ~~KAREN Stahlenberg~~ Karen Stahlenberg Date/Time 6-3-94 13:25

FORM NO. LS-042, Rev.0, 2/94

9613497.0403

# SAMPLE RECEIPT VARIANCE REPORT
## ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 4-06-083, 084, 085 DATE INITIATED: 6-7-94

INITIATED BY: Heidelberg

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6-3 @ 1325

| CLIENT SAMPLE NUMBER | RFA/COC NUMBERS | ANALYSIS REQUESTED |
|---|---|---|
| all | na | γ, TH, UIso |
| | | |
| | | |
| | | |

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☐ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☒ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received.
  - ☐ RFA/COC not received.
- ☒ 12. Other (Explain below).

NOTES: Sample dates taken off samples. COC does not state analysis requested - used SAF form for log in.

SUPERVISOR REVIEW: Jami Heidelberg

PROJECT MANAGER REVIEW: Suzy Daines

TELEPHONED TO: R. Weiss ON 6/7/94 BY Van Petty

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE.

FORM NO. LS-023, 3/92, Rev. 0

9613497.0404

# HANFORD ANALYTICAL SERVICES MANAGEMENT

## RECORD OF DISPOSITION

ROD-94-0146
Record of Disposition No.

**DATE:** June 9, 1994

**LABORATORY:** IT

**PROJECT TITLE/NO.:** Sitewide Background / 94-207

**NCR NO.:** N/A

**SAMPLE IDENTIFICATION NUMBERS:**

B01414 B01418 B01419 B01420 B01422 B01425 B01529 B01433 B01443 B01447 B01448 B01451
B01458 B01462 B01463 B01465 B01468 B01470 B01473 B01480 B01482 B01484 B01487 B01489
B01490 B01491 B01494 B014C2 B014C3 B014C8 B014F1 B014F6 B014G1 B014G2 B014K0 B014K4
B014K5 B014K7 B01B71 B01B78 B01B79 B06141 B06146 B06153 B06137 B01CN1

**DESCRIPTION OF EVENT:**

A list of the required analyses did not accompany the COC documentation.

**DISPOSITION OF SAMPLES:**

With consent from the customer, IT was instructed to perform all the analyses listed on SAF 94-207 for the samples listed above.

**APPROVAL SIGNATURES:**

Jon W. Ball / 6/9/94
**HASM Project Coordinator** (Print/Sign Name) **Date**

Scott W. Petersen 6/10/94
**Technical Representative** (Print/Sign Name) **Date**

N/A
**Quality Assurance** (Print/Sign Name) **Date**

ORIGINAL - RICHLAND FILE

9613497.0405

JWB 5/9/94

# OFFICE OF SAMPLE MANAGEMENT
# SAMPLING AUTHORIZATION FORM
# SAF # 94-207

REV. 0 DATE: 05/09/94

PROJECT NUMBER 94-207 PROJECT TITLE Sitewide Background Samples — Rad.

OSM PROJECT COORDINATOR J. W. Ball OPERABLE UNIT/TSD N/A

CUSTOMER NAME S. W. Petersen PHONE # 376-1273 MSIN H6-23

ORGANIZATION/CODE 88230 CHARGE CODE EA6B4

SAMPLING DATE _____ NUMBER OF SAMPLES 50 SAMPLING LOCATION See Comments

SAMPLE PRIORITY:
1. EXPEDITED RESPONSE ACTION
2. TPA RANKING _____
3. ✓ NON-TPA RANKING _____

ANALYTICAL PROTOCOLS: CERCLA ✓ RCRA OTHER (specify) _____

DATA TURNAROUND REQUIREMENTS: PRIORITY ✓ REGULAR ✓ RADCHEM

SAMPLE MATRIX: ✓ SOIL/SEDIMENT WATER VEGETATION OILS
SLUDGE CONCRETE OTHER _____

LABORATORY SERVICES ON-SITE ✓ OFF-SITE

| LABORATORY | LABORATORY CONTACT | TELEPHONE |
|---|---|---|
| IT | Not Applicable | N/A |

COMMENTS:

▸▸ Sample Location — Samples are from an archived collection from locations around the Hanford Site (including Moses Lake, Yakima, and Walla Walla). **The client to provide radiation release documentation.**

▸▸ The following are target detection limits for the isotopes:

| Isotope | Target Detection Limit (pCi/G) |
|---|---|
| K-40 | 1.0 |
| Ra-226 | 0.1 |
| Th-232 | 0.1 |
| U-234 | 0.1 |
| U-235 | 0.1 |
| U-238 | 0.1 |

▸▸ Mark the following on the Chain of Custody — Standalone Data Deliverable.



0057 A

9613497.0406

AWB 5/9,

# OFFICE OF SAMPLE MANAGEMENT
# FIELD SAMPLING REQUIREMENTS

94-207
SAF Number

Requirements are for IT

REV 0 05/09/94

| PARAMETER/ ANALYSIS | ANALYTICAL METHODS | CONTAINER[1]/ VOLUME | PRESERVATION | HOLDING TIME |
|---|---|---|---|---|
| 1. Gamma Spec-To Include ▸ K-40, Ra-226 | ITAS-RD-3219 | G 250 mL | None | 6 Months |
| Th-232 | ITAS-RD-3210 | | | |
| U-234, -235, -238 | ITAS-RD-3234 | | | |

[1] Container Types:

| | | | | | |
|---|---|---|---|---|---|
| P | = | Plastic (Polyethylene) | Pw | = | Plastic (Polyethylene)/wide mouth jar |
| G | = | Glass | PP | = | Polypropylene |
| Gs | = | Glass w/septum cap | aG | = | Amber Glass |
| Gw* | = | Glass/wide mouth jar | T | = | Fluorocarbon Resins |
| Gs | = | Glass w/septum cap -- No head space in container | aGs* | = | Amber Glass w/septum cap |
| | | | aGs | = | Amber Glass w/septum cap No head space in container |

[2] 7 Days for Extraction, 40 Days for Analysis

Samples to be shipped in original containers.

0057 B

9613497.0407

[462] From: Scott W Petersen at ~WHC301 5/11/94 9:30AM (558 bytes: 10 ln)
To: Laura C McClanahan at ~WHC321
Subject: Site-wide background samples
---------- Message Contents ----------

Laura,

I approve the draft SAF #94-207, which outlines radionuclide analyses for Sitewide background soil samples. This work will be completed under TCPN EA6B4, which should now be available for your use.

Thanks,

Scott

MAY 1994
Received
Analytical Lab
Coordination

9613497.0408

[7] From: Scott W Petersen at -WHC301 4/6/94 8:25AM (5266 bytes: 9 ln, 1 fl)
To: Jeffrey A Lerch at -WHC321
Receipt Requested
Subject: rad soil analyses
---------- Message Contents ----------

Text item 1:

Jeff, I have attached a short description of the requirements for the Sitewide background soil radionuclide analysis effort. I realize that the sample size is a bit small, but it's all we have to work with. Please let me know if you need anything else.

Thanks,

Scott

9613497.0409

Scott Petersen

94-207

88230 6-1873 H6-23

# Analysis of Radionuclides in Sitewide Background Samples

Evaluation of background radionuclide concentrations in the soil on and around the Hanford Site is underway. New data will be gathered in two phases:

1) Analysis of **naturally-occurring** isotopes in the archived Sitewide soil background samples,
2) Sampling and analysis both **natural and anthropogenic** isotopes from locations around the Hanford Site, including distant locations such as Moses Lake, Yakima, and Walla Walla.

The first phase will use 50 samples from the archived collection, contained in 250 ml glass containers. Sample weight is approximately 700 g. The samples range from very fine grained (diameter=0.05 mm) to very course grained (diameter=3 cm). All of the samples are uncontaminated and carry a radiation release sticker.

The following table lists the 6 naturally-occurring isotopes to be analyzed, along with their target detection limits.

| Isotope | Target Detection Limit (pCi/g) |
|---|---|
| ✓ K-40 | 1.0 |
| ✓ Ra-226 | 0.1 |
| ✓ Th-232 | 0.1 |
| ✓ U-234 | 0.1 |
| ✓ U-235 | 0.02 |
| ✓ U-238 | 0.4 |

Laboratory requirements for this first phase are:

1) Meet or exceed the target detection limits
2) Provide appropriate QC with the sample size provided
3) Provide data from QC samples, including data from blanks, spikes, etc.
4) Obtain representative subsamples from the samples provided, where appropriate
5) Return the undestructed and unused portions of all samples
6) Analytical results must be reported as a value, error, and calculated lower limit of detection. The value should not be censored with respect to detection limit.
7) Supply information on background correction methods employed, data on background values, and description of sample geometry and counters used for analyses
8) Deliver data in both printed and electronic form

Cost Code EA684 (cross-charge, not)
Data Turnaround Regular
Val Required (find out time + money)
Data Deliverable Standalone / D
Project Hanford Sitewide Background
another set mid-Summer

have HEIS #s

APR 1994 Received Analytical Lab Coordination

1000 – 1500/sample – depends on how batched
21 Days from tech review for val.
10 Days for review + blessing

no val.

0057E

9613497.0410

# OFFICE OF SAMPLE MANAGEMENT

# RECORD OF DISPOSITION

ROD-94-0160
Record of Disposition No.

| | |
|---|---|
| DATE: 06/21/94 | LABORATORY: IT |
| PROJECT TITLE/NO.: Sitewide Background / SAF# 94-207 | NCR NO.: N/A |

**SAMPLE IDENTIFICATION NUMBERS:**

B01414 B01418 B01419 B01420 B01422 B01425 B01429 B01433 B01443 B01447 B01448 B01451
B01458 B01462 B01463 B01465 B01468 B01470 B01473 B01480 B01482 B01484 B01487 B01489
B01490 B01491 B01494 B014C2 B014C3 B014C8 B014F1 B014F6 B014G1 B014G2 B014K0 B014K4
B014K5 B014K7 B01B71 B01B78 B01B79 B06141 B06146 B06153 B06137 B01CN1

**DESCRIPTION OF EVENT:**

The above listed sample numbers were used for a previous sampling event. In order to track analytical results, the samples must have a new, unique identifier.

**DISPOSITION OF SAMPLES:**

See attached for the list of new sample numbers. All analytical results will be reported under these new HEIS numbers.

**APPROVAL SIGNATURES:**

J.W. Ball Michael Daniel Ser — 6/21/94
HASM Project Coordinator (Print/Sign Name) — Date

S.W. Petersen S.W. Petersen — 6/23/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

ORIGINAL - RICHLAND

Attachment
ROD-94-0160

| Sample Received | New Number |
|---|---|
| B01414 | B0C2W8 |
| B01418 | B0C2W9 |
| B01419 | B0C2X0 |
| B01420 | B0C2X1 |
| B01422 | B0C2X2 |
| B01425 | B0C2X3 |
| B01429 | B0C2X4 |
| B01433 | B0C2X5 |
| B01443 | B0C2X6 |
| B01447 | B0C2X7 |
| B01448 | B0C2X8 |
| B01451 | B0C2X9 |
| B01458 | B0C2Y0 |
| B01462 | B0C2Y1 |
| B01463 | B0C2Y2 |
| B01465 | B0C2Y3 |
| B01468 | B0C2Y4 |
| B01470 | B0C2Y5 |
| B01473 | B0C2Y6 |
| B01480 | B0C2Y7 |
| B01482 | B0C378 |
| B01484 | B0C379 |
| B01487 | B0C380 |
| B01489 | B0C381 |
| B01490 | B0C382 |
| B01491 | B0C383 |
| B01494 | B0C384 |
| B014C2 | B0C385 |
| B014C3 | B0C386 |
| B014C8 | B0C387 |
| B014F1 | B0C388 |
| B014F6 | B0C389 |
| B014G1 | B0C390 |
| B014G2 | B0C391 |
| B014K0 | B0C392 |
| B014K4 | B0C393 |
| B014K5 | B0C394 |
| B014K7 | B0C395 |
| B01B71 | B0C396 |
| B01B78 | B0C397 |
| B01B79 | B0C372 |
| B06137 | B0C374 |
| B06141 | B0C375 |
| B06146 | B0C376 |
| B06153 | B0C377 |
| B01CN1 | B0C373 |

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

"Yes's" are category I.
"No's" are Cat. II.
JRH 6 June 94

| Customer Code | Recieved Date | | Screening Prep Date | | Count Date | Mnts. Cntd | BACKGROUND Alpha | Beta | Mnts |
|---|---|---|---|---|---|---|---|---|---|
| WHC | 60394 | | 60394 | | 6-4 | 30 | 7 | 203 | 240 |

| Customer ID WHC/SOIL | pH <2 Rcvd/Req | Residue Wght mG | Vol. Anal. mG | mL | Sample Size Gm | L | SMPLE CNT DATA Hldr Num. | Total Counts Alpha | Beta | Net Sample Counts/Minute Alpha | Beta | DPM / Aliqout Alpha | Beta | uCi per Sample Alpha | Beta | 2 Sigma Error uCi per Sample Alpha | Beta | pCi/(Gm or L) Alpha | Beta | Category 1 Yes/No | Aliquot to Cat 1 Gm or L Alpha | Beta |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 B01414 | | 84.9 | 85 | | 385.0 | | 32 | 14 | 96 | 0.44 | 2.35 | 4.1E+00 | 5.4E+00 | 8.4E-03 | 1.1E-02 | 5.6E-06 | 3.2E-06 | 2.2E+01 | 2.9E+01 | Yes | 4.6E+02 | 3.5E+03 |
| 2 B01418 | * | 88.3 | 89 | | 370.0 | | 33 | 18 | 87 | 0.57 | 2.05 | 5.6E+00 | 4.5E+00 | 1.0E-02 | 8.5E-03 | 6.1E-06 | 2.7E-06 | 2.8E+01 | 2.3E+01 | No | 3.5E+02 | 4.4E+03 |
| 3 B01419 | | 73.0 | 73 | | 440.0 | | 34 | 8 | 71 | 0.24 | 1.52 | 2.0E+00 | 3.5E+00 | 5.5E-03 | 9.4E-03 | 4.8E-06 | 5.4E-06 | 1.3E+01 | 2.1E+01 | Yes | 8.0E+02 | 4.7E+03 |
| 4 B01420 | | 88.6 | 87 | | 360.0 | | 35 | 14 | 85 | 0.44 | 1.99 | 4.3E+00 | 4.5E+00 | 7.9E-03 | 8.4E-03 | 5.2E-06 | 2.8E-06 | 2.2E+01 | 2.3E+01 | Yes | 4.5E+02 | 4.3E+03 |
| 5 B01422 | | 89.7 | 90 | | 285.0 | | 36 | 10 | 71 | 0.30 | 1.52 | 3.0E+00 | 3.5E+00 | 4.2E-03 | 5.0E-03 | 3.3E-06 | 2.0E-06 | 1.5E+01 | 1.7E+01 | Yes | 6.7E+02 | 5.7E+03 |
| 6 B01425 | | 81.0 | 81 | | 320.0 | | 37 | 13 | 70 | 0.40 | 1.49 | 3.7E+00 | 3.3E+00 | 6.7E-03 | 5.8E-03 | 4.5E-06 | 1.9E-06 | 2.1E+01 | 1.8E+01 | Yes | 4.8E+02 | 5.5E+03 |
| 7 B01429 | | 99.8 | 100 | | 350.0 | | 38 | 4 | 63 | 0.10 | 1.25 | 1.0E+00 | 3.1E+00 | 1.7E-03 | 4.9E-03 | 2.2E-06 | 5.0E-06 | 4.7E+00 | 1.4E+01 | Yes | 2.1E+03 | 7.2E+03 |
| 8 B01433 | | 77.8 | 78 | | 390.0 | | 39 | 4 | 84 | 0.10 | 1.95 | 8.6E-01 | 4.7E+00 | 1.9E-03 | 1.1E-02 | 2.6E-06 | 1.6E-05 | 5.0E+00 | 2.7E+01 | Yes | 2.0E+03 | 3.7E+03 |
| 9 B01443 | | 86.9 | 87 | | 410.0 | | 40 | 3 | 85 | 0.07 | 1.99 | 5.9E-01 | 4.9E+00 | 1.3E-03 | 1.0E-02 | 2.1E-06 | 2.3E-05 | 3.1E+00 | 2.5E+01 | Yes | 3.3E+03 | 4.0E+03 |
| 10 B01447 | | 76.4 | 76 | | 335.0 | | 41 | 8 | 78 | 0.24 | 1.75 | 2.1E+00 | 4.0E+00 | 4.1E-03 | 8.0E-03 | 3.6E-06 | 4.8E-06 | 1.2E+01 | 2.4E+01 | Yes | 8.1E+02 | 4.2E+03 |
| 11 B01448 | * | 80.7 | 81 | | 320.0 | | 42 | 22 | 108 | 0.70 | 2.75 | 6.5E+00 | 6.1E+00 | 1.2E-02 | 1.1E-02 | 6.2E-06 | 2.8E-06 | 3.6E+01 | 3.4E+01 | No | 2.8E+02 | 3.0E+03 |
| 12 B01451 | | 67.9 | 68 | | 345.0 | | 43 | 9 | 83 | 0.27 | 1.92 | 2.2E+00 | 4.4E+00 | 5.1E-03 | 1.0E-02 | 4.2E-06 | 5.8E-06 | 1.5E+01 | 2.9E+01 | Yes | 6.8E+02 | 3.5E+03 |
| 13 B01458 | | 81.0 | 81 | | 210.0 | | 44 | 8 | 92 | 0.24 | 2.22 | 2.1E+00 | 5.2E+00 | 2.5E-03 | 6.1E-03 | 2.2E-06 | 4.0E-06 | 1.2E+01 | 2.9E+01 | Yes | 8.5E+02 | 3.4E+03 |
| 14 B01462 | | 67.5 | 68 | | 330.0 | | 45 | 5 | 69 | 0.14 | 1.45 | 1.1E+00 | 3.4E+00 | 2.4E-03 | 7.4E-03 | 2.7E-06 | 7.3E-06 | 7.3E+00 | 2.2E+01 | Yes | 1.4E+03 | 4.5E+03 |
| 15 B01463 | | 76.6 | 77 | | 310.0 | | 46 | 6 | 85 | 0.17 | 1.99 | 1.5E+00 | 4.7E+00 | 2.6E-03 | 8.5E-03 | 2.7E-06 | 7.6E-06 | 8.5E+00 | 2.7E+01 | Yes | 1.2E+03 | 3.6E+03 |
| 16 B01465 | | 65.4 | 65 | | 335.0 | | 47 | 6 | 81 | 0.17 | 1.85 | 1.3E+00 | 4.3E+00 | 3.1E-03 | 9.9E-03 | 3.2E-06 | 9.2E-06 | 9.3E+00 | 3.0E+01 | Yes | 1.1E+03 | 3.4E+03 |
| 17 B01468 | | 55.8 | 58 | | 360.0 | | 48 | 8 | 58 | 0.24 | 1.09 | 1.8E+00 | 2.3E+00 | 5.2E-03 | 8.8E-03 | 4.4E-06 | 3.7E-06 | 1.4E+01 | 1.9E+01 | Yes | 7.0E+02 | 5.3E+03 |
| 18 B01470 | | 90.3 | 90 | | 335.0 | | 49 | 6 | 62 | 0.17 | 1.22 | 1.7E+00 | 2.9E+00 | 2.8E-03 | 4.8E-03 | 2.8E-06 | 3.1E-06 | 8.3E+00 | 1.4E+01 | Yes | 1.2E+03 | 7.0E+03 |
| 19 B01473 | | 92.6 | 93 | | 345.0 | | 50 | 3 | 67 | 0.07 | 1.39 | 6.5E-01 | 3.4E+00 | 1.1E-03 | 5.7E-03 | 1.8E-06 | 9.7E-06 | 3.1E+00 | 1.6E+01 | Yes | 3.2E+03 | 6.1E+03 |
| 20 B01480 | | 96.6 | 97 | | 320.0 | | 51 | 10 | 58 | 0.30 | 1.09 | 3.1E+00 | 2.4E+00 | 4.7E-03 | 3.6E-03 | 3.6E-06 | 1.2E-06 | 1.5E+01 | 1.1E+01 | Yes | 6.9E+02 | 8.9E+03 |
| B01484 | | 66.5 | 67 | | 355.0 | | 52 | 6 | 50 | 0.17 | 0.82 | 1.4E+00 | 1.8E+00 | 3.3E-03 | 4.3E-03 | 3.3E-06 | 2.6E-06 | 9.4E+00 | 1.2E+01 | Yes | 1.1E+03 | 8.2E+03 |
| TOTAL | uCi | | | | | | | | | | | | | 9.6E-02 | 1.6E-01 | | | | | | | |

400083

0900

9613497.0413

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 7-18

# REANALYSIS / RECOUNT

## CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS 1150

NAME/DATE mmm / 7-14-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP

MATRIX soil

BATCH NUMBER

| ITAS ID | CUSTOMER ID | COMMENTS |
|---|---|---|
| 1 ) ~~4060 8302~~ 7-14-94 mmm | | Reat 500 min |
| 2 ) 05 | (5) | |
| 3 ) ~~09~~ 7-14-94 mmm | | |
| 4 ) 15 | | |
| 5 ) | | |
| 6 ) | | |
| 7 ) | | |
| 8 ) | | |
| 9 ) | | |
| 10) | | |

## REANALYSIS

*REFERENCED QC*

ITAS ID - BLANK

ITAS ID - SPIKE

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

## RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT 7/14/94 CD

DATA REVIEWED mmm 7-15-94

ANALYTICAL PREP STORED mmm 7-15-9

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2