Analytical Data Package Prepared For

# CH2M Hill Plateau Remediation

Radiochemical Analysis By

## TestAmerica TARL

*2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.*

*Data Package Contains _____ Pages*

Report Nbr: 40475

| SDG Nbr | ORDER Nbr | CLIENT ID NUMBER | LOT Nbr | WORK ORDER | RPT DB ID | BATCH |
|---|---|---|---|---|---|---|
| W05570 | X08-048 | B1W4N4 | J8L020267-1 | K3XT71AA | 9K3XT710 | 8338477 |
| | | B1W4N4 | J8L020267-1 | K3XT71AC | 9K3XT710 | 8338475 |
| | | B1W4N4 | J8L020267-1 | K3XT71AD | 9K3XT710 | 8338479 |
| | | B1W4N4 | J8L020267-1 | K3XT71AE | 9K3XT710 | 8338473 |
| | | B1W4P0 | J8L020267-2 | K3XT81AA | 9K3XT810 | 8338477 |
| | | B1W4P0 | J8L020267-2 | K3XT81AC | 9K3XT810 | 8338475 |
| | | B1W4P0 | J8L020267-2 | K3XT81AD | 9K3XT810 | 8338479 |
| | | B1W4P0 | J8L020267-2 | K3XT81AE | 9K3XT810 | 8338473 |
| | | B1W4P6 | J8L020267-3 | K3XT91AA | 9K3XT910 | 8338477 |
| | | B1W4P6 | J8L020267-3 | K3XT91AC | 9K3XT910 | 8338475 |
| | | B1W4P6 | J8L020267-3 | K3XT91AD | 9K3XT910 | 8338479 |
| | | B1W4P6 | J8L020267-3 | K3XT91AE | 9K3XT910 | 8338473 |

Comments:

RECEIVED JAN 21 2009 EDMC

RECEIVED DECEMBER 30, 2008

0082361

TESTAMERICA

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Certificate of Analysis

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop - B6-06
Richland, WA 99352

December 30, 2008

Attention: Mike Neely

| | | |
|---|---|---|
| SAF Number | : | X08-048 |
| Date SDG Closed | : | December 2, 2008 |
| Number of Samples | : | Three (3) |
| Sample Type | : | Water |
| SDG Number | : | W05570 |
| Data Deliverable | : | 30-Day / Summary |

## CASE NARRATIVE

### I. Introduction

On December 2, 2008 three water samples were received at TestAmerica (TARL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Fluor Hanford specific IDs:

| PGW ID# | TARL ID# | DATE OF RECEIPT | MATRIX |
|---|---|---|---|
| B1W4P6 | K3XT9 | 12/02/08 | WATER |
| B1W4P0 | K3XT8 | 12/02/08 | WATER |
| B1W4N4 | K3XT7 | 12/02/08 | WATER |

### II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

### III. 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**
Uranium 234, 235 and 238 by method RL-ALP-015 (RICH-RC-5039)*
Neptunium-237 by method RL-ALP-013 (RICH-RC-5009)*
**Gamma Spectroscopy**
Iodine-129 (LL) by method RL-GAM-002 (RICH-RC-5025)*
**Liquid Scintillation Counting**
Selenium-79 by method RL-LSC-012 (RICH-RC-5043)*

*SOP ID's changed effective 7-01-2008. Attached is a cross reference until SOP ID's are changed in all systems.

## IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

## V. Comments

**Alpha Spectroscopy**
Uranium 234, 235 and 238 by method RL-ALP-015 (RICH-RC-5039):
The LCS, batch blank, sample and sample duplicate (B1W4N4) results are within contractual requirements.

Neptunium-237 by method RL-ALP-013 (RICH-RC-5009):
The LCS, batch blank, sample and sample duplicate (B1W4P6) results are within contractual requirements.

**Gamma Spectroscopy**
Iodine-129 (LL) by method RL-GAM-002 (RICH-RC-5025):
The LCS, batch blank, samples and sample duplicate (B1W4P0) results are within contractual requirements.

**Liquid Scintillation Counting**
Selenium-79 by method RL-LSC-012 (RICH-RC-5043):
There is no LCS for selenium-79. Except as noted, batch blank, samples and sample duplicate (B1W4N4) results are within contractual requirements.

CH2M Hill Plateau Remediation Company
December 30, 2008

---

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:

Sandra Seger

Sandra Seger
Project Manager

## Drinking Water Method Cross References

| | DRINKING WATER ASTM METHOD CROSS REFERENCES | |
|---|---|---|
| | | |
| **Referenced Method** | **Isotope(s)** | **TestAmerica Richland's SOP No.** |
| EPA 901.1 | Cs-134, I-131 | RICH-RC-5017 |
| EPA 900.0 | Alpha & Beta | RICH-RC-5014 |
| EPA 00-02 | Gross Alpha (Coprecipitation) | RICH-RC-5021 |
| EPA 903.0 | Total Alpha Radium (Ra-226) | RICH-RC-5027 |
| EPA 903.1 | Ra-226 | RICH-RC-5005 |
| EPA 904.0 | Ra-228 | RICH-RC-5005 |
| EPA 905.0 | Sr-89/90 | RICH-RC-5006 |
| ASTM D5174 | Uranium | RICH-RC-5058 |
| EPA 906.0 | Tritium | RICH-RC-5007 |

## Results in this report relate only to the sample(s) analyzed.

## Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ($u_i$) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ($u_c$) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

| | |
|---|---|
| **Action Lev** | An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit. |
| **Batch** | The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together. |
| **Bias** | Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30. |
| **COC No** | Chain of Custody Number assigned by the Client or TestAmerica. |
| **Count Error (#s)** | Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background. |
| **Total Uncert (#s)** ***$u_c$ - Combined Uncertainty.*** | All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***$u_c$ the combined uncertainty.*** The uncertainty is absolute and in the same units as the result. |
| **(#s), Coverage Factor** | The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations. |
| **CRDL (RL)** | Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL) |
| **Lc** | Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero. |
| **Lot-Sample No** | The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot. |
| **MDC\|MDA** | Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. |
| **Primary Detector** | The instrument identifier associated with the analysis of the sample aliquot. |
| **Ratio U-234/U-238** | The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038. |
| **Rst/MDC** | Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result. |
| **Rst/TotUcert** | Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result. |
| **Report DB No** | Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number. |
| **RER** | The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample. |
| **SDG** | Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt. |
| **Sum Rpt Alpha Spec Rst(s)** | The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units. |
| **Work Order** | The LIMS software assign test specific identifier. |
| **Yield** | The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method. |

| Isotope | Richland SOP # | Old Richland SOP # | Method Reference | Title |
|---|---|---|---|---|
| Asbestos | RL-ASB-001 | N/A | NIOSH 7400 | Fiber Counting by Phase Contrast Microscopy based on NIOSH 7400 |
| Asbestos | RL-ASB-002 | N/A | NIOSH 9002 | Sample Prep and Analysis for Asbestos (bulk) by Polarized Light Microsopy based on NIOSH 9002 |
| Alpha - Gross | ARCHIVED | RICH-RB-5035 | Liquid Scintillation Anal/ Packard | DETERMINATION OF GROSS ALPHA IN NASAL SMEARS BY LIQUID SCINTILLATION COUNTING |
| Alpha - Gross | RL-GPC-001 | RICH-RC-5014 | 9310 / EPA SW846 900.0 / EPA 600 | DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310 |
| Alpha - Gross | RL-GPC-007 | RICH-RC-5020 | SM 7110B EPA 680 | DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION |
| Alpha - Gross | RL-GPC-002 | RICH-RC-5021 | 00-02 EPA 520 | DETERMINATION OF GROSS ALPHA ACTIVITY IN WATER BY COPRECIPITATION |
| Alpha - Gross | RL-GPC-008 | RICH-RC-5036 | ER100 / LANL | PREPARATION OF AIR FILTERS FOR GROSS ALPHA/BETA AND COMPOSITING AIR FILTERS |
| Am | RL-ALP-003 | RICH-RC-5072 | Mod RP 725 / DOE0089T EXT Chromatography | SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY |
| Am | RL-ALP-010 | RICH-RC-5080 | Am03/Pu11HASL 300 NAS-NS-3006 | SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM |
| Beta - Gross | RL-GPC-001 | RICH-RC-5014 | 9310 / EPA SW846 900.0 / EPA 600 | DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310 |
| Beta - Gross | RL-GPC-007 | RICH-RC-5020 | SM 7110B EPA 680 | DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION |
| Beta - Gross | RL-GPC-008 | RICH-RC-5036 | ER100 / LANL | PREPARATION OF AIR FILTERS FOR GROSS ALPHA/BETA AND COMPOSITING AIR FILTERS |
| C14 | RL-LSC-001 | RICH-RB-5013 | Mod H-02 / EPA 520 | TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE |
| C14 | RL-LSC-008 | RICH-RC-5022 | EPA C-01 / EPA 520 | CARBON 14 BY DIGESTION METHOD |
| C14 | RL-LSC-009 | RICH-RC-5040 | Mod C14 / EPA 680 | DETERMINATION OF CARBON-14 BY BENZENE SYNTHESIS |
| C14 | RL-LSC-010 | RICH-RC-5046 | EPA C-01 / EPA 520 | DETERMINATION OF CARBON-14 IN GRAPHITE AND SOIL |
| C14 | RL-LSC-011 | RICH-RC-5047 | Mod H-02 / EPA 520 | DETERMINATION OF CARBON-14 IN WATER BY DIRECT COUNTING |
| Cm | RL-ALP-003 | RICH-RC-5072 | Mod RP 725 / DOE0089T EXT Chromatography | SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY |
| Coliform | RL-WC-001 | RICH-WC-5001 | 9222B | DETERMINATION OF TOTAL COLIFORM: MULTIPLE TUBE FERMENTATION TECHNIQUE |
| Coliform | RL-WC-002 | RICH-WC-5002 | 9131 | TOTAL COLIFORMS BY MEMBRANE FILTRATION |
| Coliform | RL-WC-005 | RICH-WC-5007 | 9223 | TOTAL COLIFORM BY THE COLILERT METHOD |
| Cr6+ | RL-WC-003 | RICH-WC-5003 | 7196A, SW846 | DETERMINATION OF HEXAVALENT CHROMIUM [Cr(VI)] IN WATER, SOIL, AND SIMILAR MATRICES |
| Cr6+ | RL-WC-004 | RICH-WC-5005 | 3060 / SW846 | DETERMINATION OF HEXAVALENT CHROMIUM (CrVI) IN SOLID MATRICES WITH ALKALINE DIGESTION |
| Fe | RL-LSC-015 | RICH-RC-5074 | EXT Chromatography ModFe55/PNL-ALO-435 | SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY |
| Fe55 | RL-LSC-016 | RICH-RC-5023 | R4-73-014 / EPA HASL 300 | DETERMINATION OF IRON-55 AND IRON-59 IN WATER |
| Fe59 | RL-LSC-016 | RICH-RC-5023 | R4-73-014 / EPA HASL 300 | DETERMINATION OF IRON-55 AND IRON-59 IN WATER |
| Gamma | RL-GAM-001 | RICH-RC-5017 | 901.0 / HASL 300 ASTM D3649 | PREPARATION OF ALL MATRICES FOR ANALYSIS BY GAMMA SPECTROSCOPY |
| H3 | RL-LSC-001 | RICH-RB-5013 | Mod H-02 / EPA 520 | TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE |
| H3 | RL-LSC-003 | RICH-RB-5034 | 7500-3 / SM | DETERMINATION OF TRITIUM IN URINE BY DISTILLATION |
| H3 | RL-LSC-004 | RICH-RC-5004 | H3 / EPA LV539 | DETERMINATION OF TRITIUM IN AIR |
| H3 | RL-LSC-005 | RICH-RC-5007 | Mod 906.0 / EPA 600 | SEPARATION OF TRITIUM IN WATER AND AQUEOUS COMPONENT OF WINE |
| H3 | RL-LSC-007 | RICH-RC-5024 | H-3 by EE EPA LV539 / HASL 300 | DETERMINATION OF LOW LEVEL TRITIUM IN WATER BY ELECTROLYTIC ENRICHMENT |
| H3 | RL-LSC-002 | RICH-RC-5037 | H-3 in Water/Tissue / LV 539 | DETERMINATION OF TRITIUM BY CRYOGENIC DISTILLATION |
| H3 | RL-LSC-006 | RICH-RC-5048 | H-3 in Water/Tissue / LV 539 | TRITIUM PREPARATION IN MILK SAMPLES |
| I129 | RL-GAM-002 | RICH-RC-5025 | R4-73-0141/EPA ASTM D2334 (Discontinued) | DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD |
| I131 | RL-GAM-002 | RICH-RC-5025 | R4-73-0141/EPA ASTM D2334 (Discontinued) | DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD |
| I131 | ARCHIVED | RICH-RC-5049 | HASL 300 (1983) | DETERMINATION OF IODINE-131 IN MILK BY BATCH ION-EXCHANGE |
| Metals | ARCHIVED | BHI-MT-0001 | 6010 | ICP-AE SPECTROSCOPY, SPECTROMETRIC METHOD FOR TRACE ELEMENT ANALYSIS, METHOD 6010A FOR Bechtel |

| Isotope | Richland SOP # | Old Richland SOP # | Method Reference | Title |
|---|---|---|---|---|
| Metals | RL-MT-001 | RICH-MT-0001 | 6010B | ICP-AES for TRACE ELEMENT ANALYSIS, METHOD 6010B |
| Metals | RL-MT-002 | RICH-MT-0002 | SW486 3050B | ACID DIGESTION FOR ICP ANALYSIS |
| Metals | RL-MT-003 | RICH-MT-0003 | NIOSH 7300 | DIGESTION PREP based on METHOD NIOSH 7300 |
| Ni | RL-LSC-015 | RICH-RC-5074 | EXT Chromatography ModFe55/PNL-ALO-435 | SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY |
| Ni63 | RL-LSC-001 | RICH-RB-5013 | Mod H-02 / EPA 520 | TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE |
| Ni63 | RL-LSC-017 | RICH-RC-5069 | EXT Chromatography Mod RP300 / DOE0089T | SEPARATION OF Ni-63 BY EXTRACTION CHROMATOGRAPHY |
| Np | RL-ALP-013 | RICH-RC-5009 | NAS-NS-3060 | DETERMINATION OF NEPTUNIUM-237 BY LIQUID-LIQUID EXTRACTION IN ALL MATRICES |
| Np | RL-ALP-006 | RICH-RC-5064 | EXT Chromatography | SEPARATION OF NEPTUNIUM BY EXTRACTION CHROMATOGRAPHY |
| P32 | RL-LSC-001 | RICH-RB-5013 | Mod H-02 / EPA 520 | TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE |
| Pb | RL-ALP-011 | RICH-RC-5076 | EXT Chromatography | DETERMINATION OF LEAD-210 BY EXTRACTION CHROMATOGRAPHY |
| Po | RL-ALP-007 | RICH-RB-5001 | NAS-NS-3037 HASL 300 | DETERMINATION OF POLONIUM-210 IN URINE |
| Po | RL-ALP-012 | RICH-RC-5012 | Po-01 / HASL 300 Mod U01 HASL 300 | SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS |
| Prep - Bioassay | ARCHIVED | RICH-RB-0001 | | PREPARATION FOR RAPID BIOASSAY ANALYSES |
| Prep - Bioassay | RL-PRP-001 | RICH-RB-5002 | Mod Pu06 / HASL 300 | PREPARATION OF URINE AND BLOOD SAMPLES |
| Prep - Bioassay | ARCHIVED | RICH-RB-5004 | ASTM D1429-95 | DETERMINATION OF SPECIFIC GRAVITY OF URINE |
| Prep - Bioassay | RL-RPL-002 | RICH-RB-5036 | Pub 6490,6601 / PNL | PREPARATION OF SYNTHETIC URINE AND FECES USING RECIPES FROM HPS N13.30 PREFORMANCE TESTING |
| Prep - Bioassay | RL-PRP-002 | RICH-RB-5037 | LA-10300-M R200 ASTM D3865 | PREPARATION OF FECAL SAMPLES USING HYDROFLUORIC ACID DIGESTION |
| Prep - Bioassay | RL-RPL-003 | RICH-RC-5028 | ICRP Publication 23 | PREPARATION OF SYNTHETIC URINE AND FECES |
| Prep - Count | RL-ALP-016 | RICH-RC-5003 | G-03 / HASL 300 | COPRECIPITATION OF SOME ACTINIDES ON NEODYMIUM FLUORIDE FOR ALPHA-PARTICLE SPECTROMETRY |
| Prep - Count | RL-ALP-015 | RICH-RC-5039 | G-03 / HASL 300 Anal Chem 1972 | ELECTRODEPOSITION OF ACTINIDES |
| Prep - Count | RL-ALP-014 | RICH-RC-5085 | Morrison & Freiser NAS-NS-3050 | ANHYDROUS ETHER EXTRACTION OF URANIUM |
| Prep - Env | RL-KPA-001 | RICH-RC-5015 | ASTM / D5174-97 | ENVIRONMENTAL SAMPLE PREPARATION FOR URANIUM BY LASER-INDUCED PHOSPHORESCENCE |
| Prep - Env | RL-PRP-004 | RICH-RC-5016 | Sr02 / HASL 300 | PREPARATION OF ENVIRONMENTAL MATRICES |
| Prep - Env | RL-PRP-007 | RICH-RC-5045 | Mod Pu02 / HASL 300 | PREPARATION OF MIXED BED RESINS AND PRE-FILTERS |
| Prep - Env | RL-PRP-008 | RICH-RC-5068 | Mod ER100 / LA10300 | PREPARATION OF SOIL, VEGETATION AND AIR FILTERS BY MIXED STRONG ACID LEACHING |
| Prep - Resin | RL-ALP-017 | RICH-RC-5018 | Mod Pu11 / Mod 300 | ION-EXCHANGE PREPARATION |
| Prep - Soil | RL-PRP-003 | RICH-RC-5013 | Pu02A / HASL 300 | PREPARATION OF SOIL SAMPLES |
| Prep - Soil | RL-PRP-005 | RICH-RC-5019 | D5259 / ASTM SW 846/3015/3051/3052 | PREPARATION AND DISSOLUTION OF SEDIMENTS AND SOIL BY MICROWAVE BOMB DIGESTION |
| Prep - Soil | RL-PRP-006 | RICH-RC-5032 | Pu02A / HASL 300 | COMPLETE DISSOLUTION BY MIXED ACIDS IN A TEFLON BEAKER |
| Prep - Soil | RL-PRP-009 | RICH-RC-5077 | Mod ER100 / LA10300 | PREPARATION OF SMALL SOIL SAMPLES FOR GAMMA SPEC AND/OR RADIOCHEM ANAL BY ACID DIGESTION |
| Prep - Urine | RL-PRP-010 | RICH-RC-5086 | AnalyticaChemActa1992 RP800 / DOE00089T | URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION |
| Prep - Water | RL-PRP-010 | RICH-RC-5086 | AnalyticaChemActa1992 RP800 / DOE00089T | URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION |
| Pu | ARCHIVED | RICH-RB-5015 | Pu11 / HASL 300 | RAPID DETERMINATION OF PLUTONIUM IN FECES |
| Pu | RL-ALP-002 | RICH-RC-5010 | Pu11 / HASL 300 | DETERMINATION OF ISOTOPIC PLUTONIUM IN ALL MATRICES |
| Pu | RL-ALP-010 | RICH-RC-5080 | Am03 HASL 300 Pu11 / HASL 300 | SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM |
| Pu | RL-ALP-001 | RICH-RC-5087 | AnalyticaChemActa1992 RP800 / DOE00089T | DETERMINATION OF PLUTONIUM BY EXTRACTION CHROMATOGRAPHY |
| Ra | RL-RA-001 | RICH-RC-5005 | 903.1 / EPA 600 | RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903.1 AND 904.0 |
| Ra | RL-RA-001 | RICH-RC-5005 | 904.0 / EPA 600 | RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903.1 AND 904.0 |

| Isotope | Richland SOP # | Old Richland SOP # | Method Reference | Title |
|---|---|---|---|---|
| Ra | RL-RA-002 | RICH-RC-5027 | Mod D2460/ ASTM 903.0 / EPA 600 | DETERMINATION OF TOTAL RADIUM |
| Rn | RL-LSC-019 | RICH-RC-5082 | 913.0 / EPA | DETERMINATION OF RADON-222 - ADAPTED FROM METHOD 913.0 |
| S35 | ARCHIVED | RICH-RB-5020 | Hillebrand, Lundeell, Bright, Hoffman 1953 | DETERMINATION OF SULFUR-35 IN URINE |
| Se79 | RL-LSC-012 | RICH-RC-5043 | Selenium / NAS-NS-3030 | RADIOCHEMICAL DETERMINATION OF SELENIUM-79 |
| Solubility | ARCHIVED | RICH-RC-5035 | Kalfward&Thomas PNL3716 | DETERMINATION OF SOLUBILITY OF RADIOACTIVE PARTICLE CONSTITUENTS |
| Sr | RL-GPC-005 | RICH-RB-5007 | Mod Sr02 / HASL 300 Mod 905.0 / EPA 600 | DETERMINATION OF TOTAL STRONTIUM IN URINE |
| Sr | RL-GPC-006 | RICH-RB-5021 | Mod Sr02 / HASL300 Mod 905.0 / EPA 600 | DETERMINATION OF STRONTIUM IN FECES |
| Sr | ARCHIVED | RICH-RB-5022 | Mod Sr02 / HASL300 Mod 905.0 / EPA 600 | DETERMINATION OF TOTAL STRONTIUM IN URINE FOR RAPID ANALYSIS |
| Sr | ARCHIVED | RICH-RB-5031 | Mod Sr02 / HASL300 Mod 905.0 / EPA 600 | RAPID DETERMINATION OF TOTAL STRONTIUM IN FECES |
| Sr | RL-GPC-003 | RICH-RC-5006 | Mod Sr02 / HASL300 Mod 905.0 / EPA 600 | STRONTIUM SEPARATION IN ENVIROMENTAL MATRICES |
| Sr - Yt | RL-GPC-004 | RICH-RC-5071 | Mod Sr02 / HASL300 Mod 905.0 / EPA 600 | YTTRIUM-90 SEPARATION FOR STRONTIUM-90 DETERMINATION IN ALL MATRICES |
| Tc | RL-LSC-014 | RICH-RC-5065 | EXT Chromatography Mod RP550 / DOE0089T | DETERMINATION OF TECHNETIUM-99 BY EXTRACTION CHROMATOGRAPHY |
| Tc | RL-LSC-013 | RICH-RC-5078 | Tc01 / HASL 300 | SEPARATION OF TECHNETIUM-99 IN ALL MATRICES |
| Th | RL-ALP-008 | RICH-RB-5006 | Mod Th01 / HASL 300 | SEPARATION OF THORIUM FROM URINE AND FECAL SAMPLES |
| Th | RL-ALP-005 | RICH-RC-5084 | Mod Th01 / HASL 300 Anal Chim Acta 1982 | DETERMINATION OF THORIUM ISOTOPIC IN ENVIRONMENTAL MATRICES |
| U | RL-ALP-012 | RICH-RC-5012 | Po-01 / HASL 300 Mod U01 / HASL 300 | SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS |
| U | RL-KPA-002 | RICH-RC-5031 | Mod U01 / HASL 300 | SEPARATION OF TOTAL URANIUM IN WATER AND URINE |
| U | RL-KPA-003 | RICH-RC-5058 | D5174 / ASTM | DETERMINATION OF URANIUM BY PHOSPHORESCENCE ANALYSIS |
| U | RL-ALP-004 | RICH-RC-5067 | EXT Chromatography Mod RP725 / DOE0089T | SEPARATION OF URANIUM BY EXTRACTION CHROMATOGRAPHY |
| U | RL-ALP-003 | RICH-RC-5072 | EXT Chrom Mod RP725 & 800 / DOE0089T | SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY |
| U | RL-ALP-009 | RICH-RC-5079 | EXT Chromatography Mod RP725 / DOE0089T | DETERMINATION OF ISOTOPIC URANIUM IN ALL MATRICES |

12/30/2008 11:45:09 AM

# TestAmerica Report

Lab Code: TARL

FormNbr: R FormatType: FEAD Version: 05 Rpt Nbr: 40475 File Name: h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

| Lab Sample Id: | Client Id: | Test User | Contract Nbr | SAF Nbr | Sdg Nbr: | QC Type: | Moisture/ Solids%*: | Distilled Volume | Sample On Date: | Collection Date: |
|---|---|---|---|---|---|---|---|---|---|---|
| 9K3XT710 | B1W4N4 | | MW6-SBB-A1 | X08-048 | W05570 | | | | | 12/02/2008 11:22 |

| Batch | Analyte | CAS# | Result | Unit | CntU 2S | TotU 2S | Qual | MDA | TrcYield | Method | Alq Size | Unit | Analy Date/Time | Act |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338475 | I-129L | 15046-84-1 | -6.88E-02 | pCi/L | 9.0E-01 | 9.0E-01 | U | 1.68E+00 | 100.5 | I129_SEP_LEPS_G | 5.001E-01 | L | 12/20/2008 06:58 | I |
| 8338477 | NP-237 | 13994-20-2 | 6.06E-02 | pCi/L | 1.3E-01 | 1.3E-01 | U | 2.73E-01 | 91.5 | NP237_LLE_PLAT | 2.00E-01 | L | 12/18/2008 18:34 | I |
| 8338479 | Se-79 | 15758-45-9 | -1.61E+00 | pCi/L | 2.4E+00 | 9.2E+00 | U | 5.82E+00 | 74.3 | SE79_SEP_IE_LS | 2.001E-01 | L | 12/16/2008 18:27 | I |
| 8338473 | U-234 | 13966-29-5 | 2.03E+00 | pCi/L | 5.4E-01 | 6.4E-01 | | 1.71E-01 | 78.9 | UISO_PLATE_AEA | 2.00E-01 | L | 12/24/2008 15:26 | I |
| 8338473 | U-235 | 15117-96-1 | 1.00E-01 | pCi/L | 1.2E-01 | 1.3E-01 | U | 1.71E-01 | 78.9 | UISO_PLATE_AEA | 2.00E-01 | L | 12/24/2008 15:26 | I |
| 8338473 | U-238 | U-238 | 1.37E+00 | pCi/L | 4.5E-01 | 5.0E-01 | | 2.25E-01 | 78.9 | UISO_PLATE_AEA | 2.00E-01 | L | 12/24/2008 15:26 | I |

| Lab Sample Id: | Client Id: | Test User | Contract Nbr | SAF Nbr | Sdg Nbr: | QC Type: | Moisture/ Solids%*: | Distilled Volume | Sample On Date: | Collection Date: |
|---|---|---|---|---|---|---|---|---|---|---|
| 9K3XT810 | B1W4P0 | | MW6-SBB-A1 | X08-048 | W05570 | | | | | 12/02/2008 10:30 |

| Batch | Analyte | CAS# | Result | Unit | CntU 2S | TotU 2S | Qual | MDA | TrcYield | Method | Alq Size | Unit | Analy Date/Time | Act |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338475 | I-129L | 15046-84-1 | 8.74E-01 | pCi/L | 9.1E-01 | 9.1E-01 | U | 1.87E+00 | 99.7 | I129_SEP_LEPS_G | 5.001E-01 | L | 12/20/2008 08:40 | I |
| 8338477 | NP-237 | 13994-20-2 | 1.52E-02 | pCi/L | 8.1E-02 | 8.1E-02 | U | 2.41E-01 | 90.9 | NP237_LLE_PLAT | 2.00E-01 | L | 12/18/2008 18:34 | I |
| 8338479 | Se-79 | 15758-45-9 | -6.45E-01 | pCi/L | 2.6E+00 | 9.7E+00 | U | 6.09E+00 | 71.0 | SE79_SEP_IE_LS | 2.00E-01 | L | 12/17/2008 01:12 | I |
| 8338473 | U-234 | 13966-29-5 | 5.10E-01 | pCi/L | 2.8E-01 | 2.9E-01 | | 1.77E-01 | 82.3 | UISO_PLATE_AEA | 2.001E-01 | L | 12/24/2008 15:27 | I |
| 8338473 | U-235 | 15117-96-1 | 3.70E-02 | pCi/L | 7.5E-02 | 7.6E-02 | U | 1.77E-01 | 82.3 | UISO_PLATE_AEA | 2.001E-01 | L | 12/24/2008 15:27 | I |
| 8338473 | U-238 | U-238 | 3.99E-01 | pCi/L | 2.5E-01 | 2.5E-01 | | 1.77E-01 | 82.3 | UISO_PLATE_AEA | 2.001E-01 | L | 12/24/2008 15:27 | I |

| Lab Sample Id: | Client Id: | Test User | Contract Nbr | SAF Nbr | Sdg Nbr: | QC Type: | Moisture/ Solids%*: | Distilled Volume | Sample On Date: | Collection Date: |
|---|---|---|---|---|---|---|---|---|---|---|
| 9K3XT910 | B1W4P6 | | MW6-SBB-A1 | X08-048 | W05570 | | | | | 12/02/2008 08:55 |

| Batch | Analyte | CAS# | Result | Unit | CntU 2S | TotU 2S | Qual | MDA | TrcYield | Method | Alq Size | Unit | Analy Date/Time | Act |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338475 | I-129L | 15046-84-1 | 3.06E-01 | pCi/L | 1.1E+00 | 1.1E+00 | U | 2.04E+00 | 95.1 | I129_SEP_LEPS_G | 5.001E-01 | L | 12/20/2008 08:40 | I |
| 8338477 | NP-237 | 13994-20-2 | -2.02E-02 | pCi/L | 1.0E-01 | 1.0E-01 | U | 2.85E-01 | 76.5 | NP237_LLE_PLAT | 2.001E-01 | L | 12/18/2008 18:35 | I |
| 8338479 | Se-79 | 15758-45-9 | -2.77E-01 | pCi/L | 2.6E+00 | 1.0E+01 | U | 6.25E+00 | 69.2 | SE79_SEP_IE_LS | 2.00E-01 | L | 12/17/2008 04:35 | I |
| 8338473 | U-234 | 13966-29-5 | 2.47E-02 | pCi/L | 6.3E-02 | 6.3E-02 | U | 1.48E-01 | 98.8 | UISO_PLATE_AEA | 2.00E-01 | L | 12/26/2008 04:02 | I |
| 8338473 | U-235 | 15117-96-1 | 3.08E-02 | pCi/L | 6.3E-02 | 6.3E-02 | U | 1.48E-01 | 98.8 | UISO_PLATE_AEA | 2.00E-01 | L | 12/26/2008 04:02 | I |
| 8338473 | U-238 | U-238 | 1.85E-02 | pCi/L | 6.4E-02 | 6.4E-02 | U | 1.74E-01 | 98.8 | UISO_PLATE_AEA | 2.00E-01 | L | 12/26/2008 04:02 | I |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Blank Report

Lab Code: TARL

FormNbr: R FormatType: FEAD VersionNbr: 05 File Name: h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | K31QD1AB | **Sdg/Rept Nbr:** | W05570 | 40475 | **Collection Date:** 12/02/2008 11:22 |
| **Client Id:** | NA | **Matrix:** | WATER | WATER | **Sample On Date:** |
| **Moisture/Solids%*:** | | **QC Type:** | BLK | | **Received Date:** 12/02/2008 |

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| | MW6-SBB-A19981 | | | | | | | | AD | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338473 | U-234 | 4.80E-02 | pCi/L | 1.1E-01 | U | 2.46E-01 | 104.1 | | UISO_PLATE_ | 2.001E-01 | 12/26/2008 | | | | D |
| BLK | 13966-29-5 | | | 1.1E-01 | | | | | | L | 04:02 | | | | |
| 8338473 | U-235 | -1.20E-02 | pCi/L | 6.2E-02 | U | 1.69E-01 | 104.1 | | UISO_PLATE_ | 2.001E-01 | 12/26/2008 | | | | D |
| BLK | 15117-96-1 | | | 6.2E-02 | | | | | | L | 04:02 | | | | |
| 8338473 | U-238 | -3.00E-02 | pCi/L | 7.1E-02 | U | 2.78E-01 | 104.1 | | UISO_PLATE_ | 2.001E-01 | 12/26/2008 | | | | D |
| BLK | U-238 | | | 7.1E-02 | | | | | | L | 04:02 | | | | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Blank Report

**Lab Code:** TARL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | K31QG1AB | **Sdg/Rept Nbr:** | W05570 | 40475 | **Collection Date:** 12/02/2008 10:30 |
| **Client Id:** | NA | **Matrix:** | WATER | WATER | **Sample On Date:** |
| **Moisture/Solids%*:** | | **QC Type:** | BLK | | **Received Date:** 12/02/2008 |

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| | MW6-SBB-A19981 | | | | | | | | AF | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338475 | I-129L | 2.85E-01 | pCi/L | 9.5E-01 | U | 1.79E+00 | 99.2 | | I129_SEP_LEP | 5.00E-01 | 12/20/2008 | | | | D |
| BLK | 15046-84-1 | | | 9.5E-01 | | | | | | L | 10:22 | | | | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Blank Report

Lab Code: TARL

FormNbr: R FormatType: FEAD VersionNbr: 05 File Name: h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | K31QN1AB | **Sdg/Rept Nbr:** | W05570 40475 | **Collection Date:** | 12/02/2008 08:55 |
| **Client Id:** | NA | **Matrix:** | WATER WATER | **Sample On Date:** | |
| **Moisture/Solids%*:** | | **QC Type:** | BLK | **Received Date:** | 12/02/2008 |

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| | MW6-SBB-A19981 | | | | | | | | AH | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338477 | NP-237 | -2.50E-02 | pCi/L | 8.8E-02 | U | 2.63E-01 | 80.3 | | NP237_LLE_P | 2.00E-01 | 12/18/2008 | | | | |
| BLK | 13994-20-2 | | | 8.8E-02 | | | | | | L | 18:35 | | | | D |



U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Blank Report

Lab Code: TARL

FormNbr: R FormatType: FEAD VersionNbr: 05 File Name: h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | K31QP1AB | **Sdg/Rept Nbr:** | W05570 40475 | **Collection Date:** | 12/02/2008 11:22 |
| **Client Id:** | NA | **Matrix:** | WATER WATER | **Sample On Date:** | |
| **Moisture/Solids%*:** | | **QC Type:** | BLK | **Received Date:** | 12/02/2008 |

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| | MW6-SBB-A19981 | | | | | | | | AJ | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338479 | Se-79 | 2.12E+00 | pCi/L | 1.1E+01 | U | 6.91E+00 | 62.6 | | SE79_SEP_IE_ | 2.001E-01 | 12/17/2008 | | | | D |
| BLK | 15758-45-9 | | | 2.9E+00 | | | | | | L | 07:58 | | | | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Control Sample Report

**Lab Code:** TARL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

**Lab Sample Id:** K31QD1CS **Sdg/Rept Nbr:** W05570 40475 **Collection Date:** 12/02/2008 11:22

**Client Id:** NA **Matrix:** WATER WATER **Sample On Date:**

**Moisture/Solids%*:** **QC Type:** BS **Received Date:** 12/02/2008

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| | MW6-SBB-A19981 | | | | | | | | AE | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338473 | U-234 | 9.13E+00 | pCi/L | 1.8E+00 | | 2.39E-01 | 98.0 | 8.57E+00 | UISO_PLATE_ | 2.001E-01 | 12/26/2008 | | | 75 | D |
| BS | 13966-29-5 | | | 1.1E+00 | | | | 106.6 | | L | 04:03 | | | 125 | |
| 8338473 | U-238 | 9.43E+00 | pCi/L | 1.9E+00 | | 1.93E-01 | 98.0 | 8.98E+00 | UISO_PLATE_ | 2.001E-01 | 12/26/2008 | | | 75 | D |
| BS | U-238 | | | 1.1E+00 | | | | 105.0 | | L | 04:03 | | | 125 | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Control Sample Report

**Lab Code:** TARL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

**Lab Sample Id:** K31QG1CS **Sdg/Rept Nbr:** W05570 40475 **Collection Date:** 12/02/2008 10:30

**Client Id:** NA **Matrix:** WATER WATER **Sample On Date:**

**Moisture/Solids%*:** **QC Type:** BS **Received Date:** 12/02/2008

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| | MW6-SBB-A19981 | | | | | | | | AG | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338475 | I-129L | 4.49E+01 | pCi/L | 6.5E+00 | | 2.89E+00 | 98.3 | 4.61E+01 | I129_SEP_LEP | 5.001E-01 | 12/22/2008 | | | 70 | D |
| BS | 15046-84-1 | | | 6.5E+00 | | | | 97.4 | | L | 05:35 | | | 130 | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Control Sample Report

**Lab Code:** TARL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

**Lab Sample Id:** K31QN1CS **Sdg/Rept Nbr:** W05570 40475 **Collection Date:** 12/02/2008 08:55

**Client Id:** NA **Matrix:** WATER WATER **Sample On Date:**

**Moisture/Solids%*:** **QC Type:** BS **Received Date:** 12/02/2008

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| | MW6-SBB-A19981 | | | | | | | | AI | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338477 | NP-237 | 1.00E+01 | pCi/L | 2.1E+00 | | 2.27E-01 | 86.8 | 9.20E+00 | NP237_LLE_P | 2.00E-01 | 12/18/2008 | | | 70 | D |
| BS | 13994-20-2 | | | 1.4E+00 | | | | 109.2 | | L | 18:36 | | | 130 | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Duplicate Report

Lab Code: TARL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

**Lab Sample Id:** K3XT71FR **Sdg/Rept Nbr:** W05570 40475 **Collection Date:** 12/02/2008 11:22

**Client Id:** B1W4N4 **Matrix:** WATER WATER **Sample On Date:**

**Moisture/Solids%*:** **QC Type:** DUP **Received Date:** 12/02/2008

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| X08-048 | MW6-SBB-A19981 | | | | | | | | AK | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338473 | U-234 | 1.53E+00 | pCi/L | 5.3E-01 | | 1.66E-01 | 85.9 | | UISO_PLATE_ | 2.00E-01 | 12/24/2008 | 28.5 | 1.4 | | D |
| DUP | 13966-29-5 | 2.03E+00 | | 4.6E-01 | | | | | | L | 15:26 | 20.0 | 3 | | |
| 8338473 | U-235 | 2.08E-02 | pCi/L | 7.2E-02 | U | 1.96E-01 | 85.9 | | UISO_PLATE_ | 2.00E-01 | 12/24/2008 | 131.1 | 1.5 | | D |
| DUP | 15117-96-1 | 1.00E-01 | | 7.2E-02 | | | | | | L | 15:26 | 20.0 | 3 | | |
| 8338473 | U-238 | 8.54E-01 | pCi/L | 3.8E-01 | | 1.96E-01 | 85.9 | | UISO_PLATE_ | 2.00E-01 | 12/24/2008 | 46.5 | 1.9 | | D |
| DUP | U-238 | 1.37E+00 | | 3.5E-01 | | | | | | L | 15:26 | 20.0 | 3 | | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Duplicate Report

**Lab Code:** TARL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

**Lab Sample Id:** K3XT71GR **Sdg/Rept Nbr:** W05570 40475 **Collection Date:** 12/02/2008 11:22

**Client Id:** B1W4N4 **Matrix:** WATER WATER **Sample On Date:**

**Moisture/Solids%*:** **QC Type:** DUP **Received Date:** 12/02/2008

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| X08-048 | MW6-SBB-A19981 | | | | | | | | AL | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338479 | Se-79 | -7.95E-01 | pCi/L | 9.0E+00 | U | 5.69E+00 | 76.0 | | SE79_SEP_IE_ | 2.001E-01 | 12/16/2008 | 0.0 | 0.1 | | D |
| DUP | 15758-45-9 | -1.61E+00 | | 2.4E+00 | | | | | | L | 21:49 | 20.0 | 3 | | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

TESTAMERICA

*Tuesday, December 30, 2008*

# TestAmerica QC Duplicate Report

Lab Code: TARL

FormNbr: R FormatType: FEAD VersionNbr: 05 File Name: h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | K3XT81FR | **Sdg/Rept Nbr:** | W05570 | 40475 | **Collection Date:** 12/02/2008 10:30 |
| **Client Id:** | B1W4P0 | **Matrix:** | WATER | WATER | **Sample On Date:** |
| **Moisture/Solids%*:** | | **QC Type:** | DUP | | **Received Date:** 12/02/2008 |

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| X08-048 | MW6-SBB-A19981 | | | | | | | | AM | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338475 | I-129L | -9.45E-01 | pCi/L | 1.1E+00 | U | 1.75E+00 | 99.2 | | I129_SEP_LEP | 5.00E-01 | 12/20/2008 | 0.0 | 2.3 | | D |
| DUP | 15046-84-1 | 8.74E-01 | | 1.1E+00 | | | | | | L | 08:40 | 20.0 | 3 | | |

20



U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

*Tuesday, December 30, 2008*

# TestAmerica QC Duplicate Report

Lab Code: TARL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W05570.Edd, h:\Reportdb\edd\FeadIV\Rad\40475.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | K3XT91FR | **Sdg/Rept Nbr:** | W05570 | 40475 | **Collection Date:** 12/02/2008 08:55 |
| **Client Id:** | B1W4P6 | **Matrix:** | WATER | WATER | **Sample On Date:** |
| **Moisture/Solids%*:** | | **QC Type:** | DUP | | **Received Date:** 12/02/2008 |

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| X08-048 | MW6-SBB-A19981 | | | | | | | | AN | H |

| Batch # / Qc Type | Analyt/ CAS# | Result/ Orig Rst | Unit | Tot/Cnt Uncert 2S | Qu-al | MDC | Tracer Yield | Spk Conc/ %Rec | Analy Method | Aliq Size/ | Date/Time Analyzed | RPD/ UCL | RER/ UCL | LCS LCL/UCL | R Typ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8338477 | NP-237 | 4.28E-02 | pCi/L | 1.1E-01 | U | 2.56E-01 | 74.5 | | NP237_LLE_P | 2.00E-01 | 12/18/2008 | 557.3 | 0.8 | | D |
| DUP | 13994-20-2 | -2.02E-02 | | 1.1E-01 | | | | | | L | 18:35 | 20.0 | 3 | | |





U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

TestAmerica

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/29/2008 12:54:34 PM

**Lot No., Due Date:** J8L020267; 01/02/2009

**Client, Site:** 384868; PGW 615HANFORD HANFORD

**QC Batch No., Method Test:** 8338473; RUISO Uiso by ALP

**SDG, Matrix:** W05570; WATER

## 1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? Yes ✓ No N/A

## 2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Yes ✓ No N/A

2.2 Are the QC appropriate for the analysis included in the batch? Yes ✓ No N/A

2.3 Is the Analytical Batch Worksheet complete: includes as appropriate, volumes, count times. etc? Yes ✓ No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample? Yes ✓ No N/A

## 3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits? Yes ✓ No N/A

3.2 Is the LCS result, yield, and MDA within contract limits? Yes ✓ No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits? Yes No N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits? Yes ✓ No N/A

3.5 Are the sample yields and MDAs within contract limits? Yes ✓ No N/A

## 4.0 Raw Data

4.1 Were results calculated in the correct units? Yes ✓ No N/A

4.2 Were analysis volumes entered correctly? Yes ✓ No N/A

4.3 Were Yields entered correctly? Yes ✓ No N/A

4.4 Were spectra reviewed/meet contractual requirements? Yes ✓ No N/A

4.5 Were raw counts reviewed for anomalies? Yes ✓ No N/A

## 5.0 Other

5.1 Are all nonconformances included and noted? Yes No N/A

5.2 Are all required forms filled out? Yes ✓ No N/A

5.3 Was the correct methodology used? Yes ✓ No N/A

5.4 Was transcription checked? Yes ✓ No N/A

5.5 Were all calculations checked at a minimum frequency? Yes No N/A

5.6 Are worksheet entries complete and correct? Yes ✓ No N/A

6.0 Comments on any No response:

**First Level Review** [signature] **Date** 12-29-8

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist
## RADIOCHEMISTRY
### Second Level Review

**Batch Number:** 8338473

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | √ | | |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | √ | | |
| 3. Are the correct isotopes reported? | √ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | √ | | |
| 2. Does the blank result meet the Contract criteria? | √ | | |
| 3. Is the blank result < the Contract Detection Limit? | √ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | √ |
| 5. Is the LCS recovery within contract acceptance criteria? | √ | | |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | √ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | √ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | √ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | | | √ |
| 2. Are all required forms filled out? | √ | | |
| 3. Was the correct methodology used? | √ | | |
| 4. Was transcription checked? | √ | | |
| 5. Were all calculations checked at a minimum frequency? | √ | | |
| 6. Were units checked? | √ | | |

Comments on any "No" response: _____

Second Level Review: Erika Ford Date: 12/29/18

LS-038B, Rev. 10, 9/07

TestAmerica

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/23/2008 11:25:07 AM

**Lot No., Due Date:** J8L020267; 01/02/2009

**Client, Site:** 384868; PGW 615HANFORD HANFORD

**QC Batch No., Method Test:** 8338477; RNP237 Np-237 w/tracer

**SDG, Matrix:** W05570; WATER

| | | | |
|---|---|---|---|
| **1.0 COC** | | | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | Yes ✓ | No | N/A |
| **2.0 QC Batch** | | | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | Yes ✓ | No | N/A |
| 2.2 Are the QC appropriate for the analysis included in the batch? | Yes ✓ | No | N/A |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | Yes ✓ | No | N/A |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | Yes ✓ | No | N/A |
| **3.0 QC & Samples** | | | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | Yes ✓ | No | N/A |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | Yes ✓ | No | N/A |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | Yes | No | N/A ✓ |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | Yes ✓ | No | N/A |
| 3.5 Are the sample yields and MDAs within contract limits? | Yes ✓ | No | N/A |
| **4.0 Raw Data** | | | |
| 4.1 Were results calculated in the correct units? | Yes ✓ | No | N/A |
| 4.2 Were analysis volumes entered correctly? | Yes ✓ | No | N/A |
| 4.3 Were Yields entered correctly? | Yes ✓ | No | N/A |
| 4.4 Were spectra reviewed/meet contractual requirements? | Yes ✓ | No | N/A |
| 4.5 Were raw counts reviewed for anomalies? | Yes ✓ | No | N/A |
| **5.0 Other** | | | |
| 5.1 Are all nonconformances included and noted? | Yes | No | N/A ✓ |
| 5.2 Are all required forms filled out? | Yes ✓ | No | N/A |
| 5.3 Was the correct methodology used? | Yes ✓ | No | N/A |
| 5.4 Was transcription checked? | Yes ✓ | No | N/A |
| 5.5 Were all calculations checked at a minimum frequency? | Yes ✓ | No | N/A |
| 5.6 Are worksheet entries complete and correct? | Yes ✓ | No | N/A |

6.0 Comments on any No response:

**First Level Review** [signature] **Date** 12/23/08

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist

## RADIOCHEMISTRY

### Second Level Review

**Batch Number:** 8338477

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | ✓ | | |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | ✓ | | |
| 3. Are the correct isotopes reported? | ✓ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤the Contract Detection Limit? | ✓ | | |
| 2. Does the blank result meet the Contract criteria? | ✓ | | |
| 3. Is the blank result < the Contract Detection Limit? | ✓ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | ✓ |
| 5. Is the LCS recovery within contract acceptance criteria? | ✓ | | |
| 6. Is the LCS Minimum Detectable Activity ≤the Contract Detection Limit? | ✓ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | ✓ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | ✓ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | | | ✓ |
| 2. Are all required forms filled out? | ✓ | | |
| 3. Was the correct methodology used? | ✓ | | |
| 4. Was transcription checked? | ✓ | | |
| 5. Were all calculations checked at a minimum frequency? | ✓ | | |
| 6. Were units checked? | ✓ | | |

Comments on any "No" response: _____

Second Level Review: Jodie C. Date: 12/23/08

LS-038B, Rev. 10, 9/07

TestAmerica

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/26/2008 10:45:03 AM

**Lot No., Due Date:** J8L020267; 01/02/2009

**Client, Site:** 384868; PGW 615HANFORD HANFORD

**QC Batch No., Method Test:** 8338479; RSE79 Se-79 by LSC

**SDG, Matrix:** W05570; WATER

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? Yes ✓ No N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Yes ✓ No N/A

2.2 Are the QC appropriate for the analysis included in the batch? Yes ✓ No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? Yes ✓ No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample? Yes ✓ No N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits? Yes ✓ No N/A

3.2 Is the LCS result, yield, and MDA within contract limits? Yes No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits? Yes No N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits? Yes ✓ No N/A

3.5 Are the sample yields and MDAs within contract limits? Yes ✓ No N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units? Yes ✓ No N/A

4.2 Were analysis volumes entered correctly? Yes ✓ No N/A

4.3 Were Yields entered correctly? Yes ✓ No N/A

4.4 Were spectra reviewed/meet contractual requirements? Yes No N/A

4.5 Were raw counts reviewed for anomalies? Yes ✓ No N/A

**5.0 Other**

5.1 Are all nonconformances included and noted? Yes No N/A

5.2 Are all required forms filled out? Yes ✓ No N/A

5.3 Was the correct methodology used? Yes ✓ No N/A

5.4 Was transcription checked? Yes ✓ No N/A

5.5 Were all calculations checked at a minimum frequency? Yes No N/A

5.6 Are worksheet entries complete and correct? Yes ✓ No N/A

6.0 Comments on any No response:

**First Level Review** [signature] **Date** 12-26-8

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist

## RADIOCHEMISTRY

### Second Level Review

**Batch Number:** 8338479

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | √ | | |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | √ | | |
| 3. Are the correct isotopes reported? | √ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | √ | | |
| 2. Does the blank result meet the Contract criteria? | √ | | |
| 3. Is the blank result < the Contract Detection Limit? | √ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | √ |
| 5. Is the LCS recovery within contract acceptance criteria? | ~~√~~ 12/28/8 | | √ |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | | | √ |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | √ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | √ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | | | √ |
| 2. Are all required forms filled out? | √ | | |
| 3. Was the correct methodology used? | √ | | |
| 4. Was transcription checked? | √ | | |
| 5. Were all calculations checked at a minimum frequency? | √ | | |
| 6. Were units checked? | √ | | |

Comments on any "No" response: _____

Second Level Review: Erika Jad Date: 12/29/8

LS-038B, Rev. 10, 9/07

TestAmerica

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/26/2008 10:43:27 AM

**Lot No., Due Date:** J8L020267; 01/02/2009

**Client, Site:** 384868; PGW 615HANFORD HANFORD

**QC Batch No., Method Test:** 8338475; RGAMLEPS Gamma by LEPS

**SDG, Matrix:** W05570; WATER

| | Yes | No | N/A |
|---|---|---|---|
| **1.0 COC** | | | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | ✓ | | |
| **2.0 QC Batch** | | | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | ✓ | | |
| 2.2 Are the QC appropriate for the analysis included in the batch? | ✓ | | |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | ✓ | | |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | ✓ | | |
| **3.0 QC & Samples** | | | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | ✓ | | |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | ✓ | | |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | | | ✓ |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | ✓ | | |
| 3.5 Are the sample yields and MDAs within contract limits? | ✓ | | |
| **4.0 Raw Data** | | | |
| 4.1 Were results calculated in the correct units? | ✓ | | |
| 4.2 Were analysis volumes entered correctly? | ✓ | | |
| 4.3 Were Yields entered correctly? | ✓ | | |
| 4.4 Were spectra reviewed/meet contractual requirements? | ✓ | | |
| 4.5 Were raw counts reviewed for anomalies? | ✓ | | |
| **5.0 Other** | | | |
| 5.1 Are all nonconformances included and noted? | | | ✓ |
| 5.2 Are all required forms filled out? | ✓ | | |
| 5.3 Was the correct methodology used? | ✓ | | |
| 5.4 Was transcription checked? | ✓ | | |
| 5.5 Were all calculations checked at a minimum frequency? | ✓ | | |
| 5.6 Are worksheet entries complete and correct? | ✓ | | |

6.0 Comments on any No response:

**First Level Review** [signature] **Date** 12/26/08

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# Data Review Checklist
## RADIOCHEMISTRY
### Second Level Review

**Batch Number:** 8338475

| Review Item | Yes (√) | No (√) | NA (√) |
|---|---|---|---|
| **A. Sample Analysis**<br>1. Are the sample yields within acceptance criteria? | | | √ |
| 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? | √ | | |
| 3. Are the correct isotopes reported? | √ | | |
| **B. QC Samples**<br>1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? | √ | | |
| 2. Does the blank result meet the Contract criteria? | √ | | |
| 3. Is the blank result < the Contract Detection Limit? | √ | | |
| 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? | | | √ |
| 5. Is the LCS recovery within contract acceptance criteria? | √ | | |
| 6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | √ | | |
| 7. Do the MS/MSD results and yields meet acceptance criteria? | | | √ |
| 8. Do the duplicate sample results and yields meet acceptance criteria? | √ | | |
| **C. Other**<br>1. Are all Non-conformances included and noted? | | | √ |
| 2. Are all required forms filled out? | √ | | |
| 3. Was the correct methodology used? | √ | | |
| 4. Was transcription checked? | √ | | |
| 5. Were all calculations checked at a minimum frequency? | √ | | |
| 6. Were units checked? | √ | | |

Comments on any "No" response: _____

Second Level Review: Erika Ford Date: 12/29/17

LS-038B, Rev. 10, 9/07

TESTAMERICA

| CHPRC | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. # X08-048-13 |
|---|---|---|
| | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector KJ Young | Contact/Requester Steve Trent | Telephone No. 509-373-5869 MSIN FAX |
| SAF No. X08-048 | Sampling Origin Hanford Site | Purchase Order/Charge Code |
| Project Title 2PO1 CHARACTERIZATION | HNF-N-506-19/48 | Ice Chest No. SML-313 Temp. |
| Shipped To (Lab) TestAmerica Incorporated, Richland | Method of Shipment Govt. Vehicle | Bill of Lading/Air Bill No. |
| Protocol SURV | Priority: 30 Days PRIORITY | Offsite Property No. |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
** **

**SPECIAL INSTRUCTIONS** **Hold Time** Total Activity Exemption: Yes ☑ No ☐
Do not combine X SAF samples with other sets. Need SDG to be stand alone.
Site-Wide Generator Knowledge Information Form applies.

| Sample No. | Lab ID | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| ✓ B1W4P6 | | W | 12/2/08 | 0855 | 2x1000-mL G/P | I129_SEP_LEPS_GS: I-129 (1) | 6 Months | None |
| ✓ B1W4P6 | | W | | | 1x1000-mL G/P | NP237_LLE_PLATE_AEA:Np-237(1) | 6 Months | HNO3 to pH <2 |
| ✓ B1W4P6 | | W | | | 1x1000-mL G/P | Selenium-79 | 6 Months | HNO3 to pH <2 |
| ✓ B1W4P6 | | W | | | 1x1000-mL G/P | UISO_PLATE_AEA: List-1 (3) K3XT9 | 6 Months | HNO3 to pH <2 |
| | | | | | | | | J8L020267 |
| | | | | | | | | WO 5570 |
| | | | | | | | | Due 01.02.09 |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| KJ Young | | | 12-2-08 14/15 | | Neyra Ritan | | 12-2-08 14/15 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix *

| | | | |
|---|---|---|---|
| S = Soil | | DS = Drum Solid | |
| SE = Sediment | | DL = Drum Liqui | |
| SO = Solid | | T = Tissue | |
| SL = Sludge | | WI = Wine | |
| W = Water | | L = Liquid | |
| O = Oil | | V = Vegetation | |
| A = Air | | X = Other | |

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|

30

TESTAMERICA

| CHPRC | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. # X08-048-8 |
|---|---|---|
| | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector KJ Young | Contact/Requester Steve Trent | Telephone No. 509-373-5869 MSIN FAX |
| SAF No. X08-048 | Sampling Origin Hanford Site | Purchase Order/Charge Code |
| Project Title 2POI CHARACTERIZATION | HNF-N-506-19/48 | Ice Chest No. SML-313 Temp. |
| Shipped To (Lab) TestAmerica Incorporated, Richland | Method of Shipment Govt. Vehicle | Bill of Lading/Air Bill No. |
| Protocol SURV | Priority: 30 Days PRIORITY | Offsite Property No. |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
** **

**SPECIAL INSTRUCTIONS** Hold Time Total Activity Exemption: Yes ☑ No ☐
Do not combine X SAF samples with other sets. Need SDG to be stand alone.
Site-Wide Generator Knowledge Information Form applies.

| Sample No. | Lab ID | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| ✓ B1W4P0 | | W | 12/2/08 | 1030 | 2x1000-mL G/P | I129_SEP_LEPS_GS: I-129 (1) | 6 Months | None |
| ✓ B1W4P0 | | W | | | 1x1000-mL G/P | NP237_LLE_PLATE_AEA:Np-237(1) | 6 Months | HNO3 to pH <2 |
| ✓ B1W4P0 | | W | | | 1x1000-mL G/P | Selenium-79 | 6 Months | HNO3 to pH <2 |
| ✓ B1W4P0 | | W | | | 1x1000-mL G/P | UISO_PLATE_AEA: List-1 (3) K3XT8 | 6 Months | HNO3 to pH <2 |
| | | | | | | | | J8L020267 |
| | | | | | | | | W05570 |
| | | | | | | | | Due 01.02.09 |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| KJ Young | | | 1415 12-2-08 | | Neyra Rivera | Neyra Rivera | 1415 12-2-08 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix *

| | | | |
|---|---|---|---|
| S = Soil | | DS = Drum Solid | |
| SE = Sediment | | DL = Drum Liqui | |
| SO = Solid | | T = Tissue | |
| SL = Sludge | | WI = Wine | |
| W = Water | | L = Liquid | |
| O = Oil | | V = Vegetation | |
| A = Air | | X = Other | |

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|

31

TESTAMERICA

| CHPRC | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. # X08-048-3 |
|---|---|---|
| | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: KJ Young | Contact/Requester: Steve Trent | Telephone No.: 509-373-5869 MSIN FAX |
| SAF No.: X08-048 | Sampling Origin: Hanford Site | Purchase Order/Charge Code |
| Project Title: 2PO1 CHARACTERIZATION | HNF-N-506-19/48 | Ice Chest No.: SXL-313 Temp. |
| Shipped To (Lab): TestAmerica Incorporated, Richland | Method of Shipment: Govt. Vehicle | Bill of Lading/Air Bill No. |
| Protocol: SURV | Priority: 30 Days **PRIORITY** | Offsite Property No. |

**POSSIBLE SAMPLE HAZARDS/REMARKS**
** **

**SPECIAL INSTRUCTIONS** **Hold Time** Total Activity Exemption: Yes ☑ No ☐
Do not combine X SAF samples with other sets. Need SDG to be stand alone.
Site-Wide Generator Knowledge Information Form applies.

| Sample No. | Lab ID | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B1W4N4 | | W | 12/2/08 | 1122 | 2x1000-mL G/P | I129_SEP_LEPS_GS: I-129 (1) | 6 Months | None |
| B1W4N4 | | W | | | 1x1000-mL G/P | NP237_LLE_PLATE_AEA:Np-237(1) | 6 Months | HNO3 to pH <2 |
| B1W4N4 | | W | | | 1x1000-mL G/P | Selenium-79 | 6 Months | HNO3 to pH <2 |
| B1W4N4 | | W | | | 1x1000-mL G/P | UISO_PLATE_AEA: List-1 (3) K3XT7 | 6 Months | HNO3 to pH <2 |
| | | | | | | | | J8L020267 |
| | | | | | | | | W05570 |
| | | | | | | | | Due 01-02-09 |

32

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| KJ Young | | | 1415 12-2-08 | | Neyra Ritas | Neyra Ritas | 1415 12-2-08 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix *

| | | | |
|---|---|---|---|
| S = Soil | | DS = Drum Solid | |
| SE = Sediment | | DL = Drum Liqui | |
| SO = Solid | | T = Tissue | |
| SL = Sludge | | WI = Wine | |
| W = Water | | L = Liquid | |
| O = Oil | | V = Vegetation | |
| A = Air | | X = Other | |

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Sample Check-in List

Date/Time Received: 12-2-08 1415 GM Screen Result .01

Client: CHPRC SDG #: W05570 NA[ ] SAF #: X08-048 NA [ ]

Work Order Number: J8L020267 Chain of Custody # X08-048-3 8 13

Shipping Container ID: SML-313 Air Bill # N/A

1 Custody Seals on shipping container intact? NA [ ] Yes [✓] No [ ]

2. Custody Seals dated and signed? NA [ ] Yes [✓] No [ ]

3. Chain of Custody record present? NA [ ] Yes [✓] No [ ]

4. Cooler Temperature: _____ NA [✓] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [✓]

6. Number of samples in shipping container: 3

7. Sample holding times exceeded? NA [ ] Yes [ ] No [✓]

8 Samples have:
_____ Tape
_____ Custody Seals
_____ Hazard Lables
✓ Appropriate Sample Lables

9. Samples are:
✓ In Good Condition
_____ Broken
_____ Leaking
_____ Have Air Bubbles
(Only for samples requiring no head space.)

10. Sample pH taken? NA [ ] pH<2 [✓] pH>2 [ ] pH>9 [✓] Amount $HNO_3$ Added _____

11. Sample Location, Sample Collector Listed? *
*For documentation only. No corrective action needed.

12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]

13. Description of anomalies (include sample numbers): _____

Sample Custodian: Nupur Ritari Date: 12-2-08

| Client Sample ID | Analysis Requested | Condition | Comments/Action |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Client Informed on _____ by _____ Person Contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

TESTAMERICA

12/8/2008 3:03:59 PM

# Sample Preparation/Analysis

Balance Id:1120482733

384868, Pacific Northwest National Laboratory
Pacific Northwest National Lab

7Y Uiso PrpRC5016/5086, SepRC5067(5039)
SR Uranium-234,235,238 by Alpha Spec
5I CLIENT: HANFORD

**PRIORITY**

Pipet #:

**AnalyDueDate: 12/30/2008** W05570

Sep1 DT/Tm Tech:

**Batch: 8338473 WATER pCi/L** PM, Quote: SS , 57671

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,LaneL

| Work Order, Lot, Sample Date | Total Amt /Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 K3XT7-1-AE<br>J8L020267-1-SAMP<br>12/02/2008 11:22 | | AmtRec: 5XLP | 200.00g,in | 200.00g<br>#Containers: 5 | UITC20620<br>12/03/08,pd<br>01/20/04,r | 200 | Scr: | Alpha: 8.56E-07 uCi/Sa | | Beta: -2.93E-07 uCi/Sa |
| 2 K3XT7-1-AF-X<br>J8L020267-1-DUP<br>12/02/2008 11:22 | | AmtRec: 5XLP | 200.00g,in | 200.00g<br>#Containers: 5 | UITC20621<br>12/03/08,pd<br>01/20/04,r | | Scr: | Alpha: 8.56E-07 uCi/Sa | | Beta: -2.93E-07 uCi/Sa |
| 3 K3XT8-1-AE<br>J8L020267-2-SAMP<br>12/02/2008 10:30 | | AmtRec: 5XLP | 200.10g,in | 200.10g<br>#Containers: 5 | UITC20622<br>12/03/08,pd<br>01/20/04,r | | Scr: | Alpha: -3.48E-07 uCi/Sa | | Beta: 5.30E-07 uCi/Sa |
| 4 K3XT9-1-AE<br>J8L020267-3-SAMP<br>12/02/2008 08:55 | | AmtRec: 5XLP | 200.00g,in | 200.00g<br>#Containers: 5 | UITC20623<br>12/03/08,pd<br>01/20/04,r | | Scr: | Alpha: 6.82E-07 uCi/Sa | | Beta: 2.01E-07 uCi/Sa |
| 5 K31QD-1-AA-B<br>J8L030000-473-BLK<br>12/02/2008 11:22 | | AmtRec: | 200.10g,in | 200.10g<br>#Containers: 1 | UITC20624<br>12/03/08,pd<br>01/20/04,r | | Scr: | Alpha: | | Beta: |
| 6 K31QD-1-AC-C<br>J8L030000-473-LCS<br>12/02/2008 11:22 | | AmtRec: | 200.10g,in | 200.10g<br>#Containers: 1 | UISG1716<br>10/08/08,pd<br>01/20/04,r | | Scr: | Alpha: | | Beta: |

TESTAMERICA

12/8/2008 3:03:59 PM

# Sample Preparation/Analysis

7Y Uiso PrpRC5016/5086, SepRC5067(5039)
SR Uranium-234,235,238 by Alpha Spec
5I CLIENT: HANFORD

Balance Id:1120482733
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: ,LaneL

AnalyDueDate: 12/30/2008

Batch: 8338473 pCi/L
SEQ Batch, Test: None

| Work Order, Lot, Sample Date | Total Amt /Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|

Comments: PH<2.0. RH 12 8 08

All Clients for Batch:
384868, Pacific Northwest National Laboratory Pacific Northwest National Lab, SS , 57671

K3XT71AE-SAMP Constituent List:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | U-234 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: |
| U-235 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: | U-238 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: |

K31QD1AA-BLK:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | U-234 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: |
| U-235 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: | U-238 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: |

K31QD1AC-LCS:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-232 | RDL: | pCi/L | LCL:20 | UCL:105 | RPD:20 | Uranium | RDL: | pCi/L | LCL:70 | UCL:130 | RPD:20 |

K3XT71AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
K31QD1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
K31QD1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

35

12/29/2008 12:53:33 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/30/2007, 1/3/2009, Batch: '8338473', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| **8338473** | | | | | | |
| *AC* | | **Rev1C** | **LaneL** | 12/8/2008 2:54:49 PM | | |
| *SC* | | | wagarr | IsBatched | 12/3/2008 4:02:16 PM | ICOC_RADCALC v4.8.35 |
| *SC* | | | LaneL | InPrep | 12/8/2008 2:54:49 PM | RL-PRP-004 REVISION 0 |
| *SC* | | | LaneL | Prep1C | 12/8/2008 3:04:38 PM | RL-PRP-004 REVISION 0 |
| *SC* | | | ManisD | InPrep2 | 12/19/2008 6:50:54 PM | RL-PRP-010 REV 0 |
| *SC* | | | AshworthA | Sep1C | 12/23/2008 3:51:09 PM | ALP-004 REVISION 0 |
| *SC* | | | AshworthA | Sep1C | 12/23/2008 3:51:16 PM | ALP-004 REVISION 0 |
| *SC* | | | AshworthA | Sep2C | 12/24/2008 1:03:40 PM | ALP-015 REVISION 0 |
| *SC* | | | DAWKINSO | InCnt1 | 12/24/2008 1:51:20 PM | RL-CI-008 REVISION 0 |
| *SC* | | | BlackCL | CalcC | 12/26/2008 6:32:14 AM | RL-CI-008 REVISION 0 |
| *SC* | | | DAWKINSO | InCnt1 | 12/26/2008 2:46:11 PM | RL-CI-008 REVISION 0 |
| *SC* | | | DAWKINSO | CalcC | 12/27/2008 3:31:30 PM | RL-CI-008 REVISION 0 |
| *SC* | | | nortonj | Rev1C | 12/29/2008 12:52:46 PM | RL-DR-001 REV 0 |
| *AC* | | | **LaneL** | 12/8/2008 3:04:38 PM | | |
| *AC* | | | **ManisD** | 12/19/2008 6:50:54 | | |
| *AC* | | | **AshworthA** | 12/23/2008 3:51:09 | | |
| *AC* | | | **AshworthA** | 12/23/2008 3:51:16 | | |
| *AC* | | | **AshworthA** | 12/24/2008 1:03:40 | | |
| *AC* | | | **DAWKINSO** | 12/24/2008 1:51:20 | | |
| *AC* | | | **BlackCL** | 12/26/2008 6:32:14 | | |
| *AC* | | | **DAWKINSO** | 12/26/2008 2:46:11 | | |
| *AC* | | | **DAWKINSO** | 12/27/2008 3:31:30 | | |
| *AC* | | | **nortonj** | 12/29/2008 12:52:46 | | |

*AC: Accepting Entry; SC: Status Change*

TESTAMERICA

12/8/2008 2:03:38 PM

# Sample Preparation/Analysis

Balance Id:1120482733

384868, Pacific Northwest National Laboratory ,
Pacific Northwest National Lab

KO Np-237 PrpRC5086, SepRC5064(5003)
XW Neptunium-237 with tracer by alpha spec
5I CLIENT: HANFORD

**PRIORITY**

Pipet #: 12-17-08 10 49.27 am

AnalyDueDate: 12/30/2008 W05570

Sep1 DT/Tm Tech:

Batch: 8338477 WATER pCi/L

PM, Quote: SS , 57671

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,LaneL

| Work Ord, Lot, Sample Date | Total Amt /Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 K3XT7-1-AA<br>J8L020267-1-SAMP<br>12/02/2008 11:22 | | | 200.00g,in<br>AmtRec: 5XLP | 200.00g<br>#Containers: 5 | NPTA7304<br>12/02/08,pd<br>09/17/08,r | | | 200 | Scr: | Alpha: 8.56E-07 uCi/Sa | | Beta: -2.93E-07 uCi/Sa |
| 2 K3XT8-1-AA<br>J8L020267-2-SAMP<br>12/02/2008 10:30 | | | 200.00g,in<br>AmtRec: 5XLP | 200.00g<br>#Containers: 5 | NPTA7305<br>12/02/08,pd<br>09/17/08,r | | | | Scr: | Alpha: -3.48E-07 uCi/Sa | | Beta: 5.30E-07 uCi/Sa |
| 3 K3XT9-1-AA<br>J8L020267-3-SAMP<br>12/02/2008 08:55 | | | 200.10g,in<br>AmtRec: 5XLP | 200.10g<br>#Containers: 5 | NPTA7306<br>12/02/08,pd<br>09/17/08,r | | | | Scr: | Alpha: 6.82E-07 uCi/Sa | | Beta: 2.01E-07 uCi/Sa |
| 4 K3XT9-1-AF-X<br>J8L020267-3-DUP<br>12/02/2008 08:55 | | | 200.00g,in<br>AmtRec: 5XLP | 200.00g<br>#Containers: 5 | NPTA7307<br>12/02/08,pd<br>09/17/08,r | | | | Scr: | Alpha: 6.82E-07 uCi/Sa | | Beta: 2.01E-07 uCi/Sa |
| 5 K31QN-1-AA-B<br>J8L030000-477-BLK<br>12/02/2008 08:55 | | | 200.00g,in<br>AmtRec: | 200.00g<br>#Containers: 1 | NPTA7308<br>12/02/08,pd<br>09/17/08,r | | | | Scr: | Alpha: | | Beta: |
| 6 K31QN-1-AC-C<br>J8L030000-477-LCS<br>12/02/2008 08:55 | | | 200.00g,in<br>AmtRec: | 200.00g<br>#Containers: 1 | NPSE0502<br>10/10/08,pd<br>09/17/08,r | | | | Scr: | Alpha: | | Beta: |

TESTAMERICA

12/8/2008 2:03:39 PM

# Sample Preparation/Analysis

KO Np-237 PrpRC5086, SepRC5064(5003)
XW Neptunium-237 with tracer by alpha spec
5I CLIENT: HANFORD

Balance Id:1120482733

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: ,LaneL

AnalyDueDate: 12/30/2008

Batch: 8338477 pCi/L
SEQ Batch, Test: None

| Work Ord, Lot, Sample Date | Total Amt /Unit | Total Acidified/Unit | Initial Aliquot Amt/Unit | Adj Aliq Amt (Un-Acidified) | QC Tracer Prep Date | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

Comments: PH < 2.0. RJR 12808

All Clients for Batch:
384868, Pacific Northwest National Laboratory Pacific Northwest National Lab, SS , 57671

K3XT71AA-SAMP Constituent List:
Np-237 RDL:0.6 pCi/L LCL: UCL: RPD:
K31QN1AA-BLK:
Np-237 RDL:0.6 pCi/L LCL: UCL: RPD:
K31QN1AC-LCS:

K3XT71AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
K31QN1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
K31QN1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

12/23/2008 11:24:27 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/24/2007, 12/28/2008, Batch: '8338477', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| 8338477 | | | | | | |
| AC | | Rev1C | LaneL | 12/8/2008 1:54:13 PM | | |
| SC | | | wagarr | IsBatched | 12/3/2008 4:02:16 PM | ICOC_RADCALC v4.8.35 |
| SC | | | LaneL | InPrep | 12/8/2008 1:54:13 PM | RL-PRP-004 REVISION 0 |
| SC | | | LaneL | Prep1C | 12/8/2008 2:04:51 PM | RL-PRP-004 REVISION 0 |
| SC | | | Barcotl | InSep1 | 12/17/2008 2:20:21 PM | RL-ALP-006 REVISION 0 |
| SC | | | Barcotl | Sep1C | 12/17/2008 2:20:30 PM | RL-ALP-006 REVISION 0 |
| SC | | | BlackCL | InCnt1 | 12/18/2008 1:44:49 PM | RL-CI-008 REVISION 0 |
| SC | | | BlackCL | CalcC | 12/19/2008 6:21:30 AM | RL-CI-008 REVISION 0 |
| SC | | | whelands | Rev1C | 12/23/2008 11:24:21 AM | RL-DR-001 REV 0 |
| AC | | | LaneL | 12/8/2008 2:04:51 PM | | |
| AC | | | Barcotl | 12/17/2008 2:20:21 | | |
| AC | | | Barcotl | 12/17/2008 2:20:30 | | |
| AC | | | BlackCL | 12/18/2008 1:44:49 | | |
| AC | | | BlackCL | 12/19/2008 6:21:30 | | |
| AC | | | whelands | 12/23/2008 11:24:21 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.



Grp Rec Cnt: 7

ICOCFractions v4.8.35

TESTAMERICA

12/8/2008 2:44:31 PM

# Sample Preparation/Analysis

Balance Id:1120482733

384868, Pacific Northwest National Laboratory ,
Pacific Northwest National Lab

CY Se-79 PrpRC5016, SepRC5043
TM Selenium-79 by Liquid Scint
5I CLIENT: HANFORD

**PRIORITY**

Pipet #:

**AnalyDueDate: 12/30/2008** W05570

Sep1 DT/Tm Tech:

**Batch: 8338479 WATER pCi/L** PM, Quote: SS , 57671

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,LaneL

| Work Order, Lot, Sample DateTime | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Tracer Yield | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|
| 1 K3XT7-1-AD<br>J8L020267-1-SAMP<br>12/02/2008 11:22 | | 200.10g,in<br>AmtRec: 5XLP | SETA0387<br>10/23/08<br>#Containers: 5 | | 200 | | Scr: | Alpha: 8.56E-07 uCi/Sa | Beta: -2.93E-07 uCi/Sa |
| 2 K3XT7-1-AG-X<br>J8L020267-1-DUP<br>12/02/2008 11:22 | | 200.10g,in<br>AmtRec: 5XLP | SETA0388<br>10/23/08<br>#Containers: 5 | | | | Scr: | Alpha: 8.56E-07 uCi/Sa | Beta: -2.93E-07 uCi/Sa |
| 3 K3XT8-1-AD<br>J8L020267-2-SAMP<br>12/02/2008 10:30 | | 200.00g,in<br>AmtRec: 5XLP | SETA0389<br>10/23/08<br>#Containers: 5 | | | | Scr: | Alpha: -3.48E-07 uCi/Sa | Beta: 5.30E-07 uCi/Sa |
| 4 K3XT9-1-AD<br>J8L020267-3-SAMP<br>12/02/2008 08:55 | | 200.00g,in<br>AmtRec: 5XLP | SETA0390<br>10/23/08<br>#Containers: 5 | | | | Scr: | Alpha: 6.82E-07 uCi/Sa | Beta: 2.01E-07 uCi/Sa |
| 5 K31QP-1-AA-B<br>J8L030000-479-BLK<br>12/02/2008 11:22 | | 200.10g,in<br>AmtRec: | SETA0391<br>10/23/08<br>#Containers: 1 | | | | Scr: | Alpha: | Beta: |
| 6 K31QP-1-AC-BN<br>J8L030000-479-IBLK<br>12/02/2008 11:22 | | AmtRec: | SETA0461<br>#Containers: 1 | | | | Scr: | Alpha: | Beta: |

40

TestAmerica Richland Wa. · Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added



ISV - Insufficient Volume for Analysis

WO Cnt: 6

Prep_SamplePrep v4.8.34

12/26/2008 10:43:56 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/27/2007, 12/31/2008, Batch: '8338479', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| 8338479 | | | | | | |
| AC | | Rev1C | LaneL | 12/8/2008 2:36:44 PM | | |
| SC | | | wagarr | IsBatched | 12/3/2008 4:02:16 PM | ICOC_RADCALC v4 8 35 |
| SC | | | LaneL | InPrep | 12/8/2008 2:36:44 PM | RL-PRP-004 REVISION 0 |
| SC | | | LaneL | Prep1C | 12/8/2008 2:45:18 PM | RL-PRP-004 REVISION 0 |
| SC | | | Barcotl | InSep1 | 12/15/2008 5:43:12 PM | RL-LSC-012 REVISION 0 |
| SC | | | Barcotl | Sep1C | 12/15/2008 5:43:23 PM | RL-LSC-012 REVISION 0 |
| SC | | | DAWKINSO | InCnt1 | 12/15/2008 6:00:57 PM | RL-CI-005 REVISION 0 |
| SC | | | BlackCL | CalcC | 12/17/2008 11:21:48 AM | RL-CI-005 REVISION 0 |
| SC | | | nortonj | Rev1C | 12/26/2008 10:43:48 AM | RL-DR-001 REV 0 |
| AC | | | LaneL | 12/8/2008 2:45:18 PM | | |
| AC | | | LaneL | 12/8/2008 2:45:50 PM | | |
| AC | | | Barcotl | 12/15/2008 5:43:12 | | |
| AC | | | Barcotl | 12/15/2008 5:43:23 | | |
| AC | | | DAWKINSO | 12/15/2008 6:00:57 | | |
| AC | | | BlackCL | 12/17/2008 11:21:48 | | |
| AC | | | nortonj | 12/26/2008 10:43:48 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 8

ICOCFractions v4.8.35

Due 1/2

12/8/2008 1:45:06 PM

# Sample Preparation/Analysis

Balance Id:1120482733

384868, Pacific Northwest National Laboratory ,
Pacific Northwest National Lab

BN I-129 Prp/SepRC5025
TB Gamma by LEPD
5I CLIENT: HANFORD

PRIORITY

Pipet #:

AnalyDueDate: 12/30/2008 IN05570

Sep1 DT/Tm Tech:

Batch: 8338475 WATER pCi/L

PM, Quote: SS , 57671

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,LaneL

| Work Order, Lot, Sample DateTime | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 K3XT7-1-AC<br>J8L020267-1-SAMP<br>12/02/2008 11:22 | | 500.10g,in<br>AmtRec: 5XLP | ITA7813<br>12/04/08<br>#Containers: 5 | | 37.2 | 100 | L5 | 0838 | 12/2/08 | Scr: Alpha: 8.56E-07 uCi/Sa Beta: -2.93E-07 uCi/Sa |
| 2 K3XT8-1-AC<br>J8L020267-2-SAMP<br>12/02/2008 10:30 | | 500.10g,in<br>AmtRec: 5XLP | ITA7814<br>12/04/08<br>#Containers: 5 | | 36.9 | | L2 | 1020 | | Scr: Alpha: -3.48E-07 uCi/Sa Beta: 5.30E-07 uCi/Sa |
| 3 K3XT8-1-AF-X<br>J8L020267-2-DUP<br>12/02/2008 10:30 | | 500.00g,in<br>AmtRec: 5XLP | ITA7815<br>12/04/08<br>#Containers: 5 | | 36.7 | | L4 | 1020 | | Scr: Alpha: -3.48E-07 uCi/Sa Beta: 5.30E-07 uCi/Sa |
| 4 K3XT9-1-AC<br>J8L020267-3-SAMP<br>12/02/2008 08:55 | | 500.10g,in<br>AmtRec: 5XLP | ITA7816<br>12/04/08<br>#Containers: 5 | | 35.2 | | L5 | 1020 | | Scr: Alpha: 6.82E-07 uCi/Sa Beta: 2.01E-07 uCi/Sa |
| 5 K31QG-1-AA-B<br>J8L030000-475-BLK<br>12/02/2008 10:30 | | 500.00g,in<br>AmtRec: | ITA7817<br>12/04/08<br>#Containers: 1 | | 36.7 | | L2 | 1202 | 12/2/08 | Scr: Alpha: Beta: |
| 6 K31QG-1-AC-C<br>J8L030000-475-LCS<br>12/02/2008 10:30 | | 500.10g,in<br>AmtRec: | ISB0307<br>10/08/08<br>#Containers: 1 | | 34.7 | | L2 | 0715 | 12/2/08 | Scr: Alpha: Beta: |

TESTAMERICA

42

12/8/2008 1:45:07 PM

# Sample Preparation/Analysis

BN I-129 Prp/SepRC5025
TB Gamma by LEPD
5I CLIENT: HANFORD

Balance Id:1120482733
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: ,LaneL

**AnalyDueDate: 12/30/2008**

**Batch: 8338475** pCi/L
SEQ Batch, Test: None

| Work Order, Lot, Sample DateTime | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Dish Size | Ppt or Geometry | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|

**Comments:**

```
All Clients for Batch:
   384868, Pacific Northwest National Laboratory      Pacific Northwest National Lab,  SS , 57671

K3XT71AC-SAMP Constituent List:
  I-129       RDL:5.00E+00    pCi/L     LCL:70      UCL:130     RPD:20
K31QG1AA-BLK:
  I-129       RDL:5.00E+00    pCi/L     LCL:        UCL:        RPD:
K31QG1AC-LCS:
  I-129       RDL:5           pCi/L     LCL:70      UCL:130     RPD:20
K3XT71AC-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
K31QG1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
K31QG1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

Approved By _____ Date: _____

12/26/2008 10:42:56 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/27/2007, 12/31/2008, Batch: '8338475', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| 8338475 | | | | | | |
| AC | . | Rev1C | LaneL | 12/8/2008 1:35:14 PM | | |
| SC | | | wagarr | IsBatched | 12/3/2008 4:02:16 PM | ICOC_RADCALC v4.8.35 |
| SC | | | LaneL | InPrep | 12/8/2008 1:35:14 PM | RL-PRP-004 REVISION 0 |
| SC | | | LaneL | Prep1C | 12/8/2008 1:46:16 PM | RL-PRP-004 REVISION 0 |
| SC | | | BostedD | InPrep2 | 12/17/2008 8:27:20 AM | RL-GAM-002 REVISION 0 |
| SC | | | BostedD | Prep2C | 12/19/2008 3:17:16 PM | RL-GAM-002 REVISION 0 |
| SC | | | DAWKINSO | InCnt1 | 12/19/2008 4:06:28 PM | RL-CI-007 REVISION 0 |
| SC | | | BlackCL | CalcC | 12/22/2008 8:11:01 AM | RL-CI-007 REVISION 0 |
| SC | | | whelands | Rev1C | 12/26/2008 10:42:49 AM | RL-DR-001 REV 0 |
| AC | | | LaneL | 12/8/2008 1:46:16 PM | | |
| AC | | | BostedD | 12/17/2008 8:27:20 | | |
| AC | | | BostedD | 12/19/2008 3:17:16 | | |
| AC | | | DAWKINSO | 12/19/2008 4:06:28 | | |
| AC | | | BlackCL | 12/22/2008 8:11:01 | | |
| AC | | | whelands | 12/26/2008 10:42:49 | | |

*AC: Accepting Entry; SC: Status Change*

*TestAmerica Richland*

Richland Wa.

Page 1

Grp Rec Cnt: 7

ICOCFractions v4.8.35