Analytical Data Package Prepared For

# Pacific Northwest National Lab

Radiochemical Analysis By

## STL Richland STLRL

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

*Data Package Contains _____ Pages*

Report Nbr: 31495

| SDG Nbr | ORDER Nbr | CLIENT ID NUMBER | LOT Nbr | WORK ORDER | RPT DB ID | BATCH |
|---|---|---|---|---|---|---|
| W04843 | I05-048 | B1DKX3 | J6A030205-1 | HT3JV1AA | 9HT3JV10 | 6018390 |
| | | B1DKX3 | J6A030205-1 | HT3JV1AC | 9HT3JV10 | 6018392 |

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SEP 17 2012
EDMC

Comments:

1216876

# Certificate of Analysis

Pacific Northwest National Laboratories
Sigma V Building
Richland, WA 99352

February 28, 2006

Attention: Dot Stewart

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| | | |
|---|---|---|
| SAF Number | : | I05-048 |
| Date SDG Closed | : | January 17, 2006 |
| Number of Samples | : | One (1) |
| Sample Type | : | Water |
| SDG Number | : | W04843 |
| Data Deliverable | : | 45-Day / Summary |

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## CASE NARRATIVE

### I. Introduction

On January 3, 2006, one water samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Pacific Northwest National Laboratories (PGW) specific IDs:

| PGW ID# | STLR ID# | MATRIX | DATE OF RECEIPT |
|---|---|---|---|
| B1DKX3 | HT3JV | WATER | 01/03/06 |

### 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:

**Gamma Spectroscopy**
Iodine-129 (LL) by method RICH-RC-5025
**Liquid Scintillation Counting**
Tritium by method RICH-RC-5007

## 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

**Gamma Spectroscopy**
Iodine-129 (LL) by method RICH-RC-5025:
The LCS, batch blank, samples and sample duplicate (B1DKX3) results are within contractual requirements.

**Liquid Scintillation Counting**
Tritium by method RICH-RC-5007:
The LCS, batch blank, samples and sample duplicate (B1DKX3) results are within contractual requirements.

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:

Hans Carman
Project Manager

## Drinking Water Method Cross References

| | DRINKING WATER ASTM METHOD CROSS REFERENCES | |
|---|---|---|
| | | |
| **Referenced Method** | **Isotope(s)** | **STL Richland's SOP number** |
| EPA 901.1 | Cs-134, I-131 | RICH-RC-5017 |
| EPA 900.0 | Alpha & Beta | RICH-RC-5014 |
| EPA 903.1 | Ra-226 | RICH-RC-5005 |
| EPA 904.0 | Ra-228 | RICH-RC-5005 |
| EPA 905.0 | Sr89/90 | RICH-RC-5006 |
| ASTM D2460 | Total Radium | RICH-RC-5027 |
| Standard Method 7500-U-C & ASTM D5174 | Uranium | RICH-RC-5058 |
| EPA 906.0 | Tritium | RICH-RC-5007 |
| | | |
| | | |
| | | |
| | | |
| NOTE: | | |
| The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative) | | |
| The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative) | | |

## Uncertainty Estimation

STL 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/vn), 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 STL Richland. |
| **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 STL Richland "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 STL Richland 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. |

# STL Richland Report

Lab Code: STLRL

FormNbr: R FormatType: FEAD Version: 05 Rpt Nbr: 31495 File Name: h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.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: |
|---|---|---|---|---|---|---|---|---|---|---|
| 9HT3JV10 | B1DKX3 | | MW6-SBB-A1 | I05-048 | W04843 | | | | | 01/03/2006 11:26 |

| Batch | Analyte | CAS# | Result | Unit | CntU 2S | TotU 2S | Qual | MDA | TrcYield | Method | Alq Size | Unit | Analy Date/Time | Act |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018390 | H-3 | 10028-17-8 | 2.77E+05 | pCi/L | 1.7E+03 | 1.1E+04 | | 3.29E+02 | 100.0 | 906.0_H3_LSC | 5.00E-03 | L | 01/30/200 03:59 | I |
| 6018392 | I-129L | 15046-84-1 | 3.06E+01 | pCi/L | 3.3E+00 | 3.3E+00 | | 3.95E-01 | 97.0 | I129LL_SEP_LEPS | 3.95E+00 | L | 02/20/200 17:40 | 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, February 28, 2006*

# STL Richland QC Blank Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

**Lab Sample Id:** HVV721AB **Sdg/Rept Nbr:** W04843 31495 **Collection Date:** 01/03/2006 11:26

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

**Moisture/Solids%*:** **QC Type:** BLK **Received Date:** 01/03/2006

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018392 | I-129L | 5.22E-02 | pCi/L | 1.1E-01 | U | 2.27E-01 | 97.6 | | I129LL_SEP_L | 3.8633E+00 | 02/20/2006 | | | | D |
| BLK | 15046-84-1 | | | 1.1E-01 | | | | | | L | 20:07 | | | | |



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, February 28, 2006*

# STL Richland QC Blank Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

**Lab Sample Id:** HVV7T1AB **Sdg/Rept Nbr:** W04843 31495 **Collection Date:** 01/03/2006 11:26

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

**Moisture/Solids%*:** **QC Type:** BLK **Received Date:** 01/03/2006

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018390 | H-3 | 6.64E+01 | pCi/L | 1.5E+02 | U | 3.27E+02 | 100.0 | | 906.0_H3_LSC | 5.00E-03 | 01/29/2006 | | | | D |
| BLK | 10028-17-8 | | | 1.4E+02 | | | | | | L | 22:32 | | | | |



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, February 28, 2006*

# STL Richland QC Blank Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | HVV7T1DX | **Sdg/Rept Nbr:** | W04843 | 31495 | **Collection Date:** 01/03/2006 11:26 |
| **Client Id:** | NA | **Matrix:** | WATER | WATER | **Sample On Date:** |
| **Moisture/Solids%*:** | | **QC Type:** | BLK | | **Received Date:** 01/03/2006 |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018390 | H-3 | -6.53E+01 | pCi/L | 1.5E+02 | U | 3.31E+02 | 100.0 | | 906.0_H3_LSC | 5.00E-03 | 01/30/2006 | | | | D |
| BLK | 10028-17-8 | | | 1.3E+02 | | | | | | L | 01:16 | | | | |



**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, February 28, 2006*

# STL Richland QC Control Sample Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

**Lab Sample Id:** HVV721CS **Sdg/Rept Nbr:** W04843 31495 **Collection Date:** 01/03/2006 11:26

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

**Moisture/Solids%*:** **QC Type:** BS **Received Date:** 01/03/2006

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018392 | I-129L | 9.09E+00 | pCi/L | 1.2E+00 | | 3.59E-01 | 96.3 | 9.77E+00 | I129LL_SEP_L | 3.9113E+00 | 02/20/2006 | | | 70 | D |
| BS | 15046-84-1 | | | 1.2E+00 | | | | 93.1 | | L | 19:56 | | | 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.

# STL Richland QC Control Sample Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

**Lab Sample Id:** HVV7T1CS **Sdg/Rept Nbr:** W04843 31495 **Collection Date:** 01/03/2006 11:26

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

**Moisture/Solids%*:** **QC Type:** BS **Received Date:** 01/03/2006

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018390 | H-3 | 2.88E+03 | pCi/L | 2.8E+02 | | 3.27E+02 | 100.0 | 2.80E+03 | 906.0_H3_LSC | 5.00E-03 | 01/29/2006 | | | 70 | D |
| BS | 10028-17-8 | | | 2.2E+02 | | | | 102.8 | | L | 23:54 | | | 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.

# STL Richland QC Control Sample Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

**Lab Sample Id:** HVV7T1EM **Sdg/Rept Nbr:** W04843 31495 **Collection Date:** 01/03/2006 11:26
**Client Id:** NA **Matrix:** WATER WATER **Sample On Date:**
**Moisture/Solids%*:** **QC Type:** BS **Received Date:** 01/03/2006

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018390 | H-3 | 2.80E+03 | pCi/L | 2.7E+02 | | 3.31E+02 | 100.0 | 2.80E+03 | 906.0_H3_LSC | 5.00E-03 | 01/30/2006 | | | 70 | D |
| **BS** | 10028-17-8 | | | 2.2E+02 | | | | 100.1 | | L | 02:37 | | | 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, February 28, 2006*

# STL Richland QC Duplicate Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

**Lab Sample Id:** HT3JV1DR **Sdg/Rept Nbr:** W04843 31495 **Collection Date:** 01/03/2006 11:26

**Client Id:** B1DKX3 **Matrix:** WATER WATER **Sample On Date:**

**Moisture/Solids%*:** **QC Type:** DUP **Received Date:** 01/03/2006

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| I05-048 | MW6-SBB-A19981 | | | | | | | | AB | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018390 | H-3 | 2.79E+05 | pCi/L | 1.1E+04 | | 3.30E+02 | 100.0 | | 906.0_H3_LSC | 5.00E-03 | 01/30/2006 | .5 | 0.2 | | D |
| DUP | 10028-17-8 | 2.77E+05 | | 1.8E+03 | | | | | | L | 05:21 | 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, February 28, 2006*

# STL Richland QC Duplicate Report

**Lab Code:** STLRL

**FormNbr:** R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04843.Edd, h:\Reportdb\edd\FeadIV\Rad\31495.Edd

| | | | | | |
|---|---|---|---|---|---|
| **Lab Sample Id:** | HT3JV1ER | **Sdg/Rept Nbr:** | W04843 31495 | **Collection Date:** | 01/03/2006 11:26 |
| **Client Id:** | B1DKX3 | **Matrix:** | WATER WATER | **Sample On Date:** | |
| **Moisture/Solids%*:** | | **QC Type:** | DUP | **Received Date:** | 01/03/2006 |

| SAF Nbr | Contract Nbr | Test User | Case Nbr | SAS Nbr | Suffix | Decant | Distilled Volume | File Id | FSuffix | RTyp |
|---|---|---|---|---|---|---|---|---|---|---|
| I05-048 | MW6-SBB-A19981 | | | | | | | | AC | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6018392 | I-129L | 3.00E+01 | pCi/L | 3.3E+00 | | 5.00E-01 | 96.8 | | I129LL_SEP_L | 3.8292E+00 | 02/20/2006 | 2.1 | 0.3 | | D |
| DUP | 15046-84-1 | 3.06E+01 | | 3.3E+00 | | | | | | L | 17:40 | 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.

SEVERN TRENT STL

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

2/25/2006 11:58:18 AM

**Lot No., Due Date:** J6A030205; 03/03/2006

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

**QC Batch No., Method Test:** 6018392; RGAMLEPS Gamma by LEPS

**SDG, Matrix:** W04843; WATER

## 1.0 COC

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

## 2.0 QC Batch

| | Yes | No | N/A |
|---|---|---|---|
| 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

| | Yes | No | N/A |
|---|---|---|---|
| 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

| | Yes | No | N/A |
|---|---|---|---|
| 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

| | Yes | No | N/A |
|---|---|---|---|
| 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** Pam Anderson **Date** ~~3-25-06~~ 2-25-06 HMC

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6018392

| Review Item | Yes (√) | No (√) | N/A (√) |
|---|---|---|---|
| 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 with contract acceptance criteria? | √ | | |
| 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | √ | | |
| 8. Do the MS/MSD results and yields meet acceptance criteria? | | | √ |
| 9. Do the duplicate sample results and yields meet acceptance criteria? | √ | | |
| C. Other<br>1. Are all Nonconformances 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: [signature] Date: 2-27-06

SEVERN TRENT STL

# Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/30/2006 2:21:24 PM

**Lot No., Due Date:** J6A030205; 03/03/2006

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

**QC Batch No., Method Test:** 6018390; RTRITIUM H-3 by LSC

**SDG, Matrix:** W04843; 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** 1/30/06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6016390

| Review Item | Yes (√) | No (√) | N/A (√) |
|---|---|---|---|
| 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 with contract acceptance criteria? | ✓ | | |
| 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | ✓ | | |
| 8. Do the MS/MSD results and yields meet acceptance criteria? | | | ✓ |
| 9. Do the duplicate sample results and yields meet acceptance criteria? | ✓ | | |
| C. Other<br>1. Are all Nonconformances 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: [signature] Date: 2-27-06

PNNL

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I05-048-75

Page 1 of 1

| | | |
|---|---|---|
| Collector DURATEK J.M. MYERS | Contact/Requester DL STEWART | Telephone No. 509-376-5056 MSIN FAX |
| SAF No. I05-048 | Sampling Origin HANFORD SITE | Purchase Order/Charge Code |
| Project Title LTMC 2UP1 MONITORING, AUGUST 2005 | DTS-SAWS-H96 | Ice Chest No. DAN'S Temp. |
| Shipped To (Lab) Severn Trent Incorporated, Richland | Method of Shipment GOVT. VEHICLE | Bill of Lading/Air Bill No. |
| Protocol SURV | Priority: 45 Days | Offsite Property No. |

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

W04843
J6A030205
Due 02/17/06

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
A, G, I, S, and W SAFS may be grouped into one SDG to facilitate analytical batching, not to exceed SDG closure of 14 days.
Submit invoices & deliverables to DL Stewart, PNNL

| Sample No. | Lab ID | * | Date | Time | No/Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| B1DKX3 | | W | 1-3-06 | 1126 | 1x1000-mL P | 906.0_H3_LSC: Tritium (1) H3JV | None |
| B1DKX3 | | W | ↓ | ↓ | 1x20-mL P | Activity Scan | None |
| B1DKX3 | | W | ↓ | ↓ | 2x4000-mL G/P | I129LL_SEP_LEPS_GS_LL: I-129 (1) | None |
| | | | | | | | |
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| | | | | | | | |

| Relinquished By | Received By |
|---|---|
| Print: DURATEK J.M. MYERS Sign: [signature] Date/Time: JAN 03 2006 1513 | Print: Jeff Jensen Sign: [signature] Date/Time: JAN 03 2006 1513 |
| Relinquished By Date/Time | Received By Date/Time |
| Relinquished By Date/Time | Received By Date/Time |
| Relinquished By Date/Time | Received By Date/Time |

<100 CPM

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 |
|---|---|---|---|

SEVERN TRENT STL

## Sample Check-in List

Date/Time Received: 01 03 06 1513

Client: PWW SDG #: W04893 NA [ ] SAF #: W06-012 J05-048 NA [ ]

Work Order Number: J6A030205 Chain of Custody # J05-048-75 W06-012-375

Shipping Container ID: DANS Air Bill # _____

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? Yes [✓] No [ ]
4. Cooler temperature: _____ NA [✓] 5.Vermiculite/packing materials is NA [ ] Wet [ ] Dry [✓]
6. Number of samples in shipping container: 6
7. Sample holding times exceeded? NA [✓] Yes [ ] No [ ]
8. Samples have:
   - ____ tape
   - ✓ custody seals
   - ____ hazard labels
   - ✓ appropriate samples labels
9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [ ] pH<2 [✓] pH>2 [✓] adjusted pH [ ]
11. Sample Location, Sample Collector Listed? * Yes [✓] No [ ]
    *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: [signature] Date: 01 03 06

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

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 12/05, Rev. 6

1/25/2006 8:40:56 AM

# Sample Preparation/Analysis

**Balance Id:1120482733**

384868, Pacific Northwest National Labortories ,
Pacific Northwest National Lab

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

**Pipet #:** _____

**Report Due: 03/03/2006** W04843

**Sep1 DT/Tm Tech:**

**Batch: 6018392 WATER pCi/L** **PM, Quote: HC , 57671**

**Sep2 DT/Tm Tech:**

SEQ Batch, Test: None

**Prep Tech: ,GiroirB**

| 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 HT3JV-1-AC** J6A030205-1-SAMP | | 3950.00g,in | ITA4963 01/04/06 | IFA | 35.9 mg | 100 | L5 | 1120 | 2/20/06 OD | |
| 01/03/2006 11:26 | | AmtRec: 20ML,LP,2X4LP | #Containers: 4 | | | | Scr: | Alpha: -3.01E-03 uCi/Sa | Beta: 1.72E-03 uCi/Sa | |
| **2 HT3JV-1-AE-X** J6A030205-1-DUP | | 3829.20g,in | ITA4964 01/04/06 | | 35.8 | | L4 | | | |
| 01/03/2006 11:26 | | AmtRec: 20ML,LP,2X4LP | #Containers: 4 | | | | Scr: | Alpha: -3.01E-03 uCi/Sa | Beta: 1.72E-03 uCi/Sa | |
| **3 HVV72-1-AA-B** J6A180000-392-BLK | | 3863.30g,in | ITA4965 01/04/06 | | 36.1 | | L5 | 2147 | | |
| 01/03/2006 11:26 | | AmtRec: | #Containers: 1 | | | | Scr: | Alpha: | Beta: | |
| **4 HVV72-1-AC-C** J6A180000-392-LCS | | 3911.30g,in | ISD0603 01/06/06,pd | | 38.4 | | L4 | 2140 | | |
| 01/03/2006 11:26 | | AmtRec: | #Containers: 1 | | | | Scr: | Alpha: | Beta: | |

**Comments:**

pH neutral

All Clients for Batch:
384868, Pacific Northwest National Labortories Pacific Northwest National Lab, HC , 57671

HT3JV1AC-SAMP Constituent List:

| | | | | | |
|---|---|---|---|---|---|
| I-129 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: |

HVV721AA-BLK:

| | | | | | |
|---|---|---|---|---|---|
| I-129 | RDL:1.00E+00 | pCi/L | LCL: | UCL: | RPD: |

HVV721AC-LCS:

| | | | | | |
|---|---|---|---|---|---|
| I-129 | RDL:5 | pCi/L | LCL:70 | UCL:130 | RPD:20 |

HT3JV1AC-SAMP Calc Info:

1/25/2006 8:40:57 AM

# Sample Preparation/Analysis

Balance Id:1120482733

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

Pipet #: _____

Report Due: 03/03/2006

Sep1 DT/Tm Tech:

Batch: 6018392 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,GiroirB

| 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: |
|---|---|---|---|---|---|---|---|---|---|---|

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

HVV721AA-BLK:

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

HVV721AC-LCS:

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

2/25/2006 11:44:17 AM

# ICOC Fraction Transfer/Status Report

ByDate: 2/25/2005, 3/2/2006, Batch: '6018392', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| **6018392** | | | | | | |
| *AC* | | **CalcC** | **GiroirB** | 1/24/2006 6:40:50 | | |
| *SC* | | | wagarr | IsBatched | 1/18/2006 1:28:56 PM | ICOC_RADCALC v4.8.16 |
| *SC* | | | GiroirB | InPrep | 1/24/2006 6:40:50 AM | RICH-RC-5016 REVISION 5 |
| *SC* | | | GiroirB | Prep1C | 1/25/2006 8:42:54 AM | RICH-RC-5016 REVISION 5 |
| *SC* | | | NortonJ | InSep1 | 1/27/2006 8:03:21 AM | RICHRC5025 REV3 |
| *SC* | | | NortonJ | InSep1 | 2/20/2006 8:15:57 AM | RICH-RC-5025 REVISION3 |
| *SC* | | | NortonJ | Sep1C | 2/20/2006 2:00:34 PM | RICH-RC-5025 REVISION3 |
| *SC* | | | DAWKINSO | InCnt1 | 2/20/2006 2:07:33 PM | RICH-RD-0007 REVISION 5 |
| *SC* | | | DAWKINSO | CalcC | 2/20/2006 9:09:58 PM | RICH-RD-0007 REVISION 5 |
| *AC* | | | **GiroirB** | 1/25/2006 8:42:54 | | |
| *AC* | | | **NortonJ** | 1/27/2006 8:03:21 | | |
| *AC* | | | **NortonJ** | 2/20/2006 8:15:57 | | |
| *AC* | | | **NortonJ** | 2/20/2006 2:00:34 PM | | |
| *AC* | | | **DAWKINSO** | 2/20/2006 2:07:33 PM | | |
| *AC* | | | **DAWKINSO** | 2/20/2006 9:09:58 PM | | |

*AC: Accepting Entry; SC: Status Change*

1/18/2006 1:28:28 PM

# Sample Preparation/Analysis

384868, Pacific Northwest National Labortories ,
Pacific Northwest National Lab

**AR H-3 Prp/SepRC5007**
**S6 Tritium by Liquid Scint**
**5I CLIENT: HANFORD**

**Report Due: 03/03/2006** W04843

**Batch: 6018390** **WATER** **pCi/L** **PM, Quote: HC , 57671**
SEQ Batch, Test: None All Tests: ARS6, BNTB, 6018390 ARS6, 6018392 BNTB,

**Balance Id:** 12445
**Pipet #:**
**Sep1 DT/Tm Tech:** 1-26 06am
**Sep2 DT/Tm Tech:**
**Prep Tech:**

| Work Order, Lot, Sample DateTime | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Count Time Min | Detector Id | Count On \| Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|---|---|---|---|---|---|---|---|
| **1 HT3JV-1-AA** J6A030205-1-SAMP 01/03/2006 11:26 | AmtRec: 20ML,LP,2X4LP | #Containers: 4 | | | | Scr: | Alpha: -3.01E-03 uCi/Sa | Beta: 1.72E-03 uCi/Sa |
| **2 HT3JV-1-AD-X** J6A030205-1-DUP 01/03/2006 11:26 | AmtRec: 20ML,LP,2X4LP | #Containers: 4 | | | | Scr: | Alpha: -3.01E-03 uCi/Sa | Beta: 1.72E-03 uCi/Sa |
| **3 HVV7T-1-AA-B** J6A180000-390-BLK 01/03/2006 11:26 | AmtRec: | #Containers: 1 | | | | Scr: | Alpha: | Beta: |
| **4 HVV7T-1-AC-C** J6A180000-390-LCS 01/03/2006 11:26 | AmtRec: | #Containers: 1 | | | | Scr: | Alpha: | Beta: |
| **5 HVV7T-1-AD-BX** J6A180000-390-MBLK 01/03/2006 11:26 | AmtRec: | #Containers: 1 | | | | Scr: | Alpha: | Beta: |
| **6 HVV7T-1-AE-CM** J6A180000-390-MLCS 01/03/2006 11:26 | AmtRec: | #Containers: 1 | | | | Scr: | Alpha: | Beta: |
| **7 HVV7T-1-AF-BN** J6A180000-390-IBLK 01/03/2006 11:26 | AmtRec: | #Containers: 1 | | | | Scr: | Alpha: | Beta: |

1/18/2006 1:28:30 PM

# Sample Preparation/Analysis

AR H-3 Prp/SepRC5007
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

Balance Id: 12445
Pipet #:
Sep1 DT/Tm Tech: 1-26-06 ow
Sep2 DT/Tm Tech:
Prep Tech:

**Report Due: 03/03/2006**

**Batch: 6018390** pCi/L
SEQ Batch, Test: None

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

**8 HVV7T-1-AG-BN**
J6A180000-390-IBLK
01/03/2006 11:26 AmtRec: #Containers: 1 Scr: Alpha: Beta:

**Comments:**

All Clients for Batch:
384868, Pacific Northwest National Labortories Pacific Northwest National Lab, HC , 57671

HT3JV1AA-SAMP Constituent List:
H-3 RDL:400 pCi/L LCL:70 UCL:130 RPD:20
HVV7T1AA-BLK:
H-3 RDL:400 pCi/L LCL: UCL: RPD:
HVV7T1AC-LCS:
H-3 RDL:400 pCi/L LCL:70 UCL:130 RPD:20
HVV7T1AD-MBLK:
H-3 RDL:400 pCi/L LCL: UCL: RPD:
HVV7T1AE-MLCS:
H-3 RDL:400 pCi/L LCL:70 UCL:130 RPD:20
HVV7T1AF-IBLK:
H-3 RDL:400 pCi/L LCL: UCL: RPD:
HVV7T1AG-IBLK:
H-3 RDL:400 pCi/L LCL: UCL: RPD:

HT3JV1AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
HVV7T1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
HVV7T1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
HVV7T1AD-MBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
HVV7T1AE-MLCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
HVV7T1AF-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/18/2006 1:28:32 PM

# Sample Preparation/Analysis

AR H-3 Prp/SepRC5007
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

Balance Id: 12445
Pipet #:
Sep1 DT/Tm Tech: 1-26-06 DM
Sep2 DT/Tm Tech:
Prep Tech:

**Report Due: 03/03/2006**

**Batch: 6018390** **pCi/L**
SEQ Batch, Test: None

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

HVV7T1AG-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

1/30/2006 2:20:02 PM

# ICOC Fraction Transfer/Status Report

ByDate: 1/30/2005, 2/4/2006, Batch: '6018390', User: *ALL Order By DateTimeAccepting

| Q Batch | Work Ord | CurStatus | Accepting | | | Comments |
|---|---|---|---|---|---|---|
| **6018390** | | | | | | |
| *AC* | | **CalcC** | **McDowellD** | 1/25/2006 3:57:12 PM | | |
| *SC* | | | wagarr | IsBatched | 1/18/2006 1:28:56 PM | ICOC_RADCALC v4.8.16 |
| *SC* | | | McDowellD | InSep1 | 1/25/2006 3:57:12 PM | RICH-RC-5007 REVISION 6 |
| *SC* | | | McDowellD | Sep1C | 1/27/2006 2:37:35 PM | RICH-RC-5007 REVISION 6 |
| *SC* | | | DAWKINSO | InCnt1 | 1/27/2006 3:00:17 PM | RICH-RD-0001 REVISION 3 |
| *SC* | | | BlackCL | CalcC | 1/30/2006 7:47:19 AM | RICH-RD-0001 REVISION 3 |
| *AC* | | | **McDowellD** | 1/27/2006 2:37:35 PM | | |
| *AC* | | | **DAWKINSO** | 1/27/2006 3:00:17 PM | | |
| *AC* | | | **BlackCL** | 1/30/2006 7:47:19 | | |

*AC: Accepting Entry; SC: Status Change*