Paragon Analytics

Radiochemistry Case Narrative
Isotopic Uranium

Kent & Sullivan Inc.

Ross Adams

PA WO 0405096

1. This report consists of the analytical results for 29 soil samples received by Paragon on 05/11/04.

2. These samples were prepared according to Paragon Analytics procedures PA SOP721R10, PA SOP773R8, and PA SOP778R9. Modifications were made to the method as described on QASS 268110.

3. The samples were analyzed for the presence of isotopic uranium according to Paragon Analytics procedure PA SOP714R8 and R9. The analyses were completed on 07/28/04.

4. The isotopic analysis results for these samples are reported on a dry weight basis in units of pCi/gram.

5. This analytical method quantifies U-235 alpha activity in a specific region of interest corresponding to emission energies between those of U-234 and U-238. A potential limitation of this method is that measurable amounts of U-234 in the sample may cause a small amount of characteristic activity in the U-235 region of interest due to poorly resolved alpha activity at the boundary between the two regions. To minimize the potential for a high bias in the U-235 analytical results, the U-235 region of interest has been narrowed and limited to a lower energy region. An 85.1% abundance correction has been made to the final U-235 results.

6. In order to meet the requirements for a different client's samples that were prepared in the same batch (AS040720-3), a duplicate Laboratory Control Sample was batched sample MSED-06 (PA ID 0405096-6). The results for this additional QA measure are submitted in this report.

7. Sample MSED-08 (PA ID 0405096-8) has a chemical recovery of 22.81%, below the 30% lower control limit. Spectral quality is adequate for accurate quantification. Since spectral quality is acceptable and the chemical recovery is greater than 15%,

results are acceptable according to PA SOP 714. The results are submitted without further qualification. This sample is flagged with a "Y2" flag on the final reports.

8. Due suspected alpha activity seen in gamma prescreen data, samples MSED-07, MSED–09, SSED-08, SOIL-04, SOIL-05, SOIL-07, SOIL-08 and SOIL-10 (PA ID's 0405096-7, -9, -18, -27, -28, -29, -30, and -32) were initially prepared in batch AS040603-1 on 06/03/04 at a reduced aliquot. The duplicate error ratio (DER) for the U-234, U-235, and U-238 analysis of sample SSED-08 (PA ID 0405096-18) and its duplicate (PA ID 0405096-18D) was elevated above our control limit. DER is defined as :

$$DER = \frac{/S - D/}{2 * \sqrt{\sigma_S^2 + \sigma_D^2}}$$

Where: S = sample result, D = duplicate result, σ_S = 1 sigma uncertainty of sample result, and σ_D = 1 sigma uncertainty of the duplicate result. The control limit for DER is 2.13. This sample U-234 DER = 5.18, U-235 DER = 4.25, and U-238 DER = 5.26. As a result, the samples listed above were re-prepared in batch AS040618-1 on 06/18/04 at a reduced aliquot due to the elevated alpha activity. All quality control criteria were achieved for the repreparation. The results of these samples will be reported from AS040618-1 without further qualification. Please refer to NCR 5737 in Section 5 of this report.

9. The method blank associated with the samples listed above (AS040618-1MB) was also prepared at a similar reduced aliquot. Consequently, the requested MDC was not met for this method blank. It was only given a 300-minute count, but the achieved MDC values of this method blank are less than one fifth the activity measured in the associated samples with the exception of U-235 for sample SOIL-07 (PA ID 0405096-29). Data quality is not affected by this shorter analysis time.

10. The requested MDC (0.1 pCi/g) was not met for many of the samples in this work order. However, the reported activities of these samples are greater than the achieved MDC values. They are identified with an "M3" flag on the final reports.

11. Paragon Analytics follows the convention outlined in ANSI N42.23 for reporting significant digits in the TPU and MDC results. ANSI N42.23 states that the TPU result should be rounded to two significant digits and that the MDC result should be rounded to the same decimal place as the TPU result. In practice, this could result in an MDC result with a reported value of 0 for samples with significant activity, including the batch laboratory control sample.

12. U-238 activity is reported in method blank AS040603-1MB and method blank AS040720-3MB above the minimum detectable concentration value. The measured

blank activity is below the requested MDC (0.1 pCi/g). Results are acceptable according to PA SOP 715, and are submitted without further qualification.

13. No further anomalous situations were encountered during the preparation or analysis of these samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Sharon Muller — 7-30-04
Sharon Muller — Date
Radiochemistry Instrumentation

John Pedro — 7/30/04
Radiochemistry Final Data Review — Date

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PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 1

SAMPLE RESULTS SUMMARY

Isotopic Uranium By Alpha Spectroscopy Sample Results Summary

Client Name: Kent & Sullivan Inc.
Client Project Name: Ross Adams
Client Project Number:

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Reported on: Thursday, July 29, 2004 1:25:39 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0405096-1	MSED-01	Sample	U-234	0.48 +/- 0.11	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-1	MSED-01	Sample	U-235	0.037 +/- 0.024	0.010	pCi/g	SOIL	AS040603-1	6/11/2004	LT
0405096-1	MSED-01	Sample	U-238	0.427 +/- 0.099	0.017	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-2	MSED-02	Sample	U-234	1.06 +/- 0.20	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-2	MSED-02	Sample	U-235	0.069 +/- 0.034	0.010	pCi/g	SOIL	AS040603-1	6/11/2004	LT
0405096-2	MSED-02	Sample	U-238	1.06 +/- 0.20	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-3	MSED-03	Sample	U-234	0.56 +/- 0.12	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-3	MSED-03	Sample	U-235	0.011 +/- 0.013	0.010	pCi/g	SOIL	AS040603-1	6/11/2004	LT
0405096-3	MSED-03	Sample	U-238	0.57 +/- 0.12	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

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0405096-4	MSED-04	Sample	U-234	2.80 +/- 0.48	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-4	MSED-04	Sample	U-235	0.125 +/- 0.048	0.011	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-4	MSED-04	Sample	U-238	2.83 +/- 0.48	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-5	MSED-05	Sample	U-234	4.32 +/- 0.72	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-5	MSED-05	Sample	U-235	0.226 +/- 0.070	0.020	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-5	MSED-05	Sample	U-238	4.10 +/- 0.68	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-6	MSED-06	Sample	U-234	0.55 +/- 0.18	0.14	pCi/g	SOIL	AS040720-3	7/27/2004	M3
0405096-6	MSED-06	Sample	U-235	0.022 +/- 0.046	0.067	pCi/g	SOIL	AS040720-3	7/27/2004	U
0405096-6	MSED-06	Sample	U-238	0.57 +/- 0.18	0.10	pCi/g	SOIL	AS040720-3	7/27/2004	M3

Comments:

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0405096-7	MSED-07	Sample	U-234	132 +/- 21	0	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-7	MSED-07	Sample	U-235	8.7 +/- 1.7	0.1	pCi/g	SOIL	AS040618-1	6/23/2004	
0405096-7	MSED-07	Sample	U-238	137 +/- 22	0	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-8	MSED-08	Sample	U-234	84 +/- 15	0	pCi/g	SOIL	AS040603-1	6/11/2004	Y2
0405096-8	MSED-08	Sample	U-235	4.18 +/- 0.89	0.04	pCi/g	SOIL	AS040603-1	6/11/2004	Y2
0405096-8	MSED-08	Sample	U-238	86 +/- 16	0	pCi/g	SOIL	AS040603-1	6/11/2004	Y2
0405096-9	MSED-09	Sample	U-234	25.3 +/- 4.1	0	pCi/g	SOIL	AS040618-1	6/23/2004	
0405096-9	MSED-09	Sample	U-235	1.53 +/- 0.34	0.07	pCi/g	SOIL	AS040618-1	6/23/2004	
0405096-9	MSED-09	Sample	U-238	25.9 +/- 4.2	0.1	pCi/g	SOIL	AS040618-1	6/23/2004	

Comments:

Data Package ID: *ur0405096-1*

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Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0405096-10	MSED-10	Sample	U-234	26.8 +/- 4.4	0	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-10	MSED-10	Sample	U-235	1.42 +/- 0.29	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-10	MSED-10	Sample	U-238	28.6 +/- 4.6	0	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-11	SSED-01	Sample	U-234	1.43 +/- 0.26	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-11	SSED-01	Sample	U-235	0.070 +/- 0.034	0.010	pCi/g	SOIL	AS040603-1	6/11/2004	LT
0405096-11	SSED-01	Sample	U-238	1.55 +/- 0.28	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-12	SSED-02	Sample	U-234	1.25 +/- 0.23	0.01	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-12	SSED-02	Sample	U-235	0.042 +/- 0.025	0.017	pCi/g	SOIL	AS040603-1	6/11/2004	LT
0405096-12	SSED-02	Sample	U-238	1.17 +/- 0.21	0.01	pCi/g	SOIL	AS040603-1	6/11/2004	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

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LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
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M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

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MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

000008

Isotopic Uranium By Alpha Spectroscopy Sample Results Summary

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Client Project Number:

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Reported on: Thursday, July 29, 2004 1:25:39 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0405096-13	SSED-03	Sample	U-234	1.16 +/- 0.27	0.07	pCi/g	SOIL	AS040603-1	7/28/2004	
0405096-13	SSED-03	Sample	U-235	0.034 +/- 0.036	0.038	pCi/g	SOIL	AS040603-1	7/28/2004	U
0405096-13	SSED-03	Sample	U-238	0.86 +/- 0.22	0.05	pCi/g	SOIL	AS040603-1	7/28/2004	
0405096-14	SSED-04	Sample	U-234	1.07 +/- 0.20	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-14	SSED-04	Sample	U-235	0.045 +/- 0.028	0.030	pCi/g	SOIL	AS040603-1	6/11/2004	LT
0405096-14	SSED-04	Sample	U-238	1.17 +/- 0.22	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-15	SSED-05	Sample	U-234	3.93 +/- 0.65	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-15	SSED-05	Sample	U-235	0.201 +/- 0.062	0.025	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-15	SSED-05	Sample	U-238	4.15 +/- 0.68	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
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Y2 - Chemical Yield outside default limits.
M - The requested MDC was not met.
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Abbreviations:

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BDL - Below Detection Limit

0009

Isotopic Uranium By Alpha Spectroscopy Sample Results Summary

Client Name: Kent & Sullivan Inc.
Client Project Name: Ross Adams
Client Project Number:

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Reported on: Thursday, July 29, 2004 1:25:39 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0405096-16	SSED-06	Sample	U-234	1.27 +/- 0.23	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-16	SSED-06	Sample	U-235	0.073 +/- 0.034	0.009	pCi/g	SOIL	AS040603-1	6/11/2004	LT
0405096-16	SSED-06	Sample	U-238	1.08 +/- 0.20	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-17	SSED-07	Sample	U-234	2.55 +/- 0.43	0.05	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-17	SSED-07	Sample	U-235	0.121 +/- 0.045	0.026	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-17	SSED-07	Sample	U-238	2.30 +/- 0.39	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-18	SSED-08	Sample	U-234	56.8 +/- 9.3	0.1	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-18	SSED-08	Sample	U-235	3.04 +/- 0.62	0.10	pCi/g	SOIL	AS040618-1	6/23/2004	
0405096-18	SSED-08	Sample	U-238	60.8 +/- 9.9	0.1	pCi/g	SOIL	AS040618-1	6/23/2004	

Comments:

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0010

Isotopic Uranium By Alpha Spectroscopy Sample Results Summary

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Laboratory Name: Paragon Analytics
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0405096-19	SSED-09	Sample	U-234	5.97 +/- 0.97	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-19	SSED-09	Sample	U-235	0.310 +/- 0.083	0.023	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-19	SSED-09	Sample	U-238	7.1 +/- 1.1	0	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-20	SSED-10	Sample	U-234	5.18 +/- 0.85	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-20	SSED-10	Sample	U-235	0.265 +/- 0.076	0.034	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-20	SSED-10	Sample	U-238	5.42 +/- 0.88	0.03	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-22	GEN-02	Sample	U-234	6.2 +/- 1.0	0	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-22	GEN-02	Sample	U-235	0.245 +/- 0.093	0.057	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-22	GEN-02	Sample	U-238	6.4 +/- 1.1	0	pCi/g	SOIL	AS040603-1	6/11/2004	

Comments:

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0405096-25	SOIL-01	Sample	U-234	20.1 +/- 3.3	0.1	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-25	SOIL-01	Sample	U-235	1.09 +/- 0.26	0.05	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-25	SOIL-01	Sample	U-238	20.6 +/- 3.4	0.1	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-26	SOIL-02	Sample	U-234	13.6 +/- 2.2	0.1	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-26	SOIL-02	Sample	U-235	0.77 +/- 0.19	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-26	SOIL-02	Sample	U-238	14.0 +/- 2.2	0	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-27	SOIL-04	Sample	U-234	562 +/- 92	0	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-27	SOIL-04	Sample	U-235	41.0 +/- 7.8	0.7	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-27	SOIL-04	Sample	U-238	557 +/- 91	0	pCi/g	SOIL	AS040618-1	6/23/2004	M3

Comments:

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0405096-28	SOIL-05	Sample	U-234	37.0 +/- 6.2	0.2	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-28	SOIL-05	Sample	U-235	1.65 +/- 0.57	0.27	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-28	SOIL-05	Sample	U-238	36.4 +/- 6.1	0.2	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-29	SOIL-07	Sample	U-234	4.35 +/- 0.76	0.02	pCi/g	SOIL	AS040618-1	6/23/2004	
0405096-29	SOIL-07	Sample	U-235	0.33 +/- 0.11	0.05	pCi/g	SOIL	AS040618-1	6/23/2004	
0405096-29	SOIL-07	Sample	U-238	4.83 +/- 0.83	0.05	pCi/g	SOIL	AS040618-1	6/23/2004	
0405096-30	SOIL-08	Sample	U-234	295 +/- 47	1	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-30	SOIL-08	Sample	U-235	19.7 +/- 3.9	0.5	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-30	SOIL-08	Sample	U-238	278 +/- 44	0	pCi/g	SOIL	AS040618-1	6/23/2004	M3

Comments:

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BDL - Below Detection Limit

000013

Isotopic Uranium By Alpha Spectroscopy Sample Results Summary

Client Name: Kent & Sullivan Inc.
Client Project Name: Ross Adams
Client Project Number:

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Reported on: Thursday, July 29, 2004 1:25:39 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0405096-31	SOIL-09	Sample	U-234	4.15 +/- 0.72	0.04	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-31	SOIL-09	Sample	U-235	0.160 +/- 0.073	0.020	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-31	SOIL-09	Sample	U-238	4.27 +/- 0.74	0.02	pCi/g	SOIL	AS040603-1	6/11/2004	
0405096-32	SOIL-10	Sample	U-234	164 +/- 26	0	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-32	SOIL-10	Sample	U-235	9.8 +/- 2.2	0.2	pCi/g	SOIL	AS040618-1	6/23/2004	M3
0405096-32	SOIL-10	Sample	U-238	176 +/- 28	0	pCi/g	SOIL	AS040618-1	6/23/2004	M3

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

000017

PARAGON ANALYTICS, INC.

Radiochemistry Data Package

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Section 2

QC RESULTS SUMMARY

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Lab ID: AS040603-1MB

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 03-Jun-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: U6031B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.022 +/- 0.019	0.027	U
15117-96-1	U-235	0.010 +/- 0.014	0.020	U
7440-61-1	U-238	0.010 +/- 0.012	0.009	B3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.271	3.37	pCi/g	78.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Lab ID: AS040618-1MB

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 18-Jun-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes

Final Aliquot: 0.300 g
Result Units: pCi/g
File Name: UX6181B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.16 +/- 0.14	0.18	U,M
15117-96-1	U-235	0.044 +/- 0.093	0.135	U,M
7440-61-1	U-238	0.16 +/- 0.13	0.16	U,M

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	28.44	20.5	pCi/g	72.2	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Lab ID: AS040720-3MB

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 20-Jul-04
Date Prepared: 20-Jul-04
Date Analyzed: 27-Jul-04

Prep Batch: AS040720-3
QCBatchID: AS040720-3-1
Run ID: AS040720-3A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: U7203B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.024 +/- 0.019	0.024	U
15117-96-1	U-235	-0.001 +/- 0.013	0.019	U
7440-61-1	U-238	0.018 +/- 0.015	0.008	B3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.262	3.70	pCi/g	86.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Lab ID: AS040603-1LCS

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 03-Jun-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: U6031L

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13966-29-5	U-234	4.51 +/- 0.74	0.02	4.34	104	82 - 122	P
7440-61-1	U-238	4.72 +/- 0.77	0.01	4.50	105	82 - 122	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.271	3.53	pCi/g	82.6	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Lab ID: AS040618-1LCS

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 18-Jun-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes

Final Aliquot: 0.300 g
Result Units: pCi/g
File Name: UX6181L

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13966-29-5	U-234	30.0 +/- 4.9	0.2	28.9	104	82 - 122	P,M3
7440-61-1	U-238	30.5 +/- 5.0	0.2	30.0	102	82 - 122	P,M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	28.44	21.3	pCi/g	74.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Lab ID: AS040720-3LCS

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 20-Jul-04
Date Prepared: 20-Jul-04
Date Analyzed: 27-Jul-04

Prep Batch: AS040720-3
QCBatchID: AS040720-3-1
Run ID: AS040720-3A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: U7203L

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13966-29-5	U-234	3.88 +/- 0.64	0.01	4.34	89.4	82 - 122	P
7440-61-1	U-238	3.97 +/- 0.65	0.02	4.50	88.2	82 - 122	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.262	3.94	pCi/g	92.3	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Lab ID: AS040720-3LCSD

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 20-Jul-04
Date Prepared: 20-Jul-04
Date Analyzed: 27-Jul-04

Prep Batch: AS040720-3
QCBatchID: AS040720-3-1
Run ID: AS040720-3A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: U7203LD

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13966-29-5	U-234	3.68 +/- 0.61	0.02	4.34	84.8	82 - 122	P
7440-61-1	U-238	3.86 +/- 0.64	0.02	4.50	85.7	82 - 122	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.262	3.77	pCi/g	88.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-03
Lab ID: 0405096-3DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50963D

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
13966-29-5	U-234	0.56 +/- 0.12	0.59 +/- 0.13	0.21	2.13	
15117-96-1	U-235	0.011 +/- 0.013	0.044 +/- 0.027	1.10	2.13	LT
7440-61-1	U-238	0.57 +/- 0.12	0.49 +/- 0.11	0.46	2.13	

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-05
Lab ID: 0405096-15DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes

Final Aliquot: 2.03 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509615D

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
13966-29-5	U-234	3.93 +/- 0.65	3.82 +/- 0.63	0.12	2.13	
15117-96-1	U-235	0.201 +/- 0.062	0.226 +/- 0.065	0.29	2.13	
7440-61-1	U-238	4.15 +/- 0.68	3.86 +/- 0.63	0.31	2.13	

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-08
Lab ID: 0405096-18DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 05-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes

Final Aliquot: 1.02 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX509618D

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
13966-29-5	U-234	56.8 +/- 9.3	53.9 +/- 8.8	0.23	2.13	
15117-96-1	U-235	3.04 +/- 0.62	3.46 +/- 0.69	0.46	2.13	
7440-61-1	U-238	60.8 +/- 9.9	62 +/- 10	0.07	2.13	

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID:
Lab ID: AS040720-3LCSD

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 20-Jul-04
Date Prepared: 20-Jul-04
Date Analyzed: 27-Jul-04

Prep Batch: AS040720-3
QCBatchID: AS040720-3-1
Run ID: AS040720-3A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U7203LD

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
13966-29-5	U-234	3.88 +/- 0.64	3.68 +/- 0.61	0.23	2.13	P
7440-61-1	U-238	3.97 +/- 0.65	3.86 +/- 0.64	0.13	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: *UR0405096-1*

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

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Section 3

INDIVIDUAL SAMPLE RESULTS

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-01
Lab ID: 0405096-1

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50961

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.48 +/- 0.11	0.02	
15117-96-1	U-235	0.037 +/- 0.024	0.010	LT
7440-61-1	U-238	0.427 +/- 0.099	0.017	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.257	3.27	pCi/g	76.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-02
Lab ID: 0405096-2

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.02 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50962

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	1.06 +/- 0.20	0.02	
15117-96-1	U-235	0.069 +/- 0.034	0.010	LT
7440-61-1	U-238	1.06 +/- 0.20	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.229	3.42	pCi/g	80.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-03
Lab ID: 0405096-3

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.03 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50963

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.56 +/- 0.12	0.03	
15117-96-1	U-235	0.011 +/- 0.013	0.010	LT
7440-61-1	U-238	0.57 +/- 0.12	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.213	3.35	pCi/g	79.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-03
Lab ID: 0405096-3DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50963D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.59 +/- 0.13	0.03	
15117-96-1	U-235	0.044 +/- 0.027	0.011	LT
7440-61-1	U-238	0.49 +/- 0.11	0.03	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.240	3.02	pCi/g	71.2	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-04
Lab ID: 0405096-4

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50964

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	2.80 +/- 0.48	0.02	
15117-96-1	U-235	0.125 +/- 0.048	0.011	
7440-61-1	U-238	2.83 +/- 0.48	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.267	3.32	pCi/g	77.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-05
Lab ID: 0405096-5

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50965

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	4.32 +/- 0.72	0.03	
15117-96-1	U-235	0.226 +/- 0.070	0.020	
7440-61-1	U-238	4.10 +/- 0.68	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.260	3.20	pCi/g	75.2	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-06
Lab ID: 0405096-6

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 20-Jul-04
Date Analyzed: 27-Jul-04

Prep Batch: AS040720-3
QCBatchID: AS040720-3-1
Run ID: AS040720-3A
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 0.514 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50966

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.55 +/- 0.18	0.14	M3
15117-96-1	U-235	0.022 +/- 0.046	0.067	U
7440-61-1	U-238	0.57 +/- 0.18	0.10	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	16.59	15.4	pCi/g	92.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-07
Lab ID: 0405096-7

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 0.301 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX50967

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	132 +/- 21	0	M3
15117-96-1	U-235	8.7 +/- 1.7	0.1	
7440-61-1	U-238	137 +/- 22	0	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	28.38	19.2	pCi/g	67.6	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-08
Lab ID: 0405096-8

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.02 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U50968

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	84 +/- 15	0	Y2
15117-96-1	U-235	4.18 +/- 0.89	0.04	Y2
7440-61-1	U-238	86 +/- 16	0	Y2

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.223	0.96	pCi/g	22.8	30 - 110 %	Y2

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-09
Lab ID: 0405096-9

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX50969

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	25.3 +/- 4.1	0	
15117-96-1	U-235	1.53 +/- 0.34	0.07	
7440-61-1	U-238	25.9 +/- 4.2	0.1	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.519	5.59	pCi/g	65.7	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: MSED-10
Lab ID: 0405096-10

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509610

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	26.8 +/- 4.4	0	
15117-96-1	U-235	1.42 +/- 0.29	0.03	
7440-61-1	U-238	28.6 +/- 4.6	0	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.245	2.37	pCi/g	55.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID:	SSED-01
Lab ID:	0405096-11

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 05-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509611

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	1.43 +/- 0.26	0.02	
15117-96-1	U-235	0.070 +/- 0.034	0.010	LT
7440-61-1	U-238	1.55 +/- 0.28	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.267	3.15	pCi/g	73.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID:	SSED-02
Lab ID:	0405096-12

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 05-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.04 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509612

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	1.25 +/- 0.23	0.01	
15117-96-1	U-235	0.042 +/- 0.025	0.017	LT
7440-61-1	U-238	1.17 +/- 0.21	0.01	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.195	3.46	pCi/g	82.6	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-03
Lab ID: 0405096-13

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 28-Jul-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 120 minutes
Report Basis: Dry Weight

Final Aliquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509613

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	1.16 +/- 0.27	0.07	
15117-96-1	U-235	0.034 +/- 0.036	0.038	U
7440-61-1	U-238	0.86 +/- 0.22	0.05	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.259	3.67	pCi/g	86.1	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID:	SSED-04
Lab ID:	0405096-14

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.02 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509614

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	1.07 +/- 0.20	0.03	
15117-96-1	U-235	0.045 +/- 0.028	0.030	LT
7440-61-1	U-238	1.17 +/- 0.22	0.03	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.227	3.19	pCi/g	75.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-05
Lab ID: 0405096-15

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509615

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	3.93 +/- 0.65	0.03	
15117-96-1	U-235	0.201 +/- 0.062	0.025	
7440-61-1	U-238	4.15 +/- 0.68	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.252	3.20	pCi/g	75.2	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-05
Lab ID: 0405096-15DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.03 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509615D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	3.82 +/- 0.63	0.03	
15117-96-1	U-235	0.226 +/- 0.065	0.009	
7440-61-1	U-238	3.86 +/- 0.63	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.210	3.51	pCi/g	83.5	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-06
Lab ID: 0405096-16

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.05 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509616

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	1.27 +/- 0.23	0.02	
15117-96-1	U-235	0.073 +/- 0.034	0.009	LT
7440-61-1	U-238	1.08 +/- 0.20	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.174	3.40	pCi/g	81.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-07
Lab ID: 0405096-17

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.04 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509617

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	2.55 +/- 0.43	0.05	
15117-96-1	U-235	0.121 +/- 0.045	0.026	
7440-61-1	U-238	2.30 +/- 0.39	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.197	3.38	pCi/g	80.6	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-08
Lab ID: 0405096-18

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 05-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.04 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UY509618

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	56.8 +/- 9.3	0.1	M3
15117-96-1	U-235	3.04 +/- 0.62	0.10	
7440-61-1	U-238	60.8 +/- 9.9	0.1	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.177	4.18	pCi/g	51.1	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID:	SSED-08
Lab ID:	0405096-18DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 05-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.02 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX509618D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	53.9 +/- 8.8	0.1	
15117-96-1	U-235	3.46 +/- 0.69	0.03	
7440-61-1	U-238	62 +/- 10	0	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.346	4.34	pCi/g	52.0	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-09
Lab ID: 0405096-19

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 05-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.02 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509619

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	5.97 +/- 0.97	0.02	
15117-96-1	U-235	0.310 +/- 0.083	0.023	
7440-61-1	U-238	7.1 +/- 1.1	0	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.236	3.53	pCi/g	83.3	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SSED-10
Lab ID: 0405096-20

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 04-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509620

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	5.18 +/- 0.85	0.03	
15117-96-1	U-235	0.265 +/- 0.076	0.034	
7440-61-1	U-238	5.42 +/- 0.88	0.03	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.244	3.13	pCi/g	73.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: GEN-02
Lab ID: 0405096-22

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509622

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	6.2 +/- 1.0	0	
15117-96-1	U-235	0.245 +/- 0.093	0.057	
7440-61-1	U-238	6.4 +/- 1.1	0	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.496	6.7	pCi/g	79.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SOIL-01
Lab ID: 0405096-25

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.02 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509625

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	20.1 +/- 3.3	0.1	
15117-96-1	U-235	1.09 +/- 0.26	0.05	
7440-61-1	U-238	20.6 +/- 3.4	0.1	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.387	6.6	pCi/g	78.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SOIL-02
Lab ID: 0405096-26

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509626

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	13.6 +/- 2.2	0.1	
15117-96-1	U-235	0.77 +/- 0.19	0.02	
7440-61-1	U-238	14.0 +/- 2.2	0	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.493	7.0	pCi/g	82.1	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SOIL-04
Lab ID: 0405096-27

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 0.101 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX509627

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	562 +/- 92	0	M3
15117-96-1	U-235	41.0 +/- 7.8	0.7	M3
7440-61-1	U-238	557 +/- 91	0	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	84.48	45.1	pCi/g	53.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SOIL-05
Lab ID: 0405096-28

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 06-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 0.201 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX509628

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	37.0 +/- 6.2	0.2	M3
15117-96-1	U-235	1.65 +/- 0.57	0.27	M3
7440-61-1	U-238	36.4 +/- 6.1	0.2	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	42.45	34.3	pCi/g	80.7	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SOIL-07
Lab ID: 0405096-29

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX509629

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	4.35 +/- 0.76	0.02	
15117-96-1	U-235	0.33 +/- 0.11	0.05	
7440-61-1	U-238	4.83 +/- 0.83	0.05	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.480	6.8	pCi/g	80.5	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SOIL-08
Lab ID: 0405096-30

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 0.102 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX509630

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	295 +/- 47	1	M3
15117-96-1	U-235	19.7 +/- 3.9	0.5	M3
7440-61-1	U-238	278 +/- 44	0	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	83.24	58.5	pCi/g	70.3	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID:	SOIL-09
Lab ID:	0405096-31

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 03-Jun-04
Date Analyzed: 11-Jun-04

Prep Batch: AS040603-1
QCBatchID: AS040603-1-1
Run ID: AS040603-1B
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 1.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U509631

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	4.15 +/- 0.72	0.04	
15117-96-1	U-235	0.160 +/- 0.073	0.020	
7440-61-1	U-238	4.27 +/- 0.74	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	8.505	6.7	pCi/g	78.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0405096
Client Name: Kent & Sullivan Inc.
ClientProject ID: Ross Adams

Field ID: SOIL-10
Lab ID: 0405096-32

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-May-04
Date Prepared: 18-Jun-04
Date Analyzed: 23-Jun-04

Prep Batch: AS040618-1
QCBatchID: AS040618-1-1
Run ID: AS040618-1a
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 0.103 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: UX509632

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	164 +/- 26	0	M3
15117-96-1	U-235	9.8 +/- 2.2	0.2	M3
7440-61-1	U-238	176 +/- 28	0	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	83.00	64	pCi/g	77.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *UR0405096-1*

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

4

Section 4

RAW DATA

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-1	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1342.922	30.72%	300	3.27	0.03	pCi/g	NA	
SMP	Tracer	1:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	64	U50961	7:14 AM	13.592	1000	76.8%	0.51	NA	Dry Weight	NA	
0405096-1	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	150.835	30.72%	300	0.48	0.02	pCi/g	NA	
SMP	Trg. Analyte	1:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	64	U50961	7:14 AM	3.883	1000	76.8%	0.11	NA	Dry Weight	NA	
0405096-1	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	10.000	30.72%	300	0.037	0.010	pCi/g	NA	
SMP	Trg. Analyte	1:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	64	U50961	7:14 AM	0.000	1000	76.8%	0.024	NA	Dry Weight	NA	LT
0405096-1	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	134.709	30.72%	300	0.427	0.017	pCi/g	NA	
SMP	Trg. Analyte	1:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	64	U50961	7:14 AM	0.971	1000	76.8%	0.099	NA	Dry Weight	NA	
0405096-2	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	1361.505	29.58%	300	3.42	0.03	pCi/g	NA	
SMP	Tracer	1:40:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	16	U50962	6:59 AM	11.650	1000	80.9%	0.53	NA	Dry Weight	NA	
0405096-2	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	341.709	29.58%	300	1.06	0.02	pCi/g	NA	
SMP	Trg. Analyte	1:40:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	16	U50962	6:59 AM	0.971	1000	80.9%	0.20	NA	Dry Weight	NA	
0405096-2	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	19.000	29.58%	300	0.069	0.010	pCi/g	NA	
SMP	Trg. Analyte	1:40:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	16	U50962	6:59 AM	0.000	1000	80.9%	0.034	NA	Dry Weight	NA	LT
0405096-2	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	341.126	29.58%	300	1.06	0.02	pCi/g	NA	
SMP	Trg. Analyte	1:40:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	16	U50962	6:59 AM	2.913	1000	80.9%	0.20	NA	Dry Weight	NA	
0405096-3	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	1386.845	30.69%	300	3.35	0.04	pCi/g	NA	
SMP	Tracer	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	17	U50963	6:59 AM	27.184	1000	79.4%	0.52	NA	Dry Weight	NA	
0405096-3	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	183.544	30.69%	300	0.56	0.03	pCi/g	NA	
SMP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	17	U50963	6:59 AM	4.854	1000	79.4%	0.12	NA	Dry Weight	NA	
0405096-3	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	3.000	30.69%	300	0.011	0.010	pCi/g	NA	
SMP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	17	U50963	6:59 AM	0.000	1000	79.4%	0.013	NA	Dry Weight	NA	LT

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 778 | **Reported on:** Thursday, July 29, 2004

PAI Work Order: 0405096 | **Analytical SOP:** PAI 714 | 12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-3	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	187.709	30.69%	300	0.57	0.02	pCi/g	NA	
SMP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	17	U50963	6:59 AM	0.971	1000	79.4%	0.12	NA	Dry Weight	NA	
0405096-3	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1248.097	30.80%	300	3.02	0.04	pCi/g	NA	
DUP	Tracer	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	18	U50963D	7:05 AM	33.010	1000	71.2%	0.47	NA	Dry Weight	NA	
0405096-3	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	174.835	30.80%	300	0.59	0.03	pCi/g	0.21	
DUP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	18	U50963D	7:05 AM	3.883	1000	71.2%	0.13	NA	Dry Weight	NA	
0405096-3	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	11.000	30.80%	300	0.044	0.011	pCi/g	1.10	
DUP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	18	U50963D	7:05 AM	0.000	1000	71.2%	0.027	NA	Dry Weight	NA	LT
0405096-3	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	145.252	30.80%	300	0.49	0.03	pCi/g	0.46	
DUP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	18	U50963D	7:05 AM	5.825	1000	71.2%	0.11	NA	Dry Weight	NA	
0405096-4	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1283.340	28.96%	300	3.32	0.03	pCi/g	NA	
SMP	Tracer	9:10:00 AM	AS040603-1-1	NA	NA	NA	2 g	19	U50964	7:06 AM	15.534	1000	77.9%	0.52	NA	Dry Weight	NA	
0405096-4	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	841.709	28.96%	300	2.80	0.02	pCi/g	NA	
SMP	Trg. Analyte	9:10:00 AM	AS040603-1-1	NA	NA	NA	2 g	19	U50964	7:06 AM	0.971	1000	77.9%	0.48	NA	Dry Weight	NA	
0405096-4	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	32.000	28.96%	300	0.125	0.011	pCi/g	NA	
SMP	Trg. Analyte	9:10:00 AM	AS040603-1-1	NA	NA	NA	2 g	19	U50964	7:06 AM	0.000	1000	77.9%	0.048	NA	Dry Weight	NA	
0405096-4	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	851.417	28.96%	300	2.83	0.02	pCi/g	NA	
SMP	Trg. Analyte	9:10:00 AM	AS040603-1-1	NA	NA	NA	2 g	19	U50964	7:06 AM	1.942	1000	77.9%	0.48	NA	Dry Weight	NA	
0405096-5	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1277.515	29.86%	300	3.20	0.04	pCi/g	NA	
SMP	Tracer	9:20:00 AM	AS040603-1-1	NA	NA	NA	2 g	21	U50965	7:07 AM	34.951	1000	75.2%	0.50	NA	Dry Weight	NA	
0405096-5	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1295.544	29.86%	300	4.32	0.03	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	AS040603-1-1	NA	NA	NA	2 g	21	U50965	7:07 AM	4.854	1000	75.2%	0.72	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-5	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	57.709	29.86%	300	0.226	0.020	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	AS040603-1-1	NA	NA	NA	2 g	21	U50965	7:07 AM	0.971	1000	75.2%	0.070	NA	Dry Weight	NA	
0405096-5	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1229.126	29.86%	300	4.10	0.02	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	AS040603-1-1	NA	NA	NA	2 g	21	U50965	7:07 AM	2.913	1000	75.2%	0.68	NA	Dry Weight	NA	
0405096-6	U-232	5/7/2004	AS040720-3	NA	NA	SOIL	0.514 g	Alpha Spec	AS040720-3A	7/27/2004	1539.700	29.22%	300	15.4	0.1	pCi/g	NA	
SMP	Tracer	8:30:00 AM	AS040720-3-1	NA	NA	NA	0.514 g	9	U50966	10:20 AM	21.000	1000	92.8%	2.4	NA	Dry Weight	NA	
0405096-6	U-234	5/7/2004	AS040720-3	NA	NA	SOIL	0.514 g	Alpha Spec	AS040720-3A	7/27/2004	51.200	29.22%	300	0.55	0.14	pCi/g	NA	
SMP	Trg. Analyte	8:30:00 AM	AS040720-3-1	NA	NA	NA	0.514 g	9	U50966	10:20 AM	16.000	1000	92.8%	0.18	NA	Dry Weight	NA	M3
0405096-6	U-235	5/7/2004	AS040720-3	NA	NA	SOIL	0.514 g	Alpha Spec	AS040720-3A	7/27/2004	1.700	29.22%	300	0.022	0.067	pCi/g	NA	
SMP	Trg. Analyte	8:30:00 AM	AS040720-3-1	NA	NA	NA	0.514 g	9	U50966	10:20 AM	1.000	1000	92.8%	0.046	NA	Dry Weight	NA	U
0405096-6	U-238	5/7/2004	AS040720-3	NA	NA	SOIL	0.514 g	Alpha Spec	AS040720-3A	7/27/2004	52.900	29.22%	300	0.57	0.10	pCi/g	NA	
SMP	Trg. Analyte	8:30:00 AM	AS040720-3-1	NA	NA	NA	0.514 g	9	U50966	10:20 AM	7.000	1000	92.8%	0.18	NA	Dry Weight	NA	M3
0405096-7	U-232	5/7/2004	AS040618-1	NA	NA	SOIL	0.301 g	Alpha Spec	AS040618-1a	6/23/2004	1122.900	29.22%	300	19.2	0.2	pCi/g	NA	
SMP	Tracer	9:00:00 AM	AS040618-1-1	NA	NA	NA	0.301 g	16	UX50967	12:39 PM	7.000	1000	67.6%	3.0	NA	Dry Weight	NA	
0405096-7	U-234	5/7/2004	AS040618-1	NA	NA	SOIL	0.301 g	Alpha Spec	AS040618-1a	6/23/2004	5228.400	29.22%	300	132	0	pCi/g	NA	
SMP	Trg. Analyte	9:00:00 AM	AS040618-1-1	NA	NA	NA	0.301 g	16	UX50967	12:39 PM	2.000	1000	67.6%	21	NA	Dry Weight	NA	M3
0405096-7	U-235	5/7/2004	AS040618-1	NA	NA	SOIL	0.301 g	Alpha Spec	AS040618-1a	6/23/2004	291.000	29.22%	300	8.7	0.1	pCi/g	NA	
SMP	Trg. Analyte	9:00:00 AM	AS040618-1-1	NA	NA	NA	0.301 g	16	UX50967	12:39 PM	0.000	1000	67.6%	1.7	NA	Dry Weight	NA	
0405096-7	U-238	5/7/2004	AS040618-1	NA	NA	SOIL	0.301 g	Alpha Spec	AS040618-1a	6/23/2004	5438.399	29.22%	300	137	0	pCi/g	NA	
SMP	Trg. Analyte	9:00:00 AM	AS040618-1-1	NA	NA	NA	0.301 g	16	UX50967	12:39 PM	2.000	1000	67.6%	22	NA	Dry Weight	NA	M3
0405096-8	U-232	5/7/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	368.796	28.41%	300	0.96	0.03	pCi/g	NA	
SMP	Tracer	9:15:00 AM	AS040603-1-1	NA	NA	NA	2.02 g	22	U50968	7:07 AM	10.680	1000	22.8%	0.17	NA	Dry Weight	NA	Y2

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
+ - Duplicate RPD not within limits.
LT - Result is less than Request MDC, greater than sample specific MDC
* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).
2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio
BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 778 | **Reported on:** Thursday, July 29, 2004

PAI Work Order: 0405096 | **Analytical SOP:** PAI 714 | 12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-8	U-234	5/7/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	7344.709	28.41%	300	84	0	pCi/g	NA	
SMP	Trg. Analyte	9:15:00 AM	AS040603-1-1	NA	NA	NA	2.02 g	22	U50968	7:07 AM	0.971	1000	22.8%	15	NA	Dry Weight	NA	Y2
0405096-8	U-235	5/7/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	310.000	28.41%	300	4.18	0.04	pCi/g	NA	
SMP	Trg. Analyte	9:15:00 AM	AS040603-1-1	NA	NA	NA	2.02 g	22	U50968	7:07 AM	0.000	1000	22.8%	0.89	NA	Dry Weight	NA	Y2
0405096-8	U-238	5/7/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	7534.835	28.41%	300	86	0	pCi/g	NA	
SMP	Trg. Analyte	9:15:00 AM	AS040603-1-1	NA	NA	NA	2.02 g	22	U50968	7:07 AM	3.883	1000	22.8%	16	NA	Dry Weight	NA	Y2
0405096-9	U-232	5/7/2004	AS040618-1	NA	NA	SOIL	1 g	Alpha Spec	AS040618-1a	6/23/2004	1136.800	30.47%	300	5.59	0.09	pCi/g	NA	
SMP	Tracer	9:20:00 AM	AS040618-1-1	NA	NA	NA	1 g	17	UX50969	12:39 PM	34.000	1000	65.7%	0.88	NA	Dry Weight	NA	
0405096-9	U-234	5/7/2004	AS040618-1	NA	NA	SOIL	1 g	Alpha Spec	AS040618-1a	6/23/2004	3376.400	30.47%	300	25.3	0	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	AS040618-1-1	NA	NA	NA	1 g	17	UX50969	12:39 PM	2.000	1000	65.7%	4.1	NA	Dry Weight	NA	
0405096-9	U-235	5/7/2004	AS040618-1	NA	NA	SOIL	1 g	Alpha Spec	AS040618-1a	6/23/2004	173.800	30.47%	300	1.53	0.07	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	AS040618-1-1	NA	NA	NA	1 g	17	UX50969	12:39 PM	4.000	1000	65.7%	0.34	NA	Dry Weight	NA	
0405096-9	U-238	5/7/2004	AS040618-1	NA	NA	SOIL	1 g	Alpha Spec	AS040618-1a	6/23/2004	3456.900	30.47%	300	25.9	0.1	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	AS040618-1-1	NA	NA	NA	1 g	17	UX50969	12:39 PM	7.000	1000	65.7%	4.2	NA	Dry Weight	NA	
0405096-10	U-232	5/7/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	913.379	28.77%	300	2.37	0.03	pCi/g	NA	
SMP	Tracer	10:10:00 AM	AS040603-1-1	NA	NA	NA	2.01 g	23	U509610	7:08 AM	8.738	1000	55.8%	0.38	NA	Dry Weight	NA	
0405096-10	U-234	5/7/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	5762.417	28.77%	300	26.8	0	pCi/g	NA	
SMP	Trg. Analyte	10:10:00 AM	AS040603-1-1	NA	NA	NA	2.01 g	23	U509610	7:08 AM	1.942	1000	55.8%	4.4	NA	Dry Weight	NA	
0405096-10	U-235	5/7/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	260.417	28.77%	300	1.42	0.03	pCi/g	NA	
SMP	Trg. Analyte	10:10:00 AM	AS040603-1-1	NA	NA	NA	2.01 g	23	U509610	7:08 AM	1.942	1000	55.8%	0.29	NA	Dry Weight	NA	
0405096-10	U-238	5/7/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	6150.126	28.77%	300	28.6	0	pCi/g	NA	
SMP	Trg. Analyte	10:10:00 AM	AS040603-1-1	NA	NA	NA	2.01 g	23	U509610	7:08 AM	2.913	1000	55.8%	4.6	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-11	U-232	5/5/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1365.301	32.48%	300	3.15	0.03	pCi/g	NA	
SMP	Tracer	4:15:00 PM	AS040603-1-1	NA	NA	NA	2 g	24	U509611	7:08 AM	22.330	1000	73.9%	0.49	NA	Dry Weight	NA	
0405096-11	U-234	5/5/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	457.417	32.48%	300	1.43	0.02	pCi/g	NA	
SMP	Trg. Analyte	4:15:00 PM	AS040603-1-1	NA	NA	NA	2 g	24	U509611	7:08 AM	1.942	1000	73.9%	0.26	NA	Dry Weight	NA	
0405096-11	U-235	5/5/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	19.000	32.48%	300	0.070	0.010	pCi/g	NA	
SMP	Trg. Analyte	4:15:00 PM	AS040603-1-1	NA	NA	NA	2 g	24	U509611	7:08 AM	0.000	1000	73.9%	0.034	NA	Dry Weight	NA	LT
0405096-11	U-238	5/5/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	495.126	32.48%	300	1.55	0.02	pCi/g	NA	
SMP	Trg. Analyte	4:15:00 PM	AS040603-1-1	NA	NA	NA	2 g	24	U509611	7:08 AM	2.913	1000	73.9%	0.28	NA	Dry Weight	NA	
0405096-12	U-232	5/5/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	1498.214	31.90%	300	3.46	0.03	pCi/g	NA	
SMP	Tracer	5:05:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	42	U509612	7:09 AM	12.621	1000	82.6%	0.54	NA	Dry Weight	NA	
0405096-12	U-234	5/5/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	444.709	31.90%	300	1.25	0.01	pCi/g	NA	
SMP	Trg. Analyte	5:05:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	42	U509612	7:09 AM	0.971	1000	82.6%	0.23	NA	Dry Weight	NA	
0405096-12	U-235	5/5/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	12.709	31.90%	300	0.042	0.017	pCi/g	NA	
SMP	Trg. Analyte	5:05:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	42	U509612	7:09 AM	0.971	1000	82.6%	0.025	NA	Dry Weight	NA	LT
0405096-12	U-238	5/5/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	417.709	31.90%	300	1.17	0.01	pCi/g	NA	
SMP	Trg. Analyte	5:05:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	42	U509612	7:09 AM	0.971	1000	82.6%	0.21	NA	Dry Weight	NA	
0405096-13	U-232	5/4/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	7/28/2004	571.480	29.22%	120	3.67	0.06	pCi/g	NA	
SMP	Tracer	6:10:00 PM	AS040603-1-1	NA	NA	NA	2 g	9	U509613	12:45 PM	21.000	1000	86.1%	0.62	NA	Dry Weight	NA	
0405096-13	U-234	5/4/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	7/28/2004	155.080	29.22%	120	1.16	0.07	pCi/g	NA	
SMP	Trg. Analyte	6:10:00 PM	AS040603-1-1	NA	NA	NA	2 g	9	U509613	12:45 PM	16.000	1000	86.1%	0.27	NA	Dry Weight	NA	
0405096-13	U-235	5/4/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	7/28/2004	3.880	29.22%	120	0.034	0.038	pCi/g	NA	
SMP	Trg. Analyte	6:10:00 PM	AS040603-1-1	NA	NA	NA	2 g	9	U509613	12:45 PM	1.000	1000	86.1%	0.036	NA	Dry Weight	NA	U

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-13	U-238	5/4/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	7/28/2004	115.160	29.22%	120	0.86	0.05	pCi/g	NA	
SMP	Trg. Analyte	6:10:00 PM	AS040603-1-1	NA	NA	NA	2 g	9	U509613	12:45 PM	7.000	1000	86.1%	0.22	NA	Dry Weight	NA	
0405096-14	U-232	5/4/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	1374.806	32.03%	300	3.19	0.04	pCi/g	NA	
SMP	Tracer	5:00:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	44	U509614	7:10 AM	33.981	1000	75.4%	0.50	NA	Dry Weight	NA	
0405096-14	U-234	5/4/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	348.252	32.03%	300	1.07	0.03	pCi/g	NA	
SMP	Trg. Analyte	5:00:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	44	U509614	7:10 AM	5.825	1000	75.4%	0.20	NA	Dry Weight	NA	
0405096-14	U-235	5/4/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	12.544	32.03%	300	0.045	0.030	pCi/g	NA	
SMP	Trg. Analyte	5:00:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	44	U509614	7:10 AM	4.854	1000	75.4%	0.028	NA	Dry Weight	NA	LT
0405096-14	U-238	5/4/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	382.087	32.03%	300	1.17	0.03	pCi/g	NA	
SMP	Trg. Analyte	5:00:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	44	U509614	7:10 AM	9.709	1000	75.4%	0.22	NA	Dry Weight	NA	
0405096-15	U-232	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1399.884	32.74%	300	3.20	0.03	pCi/g	NA	
SMP	Tracer	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	45	U509615	7:10 AM	20.388	1000	75.2%	0.50	NA	Dry Weight	NA	
0405096-15	U-234	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1292.961	32.74%	300	3.93	0.03	pCi/g	NA	
SMP	Trg. Analyte	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	45	U509615	7:10 AM	6.796	1000	75.2%	0.65	NA	Dry Weight	NA	
0405096-15	U-235	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	56.126	32.74%	300	0.201	0.025	pCi/g	NA	
SMP	Trg. Analyte	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	45	U509615	7:10 AM	2.913	1000	75.2%	0.062	NA	Dry Weight	NA	
0405096-15	U-238	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1365.835	32.74%	300	4.15	0.02	pCi/g	NA	
SMP	Trg. Analyte	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	45	U509615	7:10 AM	3.883	1000	75.2%	0.68	NA	Dry Weight	NA	
0405096-15	U-232	5/4/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	1509.087	31.78%	300	3.51	0.02	pCi/g	NA	
DUP	Tracer	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	46	U509615D	7:11 AM	9.709	1000	83.5%	0.54	NA	Dry Weight	NA	
0405096-15	U-234	5/4/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	1370.214	31.78%	300	3.82	0.03	pCi/g	0.12	
DUP	Trg. Analyte	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	46	U509615D	7:11 AM	12.621	1000	83.5%	0.63	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
+ - Duplicate RPD not within limits.
LT - Result is less than Request MDC, greater than sample specific MDC
* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).
2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio
BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 778 | **Reported on:** Thursday, July 29, 2004

PAI Work Order: 0405096 | **Analytical SOP:** PAI 714 | 12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-15	U-235	5/4/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	69.000	31.78%	300	0.226	0.009	pCi/g	0.29	
DUP	Trg. Analyte	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	46	U509615D	7:11 AM	0.000	1000	83.5%	0.065	NA	Dry Weight	NA	
0405096-15	U-238	5/4/2004	AS040603-1	NA	NA	SOIL	2.03 g	Alpha Spec	AS040603-1B	6/11/2004	1384.417	31.78%	300	3.86	0.02	pCi/g	0.31	
DUP	Trg. Analyte	3:59:00 PM	AS040603-1-1	NA	NA	NA	2.03 g	46	U509615D	7:11 AM	1.942	1000	83.5%	0.63	NA	Dry Weight	NA	
0405096-16	U-232	5/4/2004	AS040603-1	NA	NA	SOIL	2.05 g	Alpha Spec	AS040603-1B	6/11/2004	1412.835	30.51%	300	3.40	0.02	pCi/g	NA	
SMP	Tracer	3:03:00 PM	AS040603-1-1	NA	NA	NA	2.05 g	47	U509616	7:11 AM	3.883	1000	81.4%	0.53	NA	Dry Weight	NA	
0405096-16	U-234	5/4/2004	AS040603-1	NA	NA	SOIL	2.05 g	Alpha Spec	AS040603-1B	6/11/2004	428.544	30.51%	300	1.27	0.02	pCi/g	NA	
SMP	Trg. Analyte	3:03:00 PM	AS040603-1-1	NA	NA	NA	2.05 g	47	U509616	7:11 AM	4.854	1000	81.4%	0.23	NA	Dry Weight	NA	
0405096-16	U-235	5/4/2004	AS040603-1	NA	NA	SOIL	2.05 g	Alpha Spec	AS040603-1B	6/11/2004	21.000	30.51%	300	0.073	0.009	pCi/g	NA	
SMP	Trg. Analyte	3:03:00 PM	AS040603-1-1	NA	NA	NA	2.05 g	47	U509616	7:11 AM	0.000	1000	81.4%	0.034	NA	Dry Weight	NA	LT
0405096-16	U-238	5/4/2004	AS040603-1	NA	NA	SOIL	2.05 g	Alpha Spec	AS040603-1B	6/11/2004	364.709	30.51%	300	1.08	0.02	pCi/g	NA	
SMP	Trg. Analyte	3:03:00 PM	AS040603-1-1	NA	NA	NA	2.05 g	47	U509616	7:11 AM	0.971	1000	81.4%	0.20	NA	Dry Weight	NA	
0405096-17	U-232	5/4/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	1460.175	31.86%	300	3.38	0.03	pCi/g	NA	
SMP	Tracer	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	48	U509617	7:11 AM	19.417	1000	80.6%	0.52	NA	Dry Weight	NA	
0405096-17	U-234	5/4/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	886.262	31.86%	300	2.55	0.05	pCi/g	NA	
SMP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	48	U509617	7:11 AM	29.126	1000	80.6%	0.43	NA	Dry Weight	NA	
0405096-17	U-235	5/4/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	35.835	31.86%	300	0.121	0.026	pCi/g	NA	
SMP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	48	U509617	7:11 AM	3.883	1000	80.6%	0.045	NA	Dry Weight	NA	
0405096-17	U-238	5/4/2004	AS040603-1	NA	NA	SOIL	2.04 g	Alpha Spec	AS040603-1B	6/11/2004	801.126	31.86%	300	2.30	0.02	pCi/g	NA	
SMP	Trg. Analyte	2:00:00 PM	AS040603-1-1	NA	NA	NA	2.04 g	48	U509617	7:11 AM	2.913	1000	80.6%	0.39	NA	Dry Weight	NA	
0405096-18	U-232	5/5/2004	AS040618-1	NA	NA	SOIL	1.04 g	Alpha Spec	AS040618-1a	6/23/2004	843.200	29.03%	300	4.18	0.08	pCi/g	NA	
SMP	Tracer	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.04 g	9	UY509618	6:23 PM	26.000	1000	51.1%	0.68	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 778 | **Reported on:** Thursday, July 29, 2004

PAI Work Order: 0405096 | **Analytical SOP:** PAI 714 | 12:35:54 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-18	U-234	5/5/2004	AS040618-1	NA	NA	SOIL	1.04 g	Alpha Spec	AS040618-1a	6/23/2004	5861.100	29.03%	300	56.8	0.1	pCi/g	NA	
SMP	Trg. Analyte	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.04 g	9	UY509618	6:23 PM	13.000	1000	51.1%	9.3	NA	Dry Weight	NA	M3
0405096-18	U-235	5/5/2004	AS040618-1	NA	NA	SOIL	1.04 g	Alpha Spec	AS040618-1a	6/23/2004	266.500	29.03%	300	3.04	0.10	pCi/g	NA	
SMP	Trg. Analyte	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.04 g	9	UY509618	6:23 PM	5.000	1000	51.1%	0.62	NA	Dry Weight	NA	
0405096-18	U-238	5/5/2004	AS040618-1	NA	NA	SOIL	1.04 g	Alpha Spec	AS040618-1a	6/23/2004	6265.900	29.03%	300	60.8	0.1	pCi/g	NA	
SMP	Trg. Analyte	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.04 g	9	UY509618	6:23 PM	7.000	1000	51.1%	9.9	NA	Dry Weight	NA	
0405096-18	U-232	5/5/2004	AS040618-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040618-1a	6/23/2004	856.400	28.97%	300	4.34	0.06	pCi/g	NA	
DUP	Tracer	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.02 g	19	UX509618D	12:40 PM	12.000	1000	52.0%	0.70	NA	Dry Weight	NA	
0405096-18	U-234	5/5/2004	AS040618-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040618-1a	6/23/2004	5533.400	28.97%	300	53.9	0.1	pCi/g	0.23	
DUP	Trg. Analyte	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.02 g	19	UX509618D	12:40 PM	2.000	1000	52.0%	8.8	NA	Dry Weight	NA	
0405096-18	U-235	5/5/2004	AS040618-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040618-1a	6/23/2004	302.000	28.97%	300	3.46	0.03	pCi/g	0.46	
DUP	Trg. Analyte	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.02 g	19	UX509618D	12:40 PM	0.000	1000	52.0%	0.69	NA	Dry Weight	NA	
0405096-18	U-238	5/5/2004	AS040618-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040618-1a	6/23/2004	6332.000	28.97%	300	62	0	pCi/g	0.07	
DUP	Trg. Analyte	12:40:00 PM	AS040618-1-1	NA	NA	NA	1.02 g	19	UX509618D	12:40 PM	0.000	1000	52.0%	10	NA	Dry Weight	NA	
0405096-19	U-232	5/5/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	1371.961	28.95%	300	3.53	0.02	pCi/g	NA	
SMP	Tracer	3:20:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	57	U509619	7:12 AM	6.796	1000	83.3%	0.55	NA	Dry Weight	NA	
0405096-19	U-234	5/5/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	1933.126	28.95%	300	5.97	0.02	pCi/g	NA	
SMP	Trg. Analyte	3:20:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	57	U509619	7:12 AM	2.913	1000	83.3%	0.97	NA	Dry Weight	NA	
0405096-19	U-235	5/5/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	85.417	28.95%	300	0.310	0.023	pCi/g	NA	
SMP	Trg. Analyte	3:20:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	57	U509619	7:12 AM	1.942	1000	83.3%	0.083	NA	Dry Weight	NA	
0405096-19	U-238	5/5/2004	AS040603-1	NA	NA	SOIL	2.02 g	Alpha Spec	AS040603-1B	6/11/2004	2294.417	28.95%	300	7.1	0	pCi/g	NA	
SMP	Trg. Analyte	3:20:00 PM	AS040603-1-1	NA	NA	NA	2.02 g	57	U509619	7:12 AM	1.942	1000	83.3%	1.1	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-20	U-232	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1354.971	32.26%	300	3.13	0.04	pCi/g	NA	
SMP	Tracer	7:05:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	58	U509620	7:12 AM	30.097	1000	73.8%	0.49	NA	Dry Weight	NA	
0405096-20	U-234	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1654.252	32.26%	300	5.18	0.03	pCi/g	NA	
SMP	Trg. Analyte	7:05:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	58	U509620	7:12 AM	5.825	1000	73.8%	0.85	NA	Dry Weight	NA	
0405096-20	U-235	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	71.961	32.26%	300	0.265	0.034	pCi/g	NA	
SMP	Trg. Analyte	7:05:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	58	U509620	7:12 AM	6.796	1000	73.8%	0.076	NA	Dry Weight	NA	
0405096-20	U-238	5/4/2004	AS040603-1	NA	NA	SOIL	2.01 g	Alpha Spec	AS040603-1B	6/11/2004	1729.087	32.26%	300	5.42	0.03	pCi/g	NA	
SMP	Trg. Analyte	7:05:00 PM	AS040603-1-1	NA	NA	NA	2.01 g	58	U509620	7:12 AM	9.709	1000	73.8%	0.88	NA	Dry Weight	NA	
0405096-22	U-232	5/7/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	1449.757	32.10%	300	6.7	0.1	pCi/g	NA	
SMP	Tracer	12:35:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	59	U509622	7:13 AM	17.476	1000	79.4%	1.0	NA	Dry Weight	NA	
0405096-22	U-234	5/7/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	1057.126	32.10%	300	6.2	0	pCi/g	NA	
SMP	Trg. Analyte	12:35:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	59	U509622	7:13 AM	2.913	1000	79.4%	1.0	NA	Dry Weight	NA	
0405096-22	U-235	5/7/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	35.544	32.10%	300	0.245	0.057	pCi/g	NA	
SMP	Trg. Analyte	12:35:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	59	U509622	7:13 AM	4.854	1000	79.4%	0.093	NA	Dry Weight	NA	
0405096-22	U-238	5/7/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	1083.835	32.10%	300	6.4	0	pCi/g	NA	
SMP	Trg. Analyte	12:35:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	59	U509622	7:13 AM	3.883	1000	79.4%	1.1	NA	Dry Weight	NA	
0405096-25	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040603-1B	6/11/2004	1114.505	24.87%	300	6.6	0.1	pCi/g	NA	
SMP	Tracer	4:00:00 PM	AS040603-1-1	NA	NA	NA	1.02 g	60	U509625	7:13 AM	11.650	1000	78.8%	1.0	NA	Dry Weight	NA	
0405096-25	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040603-1B	6/11/2004	2675.126	24.87%	300	20.1	0.1	pCi/g	NA	
SMP	Trg. Analyte	4:00:00 PM	AS040603-1-1	NA	NA	NA	1.02 g	60	U509625	7:13 AM	2.913	1000	78.8%	3.3	NA	Dry Weight	NA	
0405096-25	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040603-1B	6/11/2004	122.709	24.87%	300	1.09	0.05	pCi/g	NA	
SMP	Trg. Analyte	4:00:00 PM	AS040603-1-1	NA	NA	NA	1.02 g	60	U509625	7:13 AM	0.971	1000	78.8%	0.26	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
+ - Duplicate RPD not within limits.
LT - Result is less than Request MDC, greater than sample specific MDC
* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).
2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio
BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-25	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	1.02 g	Alpha Spec	AS040603-1B	6/11/2004	2742.126	24.87%	300	20.6	0.1	pCi/g	NA	
SMP	Trg. Analyte	4:00:00 PM	AS040603-1-1	NA	NA	NA	1.02 g	60	U509625	7:13 AM	2.913	1000	78.8%	3.4	NA	Dry Weight	NA	
0405096-26	U-232	5/6/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	1449.884	31.05%	300	7.0	0.1	pCi/g	NA	
SMP	Tracer	3:40:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	61	U509626	7:14 AM	20.388	1000	82.1%	1.1	NA	Dry Weight	NA	
0405096-26	U-234	5/6/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	2323.252	31.05%	300	13.6	0.1	pCi/g	NA	
SMP	Trg. Analyte	3:40:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	61	U509626	7:14 AM	5.825	1000	82.1%	2.2	NA	Dry Weight	NA	
0405096-26	U-235	5/6/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	112.000	31.05%	300	0.77	0.02	pCi/g	NA	
SMP	Trg. Analyte	3:40:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	61	U509626	7:14 AM	0.000	1000	82.1%	0.19	NA	Dry Weight	NA	
0405096-26	U-238	5/6/2004	AS040603-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040603-1B	6/11/2004	2384.417	31.05%	300	14.0	0	pCi/g	NA	
SMP	Trg. Analyte	3:40:00 PM	AS040603-1-1	NA	NA	NA	1.01 g	61	U509626	7:14 AM	1.942	1000	82.1%	2.2	NA	Dry Weight	NA	
0405096-27	U-232	5/6/2004	AS040618-1	NA	NA	SOIL	0.101 g	Alpha Spec	AS040618-1a	6/23/2004	900.600	29.70%	300	45.1	0.9	pCi/g	NA	
SMP	Tracer	3:04:00 PM	AS040618-1-1	NA	NA	NA	0.101 g	21	UX509627	12:40 PM	38.000	1000	53.4%	7.2	NA	Dry Weight	NA	
0405096-27	U-234	5/6/2004	AS040618-1	NA	NA	SOIL	0.101 g	Alpha Spec	AS040618-1a	6/23/2004	5995.000	29.70%	300	562	0	pCi/g	NA	
SMP	Trg. Analyte	3:04:00 PM	AS040618-1-1	NA	NA	NA	0.101 g	21	UX509627	12:40 PM	0.000	1000	53.4%	92	NA	Dry Weight	NA	M3
0405096-27	U-235	5/6/2004	AS040618-1	NA	NA	SOIL	0.101 g	Alpha Spec	AS040618-1a	6/23/2004	371.400	29.70%	300	41.0	0.7	pCi/g	NA	
SMP	Trg. Analyte	3:04:00 PM	AS040618-1-1	NA	NA	NA	0.101 g	21	UX509627	12:40 PM	2.000	1000	53.4%	7.8	NA	Dry Weight	NA	M3
0405096-27	U-238	5/6/2004	AS040618-1	NA	NA	SOIL	0.101 g	Alpha Spec	AS040618-1a	6/23/2004	5942.700	29.70%	300	557	0	pCi/g	NA	
SMP	Trg. Analyte	3:04:00 PM	AS040618-1-1	NA	NA	NA	0.101 g	21	UX509627	12:40 PM	1.000	1000	53.4%	91	NA	Dry Weight	NA	M3
0405096-28	U-232	5/6/2004	AS040618-1	NA	NA	SOIL	0.201 g	Alpha Spec	AS040618-1a	6/23/2004	1303.700	28.42%	300	34.3	0.3	pCi/g	NA	
SMP	Tracer	3:10:00 PM	AS040618-1-1	NA	NA	NA	0.201 g	22	UX509628	12:40 PM	11.000	1000	80.7%	5.4	NA	Dry Weight	NA	
0405096-28	U-234	5/6/2004	AS040618-1	NA	NA	SOIL	0.201 g	Alpha Spec	AS040618-1a	6/23/2004	1136.400	28.42%	300	37.0	0.2	pCi/g	NA	
SMP	Trg. Analyte	3:10:00 PM	AS040618-1-1	NA	NA	NA	0.201 g	22	UX509628	12:40 PM	2.000	1000	80.7%	6.2	NA	Dry Weight	NA	M3

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
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H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
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Notes:

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TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio
BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:54 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-28	U-235	5/6/2004	AS040618-1	NA	NA	SOIL	0.201 g	Alpha Spec	AS040618-1a	6/23/2004	43.100	28.42%	300	1.65	0.27	pCi/g	NA	
SMP	Trg. Analyte	3:10:00 PM	AS040618-1-1	NA	NA	NA	0.201 g	22	UX509628	12:40 PM	3.000	1000	80.7%	0.57	NA	Dry Weight	NA	M3
0405096-28	U-238	5/6/2004	AS040618-1	NA	NA	SOIL	0.201 g	Alpha Spec	AS040618-1a	6/23/2004	1118.400	28.42%	300	36.4	0.2	pCi/g	NA	
SMP	Trg. Analyte	3:10:00 PM	AS040618-1-1	NA	NA	NA	0.201 g	22	UX509628	12:40 PM	2.000	1000	80.7%	6.1	NA	Dry Weight	NA	M3
0405096-29	U-232	5/7/2004	AS040618-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040618-1a	6/23/2004	1298.400	28.39%	300	6.8	0.1	pCi/g	NA	
SMP	Tracer	1:50:00 PM	AS040618-1-1	NA	NA	NA	1.01 g	23	UX509629	12:41 PM	12.000	1000	80.5%	1.1	NA	Dry Weight	NA	
0405096-29	U-234	5/7/2004	AS040618-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040618-1a	6/23/2004	666.000	28.39%	300	4.35	0.02	pCi/g	NA	
SMP	Trg. Analyte	1:50:00 PM	AS040618-1-1	NA	NA	NA	1.01 g	23	UX509629	12:41 PM	0.000	1000	80.5%	0.76	NA	Dry Weight	NA	
0405096-29	U-235	5/7/2004	AS040618-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040618-1a	6/23/2004	42.400	28.39%	300	0.33	0.05	pCi/g	NA	
SMP	Trg. Analyte	1:50:00 PM	AS040618-1-1	NA	NA	NA	1.01 g	23	UX509629	12:41 PM	2.000	1000	80.5%	0.11	NA	Dry Weight	NA	
0405096-29	U-238	5/7/2004	AS040618-1	NA	NA	SOIL	1.01 g	Alpha Spec	AS040618-1a	6/23/2004	740.100	28.39%	300	4.83	0.05	pCi/g	NA	
SMP	Trg. Analyte	1:50:00 PM	AS040618-1-1	NA	NA	NA	1.01 g	23	UX509629	12:41 PM	3.000	1000	80.5%	0.83	NA	Dry Weight	NA	
0405096-30	U-232	5/7/2004	AS040618-1	NA	NA	SOIL	0.102 g	Alpha Spec	AS040618-1a	6/23/2004	1270.900	31.83%	300	58.5	0.6	pCi/g	NA	
SMP	Tracer	4:15:00 PM	AS040618-1-1	NA	NA	NA	0.102 g	24	UX509630	12:41 PM	17.000	1000	70.3%	9.1	NA	Dry Weight	NA	
0405096-30	U-234	5/7/2004	AS040618-1	NA	NA	SOIL	0.102 g	Alpha Spec	AS040618-1a	6/23/2004	4506.500	31.83%	300	295	1	pCi/g	NA	
SMP	Trg. Analyte	4:15:00 PM	AS040618-1-1	NA	NA	NA	0.102 g	24	UX509630	12:41 PM	5.000	1000	70.3%	47	NA	Dry Weight	NA	M3
0405096-30	U-235	5/7/2004	AS040618-1	NA	NA	SOIL	0.102 g	Alpha Spec	AS040618-1a	6/23/2004	255.100	31.83%	300	19.7	0.5	pCi/g	NA	
SMP	Trg. Analyte	4:15:00 PM	AS040618-1-1	NA	NA	NA	0.102 g	24	UX509630	12:41 PM	3.000	1000	70.3%	3.9	NA	Dry Weight	NA	M3
0405096-30	U-238	5/7/2004	AS040618-1	NA	NA	SOIL	0.102 g	Alpha Spec	AS040618-1a	6/23/2004	4238.700	31.83%	300	278	0	pCi/g	NA	
SMP	Trg. Analyte	4:15:00 PM	AS040618-1-1	NA	NA	NA	0.102 g	24	UX509630	12:41 PM	1.000	1000	70.3%	44	NA	Dry Weight	NA	M3
0405096-31	U-232	5/7/2004	AS040603-1	NA	NA	SOIL	1 g	Alpha Spec	AS040603-1B	6/11/2004	1371.670	30.58%	300	6.7	0	pCi/g	NA	
SMP	Tracer	2:10:00 PM	AS040603-1-1	NA	NA	NA	1 g	62	U509631	7:14 AM	7.767	1000	78.8%	1.0	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

*Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

#Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 778 | **Reported on:** Thursday, July 29, 2004

PAI Work Order: 0405096 | **Analytical SOP:** PAI 714 | 12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0405096-31	U-234	5/7/2004	AS040603-1	NA	NA	SOIL	1 g	Alpha Spec	AS040603-1B	6/11/2004	669.417	30.58%	300	4.15	0.04	pCi/g	NA	
SMP	Trg. Analyte	2:10:00 PM	AS040603-1-1	NA	NA	NA	1 g	62	U509631	7:14 AM	1.942	1000	78.8%	0.72	NA	Dry Weight	NA	
0405096-31	U-235	5/7/2004	AS040603-1	NA	NA	SOIL	1 g	Alpha Spec	AS040603-1B	6/11/2004	22.000	30.58%	300	0.160	0.020	pCi/g	NA	
SMP	Trg. Analyte	2:10:00 PM	AS040603-1-1	NA	NA	NA	1 g	62	U509631	7:14 AM	0.000	1000	78.8%	0.073	NA	Dry Weight	NA	
0405096-31	U-238	5/7/2004	AS040603-1	NA	NA	SOIL	1 g	Alpha Spec	AS040603-1B	6/11/2004	688.000	30.58%	300	4.27	0.02	pCi/g	NA	
SMP	Trg. Analyte	2:10:00 PM	AS040603-1-1	NA	NA	NA	1 g	62	U509631	7:14 AM	0.000	1000	78.8%	0.74	NA	Dry Weight	NA	
0405096-32	U-232	5/7/2004	AS040618-1	NA	NA	SOIL	0.103 g	Alpha Spec	AS040618-1a	6/23/2004	1391.700	31.64%	300	64	1	pCi/g	NA	
SMP	Tracer	4:40:00 PM	AS040618-1-1	NA	NA	NA	0.103 g	42	UX509632	12:41 PM	11.000	1000	77.4%	10	NA	Dry Weight	NA	
0405096-32	U-234	5/7/2004	AS040618-1	NA	NA	SOIL	0.103 g	Alpha Spec	AS040618-1a	6/23/2004	2756.400	31.64%	300	164	0	pCi/g	NA	
SMP	Trg. Analyte	4:40:00 PM	AS040618-1-1	NA	NA	NA	0.103 g	42	UX509632	12:41 PM	2.000	1000	77.4%	26	NA	Dry Weight	NA	M3
0405096-32	U-235	5/7/2004	AS040618-1	NA	NA	SOIL	0.103 g	Alpha Spec	AS040618-1a	6/23/2004	139.000	31.64%	300	9.8	0.2	pCi/g	NA	
SMP	Trg. Analyte	4:40:00 PM	AS040618-1-1	NA	NA	NA	0.103 g	42	UX509632	12:41 PM	0.000	1000	77.4%	2.2	NA	Dry Weight	NA	M3
0405096-32	U-238	5/7/2004	AS040618-1	NA	NA	SOIL	0.103 g	Alpha Spec	AS040618-1a	6/23/2004	2944.700	31.64%	300	176	0	pCi/g	NA	
SMP	Trg. Analyte	4:40:00 PM	AS040618-1-1	NA	NA	NA	0.103 g	42	UX509632	12:41 PM	1.000	1000	77.4%	28	NA	Dry Weight	NA	M3
AS040603-1	U-232	6/3/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1299.505	28.95%	300	3.37	0.03	pCi/g	NA	
MB	Tracer	9:17:53 AM	AS040603-1-1	NA	NA	NA	2 g	10	U6031B	12:52 PM	11.650	1000	78.9%	0.53	NA	Dry Weight	NA	
AS040603-1	U-234	6/3/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	6.544	28.95%	300	0.022	0.027	pCi/g	NA	
MB	Trg. Analyte	9:17:53 AM	AS040603-1-1	NA	NA	NA	2 g	10	U6031B	12:52 PM	4.854	1000	78.9%	0.019	NA	Dry Weight	NA	U
AS040603-1	U-235	6/3/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	2.709	28.95%	300	0.010	0.020	pCi/g	NA	
MB	Trg. Analyte	9:17:53 AM	AS040603-1-1	NA	NA	NA	2 g	10	U6031B	12:52 PM	0.971	1000	78.9%	0.014	NA	Dry Weight	NA	U
AS040603-1	U-238	6/3/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	3.000	28.95%	300	0.010	0.009	pCi/g	NA	
MB	Trg. Analyte	9:17:53 AM	AS040603-1-1	NA	NA	NA	2 g	10	U6031B	12:52 PM	0.000	1000	78.9%	0.012	NA	Dry Weight	NA	B3

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 778 | **Reported on:** Thursday, July 29, 2004

PAI Work Order: 0405096 | **Analytical SOP:** PAI 714 | 12:35:07 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
AS040603-1	U-232	6/3/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1342.252	28.56%	300	3.53	0.02	pCi/g	NA	
LCS	Tracer	9:17:53 AM	AS040603-1-1	NA	NA	NA	2 g	11	U6031L	12:53 PM	5.825	1000	82.6%	0.55	NA	Dry Weight	NA	
AS040603-1	U-234	6/3/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1418.709	28.56%	300	4.51	0.02	pCi/g	NA	104
LCS	Trg. Analyte	9:17:53 AM	AS040603-1-1	NA	NA	NA	2 g	11	U6031L	12:53 PM	0.971	1000	82.6%	0.74	NA	Dry Weight	NA	P
AS040603-1	U-238	6/3/2004	AS040603-1	NA	NA	SOIL	2 g	Alpha Spec	AS040603-1B	6/11/2004	1482.000	28.56%	300	4.72	0.01	pCi/g	NA	105
LCS	Trg. Analyte	9:17:53 AM	AS040603-1-1	NA	NA	NA	2 g	11	U6031L	12:53 PM	0.000	1000	82.6%	0.77	NA	Dry Weight	NA	P
AS040618-1	U-232	6/18/2004	AS040618-1	NA	NA	SOIL	0.3 g	Alpha Spec	AS040618-1a	6/23/2004	1301.900	31.75%	300	20.5	0.2	pCi/g	NA	
MB	Tracer	1:05:08 PM	AS040618-1-1	NA	NA	NA	0.3 g	43	UX6181B	12:41 PM	17.000	1000	72.2%	3.2	NA	Dry Weight	NA	
AS040618-1	U-234	6/18/2004	AS040618-1	NA	NA	SOIL	0.3 g	Alpha Spec	AS040618-1a	6/23/2004	7.500	31.75%	300	0.16	0.18	pCi/g	NA	
MB	Trg. Analyte	1:05:08 PM	AS040618-1-1	NA	NA	NA	0.3 g	43	UX6181B	12:41 PM	5.000	1000	72.2%	0.14	NA	Dry Weight	NA	U,M
AS040618-1	U-235	6/18/2004	AS040618-1	NA	NA	SOIL	0.3 g	Alpha Spec	AS040618-1a	6/23/2004	1.700	31.75%	300	0.044	0.135	pCi/g	NA	
MB	Trg. Analyte	1:05:08 PM	AS040618-1-1	NA	NA	NA	0.3 g	43	UX6181B	12:41 PM	1.000	1000	72.2%	0.093	NA	Dry Weight	NA	U,M
AS040618-1	U-238	6/18/2004	AS040618-1	NA	NA	SOIL	0.3 g	Alpha Spec	AS040618-1a	6/23/2004	7.100	31.75%	300	0.16	0.16	pCi/g	NA	
MB	Trg. Analyte	1:05:08 PM	AS040618-1-1	NA	NA	NA	0.3 g	43	UX6181B	12:41 PM	3.000	1000	72.2%	0.13	NA	Dry Weight	NA	U,M
AS040618-1	U-232	6/18/2004	AS040618-1	NA	NA	SOIL	0.3 g	Alpha Spec	AS040618-1a	6/23/2004	1335.200	31.36%	300	21.3	0.3	pCi/g	NA	
LCS	Tracer	1:05:08 PM	AS040618-1-1	NA	NA	NA	0.3 g	44	UX6181L	12:42 PM	36.000	1000	74.9%	3.3	NA	Dry Weight	NA	
AS040618-1	U-234	6/18/2004	AS040618-1	NA	NA	SOIL	0.3 g	Alpha Spec	AS040618-1a	6/23/2004	1406.500	31.36%	300	30.0	0.2	pCi/g	NA	104
LCS	Trg. Analyte	1:05:08 PM	AS040618-1-1	NA	NA	NA	0.3 g	44	UX6181L	12:42 PM	5.000	1000	74.9%	4.9	NA	Dry Weight	NA	P,M3
AS040618-1	U-238	6/18/2004	AS040618-1	NA	NA	SOIL	0.3 g	Alpha Spec	AS040618-1a	6/23/2004	1433.600	31.36%	300	30.5	0.2	pCi/g	NA	102
LCS	Trg. Analyte	1:05:08 PM	AS040618-1-1	NA	NA	NA	0.3 g	44	UX6181L	12:42 PM	8.000	1000	74.9%	5.0	NA	Dry Weight	NA	P,M3
AS040720-3	U-232	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	1401.000	28.40%	300	3.70	0.03	pCi/g	NA	
MB	Tracer	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	22	U7203B	10:29 AM	10.000	1000	86.9%	0.58	NA	Dry Weight	NA	

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Isotopic Uranium By Alpha Spectroscopy Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Wednesday, July 28, 2004 10:30:44 AM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	Net Cnts Bkg Cnts	BaseEff Bkg(min)	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
AS040720-3	U-234	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	7.800	28.40%	300	0.024	0.024	pCi/g	NA	
MB	Trg. Analyte	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	22	U7203B	10:29 AM	4.000	1000	86.9%	0.019	NA	Dry Weight	NA	U
AS040720-3	U-235	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	-0.300	28.40%	300	-0.001	0.019	pCi/g	NA	
MB	Trg. Analyte	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	22	U7203B	10:29 AM	1.000	1000	86.9%	0.013	NA	Dry Weight	NA	U
AS040720-3	U-238	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	6.000	28.40%	300	0.018	0.008	pCi/g	NA	
MB	Trg. Analyte	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	22	U7203B	10:29 AM	0.000	1000	86.9%	0.015	NA	Dry Weight	NA	B3
AS040720-3	U-232	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	1498.300	28.58%	300	3.94	0.03	pCi/g	NA	
LCS	Tracer	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	23	U7203L	10:30 AM	9.000	1000	92.3%	0.61	NA	Dry Weight	NA	
AS040720-3	U-234	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	1363.700	28.58%	300	3.88	0.01	pCi/g	NA	89.4
LCS	Trg. Analyte	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	23	U7203L	10:30 AM	1.000	1000	92.3%	0.64	NA	Dry Weight	NA	P
AS040720-3	U-238	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	1396.800	28.58%	300	3.97	0.02	pCi/g	NA	88.2
LCS	Trg. Analyte	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	23	U7203L	10:30 AM	4.000	1000	92.3%	0.65	NA	Dry Weight	NA	P
AS040720-3	U-232	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	1440.400	28.70%	300	3.77	0.02	pCi/g	NA	
LCSD	Tracer	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	24	U7203LD	10:32 AM	2.000	1000	88.4%	0.58	NA	Dry Weight	NA	
AS040720-3	U-234	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	1243.700	28.70%	300	3.68	0.02	pCi/g	0.23	84.8
LCSD	Trg. Analyte	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	24	U7203LD	10:32 AM	1.000	1000	88.4%	0.61	NA	Dry Weight	NA	P
AS040720-3	U-238	7/20/2004	AS040720-3	NA	NA	SOIL	2 g	Alpha Spec	AS040720-3A	7/27/2004	1303.700	28.70%	300	3.86	0.02	pCi/g	0.13	85.7
LCSD	Trg. Analyte	11:56:31 AM	AS040720-3-1	NA	NA	NA	2 g	24	U7203LD	10:32 AM	1.000	1000	88.4%	0.64	NA	Dry Weight	NA	P

Comments:

Data Package ID: *ur0405096-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

0007 4

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:46:14 PM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-1 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 8 Input 8

Date/Time of Count: 6/11/04 7:14:58 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **76.83%**

Real Time: 300.01 Minutes

Total Eff.: 23.60 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 30.72%

Analysis: Relative Region-Of-Interest

Original: 3,023 + 10.2209 * Chn + -0.00130 * Chn **2.

Spectrum Calibration: 3,023 + 10.2755 * Chn + -0.00130 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50961.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060864.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	115.94	94	123	6.00	17.00	135.00	0.29	134.71	1.90
2	174.31	154	181	8.00	19.00	152.00	1.17	150.83	2.13
3	136.35	124	139	4.00	2.00	10.00	0.00	10.00	0.14
Tracer	230.23	211	238	8.00	153.00	1,347.00	4.08	1342.92	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.84	0.429	n/a	16.91 %
2	U-234	4774.80	78.58	0.480	n/a	16.03 %
3	U-235	4400.00	39.68	0.032	n/a	61.98 %
Tracer	U-232	5320.00	77.42	4.272	n/a	5.34 %

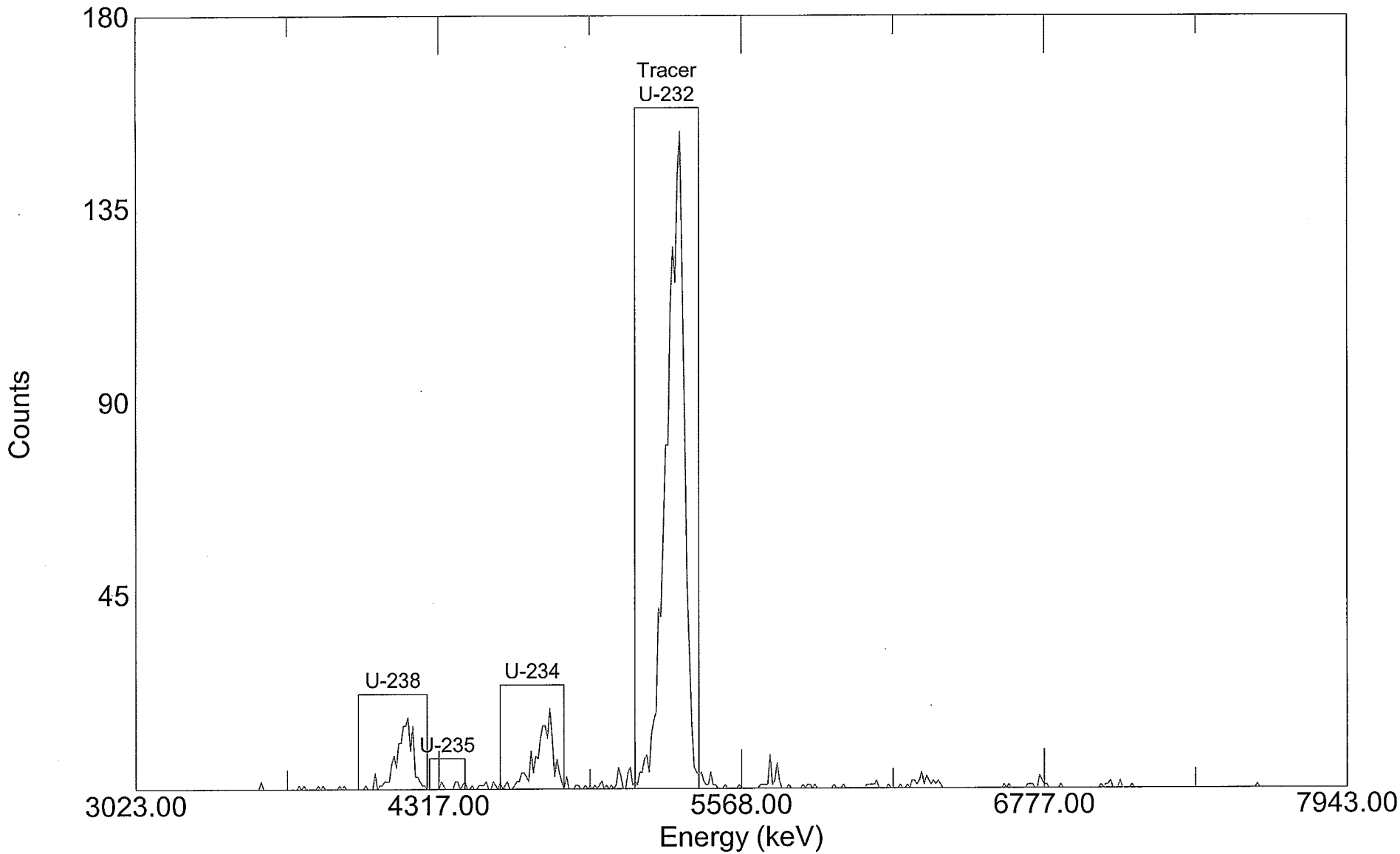
Totals

		% Total
Gross Count:	1,794.00	100.00
Net Area:	1,725.26	96.17
Background:	68.74	3.83
Composite Fit:	1,644.00	91.64
Residuals:	150.00	8.36

Analyzed By: Sm

Checked By: LD

U50961 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:14:58 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U50961.SPC
Sample: 0405096-1 UAS040603-1

Real Time: 18000.84 s. Live Time: 18000.00 s.
Detector: #64 MCB 8 Input 8
Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:46:54 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-2 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 2 Input 8

Date/Time of Count: 6/11/04 6:59:17 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **80.89%**

Real Time: 300.01 Minutes

Total Eff.: 23.93 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 29.58%

Analysis: Relative Region-Of-Interest

Original: 3,019 + 9.9439 * Chn + -0.00045 * Chn **2.

Spectrum Calibration: 3,019 + 10.0005 * Chn + -0.00045 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50962.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060816.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	118.40	95	124	6.00	51.00	342.00	0.87	341.13	4.75
2	176.96	154	181	6.00	45.00	342.00	0.29	341.71	4.76
3	138.94	125	141	4.00	3.00	19.00	0.00	19.00	0.26
Tracer	232.51	211	238	6.00	171.00	1,365.00	3.50	1361.50	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.36	1.070	n/a	10.63 %
2	U-234	4774.80	59.04	1.072	n/a	10.61 %
3	U-235	4400.00	39.50	0.060	n/a	44.97 %
Tracer	U-232	5320.00	58.74	4.272	n/a	5.31 %

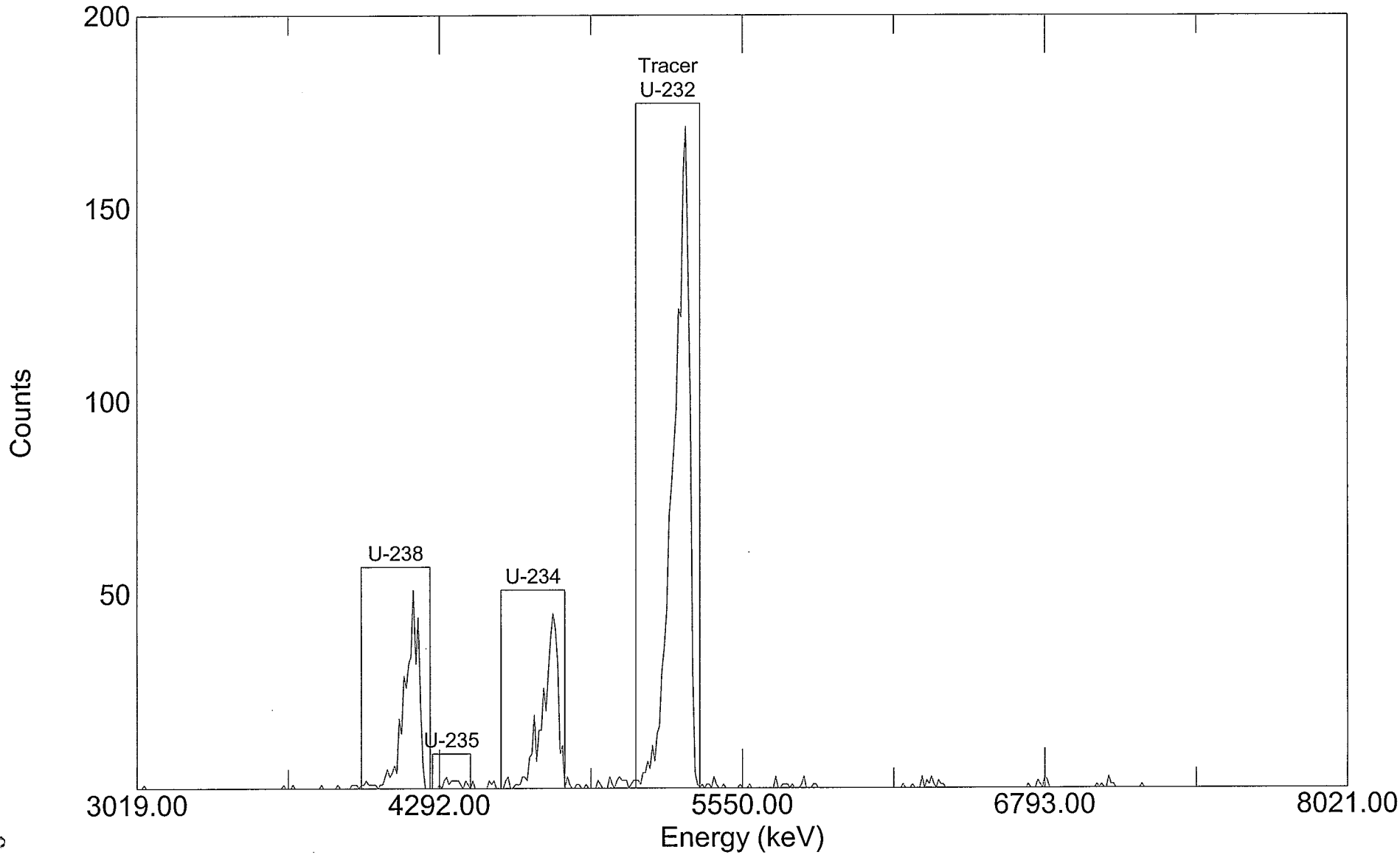
Totals

		% Total
Gross Count:	2,167.00	100.00
Net Area:	2,105.84	97.18
Background:	61.17	2.82
Composite Fit:	2,068.00	95.43
Residuals:	99.00	4.57

Analyzed By: Sm

Checked By: SD

U50962 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 06:59:17 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U50962.SPC
Sample: 0405096-2 UAS040603-1

Real Time: 18000.54 s. Live Time: 18000.00 s.
Detector: #16 MCB 2 Input 8
Type: Uranium Default

000078

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:40:27 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-3 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 1

Date/Time of Count: 6/11/04 6:59:45 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **79.42%**

Real Time: 300.02 Minutes

Total Eff.: 24.37 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 30.69%

Analysis: Relative Region-Of-Interest

Original: 3,031 + 10.0591 * Chn + -0.00088 * Chn **2.

Spectrum Calibration: 3,031 + 10.3274 * Chn + -0.00088 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50963.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060817.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	114.00	92	121	2.00	20.00	188.00	0.29	187.71	2.57
2	171.34	149	176	4.00	21.00	185.00	1.46	183.54	2.51
3	134.08	122	137	4.00	1.00	3.00	0.00	3.00	0.04
Tracer	225.98	206	235	6.00	160.00	1,395.00	8.16	1386.84	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	20.25	0.578	n/a	14.32 %
2	U-234	4774.80	40.10	0.565	n/a	14.53 %
3	U-235	4400.00	40.37	0.009	n/a	113.16 %
Tracer	U-232	5320.00	59.58	4.272	n/a	5.25 %

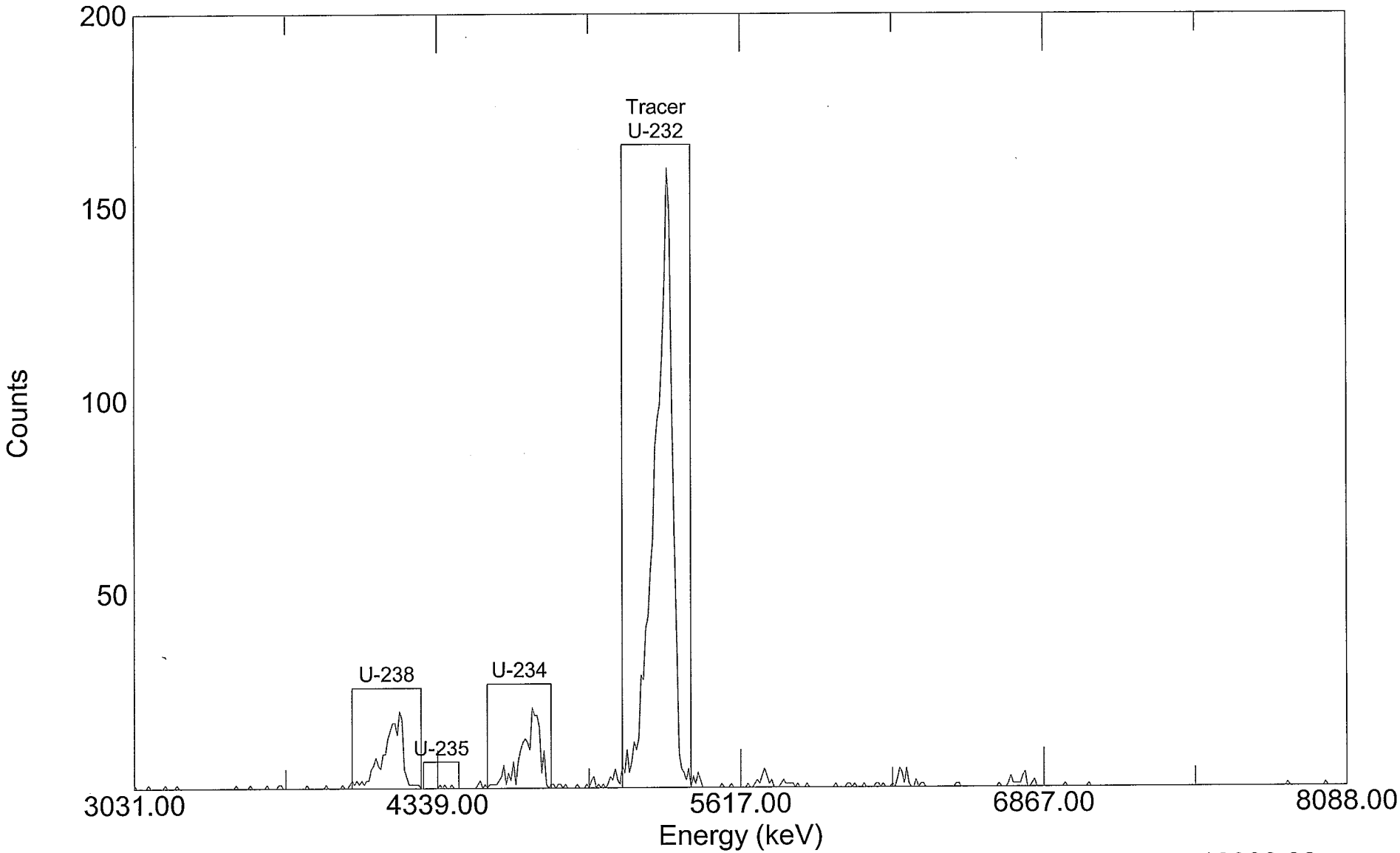
Totals

		% Total
Gross Count:	1,911.00	100.00
Net Area:	1,801.49	94.27
Background:	109.51	5.73
Composite Fit:	1,771.00	92.67
Residuals:	140.00	7.33

Analyzed By: Sm

Checked By: SD

U50963 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 06:59:45 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U50963.SPC
Sample: 0405096-3 UAS040603-1

Real Time: 18000.90 s. Live Time: 18000.00 s.
Detector: #17 MCB 3 Input 1
Type: Uranium Default

080000

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:39:56 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-3D UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 2

Date/Time of Count: 6/11/04 7:05:45 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **71.22%**

Real Time: 300.02 Minutes

Total Eff.: 21.93 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 30.80%

Analysis: Relative Region-Of-Interest

Original: 3,042 + 9.8460 * Chn + -0.00042 * Chn **2.

Spectrum Calibration: 3,042 + 9.9379 * Chn + -0.00042 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50963D.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060818.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.76	95	124	6.00	20.00	147.00	1.75	145.25	2.21
2	175.62	154	181	4.00	25.00	176.00	1.17	174.83	2.66
3	137.41	125	141	4.00	3.00	11.00	0.00	11.00	0.17
Tracer	231.43	212	241	8.00	122.00	1,258.00	9.90	1248.10	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.05	0.497	n/a	16.37 %
2	U-234	4774.80	39.17	0.598	n/a	14.88 %
3	U-235	4400.00	39.30	0.038	n/a	59.10 %
Tracer	U-232	5320.00	77.97	4.272	n/a	5.53 %

Totals

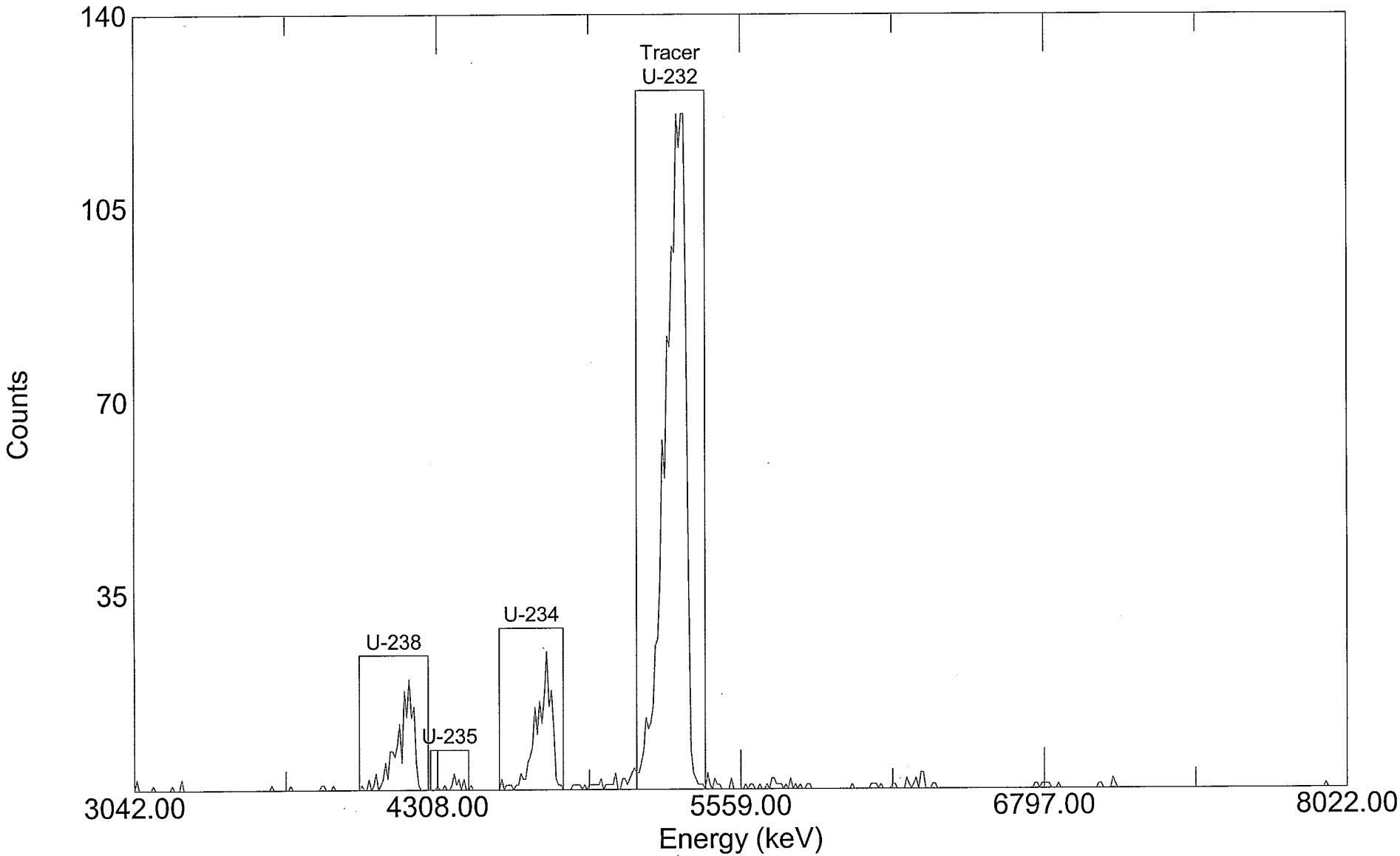
		% Total
Gross Count:	1,700.00	100.00
Net Area:	1,615.83	95.05
Background:	84.17	4.95
Composite Fit:	1,592.00	93.65
Residuals:	108.00	6.35

Analyzed By: Sm

Checked By: CS

000081

U50963D AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:05:45 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U50963D.SPC
Sample: 0405096-3D UAS040603-1

Real Time: 18000.90 s. Live Time: 18000.00 s.
Detector: #18 MCB 3 Input 2
Type: Uranium Default

000082

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:49:03 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-4 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 3

Date/Time of Count: 6/11/04 7:06:11 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **77.88%**

Real Time: 300.02 Minutes

Total Eff.: 22.55 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 28.96%

Analysis: Relative Region-Of-Interest

Original: 3,012 + 10.1582 * Chn + -0.00093 * Chn **2.

Spectrum Calibration: 3,012 + 10.2409 * Chn + -0.00093 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50964.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060819.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.93	95	124	4.00	106.00	852.00	0.58	851.42	12.58
2	174.89	154	181	6.00	102.00	842.00	0.29	841.71	12.44
3	137.22	125	140	2.00	7.00	32.00	0.00	32.00	0.47
Tracer	230.15	210	237	8.00	145.00	1,288.00	4.66	1283.34	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	40.10	2.834	n/a	6.72 %
2	U-234	4774.80	59.50	2.802	n/a	6.76 %
3	U-235	4400.00	19.97	0.107	n/a	34.65 %
Tracer	U-232	5320.00	78.51	4.272	n/a	5.46 %

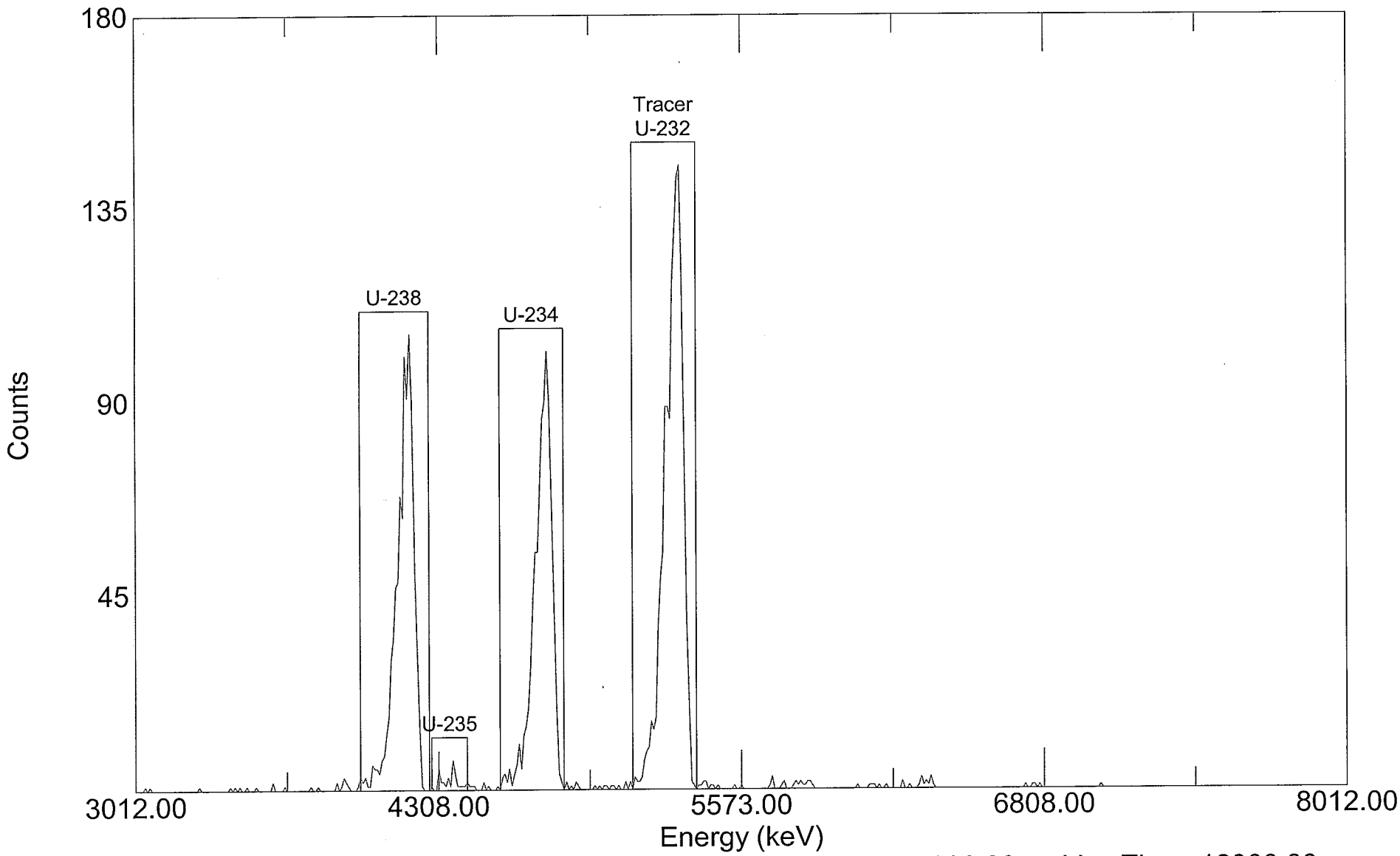
Totals

		% Total
Gross Count:	3,118.00	100.00
Net Area:	3,047.81	97.75
Background:	70.19	2.25
Composite Fit:	3,014.00	96.66
Residuals:	104.00	3.34

Analyzed By: Sm

Checked By: SD

U50964 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:06:11 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U50964.SPC
Sample: 0405096-4 UAS040603-1

Real Time: 18000.90 s. Live Time: 18000.00 s.
Detector: #19 MCB 3 Input 3
Type: Uranium Default

000084

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:50:21 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-5 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 5

Date/Time of Count: 6/11/04 7:07:03 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **75.19%**

Real Time: 300.02 Minutes

Total Eff.: 22.45 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 29.86%

Analysis: Relative Region-Of-Interest

Original: 3,035 + 10.1035 * Chn + -0.00096 * Chn **2.

Spectrum Calibration: 3,035 + 10.2278 * Chn + -0.00096 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50965.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060821.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	114.81	95	124	6.00	136.00	1,230.00	0.87	1229.13	18.25
2	172.86	154	181	8.00	117.00	1,297.00	1.46	1295.54	19.23
3	135.13	125	141	6.00	9.00	58.00	0.29	57.71	0.86
Tracer	228.24	211	239	6.00	136.00	1,288.00	10.49	1277.51	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	60.05	4.110	n/a	5.59 %
2	U-234	4774.80	79.18	4.332	n/a	5.45 %
3	U-235	4400.00	59.82	0.193	n/a	25.87 %
Tracer	U-232	5320.00	58.75	4.272	n/a	5.46 %

Totals

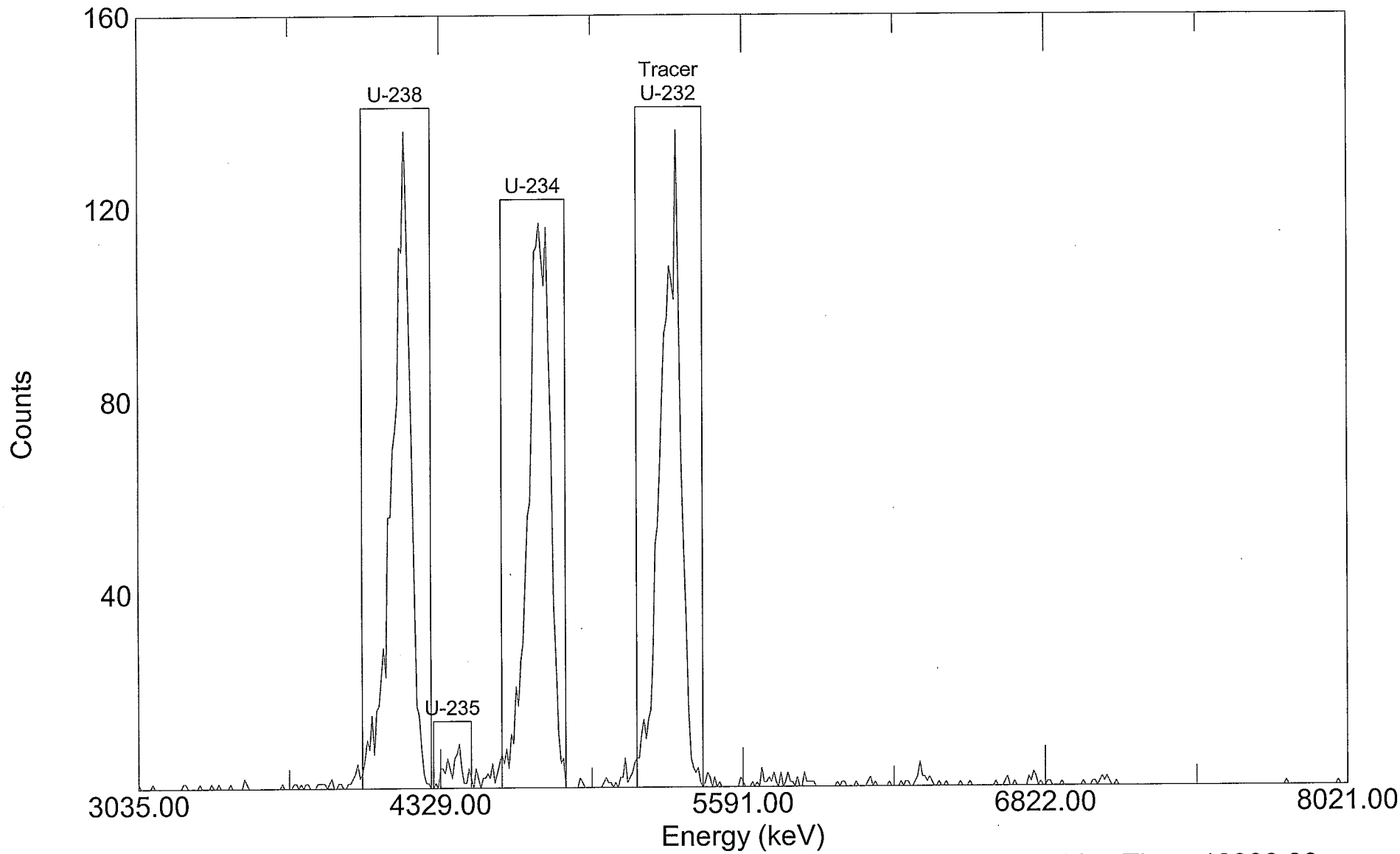
		% Total
Gross Count:	4,079.00	100.00
Net Area:	3,982.88	97.64
Background:	96.12	2.36
Composite Fit:	3,873.00	94.95
Residuals:	206.00	5.05

Analyzed By: Sm

Checked By: SD

000085

U50965 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:07:03 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U50965.SPC
Sample: 0405096-5 UAS040603-1

Real Time: 18000.92 s. Live Time: 18000.00 s.
Detector: #21 MCB 3 Input 5
Type: Uranium Default

000088

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
7/28/04 7:52:46 AM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-6 UAS040720-3

Analysis Type: Uranium Default

Detector: MCB 2 Input 1

Date/Time of Count: 7/27/04 10:20:25 AM

Sample Volume: 0.500 Total, 0.500 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **92.80%**

Real Time: 300.01 Minutes

Total Eff.: 27.12 %

Dead Time: 0.0 %

Tracer Amount: 18.928 DPM.

Acquisition: 512 Channels

Efficiency: 29.22%

Analysis: Relative Region-Of-Interest

Original: 3,027 + 9.9441 * Chn + -0.00050 * Chn **2.

Spectrum Calibration: 3,027 + 10.0387 * Chn + -0.00050 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50966.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4072609.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	117.21	95	124	2.00	13.00	55.00	2.10	52.90	0.65
2	175.62	155	182	4.00	7.00	56.00	4.80	51.20	0.63
3	137.69	125	141	2.00	1.00	2.00	0.30	1.70	0.02
Tracer	231.06	211	238	6.00	170.00	1,546.00	6.30	1539.70	18.93

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	19.84	0.586	n/a	27.52 %
2	U-234	4774.80	39.45	0.567	n/a	28.76 %
3	U-235	4400.00	19.80	0.019	n/a	164.15 %
Tracer	U-232	5320.00	58.84	17.052	n/a	4.98 %

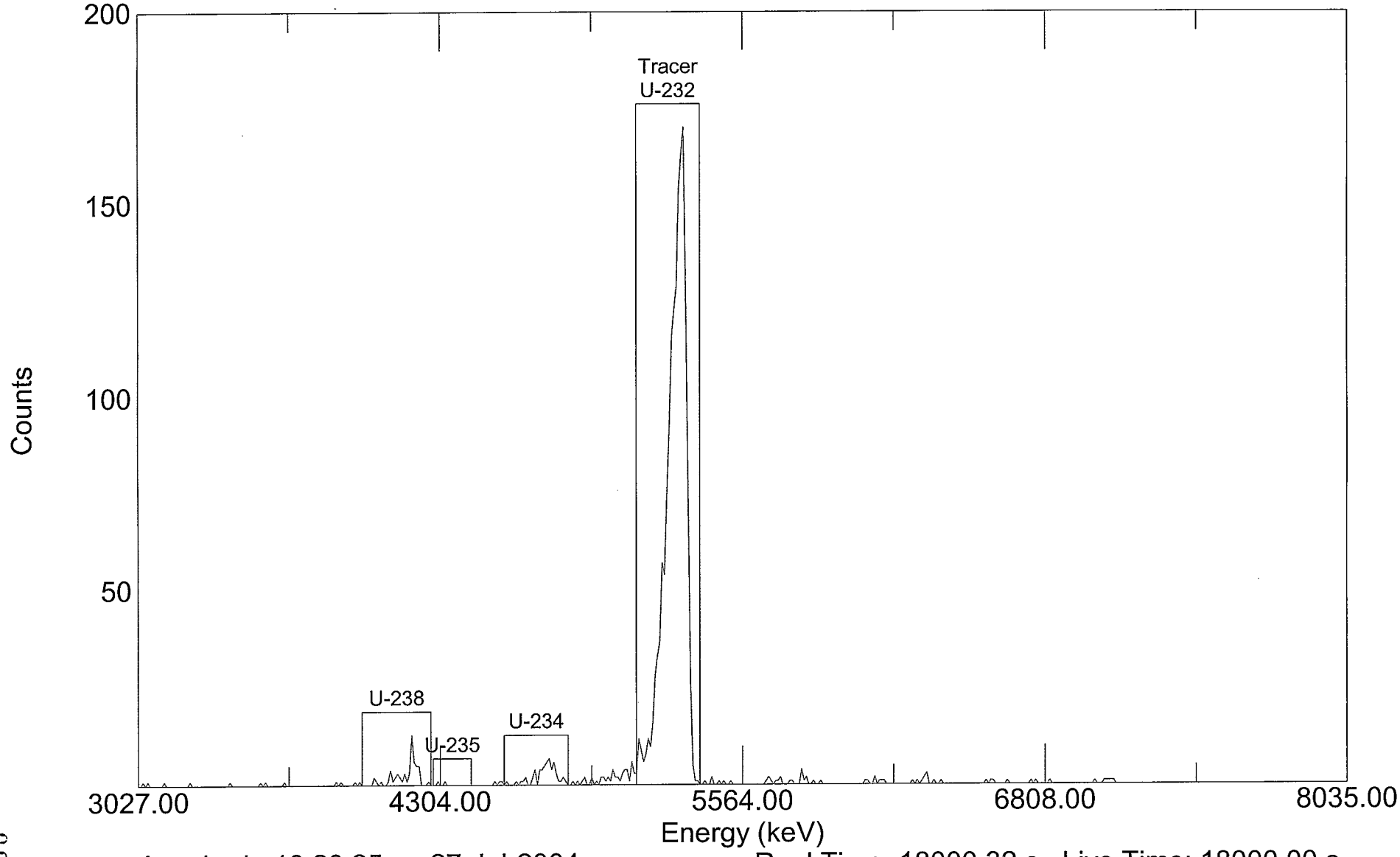
Totals

		% Total
Gross Count:	1,775.00	100.00
Net Area:	1,692.80	95.37
Background:	82.20	4.63
Composite Fit:	1,659.00	93.46
Residuals:	116.00	6.54

Analyzed By: Sm

Checked By: JP

U50966 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 10:20:25 on 27-Jul-2004
File: C:\User\Alpha\ALPHA\U50966.SPC
Sample: 0405096-6 UAS040720-3

Real Time: 18000.32 s. Live Time: 18000.00 s.
Detector: #9 MCB 2 Input 1
Type: Uranium Default

000088

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:03:18 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-7 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 2 Input 8

Date/Time of Count: 6/23/04 12:39:39 PM

Sample Volume: 0.300 Total, 0.300 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **67.62%**

Real Time: 300.01 Minutes

Total Eff.: 19.76 %

Dead Time: 0.0 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 29.22%

Analysis: Relative Region-Of-Interest

Original: 3,016 + 9.9419 * Chn + -0.00046 * Chn **2.

Spectrum Calibration: 3,016 + 10.0245 * Chn + -0.00046 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX50967.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062216.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	118.42	95	124	8.00	533.00	5,439.00	0.60	5438.40	91.75
2	176.84	155	182	6.00	520.00	5,229.00	0.60	5228.40	88.21
3	138.91	125	141	10.00	30.00	291.00	0.00	291.00	4.91
Tracer	232.27	211	238	8.00	109.00	1,125.00	2.10	1122.90	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	79.33	137.764	n/a	2.66 %
2	U-234	4774.80	59.18	132.444	n/a	2.71 %
3	U-235	4400.00	98.97	7.372	n/a	11.49 %
Tracer	U-232	5320.00	78.49	28.445	n/a	5.84 %

Totals

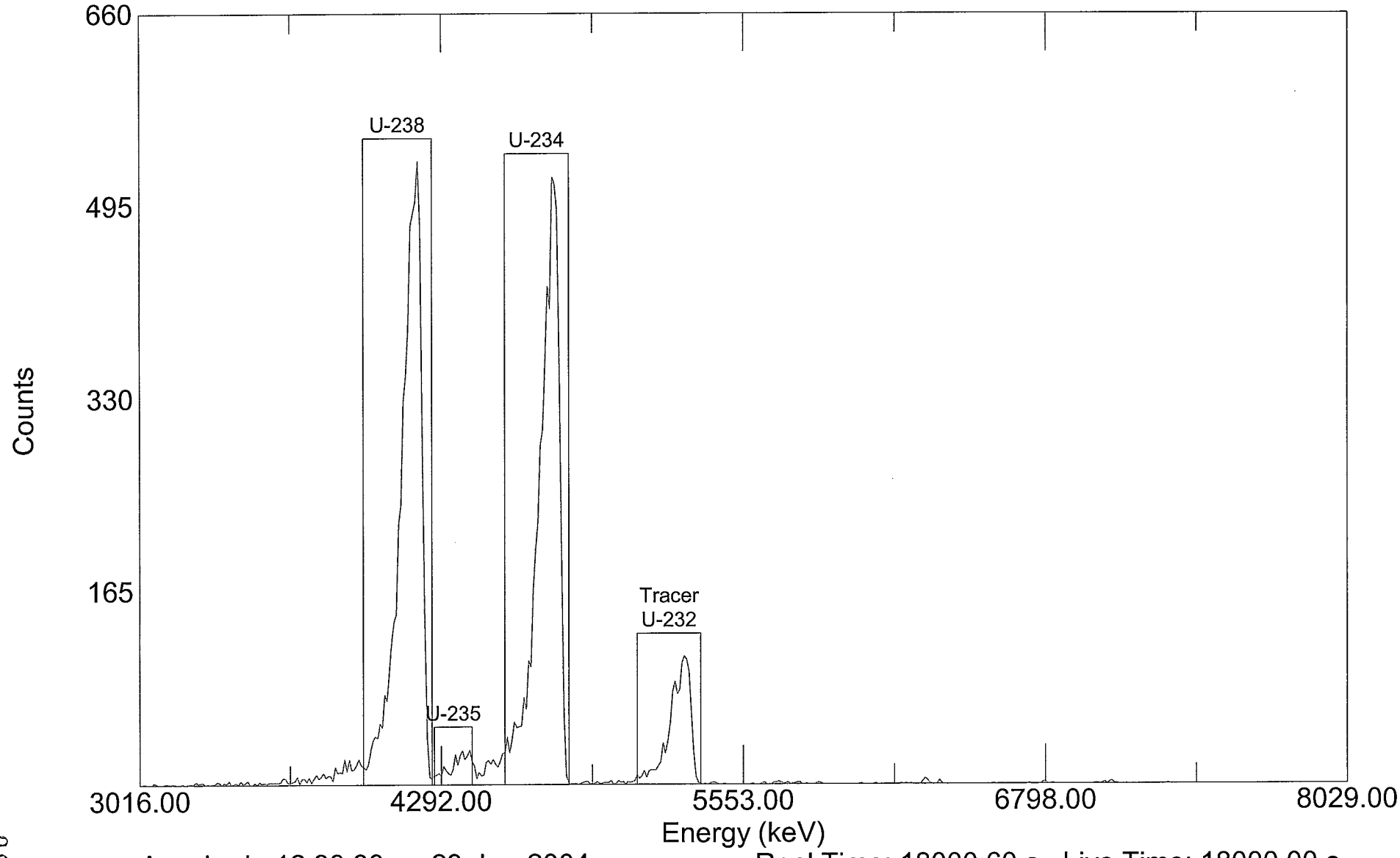
		% Total
Gross Count:	12,793.00	100.00
Net Area:	12,702.70	99.29
Background:	90.30	0.71
Composite Fit:	12,084.00	94.46
Residuals:	709.00	5.54

Analyzed By: Sm

Checked By: SD

000089

UX50967 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:39:39 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX50967.SPC
Sample: 0405096-7 UAS040618-1

Real Time: 18000.60 s. Live Time: 18000.00 s.
Detector: #16 MCB 2 Input 8
Type: Uranium Default

000090

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:51:14 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-8 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 6

Date/Time of Count: 6/11/04 7:07:35 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **22.81%**

Real Time: 300.02 Minutes

Total Eff.: 6.48 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 28.41%

Analysis: Relative Region-Of-Interest

Original: 3,042 + 9.9010 * Chn + -0.00036 * Chn **2.

Spectrum Calibration: 3,042 + 9.9957 * Chn + -0.00036 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U50968.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060822.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.08	93	122	6.00	737.00	7,536.00	1.17	7534.83	387.51
2	174.50	154	181	6.00	733.00	7,345.00	0.29	7344.71	377.73
3	136.58	123	139	4.00	38.00	310.00	0.00	310.00	15.94
Tracer	229.86	208	235	8.00	40.00	372.00	3.20	368.80	18.97

OK SD 6/17/04

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.47	87.278	n/a	2.26 %
2	U-234	4774.80	59.21	85.075	n/a	2.29 %
3	U-235	4400.00	39.59	3.591	n/a	11.13 %
Tracer	U-232	5320.00	78.63	4.272	n/a	10.16 %

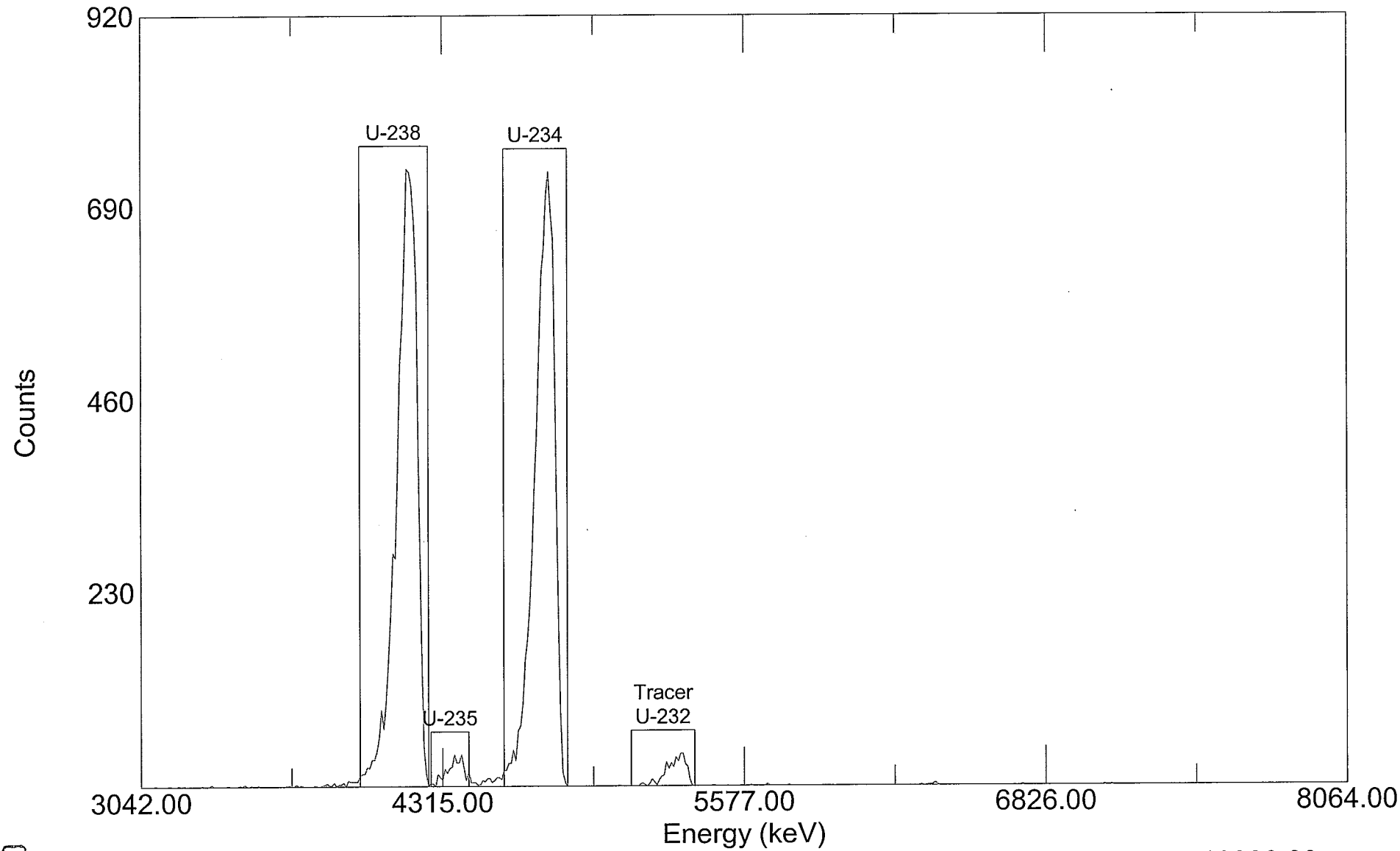
Totals

		% Total
Gross Count:	15,858.00	100.00
Net Area:	15,797.13	99.62
Background:	60.87	0.38
Composite Fit:	15,563.00	98.14
Residuals:	295.00	1.86

Analyzed By: SM

Checked By: SD

U50968 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:07:35 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U50968.SPC
Sample: 0405096-8 UAS040603-1

Real Time: 18000.90 s. Live Time: 18000.00 s.
Detector: #22 MCB 3 Input 6
Type: Uranium Default

000092

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:04:16 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-9 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 1

Date/Time of Count: 6/23/04 12:39:51 PM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **65.65%**

Real Time: 300.57 Minutes

Total Eff.: 20.00 %

Dead Time: 0.2 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 30.47%

Analysis: Relative Region-Of-Interest

Original: 3,052 + 9.9202 * Chn + -0.00047 * Chn **2.

Spectrum Calibration: 3,052 + 10.0619 * Chn + -0.00047 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX50969.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062217.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	114.46	94	123	8.00	281.00	3,459.00	2.10	3456.90	57.61
2	172.66	155	182	8.00	296.00	3,377.00	0.60	3376.40	56.27
3	134.87	124	140	2.00	20.00	175.00	1.20	173.80	2.90
Tracer	227.88	210	237	10.00	84.00	1,147.00	10.20	1136.80	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	79.63	25.949	n/a	3.33 %
2	U-234	4774.80	79.19	25.345	n/a	3.37 %
3	U-235	4400.00	19.87	1.305	n/a	14.92 %
Tracer	U-232	5320.00	98.47	8.533	n/a	5.79 %

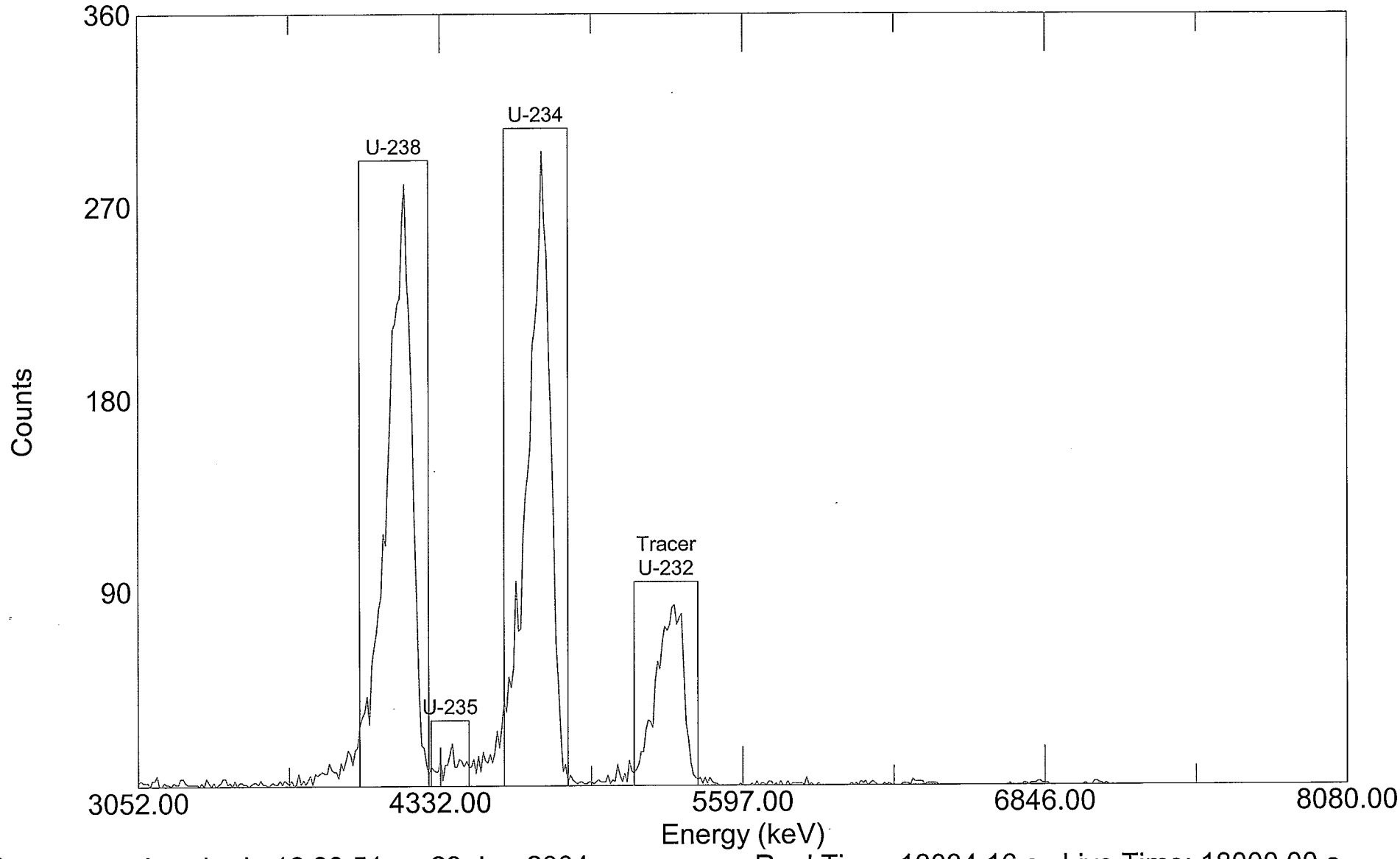
Totals

		% Total
Gross Count:	8,854.00	100.00
Net Area:	8,740.90	98.72
Background:	113.10	1.28
Composite Fit:	8,158.00	92.14
Residuals:	696.00	7.86

Analyzed By: Sm

Checked By: SD

UX50969 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:39:51 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX50969.SPC
Sample: 0405096-9 UAS040618-1

Real Time: 18034.16 s. Live Time: 18000.00 s.
Detector: #17 MCB 3 Input 1
Type: Uranium Default

000094

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/11/04 12:08:44 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-10 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 7

Date/Time of Count: 6/11/04 7:08:18 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **55.79%**

Real Time: 300.02 Minutes

Total Eff.: 16.05 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 28.77%

Analysis: Relative Region-Of-Interest

Original: 3,009 + 10.0884 * Chn + -0.00083 * Chn **2.

Spectrum Calibration: 3,009 + 10.1570 * Chn + -0.00083 * Chn **2.

Cal File:

Spectrum File: **C:\USER\ALPHA\ALPHA\U509610.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060823.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	118.15	95	124	6.00	699.00	6,151.00	0.87	6150.13	127.71
2	176.45	154	181	8.00	652.00	5,763.00	0.58	5762.42	119.66
3	138.57	125	141	4.00	29.00	261.00	0.58	260.42	5.41
Tracer	231.99	210	237	6.00	106.00	916.00	2.62	913.38	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.76	28.764	n/a	2.50 %
2	U-234	4774.80	78.90	26.951	n/a	2.58 %
3	U-235	4400.00	39.70	1.218	n/a	12.16 %
Tracer	U-232	5320.00	58.62	4.272	n/a	6.48 %

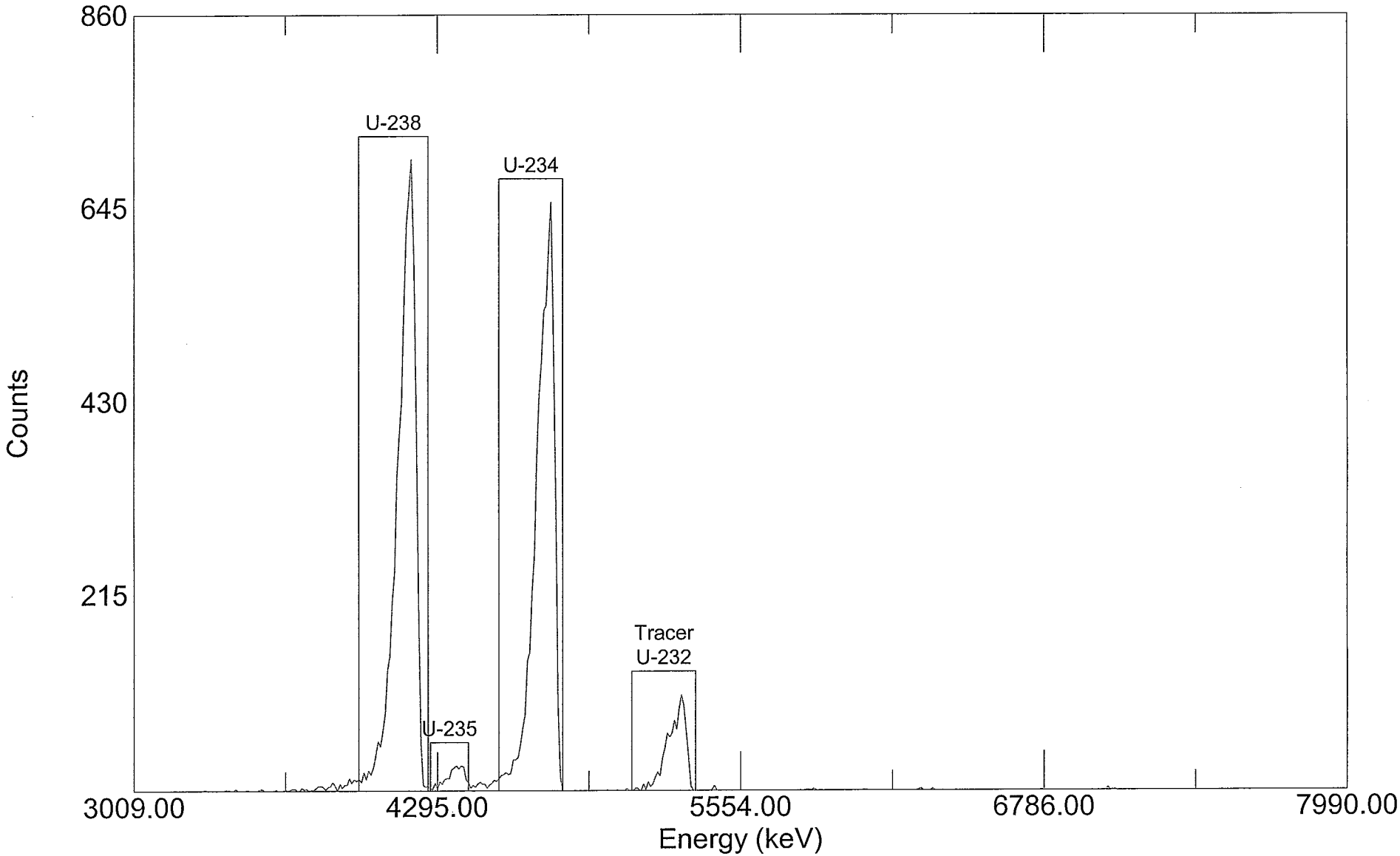
Totals

		% Total
Gross Count:	13,470.00	100.00
Net Area:	13,400.39	99.48
Background:	69.61	0.52
Composite Fit:	13,091.00	97.19
Residuals:	379.00	2.81

Analyzed By: Sm

Checked By: SD

U509610 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:08:18 on 11-Jun-2004 Real Time: 18000.92 s. Live Time: 18000.00 s.
File: C:\USER\ALPHA\ALPHA\U509610.SPC Detector: #23 MCB 3 Input 7
Sample: 0405096-10 UAS040603-1 Type: Uranium Default

000096

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:52:21 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-11 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 8

Date/Time of Count: 6/11/04 7:08:49 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **73.87%**

Real Time: 300.02 Minutes

Total Eff.: 23.99 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 32.48%

Analysis: Relative Region-Of-Interest

Original: 3,042 + 9.7713 * Chn + -0.00025 * Chn **2.

Spectrum Calibration: 3,042 + 9.7005 * Chn + -0.00025 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509611.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060824.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	119.44	96	125	10.00	65.00	496.00	0.87	495.13	6.88
2	179.47	159	186	8.00	55.00	458.00	0.58	457.42	6.35
3	140.51	126	143	2.00	4.00	19.00	0.00	19.00	0.26
Tracer	236.29	217	244	8.00	149.00	1,372.00	6.70	1365.30	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	96.40	1.549	n/a	8.82 %
2	U-234	4774.80	76.88	1.431	n/a	9.17 %
3	U-235	4400.00	19.26	0.059	n/a	44.97 %
Tracer	U-232	5320.00	76.65	4.272	n/a	5.29 %

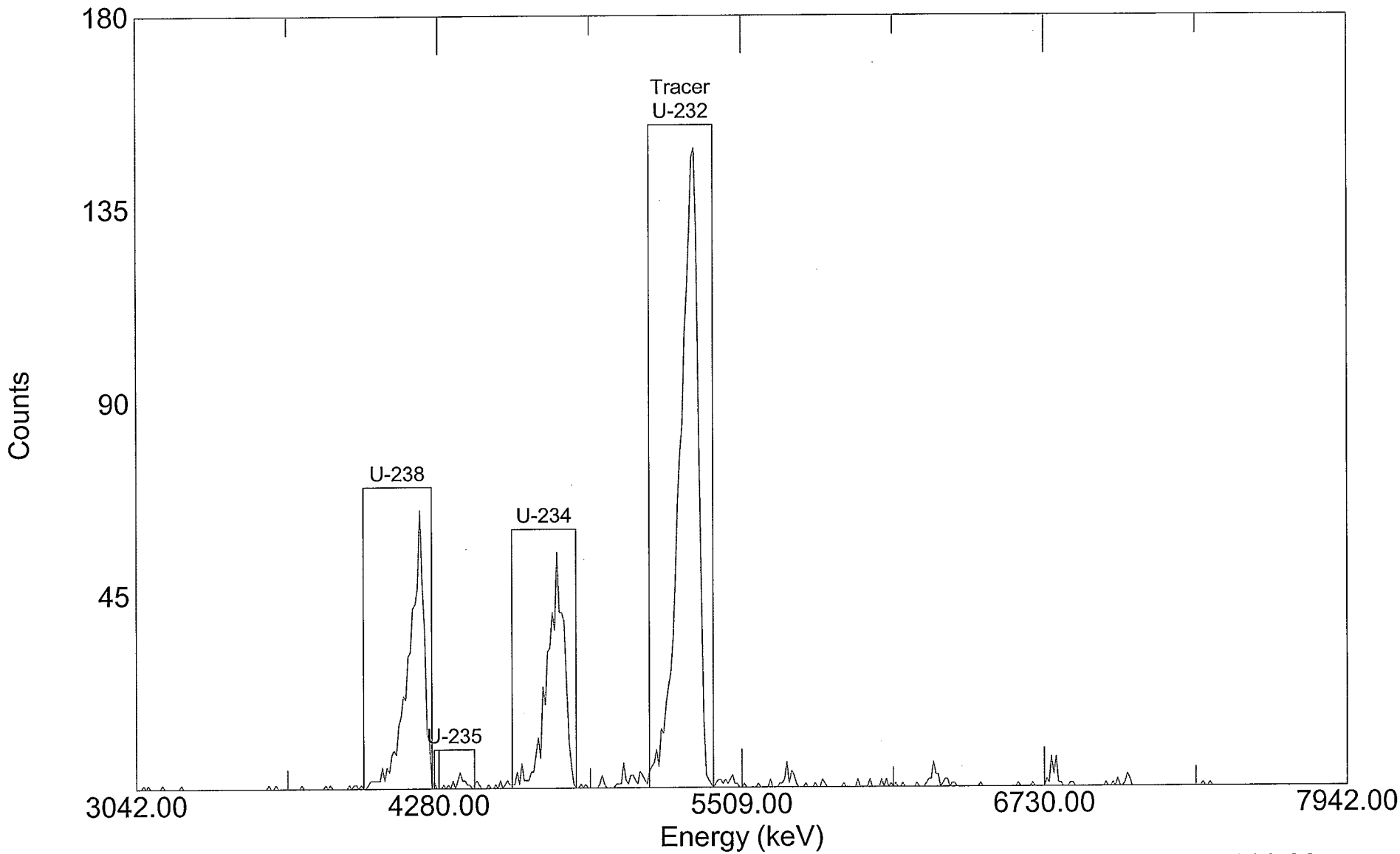
Totals

		% Total
Gross Count:	2,527.00	100.00
Net Area:	2,438.46	96.50
Background:	88.54	3.50
Composite Fit:	2,345.00	92.80
Residuals:	182.00	7.20

Analyzed By: Sm

Checked By: SD

U509611 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:08:49 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509611.SPC
Sample: 0405096-11 UAS040603-1

Real Time: 18000.92 s. Live Time: 18000.00 s.
Detector: #24 MCB 3 Input 8
Type: Uranium Default

000098

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:52:51 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-12 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 2

Date/Time of Count: 6/11/04 7:09:34 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **82.54%**

Real Time: 300.02 Minutes

Total Eff.: 26.33 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 31.90%

Analysis: Relative Region-Of-Interest

Original: 2,977 + 10.2283 * Chn + -0.00075 * Chn **2.

Spectrum Calibration: 2,977 + 10.2999 * Chn + -0.00075 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509612.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060842.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	119.48	97	126	8.00	51.00	418.00	0.29	417.71	5.29
2	176.82	156	183	6.00	57.00	445.00	0.29	444.71	5.63
3	139.57	127	143	2.00	5.00	13.00	0.29	12.71	0.16
Tracer	231.38	210	237	8.00	178.00	1,502.00	3.79	1498.21	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	80.96	1.191	n/a	9.59 %
2	U-234	4774.80	60.20	1.268	n/a	9.30 %
3	U-235	4400.00	20.18	0.036	n/a	55.66 %
Tracer	U-232	5320.00	79.61	4.272	n/a	5.06 %

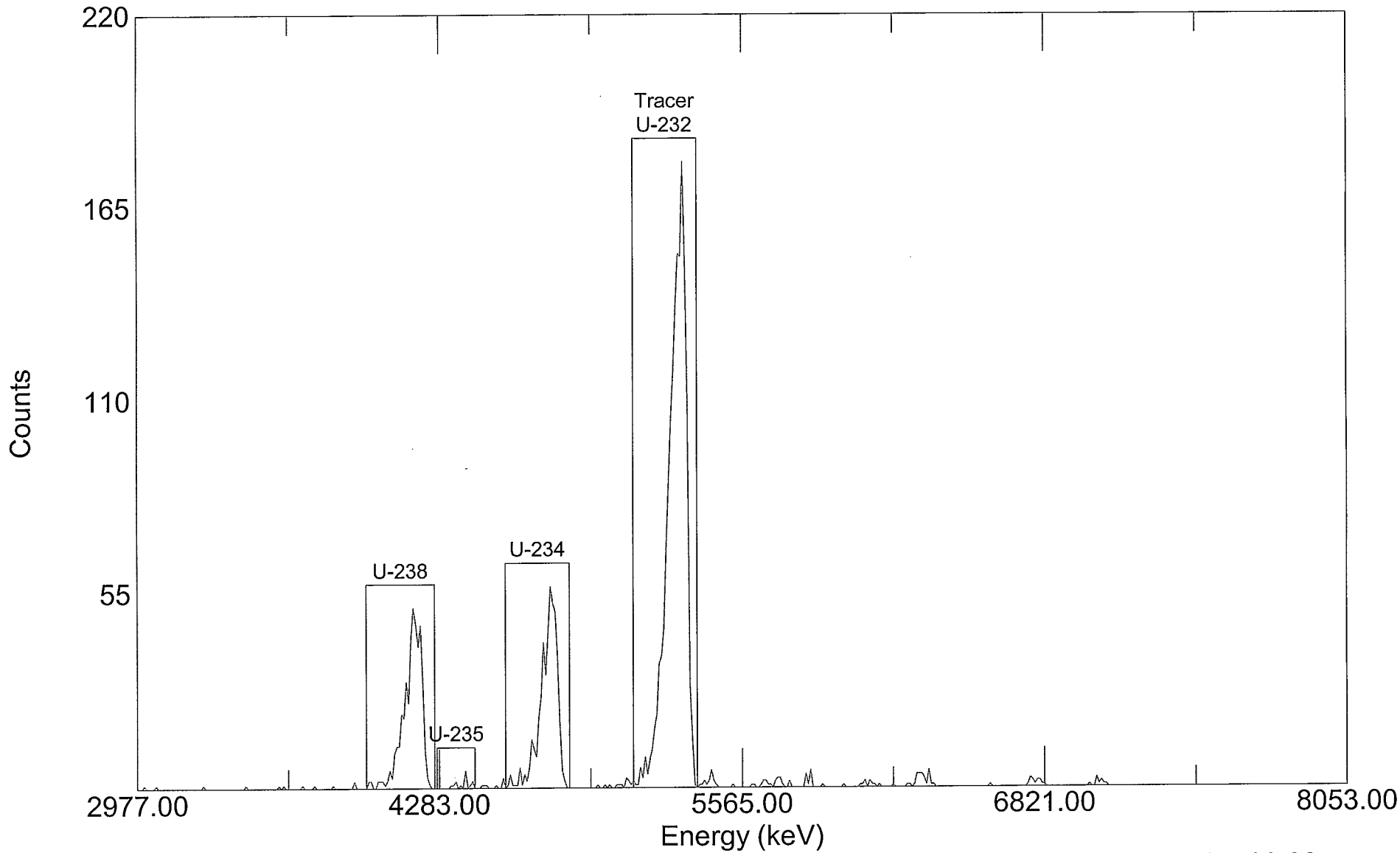
Totals

		% Total
Gross Count:	2,515.00	100.00
Net Area:	2,435.49	96.84
Background:	79.51	3.16
Composite Fit:	2,378.00	94.55
Residuals:	137.00	5.45

Analyzed By: Sm

Checked By: SD

U509612 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:09:34 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509612.SPC
Sample: 0405096-12 UAS040603-1

Real Time: 18000.92 s. Live Time: 18000.00 s.
Detector: #42 MCB 6 Input 2
Type: Uranium Default

0001100

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
7/28/04 2:52:05 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-13 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 2 Input 1

Date/Time of Count: 7/28/04 12:45:30 PM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **120.00 Minutes**

Chem. Yield: **85.93%**

Real Time: 120.00 Minutes

Total Eff.: 25.11 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 29.22%

Analysis: Relative Region-Of-Interest

Original: 3,027 + 9.9441 * Chn + -0.00050 * Chn **2.

Spectrum Calibration: 3,027 + 10.0239 * Chn + -0.00050 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509613.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4072609.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	117.38	95	124	6.00	16.00	116.00	0.84	115.16	3.82
2	175.89	155	182	6.00	20.00	157.00	1.92	155.08	5.15
3	137.90	125	141	8.00	1.00	4.00	0.12	3.88	0.13
Tracer	231.41	212	238	8.00	67.00	574.00	2.52	571.48	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.44	0.861	n/a	18.33 %
2	U-234	4774.80	59.08	1.159	n/a	15.84 %
3	U-235	4400.00	79.08	0.029	n/a	101.05 %
Tracer	U-232	5320.00	78.33	4.272	n/a	8.18 %

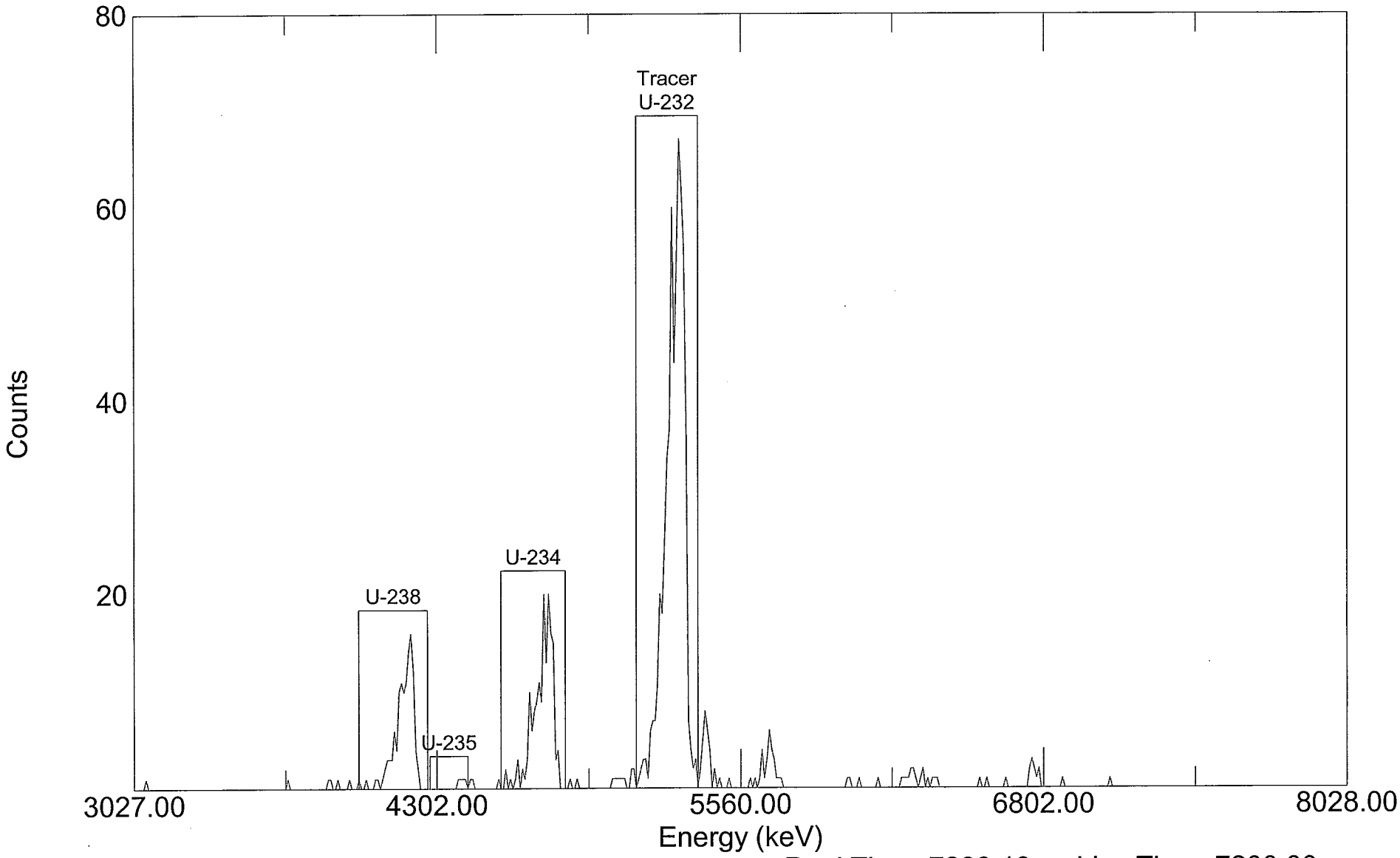
Totals

		% Total
Gross Count:	963.00	100.00
Net Area:	930.12	96.59
Background:	32.88	3.41
Composite Fit:	851.00	88.37
Residuals:	112.00	11.63

Analyzed By: Sm

Checked By: JP

U509613 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:45:30 on 28-Jul-2004
File: C:\User\Alpha\ALPHA\U509613.SPC
Sample: 0405096-13 UAS040603-1

Real Time: 7200.10 s. Live Time: 7200.00 s.
Detector: #9 MCB 2 Input 1
Type: Uranium Default

000102

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/11/04 12:10:32 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-14 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 4

Date/Time of Count: 6/11/04 7:10:21 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **75.43%**

Real Time: 300.02 Minutes

Total Eff.: 24.16 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 32.03%

Analysis: Relative Region-Of-Interest

Original: 3,013 + 10.0214 * Chn + -0.00045 * Chn **2.

Spectrum Calibration: 3,013 + 10.0752 * Chn + -0.00045 * Chn **2.

Cal File:

Spectrum File: **C:\USER\ALPHA\ALPHA\U509614.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060844.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	118.13	95	124	4.00	43.00	385.00	2.91	382.09	5.27
2	176.24	154	181	6.00	38.00	350.00	1.75	348.25	4.80
3	138.51	125	141	2.00	5.00	14.00	1.46	12.54	0.17
Tracer	231.34	209	236	6.00	143.00	1,385.00	10.19	1374.81	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	39.88	1.187	n/a	10.07 %
2	U-234	4774.80	59.51	1.082	n/a	10.53 %
3	U-235	4400.00	19.90	0.039	n/a	58.72 %
Tracer	U-232	5320.00	59.21	4.272	n/a	5.27 %

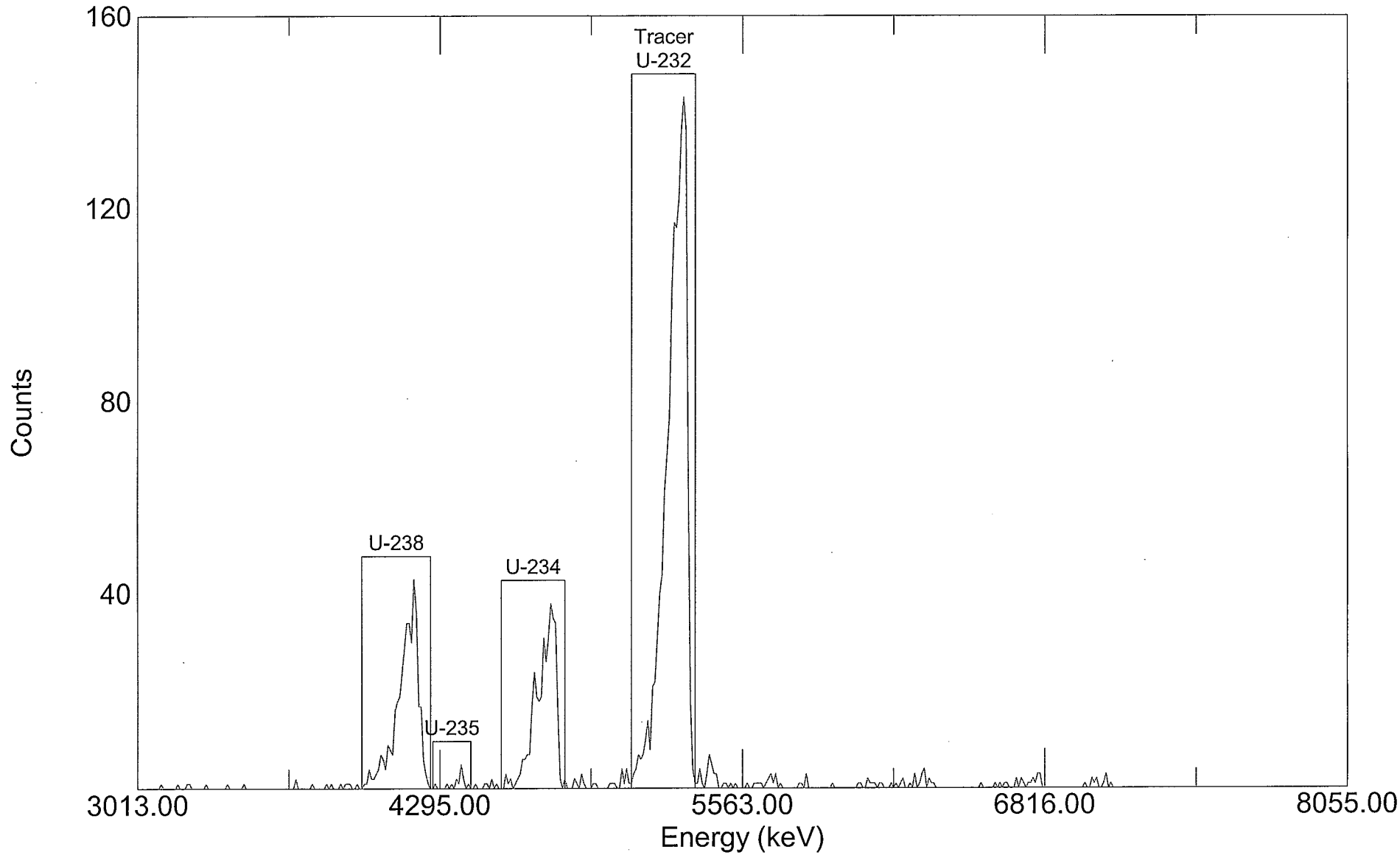
Totals

		% Total
Gross Count:	2,294.00	100.00
Net Area:	2,157.11	94.03
Background:	136.89	5.97
Composite Fit:	2,134.00	93.03
Residuals:	160.00	6.97

Analyzed By: Sm

Checked By: SD

U509614 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:10:21 on 11-Jun-2004 Real Time: 18000.92 s. Live Time: 18000.00 s.
File: C:\USER\ALPHA\ALPHA\U509614.SPC Detector: #44 MCB 6 Input 4
Sample: 0405096-14 UAS040603-1 Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/15/04 4:54:03 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-15 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 5

Date/Time of Count: 6/11/04 7:10:48 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **75.14%**

Real Time: 300.02 Minutes

Total Eff.: 24.60 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 32.74%

Analysis: Relative Region-Of-Interest

Original: 2,991 + 10.2773 * Chn + -0.00096 * Chn **2.

Spectrum Calibration: 2,991 + 10.5906 * Chn + -0.00096 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509615.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4060845.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	115.09	90	119	2.00	147.00	1,367.00	1.17	1365.83	18.51
2	171.09	149	176	6.00	123.00	1,295.00	2.04	1292.96	17.52
3	134.70	120	135	2.00	7.00	57.00	0.87	56.13	0.76
Tracer	224.48	203	230	8.00	134.00	1,406.00	6.12	1399.88	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	20.74	4.168	n/a	5.31 %
2	U-234	4774.80	61.58	3.946	n/a	5.46 %
3	U-235	4400.00	20.67	0.171	n/a	26.38 %
Tracer	U-232	5320.00	81.29	4.272	n/a	5.23 %

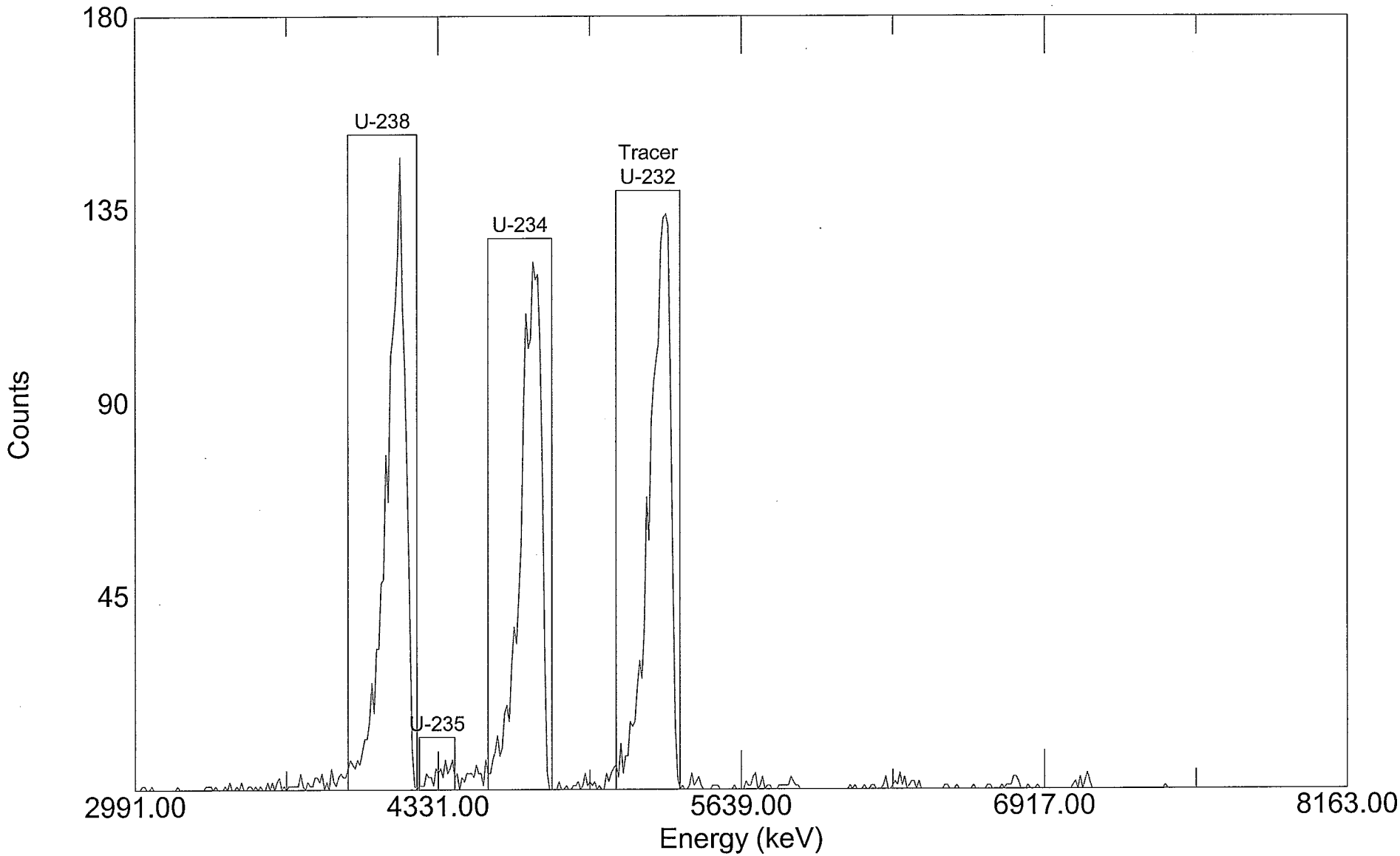
Totals

		% Total
Gross Count:	4,391.00	100.00
Net Area:	4,280.61	97.49
Background:	110.39	2.51
Composite Fit:	4,125.00	93.94
Residuals:	266.00	6.06

Analyzed By: Sm

Checked By: [illegible]

U509615 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:10:48 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509615.SPC
Sample: 0405096-15 UAS040603-1

Real Time: 18000.92 s. Live Time: 18000.00 s.
Detector: #45 MCB 6 Input 5
Type: Uranium Default

000106

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:43:18 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-15D UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 6

Date/Time of Count: 6/11/04 7:11:11 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **83.45%**

Real Time: 300.02 Minutes

Total Eff.: 26.52 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 31.78%

Analysis: Relative Region-Of-Interest

Original: 2,976 + 10.2610 * Chn + -0.00100 * Chn **2.

Spectrum Calibration: 2,976 + 10.3216 * Chn + -0.00100 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509615D.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060846.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	119.67	96	124	4.00	134.00	1,385.00	0.58	1384.42	17.40
2	177.30	155	182	6.00	145.00	1,374.00	3.79	1370.21	17.22
3	139.84	125	140	6.00	9.00	69.00	0.00	69.00	0.87
Tracer	232.31	210	238	6.00	175.00	1,512.00	2.91	1509.09	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	40.33	3.919	n/a	5.27 %
2	U-234	4774.80	59.80	3.879	n/a	5.30 %
3	U-235	4400.00	60.25	0.195	n/a	23.60 %
Tracer	U-232	5320.00	59.14	4.272	n/a	5.04 %

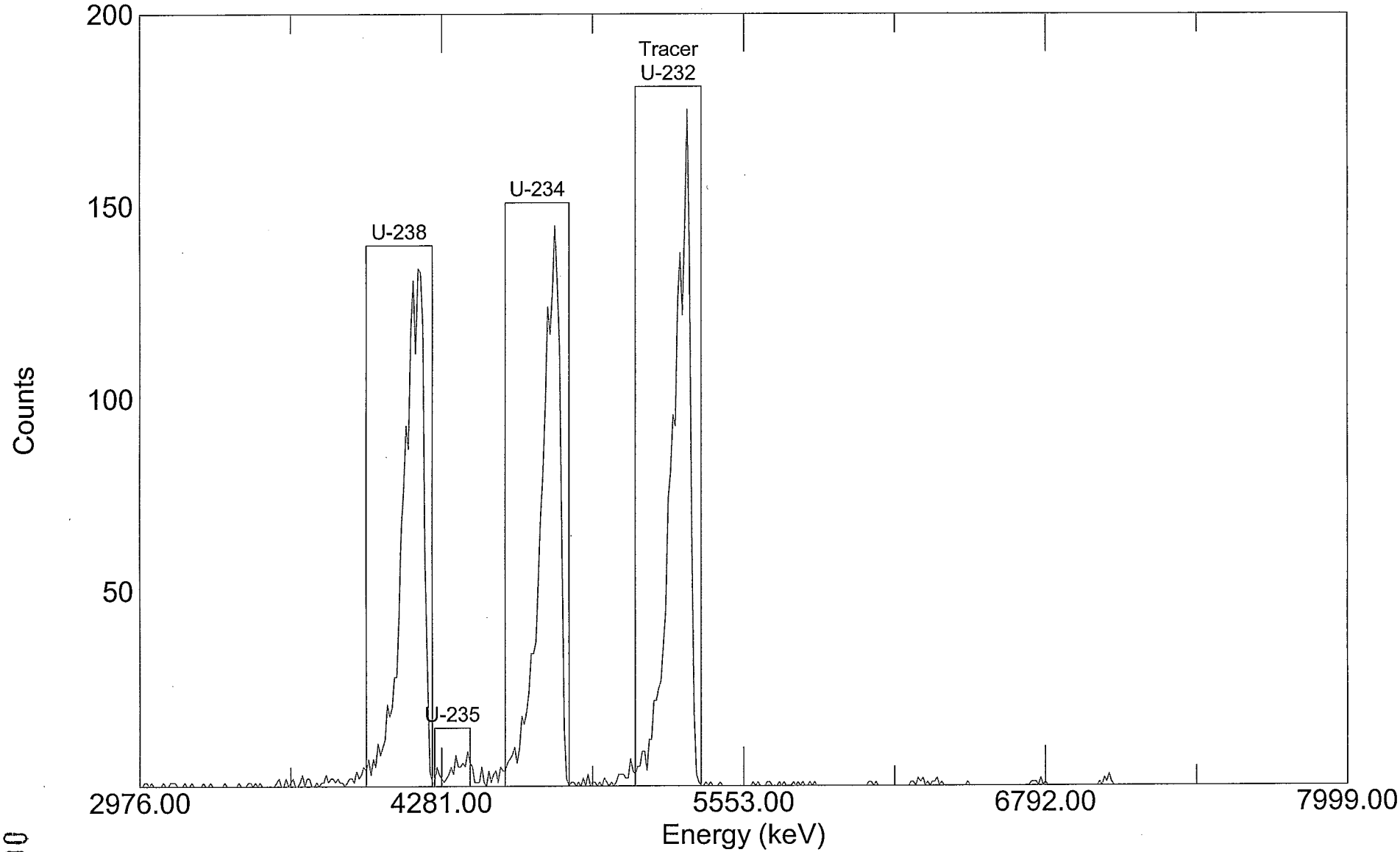
Totals

		% Total
Gross Count:	4,530.00	100.00
Net Area:	4,486.60	99.04
Background:	43.40	0.96
Composite Fit:	4,340.00	95.81
Residuals:	190.00	4.19

Analyzed By: Sm

Checked By: SD

U509615D AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:11:11 on 11-Jun-2004 Real Time: 18000.90 s. Live Time: 18000.00 s.
File: C:\User\Alpha\ALPHA\U509615D.SPC Detector: #46 MCB 6 Input 6
Sample: 0405096-15D UAS040603-1 Type: Uranium Default

000108

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:45:43 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-16 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 7

Date/Time of Count: 6/11/04 7:11:35 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **81.38%**

Real Time: 300.02 Minutes

Total Eff.: 24.83 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 30.51%

Analysis: Relative Region-Of-Interest

Original: 2,954 + 10.5228 * Chn + -0.00140 * Chn **2.

Spectrum Calibration: 2,954 + 10.6067 * Chn + -0.00140 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509616.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060847.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	119.02	97	126	6.00	59.00	365.00	0.29	364.71	4.90
2	175.70	154	181	6.00	61.00	430.00	1.46	428.54	5.75
3	138.83	127	142	2.00	7.00	21.00	0.00	21.00	0.28
Tracer	230.01	210	238	6.00	169.00	1,414.00	1.17	1412.83	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	61.64	1.103	n/a	10.27 %
2	U-234	4774.80	60.69	1.296	n/a	9.49 %
3	U-235	4400.00	20.44	0.063	n/a	42.77 %
Tracer	U-232	5320.00	59.78	4.272	n/a	5.21 %

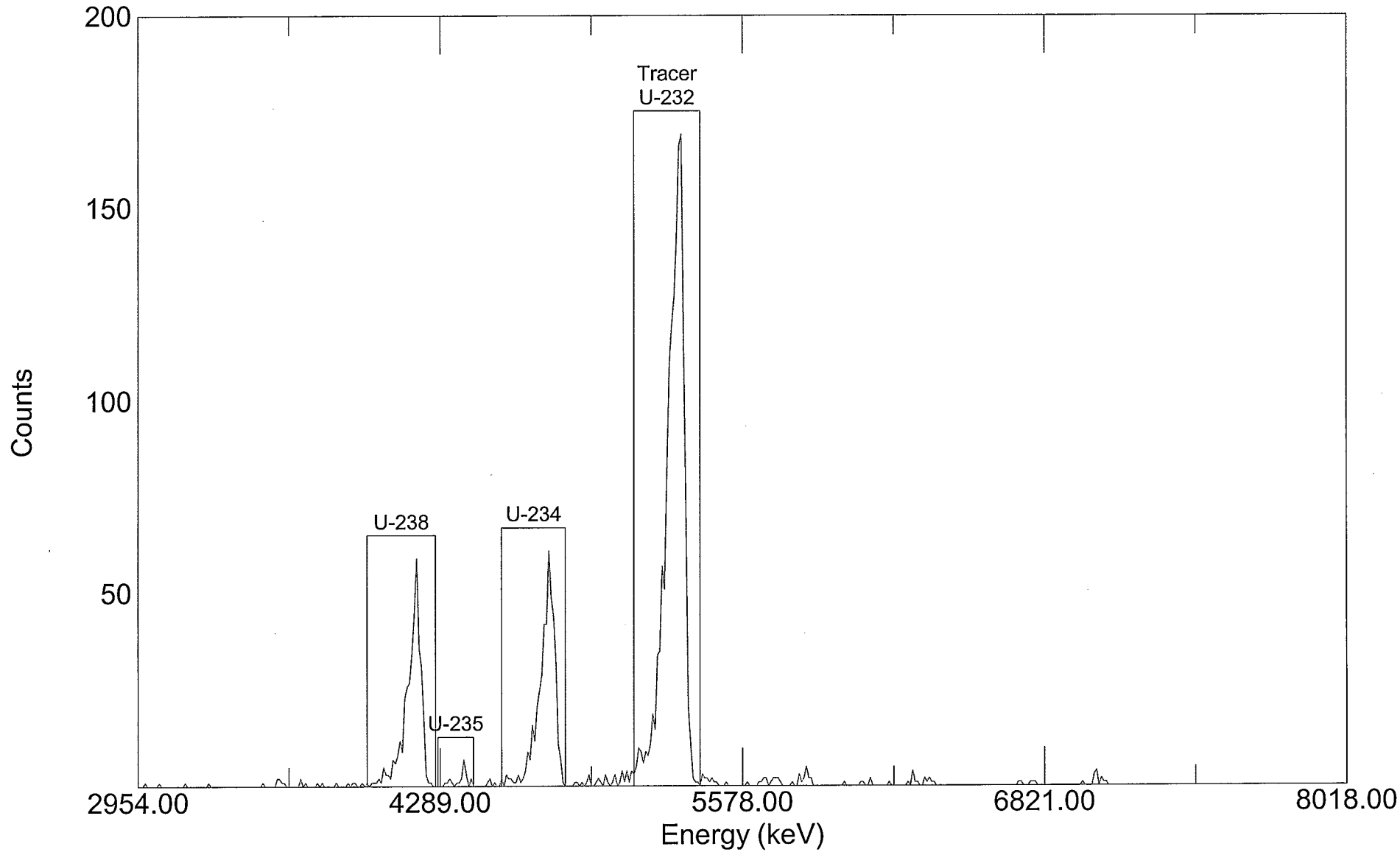
Totals

		% Total
Gross Count:	2,370.00	100.00
Net Area:	2,286.41	96.47
Background:	83.59	3.53
Composite Fit:	2,230.00	94.09
Residuals:	140.00	5.91

Analyzed By: Sm

Checked By: GD

U509616 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:11:35 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509616.SPC
Sample: 0405096-16 UAS040603-1

Real Time: 18000.92 s. Live Time: 18000.00 s.
Detector: #47 MCB 6 Input 7
Type: Uranium Default

000110

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:45:12 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-17 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 8

Date/Time of Count: 6/11/04 7:11:58 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **80.55%**

Real Time: 300.02 Minutes

Total Eff.: 25.66 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 31.86%

Analysis: Relative Region-Of-Interest

Original: 3,029 + 10.0115 * Chn + -0.00065 * Chn **2.

Spectrum Calibration: 3,029 + 10.0382 * Chn + -0.00065 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509617.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060848.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	117.21	96	125	6.00	83.00	802.00	0.87	801.13	10.41
2	175.89	155	182	6.00	91.00	895.00	8.74	886.26	11.51
3	137.78	126	142	2.00	8.00	37.00	1.17	35.83	0.47
Tracer	231.67	209	236	4.00	164.00	1,466.00	5.83	1460.17	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.31	2.344	n/a	6.93 %
2	U-234	4774.80	58.86	2.593	n/a	6.62 %
3	U-235	4400.00	19.72	0.105	n/a	33.31 %
Tracer	U-232	5320.00	38.95	4.272	n/a	5.12 %

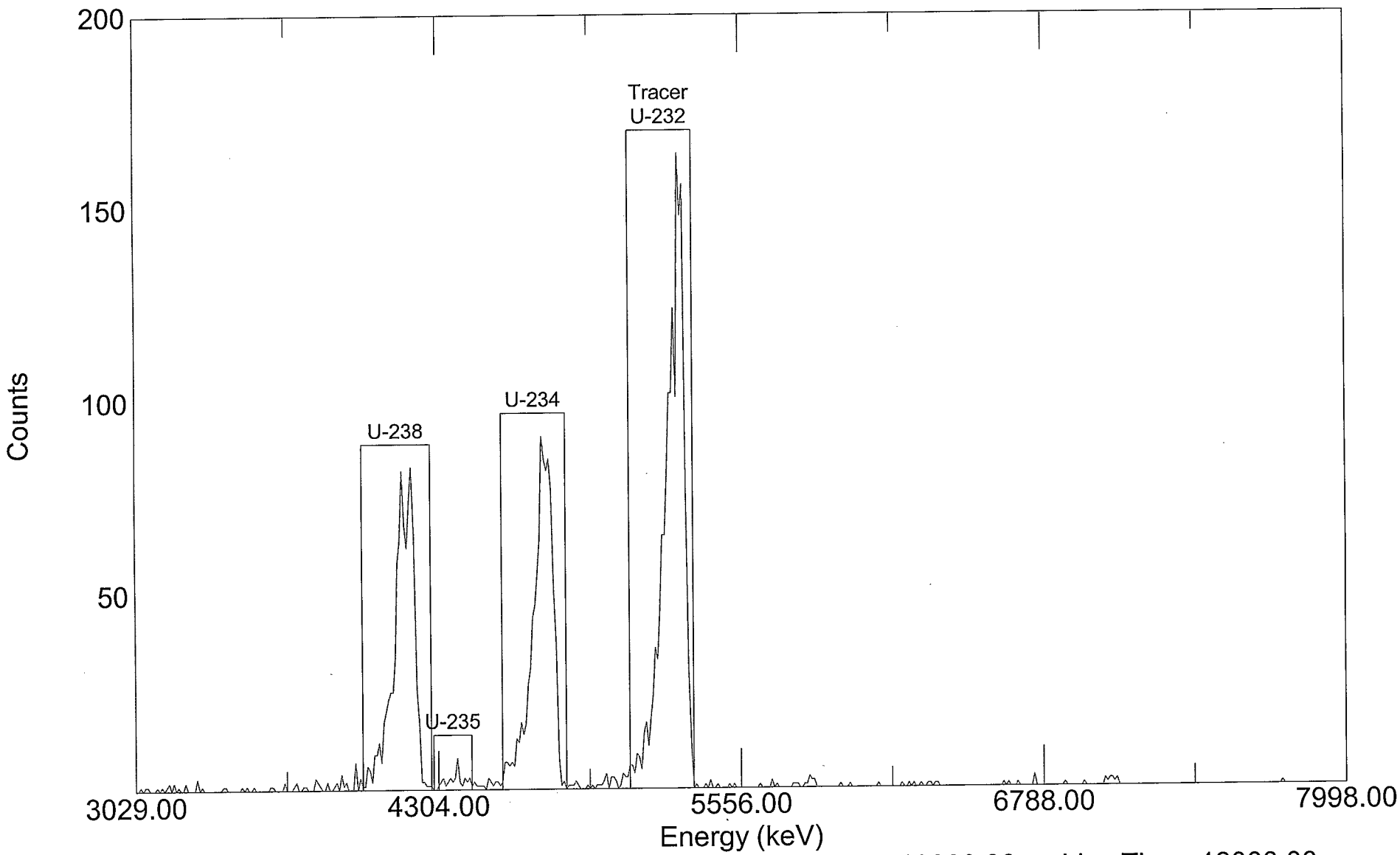
Totals

		% Total
Gross Count:	3,365.00	100.00
Net Area:	3,296.85	97.97
Background:	68.16	2.03
Composite Fit:	3,200.00	95.10
Residuals:	165.00	4.90

Analyzed By: Sm

Checked By: CD

U509617 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:11:58 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509617.SPC
Sample: 0405096-17 UAS040603-1

Real Time: 18000.90 s. Live Time: 18000.00 s.
Detector: #48 MCB 6 Input 8
Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:05:25 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-18 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 2 Input 1

Date/Time of Count: 6/23/04 6:23:04 PM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **51.11%**

Real Time: 300.01 Minutes

Total Eff.: 14.84 %

Dead Time: 0.0 %

Tracer Amount: 18.945 DPM.

Acquisition: 512 Channels

Efficiency: 29.03%

Analysis: Relative Region-Of-Interest

Original: 3,045 + 9.7273 * Chn + -0.00001 * Chn **2.

Spectrum Calibration: 3,045 + 9.9092 * Chn + -0.00001 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UY509618.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062209.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.31	95	124	10.00	555.00	6,268.00	2.10	6265.90	140.78
2	174.63	154	181	8.00	526.00	5,865.00	3.90	5861.10	131.68
3	136.80	125	141	8.00	31.00	268.00	1.50	266.50	5.99
Tracer	229.66	209	236	10.00	83.00	851.00	7.80	843.20	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	99.08	63.414	n/a	2.48 %
2	U-234	4774.80	79.26	59.317	n/a	2.56 %
3	U-235	4400.00	79.26	2.697	n/a	12.04 %
Tracer	U-232	5320.00	99.07	8.534	n/a	6.72 %

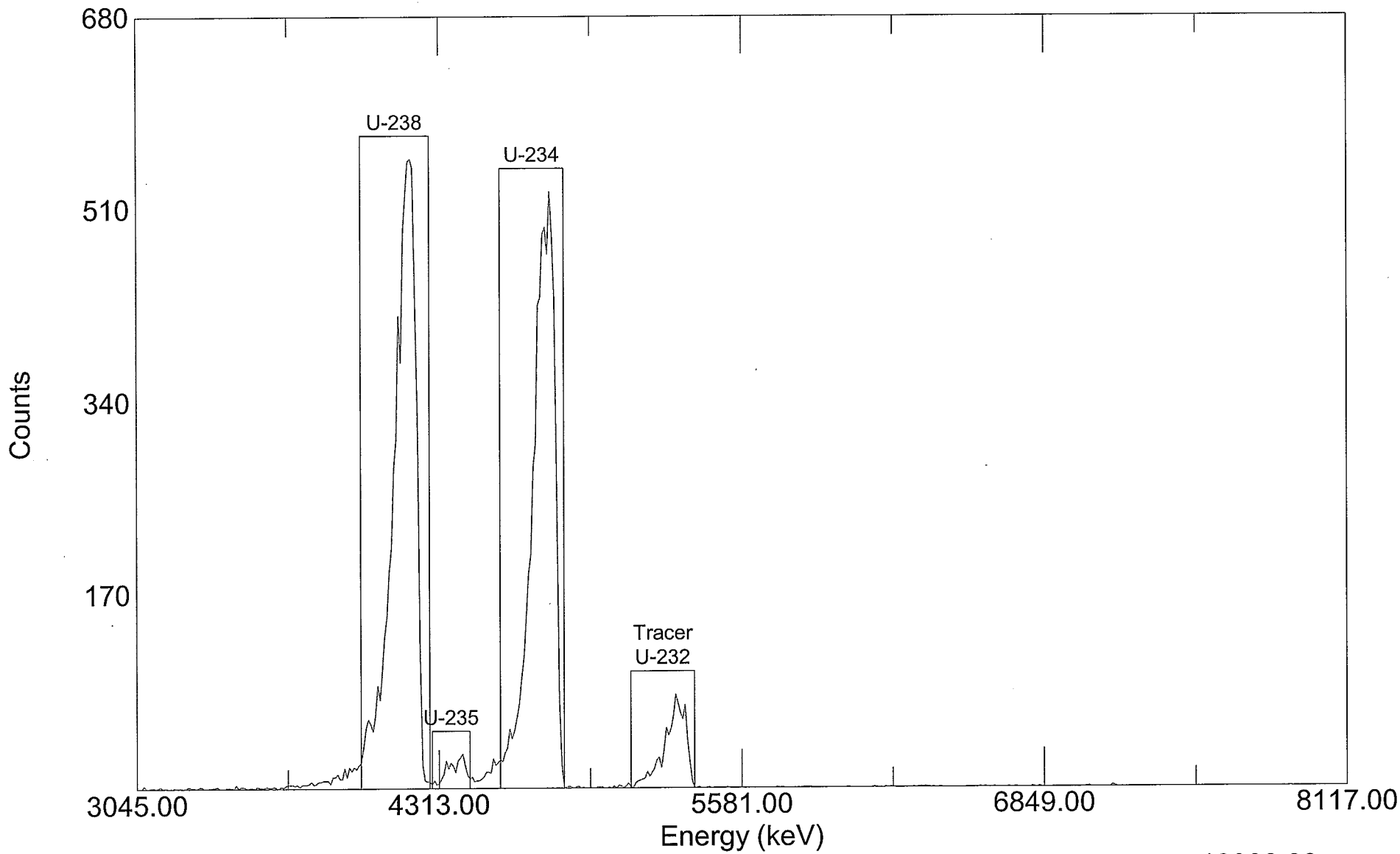
Totals

		% Total
Gross Count:	13,802.00	100.00
Net Area:	13,735.10	99.52
Background:	66.90	0.48
Composite Fit:	13,252.00	96.02
Residuals:	550.00	3.98

Analyzed By: Sm

Checked By: SD

UY509618 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 18:23:04 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UY509618.SPC
Sample: 0405096-18 UAS040618-1

Real Time: 18000.40 s. Live Time: 18000.00 s.
Detector: #9 MCB 2 Input 1
Type: Uranium Default

000114

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:07:47 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-18D UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 3

Date/Time of Count: 6/23/04 12:40:18 PM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **52.01%**

Real Time: 300.57 Minutes

Total Eff.: 15.07 %

Dead Time: 0.2 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 28.97%

Analysis: Relative Region-Of-Interest

Original: 2,997 + 10.3070 * Chn + -0.00130 * Chn **2.

Spectrum Calibration: 2,997 + 10.4390 * Chn + -0.00130 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX509618D.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062219.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.64	96	125	6.00	543.00	6,332.00	0.00	6332.00	140.07
2	174.07	155	182	8.00	476.00	5,534.00	0.60	5533.40	122.40
3	136.72	126	142	8.00	30.00	302.00	0.00	302.00	6.68
Tracer	229.06	211	238	8.00	80.00	860.00	3.60	856.40	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	60.81	63.094	n/a	2.46 %
2	U-234	4774.80	79.89	55.137	n/a	2.64 %
3	U-235	4400.00	80.67	3.009	n/a	11.28 %
Tracer	U-232	5320.00	78.75	8.533	n/a	6.68 %

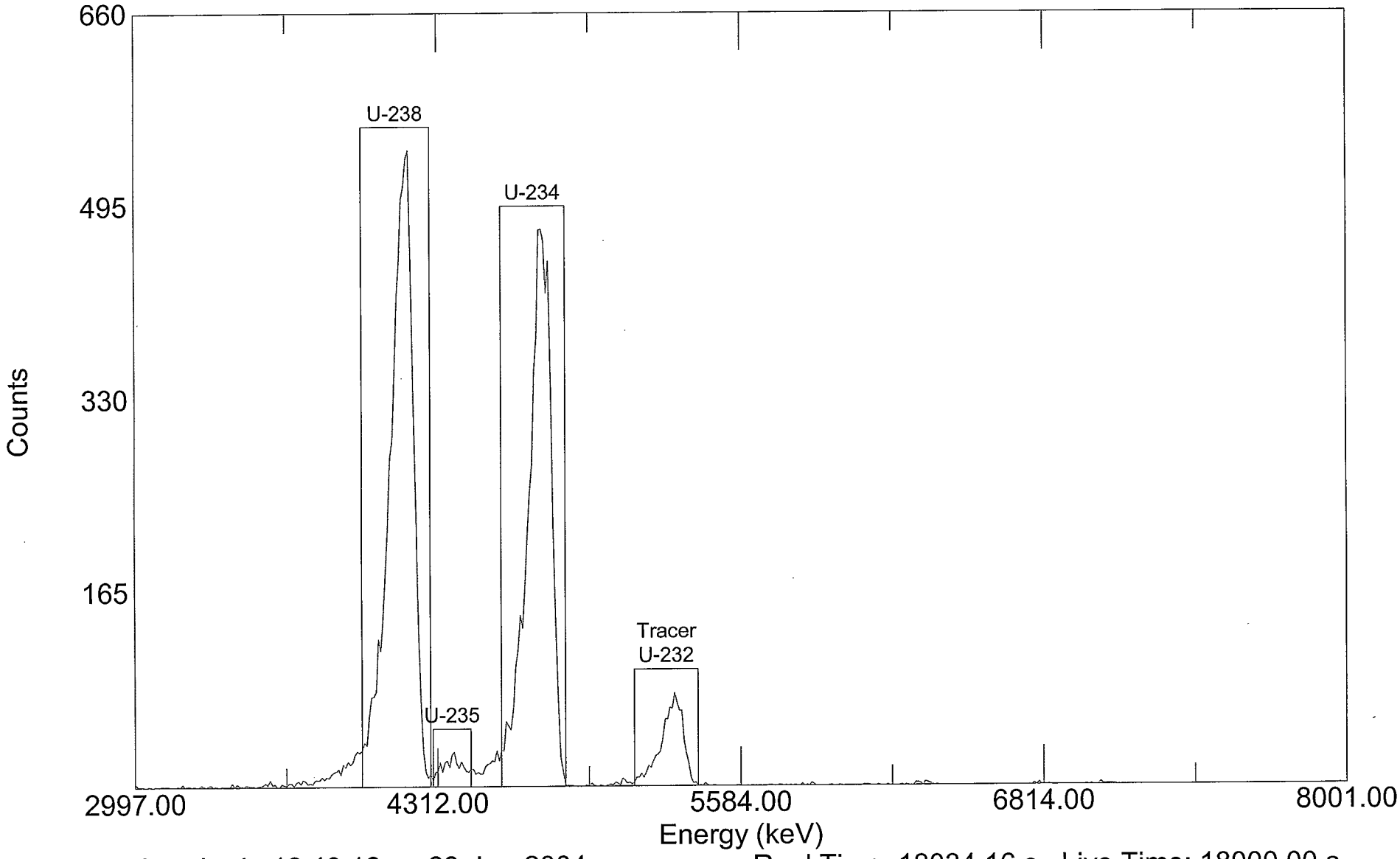
Totals

		% Total
Gross Count:	13,763.00	100.00
Net Area:	13,695.80	99.51
Background:	67.20	0.49
Composite Fit:	13,028.00	94.66
Residuals:	735.00	5.34

Analyzed By: Sm

Checked By: SD

UX509618D AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:40:18 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX509618D.SPC
Sample: 0405096-18D UAS040618-1

Real Time: 18034.16 s. Live Time: 18000.00 s.
Detector: #19 MCB 3 Input 3
Type: Uranium Default

000116

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
7/29/04 1:24:47 PM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-19 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 8 Input 1

Date/Time of Count: 6/11/04 7:12:29 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **83.29%**

Real Time: 300.01 Minutes

Total Eff.: 24.11 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 28.95%

Analysis: Relative Region-Of-Interest

Original: 3,052 + 9.7782 * Chn + -0.00026 * Chn **2.

Spectrum Calibration: 3,052 + 9.8473 * Chn + -0.00026 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509619.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060857.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.61	94	123	4.00	267.00	2,295.00	0.58	2294.42	31.72
2	175.74	155	182	6.00	197.00	1,934.00	0.87	1933.13	26.72
3	137.36	124	140	2.00	12.00	86.00	0.58	85.42	1.18
Tracer	231.70	211	238	6.00	150.00	1,374.00	2.04	1371.96	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	39.15	7.144	n/a	4.09 %
2	U-234	4774.80	58.54	6.019	n/a	4.46 %
3	U-235	4400.00	19.55	0.266	n/a	21.29 %
Tracer	U-232	5320.00	58.37	4.272	n/a	5.29 %

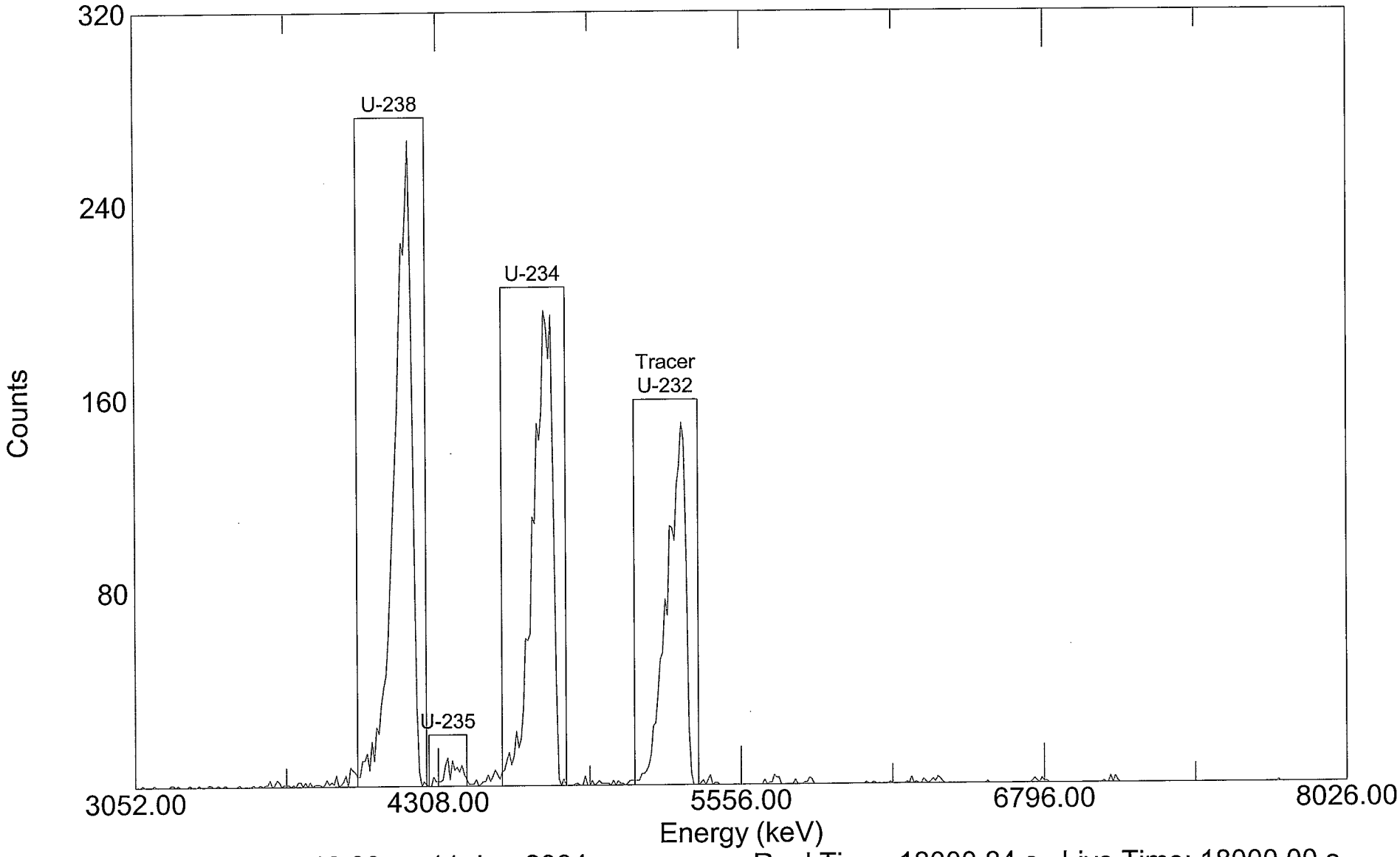
Totals

		% Total
Gross Count:	5,907.00	100.00
Net Area:	5,839.43	98.86
Background:	67.57	1.14
Composite Fit:	5,689.00	96.31
Residuals:	218.00	3.69

Analyzed By: Sm

Checked By: R

U509619 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:12:29 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509619.SPC
Sample: 0405096-19 UAS040603-1

Real Time: 18000.84 s. Live Time: 18000.00 s.
Detector: #57 MCB 8 Input 1
Type: Uranium Default

000118

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:52:29 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-20 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 8 Input 2

Date/Time of Count: 6/11/04 7:12:53 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **73.82%**

Real Time: 300.01 Minutes

Total Eff.: 23.81 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 32.26%

Analysis: Relative Region-Of-Interest

Original: 3,079 + 9.6415 * Chn + -0.00008 * Chn **2.

Spectrum Calibration: 3,079 + 9.7146 * Chn + -0.00008 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509620.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060858.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	115.22	94	123	8.00	158.00	1,732.00	2.91	1729.09	24.20
2	174.84	155	184	6.00	166.00	1,656.00	1.75	1654.25	23.16
3	136.16	124	141	4.00	11.00	74.00	2.04	71.96	1.01
Tracer	231.15	213	240	6.00	135.00	1,364.00	9.03	1354.97	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	77.57	5.451	n/a	4.72 %
2	U-234	4774.80	58.12	5.215	n/a	4.82 %
3	U-235	4400.00	38.77	0.227	n/a	23.46 %
Tracer	U-232	5320.00	58.06	4.272	n/a	5.31 %

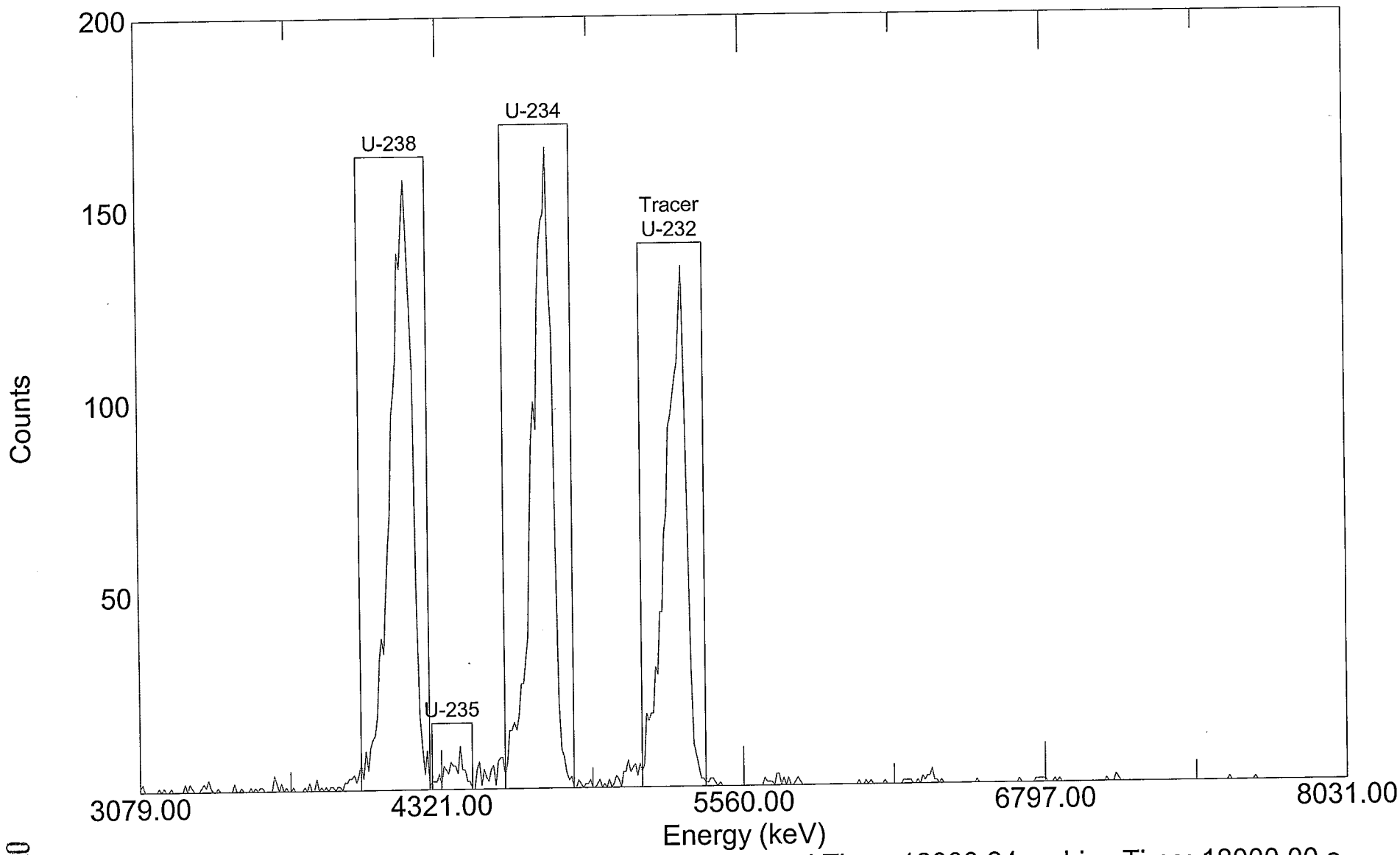
Totals

		% Total
Gross Count:	5,075.00	100.00
Net Area:	4,981.21	98.15
Background:	93.79	1.85
Composite Fit:	4,826.00	95.09
Residuals:	249.00	4.91

Analyzed By: Sm

Checked By: SD

U509620 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:12:53 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509620.SPC
Sample: 0405096-20 UAS040603-1

Real Time: 18000.84 s. Live Time: 18000.00 s.
Detector: #58 MCB 8 Input 2
Type: Uranium Default

000130

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:48:27 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-22 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 8 Input 3

Date/Time of Count: 6/11/04 7:13:14 AM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **79.37%**

Real Time: 300.01 Minutes

Total Eff.: 25.48 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 32.10%

Analysis: Relative Region-Of-Interest

Original: 3,044 + 9.9538 * Chn + -0.00088 * Chn **2.

Spectrum Calibration: 3,044 + 10.0276 * Chn + -0.00088 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509622.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060859.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.18	94	123	8.00	102.00	1,085.00	1.17	1083.83	14.18
2	175.31	155	182	8.00	116.00	1,058.00	0.87	1057.13	13.83
3	136.88	124	140	6.00	6.00	37.00	1.46	35.54	0.47
Tracer	231.70	211	238	6.00	161.00	1,455.00	5.24	1449.76	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	78.59	6.387	n/a	5.96 %
2	U-234	4774.80	77.75	6.230	n/a	6.03 %
3	U-235	4400.00	58.72	0.209	n/a	33.60 %
Tracer	U-232	5320.00	57.72	8.544	n/a	5.14 %

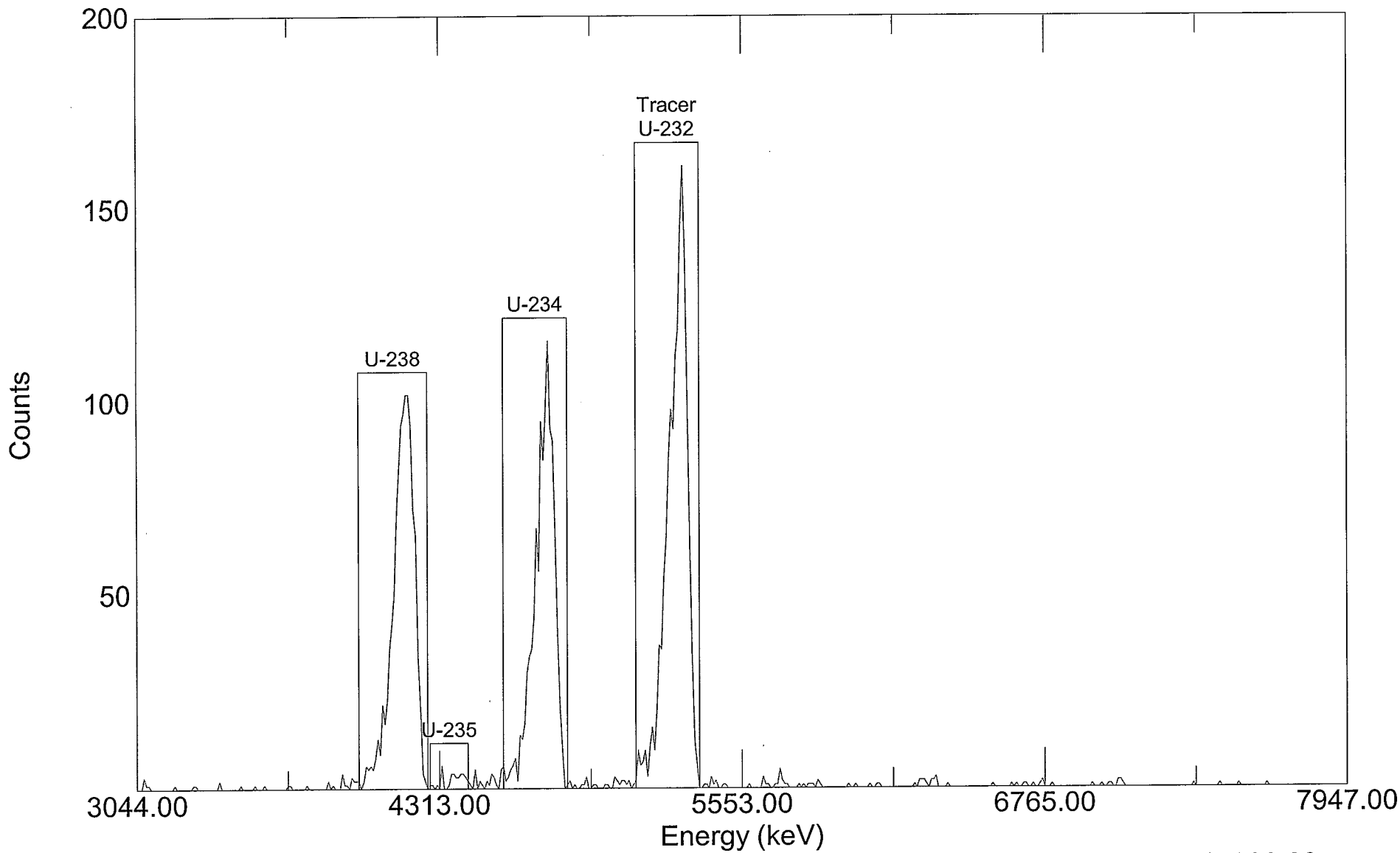
Totals

		% Total
Gross Count:	3,797.00	100.00
Net Area:	3,711.37	97.74
Background:	85.63	2.26
Composite Fit:	3,635.00	95.73
Residuals:	162.00	4.27

Analyzed By: Sm

Checked By: KD

U509622 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:13:14 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509622.SPC
Sample: 0405096-22 UAS040603-1

Real Time: 18000.84 s. Live Time: 18000.00 s.
Detector: #59 MCB 8 Input 3
Type: Uranium Default

000122

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:49:12 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-25 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 8 Input 4

Date/Time of Count: 6/11/04 7:13:38 AM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **78.76%**

Real Time: 300.01 Minutes

Total Eff.: 19.59 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 24.87%

Analysis: Relative Region-Of-Interest

Original: 3,023 + 10.0483 * Chn + -0.00093 * Chn **2.

Spectrum Calibration: 3,023 + 10.1234 * Chn + -0.00093 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509625.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060860.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	117.19	95	124	6.00	308.00	2,743.00	0.87	2742.13	46.67
2	175.84	155	182	6.00	306.00	2,676.00	0.87	2675.13	45.53
3	137.73	125	141	4.00	19.00	123.00	0.29	122.71	2.09
Tracer	231.78	212	239	6.00	125.00	1,118.00	3.50	1114.50	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.44	21.021	n/a	3.74 %
2	U-234	4774.80	58.79	20.507	n/a	3.79 %
3	U-235	4400.00	39.47	0.941	n/a	17.72 %
Tracer	U-232	5320.00	58.16	8.544	n/a	5.86 %

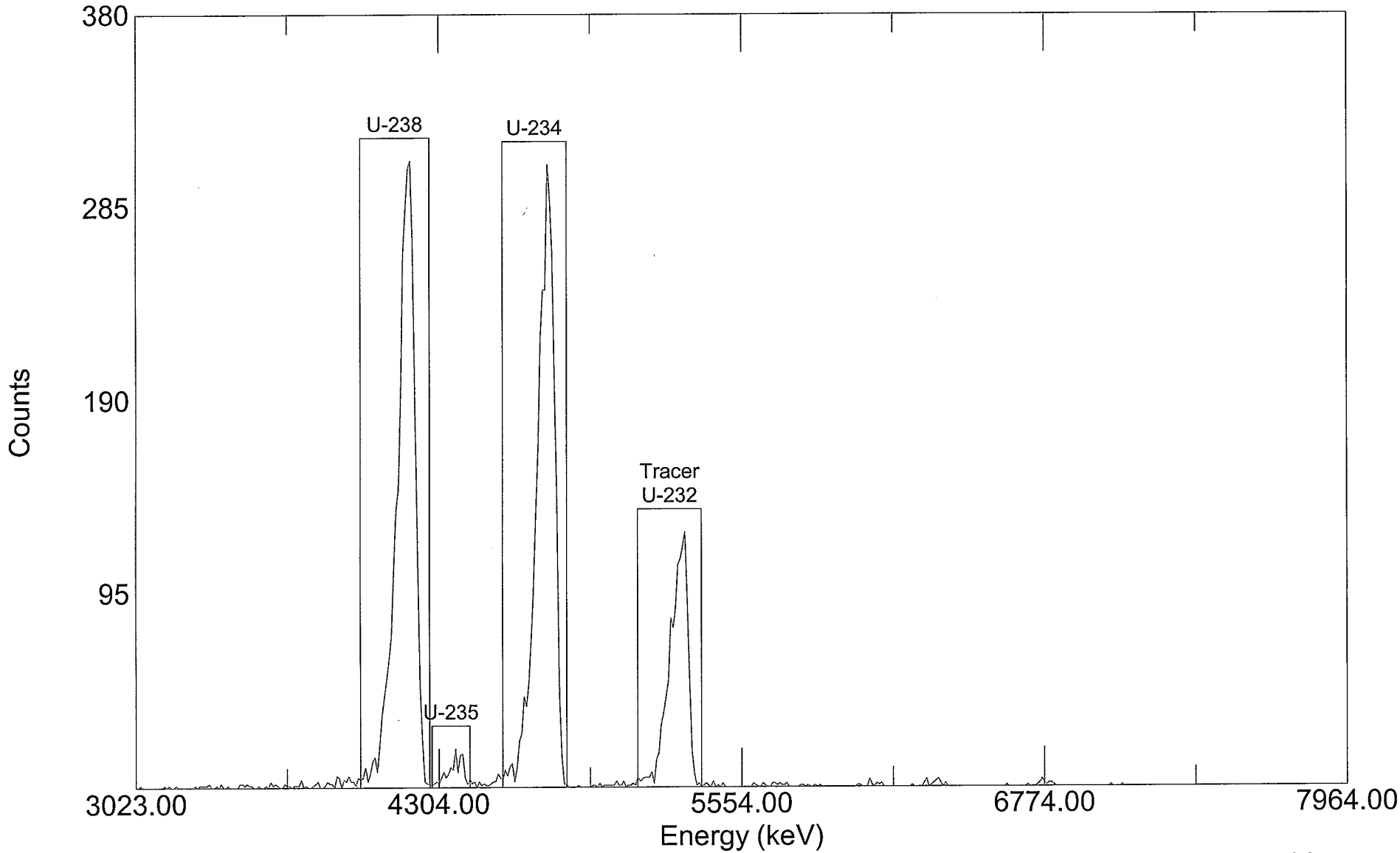
Totals

		% Total
Gross Count:	6,895.00	100.00
Net Area:	6,838.20	99.18
Background:	56.80	0.82
Composite Fit:	6,660.00	96.59
Residuals:	235.00	3.41

Analyzed By: Sm

Checked By: SD

U509625 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:13:38 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509625.SPC
Sample: 0405096-25 UAS040603-1

Real Time: 18000.84 s. Live Time: 18000.00 s.
Detector: #60 MCB 8 Input 4
Type: Uranium Default

000124

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:49:56 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-26 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 8 Input 5

Date/Time of Count: 6/11/04 7:14:05 AM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **82.06%**

Real Time: 300.01 Minutes

Total Eff.: 25.48 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 31.05%

Analysis: Relative Region-Of-Interest

Original: 3,077 + 9.7539 * Chn + -0.00026 * Chn **2.

Spectrum Calibration: 3,077 + 9.8283 * Chn + -0.00026 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509626.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060861.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	114.30	92	121	8.00	217.00	2,385.00	0.58	2384.42	31.19
2	173.53	153	180	6.00	248.00	2,325.00	1.75	2323.25	30.39
3	135.09	122	138	4.00	15.00	112.00	0.00	112.00	1.47
Tracer	229.59	209	236	6.00	149.00	1,456.00	6.12	1449.88	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	78.16	14.051	n/a	4.01 %
2	U-234	4774.80	58.44	13.690	n/a	4.07 %
3	U-235	4400.00	39.04	0.660	n/a	18.52 %
Tracer	U-232	5320.00	58.27	8.544	n/a	5.14 %

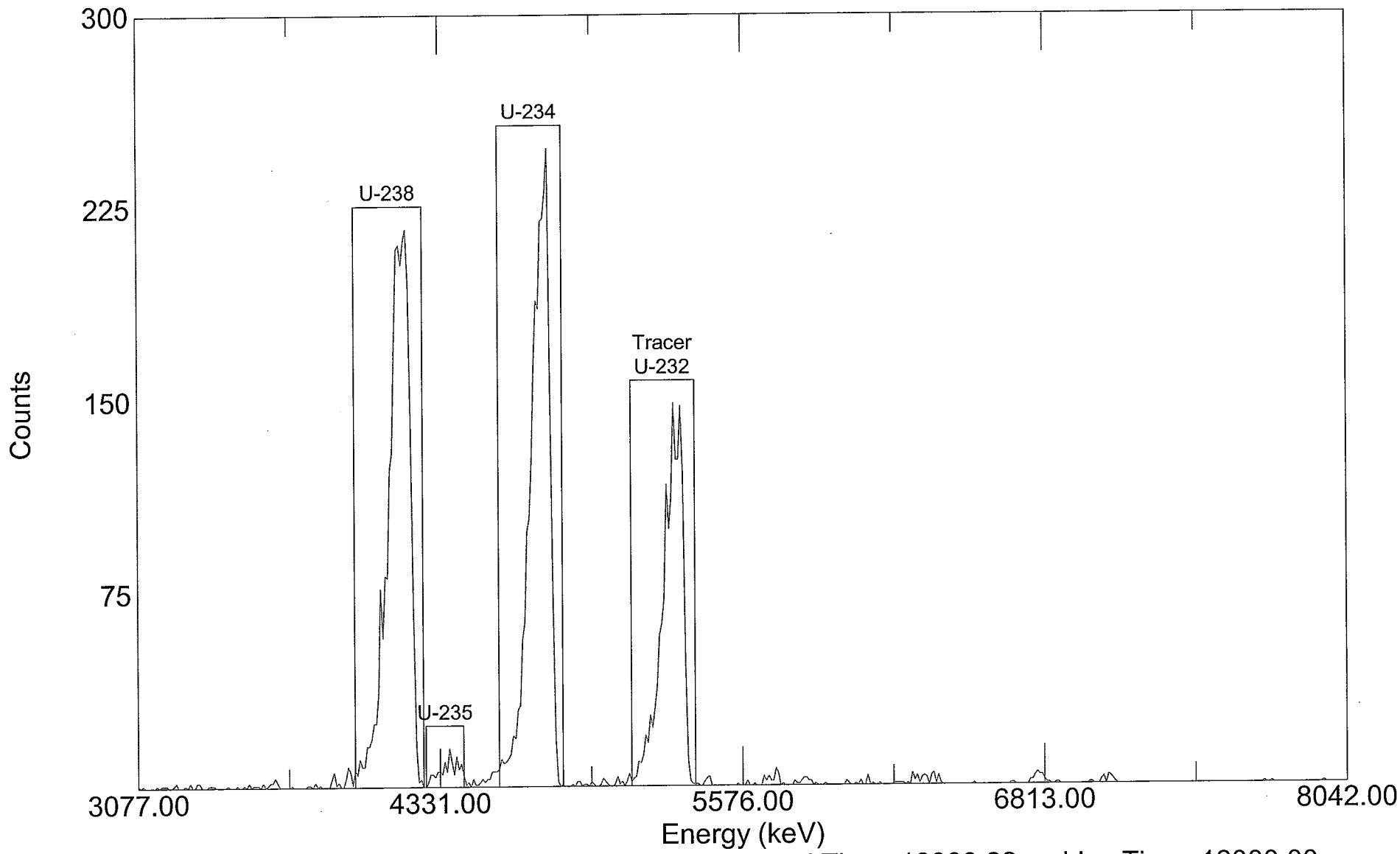
Totals

		% Total
Gross Count:	6,589.00	100.00
Net Area:	6,470.17	98.20
Background:	118.84	1.80
Composite Fit:	6,278.00	95.28
Residuals:	311.00	4.72

Analyzed By: Sm

Checked By: SD

U509626 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:14:05 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509626.SPC
Sample: 0405096-26 UAS040603-1

Real Time: 18000.82 s. Live Time: 18000.00 s.
Detector: #61 MCB 8 Input 5
Type: Uranium Default

000126

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:09:21 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-27 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 5

Date/Time of Count: 6/23/04 12:40:39 PM

Sample Volume: 0.100 Total, 0.100 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **53.36%**

Real Time: 300.57 Minutes

Total Eff.: 15.85 %

Dead Time: 0.2 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 29.70%

Analysis: Relative Region-Of-Interest

Original: 3,017 + 10.0951 * Chn + -0.00100 * Chn **2.

Spectrum Calibration: 3,017 + 10.0876 * Chn + -0.00100 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX509627.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062221.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	118.36	98	127	8.00	453.00	5,943.00	0.30	5942.70	125.01
2	177.36	158	187	10.00	477.00	5,995.00	0.00	5995.00	126.11
3	139.01	128	144	14.00	32.00	372.00	0.60	371.40	7.81
Tracer	233.70	215	242	8.00	74.00	912.00	11.40	900.60	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	78.81	563.090	n/a	2.54 %
2	U-234	4774.80	97.34	568.045	n/a	2.53 %
3	U-235	4400.00	137.35	35.191	n/a	10.18 %
Tracer	U-232	5320.00	76.97	85.335	n/a	6.49 %

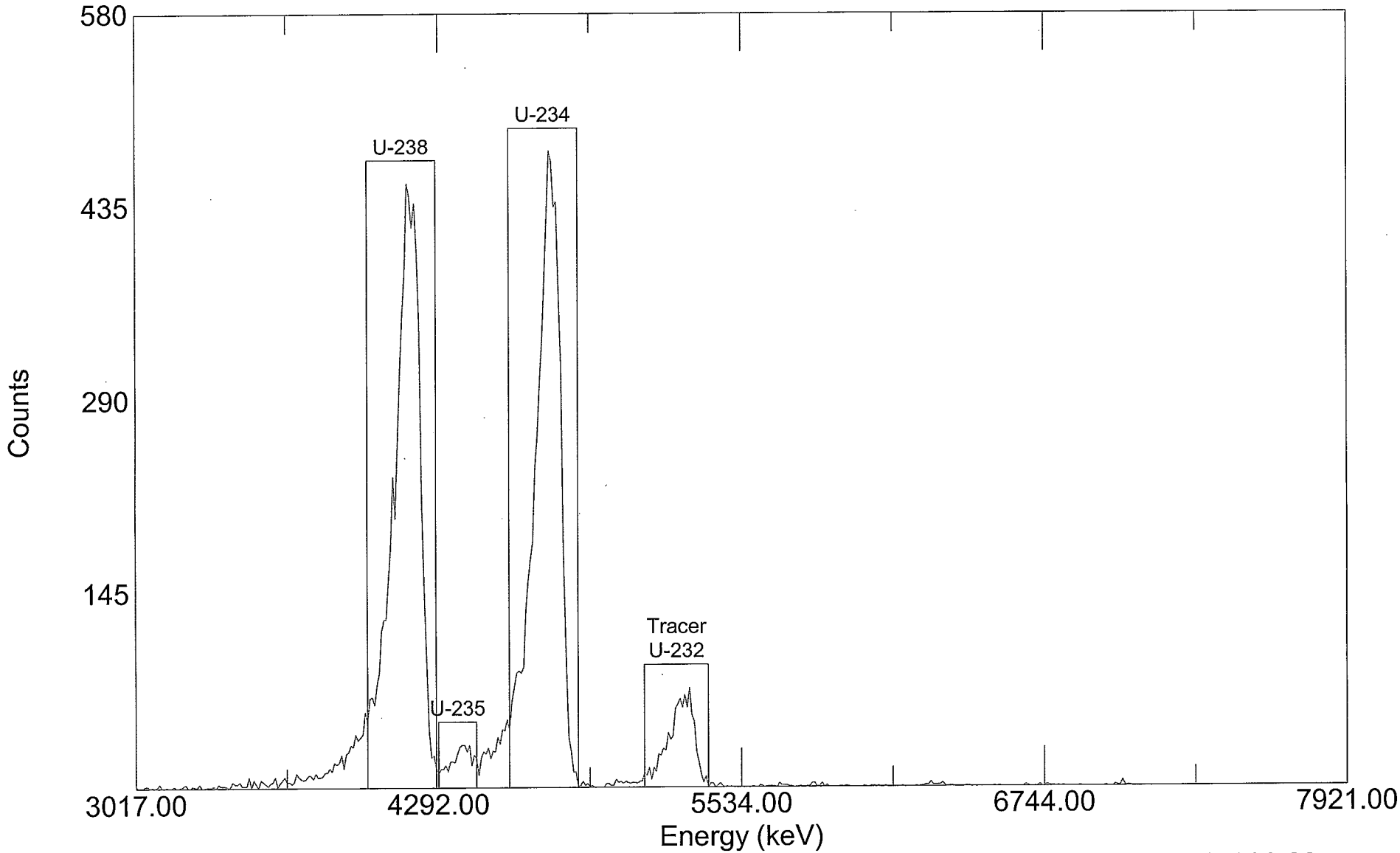
Totals

		% Total
Gross Count:	14,541.00	100.00
Net Area:	14,430.00	99.24
Background:	111.00	0.76
Composite Fit:	13,222.00	90.93
Residuals:	1,319.00	9.07

Analyzed By: Sm

Checked By: SD

UX509627 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:40:39 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX509627.SPC
Sample: 0405096-27 UAS040618-1

Real Time: 18034.12 s. Live Time: 18000.00 s.
Detector: #21 MCB 3 Input 5
Type: Uranium Default

0001128

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:10:16 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-28 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 6

Date/Time of Count: 6/23/04 12:40:53 PM

Sample Volume: 0.200 Total, 0.200 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **80.71%**

Real Time: 300.57 Minutes

Total Eff.: 22.94 %

Dead Time: 0.2 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 28.42%

Analysis: Relative Region-Of-Interest

Original: 3,046 + 9.8641 * Chn + -0.00028 * Chn **2.

Spectrum Calibration: 3,046 + 9.9784 * Chn + -0.00028 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX509628.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062222.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	115.76	93	122	8.00	117.00	1,119.00	0.60	1118.40	16.25
2	174.14	152	179	8.00	127.00	1,137.00	0.60	1136.40	16.51
3	136.25	123	138	8.00	6.00	44.00	0.90	43.10	0.63
Tracer	229.40	209	236	10.00	128.00	1,307.00	3.30	1303.70	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	79.31	36.603	n/a	5.86 %
2	U-234	4774.80	79.05	37.192	n/a	5.82 %
3	U-235	4400.00	79.22	1.411	n/a	30.19 %
Tracer	U-232	5320.00	98.51	42.667	n/a	5.42 %

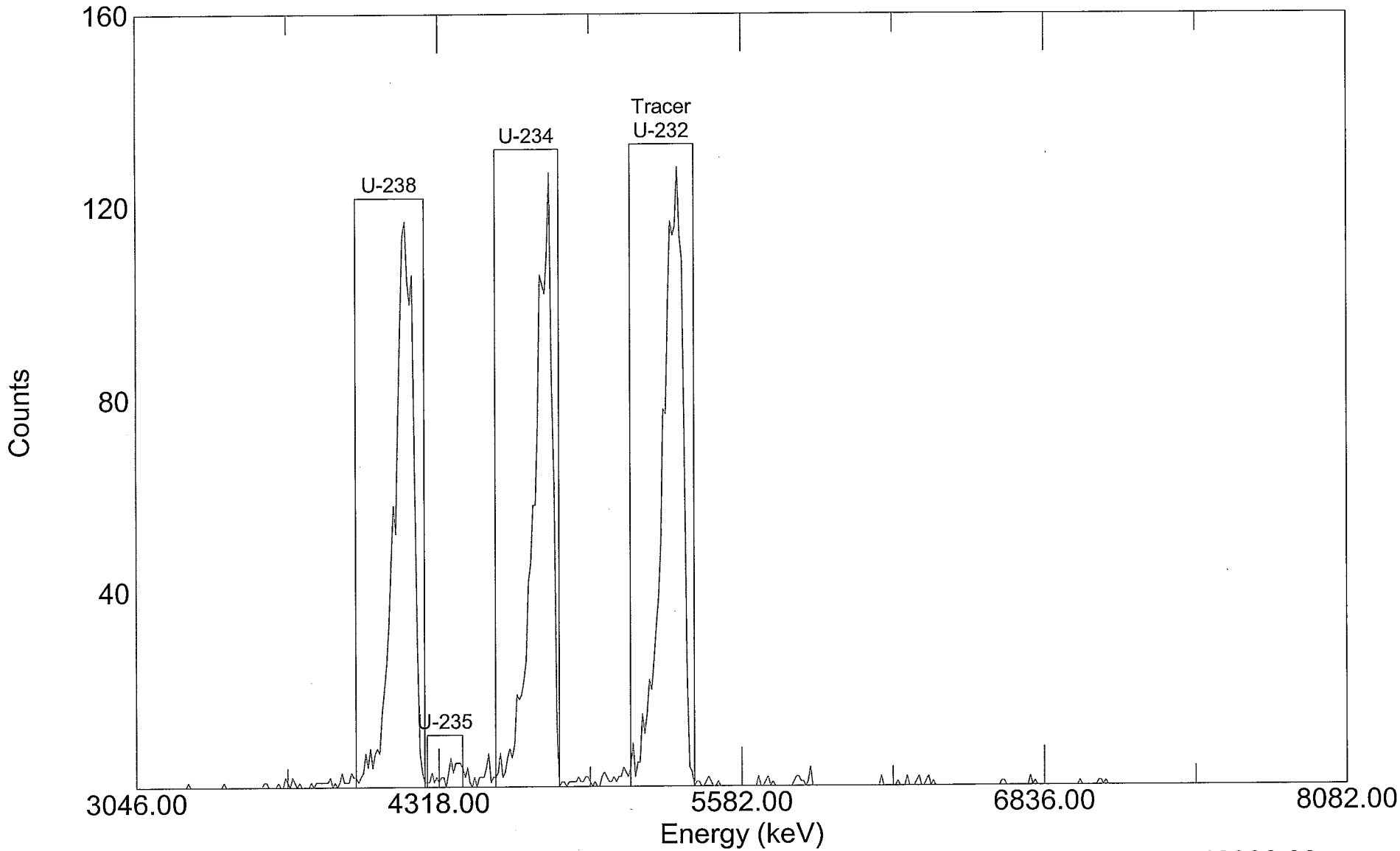
Totals

		% Total
Gross Count:	3,757.00	100.00
Net Area:	3,682.00	98.00
Background:	75.00	2.00
Composite Fit:	3,607.00	96.01
Residuals:	150.00	3.99

Analyzed By: Sm

Checked By: SR

UX509628 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:40:53 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX509628.SPC
Sample: 0405096-28 UAS040618-1

Real Time: 18034.12 s. Live Time: 18000.00 s.
Detector: #22 MCB 3 Input 6
Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:11:22 PM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-29 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 7

Date/Time of Count: 6/23/04 12:41:05 PM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **80.47%**

Real Time: 300.57 Minutes

Total Eff.: 22.85 %

Dead Time: 0.2 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 28.39%

Analysis: Relative Region-Of-Interest

Original: 3,035 + 9.8093 * Chn + -0.00017 * Chn **2.

Spectrum Calibration: 3,035 + 9.8829 * Chn + -0.00017 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX509629.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062223.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	117.83	95	124	6.00	103.00	741.00	0.90	740.10	10.80
2	176.59	155	182	6.00	82.00	666.00	0.00	666.00	9.72
3	138.46	125	140	2.00	10.00	43.00	0.60	42.40	0.62
Tracer	232.13	212	239	6.00	149.00	1,302.00	3.60	1298.40	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.06	4.864	n/a	7.21 %
2	U-234	4774.80	58.95	4.377	n/a	7.59 %
3	U-235	4400.00	19.67	0.279	n/a	30.33 %
Tracer	U-232	5320.00	58.83	8.533	n/a	5.43 %

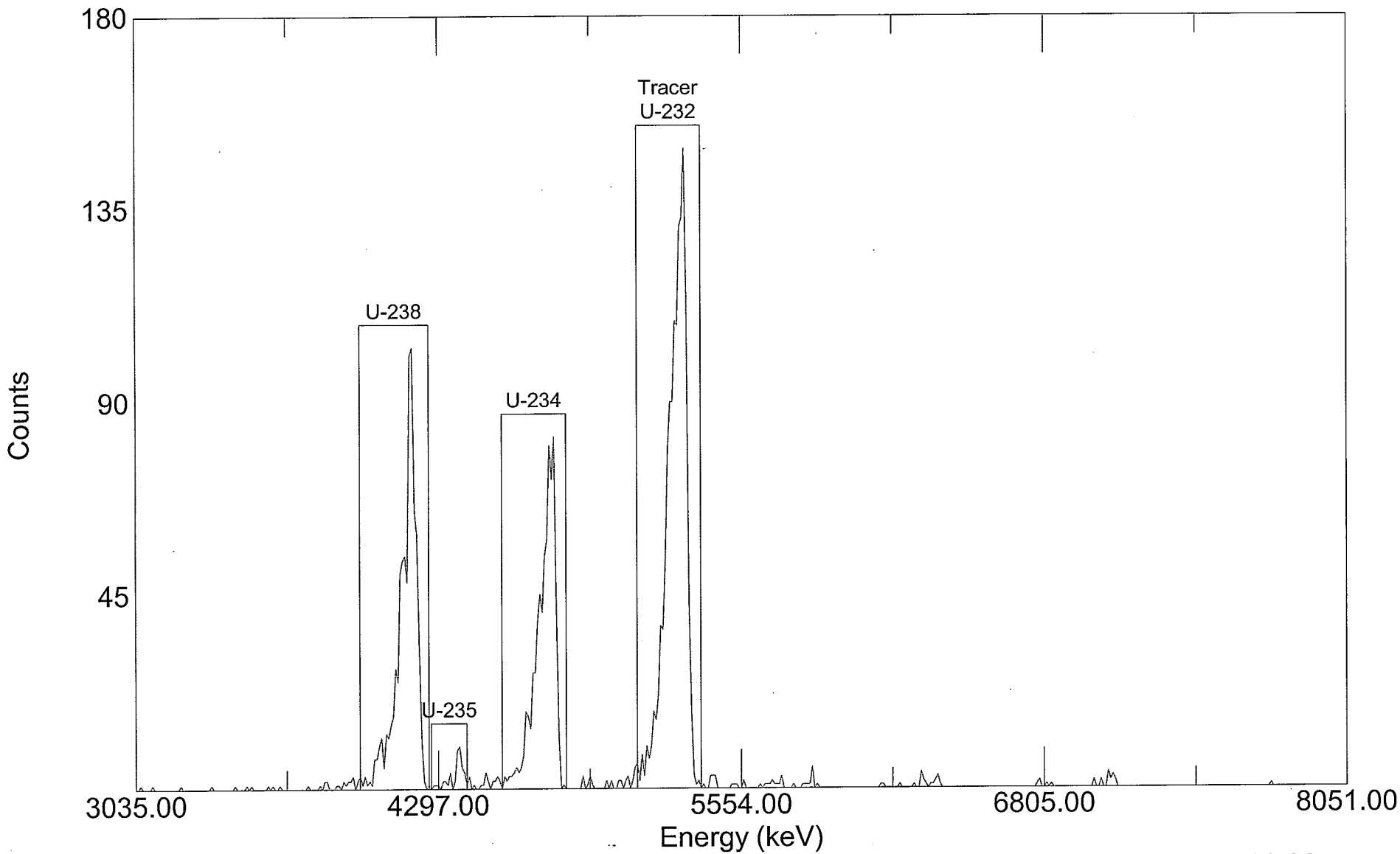
Totals

		% Total
Gross Count:	2,909.00	100.00
Net Area:	2,832.20	97.36
Background:	76.80	2.64
Composite Fit:	2,752.00	94.60
Residuals:	157.00	5.40

Analyzed By: Sn

Checked By: SD

UX509629 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:41:05 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX509629.SPC
Sample: 0405096-29 UAS040618-1

Real Time: 18034.12 s. Live Time: 18000.00 s.
Detector: #23 MCB 3 Input 7
Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:12:17 PM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-30 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 3 Input 8

Date/Time of Count: 6/23/04 12:41:22 PM

Sample Volume: 0.100 Total, 0.100 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **70.25%**

Real Time: 300.57 Minutes

Total Eff.: 22.36 %

Dead Time: 0.2 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 31.83%

Analysis: Relative Region-Of-Interest

Original: 3,035 + 9.9229 * Chn + -0.00058 * Chn **2.

Spectrum Calibration: 3,035 + 10.1046 * Chn + -0.00058 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX509630.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062224.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	115.74	93	122	6.00	363.00	4,239.00	0.30	4238.70	63.18
2	173.90	153	180	6.00	380.00	4,508.00	1.50	4506.50	67.17
3	136.13	123	138	12.00	27.00	256.00	0.90	255.10	3.80
Tracer	229.13	208	235	8.00	107.00	1,276.00	5.10	1270.90	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.82	284.608	n/a	3.01 %
2	U-234	4774.80	59.41	302.589	n/a	2.92 %
3	U-235	4400.00	119.35	17.129	n/a	12.30 %
Tracer	U-232	5320.00	78.70	85.335	n/a	5.49 %

Totals

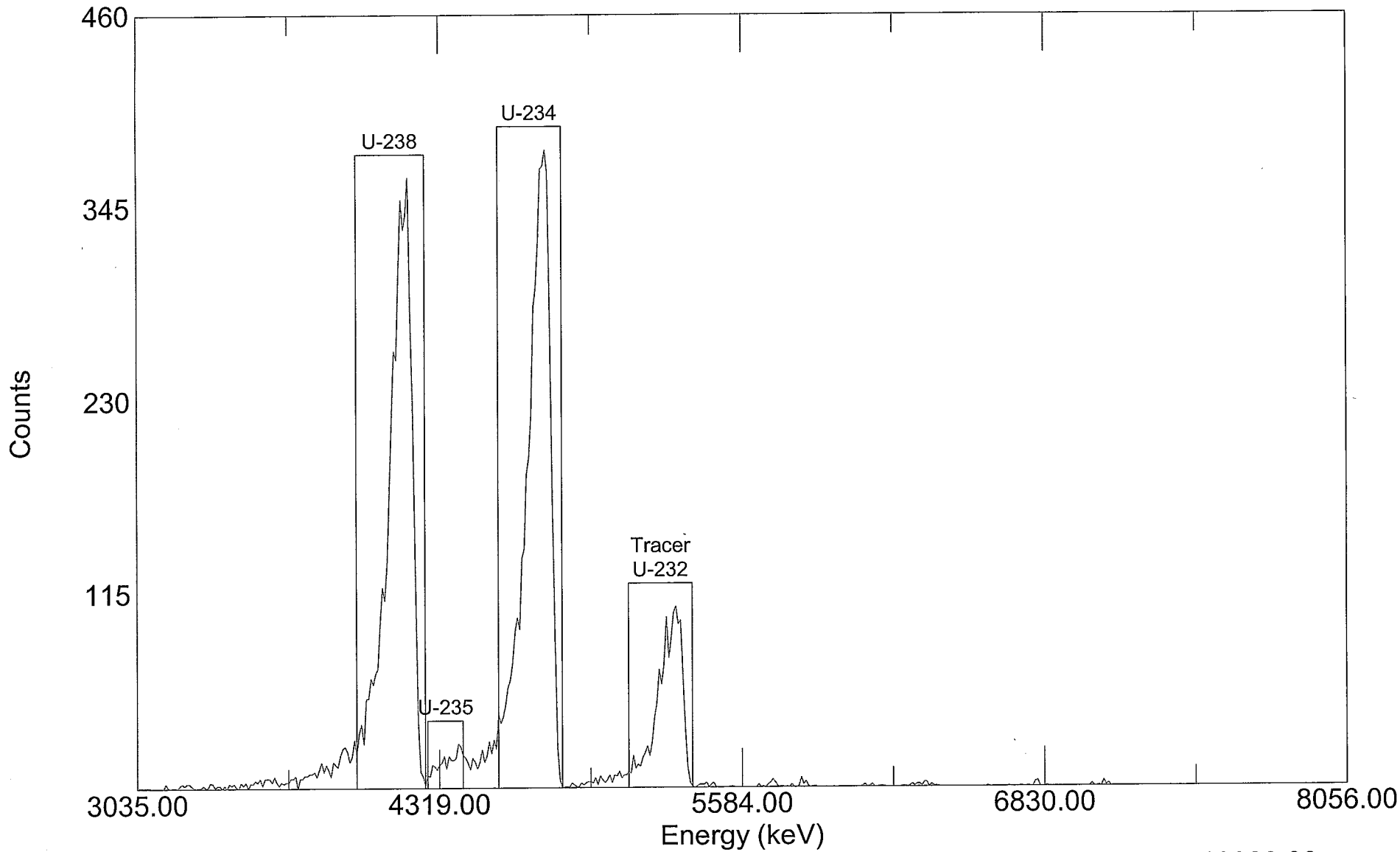
		% Total
Gross Count:	11,257.00	100.00
Net Area:	11,129.80	98.87
Background:	127.20	1.13
Composite Fit:	10,279.00	91.31
Residuals:	978.00	8.69

Analyzed By: dm

Checked By: SD

000133

UX509630 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:41:22 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX509630.SPC
Sample: 0405096-30 UAS040618-1

Real Time: 18034.12 s. Live Time: 18000.00 s.
Detector: #24 MCB 3 Input 8
Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:53:28 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-31 UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 8 Input 6

Date/Time of Count: 6/11/04 7:14:26 AM

Sample Volume: 1.000 Total, 1.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **78.83%**

Real Time: 300.01 Minutes

Total Eff.: 24.11 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 30.58%

Analysis: Relative Region-Of-Interest

Original: 3,050 + 9.9060 * Chn + -0.00063 * Chn **2.

Spectrum Calibration: 3,050 + 9.9850 * Chn + -0.00063 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U509631.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060862.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	115.72	94	123	6.00	88.00	688.00	0.00	688.00	9.51
2	174.66	154	181	6.00	77.00	670.00	0.58	669.42	9.26
3	136.38	124	139	4.00	5.00	22.00	0.00	22.00	0.30
Tracer	230.69	211	236	6.00	159.00	1,374.00	2.33	1371.67	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.04	4.285	n/a	7.47 %
2	U-234	4774.80	58.60	4.170	n/a	7.58 %
3	U-235	4400.00	39.26	0.137	n/a	41.79 %
Tracer	U-232	5320.00	58.17	8.544	n/a	5.29 %

Totals

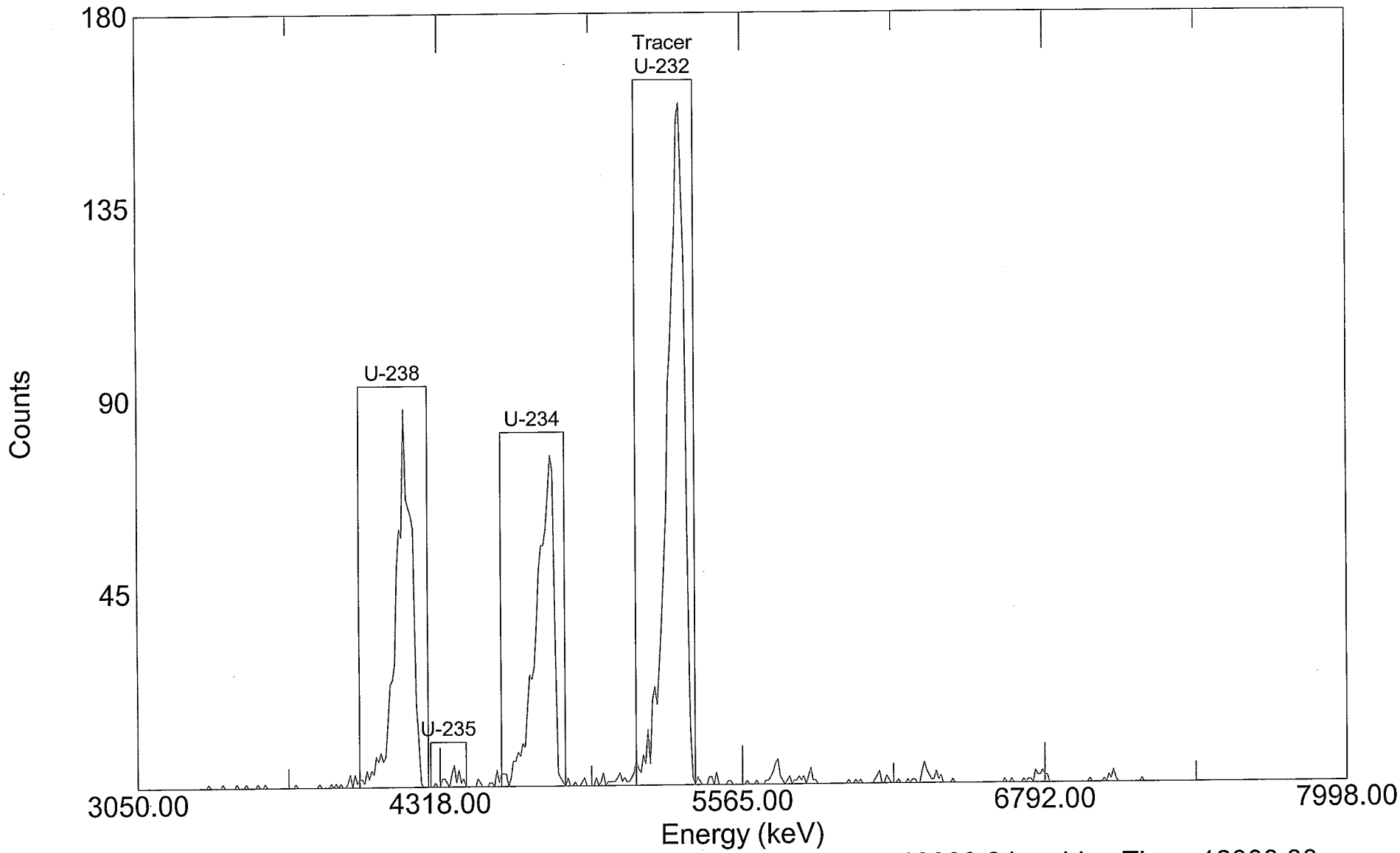
		% Total
Gross Count:	2,934.00	100.00
Net Area:	2,862.64	97.57
Background:	71.36	2.43
Composite Fit:	2,754.00	93.87
Residuals:	180.00	6.13

Analyzed By: Sm

Checked By: SD

000135

U509631 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 07:14:26 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U509631.SPC
Sample: 0405096-31 UAS040603-1

Real Time: 18000.84 s. Live Time: 18000.00 s.
Detector: #62 MCB 8 Input 6
Type: Uranium Default

0001336

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:13:48 PM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: 0405096-32 UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 2

Date/Time of Count: 6/23/04 12:41:40 PM

Sample Volume: 0.100 Total, 0.100 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **77.39%**

Real Time: 302.02 Minutes

Total Eff.: 24.49 %

Dead Time: 0.7 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 31.64%

Analysis: Relative Region-Of-Interest

Original: 2,972 + 10.2678 * Chn + -0.00090 * Chn **2.

Spectrum Calibration: 2,972 + 10.3597 * Chn + -0.00090 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX509632.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062242.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	119.44	97	126	8.00	301.00	2,945.00	0.30	2944.70	40.08
2	176.69	157	184	6.00	274.00	2,757.00	0.60	2756.40	37.52
3	139.49	127	142	8.00	17.00	139.00	0.00	139.00	1.89
Tracer	231.25	210	237	8.00	140.00	1,395.00	3.30	1391.70	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	81.16	180.560	n/a	3.61 %
2	U-234	4774.80	60.25	169.014	n/a	3.73 %
3	U-235	4400.00	80.87	8.523	n/a	16.62 %
Tracer	U-232	5320.00	79.55	85.335	n/a	5.25 %

Totals

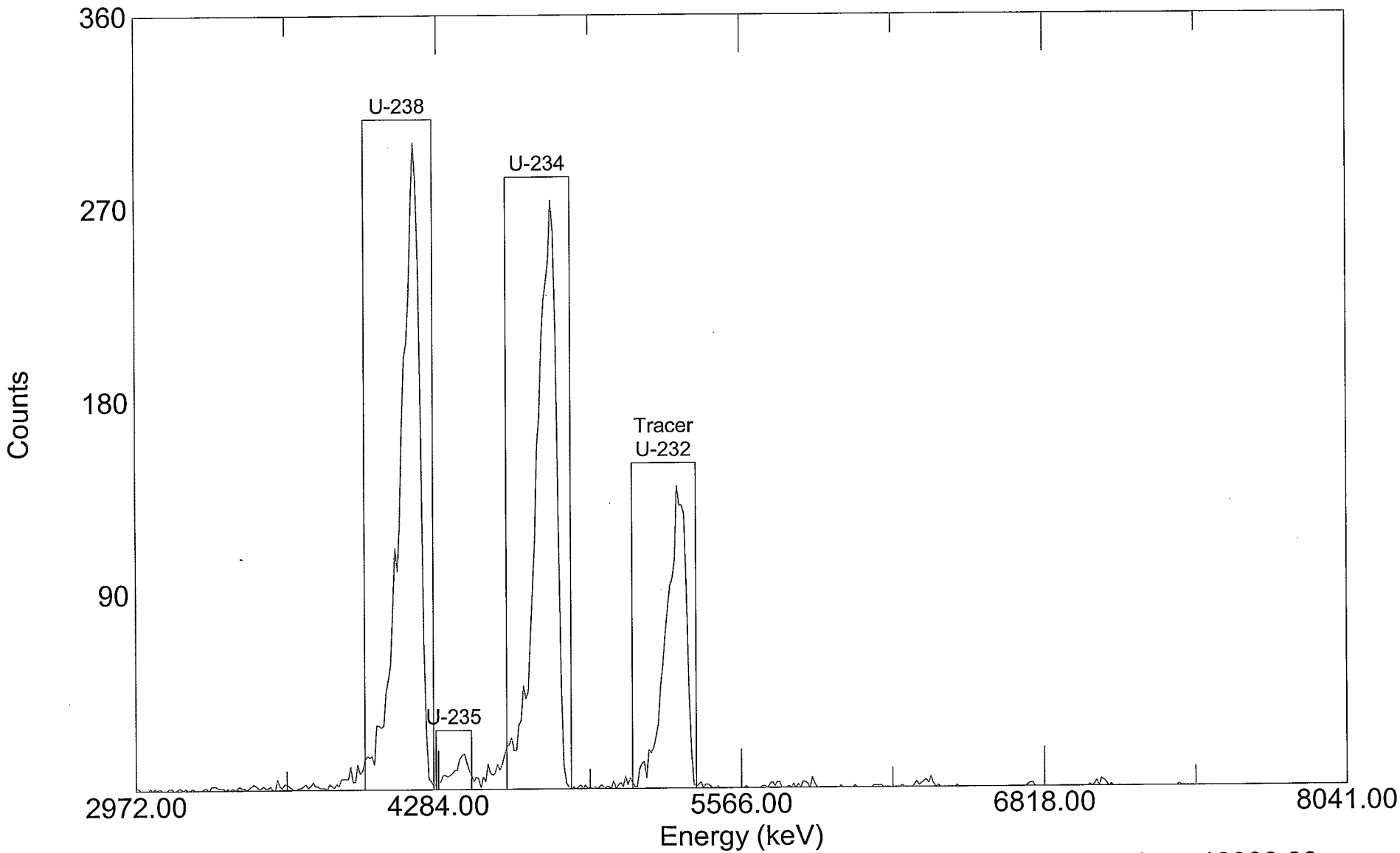
		% Total
Gross Count:	7,644.00	100.00
Net Area:	7,570.50	99.04
Background:	73.50	0.96
Composite Fit:	7,236.00	94.66
Residuals:	408.00	5.34

Analyzed By: Sm

Checked By: SD

000137

UX509632 AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:41:40 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX509632.SPC
Sample: 0405096-32 UAS040618-1

Real Time: 18121.36 s. Live Time: 18000.00 s.
Detector: #42 MCB 6 Input 2
Type: Uranium Default

000138

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:51:07 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: AS040603-1MB UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 2 Input 2

Date/Time of Count: 6/11/04 12:52:51 PM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **78.89%**

Real Time: 300.02 Minutes

Total Eff.: 22.84 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 28.95%

Analysis: Relative Region-Of-Interest

Original: 3,010 + 10.1605 * Chn + -0.00091 * Chn **2.

Spectrum Calibration: 3,010 + 10.2454 * Chn + -0.00091 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U6031B.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060810.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	117.03	95	124	2.00	1.00	3.00	0.00	3.00	0.04
2	174.92	154	181	2.00	2.00	8.00	1.46	6.54	0.10
3	137.30	125	140	2.00	1.00	3.00	0.29	2.71	0.04
Tracer	230.12	210	237	8.00	145.00	1,303.00	3.50	1299.50	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	20.07	0.010	n/a	113.16 %
2	U-234	4774.80	19.85	0.022	n/a	85.37 %
3	U-235	4400.00	19.99	0.009	n/a	125.84 %
Tracer	U-232	5320.00	78.62	4.272	n/a	5.43 %

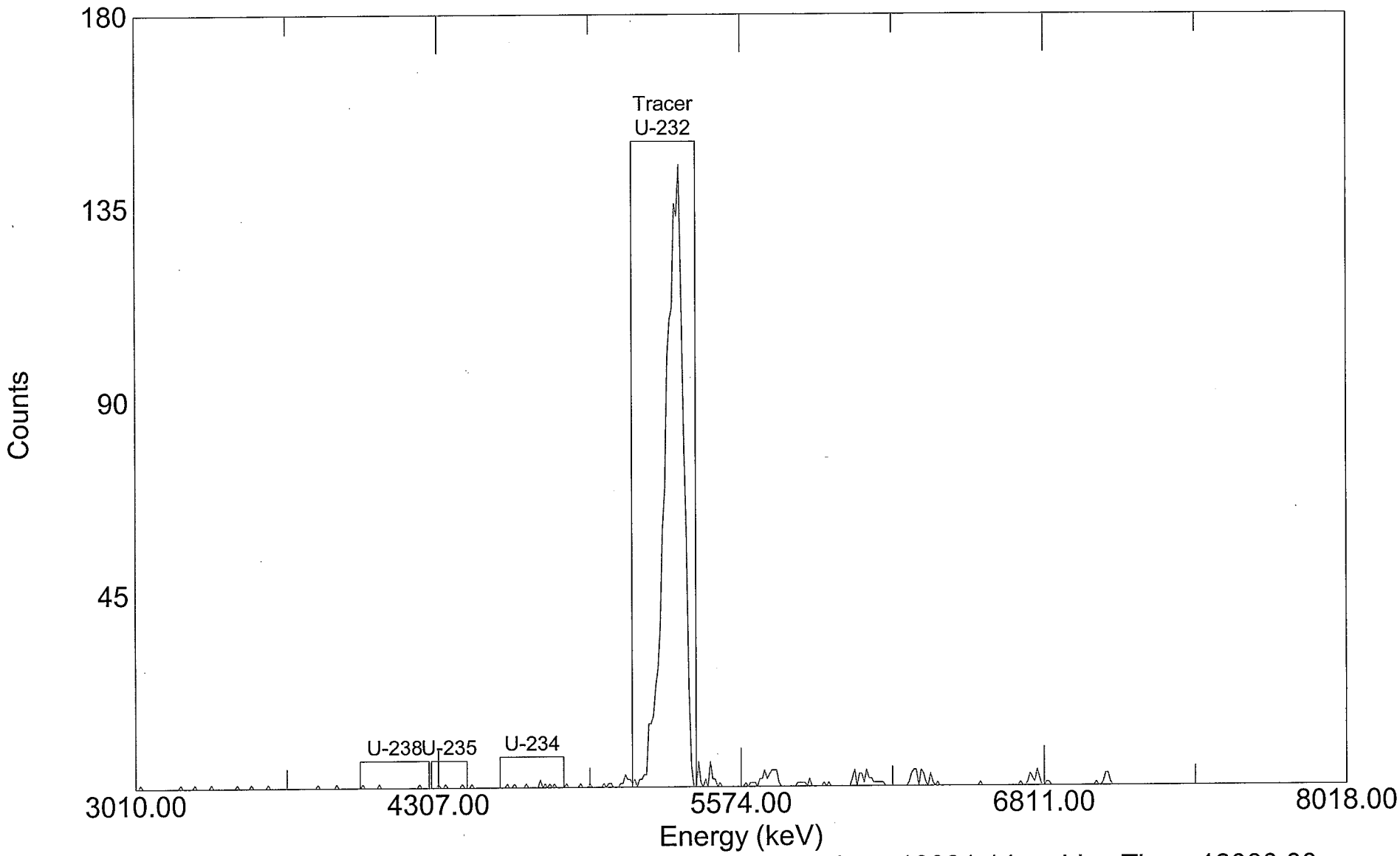
Totals

		% Total
Gross Count:	1,477.00	100.00
Net Area:	1,427.49	96.65
Background:	49.51	3.35
Composite Fit:	1,317.00	89.17
Residuals:	160.00	10.83

Analyzed By: Sm

Checked By: 60

U6031B AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:52:51 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U6031B.SPC
Sample: AS040603-1MB UAS040603-1

Real Time: 18001.14 s. Live Time: 18000.00 s.
Detector: #10 MCB 2 Input 2
Type: Uranium Default

000140

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/16/04 1:51:51 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: AS040603-1LCS UAS040603-1

Analysis Type: Uranium Default

Detector: MCB 2 Input 3

Date/Time of Count: 6/11/04 12:53:14 PM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **82.60%**

Real Time: 300.02 Minutes

Total Eff.: 23.59 %

Dead Time: 0.0 %

Tracer Amount: 18.967 DPM.

Acquisition: 512 Channels

Efficiency: 28.56%

Analysis: Relative Region-Of-Interest

Original: 2,997 + 10.0999 * Chn + -0.00076 * Chn **2.

Spectrum Calibration: 2,997 + 10.1568 * Chn + -0.00076 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U6031L.SPC**

Background File: **C:\User\Alpha\ALPHA\B4060811.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	119.26	97	126	6.00	186.00	1,482.00	0.00	1482.00	20.94
2	177.44	156	183	6.00	168.00	1,419.00	0.29	1418.71	20.05
3	139.64	127	142	8.00	7.00	62.00	0.00	62.00	0.88
Tracer	232.82	212	239	6.00	182.00	1,344.00	1.75	1342.25	18.97

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.85	4.717	n/a	5.09 %
2	U-234	4774.80	59.32	4.515	n/a	5.20 %
3	U-235	4400.00	79.55	0.197	n/a	24.89 %
Tracer	U-232	5320.00	58.81	4.272	n/a	5.35 %

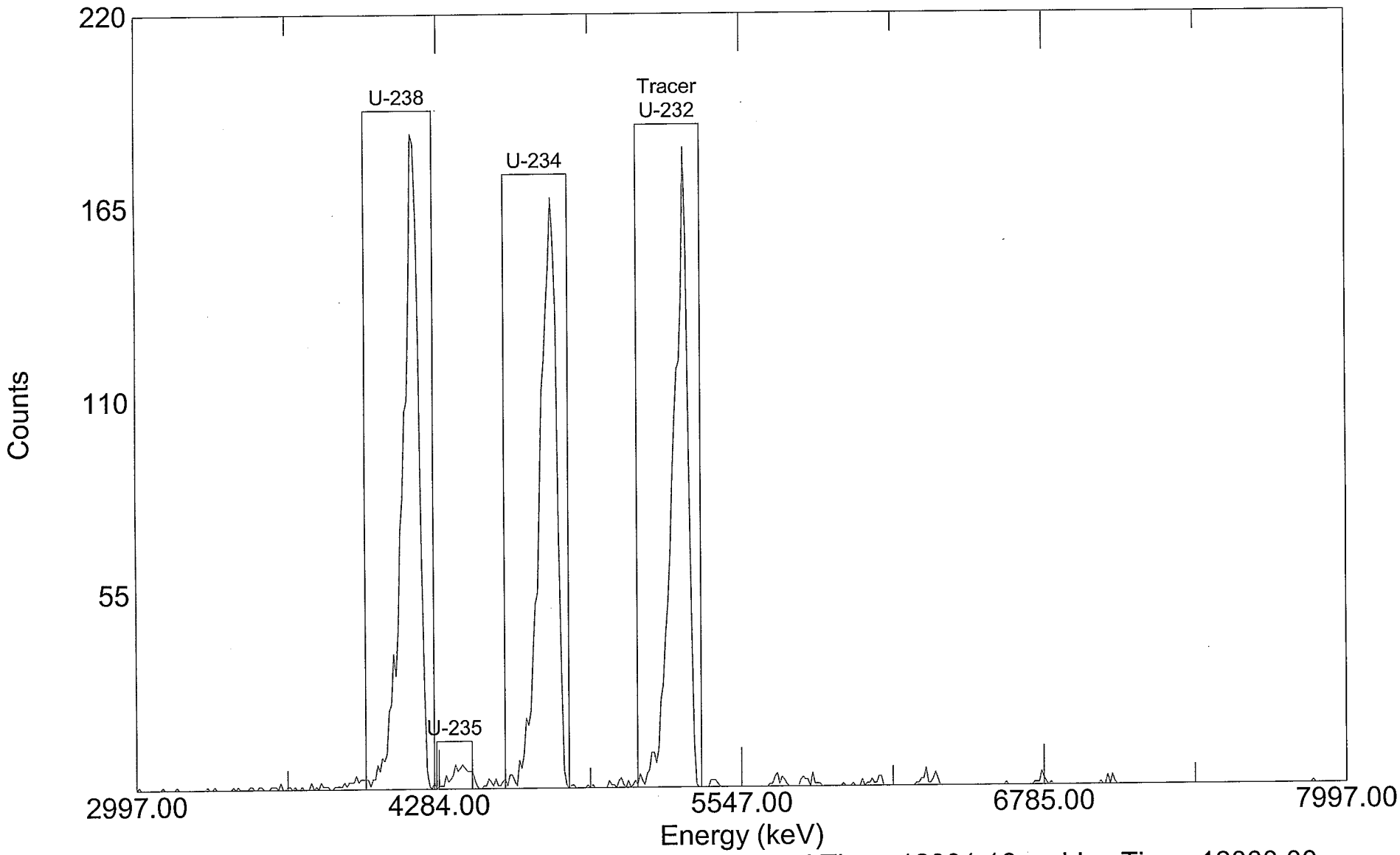
Totals

		% Total
Gross Count:	4,495.00	100.00
Net Area:	4,447.82	98.95
Background:	47.18	1.05
Composite Fit:	4,307.00	95.82
Residuals:	188.00	4.18

Analyzed By: Sm

Checked By: [illegible]

U6031L AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:53:14 on 11-Jun-2004
File: C:\User\Alpha\ALPHA\U6031L.SPC
Sample: AS040603-1LCS UAS040603-1

Real Time: 18001.16 s. Live Time: 18000.00 s.
Detector: #11 MCB 2 Input 3
Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:14:28 PM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: AS040618-1MB UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 3

Date/Time of Count: 6/23/04 12:41:52 PM

Sample Volume: 0.300 Total, 0.300 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **72.15%**

Real Time: 302.02 Minutes

Total Eff.: 22.91 %

Dead Time: 0.7 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 31.75%

Analysis: Relative Region-Of-Interest

Original: 3,036 + 9.8031 * Chn + 0.00012 * Chn **2.

Spectrum Calibration: 3,036 + 9.9005 * Chn + 0.00012 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX6181B.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062243.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	117.11	95	124	4.00	1.00	8.00	0.90	7.10	0.10
2	175.26	155	182	2.00	1.00	9.00	1.50	7.50	0.11
3	137.55	125	141	2.00	1.00	2.00	0.30	1.70	0.02
Tracer	230.07	209	236	8.00	132.00	1,307.00	5.10	1301.90	18.94

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	39.71	0.155	n/a	78.47 %
2	U-234	4774.80	19.88	0.164	n/a	78.99 %
3	U-235	4400.00	19.87	0.037	n/a	164.15 %
Tracer	U-232	5320.00	79.64	28.445	n/a	5.42 %

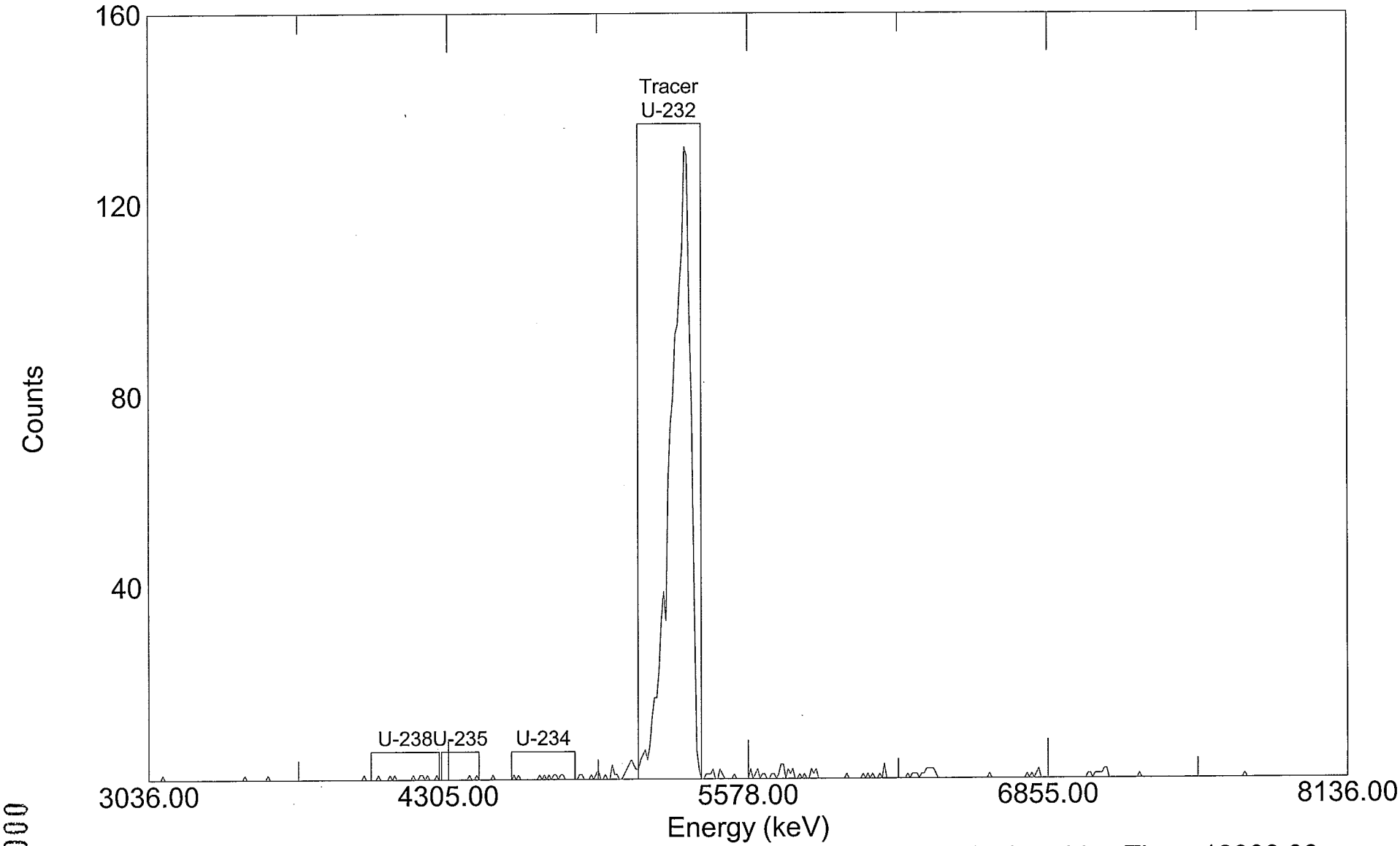
Totals

		% Total
Gross Count:	1,436.00	100.00
Net Area:	1,338.20	93.19
Background:	97.80	6.81
Composite Fit:	1,326.00	92.34
Residuals:	110.00	7.66

Analyzed By: Sm

Checked By: SD

UX6181B AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:41:52 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX6181B.SPC
Sample: AS040618-1MB UAS040618-1

Real Time: 18121.38 s. Live Time: 18000.00 s.
Detector: #43 MCB 6 Input 3
Type: Uranium Default

000147

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
6/24/04 12:15:23 PM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: AS040618-1LCS UAS040618-1

Analysis Type: Uranium Default

Detector: MCB 6 Input 4

Date/Time of Count: 6/23/04 12:42:03 PM

Sample Volume: 0.300 Total, 0.300 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **74.92%**

Real Time: 302.02 Minutes

Total Eff.: 23.49 %

Dead Time: 0.7 %

Tracer Amount: 18.944 DPM.

Acquisition: 512 Channels

Efficiency: 31.36%

Analysis: Relative Region-Of-Interest

Original: 3,001 + 10.1378 * Chn + -0.00069 * Chn **2.

Spectrum Calibration: 3,001 + 10.2009 * Chn + -0.00069 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\UX6181L.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4062244.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
Tracer	230.90	209	236	6.00	135.00	1,346.00	10.80	1335.20	18.94
1	118.16	95	124	6.00	147.00	1,436.00	2.40	1433.60	20.34
2	175.95	154	181	6.00	143.00	1,408.00	1.50	1406.50	19.96
3	138.41	125	140	2.00	12.00	80.00	1.20	78.80	1.12

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
Tracer	U-232	5320.00	59.30	28.445	n/a	5.34 %
1	U-238	4197.00	60.23	30.541	n/a	5.18 %
2	U-234	4774.80	59.76	29.964	n/a	5.23 %
3	U-235	4400.00	20.02	1.679	n/a	22.26 %

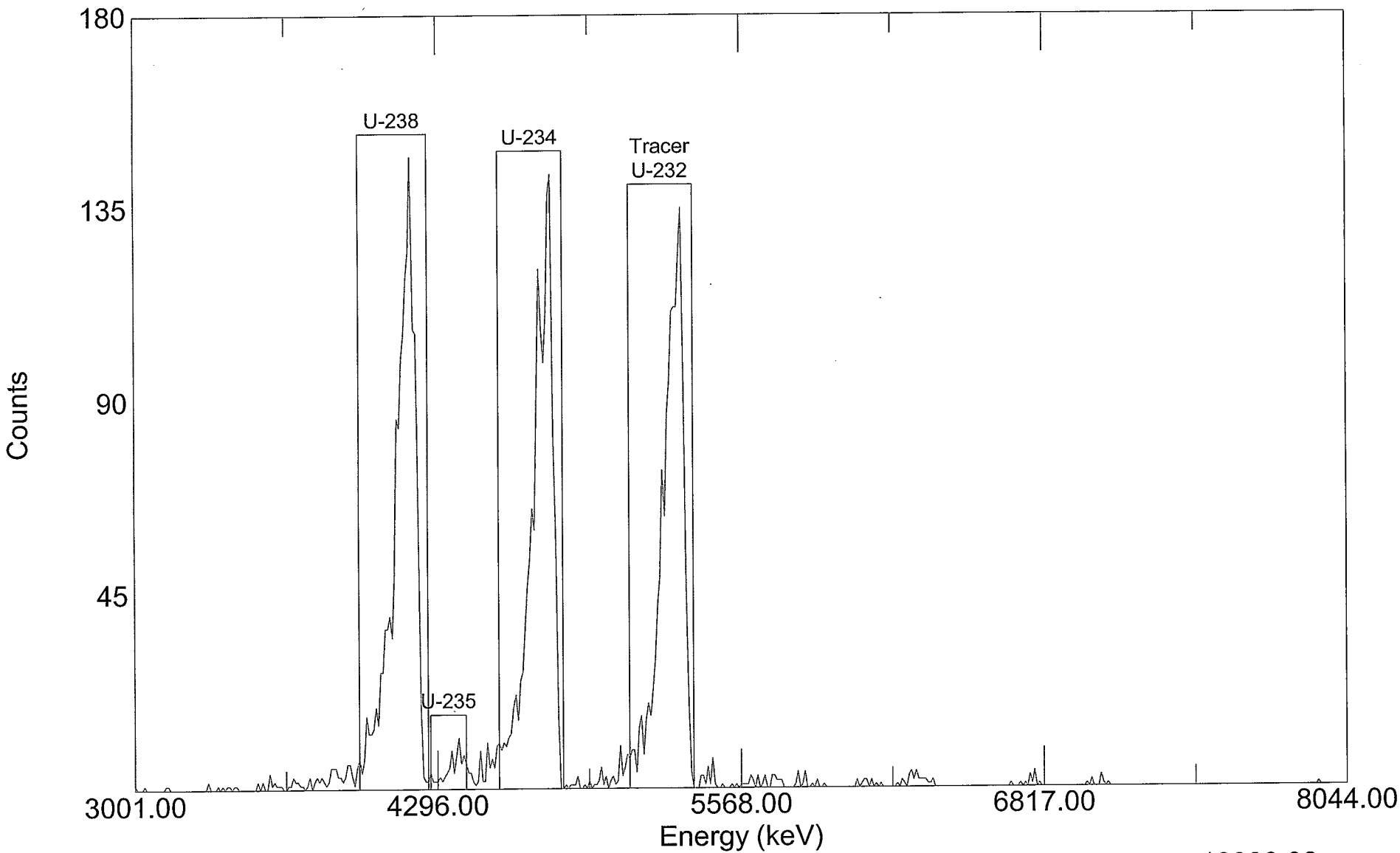
Totals

		% Total
Gross Count:	4,621.00	100.00
Net Area:	4,486.90	97.10
Background:	134.10	2.90
Composite Fit:	4,270.00	92.40
Residuals:	351.00	7.60

Analyzed By: Sm

Checked By: SD

UX6181L AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 12:42:03 on 23-Jun-2004
File: C:\User\Alpha\ALPHA\UX6181L.SPC
Sample: AS040618-1LCS UAS040618-1

Real Time: 18121.36 s. Live Time: 18000.00 s.
Detector: #44 MCB 6 Input 4
Type: Uranium Default

000145

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
7/27/04 3:30:03 PM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: AS040720-3MB UAS040720-3

Analysis Type: Uranium Default

Detector: MCB 3 Input 6

Date/Time of Count: 7/27/04 10:29:51 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **86.87%**

Real Time: 300.01 Minutes

Total Eff.: 24.67 %

Dead Time: 0.0 %

Tracer Amount: 18.928 DPM.

Acquisition: 512 Channels

Efficiency: 28.40%

Analysis: Relative Region-Of-Interest

Original: 3,036 + 9.9361 * Chn + -0.00048 * Chn **2.

Spectrum Calibration: 3,036 + 9.9953 * Chn + -0.00048 * Chn **2.

Cal File:

Spectrum File: **C:\USER\ALPHA\ALPHA\U7203B.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4072622.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
3	175.39	153	180	2.00	2.00	9.00	1.20	7.80	0.11
Tracer	231.01	209	236	6.00	166.00	1,404.00	3.00	1401.00	18.93
1	137.32	120	139	0.00	0.00	0.00	0.30	-0.30	0.00
2	116.76	94	119	2.00	1.00	6.00	0.00	6.00	0.08

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
3	U-234	4774.80	19.66	0.024	n/a	75.84 %
Tracer	U-232	5320.00	58.65	4.263	n/a	5.23 %
1	U-235	4400.00	0.00	-0.001	n/a	-107.35 %
2	U-238	4197.00	19.77	0.018	n/a	80.02 %

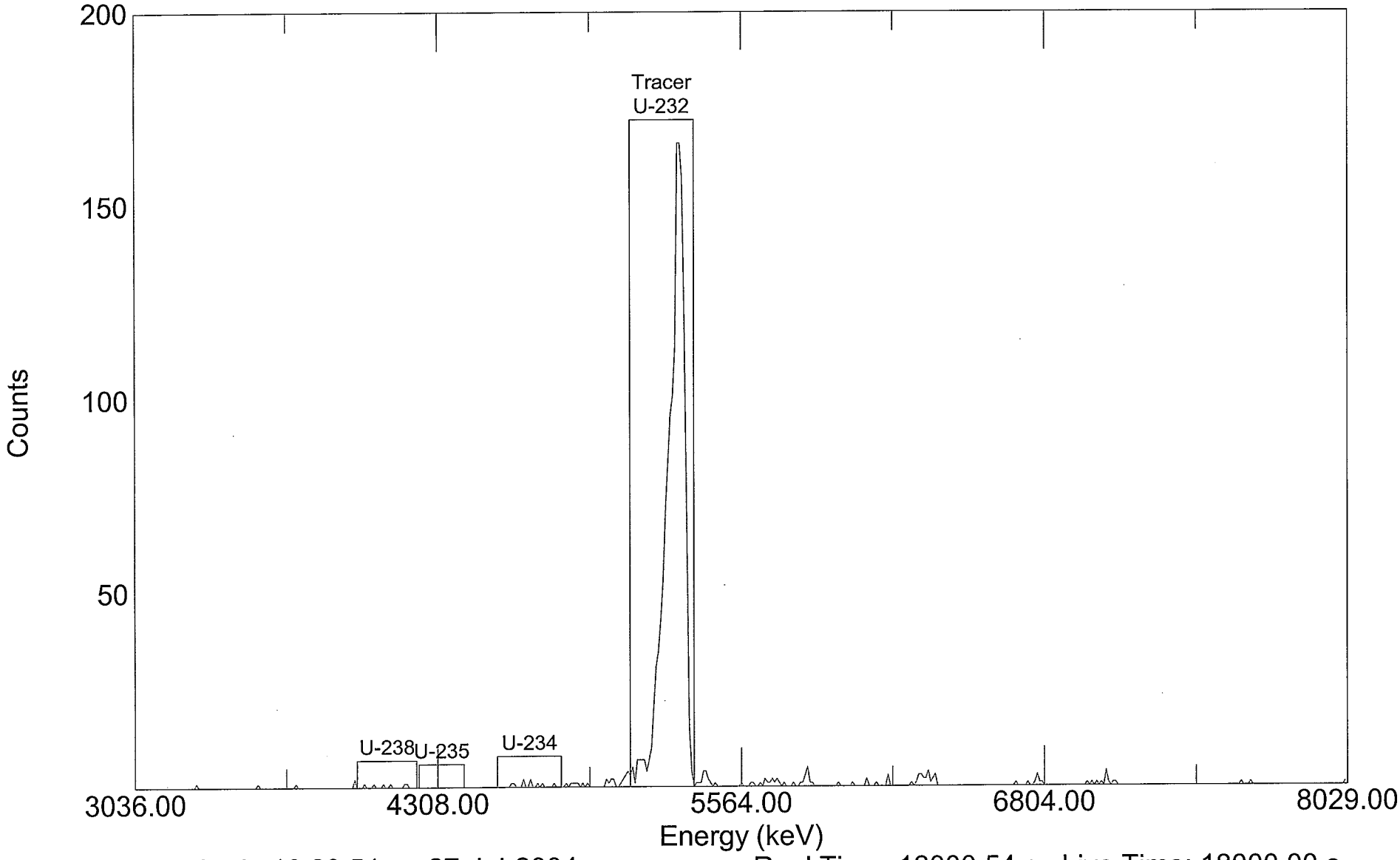
Totals

		% Total
Gross Count:	1,543.00	100.00
Net Area:	1,469.20	95.22
Background:	73.80	4.78
Composite Fit:	1,419.00	91.96
Residuals:	124.00	8.04

Analyzed By: Sm

Checked By: JP

U7203B AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 10:29:51 on 27-Jul-2004
File: C:\USER\ALPHA\ALPHA\U7203B.SPC
Sample: AS040720-3MB UAS040720-3

Real Time: 18000.54 s. Live Time: 18000.00 s.
Detector: #22 MCB 3 Input 6
Type: Uranium Default

000148

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
7/28/04 8:09:23 AM
Para0327.rpt
rev 11/13/03 KVG

Sample Name: AS040720-3LCS UAS040720-3

Analysis Type: Uranium Default

Detector: MCB 3 Input 7

Date/Time of Count: 7/27/04 10:30:40 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **92.32%**

Real Time: 300.01 Minutes

Total Eff.: 26.39 %

Dead Time: 0.0 %

Tracer Amount: 18.928 DPM.

Acquisition: 512 Channels

Efficiency: 28.58%

Analysis: Relative Region-Of-Interest

Original: 3,002 + 10.1591 * Chn + -0.00099 * Chn **2.

Spectrum Calibration: 3,002 + 10.2246 * Chn + -0.00099 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U7203L.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4072623.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	118.23	97	123	6.00	175.00	1,398.00	1.20	1396.80	17.65
2	176.39	154	181	6.00	171.00	1,364.00	0.30	1363.70	17.23
3	138.59	124	143	4.00	13.00	68.00	0.00	68.00	0.86
Tracer	231.91	210	237	6.00	194.00	1,501.00	2.70	1498.30	18.93

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	59.95	3.974	n/a	5.25 %
2	U-234	4774.80	59.26	3.880	n/a	5.31 %
3	U-235	4400.00	39.80	0.193	n/a	23.77 %
Tracer	U-232	5320.00	58.60	4.263	n/a	5.06 %

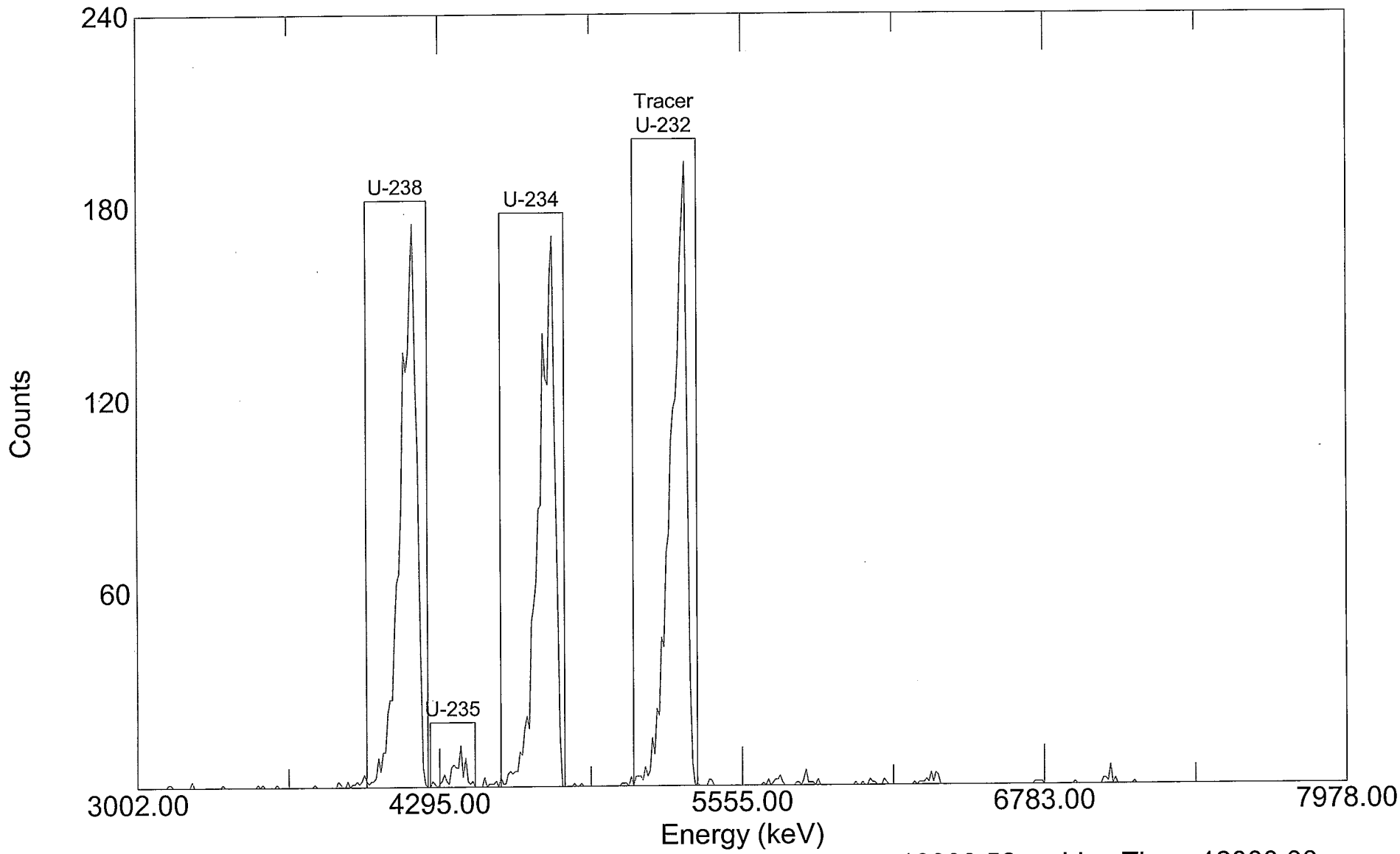
Totals

		% Total
Gross Count:	4,449.00	100.00
Net Area:	4,375.50	98.35
Background:	73.50	1.65
Composite Fit:	4,331.00	97.35
Residuals:	118.00	2.65

Analyzed By: Sm

Checked By: JP

U7203L AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 10:30:40 on 27-Jul-2004
File: C:\User\Alpha\ALPHA\U7203L.SPC
Sample: AS040720-3LCS UAS040720-3

Real Time: 18000.52 s. Live Time: 18000.00 s.
Detector: #23 MCB 3 Input 7
Type: Uranium Default

Paragon Analytics
Alpha Spectroscopy Analysis

Report Printed:
7/28/04 8:11:32 AM

Para0327.rpt
rev 11/13/03 KVG

Sample Name: AS040720-3LCSD UAS040720-3

Analysis Type: Uranium Default

Detector: MCB 3 Input 8

Date/Time of Count: 7/27/04 10:32:02 AM

Sample Volume: 2.000 Total, 2.000 Aliquot.

Live Time: **300.00 Minutes**

Chem. Yield: **88.38%**

Real Time: 300.01 Minutes

Total Eff.: 25.37 %

Dead Time: 0.0 %

Tracer Amount: 18.928 DPM.

Acquisition: 512 Channels

Efficiency: 28.70%

Analysis: Relative Region-Of-Interest

Original: 3,010 + 10.2222 * Chn + -0.00120 * Chn **2.

Spectrum Calibration: 3,010 + 10.3348 * Chn + -0.00120 * Chn **2.

Cal File:

Spectrum File: **C:\User\Alpha\ALPHA\U7203LD.SPC**

Background File: **C:\USER\ALPHA\BKGND\B4072624.SPC**

Library File: C:\User\Alpha\ALPHAVIS.ALB

Peaks

Peak	Channel	Start	End	FWHM	Height	Gross Cts	Bkg Cts	Net Area	DPM
1	116.44	98	125	8.00	138.00	1,304.00	0.30	1303.70	17.13
2	174.30	157	184	10.00	126.00	1,244.00	0.30	1243.70	16.34
3	136.67	126	141	8.00	9.00	58.00	0.00	58.00	0.76
Tracer	229.65	211	238	10.00	129.00	1,441.00	0.60	1440.40	18.93

Analysis Results

Peak	Nuclide	Energy (keV)	Width (keV)	Aliquot pCi	MDA pCi	% Error
1	U-238	4197.00	80.44	3.858	n/a	5.43 %
2	U-234	4774.80	99.16	3.681	n/a	5.56 %
3	U-235	4400.00	80.05	0.172	n/a	25.74 %
Tracer	U-232	5320.00	97.84	4.263	n/a	5.16 %

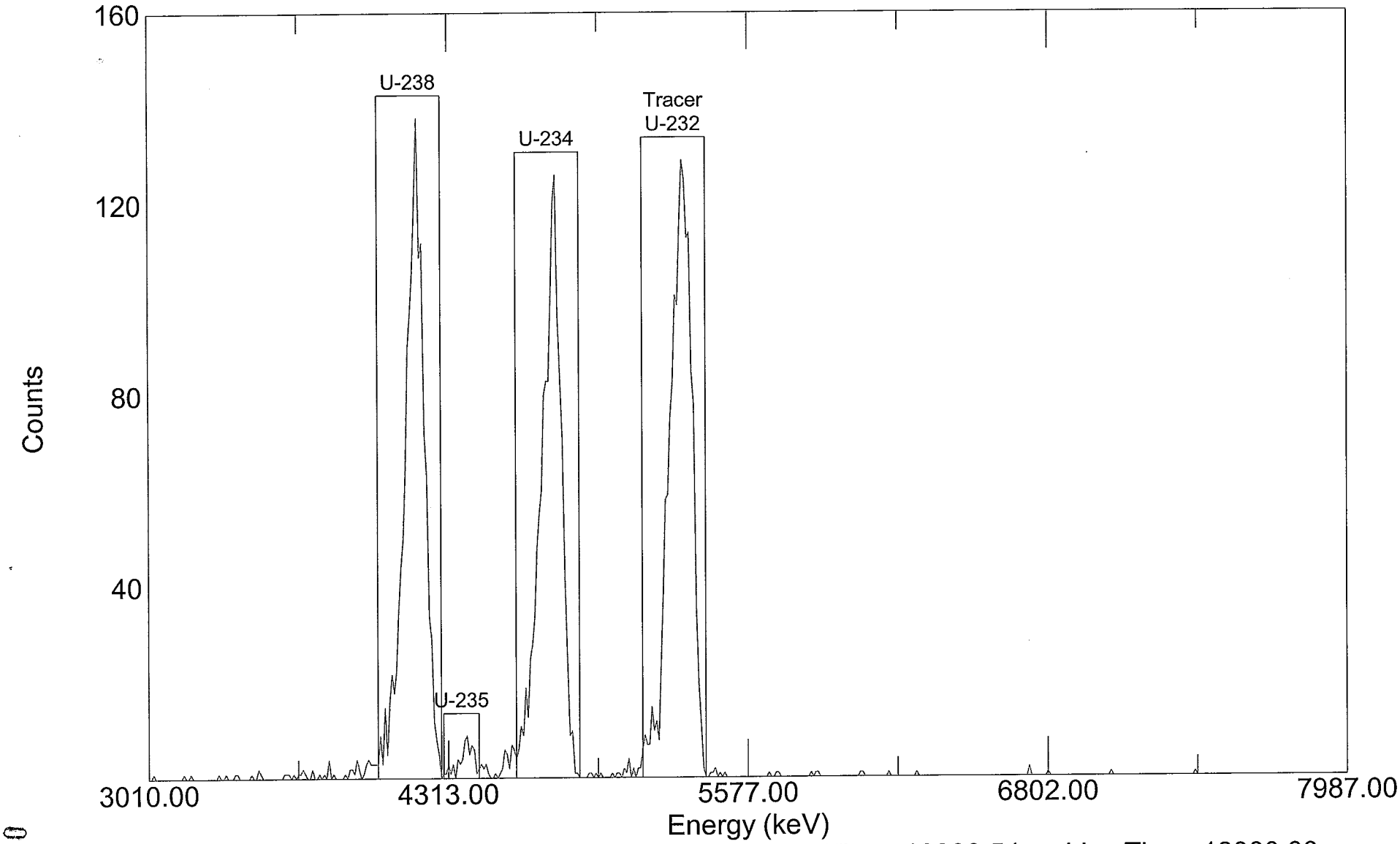
Totals

		% Total
Gross Count:	4,185.00	100.00
Net Area:	4,176.30	99.79
Background:	8.70	0.21
Composite Fit:	4,047.00	96.70
Residuals:	138.00	3.30

Analyzed By: Sm

Checked By: JP

U7203LD AlphaVision Relative Region-Of-Interest (Slope Recalibration)



Acquired: 10:32:02 on 27-Jul-2004
File: C:\User\Alpha\ALPHA\U7203LD.SPC
Sample: AS040720-3LCSD UAS040720-3

Real Time: 18000.54 s. Live Time: 18000.00 s.
Detector: #24 MCB 3 Input 8
Type: Uranium Default

0001152

Paragon Analytics

Alpha Spectrometer Instrument Run Log

FORM 746r6.xls (11/8/2000)

Date: 6-11-04

277771

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
9	AS040603-2	0405096-30	U/S	300	Sm	UR509630
10	AS040601-6	0405135-3D	U/S	240	Sm	UR51353D
11	AS040607-2	0405096-4	Th/AC/S	310	Sm	TA 50964
12	↓	↓ -4D	↓	300	↓	↓ 4D
13	↓	AS040607-2MB	↓	*300	↓	TA 6072B
15	↓	↓ -2LCS	↓	300	↓	↓ L
64	AS040603-1	0405096-1	U/S	300	↓	U50961
16	↓	-2	↓	↓	↓	2
17	↓	-3	↓	↓	↓	3
18	↓	-3D	↓	↓	↓	3D
19	↓	-4	↓	↓	↓	4
21	↓	-5	↓	↓	↓	5
22	↓	-8	↓	↓	↓	8
23	↓	-10	↓	↓	↓	10
24	↓	-11	↓	↓	↓	11
42	↓	-12	↓	↓	↓	12
43	↓	-13	↓	↓	↓	13
44	↓	-14	↓	↓	↓	14
45	↓	-15	↓	↓	↓	15
46	↓	-15D	↓	↓	↓	15D
47	↓	-16	↓	↓	↓	16
48	↓	-17	↓	↓	↓	17
57	↓	-19	↓	↓	↓	19
58	↓	↓ -20	↓	↓	↓	20

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
59	AS040603-1	0405096-22	U/S	300	Sm	U509622
60	↓	↓ -25	↓	↓	↓	↓ 25
61	↓	↓ -26	↓	↓	↓	↓ 26
62	↓	↓ -31	↓	↓	↓	↓ 31
9	AS040607-2	0405096-4	Th/AC/S	300	Sm	TZ50964
10	AS040603-1	AS040603-1MB	Sm 6/11/04 U/W/S	300	Sm	U6031B
11	↓	↓ -1LCS	U/S	↓	↓	↓ L
12	276517	0418004-2	U/W	300	Sm	UR180042
13	↓	↓ -3	↓	↓	↓	↓ 3
15	↓	↓ -4	↓	↓	↓	↓ 4
16	AS040604-2	0404255-1	Th/S	300	Sm	T42551
17	↓	-2	↓	↓	↓	2
18	↓	-3	↓	↓	↓	3
19	↓	-4	↓	↓	↓	4
21	↓	-5	↓	↓	↓	5
22	↓	-6	↓	↓	↓	6
23	↓	-7	↓	↓	↓	7
24	↓	-8	↓	↓	↓	8
42	↓	-9	↓	↓	↓	9
43	↓	-9D	↓	↓	↓	9D
44	↓	-10	↓	↓	↓	10
45	↓	-11	↓	↓	↓	11
46	↓	-12	↓	↓	↓	12
47	↓	↓ -13	↓	↓	↓	↓ 13

Notes: * MB ran for 310 mins. Report did not print and new samples loaded. 310 min file lost. Sample 4 required recounting and will be recounted for 300 min. Sm 6-11-04.

Cont. on page 277772 Sm 6-11-04

Reviewed by: Sm

Date: 6-14-04

Paragon Analytics

FORM 746r6.xls (11/8/2000) 277792

Alpha Spectrometer Instrument Run Log

Date: 6/23/04

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
9	AS040611-2	AS040611-2MB	Th/S	600	SD	TR6112B
10	AS040603-3	0405096-1	↓	330	↓	TR50961
11	AS040614-2	0405222-1	U/W	300		U52221
12		2				2
13		11				11
SD 6/23/04 18/16		0405243-1				U52431
17		2				2
18		3				3
19		4				4
21		5				5
22		5D				5D
23		6				6
24		7				7
42		8				8
43		9				9
44		10				10
45		11				11
46		12				12
26	AS040617-2	0406025-1	Pu/W			P60251
27		2				2
28		2D				2D
29		AS040617-2MB				P6172B
30		LCS				L
4	AS040617-3	0406005-1	U/W		SD	U60051

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
47	AS040615-4	0405009-15	Th/S	300	SD	T50091S
48		16				16
57		17				17
58		17D				17D
59		18				18
60		19				19
62		20				20
63		AS040615-4MB				T6154B
64		LCS				L 2
49	276521	0418012-1	Pu/V			P180121
50		2				2
51		3				3
52		4				4
4	AS040617-4	0406005-1	Th/W		SD	T60051
10	AS040614-3	0405243-1	Th/W		SD	TR52431
11	↓	2	↓		↓	2
12	AS040614-2	0405243-2	U/W			UR52432
13	↓	3	↓		↓	3
9	AS040618-1	0405096-18	U/S	300	↓	U4509618
62	AS040617-3	0406020-1	U/W			U60201
63		039-1				0391
64		051-1				0511
4		055-1				0551
						SD 6/24/04

Notes:

cont'd on page 277793

Reviewed by: SD

Date: 6/24/04

Paragon Analytics

Alpha Spectrometer Instrument Run Log

FORM 746r6.xls (11/8/2000)

Date: 6/23/04

277793

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
16	AS040618-1	0405096-7	U/S	300	SD	UX50967
17		9				9
18		18				18
19		18D				18D
21		27				27
22		28				28
23		29				29
24		30				30
42		32				32
43		AS040618-1 MB				UX6181B
44		LCS				L
45	AS040617-4	0406020-1	Th/W			T60201
46		039-1				0391
47		051-1				0511
48		055-1				0551
57		065-1				0651
58		088-1				0881
59		099-1				0991
60		110-1				1101
62		AS040617-4MB				T6174B
63		LCS				L
64		LCSD				LD

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
10	AS040609-2	0406015-1	U/F	720 m	SD	U60151
11		2				2
12		3				3
13		4				4
16		5				5
17		6				6
19		7				7
21		8				8
22		9				9
23		10				10
24		11				11
42		12				12
43		13				13
44		14				14
45		15				15
46		16				16
47		17				17
48		18				18
57		19				19
58		AS040609-2MB				U6092B
59		LCS				L
60		LCSD				

SD 6/24/04

Notes: cont'd from pg. ~~2774~~ 277793 SD 6/24/04

Reviewed by: SD

Date: 6/24/04

000155

Paragon Analytics

FORM 746r6.xls (11/8/2000) 279242

Alpha Spectrometer Instrument Run Log

Date: 7/27/04

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
9	AS040720-3	0405096-6	U/S	300	TE	U50966
10		0407041-3				U70413
11		3D				3D
13		4				4
16		0407126-7				U71267
17		8				8
18		8D				8D
19		16				16
21		22				22
22		AS040720-3MB				U7203B
23		LCS				L
24		LCS-D				LD
42	AS040720-4	0405096-6	Th/S			~~T~~ U50966
43		0407041-3				~~T~~ U70413
44		3D				3D
45		4				4
46		AS040720-4MB				T7204B
47		LCS				L
48		LCS-D				LD
57	AS040719-1	0407071-1	U/W			U70711
58		2				2
59		3				3
60		4				4
61		5				5

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
62	AS040719-1	0407071-7	U/W	300	TE	U70717
63		7D				7D
64		8				8

Sm 7/27/04

Notes:

Reviewed by: Sm

Date: 7/27/04

000136

Paragon Analytics

Alpha Spectrometer Instrument Run Log

FORM 746r6.xls (11/8/2000)

279243

Date: 7-28-04

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
9	AS040720-3	0407126-22	U/S	300	Sm	UR 712622
10	AS040720-4	AS040720-4LCS	Th/S	210		TR 7204L
11	AS040719-1	0407071-7D	U/W	300		UR 70717D
13		-89				U70719
16		-11				111
17		-12				112
18		0407090-2				U70902
19		0407100-1				U71001
22		0407103-2				32
23		-2D				32D
24		0407112-1				U71121
42		-2				2
43		-3				3
44		0407116-2				62
45		0407125-4				U71254
46		-4D				4D
48		0407127-2				72
57		0407142-2				U71422
58		AS040719-1MB				U7191B
59		-1LCS				1
60		-1LCSD				1D
9	AS040603-1	0405096-13	U/S	120	Sm	U509613
63	AS040720-2	0407091-19	Th/F	1000		TR709119
64		AS040720-2LCSD				TR7202LD

Detector	Batch ID	Sample ID	Iso/Matrix	Duration	Initial	File ID/Comm.
61	AS040719-2	0407071-1	Th/W	300	Sm	T70711
62		-2				2
63		-3				3
64		-4				4
1	AS040721-1	0407013-1	Pu/S	300	Sm	P70131
2		-1D				1D
3		-2				2
4		AS040721-1MB				P7211B
5		-1LCS				L
13	AS040721-1	0407013-1	U/S	300	Sm	U70131
16		-1D				1D
17		-2				2
18		AS040721-1MB				U7211B
19		-1LCS				L
9	AS040611-2	0405096-8	Th/S	300	Sm	TC50968
10		AS040611-2MB				TC6112B
11		-2LCS				L
17	AS040721-1	0407013-1	U/S	300	Sm	UR70131
18		-2				2
22	AS040719-2	0407071-5	Th/W	300	Sm	T70715
23		-7				7
24		-7D				7D
10		0407142-2				T71422
11		AS040719-2MB				T7192B

Notes: Cont. on page 279244 Sm 7/28/04

Reviewed by: Sm

Date: 7/29/04

000157

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 5

QUALITY ASSURANCE SUMMARY REPORTS

5

Paragon Analytics, Inc.

QUALITY ASSURANCE SUMMARY SHEET

PAI W.O. # / BATCH For all uranium batches

TEST U-iso

268110 METHOD Prep

SOP/REV (PREP) 778 | ~~R8~~ R9 AM 4/14/04

SOP/REV (ANAL)

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

AM 4/14/04

AM 4/20/04 1. A consistent 20-25 ml of ammonium hydroxide was used per sample in order to form the ferric hydroxide precipitate prior to running a chloride column. AM 4/14/04

AM 4/14/04

AM 4/14/04

TECHNICIAN/ANALYST A. Lawson DATE 4/14/04

DEPARTMENT MANAGER Karen Nye DATE 4/14/04

FORM 302r5.FRM (04/30/01)

Paragon Analytics

QUALITY ASSURANCE SUMMARY SHEET

PAI W.O. # / BATCH AS040720-3,4
TEST Uisa Thisa
METHOD Prep
SOP/REV (PREP) 778/777
SOP/REV (ANAL)

277668

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

A reduced aliquot of approximately 1 gram (batch AS040720-4) and 0.5 grams (batch AS040720-3) was taken for sample 0405096-6 due to elevated pre-screen data.

7/26/04

TECHNICIAN/ANALYST [signature] corr 7/26/04 DATE 7/26/04

DEPARTMENT MANAGER [signature] DATE 7/26/04

FORM 302r6.doc (4/22/04)

Paragon Analytics, Inc.

QUALITY ASSURANCE SUMMARY SHEET

PAI W.O. # / BATCH 0405096
TEST U^{ISO}, Th^{ISO}
METHOD Prep
SOP/REV (PREP)
SOP/REV (ANAL)

270462

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

Reduced aliquots were taken for some samples in work order 0405096 due to elevated alpha activity seen in pre-screen data. Aliquot sizes are noted on the ~~Benchsheet~~ AC 6/8/04 Benchsheet.

6/8/04

TECHNICIAN/ANALYST Grace Campa DATE 6/8/04

DEPARTMENT MANAGER [illegible] DATE 6/8/04

FORM 302r5.FRM (04/30/01)

Paragon Analytics, Inc.

QUALITY ASSURANCE SUMMARY SHEET

PAI W.O. # / BATCH AS040618-1
TEST U ISO
METHOD prep
SOP/REV (PREP) NA
SOP/REV (ANAL)

270475

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

Reduced aliquots were taken for all samples in batch AS040618-1 due to elevated alpha activity seen in pre-screen data. Actual aliquot sizes are noted on the benchsheet.

6/22/04

TECHNICIAN/ANALYST Grace C DATE 6/22/04

DEPARTMENT MANAGER C Moncavage DATE 6/22/04

FORM 302r5.FRM (04/30/01)

NCR # 005737

CONTROLLED
NON-CONFORMANCE REPORT

Paragon Analytics

Initiated by Sm Date 6-16-04

Reason: X Non-Conformance
___ Client Inquiry
___ Other _____

Method/Procedure Iso U
Work Orders Affected 0405096
AS040603-2
Clients Kent and Sullivan

SECTION I TYPE OF EVENT (circle as appropriate)

___ 1. LCS / Surrogate / IS / Tracer or Chemical Yield Criteria Not Met
___ 2. Calibration Criteria Not Met (ICAL, ICV, CCV)
___ 3. Method Requirements Not Met (HTV, MB, ____)
___ 4. Deviation from LQAP / SOP (i.e., PAI criteria not met)
✓ 5. Client Criteria Not Met (MDC, DER, _____)
___ 6. Equipment Failure or Laboratory Incident / Error
___ 7. Other _____

Explanation: Sample 0405096-18 and 18D did not meet the requirements for DER. The control limit is 2.13

U-235	4.25
U-234	5.18
U-238	5.26

This sample was prepared with a reduced aliquot of 1g. due to elevated alpha activity seen in pre-screen data.

Actions to Prevent Recurrence (Retrain, etc.): N/A - Sample characteristics, see comments below

SECTION II NOTIFICATION

Client Contacted? (Y / N) Name: _____ Date: _____ Time: _____

SECTION III CORRECTIVE ACTIONS

✓ 1. Submit for Re-Prep. or Clean-up
___ 2. Re-analyze
___ 3. Resubmit Data (hc, edd, narrative)
___ 4. Document in Narrative
___ 5. Other _____

Approved by: DPM PM

SECTION IV REQUEST FOR REWORK

Initial Batch ID: AS040603-~~2~~ 1 Sm 7/29/04 Date: 6/3/04
Reworked Batch ID: AS040618-1 Date: 6/18/04
Outcome: With reduced aliquot and re-analysis, all QC parameters were met. DER met requirements.
Approved by: RG 7/28/04
Matrix Effect or Elevated / Sample Activity Suspected? (circle applicable)

SECTION V DISPOSITION **Use as is** **Repair** **Reject**

SECTION VI COMMENTS

Report results from batch AS040618-1. RG 7/28/04

SECTION VII APPROVAL SIGNATURES

Project Manager (PM) Debbie Fazio Date 7/28/04
Department Manager (DPM) [signature] Date 7/28/04 (Verification of Disposition)
QA Manager [signature] Date 7/28/04

SECTION VIII DISTRIBUTION DJF PM RG Dept. Manager KDC Lab Director ___ Rpt.Group or ✓ Rad
DCB

FORM 313r14.doc (3/8/04)

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 6

LABORATORY BENCH SHEETS

6

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AS040603-1

Prep Procedure: UISO

Analytical QASS / ~~NCR~~ / N Sm 7/29/04

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0405096-1	SMP	2.0067	2.0067	g	U _50961	Sm 6/8/04 15 64	Sm	_50961			_50961			
1	0405096-2	SMP	2.0198	2.0198	g	_50962	16		_50962			_50962			
1	0405096-3	SMP	2.0275	2.0275	g	_50963	17		_50963			_50963			
1	0405096-3	DUP	2.0144	2.0144	g	_50963D	18		_50963D			_50963D			
1	0405096-4	SMP	2.002	2.002	g	_50964	19		_50964			_50964			
1	0405096-5	SMP	2.005	2.005	g	_50965	21		_50965			_50965			
1	0405096-8	SMP	2.0227	2.0227	g	_50968	22		_50968			_50968			
1	0405096-10	SMP	2.0123	2.0123	g	_509610	23		_509610			_509610			
1	0405096-11	SMP	2.0017	2.0017	g	_509611	24		_509611			_509611			Sm 7/29/04
1	0405096-12	SMP	2.0362	2.0362	g	_509612	42		_509612			_509612			
1	0405096-13	SMP	2.0028	2.0028	g	_509613	43		U _509613 9 Sm			_509613			Data lost- no print-out. Sm 7/27/04
1	0405096-14	SMP	2.0208	2.0208	g	_509614	44		_509614			_509614			
1	0405096-15	SMP	2.0091	2.0091	g	_509615	45		_509615			_509615			
1	0405096-15	DUP	2.029	2.029	g	_509615D	46		_509615D			_509615D			
1	0405096-16	SMP	2.0462	2.0462	g	_509616	47		_509616			_509616			
1	0405096-17	SMP	2.0352	2.0352	g	_509617	48		_509617			_509617			
1	0405096-19	SMP	2.0164	2.0164	g	_509619	57		_509619			_509619			
1	0405096-20	SMP	2.0126	2.0126	g	_509620	58		_509620			_509620			
1	0405096-22	SMP	1.0054	1.0054	g	_509622	59		_509622			_509622			
1	0405096-25	SMP	1.0185	1.0185	g	_509625	60		_509625			_509625			
1	0405096-26	SMP	1.0058	1.0058	g	_509626	61		_509626			_509626			
1	0405096-31	SMP	1.0043	1.0043	g	_509631	62		_509631			_509631			
1	AS040603-1	MB	2	2	g	6031B Sm 6/11/04	64 10	JP	_6031B			_6031B			
1	AS040603-1	LCS	2	2	g	_6031L	11		_6031L			_6031L			Sm 7/29/04

001165

Supersedes: NA

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AS040603-1

Prep Procedure: UISO

Analytical QASS / NCR? Y / N

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.41	18.967	DPM/ml	06/03/04	1	ml	AW010

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	06/03/04	0.5	ml	AW009
S1	U-235	643.2382.44	1.841	DPM/ml	06/03/04	0.5	ml	AW009
S1	U-238	643.2382.44	39.994	DPM/ml	06/03/04	0.5	ml	AW009

000163

Supersedes: NA

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AS040603-1

Prep Procedure: UISO

Reviewed By: gxc tc **Review Date:** 6/8/04 6/8/04

Non-Routine Pre-Treatment? (Y) / N **Batch:** see comments **Re-Prep?** Y / (N) **Batch:** NA **Prep QASS / NCR?** (Y) N 270462

Prep SOP: PAI 778 **Rev:** 9 **Prep Analyst:** Grace Campagnola **Balance:** 23

Prep SOP: NONE **Prep Date:** 6/3/04 **Balance:**

Matrix Class: solid **Prep Dept:** AP

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Micro Init	Micro Date	Standards	Prep Notes
1	1	0405096-1	SMP		2.0067	2.0067	Dry Weight	tc	6/8/04	T1	
2	1	0405096-2	SMP		2.0198	2.0198	Dry Weight			T1	
3	1	0405096-3	SMP		2.0275	2.0275	Dry Weight			T1	
4	1	0405096-3	DUP		2.0144	2.0144	Dry Weight			T1	
5	1	0405096-4	SMP		2.002	2.002	Dry Weight			T1	
6	1	0405096-5	SMP		2.005	2.005	Dry Weight			T1	
7	1	0405096-8	SMP		2.0227	2.0227	Dry Weight			T1	
8	1	0405096-10	SMP		2.0123	2.0123	Dry Weight			T1	
9	1	0405096-11	SMP		2.0017	2.0017	Dry Weight			T1	
10	1	0405096-12	SMP		2.0362	2.0362	Dry Weight			T1	
11	1	0405096-13	SMP		2.0028	2.0028	Dry Weight			T1	
12	1	0405096-14	SMP		2.0208	2.0208	Dry Weight			T1	
13	1	0405096-15	SMP		2.0091	2.0091	Dry Weight			T1	
14	1	0405096-15	DUP		2.029	2.029	Dry Weight			T1	
15	1	0405096-16	SMP		2.0462	2.0462	Dry Weight			T1	
16	1	0405096-17	SMP		2.0352	2.0352	Dry Weight			T1	
17	1	0405096-19	SMP		2.0164	2.0164	Dry Weight			T1	
18	1	0405096-20	SMP		2.0126	2.0126	Dry Weight			T1	
19	1	0405096-22	SMP		1.0054	1.0054	Dry Weight			T1	
20	1	0405096-25	SMP		1.0185	1.0185	Dry Weight			T1	
21	1	0405096-26	SMP		1.0058	1.0058	Dry Weight			T1	
22	1	0405096-31	SMP		1.0043	1.0043	Dry Weight			T1	
23	1	AS040603-1	MB		2	2	Dry Weight			T1	
24	1	AS040603-1	LCS		2	2	Dry Weight			T1,S1	

6/8/04 tc

Spiked By: Grace Campagnola **Date:** 6/3/04

Witnessed By: Carissa Moncavage **Date:** 6/3/04

Relinquished By: CW **Date:** 6/9/04

Received By: SM **Date:** 6-9-04

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.41	18.967	DPM/ml	06/03/04	1	ml	AW010

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	06/03/04	0.5	ml	AW009
S1	U-235	643.2382.44	1.841	DPM/ml	06/03/04	0.5	ml	AW009
S1	U-238	643.2382.44	39.994	DPM/ml	06/03/04	0.5	ml	AW009

000167

Comments

1.All samples were muffled at 600°C overnight.
2. All of the samples received PEG treatment.

Paragon Analytics

LIMS Version: 5.028A

Supersedes: 6/3/04 9:32

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AS040603-1

Prep Procedure: UISO

Prep Batch Not Validated!!!

Reviewed By: **Review Date:**

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep? Y / N** **Batch:** _____ **Prep QASS / NCR? Y / N** _____

Prep SOP: PAI 778 **Rev:** 9
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Grace Campagnola GC 6/8/04
Prep Date: 6/3/04
Prep Dept: AP

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Micro Init	Micro Date	Standards	Prep Notes (Funnel #)
1	1	0405096-1	SMP	1069	2.0067	2	Dry Weight			T1	24
2	1	0405096-2	SMP	505	2.0198	2	Dry Weight			T1	31
3	1	0405096-3	SMP	307	2.0275	2	Dry Weight			T1	16
4	1	0405096-3	DUP	495	2.0144	2	Dry Weight			T1	6
5	1	0405096-4	SMP	1045	2.0020	2	Dry Weight			T1	3
6	1	0405096-5	SMP	477	2.0050	2	Dry Weight			T1	2
7	1	0405096-8	SMP	435	2.0227	2	Dry Weight			T1	25
8	1	0405096-10	SMP	574	2.0123	2	Dry Weight			T1	4
9	1	0405096-11	SMP	318	2.0017	2	Dry Weight			T1	30
10	1	0405096-12	SMP	301	2.0362	2	Dry Weight			T1	9
11	1	0405096-13	SMP	570	2.0028	2	Dry Weight			T1	22
12	1	0405096-14	SMP	465	2.0208	2	Dry Weight			T1	8
13	1	0405096-15	SMP	312	2.0091	2	Dry Weight			T1	37
14	1	0405096-15	DUP	1042	2.0290	2	Dry Weight			T1	35
15	1	0405096-16	SMP	580	2.0462	2	Dry Weight			T1	33
16	1	0405096-17	SMP	316	2.0352	2	Dry Weight			T1	28
17	1	0405096-19	SMP	434	2.0164	2	Dry Weight			T1	20
18	1	0405096-20	SMP	474	2.0126	2	Dry Weight			T1	21
19	1	0405096-22	SMP	1021	1.0054	1	Dry Weight			T1	23
20	1	0405096-25	SMP	428	1.0185	1	Dry Weight			T1	24
21	1	0405096-26	SMP	403	1.0058	1	Dry Weight			T1	38
22	1	0405096-31	SMP	484	1.6043	1	Dry Weight			T1	39
23	1	AS040603-1	MB	1066	2	2	Dry Weight			T1	36
24	1	AS040603-1	LCS	1060	2	2	Dry Weight			T1,S1	34

Spiked By: GC **Date:** 6/3/04
Witnessed By: Cam **Date:** 6/3/04

Relinquished By: _____
Date: _____
Received By: _____
Date: _____

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.41	18.967	DPM/ml	06/03/04	~~0.5~~ 1.0	ml	AW009

exp 4/21/05 — 1.0 GC 6/3/04 AW010

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	06/03/04	0.5	ml	AW009
S1	U-235	643.2382.44	1.841	DPM/ml	06/03/04	0.5	ml	AW009
S1	U-238	643.2382.44	39.994	DPM/ml	06/03/04	0.5	ml	AW009

exp 11/1/04

Comments

Supersedes: _____

00138

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AS040618-1

Prep Procedure: UISO

Analytical QASS / NCR? Y / N

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0405096-7	SMP	0.3007	0.3007	g	UK _50967	16	SD	~~_50967~~			_50967			
1	0405096-9	SMP	1.0016	1.0016	g	_50969	17		~~_50969~~			_50969			Sm 7/29/04
1	0405096-18	SMP	1.0435	1.0435	g	_509618	18	UK	_509618 *	9	SD	_509618			* Peak Shift SD 6/23/04
1	0405096-18	DUP	1.0223	1.0223	g	_509618D	19		~~_509618D~~			~~_509618D~~			
1	0405096-27	SMP	0.101	0.101	g	_509627	21		_509627			_509627			
1	0405096-28	SMP	0.201	0.201	g	_509628	22		_509628			_509628			
1	0405096-29	SMP	1.0062	1.0062	g	_509629	23		_509629			_509629			
1	0405096-30	SMP	0.1025	0.1025	g	_509630	24		_509630			_509630			
1	0405096-32	SMP	0.1028	0.1028	g	_509632	42		_509632			_509632			
1	AS040618-1	MB	0.3	0.3	g	_6181B	43		_6181B			_6181B			
1	AS040618-1	LCS	0.3	0.3	g	_6181L	44		~~_6181L~~			~~6181L~~			Sm 7/29/04

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.40	37.889	DPM/ml	06/18/04	0.5	ml	AW004

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	06/18/04	0.5	ml	AW004
S1	U-235	643.2382.44	1.841	DPM/ml	06/18/04	0.5	ml	AW004
S1	U-238	643.2382.44	39.994	DPM/ml	06/18/04	0.5	ml	AW004

000169

Supersedes: NA

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AS040618-1

Prep Procedure: UISO

Reviewed By: GXC dC 6/22/04 Review Date: 6/22/04

Non-Routine Pre-Treatment? Y / N (N) Batch: ~~N/A~~ See Comments (CDM 6/23/04) (CDM 6/23/04) Re-Prep? Y / N Batch: AS040603-2 Prep QASS / NCR? Y / N 270475

Prep SOP: PAI 778 **Rev:** 9
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Grace Campagnola
Prep Date: 6/18/04
Prep Dept: AP

Balance: 23
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Micro Init	Micro Date	Standards	Prep Notes
1	1	0405096-7	SMP		0.3007	0.3007	Dry Weight	dC	6/22/04	T1	
2	1	0405096-9	SMP		1.0016	1.0016	Dry Weight			T1	
3	1	0405096-18	SMP		1.0435	1.0435	Dry Weight			T1	
4	1	0405096-18	DUP		1.0223	1.0223	Dry Weight			T1	
5	1	0405096-27	SMP		0.101	0.101	Dry Weight			T1	
6	1	0405096-28	SMP		0.201	0.201	Dry Weight			T1	
7	1	0405096-29	SMP		1.0062	1.0062	Dry Weight			T1	
8	1	0405096-30	SMP		0.1025	0.1025	Dry Weight			T1	
9	1	0405096-32	SMP		0.1028	0.1028	Dry Weight			T1	
10	1	AS040618-1	MB		0.3	0.3	Dry Weight			T1	
11	1	AS040618-1	LCS		0.3	0.3	Dry Weight			T1,S1	

dC 6/22/04

Spiked By: Grace Campagnola **Date:** 6/19/04

Witnessed By: Tambrae Elhart **Date:** 6/19/04

Relinquished By: CDM
Date: 6/23/04
Received By: SP
Date: 6/23/04

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.40	37.889	DPM/ml	06/18/04	0.5	ml	AW004

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	06/18/04	0.5	ml	AW004
S1	U-235	643.2382.44	1.841	DPM/ml	06/18/04	0.5	ml	AW004
S1	U-238	643.2382.44	39.994	DPM/ml	06/18/04	0.5	ml	AW004

000170

Comments
1. All samples were muffled at 600°C overnight.
2. None of the samples received PEG treatment.

Paragon Analytics
LIMS Version: 5.032A

Supersedes: 6/18/04 1326

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AS040618-1

Prep Procedure: UISO

Prep Batch Not Validated!!!

Reviewed By:

Review Date:

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep? Y / N** **Batch:** _____ **Prep QASS / NCR? Y / N** _____

Prep SOP: PAI 778 **Rev:** 9
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Grace Campagnola dc
Prep Date: 6/18/04 6/22/04
Prep Dept: AP

Balance: 23
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Micro Init	Micro Date	Standards	Prep Notes Funnel #
1	1	0405096-7	SMP	H321	0.3007	0.3	Dry Weight			T1	4
2	1	0405096-9	SMP	H401	1.0016	1	Dry Weight			T1	22
3	1	0405096-18	SMP	H444	1.0435	1	Dry Weight			T1	3
4	1	0405096-18	DUP	H311	1.0223	1	Dry Weight			T1	23
5	1	0405096-27	SMP	H405	0.1010	0.1	Dry Weight			T1	28
6	1	0405096-28	SMP	H419	0.2010	0.2	Dry Weight			T1	9
7	1	0405096-29	SMP	H400	1.0062	1	Dry Weight			T1	24
8	1	0405096-30	SMP	H409	0.1025	0.1	Dry Weight			T1	29
9	1	0405096-32	SMP	H1062	0.1028	0.1	Dry Weight			T1	25
10	1	AS040618-1	MB	H455	0.3	0.3	Dry Weight			T1	30
11	1	AS040618-1	LCS	H326	0.3	0.3	Dry Weight			T1,S1	31

Spiked By: dc **Date:** 6/19/04
Witnessed By: TE **Date:** 6/19/04

Relinquished By: _____
Date: _____
Received By: _____
Date: _____

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.40	37.889	DPM/ml	06/18/04	0.5	ml	AW004

6/2/05

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	06/18/04	0.5	ml	AW004
S1	U-235	643.2382.44	1.841	DPM/ml	06/18/04	0.5	ml	AW004
S1	U-238	643.2382.44	39.994	DPM/ml	06/18/04	0.5	ml	AW004

11/1/04

000171

Comments

Supersedes: NA

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AS040720-3

Prep Procedure: UISO

Analytical QASS / NCR? Y / N

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0405096-6	SMP	0.5138	0.5138	g	_50966	9	Sm	_50966			_50966			
1	0407041-3	SMP	2.0221	2.0221	g	_70413	10		_70413			_70413			
1	0407041-3	DUP	2.0371	2.0371	g	_70413D	11		_70413D			_70413D			
1	0407041-4	SMP	2.1024	2.1024	g	_70414	13		_70414			_70414			
1	0407126-7	SMP	2.1529	2.1529	g	_71267	16		_71267			_71267			
1	0407126-8	SMP	2.0652	2.0652	g	_71268	17		_71268			_71268			
1	0407126-8	DUP	2.1174	2.1174	g	_71268D	18		_71268D			_71268D			
1	0407126-16	SMP	2.0521	2.0521	g	_712616	19		_712616			_712616			Sm 7/29/04
1	0407126-22	SMP	2.0974	2.0974	g	_712622	21	UR	_712622	9	Sm	_712622			Peak Shift Sm 7/27/04
1	AS040720-3	MB	2	2	g	_7203B	22		_7203B			_7203B			
1	AS040720-3	LCS	2	2	g	_7203L	23		_7203L			_7203L			
1	AS040720-3	LCSD	2	2	g	_7203LD	24		_7203LD			_7203LD			Sm 7/29/04

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.40	37.856	DPM/ml	07/20/04	0.5	ml	AW004

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	07/20/04	0.5	ml	AW004
S1	U-235	643.2382.44	1.841	DPM/ml	07/20/04	0.5	ml	AW004
S1	U-238	643.2382.44	39.994	DPM/ml	07/20/04	0.5	ml	AW004

000172

Supersedes: N/A

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AS040720-3

Prep Procedure: UISO

Reviewed By: JLO JLO 7/26/04 **Review Date:** 7/26/04

Non-Routine Pre-Treatment? (Y) / N **Batch:** See Comments **Re-Prep?** Y / (N) **Batch:** N/A **Prep QASS / NCR?** (Y) / N 268110/277668

Prep SOP: PAI 778 **Rev:** 9
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Jimi Oldenburg
Prep Date: 7/20/04
Prep Dept: AP

Balance: 23
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Micro Init	Micro Date	Standards	Prep Notes
1	1	0405096-6	SMP		0.5138	0.5138	Dry Weight	JLO	7/26/04	T1	
2	1	0407041-3	SMP		2.0221	2.0221	Dry Weight			T1	
3	1	0407041-3	DUP		2.0371	2.0371	Dry Weight			T1	
4	1	0407041-4	SMP		2.1024	2.1024	Dry Weight			T1	
5	1	0407126-7	SMP		2.1529	2.1529	Dry Weight			T1	
6	1	0407126-8	SMP		2.0652	2.0652	Dry Weight			T1	
7	1	0407126-8	DUP		2.1174	2.1174	Dry Weight			T1	
8	1	0407126-16	SMP		2.0521	2.0521	Dry Weight			T1	
9	1	0407126-22	SMP		2.0974	2.0974	Dry Weight			T1	
10	1	AS040720-3	MB		2	2	Dry Weight			T1	
11	1	AS040720-3	LCS		2	2	Dry Weight			T1,S1	
12	1	AS040720-3	LCSD		2	2	Dry Weight			T1,S1	

JLO 7/26/04

Spiked By: Jimi Oldenburg **Date:** 7/20/04

Witnessed By: Grace Campagnola **Date:** 7/20/04

Relinquished By: [illegible] **Date:** 7/26/04
Received By: [illegible] **Date:** 7/27/04

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.40	37.856	DPM/ml	07/20/04	0.5	ml	AW004

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	07/20/04	0.5	ml	AW004
S1	U-235	643.2382.44	1.841	DPM/ml	07/20/04	0.5	ml	AW004
S1	U-238	643.2382.44	39.994	DPM/ml	07/20/04	0.5	ml	AW004

0001173

Comments
All samples were muffled at 600 C. PEG treatment was performed on all samples.

Supersedes: 7/20/04 16:05

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AS040720-3

Prep Procedure: UISO

Prep Batch Not Validated!!!

Reviewed By: **Review Date:**

Non-Routine Pre-Treatment? Y / N **Batch:** N/A **Re-Prep?** Y / N **Batch:** N/A **Prep QASS / NCR?** Y / N 268110

Prep SOP: PAI 778 **Rev:** 9 7/20/04 **Prep Analyst:** Jimi Oldenburg **Balance:** 23

Prep SOP: NONE **Prep Date:** 7/20/04 **Balance:**

Matrix Class: solid **Prep Dept:** AP

	Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Micro Init	Micro Date	Standards	Prep Notes
29	1	1	0405096-6	SMP	1045	0.5138	0.5138	Dry Weight	JLO	7/26/04	T1	
8	2	1	0407041-3	SMP	404	2.0221	2	Dry Weight			T1	
22	3	1	0407041-3	DUP	558	2.0371	2	Dry Weight			T1	
2	4	1	0407041-4	SMP	483	2.1624	2	Dry Weight			T1	
23	5	1	0407126-7	SMP	492	2.1529	2	Dry Weight			T1	
9	6	1	0407126-8	SMP	1085	2.0652	2	Dry Weight			T1	
1	7	1	0407126-8	DUP	599	2.1174	2	Dry Weight			T1	
21	8	1	0407126-16	SMP	417	2.0521	2	Dry Weight			T1	
22	9	1	0407126-22	SMP	428	2.0974	2	Dry Weight			T1	
23	10	1	AS040720-3	MB	585	2	2	Dry Weight			T1	
24	11	1	AS040720-3	LCS	456	2	2	Dry Weight			T1,S1	
30	12	1	AS040720-3	LCSD	316	2	2	Dry Weight			T1,S1	

JLO 7/26/04

Spiked By: JLO **Date:** 7/20/04

Witnessed By: KC **Date:** 7/20/04

Relinquished By:

Date:

Received By:

Date:

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	U-232	511.2613.40 52	37.856	DPM/ml	07/20/04	0.5	ml	AW004

BY 7/20/04

exp 7/14/05

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	U-234	643.2382.44	38.522	DPM/ml	07/20/04	0.5	ml	AW004
S1	U-235	643.2382.44	1.841	DPM/ml	07/20/04	0.5	ml	AW004
S1	U-238	643.2382.44	39.994	DPM/ml	07/20/04	0.5	ml	AW004

exp 11/1/04

000174

Comments

Supersedes: N/A

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: AC

ANALYSIS DATE: 6/3/04 METHOD: Prep

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
04050916	1	dry	grand	none
	2			
	3			
	4			
	5			
	8			
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	19			
	20			
	22			
	25			
	26			
	31			

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JC

ANALYSIS DATE: 6/19/04 METHOD: Prep

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0405096	7	dry	ground	none
	9			
	18			
	27			
	28			
	29			
	30			
	32			

JC 6/19/04

000176

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JLO

ANALYSIS DATE: 7/20/04 METHOD:

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0405096	6	Dry	Ground	None
0407041	3			
	4			
0407126	7			
	8			
	16			
	22			

7/26/04 JLO

PROJECT KENT & SULLIVAN Notebook No. 2770
Continued From Page

6/2/04 W.O. # 04-05-096 (Th$^{I\pm50}$, U$^{I\pm50}$, RA226(903.1))

in oven - 5/28 @ 1740
out oven - 6/1 @ 1430

S.O.P. - 721 - R11
balance #15, oven #1
5 balls, shake 15 min.

Sample #	Sample/can/balls (g)	can/balls (g)	ground sample (g)	TYPE sample
04-05-096 - 1	127.0	96.6	30.4	SOIL
- 2	128.1	97.4	30.7	
- 3	127.1	96.5	30.6	
- 4	127.7	97.4	30.3	
- 5	127.7	97.3	30.4	
- 7	127.5	97.0	30.5	
- 8	126.8	96.8	30.0	
- 9	127.3	97.0	30.3	
- 10	127.2	97.1	30.1	
- 11	127.6	97.3	30.3	
- 12	127.8	97.3	30.5	
- 13	127.8	97.4	30.4	
- 14	127.6	97.2	30.4	
- 15	128.0	97.8	30.2	
- 16	127.8	97.4	30.4	
- 17	127.7	97.2	30.5	

C.O. - 6/2/04

Continued on Page 51

Read and Understood By

Carson R. O'Dell 6/2/04 — Signed, Date
T Elhart 6/2/04 — Signed, Date

3

6/2/04 W.O. #04-05-096 (Th^{I-50}, U^{I-50}, RA^{226}(903.1))

in oven - 5/28 @ 1740
OUT oven - 6/1 @ 1430

S.O.P. - 721 - R11
balance #15, oven #1
5 balls, shake 15 min.

Sample #	sampler/can/balls (g)	can/balls (g)	ground sample (g)	Type sample
04-05-096-18	128.3	97.4	30.9	SOIL
-19	127.4	97.3	30.1	
-20	127.7	97.4	30.3	
-21	128.1	97.4	30.7	
-22	126.9	96.4	30.5	
-23	124.3	96.9	27.4	
-24	127.5	97.0	30.5	
-25	127.8	97.7	30.1	
-26	127.5	96.9	30.6	
-27	124.8	97.4	27.4	
-28	120.9	96.8	24.1	
-29	128.0	97.3	30.7	
-30	128.4	97.3	31.1	
-31	127.4	97.3	30.1	
-32	128.4	97.5	30.9	

C.O. - 6/2/04

Continued on Page

Read and Understood By

Carson R. O'Dell 6/2/04 — Signed, Date
T Elhart 6/2/04 — Signed, Date

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 7

STANDARDS TRACEABILITY DOCUMENTS

7

cbm 4/20/04

cbm 4/20/04

Preparation of U-232 tracer solution with Th-228 daughter removed by ion exchange

1. Weigh 5.2113g of U-232 parent standard (ID= 511.1572.82 activity= 1920.01dpm/g) into a tared disposable plastic 220 mL beaker.
2. Place beaker + contents onto steambath and evaporate solution to dryness.
3. Re-dissolve residue in 30-40 mL of 9M HCL.
4. Prepare anion exchange column: 10mL resin bed, 50-100 mesh particle size. Rinse column with 50 mL of 9M HCL. Discard effluent from column.
5. Load standard solution in 9M HCL onto prepared anion exchange column. Discard effluent from column.
6. Rinse column four times with 25 mL volumes of 9M HCL. Allow each rinse to pass through column completely before adding next. Discard effluent from column.
7. Strip U by rinsing column several times with 80 mL volumes of 0.5M HCL. Collect effluent from the column in a clean 500 mL volumetric flask (Class A).
8. After adding about 60 mL of conc. HCL, bring to 500 mL final volume (at mark) with 0.5M HCL, mix thoroughly. Transfer to plastic bottle with screw cap. Estimate final acid conc.~2M HCL.

cbm 4/20/04

SD 4/26/04

Cleaned up tracer solution: Th-228 removed

Stnd ID: 511.2613.41

Description:	U-232	
Expiration:	4/21/05	
Activity:	20.01	dpm/mL
2s Uncertainty:	0.67	dpm/mL
Ref. Date:	2/4/99	
Ref Time:	N/A	
Prep Date:	4/20/04	*Prep by:* CL
Matrix/Comp.	0.5M HCl	
Half Life (y):	6.98E+01	

SD 4/26/04

cbm 4/20/04

Activity calculation

$$5.2113\,g \times \frac{1920.01\ dpm}{g} = \frac{10005.7\ dpm}{500\ mL} = 20.01\ dpm/mL$$

HCL Lot # 432168

Continued on Page

Read and Understood By

C Moncevaage — Signed — 4/20/04 Date

Signed — 4/26/04 Date

OJECT U 232 Standard
511.1572.82

NOTEBOOK NO. 10

Continued From Page

Transfer U 232 standard RSO # 511 to a 1 liter Nalgene bottle.

empty bottle (w/lid):	59.2300 g	balance 12
full bottle (w/lid):	594.60 g	balance 21
	535.37 g	total amt + standard

Activity of standard (data from calibration sheet for RSO #511)

(17170 dps)(60 sec/min) = 1,030,200 dpm

1,030,200 dpm / 536.56 g = 1920.61 dpm/g

ref date: 2/4/99

$t_{1/2}$ = 69.8 yr

Subsequent Dilutions to be verified.

This was a direct transfer, w/o dilution.

Continued on Page

Read and Understood By

D Mansell	3/31/99	DCB	4/28/99
Signed	Date	Signed	Date

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

PAID 4-511
rec'd 2-10-99

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

57106-307

U-232 500 mL Liquid in Flame Sealed Bottle

This standard radionuclide source was prepared using an aliquot measured gravimetrically from a master radionuclide solution standard. The master radionuclide solution standard was calibrated by the Department Des Applications Et De La Metrologie Des Rayonnements Ionisants (DAMRI), Paris, France, as Number 23236.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	U-232
ACTIVITY (dps):	1.717 E+04
CALIBRATION DATE:	February 4, 1999 12:00 EST
HALF-LIFE:	69.8 years
TOTAL UNCERTAINTY:	5.0%

536.56 grams of solution 2M HNO_3.
Impurities detected: U-233 <50 dps/bottle, Am-241 <25 dps/bottle on above referenced date.

P O NUMBER 22055, Item 1

SOURCE PREPARED BY: _____
E. A. Taskaev, Radiochemist

Q A APPROVED: _____ 2-4-99

U-233 $\frac{< 50 \text{ dps}}{1.717E+04} = 0.29\%$

28/03

Am-241 $\frac{< 25 \text{ dps}}{1.717 E+04} = 0.15\%$

PROJECT U-232 511.~~1572~~ 2613.40 CDM 4/20/04

Notebook No. 2613

Continued From Page

U-232 working dilution

Prepare a working level dilution of U-232 by diluting w/ 2M HCL to 40 dpm/mL. This working level standard will be made by diluting std 511.1572.82 to 40 dpm/mL with 2M HCL.

1) Determine the density of 2M HCL lot # 43268

Mass of empty 100 mL Class A volumetric flask	68.2978 g
Mass of 100 mL of 2M HCL & flask	171.1645 g
Net mass of 2M HCL	102.8667
	ρ = 1.0287 g/mL

2) Transfer U-232 (std 511.1572.82) to a 500 mL nalgene bottle

a) Mass of nalgene bottle without lid	48.2085 g
b) Mass of glass graduated cylinder empty	36.0527 g
c) Mass of glass graduated cylinder + U-232 std	46.8358 g
~~Net mass of standard transferred~~ CDM 4/20/04	
d) Mass of glass graduated cylinder after transfer	36.1577 g
e) Net mass of standard transferred (calculation taken from difference of lines c & d)	10.6781 g

3) Dilute to final volume with 2M HCL

Mass of nalgene bottle w/out lid (from above)	48.2085 g
Mass of nalgene bottle, std & 2M HCL	575.57 g
Net mass of standard	527.36 g

4) Final Activity Calculation

$$\frac{(1920.01\ \frac{dpm}{g})(1.0287\ \frac{g}{mL})(10.6781\ g)}{527.36\ g} = 39.99\ dpm/mL$$

SD 6/4/04

Stnd ID: 511.2613.40

Description: U-232

Expiration: 6/2/2005

Activity: 39.99 dpm/mL

2s Uncertainty: 1.33 dpm/mL

Ref. Date: 2/4/1999

Ref Time: N/A

Prep Date: 4/20/2004 Prep by: CDM

Matrix/Comp. 2M HCl

Half Life (y): 6.98E+01

SD 6/4/04

SD 4/4/04

Requires NCR for ICPT work.

SD 4/4/04

Continued on Page

Read and Understood By

Signed: Chroncavage Date: 4/20/04

Signed: [signature] Date: 6/4/04

Transfer U 232 standard RSO # 511 to a 1 liter Nalgene bottle.

balance 12

empty bottle w/ lid: 59.2300 g
full bottle (w/ lid): 594.60 g
535.37 g total amt + standard

balance 21

Activity of standard (data from calibration sheet for RSO #511)

(1710 dps)(60 sec/min) = 1,030,200 dpm

1,030,200 dpm / 536.56 g = 1920.61 dpm/g
ref date: 2/4/99
$t_{1/2}$ = 69.8 yr

Subsequent Dilutions to be verified.

This was a direct transfer, w/o dilution.

Continued on Page

Read and Understood By

Signed: [illegible] Date: 3/31/99
Signed: [illegible] Date: 4/28/99

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

PAI ID #.511
rec'd 2-10-99

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

57106-307

U-232 500 mL Liquid in Flame Sealed Bottle

This standard radionuclide source was prepared using an aliquot measured gravimetrically from a master radionuclide solution standard. The master radionuclide solution standard was calibrated by the Department Des Applications Et De La Metrologie Des Rayonnements Ionisants (DAMRI), Paris, France, as Number 23236.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	U-232
ACTIVITY (dps):	1.717 E+04
CALIBRATION DATE:	February 4, 1999 12:00 EST
HALF-LIFE:	69.8 years
TOTAL UNCERTAINTY:	5.0%

536.56 grams of solution 2M HNO_3.
Impurities detected: U-233 <50 dps/bottle, Am-241 <25 dps/bottle on above referenced date.

P O NUMBER 22055, Item 1

SOURCE PREPARED BY: _____
E. A. Taskaev, Radiochemist

Q A APPROVED: _____ 2-4-99

U-238 working dilution

CDM 10-18-02

prepare a working dilution of U-238 643.2382.44 43
to 40 dpm/ml by diluting w/ 1N HNO3 (Lot #42207)

Copied from 643.2382.41

1) Determine the density of 1N HNO3 (Lot #42207)

mass of 100 ml vol flask	164.6667 g	(Bal 12)
mass of vol flask + 1N HNO3	267.4861 g	
Net mass of ~~std~~ HNO3 RG 12/3/02	102.819 g	

ρ = .028 g/mL

2) Transfer approx 20 g ~~10~~ g CDM 10-18-02 of U-238 (643.2382.43)
to 1L wide mouth bottle

mass of wide mouth bottle w/o lid	74.1463 g	(Bal 12)
mass of bottle + std ~~74.1463 g~~ 92.0243 g		(Bal 12)
Net mass of std transferred	17.878 g	

3) Dilute to final vol w/ 1N HNO3

mass of wide mouth (from above)	74.1463 g	(Bal 12)
mass of wide mouth + std + 1N HNO3	953.3 g	(Bal 26)
Net mass of std	879.2 g	

4) Final Activity Calculation

$$\frac{(1913.24\ dpm/g)(17.878\ g)(1.028\ g/mL)}{879.2\ g} = \cancel{\text{PL}\ 10.00}\ \cancel{\text{Bio}\ 10/18/02}\ 39.99\ dpm/mL$$

RG 11/10/02

Standard reverified 11/25/03. SD 11/26/03
New expiration date 11/1/04.

Std ID: 643.2382.44
Description: U-238
Activity: 39.99 dpm/ml
2s Uncertainty: 0.24 dpm/ml
Ref. Date: 8/1/97
Ref Time: na
Prep Date: ~~10/4/93~~ 10/18/02
Prep by: CM/DCB
Expiration: 11/6/03
Matrix/Comp. 1.0N HNO3
Half Life (y): 4.47E+09
RG 11/10/02

Read and Understood By

CDM Signed 10-18-02 Date

Signed 11/10/02 Date

U-238 primary dilution

Prepare a primary dilution of U-238 (NIST SRM 4321c)

1) Transfer ampule to a 40 ml VOA Vial

mass of empty 50 ml beaker 29.3895 g (Bal 12)

mass of beaker + ampule 38.0534 g

~~Net mass of std transferred~~ ~~8.6639 g~~

mass of beaker + empty ampule: 33.9475 g (Bal 12) Net mass of std transferred: 5.1109 g

2) Dilute to final volume w/ 1N HNO_3

mass of empty VOA Vial 22.0308 g (Bal 12)

mass of VOA vial + std + 1N HNO_3 60.8186 g

Net mass of diluted ~~std~~ HNO_3 38.7878 g

3) Final activity Calculation

$$\frac{(242.0\ \mu g/g)(60\ dpm/\mu g)(5.1109\ g)(.028\ g/mL)}{38.7878\ g}$$

19606.808 dpm/mL

= 2334.02 dpm/mL

1913.24 dpm/g

= 3429.43 dpm/g

Continued on Page

Read and Understood By

CDM 10-18-02 Signed Date

Signed 11/10/02 Date

National Institute of Standards & Technology

Certificate

PAI IP C 6/3
10-15-02

Standard Reference Material 4321C
Natural Uranium Radioactivity Standard

s Standard Reference Material (SRM) consists of radioactive natural uranium nitrate and nitric acid solved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass poule. The SRM is intended for the calibration of alpha-particle counting instruments and for the nitoring of radiochemical procedures.

Radiological Hazard

ie SRM ampoule contains uranium-238, uranium-235, and uranium-234 with a total activity of approximately 00 Bq. Uranium decays by alpha-particle emission. The progeny of uranium-238, uranium-235, and anium-234 have a total activity of approximately 2600 Bq and decay by alpha- and beta-particle emission. one of the alpha or beta particles escape from the SRM ampoule. During the decay process X-rays and mma rays with energies from 11 keV to 2.0 MeV are also emitted. Most of these photons escape from the RM ampoule but their intensities are so small that they do not represent a radiation hazard. Approximate nshielded dose rates at several distances (as of the reference time) are given in note [a]*. The SRM should e used only by persons qualified to handle radioactive material.

Chemical Hazard

The SRM ampoule contains nitric acid (HNO_3) with a concentration of 1 mole per liter of water. The solution s corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least August 2007.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Thomas E. Gills, Chief
Standard Reference Materials Program

Gaithersburg, Maryland 20899
November 1997

*Notes and references are on pages 5 and 6.

000189

If the SRM solution is to be diluted, it is recommended that the diluting solution have a composition comparable to that of the SRM solution.

Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it. Work in a fume hood. In addition to the radioactive material, the solution contains strong acid and is corrosive.

Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.

Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.

Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.

Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.

Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. NEVER PIPETTE BY MOUTH.

Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss.

e also reference [4]*.

*Notes and references are on pages 5 and 6.

PROPERTIES OF SRM 4321C

(Certified values are shown in bold type)

ource identification number	NIST SRM 4321C
hysical Properties:	
;ource description	Liquid in flame-sealed NIST borosilicate-glass ampoule
Ampoule specifications	Body outside diameter (16.5 ± 0.5) mm Wall Thickness (0.60 ± 0.04) mm Barium content Less than 2.5% Lead-oxide content Less than 0.02% Other heavy elements Trace quantities
Solution density	(1.053 ± 0.001) $g \cdot mL^{-1}$ at 21.4 °C [b]*
Solution mass	(5.258 ± 0.002) g [b]

Chemical Properties:

Solution composition	Chemical Formula	Concentration ($mol \cdot L^{-1}$)	Mass Fraction ($g \cdot g^{-1}$)
	H_2O	53	0.91
	HNO_3	1.0	0.06
	$UO_2(NO_3)_2$	0.09	0.03

Radiological Properties:

Radionuclide	Natural Uranium (Mixture of U-238, U-235, and U-234)
Reference time	1200 EST, 1 August 1997
Massic activity of the solution [c]	U-238: 242.0 $Bq \cdot g^{-1}$ U-235: 11.14 $Bq \cdot g^{-1}$ U-234: 233.1 $Bq \cdot g^{-1}$
Relative expanded uncertainty ($k=2$)	U-238: 0.60% [d] [e] U-235: 0.62% [d] [e] U-234: 0.98% [d] [e]
Mass fraction of uranium	(0.01960 ± 0.00010) $g \cdot g^{-1}$ [b]
Photon-emitting impurities	None detected [f]
Half lives used	Uranium-238: (4.468 ± 0.003) × 10^9 a [g] Uranium-235: (7.038 ± 0.005) × 10^8 a [g] Uranium-234: (2.455 ± 0.006) × 10^5 a [g]
Measuring instruments	Mass spectrometer, silicon surface-barrier detector, and $4\pi(\alpha+\beta)$ liquid-scintillation counting systems.

*Notes and references are on pages 5 and 6.

EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d]*

Input Quantity x_i, source of uncertainty (and individual certainty components where appropriate)	Method Used To Evaluate $u(x_i)$, the standard uncertainty of x_i (A) denotes evaluation by statistical methods (B) denotes evaluation by other methods	Relative Uncertainty Of Input Quantity, $u(x_i)/x_i$, (%) [h]	Relative Sensitivity Factor, $\lvert \partial y/\partial x_i \rvert \cdot (x_i/y)$ [i]	Relative Uncertainty Of Output Quantity, $u_i(y)/y$, (%) [j]
opic uranium atom tion in SRM 960	Standard deviation of the mean for repeated mass-spectrometric measurements (A)	U-238: 0.001 U-235: 0.07 U-234: 0.31	1.0 1.0 1.0	0.001 0.07 0.31
lf life	Standard uncertainty of the half life (A)	U-238: 0.07 U-235: 0.07 U-234: 0.25	1.0 1.0 1.0	0.07 0.07 0.25
anium mass fraction SRM 960	Certificate value (B)	0.003	1.0	0.003
uantitative dissolution	Estimated (B)	0.25	1.0	0.25
ravimetric easurements	Estimated (B)	0.10	1.0	0.10
hoton-emitting apurities	Limit of detection (B) [k]	100.	0.001	0.10
elative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$, (%)			U-238: U-235: U-234:	0.30 0.31 0.49
Coverage Factor, k				x 2
Relative Expanded Uncertainty of the Output Quantity, U/y, (%)			U-238: U-235: U-234:	0.60 0.62 0.98

*Notes and references are on pages 5 and 6.

NOTES

The Sievert is the SI unit for dose equivalent. See reference [1]. One μSv is equal to 0.1 mrem.

Distance from Ampoule (cm):	1	30	100
Approximate Dose Rate (μSv/h):	<0.1	-	-

The stated uncertainty is two times the standard uncertainty.

Massic activity is the preferred name for the quantity activity divided by the total mass of the sample. See reference [1].

The reported value, y, of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \ldots x_n)$, where f is a mathematical function derived from the assumed model of the measurement process.

The value, x_i, used for each input quantity i has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in y, $u_i(y) \equiv |\partial y/\partial x_i| \cdot u(x_i)$, called a component of combined standard uncertainty of y.

The combined standard uncertainty of y, $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain U, the expanded uncertainty of y.

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

[e] The value of each standard uncertainty component, and hence the value of the expanded uncertainty itself, is a best estimate based upon all available information, but is only approximately known. That is to say, the "uncertainty of the uncertainty" is large and not well known. This is true for uncertainties evaluated by statistical methods (e.g., the relative standard deviation of the standard deviation of the mean for the massic count rate is approximately 50%) and for uncertainties evaluated by other methods (which could easily be over estimated or under estimated by substantial amounts). The unknown value of the expanded uncertainty is believed to lie in the interval $U/2$ to $2U$ (i.e., within a factor of 2 of the estimated value).

[f] Estimated limits of detection for photon-emitting impurities are:
1.4 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 8 and 59 keV,
1.1 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 67 and 88 keV,
0.5 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 102 and 197 keV,
0.3 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 205 and 762 keV,
0.2 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 770 and 996 keV, and
0.1 $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 1006 and 1900 keV,
provided that the photons are separated in energy by 4 keV or more from photons emitted in the decay of uranium-238, uranium-235, uranium-234, or their progeny.

[g] The stated uncertainty is the standard uncertainty. See reference [5].

Relative standard uncertainty of the input quantity x_i.

The relative change in the output quantity y divided by the relative change in the input quantity x_i. If $|\partial y/\partial x_i| \cdot (x_i/y) = 1.0$, then a 1% change in x_i results in a 1% change in y. If $|\partial y/\partial x_i| \cdot (x_i/y) = 0.05$, then a 1% change in x_i results in a 0.05% change in y.

Relative component of combined standard uncertainty of output quantity y, rounded to two significant figures or less. The relative component of combined standard uncertainty of y is given by $u_i(y)/y = |\partial y/\partial x_i| \cdot u(x_i)/y = |\partial y/\partial x_i| \cdot (x_i/y) \cdot u(x_i)/x_i$. The numerical values of $u(x_i)/x_i$, $|\partial y/\partial x_i| \cdot (x_i/y)$, and $u_i(y)/y$, all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e. $u(x_i)/x_i$ = 100%. $|\partial y/\partial x_i| \cdot (x_i/y)$ = {(response per Bq of impurity)/(response per Bq of U-238)} · {(Bq of impurity)/(Bq of U-238)}. Thus $u_i(y)/y$ is the relative change in y if the impurity were present with a massic activity equal to the estimated limit of detection.

REFERENCES

International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900.

International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900. (Listed under ISO miscellaneous publications as "ISO Guide to the Expression 1993".)

B. N. Taylor and C. E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1994. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20407, U.S.A.

National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.

Evaluated Nuclear Structure Data File (ENSDF), August 1997.

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 8

CHAIN OF CUSTODY

8

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0405096
Client Name: Kent & Sullivan Inc.
Client Project Name: Ross Adams
Client Project Number:
Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
MSED-01	0405096-1		SOIL	06-May-04	13:00
MSED-02	0405096-2		SOIL	06-May-04	13:40
MSED-03	0405096-3		SOIL	06-May-04	14:00
MSED-04	0405096-4		SOIL	06-May-04	9:10
MSED-05	0405096-5		SOIL	06-May-04	9:20
MSED-06	0405096-6		SOIL	07-May-04	8:30
MSED-07	0405096-7		SOIL	07-May-04	9:00
MSED-08	0405096-8		SOIL	07-May-04	9:15
MSED-09	0405096-9		SOIL	07-May-04	9:20
MSED-10	0405096-10		SOIL	07-May-04	10:10
SSED-01	0405096-11		SOIL	05-May-04	16:15
SSED-02	0405096-12		SOIL	05-May-04	17:05
SSED-03	0405096-13		SOIL	04-May-04	18:10
SSED-04	0405096-14		SOIL	04-May-04	17:00
SSED-05	0405096-15		SOIL	04-May-04	15:59
SSED-06	0405096-16		SOIL	04-May-04	15:03
SSED-07	0405096-17		SOIL	04-May-04	14:00
SSED-08	0405096-18		SOIL	05-May-04	12:40
SSED-09	0405096-19		SOIL	05-May-04	15:20
SSED-10	0405096-20		SOIL	04-May-04	19:05
GEN-01	0405096-21		SOIL	07-May-04	12:40
GEN-02	0405096-22		SOIL	07-May-04	12:35
GEN-03	0405096-23		SOIL	07-May-04	12:50
GEN-04	0405096-24		SOIL	07-May-04	13:06
SOIL-01	0405096-25		SOIL	06-May-04	16:00
SOIL-02	0405096-26		SOIL	06-May-04	15:40
SOIL-04	0405096-27		SOIL	06-May-04	15:04
SOIL-05	0405096-28		SOIL	06-May-04	15:10
SOIL-07	0405096-29		SOIL	07-May-04	13:50
SOIL-08	0405096-30		SOIL	07-May-04	16:15
SOIL-09	0405096-31		SOIL	07-May-04	14:10
SOIL-10	0405096-32		SOIL	07-May-04	16:40

Paragon Analytics
LIMS Version: 5.014A

Date Printed: Thursday, May 13, 2004

Paragon Analytics, Inc.

225 Commerce Drive Fort Collins, CO 80524
800-443-1511 or (970) 490-1511 (970) 490-1522 Fax

Accession Number (LAB ID) 0405096

Chain-of-Custody

Date _____ Page 2 of 9

Project Name / No.: _____ Sampler(s): _____ (circle one) Turnaround: Standard or Rush (Due _____). Dispose or Return to Client

Report To:
Phone:
Fax:
Company:
Address: See page 1

circle method or specify under comments

Sample ID	Date 2004	Time *	Lab ID	Matrix	No. of Containers	VOCs SW8260B E624 E524.2 OLMO__	BTEX (only) SW8021B	SVOCs SW8270C E625 E525 OLMO__	OC Pesticides SW8081A E608 E508 OLMO__	PCBs SW8082 E608 E508 OLMO__	OP Pesticides SW8141A E614	Herbicides SW8151A E615	TCLP Organics SW1311 8260B 8270C 8081A 8151A	TCLP Metals SW 1311 6010B 7471	Total Metals SW6010B 7470 7471 E200 ILMO__	Dissolved Metals SW6010B 7470 E200 ILMO__	Reactive CN / S SW846 Chapter 7	Hexavalent Chromium SW7196A Alkaline Digest? Y / N	Inorganic Anions ** SW9056 E300.0	pH SW9040B 9045C	Oil & Grease SW9071A E413.2	TPH GRO DRO SW8015B (both)	TOX SW9020B	Gross Alpha / Beta SW9310 E900.0	Actinides by PAI SOP (circle): Pu / U / Am / Th / Cm	Total Uranium isotopic	Tritium E906.0	Total Alpha-Emitting Radium SW9315 E903.0	Radium 226 SW9315 E903.0 Radium 228 SW9320 E904.0	Strontium 89 D5811-95 Strontium 90 D5811-95	Gamma Isotopes ** E901.1	Th- isotopic	Ac 227 - Po 231 - Pb 210
(X) FR-01	5-6-04	0800		W	2										(B)									X									
(X) FR-02	↓	0810		W	2										(B)									X									
MSED-01	5-6	1300	1	SED	2										(C)											X			X			X	
MSED-02	5-6	1340	2		3										(C)											X			X			X	
MSED-03	5-6	1400	3		2 1/4										(C)											X			X			X	
MSED-04	5-6	0910	4		3										(C)											X			X			X	X
MSED-05	5-6	0920	5		3										(C)											X			X			X	
MSED-06	5-7	0930	6		[illegible]										(C)											X			X			X	
MSED-07	5-7	0900	7	↓	3										(C)											X			X			X	

Comments:
(B) Hold analyses pending metals analyses from samples SW-05 and SW-07.
(C) Hold analyses pending metals results from samples OSA-01, 700-01, and 900-01.
(X) on WO # 0405095 [illegible] 5/12/04

Form 202r4.xls (1/3/01)

Relinquished By: (1)	Relinquished By: (2)
Signature Gerald Warrick	Signature
Printed Name Gerald Warrick	Printed Name
Date 5-10-04 Time 10:00	Date Time
Company Kent + Sullivan	Company

Received By: (1)	Received By: (2)
Signature [illegible]	Signature
Printed Name Amy Wolf	Printed Name
Date 5/11/04 Time 11:45	Date Time
Company Paragon Analytics	Company

000197

* Time Zone (circle one): EST CST MST PST ** Indicate specific analytes under comments.

Distribution: white / yellow (Paragon); pink retained by originator.

Paragon Analytics, Inc.

225 Commerce Drive Fort Collins, CO 80524
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Accession Number (LAB ID) 0405096

Chain-of-Custody

Date _____ Page 3 of 9

Project Name / No.: _____ Sampler(s): _____ (circle one) Turnaround: Standard or Rush (Due _____) Dispose or Return to Client

Report To:
Phone:
Fax:
Company:
Address: See pg 1

circle method or specify under comments

Sample ID	Date (2004)	Time *	Lab ID	Matrix	No. of Containers	VOCs SW8260B E624 E524.2 OLMO__	BTEX (only) SW8021B	SVOCs SW8270C E625 E525 OLMO__	OC Pesticides SW8081A E608 E508 OLMO__	PCBs SW8082 E608 E508 OLMO__	OP Pesticides SW8141A E614	Herbicides SW8151A E615	TCLP Organics SW1311 8260B 8270C 8081A 8151A	TCLP Metals SW 1311 6010B 7471	Total Metals SW6010B 7470 7471 E200 ILMO__	Dissolved Metals SW6010B 7470 E200 ILMO__	Reactive CN / S SW846 Chapter 7	Hexavalent Chromium SW7196A Alkaline Digest? Y / N	Inorganic Anions ** SW9056 E300.0	pH SW9040B 9045C	Oil & Grease SW9071A E413.2	TPH GRO DRO SW8015B (both)	TOX SW9020B	Gross Alpha / Beta SW9310 E900.0	Actinides by PAI SOP (circle): Pu / U / Am / Th / Cm	~~Total~~ Uranium ~~by KPA D5174-91~~ isotopic	Tritium E906.0	Total Alpha-Emitting Radium SW9315 E903.0	Radium 226 SW9315 E903.0 / Radium 228 SW9320 E904.0	Strontium 89 D5811-95 / Strontium 90 D5811-95	Gamma Isotopes ** E901.1	Th-isotopic
MSED-08	5-7	0915	8	SED	3										(c)											X			X			X
MSED-09	↓	0920	9	↓	3										(c)											X			X			X
MSED-10	↓	1010	10	↓	3										(c)											X			X			X
SSED-01	5-5	1615	11	SED	3										(c)											X			X			X
SSED-02	5-5	1705	12	↓	3										(c)											X			X			X
SSED-03	5-4	1810	13	↓	3										(c)											X			X			X
SSED-04	↓	1700	14	↓	3										(c)											X			X			X
SSED-05	↓	1559	15	↓	3										(c)											X			X			X
SSED-06	↓	1503	16	↓	3										(c)											X			X			X

Comments:
(c) Hold analyses pending metal results from samples OS1-01, 700-01, and 900-01.

Relinquished By: (1)
Signature Gerald Warrick
Printed Name Gerald Warrick
Date 5-10-04 Time 1010
Company Kent & Sullivan

Relinquished By: (2)
Signature _____
Printed Name _____
Date _____ Time _____
Company _____

Received By (1)
Signature _____
Printed Name Amy Wolf
Date 5/11/04 Time 1645
Company Paragon Analytics

Received By: (2)
Signature _____
Printed Name _____
Date _____ Time _____
Company _____

Form 202r4.xls (1/3/01)

* Time Zone (circle one): EST CST MST PST ** Indicate specific analytes under comments.

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000138

Paragon Analytics, Inc.
225 Commerce Drive Fort Collins, CO 80524
800-443-1511 or (970) 490-1511 (970) 490-1522 Fax

Chain-of-Custody

Accession Number (LAB ID) 0405096

Date _____ Page 4 of 9

Project Name / No.: _____ Sampler(s): _____ (circle one) Turnaround: Standard or Rush (Due _____) Dispose or Return to Client

Report To:
Phone:
Fax:
Company:
Address:
See pg 1

circle method or specify under comments

Sample ID	Date 2004	Time *	Lab ID	Matrix	No. of Containers	VOCs SW8260B E624 E524.2 OLMO__	BTEX (only) SW8021B	SVOCs SW8270C E625 E525 OLMO__	OC Pesticides SW8081A E608 E508 OLMO__	PCBs SW8082 E608 E508 OLMO__	OP Pesticides SW8141A E614	Herbicides SW8151A E615	TCLP Organics SW1311 8260B 8270C 8081A 8151A	TCLP Metals SW 1311 6010B 7471	Total Metals SW6010B 7470 7471 E200 ILMO__	Dissolved Metals SW6010B 7470 E200 ILMO__	Reactive CN / S SW846 Chapter 7	Hexavalent Chromium SW7196A Alkaline Digest? Y / N	Inorganic Anions ** SW9056 E300.0	pH SW9040B 9045C	Oil & Grease SW9071A E413.2	TPH GRO (DRO) SW8015B (both) (ARO)	~~SW8015B~~ EPA TOC	Gross Alpha / Beta SW9310 E900.0	Actinides by PAI SOP (circle): Pu / U / Am / Th / Cm	~~Total~~ Uranium ~~by KPA D5174-91~~ isotopic	Tritium E906.0	Total Alpha-Emitting Radium SW9315 E903.0	Radium 226 SW9315 E903.0 Radium 228 SW9320 E904.0	Strontium 89 D5811-95 Strontium 90 D5811-95	Gamma Isotopes ** E901.1	Th - isotopic
SSED-07	5-4	1400	17	SED	3										(c)											X			X			X
SSED-08	5-5	1240	18	(	3										(c)											X			X			X
SSED-09	5-5	1520	19	↓	3										(c)											X			X			X
SSED-10	5-4	1905	20	↓	3										(c)											X			X			X
GEN-01	5-7	1240	21	SOIL	2																	X	X									
GEN-02	5-7	1235	22	(	5										(c)							X	X			X			X			X
GEN-03	5-7	1250	23		2																	X	X									
GEN-04	5-7	1306	24	↓	2																	X	X									

Comments:
(c) Hold analyses pending metal results from samples OSA-01, 700-01, and 900-01.

Relinquished By: (1)
Signature Gerald Warrick
Printed Name Gerald Warrick
Date 5-10-04 Time 10:00
Company Gerald Warrick

Relinquished By: (2)
Signature _____
Printed Name _____
Date _____ Time _____
Company _____

Received By: (1)
Signature [illegible]
Printed Name Amy Wolf
Date 5/11/04 Time 1645
Company Paragon Analytics

Received By: (2)
Signature _____
Printed Name _____
Date _____ Time _____
Company _____

Form 202r4.xls (1/3/01)

* Time Zone (circle one): EST CST MST PST ** Indicate specific analytes under comments.

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000199

Paragon Analytics, Inc.

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800-443-1511 or (970) 490-1511 (970) 490-1522 Fax

Chain-of-Custody

Accession Number (LAB ID) 0405096

Date _____ Page 5 of 9

Project Name / No.: _____ Sampler(s): _____ (circle one) Turnaround: Standard or Rush (Due _____) Dispose or Return to Client

Report To:
Phone:
Fax:
Company:
Address:
All pg 1

circle method or specify under comments

Sample ID	Date 2004	Time *	Lab ID	Matrix	No. of Containers	VOCs SW8260B E624 E524.2 OLMO___	BTEX (only) SW8021B	SVOCs SW8270C E625 E525 OLMO___	OC Pesticides SW8081A E608 E508 OLMO___	PCBs SW8082 E608 E508 OLMO___	OP Pesticides SW8141A E614	Herbicides SW8151A E615	TCLP Organics SW1311 8260B 8270C 8081A 8151A	TCLP Metals SW 1311 6010B 7471	Total Metals SW6010B 7470 7471 E200 ILMO___	Dissolved Metals SW6010B 7470 E200 ILMO___	Reactive CN / S SW846 Chapter 7	Hexavalent Chromium SW7196A Alkaline Digest? Y / N	Inorganic Anions ** SW9056 E300.0	pH SW9040B 9045C	Oil & Grease SW9071A E413.2	TPH GRO DRO SW8015B (both)	TOX SW9020B	Gross Alpha / Beta SW9310 E900.0	Actinides by PAI SOP (circle): Pu / U / Am / Th / Cm	~~Total~~ Uranium by KPA D5174-91 Isotopic	Tritium E906.0	Total Alpha-Emitting Radium SW9315 E903.0	Radium 226 SW9315 E903.0 Radium 228 SW9320 E904.0	Strontium 89 D5811-95 Strontium 90 D5811-95	Gamma Isotopes ** E901.1	Th- isotopic	
SOIL-01	5-6	1600	25	SOIL	3										C											X			X			X	
SOIL-02	5-6	1540	26	SOIL	3										C											X			X			X	
SOIL-04	5-6	1504	27	SOIL	3										C											X			X			X	
SOIL-05	5-6	1510	28	SOIL	3										C											X			X			X	
SOIL-07	5-7	1350	29	SOIL	3										C											X			X			X	
SOIL-08	5-7	1615	30	SOIL	3										C											X			X			X	
SOIL-09	5-7	1410	31	SOIL	3										C											X			X			X	
SOIL-10	5-7	1640	32	SOIL	3										C											X			X			X	
(X) HR-01	5-6	1900		RK	1										C											X			X			X	

Comments:
(X) on WO # 0405097
AW 5/12/04

Relinquished By: (1)
Signature Gerald Warrick
Printed Name Gerald Warrick
Date 5-10-04 Time 10:00
Company Kent + Sullivan

Relinquished By: (2)
Signature _____
Printed Name _____
Date _____ Time _____
Company _____

Received By: (1)
Signature AWolf
Printed Name Amy Wolf
Date 5/11/04 Time 1645
Company Paragon Analytics

Received By: (2)
Signature _____
Printed Name _____
Date _____ Time _____
Company _____

Form 202r4.xls (1/3/01)

* Time Zone (circle one): EST CST MST PST ** Indicate specific analytes under comments. Distribution: white / yellow (Paragon); pink retained by originator.

002200

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Kent + Sullivan WORKORDER NO: 0405096

PROJECT MANAGER: Debbie Fazio INITIALS: DW DATE: 5/12/04

1. Does this project require any special handling in addition to standard Paragon procedures?		Yes	No
IS PRE-SCREENING REQUIRED? (radiochemistry, DOE, etc.)		Yes	No
2. Are custody seals on shipping containers intact? How many custody seals are provided? 2 each	N/A	Yes	No
3. Are the custody seals on sample containers intact?	N/A	Yes	No
4. Is there a Chain-of-Custody (COC) or other representative documents, letters, or shipping memos?		Yes	No
5. Is the COC complete? Relinquished: Yes ✓ No___ Analyses Requested: Yes ✓ No___	N/A	Yes	No
6. Is the COC in agreement with the samples received? No. of Samples: Yes ✓ No___ Sample ID's: Yes ✓ No___ Matrix: Yes ✓ No___ No. of Containers: Yes ✓ No___	N/A	Yes	No
7. Were COC (if applicable) and sample labels legible?		Yes	No
8. Were airbills present and/or removable?	N/A	Yes	No
9. Are all aqueous samples requiring chemical preservation preserved correctly (excluding volatile organics)?	N/A	Yes	No
Are all aqueous **non-preserved** samples at the correct pH?		Yes	No
10. Is there enough sample for requested analyses? If so, were samples placed in the proper containers?		Yes	No
11. Are all samples within holding times for the requested analyses?		Yes	No
12. Were all sample containers received intact? (not broken or leaking, etc.)		~~Yes~~ DW 5/12/04	No
13. Are samples requiring no headspace (volatiles, reactive cyanide/sulfide, radon), headspace free? **Size of bubble:** ___ < green pea; ___ > green pea (List sample IDs and affected containers on Page 2)	N/A	Yes	No
14. Were samples checked for and free from the presence of residual chlorine?	N/A	Yes	No
15. Were the sample(s) shipped on ice?	N/A	Yes	No
16. Were cooler temperatures measured at 0.1 - 6 °C ? **IR Gun Used*:** 1 2	N/A	Yes	No
17. Were all samples cooled that should have been cooled?	N/A	Yes	No

Cooler #'s	924	898	897	749	868	22	
Temperature	10°	10°	9°	15°	12°	14°	°C

Project Manager Signature / Date: Debbie Fazio 5/14/04

A NO RESPONSE TO ANY QUESTION EXCEPT # 1 REQUIRES THE COMPLETION OF PAGE 2 OF THIS FORM

* IR Gun #1 (original): Raytek, SN SC-PM3/T29403
IR Gun #2 (newer): Oakton, SN 2SCIR1201

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Kent + Sullivan WORKORDER NO: 0405096

PROJECT MANAGER: Debbie Fazio INITIALS: AW DATE: 5/12/04

- [ ] **Custody seals** broken (on outside of shipping container or on sample containers).
- [ ] No Chain-of-Custody (**COC**) present.
- [ ] **Number of samples** on the COC do not match the number of samples received.
- [ ] Aqueous samples **not preserved correctly** (see pH discussion below).
- [ ] SVOC samples contained **residual chlorine** (list sample IDs and affected containers below).
- [x] Samples received at **inappropriate temperature.**
- [ ] **Insufficient sample** to perform requested analyses.
- [ ] Extraction or analytical **holding times** expired in transit.
- [x] **Broken/leaking bottles** and intact bottles received in same cooler (list affected sample IDs below).
- [ ] **No analyses requested.**
- [ ] **Incorrect sample type** received.
- [ ] VOAs, reactive CN/S, radon not **headspace** free (list sample IDs and affected vials below).
- [ ] **Airbills** not present and/or removable (record applicable shipper's tracking number below).
- [ ] Other (describe below).

Describe discrepancy:

- All samples received between 9° - 15° C. Refer to page 1 for cooler temperatures and refer to DOT Survey pages for cooler contents. Insufficient ice packed with samples.
- Sample #17, bottle 3: Containes received with a small crack in lid, no loss of sample was apparent. Lid was replaced during sample check-in.

Was the client contacted? ___ No; ✓ Yes: Name Sue Kent Date/Time 5/14/04

Was the pH of any sample adjusted by the laboratory? ___ No; ___ Yes (see Table below):

NOTE: No pH adjustments shall be made without prior consent of Project Manager. After pH adjustment, hold metals and radchem samples ≥ 16 hr before analysis.

Sample ID	*Initial pH*	*Final pH (wait 30 min)*	*Type of Reagent Used*	*Lot No. of Reagent Used*	*Initials / Date / Time*

Was the laboratory directed to proceed with the analysis of any samples yielding the presence of residual chlorine? ___ No; ___ Yes (see notes above).

Project Manager Signature / Date: 5/14/04

SAMPLE LOGIN / DOT SURVEY

Client: Kent & Sullivan Workorder No: 0405096 & 0405097

Project Manager: Debbie Fazio Initials: AW Date: 05/12/04

COOLER #: 924 External Micro R Meter Reading (μ R/hr): 190

Paragon Sample ID:	Client Sample ID:	Micro R Meter Reading (μ R/hr):
0405096-1-1	MSED-01	< background
0405096-1-2	MSED-01	< background
0405096-2-1	MSED-02	< background
0405096-2-2	MSED-02	< background
0405096-2-3	MSED-02	< background
0405096-3-1	MSED-03	< background
0405096-3-2	MSED-03	< background
0405096-3-3	MSED-03	< background
0405096-7-1	MSED-07	< background
0405096-7-2	MSED-07	< background
0405096-7-3	MSED-07	35
0405096-8-1	MSED-08	75
0405096-8-2	MSED-08	< background
0405096-8-3	MSED-08	30
0405096-9-1	MSED-09	< background
0405096-9-2	MSED-09	< background
0405096-9-3	MSED-09	150
0405096-10-1	MSED-10	> background
0405096-10-2	MSED-10	30
0405096-10-3	MSED-10	40
0405096-16-1	SSED-06	< background
0405096-16-2	SSED-06	< background
0405096-16-3	SSED-06	< background
0405097-2-1	MR-01	70
0405097-2-2	MR-01	60
0405097-2-3	MR-01	80
0405097-3-1	MR-02	85
0405097-3-2	MR-02	85
0405097-3-3	MR-02	85
0405097-17-1	300-01	800

If applicable, was the client contacted? YES / NO / NA Client Rep. Name: Sue Kent Date/Time: 5/14/04

Project Manager Signature/ Date: 5/14/04

SAMPLE LOGIN / DOT SURVEY

Client: Kent & Sullivan Workorder No: 0405096 & 0405097

Project Manager: Debbie Fazio Initials: AW Date: 05/12/04

COOLER #: 898 External Micro R Meter Reading (μ R/hr): 140

Paragon Sample ID:	Client Sample ID:	Micro R Meter Reading (μ R/hr):
0405096-4-1	MSED-04	< background
0405096-4-2	MSED-04	< background
0405096-4-3	MSED-04	< background
0405096-11-1	SSED-01	< background
0405096-11-2	SSED-01	< background
0405096-11-3	SSED-01	< background
0405096-26-1	SOIL-02	< background
0405096-26-2	SOIL-02	< background
0405096-26-3	SOIL-02	< background
0405096-27-1	SOIL-04	< background
0405096-27-2	SOIL-04	40
0405096-27-3	SOIL-04	< background
0405096-28-1	SOIL-05	30
0405096-28-2	SOIL-05	< background
0405096-28-3	SOIL-05	< background
0405097-4-1	GR-01	< background
0405097-6-1	GR-03	< background
0405097-13-1	GR-10	< background
0405097-14-1	QM-01	< background
0405097-16-1	QM-03	< background
0405097-18-1	300-02	45
0405097-19-1	700-01	1000
0405097-19-2	700-01	950
0405097-19-3	700-01	1100

If applicable, was the client contacted? **YES / NO / NA** Client Rep. Name: Sue Kent Date/Time: 5/14/04

Project Manager Signature/ Date: 5/14/04

SAMPLE LOGIN / DOT SURVEY

Client: Kent & Sullivan Workorder No: 0405096 & 0405097

Project Manager: Debbie Fazio Initials: AW Date: 05/12/04

COOLER #: 897 External Micro R Meter Reading (μ R/hr): 320

Paragon Sample ID:	Client Sample ID:	Micro R Meter Reading (μ R/hr):
0405096-5-1	MSED-05	< background
0405096-5-2	MSED-05	< background
0405096-5-3	MSED-05	< background
0405096-21-1	GEN-01	28
0405096-21-2	GEN-01	28
0405096-22-1	GEN-02	30
0405096-22-2	GEN-02	29
0405096-22-3	GEN-02	< background
0405096-22-4	GEN-02	< background
0405096-22-5	GEN-02	< background
0405096-23-1	GEN-03	< background
0405096-23-2	GEN-03	< background
0405096-24-1	GEN-04	< background
0405096-24-2	GEN-04	< background
0405097-9-1	GR-06	30
0405097-11-1	GR-08	< background
0405097-15-1	QM-02	< background
0405097-20-1	700-02	250
0405097-24-1	900-02	1500
0405097-25-1	900-03	300
0405097-27-1	900-05	100

If applicable, was the client contacted? **YES / NO / NA** Client Rep. Name: Sue Kent Date/Time: 5/14/04

Project Manager Signature/ Date: 5/14/04

SAMPLE LOGIN / DOT SURVEY

Client: Kent & Sullivan Workorder No: 0405096 & 0405097

Project Manager: Debbie Fazio Initials: AW Date: 05/12/04

COOLER #: 749 External Micro R Meter Reading (μ R/hr): 300

Paragon Sample ID:	Client Sample ID:	Micro R Meter Reading (μ R/hr):
0405096-6-1	MSED-06	40
0405096-12-1	SSED-02	40
0405096-12-2	SSED-02	< background
0405096-12-3	SSED-02	< background
0405096-18-1	SSED-08	< background
0405096-18-2	SSED-08	< background
0405096-18-3	SSED-08	30
0405096-19-1	SSED-09	< background
0405096-19-2	SSED-09	< background
0405096-19-3	SSED-09	< background
0405096-25-1	SOIL-01	< background
0405096-25-2	SOIL-01	< background
0405096-25-3	SOIL-01	< background
0405097-1-1	HR-01	140
0405097-5-1	GR-02	< background
0405097-7-1	GR-04	90
0405097-28-1	OSA-01	1200
0405097-28-2	OSA-01	1100
0405097-28-3	OSA-01	1200

If applicable, was the client contacted? **YES / NO / NA** Client Rep. Name: Sue Kent Date/Time: 5/14/04

Project Manager Signature/ Date: 5/14/04

SAMPLE LOGIN / DOT SURVEY

Client: Kent & Sullivan Workorder No: 0405096 & 0405097

Project Manager: Debbie Fazio Initials: AW Date: 05/12/04

COOLER #: 868 External Micro R Meter Reading (μ R/hr): 320

Paragon Sample ID:	Client Sample ID:	Micro R Meter Reading (μ R/hr):
0405096-13-1	SSED-03	< background
0405096-13-2	SSED-03	< background
0405096-13-3	SSED-03	< background
0405096-14-1	SSED-04	< background
0405096-14-2	SSED-04	< background
0405096-14-3	SSED-04	< background
0405096-15-1	SSED-05	< background
0405096-15-2	SSED-05	< background
0405096-15-3	SSED-05	< background
0405096-17-1	SSED-07	< background
0405096-17-2	SSED-07	< background
0405096-17-3	SSED-07	< background
0405096-20-1	SSED-10	< background
0405096-20-2	SSED-10	< background
0405096-20-3	SSED-10	< background
0405097-8-1	GR-05	< background
0405097-10-1	GR-07	< background
0405097-12-1	GR-09	< background
0405097-21-1	700-03	800
0405097-21-2	700-03	950
0405097-21-3	700-03	850
0405097-26-1	900-04	95
0405097-29-1	OSA-02	180
0405097-29-2	OSA-02	150
0405097-29-3	OSA-02	160
0405097-30-1	OSA-03	200
0405097-30-2	OSA-03	250
0405097-30-3	OSA-03	150

If applicable, was the client contacted? **YES / NO / NA** Client Rep. Name: Sue Kent Date/Time: 5/14/04

Project Manager Signature/ Date: 5/14/04

SAMPLE LOGIN / DOT SURVEY

Client: Kent & Sullivan Workorder No: 0405096 & 0405097

Project Manager: Debbie Fazio Initials: AW Date: 05/12/04

COOLER #: 22 External Micro R Meter Reading (μ R/hr): 260

Paragon Sample ID:	Client Sample ID:	Micro R Meter Reading (μ R/hr):
0405096-29-1	SOIL-07	< background
0405096-29-2	SOIL-07	< background
0405096-29-3	SOIL-07	< background
0405096-30-1	SOIL-08	45
0405096-30-2	SOIL-08	40
0405096-30-3	SOIL-08	40
0405096-31-1	SOIL-09	< background
0405096-31-2	SOIL-09	< background
0405096-31-3	SOIL-09	< background
0405096-32-1	SOIL-10	55
0405096-32-2	SOIL-10	50
0405096-32-3	SOIL-10	65
0405097-22-1	700-04	450
0405097-23-1	900-01	110
0405097-23-2	900-01	110
0405097-23-3	900-01	140

If applicable, was the client contacted? **YES / NO / NA** Client Rep. Name: Sue Kent Date/Time: 5/14/04

Project Manager Signature/ Date: 5/14/04

0405096
0405097

AirCargo
Alaska Airlines
1-800-2ALASKA

Airbill Number
027 KTN 5436-6152 Box No. 0001

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

190
#924
2 seals
10°C

ARTIC 0-0410-3-1635

AirCargo
Alaska Airlines
1-800-2ALASKA

10°C

Airbill Number
027 KTN 5436-6152 Box No. 0015

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

140
9°C
#898
2 seals

ARTIC 0-0410-3-1635

AirCargo
Alaska Airlines
1-800-2ALASKA

Airbill Number
027 KTN 5436-6152 Box No. 0011

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

320
9°C
#897
2 seals

ARTIC 0-0410-3-1635

AirCargo
Alaska Airlines
1-800-2ALASKA

Airbill Number
027 KTN 5436-6152 Box No. 0002

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

300
15°C
#899
2 seals

ARTIC 0-0410-3-1635

0405096
0405097

AirCargo
Alaska Airlines
1-800-2ALASKA

Airbill Number
027 KTN 5436-6152 Box No. 0006

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

320 12.0 2 seals

ARTIC 0-0410-3-1635

AirCargo
Alaska Airlines
1-800-2ALASKA

Airbill Number
027 KTN 5436-6152 Box No. 0010

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

260 14.0 2 seals

ARTIC 0-0410-3-1635

0405096
0405097

Air Cargo
Alaska Airlines
1-800-2ALASKA

Airbill Number: 027 KTN 5436-6152 Box No. 0001
Destination: DEN
Pieces: 17 | Total Weight: 865 | Date: 10-MAY-04
14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS
190
#924
2 seals
10 °C
ARTIC 0-0410-3-1635

Air Cargo
Alaska Airlines
1-800-2ALASKA

10 °C

Airbill Number: 027 KTN 5436-6152 Box No. 0015
Destination: DEN
Pieces: 17 | Total Weight: 865 | Date: 10-MAY-04
14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS
140
#898
2 Seals
ARTIC 0-0410-3-1635

Air Cargo
Alaska Airlines
1-800-2ALASKA

Airbill Number: 027 KTN 5436-6152 Box No. 0011
Destination: DEN
Pieces: 17 | Total Weight: 865 | Date: 10-MAY-04
14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS
320
9 °C
#897
2 seals
ARTIC 0-0410-3-1635

Air Cargo
Alaska Airlines
1-800-2ALASKA

Airbill Number: 027 KTN 5436-6152 Box No. 0002
Destination: DEN
Pieces: 17 | Total Weight: 865 | Date: 10-MAY-04
14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS
300
15 °C
2 seals
ARTIC 0-0410-3-1635

7/31/04
211
000213

0405096
0405097

Air Cargo
Alaska Airlines
1-800-2ALASKA

Airbill Number
027 KTN 5436-6152
Box No. 0006

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

320
12.0
2 Seals

ARTIC 0-0410-3-1635

Air Cargo
Alaska Airlines
1-800-2ALASKA

Airbill Number
027 KTN 5436-6152
Box No. 0010

Destination
DEN

Pieces	Total Weight	Date
17	865	10-MAY-04

14 RAIDOACTIVE COOLERS COOL
3 MT COOLERS

260
14.0
2 Seals

ARTIC 0-0410-3-1635

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 9

ADDITIONAL SUPPORTING DOCUMENTATION

9

Calibration Data Summary

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Lab Sample ID Spectrum Analysis Date	QC Type	Batch ID Analysis Run	Test Name	Detector Id	Eff Spectrum Bkg Spectrum Egy Spectrum	Eff Date Bkg Date Egy Date	RESULTS %Efficiency Bkg CPM Energy keV	FLAGS Efficiency Background Energy	LCL %Efficiency Bkg CPM Energy keV	LWL %Efficiency Bkg CPM Energy keV	UWL %Efficiency Bkg CPM Energy keV	UCL %Efficiency Bkg CPM Energy keV
0405096-1	SMP	AS040603-1	UISO	64	C4060864	6/8/2004	30.72	Pass	29.04	29.56	31.49	32.10
U50961		AS040603-1B			B4060864	6/9/2004	0.2291	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060864	6/8/2004	5554.5	Pass	5520.0	5530.0	5610.0	5620.0
0405096-2	SMP	AS040603-1	UISO	16	C4060816	6/8/2004	29.58	Pass	27.77	28.27	30.11	30.69
U50962		AS040603-1B			B4060816	6/9/2004	0.2039	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060816	6/8/2004	5535.2	Pass	5506.9	5516.9	5596.9	5606.9
0405096-3	SMP	AS040603-1	UISO	17	C4060817	6/8/2004	30.69	Pass	29.36	29.88	31.83	32.45
U50963		AS040603-1B			B4060817	6/9/2004	0.3650	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060817	6/8/2004	5548.6	Pass	5483.4	5493.4	5573.4	5583.4
0405096-3	DUP	AS040603-1	UISO	18	C4060818	6/8/2004	30.80	Pass	28.80	29.32	31.23	31.84
U50963D		AS040603-1B			B4060818	6/9/2004	0.2806	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060818	6/8/2004	5535.7	Pass	5499.6	5509.6	5589.6	5599.6
0405096-4	SMP	AS040603-1	UISO	19	C4060819	6/8/2004	28.96	Pass	27.15	27.64	29.44	30.01
U50964		AS040603-1B			B4060819	6/9/2004	0.2340	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060819	6/8/2004	5551.9	Pass	5492.2	5502.2	5582.2	5592.2
0405096-5	SMP	AS040603-1	UISO	21	C4060821	6/8/2004	29.86	Pass	27.83	28.32	30.17	30.75
U50965		AS040603-1B			B4060821	6/9/2004	0.3204	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060821	6/8/2004	5559.2	Pass	5491.1	5501.1	5581.1	5591.1
0405096-6	SMP	AS040720-3	UISO	9	C4072609	7/26/2004	29.22	Pass	28.42	28.93	30.91	31.42
U50966		AS040720-3A			B4072609	7/27/2004	0.2740	Pass	0.0000	0.0500	0.4000	0.5000
7/27/2004					C4072609	7/26/2004	5540.1	Pass	5477.6	5487.6	5567.6	5577.6
0405096-7	SMP	AS040618-1	UISO	16	C4062216	6/22/2004	29.22	Pass	27.77	28.27	30.11	30.69
UX50967		AS040618-1a			B4062216	6/23/2004	0.3010	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062216	6/22/2004	5531.5	Pass	5506.9	5516.9	5596.9	5606.9
0405096-8	SMP	AS040603-1	UISO	22	C4060822	6/8/2004	28.41	Pass	27.18	27.67	29.47	30.04
U50968		AS040603-1B			B4060822	6/9/2004	0.2029	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060822	6/8/2004	5552.4	Pass	5503.6	5513.6	5593.6	5603.6

Data Package ID: *ur0405096-1*

Abbreviations:
Eff - Efficiency; Bkg - Background; LCL - Lower Control Limit; UWL - Upper Warning Limit
Egy - Energy; CPM - Counts per Minute; LWL - Lower Warning Limit; UCL - Upper Control Limit; CI - The Analysis Date exceeds the Calibration Date by more than 7 days.

Calibration Data Summary

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:54 PM

Lab Sample ID Spectrum Analysis Date	QC Type	Batch ID Analysis Run	Test Name	Detector Id	Eff Spectrum Bkg Spectrum Egy Spectrum	Eff Date Bkg Date Egy Date	RESULTS %Efficiency Bkg CPM Energy keV	FLAGS Efficiency Background Energy	LCL %Efficiency Bkg CPM Energy keV	LWL %Efficiency Bkg CPM Energy keV	UWL %Efficiency Bkg CPM Energy keV	UCL %Efficiency Bkg CPM Energy keV
0405096-9	SMP	AS040618-1	UISO	17	C4062217	6/22/2004	30.47	Pass	29.36	29.88	31.83	32.45
UX50969		AS040618-1a			B4062217	6/23/2004	0.3770	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062217	6/22/2004	5560.2	Pass	5483.4	5493.4	5573.4	5583.4
0405096-10	SMP	AS040603-1	UISO	23	C4060823	6/8/2004	28.77	Pass	27.21	27.72	29.53	30.10
U509610		AS040603-1B			B4060823	6/9/2004	0.2320	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060823	6/8/2004	5536.6	Pass	5490.3	5500.3	5580.3	5590.3
0405096-11	SMP	AS040603-1	UISO	24	C4060824	6/8/2004	32.48	Pass	30.79	31.34	33.38	34.03
U509611		AS040603-1B			B4060824	6/9/2004	0.2951	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060824	6/8/2004	5526.9	Pass	5495.6	5505.6	5585.6	5595.6
0405096-12	SMP	AS040603-1	UISO	42	C4060842	6/8/2004	31.90	Pass	29.74	30.28	32.25	32.88
U509612		AS040603-1B			B4060842	6/9/2004	0.2650	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060842	6/8/2004	5546.2	Pass	5494.2	5504.2	5584.2	5594.2
0405096-13	SMP	AS040603-1	UISO	9	C4072609	7/26/2004	29.22	Pass	28.42	28.93	30.91	31.42
U509613		AS040603-1B			B4072609	7/27/2004	0.2740	Pass	0.0000	0.0500	0.4000	0.5000
7/28/2004					C4072609	7/26/2004	5540.1	Pass	5477.6	5487.6	5567.6	5577.6
0405096-14	SMP	AS040603-1	UISO	44	C4060844	6/8/2004	32.03	Warning	29.31	29.84	31.78	32.40
U509614		AS040603-1B			B4060844	6/9/2004	0.4563	Warning	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060844	6/8/2004	5549.3	Pass	5508.2	5518.2	5598.2	5608.2
0405096-15	SMP	AS040603-1	UISO	45	C4060845	6/8/2004	32.74	Pass	31.07	31.62	33.68	34.34
U509615		AS040603-1B			B4060845	6/9/2004	0.3680	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060845	6/8/2004	5559.1	Pass	5497.4	5507.4	5587.4	5597.4
0405096-15	DUP	AS040603-1	UISO	46	C4060846	6/8/2004	31.78	Pass	29.86	30.39	32.47	33.00
U509615D		AS040603-1B			B4060846	6/9/2004	0.1447	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060846	6/8/2004	5537.4	Pass	5485.1	5495.1	5575.1	5585.1
0405096-16	SMP	AS040603-1	UISO	47	C4060847	6/8/2004	30.51	Pass	29.92	30.45	32.53	33.06
U509616		AS040603-1B			B4060847	6/9/2004	0.2786	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060847	6/8/2004	5556.5	Pass	5513.5	5523.5	5603.5	5613.3

Data Package ID: *ur0405096-1*

Abbreviations:
Eff - Efficiency; Bkg - Background; LCL - Lower Control Limit; UWL - Upper Warning Limit
Egy - Energy; CPM - Counts per Minute; LWL - Lower Warning Limit; UCL - Upper Control Limit; CI - The Analysis Date exceeds the Calibration Date by more than 7 days.

00015

Calibration Data Summary

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:07 PM

Lab Sample ID Spectrum Analysis Date	QC Type	Batch ID Analysis Run	Test Name	Detector Id	Eff Spectrum Bkg Spectrum Egy Spectrum	Eff Date Bkg Date Egy Date	RESULTS %Efficiency Bkg CPM Energy keV	FLAGS Efficiency Background Energy	LCL %Efficiency Bkg CPM Energy keV	LWL %Efficiency Bkg CPM Energy keV	UWL %Efficiency Bkg CPM Energy keV	UCL %Efficiency Bkg CPM Energy keV
0405096-17	SMP	AS040603-1	UISO	48	C4060848	6/8/2004	31.86	Pass	30.08	30.62	32.70	33.24
U509617		AS040603-1B			B4060848	6/9/2004	0.2272	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060848	6/8/2004	5549.7	Pass	5480.8	5490.8	5570.8	5580.8
0405096-18	SMP	AS040618-1	UISO	9	C4062209	6/22/2004	29.03	Pass	28.42	28.93	30.91	31.42
UY509618		AS040618-1a			B4062209	6/23/2004	0.2230	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062209	6/22/2004	5534.4	Pass	5477.6	5487.6	5567.6	5577.6
0405096-18	DUP	AS040618-1	UISO	19	C4062219	6/22/2004	28.97	Pass	27.15	27.64	29.44	30.01
UX509618D		AS040618-1a			B4062219	6/23/2004	0.2240	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062219	6/22/2004	5550.5	Pass	5492.2	5502.2	5582.2	5592.2
0405096-19	SMP	AS040603-1	UISO	57	C4060857	6/8/2004	28.95	Warning	26.69	27.16	28.93	29.49
U509619		AS040603-1B			B4060857	6/9/2004	0.2252	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060857	6/8/2004	5538.5	Pass	5489.3	5499.3	5579.3	5589.3
0405096-20	SMP	AS040603-1	UISO	58	C4060858	6/8/2004	32.26	Pass	30.35	30.90	33.00	33.55
U509620		AS040603-1B			B4060858	6/9/2004	0.3126	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060858	6/8/2004	5541.7	Pass	5484.4	5494.4	5574.4	5584.4
0405096-22	SMP	AS040603-1	UISO	59	C4060859	6/8/2004	32.10	Pass	30.37	30.91	32.93	33.57
U509622		AS040603-1B			B4060859	6/9/2004	0.2854	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060859	6/8/2004	5534.4	Pass	5487.7	5497.7	5577.7	5587.7
0405096-25	SMP	AS040603-1	UISO	60	C4060860	6/8/2004	24.87	Warning	24.46	24.90	26.60	27.04
U509625		AS040603-1B			B4060860	6/9/2004	0.1893	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060860	6/8/2004	5535.0	Pass	5489.5	5499.5	5579.5	5589.5
0405096-26	SMP	AS040603-1	UISO	61	C4060861	6/8/2004	31.05	Pass	29.44	29.97	31.92	32.54
U509626		AS040603-1B			B4060861	6/9/2004	0.3961	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060861	6/8/2004	5557.3	Pass	5529.6	5535.6	5559.6	5565.6
0405096-27	SMP	AS040618-1	UISO	21	C4062221	6/22/2004	29.70	Pass	27.83	28.32	30.17	30.75
UX509627		AS040618-1a			B4062221	6/23/2004	0.3700	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062221	6/22/2004	5536.0	Pass	5491.1	5501.1	5581.1	5591.1

Data Package ID: *ur0405096-1*

Abbreviations:
Eff - Efficiency; Bkg - Background; LCL - Lower Control Limit; UWL - Upper Warning Limit
Egy - Energy; CPM - Counts per Minute; LWL - Lower Warning Limit; UCL - Upper Control Limit; CI - The Analysis Date exceeds the Calibration Date by more than 7 days.

Calibration Data Summary

Laboratory Name: Paragon Analytics
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Thursday, July 29, 2004
12:35:54 PM

Lab Sample ID Spectrum Analysis Date	QC Type	Batch ID Analysis Run	Test Name	Detector Id	Eff Spectrum Bkg Spectrum Egy Spectrum	Eff Date Bkg Date Egy Date	RESULTS %Efficiency Bkg CPM Energy keV	FLAGS Efficiency Background Energy	LCL %Efficiency Bkg CPM Energy keV	LWL %Efficiency Bkg CPM Energy keV	UWL %Efficiency Bkg CPM Energy keV	UCL %Efficiency Bkg CPM Energy keV
0405096-28	SMP	AS040618-1	UISO	22	C4062222	6/22/2004	28.42	Pass	27.18	27.67	29.47	30.04
UX509628		AS040618-1a			B4062222	6/23/2004	0.2500	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062222	6/22/2004	5552.6	Pass	5503.6	5513.6	5593.6	5603.6
0405096-29	SMP	AS040618-1	UISO	23	C4062223	6/22/2004	28.39	Pass	27.21	27.72	29.53	30.10
UX509629		AS040618-1a			B4062223	6/23/2004	0.2560	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062223	6/22/2004	5535.1	Pass	5490.3	5500.3	5580.3	5590.3
0405096-30	SMP	AS040618-1	UISO	24	C4062224	6/22/2004	31.83	Pass	30.79	31.34	33.38	34.03
UX509630		AS040618-1a			B4062224	6/23/2004	0.4240	Warning	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062224	6/22/2004	5537.4	Pass	5495.6	5505.6	5585.6	5595.6
0405096-31	SMP	AS040603-1	UISO	62	C4060862	6/8/2004	30.58	Pass	28.57	29.08	31.06	31.57
U509631		AS040603-1B			B4060862	6/9/2004	0.2379	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060862	6/8/2004	5544.8	Pass	5493.0	5503.0	5583.0	5593.0
0405096-32	SMP	AS040618-1	UISO	42	C4062242	6/22/2004	31.64	Pass	29.74	30.28	32.25	32.88
UX509632		AS040618-1a			B4062242	6/23/2004	0.2450	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062242	6/22/2004	5542.1	Pass	5494.2	5504.2	5584.2	5594.2
AS040603-1	MB	AS040603-1	UISO	10	C4060810	6/8/2004	28.95	Pass	28.38	28.88	30.86	31.36
U6031B		AS040603-1B			B4060810	6/9/2004	0.1650	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060810	6/8/2004	5552.0	Pass	5497.3	5507.3	5587.3	5597.3
AS040603-1	LCS	AS040603-1	UISO	11	C4060811	6/8/2004	28.56	Pass	26.79	27.27	29.13	29.61
U6031L		AS040603-1B			B4060811	6/9/2004	0.1573	Pass	0.0000	0.0500	0.4000	0.5000
6/11/2004					C4060811	6/8/2004	5532.3	Pass	5484.4	5494.4	5574.4	5584.4
AS040618-1	MB	AS040618-1	UISO	43	C4062243	6/22/2004	31.75	Pass	29.78	30.29	32.20	32.80
UX6181B		AS040618-1a			B4062243	6/23/2004	0.3260	Pass	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062243	6/22/2004	5553.3	Pass	5476.5	5486.5	5566.5	5576.5
AS040618-1	LCS	AS040618-1	UISO	44	C4062244	6/22/2004	31.36	Pass	29.31	29.84	31.78	32.40
UX6181L		AS040618-1a			B4062244	6/23/2004	0.4470	Warning	0.0000	0.0500	0.4000	0.5000
6/23/2004					C4062244	6/22/2004	5551.5	Pass	5508.2	5518.2	5598.2	5608.2

Data Package ID: *ur0405096-1*

Abbreviations:

Eff - Efficiency	Bkg - Background	LCL - Lower Control Limit	UWL - Upper Warning Limit	
Egy - Energy	CPM - Counts per Minute	LWL - Lower Warning Limit	UCL - Upper Control Limit	CI - The Analysis Date exceeds the Calibration Date by more than 7 days.

Calibration Data Summary

Laboratory Name: **Paragon Analytics**
PAI Work Order: 0405096

Prep SOP: PAI 778
Analytical SOP: PAI 714

Reported on: Wednesday, July 28, 2004
10:30:44 AM

Lab Sample ID Spectrum Analysis Date	QC Type	Batch ID Analysis Run	Test Name	Detector Id	Eff Spectrum Bkg Spectrum Egy Spectrum	Eff Date Bkg Date Egy Date	RESULTS %Efficiency Bkg CPM Energy keV	FLAGS Efficiency Background Energy	LCL %Efficiency Bkg CPM Energy keV	LWL %Efficiency Bkg CPM Energy keV	UWL %Efficiency Bkg CPM Energy keV	UCL %Efficiency Bkg CPM Energy keV
AS040720-3	MB	AS040720-3	UISO	22	C4072622	7/26/2004	28.40	Pass	27.18	27.67	29.47	30.04
U7203B		AS040720-3A			B4072622	7/27/2004	0.2460	Pass	0.0000	0.0500	0.4000	0.5000
7/27/2004					C4072622	7/26/2004	5548.8	Pass	5503.6	5513.6	5593.6	5603.6
AS040720-3	LCS	AS040720-3	UISO	23	C4072623	7/26/2004	28.58	Pass	27.21	27.72	29.53	30.10
U7203L		AS040720-3A			B4072623	7/27/2004	0.2450	Pass	0.0000	0.0500	0.4000	0.5000
7/27/2004					C4072623	7/26/2004	5538.0	Pass	5490.3	5500.3	5580.3	5590.3
AS040720-3	LCSD	AS040720-3	UISO	24	C4072624	7/26/2004	28.70	Pass	27.08	27.57	29.45	29.93
U7203LD		AS040720-3A			B4072624	7/27/2004	0.0290	Warning	0.0000	0.0500	0.5000	0.7500
7/27/2004					C4072624	7/26/2004	5548.1	Pass	5495.6	5505.6	5585.6	5595.6

Data Package ID: *ur0405096-1*

Abbreviations:
Eff - Efficiency; Bkg - Background; LCL - Lower Control Limit; UWL - Upper Warning Limit
Egy - Energy; CPM - Counts per Minute; LWL - Lower Warning Limit; UCL - Upper Control Limit; CI - The Analysis Date exceeds the Calibration Date by more than 7 days.

0002218

Alpha Spectroscopy

Quality Control Data

Weekly Background, Energy, and Efficiency Calibrations

Alpha Spec Calibration Source Re-Certification

R:\INST\ALPHA\CLCRT304.XLS

Primary Certified Source
Source PAI ID 190 was recalibrated by Isotope Products Laboratories on 03-01-2003 and recieved by PAI on 03-04-2003.

Source ID: 92MIX223027; PAI ID 190 (Labled #9)
Total Activity: 3754 dpm
Ref. Date: 3/1/03
Count Date: 3/22/04

U-234 Activity:	79.06%	=	2967.90 dpm (decay corrected)
Am-241 Activity:	19.20%	=	719.56 dpm (decay corrected)
Combined Activity:		=	3687.46 dpm (decay corrected)

Detector 13 Efficiency Determination

Source Serial #	PAI ID	Seqential #	Count Date	Am-241 net cts	U-234 net cts	count dur (s)	Combined cpm	Known dpm	detector efficiency
92MIX223027	190	97-19-103-09	3/22/04	7824.65	32919.75	2100	1164.126	3687.46	31.57%

Sources 1 through 8 activity determination

Source Serial #	PAI ID	Seqential #	Count Date	Am-241 net cts	U-234 net cts	count dur (s)	detector efficiency	Am-241 dpm	U-234 dpm	combined dpm
92MIX2203026	182	97-19-103-01	3/22/04	13674.65	81078.76	2100	31.57%	1237.59	7337.81	8575.40
92MIX2203028	183	97-19-103-02	3/22/04	15497.65	153089.76	2100	31.57%	1402.57	13854.97	15257.54
92MIX2203024	184	97-19-103-03	3/22/04	72039.65	74346.76	2100	31.57%	6519.75	6728.55	13248.30
92MIX2203021	185	97-19-103-04	3/22/04	22309.65	63564.76	2100	31.57%	2019.07	5752.75	7771.83
92MIX2203025	186	97-19-103-05	3/22/04	102504.65	126055.76	2100	31.57%	9276.90	11408.33	20685.23
92MIX2203022	187	97-19-103-06	3/22/04	77656.69	83352.76	2100	31.57%	7028.11	7543.61	14571.72
92MIX2203023	188	97-19-103-07	3/22/04	46378.65	70580.76	2100	31.57%	4197.37	6387.72	10585.09
92MIX2203029	189	97-19-103-08	3/22/04	34881.65	219992.76	2100	31.57%	3156.87	19909.84	23066.71

Detector 13 Efficiency Verification

Source Serial #	PAI ID	Seqential #	Count Date	Am-241 net cts	U-234 net cts	count dur (s)	Combined cpm	Known dpm	detector efficiency	% difference from 1st count
92MIX223027	190	97-19-103-09	3/22/04	7546.69	32241.76	2100	1136.813	3687.46	30.83%	2.35%

Sources 1 through 8 activity re-verification

Source Serial #	PAI ID	Seqential #	Combined Observed dpm	Combined Certified dpm*	Percent Difference %	Within 5% of Certified value Yes/No
92MIX2203026	182	97-19-103-01	8575.40	8730.07	1.77%	Yes
92MIX2203028	183	97-19-103-02	15257.54	15767.93	3.24%	Yes
92MIX2203024	184	97-19-103-03	13248.30	13517.34	1.99%	Yes
92MIX2203021	185	97-19-103-04	7771.83	8130.72	4.41%	Yes
92MIX2203025	186	97-19-103-05	20685.23	20951.92	1.27%	Yes
92MIX2203022	187	97-19-103-06	14571.72	15242.25	4.40%	Yes
92MIX2203023	188	97-19-103-07	10585.09	10755.77	1.59%	Yes
92MIX2203029	189	97-19-103-08	23066.71	23263.22	0.84%	Yes

*Sources 185,186,187, & 188 decay corrected to 04/01/03.
*Sources 182,183,184, & 189 decay corrected to 05/01/03.

OK - RG
EXP 3/22/05

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[α 1]

PAI 182
recalibrated 4-15-03

CERTIFICATE OF CALIBRATION
MIXED ALPHA STANDARD SOURCE

Radionuclide A:	U-234	**Customer:**	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	**P.O. No.:**	EW040203/R2193
Radionuclide C:	Am-241	**Catalog No.:**	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	**Reference Date:**	1-May-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	**Source No.:**	92MIX2203026
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	3.354	nCi	(124.1 Bq)	Am-241:	0.5793	nCi	(21.43 Bq)
U-235:	0.06566	nCi	(2.429 Bq)	Total Activity:	3.999	nCi	(148.0 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Mar 1998.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.7%
B. Type B (systematic) uncertainty:	± 3.0%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.1%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 4483 α/min in 2π on 11 Apr 03.

Daniel James Van Dalsem
Quality Control

15-Apr-03
Date Signed

IPL Ref. No.: 987-7

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α2

PAI 183
Recalibrated 4-15-03

CERTIFICATE OF CALIBRATION
MIXED ALPHA STANDARD SOURCE

Radionuclide A:	U-234	**Customer:**	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	**P.O. No.:**	EW040203/R2193
Radionuclide C:	Am-241	**Catalog No.:**	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	**Reference Date:**	1-May-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	**Source No.:**	92MIX2203028
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	6.467	nCi	(239.3 Bq)	Am-241:	0.6366	nCi	(23.55 Bq)
U-235:	0.1135	nCi	(4.200 Bq)	Total Activity:	7.217	nCi	(267.1 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Aug 1992.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.7%
B. Type B (systematic) uncertainty:	± 3.0%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.1%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 8091 α/min in 2π on 11 Apr 03.

Daniel James Van Dalsem
Quality Control

15-Apr-03
Date Signed

IPL Ref. No.: 987-7

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α3

PAT I.D 184
recalibrated 4-15-03

CERTIFICATE OF CALIBRATION
MIXED ALPHA STANDARD SOURCE

Radionuclide A:	U-234	**Customer:**	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	**P.O. No.:**	EW040203/R2193
Radionuclide C:	Am-241	**Catalog No.:**	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	**Reference Date:**	1-May-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	**Source No.:**	92MIX2203024
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	3.227	nCi	(119.4 Bq)	Am-241:	2.866	nCi	(106.0 Bq)
U-235:	0.05205	nCi	(1.926 Bq)	Total Activity:	6.145	nCi	(227.3 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Aug 1992.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.6%
B. Type B (systematic) uncertainty:	± 3.0%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.1%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 6889 α/min in 2π on 11 Apr 03.

Daniel James Van Dalsem
Quality Control

15-Apr-03
Date Signed

IPL Ref. No.: 987-7

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α4

PAI ID: 00185
rec'd from recalibration
3-28-03

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOURCE

Radionuclide A:	U-234	Customer:	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	P.O. No.:	EW030603/R2155
Radionuclide C:	Am-241	Catalog No.:	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	Reference Date:	1-Apr-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	Source No.:	92MIX2203021
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	2.731	nCi	(101.0 Bq)	Am-241:	0.9325	nCi	(34.50 Bq)
U-235:	0.03416	nCi	(1.264 Bq)	Total Activity:	3.698	nCi	(136.8 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Aug 1992.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.8%
B. Type B (systematic) uncertainty:	± 3.1%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.2%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 4145 α/min in 2π on 18 Mar 03.

Daniel James Van Dalsem
Quality Control

19-Mar-03
Date Signed

IPL Ref. No.: 987-2

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α5

PAI I-D 00186
recalibration
received ~~186~~
3-28-03

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOURCE

Radionuclide A:	U-234	Customer:	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	P.O. No.:	EW030603/R2155
Radionuclide C:	Am-241	Catalog No.:	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	Reference Date:	1-Apr-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	Source No.:	92MIX2203025
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	5.486	nCi	(203.0 Bq)	Am-241:	3.958	nCi	(146.4 Bq)
U-235:	0.09221	nCi	(3.412 Bq)	Total Activity:	9.536	nCi	(352.8 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Aug 1992.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.8%
B. Type B (systematic) uncertainty:	± 3.1%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.2%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 10690 α/min in 2π on 18 Mar 03.

Daniel James Lin Dalson
Quality Control

19-Mar-03
Date Signed

IPL Ref. No.: 987-2

000225

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α6

PAIO, CC 187
recd for recalibration
3-28-03

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOURCE

Radionuclide A:	U-234	Customer:	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	P.O. No.:	EW030603/R2155
Radionuclide C:	Am-241	Catalog No.:	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	Reference Date:	1-Apr-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	Source No.:	92MIX2203022
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	3.592	nCi	(132.9 Bq)	Am-241:	3.279	nCi	(121.3 Bq)
U-235:	0.08556	nCi	(3.166 Bq)	Total Activity:	6.957	nCi	(257.4 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Aug 1992.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.8%
B. Type B (systematic) uncertainty:	± 3.1%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.2%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 7799 α/min in 2π on 18 Mar 03.

Daniel James Van Dalsem
Quality Control

19-Mar-03
Date Signed

IPL Ref. No.: 987-2

000226

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[α 7]

PAIP 188
rec'd for recalibration
3-28-03

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOURCE

Radionuclide A:	U-234	Customer:	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	P.O. No.:	EW030603/R2155
Radionuclide C:	Am-241	Catalog No.:	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	Reference Date:	1-Apr-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	Source No.:	92MIX2203023
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	2.895	nCi	(107.1 Bq)	Am-241:	1.953	nCi	(72.26 Bq)
U-235:	0.02502	nCi	(0.9257 Bq)	Total Activity:	4.873	nCi	(180.3 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Aug 1992.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.8%
B. Type B (systematic) uncertainty:	± 3.1%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.2%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 5463 α/min in 2π on 18 Mar 03.

Daniel Thomas Van Dalsem
Quality Control

19-Mar-03
Date Signed

IPL Ref. No.: 987-2

000227

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[α 8]

PAI ID 189
recd 4-21-03
recalibrated 4-15-03

CERTIFICATE OF CALIBRATION
MIXED ALPHA STANDARD SOURCE

Radionuclide A:	U-234	**Customer:**	PARAGON ANALYTICS, INC.
Radionuclide B:	U-235	**P.O. No.:**	EW040203/R2193
Radionuclide C:	Am-241	**Catalog No.:**	MISC-STD
Half Life (U-234):	(2.454 ± 0.006)E+05 years	**Reference Date:**	1-May-03 12:00 PST
Half Life (U-235):	(7.037 ± 0.011)E+08 years	**Source No.:**	92MIX2203029
Half Life (Am-241):	432.17 ± 0.66 years		

Contained Radioactivity:

U-234:	9.048	nCi	(334.8 Bq)	Am-241:	1.433	nCi	(53.02 Bq)
U-235:	0.1771	nCi	(6.553 Bq)	Total Activity:	10.66	nCi	(394.4 Bq)

Physical description:

A. Capsule type:	Disk (22 mm OD X 0.79 mm THK)
B. Nature of active deposit:	Electrodeposited and diffusion bonded oxides
C. Active Diameter:	19 mm
D. Backing:	Stainless steel
E. Cover:	None

Radioimpurities: Not determined

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter for total alpha activity. Individual nuclide ratios were taken from those determined in Mar 1998.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.5%
B. Type B (systematic) uncertainty:	± 3.0%
C. Uncertainty in aliquot weighing:	± 0.0%
D. Total uncertainty at the 99% confidence level:	± 3.0%

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This source has a working life of 2 years.
- This source had a total alpha surface emission rate of 11950 α/min in 2π on 11 Apr 03.

Daniel James Van Dalsem
Quality Control

15-Apr-03
Date Signed

IPL Ref. No.: 987-7

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