Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2251.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.023500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2251.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.028200
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.062117
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.105773	4.105773	OK
CU	0.169728	0.169728	OK
TPU	0.524450	0.524450	OK
MDA	0.013435	0.013435	OK
DL	0.004245	0.004245	OK
BP MDA	0.132128	0.132128	OK
BP DL	0.063728	0.063728	OK
DL QSAS			
Gross Count Rate	1.563194	1.563194	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	1.562500	1.562500	OK
Δ t 1 (t2 - t1)	16.939583	16.939583	OK
DF	0.999533	0.999533	OK
Tracer DPM	9.410067	9.410067	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.791306	0.791306	OK
Chem Rec Factor	0.807455	0.807455	OK
Sys Err	0.061664	0.061664	OK
K	0.380562	0.380562	OK
K MDA	548.008858	548.008858	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-10
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	31.86484528
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	393.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.023500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2251.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.028200
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.067262
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.710623	0.710623	OK
CU	0.071069	0.071069	OK
TPU	0.111477	0.111477	OK
MDA	0.019622	0.019622	OK
DL	0.007342	0.007342	OK
BP MDA	0.142590	0.142590	OK
BP DL	0.068974	0.068974	OK
DL QSAS			
Gross Count Rate	0.272917	0.272917	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	0.270833	0.270833	OK
Δ t 1 (t2 - t1)	16.939583	16.939583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.410067	9.410067	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.791306	0.791306	OK
Chem Rec Factor	0.807455	0.807455	OK
Sys Err	0.061664	0.061664	OK
K	0.381121	0.381121	OK
K MDA	548.814483	548.814483	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-10
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	34.65392685
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	7.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.023500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2251.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.028200
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.010880
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.014784	0.014784	OK
CU	0.010952	0.010952	OK
TPU	0.011097	0.011097	OK
MDA	0.005724	0.005724	OK
DL	0.000000	0.000000	OK
BP MDA	0.027990	0.027990	OK
BP DL	0.011157	0.011157	OK
DL QSAS			
Gross Count Rate	0.004861	0.004861	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.004861	0.004861	OK
Δ t 1 (t2 - t1)	16.939583	16.939583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.410067	9.410067	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.791306	0.791306	OK
Chem Rec Factor	0.807455	0.807455	OK
Sys Err	0.061664	0.061664	OK
K	0.328803	0.328803	OK
K MDA	473.476284	473.476284	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-10
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	7.364357948
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	350.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.023500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2251.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.028200
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.029731
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.631007	0.631007	OK
CU	0.066965	0.066965	OK
TPU	0.101491	0.101491	OK
MDA	0.019583	0.019583	OK
DL	0.007327	0.007327	OK
BP MDA	0.065773	0.065773	OK
BP DL	0.030488	0.030488	OK
DL QSAS			
Gross Count Rate	0.243056	0.243056	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	0.240972	0.240972	OK
Δ t 1 (t2 - t1)	16.939583	16.939583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.410067	9.410067	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.791306	0.791306	OK
Chem Rec Factor	0.807455	0.807455	OK
Sys Err	0.061664	0.061664	OK
K	0.381885	0.381885	OK
K MDA	549.914384	549.914384	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-10
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	37.95228577
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5-10-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2436.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.110000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2436.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024400
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.062117
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**3.771723**	**3.771723**	**OK**
CU	**0.150151**	**0.150151**	**OK**
TPU	**0.479944**	**0.479944**	**OK**
MDA	**0.018635**	**0.018635**	**OK**
DL	**0.007216**	**0.007216**	**OK**
BP MDA	**0.121471**	**0.121471**	**OK**
BP DL	**0.058760**	**0.058760**	**OK**
DL QSAS			
Gross Count Rate	**1.691667**	**1.691667**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**1.688889**	**1.688889**	**OK**
Δ t 1 (t2 - t1)	**15.939583**	**15.939583**	**OK**
DF	**0.999561**	**0.999561**	**OK**
Tracer DPM	**9.375290**	**9.375290**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.845170**	**0.845170**	**OK**
Chem Rec Factor	**0.862418**	**0.862418**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.447776**	**0.447776**	**OK**
K MDA	**644.798110**	**644.798110**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-11
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	81.9491272
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	583.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.110000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2436.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024400
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.067262
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.902857**	**0.902857**	**OK**
CU	**0.073289**	**0.073289**	**OK**
TPU	**0.131447**	**0.131447**	**OK**
MDA	**0.004197**	**0.004197**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.131122**	**0.131122**	**OK**
BP DL	**0.063599**	**0.063599**	**OK**
DL QSAS			
Gross Count Rate	**0.404861**	**0.404861**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.404861**	**0.404861**	**OK**
Δ t 1 (t2 - t1)	**15.939583**	**15.939583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.375290**	**9.375290**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.845170**	**0.845170**	**OK**
Chem Rec Factor	**0.862418**	**0.862418**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.448422**	**0.448422**	**OK**
K MDA	**645.728241**	**645.728241**	**OK**
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01648		
Batch ID	ARS1-B11-01648-11		
Analysis Code	ASP-A-025		
SDG	ARS1-11-00895		
Fraction	008		
Client	Summit Environmental Technologies		
Client Profile	Cuyahoga Falls		
Client ID	RP-SED-02-110420		
Instr File Name	ApexAlpha		
Instr Detector	A_3_4B		
Instr keV	25.1978302		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	17.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.110000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2436.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024400
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.010880
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.030516**	**0.030516**	**OK**
CU	**0.014506**	**0.014506**	**OK**
TPU	**0.014968**	**0.014968**	**OK**
MDA	**0.004865**	**0.004865**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.025396**	**0.025396**	**OK**
BP DL	**0.010288**	**0.010288**	**OK**
DL QSAS			
Gross Count Rate	**0.011806**	**0.011806**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.011806**	**0.011806**	**OK**
Δ t 1 (t2 - t1)	**15.939583**	**15.939583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.375290**	**9.375290**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.845170**	**0.845170**	**OK**
Chem Rec Factor	**0.862418**	**0.862418**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.386865**	**0.386865**	**OK**
K MDA	**557.086257**	**557.086257**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-11
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	7.349367142
Version/Date	2.0 -- 4/20/2006

Reviewed by: dew **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	619.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.110000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2436.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024400
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.029731
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.947417**	**0.947417**	**OK**
CU	**0.075732**	**0.075732**	**OK**
TPU	**0.137283**	**0.137283**	**OK**
MDA	**0.021803**	**0.021803**	**OK**
DL	**0.008807**	**0.008807**	**OK**
BP MDA	**0.060292**	**0.060292**	**OK**
BP DL	**0.028112**	**0.028112**	**OK**
DL QSAS			
Gross Count Rate	**0.429861**	**0.429861**	**OK**
BKG Count Rate	**0.004167**	**0.004167**	**OK**
Net Count Rate	**0.425694**	**0.425694**	**OK**
Δ t 1 (t2 - t1)	**15.939583**	**15.939583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.375290**	**9.375290**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.845170**	**0.845170**	**OK**
Chem Rec Factor	**0.862418**	**0.862418**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.449321**	**0.449321**	**OK**
K MDA	**647.022366**	**647.022366**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-11
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	78.67591095
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2152.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.044000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2152.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.062117
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.011340**	**4.011340**	**OK**
CU	**0.169601**	**0.169601**	**OK**
TPU	**0.513622**	**0.513622**	**OK**
MDA	**0.013731**	**0.013731**	**OK**
DL	**0.004338**	**0.004338**	**OK**
BP MDA	**0.129735**	**0.129735**	**OK**
BP DL	**0.062475**	**0.062475**	**OK**
DL QSAS			
Gross Count Rate	**1.494444**	**1.494444**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**1.493750**	**1.493750**	**OK**
Δ t 1 (t2 - t1)	**15.939583**	**15.939583**	**OK**
DF	**0.999561**	**0.999561**	**OK**
Tracer DPM	**9.378035**	**9.378035**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.756093**	**0.756093**	**OK**
Chem Rec Factor	**0.771524**	**0.771524**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.372382**	**0.372382**	**OK**
K MDA	**536.229804**	**536.229804**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-12
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	31.02633286
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	727.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.044000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2152.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.067262
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.350085	1.350085	OK
CU	0.098547	0.098547	OK
TPU	0.190621	0.190621	OK
MDA	0.017300	0.017300	OK
DL	0.006127	0.006127	OK
BP MDA	0.139996	0.139996	OK
BP DL	0.067620	0.067620	OK
DL QSAS			
Gross Count Rate	0.504861	0.504861	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.503472	0.503472	OK
Δ t 1 (t2 - t1)	15.939583	15.939583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.378035	9.378035	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.756093	0.756093	OK
Chem Rec Factor	0.771524	0.771524	OK
Sys Err	0.061664	0.061664	OK
K	0.372919	0.372919	OK
K MDA	537.003324	537.003324	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-12
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	32.15897751
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	48.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.044000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2152.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.010880
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.101449	0.101449	OK
CU	0.029615	0.029615	OK
TPU	0.032052	0.032052	OK
MDA	0.015892	0.015892	OK
DL	0.005021	0.005021	OK
BP MDA	0.027679	0.027679	OK
BP DL	0.010938	0.010938	OK
DL QSAS			
Gross Count Rate	0.033333	0.033333	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.032639	0.032639	OK
Δ t 1 (t2 - t1)	15.939583	15.939583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.378035	9.378035	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.756093	0.756093	OK
Chem Rec Factor	0.771524	0.771524	OK
Sys Err	0.061664	0.061664	OK
K	0.321727	0.321727	OK
K MDA	463.286492	463.286492	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-12
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	14.69458294
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	884.000000
Count Mins	1440.000000
BKG Counts	10.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.044000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	2152.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.024700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.029731
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.624295	1.624295	OK
CU	0.108913	0.108913	OK
TPU	0.224501	0.224501	OK
MDA	0.032381	0.032381	OK
DL	0.013672	0.013672	OK
BP MDA	0.064686	0.064686	OK
BP DL	0.029889	0.029889	OK
DL QSAS			
Gross Count Rate	0.613889	0.613889	OK
BKG Count Rate	0.006944	0.006944	OK
Net Count Rate	0.606944	0.606944	OK
Δ t 1 (t2 - t1)	15.939583	15.939583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.378035	9.378035	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.756093	0.756093	OK
Chem Rec Factor	0.771524	0.771524	OK
Sys Err	0.061664	0.061664	OK
K	0.373666	0.373666	OK
K MDA	538.079550	538.079550	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-12
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	32.74837494
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1810.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.300200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1810.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020800
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.062117
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	3.208749	3.208749	OK
CU	0.147949	0.147949	OK
TPU	0.415074	0.415074	OK
MDA	0.013060	0.013060	OK
DL	0.004126	0.004126	OK
BP MDA	0.104923	0.104923	OK
BP DL	0.050166	0.050166	OK
DL QSAS			
Gross Count Rate	1.256944	1.256944	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	1.256250	1.256250	OK
Δ t 1 (t2 - t1)	16.939583	16.939583	OK
DF	0.999533	0.999533	OK
Tracer DPM	9.342343	9.342343	OK
Tracer Δt	330.970833	330.970833	OK
Tracer DF	0.990924	0.990924	OK
Tracer Recovery	0.621386	0.621386	OK
Chem Rec Factor	0.634067	0.634067	OK
Sys Err	0.061664	0.061664	OK
K	0.391508	0.391508	OK
K MDA	563.771191	563.771191	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-13
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	33.73409271
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	140.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.300200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1810.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020800
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.067262
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.242650**	**0.242650**	**OK**
CU	**0.041513**	**0.041513**	**OK**
TPU	**0.050827**	**0.050827**	**OK**
MDA	**0.019073**	**0.019073**	**OK**
DL	**0.007137**	**0.007137**	**OK**
BP MDA	**0.113158**	**0.113158**	**OK**
BP DL	**0.054296**	**0.054296**	**OK**
DL QSAS			
Gross Count Rate	**0.097222**	**0.097222**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**0.095139**	**0.095139**	**OK**
Δ t 1 (t2 - t1)	**16.939583**	**16.939583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.342343**	**9.342343**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.621386**	**0.621386**	**OK**
Chem Rec Factor	**0.634067**	**0.634067**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.392083**	**0.392083**	**OK**
K MDA	**564.599989**	**564.599989**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-13
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	13.7185688
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.300200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1810.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020800
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.010880
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.002053**	**0.002053**	**OK**
CU	**0.006970**	**0.006970**	**OK**
TPU	**0.006974**	**0.006974**	**OK**
MDA	**0.015116**	**0.015116**	**OK**
DL	**0.004776**	**0.004776**	**OK**
BP MDA	**0.023091**	**0.023091**	**OK**
BP DL	**0.008783**	**0.008783**	**OK**
DL QSAS			
Gross Count Rate	**0.001389**	**0.001389**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.000694**	**0.000694**	**OK**
Δ t 1 (t2 - t1)	**16.939583**	**16.939583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.342343**	**9.342343**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.621386**	**0.621386**	**OK**
Chem Rec Factor	**0.634067**	**0.634067**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.338260**	**0.338260**	**OK**
K MDA	**487.094844**	**487.094844**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-13
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	4.899488926
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	120.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.300200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/6/11 10:33 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1810.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020800
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.029731
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.201509**	**0.201509**	**OK**
CU	**0.038889**	**0.038889**	**OK**
TPU	**0.045886**	**0.045886**	**OK**
MDA	**0.024936**	**0.024936**	**OK**
DL	**0.010073**	**0.010073**	**OK**
BP MDA	**0.052686**	**0.052686**	**OK**
BP DL	**0.024000**	**0.024000**	**OK**
DL QSAS			
Gross Count Rate	**0.083333**	**0.083333**	**OK**
BKG Count Rate	**0.004167**	**0.004167**	**OK**
Net Count Rate	**0.079167**	**0.079167**	**OK**
Δ t 1 (t2 - t1)	**16.939583**	**16.939583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.342343**	**9.342343**	**OK**
Tracer Δt	**330.970833**	**330.970833**	**OK**
Tracer DF	**0.990924**	**0.990924**	**OK**
Tracer Recovery	**0.621386**	**0.621386**	**OK**
Chem Rec Factor	**0.634067**	**0.634067**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.392869**	**0.392869**	**OK**
K MDA	**565.731526**	**565.731526**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01648
Batch ID	ARS1-B11-01648-13
Analysis Code	ASP-A-025
SDG	ARS1-11-00895
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	17.02572441
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

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American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Uranium Alpha Spectroscopy Laboratory Records

Analysis Batch Report

Analysis Batch ID **ARS1-B11-01648**

Method	ARS-026	Analysis	ASP-A-025	Matrix	SO
Description	Uranium Solid, Waste, Biota, Sediment, Veg				

ABatch Sample ID	Type	Blind Iso1	Blind Iso2	Blind Iso3	SDG	FR	Run	Client ID	Isotope Group	Lab Deadline
ARS1-B11-01648-01	LCS	B-11688								
ARS1-B11-01648-02	LCSD	B-11689								
ARS1-B11-01648-03	MBL									
ARS1-B11-01648-04	TRG				**ARS1-11-00895**	001	1	PR-SED-01-110420	STD	05/03/11
ARS1-B11-01648-05	TRG				**ARS1-11-00895**	002	1	RM-JM-SED-02-110420	STD	05/03/11
ARS1-B11-01648-06	TRG				**ARS1-11-00895**	003	1	RM-JM-SED-110420	STD	05/03/11
ARS1-B11-01648-07	TRG				**ARS1-11-00895**	004	1	RM-SED-BG-110419	STD	05/03/11
ARS1-B11-01648-08	TRG				**ARS1-11-00895**	005	1	RP-JM-SED-01	STD	05/03/11
ARS1-B11-01648-09	TRG				**ARS1-11-00895**	006	1	RP-JM-SED-110420	STD	05/03/11
ARS1-B11-01648-10	TRG				**ARS1-11-00895**	007	1	RP-SED-01-110419	STD	05/03/11
ARS1-B11-01648-11	TRG				**ARS1-11-00895**	008	1	RP-SED-02-110420	STD	05/03/11
ARS1-B11-01648-12	TRG				**ARS1-11-00895**	009	1	RP-SED-03-110420	STD	05/03/11
ARS1-B11-01648-13	TRG				**ARS1-11-00895**	010	1	RP-SED-BG-041911	STD	05/03/11

American Radiation Services
Baton Rouge Laboratory

LCS Report
Analytical Batch: ARS1-B11-01648

Printed: 5/10/2011 11:50 AM

BlindID	ABatch	ABatchSampleID	BlindGroup	StdID	Isotope	ExpectedAddition	ExpectedValue	EmptyWt	GrossWt	NetWt	UserID	ModDate	ExpectedValue_CT	MidPointCountDate	KnownValue
B-11688	ARS1-B11-0164B	ARS1-B11-0164B-01	B-UU238	5-0028	U-238	1	15.7364287	13.5104	14.5784	1.068	VMULLIGAN	4/28/2011	15.7364287	5/6/2011	16.80650585
B-11689	ARS1-B11-01648	ARS1-B11-0164B-02	B-UU238	5-0028	U-238	1	15.7364287	13.5329	14.6035	1.0706	VMULLIGAN	4/28/2011	15.7364287	5/6/2011	16.84742057

Batch Result Verification Report

ABatchSampleID	SDG	Fraction	ClientID	Run	Isotope	ACT	TPU	TPU1s	TPU2s	MDA	DL	CU	CU1s	CU2s	ActivityReportUnits
ARS1-B11-01648-01				1	U-232	4.259039482	0.541651679	0.276352897	0.541651679	0.004707177	0	0.168580565	0.08601049	0.16858056	pCi
ARS1-B11-01648-01				1	U-234	17.30928788	2.119421263	1.081337379	2.119421263	0.018684906	0.006991402	0.339772022	0.17335307	0.33977202	pCi
ARS1-B11-01648-01				1	U-235	0.784358754	0.122791677	0.062648815	0.122791677	0.014807814	0.004678763	0.078045748	0.03981926	0.07804575	pCi
ARS1-B11-01648-01				1	U-238	17.82013011	2.181117277	1.112814937	2.181117277	0.020806357	0.00805683	0.344434696	0.17573199	0.3444347	pCi
ARS1-B11-01648-02				1	U-232	4.239429516	0.540406162	0.275717429	0.540406162	0.004909767	0	0.171773262	0.08763942	0.17177326	pCi
ARS1-B11-01648-02				1	U-234	16.45260911	2.017033644	1.029098798	2.017033644	0.013324899	0.004210213	0.338246093	0.17257454	0.33824609	pCi
ARS1-B11-01648-02				1	U-235	0.778259467	0.123097413	0.062804802	0.123097413	0.015445121	0.00488013	0.079407402	0.04051398	0.0794074	pCi
ARS1-B11-01648-02				1	U-238	17.3516766	2.125666451	1.0845237	2.125666451	0.021701833	0.008403584	0.347123783	0.17710397	0.34712378	pCi
ARS1-B11-01648-03				1	U-232	4.233301402	0.557659275	0.284520038	0.557659275	0.028030912	0.009926986	0.221832227	0.11317971	0.22183223	pCi
ARS1-B11-01648-03				1	U-234	0.105492388	0.045629239	0.023280224	0.045629239	0.052515097	0.022173486	0.043811739	0.02235293	0.04381174	pCi
ARS1-B11-01648-03				1	U-235	0.006987317	0.019386257	0.009890948	0.019386257	0.037622585	0.014077385	0.019367855	0.00988156	0.01936785	pCi
ARS1-B11-01648-03				1	U-238	0.02406432	0.063016627	0.03215134	0.063016627	0.110041995	0.050945103	0.062949474	0.03211708	0.06294947	pCi
ARS1-B11-01648-04	ARS1-11-00895	001	PR-SED-01-110420	1	U-232	3.288267722	0.422646726	0.215636085	0.422646726	0.004437851	0	0.143827319	0.07338129	0.14382732	pCi
ARS1-B11-01648-04	ARS1-11-00895	001	PR-SED-01-110420	1	U-234	2.124156912	0.281845995	0.143798977	0.281845995	0.027256396	0.011412469	0.116312503	0.05934311	0.1163125	pCi
ARS1-B11-01648-04	ARS1-11-00895	001	PR-SED-01-110420	1	U-235	0.089084601	0.028145879	0.014360142	0.028145879	0.013955506	0.004409463	0.026005122	0.01326792	0.02600512	pCi
ARS1-B11-01648-04	ARS1-11-00895	001	PR-SED-01-110420	1	U-238	2.247200755	0.29647038	0.151260398	0.29647038	0.015160853	0.005369129	0.118866874	0.06064636	0.11886687	pCi
ARS1-B11-01648-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	U-232	4.174382063	0.540156487	0.275590044	0.540156487	0.024918611	0.009323891	0.192952772	0.09844529	0.19295277	pCi
ARS1-B11-01648-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	U-234	0.820272195	0.131585298	0.067135356	0.131585298	0.030301302	0.012019753	0.086523114	0.04414445	0.08652311	pCi
ARS1-B11-01648-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	U-235	0.053565723	0.024352515	0.012424753	0.024352515	0.007258155	0	0.023476213	0.01197766	0.02347621	pCi
ARS1-B11-01648-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	U-238	0.846303602	0.134468998	0.068606632	0.134468998	0.024832949	0.009291838	0.08729123	0.04453634	0.08729123	pCi
ARS1-B11-01648-06	ARS1-11-00895	003	RM-JM-SED-110420	1	U-232	3.792003893	0.48382906	0.246851561	0.48382906	0.012144247	0.003837167	0.155075855	0.07912033	0.15507585	pCi
ARS1-B11-01648-06	ARS1-11-00895	003	RM-JM-SED-110420	1	U-234	5.781105494	0.724496664	0.369641155	0.724496664	0.023234599	0.009385562	0.191581922	0.09774588	0.19158192	pCi
ARS1-B11-01648-06	ARS1-11-00895	003	RM-JM-SED-110420	1	U-235	0.261548167	0.054272026	0.027689809	0.054272026	0.014056329	0.004441319	0.044115843	0.02250808	0.04411584	pCi
ARS1-B11-01648-06	ARS1-11-00895	003	RM-JM-SED-110420	1	U-238	5.887892164	0.737302543	0.376174767	0.737302543	0.015270385	0.005407919	0.192928097	0.0984327	0.1929281	pCi
ARS1-B11-01648-07	ARS1-11-00895	004	RM-SED-BG-110419	1	U-232	3.852596072	0.503047405	0.256656839	0.503047405	0.00663734	0	0.190390462	0.09713799	0.19039046	pCi
ARS1-B11-01648-07	ARS1-11-00895	004	RM-SED-BG-110419	1	U-234	0.369286742	0.077246243	0.039411349	0.077246243	0.044366911	0.018869657	0.063047213	0.03216695	0.06304721	pCi
ARS1-B11-01648-07	ARS1-11-00895	004	RM-SED-BG-110419	1	U-235	0.01984322	0.014894412	0.00759919	0.014894412	0.007682161	0	0.014700063	0.00750003	0.01470006	pCi
ARS1-B11-01648-07	ARS1-11-00895	004	RM-SED-BG-110419	1	U-238	0.302648788	0.064619522	0.032969144	0.064619522	0.00661434	0	0.05327018	0.02717866	0.05327018	pCi
ARS1-B11-01648-08	ARS1-11-00895	005	RP-JM-SED-01	1	U-232	3.580836985	0.468706073	0.239135752	0.468706073	0.021813754	0.007725216	0.179959394	0.09181602	0.17995939	pCi
ARS1-B11-01648-08	ARS1-11-00895	005	RP-JM-SED-01	1	U-234	0.679965189	0.114040172	0.058183761	0.114040172	0.025249736	0.00944779	0.079066153	0.04033987	0.07906615	pCi
ARS1-B11-01648-08	ARS1-11-00895	005	RP-JM-SED-01	1	U-235	0.048920234	0.023360601	0.011918674	0.023360601	0.007365213	0	0.022599995	0.01153061	0.02259999	pCi
ARS1-B11-01648-08	ARS1-11-00895	005	RP-JM-SED-01	1	U-238	0.687965246	0.115543875	0.058950957	0.115543875	0.033010384	0.013334468	0.080229845	0.04093359	0.08022985	pCi
ARS1-B11-01648-09	ARS1-11-00895	006	RP-JM-SED-110420	1	U-232	3.911875637	0.510510706	0.260464646	0.510510706	0.006688444	0	0.192586783	0.09825856	0.19258678	pCi
ARS1-B11-01648-09	ARS1-11-00895	006	RP-JM-SED-110420	1	U-234	0.786177175	0.129066973	0.065850496	0.129066973	0.029612325	0.011466758	0.087349354	0.044566	0.08734935	pCi
ARS1-B11-01648-09	ARS1-11-00895	006	RP-JM-SED-110420	1	U-235	0.028566503	0.019700519	0.010051285	0.019700519	0.021032838	0.006645658	0.019395625	0.00989573	0.01939562	pCi
ARS1-B11-01648-09	ARS1-11-00895	006	RP-JM-SED-110420	1	U-238	0.691140839	0.119380034	0.06090818	0.119380034	0.052440743	0.022887646	0.085288107	0.04351434	0.08528811	pCi
ARS1-B11-01648-10	ARS1-11-00895	007	RP-SED-01-110419	1	U-232	4.105773052	0.524449674	0.267576364	0.524449674	0.013435481	0.004245153	0.169727684	0.08659576	0.16972768	pCi
ARS1-B11-01648-10	ARS1-11-00895	007	RP-SED-01-110419	1	U-234	0.710622646	0.11147732	0.056876184	0.11147732	0.01962197	0.007342027	0.071068656	0.03625952	0.07106866	pCi
ARS1-B11-01648-10	ARS1-11-00895	007	RP-SED-01-110419	1	U-235	0.014784267	0.011097139	0.005661806	0.011097139	0.005723624	0	0.010952339	0.00558793	0.01095234	pCi
ARS1-B11-01648-10	ARS1-11-00895	007	RP-SED-01-110419	1	U-238	0.631007318	0.101491359	0.051781306	0.101491359	0.019582723	0.007327342	0.066965073	0.03416585	0.06696507	pCi
ARS1-B11-01648-11	ARS1-11-00895	008	RP-SED-02-110420	1	U-232	3.771723214	0.47994431	0.244869546	0.47994431	0.018634554	0.007215844	0.150150654	0.07660748	0.15015065	pCi
ARS1-B11-01648-11	ARS1-11-00895	008	RP-SED-02-110420	1	U-234	0.902856593	0.131447432	0.067065016	0.131447432	0.004196812	0	0.073289299	0.0373925	0.0732893	pCi
ARS1-B11-01648-11	ARS1-11-00895	008	RP-SED-02-110420	1	U-235	0.030515921	0.014967856	0.007636661	0.014967856	0.004864597	0	0.014506348	0.0074012	0.01450635	pCi
ARS1-B11-01648-11	ARS1-11-00895	008	RP-SED-02-110420	1	U-238	0.947417018	0.137283377	0.070042539	0.137283377	0.021802792	0.008807187	0.07573154	0.03863854	0.07573154	pCi
ARS1-B11-01648-12	ARS1-11-00895	009	RP-SED-03-110420	1	U-232	4.011339881	0.513621924	0.262052002	0.513621924	0.013730611	0.004338404	0.169600503	0.08653087	0.1696005	pCi
ARS1-B11-01648-12	ARS1-11-00895	009	RP-SED-03-110420	1	U-234	1.350084752	0.190621498	0.097255867	0.190621498	0.017299707	0.006126591	0.098546876	0.05027902	0.09854688	pCi
ARS1-B11-01648-12	ARS1-11-00895	009	RP-SED-03-110420	1	U-235	0.101449105	0.032052389	0.01635326	0.032052389	0.015892461	0.005021475	0.029614505	0.01510944	0.0296145	pCi
ARS1-B11-01648-12	ARS1-11-00895	009	RP-SED-03-110420	1	U-238	1.624295145	0.224501225	0.114541441	0.224501225	0.032380579	0.013672074	0.108912655	0.05556768	0.10891265	pCi
ARS1-B11-01648-13	ARS1-11-00895	010	RP-SED-BG-041911	1	U-232	3.208748562	0.415073787	0.21177234	0.415073787	0.013059842	0.004126464	0.14794913	0.07548425	0.14794913	pCi
ARS1-B11-01648-13	ARS1-11-00895	010	RP-SED-BG-041911	1	U-234	0.242649668	0.050826969	0.025932127	0.050826969	0.019073364	0.007136753	0.041512914	0.02118006	0.04151291	pCi
ARS1-B11-01648-13	ARS1-11-00895	010	RP-SED-BG-041911	1	U-235	0.002052988	0.00697394	0.003558133	0.00697394	0.015115665	0.004776034	0.006969525	0.00355588	0.00696952	pCi
ARS1-B11-01648-13	ARS1-11-00895	010	RP-SED-BG-041911	1	U-238	0.201509011	0.04588599	0.023411219	0.04588599	0.024935669	0.010072706	0.038889375	0.01984152	0.03888937	pCi

ABatchSampleID	SDG	Fraction	AliquotReportUnits	ChemRecovery	TracerRecovery	SampleCounts	SampleCountMins	BKG_Counts	BKG_CountMins	EFF	ALIQ	SampleCollDate	MidPointCountDate
ARS1-B11-01648-01			g		0.846466241	2452	1440	0	1440	0.213413358	1	5/3/2011	5/6/2011
ARS1-B11-01648-01			g		0.846466241	9979	1440	3	1440	0.213413358	1	5/3/2011	5/6/2011
ARS1-B11-01648-01			g		0.846466241	391	1440	1	1440	0.213413358	1	5/3/2011	5/6/2011
ARS1-B11-01648-01			g		0.846466241	10295	1440	4	1440	0.213413358	1	5/3/2011	5/6/2011
ARS1-B11-01648-02			g		0.769905462	2340	1440	0	1440	0.224953875	1	5/3/2011	5/6/2011
ARS1-B11-01648-02			g		0.769905462	9092	1440	1	1440	0.224953875	1	5/3/2011	5/6/2011
ARS1-B11-01648-02			g		0.769905462	372	1440	1	1440	0.224953875	1	5/3/2011	5/6/2011
ARS1-B11-01648-02			g		0.769905462	9611	1440	4	1440	0.224953875	1	5/3/2011	5/6/2011
ARS1-B11-01648-03			g		0.481854236	1405	1440	2	1440	0.215816796	1	5/3/2011	5/6/2011
ARS1-B11-01648-03			g		0.481854236	45	1440	10	1440	0.215816796	1	5/3/2011	5/6/2011
ARS1-B11-01648-03			g		0.481854236	5	1440	3	1440	0.215816796	1	5/3/2011	5/6/2011
ARS1-B11-01648-03			g		0.481854236	61	1440	53	1440	0.215816796	1	5/3/2011	5/6/2011
ARS1-B11-01648-04	ARS1-11-00895	001	g		0.683126611	2008	1440	0	1440	0.218973055	1.2814	4/20/2011	5/6/2011
ARS1-B11-01648-04	ARS1-11-00895	001	g		0.683126611	1308	1440	9	1440	0.218973055	1.2814	4/20/2011	5/6/2011
ARS1-B11-01648-04	ARS1-11-00895	001	g		0.683126611	48	1440	1	1440	0.218973055	1.2814	4/20/2011	5/6/2011
ARS1-B11-01648-04	ARS1-11-00895	001	g		0.683126611	1379	1440	2	1440	0.218973055	1.2814	4/20/2011	5/6/2011
ARS1-B11-01648-05	ARS1-11-00895	002	g		0.631044977	1807	1440	3	1440	0.213045776	1.009	4/20/2011	5/6/2011
ARS1-B11-01648-05	ARS1-11-00895	002	g		0.631044977	360	1440	5	1440	0.213045776	1.009	4/20/2011	5/6/2011
ARS1-B11-01648-05	ARS1-11-00895	002	g		0.631044977	20	1440	0	1440	0.213045776	1.009	4/20/2011	5/6/2011
ARS1-B11-01648-05	ARS1-11-00895	002	g		0.631044977	370	1440	3	1440	0.213045776	1.009	4/20/2011	5/6/2011
ARS1-B11-01648-06	ARS1-11-00895	003	g		0.767683362	2300	1440	1	1440	0.223027632	1.1115	4/20/2011	5/6/2011
ARS1-B11-01648-06	ARS1-11-00895	003	g		0.767683362	3516	1440	6	1440	0.223027632	1.1115	4/20/2011	5/6/2011
ARS1-B11-01648-06	ARS1-11-00895	003	g		0.767683362	138	1440	1	1440	0.223027632	1.1115	4/20/2011	5/6/2011
ARS1-B11-01648-06	ARS1-11-00895	003	g		0.767683362	3584	1440	2	1440	0.223027632	1.1115	4/20/2011	5/6/2011
ARS1-B11-01648-07	ARS1-11-00895	004	g		0.573392505	1573	1440	0	1440	0.209818289	1.0653	4/19/2011	5/6/2011
ARS1-B11-01648-07	ARS1-11-00895	004	g		0.573392505	162	1440	11	1440	0.209818289	1.0653	4/19/2011	5/6/2011
ARS1-B11-01648-07	ARS1-11-00895	004	g		0.573392505	7	1440	0	1440	0.209818289	1.0653	4/19/2011	5/6/2011
ARS1-B11-01648-07	ARS1-11-00895	004	g		0.573392505	124	1440	0	1440	0.209818289	1.0653	4/19/2011	5/6/2011
ARS1-B11-01648-08	ARS1-11-00895	005	g		0.513659584	1527	1440	2	1440	0.220569149	1.1799	4/20/2011	5/6/2011
ARS1-B11-01648-08	ARS1-11-00895	005	g		0.513659584	293	1440	3	1440	0.220569149	1.1799	4/20/2011	5/6/2011
ARS1-B11-01648-08	ARS1-11-00895	005	g		0.513659584	18	1440	0	1440	0.220569149	1.1799	4/20/2011	5/6/2011
ARS1-B11-01648-08	ARS1-11-00895	005	g		0.513659584	300	1440	6	1440	0.220569149	1.1799	4/20/2011	5/6/2011
ARS1-B11-01648-09	ARS1-11-00895	006	g		0.539253382	1585	1440	0	1440	0.219087392	1.0765	4/20/2011	5/6/2011
ARS1-B11-01648-09	ARS1-11-00895	006	g		0.539253382	323	1440	4	1440	0.219087392	1.0765	4/20/2011	5/6/2011
ARS1-B11-01648-09	ARS1-11-00895	006	g		0.539253382	11	1440	1	1440	0.219087392	1.0765	4/20/2011	5/6/2011
ARS1-B11-01648-09	ARS1-11-00895	006	g		0.539253382	297	1440	16	1440	0.219087392	1.0765	4/20/2011	5/6/2011
ARS1-B11-01648-10	ARS1-11-00895	007	g		0.791305513	2251	1440	1	1440	0.212396607	1.0235	4/19/2011	5/6/2011
ARS1-B11-01648-10	ARS1-11-00895	007	g		0.791305513	393	1440	3	1440	0.212396607	1.0235	4/19/2011	5/6/2011
ARS1-B11-01648-10	ARS1-11-00895	007	g		0.791305513	7	1440	0	1440	0.212396607	1.0235	4/19/2011	5/6/2011
ARS1-B11-01648-10	ARS1-11-00895	007	g		0.791305513	350	1440	3	1440	0.212396607	1.0235	4/19/2011	5/6/2011
ARS1-B11-01648-11	ARS1-11-00895	008	g		0.845169865	2436	1440	4	1440	0.215743065	1.11	4/20/2011	5/6/2011
ARS1-B11-01648-11	ARS1-11-00895	008	g		0.845169865	583	1440	0	1440	0.215743065	1.11	4/20/2011	5/6/2011
ARS1-B11-01648-11	ARS1-11-00895	008	g		0.845169865	17	1440	0	1440	0.215743065	1.11	4/20/2011	5/6/2011
ARS1-B11-01648-11	ARS1-11-00895	008	g		0.845169865	619	1440	6	1440	0.215743065	1.11	4/20/2011	5/6/2011
ARS1-B11-01648-12	ARS1-11-00895	009	g		0.756093297	2152	1440	1	1440	0.213233352	1.044	4/20/2011	5/6/2011
ARS1-B11-01648-12	ARS1-11-00895	009	g		0.756093297	727	1440	2	1440	0.213233352	1.044	4/20/2011	5/6/2011
ARS1-B11-01648-12	ARS1-11-00895	009	g		0.756093297	48	1440	1	1440	0.213233352	1.044	4/20/2011	5/6/2011
ARS1-B11-01648-12	ARS1-11-00895	009	g		0.756093297	884	1440	10	1440	0.213233352	1.044	4/20/2011	5/6/2011
ARS1-B11-01648-13	ARS1-11-00895	010	g		0.621385989	1810	1440	1	1440	0.219039932	1.3002	4/19/2011	5/6/2011
ARS1-B11-01648-13	ARS1-11-00895	010	g		0.621385989	140	1440	3	1440	0.219039932	1.3002	4/19/2011	5/6/2011
ARS1-B11-01648-13	ARS1-11-00895	010	g		0.621385989	2	1440	1	1440	0.219039932	1.3002	4/19/2011	5/6/2011
ARS1-B11-01648-13	ARS1-11-00895	010	g		0.621385989	120	1440	6	1440	0.219039932	1.3002	4/19/2011	5/6/2011

ABatchSampleID	SDG	Fraction	BP_DL	BP_MDA	Sb_Val	UCF	CF	GrossCountRate	BKGCountRate	NetCountRate	PlatingRecovery	InstFileName	DetectorID	InstrumentkeV	NuclideAbd	TracerMeasACT
ARS1-B11-01648-01			0.06520006	0.134827469	0.062117216	2.22	1.96	1.702777778	0	1.702777778	0.98	ApexAlpha	A_2_3B	55.76531219		
ARS1-B11-01648-01			0.070595057	0.145589233	0.067262242	2.22	1.96	6.929861111	0.002083333	6.927777778	0.98	ApexAlpha	A_2_3B	65.2660675		
ARS1-B11-01648-01			0.011419374	0.028240025	0.010880262	2.22	1.96	0.271527778	0.000694444	0.270833333	0.98	ApexAlpha	A_2_3B	49.36266708		
ARS1-B11-01648-01			0.031204294	0.066967362	0.02973113	2.22	1.96	7.149305556	0.002777778	7.146527778	0.98	ApexAlpha	A_2_3B	61.71909714		
ARS1-B11-01648-02			0.06520006	0.135030059	0.062117216	2.22	1.96	1.625	0	1.625	0.98	ApexAlpha	A_2_4A	39.58743668		
ARS1-B11-01648-02			0.070595057	0.145791604	0.067262242	2.22	1.96	6.313888889	0.000694444	6.313194444	0.98	ApexAlpha	A_2_4A	49.32971954		
ARS1-B11-01648-02			0.011419374	0.028474597	0.010880262	2.22	1.96	0.258333333	0.000694444	0.257638889	0.98	ApexAlpha	A_2_4A	37.89388275		
ARS1-B11-01648-02			0.031204294	0.067169329	0.02973113	2.22	1.96	6.674305556	0.002777778	6.671527778	0.98	ApexAlpha	A_2_4A	52.94215393		
ARS1-B11-01648-03			0.06520006	0.138297232	0.062117216	2.22	1.96	0.975694444	0.001388889	0.974305556	0.98	ApexAlpha	A_2_4B	27.46372223		
ARS1-B11-01648-03			0.070595057	0.149055255	0.067262242	2.22	1.96	0.03125	0.006944444	0.024305556	0.98	ApexAlpha	A_2_4B	11.04856873		
ARS1-B11-01648-03			0.011419374	0.032257552	0.010880262	2.22	1.96	0.003472222	0.002083333	0.001388889	0.98	ApexAlpha	A_2_4B	4.910474777		
ARS1-B11-01648-03			0.031204294	0.070426453	0.02973113	2.22	1.96	0.042361111	0.036805556	0.005555556	0.98	ApexAlpha	A_2_4B	12.27618694		
ARS1-B11-01648-04	ARS1-11-00895	001	0.050900365	0.106020125	0.062117216	2.22	1.96	1.394444444	0	1.394444444	0.98	ApexAlpha	A_2_5A	35.04392242		
ARS1-B11-01648-04	ARS1-11-00895	001	0.055092137	0.114379285	0.067262242	2.22	1.96	0.908333333	0.00625	0.902083333	0.98	ApexAlpha	A_2_5A	39.03789902		
ARS1-B11-01648-04	ARS1-11-00895	001	0.008911639	0.02292161	0.010880262	2.22	1.96	0.033333333	0.000694444	0.032638889	0.98	ApexAlpha	A_2_5A	8.557236671		
AR51-B11-01648-04	ARS1-11-00895	001	0.02435172	0.053021522	0.02973113	2.22	1.96	0.957638889	0.001388889	0.95625	0.98	ApexAlpha	A_2_5A	36.89613724		
ARS1-B11-01648-05	ARS1-11-00895	002	0.064641952	0.135277299	0.062117216	2.22	1.96	1.254861111	0.002083333	1.252777778	0.98	ApexAlpha	A_2_5B	29.02936172		
ARS1-B11-01648-05	ARS1-11-00895	002	0.069965376	0.145892267	0.067262242	2.22	1.96	0.25	0.003472222	0.246527778	0.98	ApexAlpha	A_2_5B	23.11819649		
ARS1-B11-01648-05	ARS1-11-00895	002	0.011317516	0.029844614	0.010880262	2.22	1.96	0.013888889	0	0.013888889	0.98	ApexAlpha	A_2_5B	24.51929855		
ARS1-B11-01648-05	ARS1-11-00895	002	0.03092596	0.067968463	0.02973113	2.22	1.96	0.256944444	0.002083333	0.254861111	0.98	ApexAlpha	A_2_5B	28.36746597		
ARS1-B11-01648-06	ARS1-11-00895	003	0.058680818	0.121579701	0.062117216	2.22	1.96	1.597222222	0.000694444	1.596527778	0.98	ApexAlpha	A_3_1A	34.18450165		
ARS1-B11-01648-06	ARS1-11-00895	003	0.063513328	0.131217541	0.067262242	2.22	1.96	2.441666667	0.004166667	2.4375	0.98	ApexAlpha	A_3_1A	36.54356003		
ARS1-B11-01648-06	ARS1-11-00895	003	0.01027384	0.025677277	0.010880262	2.22	1.96	0.095833333	0.000694444	0.095138889	0.98	ApexAlpha	A_3_1A	46.24260712		
ARS1-B11-01648-06	ARS1-11-00895	003	0.028074039	0.060482135	0.02973113	2.22	1.96	2.488888889	0.001388889	2.4875	0.98	ApexAlpha	A_3_1A	37.66130066		
ARS1-B11-01648-07	ARS1-11-00895	004	0.061227378	0.128829318	0.062117216	2.22	1.96	1.092361111	0	1.092361111	0.98	ApexAlpha	A_3_1B	30.37384605		
ARS1-B11-01648-07	ARS1-11-00895	004	0.066267779	0.138878743	0.067262242	2.22	1.96	0.1125	0.007638889	0.104861111	0.98	ApexAlpha	A_3_1B	27.0384407		
ARS1-B11-01648-07	ARS1-11-00895	004	0.010719397	0.029074949	0.010880262	2.22	1.96	0.004861111	0	0.004861111	0.98	ApexAlpha	A_3_1B	9.789780617		
ARS1-B11-01648-07	ARS1-11-00895	004	0.029291556	0.065071737	0.02973113	2.22	1.96	0.086111111	0	0.086111111	0.98	ApexAlpha	A_3_1B	21.41514587		
ARS1-B11-01648-08	ARS1-11-00895	005	0.055279032	0.116684138	0.062117216	2.22	1.96	1.060416667	0.001388889	1.059027778	0.98	ApexAlpha	A_3_2B	27.63113976		
ARS1-B11-01648-08	ARS1-11-00895	005	0.059831396	0.125760162	0.067262242	2.22	1.96	0.203472222	0.002083333	0.201388889	0.98	ApexAlpha	A_3_2B	29.47825241		
ARS1-B11-01648-08	ARS1-11-00895	005	0.009678255	0.026680186	0.010880262	2.22	1.96	0.0125	0	0.0125	0.98	ApexAlpha	A_3_2B	5.705468178		
ARS1-B11-01648-08	ARS1-11-00895	005	0.026446558	0.05912106	0.02973113	2.22	1.96	0.208333333	0.004166667	0.204166667	0.98	ApexAlpha	A_3_2B	29.30165482		
ARS1-B11-01648-09	ARS1-11-00895	006	0.060588694	0.127605795	0.062117216	2.22	1.96	1.100694444	0	1.100694444	0.98	ApexAlpha	A_3_3A	32.36300659		
ARS1-B11-01648-09	ARS1-11-00895	006	0.065578322	0.137554002	0.067262242	2.22	1.96	0.224305556	0.002777778	0.221527778	0.98	ApexAlpha	A_3_3A	35.97846985		
ARS1-B11-01648-09	ARS1-11-00895	006	0.010607871	0.028911738	0.010880262	2.22	1.96	0.007638889	0.000694444	0.006944444	0.98	ApexAlpha	A_3_3A	4.906154633		
ARS1-B11-01648-09	ARS1-11-00895	006	0.028986804	0.064514651	0.02973113	2.22	1.96	0.20625	0.011111111	0.195138889	0.98	ApexAlpha	A_3_3A	32.22022629		
ARS1-B11-01648-10	ARS1-11-00895	007	0.06372792	0.132127505	0.062117216	2.22	1.96	1.563194444	0.000694444	1.5625	0.98	ApexAlpha	A_3_3B	31.86484528		
ARS1-B11-01648-10	ARS1-11-00895	007	0.068974171	0.142590233	0.067262242	2.22	1.96	0.272916667	0.002083333	0.270833333	0.98	ApexAlpha	A_3_3B	34.65392685		
ARS1-B11-01648-10	ARS1-11-00895	007	0.01115718	0.027990098	0.010880262	2.22	1.96	0.004861111	0	0.004861111	0.98	ApexAlpha	A_3_3B	7.364357948		
ARS1-B11-01648-10	ARS1-11-00895	007	0.03048783	0.065772851	0.02973113	2.22	1.96	0.243055556	0.002083333	0.240972222	0.98	ApexAlpha	A_3_3B	37.95228577		
ARS1-B11-01648-11	ARS1-11-00895	008	0.058760117	0.12147091	0.062117216	2.22	1.96	1.691666667	0.002777778	1.688888889	0.98	ApexAlpha	A_3_4B	81.9491272		
ARS1-B11-01648-11	ARS1-11-00895	008	0.063599157	0.131122168	0.067262242	2.22	1.96	0.404861111	0	0.404861111	0.98	ApexAlpha	A_3_4B	25.1978302		
ARS1-B11-01648-11	ARS1-11-00895	008	0.010287724	0.025395891	0.010880262	2.22	1.96	0.011805556	0	0.011805556	0.98	ApexAlpha	A_3_4B	7.349367142		
ARS1-B11-01648-11	ARS1-11-00895	008	0.028111977	0.060291719	0.02973113	2.22	1.96	0.429861111	0.004166667	0.425694444	0.98	ApexAlpha	A_3_4B	78.67591095		
ARS1-B11-01648-12	ARS1-11-00895	009	0.062474837	0.129735344	0.062117216	2.22	1.96	1.494444444	0.000694444	1.49375	0.98	ApexAlpha	A_3_5A	31.02633286		
ARS1-B11-01648-12	ARS1-11-00895	009	0.067619793	0.139995896	0.067262242	2.22	1.96	0.504861111	0.001388889	0.503472222	0.98	ApexAlpha	A_3_5A	32.15897751		
ARS1-B11-01648-12	ARS1-11-00895	009	0.010938097	0.027678762	0.010880262	2.22	1.96	0.033333333	0.000694444	0.032638889	0.98	ApexAlpha	A_3_5A	14.69458294		
ARS1-B11-01648-12	ARS1-11-00895	009	0.029889171	0.064686492	0.02973113	2.22	1.96	0.613888889	0.006944444	0.606944444	0.98	ApexAlpha	A_3_5A	32.74837494		
ARS1-B11-01648-13	ARS1-11-00895	010	0.050165764	0.104923139	0.062117216	2.22	1.96	1.256944444	0.000694444	1.25625	0.98	ApexAlpha	A_3_6A	33.73409271		
ARS1-B11-01648-13	ARS1-11-00895	010	0.054295543	0.113157916	0.067262242	2.22	1.96	0.097222222	0.002083333	0.095138889	0.98	ApexAlpha	A_3_6A	13.7185688		
ARS1-B11-01648-13	ARS1-11-00895	010	0.008782782	0.023091469	0.010880262	2.22	1.96	0.001388889	0.000694444	0.000694444	0.98	ApexAlpha	A_3_6A	4.899488926		
ARS1-B11-01648-13	ARS1-11-00895	010	0.023999611	0.052686477	0.02973113	2.22	1.96	0.083333333	0.004166667	0.079166667	0.98	ApexAlpha	A_3_6A	17.02572441		

ABatchSampleID	SDG	Fraction	TracerKnownACT	TracerIsotope	TracerRefDate	TracerRefACT	TracerKnown	Halflife1	Halflife2	Halflife3	TPUF_1	TPUF_2	TPUF_3	TPUF_4	TPUF_5	TPUF_6	DeltaT1	DeltaT2
ARS1-B11-01648-01				U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-01				U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-01				U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-01				U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-02				U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-02				U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-02				U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-02				U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-03				U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-03				U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-03				U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-03				U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	2.763877315	
ARS1-B11-01648-04	ARS1-11-00895	001		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	15.93888889	
ARS1-B11-01648-04	ARS1-11-00895	001		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	15.93888889	
ARS1-B11-01648-04	ARS1-11-00895	001		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	15.93888889	
ARS1-B11-01648-04	ARS1-11-00895	001		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	15.93888889	
ARS1-B11-01648-05	ARS1-11-00895	002		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-05	ARS1-11-00895	002		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-05	ARS1-11-00895	002		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-05	ARS1-11-00895	002		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-06	ARS1-11-00895	003		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-06	ARS1-11-00895	003		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-06	ARS1-11-00895	003		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-06	ARS1-11-00895	003		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-07	ARS1-11-00895	004		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-07	ARS1-11-00895	004		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-07	ARS1-11-00895	004		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-07	ARS1-11-00895	004		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-08	ARS1-11-00895	005		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-08	ARS1-11-00895	005		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-08	ARS1-11-00895	005		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-08	ARS1-11-00895	005		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-09	ARS1-11-00895	006		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-09	ARS1-11-00895	006		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-09	ARS1-11-00895	006		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-09	ARS1-11-00895	006		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-10	ARS1-11-00895	007		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-10	ARS1-11-00895	007		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-10	ARS1-11-00895	007		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-10	ARS1-11-00895	007		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-11	ARS1-11-00895	008		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-11	ARS1-11-00895	008		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	15.93958333	
AR51-B11-01648-11	ARS1-11-00895	008		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-11	ARS1-11-00895	008		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-12	ARS1-11-00895	009		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-12	ARS1-11-00895	009		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-12	ARS1-11-00895	009		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-12	ARS1-11-00895	009		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	15.93958333	
ARS1-B11-01648-13	ARS1-11-00895	010		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-13	ARS1-11-00895	010		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-13	ARS1-11-00895	010		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	16.93958333	
ARS1-B11-01648-13	ARS1-11-00895	010		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	16.93958333	

Batch Result Verification Report

ABatchSampleID	SDG	Fraction	DeltaT3	DeltaT4	DeltaT5	DeltaT6	DF1	DF2	DF3	IF1	IF2	SysErr	K_Val	K_MDA	AnalysisCode	UserID	ModDate
ARS1-B11-01648-01							0.999923865					0.061663514	0.399803238	575.7166634		JARMSTRONG	5/10/2011
ARS1-B11-01648-01							0.999999979					0.061663514	0.400234708	576.3379794		JARMSTRONG	5/10/2011
ARS1-B11-01648-01							1					0.061663514	0.345292676	497.2214537		JARMSTRONG	5/10/2011
ARS1-B11-01648-01							1					0.061663514	0.40103679	577.4929776		JARMSTRONG	5/10/2011
ARS1-B11-01648-02							0.999923865					0.061663514	0.38330629	551.9610577		JARMSTRONG	5/10/2011
ARS1-B11-01648-02							0.999999979					0.061663514	0.383719956	552.5567365		JARMSTRONG	5/10/2011
ARS1-B11-01648-02							1					0.061663514	0.331044979	476.7047699		JARMSTRONG	5/10/2011
ARS1-B11-01648-02							1					0.061663514	0.384488942	553.6640765		JARMSTRONG	5/10/2011
ARS1-B11-01648-03							0.999923865					0.061663514	0.230152655	331.4198227		JARMSTRONG	5/10/2011
ARS1-B11-01648-03							0.999999979					0.061663514	0.230401036	331.7774924		JARMSTRONG	5/10/2011
ARS1-B11-01648-03							1					0.061663514	0.198772842	286.2328929		JARMSTRONG	5/10/2011
ARS1-B11-01648-03							1					0.061663514	0.230862767	332.4423843		JARMSTRONG	5/10/2011
ARS1-B11-01648-04	ARS1-11-00895	001					0.999561022					0.061663514	0.424066579	610.6558741	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-04	ARS1-11-00895	001					0.999999877					0.061663514	0.424678294	611.5367431	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-04	ARS1-11-00895	001					1					0.061663514	0.366380818	527.5883774	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-04	ARS1-11-00895	001					1					0.061663514	0.425529405	612.7623431	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-05	ARS1-11-00895	002					0.999561003					0.061663514	0.300110953	432.1597718	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-05	ARS1-11-00895	002					0.999999877					0.061663514	0.300543867	432.7831691	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-05	ARS1-11-00895	002					1					0.061663514	0.259286875	373.3731007	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-05	ARS1-11-00895	002					1					0.061663514	0.301146197	433.6505234	ASP-A-025	JARMSTRONG	5/10/2011
AR51-B11-01648-06	ARS1-11-00895	003					0.999561003					0.061663514	0.421024826	606.2757489	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-06	ARS1-11-00895	003					0.999999877					0.061663514	0.421632161	607.1503113	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-06	ARS1-11-00895	003					1					0.061663514	0.363752841	523.8040905	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-06	ARS1-11-00895	003					1					0.061663514	0.422477167	608.3671203	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-07	ARS1-11-00895	004					0.999533468					0.061663514	0.283538967	408.2961128	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-07	ARS1-11-00895	004					0.999999869					0.061663514	0.283955797	408.896347	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-07	ARS1-11-00895	004					1					0.061663514	0.244975925	352.7653315	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-07	ARS1-11-00895	004					1					0.061663514	0.284524883	409.7158322	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-08	ARS1-11-00895	005					0.999561003					0.061663514	0.295748671	425.8780856	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-08	ARS1-11-00895	005					0.999999877					0.061663514	0.296175293	426.4924215	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-08	ARS1-11-00895	005					1					0.061663514	0.255517994	367.9459119	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-08	ARS1-11-00895	005					1					0.061663514	0.296768867	427.3471683	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-09	ARS1-11-00895	006					0.999561003					0.061663514	0.281372555	405.1764798	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-09	ARS1-11-00895	006					0.999999877					0.061663514	0.28177844	405.7609532	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-09	ARS1-11-00895	006					1					0.061663514	0.243097461	350.0603444	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-09	ARS1-11-00895	006					1					0.061663514	0.282343161	406.5741515	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-10	ARS1-11-00895	007					0.999533468					0.061663514	0.380561707	548.0088576	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-10	ARS1-11-00895	007					0.999999869					0.061663514	0.381121169	548.814483	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-10	ARS1-11-00895	007					1					0.061663514	0.328802975	473.4762842	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-10	ARS1-11-00895	007					1					0.061663514	0.381884989	549.9143835	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-11	ARS1-11-00895	008					0.999561003					0.061663514	0.447776465	644.79811	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-11	ARS1-11-00895	008					0.999999877					0.061663514	0.44842239	645.7282414	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-11	ARS1-11-00895	008					1					0.061663514	0.386865456	557.0862568	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-11	ARS1-11-00895	008					1					0.061663514	0.449321087	647.0223657	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-12	ARS1-11-00895	009					0.999561003					0.061663514	0.372381809	536.2298045	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-12	ARS1-11-00895	009					0.999999877					0.061663514	0.372918975	537.0033244	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-12	ARS1-11-00895	009					1					0.061663514	0.321726731	463.2864922	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-12	ARS1-11-00895	009					1					0.061663514	0.373666354	538.0795496	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-13	ARS1-11-00895	010					0.999533468					0.061663514	0.391507772	563.7711914	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-13	ARS1-11-00895	010					0.999999869					0.061663514	0.392083326	564.5999889	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-13	ARS1-11-00895	010					1					0.061663514	0.338260308	487.0948437	ASP-A-025	JARMSTRONG	5/10/2011
ARS1-B11-01648-13	ARS1-11-00895	010					1					0.061663514	0.392869115	565.7315258	ASP-A-025	JARMSTRONG	5/10/2011

ARS1-B11-01648

ABatch	ABatchSampleID	ClientID	SampleType	EmptyWt	FilledWt	NetWt	Exp Val	StdID	Isotope	TracerDate	UserID	ModDate	HL days	Ref Date	Cert dpm/g	Curr ACT
ARS1-B11-01648	ARS1-B11-01648-01		LCS	101.735	102.777	1.043	9.455	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-02		LCSD	105.213	106.250	1.038	9.412	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-03		MBL	89.789	90.825	1.036	9.398	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-04	PR-SED-01-110420	TRG	78.572	79.603	1.031	9.351	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-05	RM-JM-SED-02-110420	TRG	84.128	85.159	1.031	9.347	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-06	RM-JM-SED-110420	TRG	84.622	85.653	1.031	9.354	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-07	RM-SED-BG-110419	TRG	85.768	86.772	1.004	9.108	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-08	RP-JM-SED-01	TRG	79.766	80.800	1.034	9.376	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-09	RP-JM-SED-110420	TRG	74.601	75.632	1.030	9.346	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-10	RP-SED-01-110419	TRG	79.235	80.263	1.028	9.326	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-11	RP-SED-02-110420	TRG	84.272	85.296	1.024	9.291	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-12	RP-SED-03-110420	TRG	81.242	82.267	1.025	9.294	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01648	ARS1-B11-01648-13	RP-SED-BG-041911	TRG	82.339	83.360	1.021	9.259	S-0241	U-232	5/2/2011	JBROWN	5/2/2011	25162.037	6/9/2010	9.152	9.070

ARS-026

ID_31001_026	ABatch	ABatchSampleID	ClientID	Aliquot	AliquotUnits	UserID	ModDate	IC_ID	BalanceSerialNumber
8818	ARS1-B11-01648	ARS1-B11-01648-01		1	g	JBROWN	05/03/2011 16:12:01		N1771123140130P
8819	ARS1-B11-01648	ARS1-B11-01648-02		1	g	JBROWN	05/03/2011 16:12:01		N1771123140130P
8820	ARS1-B11-01648	ARS1-B11-01648-03		1	g	JBROWN	05/03/2011 16:12:01		N1771123140130P
8821	ARS1-B11-01648	ARS1-B11-01648-04	PR-SED-01-110420	1.2814	g	JBROWN	05/03/2011 16:12:01	85912	N1771123140130P
8822	ARS1-B11-01648	ARS1-B11-01648-05	RM-JM-SED-02-110420	1.009	g	JBROWN	05/03/2011 16:12:01	85913	N1771123140130P
8823	ARS1-B11-01648	ARS1-B11-01648-06	RM-JM-SED-110420	1.1115	g	JBROWN	05/03/2011 16:12:01	85914	N1771123140130P
8824	ARS1-B11-01648	ARS1-B11-01648-07	RM-SED-BG-110419	1.0653	g	JBROWN	05/03/2011 16:12:01	85915	N1771123140130P
8825	ARS1-B11-01648	ARS1-B11-01648-08	RP-JM-SED-01	1.1799	g	JBROWN	05/03/2011 16:12:02	85916	N1771123140130P
8826	ARS1-B11-01648	ARS1-B11-01648-09	RP-JM-SED-110420	1.0765	g	JBROWN	05/03/2011 16:12:02	85917	N1771123140130P
8827	ARS1-B11-01648	ARS1-B11-01648-10	RP-SED-01-110419	1.0235	g	JBROWN	05/03/2011 16:12:02	85918	N1771123140130P
8828	ARS1-B11-01648	ARS1-B11-01648-11	RP-SED-02-110420	1.11	g	JBROWN	05/03/2011 16:12:02	85919	N1771123140130P
8829	ARS1-B11-01648	ARS1-B11-01648-12	RP-SED-03-110420	1.044	g	JBROWN	05/03/2011 16:12:02	85920	N1771123140130P
8830	ARS1-B11-01648	ARS1-B11-01648-13	RP-SED-BG-041911	1.3002	g	JBROWN	05/03/2011 16:12:02	85921	N1771123140130P

Technical Notes

ARS INTERNATIONAL	Batch	ARS1-B11-01648
	Analysis Code	ASP-A-025
	Procedure No.	ARS-026
	Matrix	SO

#	Date	Dept.	Batch Technical Notes	
1	05/03/11 16:18	CHEMISTRY	B11-01648-03 seems to have electroplated with a light shadow, this may or may not affect tracer recovery.	JBROWN
2	05/03/11 16:20	CHEMISTRY	[illegible] recovery.	

5/6/2011 10:31:35

Apex-Alpha™

ASSIGNED SAMPLES REPORT

Date : 5/6/2011
Time : 10:31:35
User : countroom

SAMPLE	CHAMBER	GEOMETRY	DEVICE	CERTIFICATE
11-01660-01	A_1_1A	Shelf 2	Alpha Analyst10139	
11-01660-02	A_1_1B	Shelf 2	Alpha Analyst10139	
11-01660-03	A_1_2A	Shelf 2	Alpha Analyst10139	
11-01660-04	A_1_2B	Shelf 2	Alpha Analyst10139	
11-01660-05	A_1_3A	Shelf 2	Alpha Analyst10139	
11-01660-06	A_1_3B	Shelf 2	Alpha Analyst10139	
11-01660-07	A_1_4A	Shelf 2	Alpha Analyst10139	
11-01660-08	A_1_4B	Shelf 2	Alpha Analyst10139	
11-01660-09	A_1_5A	Shelf 2	Alpha Analyst10139	
11-01660-10	A_1_5B	Shelf 2	Alpha Analyst10139	
11-01660-11	A_1_6A	Shelf 2	Alpha Analyst10139	
11-01660-12	A_1_6B	Shelf 2	Alpha Analyst10139	
11-01660-13	A_2_1A	Shelf 2	Alpha Analyst10139	
11-01660-14	A_2_1B	Shelf 2	Alpha Analyst10139	
11-01660-15	A_2_2A	Shelf 2	Alpha Analyst10139	
11-01648-01	A_2_3B	Shelf 2	Alpha Analyst10139	
11-01648-02	A_2_4A	Shelf 2	Alpha Analyst10139	
11-01648-03	A_2_4B	Shelf 2	Alpha Analyst10139	
11-01648-04	A_2_5A	Shelf 2	Alpha Analyst10139	
11-01648-05	A_2_5B	Shelf 2	Alpha Analyst10139	
11-01648-06	A_3_1A	Shelf 2	Alpha Analyst10139	
11-01648-07	A_3_1B	Shelf 2	Alpha Analyst10139	
11-01648-08	A_3_2B	Shelf 2	Alpha Analyst10139	
11-01648-09	A_3_3A	Shelf 2	Alpha Analyst10139	
11-01648-10	A_3_3B	Shelf 2	Alpha Analyst10139	
11-01648-11	A_3_4B	Shelf 2	Alpha Analyst10139	
11-01648-12	A_3_5A	Shelf 2	Alpha Analyst10139	
11-01648-13	A_3_6A	Shelf 2	Alpha Analyst10139	

Apex Alpha Instrument Data Transfer Report

#	Report ID	Batch Sample ID	Isotope	Gross Area	Count Mins	BKG Counts	BKG Count Mins	EFF	Analysis Date	Detector
1	ApexAlpha	ARS1-B11-01648-01	U-232	2452	1440	0	1440	0.21	05/06/11 10:32	A_2_3B
2	ApexAlpha	ARS1-B11-01648-01	U-234	9979	1440	3	1440	0.21	05/06/11 10:32	A_2_3B
3	ApexAlpha	ARS1-B11-01648-01	U-235	391	1440	1	1440	0.21	05/06/11 10:32	A_2_3B
4	ApexAlpha	AR51-B11-01648-01	U-238	10295	1440	4	1440	0.21	05/06/11 10:32	A_2_3B
5	ApexAlpha	ARS1-B11-01648-02	U-232	2340	1440	0	1440	0.22	05/06/11 10:32	A_2_4A
6	ApexAlpha	AR51-B11-01648-02	U-234	9092	1440	1	1440	0.22	05/06/11 10:32	A_2_4A
7	ApexAlpha	ARS1-B11-01648-02	U-235	372	1440	1	1440	0.22	05/06/11 10:32	A_2_4A
8	ApexAlpha	ARS1-B11-01648-02	U-238	9611	1440	4	1440	0.22	05/06/11 10:32	A_2_4A
9	ApexAlpha	ARS1-B11-01648-03	U-232	1405	1440	2	1440	0.22	05/06/11 10:32	A_2_4B
10	ApexAlpha	AR51-B11-01648-03	U-234	45	1440	10	1440	0.22	05/06/11 10:32	A_2_4B
11	ApexAlpha	ARS1-B11-01648-03	U-235	5	1440	3	1440	0.22	05/06/11 10:32	A_2_4B
12	ApexAlpha	AR51-B11-01648-03	U-238	61	1440	53	1440	0.22	05/06/11 10:32	A_2_4B
13	ApexAlpha	ARS1-B11-01648-04	U-232	2008	1440	0	1440	0.22	05/06/11 10:32	A_2_5A
14	ApexAlpha	AR51-811-01648-04	U-234	1308	1440	9	1440	0.22	05/06/11 10:32	A_2_5A
15	ApexAlpha	ARS1-B11-01648-04	U-235	48	1440	1	1440	0.22	05/06/11 10:32	A_2_5A
16	ApexAlpha	ARS1-B11-01648-04	U-238	1379	1440	2	1440	0.22	05/06/11 10:32	A_2_5A
17	ApexAlpha	ARS1-B11-01648-05	U-232	1807	1440	3	1440	0.21	05/06/11 10:33	A_2_5B
18	ApexAlpha	AR51-B11-01648-05	U-234	360	1440	5	1440	0.21	05/06/11 10:33	A_2_5B
19	ApexAlpha	ARS1-B11-01648-05	U-235	20	1440	0	1440	0.21	05/06/11 10:33	A_2_5B
20	ApexAlpha	ARS1-B11-01648-05	U-238	370	1440	3	1440	0.21	05/06/11 10:33	A_2_5B
21	ApexAlpha	ARS1-B11-01648-06	U-232	2300	1440	1	1440	0.22	05/06/11 10:33	A_3_1A
22	ApexAlpha	ARS1-B11-01648-06	U-234	3516	1440	6	1440	0.22	05/06/11 10:33	A_3_1A
23	ApexAlpha	ARS1-B11-01648-06	U-235	138	1440	1	1440	0.22	05/06/11 10:33	A_3_1A
24	ApexAlpha	ARS1-B11-01648-06	U-238	3584	1440	2	1440	0.22	05/06/11 10:33	A_3_1A
25	ApexAlpha	ARS1-B11-01648-07	U-232	1573	1440	0	1440	0.21	05/06/11 10:33	A_3_1B
26	ApexAlpha	AR51-B11-01648-07	U-234	162	1440	11	1440	0.21	05/06/11 10:33	A_3_1B
27	ApexAlpha	ARS1-B11-01648-07	U-235	7	1440	0	1440	0.21	05/06/11 10:33	A_3_1B
28	ApexAlpha	ARS1-B11-01648-07	U-238	124	1440	0	1440	0.21	05/06/11 10:33	A_3_1B
29	ApexAlpha	ARS1-B11-01648-08	U-232	1527	1440	2	1440	0.22	05/06/11 10:33	A_3_2B
30	ApexAlpha	ARS1-B11-01648-08	U-234	293	1440	3	1440	0.22	05/06/11 10:33	A_3_2B
31	ApexAlpha	ARS1-B11-01648-08	U-235	18	1440	0	1440	0.22	05/06/11 10:33	A_3_2B
32	ApexAlpha	ARS1-B11-01648-08	U-238	300	1440	6	1440	0.22	05/06/11 10:33	A_3_2B
33	ApexAlpha	ARS1-B11-01648-09	U-232	1585	1440	0	1440	0.22	05/06/11 10:33	A_3_3A
34	ApexAlpha	ARS1-B11-01648-09	U-234	323	1440	4	1440	0.22	05/06/11 10:33	A_3_3A
35	ApexAlpha	ARS1-B11-01648-09	U-235	11	1440	1	1440	0.22	05/06/11 10:33	A_3_3A
36	ApexAlpha	ARS1-B11-01648-09	U-238	297	1440	16	1440	0.22	05/06/11 10:33	A_3_3A
37	ApexAlpha	ARS1-B11-01648-10	U-232	2251	1440	1	1440	0.21	05/06/11 10:33	A_3_3B
38	ApexAlpha	ARS1-B11-01648-10	U-234	393	1440	3	1440	0.21	05/06/11 10:33	A_3_3B
39	ApexAlpha	ARS1-B11-01648-10	U-235	7	1440	0	1440	0.21	05/06/11 10:33	A_3_3B
40	ApexAlpha	ARS1-B11-01648-10	U-238	350	1440	3	1440	0.21	05/06/11 10:33	A_3_3B
41	ApexAlpha	AR51-B11-01648-11	U-232	2436	1440	4	1440	0.22	05/06/11 10:33	A_3_4B
42	ApexAlpha	ARS1-B11-01648-11	U-234	583	1440	0	1440	0.22	05/06/11 10:33	A_3_4B
43	ApexAlpha	ARS1-B11-01648-11	U-235	17	1440	0	1440	0.22	05/06/11 10:33	A_3_4B
44	ApexAlpha	ARS1-B11-01648-11	U-238	619	1440	6	1440	0.22	05/06/11 10:33	A_3_4B
45	ApexAlpha	ARS1-B11-01648-12	U-232	2152	1440	1	1440	0.21	05/06/11 10:33	A_3_5A
46	ApexAlpha	AR51-B11-01648-12	U-234	727	1440	2	1440	0.21	05/06/11 10:33	A_3_5A
47	ApexAlpha	ARS1-B11-01648-12	U-235	48	1440	1	1440	0.21	05/06/11 10:33	A_3_5A
48	ApexAlpha	ARS1-B11-01648-12	U-238	884	1440	10	1440	0.21	05/06/11 10:33	A_3_5A
49	ApexAlpha	ARS1-B11-01648-13	U-232	1810	1440	1	1440	0.22	05/06/11 10:33	A_3_6A
50	ApexAlpha	ARS1-B11-01648-13	U-234	140	1440	3	1440	0.22	05/06/11 10:33	A_3_6A
51	ApexAlpha	AR51-B11-01648-13	U-235	2	1440	1	1440	0.22	05/06/11 10:33	A_3_6A
52	ApexAlpha	ARS1-B11-01648-13	U-238	120	1440	6	1440	0.22	05/06/11 10:33	A_3_6A

ALPHA SPECTRUM ANALYSIS

Sample Description: LCS
Batch Identification: B11-01648
Sample Identification: 11-01648-01
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 3B
Chamber Serial Number: 12044981B
Detector Serial Number: 55799
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:22
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.7 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2134 +/- 0.0044 on 5/24/10 08:35:23
Effective Efficiency: 0.2134 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

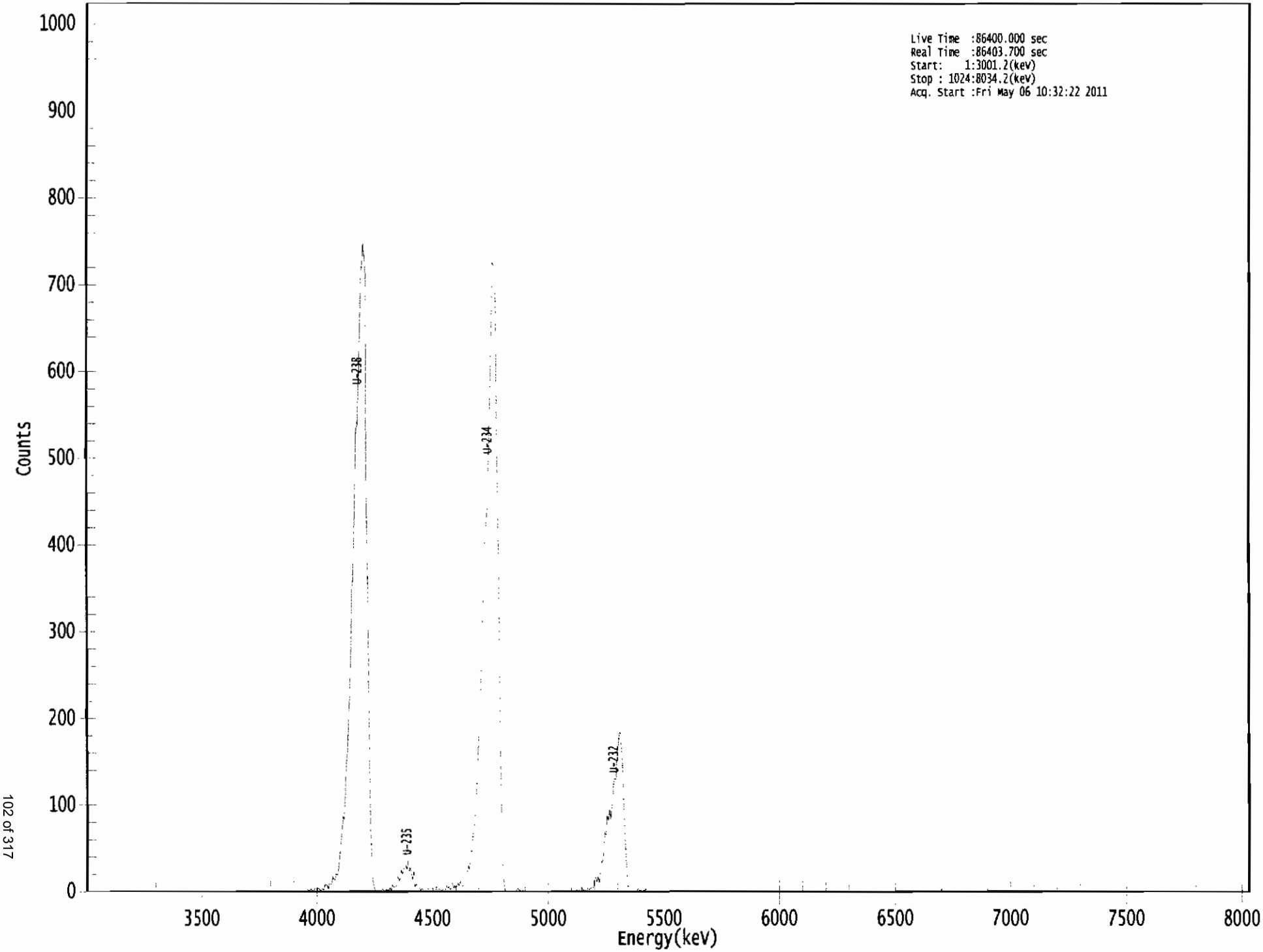
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5289.403	2452.00	49.52	0.00	0.00E+000	55.8
U-234	4748.208	9979.00	99.89	0.00	0.00E+000	65.3
U-235	4392.191	391.00	19.77	0.00	0.00E+000	49.4
U-238	4180.286	10295.00	101.46	0.00	0.00E+000	61.7

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.6012E+000	2.88	3.9743E-003	2.06
U-234	1.4656E+001	2.29	3.9743E-003	2.06
U-235	7.0842E-001	5.46	4.9028E-003	2.06
U-238	1.5055E+001	2.28	3.9573E-003	2.06

Errors quoted at 1.000 sigma

0000012222.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: LCSD
Batch Identification: B11-01648
Sample Identification: 11-01648-02
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4A
Chamber Serial Number: 12044982A
Detector Serial Number: 55800
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:25
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/13/10 09:49:41
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

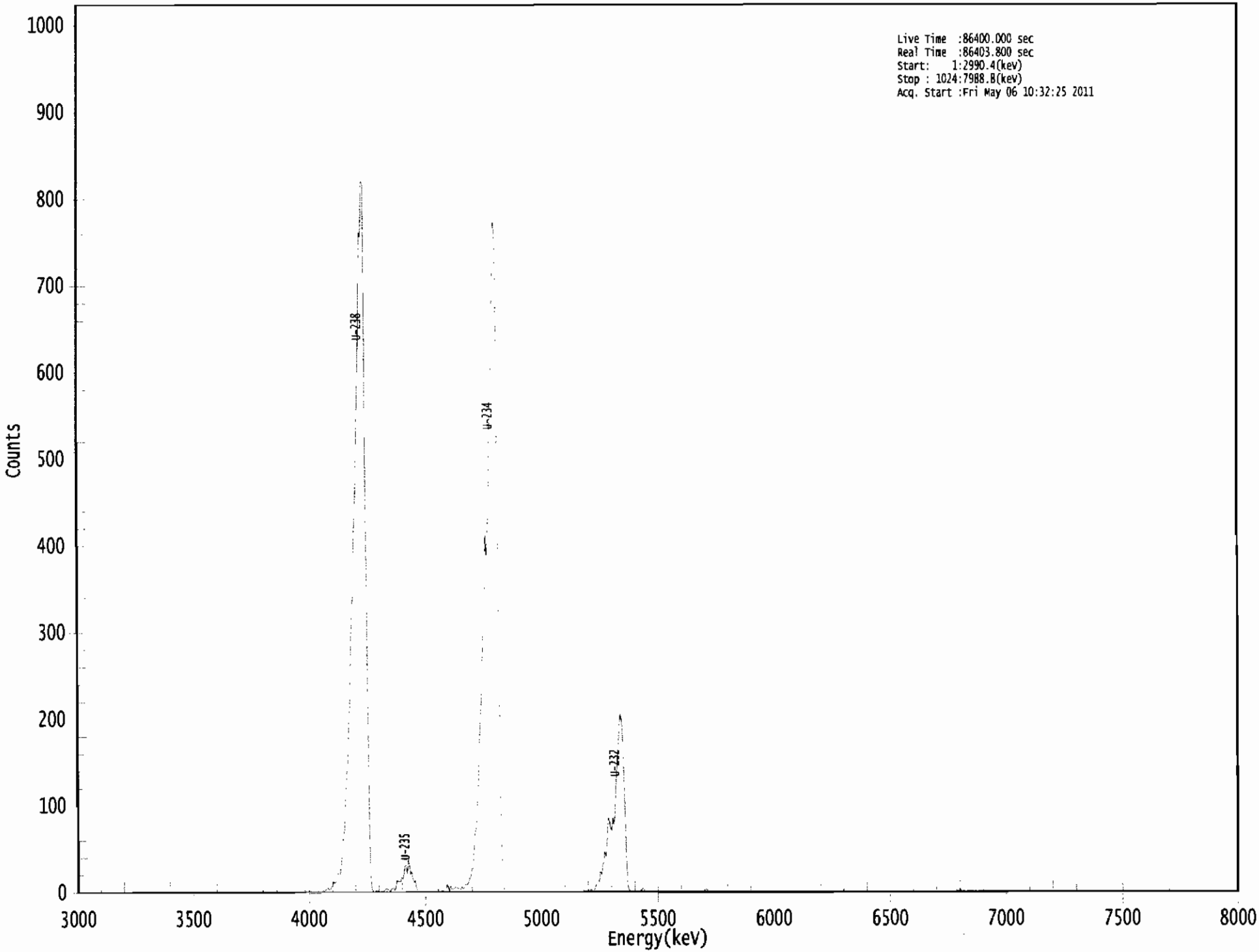
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5311.224	2340.00	48.37	0.00	0.00E+000	39.6
U-234	4772.587	9092.00	95.35	0.00	0.00E+000	49.3
U-235	4409.672	372.00	19.29	0.00	0.00E+000	37.9
U-238	4204.803	9611.00	98.04	0.00	0.00E+000	52.9

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.2604E+000	2.91	3.7704E-003	2.05
U-234	1.2668E+001	2.30	3.7704E-003	2.05
U-235	6.3942E-001	5.58	4.6513E-003	2.05
U-238	1.3334E+001	2.29	3.7543E-003	2.05

Errors quoted at 1.000 sigma

0000012188.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: MBL
Batch Identification: B11-01648
Sample Identification: 11-01648-03
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4B
Chamber Serial Number: 12044982B
Detector Serial Number: 55801
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:27
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.7 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2158 +/- 0.0044 on 4/13/10 09:50:10
Effective Efficiency: 0.2158 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

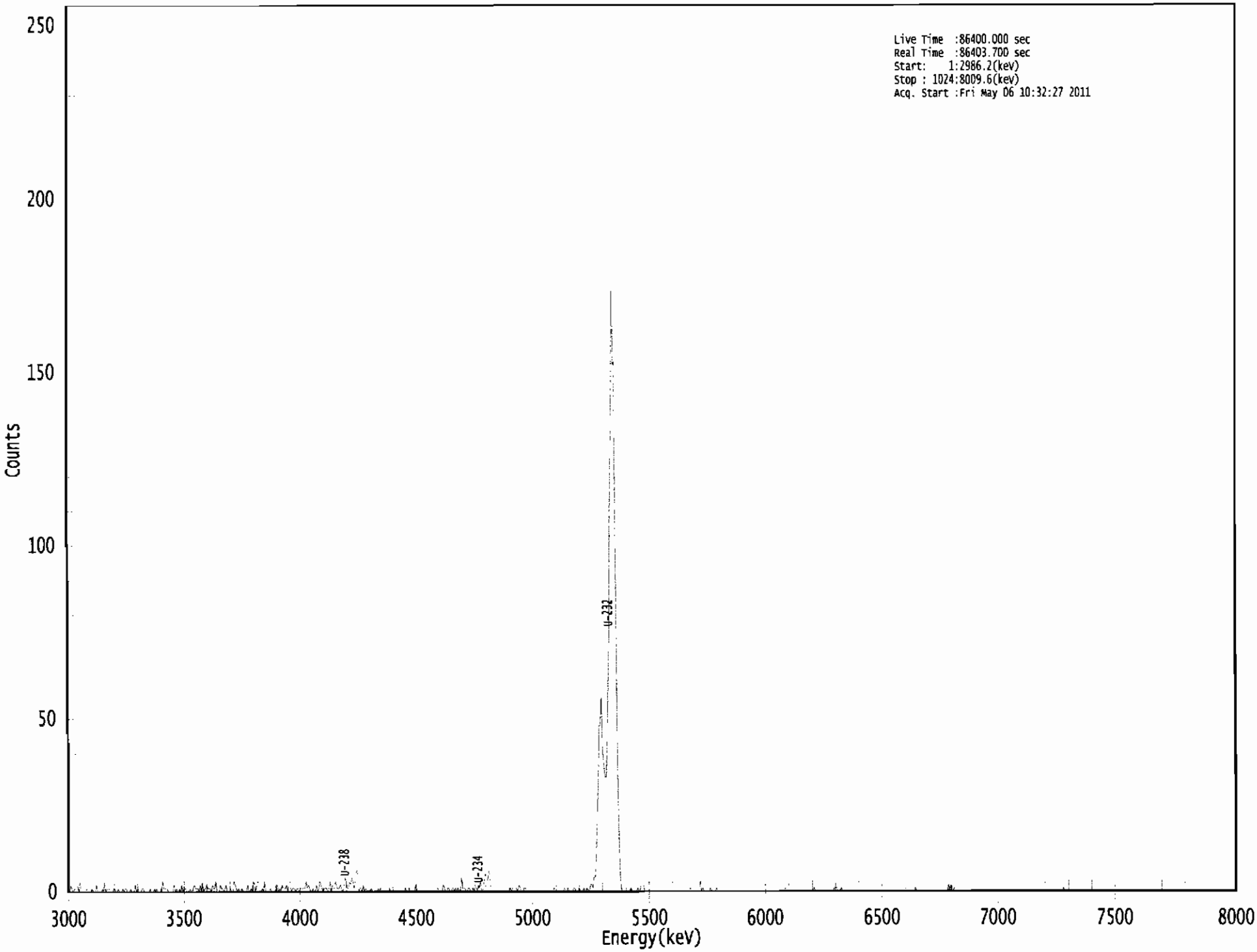
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5319.591	1405.00	37.48	0.00	0.00E+000	27.5
U-234	4759.501	45.00	6.71	0.00	0.00E+000	11.0
U-235	4446.540	5.00	2.24	0.00	0.00E+000	4.9
U-238	4182.952	61.00	7.81	0.00	0.00E+000	12.3

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.0405E+000	3.37	3.9301E-003	2.05
U-234	6.5355E-002	15.05	3.9301E-003	2.05
U-235	8.9582E-003	44.77	4.8482E-003	2.05
U-238	8.8213E-002	12.97	3.9132E-003	2.05

Errors quoted at 1.000 sigma

0000012176.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-001
Batch Identification: B11-01648
Sample Identification: 11-01648-04
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5A
Chamber Serial Number: 12044983A
Detector Serial Number: 55802
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:29
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/13/10 20:11:11
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

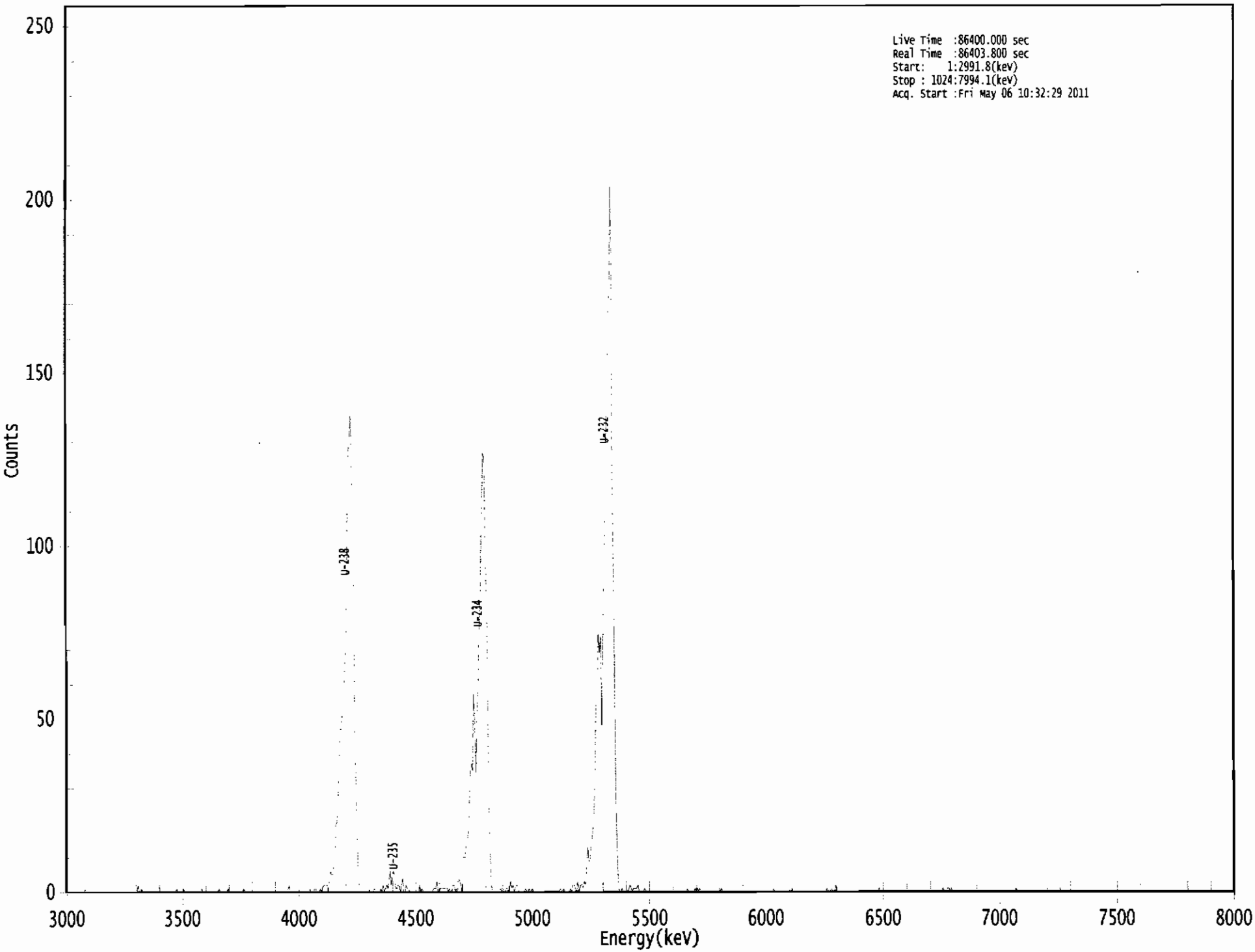
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5307.306	2008.00	44.81	0.00	0.00E+000	35.0
U-234	4767.972	1308.00	36.17	0.00	0.00E+000	39.0
U-235	4399.350	48.00	6.93	0.00	0.00E+000	8.6
U-238	4201.118	1379.00	37.13	0.00	0.00E+000	36.9

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.8743E+000	3.03	3.8734E-003	2.06
U-234	1.8723E+000	3.45	3.8734E-003	2.06
U-235	8.4759E-002	14.58	4.7783E-003	2.06
U-238	1.9654E+000	3.39	3.8568E-003	2.06

Errors quoted at 1.000 sigma

0000012183.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-002
Batch Identification: B11-01648
Sample Identification: 11-01648-05
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5B
Chamber Serial Number: 12044983B
Detector Serial Number: 55803
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:31
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2130 +/- 0.0044 on 4/13/10 20:11:42
Effective Efficiency: 0.2130 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

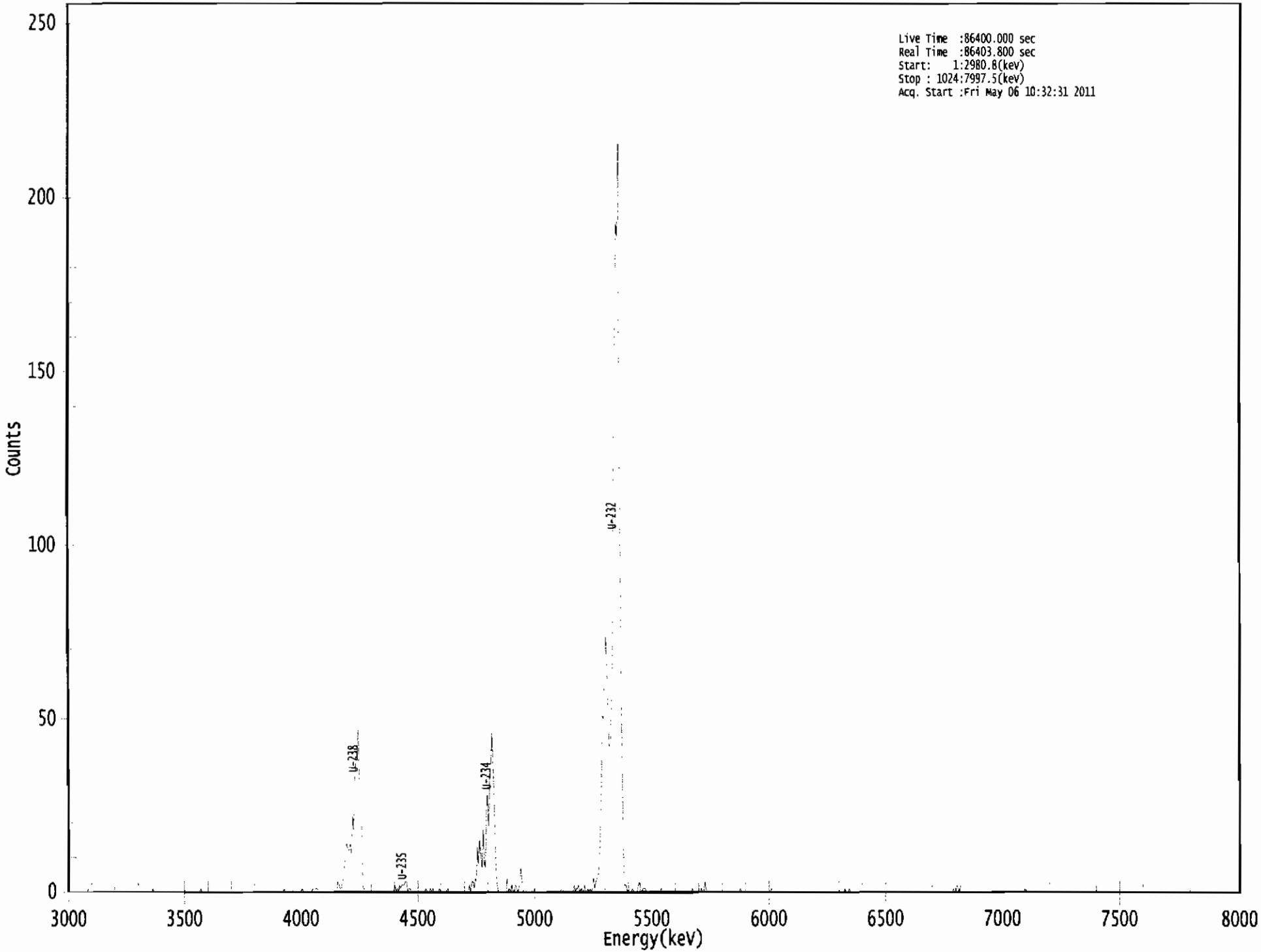
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5319.553	1807.00	42.51	0.00	0.00E+000	29.0
U-234	4781.317	360.00	18.97	0.00	0.00E+000	23.1
U-235	4417.423	20.00	4.47	0.00	0.00E+000	24.5
U-238	4210.606	370.00	19.24	0.00	0.00E+000	28.4

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.6585E+000	3.12	3.9812E-003	2.06
U-234	5.2964E-001	5.66	3.9812E-003	2.06
U-235	3.6299E-002	22.45	4.9113E-003	2.06
U-238	5.4202E-001	5.59	3.9641E-003	2.06

Errors quoted at 1.000 sigma

0000012172.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-003
Batch Identification: B11-01648
Sample Identification: 11-01648-06
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1A
Chamber Serial Number: 12044985A
Detector Serial Number: 55806
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:33
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2230 +/- 0.0046 on 5/28/10 09:42:00
Effective Efficiency: 0.2230 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

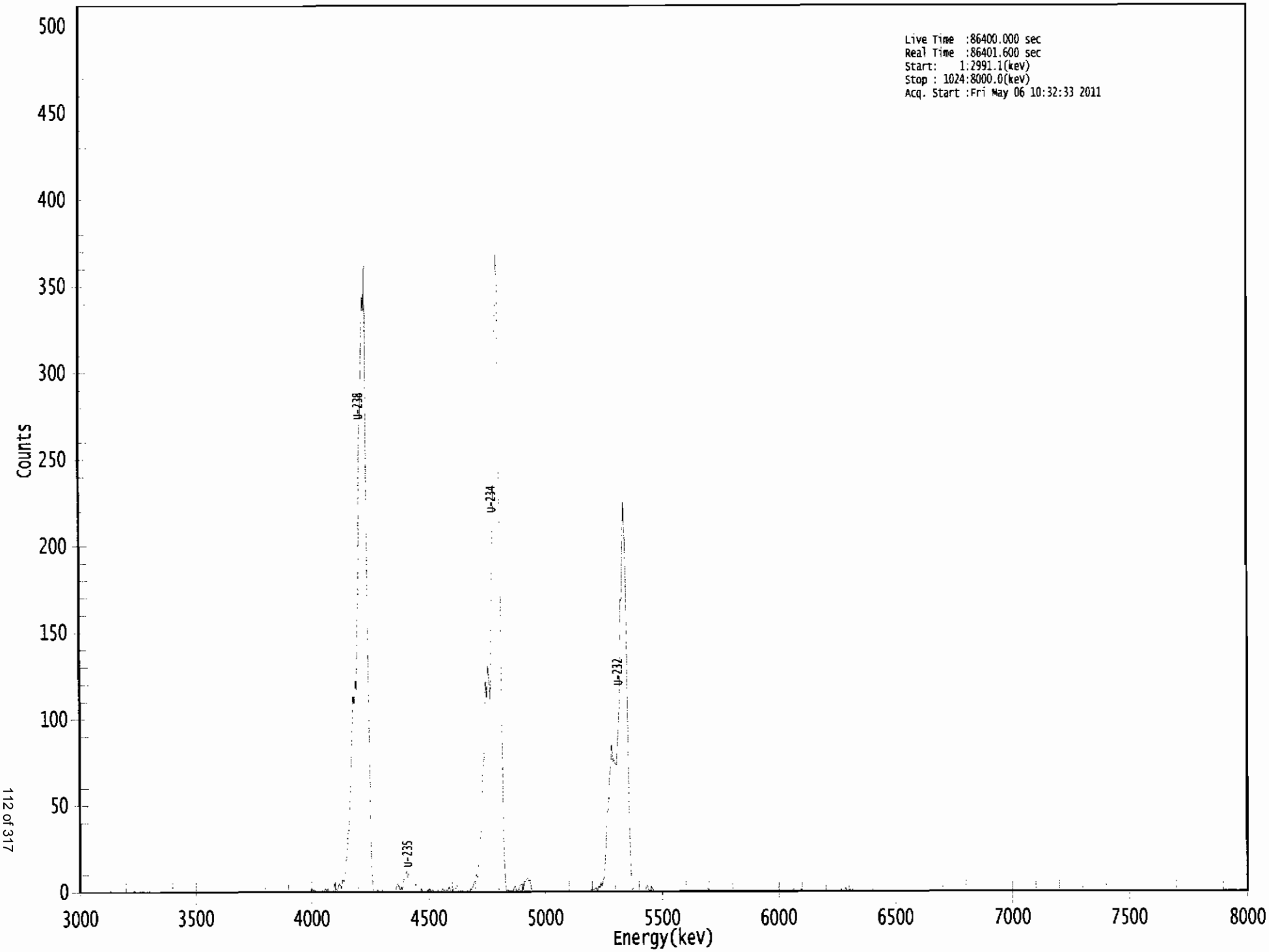
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5311.382	2300.00	47.96	0.00	0.00E+000	34.2
U-234	4772.639	3516.00	59.30	0.00	0.00E+000	36.5
U-235	4405.981	138.00	11.75	0.00	0.00E+000	46.2
U-238	4203.967	3584.00	59.87	0.00	0.00E+000	37.7

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.2324E+000	2.93	3.8030E-003	2.06
U-234	4.9413E+000	2.66	3.8030E-003	2.06
U-235	2.3925E-001	8.76	4.6915E-003	2.06
U-238	5.0153E+000	2.65	3.7867E-003	2.06

Errors quoted at 1.000 sigma

0000012175.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-004
Batch Identification: B11-01648
Sample Identification: 11-01648-07
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1B
Chamber Serial Number: 12044985B
Detector Serial Number: 55807
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:36
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2098 +/- 0.0043 on 4/18/10 15:12:35
Effective Efficiency: 0.2098 +/- 0.0043

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

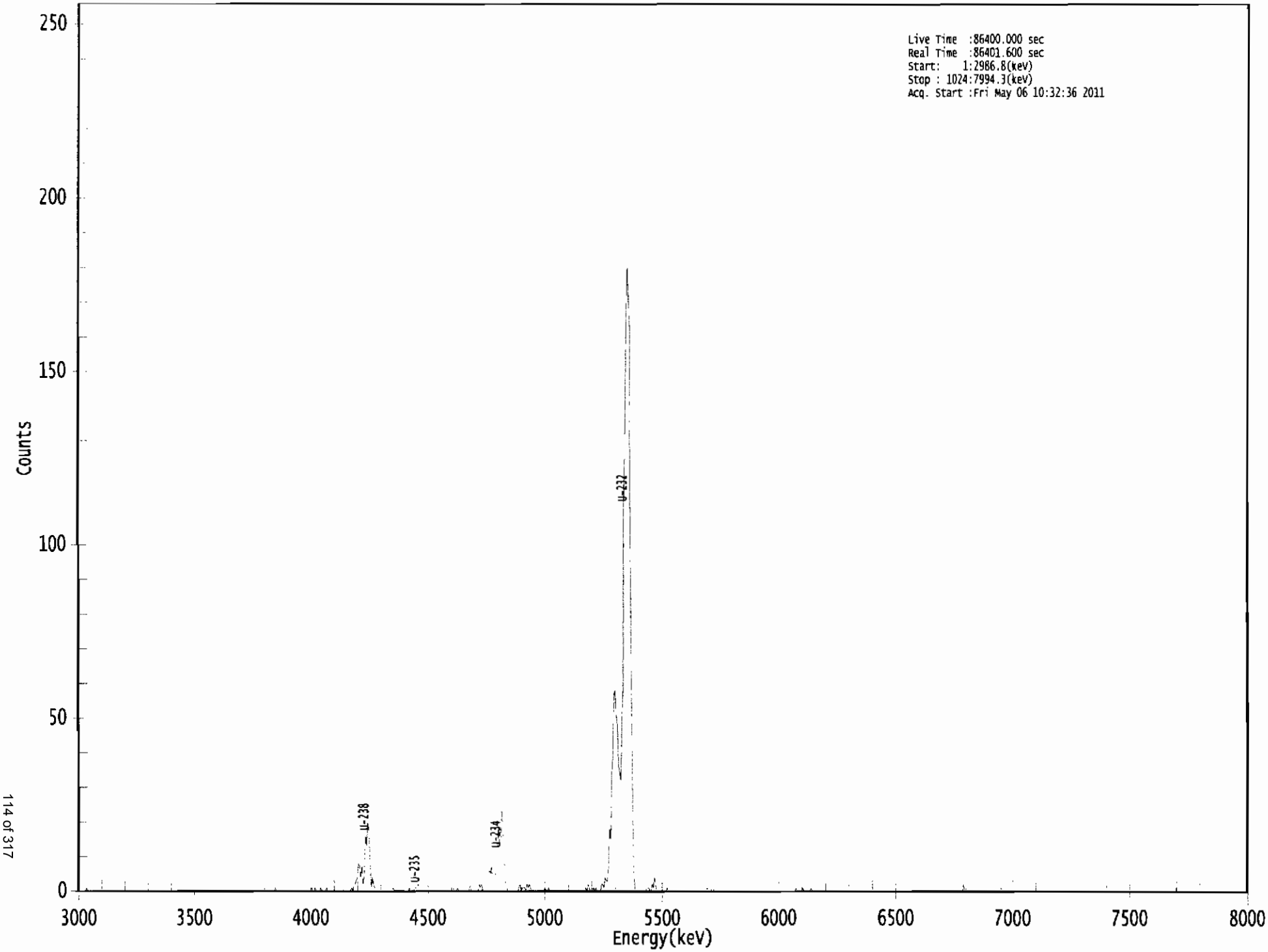
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5324.805	1573.00	39.66	0.00	0.00E+000	30.4
U-234	4782.654	162.00	12.73	0.00	0.00E+000	27.0
U-235	4436.420	7.00	2.65	0.00	0.00E+000	9.8
U-238	4217.938	124.00	11.14	0.00	0.00E+000	21.4

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.3498E+000	3.25	4.0424E-003	2.06
U-234	2.4201E-001	8.12	4.0424E-003	2.06
U-235	1.2900E-002	37.85	4.9868E-003	2.06
U-238	1.8444E-001	9.21	4.0251E-003	2.06

Errors quoted at 1.000 sigma

0000012179.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-005
Batch Identification: B11-01648
Sample Identification: 11-01648-08
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 2B
Chamber Serial Number: 12045128B
Detector Serial Number: 55809
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:38
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2206 +/- 0.0045 on 4/18/10 15:13:08
Effective Efficiency: 0.2206 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

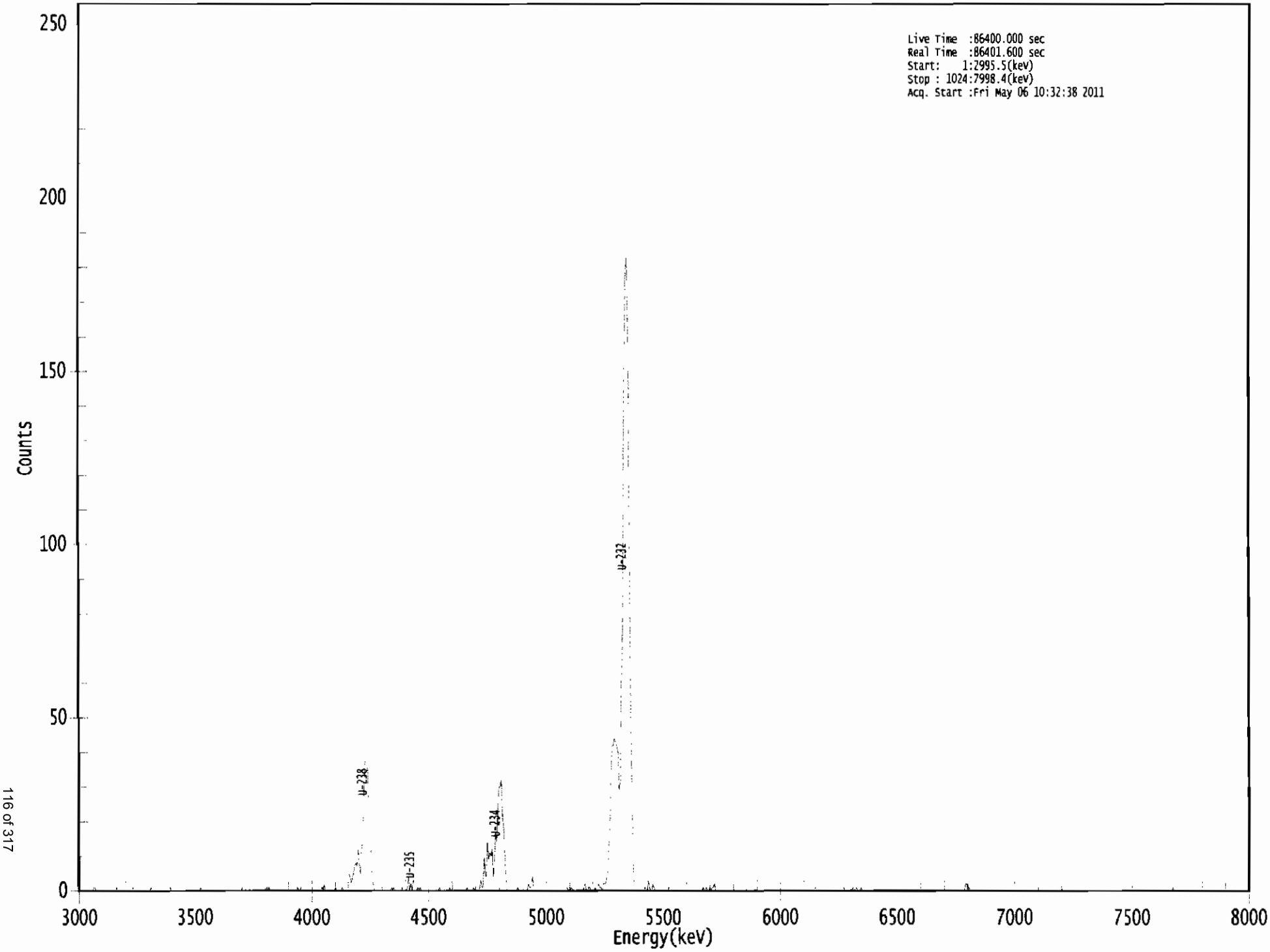
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5327.163	1527.00	39.08	0.00	0.00E+000	27.6
U-234	4783.550	293.00	17.12	0.00	0.00E+000	29.5
U-235	4418.656	18.00	4.24	0.00	0.00E+000	5.7
U-238	4217.807	300.00	17.32	0.00	0.00E+000	29.3

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.1699E+000	3.28	3.8454E-003	2.05
U-234	4.1637E-001	6.19	3.8454E-003	2.05
U-235	3.1555E-002	23.66	4.7438E-003	2.05
U-238	4.2449E-001	6.13	3.8289E-003	2.05

Errors quoted at 1.000 sigma

0000012168.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-006
Batch Identification: B11-01648
Sample Identification: 11-01648-09
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3A
Chamber Serial Number: 12045129A
Detector Serial Number: 55810
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:41
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2191 +/- 0.0045 on 4/18/10 15:15:02
Effective Efficiency: 0.2191 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

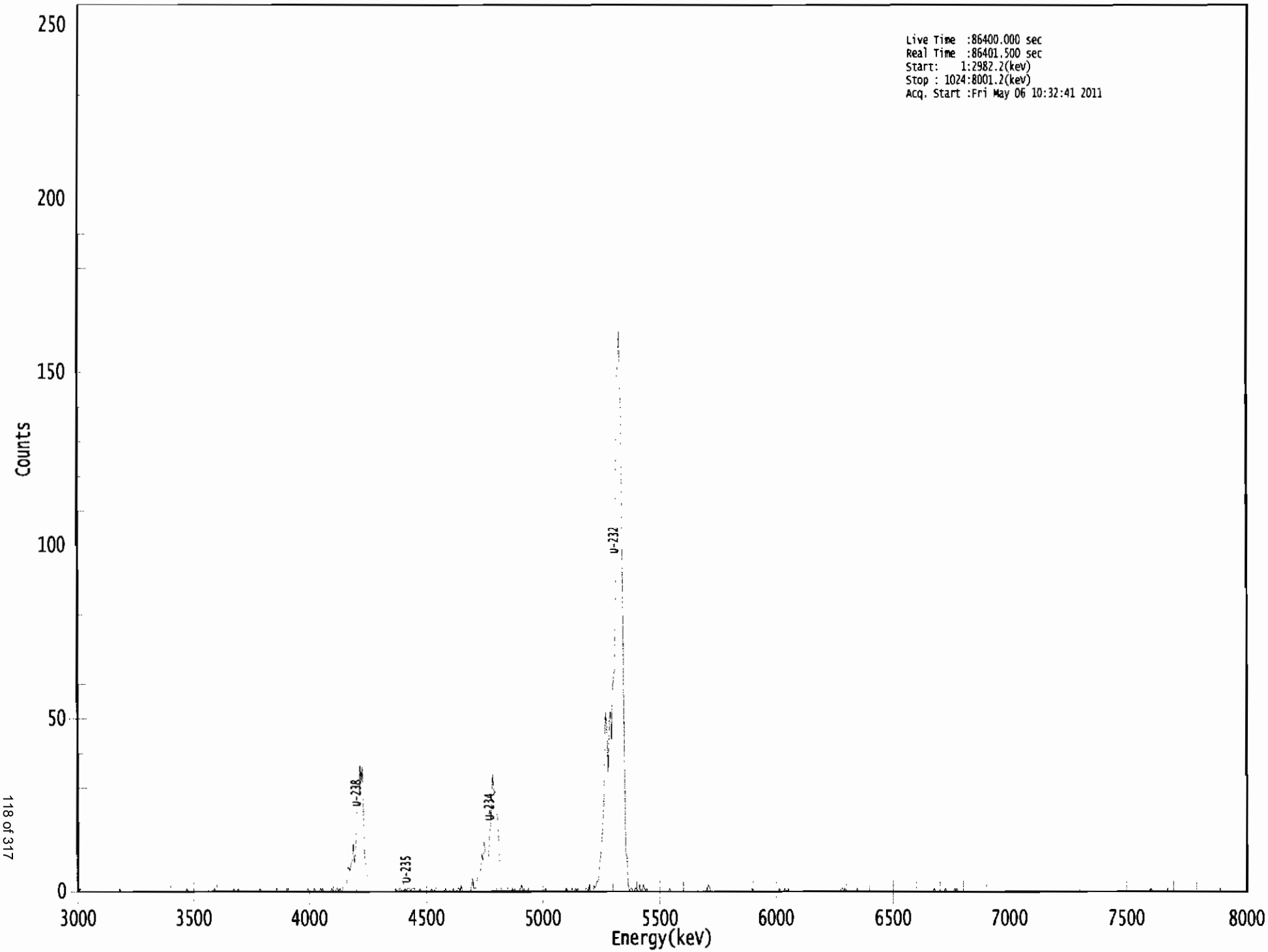
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5296.500	1585.00	39.81	0.00	0.00E+000	32.4
U-234	4758.122	323.00	17.97	0.00	0.00E+000	36.0
U-235	4401.848	11.00	3.32	0.00	0.00E+000	4.9
U-238	4190.140	297.00	17.23	0.00	0.00E+000	32.2

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.2676E+000	3.25	3.8714E-003	2.06
U-234	4.6210E-001	5.93	3.8714E-003	2.06
U-235	1.9414E-002	30.22	4.7758E-003	2.06
U-238	4.2308E-001	6.16	3.8548E-003	2.06

Errors quoted at 1.000 sigma

0000012170.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00895-007
Batch Identification: B11-01648
Sample Identification: 11-01648-10
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3B
Chamber Serial Number: 12045129B
Detector Serial Number: 55811
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:43
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2124 +/- 0.0044 on 4/18/10 15:15:32
Effective Efficiency: 0.2124 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

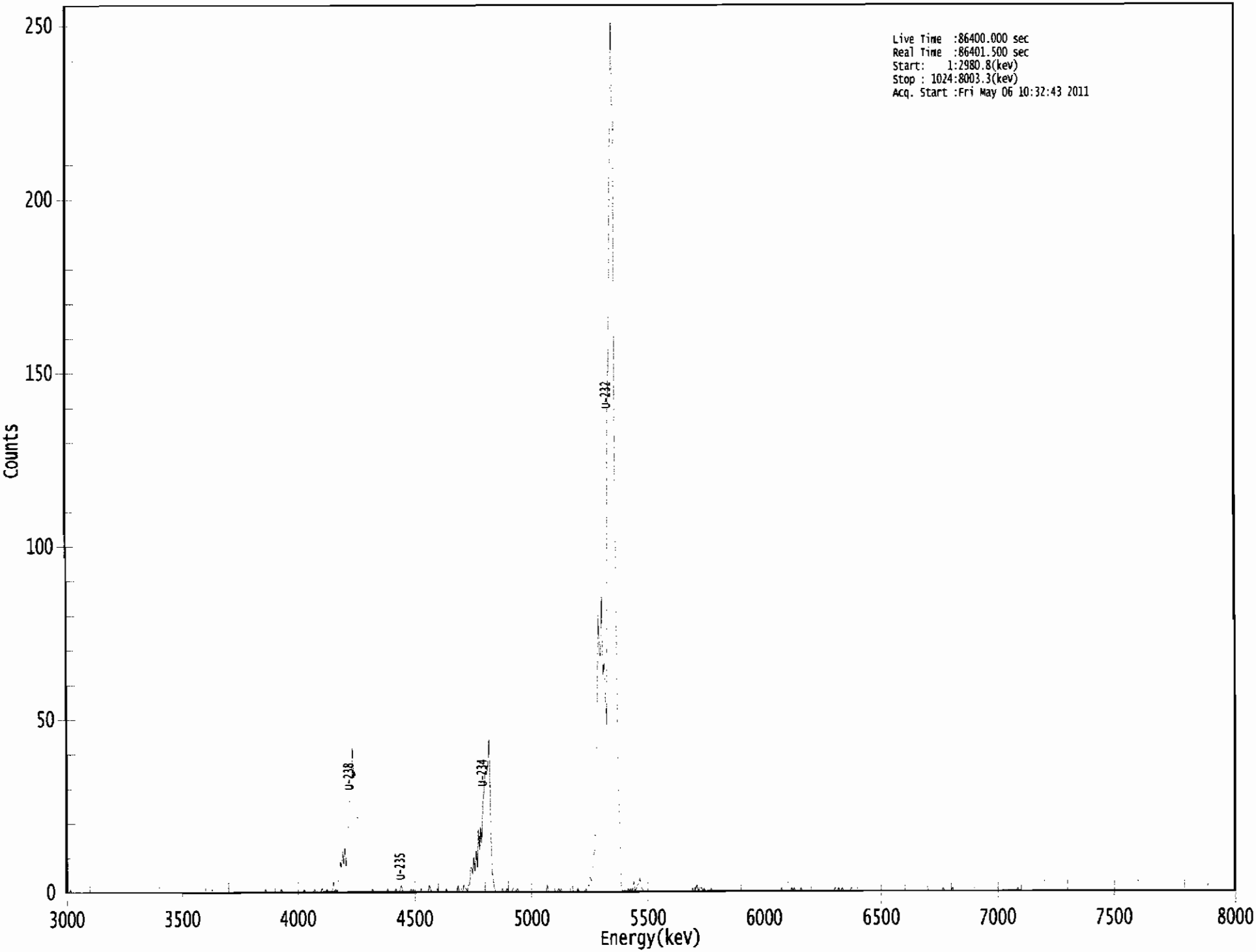
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5317.676	2251.00	47.44	0.00	0.00E+000	31.9
U-234	4775.944	393.00	19.82	0.00	0.00E+000	34.7
U-235	4424.204	7.00	2.65	0.00	0.00E+000	7.4
U-238	4207.454	350.00	18.71	0.00	0.00E+000	38.0

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.3219E+000	2.94	3.9934E-003	2.06
U-234	5.7996E-001	5.45	3.9934E-003	2.06
U-235	1.2743E-002	37.85	4.9263E-003	2.06
U-238	5.1429E-001	5.73	3.9762E-003	2.06

Errors quoted at 1.000 sigma

0000012178.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-008
Batch Identification: B11-01648
Sample Identification: 11-01648-11
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 4B
Chamber Serial Number: 12045130B
Detector Serial Number: 55813
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:45
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2157 +/- 0.0044 on 4/18/10 15:16:34
Effective Efficiency: 0.2157 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

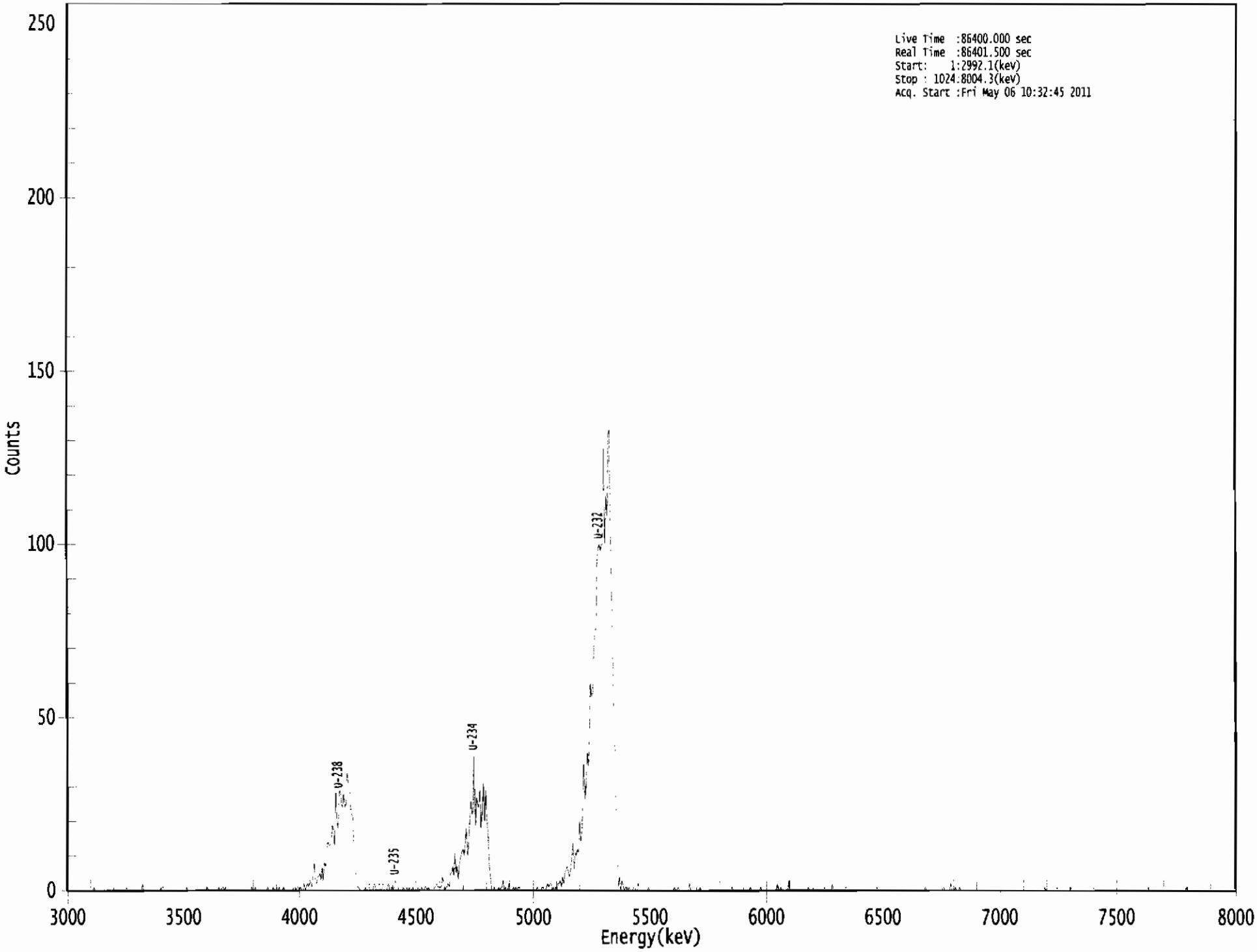
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5278.692	2436.00	49.36	0.00	0.00E+000	81.9
U-234	4740.110	583.00	24.15	0.00	0.00E+000	25.2
U-235	4400.826	17.00	4.12	0.00	0.00E+000	7.3
U-238	4163.361	619.00	24.88	0.00	0.00E+000	78.7

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.5391E+000	2.89	3.9314E-003	2.05
U-234	8.4700E-001	4.62	3.9314E-003	2.05
U-235	3.0468E-002	24.34	4.8499E-003	2.05
U-238	8.9545E-001	4.51	3.9145E-003	2.05

Errors quoted at 1.000 sigma

0000012223.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-009
Batch Identification: B11-01648
Sample Identification: 11-01648-12
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 5A
Chamber Serial Number: 12045131A
Detector Serial Number: 55814
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:47
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2132 +/- 0.0044 on 4/19/10 14:24:55
Effective Efficiency: 0.2132 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

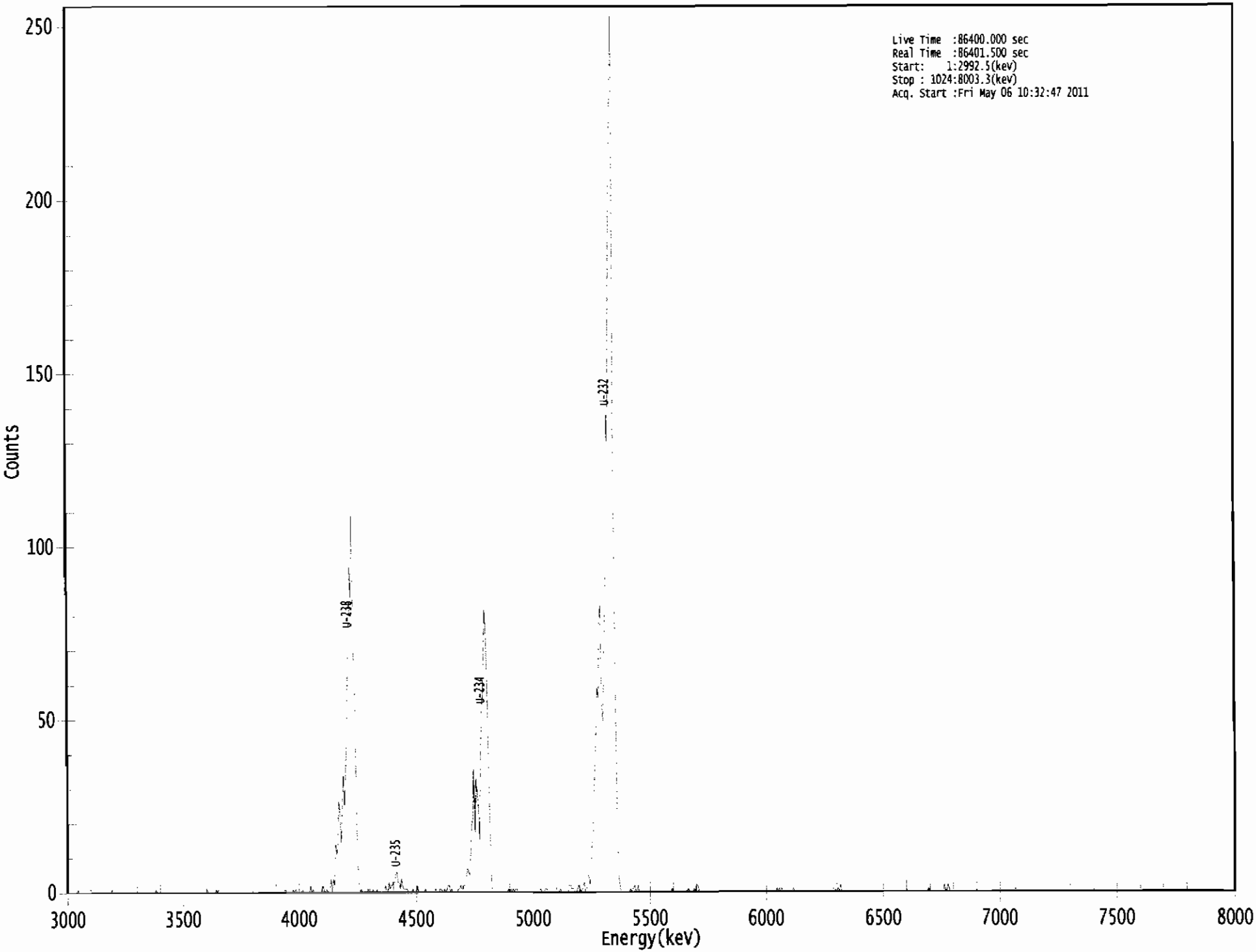
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5313.508	2152.00	46.39	0.00	0.00E+000	31.0
U-234	4773.445	727.00	26.96	0.00	0.00E+000	32.2
U-235	4410.313	48.00	6.93	0.00	0.00E+000	14.7
U-238	4204.826	884.00	29.73	0.00	0.00E+000	32.7

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.1633E+000	2.98	3.9777E-003	2.06
U-234	1.0686E+000	4.24	3.9777E-003	2.06
U-235	8.7041E-002	14.58	4.9070E-003	2.06
U-238	1.2939E+000	3.94	3.9606E-003	2.06

Errors quoted at 1.000 sigma

0000012167.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-010
Batch Identification: B11-01648
Sample Identification: 11-01648-13
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 6A
Chamber Serial Number: 12045132A
Detector Serial Number: 55816
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:49
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86401.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/19/10 14:26:08
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

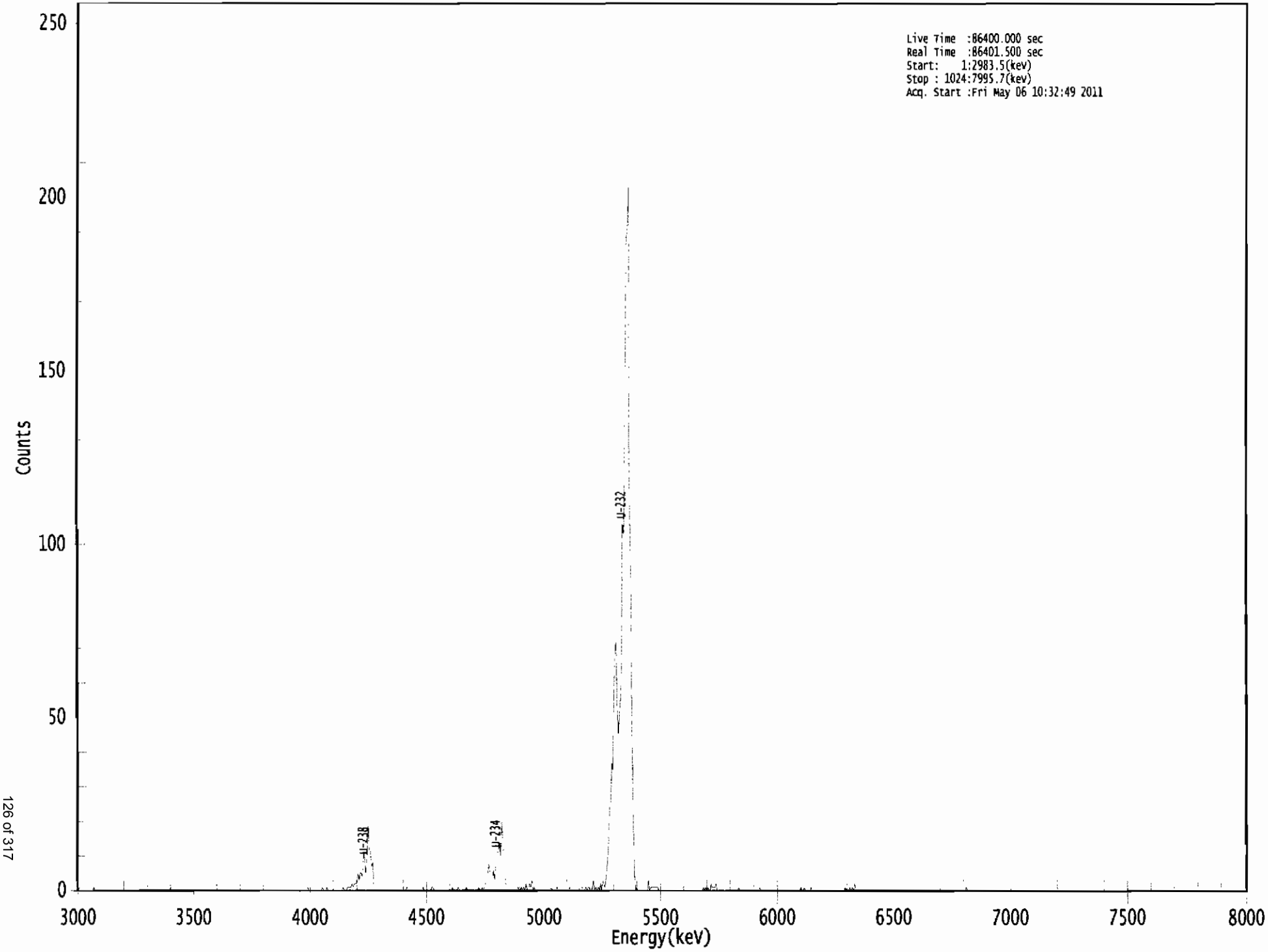
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5327.467	1810.00	42.54	0.00	0.00E+000	33.7
U-234	4787.834	140.00	11.83	0.00	0.00E+000	13.7
U-235	4433.776	2.00	1.41	0.00	0.00E+000	4.9
U-238	4217.178	120.00	10.95	0.00	0.00E+000	17.0

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.5901E+000	3.12	3.8722E-003	2.05
U-234	2.0034E-001	8.70	3.8722E-003	2.05
U-235	3.5306E-003	70.74	4.7769E-003	2.05
U-238	1.7098E-001	9.36	3.8556E-003	2.05

Errors quoted at 1.000 sigma

0000012166.CNF



ARS1-B11-01648
U-232

Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	09/28/10	9.50322	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
2	10/01/10	9.39061	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
3	10/06/10	9.39658	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
4	10/06/10	9.42475	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
5	10/09/10	9.47214	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
6	10/14/10	9.53459	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
7	10/20/10	9.45747	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
8	10/22/10	9.52249	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
9	11/03/10	9.47749	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
10	11/10/10	9.41019	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
11	12/08/10	9.46466	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
12	12/10/10	9.47420	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
13	01/06/11	9.33739	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
14	01/13/11	9.35826	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
15	01/19/11	9.34223	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
16	02/14/11	9.35727	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
17	03/11/11	9.45677	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
18	03/30/11	9.43104	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
19	04/08/11	9.51189	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645
20	05/06/11	9.36902	9.2482612	9.31037844	9.4346129	9.5588473	9.6209645

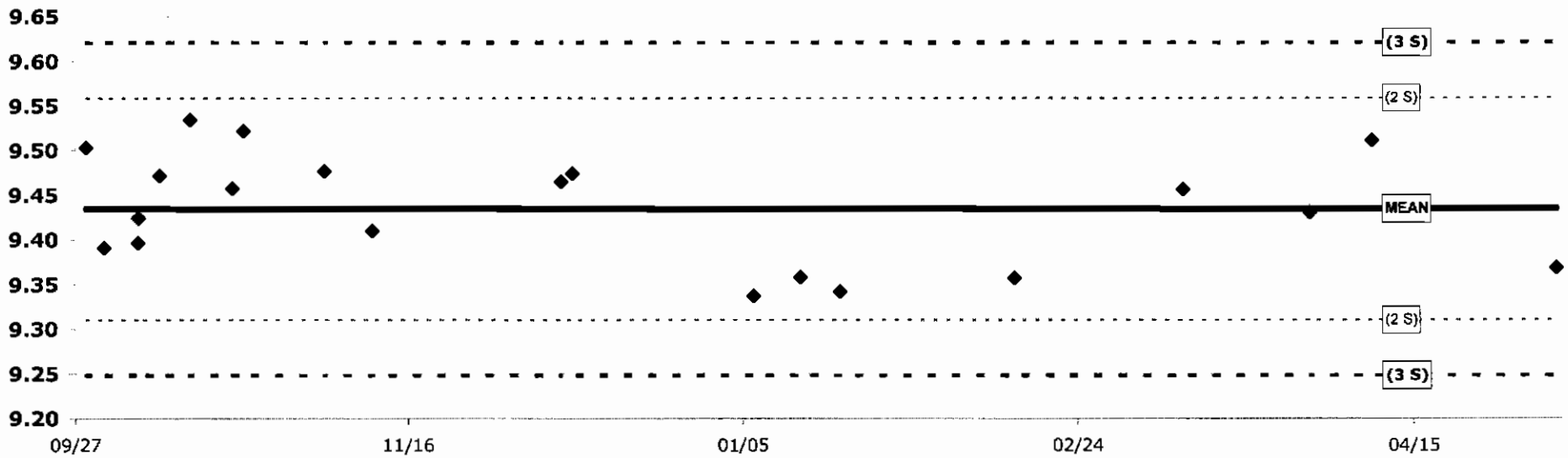
American Radiation Services
Baton Rouge Laboratory

Blank Population Analysis

Population Size	20	Statistical Quality Control(SQC) Rules Analysis	
Last Data Point Value	9.37	One or more points outside of the control limits.	OK
NSD	-1.0559	A run of eight points on one side of the center line	OK
Average	9.4346	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	OK
Upper Control Limit (UCL)	9.6210	Four of five consecutive points beyond the 1-sigma limits.	INVESTIGATE
Standard Deviation	0.0621	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	9.2483	Several points near a warning or control limit.	OK

Batch ARS1-B11-01648 - BLK Population for Isotope - U-232

Process Date Range: 09/28/10 - 05/06/11

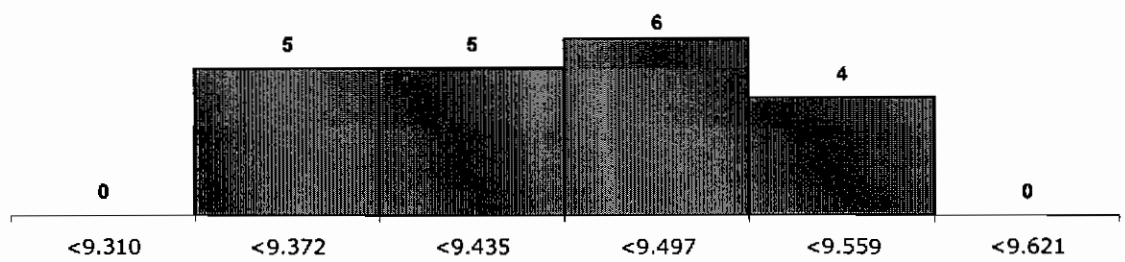


ARS INTERNATIONAL

Statistical Process Control

Population Frequency Distribution (Histogram)

Bin	Frequency
<9.310	0
<9.372	5
<9.435	5
<9.497	6
<9.559	4
<9.621	0



ARS1-B11-01648
U-234

Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	09/28/10	0.02424	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
2	10/01/10	0.18425	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
3	10/06/10	0.04493	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
4	10/06/10	0.03098	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
5	10/09/10	0.04221	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
6	10/14/10	0.09380	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
7	10/20/10	0.02354	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
8	10/22/10	0.18702	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
9	11/03/10	0.00975	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
10	11/10/10	0.06253	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
11	12/08/10	0.00480	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
12	12/10/10	0.00772	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
13	01/06/11	0.02743	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
14	01/13/11	0.01574	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
15	01/19/11	0.02405	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
16	02/14/11	0.00803	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
17	03/11/11	0.04544	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
18	03/30/11	0.01764	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
19	04/08/11	0.01272	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135
20	05/06/11	0.23372	-0.14676	-0.07949771	0.0550268	0.1895513	0.2568135

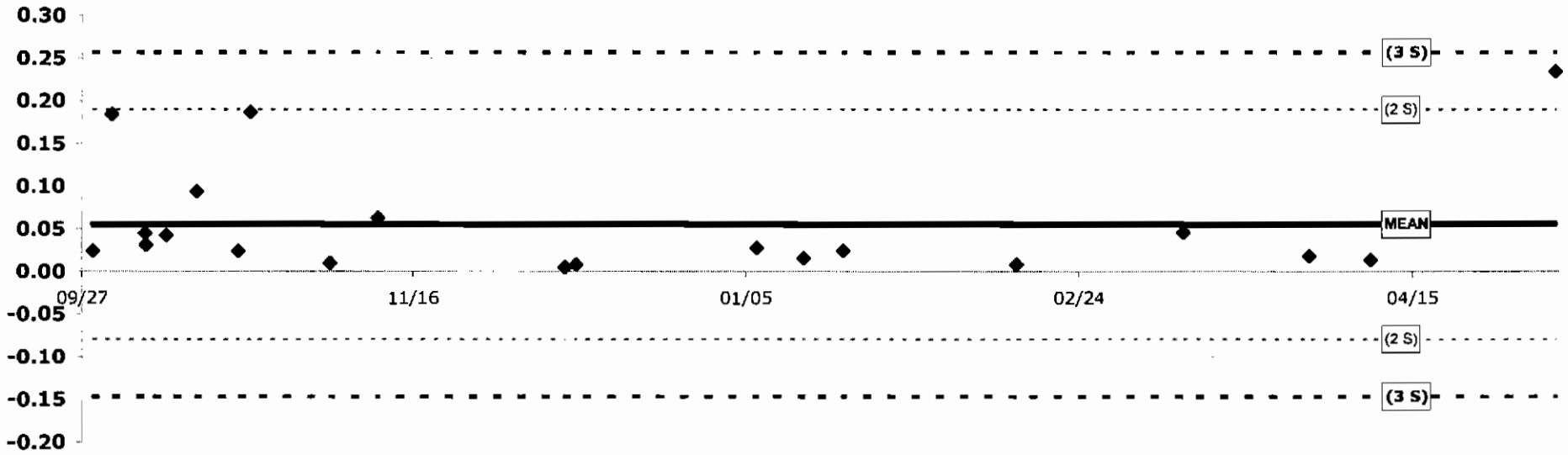
American Radiation Services
Baton Rouge Laboratory

Blank Population Analysis

		Statistical Quality Control(SQC) Rules Analysis	
Population Size	20		
Last Data Point Value	0.23	One or more points outside of the control limits.	OK
NSD	2.6567	A run of eight points on one side of the center line	INVESTIGATE
Average	0.0550	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	OK
Upper Control Limit (UCL)	0.2568	Four of five consecutive points beyond the 1-sigma limits.	OK
Standard Deviation	0.0673	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	-0.1468	Several points near a warning or control limit.	OK

Batch ARS1-B11-01648 - BLK Population for Isotope - U-234

Process Date Range: 09/28/10 - 05/06/11

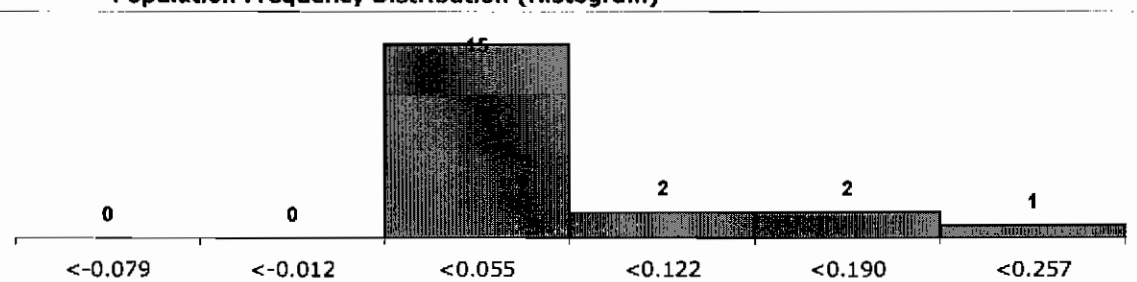


ARS INTERNATIONAL

Statistical Process Control

Bin	Frequency
<-0.079	0
<-0.012	0
<0.055	15
<0.122	2
<0.190	2
<0.257	1

Population Frequency Distribution (Histogram)



ARS1-B11-01648
U-235

Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	09/28/10	-0.00808	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
2	10/01/10	0.04160	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
3	10/06/10	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
4	10/06/10	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
5	10/09/10	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
6	10/14/10	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
7	10/20/10	0.00471	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
8	10/22/10	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
9	11/03/10	-0.00488	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
10	11/10/10	-0.00521	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
11	12/08/10	0.00480	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
12	12/10/10	-0.01158	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
13	01/06/11	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
14	01/13/11	0.00787	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
15	01/19/11	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
16	02/14/11	-0.00401	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
17	03/11/11	0.00909	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
18	03/30/11	0.00441	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
19	04/08/11	0.00000	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449
20	05/06/11	0.01336	-0.030037	-0.01915637	0.0026042	0.0243647	0.0352449

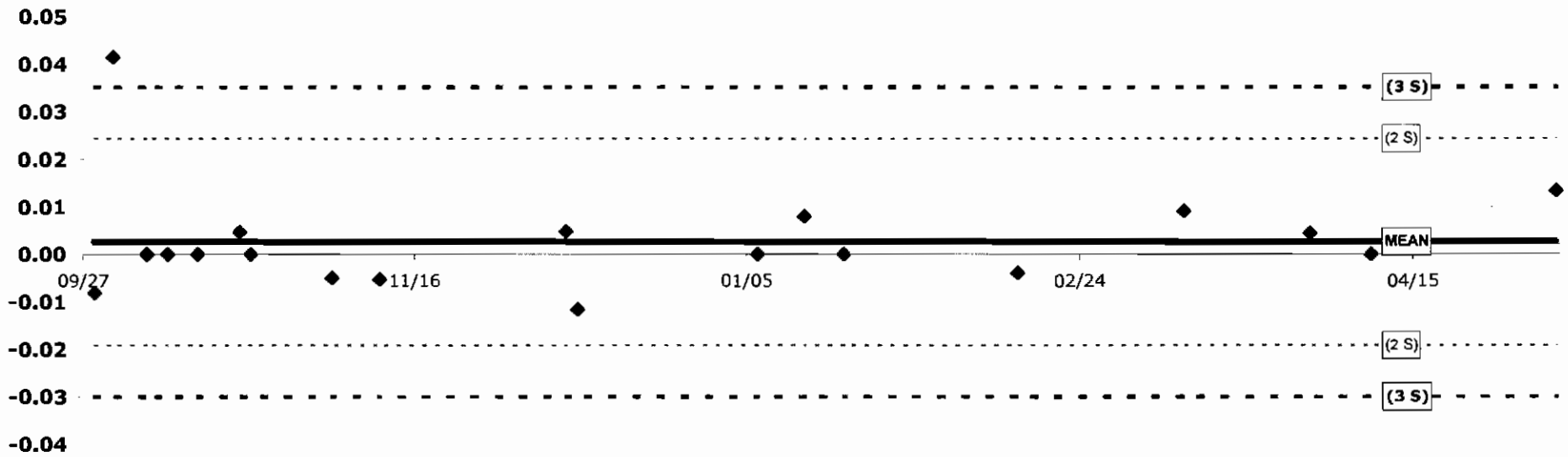
American Radiation Services
Baton Rouge Laboratory

Blank Population Analysis

		Statistical Quality Control(SQC) Rules Analysis	
Population Size	20		
Last Data Point Value	0.01	One or more points outside of the control limits.	OUT OF CONTROL
NSD	0.9882	A run of eight points on one side of the center line	OK
Average	0.0026	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	OK
Upper Control Limit (UCL)	0.0352	Four of five consecutive points beyond the 1-sigma limits.	OK
Standard Deviation	0.0109	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	-0.0300	Several points near a warning or control limit.	OK

Batch ARS1-B11-01648 - BLK Population for Isotope - U-235

Process Date Range: 09/28/10 - 05/06/11

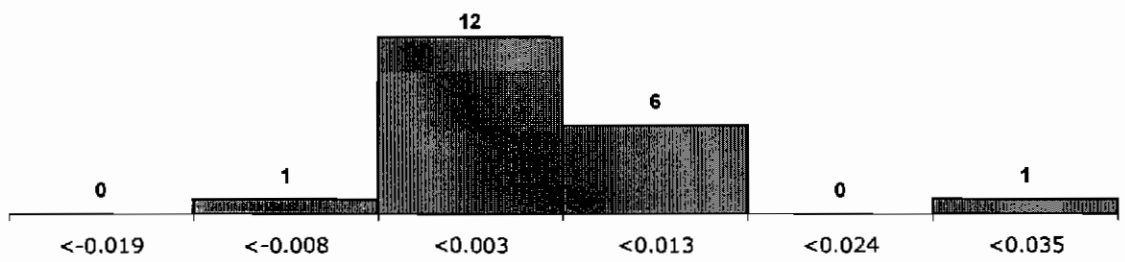


ARS INTERNATIONAL

Statistical Process Control

Population Frequency Distribution (Histogram)

Bin	Frequency
<-0.019	0
<-0.008	1
<0.003	12
<0.013	6
<0.024	0
<0.035	1



ARS1-B11-01648
U-238

Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	09/28/10	0.02424	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
2	10/01/10	0.05943	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
3	10/06/10	0.01685	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
4	10/06/10	0.01936	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
5	10/09/10	0.01206	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
6	10/14/10	-0.02345	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
7	10/20/10	0.02354	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
8	10/22/10	-0.03117	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
9	11/03/10	0.02438	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
10	11/10/10	-0.00521	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
11	12/08/10	0.00960	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
12	12/10/10	0.01544	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
13	01/06/11	0.05486	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
14	01/13/11	0.05247	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
15	01/19/11	0.04811	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
16	02/14/11	-0.03611	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
17	03/11/11	-0.00454	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
18	03/30/11	-0.02647	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
19	04/08/11	0.00000	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336
20	05/06/11	0.05342	-0.074853	-0.04512209	0.0143402	0.0738024	0.1035336

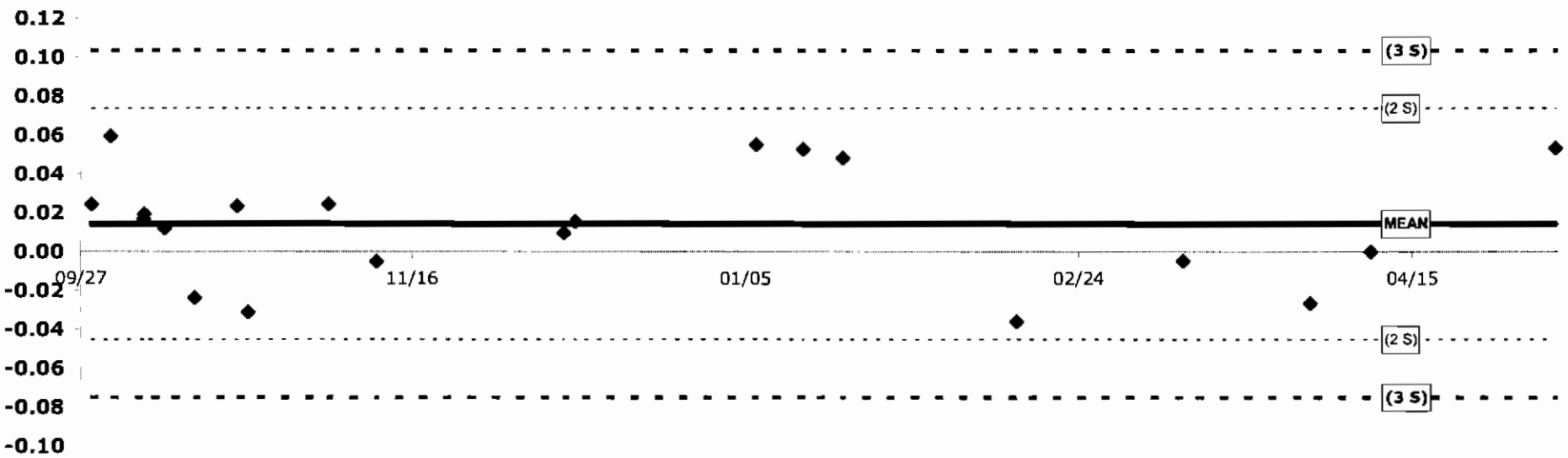
American Radiation Services
Baton Rouge Laboratory

Blank Population Analysis

		Statistical Quality Control(SQC) Rules Analysis	
Population Size	20		
Last Data Point Value	0.05	One or more points outside of the control limits.	OK
NSD	1.3145	A run of eight points on one side of the center line	OK
Average	0.0143	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	OK
Upper Control Limit (UCL)	0.1035	Four of five consecutive points beyond the 1-sigma limits.	OK
Standard Deviation	0.0297	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	-0.0749	Several points near a warning or control limit.	OK

Batch ARS1-B11-01648 - BLK Population for Isotope - U-238

Process Date Range: 09/28/10 - 05/06/11

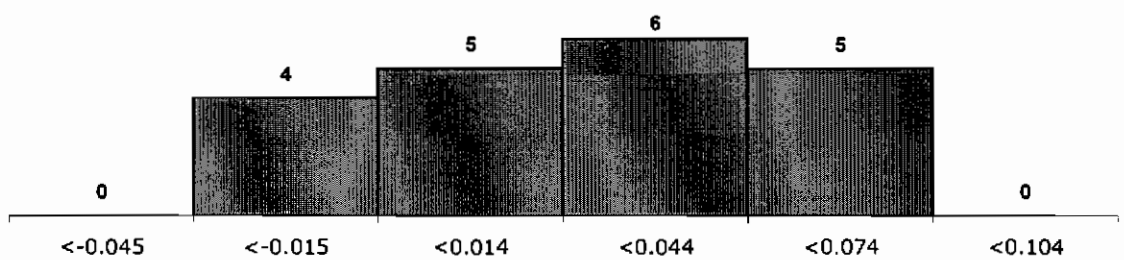


ARS INTERNATIONAL

Statistical Process Control

Population Frequency Distribution (Histogram)

Bin	Frequency
<-0.045	0
<-0.015	4
<0.014	5
<0.044	6
<0.074	5
<0.104	0



Alpha Spectroscopy Count Log Book – Canberra System

Sample Number	Batch Number	Chamber Number	Spectrum Number	Type of Analysis	Analysis Date and Time	Analyst Initials	Count Time (seconds)
11-01660-05	B11-01660	A13A	12221	Th	3-6-11 1033	[illegible]	36400
11-01660-06	↓	A13B	12182	↓	↓	[illegible]	↓
11-01660-07	↓	A14A	12181	↓	↓	[illegible]	↓
11-01660-08	↓	A14B	12186	↓	↓	[illegible]	↓
11-01660-09	↓	A15A	12187	↓	↓	[illegible]	↓
11-01660-10	↓	A15B	12173	↓	↓	[illegible]	↓
11-01660-11	↓	A16A	12185	↓	↓	[illegible]	↓
11-01660-12	↓	A16B	12177	↓	↓	[illegible]	↓
11-01660-13	↓	A21A	12189	↓	↓	[illegible]	↓
11-01660-14	↓	A21B	12180	↓	↓	[illegible]	↓
11-01660-15	↓	A22A	12190	↓	↓	[illegible]	↓
11-01648-01	B11-01648	A23B	12222	U	↓	[illegible]	↓
11-01648-02	↓	A24A	12188	↓	↓	[illegible]	↓
11-01648-03	↓	A24B	12176	↓	↓	[illegible]	↓
11-01648-04	↓	A25A	12183	↓	↓	[illegible]	↓

Reviewed By: LSW Initials Date: 5-10-11 (10) LSW 5-10-11

Alpha Spectroscopy Count Log Book – Canberra System

Sample Number	Batch Number	Chamber Number	Spectrum Number	Type of Analysis	Analysis Date and Time	Analyst Initials	Count Time (seconds)
11-01648 -05	B11-01648	A25B	12172	U	5-6-11 1033	[illegible]	86400
11-01648 -06	↓	A31A	12175	↓	↓	[illegible]	↓
11-01648 -07	↓	A31B	12179	↓	↓	[illegible]	↓
11-01648 -08	↓	A32B	12168	↓	↓	[illegible]	↓
11-01648 -09	↓	A33A	12170	↓	↓	[illegible]	↓
11-01648 -10	↓	A33B	12178	↓	↓	[illegible]	↓
11-01648 -11	↓	A34B	12223	↓	↓	[illegible]	↓
11-01648 -12	↓	A35A	12167	↓	↓	[illegible]	↓
11-01648 -13	↓	A36A ~~A35B~~ 5-6-11 [illegible]	12166	↓	↓	[illegible]	↓
11-01721 -01	B11-01721	A11A	12209	Th	5-9-11 1105	[illegible]	↓
11-01721 -02	↓	A11B	12224	↓	↓	[illegible]	↓
11-01721 -03	↓	A12A	12208	↓	↓	[illegible]	↓
11-01721 -04	↓	A12B	12211	↓	↓	[illegible]	↓
11-01721 -05	↓	A13A	12210	↓	↓	[illegible]	↓
11-01721 -06	↓	A13B	12207	↓	↓	[illegible]	↓

Reviewed By: LSW Date: 5-10-11
Initials

AMERICAN RADIATION SERVICES, INC.

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American Radiation Services Analytical Reports

for

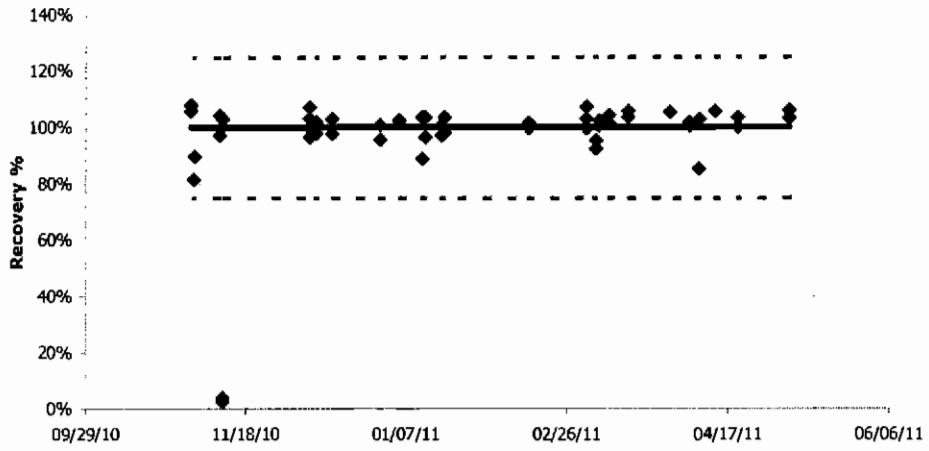
Summit Environmental Technologies

Uranium Alpha Spectroscopy Control Charts

American Radiation Services
Baton Rouge Laboratory

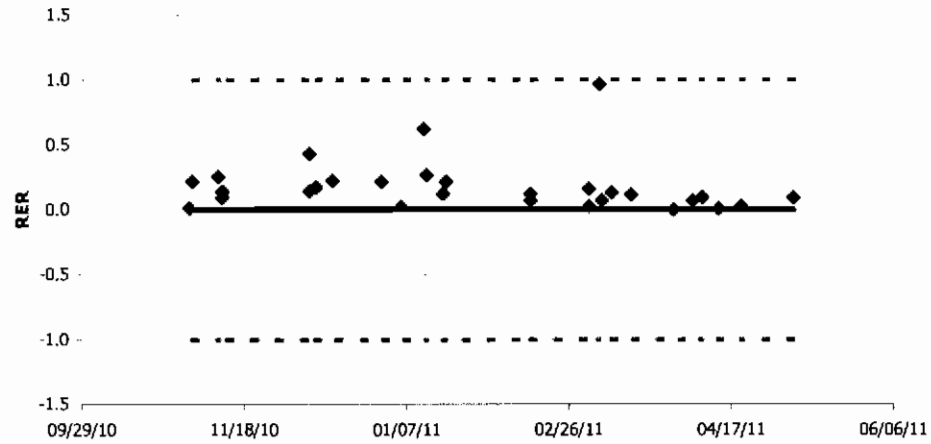
QC Chart

U LCS



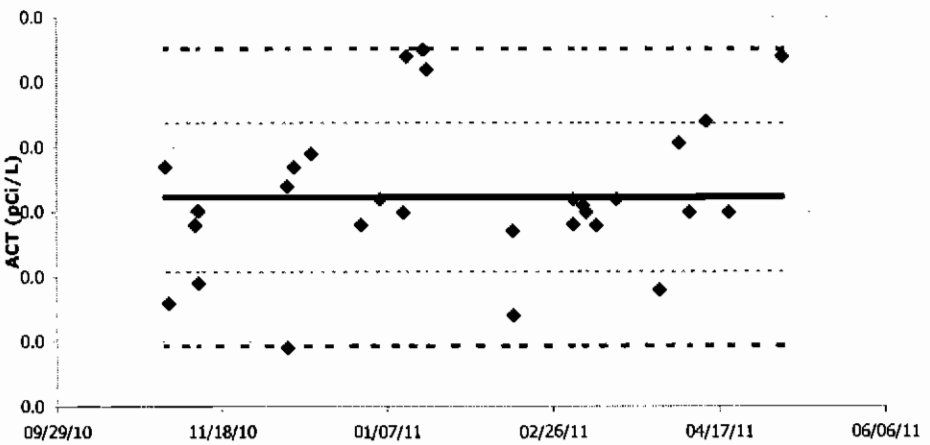
Average	STDEV	n	UCL	LCL
0.9407	0.2502	30	1.2500	0.7500

U RER



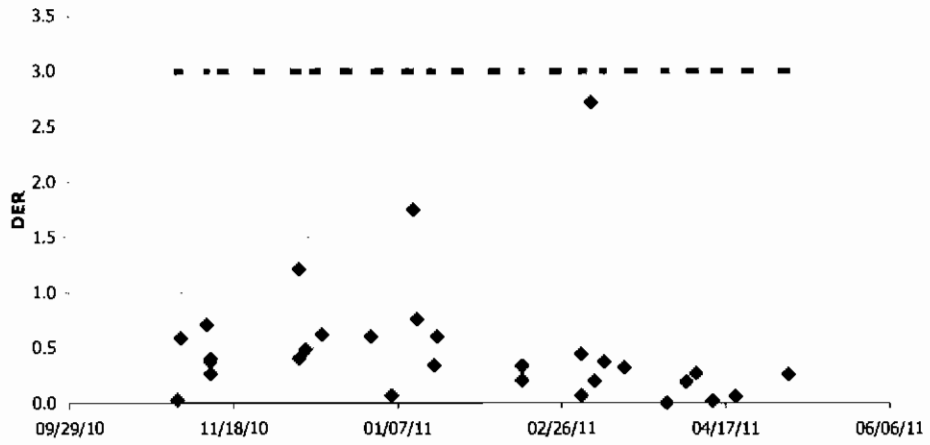
		n	UCL	LCL
		30	1.0000	-1.0000

U Blank



Average	STDEV	n	UCL	LCL
0.0023	0.0115	30	0.0252	-0.0206

U DER



		n	UCL	
		30	3.0000	

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American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Thorium Alpha Spectroscopy Samples

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	4.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.000000
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2513.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.003200
Tracer EFF	0.224954
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	Kill

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT			
CU			
TPU			
MDA			
DL			
BP MDA			
BP DL			
DL QSAS			
Gross Count Rate			
BKG Count Rate			
Net Count Rate			
Δ t 1 (t2 - t1)			
DF			
Tracer DPM			
Tracer Δt			
Tracer DF			
Tracer Recovery			
Chem Rec Factor			
Sys Err			
K			
K MDA			

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4A
Instr keV	
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5-10-11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2513.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224954
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2513.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.003200
Tracer EFF	0.224954
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	5.062868	5.062868	OK
CU	0.198187	0.198187	OK
TPU	0.643195	0.643195	OK
MDA	0.018731	0.018731	OK
DL	0.006634	0.006634	OK
BP MDA	0.156031	0.156031	OK
BP DL	0.075445	0.075445	OK
DL QSAS			
Gross Count Rate	1.745139	1.745139	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	1.743750	1.743750	OK
Δ t 1 (t2 - t1)	2.742222	2.742222	OK
DF	0.999999	0.999999	OK
Tracer DPM	11.240217	11.240217	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.689670	0.689670	OK
Chem Rec Factor	0.964574	0.964574	OK
Sys Err	0.061664	0.061664	OK
K	0.344419	0.344419	OK
K MDA	495.963985	495.963985	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4A
Instr keV	49.10917282
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	39.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224954
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2513.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.003200
Tracer EFF	0.224954
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.070570	0.070570	OK
CU	0.025914	0.025914	OK
TPU	0.027282	0.027282	OK
MDA	0.024227	0.024227	OK
DL	0.009381	0.009381	OK
BP MDA	0.070536	0.070536	OK
BP DL	0.032606	0.032606	OK
DL QSAS			
Gross Count Rate	0.027083	0.027083	OK
BKG Count Rate	0.002778	0.002778	OK
Net Count Rate	0.024306	0.024306	OK
Δ t 1 (t2 - t1)	2.742222	2.742222	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.240217	11.240217	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.689670	0.689670	OK
Chem Rec Factor	0.964574	0.964574	OK
Sys Err	0.061664	0.061664	OK
K	0.344420	0.344420	OK
K MDA	495.964337	495.964337	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01647		
Batch ID	ARS1-B11-01647-01		
Analysis Code			
SDG	QC Sample		
Fraction	N/A QC Sample		
Client	QC Sample		
Client Profile			
Client ID	N/A QC Sample		
Instr File Name	ApexAlpha		
Instr Detector	A_2_4A		
Instr keV	5.700368881		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	1.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2755.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	6.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.984500
Tracer EFF	0.215817
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**-0.001823**	**-0.001823**	**OK**
CU	**0.006190**	**0.006190**	**OK**
TPU	**0.006194**	**0.006194**	**OK**
MDA	**0.016938**	**0.016938**	**OK**
DL	**0.005998**	**0.005998**	**OK**
BP MDA	**0.051322**	**0.051322**	**OK**
BP DL	**0.023240**	**0.023240**	**OK**
DL QSAS			
Gross Count Rate	**0.000694**	**0.000694**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**-0.000694**	**-0.000694**	**OK**
Δ t 1 (t2 - t1)	**2.742222**	**2.742222**	**OK**
DF	**0.997282**	**0.997282**	**OK**
Tracer DPM	**11.030695**	**11.030695**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.801954**	**0.801954**	**OK**
Chem Rec Factor	**1.121614**	**1.121614**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.380883**	**0.380883**	**OK**
K MDA	**548.472194**	**548.472194**	**OK**
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01647		
Batch ID	ARS1-B11-01647-02		
Analysis Code			
SDG	QC Sample		
Fraction	N/A QC Sample		
Client	QC Sample		
Client Profile			
Client ID	N/A QC Sample		
Instr File Name	ApexAlpha		
Instr Detector	A_2_4B		
Instr keV	4.910474777		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: _____ **Date:** 5-10-11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	3495.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224954
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2513.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.003200
Tracer EFF	0.224954
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	7.054939	7.054939	OK
CU	0.234199	0.234199	OK
TPU	0.884242	0.884242	OK
MDA	0.021756	0.021756	OK
DL	0.008141	0.008141	OK
BP MDA	0.269888	0.269888	OK
BP DL	0.132491	0.132491	OK
DL QSAS			
Gross Count Rate	2.427083	2.427083	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	2.425000	2.425000	OK
Δ t 1 (t2 - t1)	2.742222	2.742222	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.240217	11.240217	OK
Tracer Δt	226.643056	226.643056	OK
Tracer OF	0.999941	0.999941	OK
Tracer Recovery	0.689670	0.689670	OK
Chem Rec Factor	0.964574	0.964574	OK
Sys Err	0.061664	0.061664	OK
K	0.343731	0.343731	OK
K MDA	494.972374	494.972374	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4A
Instr keV	31.02458572
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5-10-11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2755.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2755.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	6.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.984500
Tracer EFF	0.215817
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.968494	4.968494	OK
CU	0.186140	0.186140	OK
TPU	0.628683	0.628683	OK
MDA	0.025497	0.025497	OK
DL	0.010299	0.010299	OK
BP MDA	0.155465	0.155465	OK
BP DL	0.075445	0.075445	OK
DL QSAS			
Gross Count Rate	1.913194	1.913194	OK
BKG Count Rate	0.004167	0.004167	OK
Net Count Rate	1.909028	1.909028	OK
Δ t 1 (t2 - t1)	2.742222	2.742222	OK
DF	0.999999	0.999999	OK
Tracer DPM	11.030695	11.030695	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.801954	0.801954	OK
Chem Rec Factor	1.121614	1.121614	OK
Sys Err	0.061664	0.061664	OK
K	0.384227	0.384227	OK
K MDA	553.286369	553.286369	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4B
Instr keV	50.41350555
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	3395.000000
Count Mins	1440.000000
BKG Counts	11.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2755.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	6.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.984500
Tracer EFF	0.215817
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**6.128435**	**6.128435**	**OK**
CU	**0.207156**	**0.207156**	**OK**
TPU	**0.769109**	**0.769109**	**OK**
MDA	**0.032854**	**0.032854**	**OK**
DL	**0.013973**	**0.013973**	**OK**
BP MDA	**0.269320**	**0.269320**	**OK**
BP DL	**0.132491**	**0.132491**	**OK**
DL QSAS			
Gross Count Rate	**2.357639**	**2.357639**	**OK**
BKG Count Rate	**0.007639**	**0.007639**	**OK**
Net Count Rate	**2.350000**	**2.350000**	**OK**
Δ t 1 (t2 - t1)	**2.742222**	**2.742222**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.030695**	**11.030695**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.801954**	**0.801954**	**OK**
Chem Rec Factor	**1.121614**	**1.121614**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.383458**	**0.383458**	**OK**
K MDA	**552.180150**	**552.180150**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4B
Instr keV	29.97737694
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	58.000000
Count Mins	1440.000000
BKG Counts	47.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2755.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	6.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.984500
Tracer EFF	0.215817
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.019881**	**0.019881**	**OK**
CU	**0.036299**	**0.036299**	**OK**
TPU	**0.036379**	**0.036379**	**OK**
MDA	**0.062549**	**0.062549**	**OK**
DL	**0.028826**	**0.028826**	**OK**
BP MDA	**0.069970**	**0.069970**	**OK**
BP DL	**0.032606**	**0.032606**	**OK**
DL QSAS			
Gross Count Rate	**0.040278**	**0.040278**	**OK**
BKG Count Rate	**0.032639**	**0.032639**	**OK**
Net Count Rate	**0.007639**	**0.007639**	**OK**
Δ t 1 (t2 - t1)	**2.742222**	**2.742222**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.030695**	**11.030695**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.801954**	**0.801954**	**OK**
Chem Rec Factor	**1.121614**	**1.121614**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.384227**	**0.384227**	**OK**
K MDA	**553.286761**	**553.286761**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4B
Instr keV	
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/07/

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	4.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.019300
Tracer EFF	0.218973
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.007768**	**0.007768**	**OK**
CU	**0.007613**	**0.007613**	**OK**
TPU	**0.007671**	**0.007671**	**OK**
MDA	**0.005263**	**0.005263**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.051644**	**0.051644**	**OK**
BP DL	**0.023240**	**0.023240**	**OK**
DL QSAS			
Gross Count Rate	**0.002778**	**0.002778**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.002778**	**0.002778**	**OK**
Δ t 1 (t2 - t1)	**2.742222**	**2.742222**	**OK**
DF	**0.997282**	**0.997282**	**OK**
Tracer DPM	**11.420607**	**11.420607**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.742027**	**0.742027**	**OK**
Chem Rec Factor	**1.037800**	**1.037800**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.357575**	**0.357575**	**OK**
K MDA	**514.908457**	**514.908457**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	4.889849663
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2675.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.019300
Tracer EFF	0.218973
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**5.144120**	**5.144120**	**OK**
CU	**0.195270**	**0.195270**	**OK**
TPU	**0.651665**	**0.651665**	**OK**
MDA	**0.020732**	**0.020732**	**OK**
DL	**0.007757**	**0.007757**	**OK**
BP MDA	**0.155784**	**0.155784**	**OK**
BP DL	**0.075445**	**0.075445**	**OK**
DL QSAS			
Gross Count Rate	**1.857639**	**1.857639**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**1.855556**	**1.855556**	**OK**
Δ t 1 (t2 - t1)	**2.742222**	**2.742222**	**OK**
DF	**0.999999**	**0.999999**	**OK**
Tracer DPM	**11.420607**	**11.420607**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.742027**	**0.742027**	**OK**
Chem Rec Factor	**1.037800**	**1.037800**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.360714**	**0.360714**	**OK**
K MDA	**519.428029**	**519.428029**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	42.68838501
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	44.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.019300
Tracer EFF	0.218973
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.073304	0.073304	OK
CU	0.026735	0.026735	OK
TPU	0.028165	0.028165	OK
MDA	0.027213	0.027213	OK
DL	0.010993	0.010993	OK
BP MDA	0.269640	0.269640	OK
BP DL	0.132491	0.132491	OK
DL QSAS			
Gross Count Rate	0.030556	0.030556	OK
BKG Count Rate	0.004167	0.004167	OK
Net Count Rate	0.026389	0.026389	OK
Δ t 1 (t2 - t1)	2.742222	2.742222	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.420607	11.420607	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.742027	0.742027	OK
Chem Rec Factor	1.037800	1.037800	OK
Sys Err	0.061664	0.061664	OK
K	0.359993	0.359993	OK
K MDA	518.389505	518.389505	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	7.334774494
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	3.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/2/11 10:04 AM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.019300
Tracer EFF	0.218973
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.005776	0.005776	OK
CU	0.006536	0.006536	OK
TPU	0.006573	0.006573	OK
MDA	0.005217	0.005217	OK
DL	0.000000	0.000000	OK
BP MDA	0.070289	0.070289	OK
BP DL	0.032606	0.032606	OK
DL QSAS			
Gross Count Rate	0.002083	0.002083	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.002083	0.002083	OK
Δ t 1 (t2 - t1)	2.742222	2.742222	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.420607	11.420607	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.742027	0.742027	OK
Chem Rec Factor	1.037800	1.037800	OK
Sys Err	0.061664	0.061664	OK
K	0.360714	0.360714	OK
K MDA	519.428397	519.428397	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	4.889849663
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	233.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	1.022700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2543.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.012500
Tracer EFF	0.213046
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.461649	0.461649	OK
CU	0.060436	0.060436	OK
TPU	0.082253	0.082253	OK
MDA	0.021615	0.021615	OK
DL	0.008088	0.008088	OK
BP MDA	0.051330	0.051330	OK
BP DL	0.022995	0.022995	OK
DL QSAS			
Gross Count Rate	0.161806	0.161806	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	0.159722	0.159722	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	0.985553	0.985553	OK
Tracer DPM	11.344417	11.344417	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.730151	0.730151	OK
Chem Rec Factor	1.021190	1.021190	OK
Sys Err	0.061664	0.061664	OK
K	0.345982	0.345982	OK
K MDA	498.213498	498.213498	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-04
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SED-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_58
Instr keV	25.94958878
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ Date: 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2543.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	1.022700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2543.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.012500
Tracer EFF	0.213046
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.996400**	**4.996400**	**OK**
CU	**0.194425**	**0.194425**	**OK**
TPU	**0.634395**	**0.634395**	**OK**
MDA	**0.018267**	**0.018267**	**OK**
DL	**0.006469**	**0.006469**	**OK**
BP MDA	**0.152554**	**0.152554**	**OK**
BP DL	**0.073771**	**0.073771**	**OK**
DL QSAS			
Gross Count Rate	**1.765972**	**1.765972**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**1.764583**	**1.764583**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.999996**	**0.999996**	**OK**
Tracer DPM	**11.344417**	**11.344417**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.730151**	**0.730151**	**OK**
Chem Rec Factor	**1.021190**	**1.021190**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.353171**	**0.353171**	**OK**
K MDA	**508.566211**	**508.566211**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-04
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SED-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_SB
Instr keV	45.33880997
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2253.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	1.022700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2543.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.012500
Tracer EFF	0.213046
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.433054**	**4.433054**	**OK**
CU	**0.183420**	**0.183420**	**OK**
TPU	**0.566307**	**0.566307**	**OK**
MDA	**0.021217**	**0.021217**	**OK**
DL	**0.007939**	**0.007939**	**OK**
BP MDA	**0.263883**	**0.263883**	**OK**
BP DL	**0.129550**	**0.129550**	**OK**
DL QSAS			
Gross Count Rate	**1.564583**	**1.564583**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**1.562500**	**1.562500**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.344417**	**11.344417**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.730151**	**0.730151**	**OK**
Chem Rec Factor	**1.021190**	**1.021190**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.352466**	**0.352466**	**OK**
K MDA	**507.550815**	**507.550815**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-04
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SED-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_5B
Instr keV	26.77484131
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	278.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	1.022700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2543.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.012500
Tracer EFF	0.213046
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.542700**	**0.542700**	**OK**
CU	**0.064489**	**0.064489**	**OK**
TPU	**0.091984**	**0.091984**	**OK**
MDA	**0.018267**	**0.018267**	**OK**
DL	**0.006469**	**0.006469**	**OK**
BP MDA	**0.068956**	**0.068956**	**OK**
BP DL	**0.031882**	**0.031882**	**OK**
DL QSAS			
Gross Count Rate	**0.193056**	**0.193056**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.191667**	**0.191667**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.344417**	**11.344417**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.730151**	**0.730151**	**OK**
Chem Rec Factor	**1.021190**	**1.021190**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.353172**	**0.353172**	**OK**
K MDA	**508.568139**	**508.568139**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-04
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SED-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_58
Instr keV	18.91488647
Version/Date	2.0 -- 4/20/2006

Reviewed by: HW **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	279.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	1.109200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2379.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.011800
Tracer EFF	0.223028
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.548079**	**0.548079**	**OK**
CU	**0.065009**	**0.065009**	**OK**
TPU	**0.092812**	**0.092812**	**OK**
MDA	**0.018381**	**0.018381**	**OK**
DL	**0.006510**	**0.006510**	**OK**
BP MDA	**0.047674**	**0.047674**	**OK**
BP DL	**0.021202**	**0.021202**	**OK**
DL QSAS			
Gross Count Rate	**0.193750**	**0.193750**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.192361**	**0.192361**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.985553**	**0.985553**	**OK**
Tracer DPM	**11.336574**	**11.336574**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.652358**	**0.652358**	**OK**
Chem Rec Factor	**0.912389**	**0.912389**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.350973**	**0.350973**	**OK**
K MDA	**505.401353**	**505.401353**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-05
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	24.01058388
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2379.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	1.109200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2379.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.011800
Tracer EFF	0.223028
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.603575**	**4.603575**	**OK**
CU	**0.185460**	**0.185460**	**OK**
TPU	**0.586486**	**0.586486**	**OK**
MDA	**0.023290**	**0.023290**	**OK**
DL	**0.009019**	**0.009019**	**OK**
BP MDA	**0.140997**	**0.140997**	**OK**
BP DL	**0.068018**	**0.068018**	**OK**
DL QSAS			
Gross Count Rate	**1.652083**	**1.652083**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**1.649306**	**1.649306**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.999996**	**0.999996**	**OK**
Tracer DPM	**11.336574**	**11.336574**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.652358**	**0.652358**	**OK**
Chem Rec Factor	**0.912389**	**0.912389**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.358266**	**0.358266**	**OK**
K MDA	**515.903427**	**515.903427**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-05
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	42.74464035
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	503.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	1.109200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2379.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.011800
Tracer EFF	0.223028
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.973055	0.973055	OK
CU	0.085546	0.085546	OK
TPU	0.145426	0.145426	OK
MDA	0.018043	0.018043	OK
DL	0.006390	0.006390	OK
BP MDA	0.243645	0.243645	OK
BP DL	0.119447	0.119447	OK
DL QSAS			
Gross Count Rate	0.349306	0.349306	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.347917	0.347917	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.336574	11.336574	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.652358	0.652358	OK
Chem Rec Factor	0.912389	0.912389	OK
Sys Err	0.061664	0.061664	OK
K	0.357551	0.357551	OK
K MDA	514.873382	514.873382	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-05
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	14.36770821
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	239.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	1.109200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2379.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.011800
Tracer EFF	0.223028
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.451633**	**0.451633**	**OK**
CU	**0.059466**	**0.059466**	**OK**
TPU	**0.080720**	**0.080720**	**OK**
MDA	**0.027344**	**0.027344**	**OK**
DL	**0.011046**	**0.011046**	**OK**
BP MDA	**0.063919**	**0.063919**	**OK**
BP DL	**0.029396**	**0.029396**	**OK**
DL QSAS			
Gross Count Rate	**0.165972**	**0.165972**	**OK**
BKG Count Rate	**0.004167**	**0.004167**	**OK**
Net Count Rate	**0.161806**	**0.161806**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.336574**	**11.336574**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.652358**	**0.652358**	**OK**
Chem Rec Factor	**0.912389**	**0.912389**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.358268**	**0.358268**	**OK**
K MDA	**515.905383**	**515.905383**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-05
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	24.17536354
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	539.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	1.078500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2044.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007600
Tracer EFF	0.209818
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**1.266315**	**1.266315**	**OK**
CU	**0.107503**	**0.107503**	**OK**
TPU	**0.187031**	**0.187031**	**OK**
MDA	**0.021907**	**0.021907**	**OK**
DL	**0.007758**	**0.007758**	**OK**
BP MDA	**0.049907**	**0.049907**	**OK**
BP DL	**0.021805**	**0.021805**	**OK**
DL QSAS			
Gross Count Rate	**0.374306**	**0.374306**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.372917**	**0.372917**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.985553**	**0.985553**	**OK**
Tracer DPM	**11.289516**	**11.289516**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.598394**	**0.598394**	**OK**
Chem Rec Factor	**0.836915**	**0.836915**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.294490**	**0.294490**	**OK**
K MDA	**424.065162**	**424.065162**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-06
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	26.97288513
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2044.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	1.078500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2044.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007600
Tracer EFF	0.209818
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.714964**	**4.714964**	**OK**
CU	**0.204857**	**0.204857**	**OK**
TPU	**0.605556**	**0.605556**	**OK**
MDA	**0.024877**	**0.024877**	**OK**
DL	**0.009308**	**0.009308**	**OK**
BP MDA	**0.145869**	**0.145869**	**OK**
BP DL	**0.069954**	**0.069954**	**OK**
DL QSAS			
Gross Count Rate	**1.419444**	**1.419444**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**1.417361**	**1.417361**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.999996**	**0.999996**	**OK**
Tracer DPM	**11.289516**	**11.289516**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.598394**	**0.598394**	**OK**
Chem Rec Factor	**0.836915**	**0.836915**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.300609**	**0.300609**	**OK**
K MDA	**432.877097**	**432.877097**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-06
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	39.9537468
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2960.000000
Count Mins	1440.000000
BKG Counts	10.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	1.078500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2044.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007600
Tracer EFF	0.209818
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	6.828501	6.828501	OK
CU	0.247251	0.247251	OK
TPU	0.861537	0.861537	OK
MDA	0.040331	0.040331	OK
DL	0.017029	0.017029	OK
BP MDA	0.251440	0.251440	OK
BP DL	0.122847	0.122847	OK
DL QSAS			
Gross Count Rate	2.055556	2.055556	OK
BKG Count Rate	0.006944	0.006944	OK
Net Count Rate	2.048611	2.048611	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.289516	11.289516	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.598394	0.598394	OK
Chem Rec Factor	0.836915	0.836915	OK
Sys Err	0.061664	0.061664	OK
K	0.300009	0.300009	OK
K MDA	432.012821	432.012821	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-06
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	30.49419785
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	551.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	1.078500
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2044.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007600
Tracer EFF	0.209818
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**1.268254**	**1.268254**	**OK**
CU	**0.106476**	**0.106476**	**OK**
TPU	**0.186635**	**0.186635**	**OK**
MDA	**0.021461**	**0.021461**	**OK**
DL	**0.007600**	**0.007600**	**OK**
BP MDA	**0.066596**	**0.066596**	**OK**
BP DL	**0.030233**	**0.030233**	**OK**
DL QSAS			
Gross Count Rate	**0.382639**	**0.382639**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.381250**	**0.381250**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.289516**	**11.289516**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.598394**	**0.598394**	**OK**
Chem Rec Factor	**0.836915**	**0.836915**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.300610**	**0.300610**	**OK**
K MDA	**432.878738**	**432.878738**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-06
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	37.24372864
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	462.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	1.060700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2752.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007000
Tracer EFF	0.220569
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.821286**	**0.821286**	**OK**
CU	**0.075135**	**0.075135**	**OK**
TPU	**0.124491**	**0.124491**	**OK**
MDA	**0.013117**	**0.013117**	**OK**
DL	**0.004145**	**0.004145**	**OK**
BP MDA	**0.049119**	**0.049119**	**OK**
BP DL	**0.022193**	**0.022193**	**OK**
DL QSAS			
Gross Count Rate	**0.320833**	**0.320833**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.320139**	**0.320139**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**0.984575**	**0.984575**	**OK**
Tracer DPM	**11.282793**	**11.282793**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.766864**	**0.766864**	**OK**
Chem Rec Factor	**1.072537**	**1.072537**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.389802**	**0.389802**	**OK**
K MDA	**561.314644**	**561.314644**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-07
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SED-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_2B
Instr keV	39.25505829
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2752.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	1.060700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2752.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007000
Tracer EFF	0.220569
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.791234	4.791234	OK
CU	0.179402	0.179402	OK
TPU	0.606224	0.606224	OK
MDA	0.020949	0.020949	OK
DL	0.008112	0.008112	OK
BP MDA	0.146676	0.146676	OK
BP DL	0.071128	0.071128	OK
DL QSAS			
Gross Count Rate	1.911111	1.911111	OK
BKG Count Rate	0.002778	0.002778	OK
Net Count Rate	1.908333	1.908333	OK
Δ t 1 (t2 - t1)	15.661806	15.661806	OK
DF	0.999996	0.999996	OK
Tracer DPM	11.282793	11.282793	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.766864	0.766864	OK
Chem Rec Factor	1.072537	1.072537	OK
Sys Err	0.061664	0.061664	OK
K	0.398297	0.398297	OK
K MDA	573.547416	573.547416	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-07
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SED-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_28
Instr keV	61.57248306
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	602.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	1.060700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2752.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007000
Tracer EFF	0.220569
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**1.044720**	**1.044720**	**OK**
CU	**0.084293**	**0.084293**	**OK**
TPU	**0.151816**	**0.151816**	**OK**
MDA	**0.020991**	**0.020991**	**OK**
DL	**0.008128**	**0.008128**	**OK**
BP MDA	**0.254016**	**0.254016**	**OK**
BP DL	**0.124909**	**0.124909**	**OK**
DL QSAS			
Gross Count Rate	**0.418056**	**0.418056**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**0.415278**	**0.415278**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.282793**	**11.282793**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.766864**	**0.766864**	**OK**
Chem Rec Factor	**1.072537**	**1.072537**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.397502**	**0.397502**	**OK**
K MDA	**572.402413**	**572.402413**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-07
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SED-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_2B
Instr keV	41.29672241
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	472.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	1.060700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2752.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.007000
Tracer EFF	0.220569
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.821202**	**0.821202**	**OK**
CU	**0.074322**	**0.074322**	**OK**
TPU	**0.123994**	**0.123994**	**OK**
MDA	**0.012837**	**0.012837**	**OK**
DL	**0.004056**	**0.004056**	**OK**
BP MDA	**0.066073**	**0.066073**	**OK**
BP DL	**0.030740**	**0.030740**	**OK**
DL QSAS			
Gross Count Rate	**0.327778**	**0.327778**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.327083**	**0.327083**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.282793**	**11.282793**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.766864**	**0.766864**	**OK**
Chem Rec Factor	**1.072537**	**1.072537**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.398298**	**0.398298**	**OK**
K MDA	**573.549739**	**573.549739**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-07
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SED-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_2B
Instr keV	28.52734184
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	183.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	1.021700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2499.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004900
Tracer EFF	0.219087
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.371045**	**0.371045**	**OK**
CU	**0.053760**	**0.053760**	**OK**
TPU	**0.070008**	**0.070008**	**OK**
MDA	**0.005495**	**0.005495**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.051430**	**0.051430**	**OK**
BP DL	**0.023017**	**0.023017**	**OK**
DL QSAS			
Gross Count Rate	**0.127083**	**0.127083**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.127083**	**0.127083**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.985553**	**0.985553**	**OK**
Tracer DPM	**11.259264**	**11.259264**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.703561**	**0.703561**	**OK**
Chem Rec Factor	**0.984002**	**0.984002**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.342501**	**0.342501**	**OK**
K MDA	**493.201517**	**493.201517**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-08
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-01
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	28.15198326
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2499.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	1.021700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2499.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004900
Tracer EFF	0.219087
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.963749	4.963749	OK
CU	0.194618	0.194618	OK
TPU	0.630699	0.630699	OK
MDA	0.005383	0.005383	OK
DL	0.000000	0.000000	OK
BP MDA	0.152752	0.152752	OK
BP DL	0.073843	0.073843	OK
DL QSAS			
Gross Count Rate	1.735417	1.735417	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	1.735417	1.735417	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	0.999996	0.999996	OK
Tracer DPM	11.259264	11.259264	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.703561	0.703561	OK
Chem Rec Factor	0.984002	0.984002	OK
Sys Err	0.061664	0.061664	OK
K	0.349618	0.349618	OK
K MDA	503.450082	503.450082	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-08
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-01
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	45.02334595
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	343.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	1.021700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2499.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004900
Tracer EFF	0.219087
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.678681**	**0.678681**	**OK**
CU	**0.072456**	**0.072456**	**OK**
TPU	**0.109445**	**0.109445**	**OK**
MDA	**0.018490**	**0.018490**	**OK**
DL	**0.006548**	**0.006548**	**OK**
BP MDA	**0.264190**	**0.264190**	**OK**
BP DL	**0.129677**	**0.129677**	**OK**
DL QSAS			
Gross Count Rate	**0.238194**	**0.238194**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.236806**	**0.236806**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.259264**	**11.259264**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.703561**	**0.703561**	**OK**
Chem Rec Factor	**0.984002**	**0.984002**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.348920**	**0.348920**	**OK**
K MDA	**502.444902**	**502.444902**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-08
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-01
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	35.14909363
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	214.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	1.021700
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2499.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004900
Tracer EFF	0.219087
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.419106**	**0.419106**	**OK**
CU	**0.057349**	**0.057349**	**OK**
TPU	**0.076516**	**0.076516**	**OK**
MDA	**0.021390**	**0.021390**	**OK**
DL	**0.008004**	**0.008004**	**OK**
BP MDA	**0.069073**	**0.069073**	**OK**
BP DL	**0.031913**	**0.031913**	**OK**
DL QSAS			
Gross Count Rate	**0.148611**	**0.148611**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**0.146528**	**0.146528**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.259264**	**11.259264**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.703561**	**0.703561**	**OK**
Chem Rec Factor	**0.984002**	**0.984002**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.349619**	**0.349619**	**OK**
K MDA	**503.451991**	**503.451991**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-08
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-01
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	34.75193024
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	426.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.108200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	1977.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	8.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004500
Tracer EFF	0.212397
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	OK

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.005528	1.005528	OK
CU	0.096163	0.096163	OK
TPU	0.154972	0.154972	OK
MDA	0.022032	0.022032	OK
DL	0.007802	0.007802	OK
BP MDA	0.048777	0.048777	OK
BP DL	0.021221	0.021221	OK
DL QSAS			
Gross Count Rate	0.295833	0.295833	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.294444	0.294444	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	0.985553	0.985553	OK
Tracer DPM	11.254783	11.254783	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.572037	0.572037	OK
Chem Rec Factor	0.800052	0.800052	OK
Sys Err	0.061664	0.061664	OK
K	0.292826	0.292826	OK
K MDA	421.668852	421.668852	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-09
Analysis Code	ASP-A-009
SDG	ARS1-I1-00895
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	20.57688332
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	1977.000000
Count Mins	1440.000000
BKG Counts	8.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.108200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	1977.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	8.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004500
Tracer EFF	0.212397
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.574485	4.574485	OK
CU	0.202877	0.202877	OK
TPU	0.588922	0.588922	OK
MDA	0.036870	0.036870	OK
DL	0.015287	0.015287	OK
BP MDA	0.142163	0.142163	OK
BP DL	0.068079	0.068079	OK
DL QSAS			
Gross Count Rate	1.372917	1.372917	OK
BKG Count Rate	0.005556	0.005556	OK
Net Count Rate	1.367361	1.367361	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	0.999996	0.999996	OK
Tracer DPM	11.254783	11.254783	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.572037	0.572037	OK
Chem Rec Factor	0.800052	0.800052	OK
Sys Err	0.061664	0.061664	OK
K	0.298910	0.298910	OK
K MDA	430.430992	430.430992	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-09
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_38
Instr keV	35.814991
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	370.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.108200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	1977.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	8.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004500
Tracer EFF	0.212397
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.858995**	**0.858995**	**OK**
CU	**0.087884**	**0.087884**	**OK**
TPU	**0.136021**	**0.136021**	**OK**
MDA	**0.017140**	**0.017140**	**OK**
DL	**0.005416**	**0.005416**	**OK**
BP MDA	**0.244905**	**0.244905**	**OK**
BP DL	**0.119555**	**0.119555**	**OK**
DL QSAS			
Gross Count Rate	**0.256944**	**0.256944**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.256250**	**0.256250**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.254783**	**11.254783**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.572037**	**0.572037**	**OK**
Chem Rec Factor	**0.800052**	**0.800052**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.298314**	**0.298314**	**OK**
K MDA	**429.571600**	**429.571600**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-09
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	25.31498146
Version/Date	2.0 -- 4/20/2006

Reviewed by: HEW **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	393.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	1.108200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	1977.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	8.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.004500
Tracer EFF	0.212397
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	OK

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.908388	0.908388	OK
CU	0.090500	0.090500	OK
TPU	0.142281	0.142281	OK
MDA	0.021583	0.021583	OK
DL	0.007643	0.007643	OK
BP MDA	0.065015	0.065015	OK
BP DL	0.029422	0.029422	OK
DL QSAS			
Gross Count Rate	0.272917	0.272917	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.271528	0.271528	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.254783	11.254783	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.572037	0.572037	OK
Chem Rec Factor	0.800052	0.800052	OK
Sys Err	0.061664	0.061664	OK
K	0.298912	0.298912	OK
K MDA	430.432624	430.432624	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-09
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SED-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	34.51046371
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	239.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.015200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2365.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.001000
Tracer EFF	0.215743
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.512117**	**0.512117**	**OK**
CU	**0.065336**	**0.065336**	**OK**
TPU	**0.089999**	**0.089999**	**OK**
MDA	**0.015843**	**0.015843**	**OK**
DL	**0.005006**	**0.005006**	**OK**
BP MDA	**0.052107**	**0.052107**	**OK**
BP DL	**0.023188**	**0.023188**	**OK**
DL QSAS			
Gross Count Rate	**0.165972**	**0.165972**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.165278**	**0.165278**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**0.984575**	**0.984575**	**OK**
Tracer DPM	**11.215567**	**11.215567**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.678217**	**0.678217**	**OK**
Chem Rec Factor	**0.948555**	**0.948555**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.322734**	**0.322734**	**OK**
K MDA	**464.737587**	**464.737587**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-10
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	28.25423431
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2365.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.015200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2365.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.001000
Tracer EFF	0.215743
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.976144	4.976144	OK
CU	0.200810	0.200810	OK
TPU	0.634058	0.634058	OK
MDA	0.019563	0.019563	OK
DL	0.006928	0.006928	OK
BP MDA	0.154020	0.154020	OK
BP DL	0.074316	0.074316	OK
DL QSAS			
Gross Count Rate	1.642361	1.642361	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	1.640972	1.640972	OK
Δ t 1 (t2 - t1)	15.661806	15.661806	OK
DF	0.999996	0.999996	OK
Tracer DPM	11.215567	11.215567	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.678217	0.678217	OK
Chem Rec Factor	0.948555	0.948555	OK
Sys Err	0.061664	0.061664	OK
K	0.329768	0.329768	OK
K MDA	474.865648	474.865648	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-10
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	41.05665207
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	279.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.015200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2365.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.001000
Tracer EFF	0.215743
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	OK

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.584490	0.584490	OK
CU	0.069328	0.069328	OK
TPU	0.098978	0.098978	OK
MDA	0.019603	0.019603	OK
DL	0.006942	0.006942	OK
BP MDA	0.266172	0.266172	OK
BP DL	0.130507	0.130507	OK
DL QSAS			
Gross Count Rate	0.193750	0.193750	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.192361	0.192361	OK
Δ t 1 (t2 - t1)	15.661806	15.661806	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.215567	11.215567	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.678217	0.678217	OK
Chem Rec Factor	0.948555	0.948555	OK
Sys Err	0.061664	0.061664	OK
K	0.329109	0.329109	OK
K MDA	473.917649	473.917649	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01647		
Batch ID	ARS1-B11-01647-10		
Analysis Code	ASP-A-009		
SDG	ARS1-11-00895		
Fraction	007		
Client	Summit Environmental Technologies		
Client Profile	Cuyahoga Falls		
Client ID	RP-SED-01-110419		
Instr File Name	ApexAlpha		
Instr Detector	A_3_4B		
Instr keV	23.88544273		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	230.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	1.015200
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2365.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	1.001000
Tracer EFF	0.215743
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.475922**	**0.475922**	**OK**
CU	**0.063138**	**0.063138**	**OK**
TPU	**0.085411**	**0.085411**	**OK**
MDA	**0.025303**	**0.025303**	**OK**
DL	**0.009798**	**0.009798**	**OK**
BP MDA	**0.069805**	**0.069805**	**OK**
BP DL	**0.032118**	**0.032118**	**OK**
DL QSAS			
Gross Count Rate	**0.159722**	**0.159722**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**0.156944**	**0.156944**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.215567**	**11.215567**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.678217**	**0.678217**	**OK**
Chem Rec Factor	**0.948555**	**0.948555**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.329769**	**0.329769**	**OK**
K MDA	**474.867571**	**474.867571**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-10
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	18.78171539
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	391.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.064000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2360.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	5.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.999600
Tracer EFF	0.213233
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.795329**	**0.795329**	**OK**
CU	**0.080055**	**0.080055**	**OK**
TPU	**0.125095**	**0.125095**	**OK**
MDA	**0.024693**	**0.024693**	**OK**
DL	**0.009562**	**0.009562**	**OK**
BP MDA	**0.049679**	**0.049679**	**OK**
BP DL	**0.022102**	**0.022102**	**OK**
DL QSAS			
Gross Count Rate	**0.271528**	**0.271528**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**0.268750**	**0.268750**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.985553**	**0.985553**	**OK**
Tracer DPM	**11.199881**	**11.199881**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.684834**	**0.684834**	**OK**
Chem Rec Factor	**0.957810**	**0.957810**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.337910**	**0.337910**	**OK**
K MDA	**486.590799**	**486.590799**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-11
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	36.71587753
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2360.000000
Count Mins	1440.000000
BKG Counts	5.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.064000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2360.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	5.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.999600
Tracer EFF	0.213233
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.741273**	**4.741273**	**OK**
CU	**0.191900**	**0.191900**	**OK**
TPU	**0.604311**	**0.604311**	**OK**
MDA	**0.026402**	**0.026402**	**OK**
DL	**0.010473**	**0.010473**	**OK**
BP MDA	**0.146967**	**0.146967**	**OK**
BP DL	**0.070907**	**0.070907**	**OK**
DL QSAS			
Gross Count Rate	**1.638889**	**1.638889**	**OK**
BKG Count Rate	**0.003472**	**0.003472**	**OK**
Net Count Rate	**1.635417**	**1.635417**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**0.999996**	**0.999996**	**OK**
Tracer DPM	**11.199881**	**11.199881**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.684834**	**0.684834**	**OK**
Chem Rec Factor	**0.957810**	**0.957810**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.344932**	**0.344932**	**OK**
K MDA	**496.701996**	**496.701996**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-11
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	55.79859543
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	802.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.064000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2360.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	5.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.999600
Tracer EFF	0.213233
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**1.609811**	**1.609811**	**OK**
CU	**0.112252**	**0.112252**	**OK**
TPU	**0.224622**	**0.224622**	**OK**
MDA	**0.024239**	**0.024239**	**OK**
DL	**0.009386**	**0.009386**	**OK**
BP MDA	**0.253975**	**0.253975**	**OK**
BP DL	**0.124521**	**0.124521**	**OK**
DL QSAS			
Gross Count Rate	**0.556944**	**0.556944**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**0.554167**	**0.554167**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.199881**	**11.199881**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.684834**	**0.684834**	**OK**
Chem Rec Factor	**0.957810**	**0.957810**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.344243**	**0.344243**	**OK**
K MDA	**495.710288**	**495.710288**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-11
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	35.01737976
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	371.000000
Count Mins	1440.000000
BKG Counts	7.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	1.064000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2360.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	5.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.999600
Tracer EFF	0.213233
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.732831**	**0.732831**	**OK**
CU	**0.076719**	**0.076719**	**OK**
TPU	**0.117177**	**0.117177**	**OK**
MDA	**0.030239**	**0.030239**	**OK**
DL	**0.012392**	**0.012392**	**OK**
BP MDA	**0.066614**	**0.066614**	**OK**
BP DL	**0.030645**	**0.030645**	**OK**
DL QSAS			
Gross Count Rate	**0.257639**	**0.257639**	**OK**
BKG Count Rate	**0.004861**	**0.004861**	**OK**
Net Count Rate	**0.252778**	**0.252778**	**OK**
Δ t 1 (t2 - t1)	**14.661806**	**14.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.199881**	**11.199881**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.684834**	**0.684834**	**OK**
Chem Rec Factor	**0.957810**	**0.957810**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.344933**	**0.344933**	**OK**
K MDA	**496.703879**	**496.703879**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-11
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	34.94045258
Version/Date	2.0 -- 4/20/2006

Reviewed by: AEU **Date:** 5/0 11

Procedure	ARS-031
Variable	**Value**
Counts	553.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.019900
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2466.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998100
Tracer EFF	0.219040
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
0 **Variables Intact Test**	OK

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.129883	1.129883	OK
CU	0.094429	0.094429	OK
TPU	0.166027	0.166027	OK
MDA	0.015071	0.015071	OK
DL	0.004762	0.004762	OK
BP MDA	0.051564	0.051564	OK
BP DL	0.023058	0.023058	OK
DL QSAS			
Gross Count Rate	0.384028	0.384028	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.383333	0.383333	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	0.985553	0.985553	OK
Tracer DPM	11.183075	11.183075	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.698301	0.698301	OK
Chem Rec Factor	0.976645	0.976645	OK
Sys Err	0.061664	0.061664	OK
K	0.339268	0.339268	OK
K MDA	488.546098	488.546098	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-12
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	26.07896614
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** _____

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2466.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.019900
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2466.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998100
Tracer EFF	0.219040
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.938862	4.938862	OK
CU	0.195290	0.195290	OK
TPU	0.628047	0.628047	OK
MDA	0.021594	0.021594	OK
DL	0.008080	0.008080	OK
BP MDA	0.153064	0.153064	OK
BP DL	0.073974	0.073974	OK
DL QSAS			
Gross Count Rate	1.712500	1.712500	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	1.710417	1.710417	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	0.999996	0.999996	OK
Tracer DPM	11.183075	11.183075	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.698301	0.698301	OK
Chem Rec Factor	0.976645	0.976645	OK
Sys Err	0.061664	0.061664	OK
K	0.346318	0.346318	OK
K MDA	498.697925	498.697925	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-12
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	45.91628647
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	1983.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.019900
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2466.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998100
Tracer EFF	0.219040
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	3.982301	3.982301	OK
CU	0.175411	0.175411	OK
TPU	0.512271	0.512271	OK
MDA	0.014794	0.014794	OK
DL	0.004674	0.004674	OK
BP MDA	0.264699	0.264699	OK
BP DL	0.129906	0.129906	OK
DL QSAS			
Gross Count Rate	1.377083	1.377083	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	1.376389	1.376389	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.183075	11.183075	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.698301	0.698301	OK
Chem Rec Factor	0.976645	0.976645	OK
Sys Err	0.061664	0.061664	OK
K	0.345627	0.345627	OK
K MDA	497.702232	497.702232	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-12
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	31.45694542
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	496.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	1.019900
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2466.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998100
Tracer EFF	0.219040
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.994586	0.994586	OK
CU	0.087530	0.087530	OK
TPU	0.148698	0.148698	OK
MDA	0.005434	0.005434	OK
DL	0.000000	0.000000	OK
BP MDA	0.069236	0.069236	OK
BP DL	0.031970	0.031970	OK
DL QSAS			
Gross Count Rate	0.344444	0.344444	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.344444	0.344444	OK
Δ t 1 (t2 - t1)	14.661806	14.661806	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.183075	11.183075	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.698301	0.698301	OK
Chem Rec Factor	0.976645	0.976645	OK
Sys Err	0.061664	0.061664	OK
K	0.346319	0.346319	OK
K MDA	498.699815	498.699815	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-12
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-03-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	29.80042267
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	242.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	1.083800
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.994000
Halflife Days 1 - Result Isotope	698.356481
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2480.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	7.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998000
Tracer EFF	0.217225
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.022083
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-228		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.464672**	**0.464672**	**OK**
CU	**0.058546**	**0.058546**	**OK**
TPU	**0.081127**	**0.081127**	**OK**
MDA	**0.005204**	**0.005204**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.048550**	**0.048550**	**OK**
BP DL	**0.021720**	**0.021720**	**OK**
DL QSAS			
Gross Count Rate	**0.168056**	**0.168056**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.168056**	**0.168056**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**0.984575**	**0.984575**	**OK**
Tracer DPM	**11.181954**	**11.181954**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.707065**	**0.707065**	**OK**
Chem Rec Factor	**0.988902**	**0.988902**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.361665**	**0.361665**	**OK**
K MDA	**520.797952**	**520.797952**	**OK**
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01647		
Batch ID	ARS1-B11-01647-13		
Analysis Code	ASP-A-009		
SDG	ARS1-11-00895		
Fraction	010		
Client	Summit Environmental Technologies		
Client Profile	Cuyahoga Falls		
Client ID	RP-SED-BG-041911		
Instr File Name	ApexAlpha		
Instr Detector	A_3_6B		
Instr keV	24.91238785		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	2480.000000
Count Mins	1440.000000
BKG Counts	7.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	1.083800
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	2680555.555556
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2480.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	7.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998000
Tracer EFF	0.217225
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.071883
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-229		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.647206**	**4.647206**	**OK**
CU	**0.183680**	**0.183680**	**OK**
TPU	**0.590935**	**0.590935**	**OK**
MDA	**0.028225**	**0.028225**	**OK**
DL	**0.011566**	**0.011566**	**OK**
BP MDA	**0.144018**	**0.144018**	**OK**
BP DL	**0.069612**	**0.069612**	**OK**
DL QSAS			
Gross Count Rate	**1.722222**	**1.722222**	**OK**
BKG Count Rate	**0.004861**	**0.004861**	**OK**
Net Count Rate	**1.717361**	**1.717361**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**0.999996**	**0.999996**	**OK**
Tracer DPM	**11.181954**	**11.181954**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.707065**	**0.707065**	**OK**
Chem Rec Factor	**0.988902**	**0.988902**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.369547**	**0.369547**	**OK**
K MDA	**532.147740**	**532.147740**	**OK**
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01647		
Batch ID	ARS1-B11-01647-13		
Analysis Code	ASP-A-009		
SDG	ARS1-11-00895		
Fraction	010		
Client	Summit Environmental Technologies		
Client Profile	Cuyahoga Falls		
Client ID	RP-SED-BG-041911		
Instr File Name	ApexAlpha		
Instr Detector	A_3_6B		
Instr keV	45.42248535		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: CHEJ **Date:** 5/10/1

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	251.000000
Count Mins	1440.000000
BKG Counts	10.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	1.083800
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	27534722.222222
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2480.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	7.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998000
Tracer EFF	0.217225
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.126236
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-230		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.453788**	**0.453788**	**OK**
CU	**0.059623**	**0.059623**	**OK**
TPU	**0.081011**	**0.081011**	**OK**
MDA	**0.032807**	**0.032807**	**OK**
DL	**0.013852**	**0.013852**	**OK**
BP MDA	**0.249071**	**0.249071**	**OK**
BP DL	**0.122246**	**0.122246**	**OK**
DL QSAS			
Gross Count Rate	**0.174306**	**0.174306**	**OK**
BKG Count Rate	**0.006944**	**0.006944**	**OK**
Net Count Rate	**0.167361**	**0.167361**	**OK**
Δ t 1 (t2 - t1)	**15.661806**	**15.661806**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**11.181954**	**11.181954**	**OK**
Tracer Δt	**226.643056**	**226.643056**	**OK**
Tracer DF	**0.999941**	**0.999941**	**OK**
Tracer Recovery	**0.707065**	**0.707065**	**OK**
Chem Rec Factor	**0.988902**	**0.988902**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.368809**	**0.368809**	**OK**
K MDA	**531.085386**	**531.085386**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01647
Batch ID	ARS1-B11-01647-13
Analysis Code	ASP-A-009
SDG	ARS1-11-00895
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SED-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_3_6B
Instr keV	19.59401321
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 5/10/11

Calculation Verification

Procedure	ARS-031
Variable	**Value**
Counts	265.000000
Count Mins	1440.000000
BKG Counts	7.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	1.083800
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/5/11 3:53 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	5131944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0246
Tracer Std - Isotope	Th-229
Tracer Counts	2480.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	7.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	9/20/10 12:27 PM
Tracer DPM/g	11.2044
Tracer Net Wt Added g	0.998000
Tracer EFF	0.217225
Tracer Plating Rec	0.715000
Tracer Abundance	1.000000
Tracer Halflife Days	2680555.5556
Sb	0.031067
Activity Units	pCi
Aliquot Units	g
Variables Intact Test	**OK**

Isotope	TH-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.484826	0.484826	OK
CU	0.060744	0.060744	OK
TPU	0.084400	0.084400	OK
MDA	0.028225	0.028225	OK
DL	0.011566	0.011566	OK
BP MDA	0.065133	0.065133	OK
BP DL	0.030085	0.030085	OK
DL QSAS			
Gross Count Rate	0.184028	0.184028	OK
BKG Count Rate	0.004861	0.004861	OK
Net Count Rate	0.179167	0.179167	OK
Δ t 1 (t2 - t1)	15.661806	15.661806	OK
DF	1.000000	1.000000	OK
Tracer DPM	11.181954	11.181954	OK
Tracer Δt	226.643056	226.643056	OK
Tracer DF	0.999941	0.999941	OK
Tracer Recovery	0.707065	0.707065	OK
Chem Rec Factor	0.988902	0.988902	OK
Sys Err	0.061664	0.061664	OK
K	0.369549	0.369549	OK
K MDA	532.149896	532.149896	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01647		
Batch ID	ARS1-B11-01647-13		
Analysis Code	ASP-A-009		
SDG	ARS1-11-00895		
Fraction	010		
Client	Summit Environmental Technologies		
Client Profile	Cuyahoga Falls		
Client ID	RP-SED-BG-041911		
Instr File Name	ApexAlpha		
Instr Detector	A_3_6B		
Instr keV	30.39453316		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: HCV **Date:** 5/10/11

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Thorium Alpha Spectroscopy Laboratory Records

Analysis Batch Report

Analysis Batch ID **ARS1-B11-01647**

Method	ARS-031	Analysis	ASP-A-009	Matrix	SO
Description	Thorium in Solid, Waste, Biota, Sediment, Veg				

ABatch Sample ID	Type	Blind Iso1	Blind Iso2	Blind Iso3	SDG	FR	Run	Client ID	Isotope Group	Lab Deadline
ARS1-B11-01647-01	LCS	B-11682								
ARS1-B11-01647-02	LCSD	B-11683								
ARS1-B11-01647-03	MBL									
ARS1-B11-01647-04	TRG				ARS1-11-00895	001	1	PR-SED-01-110420	STD	05/03/11
ARS1-B11-01647-05	TRG				ARS1-11-00895	002	1	RM-JM-SED-02-110420	STD	05/03/11
ARS1-B11-01647-06	TRG				ARS1-11-00895	003	1	RM-JM-SED-110420	STD	05/03/11
ARS1-B11-01647-07	TRG				ARS1-11-00895	004	1	RM-SED-BG-110419	STD	05/03/11
ARS1-B11-01647-08	TRG				ARS1-11-00895	005	1	RP-JM-SED-01	STD	05/03/11
ARS1-B11-01647-09	TRG				ARS1-11-00895	006	1	RP-JM-SED-110420	STD	05/03/11
ARS1-B11-01647-10	TRG				ARS1-11-00895	007	1	RP-SED-01-110419	STD	05/03/11
ARS1-B11-01647-11	TRG				ARS1-11-00895	008	1	RP-SED-02-110420	STD	05/03/11
ARS1-B11-01647-12	TRG				ARS1-11-00895	009	1	RP-SED-03-110420	STD	05/03/11
ARS1-B11-01647-13	TRG				ARS1-11-00895	010	1	RP-SED-BG-041911	STD	05/03/11

American Radiation Services
Baton Rouge Laboratory

LCS Report
Analytical Batch: ARS1-B11-01647

BlindID	ABatch	ABatchSampleID	BlindGroup	StdID	Isotope	ExpectedAddition	ExpectedValue	EmptyWt	GrossWt	NetWt	UserID	ModDate	ExpectedValue_CT	MidPointCountDate	KnownValue
B-11682	ARS1-B11-01647	ARS1-B11-01647-01	B-Th230	S-0231	Th-230	1	5.656931968	13.1912	14.2214	1.0302	VMULLIGAN	4/28/2011	5.656930971	5/5/2011	5.827770287
B-11683	ARS1-B11-01647	ARS1-B11-01647-02	B-Th230	S-0231	Th-230	1	5.656931968	13.4853	14.5137	1.0284	VMULLIGAN	4/28/2011	5.656930971	5/5/2011	5.817587811

ARS-031

ID_31001_031	ABatch	ABatchSampleID	ClientID	Aliquot	AliquotUnits	UserID	ModDate	IC_ID
2917	ARS1-B11-01647	ARS1-B11-01647-01		1	g	JBROWN	05/02/2011 10:04:12	
2918	ARS1-B11-01647	ARS1-B11-01647-02		1	g	JBROWN	05/02/2011 10:04:12	
2919	ARS1-B11-01647	ARS1-B11-01647-03		1	g	JBROWN	05/02/2011 10:04:12	
2920	ARS1-B11-01647	ARS1-B11-01647-04	PR-SED-01-110420	1.0227	g	JBROWN	05/02/2011 10:04:12	85785
2921	ARS1-B11-01647	ARS1-B11-01647-05	RM-JM-SED-02-110420	1.1092	g	JBROWN	05/02/2011 10:04:12	85786
2922	ARS1-B11-01647	ARS1-B11-01647-06	RM-JM-SED-110420	1.0785	g	JBROWN	05/02/2011 10:04:12	85787
2923	ARS1-B11-01647	ARS1-B11-01647-07	RM-SED-BG-110419	1.0607	g	JBROWN	05/02/2011 10:04:12	85788
2924	ARS1-B11-01647	ARS1-B11-01647-08	RP-JM-SED-01	1.0217	g	JBROWN	05/02/2011 10:04:13	85789
2925	ARS1-B11-01647	ARS1-B11-01647-09	RP-JM-SED-110420	1.1082	g	JBROWN	05/02/2011 10:04:13	85790
2926	ARS1-B11-01647	ARS1-B11-01647-10	RP-SED-01-110419	1.0152	g	JBROWN	05/02/2011 10:04:13	85791
2927	ARS1-B11-01647	ARS1-B11-01647-11	RP-SED-02-110420	1.064	g	JBROWN	05/02/2011 10:04:13	85794
2928	ARS1-B11-01647	ARS1-B11-01647-12	RP-SED-03-110420	1.0199	g	JBROWN	05/02/2011 10:04:13	85792
2929	ARS1-B11-01647	ARS1-B11-01647-13	RP-SED-BG-041911	1.0838	g	JBROWN	05/02/2011 10:04:13	85793

ARS1-B11-01647

ABatch	ABatchSampleID	ClientID	SampleType	EmptyWt	FilledWt	NetWt	Exp Val	StdID	Isotope	TracerDate	UserID	ModDate	HL days	Ref Date	Cert dpm/g	Curr ACT
ARS1-B11-01647	ARS1-B11-01647-01		LCS	59.022	60.025	1.003	11.240	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-02		LCSD	66.050	67.034	0.984	11.030	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-03		MBL	82.240	83.259	1.019	11.420	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-04	PR-SED-01-110420	TRG	74.915	75.928	1.013	11.344	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-05	RM-JM-SED-02-110420	TRG	80.936	81.948	1.012	11.336	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-06	RM-JM-SED-110420	TRG	70.165	71.173	1.008	11.289	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-07	RM-SED-BG-110419	TRG	73.004	74.011	1.007	11.282	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-08	RP-JM-SED-01	TRG	75.939	76.944	1.005	11.259	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-09	RP-JM-SED-110420	TRG	81.275	82.280	1.005	11.254	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-10	RP-SED-01-110419	TRG	64.686	65.687	1.001	11.215	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-11	RP-SED-02-110420	TRG	77.849	78.849	1.000	11.199	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-12	RP-SED-03-110420	TRG	73.610	74.609	0.998	11.182	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204
ARS1-B11-01647	ARS1-B11-01647-13	RP-SED-BG-041911	TRG	72.661	73.659	0.998	11.181	S-0246	Th-229	5/2/2011	JBROWN	5/2/2011	2680555.556	9/20/2010	11.204	11.204

Technical Notes

Batch	ARS1-B11-01647
Analysis Code	ASP-A-009
Procedure No	ARS-031
Matrix	SO

#	Date	Dept.	Batch Technical Notes	
1	05/03/11 16:22	CHEMISTRY	B11-01647-11 electroplated with a very light shadow and the plate seems to have white particles that plated on the disk. As a result, tracer recovery and activity may be affected.	JBROWN

5/5/2011 03:51:46

Apex-Alpha™

ASSIGNED SAMPLES REPORT

Date : 5/5/2011
Time : 03:51:46
User : countroom

SAMPLE	CHAMBER	GEOMETRY	DEVICE	CERTIFICATE
11-01657-01	A_1_1A	Shelf 2	Alpha Analyst10139	
11-01657-02	A_1_1B	Shelf 2	Alpha Analyst10139	
11-01657-03	A_1_2A	Shelf 2	Alpha Analyst10139	
11-01657-04	A_1_2B	Shelf 2	Alpha Analyst10139	
11-01657-05	A_1_3A	Shelf 2	Alpha Analyst10139	
11-01657-06	A_1_3B	Shelf 2	Alpha Analyst10139	
11-01657-07	A_1_4A	Shelf 2	Alpha Analyst10139	
11-01657-08	A_1_4B	Shelf 2	Alpha Analyst10139	
11-01657-09	A_1_5A	Shelf 2	Alpha Analyst10139	
11-01657-10	A_1_5B	Shelf 2	Alpha Analyst10139	
11-01657-11	A_1_6A	Shelf 2	Alpha Analyst10139	
11-01657-12	A_1_6B	Shelf 2	Alpha Analyst10139	
11-01657-13	A_2_1A	Shelf 2	Alpha Analyst10139	
11-01657-14	A_2_1B	Shelf 2	Alpha Analyst10139	
11-01657-15	A_2_2A	Shelf 2	Alpha Analyst10139	
11-01657-16	A_2_3B	Shelf 2	Alpha Analyst10139	
11-01647-01	A_2_4A	Shelf 2	Alpha Analyst10139	
11-01647-02	A_2_4B	Shelf 2	Alpha Analyst10139	
11-01647-03	A_2_5A	Shelf 2	Alpha Analyst10139	
11-01647-04	A_2_5B	Shelf 2	Alpha Analyst10139	
11-01647-05	A_3_1A	Shelf 2	Alpha Analyst10139	
11-01647-06	A_3_1B	Shelf 2	Alpha Analyst10139	
11-01647-07	A_3_2B	Shelf 2	Alpha Analyst10139	
11-01647-08	A_3_3A	Shelf 2	Alpha Analyst10139	
11-01647-09	A_3_3B	Shelf 2	Alpha Analyst10139	
11-01647-10	A_3_4B	Shelf 2	Alpha Analyst10139	
11-01647-11	A_3_5A	Shelf 2	Alpha Analyst10139	
11-01647-12	A_3_6A	Shelf 2	Alpha Analyst10139	
11-01647-13	A_3_6B	Shelf 2	Alpha Analyst10139	

ALPHA SPECTRUM ANALYSIS

Sample Description: LCS
Batch Identification: B11-01647
Sample Identification: 11-01647-01
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 4A
Chamber Serial Number: 12044982A
Detector Serial Number: 55800
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:39
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/13/10 09:49:41
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

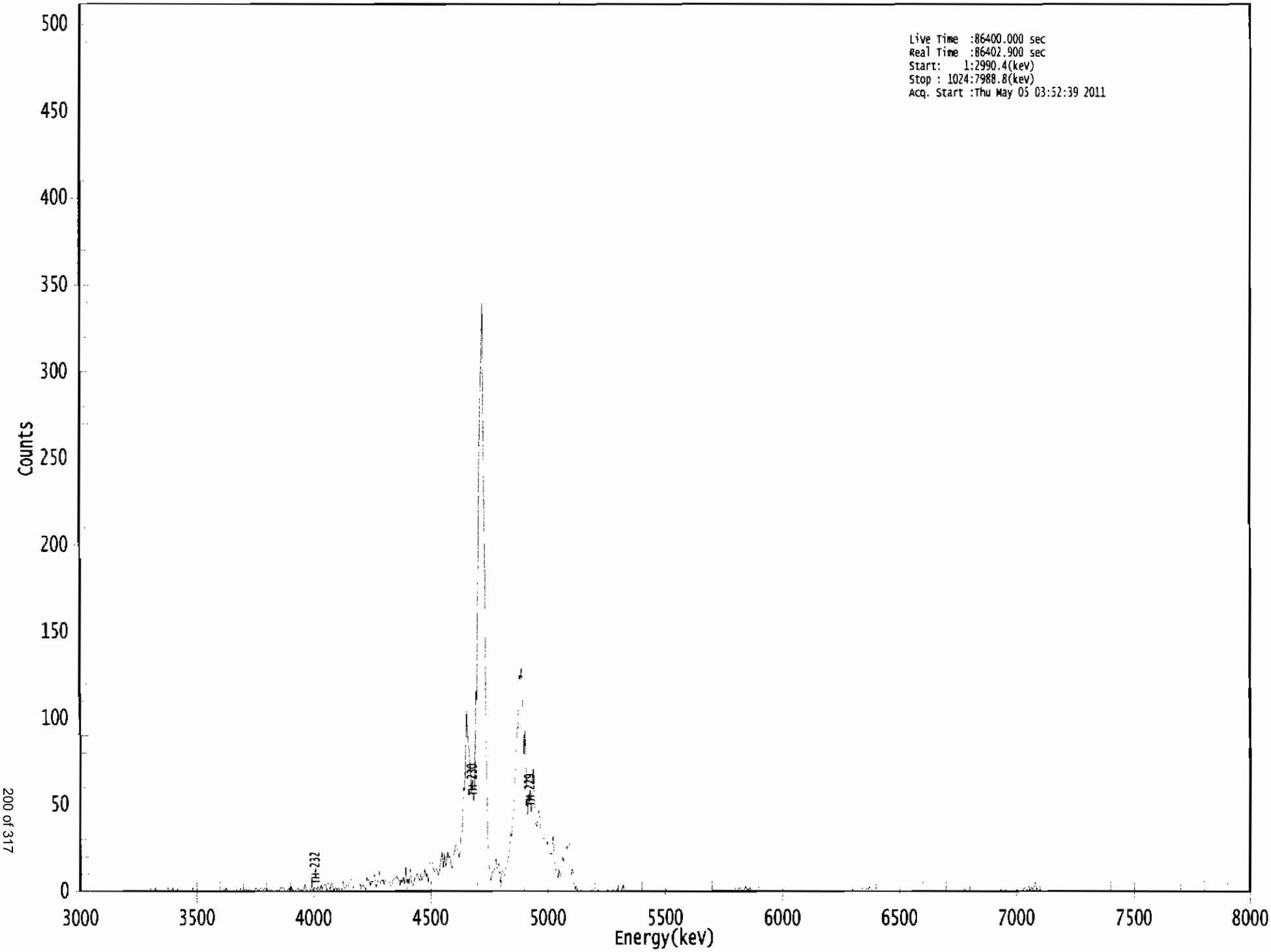
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-229	4919.829	2513.00	50.13	0.00	0.00E+000	49.1
TH-230	4674.833	3495.00	59.12	0.00	0.00E+000	31.0
TH-232	4002.684	39.00	6.24	0.00	0.00E+000	5.7
<not ID'd>	5316.149	14.00	3.74	0.00	0.00E+000	7.3

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-229	3.5113E+000	2.86	3.7811E-003	2.05
TH-230	4.8688E+000	2.66	3.7697E-003	2.05
TH-232	5.4232E-002	16.14	3.7629E-003	2.05

Errors quoted at 1.000 sigma

0000012152.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: LCSD
Batch Identification: B11-01647
Sample Identification: 11-01647-02
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 4B
Chamber Serial Number: 12044982B
Detector Serial Number: 55801
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:41
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2158 +/- 0.0044 on 4/13/10 09:50:10
Effective Efficiency: 0.2158 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

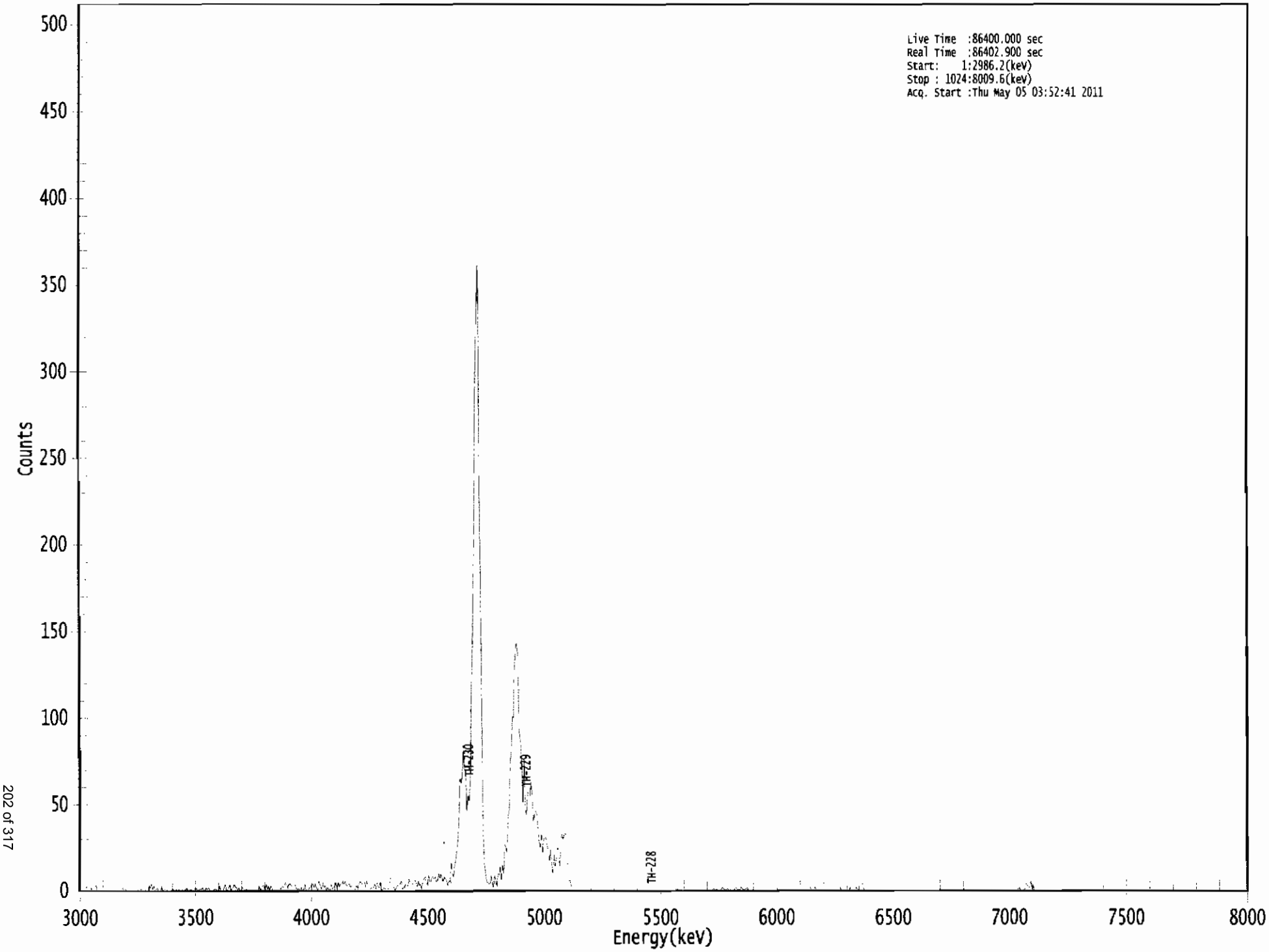
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5451.223	1.00	1.00	0.00	0.00E+000	4.9
TH-229	4915.167	2755.00	52.49	0.00	0.00E+000	50.4
TH-230	4670.242	3395.00	58.27	0.00	0.00E+000	30.0
<not ID'd>	3881.395	58.00	7.62	0.00	0.00E+000	14.7

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	1.4503E-003	100.02	3.9246E-003	2.05
TH-229	4.0125E+000	2.80	3.9411E-003	2.05
TH-230	4.9297E+000	2.68	3.9293E-003	2.05

Errors quoted at 1.000 sigma

0000012154.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: MBL
Batch Identification: B11-01647
Sample Identification: 11-01647-03
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 5A
Chamber Serial Number: 12044983A
Detector Serial Number: 55802
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:43
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/13/10 20:11:11
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

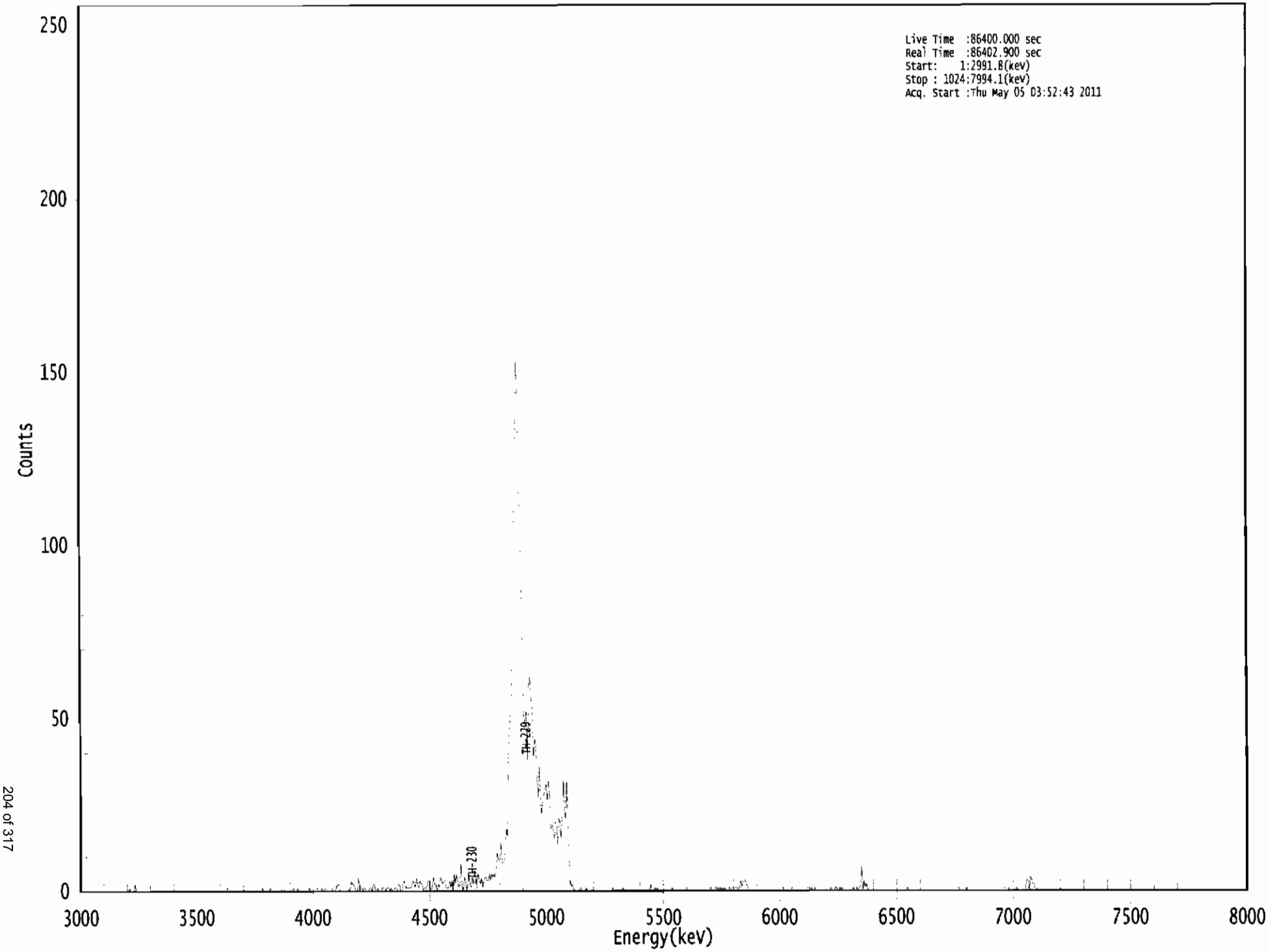
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5448.936	4.00	2.00	0.00	0.00E+000	4.9
TH-229	4911.558	2675.00	51.72	0.00	0.00E+000	42.7
TH-230	4676.339	44.00	6.63	0.00	0.00E+000	7.3
TH-232	4003.985	3.00	1.73	0.00	0.00E+000	4.9

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	5.7176E-003	50.04	3.8680E-003	2.06
TH-229	3.8398E+000	2.82	3.8843E-003	2.06
TH-230	6.2969E-002	15.22	3.8726E-003	2.06
TH-232	4.2856E-003	57.77	3.8657E-003	2.06

Errors quoted at 1.000 sigma

0000012155.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00895-001
Batch Identification: B11-01647
Sample Identification: 11-01647-04
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 5B
Chamber Serial Number: 12044983B
Detector Serial Number: 55803
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:46
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2130 +/- 0.0044 on 4/13/10 20:11:42
Effective Efficiency: 0.2130 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

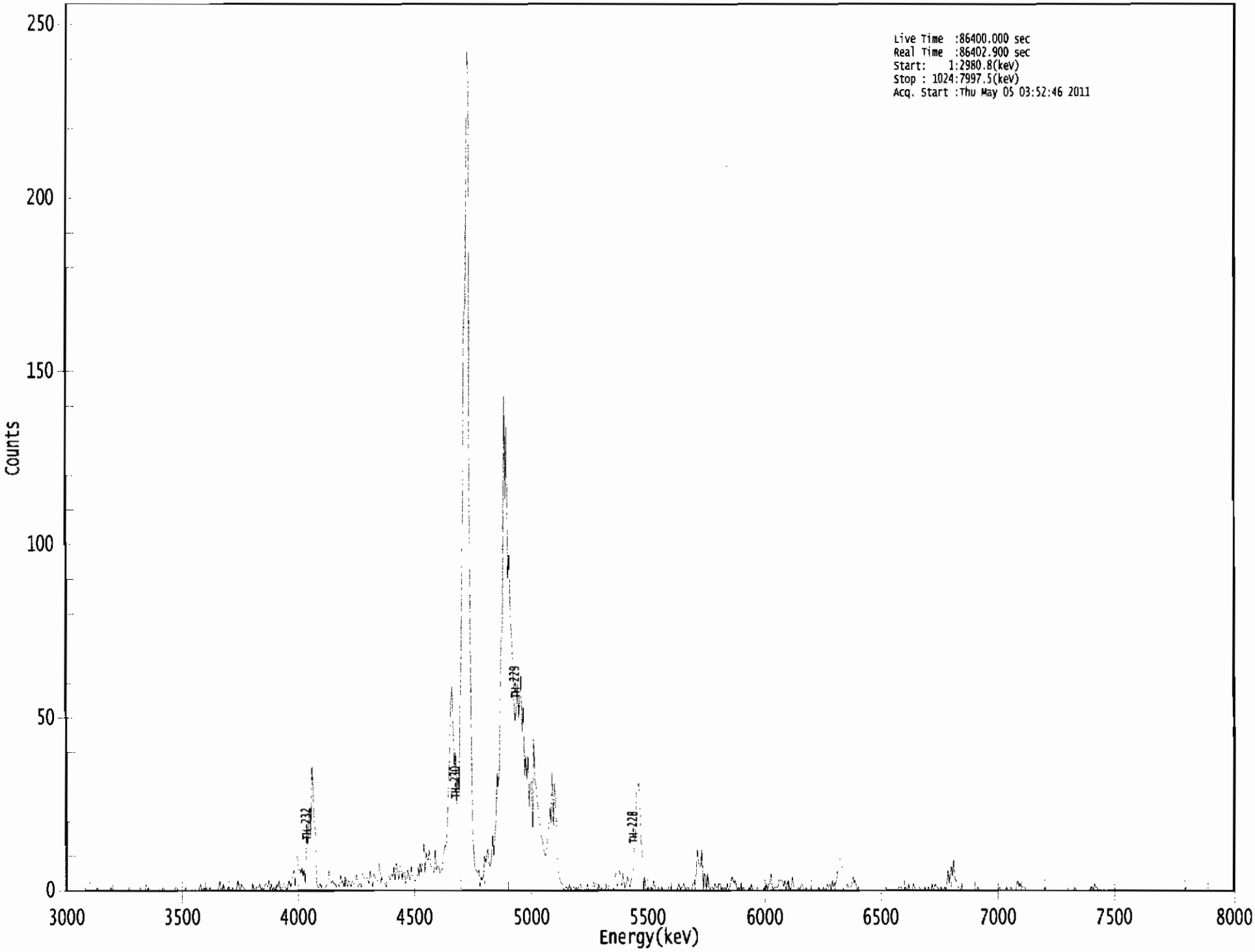
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5422.918	233.00	15.26	0.00	0.00E+000	25.9
TH-229	4919.964	2543.00	50.43	0.00	0.00E+000	45.3
TH-230	4665.310	2253.00	47.47	0.00	0.00E+000	26.8
TH-232	4018.480	278.00	16.67	0.00	0.00E+000	18.9

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	3.4232E-001	6.87	3.9756E-003	2.06
TH-229	3.7519E+000	2.86	3.9924E-003	2.06
TH-230	3.3140E+000	2.94	3.9804E-003	2.06
TH-232	4.0818E-001	6.34	3.9732E-003	2.06

Errors quoted at 1.000 sigma

0000012156.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-002
Batch Identification: B11-01647
Sample Identification: 11-01647-05
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 1A
Chamber Serial Number: 12044985A
Detector Serial Number: 55806
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:48
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2230 +/- 0.0046 on 5/28/10 09:42:00
Effective Efficiency: 0.2230 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

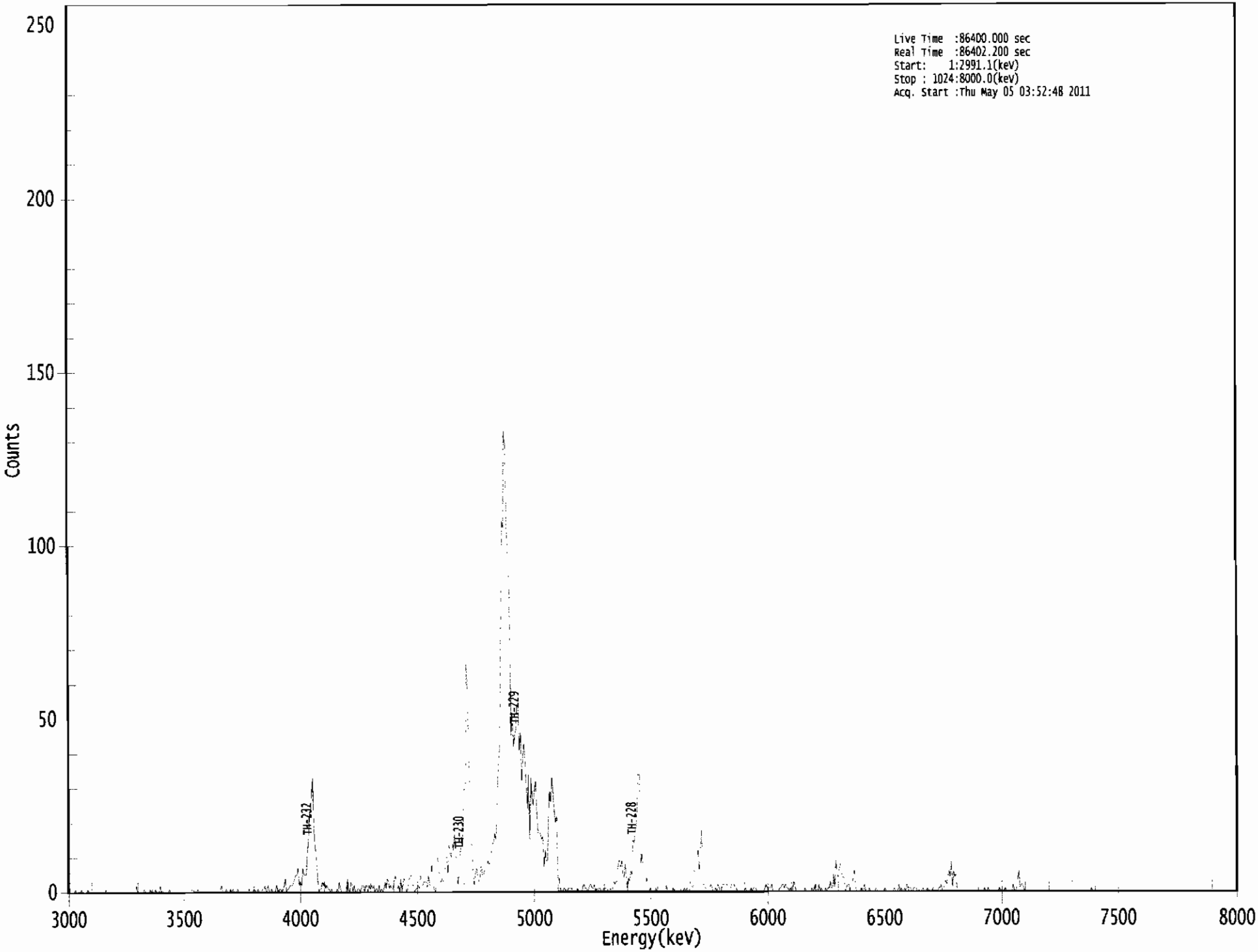
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5416.195	279.00	16.70	0.00	0.00E+000	24.0
TH-229	4916.278	2379.00	48.77	0.00	0.00E+000	42.7
TH-230	4676.820	503.00	22.43	0.00	0.00E+000	14.4
TH-232	4024.787	239.00	15.46	0.00	0.00E+000	24.2

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	3.9155E-001	6.33	3.7977E-003	2.06
TH-229	3.3528E+000	2.90	3.8137E-003	2.06
TH-230	7.0677E-001	4.91	3.8022E-003	2.06
TH-232	3.3522E-001	6.79	3.7954E-003	2.06

Errors quoted at 1.000 sigma

0000012157.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-003
Batch Identification: B11-01647
Sample Identification: 11-01647-06
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 1B
Chamber Serial Number: 12044985B
Detector Serial Number: 55807
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:51
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2098 +/- 0.0043 on 4/18/10 15:12:35
Effective Efficiency: 0.2098 +/- 0.0043

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

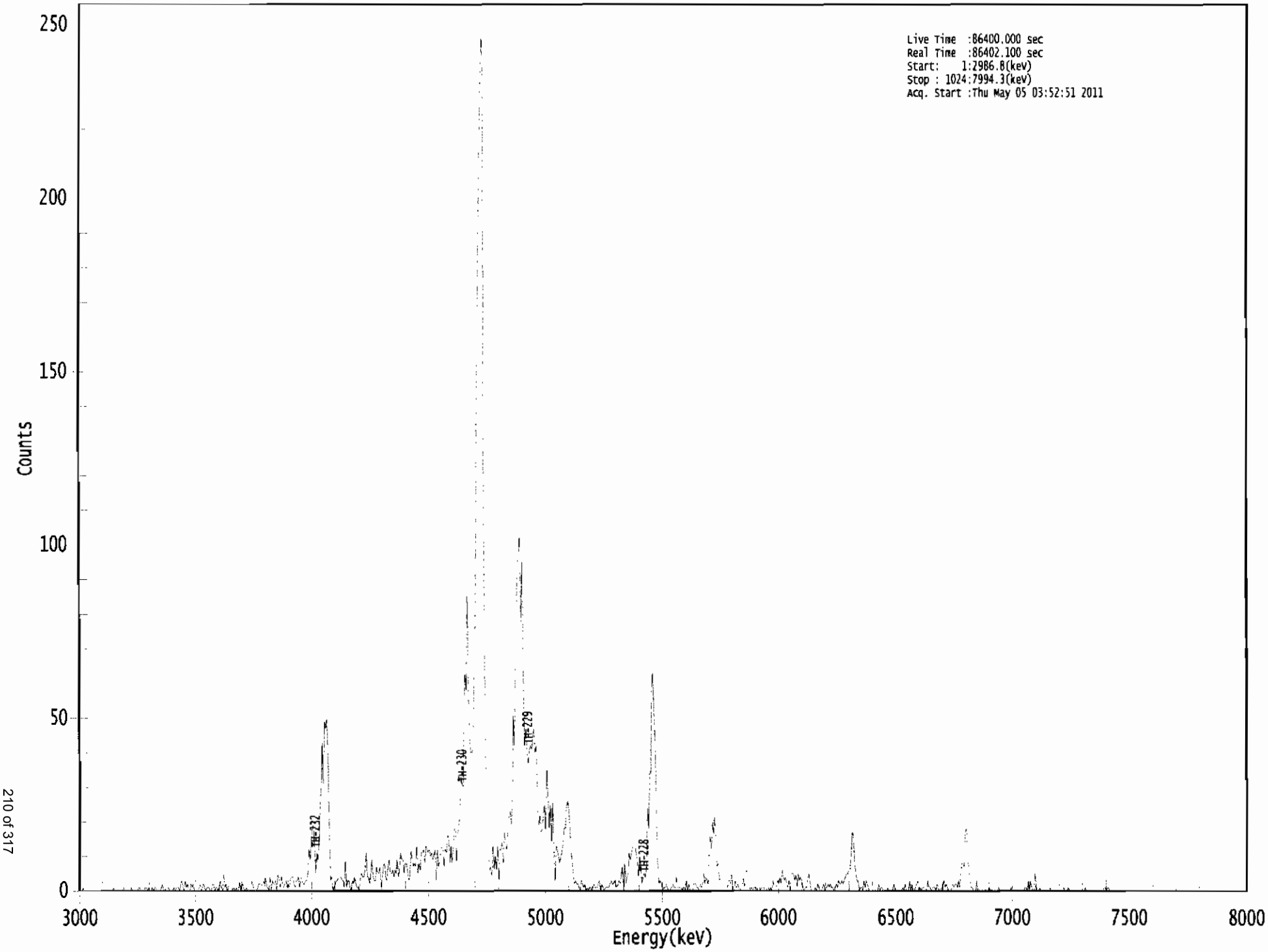
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5414.146	539.00	23.22	0.00	0.00E+000	27.0
TH-229	4920.519	2044.00	45.21	0.00	0.00E+000	40.0
TH-230	4636.126	2960.00	54.41	0.00	0.00E+000	30.5
TH-232	4010.461	551.00	23.47	0.00	0.00E+000	37.2

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	8.0406E-001	4.77	4.0368E-003	2.06
TH-229	3.0620E+000	3.02	4.0538E-003	2.06
TH-230	4.4209E+000	2.76	4.0416E-003	2.06
TH-232	8.2147E-001	4.73	4.0343E-003	2.06

Errors quoted at 1.000 sigma

0000012158.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-004
Batch Identification: B11-01647
Sample Identification: 11-01647-07
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 2B
Chamber Serial Number: 12045128B
Detector Serial Number: 55809
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:54
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2206 +/- 0.0045 on 4/18/10 15:13:08
Effective Efficiency: 0.2206 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

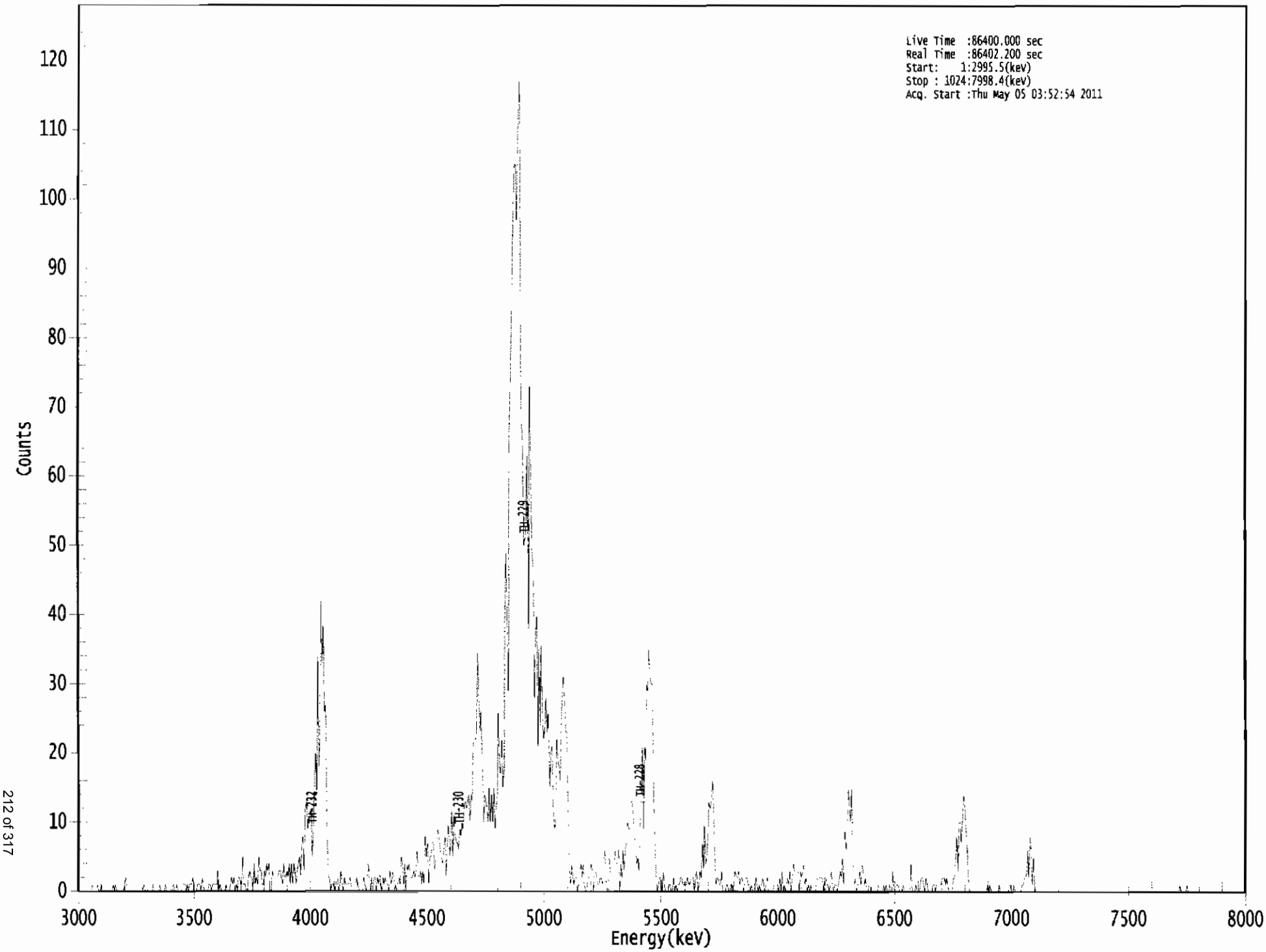
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5411.662	462.00	21.49	0.00	0.00E+000	39.3
TH-229	4916.210	2752.00	52.46	0.00	0.00E+000	61.6
TH-230	4634.459	602.00	24.54	0.00	0.00E+000	41.3
TH-232	4008.929	472.00	21.73	0.00	0.00E+000	28.5

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	6.5561E-001	5.09	3.8400E-003	2.05
TH-229	3.9217E+000	2.80	3.8562E-003	2.05
TH-230	8.5530E-001	4.56	3.8446E-003	2.05
TH-232	6.6939E-001	5.04	3.8377E-003	2.05

Errors quoted at 1.000 sigma

0000012159.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00895-005
Batch Identification: B11-01647
Sample Identification: 11-01647-08
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 3A
Chamber Serial Number: 12045129A
Detector Serial Number: 55810
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:57
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2191 +/- 0.0045 on 4/18/10 15:15:02
Effective Efficiency: 0.2191 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

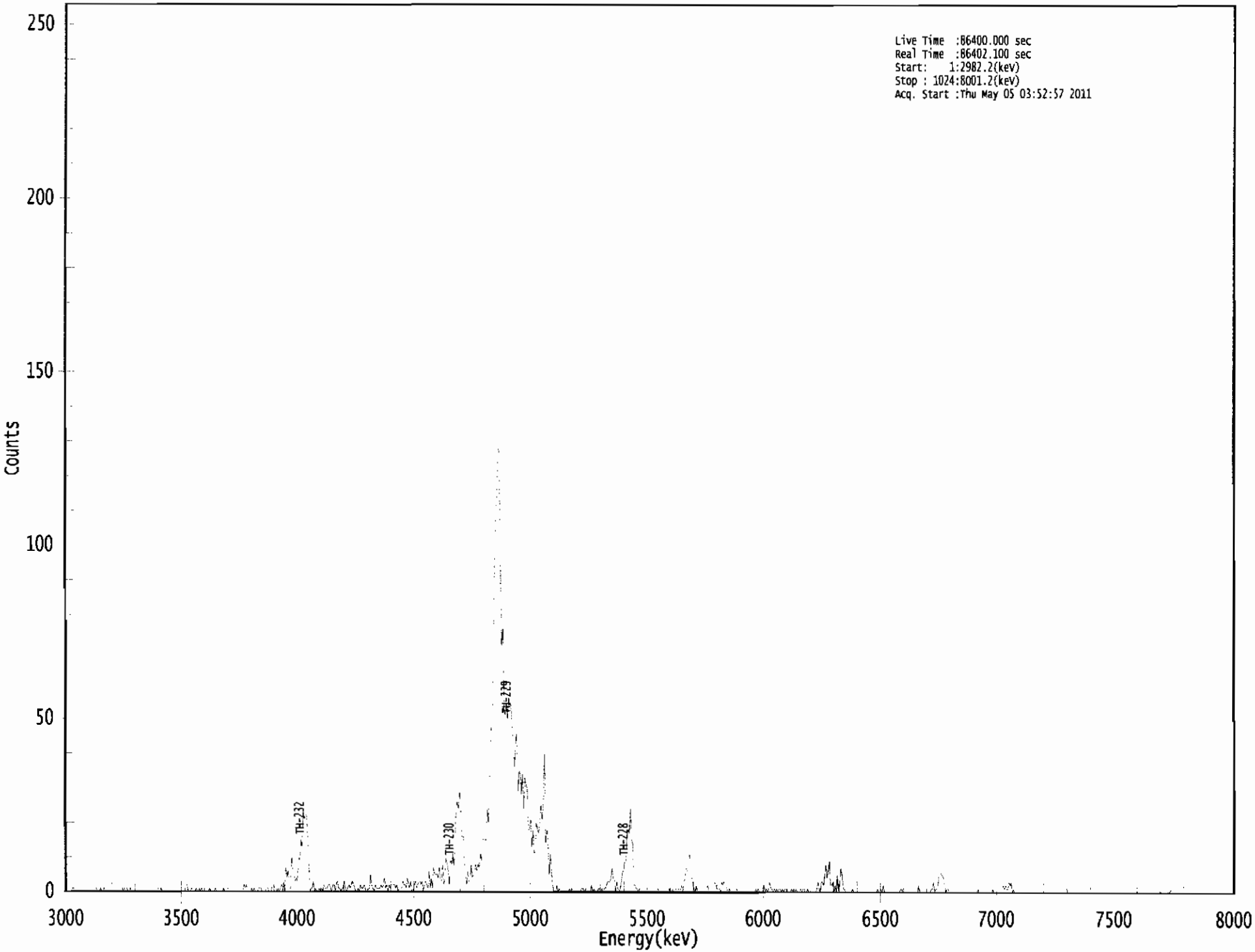
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5386.442	183.00	13.53	0.00	0.00E+000	28.2
TH-229	4888.035	2499.00	49.99	0.00	0.00E+000	45.0
TH-230	4640.022	343.00	18.52	0.00	0.00E+000	35.1
TH-232	3996.017	214.00	14.63	0.00	0.00E+000	34.8

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	2.6144E-001	7.67	3.8660E-003	2.06
TH-229	3.5853E+000	2.87	3.8823E-003	2.06
TH-230	4.9062E-001	5.78	3.8706E-003	2.06
TH-232	3.0555E-001	7.14	3.8637E-003	2.06

Errors quoted at 1.000 sigma

0000012160.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-006
Batch Identification: B11-01647
Sample Identification: 11-01647-09
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 3B
Chamber Serial Number: 12045129B
Detector Serial Number: 55811
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:59
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2124 +/- 0.0044 on 4/18/10 15:15:32
Effective Efficiency: 0.2124 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

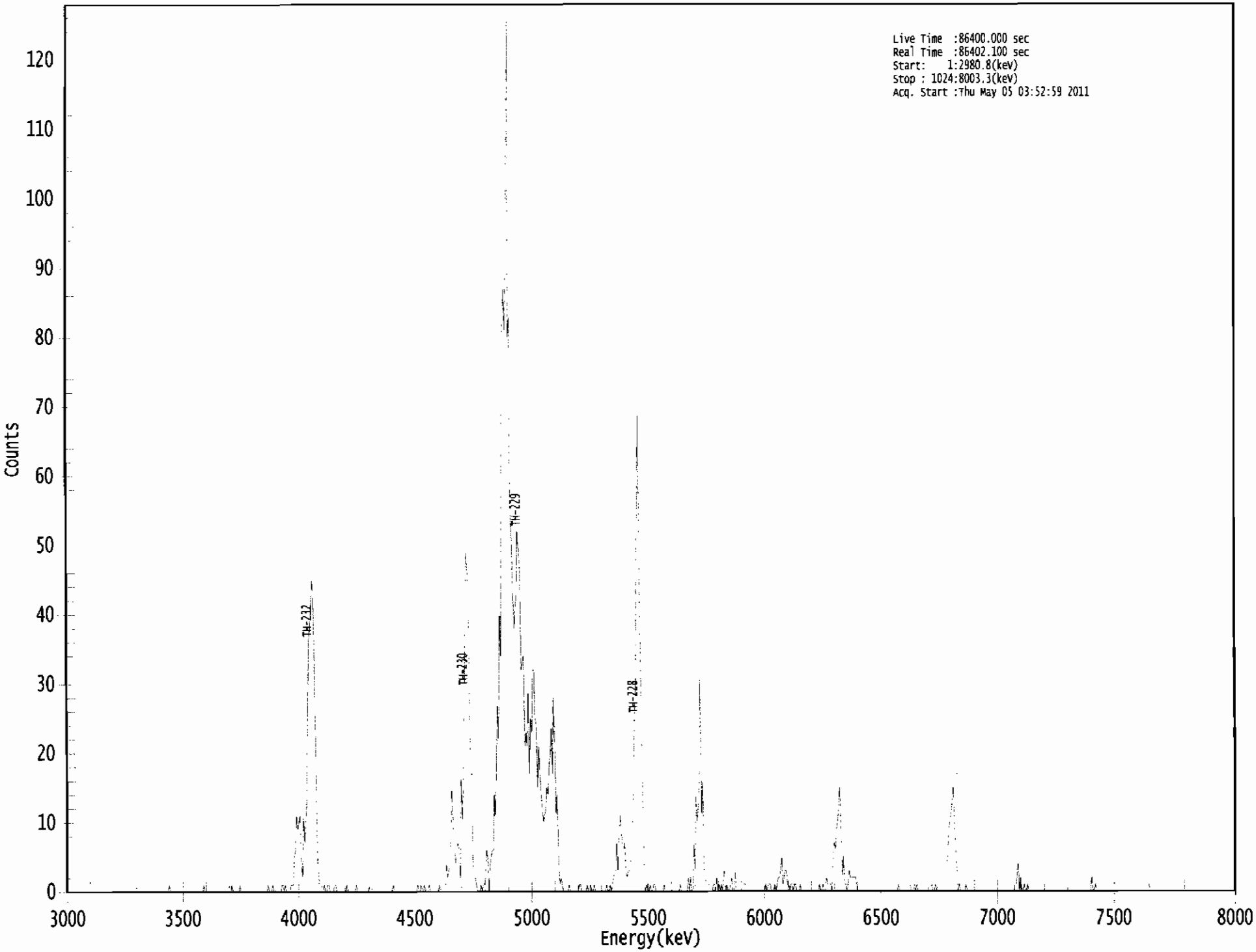
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5426.033	426.00	20.64	0.00	0.00E+000	20.6
TH-229	4924.347	1977.00	44.46	0.00	0.00E+000	35.8
TH-230	4692.439	370.00	19.24	0.00	0.00E+000	25.3
TH-232	4026.754	393.00	19.82	0.00	0.00E+000	34.5

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	6.2778E-001	5.26	3.9878E-003	2.06
TH-229	2.9257E+000	3.05	4.0046E-003	2.06
TH-230	5.4591E-001	5.59	3.9926E-003	2.06
TH-232	5.7880E-001	5.45	3.9854E-003	2.06

Errors quoted at 1.000 sigma

0000012161.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-007
Batch Identification: B11-01647
Sample Identification: 11-01647-10
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 4B
Chamber Serial Number: 12045130B
Detector Serial Number: 55813
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:53:01
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2157 +/- 0.0044 on 4/18/10 15:16:34
Effective Efficiency: 0.2157 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

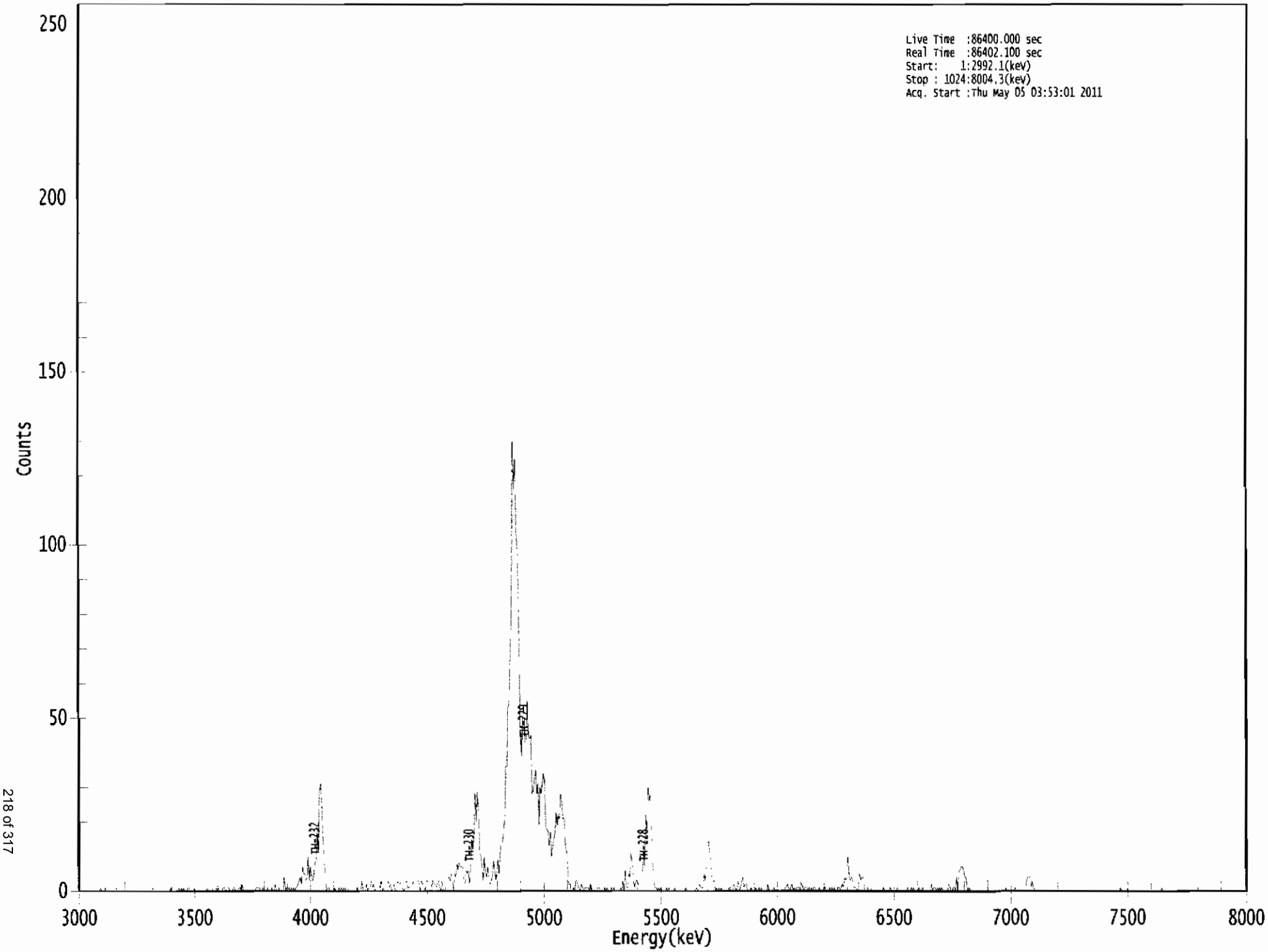
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5420.112	239.00	15.46	0.00	0.00E+000	28.3
TH-229	4914.200	2365.00	48.63	0.00	0.00E+000	41.1
TH-230	4675.208	279.00	16.70	0.00	0.00E+000	23.9
TH-232	4015.490	230.00	15.17	0.00	0.00E+000	18.8

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	3.4674E-001	6.79	3.9259E-003	2.05
TH-229	3.4456E+000	2.91	3.9425E-003	2.05
TH-230	4.0526E-001	6.33	3.9306E-003	2.05
TH-232	3.3348E-001	6.91	3.9236E-003	2.05

Errors quoted at 1.000 sigma

0000012162.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-008
Batch Identification: B11-01647
Sample Identification: 11-01647-11
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 5A
Chamber Serial Number: 12045131A
Detector Serial Number: 55814
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:53:02
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2132 +/- 0.0044 on 4/19/10 14:24:55
Effective Efficiency: 0.2132 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

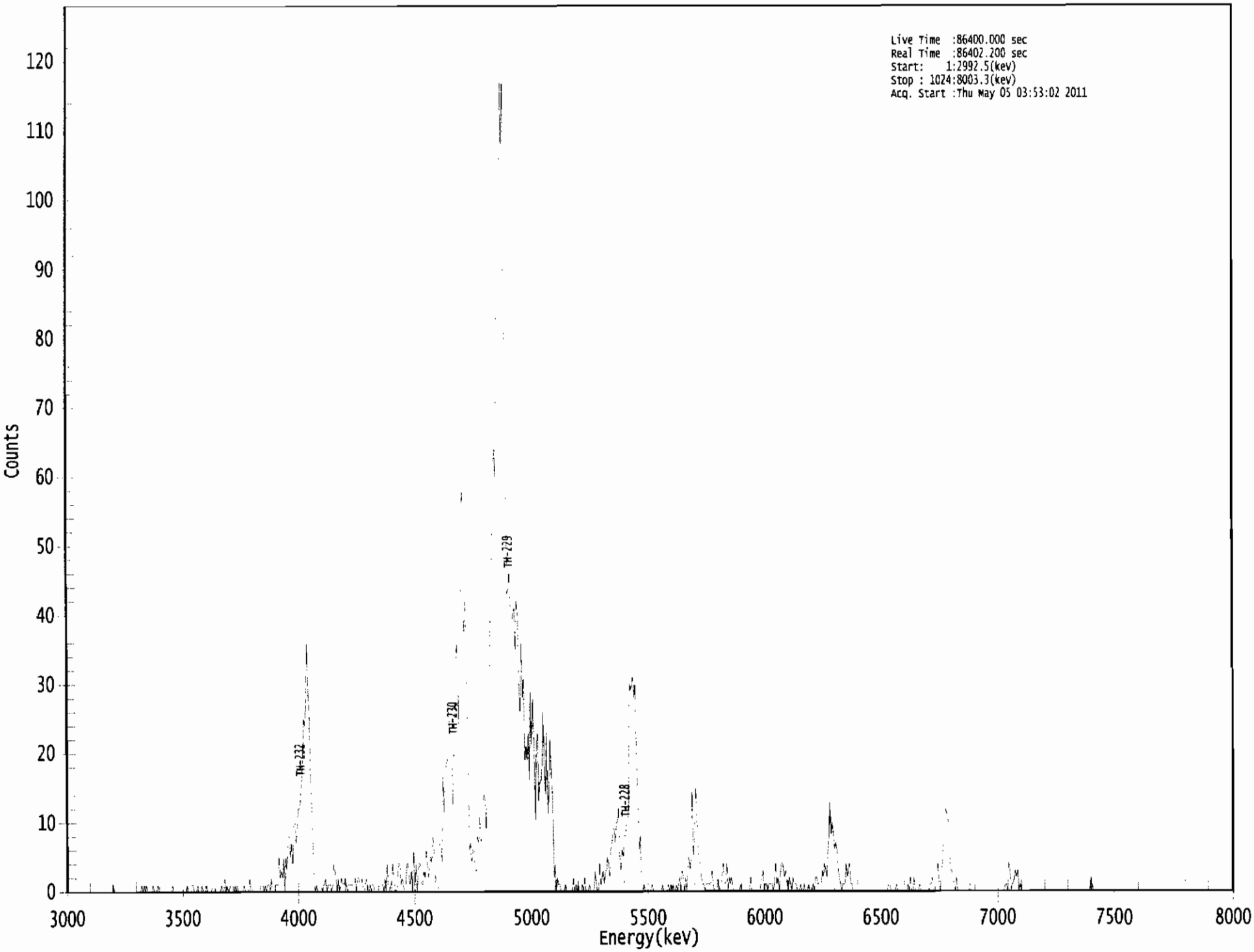
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5404.105	391.00	19.77	0.00	0.00E+000	36.7
TH-229	4903.505	2360.00	48.58	0.00	0.00E+000	55.8
TH-230	4661.461	802.00	28.32	0.00	0.00E+000	35.0
TH-232	4006.693	371.00	19.26	0.00	0.00E+000	34.9

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	5.7394E-001	5.46	3.9721E-003	2.06
TH-229	3.4788E+000	2.91	3.9889E-003	2.06
TH-230	1.1787E+000	4.09	3.9769E-003	2.06
TH-232	5.4426E-001	5.58	3.9697E-003	2.06

Errors quoted at 1.000 sigma

0000012163.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-009
Batch Identification: B11-01647
Sample Identification: 11-01647-12
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 6A
Chamber Serial Number: 12045132A
Detector Serial Number: 55816
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:53:04
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/19/10 14:26:08
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

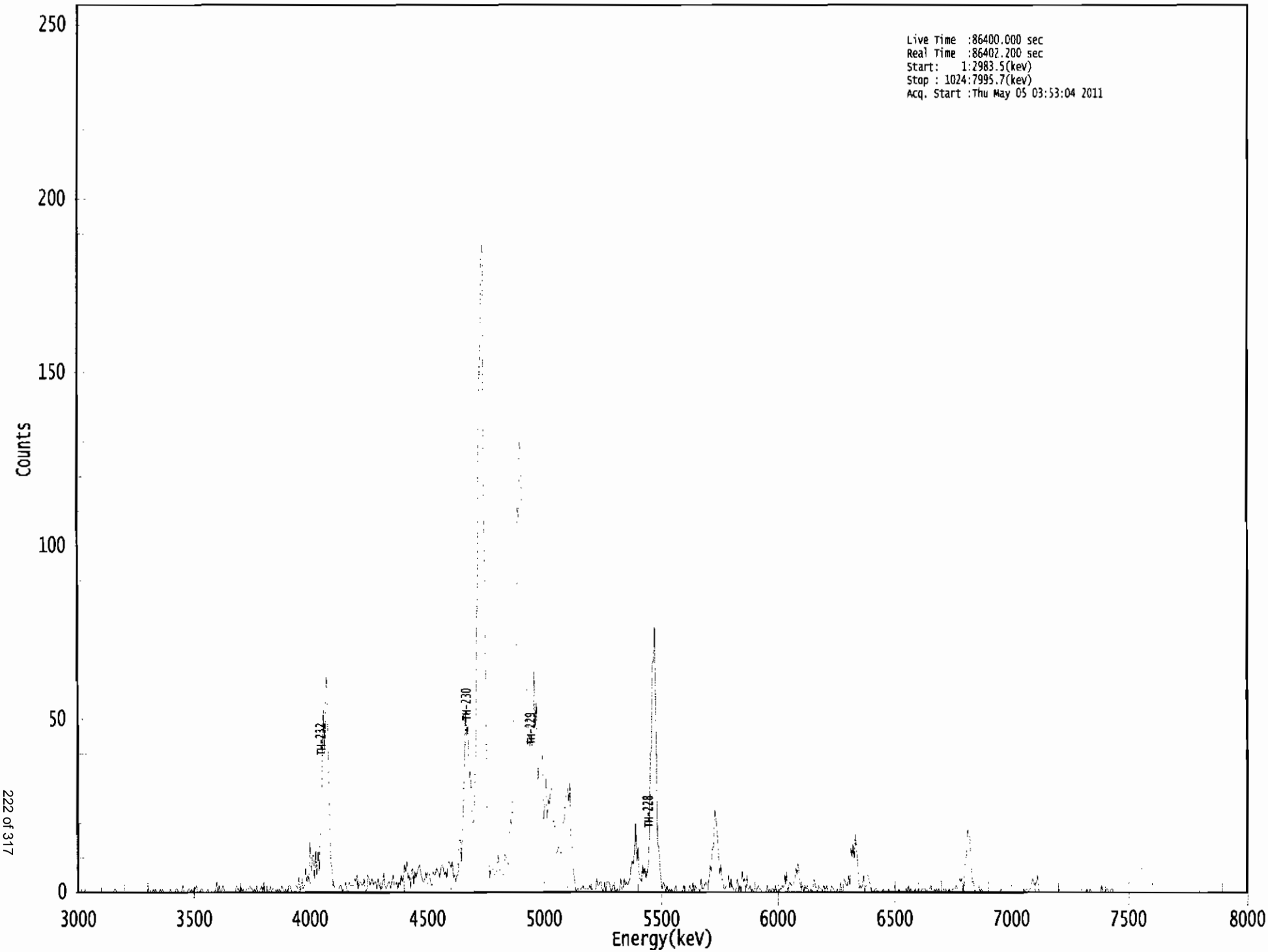
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5432.678	553.00	23.52	0.00	0.00E+000	26.1
TH-229	4931.162	2466.00	49.66	0.00	0.00E+000	45.9
TH-230	4656.996	1983.00	44.53	0.00	0.00E+000	31.5
TH-232	4035.130	496.00	22.27	0.00	0.00E+000	29.8

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	7.9022E-001	4.72	3.8668E-003	2.05
TH-229	3.5387E+000	2.88	3.8831E-003	2.05
TH-230	2.8370E+000	3.04	3.8715E-003	2.05
TH-232	7.0834E-001	4.94	3.8645E-003	2.05

Errors quoted at 1.000 sigma

0000012164.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00895-010
Batch Identification: B11-01647
Sample Identification: 11-01647-13
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 3 6B
Chamber Serial Number: 12045132B
Detector Serial Number: 55817
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:53:06
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2172 +/- 0.0045 on 4/19/10 14:26:42
Effective Efficiency: 0.2172 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

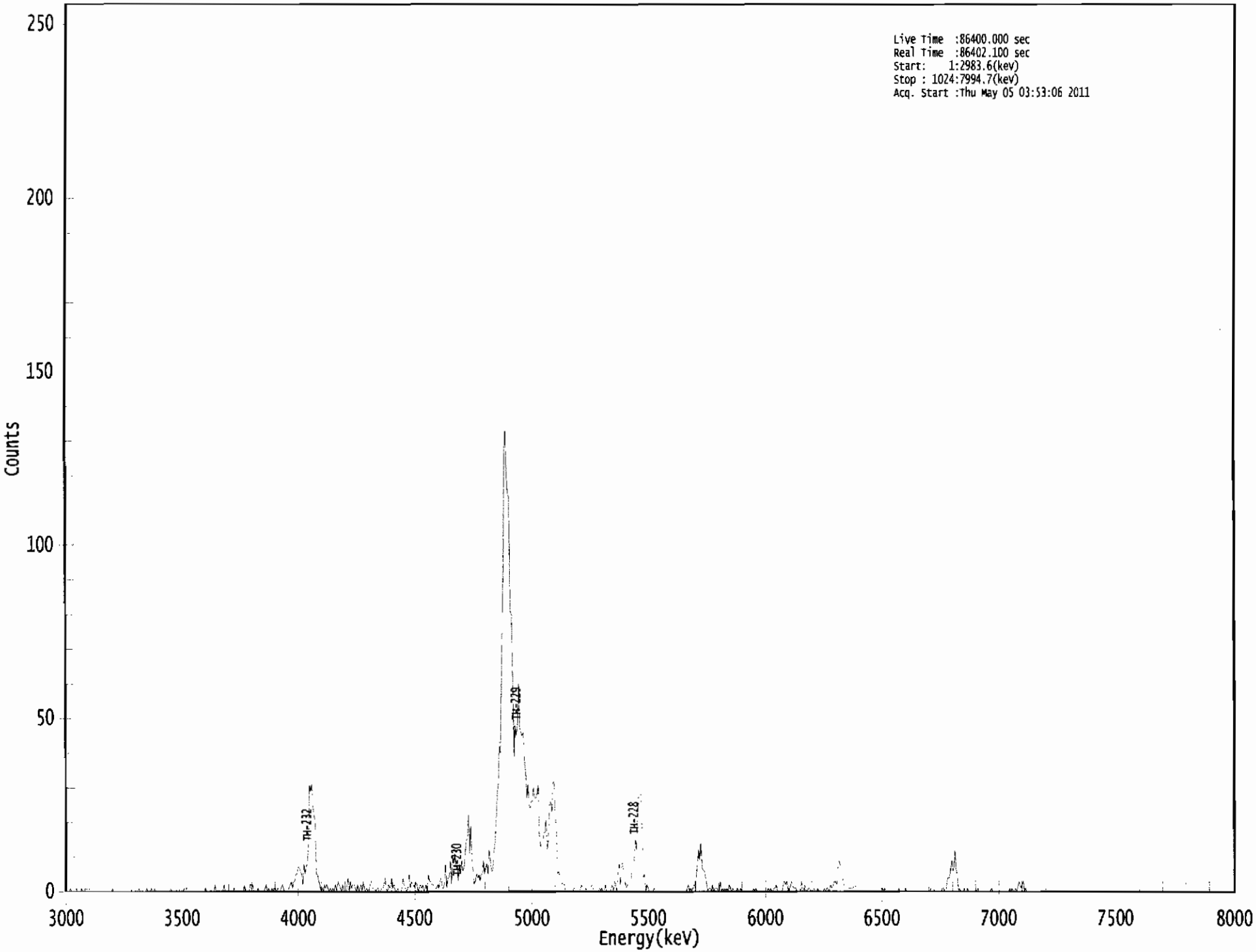
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-228	5425.477	242.00	15.56	0.00	0.00E+000	24.9
TH-229	4921.361	2480.00	49.80	0.00	0.00E+000	45.4
TH-230	4670.316	251.00	15.84	0.00	0.00E+000	19.6
TH-232	4028.449	265.00	16.28	0.00	0.00E+000	30.4

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
TH-228	3.4870E-001	6.75	3.8991E-003	2.05
TH-229	3.5885E+000	2.87	3.9156E-003	2.05
TH-230	3.6210E-001	6.64	3.9038E-003	2.05
TH-232	3.8161E-001	6.48	3.8968E-003	2.05

Errors quoted at 1.000 sigma

0000012165.CNF



Apex Alpha Instrument Data Transfer Report

#	Report ID	Batch Sample ID	Isotope	Gross Area	Count Mins	BKG Counts	BKG Count Mins	EFF	Analysis Date	Date
1	ApexAlpha	ARS1-B11-01647-01	TH-228	4	1440	2	1440		05/05/11 03:53	A_2
2	ApexAlpha	ARS1-B11-01647-01	TH-229	2513	1440	2	1440	0.22	05/05/11 03:53	A_2
3	ApexAlpha	ARS1-B11-01647-01	TH-230	3495	1440	3	1440	0.22	05/05/11 03:53	A_2
4	ApexAlpha	ARS1-B11-01647-01	TH-232	39	1440	4	1440	0.22	05/05/11 03:53	A_2
5	ApexAlpha	ARS1-B11-01647-02	TH-228	1	1440	2	1440	0.22	05/05/11 03:53	A_2
6	ApexAlpha	ARS1-B11-01647-02	TH-229	2755	1440	6	1440	0.22	05/05/11 03:53	A_2
7	ApexAlpha	ARS1-B11-01647-02	TH-230	3395	1440	11	1440	0.22	05/05/11 03:53	A_2
8	ApexAlpha	ARS1-B11-01647-02	TH-232	58	1440	47	1440	0.22	05/05/11 03:53	A_2
9	ApexAlpha	ARS1-B11-01647-03	TH-228	4	1440	0	1440	0.22	05/05/11 03:53	A_2
10	ApexAlpha	ARS1-B11-01647-03	TH-229	2675	1440	3	1440	0.22	05/05/11 03:53	A_2
11	ApexAlpha	ARS1-B11-01647-03	TH-230	44	1440	6	1440	0.22	05/05/11 03:53	A_2
12	ApexAlpha	ARS1-B11-01647-03	TH-232	3	1440	0	1440	0.22	05/05/11 03:53	A_2
13	ApexAlpha	ARS1-B11-01647-04	TH-228	233	1440	3	1440	0.21	05/05/11 03:53	A_2
14	ApexAlpha	ARS1-B11-01647-04	TH-229	2543	1440	2	1440	0.21	05/05/11 03:53	A_2
15	ApexAlpha	ARS1-B11-01647-04	TH-230	2253	1440	3	1440	0.21	05/05/11 03:53	A_2
16	ApexAlpha	ARS1-B11-01647-04	TH-232	278	1440	2	1440	0.21	05/05/11 03:53	A_2
17	ApexAlpha	ARS1-B11-01647-05	TH-228	279	1440	2	1440	0.22	05/05/11 03:53	A_3
18	ApexAlpha	ARS1-B11-01647-05	TH-229	2379	1440	4	1440	0.22	05/05/11 03:53	A_3
19	ApexAlpha	ARS1-B11-01647-05	TH-230	503	1440	2	1440	0.22	05/05/11 03:53	A_3
20	ApexAlpha	ARS1-B11-01647-05	TH-232	239	1440	6	1440	0.22	05/05/11 03:53	A_3
21	ApexAlpha	ARS1-B11-01647-06	TH-228	539	1440	2	1440	0.21	05/05/11 03:53	A_3
22	ApexAlpha	ARS1-B11-01647-06	TH-229	2044	1440	3	1440	0.21	05/05/11 03:53	A_3
23	ApexAlpha	ARS1-B11-01647-06	TH-230	2960	1440	10	1440	0.21	05/05/11 03:53	A_3
24	ApexAlpha	ARS1-B11-01647-06	TH-232	551	1440	2	1440	0.21	05/05/11 03:53	A_3
25	ApexAlpha	ARS1-B11-01647-07	TH-228	462	1440	1	1440	0.22	05/05/11 03:53	A_3
26	ApexAlpha	ARS1-B11-01647-07	TH-229	2752	1440	4	1440	0.22	05/05/11 03:53	A_3
27	ApexAlpha	ARS1-B11-01647-07	TH-230	602	1440	4	1440	0.22	05/05/11 03:53	A_3
28	ApexAlpha	ARS1-B11-01647-07	TH-232	472	1440	1	1440	0.22	05/05/11 03:53	A_3
29	ApexAlpha	ARS1-B11-01647-08	TH-228	183	1440	0	1440	0.22	05/05/11 03:53	A_3
30	ApexAlpha	ARS1-B11-01647-08	TH-229	2499	1440	0	1440	0.22	05/05/11 03:53	A_3
31	ApexAlpha	ARS1-B11-01647-08	TH-230	343	1440	2	1440	0.22	05/05/11 03:53	A_3
32	ApexAlpha	ARS1-B11-01647-08	TH-232	214	1440	3	1440	0.22	05/05/11 03:53	A_3
33	ApexAlpha	ARS1-B11-01647-09	TH-228	426	1440	2	1440	0.21	05/05/11 03:53	A_3
34	ApexAlpha	ARS1-B11-01647-09	TH-229	1977	1440	8	1440	0.21	05/05/11 03:53	A_3
35	ApexAlpha	ARS1-B11-01647-09	TH-230	370	1440	1	1440	0.21	05/05/11 03:53	A_3
36	ApexAlpha	ARS1-B11-01647-09	TH-232	393	1440	2	1440	0.21	05/05/11 03:53	A_3
37	ApexAlpha	ARS1-B11-01647-10	TH-228	239	1440	1	1440	0.22	05/05/11 03:53	A_3
38	ApexAlpha	ARS1-B11-01647-10	TH-229	2365	1440	2	1440	0.22	05/05/11 03:53	A_3
39	ApexAlpha	ARS1-B11-01647-10	TH-230	279	1440	2	1440	0.22	05/05/11 03:53	A_3
40	ApexAlpha	ARS1-B11-01647-10	TH-232	230	1440	4	1440	0.22	05/05/11 03:53	A_3
41	ApexAlpha	ARS1-B11-01647-11	TH-228	391	1440	4	1440	0.21	05/05/11 03:53	A_3
42	ApexAlpha	ARS1-B11-01647-11	TH-229	2360	1440	5	1440	0.21	05/05/11 03:53	A_3
43	ApexAlpha	ARS1-B11-01647-11	TH-230	802	1440	4	1440	0.21	05/05/11 03:53	A_3
44	ApexAlpha	ARS1-B11-01647-11	TH-232	371	1440	7	1440	0.21	05/05/11 03:53	A_3
45	ApexAlpha	ARS1-B11-01647-12	TH-228	553	1440	1	1440	0.22	05/05/11 03:53	A_3
46	ApexAlpha	ARS1-B11-01647-12	TH-229	2466	1440	3	1440	0.22	05/05/11 03:53	A_3
47	ApexAlpha	ARS1-B11-01647-12	TH-230	1983	1440	1	1440	0.22	05/05/11 03:53	A_3
48	ApexAlpha	ARS1-B11-01647-12	TH-232	496	1440	0	1440	0.22	05/05/11 03:53	A_3
49	ApexAlpha	ARS1-B11-01647-13	TH-228	242	1440	0	1440	0.22	05/05/11 03:53	A_3
50	ApexAlpha	ARS1-B11-01647-13	TH-229	2480	1440	7	1440	0.22	05/05/11 03:53	A_3
51	ApexAlpha	ARS1-B11-01647-13	TH-230	251	1440	10	1440	0.22	05/05/11 03:53	A_3
52	ApexAlpha	ARS1-B11-01647-13	TH-232	265	1440	7	1440	0.22	05/05/11 03:53	A_3

Batch Result Verification Report

ABatchSampleID	SDG	Fraction	ClientID	Run	Isotope	ACT	TPU	TPU1s	TPU2s	MDA	DL	CU	CU1s	CU2s	ActivityReportUnits
ARS1-B11-01647-01				1	TH-228										pCi
ARS1-B11-01647-01				1	TH-229	5.06286762	0.643195493	0.328160966	0.643195493	0.018731199	0.006633546	0.198186891	0.10111576	0.19818689	pCi
ARS1-B11-01647-01				1	TH-230	7.054939195	0.884242055	0.451143905	0.864242055	0.021756409	0.008140678	0.234198988	0.11948928	0.23419899	pCi
ARS1-B11-01647-01				1	TH-232	0.07056959	0.027281811	0.013919291	0.027281811	0.024226591	0.009381244	0.025914322	0.01322159	0.02591432	pCi
ARS1-B11-01647-02				1	TH-228	-0.001823246	0.006193514	0.003159956	0.006193514	0.01693796	0.005998481	0.006189593	0.00315796	0.00618959	pCi
ARS1-B11-01647-02				1	TH-229	4.968493991	0.628682591	0.320756424	0.628682591	0.025496551	0.010299273	0.186139826	0.0949693	0.18613983	pCi
ARS1-B11-01647-02				1	TH-230	6.128434718	0.769109086	0.392402595	0.769109086	0.032854256	0.013973219	0.207156041	0.10569186	0.20715604	pCi
ARS1-B11-01647-02				1	TH-232	0.019881191	0.036378925	0.018560676	0.036378925	0.062549361	0.028825679	0.036299483	0.01852014	0.03629948	pCi
ARS1-B11-01647-03				1	TH-228	0.007768371	0.00767068	0.003913612	0.00767068	0.005263071	0	0.007613004	0.00388419	0.007613	pCi
ARS1-B11-01647-03				1	TH-229	5.144119782	0.651664967	0.332482126	0.651664967	0.020732076	0.007757399	0.195270202	0.09962765	0.1952702	pCi
ARS1-B11-01647-03				1	TH-230	0.073303953	0.028165001	0.014369899	0.028165001	0.027212924	0.010992597	0.026735288	0.01364045	0.02673529	pCi
ARS1-B11-01647-03				1	TH-232	0.005775579	0.006572855	0.003353497	0.006572855	0.005217273	0	0.006535683	0.00333453	0.00653568	pCi
ARS1-B11-01647-04	ARS1-11-00895	001	PR-SED-01-110420	1	TH-228	0.461649475	0.082253431	0.041966036	0.082253431	0.021614873	0.008087719	0.060436121	0.03083476	0.06043612	pCi
ARS1-B11-01647-04	ARS1-11-00895	001	PR-SED-01-110420	1	TH-229	4.996399578	0.63439486	0.323670847	0.63439486	0.018267041	0.006469167	0.194425159	0.09919651	0.19442516	pCi
ARS1-B11-01647-04	ARS1-11-00895	001	PR-SED-01-110420	1	TH-230	4.433053663	0.566307432	0.288932363	0.566307432	0.021217228	0.00793893	0.183419747	0.0935815	0.18341975	pCi
ARS1-B11-01647-04	ARS1-11-00895	001	PR-SED-01-110420	1	TH-232	0.54270014	0.091983784	0.046930502	0.091983784	0.018266972	0.006469143	0.064489044	0.03290257	0.06448904	pCi
ARS1-B11-01647-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	TH-228	0.548079261	0.092811875	0.047352997	0.092811875	0.018381431	0.006509678	0.065008902	0.03316781	0.0650089	pCi
ARS1-B11-01647-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	TH-229	4.60357477	0.586485696	0.299227396	0.586485696	0.023290261	0.00901867	0.185459754	0.09462232	0.18545975	pCi
ARS1-B11-01647-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	TH-230	0.973054769	0.145426419	0.074197153	0.145426419	0.018043271	0.006389921	0.085546318	0.04364608	0.08554632	pCi
ARS1-B11-01647-05	ARS1-11-00895	002	RM-JM-SED-02-110420	1	TH-232	0.451633202	0.080719824	0.041183584	0.080719824	0.027343956	0.011045528	0.059466045	0.03033982	0.05946604	pCi
ARS1-B11-01647-06	ARS1-11-00895	003	RM-JM-SED-110420	1	TH-228	1.266314821	0.187030721	0.095423837	0.187030721	0.021907011	0.007758242	0.107503377	0.05484866	0.10750338	pCi
AR51-B11-01647-06	ARS1-11-00895	003	RM-JM-SED-110420	1	TH-229	4.714964166	0.605556433	0.308957364	0.605556433	0.024877318	0.00930844	0.2048568	0.10451878	0.2048568	pCi
AR51-B11-01647-06	ARS1-11-00895	003	RM-JM-SED-110420	1	TH-230	6.828501045	0.86153721	0.439559801	0.86153721	0.040330579	0.017028809	0.247250774	0.12614835	0.24725077	pCi
ARS1-B11-01647-06	ARS1-11-00895	003	RM-JM-SED-110420	1	TH-232	1.268253559	0.186634577	0.095221723	0.186634577	0.021460976	0.007600281	0.10647616	0.05432457	0.10647616	pCi
ARS1-B11-01647-07	ARS1-11-00895	004	RM-SED-BG-110419	1	TH-228	0.821286252	0.124490847	0.063515738	0.124490847	0.013116997	0.004144523	0.075134637	0.038334	0.07513464	pCi
ARS1-B11-01647-07	ARS1-11-00895	004	RM-SED-BG-110419	1	TH-229	4.791234211	0.606224417	0.309298172	0.606224417	0.020949489	0.008112255	0.179401616	0.09153144	0.17940162	pCi
ARS1-B11-01647-07	ARS1-11-00895	004	RM-SED-BG-110419	1	TH-230	1.044719564	0.151816404	0.077457349	0.151816404	0.020991395	0.008128462	0.084292887	0.04300657	0.08429289	pCi
ARS1-B11-01647-07	ARS1-11-00895	004	RM-SED-BG-110419	1	TH-232	0.821201664	0.123993713	0.063262098	0.123993713	0.012837182	0.004056111	0.074321686	0.03791923	0.07432169	pCi
ARS1-B11-01647-08	ARS1-11-00895	005	RP-JM-SED-01	1	TH-228	0.371045087	0.070008261	0.0357185	0.070008261	0.005494711	0	0.053759747	0.02742844	0.05375975	pCi
ARS1-B11-01647-08	ARS1-11-00895	005	RP-JM-SED-01	1	TH-229	4.963749312	0.630699232	0.321785323	0.630699232	0.005382857	0	0.194617901	0.09929485	0.1946179	pCi
ARS1-B11-01647-08	ARS1-11-00895	005	RP-JM-SED-01	1	TH-230	0.678681382	0.109444807	0.055839187	0.109444807	0.01848959	0.006547982	0.072456471	0.03696759	0.07245647	pCi
ARS1-B11-01647-08	ARS1-11-00895	005	RP-JM-SED-01	1	TH-232	0.419106496	0.076516057	0.039038804	0.076516057	0.021389967	0.008003565	0.057349268	0.02925983	0.05734927	pCi
ARS1-B11-01647-09	ARS1-11-00895	006	RP-JM-SED-110420	1	TH-228	1.005528386	0.154972477	0.07906759	0.154972477	0.022031506	0.007802331	0.096162653	0.04906258	0.09616265	pCi
ARS1-B11-01647-09	ARS1-11-00895	006	RP-JM-SED-110420	1	TH-229	4.574484731	0.588922092	0.300470455	0.588922092	0.036870022	0.015287003	0.20287699	0.10350867	0.20287699	pCi
ARS1-B11-01647-09	ARS1-11-00895	006	RP-JM-SED-110420	1	TH-230	0.858995334	0.136021374	0.06939866	0.136021374	0.01713978	0.005415585	0.087883524	0.04483853	0.08788352	pCi
ARS1-B11-01647-09	ARS1-11-00895	006	RP-JM-SED-110420	1	TH-232	0.908388394	0.142280516	0.0725921	0.142280516	0.021582937	0.007643473	0.090500179	0.04617356	0.09050018	pCi
ARS1-B11-01647-10	ARS1-11-00895	007	RP-SED-01-110419	1	TH-228	0.512116959	0.089998744	0.045917727	0.089998744	0.015842839	0.005005795	0.065336203	0.0333348	0.0653362	pCi
ARS1-B11-01647-10	ARS1-11-00895	007	RP-SED-01-110419	1	TH-229	4.976144324	0.634058021	0.32349899	0.634058021	0.019563428	0.006928275	0.200809589	0.10245387	0.20080959	pCi
ARS1-B11-01647-10	ARS1-11-00895	007	RP-SED-01-110419	1	TH-230	0.584489732	0.098977633	0.050498792	0.098977633	0.019602562	0.006942134	0.069327629	0.03537124	0.06932763	pCi
ARS1-B11-01647-10	ARS1-11-00895	007	RP-SED-01-110419	1	TH-232	0.475922159	0.085410718	0.043576897	0.085410718	0.025302897	0.009798021	0.063138097	0.03221331	0.0631381	pCi
ARS1-B11-01647-11	ARS1-11-00895	008	RP-SED-02-110420	1	TH-228	0.795329465	0.125094665	0.063823809	0.125094665	0.024693285	0.009561962	0.080055417	0.0408446	0.08005542	pCi
ARS1-B11-01647-11	ARS1-11-00895	008	RP-SED-02-110420	1	TH-229	4.741273481	0.60431128	0.308322081	0.60431128	0.026401934	0.010472973	0.191900338	0.09790834	0.19190034	pCi
ARS1-B11-01647-11	ARS1-11-00895	008	RP-SED-02-110420	1	TH-230	1.609811253	0.224622343	0.114603236	0.224622343	0.024239007	0.009386052	0.112252406	0.05727164	0.11225241	pCi
ARS1-B11-01647-11	ARS1-11-00895	008	RP-SED-02-110420	1	TH-232	0.732831	0.117177409	0.059784393	0.117177409	0.030239451	0.012391742	0.076719263	0.03914248	0.07671926	pCi
ARS1-B11-01647-12	ARS1-11-00895	009	RP-SED-03-110420	1	TH-228	1.129883143	0.166027064	0.084707685	0.166027064	0.015070763	0.004761846	0.094429003	0.04817806	0.094429	pCi
ARS1-B11-01647-12	ARS1-11-00895	009	RP-SED-03-110420	1	TH-229	4.938861539	0.628047288	0.32043229	0.628047288	0.021593876	0.008079862	0.195289573	0.09963754	0.19528957	pCi
ARS1-B11-01647-12	ARS1-11-00895	009	RP-SED-03-110420	1	TH-230	3.982300806	0.512270911	0.26136271	0.512270911	0.014793509	0.004674243	0.175411199	0.08949551	0.1754112	pCi
ARS1-B11-01647-12	ARS1-11-00895	009	RP-SED-03-110420	1	TH-232	0.994586291	0.148697864	0.075866257	0.148697864	0.005434131	0	0.087530156	0.04465824	0.08753016	pCi
ARS1-B11-01647-13	ARS1-11-00895	010	RP-SED-BG-041911	1	TH-228	0.464671567	0.081126968	0.04139131	0.081126968	0.005203553	0	0.05854563	0.02987022	0.05854563	pCi
ARS1-B11-01647-13	ARS1-11-00895	010	RP-SED-BG-041911	1	TH-229	4.647205677	0.590935067	0.301497483	0.590935067	0.028225344	0.011566386	0.183679945	0.09371426	0.18367995	pCi
ARS1-B11-01647-13	ARS1-11-00895	010	RP-SED-BG-041911	1	TH-230	0.45378767	0.081011392	0.041332343	0.081011392	0.032807017	0.01385213	0.059622746	0.03041977	0.05962275	pCi
ARS1-B11-01647-13	ARS1-11-00895	010	RP-SED-BG-041911	1	TH-232	0.484825802	0.084400305	0.04306138	0.084400305	0.028225229	0.01156634	0.060744441	0.03099206	0.06074444	pCi

ABatchSampleID	SDG	Fraction	AliquotReportUnits	ChemRecovery	TracerRecovery	SampleCounts	SampleCountMins	BKG_Counts	BKG_CountMins	EFF	ALIQ	SampleCollDate	MidPointCountDate
ARS1-B11-01647-01			g			4	1440	2	1440	0	1	5/2/2011	5/5/2011
ARS1-B11-01647-01			g		0.689670268	2513	1440	2	1440	0.224953875	1	5/2/2011	5/5/2011
ARS1-B11-01647-01			g		0.689670268	3495	1440	3	1440	0.224953875	1	5/2/2011	5/5/2011
ARS1-B11-01647-01			g		0.689670268	39	1440	4	1440	0.224953875	1	5/2/2011	5/5/2011
ARS1-B11-01647-02			g		0.80195421	1	1440	2	1440	0.215816796	1	5/2/2011	5/5/2011
ARS1-B11-01647-02			g		0.80195421	2755	1440	6	1440	0.215816796	1	5/2/2011	5/5/2011
ARS1-B11-01647-02			g		0.80195421	3395	1440	11	1440	0.215816796	1	5/2/2011	5/5/2011
ARS1-B11-01647-02			g		0.80195421	58	1440	47	1440	0.215816796	1	5/2/2011	5/5/2011
ARS1-B11-01647-03			g		0.74202672	4	1440	0	1440	0.218973055	1	5/2/2011	5/5/2011
ARS1-B11-01647-03			g		0.74202672	2675	1440	3	1440	0.218973055	1	5/2/2011	5/5/2011
ARS1-B11-01647-03			g		0.74202672	44	1440	6	1440	0.218973055	1	5/2/2011	5/5/2011
ARS1-B11-01647-03			g		0.74202672	3	1440	0	1440	0.218973055	1	5/2/2011	5/5/2011
ARS1-B11-01647-04	ARS1-11-00895	001	g		0.730150687	233	1440	3	1440	0.213045776	1.0227	4/20/2011	5/5/2011
ARS1-B11-01647-04	ARS1-11-00895	001	g		0.730150687	2543	1440	2	1440	0.213045776	1.0227	4/20/2011	5/5/2011
ARS1-B11-01647-04	ARS1-11-00895	001	g		0.730150687	2253	1440	3	1440	0.213045776	1.0227	4/20/2011	5/5/2011
ARS1-B11-01647-04	ARS1-11-00895	001	g		0.730150687	278	1440	2	1440	0.213045776	1.0227	4/20/2011	5/5/2011
ARS1-B11-01647-05	ARS1-11-00895	002	g		0.6523581	279	1440	2	1440	0.223027632	1.1092	4/20/2011	5/5/2011
ARS1-B11-01647-05	ARS1-11-00895	002	g		0.6523581	2379	1440	4	1440	0.223027632	1.1092	4/20/2011	5/5/2011
ARS1-B11-01647-05	ARS1-11-00895	002	g		0.6523581	503	1440	2	1440	0.223027632	1.1092	4/20/2011	5/5/2011
ARS1-B11-01647-05	ARS1-11-00895	002	g		0.6523581	239	1440	6	1440	0.223027632	1.1092	4/20/2011	5/5/2011
ARS1-B11-01647-06	ARS1-11-00895	003	g		0.598394094	539	1440	2	1440	0.209818289	1.0785	4/20/2011	5/5/2011
ARS1-B11-01647-06	ARS1-11-00895	003	g		0.598394094	2044	1440	3	1440	0.209818289	1.0785	4/20/2011	5/5/2011
ARS1-B11-01647-06	ARS1-11-00895	003	g		0.598394094	2960	1440	10	1440	0.209818289	1.0785	4/20/2011	5/5/2011
ARS1-B11-01647-06	ARS1-11-00895	003	g		0.598394094	551	1440	2	1440	0.209818289	1.0785	4/20/2011	5/5/2011
ARS1-B11-01647-07	ARS1-11-00895	004	g		0.766863882	462	1440	1	1440	0.220569149	1.0607	4/19/2011	5/5/2011
ARS1-B11-01647-07	ARS1-11-00895	004	g		0.766863882	2752	1440	4	1440	0.220569149	1.0607	4/19/2011	5/5/2011
ARS1-B11-01647-07	ARS1-11-00895	004	g		0.766863882	602	1440	4	1440	0.220569149	1.0607	4/19/2011	5/5/2011
ARS1-B11-01647-07	ARS1-11-00895	004	g		0.766863882	472	1440	1	1440	0.220569149	1.0607	4/19/2011	5/5/2011
ARS1-B11-01647-08	ARS1-11-00895	005	g		0.703561096	183	1440	0	1440	0.219087392	1.0217	4/20/2011	5/5/2011
ARS1-B11-01647-08	ARS1-11-00895	005	g		0.703561096	2499	1440	0	1440	0.219087392	1.0217	4/20/2011	5/5/2011
ARS1-B11-01647-08	ARS1-11-00895	005	g		0.703561096	343	1440	2	1440	0.219087392	1.0217	4/20/2011	5/5/2011
ARS1-B11-01647-08	ARS1-11-00895	005	g		0.703561096	214	1440	3	1440	0.219087392	1.0217	4/20/2011	5/5/2011
ARS1-B11-01647-09	ARS1-11-00895	006	g		0.572036833	426	1440	2	1440	0.212396607	1.1082	4/20/2011	5/5/2011
ARS1-B11-01647-09	ARS1-11-00895	006	g		0.572036833	1977	1440	8	1440	0.212396607	1.1082	4/20/2011	5/5/2011
ARS1-B11-01647-09	ARS1-11-00895	006	g		0.572036833	370	1440	1	1440	0.212396607	1.1082	4/20/2011	5/5/2011
ARS1-B11-01647-09	ARS1-11-00895	006	g		0.572036833	393	1440	2	1440	0.212396607	1.1082	4/20/2011	5/5/2011
ARS1-B11-01647-10	ARS1-11-00895	007	g		0.678216877	239	1440	1	1440	0.215743065	1.0152	4/19/2011	5/5/2011
ARS1-B11-01647-10	ARS1-11-00895	007	g		0.678216877	2365	1440	2	1440	0.215743065	1.0152	4/19/2011	5/5/2011
ARS1-B11-01647-10	ARS1-11-00895	007	g		0.678216877	279	1440	2	1440	0.215743065	1.0152	4/19/2011	5/5/2011
ARS1-B11-01647-10	ARS1-11-00895	007	g		0.678216877	230	1440	4	1440	0.215743065	1.0152	4/19/2011	5/5/2011
ARS1-B11-01647-11	ARS1-11-00895	008	g		0.684834016	391	1440	4	1440	0.213233352	1.064	4/20/2011	5/5/2011
ARS1-B11-01647-11	ARS1-11-00895	008	g		0.684834016	2360	1440	5	1440	0.213233352	1.064	4/20/2011	5/5/2011
ARS1-B11-01647-11	ARS1-11-00895	008	g		0.684834016	802	1440	4	1440	0.213233352	1.064	4/20/2011	5/5/2011
ARS1-B11-01647-11	ARS1-11-00895	008	g		0.684834016	371	1440	7	1440	0.213233352	1.064	4/20/2011	5/5/2011
ARS1-B11-01647-12	ARS1-11-00895	009	g		0.698301305	553	1440	1	1440	0.219039932	1.0199	4/20/2011	5/5/2011
ARS1-B11-01647-12	ARS1-11-00895	009	g		0.698301305	2466	1440	3	1440	0.219039932	1.0199	4/20/2011	5/5/2011
ARS1-B11-01647-12	ARS1-11-00895	009	g		0.698301305	1983	1440	1	1440	0.219039932	1.0199	4/20/2011	5/5/2011
ARS1-B11-01647-12	ARS1-11-00895	009	g		0.698301305	496	1440	0	1440	0.219039932	1.0199	4/20/2011	5/5/2011
ARS1-B11-01647-13	ARS1-11-00895	010	g		0.707065264	242	1440	0	1440	0.21722503	1.0838	4/19/2011	5/5/2011
ARS1-B11-01647-13	ARS1-11-00895	010	g		0.707065264	2480	1440	7	1440	0.21722503	1.0838	4/19/2011	5/5/2011
ARS1-B11-01647-13	ARS1-11-00895	010	g		0.707065264	251	1440	10	1440	0.21722503	1.0838	4/19/2011	5/5/2011
ARS1-B11-01647-13	ARS1-11-00895	010	g		0.707065264	265	1440	7	1440	0.21722503	1.0838	4/19/2011	5/5/2011

ABatchSampleID	SDG	Fraction	BP_DL	BP_MDA	Sb_Val	UCF	CF	GrossCountRate	BKGCountRate	NetCountRate	PlatingRecovery	InstFileName	DetectorID	InstrumentkeV	NuclideAbd	TracerMeas.
ARS1-B11-01647-01					0.022082805	2.22	1.96				0.715	ApexAlpha	A_2_4A			
ARS1-B11-01647-01			0.075445343	0.156030993	0.071883495	2.22	1.96	1.745138889	0.001388889	1.74375	0.715	ApexAlpha	A_2_4A	49.10917282		
ARS1-B11-01647-01			0.132490624	0.269887672	0.126235693	2.22	1.96	2.427083333	0.002083333	2.425	0.715	ApexAlpha	A_2_4A	31.02458572		
ARS1-B11-01647-01			0.032605946	0.070536055	0.03106681	2.22	1.96	0.027083333	0.002777778	0.024305556	0.715	ApexAlpha	A_2_4A	5.700368881		
ARS1-B11-01647-02			0.023240167	0.051321588	0.022082805	2.22	1.96	0.000694444	0.001388889	-0.000694444	0.715	ApexAlpha	A_2_4B	4.910474777		
ARS1-B11-01647-02			0.075445343	0.155464892	0.071883495	2.22	1.96	1.913194444	0.004166667	1.909027778	0.715	ApexAlpha	A_2_4B	50.41350555		
ARS1-B11-01647-02			0.132490624	0.269320437	0.126235693	2.22	1.96	2.357638889	0.007638889	2.35	0.715	ApexAlpha	A_2_4B	29.97737694		
ARS1-B11-01647-02			0.032605946	0.069969955	0.03106661	2.22	1.96	0.040277778	0.032638889	0.007638889	0.715	ApexAlpha	A_2_4B			
ARS1-B11-01647-03			0.023240167	0.051643662	0.022082805	2.22	1.96	0.002777778	0	0.002777778	0.715	ApexAlpha	A_2_5A	4.889849663		
ARS1-B11-01647-03			0.075445343	0.155784163	0.071883495	2.22	1.96	1.857638889	0.002083333	1.855555556	0.715	ApexAlpha	A_2_5A	42.68838501		
ARS1-B11-01647-03			0.132490624	0.269640348	0.126235693	2.22	1.96	0.030555556	0.004166667	0.026388889	0.715	ApexAlpha	A_2_5A	7.334774494		
ARS1-B11-01647-03			0.032605946	0.070289226	0.03106661	2.22	1.96	0.002083333	0	0.002083333	0.715	ApexAlpha	A_2_5A	4.889849663		
ARS1-B11-01647-04	ARS1-11-00895	001	0.022994765	0.051330275	0.022082805	2.22	1.96	0.161805556	0.002083333	0.159722222	0.715	ApexAlpha	A_2_5B	25.94958878		
ARS1-B11-01647-04	ARS1-11-00895	001	0.073770974	0.152554041	0.071883495	2.22	1.96	1.765972222	0.001388889	1.764583333	0.715	ApexAlpha	A_2_5B	45.33880997		
ARS1-B11-01647-04	ARS1-11-00895	001	0.129549881	0.263883122	0.126235693	2.22	1.96	1.564583333	0.002083333	1.5625	0.715	ApexAlpha	A_2_5B	26.77484131		
ARS1-B11-01647-04	ARS1-11-00695	001	0.03188222	0.068956292	0.03106661	2.22	1.96	0.193055556	0.001388889	0.191666667	0.715	ApexAlpha	A_2_5B	18.91488647		
ARS1-B11-01647-05	ARS1-11-00895	002	0.021201538	0.047674158	0.022062805	2.22	1.96	0.19375	0.001388889	0.192361111	0.715	ApexAlpha	A_3_1A	24.01058388		
ARS1-B11-01647-05	ARS1-11-00895	002	0.068018009	0.140997016	0.071883495	2.22	1.96	1.652083333	0.002777778	1.649305556	0.715	ApexAlpha	A_3_1A	42.74464035		
ARS1-B11-01647-05	ARS1-11-00895	002	0.119447046	0.243644874	0.126235693	2.22	1.98	0.349305556	0.001388889	0.347916667	0.715	ApexAlpha	A_3_1A	14.36770821		
ARS1-B11-01647-05	ARS1-11-00895	002	0.029395913	0.063918564	0.03106661	2.22	1.98	0.165972222	0.004166667	0.161805556	0.715	ApexAlpha	A_3_1A	24.17536354		
ARS1-B11-01647-06	ARS1-11-00895	003	0.02180505	0.049907043	0.022082805	2.22	1.96	0.374305556	0.001388889	0.372916667	0.715	ApexAlpha	A_3_1B	26.97288513		
ARS1-B11-01647-06	ARS1-11-00895	003	0.069954173	0.145868551	0.071883495	2.22	1.96	1.419444444	0.002083333	1.417361111	0.715	ApexAlpha	A_3_1B	39.9537468		
ARS1-B11-01647-06	ARS1-11-00895	003	0.122847162	0.251440044	0.126235693	2.22	1.96	2.055555556	0.006944444	2.048611111	0.715	ApexAlpha	A_3_1B	30.49419785		
ARS1-B11-01647-06	ARS1-11-00895	003	0.030232681	0.066596021	0.03106661	2.22	1.96	0.382638889	0.001388889	0.38125	0.715	ApexAlpha	A_3_1B	37.24372864		
ARS1-B11-01647-07	ARS1-11-00895	004	0.022192985	0.049118673	0.022082805	2.22	1.96	0.320833333	0.000694444	0.320138889	0.715	ApexAlpha	A_3_2B	39.25505829		
ARS1-B11-01647-07	ARS1-11-00895	004	0.071128118	0.146675945	0.071883495	2.22	1.96	1.911111111	0.002777778	1.908333333	0.715	ApexAlpha	A_3_2B	61.57248306		
ARS1-B11-01647-07	ARS1-11-00895	004	0.124908709	0.25401576	0.126235693	2.22	1.96	0.418055556	0.002777778	0.415277778	0.715	ApexAlpha	A_3_2B	41.29672241		
ARS1-B11-01647-07	ARS1-11-00895	004	0.030740027	0.066073082	0.03106661	2.22	1.96	0.327777778	0.000694444	0.327083333	0.715	ApexAlpha	A_3_2B	28.52734184		
ARS1-B11-01647-08	ARS1-11-00895	005	0.023017271	0.051430468	0.022082805	2.22	1.96	0.127083333	0	0.127083333	0.715	ApexAlpha	A_3_3A	28.15198326		
ARS1-B11-01647-08	ARS1-11-00895	005	0.073843179	0.152752291	0.071883495	2.22	1.96	1.735416667	0	1.735416667	0.715	ApexAlpha	A_3_3A	45.02334595		
ARS1-B11-01647-08	ARS1-11-00895	005	0.12967668	0.264190434	0.126235693	2.22	1.96	0.238194444	0.001388889	0.236805556	0.715	ApexAlpha	A_3_3A	35.14909363		
ARS1-B11-01647-08	ARS1-11-00895	005	0.031913425	0.069072719	0.03106661	2.22	1.96	0.148611111	0.002083333	0.146527778	0.715	ApexAlpha	A_3_3A	34.75193024		
ARS1-B11-01647-09	ARS1-11-00895	006	0.02122067	0.048777108	0.022082805	2.22	1.96	0.295833333	0.001388889	0.294444444	0.715	ApexAlpha	A_3_3B	20.57688332		
ARS1-B11-01647-09	ARS1-11-00895	006	0.068079386	0.142162601	0.071883495	2.22	1.96	1.372916667	0.005555556	1.367361111	0.715	ApexAlpha	A_3_3B	35.814991		
ARS1-B11-01647-09	ARS1-11-00895	006	0.119554831	0.244905162	0.126235693	2.22	1.96	0.256944444	0.000694444	0.25625	0.715	ApexAlpha	A_3_3B	25.31498146		
ARS1-B11-01647-09	ARS1-11-00895	006	0.029422438	0.065014591	0.03106661	2.22	1.96	0.272916667	0.001388889	0.271527778	0.715	ApexAlpha	A_3_3B	34.51046371		
ARS1-B11-01647-10	ARS1-11-00895	007	0.023187647	0.052107024	0.022082805	2.22	1.96	0.165972222	0.000894444	0.165277778	0.715	ApexAlpha	A_3_4B	28.25423431		
ARS1-B11-01647-10	ARS1-11-00895	007	0.074315992	0.154019908	0.071883495	2.22	1.96	1.642361111	0.001388889	1.640972222	0.715	ApexAlpha	A_3_4B	41.05665207		
ARS1-B11-01647-10	ARS1-11-00895	007	0.130506961	0.2661721	0.126235693	2.22	1.96	0.19375	0.001388889	0.192361111	0.715	ApexAlpha	A_3_4B	23.88544273		
ARS1-B11-01647-10	ARS1-11-00895	007	0.032117756	0.069804522	0.03106661	2.22	1.96	0.159722222	0.002777778	0.156944444	0.715	ApexAlpha	A_3_4B	18.78171539		
ARS1-B11-01647-11	ARS1-11-00895	008	0.022102205	0.049678912	0.022082805	2.22	1.96	0.271527778	0.002777778	0.26875	0.715	ApexAlpha	A_3_5A	36.71587753		
ARS1-B11-01647-11	ARS1-11-00895	008	0.070907496	0.146966655	0.071883495	2.22	1.96	1.638888889	0.003472222	1.635416667	0.715	ApexAlpha	A_3_5A	55.79859543		
ARS1-B11-01647-11	ARS1-11-00895	008	0.124521301	0.253975078	0.126235693	2.22	1.96	0.556944444	0.002777778	0.554166667	0.715	ApexAlpha	A_3_5A	35.01737976		
ARS1-B11-01647-11	ARS1-11-00895	008	0.030644686	0.066613817	0.03106661	2.22	1.96	0.257638889	0.004861111	0.252777778	0.715	ApexAlpha	A_3_5A	34.94045258		
ARS1-B11-01647-12	ARS1-11-00895	009	0.023057894	0.051563899	0.022082805	2.22	1.96	0.384027778	0.000694444	0.383333333	0.715	ApexAlpha	A_3_6A	26.07896614		
ARS1-B11-01647-12	ARS1-11-00895	009	0.073973503	0.153063674	0.071883495	2.22	1.98	1 7125	0.002083333	1.710416667	0.715	ApexAlpha	A_3_6A	45.91628647		
ARS1-B11-01647-12	ARS1-11-00895	009	0.129905543	0.264698575	0.126235693	2.22	1.96	1.377083333	0.000694444	1.376388889	0.715	ApexAlpha	A_3_6A	31.45694542		
ARS1-B11-01647-12	ARS1-11-00895	009	0.031969748	0.069236418	0.03106661	2.22	1.96	0.344444444	0	0.344444444	0.715	ApexAlpha	A_3_6A	29.80042267		
ARS1-B11-01647-13	ARS1-11-00895	010	0.021719966	0.048550267	0.022082805	2.22	1.96	0.168055556	0	0.168055556	0.715	ApexAlpha	A_3_6B	24.91238785		
ARS1-B11-01647-13	ARS1-11-00895	010	0.069612101	0.144018008	0.071883495	2.22	1.96	1.722222222	0.004861111	1.717361111	0.715	ApexAlpha	A_3_6B	45.42248535		
ARS1-B11-01647-13	ARS1-11-00895	010	0.122246417	0.24907093	0.126235693	2.22	1.96	0.174305556	0.006944444	0.167361111	0.715	ApexAlpha	A_3_6B	19.59401321		
ARS1-B11-01647-13	ARS1-11-00895	010	0.030084837	0.065133104	0.03106661	2.22	1.96	0.184027778	0.004861111	0.179166667	0.715	ApexAlpha	A_3_6B	30.39453316		

ABatchSampleID	SDG	Fraction	TracerKnownACT	TracerIsotope	TracerRefDate	TracerRefACT	TracerKnown	Halflife1	Halflife2	Halflife3	TPUF_1	TPUF_2	TPUF_3	TPUF_4	TPUF_5	TPUF_6	DeltaT1	Delta
ARS1-B11-01647-01				TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0		
ARS1-B11-01647-01				TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-01				TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-01				TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-02				TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-02				TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-02				TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-02				TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-03				TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-03				TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-03				TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-03				TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	2.742222222	
ARS1-B11-01647-04	ARS1-11-00895	001		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-04	ARS1-11-00895	001		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-04	ARS1-11-00895	001		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-04	ARS1-11-00895	001		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-05	ARS1-11-00895	002		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-05	ARS1-11-00895	002		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-05	ARS1-11-00895	002		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-05	ARS1-11-00895	002		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-06	ARS1-11-00895	003		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-06	ARS1-11-00895	003		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-06	ARS1-11-00895	003		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-06	ARS1-11-00895	003		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-07	ARS1-11-00895	004		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-07	ARS1-11-00895	004		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-07	ARS1-11-00895	004		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-07	ARS1-11-00895	004		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-08	ARS1-11-00895	005		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-08	ARS1-11-00895	005		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-08	ARS1-11-00895	005		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-08	ARS1-11-00895	005		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-09	ARS1-11-00895	006		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-09	ARS1-11-00895	006		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-09	ARS1-11-00895	006		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-09	ARS1-11-00895	006		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-10	ARS1-11-00895	007		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-10	ARS1-11-00895	007		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-10	ARS1-11-00895	007		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-10	ARS1-11-00895	007		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-11	ARS1-11-00895	008		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-11	ARS1-11-00895	008		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-11	ARS1-11-00895	008		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-11	ARS1-11-00895	008		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-12	ARS1-11-00895	009		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-12	ARS1-11-00895	009		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-12	ARS1-11-00895	009		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-12	ARS1-11-00895	009		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	14.66180556	
ARS1-B11-01647-13	ARS1-11-00895	010		TH-229	9/20/2010			698.3564815			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-13	ARS1-11-00895	010		TH-229	9/20/2010			2680555.556			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-13	ARS1-11-00895	010		TH-229	9/20/2010			27534722.22			0	0.02	0.05833	0	0	0	15.66180556	
ARS1-B11-01647-13	ARS1-11-00895	010		TH-229	9/20/2010			5.13194E+12			0	0.02	0.05833	0	0	0	15.66180556	

Batch Result Verification Report

ABatchSampleID	SDG	Fraction	DeltaT3	DeltaT4	DeltaT5	DeltaT6	DF1	DF2	DF3	IF1	IF2	SysErr	K_Val	K_MDA	AnalysisCode	UserID	ModDate
AR51-B11-01647-01																ABAILEY	5/6/2011
ARS1-B11-01647-01							0.999999291					0.061663514	0.344419434	495.9639849		ABAILEY	5/6/2011
AR51-B11-01647-01							0.999999931					0.061663514	0.343730815	494.9723737		ABAILEY	5/6/2011
AR51-B11-01647-01							1					0.061663514	0.344419678	495.9643366		ABAILEY	5/6/2011
ARS1-B11-01647-02							0.997281934					0.061663514	0.380883468	548.4721939		ABAILEY	5/6/2011
ARS1-B11-01647-02							0.999999291					0.061663514	0.384226645	553.286369		ABAILEY	5/6/2011
ARS1-B11-01647-02							0.999999931					0.061663514	0.383458437	552.1801497		ABAILEY	5/6/2011
ARS1-B11-01647-02							1					0.061663514	0.384226916	553.2867613		ABAILEY	5/6/2011
ARS1-B11-01647-03							0.997281934					0.061663514	0.357575318	514.9084573		ABAILEY	5/6/2011
ARS1-B11-01647-03							0.999999291					0.061663514	0.360713909	519.4280291		ABAILEY	5/6/2011
ARS1-B11-01647-03							0.999999931					0.061663514	0.359992712	518.3895049		ABAILEY	5/6/2011
ARS1-B11-01647-03							1					0.061663514	0.360714165	519.4283974		ABAILEY	5/6/2011
ARS1-B11-01647-04	AR51-11-00895	001					0.985552937					0.061663514	0.345981596	498.213498	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-04	AR51-11-00895	001					0.999996209					0.061663514	0.35317096	508.5662106	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-04	AR51-11-00895	001					0.999999631					0.061663514	0.352465844	507.5508151	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-04	AR51-11-00895	001					1					0.061663514	0.353172319	508.5681387	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-05	AR51-11-00895	002					0.985552937					0.061663514	0.350973162	505.4013531	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-05	AR51-11-00895	002					0.999996209					0.061663514	0.358266269	515.9034269	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-05	ARS1-11-00895	002					0.999999631					0.061663514	0.35755096	514.8733821	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-05	ARS1-11-00895	002					1					0.061663514	0.358267627	515.9053829	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-06	ARS1-11-00895	003					0.985552937					0.061663514	0.294489696	424.0651622	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-06	ARS1-11-00895	003					0.999996209					0.061663514	0.300609095	432.8770968	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-06	ARS1-11-00895	003					0.999999631					0.061663514	0.300008904	432.0128211	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-06	ARS1-11-00895	003					1					0.061663514	0.300610235	432.878738	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-07	ARS1-11-00895	004					0.984575221					0.061663514	0.389801836	561.3146436	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-07	ARS1-11-00895	004					0.99999595					0.061663514	0.398296817	573.5474158	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-07	ARS1-11-00895	004					0.999999606					0.061663514	0.397501676	572.4024134	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-07	ARS1-11-00895	004					1					0.061663514	0.39829843	573.5497386	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-08	ARS1-11-00895	005					0.985552937					0.061663514	0.342501053	493.201517	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-08	ARS1-11-00895	005					0.999996209					0.061663514	0.349618113	503.4500823	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-08	ARS1-11-00895	005					0.999999631					0.061663514	0.348920071	502.4449016	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-08	ARS1-11-00895	005					1					0.061663514	0.349619438	503.4519911	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-09	ARS1-11-00895	006					0.985552937					0.061663514	0.292825592	421.6688518	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-09	ARS1-11-00895	006					0.999996209					0.061663514	0.298910411	430.4309919	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-09	ARS1-11-00895	006					0.999999631					0.061663514	0.298313611	429.5715999	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-09	ARS1-11-00895	006					1					0.061663514	0.298911544	430.4326237	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-10	ARS1-11-00895	007					0.984575221					0.061663514	0.322734435	464.7375871	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-10	ARS1-11-00895	007					0.99999595					0.061663514	0.329767811	474.8656482	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-10	ARS1-11-00895	007					0.999999606					0.061663514	0.329109479	473.9176494	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-10	ARS1-11-00895	007					1					0.061663514	0.329769147	474.8675714	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-11	ARS1-11-00895	008					0.985552937					0.061663514	0.337910277	486.5907989	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-11	ARS1-11-00895	008					0.999996209					0.061663514	0.344931941	496.7019956	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-11	ARS1-11-00895	008					0.999999631					0.061663514	0.344243256	495.7102881	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-11	ARS1-11-00895	008					1					0.061663514	0.344933249	496.7038788	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-12	ARS1-11-00895	009					0.985552937					0.061663514	0.339268123	488.5460975	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-12	ARS1-11-00895	009					0.999996209					0.061663514	0.346318003	498.6979247	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-12	ARS1-11-00895	009					0.999999631					0.061663514	0.34562655	497.7022321	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-12	ARS1-11-00895	009					1					0.061663514	0.346319316	498.6998155	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-13	ARS1-11-00895	010					0.984575221					0.061663514	0.361665244	520.7979515	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-13	ARS1-11-00895	010					0.99999595					0.061663514	0.369547042	532.1477404	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-13	ARS1-11-00895	010					0.999999606					0.061663514	0.368809296	531.0853864	ASP-A-009	ABAILEY	5/6/2011
ARS1-B11-01647-13	ARS1-11-00895	010					1					0.061663514	0.369548539	532.1498955	ASP-A-009	ABAILEY	5/6/2011

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Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	06/21/10	0.02770	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
2	08/25/10	0.04561	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
3	09/01/10	0.03338	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
4	09/04/10	0.02630	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
5	09/04/10	0.00403	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
6	09/07/10	0.07760	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
7	09/14/10	0.02114	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
8	09/29/10	0.00921	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
9	10/06/10	0.00548	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
10	10/13/10	0.04427	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
11	10/19/10	0.07291	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
12	11/10/10	0.00398	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
13	12/08/10	0.06481	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
14	01/13/11	0.02716	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
15	01/24/11	0.02326	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
16	01/25/11	0.03179	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
17	01/31/11	0.01661	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
18	03/11/11	0.02413	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
19	04/26/11	0.00583	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638
20	05/05/11	0.01710	-0.037133	-0.0150502	0.0291154	0.073281	0.0953638

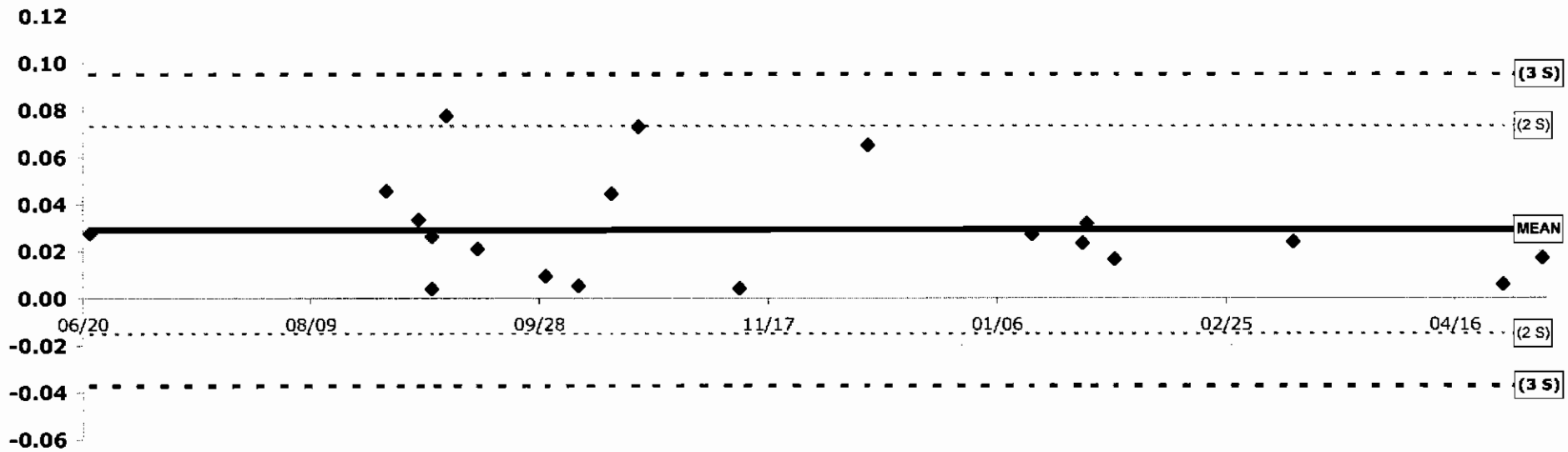
American Radiation Services
Baton Rouge Laboratory

Blank Population Analysis

		Statistical Quality Control(SQC) Rules Analysis	
Population Size	20		
Last Data Point Value	0.02	One or more points outside of the control limits.	OK
NSD	-0.5443	A run of eight points on one side of the center line	OK
Average	0.0291	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	OK
Upper Control Limit (UCL)	0.0954	Four of five consecutive points beyond the 1-sigma limits.	OK
Standard Deviation	0.0221	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	-0.0371	Several points near a warning or control limit.	OK

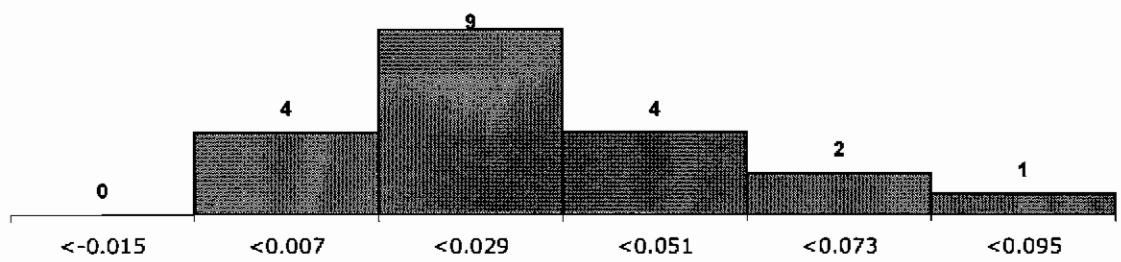
Batch ARS1-B11-01647 - BLK Population for Isotope - TH-228

Process Date Range: 06/21/10 - 05/05/11



Population Frequency Distribution (Histogram)

Bin	Frequency
<-0.015	0
<0.007	4
<0.029	9
<0.051	4
<0.073	2
<0.095	1



ARS INTERNATIONAL

Statistical Process Control

ARS1-B11-01647
TH-229

Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	06/21/10	11.24243	11.105837	11.1777202	11.321487	11.465254	11.537138
2	08/25/10	11.29530	11.105837	11.1777202	11.321487	11.465254	11.537138
3	09/01/10	11.23559	11.105837	11.1777202	11.321487	11.465254	11.537138
4	09/04/10	11.24995	11.105837	11.1777202	11.321487	11.465254	11.537138
5	09/04/10	11.24553	11.105837	11.1777202	11.321487	11.465254	11.537138
6	09/07/10	11.35495	11.105837	11.1777202	11.321487	11.465254	11.537138
7	09/14/10	11.22339	11.105837	11.1777202	11.321487	11.465254	11.537138
8	09/29/10	11.28856	11.105837	11.1777202	11.321487	11.465254	11.537138
9	10/06/10	11.35154	11.105837	11.1777202	11.321487	11.465254	11.537138
10	10/13/10	11.37363	11.105837	11.1777202	11.321487	11.465254	11.537138
11	10/19/10	11.29735	11.105837	11.1777202	11.321487	11.465254	11.537138
12	11/10/10	11.34149	11.105837	11.1777202	11.321487	11.465254	11.537138
13	12/08/10	11.30383	11.105837	11.1777202	11.321487	11.465254	11.537138
14	01/13/11	11.21420	11.105837	11.1777202	11.321487	11.465254	11.537138
15	01/24/11	11.39895	11.105837	11.1777202	11.321487	11.465254	11.537138
16	01/25/11	11.35413	11.105837	11.1777202	11.321487	11.465254	11.537138
17	01/31/11	11.37316	11.105837	11.1777202	11.321487	11.465254	11.537138
18	03/11/11	11.44811	11.105837	11.1777202	11.321487	11.465254	11.537138
19	04/26/11	11.41772	11.105837	11.1777202	11.321487	11.465254	11.537138
20	05/05/11	11.41994	11.105837	11.1777202	11.321487	11.465254	11.537138

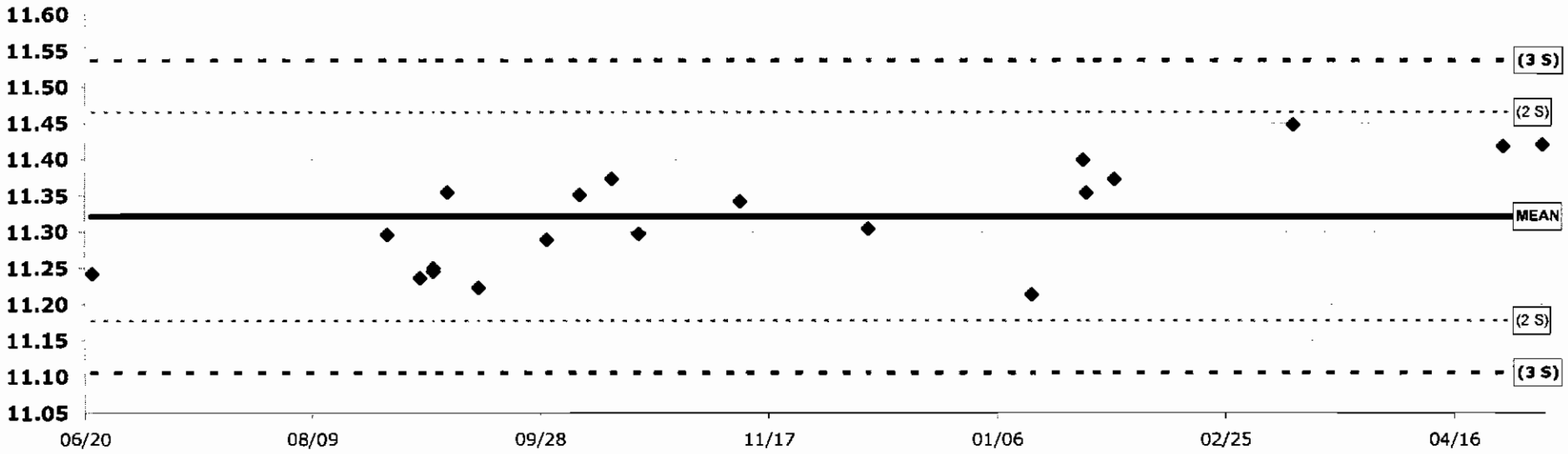
American Radiation Services
Baton Rouge Laboratory

Blank Population Analysis

		Statistical Quality Control(SQC) Rules Analysis	
Population Size	20		
Last Data Point Value	11.42	One or more points outside of the control limits.	OK
NSD	1.3696	A run of eight points on one side of the center line	OK
Average	11.3215	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	OK
Upper Control Limit (UCL)	11.5371	Four of five consecutive points beyond the 1-sigma limits.	OK
Standard Deviation	0.0719	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	11.1058	Several points near a warning or control limit.	OK

Batch ARS1-B11-01647 - BLK Population for Isotope - TH-229

Process Date Range: 06/21/10 - 05/05/11

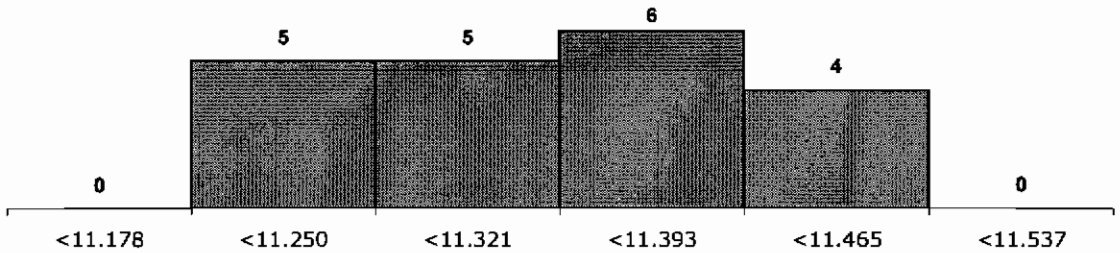


ARS INTERNATIONAL

Statistical Process Control

Bin	Frequency
<11.178	0
<11.250	5
<11.321	5
<11.393	6
<11.465	4
<11.537	0

Population Frequency Distribution (Histogram)



ARS1-B11-01647
TH-230

Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	06/21/10	0.07387	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
2	08/25/10	0.09121	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
3	09/01/10	0.07790	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
4	09/04/10	0.05259	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
5	09/04/10	0.08470	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
6	09/07/10	0.05888	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
7	09/14/10	0.05498	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
8	09/29/10	0.06448	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
9	10/06/10	0.08218	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
10	10/13/10	0.05634	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
11	10/19/10	0.32000	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
12	11/10/10	0.15718	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
13	12/08/10	0.04575	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
14	01/13/11	0.06337	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
15	01/24/11	0.02326	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
16	01/25/11	0.03179	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
17	01/31/11	0.07059	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
18	03/11/11	0.01034	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
19	04/26/11	0.56215	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063
20	05/05/11	0.16241	-0.271508	-0.14527212	0.1071993	0.3596706	0.4859063

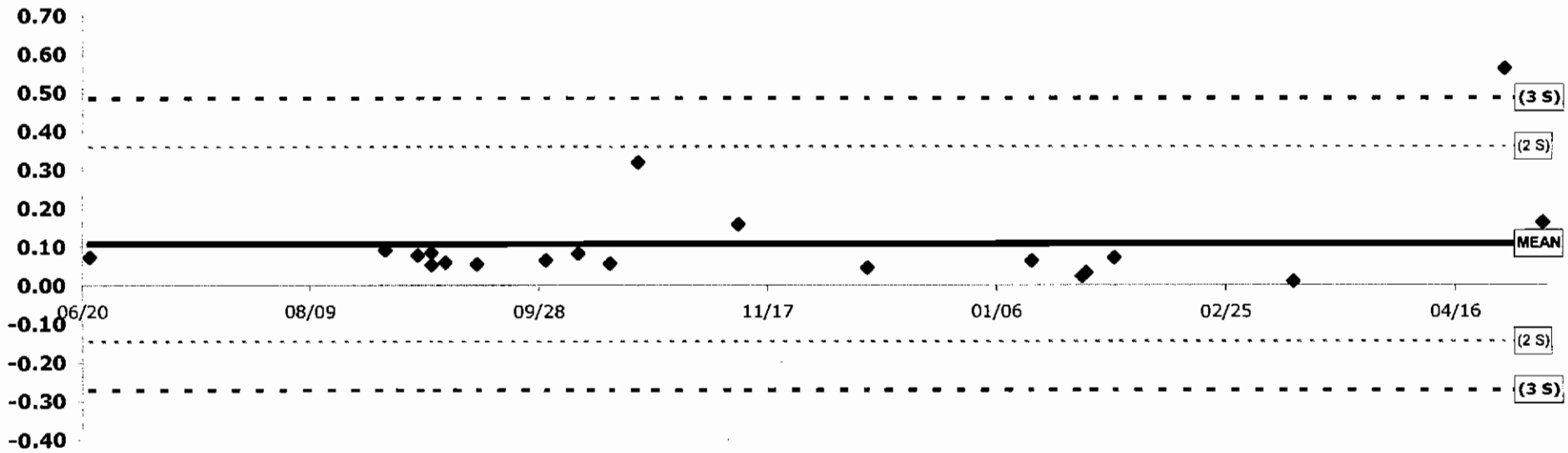
American Radiation Services
Baton Rouge Laboratory

Blank Population Analysis

		Statistical Quality Control(SQC) Rules Analysis	
Population Size	20		
Last Data Point Value	0.16	One or more points outside of the control limits.	OUT OF CONTROL
NSD	0.4374	A run of eight points on one side of the center line	INVESTIGATE
Average	0.1072	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	OK
Upper Control Limit (UCL)	0.4859	Four of five consecutive points beyond the 1-sigma limits.	OK
Standard Deviation	0.1262	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	-0.2715	Several points near a warning or control limit.	OK

Batch ARS1-B11-01647 - BLK Population for Isotope - TH-230

Process Date Range: 06/21/10 - 05/05/11

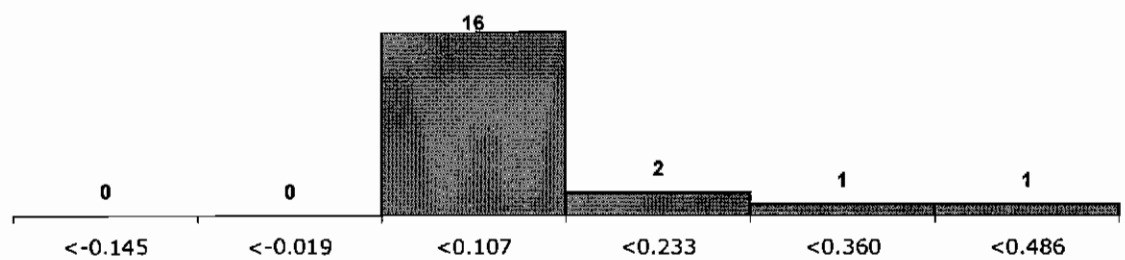


ARS INTERNATIONAL

Statistical Process Control

Population Frequency Distribution (Histogram)

Bin	Frequency
<-0.145	0
<-0.019	0
<0.107	16
<0.233	2
<0.360	1
<0.486	1



ARS1-B11-01647
TH-232

Data Point	Date	Value	LCL	LWL	Mean	UWL	UCL
1	06/21/10	0.00462	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
2	08/25/10	0.01520	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
3	09/01/10	0.02226	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
4	09/04/10	0.10518	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
5	09/04/10	0.02420	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
6	09/07/10	0.09881	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
7	09/14/10	0.01692	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
8	09/29/10	0.02303	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
9	10/06/10	0.01644	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
10	10/13/10	-0.00402	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
11	10/19/10	-0.01215	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
12	11/10/10	0.00403	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
13	12/08/10	0.00000	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
14	01/13/11	0.01132	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
15	01/24/11	-0.01861	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
16	01/25/11	0.00795	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
17	01/31/11	-0.00415	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
18	03/11/11	0.01379	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
19	04/26/11	0.01748	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545
20	05/05/11	0.01282	-0.075445	-0.04437858	0.0177546	0.0798879	0.1109545

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Baton Rouge Laboratory

Blank Population Analysis

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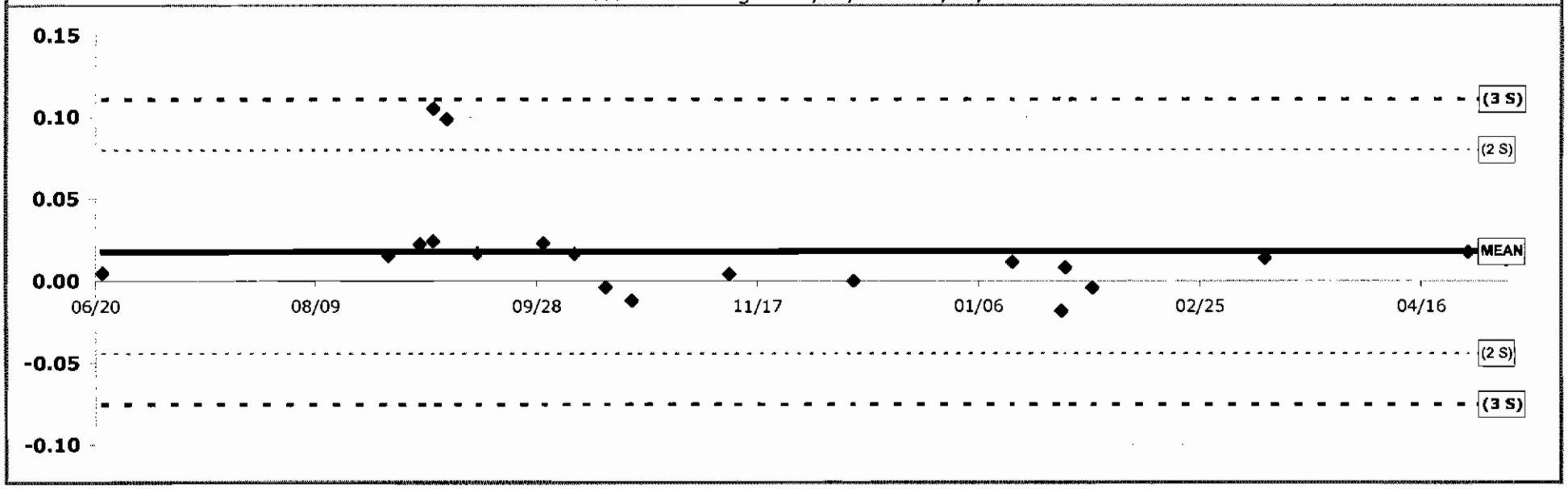
		Statistical Quality Control(SQC) Rules Analysis	
Population Size	20		
Last Data Point Value	0.01	One or more points outside of the control limits.	OK
NSD	-0.1588	A run of eight points on one side of the center line	INVESTIGATE
Average	0.0178	2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits	INVESTIGATE
Upper Control Limit (UCL)	0.1110	Four of five consecutive points beyond the 1-sigma limits.	OK
Standard Deviation	0.0311	A trend of seven points in a row upward or downward.	OK
Lower Control Limit (LCL)	-0.0754	Several points near a warning or control limit.	INVESTIGATE

Batch ARS1-B11-01647 - BLK Population for Isotope - TH-232

Process Date Range: 06/21/10 - 05/05/11

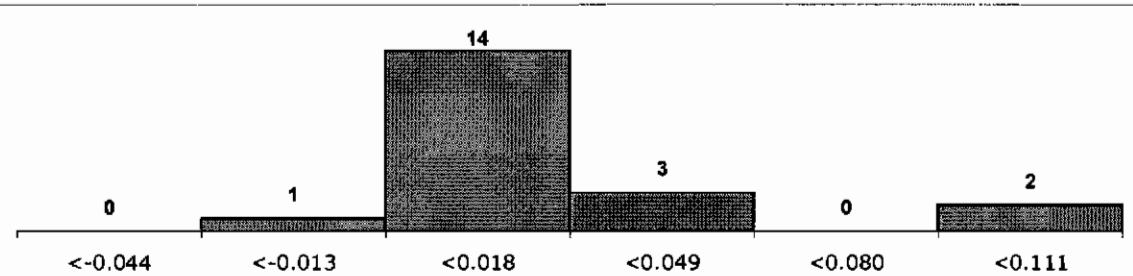


ARS INTERNATIONAL

Statistical Process Control

Population Frequency Distribution (Histogram)

Bin	Frequency
<-0.044	0
<-0.013	1
<0.018	14
<0.049	3
<0.080	0
<0.111	2



Alpha Spectroscopy Count Log Book – Canberra System

Sample Number	Batch Number	Chamber Number	Spectrum Number	Type of Analysis	Analysis Date and Time	Analyst Initials	Count Time (seconds)
11-01657-04	B11-01657	A12B	12139	Th	5-5-11 0353	[illegible]	86400
11-01657-05	↓	A13A	12140	↓	↓	[illegible]	↓
11-01657-06	↓	A13B	12141	↓	↓	[illegible]	↓
11-01657-07	↓	A14A ~~A12~~ [illegible] 5-5-11	~~12143~~ 12142 [illegible] 5-6-11	↓	↓	[illegible]	↓
11-01657-08	↓	A14B	12143	↓	↓	[illegible]	↓
11-01657-09	↓	A15A	12144	↓	↓	[illegible]	↓
11-01657-10	↓	A15B	12145	↓	↓	[illegible]	↓
11-01657-11	↓	A16A	12146	↓	↓	[illegible]	↓
11-01657-12	↓	A16B	12147	↓	↓	[illegible]	↓
11-01657-13	↓	[illegible] 5-5-11 A21A ~~A21B~~	12148	↓	↓	[illegible]	↓
11-01657-14	↓	[illegible] 5-5-11 A21B ~~A22A~~	12149	↓	↓	[illegible]	↓
11-01657-15	↓	A22A	12150	↓	↓	[illegible]	↓
11-01657-16	↓	A23B	12151	↓	↓	[illegible]	↓
11-01647-01	B11-01647	A24A	12152	↓	↓	[illegible]	↓
11-01647-02	↓	A24B	12154	↓	↓	[illegible]	↓

Reviewed By: [illegible] Date: 5-10-11
Initials

Alpha Spectroscopy Count Log Book – Canberra System

Sample Number	Batch Number	Chamber Number	Spectrum Number	Type of Analysis	Analysis Date and Time	Analyst Initials	Count Time (seconds)
11-01647-03	B11-01647	A25A	12155	Th	5-5-11 0353	[illegible]	86400
11-01647-04	↓	A25B	12156	↓	↓	[illegible]	↓
11-01647-05	↓	A31A	12157	↓	↓	[illegible]	↓
11-01647-06	↓	A31B	12158	↓	↓	[illegible]	↓
11-01647-07	↓	A32B	12159	↓	↓	[illegible]	↓
11-01647-08	↓	A33A	12160	↓	↓	[illegible]	↓
11-01647-09	↓	A33B	12161	↓	↓	[illegible]	↓
11-01647-10	↓	A34B	12162	↓	↓	[illegible]	↓
11-01647-11	↓	A35A	12163	↓	↓	[illegible]	↓
11-01647-12	↓	A36A	12164	↓	↓	[illegible]	↓
11-01647-13	↓	A36B	12165	↓	↓	[illegible]	↓
11-01660-01	B11-01660	A11A	12169	↓	5-6-11 1033	[illegible]	↓
11-01660-02	↓	A11B	12193	↓	↓	[illegible]	↓
11-01660-03	↓	A12A	12192	↓	↓	[illegible]	↓
11-01660-04	↓	A12B	12191	↓	↓	[illegible]	↓

Reviewed By: LSW Date: 5-10-11
Initials

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American Radiation Services Analytical Reports

for

Summit Environmental Technologies

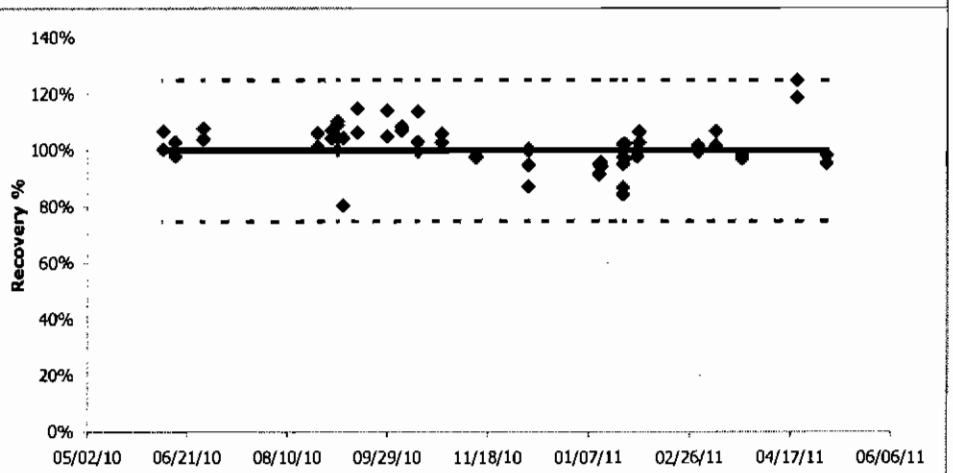
Thorium Alpha Spectroscopy Control Charts

American Radiation Services
Baton Rouge Laboratory

QC Chart

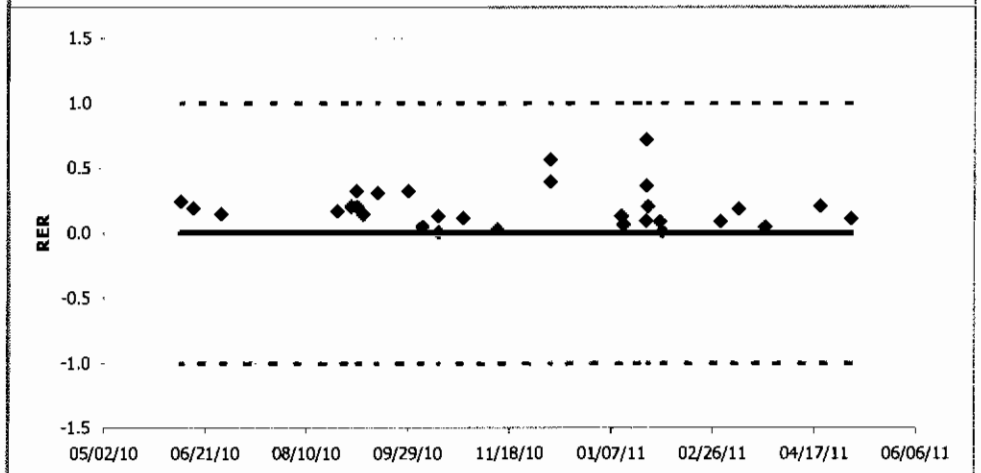
Printed: 5/10/2011 5:03 PM
Page 1 of 1

Th LCS



Average	STDEV	n	UCL	LCL
1.0189	0.0783	30	1.2500	0.7500

Th RER



		n	UCL	LCL
		30	1.0000	-1.0000

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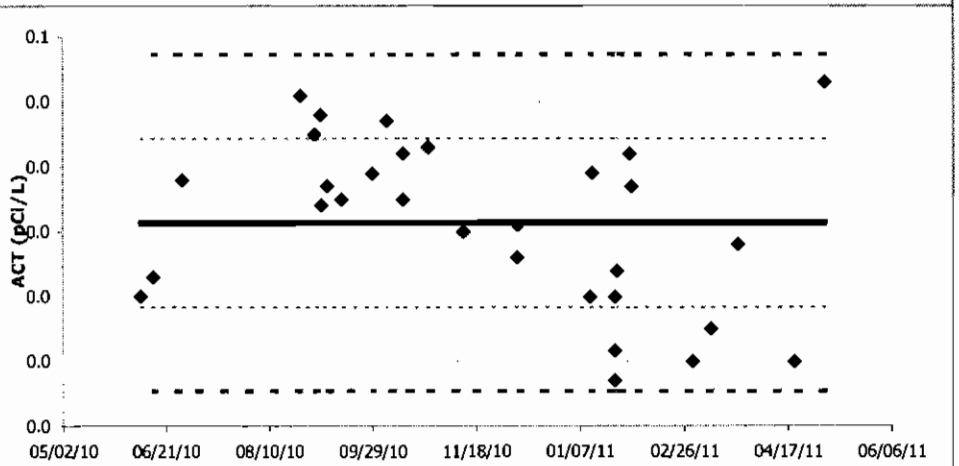
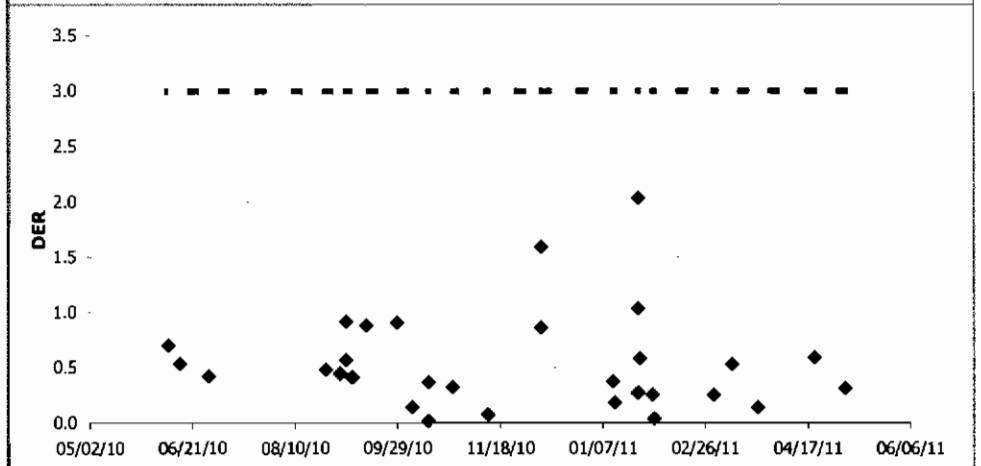


Average	STDEV	n	UCL	LCL
0.0214	0.0130	30	0.0473	-0.0046

Th DER



		n	UCL	
		30	3.0000	

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American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Alpha Spectroscopy Calibration Information

Alpha Calibration Report 2/24/2011 11:37:29

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008038.cn
Detector Name: A_1_1A
Chamber Serial Number: 10043743A
Detector Serial Number: 57895
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:25 by Countroom
Shape Calibration: 4/9/2010 20:07:25 by Countroom
Efficiency Calibration: 4/9/2010 20:56:03 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.994 MeV + 4.8826E-003*ch
FWHM = 5.7654E-002 MeV
Low Tail = 1.6117E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	247.40	0.1602	12.16	0.4148	3.34	0.3168
4.775	364.50	0.1651	11.24	0.4134	2.51	0.2370
5.157	442.28	0.0962	10.40	0.2462	2.72	0.1765
5.486	510.34	0.0604	12.45	0.1619	4.66	0.2048

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2125
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1281E-001	8.76E-003
4.775	2.0826E-001	8.58E-003
5.157	2.1141E-001	8.70E-003
5.486	2.1776E-001	8.96E-003

Alpha Calibration Report 2/24/2011 11:37:39

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008039.cn
Detector Name: A_1_1B
Chamber Serial Number: 10043743B
Detector Serial Number: 57896
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:23 by Countroom
Shape Calibration: 4/9/2010 20:07:23 by Countroom
Efficiency Calibration: 4/9/2010 20:56:53 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8833E-003*ch
FWHM = 6.0195E-002 MeV
Low Tail = 1.4244E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.48	0.2084	14.04	0.5381	3.84	0.4115
4.775	365.76	0.2480	12.68	0.6162	2.72	0.3372
5.157	443.89	0.1604	10.72	0.3957	2.27	0.2129
5.486	511.75	0.1078	12.59	0.2771	3.35	0.2043

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.1922
Uncertainty: +/- 0.0040

Energy (MeV)	Efficiency	Error
4.198	1.9170E-001	7.90E-003
4.775	1.9452E-001	8.02E-003
5.157	1.9294E-001	7.95E-003
5.486	1.8977E-001	7.82E-003

Alpha Calibration Report 2/24/2011 11:37:45

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008040.cn
Detector Name: A_1_2A
Chamber Serial Number: 10043744A
Detector Serial Number: 57897
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:21 by Countroom
Shape Calibration: 4/9/2010 20:07:21 by Countroom
Efficiency Calibration: 4/9/2010 20:57:28 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.977 MeV + 4.9125E-003*ch
FWHM = 5.6717E-002 MeV
Low Tail = 1.1572E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.85	0.2425	12.69	0.6064	2.82	0.3470
4.775	366.26	0.2711	10.35	0.6342	1.63	0.2370
5.157	443.16	0.1640	10.35	0.4064	2.17	0.2143
5.486	510.85	0.1463	12.55	0.3761	3.37	0.2785

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2164
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1893E-001	8.99E-003
4.775	2.1235E-001	8.73E-003
5.157	2.1768E-001	8.94E-003
5.486	2.1681E-001	8.91E-003

Alpha Calibration Report 2/24/2011 11:37:52

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008041.cn
Detector Name: A_1_2B
Chamber Serial Number: 10043744B
Detector Serial Number: 57898
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:19 by Countroom
Shape Calibration: 4/9/2010 20:07:19 by Countroom
Efficiency Calibration: 4/9/2010 20:58:18 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8889E-003*ch
FWHM = 5.9682E-002 MeV
Low Tail = 1.3980E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.38	0.2286	12.68	0.5722	2.91	0.3425
4.775	365.30	0.2707	12.25	0.6691	2.61	0.3646
5.157	443.34	0.1612	10.52	0.4021	2.30	0.2238
5.486	511.25	0.1282	13.21	0.3346	3.90	0.2863

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2196
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.2324E-001	9.16E-003
4.775	2.1019E-001	8.64E-003
5.157	2.2270E-001	9.14E-003
5.486	2.2328E-001	9.17E-003

Alpha Calibration Report 2/24/2011 11:37:58

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008046.cn
Detector Name: A_1_3A
Chamber Serial Number: 10043745A
Detector Serial Number: 57907
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:21 by Countroom
Shape Calibration: 4/10/2010 04:25:21 by Countroom
Efficiency Calibration: 4/11/2010 09:13:21 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.980 MeV + 4.9113E-003*ch
FWHM = 4.9657E-002 MeV
Low Tail = 1.0633E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.68	0.1668	9.38	0.4059	1.80	0.1915
4.775	365.32	0.2136	9.66	0.5138	1.80	0.2335
5.157	442.69	0.1250	9.10	0.3121	2.07	0.1844
5.486	510.49	0.1062	11.42	0.2816	3.77	0.2876

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2122
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1425E-001	8.81E-003
4.775	2.1233E-001	8.74E-003
5.157	2.0801E-001	8.57E-003
5.486	2.1434E-001	8.82E-003

Alpha Calibration Report 2/24/2011 11:38:04

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008047.cn
Detector Name: A_1_3B
Chamber Serial Number: 10043745B
Detector Serial Number: 57908
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:19 by Countroom
Shape Calibration: 4/10/2010 04:25:19 by Countroom
Efficiency Calibration: 4/11/2010 09:13:55 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9138E-003*ch
FWHM = 5.5624E-002 MeV
Low Tail = 1.1330E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.30	0.2335	10.97	0.5638	2.06	0.2590
4.775	365.46	0.2546	11.48	0.6198	2.25	0.3011
5.157	443.37	0.1808	9.78	0.4378	1.88	0.2079
5.486	510.82	0.1427	12.50	0.3680	3.42	0.2808

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2061
Uncertainty: +/- 0.0042

Energy (MeV)	Efficiency	Error
4.198	2.0722E-001	8.52E-003
4.775	2.0660E-001	8.50E-003
5.157	2.0655E-001	8.49E-003
5.486	2.0413E-001	8.40E-003

Alpha Calibration Report 2/24/2011 11:38:10

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008048.cn
Detector Name: A_1_4A
Chamber Serial Number: 10043746A
Detector Serial Number: 57909
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:18 by Countroom
Shape Calibration: 4/10/2010 04:25:18 by Countroom
Efficiency Calibration: 4/11/2010 09:14:49 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.978 MeV + 4.9105E-003*ch
FWHM = 6.1770E-002 MeV
Low Tail = 1.4252E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.64	0.2563	13.20	0.6451	3.14	0.4035
4.775	365.77	0.3055	11.78	0.7376	2.24	0.3424
5.157	443.45	0.1886	10.35	0.4610	2.09	0.2324
5.486	510.66	0.1040	13.37	0.2745	4.27	0.2665

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2259
Uncertainty: +/- 0.0046

Energy (MeV)	Efficiency	Error
4.198	2.2669E-001	9.30E-003
4.775	2.2972E-001	9.43E-003
5.157	2.2620E-001	9.28E-003
5.486	2.2142E-001	9.09E-003

Alpha Calibration Report 2/24/2011 11:38:16

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008049.cn
Detector Name: A_1_4B
Chamber Serial Number: 10043746B
Detector Serial Number: 57910
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:17 by Countroom
Shape Calibration: 4/10/2010 04:25:17 by Countroom
Efficiency Calibration: 4/11/2010 09:15:19 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.983 MeV + 4.8903E-003*ch
FWHM = 6.1459E-002 MeV
Low Tail = 1.4881E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.90	0.2617	14.07	0.6789	3.91	0.5283
4.775	366.20	0.2507	12.28	0.6192	2.63	0.3381
5.157	444.23	0.1492	10.51	0.3722	2.31	0.2086
5.486	511.79	0.1047	13.52	0.2778	4.49	0.2876

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2164
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1779E-001	8.95E-003
4.775	2.1023E-001	8.64E-003
5.157	2.1880E-001	8.98E-003
5.486	2.1948E-001	9.02E-003

Alpha Calibration Report 2/24/2011 11:38:22

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008054.cn
Detector Name: A_1_5A
Chamber Serial Number: 10043747A
Detector Serial Number: 57911
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:41 by Countroom
Shape Calibration: 4/11/2010 17:28:41 by Countroom
Efficiency Calibration: 4/11/2010 18:32:55 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.984 MeV + 4.8897E-003*ch
FWHM = 5.1623E-002 MeV
Low Tail = 1.1344E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.03	0.1877	10.55	0.4664	2.32	0.2634
4.775	366.42	0.1888	9.07	0.4492	1.54	0.1819
5.157	443.58	0.1267	9.77	0.3224	2.42	0.2140
5.486	511.89	0.0975	11.56	0.2593	3.85	0.2678

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2092
Uncertainty: +/- 0.0043

Energy (MeV)	Efficiency	Error
4.198	2.0798E-001	8.56E-003
4.775	2.0844E-001	8.59E-003
5.157	2.1016E-001	8.65E-003
5.486	2.1030E-001	8.66E-003

Alpha Calibration Report 2/24/2011 11:38:28

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008055.cn
Detector Name: A_1_5B
Chamber Serial Number: 10043747B
Detector Serial Number: 57912
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:40 by Countroom
Shape Calibration: 4/11/2010 17:28:40 by Countroom
Efficiency Calibration: 4/11/2010 18:33:27 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.983 MeV + 4.9065E-003*ch
FWHM = 5.5961E-002 MeV
Low Tail = 1.1378E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.00	0.2314	12.16	0.5731	2.64	0.3181
4.775	365.10	0.2336	10.43	0.5549	1.79	0.2285
5.157	442.90	0.1554	9.44	0.3765	1.77	0.1730
5.486	510.17	0.1051	12.51	0.2737	3.62	0.2274

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2047
Uncertainty: +/- 0.0042

Energy (MeV)	Efficiency	Error
4.198	2.0623E-001	8.48E-003
4.775	2.0457E-001	8.42E-003
5.157	2.0543E-001	8.45E-003
5.486	2.0278E-001	8.34E-003

Alpha Calibration Report 2/24/2011 11:38:34

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008056.cn
Detector Name: A_1_6A
Chamber Serial Number: 10043748A
Detector Serial Number: 57913
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:38 by Countroom
Shape Calibration: 4/11/2010 17:28:38 by Countroom
Efficiency Calibration: 4/11/2010 18:33:56 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.984 MeV + 4.8861E-003*ch
FWHM = 6.0193E-002 MeV
Low Tail = 1.5559E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.33	0.2342	13.18	0.5906	3.12	0.3682
4.775	365.93	0.2966	12.72	0.7289	2.64	0.3815
5.157	443.99	0.1659	10.60	0.4080	2.18	0.2105
5.486	511.96	0.0547	12.36	0.0752	3.28	0.0580

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2250
Uncertainty: +/- 0.0046

Energy (MeV)	Efficiency	Error
4.198	2.2625E-001	9.28E-003
4.775	2.2317E-001	9.17E-003
5.157	2.2747E-001	9.33E-003
5.486	2.2324E-001	9.16E-003

Alpha Calibration Report 2/24/2011 11:38:41

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008057.cn
Detector Name: A_1_6B
Chamber Serial Number: 10043748B
Detector Serial Number: 57914
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:37 by Countroom
Shape Calibration: 4/11/2010 17:28:37 by Countroom
Efficiency Calibration: 4/11/2010 18:34:27 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.980 MeV + 4.8993E-003*ch
FWHM = 5.9778E-002 MeV
Low Tail = 1.3391E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.58	0.2586	11.58	0.6258	2.21	0.2944
4.775	365.94	0.2326	11.57	0.5651	2.25	0.2726
5.157	443.70	0.1830	10.72	0.4510	2.27	0.2424
5.486	511.53	0.1042	13.00	0.2724	3.85	0.2333

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2243
Uncertainty: +/- 0.0046

Energy (MeV)	Efficiency	Error
4.198	2.2589E-001	9.27E-003
4.775	2.2008E-001	9.04E-003
5.157	2.2431E-001	9.20E-003
5.486	2.2718E-001	9.32E-003

Alpha Calibration Report 2/24/2011 11:38:46

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008062.cn
Detector Name: A_2_1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 01:36:29 by Countroom
Shape Calibration: 4/12/2010 01:36:29 by Countroom
Efficiency Calibration: 4/12/2010 10:36:04 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9081E-003*ch
FWHM = 4.9742E-002 MeV
Low Tail = 1.1055E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.76	0.1868	10.25	0.4602	2.16	0.2460
4.775	366.46	0.1968	9.22	0.4711	1.63	0.2009
5.157	443.65	0.1188	8.63	0.2934	1.80	0.1541
5.486	511.43	0.0731	10.91	0.1914	3.25	0.1667

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2205
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.2008E-001	9.05E-003
4.775	2.1744E-001	8.95E-003
5.157	2.2335E-001	9.18E-003
5.486	2.2138E-001	9.10E-003

Alpha Calibration Report 2/24/2011 11:38:53

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008081.cn
Detector Name: A_2_1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 02:51:58 by Countroom
Shape Calibration: 4/13/2010 02:51:58 by Countroom
Efficiency Calibration: 4/13/2010 09:49:08 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.990 MeV + 4.8791E-003*ch
FWHM = 5.7970E-002 MeV
Low Tail = 1.2280E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.13	0.2401	11.49	0.5867	2.28	0.2902
4.775	365.58	0.2491	10.98	0.5966	1.98	0.2617
5.157	443.76	0.1754	10.10	0.4278	1.99	0.2095
5.486	511.60	0.1069	12.93	0.2797	3.84	0.2418

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2148
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1391E-001	8.79E-003
4.775	2.1624E-001	8.89E-003
5.157	2.1645E-001	8.89E-003
5.486	2.1258E-001	8.74E-003

Alpha Calibration Report 2/24/2011 11:38:59

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008064.cn
Detector Name: A_2_2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 02:27:31 by Countroom
Shape Calibration: 4/12/2010 02:27:31 by Countroom
Efficiency Calibration: 4/12/2010 10:37:23 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.980 MeV + 4.9030E-003*ch
FWHM = 6.3766E-002 MeV
Low Tail = 1.5838E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.81	0.2348	14.09	0.6039	3.74	0.4427
4.775	365.84	0.2834	12.45	0.6928	2.54	0.3502
5.157	443.48	0.1886	11.05	0.4709	2.43	0.2654
5.486	511.07	0.1062	13.55	0.2794	4.12	0.2494

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2232
Uncertainty: +/- 0.0046

Energy (MeV)	Efficiency	Error
4.198	2.2518E-001	9.24E-003
4.775	2.2476E-001	9.23E-003
5.157	2.2219E-001	9.12E-003
5.486	2.2075E-001	9.06E-003

Alpha Calibration Report 2/24/2011 11:39:06

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008065.cn
Detector Name: A_2_2B
Chamber Serial Number: 12044980B
Detector Serial Number: 55797
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 02:27:35 by Countroom
Shape Calibration: 4/12/2010 02:27:35 by Countroom
Efficiency Calibration: 4/12/2010 10:38:36 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 3.011 MeV + 4.8460E-003*ch
FWHM = 5.9319E-002 MeV
Low Tail = 1.3484E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	245.56	0.2490	12.77	0.6251	2.97	0.3816
4.775	363.41	0.2480	12.22	0.6095	2.48	0.3112
5.157	442.44	0.1779	10.28	0.4331	2.05	0.2150
5.486	510.65	0.1089	12.98	0.2848	3.83	0.2444

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2199
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.2099E-001	9.07E-003
4.775	2.1343E-001	8.77E-003
5.157	2.2116E-001	9.08E-003
5.486	2.2441E-001	9.21E-003

Alpha Calibration Report 2/24/2011 11:39:12

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008513.cn
Detector Name: A_2_3A
Chamber Serial Number: 12044981A
Detector Serial Number: 55798
Geometry Description: Shelf 2

Energy Calibration: 5/21/2010 18:14:32 by test
Shape Calibration: 5/21/2010 18:14:32 by test
Efficiency Calibration: 5/24/2010 08:34:35 by test
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 3.000 MeV + 4.9151E-003*ch
FWHM = 5.0565E-002 MeV
Low Tail = 1.1431E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	244.76	0.1645	10.27	0.4056	2.18	0.2184
4.775	360.70	0.1879	10.29	0.4605	2.12	0.2386
5.157	438.31	0.1171	8.95	0.2888	1.92	0.1570
5.486	506.04	0.0918	11.22	0.2412	3.48	0.2225

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2188
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.2301E-001	9.16E-003
4.775	2.1742E-001	8.95E-003
5.157	2.1724E-001	8.93E-003
5.486	2.1778E-001	8.96E-003

Alpha Calibration Report 2/24/2011 11:39:18

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008514.cn
Detector Name: A_2_3B
Chamber Serial Number: 12044981B
Detector Serial Number: 55799
Geometry Description: Shelf 2

Energy Calibration: 5/21/2010 18:14:43 by test
Shape Calibration: 5/21/2010 18:14:43 by test
Efficiency Calibration: 5/24/2010 08:35:23 by test
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.996 MeV + 4.9199E-003*ch
FWHM = 6.0350E-002 MeV
Low Tail = 1.3732E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	244.47	0.2346	12.48	0.5854	2.81	0.3415
4.775	361.87	0.2679	10.34	0.6327	1.68	0.2451
5.157	438.44	0.2013	10.93	0.5045	2.44	0.2902
5.486	506.05	0.0939	12.84	0.2457	3.82	0.2132

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2134
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1364E-001	8.78E-003
4.775	2.1437E-001	8.82E-003
5.157	2.1494E-001	8.83E-003
5.486	2.1081E-001	8.67E-003

Alpha Calibration Report 2/24/2011 11:39:24

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008082.cn
Detector Name: A_2_4A
Chamber Serial Number: 12044982A
Detector Serial Number: 55800
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 17:41:27 by Countroom
Shape Calibration: 4/12/2010 17:41:27 by Countroom
Efficiency Calibration: 4/13/2010 09:49:41 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.986 MeV + 4.8860E-003*ch
FWHM = 5.8711E-002 MeV
Low Tail = 1.3220E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.15	0.2425	13.53	0.6145	3.28	0.3958
4.775	365.66	0.2464	12.84	0.6125	2.81	0.3416
5.157	443.85	0.1716	10.82	0.4211	2.23	0.2182
5.486	511.92	0.1374	12.09	0.3502	3.00	0.2332

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2250
Uncertainty: +/- 0.0046

Energy (MeV)	Efficiency	Error
4.198	2.2869E-001	9.38E-003
4.775	2.2368E-001	9.19E-003
5.157	2.2797E-001	9.35E-003
5.486	2.1992E-001	9.03E-003

Alpha Calibration Report 2/24/2011 11:39:31

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008083.cn
Detector Name: A_2_4B
Chamber Serial Number: 12044982B
Detector Serial Number: 55801
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 18:36:12 by Countroom
Shape Calibration: 4/12/2010 18:36:12 by Countroom
Efficiency Calibration: 4/13/2010 09:50:10 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.981 MeV + 4.9105E-003*ch
FWHM = 5.8244E-002 MeV
Low Tail = 1.2717E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.52	0.2488	11.80	0.6090	2.37	0.3057
4.775	364.69	0.2607	11.99	0.6416	2.50	0.3371
5.157	442.73	0.1745	9.87	0.4254	1.94	0.2077
5.486	510.10	0.1153	12.83	0.2994	3.67	0.2441

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2158
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1617E-001	8.88E-003
4.775	2.1332E-001	8.77E-003
5.157	2.1771E-001	8.94E-003
5.486	2.1616E-001	8.88E-003

Alpha Calibration Report 2/24/2011 11:39:38

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008088.cn
Detector Name: A_2_5A
Chamber Serial Number: 12044983A
Detector Serial Number: 55802
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:15 by Countroom
Shape Calibration: 4/13/2010 16:52:15 by Countroom
Efficiency Calibration: 4/13/2010 20:11:11 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8898E-003*ch
FWHM = 5.1736E-002 MeV
Low Tail = 1.2152E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.63	0.1859	10.71	0.4630	2.38	0.2641
4.775	365.38	0.2055	10.17	0.4991	1.99	0.2421
5.157	443.10	0.1211	9.07	0.3014	1.98	0.1674
5.486	511.16	0.0784	11.34	0.2072	3.69	0.2066

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.1858E-001	8.99E-003
4.775	2.1889E-001	9.01E-003
5.157	2.1963E-001	9.03E-003
5.486	2.1880E-001	9.00E-003

Alpha Calibration Report 2/24/2011 11:39:44

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008089.cn
Detector Name: A_2_5B
Chamber Serial Number: 12044983B
Detector Serial Number: 55803
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:14 by Countroom
Shape Calibration: 4/13/2010 16:52:14 by Countroom
Efficiency Calibration: 4/13/2010 20:11:42 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9039E-003*ch
FWHM = 5.8829E-002 MeV
Low Tail = 1.3010E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.40	0.2267	12.61	0.5701	2.97	0.3535
4.775	367.36	0.2642	10.23	0.6193	1.63	0.2332
5.157	444.10	0.1664	10.91	0.4173	2.54	0.2540
5.486	511.90	0.1109	12.75	0.2902	3.77	0.2487

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2130
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1648E-001	8.89E-003
4.775	2.1009E-001	8.64E-003
5.157	2.1299E-001	8.75E-003
5.486	2.1281E-001	8.75E-003

Alpha Calibration Report 2/24/2011 11:39:51

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008090.cn
Detector Name: A_2_6A
Chamber Serial Number: 12044984A
Detector Serial Number: 55804
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:12 by Countroom
Shape Calibration: 4/13/2010 16:52:12 by Countroom
Efficiency Calibration: 4/13/2010 20:12:14 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.982 MeV + 4.8867E-003*ch
FWHM = 5.9367E-002 MeV
Low Tail = 1.3752E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.66	0.2446	13.42	0.6146	3.15	0.3794
4.775	366.64	0.2589	12.30	0.6338	2.46	0.3176
5.157	444.54	0.1646	10.92	0.4079	2.35	0.2232
5.486	512.52	0.1137	12.46	0.2921	3.28	0.2115

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2248
Uncertainty: +/- 0.0046

Energy (MeV)	Efficiency	Error
4.198	2.2815E-001	9.36E-003
4.775	2.2302E-001	9.16E-003
5.157	2.2375E-001	9.18E-003
5.486	2.2430E-001	9.21E-003

Alpha Calibration Report 2/24/2011 11:39:57

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008091.cn
Detector Name: A_2_6B
Chamber Serial Number: 12044984B
Detector Serial Number: 55805
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:11 by Countroom
Shape Calibration: 4/13/2010 16:52:11 by Countroom
Efficiency Calibration: 4/13/2010 20:12:47 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.978 MeV + 4.9004E-003*ch
FWHM = 5.9702E-002 MeV
Low Tail = 1.3766E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.50	0.2280	12.37	0.5676	2.74	0.3234
4.775	366.12	0.2513	12.00	0.6168	2.48	0.3224
5.157	444.25	0.1908	10.31	0.4656	2.04	0.2291
5.486	511.77	0.1173	12.83	0.2756	3.82	0.2345

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.1924E-001	9.00E-003
4.775	2.1227E-001	8.73E-003
5.157	2.2292E-001	9.15E-003
5.486	2.2201E-001	9.12E-003

Alpha Calibration Report 2/24/2011 11:40:03

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008606.cn
Detector Name: A_3_1A
Chamber Serial Number: 12044985A
Detector Serial Number: 55806
Geometry Description: Shelf 2

Energy Calibration: 5/27/2010 20:44:58 by Countroom
Shape Calibration: 5/27/2010 20:44:58 by Countroom
Efficiency Calibration: 5/28/2010 09:42:00 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.986 MeV + 4.8963E-003*ch
FWHM = 5.1530E-002 MeV
Low Tail = 1.1820E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.64	0.1886	10.14	0.4606	2.04	0.2318
4.775	364.96	0.1742	10.03	0.4269	1.96	0.2064
5.157	442.69	0.1168	9.14	0.2914	2.07	0.1714
5.486	510.66	0.0817	11.49	0.2153	3.55	0.1979

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2230
Uncertainty: +/- 0.0046

Energy (MeV)	Efficiency	Error
4.198	2.2559E-001	9.27E-003
4.775	2.2125E-001	9.10E-003
5.157	2.2375E-001	9.20E-003
5.486	2.2163E-001	9.11E-003

Alpha Calibration Report 2/24/2011 11:40:09

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008118.cn
Detector Name: A_3_1B
Chamber Serial Number: 12044985B
Detector Serial Number: 55807
Geometry Description: Shelf 2

Energy Calibration: 4/17/2010 21:22:33 by Countroom
Shape Calibration: 4/17/2010 21:22:33 by Countroom
Efficiency Calibration: 4/18/2010 15:12:35 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.982 MeV + 4.8949E-003*ch
FWHM = 5.7620E-002 MeV
Low Tail = 1.3849E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.74	0.2496	11.82	0.6117	2.41	0.3138
4.775	365.89	0.2311	12.04	0.5674	2.49	0.2956
5.157	443.62	0.1523	10.86	0.3836	2.52	0.2320
5.486	511.66	0.0972	12.10	0.2516	3.37	0.1967

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2098
Uncertainty: +/- 0.0043

Energy (MeV)	Efficiency	Error
4.198	2.0756E-001	8.54E-003
4.775	2.1337E-001	8.78E-003
5.157	2.1269E-001	8.74E-003
5.486	2.0603E-001	8.47E-003

Alpha Calibration Report 2/24/2011 11:40:15

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008604.cn
Detector Name: A_3_2A
Chamber Serial Number: 12045128A
Detector Serial Number: 55808
Geometry Description: Shelf 2

Energy Calibration: 1/18/2010 20:52:22 by jarmstrong
Shape Calibration: 1/18/2010 20:52:22 by jarmstrong
Efficiency Calibration: 1/19/2010 08:12:58 by jarmstrong
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 3000.0 MeV + 1.0000E+000*ch
FWHM = 2.5000E+001 MeV
Low Tail = <none>

No Calibration Peaks Available

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4198.000	2.2118E-001	9.08E-003
4774.600	2.1766E-001	8.94E-003
5156.590	2.1978E-001	9.02E-003
5485.560	2.1738E-001	8.93E-003

Alpha Calibration Report 2/24/2011 11:40:21

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008119.cn
Detector Name: A_3_2B
Chamber Serial Number: 12045128B
Detector Serial Number: 55809
Geometry Description: Shelf 2

Energy Calibration: 4/17/2010 21:22:30 by Countroom
Shape Calibration: 4/17/2010 21:22:30 by Countroom
Efficiency Calibration: 4/18/2010 15:13:08 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.991 MeV + 4.8904E-003*ch
FWHM = 6.0011E-002 MeV
Low Tail = 1.4919E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	247.97	0.2466	12.24	0.6094	2.62	0.3322
4.775	364.48	0.2355	12.21	0.5822	2.56	0.3092
5.157	442.22	0.1694	11.22	0.4266	2.66	0.2669
5.486	510.31	0.0963	12.65	0.2515	3.72	0.2148

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2206
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.2004E-001	9.04E-003
4.775	2.1576E-001	8.87E-003
5.157	2.2461E-001	9.22E-003
5.486	2.2225E-001	9.13E-003

Alpha Calibration Report 2/24/2011 11:40:27

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008120.cn
Detector Name: A_3_3A
Chamber Serial Number: 12045129A
Detector Serial Number: 55810
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:02 by Countroom
Shape Calibration: 4/14/2010 05:15:02 by Countroom
Efficiency Calibration: 4/18/2010 15:15:02 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.977 MeV + 4.9062E-003*ch
FWHM = 4.7685E-002 MeV
Low Tail = 9.7367E-003 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	250.04	0.1885	9.26	0.4499	1.65	0.1940
4.775	366.49	0.1784	8.93	0.4236	1.47	0.1648
5.157	443.27	0.1141	9.36	0.2888	2.20	0.1780
5.486	511.73	0.1045	10.52	0.2699	2.82	0.1986

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2191
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.2191E-001	9.12E-003
4.775	2.1993E-001	9.05E-003
5.157	2.1684E-001	8.92E-003
5.486	2.1781E-001	8.96E-003

Alpha Calibration Report 2/24/2011 11:40:33

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008121.cn
Detector Name: A_3_3B
Chamber Serial Number: 12045129B
Detector Serial Number: 55811
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:00 by Countroom
Shape Calibration: 4/14/2010 05:15:00 by Countroom
Efficiency Calibration: 4/18/2010 15:15:32 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9096E-003*ch
FWHM = 6.0051E-002 MeV
Low Tail = 1.3852E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.47	0.2276	12.49	0.5651	2.72	0.3155
4.775	366.25	0.2738	11.44	0.6610	2.12	0.2993
5.157	443.67	0.1748	10.87	0.4363	2.44	0.2529
5.486	511.33	0.1177	13.00	0.3078	3.89	0.2685

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2124
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.0994E-001	8.63E-003
4.775	2.1591E-001	8.88E-003
5.157	2.1585E-001	8.87E-003
5.486	2.0831E-001	8.57E-003

Alpha Calibration Report 2/24/2011 11:40:39

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008122.cn
Detector Name: A_3_4A
Chamber Serial Number: 12045130A
Detector Serial Number: 55812
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:06 by Countroom
Shape Calibration: 4/14/2010 05:15:06 by Countroom
Efficiency Calibration: 4/18/2010 15:16:03 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.981 MeV + 4.8980E-003*ch
FWHM = 6.0307E-002 MeV
Low Tail = 1.4323E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.33	0.2520	13.47	0.6414	3.30	0.4209
4.775	365.80	0.2208	12.61	0.5526	2.81	0.3165
5.157	443.80	0.1783	10.83	0.4416	2.36	0.2462
5.486	511.51	0.1340	12.77	0.3474	3.51	0.2656

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2175
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.2013E-001	9.04E-003
4.775	2.1787E-001	8.95E-003
5.157	2.1707E-001	8.91E-003
5.486	2.1512E-001	8.84E-003

Alpha Calibration Report 2/24/2011 11:40:45

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008123.cn
Detector Name: A_3_4B
Chamber Serial Number: 12045130B
Detector Serial Number: 55813
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:04 by Countroom
Shape Calibration: 4/14/2010 05:15:04 by Countroom
Efficiency Calibration: 4/18/2010 15:16:34 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8996E-003*ch
FWHM = 5.6621E-002 MeV
Low Tail = 1.1136E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	247.86	0.2586	11.05	0.6231	2.02	0.2804
4.775	364.84	0.2305	10.28	0.5453	1.69	0.2133
5.157	441.99	0.1954	10.82	0.4837	2.34	0.2666
5.486	510.19	0.1447	12.78	0.3748	3.58	0.2953

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2157
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1478E-001	8.83E-003
4.775	2.1077E-001	8.67E-003
5.157	2.1735E-001	8.93E-003
5.486	2.2054E-001	9.06E-003

Alpha Calibration Report 2/24/2011 11:40:51

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008128.cn
Detector Name: A_3_5A
Chamber Serial Number: 12045131A
Detector Serial Number: 55814
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:20 by Countroom
Shape Calibration: 4/18/2010 21:27:20 by Countroom
Efficiency Calibration: 4/19/2010 14:24:55 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

----- ENERGY / SHAPE CALIBRATION -----

Version: Alpha Encal v1.1
Energy = 2.988 MeV + 4.8982E-003*ch
FWHM = 4.9981E-002 MeV
Low Tail = 1.1096E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	248.09	0.1948	9.77	0.4737	1.89	0.2270
4.775	364.86	0.2099	9.21	0.4985	1.58	0.2054
5.157	441.94	0.1346	9.21	0.3388	2.15	0.2077
5.486	510.20	0.0864	10.96	0.2270	3.27	0.1967

----- EFFICIENCY CALIBRATION -----

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2132
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1535E-001	8.86E-003
4.775	2.0935E-001	8.62E-003
5.157	2.1408E-001	8.81E-003
5.486	2.1435E-001	8.82E-003

Alpha Calibration Report 2/24/2011 11:40:57

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008129.cn
Detector Name: A_3_5B
Chamber Serial Number: 12045131B
Detector Serial Number: 55815
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:25 by Countroom
Shape Calibration: 4/18/2010 21:27:25 by Countroom
Efficiency Calibration: 4/19/2010 14:25:36 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.982 MeV + 4.8985E-003*ch
FWHM = 5.8445E-002 MeV
Low Tail = 1.3560E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.00	0.2268	12.27	0.5634	2.69	0.3172
4.775	365.90	0.2588	11.35	0.6258	2.14	0.2903
5.157	443.33	0.1537	10.86	0.3853	2.47	0.2265
5.486	511.30	0.1131	12.59	0.2935	3.54	0.2339

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2140
Uncertainty: +/- 0.0044

Energy (MeV)	Efficiency	Error
4.198	2.1312E-001	8.76E-003
4.775	2.1696E-001	8.92E-003
5.157	2.1443E-001	8.81E-003
5.486	2.1155E-001	8.69E-003

Alpha Calibration Report 2/24/2011 11:41:03

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008130.cn
Detector Name: A_3_6A
Chamber Serial Number: 12045132A
Detector Serial Number: 55816
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:23 by Countroom
Shape Calibration: 4/18/2010 21:27:23 by Countroom
Efficiency Calibration: 4/19/2010 14:26:08 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.979 MeV + 4.8995E-003*ch
FWHM = 6.2078E-002 MeV
Low Tail = 1.4874E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.35	0.2328	13.64	0.5925	3.36	0.3892
4.775	366.38	0.2533	12.14	0.6200	2.40	0.3050
5.157	444.09	0.1968	11.15	0.4862	2.36	0.2620
5.486	511.76	0.1039	13.04	0.2715	3.77	0.2251

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.1813E-001	8.96E-003
4.775	2.1835E-001	8.97E-003
5.157	2.2364E-001	9.18E-003
5.486	2.1629E-001	8.88E-003

Alpha Calibration Report 2/24/2011 11:41:09

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008131.cn
Detector Name: A_3_6B
Chamber Serial Number: 12045132B
Detector Serial Number: 55817
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:22 by Countroom
Shape Calibration: 4/18/2010 21:27:22 by Countroom
Efficiency Calibration: 4/19/2010 14:26:42 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.979 MeV + 4.8985E-003*ch
FWHM = 6.0932E-002 MeV
Low Tail = 1.3842E-002 MeV

Energy (MeV)	Centroid Channel	Centroid error	FWHM (ch)	FWHM error	TAIL (ch)	TAIL error
4.198	249.20	0.1818	12.79	0.4608	3.09	0.2952
4.775	366.43	0.2257	11.55	0.5494	2.25	0.2646
5.157	444.34	0.1747	10.42	0.4286	2.12	0.2186
5.486	511.85	0.1064	13.40	0.2798	4.12	0.2551

EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2172
Uncertainty: +/- 0.0045

Energy (MeV)	Efficiency	Error
4.198	2.1581E-001	8.87E-003
4.775	2.1427E-001	8.81E-003
5.157	2.2020E-001	9.04E-003
5.486	2.1881E-001	8.99E-003

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Folder Duplicate

Report Compilation Checklist

ARS SDG: 11-00895 **Client Name:** Summit Environ. **Sample Matrix:** SO

LEVEL 1 COMPONENTS	1st Reviewer	
1) Cover Page Complete and Accurate (see ARS-059)?	~~Yes~~ No N/A	
2) Technical Review Checklist(s) Complete and Accurate?	~~Yes~~ No N/A	
3) Case Narrative Complete and Accurate (see ARS-059)?	~~Yes~~ No N/A	
4) Form 1s Present for all Samples and Tests?	~~Yes~~ No N/A	
5) Client Specific Components are Present and Complete?	~~Yes~~ No N/A	

LEVEL 2 COMPONENTS	1st Reviewer	
6) Batch Quality Control Report is Present and Accurate?	~~Yes~~ No N/A	
7) DQO Report is Present and Accurate?	~~Yes~~ No N/A	
8) Client Specific Batch QC Components are Present and Complete?	~~Yes~~ No N/A	

LEVEL 3 COMPONENTS	1st Reviewer	
9) Efficiencies are Present?	~~Yes~~ No N/A	
10) Calibrations are Present?	~~Yes~~ No N/A	
11) Backgrounds are Present?	~~Yes~~ No N/A	
12) Spectrum Analysis is Present?	~~Yes~~ No N/A	
13) Spectral Plots are Present?	~~Yes~~ No N/A	
14) Plateaus are Present?	~~Yes~~ No N/A	
15) Control Charts are Present?	~~Yes~~ No N/A	
16) Other:	~~Yes~~ No N/A	

LEVEL 4 COMPONENTS	1st Reviewer	
17) Preparation Raw Data Present, Signed and Complete?	~~Yes~~ No N/A	
18) Instrument Raw Data Present and Complete?	~~Yes~~ No N/A	
19) Calibration Certificates Present?	~~Yes~~ No N/A	
20) Copies of Log Book Pages Present?	~~Yes~~ No N/A	
21) Sample Receiving Documentation Present?	~~Yes~~ No N/A	
22) LIMS Reports Present?	~~Yes~~ No N/A	
23) Applicable Correspondence Present?	~~Yes~~ No N/A	
24) Other:	~~Yes~~ No N/A	

Heather Wright 5-10-11 — Report Generator Signature — Date

VLM 5-11-11 — Management Review Signature — Date

ARS-059
07/03/2009

Alpha Spec
Technical Review Checklist

ARS SDG ARS1-11-00895

Sample Matrix: SO **Aliquot** (Circle One) : Dry As Received Filtered Other: Digested

Required QC Samples (Circle all that apply): Blank LCS LCSD Sample Dup

ARS Prep. Batch ID(s):	**Batch A:**	**Batch B:**	**Batch C:**
	B11-01648	NA	NA
Test(s):	ASP-A-025	NA	NA

A. RADIOCHEMICAL PREPARATION REVIEW

	Chemist Review			Lab Supervisor		
1) 100% of Manual Transcriptions Verified?	✓ Yes	No	N/A	✓ Yes	No	N/A
2) 100% of Manual Calculations Verified?	Yes	No	✓ N/A	Yes	No	✓ N/A
3) Tracers Added Before Muffling, Digestion, or Chem. Sep.?	✓ Yes	No	N/A	✓ Yes	No	N/A
4) QC and Samples are Aliquoted / Traced?	✓ Yes	No	N/A	✓ Yes	No	N/A
5) Deviations from procedure are documented and verified?	Yes	No	✓ N/A	Yes	No	✓ N/A

6) Sample Prep Anomaly? ☐ **No** ☑ **Yes** (See Tech Notes) **NCR #** (If initiated): _____

Jamaal Brown 5-3-11 — **Chemist Signature** **Date**

Jerry D Rolen 5-3-11 — **Verifier Signature** **Date**

B. ANALYSIS REVIEW

	Analyst Review			QA Officer Review		
1) Calibrations/Backgrounds Valid and Current?	✓ Yes	No	N/A	✓ Yes	No	N/A
2) Source Checks Completed and Acceptable?	✓ Yes	No	N/A	✓ Yes	No	N/A
3) Background Checks Complete and Acceptable?	✓ Yes	No	✓ N/A	Yes	No ✓	N/A

VLM 5-11-11

Quality Assurance Officer Signature **Date**

	Analyst Review			Lab Supervisor		
4) 100% of Manually entered Parameters Verified Accurate?	✓ Yes	No	N/A	✓ Yes	No	N/A
5) Appropriate QC samples initiated at required frequency?	✓ Yes	No	N/A	✓ Yes	No	N/A
6) Test/Sample Specific Parameters (See ARS-059 for details)						
a) All Centroids +/- 50 keV for each sample and QC sample?	✓ Yes	No	N/A	✓ Yes	No	N/A
b) FWHM <100 kEV for each sample and QC sample?	✓ Yes	No	N/A	✓ Yes	No	N/A
c) All specific peaks are with in the regions of interest (ROI's) ?	✓ Yes	No	N/A	✓ Yes	No	N/A
d) Spectrum shows no visual indication of interferences?	✓ Yes	No	N/A	✓ Yes	No	N/A

7) Analysis Anomaly? ☑ **No** ☐ **Yes** (See Comments) **NCR #** (If initiated): _____

5-10-11 — **Analyst Signature** **Date**

5-10-11 — **Laboratory Supervisor Signature** **Date**

Batch A: B11-01648

Alpha Spec
Technical Review Checklist

C. BATCH QC VALIDATION

	Proj. Mgr. Review	QA Officer Review
1) RDL Criteria are Met?	(Yes) No N/A	✓Yes No N/A
2) Activity + 3xCSU a Negative Number?	Yes (No) N/A	Yes ✓No N/A
3) Method Blank Criteria Met?	5/10 ~~Yes~~ (No) N/A	Yes ✓No N/A
4) LCS/LCD Criteria Met?	(Yes) No N/A	✓Yes No N/A
5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met?	(Yes) No N/A	✓Yes No N/A
6) Tracer yield results meet acceptance criteria?	(Yes) No N/A	✓Yes No N/A

7) Batch QC Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): _____

Project Manager Signature	Date	Quality Assurance Officer Signature	Date
Jennifer Wright	5/10/11	VLM	5-11-11

GENERAL COMMENTS

see technical notes about method Blank 5/10/11 JW

Technical Notes

Batch	ARS1-B11-01648
Analysis Code	ASP-A-025
Procedure No	ARS-026
Matrix	SO

#	Date	Dept	Batch Technical Notes	User ID
1	05/03/11 16:18	CHEMISTRY	B11-01648-03 seems to have electroplated with a light shadow, this may or may not affect tracer recovery.	JBROWN
2	05/03/11 16:20	CHEMISTRY	B11-01648-11 electroplated but it is cloudy and has a gray film covering the plate, this may or may not affect activity and tracer recovery.	JBROWN
3	05/10/11 16:42	REPORTING	The method blank for U-234 is elevated; however, method blank evaluation was performed per procedure and the data is being released as valid.	HWRIGHT

Alpha Spec
Technical Review Checklist

ARS SDG ARS1-11-00895

Sample Matrix: SO **Aliquot** (Circle One) : Dry As Received Filtered Other: Digested

Required QC Samples (Circle all that apply): Blank LCS LCSD Sample Dup

ARS Prep. Batch ID(s):	**Batch A:** B11-01647	**Batch B:** NA	**Batch C:** NA
Test(s):	ASP-A-009	NA	NA

A. RADIOCHEMICAL PREPARATION REVIEW

	Chemist Review	Lab Supervisor
1) 100% of Manual Transcriptions Verified?	Yes ✓ No N/A	Yes ✓ No N/A
2) 100% of Manual Calculations Verified?	Yes No N/A ✓	Yes No N/A ✓
3) Tracers Added Before Muffling, Digestion, or Chem. Sep.?	Yes ✓ No N/A	Yes ✓ No N/A
4) QC and Samples are Aliquoted / Traced?	Yes ✓ No N/A	Yes ✓ No N/A
5) Deviations from procedure are documented and verified?	Yes No N/A ✓	Yes No N/A ✓

6) Sample Prep Anomaly? ☐ **No** ☒ **Yes** (See Tech Notes) **NCR #** (If initiated): _____

Jamaal Brown 5-3-11 — Chemist Signature, Date

Jerry D. Rabe 5-3-11 — Verifier Signature, Date

B. ANALYSIS REVIEW

	Analyst Review	QA Officer Review
1) Calibrations/Backgrounds Valid and Current?	Yes ✓ No N/A	Yes No N/A
2) Source Checks Completed and Acceptable?	Yes ✓ No N/A	Yes No N/A
3) Background Checks Complete and Acceptable?	Yes No N/A ✓	Yes No N/A

VHM 5-6-11 — Quality Assurance Officer Signature, Date

	Analyst Review	Lab Supervisor
4) 100% of Manually entered Parameters Verified Accurate?	Yes ✓ No N/A	Yes No N/A
5) Appropriate QC samples initiated at required frequency?	Yes ✓ No N/A	Yes No N/A
6) Test/Sample Specific Parameters (See ARS-059 for details)		
a) All Centroids +/- 50 keV for each sample and QC sample?	Yes No ✓ N/A	Yes No N/A
b) FWHM <100 keV for each sample and QC sample?	Yes ✓ No N/A	Yes No N/A
c) All specific peaks are with in the regions of interest (ROI's) ?	Yes ✓ No N/A	Yes No N/A
d) Spectrum shows no visual indication of interferences?	Yes No ✓ N/A	Yes No N/A

7) Analysis Anomaly? ☐ **No** ☑ **Yes** (See Comments) **NCR #** (If initiated): _____

5-6-11 — Analyst Signature, Date

5-6-11 — Laboratory Supervisor Signature, Date

Batch A: B11-01647

Alpha Spec
Technical Review Checklist

C. BATCH QC VALIDATION

	Proj. Mgr. Review	QA Officer Review
1) RDL Criteria are Met?	Yes No N/A	Yes No N/A
2) Activity + 3xCSU a Negative Number?	Yes No N/A	Yes No N/A
3) Method Blank Criteria Met?	Yes No N/A	Yes No N/A
4) LCS/LCD Criteria Met?	Yes No N/A	Yes No N/A
5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met?	Yes No N/A	Yes No N/A
6) Tracer yield results meet acceptance criteria?	Yes No N/A	Yes No N/A

7) Batch QC Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): _____

[signature] 5-6-11 — Project Manager Signature, Date

[signature] 5-6-11 — Quality Assurance Officer Signature, Date

GENERAL COMMENTS

REFER TO BATCH TECHNICAL NOTES. [signature] 5-6-11

Technical Notes

Batch	ARS1-B11-01647
Analysis Code	ASP-A-009
Procedure No	ARS-031
Matrix	SO

#	Date	Dept	Batch Technical Notes	User ID
1	05/03/11 16:22	CHEMISTRY	B11-01647-11 electroplated with a very light shadow and the plate seems to have white particles that plated on the disk. As a result, tracer recovery and activity may be affected.	JBROWN
2	05/06/11 14:40	COUNTROOM	The following spectral anomalies were identified in the counting results for this batch: Heavy peak trailing was encountered on the Th-229 & Th-230 peaks for B11-01647-01, -02, 04 thru -08, & -10 thru -13. There was also heavy peak trailing on the Th-229 peak for B11-01647-03. This causes blending of the Th-229 and Th-230 peaks, and in the case of B11-01647-03, it likely led to a false detection of Th-230 counts. Also, Th-228 was not identified in B11-01647-01. Th-232 was not identified in B11-01647-02. In both of these cases, a small amount of unidentified isotope was used in place for calculation purposes, but the centroid energies would be low out of acceptable range. Finally, the Th-230 centroid energies for B11-01647-06 & -07 are low out of acceptable range.	ABAILEY
3	05/06/11 16:11	REPORTING	Method Blank for TH-228, TH-230, TH-232 was slightly elevated; however, method blank evaluation was performed per procedure and the data is being released as valid.	HWRIGHT

ARS INTERNATIONAL

Report Compilation Checklist

ARS SDG: 11-00895 **Client Name:** Summit **Sample Matrix:** SO

LEVEL 1 COMPONENTS	1st Reviewer	
1) Cover Page Complete and Accurate (see ARS-059)?	~~Yes~~ No N/A	
2) Technical Review Checklist(s) Complete and Accurate?	~~Yes~~ No N/A	
3) Case Narrative Complete and Accurate (see ARS-059)?	~~Yes~~ No N/A	
4) Form 1s Present for all Samples and Tests?	~~Yes~~ No N/A	
5) Client Specific Components are Present and Complete?	Yes No ~~N/A~~	

LEVEL 2 COMPONENTS	1st Reviewer	
6) Batch Quality Control Report is Present and Accurate?	~~Yes~~ No N/A	
7) DQO Report is Present and Accurate?	~~Yes~~ No N/A	
8) Client Specific Batch QC Components are Present and Complete?	Yes No ~~N/A~~	

LEVEL 3 COMPONENTS	1st Reviewer	
9) Efficiencies are Present?	Yes No N/A	
10) Calibrations are Present?	Yes No N/A	
11) Backgrounds are Present?	Yes No N/A	
12) Spectrum Analysis is Present?	Yes No N/A	
13) Spectral Plots are Present?	Yes No N/A	
14) Plateaus are Present?	Yes No N/A	
15) Control Charts are Present?	Yes No N/A	
16) Other:	Yes No N/A	

LEVEL 4 COMPONENTS	1st Reviewer	
17) Preparation Raw Data Present, Signed and Complete?	Yes No N/A	
18) Instrument Raw Data Present and Complete?	Yes No N/A	
19) Calibration Certificates Present?	Yes No N/A	
20) Copies of Log Book Pages Present?	Yes No N/A	
21) Sample Receiving Documentation Present?	Yes No N/A	
22) LIMS Reports Present?	Yes No N/A	
23) Applicable Correspondence Present?	Yes No N/A	
24) Other:	Yes No N/A	

Report Generator Signature: [signature] Date: 5/6/11

Management Review Signature: VHM Date: 5-6-11

ARS-059
07/03/2009

2609 North River Road, Port Allen, Louisiana 70767
(800) 401-4277 -- FAX (225) 381-2996

Preliminary

American Radiation Services, Inc.

Laboratory Analysis Report

ARS1-11-00895

Prepared for:

Summit Environmental Technologies

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Project Manager Review

Management Review

Notes. American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

Contact Person: Questions regarding this analytical report should be addressed to:

Project Manager

ProjectManagers@amrad.com

Phone: 225.381.2991
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LELAP Cert# 01949 **NELAP Cert# E87558**

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	PR-SED-01-110420	**ARS Sample ID:**	ARS1-11-00895-001
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	0.462	0.082	0.022	0.008		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	73%
TH-230	4.433	0.566	0.021	0.008		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	73%
TH-232	0.543	0.092	0.018	0.006		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	73%

NOTES:

Project Manager Review

Notes: *American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.*

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ARS INTERNATIONAL

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1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RM-JM-SED-02-110420	**ARS Sample ID:**	ARS1-11-00895-002
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	0.548	0.093	0.018	0.007		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	65%
TH-230	0.973	0.145	0.018	0.006		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	65%
TH-232	0.452	0.081	0.027	0.011		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	65%

NOTES:

Project Manager Review

Notes: *American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.*

LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RM-JM-SED-110420	**ARS Sample ID:**	ARS1-11-00895-003
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	1.266	0.187	0.022	0.008		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	60%
TH-230	6.829	0.862	0.040	0.017		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	60%
TH-232	1.268	0.187	0.021	0.008		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	60%

NOTES:

Project Manager Review

Notes: *American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.*

LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RM-SED-BG-110419	**ARS Sample ID:**	ARS1-11-00895-004
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	0.821	0.124	0.013	0.004		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	77%
TH-230	1.045	0.152	0.021	0.008		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	77%
TH-232	0.821	0.124	0.013	0.004		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	77%

NOTES:

Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RP-JM-SED-01	**ARS Sample ID:**	ARS1-11-00895-005
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	0.371	0.070	0.005	0.000		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	70%
TH-230	0.679	0.109	0.018	0.007		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	70%
TH-232	0.419	0.077	0.021	0.008		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	70%

NOTES:

Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RP-JM-SED-110420	**ARS Sample ID:**	ARS1-11-00895-006
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	1.006	0.155	0.022	0.008		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	57%
TH-230	0.859	0.136	0.017	0.005		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	57%
TH-232	0.908	0.142	0.022	0.008		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	57%

NOTES:

Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RP-SED-01-110419	**ARS Sample ID:**	ARS1-11-00895-007
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	0.512	0.090	0.016	0.005		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	68%
TH-230	0.584	0.099	0.020	0.007		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	68%
TH-232	0.476	0.085	0.025	0.010		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	68%

NOTES:

Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RP-SED-02-110420	**ARS Sample ID:**	ARS1-11-00895-008
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	0.795	0.125	0.025	0.010		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	68%
TH-230	1.610	0.225	0.024	0.009		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	68%
TH-232	0.733	0.117	0.030	0.012		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	68%

NOTES:

Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RP-SED-03-110420	**ARS Sample ID:**	ARS1-11-00895-009
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	1.130	0.166	0.015	0.005		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	70%
TH-230	3.982	0.512	0.015	0.005		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	70%
TH-232	0.995	0.149	0.005	0.000		pCi/g	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	70%

NOTES:

Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00895	**Request or PO Number:**	N/A
Client Sample ID:	RP-SED-BG-041911	**ARS Sample ID:**	ARS1-11-00895-010
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Soil/Solid/Sludge	**Report Date:**	05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
TH-228	0.465	0.081	0.005	0.000		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	71%
TH-230	0.454	0.081	0.033	0.014		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	71%
TH-232	0.485	0.084	0.028	0.012		pCi/g	ARS-031/Elchrom ACW-10	05/05/11 03:53	JB	71%

NOTES:

Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

Notes:

Comments:

1.0) Soil and Sludge analysis are reported on a wet basis or an as received basis unless otherwise indicated.

2.0) Data in this report are within the limits of uncertainty specified in the reference method unless otherwise specified.

3.0) Modified analysis procedures are procedures that are modified to meet the certain specifications. An example may be the use of a water method to analyze a solid matrix due to the lack of an officially recognized procedure for the analysis of the solid matrix. Modified analyses are indicated by the subsequent addition of "m" to the procedure number (i.e. 900.0M).

4.0) Derived Air Concentrations and Effluent Release Concentrations are obtained from 10 CFR 20 Appendix B.

5.0) **Total activity** is actually total gamma activity and is determined utilizing the prominent gamma emitters from the naturally occurring radioactive decay chains and other prominent radioactive nuclides. Total activity may be lower than the actual total activity due to the extent of secular equilibrium achieved in the various decay chains at the time of analysis. The total activity is not representative of nuclides that emit solely alpha or beta particles.

6.0) Ra-228 is determined via secular equilibrium with its daughter, Actinium 228 (Gamma Spectroscopy only).

7.0) U-238 is determined via secular equilibrium with its daughter, Thorium 234 (Gamma Spectroscopy only).

8.0) All gamma spectroscopy was performed utilizing high purity germanium detectors (**HPGe**).

9.0) ARS makes every attempt to match sample density to calibrated density; however, in some cases, it is not practical or possible to do so and data results may be affected (Gamma Spectroscopy only).

10.0) Gamma spectroscopy results are calculated values based on the **ORTEC**® GammaVision ENV32 Analysis Engine.

Method References:

1.0) **EPA 600/4-80-032**; Prescribed Procedures for the Measurements of Radioactivity in Drinking Water. August 1980.

2.0) Standard Methods for Examination of Water and Waste Water, 18th, 1992.

3.0) **EPA SW-846**; Test Methods for Evaluating Solid Waste, Third Edition. (9/86). (Updated through 1995).

4.0) **EPA 600/4/79-020**; Methods for Chemical Analysis of Water and Waste, March 1983.

5.0) HASL 300

6.0) **ARS-040**; An LCSD is not reported with this process. The criteria for the LCS/LCSD analysis for reproducibility have not been established for Low Level Tritium analysis. A prepared standard for Low Level Tritium has not been developed. As a result, the standard we use is based on the dilution of a verified conventional tritium standard. The volume required for Low Level Tritium analysis, in addition to the lack of an available Low Level Tritium standard, introduce variability into the LCS/LCSD analysis that does not represent the actual sample analysis. The preferred measure for reproducibility is to run a duplicate analysis of a sample.

Definitions:

1.0)	**ND**	Not detected above the detection limit (non-detect).
2.0)	**MDC**	(Minimum Detectable Concentration) minimum concentration of the analyte that ARS can detect utilizing the specific analysis
3.0)	**MBL**	Method Blank
4.0)	**DO**	Duplicate Original
5.0)	**DUP**	Method Duplicate
6.0)	**MS/MSD**	Matrix Spike/Matrix Spike Duplicate
7.0)	**S**	Spike
8.0)	**RS**	Reference Spike
9.0)	***SC**	Subcontracted out to another qualified laboratory
10.0)	**NR**	Not Referenced
11.0)	**N/A**	Not Applicable
12.0)	******	False Positive due to interference from Bi-214
13.0)	**U**	Activity is below the MDC
14.0)	**LCS/LCSD**	Laboratory Control Standard/Laboratory Control Standard Duplicate
15.0)	**DLC**	Decision Level Concentration (ANSI N42.23) or critical level

Notes: ARS International assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Cert# 01949 ***NELAP Cert# E87558***

American Radiation Services, Inc.
Baton Rouge Laboratory

Analysis Batch Report

Analysis Batch ID **ARS1-B11-01618**

Method	ARS-003	Analysis	GPC-A-003	Matrix	SO
Description	Gross Alpha/Beta (Soil, Sludge, Waste, Sediment)				

ABatch Sample ID	Type	Blind Iso1	Blind Iso2	Blind Iso3	SDG	FR	Run	Client ID	Isotope Group	Lab Deadline
ARS1-B11-01618-01	LCS									
ARS1-B11-01618-02	LCSD									
ARS1-B11-01618-03	MBL									
ARS1-B11-01618-04	TRG				ARS1-11-00895	001	1	PR-SED-01-110420	STD	05/03/11
ARS1-B11-01618-05	TRG				ARS1-11-00895	002	1	RM-JM-SED-02-110420	STD	05/03/11
ARS1-B11-01618-06	TRG				ARS1-11-00895	003	1	RM-JM-SED-110420	STD	05/03/11
ARS1-B11-01618-07	TRG				ARS1-11-00895	004	1	RM-SED-BG-110419	STD	05/03/11
ARS1-B11-01618-08	TRG				ARS1-11-00895	005	1	RP-JM-SED-01	STD	05/03/11
ARS1-B11-01618-09	TRG				ARS1-11-00895	006	1	RP-JM-SED-110420	STD	05/03/11
ARS1-B11-01618-10	TRG				ARS1-11-00895	007	1	RP-SED-01-110419	STD	05/03/11
ARS1-B11-01618-11	TRG				ARS1-11-00895	008	1	RP-SED-02-110420	STD	05/03/11
ARS1-B11-01618-12	TRG				ARS1-11-00895	009	1	RP-SED-03-110420	STD	05/03/11
ARS1-B11-01618-13	TRG				ARS1-11-00895	010	1	RP-SED-BG-041911	STD	05/03/11

GEN 256
A 35723
Screen GAGB
ACB

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
A1	11-01618-04	0	34	10	1395	4/28/11 11:42
A2	11-01618-05	0	21	10	1395	4/28/11 11:42
A3	11-01618-06	1	51	10	1395	4/28/11 11:42
A4	11-01618-07	1	32	10	1395	4/28/11 11:42
C1	11-01618-08	2	17	10	1395	4/28/11 11:42
C2	11-01618-09	4	27	10	1395	4/28/11 11:42
C3	11-01618-10	0	16	10	1395	4/28/11 11:42
C4	11-01618-11	0	29	10	1395	4/28/11 11:42
D3	11-01618-12	1	30	10	1395	4/28/11 11:42
D4	11-01618-13	0	11	10	1395	4/28/11 11:42

DQO Report for SDG

ARS1-11-00895

Analysis Code	Group	Isotope	Activity Units	Aliquot Units	ProcedureNo	RDL	LCS_LL	LCS_UL	MS_LL	MS_UL	RadY_LL	RadY_UL	GravY_LL	GravY_LL	RER	RPD	DiltionReq	RoughPrepReq	BlankCorrectionMDA	BlankCorrectionAll	CountTimeReq	AliquotRequired
ASP-A-009	STD	TH-228	pCi	g	ARS-031	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-009	STD	TH-230	pCi	g	ARS-031	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-009	STD	TH-232	pCi	g	ARS-031	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-025	STD	U-234	pCi	g	ARS-026	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-025	STD	U-235	pCi	g	ARS-026	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-025	STD	U-238	pCi	g	ARS-026	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
GPC-A-003	STD	GROSS ALPHA	pCi	g	ARS-003	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
GPC-A-003	STD	GROSS BETA	pCi	g	ARS-003	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		

SDG Report - Samples and Containers

SDG Specific Data

SDG	ARS1-11-00895			TAT Days	7	Project Type	Environmental
Sample Count	12	Rpt Level	2	Date Received	4/27/2011	COC Number	6-042211-001353-0001
Client	Summit Environmental Technologies			Client Deadline	5/6/2011	PO Number	
Client Code	493			Internal Deadline	5/5/2011	Job Number	
Profile Number	PN-00556			Lab Deadline	5/3/2011	Job Location	site 0603
Comments	LEVEL IV DELIVERABLE						

Samples and Containers (➔) Checked In Thus Far

FR	ClientID	Matrix	SampleStartDate	SampleEndDate	Disp	Hold	Arch	Storage	X	Units	Y	Units	Z	Units	Comments
001	PR-SED-01-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							PR
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85373	1		511.00			25	16		N	N/A				
	85375	2		540.00			25	16		N	N/A				
002	RM-JM-SED-02-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RM-JM
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85376	1		557.00			30	16		N	N/A				
	85377	2		555.00			30	15		N	N/A				
003	RM-JM-SED-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RM-JM
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85378	1		553.00			30	15		N	N/A				
	85379	2		590.00			30	14		N	N/A				
004	RM-SED-BG-110419	SO	04/19/11 12:00 PM	04/19/11 12:00 PM	H	30	5	M2							RM-BG
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85380	1		666.00			30	16		N	N/A				
	85381	2		677.00			30	14		N	N/A				
005	RP-JM-SED-01	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-JM-01
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85382	1		559.00			35	14		N	N/A				
	85383	2		533.00			35	16		N	N/A				
006	RP-JM-SED-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-JM
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85384	1		641.00			30	16		N	N/A				
	85385	2		596.00			30	17		N	N/A				
007	RP-SED-01-110419	SO	04/19/11 12:00 PM	04/19/11 12:00 PM	H	30	5	M2							RP-01
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85386	1		643.00			25	16		N	N/A				
	85387	2		573.00			25	16		N	N/A				
008	RP-SED-02-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-02
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85388	1		674.00			30	15		N	N/A				
	85389	2		703.00			30	14		N	N/A				
009	RP-SED-03-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-03
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85390	1		490.00			40	17		N	N/A				
	85391	2		496.00			40	17		N	N/A				
010	RP-SED-BG-041911	SO	04/19/11 12:00 PM	04/19/11 12:00 PM	H	30	5	M2							RP-BG

SDG Report - Samples and Containers

SDG Specific Data

SDG	ARS1-11-00895	TAT Days	7	Project Type	Environmental
Sample Count	Rpt Level 2	Date Received	4/27/2011	COC Number	6-042211-001353-0001
Client	Summit Environmental Technologies	Client Deadline	5/6/2011	PO Number	
Client Code	493	Internal Deadline	5/5/2011	Job Number	
Profile Number	PN-00556	Lab Deadline	5/3/2011	Job Location	site 0603
Comments	LEVEL IV DELIVERABLE				

Samples and Containers (➔) Checked In Thus Far

FR	ClientID	Matrix	SampleStartDate	SampleEndDate	Disp	Hold	Arch	Storage	X	Units	Y	Units	Z	Units	Comments
➔	IC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85392	1		719.00			35	17		N	N/A				
	85393	2		710.00			35	17		N	N/A				

SDG Report - Analysis Assignments

Temp SDG	ARS1-11-00895	Sample Count	[illegible]
Client	Summit Environmental Technologies	Analysis Count	3-30

Samples Count Totals per Analysis

Analysis Code	Analysis Description	Samples Count
ASP-A-009	Thorium in (Soil, Sludge, Waste, Biota, Sediment [SO, BI, VG])	10
ASP-A-025	(233, 234U, 235U, 238U) In (Soil, Sludge, Waste, Biota, Sediment [SO,	10
GPC-A-003	Gross Alpha/Beta in (Soil, Sludge, Waste, Sediment [SO])	10

Analyses Assigned Per Fraction

Fraction	Analysis Code	X = Assigned
001	ASP-A-009	X
001	ASP-A-025	X
001	GPC-A-003	X
002	ASP-A-009	X
002	ASP-A-025	X
002	GPC-A-003	X
003	ASP-A-009	X
003	ASP-A-025	X
003	GPC-A-003	X
004	ASP-A-009	X
004	ASP-A-025	X
004	GPC-A-003	X
005	ASP-A-009	X
005	ASP-A-025	X
005	GPC-A-003	X
006	ASP-A-009	X
006	ASP-A-025	X
006	GPC-A-003	X
007	ASP-A-009	X
007	ASP-A-025	X
007	GPC-A-003	X
008	ASP-A-009	X
008	ASP-A-025	X
008	GPC-A-003	X
009	ASP-A-009	X
009	ASP-A-025	X
009	GPC-A-003	X
010	ASP-A-009	X
010	ASP-A-025	X
010	GPC-A-003	X

DQO Report for SDG

ARS1-11-00895

Analysis Code	Group	Isotope	Activity Units	Aliquot Units	ProcedureNo	RDL	LCS_LL	LCS_UL	MS_LL	MS_UL	RadY_LL	RadY_UL	GravY_LL	GravY_LL	RER	RPD	DilutionReq	RoughPrepReq	BlankCorrectionMDA	BlankCorrectionAll	CountTimeReq	AliquotRequired
ASP-A-009	STD	TH-22	pCi	g	ARS-031	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-009	STD	TH-23	pCi	g	ARS-031	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-009	STD	TH-23	pCi	g	ARS-031	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-025	STD	U-234	pCi	g	ARS-026	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-025	STD	U-235	pCi	g	ARS-026	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		
ASP-A-025	STD	U-238	pCi	g	ARS-026	0.00E+00	75	125	60	140	30	110	40	110	1.00	25	FALSE	FALSE	FALSE	FALSE		

SDG Report - Samples and Containers

SDG Specific Data

SDG	ARS1-11-00895	TAT Days	7	Project Type	Environmental
Sample Count	Rpt Level 2	Date Received	4/27/2011	COC Number	6-042211-001353-0001
Client	Summit Environmental Technologies	Client Deadline	5/6/2011	PO Number	
Client Code	493	Internal Deadline	5/5/2011	Job Number	
Profile Number	PN-00556	Lab Deadline	5/3/2011	Job Location	site 0603
Comments	LEVEL IV DELIVERABLE				

Samples and Containers (→) Checked In Thus Far

FR	ClientID	Matrix	SampleStartDate	SampleEndDate	Disp	Hold	Arch	Storage	X	Units	Y	Units	Z	Units	Comments
001	PR-SED-01-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							PR
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85373	1		511.00			25	16		N	N/A				
	85375	2		540.00			25	16		N	N/A				
002	RM-JM-SED-02-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RM-JM
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85376	1		557.00			30	16		N	N/A				
	85377	2		555.00			30	15		N	N/A				
003	RM-JM-SED-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RM-JM
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85378	1		553.00			30	15		N	N/A				
	85379	2		590.00			30	14		N	N/A				
004	RM-SED-BG-110419	SO	04/19/11 12:00 PM	04/19/11 12:00 PM	H	30	5	M2							RM-BG
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85380	1		666.00			30	16		N	N/A				
	85381	2		677.00			30	14		N	N/A				
005	RP-JM-SED-01	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-JM-01
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85382	1		559.00			35	14		N	N/A				
	85383	2		533.00			35	16		N	N/A				
006	RP-JM-SED-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-JM
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85384	1		641.00			30	16		N	N/A				
	85385	2		596.00			30	17		N	N/A				
007	RP-SED-01-110419	SO	04/19/11 12:00 PM	04/19/11 12:00 PM	H	30	5	M2							RP-01
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85386	1		643.00			25	16		N	N/A				
	85387	2		573.00			25	16		N	N/A				
008	RP-SED-02-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-02
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85388	1		674.00			30	15		N	N/A				
	85389	2		703.00			30	14		N	N/A				
009	RP-SED-03-110420	SO	04/20/11 12:00 PM	04/20/11 12:00 PM	H	30	5	M2							RP-03
→	TC_ID	Cnt	Volume_mL	Wt_g	pH_Orig	pH_Final	CPM	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85390	1		490.00			40	17		N	N/A				
	85391	2		496.00			40	17		N	N/A				
010	RP-SED-BG-041911	SO	04/19/11 12:00 PM	04/19/11 12:00 PM	H	30	5	M2							RP-BG

SDG Report - Samples and Containers

SDG Specific Data

SDG	ARS1-11-00895	TAT Days	7	Project Type	Environmental
Sample Count	Rpt Level 2	Date Received	4/27/2011	COC Number	6-042211-001353-0001
Client	Summit Environmental Technologies	Client Deadline	5/6/2011	PO Number	
Client Code	493	Internal Deadline	5/5/2011	Job Number	
Profile Number	PN-00556	Lab Deadline	5/3/2011	Job Location	site 0603
Comments	LEVEL IV DELIVERABLE				

Samples and Containers (→) Checked In Thus Far

FR	ClientID	Matrix	SampleStartDate	SampleEndDate	Disp	Hold	Arch	Storage	X	Units	Y	Units	Z	Units	Comments
→	TC_ID	Cat	Volume_mL	Wt_g	pH_Orig	pH_Final	CPU	uR_Hr	Storage	VOA	Head Sp	AF Units	AF Rate	AF Mins	AF Total Vol
	85392	1		719.00			35	17		N	N/A				
	85393	2		710.00			35	17		N	N/A				

SDG Report - Analysis Assignments

Temp SDG	ARS1-11-00895	Sample Count	
Client	Summit Environmental Technologies	Analysis Count	2-20

Samples Count Totals per Analysis

Analysis Code	Analysis Description	Samples Count
ASP-A-009	Thorium in (Soil, Sludge, Waste, Biota, Sediment [SO, BI, VG])	10
ASP-A-025	(233, 234U, 235U, 238U) in (Soil, Sludge, Waste, Biota, Sediment [SO,	10

Analyses Assigned Per Fraction

Fraction	Analysis Code	X = Assigned
001	ASP-A-009	X
001	ASP-A-025	X
002	ASP-A-009	X
002	ASP-A-025	X
003	ASP-A-009	X
003	ASP-A-025	X
004	ASP-A-009	X
004	ASP-A-025	X
005	ASP-A-009	X
005	ASP-A-025	X
006	ASP-A-009	X
006	ASP-A-025	X
007	ASP-A-009	X
007	ASP-A-025	X
008	ASP-A-009	X
008	ASP-A-025	X
009	ASP-A-009	X
009	ASP-A-025	X
010	ASP-A-009	X
010	ASP-A-025	X

Heather Wright

From: Virgene Ideker-Mulligan
Sent: Tuesday, April 26, 2011 10:08 AM
To: Project Managers
Subject: FW: Price quote please

Virgene Mulligan, **CQM, CHMM**
Vice President - Laboratory Services
Phone: 225-381-2991
Direct: 225-346-6030
Cell: 225-223-8225
FAX: 225-381-2996
ARS INTERNATIONAL

-----Original Message-----
From: Elvin Chavez [mailto:echavez@summitlabs.com]
Sent: Tuesday, April 26, 2011 9:58 AM
To: Virgene Ideker-Mulligan; Danny Coleman
Subject: RE: Price quote please

Virgene,

We shipped 3 coolers with soils and waters for analyses. On the chains I highlighted what I need you all to do. For the isotopic thorium, we are looking for 230 and 232. For the uranium, we need 234, 235, and 238. Both analyses are by alpha spec I believe???

Elvin J. Chavez
Vice President
Summit Environmental Technologies, Inc.
2709 Pan American Fwy. NE, Suite A/C
Albuquerque, NM 87107
Email: echavez@summitlabs.com
Web: http://www.settek.com/
Video Tour of Lab: http://www.settek.com/videos
Cell Phone: 505-259-9795
Office Phone: 505-345-3335
Fax Number: 505-345-3338

Corporate Headquarters:
3310 Win St.
Cuyahoga Falls, Ohio 44223
Phone: 1-800-278-0140

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From: Virgene Ideker-Mulligan
Sent: Thu 4/21/2011 3:31 PM
To: Elvin Chavez; Danny Coleman
Subject: RE: Price quote please

Elvin:

Please find attached the price quote you requested.

In addition, would you please call or e-mail Heather about the samples she has written to you for confirmation of analysis request. We need to get this completed in order to begin the analysis.

Thank you.

Virgene Mulligan, **CQM, CHMM**
Vice President - Laboratory Services
Phone: 225-381-2991
Direct: 225-346-6030
Cell: 225-223-8225
FAX: 225-381-2996
ARS INTERNATIONAL

-----Original Message-----
From: Elvin Chavez [mailto:echavez@summitlabs.com]
Sent: Thursday, April 21, 2011 3:54 PM
To: Danny Coleman
Cc: Virgene Ideker-Mulligan
Subject: Price quote please
Importance: High

Hey Guys,
You will be getting the 45 samples for the quote you gave me for the Weston project here. I am sending them on Friday (FedEx) Express. Additionally, they want pricing now for another project I am sampling for them. See below and get back to me as soon as you can.
Thanks.
For the deliverable, we need a full Level IV deliverable. For a chemical analysis I would say a CLP like. For number of samples, it really varies. I would say 10 to 20 per week through the summer. The TAT required would also vary. In some cases, we look for a 7 day TAT. The longest TAT we prefer is a 14 day TAT.
For the isotopic thorium, we are looking for 230 and 232. For the uranium, we need 234, 235, and 238. Both analyses are by alpha spec.

Elvin J. Chavez
Vice President
Summit Environmental Technologies, Inc.
2709 Pan American Fwy. NE, Suite A/C
Albuquerque, NM 87107

Email: echavez@summitlabs.com
Web: http://www.settek.com/
Video Tour of Lab: http://www.settek.com/videos
Cell Phone: 505-259-9795
Office Phone: 505-345-3335
Fax Number: 505-345-3338

Corporate Headquarters:
3310 Win St.
Cuyahoga Falls, Ohio 44223
Phone: 1-800-278-0140

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ARS FILE TRACKING SHEET

SDG: ARS1-11-00895

Task	Date / Time	Initials
Date & Time Samples Received	04-27-11/12:30	CWB
ICOC Initiated / Storage Location: M2	04-28-11/08:50	CWB
Technical Checks Performed	see batch	
Report Written / EDD Generated: ____/____ Date/Time Initials	Final 5-11-10/0842	CLW
	prelim 5-6-11/1619	CLW
Quality Assurance Checks Performed on Report	Prelim 5-6-11 16:21 FINAL	Prelim VLM FINAL
Management Check Performed on Report	5-11-11/1457	VLM
Preliminary Report Sent	5-6-11/1637	CLW
Report E-mailed		
Report Faxed	N/A	
Report Reviewed		
Report Mailed		
Invoice Completed Invoice #:_____		
Report Imaged		

SPECIAL REQUIREMENTS

Requirement	Yes	No
3 Hour Rush		✓
24 Hour Rush		✓
48 Hour Rush		✓
Special Invoicing *see notes* Mgmt. Approval:_____		✓

NOTES:

ARS-062
04/23/2010

COMPANY NAME: Summit **SDG:** ARSH100895

SHIPPING CONTAINER

Good Condition	☑ Yes	☐ No
Radioactive	☐ Yes	☑ No
UN2910	☐ Yes	☑ No
Sec. Seals	☐ Yes	☑ No
Seals Intact	☐ Yes ☐ No	☑ N/A
Air Bill	☐ Yes	☑ No

COC PRESENT WITH SAMPLES

COC	☑ Yes	☐ No

SAMPLE CONTAINER(S)

Good Condition	☑ Yes	☐ No
Sec. Seals	☐ Yes	☑ No
Seal Intact	☐ Yes ☐ No	☑ N/A
Marked Radioactive	☐ Yes	☑ No

Samples Rcv 10

Matrix [AF , AQ , BI , FE , LT , SI , SO , UR , VG]

External and Internal Surveys

Exposure Rate Meter:	M3 242861	Serial No.:	M44-2 PR2042066	Calibration Due Date:	4-20-12
Count Rate Meter:	M2 154859	Serial No.:	M44-4 PR184559	Calibration Due Date:	4-20-12

Background Exposure Rate (µR/hr)	24	Max. Exposure Rate on Shipping Containers Externals (Plus Bkgd)	14	µR/hr
Background Count Rate (cpm)	60	Max. Removable Count Rate on Shipping Containers Externals (Plus Bkgd)	26	cpm
		Max. Removable Count Rate on Shipping Containers Internals (Plus Bkgd)	26	cpm

Sample Label/Comments/Notes	pH Orig (pH ≤ 2 is Acceptable)	pH Final	Mark if Preserve	Acid Lot #	Weight(g) / Volume(mL)	µR/hr (Acceptance Limits <500 µR/hr)	cpm (Acceptance Limits <100 cpm/cm²)
PR-SED-01-110420					511	16	25
↓					540	16	25
RM-JM-SED-02-110420		Clw 4-27-11			557	16	30
↓					555	15	30
RM-JM-SED-110420					553	15	30
↓					590	14	30
RM-SED-BG-110419					666	16	30
↓					677	14	30
RP-JM-SED-01					559	14	35
↓					533	16	35
RP-JM-SED-110420					641	16	30
↓					596	17	30
RP-SED-01-110419		Clw 4-27-11			643	16	25
↓					573	16	25
RP-SED-02-110420					674	15	30
↓					703	14	30
RP-SED-03-110420					490	17	40
↓					496	17	40
RP-SED-BG 041911					719	17	35

Surveyors' Name: [illegible] Date/Time Surveyed: 4-27-11 / 15:18

S:\Procedures_Controlled\Controlled Forms\ARS-062 Sample Receipt Inspection Form

COMPANY NAME: Summit

SDG: ARS11-00895

SHIPPING CONTAINER

Good Condition	☑ Yes	☐ No
Radioactive	☐ Yes	☑ No
UN2910	☐ Yes	☑ No
Sec. Seals	☐ Yes	☑ No
Seals Intact	☐ Yes ☐ No	☑ N/A
Air Bill	☐ Yes	☐ No

COC PRESENT WITH SAMPLES

COC	☑ Yes	☐ No

SAMPLE CONTAINER(S)

Good Condition	☑ Yes	☐ No
Sec. Seals	☐ Yes	☑ No
Seal Intact	☐ Yes ☐ No	☑ N/A
Marked Radioactive	☐ Yes	☑ No

Samples Rcv 10

Matrix [AF , AQ , BI , FE , LT , SI , SO , UR , VG]

External and Internal Surveys

Exposure Rate Meter:	M3 242861	Serial No.:	M44-2 PR242066	Calibration Due Date:	4-20-12
Count Rate Meter:	M2 154859	Serial No.:	M44-9 PR154559	Calibration Due Date:	4-20-12

Background Exposure Rate (µR/hr)	24	Max. Exposure Rate on Shipping Containers Externals (Plus Bkgd)	14	µR/hr
Background Count Rate (cpm)	60	Max. Removable Count Rate on Shipping Containers Externals (Plus Bkgd)	26	cpm
		Max. Removable Count Rate on Shipping Containers Internals (Plus Bkgd)	26	cpm

Sample Label/Comments/Notes	pH Orig (pH ≤ 2 is Acceptable)	pH Final	Mark if Preserve	Acid Lot #	Weight(g) / Volume(mL)	µR/hr (Acceptance Limits <500 µR/hr)	cpm (Acceptance Limits <100 cpm/cm²)
RP-SED-BG 041911	—	—	—	—	710	17	35

Surveyors Name: [signature]

Date/Time Surveyed: 4-27-11 / 15:18

SAMPLE CHECK-IN COMMENT SHEET

SDG: ARS1-11-00895

SLUDGE cb04-28-11

ARS-062
04/23/2010

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Analytical Reports

for

Summit Enviromental Technologies

Site Number: 0603

(Aqueous samples)

2609 North River Road, Port Allen, Louisiana 70767

(800) 401-4277 -- FAX (225) 381-2996

American Radiation Services, Inc.

Laboratory Analysis Report

ARS1-11-00897

Prepared for:

Summit Environmental Technologies

Dara Gilger
3310 Win St
Cuyahoga Falls, OH 44223

dgilger@settek.com
echavez@summitlabs.com

Phone: 330-253-8211
Fax: 330-253-4489

Project Manager Review

Management Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

Contact Person: Questions regarding this analytical report should be addressed to:

Project Manager

ProjectManagers@amrad.com

Phone: 225.381.2991
Fax: 225.381.2996

LELAP Cert# 01949 **NELAP Cert# E87558**

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Analytical Reports

for

Summit Enviromental Technologies

Site Number: 0603

Original COC

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	MW-1-110419	MW-1	Gamma Spec - Thorium	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	Y
	MW-1-110419	MW-1	Gross Alpha/Beta	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	Y
	MW-1-110419	MW-1	Total Dissolved Solids	Ground Water	4/19/2011	1	500 ml poly	None	
	MW-1-110419	MW-1	Total Radium (226+228)	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	Y
	MW-1-110419	MW-1	TAL Metals/Hg	Ground Water	4/19/2011	1	500 ml poly	HNO3 pH<2	Y
	MW-2-110421	MW-2	Alkalinity	Ground Water	4/21/2011	1	NA	NA	
	MW-2-110421	MW-2	Alpha Spec -Uranium isotopes	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-110421	MW-2	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/21/2011	1	500 ml poly	None	
	MW-2-110421	MW-2	Gamma Spec - Thorium	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-110421	MW-2	Gross Alpha/Beta	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-110421	MW-2	Total Dissolved Solids	Ground Water	4/21/2011	1	500 ml poly	None	
	MW-2-110421	MW-2	Total Radium (226+228)	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-110421	MW-2	TAL Metals/Hg	Ground Water	4/21/2011	1	500 ml poly	HNO3 pH<2	
	MW-2-2-110421	MW-2	Alkalinity	Ground Water	4/21/2011	1	NA	NA	
	MW-2-2-110421	MW-2	Alpha Spec -Uranium isotopes	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-2-110421	MW-2	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/21/2011	1	500 ml poly	None	
	MW-2-2-110421	MW-2	Gamma Spec - Thorium	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-2-110421	MW-2	Gross Alpha/Beta	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-2-110421	MW-2	Total Dissolved Solids	Ground Water	4/21/2011	1	500 ml poly	None	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	[illegible]	04/22/11	[illegible]	4/22/11	8:45		[illegible]	4/22/11	[illegible]	4-27-11	1230

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	JPOP41S-110421	JPOP41S	Alkalinity	Ground Water	4/21/2011	1	NA	NA	
	JPOP41S-110421	JPOP41S	**Alpha Spec -Uranium Isotopes**	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	JPOP41S-110421	JPOP41S	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/21/2011	1	500 ml poly	None	
	JPOP41S-110421	JPOP41S	**Gamma Spec - Thorium**	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	JPOP41S-110421	JPOP41S	Gross Alpha/Beta	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	JPOP41S-110421	JPOP41S	Total Dissolved Solids	Ground Water	4/21/2011	1	500 ml poly	None	
	JPOP41S-110421	JPOP41S	Total Radium (226+228)	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	JPOP41S-110421	JPOP41S	TAL Metals/Hg	Ground Water	4/21/2011	1	500 ml poly	HNO3 pH<2	
	MD-SW-110420	MW-MD	Alkalinity	Surface Water	4/20/2011	1	NA	NA	
	MD-SW-110420	MW-MD	**Alpha Spec -Uranium Isotopes**	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MD-SW-110420	MW-MD	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/20/2011	1	500 ml poly	None	
	MD-SW-110420	MW-MD	**Gamma Spec** - Thorium	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MD-SW-110420	MW-MD	Gross Alpha/Beta	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MD-SW-110420	MW-MD	Total Dissolved Solids	Surface Water	4/20/2011	1	500 ml poly	None	
	MD-SW-110420	MW-MD	Total Radium (226+228)	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MD-SW-110420	MW-MD	TAL Metals/Hg	Surface Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	MW-1-110419	MW-1	Alkalinity	Ground Water	4/19/2011	1	NA	NA	
	MW-1-110419	MW-1	**Alpha Spec -Uranium Isotopes**	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	Y
	MW-1-110419	MW-1	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/19/2011	1	500 ml poly	None	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	[illegible]	4/22/11	[signature]	4/22/11	8:45		[signature]	4/22/11	[signature]	4-27-11	12:30

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	MW-2-2-110421	MW-2	Total Radium (226+228)	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	MW-2-2-110421	MW-2	TAL Metals/Hg	Ground Water	4/21/2011	1	500 ml poly	HNO3 pH<2	
	MW-3-110420	MW-3	Alkalinity	Ground Water	4/20/2011	1	NA	NA	
	MW-3-110420	MW-3	Alpha Spec -Uranium isotopes	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-3-110420	MW-3	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-3-110420	MW-3	Gamma Spec - Thorium	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-3-110420	MW-3	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-3-110420	MW-3	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-3-110420	MW-3	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-3-110420	MW-3	TAL Metals/Hg	Ground Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	MW-4-110420	MW-6	Alkalinity	Ground Water	4/20/2011	1	NA	NA	
	MW-4-110420	MW-6	Alpha Spec -Uranium isotopes	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-4-110420	MW-6	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-4-110420	MW-6	Gamma Spec - Thorium	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-4-110420	MW-6	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-4-110420	MW-6	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-4-110420	MW-6	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-4-110420	MW-6	TAL Metals/Hg	Ground Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	MW-6-110420	MW-6	Alkalinity	Ground Water	4/20/2011	1	NA	NA	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

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		04/22/11		4/22/11	8:45			4/22/11		4-27-11	12:50

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	MW-6-110420	MW-6	**Alpha Spec -Uranium isotopes**	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-6-110420	MW-6	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-6-110420	MW-6	**Gamma Spec - Thorium**	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-6-110420	MW-6	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-6-110420	MW-6	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-6-110420	MW-6	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-6-110420	MW-6	TAL Metals/Hg	Ground Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	MW-7-110419	MW-7	Alkalinity	Ground Water	4/19/2011	1	NA	NA	
	MW-7-110419	MW-7	**Alpha Spec -Uranium isotopes**	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-7-110419	MW-7	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/19/2011	1	500 ml poly	None	
	MW-7-110419	MW-7	**Gamma Spec - Thorium**	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-7-110419	MW-7	Gross Alpha/Beta	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-7-110419	MW-7	Total Dissolved Solids	Ground Water	4/19/2011	1	500 ml poly	None	
	MW-7-110419	MW-7	Total Radium (226+228)	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-7-110419	MW-7	TAL Metals/Hg	Ground Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	MW-8-110419	MW-8	Alkalinity	Ground Water	4/19/2011	1	NA	NA	
	MW-8-110419	MW-8	**Alpha Spec -Uranium isotopes**	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-8-110419	MW-8	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/19/2011	1	500 ml poly	None	
	MW-8-110419	MW-8	**Gamma Spec - Thorium**	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

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	[illegible]	04/22/11	[signature]	4/22/11	8:45		[signature]	4/22/11	[signature]	4-27-11	12:50

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analysas	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	MW-8-110419	MW-8	Gross Alpha/Beta	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-8-110419	MW-8	Total Dissolved Solids	Ground Water	4/19/2011	1	500 ml poly	None	
	MW-8-110419	MW-8	Total Radium (226+228)	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-8-110419	MW-8	TAL Metals/Hg	Ground Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Alkalinity	Ground Water	4/20/2011	1	NA	NA	
	MW-MD-02-110420	MW-MD	**Alpha Spec -Uranium isotopes**	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-02-110420	MW-MD	**Gamma Spec - Thorium**	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-02-110420	MW-MD	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	TAL Metals/Hg	Ground Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Alkalinity	Ground Water	4/20/2011	1	NA	NA	
	MW-MD-110420	MW-MD	**Alpha Spec -Uranium isotopes**	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-110420	MW-MD	**Gamma Spec - Thorium**	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-110420	MW-MD	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	

Special Instructions: 5-7 day TAT
Level IV Deliverable

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USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	MW-MD-110420	MW-MD	TAL Metals/Hg	Ground Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	NPOP20E-110420	NPOP20E	Alkalinity	Ground Water	4/20/2011	1	NA	NA	
	NPOP20E-110420	NPOP20E	Alpha Spec -Uranium isotopes	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	NPOP20E-110420	NPOP20E	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	NPOP20E-110420	NPOP20E	Gamma Spec - Thorium	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	NPOP20E-110420	NPOP20E	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	NPOP20E-110420	NPOP20E	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	NPOP20E-110420	NPOP20E	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	NPOP20E-110420	NPOP20E	TAL Metals/Hg	Ground Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	PR-SED-01-110420	PR	Alpha Spec -Uranium isotopes	Sediment	4/20/2011	1	8 oz glass	None	
	PR-SED-01-110420	PR	Gamma Spec - Thorium	Sediment	4/20/2011	1	8 oz glass	None	
	PR-SED-01-110420	PR	Gross Alpha/Beta	Sediment	4/20/2011	1	8 oz glass	None	
	PR-SED-01-110420	PR	TAL Metals/Hg	Sediment	4/20/2011	1	8 oz glass	None	
	PR-SED-01-110420	PR	Total Radium (226+228)	Sediment	4/20/2011	1	8 oz glass	None	
	PR-SW-01-110420	PR	Alkalinity	Surface Water	4/20/2011	1	NA	NA	
	PR-SW-01-110420	PR	Alpha Spec -Uranium isotopes	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	PR-SW-01-110420	PR	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/20/2011	1	500 ml poly	None	
	PR-SW-01-110420	PR	Gamma Spec - Thorium	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	PR-SW-01-110420	PR	Gross Alpha/Beta	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

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	[illegible]	04/22/11	[signature]	4/22/11	8:45		[signature]	4/22/11	[signature]	4-27-11	12:30

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	PR-SW-01-110420	PR	Total Dissolved Solids	Surface Water	4/20/2011	1	500 ml poly	None	
	PR-SW-01-110420	PR	Total Radium (226+228)	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	PR-SW-01-110420	PR	TAL Metals/Hg	Surface Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	RB-01-110420	NA	Alkalinity	Blank	4/20/2011	1	NA	NA	
	RB-01-110420	NA	Alpha Spec -Uranium isotopes	Blank	4/20/2011	1	1 L poly	HNO3 pH<2	
	RB-01-110420	NA	Anions (NO2,NO3,Cl,SO4)	Blank	4/20/2011	1	500 ml poly	None	
	RB-01-110420	NA	Gamma Spec - Thorium	Blank	4/20/2011	1	1 L poly	HNO3 pH<2	
	RB-01-110420	NA	Gross Alpha/Beta	Blank	4/20/2011	1	1 L poly	HNO3 pH<2	
	RB-01-110420	NA	Total Dissolved Solids	Blank	4/20/2011	1	500 ml poly	None	
	RB-01-110420	NA	Total Radium (226+228)	Blank	4/20/2011	1	1 L poly	HNO3 pH<2	
	RB-01-110420	NA	TAL Metals/Hg	Blank	4/20/2011	1	500 ml poly	HNO3 pH<2	
	RB-02-110421	NA	Alkalinity	Blank	4/21/2011	1	NA	NA	
	RB-02-110421	NA	Alpha Spec -Uranium isotopes	Blank	4/21/2011	1	1 L poly	HNO3 pH<2	
	RB-02-110421	NA	Anions (NO2,NO3,Cl,SO4)	Blank	4/21/2011	1	500 ml poly	None	
	RB-02-110421	NA	Gamma Spec - Thorium	Blank	4/21/2011	1	1 L poly	HNO3 pH<2	
	RB-02-110421	NA	Gross Alpha/Beta	Blank	4/21/2011	1	1 L poly	HNO3 pH<2	
	RB-02-110421	NA	Total Dissolved Solids	Blank	4/21/2011	1	500 ml poly	None	
	RB-02-110421	NA	Total Radium (226+228)	Blank	4/21/2011	1	1 L poly	HNO3 pH<2	
	RB-02-110421	NA	TAL Metals/Hg	Blank	4/21/2011	1	500 ml poly	HNO3 pH<2	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

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	[illegible]	04/22/11	[signature]	4/22/11	8:45		[signature]	4/22/11	[signature]	4-27-11	12:30
										4-27-11	

USEPA

DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD

Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001

Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RM-JM-SED-02-110420	RM-JM	Alpha Spec -Uranium isotopes	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-02-110420	RM-JM	Gamma Spec - Thorium	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-02-110420	RM-JM	Gross Alpha/Beta	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-02-110420	RM-JM	TAL Metals/Hg	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-02-110420	RM-JM	Total Radium (226+228)	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-110420	RM-JM	Alphe Spec -Uranium isotopes	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-110420	RM-JM	Gamma Spec - Thorium	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-110420	RM-JM	Gross Alpha/Beta	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-110420	RM-JM	TAL Metals/Hg	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SED-110420	RM-JM	Total Radium (226+228)	Sediment	4/20/2011	1	8 oz glass	None	
	RM-JM-SW-02-110420	RM-JM	Alkalinity	Surface Water	4/20/2011	1	NA	NA	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	[illegible]	04/22/11	[illegible]	4/22/11	8:45		[illegible]	4/22/11	[illegible]	4-27-11	14:20 [illegible] 4-27-11

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
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CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RM-JM-SW-02-110420	RM-JM	Alpha Spec -Uranium Isotopes	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RM-JM-SW-02-110420	RM-JM	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/20/2011	1	500 ml poly	None	
	RM-JM-SW-02-110420	RM-JM	Gamma Spec - Thorium	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RM-JM-SW-02-110420	RM-JM	Gross Alpha/Beta	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RM-JM-SW-02-110420	RM-JM	Total Dissolved Solids	Surface Water	4/20/2011	1	500 ml poly	None	
	RM-JM-SW-02-110420	RM-JM	Total Radium (226+228)	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RM-JM-SW-02-110420	RM-JM	TAL Metals/Hg	Surface Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	RM-JM-SW-110420	RM-JM	Alkalinity	Surface Water	4/20/2011	1	NA	NA	
	RM-JM-SW-110420	RM-JM	Alpha Spec -Uranium Isotopes	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RM-JM-SW-110420	RM-JM	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/20/2011	1	500 ml poly	None	
	RM-JM-SW-110420	RM-JM	Gamma Spec - Thorium	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RM-JM-SW-110420	RM-JM	Gross Alpha/Beta	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RM-JM-SW-110420	RM-JM	Total Dissolved Solids	Surface Water	4/20/2011	1	500 ml poly	None	
	RM-JM-SW-110420	RM-JM	Total Radium (226+228)	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	

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USEPA
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AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RM-JM-SW-110420	RM-JM	TAL Metals/Hg	Surface Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	RM-SED-BG-110419	RM-BG	Alpha Spec -Uranium isotopes	Sediment	4/19/2011	1	8 oz glass	None	
	RM-SED-BG-110419	RM-BG	Gamma Spec - Thorium	Sediment	4/19/2011	1	8 oz glass	None	
	RM-SED-BG-110419	RM-BG	TAL Metals/Hg	Sediment	4/19/2011	1	8 oz glass	None	
	RM-SED-BG-110419	RM-BG	Total Radium (226+228)	Sediment	4/19/2011	1	8 oz glass	None	
	RM-SW-BG-110419	RM-BG	Alkalinity	Surface Water	4/19/2011	1	NA	NA	
	RM-SW-BG-110419	RM-BG	Alpha Spec -Uranium isotopes	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RM-SW-BG-110419	RM-BG	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/19/2011	1	500 ml poly	None	
	RM-SW-BG-110419	RM-BG	Gamma Spec - Thorium	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RM-SW-BG-110419	RM-BG	Gross Alpha/Beta	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RM-SW-BG-110419	RM-BG	Total Dissolved Solids	Surface Water	4/19/2011	1	500 ml poly	None	
	RM-SW-BG-110419	RM-BG	Total Radium (226+228)	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RM-SW-BG-110419	RM-BG	TAL Metals/Hg	Surface Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	RP-JM-SED-01	RP-JM-01	Alpha Spec -Uranium isotopes	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-01	RP-JM-01	Gamma Spec - Thorium	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-01	RP-JM-01	Gross Alpha/Beta	Sediment	4/20/2011	1	8 oz glass	None	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		04/22/11	[signature]	4/22/11	8:45		[signature]	4/22/11	[signature]	4-27-11	12:30

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RP-JM-SED-01	RP-JM-01	TAL Metals/Hg	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-01	RP-JM-01	Total Radium (226+228)	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-110420	RP-JM	**Alpha Spec -Uranium isotopes**	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-110420	RP-JM	**Gamma Spec - Thorium**	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-110420	RP-JM	Gross Alpha/Beta	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-110420	RP-JM	TAL Metals/Hg	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SED-110420	RP-JM	Total Radium (226+228)	Sediment	4/20/2011	1	8 oz glass	None	
	RP-JM-SW-01-110420	RP-JM-01	Alkalinity	Surface Water	4/20/2011	1	NA	NA	
	RP-JM-SW-01-110420	RP-JM-01	**Alpha Spec -Uranium isotopes**	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RP-JM-SW-01-110420	RP-JM-01	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/20/2011	1	500 ml poly	None	
	RP-JM-SW-01-110420	RP-JM-01	**Gamma Spec - Thorium**	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RP-JM-SW-01-110420	RP-JM-01	Gross Alpha/Beta	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RP-JM-SW-01-110420	RP-JM-01	Total Dissolved Solids	Surface Water	4/20/2011	1	500 ml poly	None	
	RP-JM-SW-01-110420	RP-JM-01	Total Radium (226+228)	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		04/22/11		4/22/11	8:45			4/22/11		4-27-11	12:30 4-27-11

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RP-JM-SW-01-110420	RP-JM-01	TAL Metals/Hg	Surface Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	RP-JM-SW-110420	RP-JM	Alkalinity	Surface Water	4/20/2011	1	NA	NA	
	RP-JM-SW-110420	RP-JM	Alpha Spec -Uranium isotopes	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RP-JM-SW-110420	RP-JM	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/20/2011	1	500 ml poly	None	
	RP-JM-SW-110420	RP-JM	Gamma Spec - Thorium	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RP-JM-SW-110420	RP-JM	Gross Alpha/Beta	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RP-JM-SW-110420	RP-JM	Total Dissolved Solids	Surface Water	4/20/2011	1	500 ml poly	None	
	RP-JM-SW-110420	RP-JM	Total Radium (226+228)	Surface Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	RP-JM-SW-110420	RP-JM	TAL Metals/Hg	Surface Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	RP-SED-01-110419	RP-01	Alpha Spec -Uranium isotopes	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-01-110419	RP-01	Gamma Spec - Thorium	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-01-110419	RP-01	Gross Alpha/Beta	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-01-110419	RP-01	TAL Metals/Hg	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-01-110419	RP-01	Total Radium (226+228)	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-02-110420	RP-02	Alpha Spec -Uranium isotopes	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-02-110420	RP-02	Gamma Spec - Thorium	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-02-110420	RP-02	Gross Alpha/Beta	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-02-110420	RP-02	TAL Metals/Hg	Sediment	4/20/2011	1	8 oz glass	None	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	[illegible]	04/22/11	[signature]	4/22/11	8:45		[signature]	4/22/11	[signature]	4-27-11	12:00

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RP-SED-02-110420	RP-02	Total Radium (226+228)	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-03-110420	RP-03	Alpha Spec -Uranium Isotopes	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-03-110420	RP-03	Gamma Spec - Thorium	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-03-110420	RP-03	Gross Alpha/Beta	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-03-110420	RP-03	TAL Metals/Hg	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-03-110420	RP-03	Total Radium (226+228)	Sediment	4/20/2011	1	8 oz glass	None	
	RP-SED-BG-041911	RP-BG	Alpha Spec -Uranium Isotopes	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-BG-041911	RP-BG	Gamma Spec - Thorium	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-BG-041911	RP-BG	Gross Alpha/Beta	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-BG-041911	RP-BG	TAL Metals/Hg	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SED-BG-041911	RP-BG	Total Radium (226+228)	Sediment	4/19/2011	1	8 oz glass	None	
	RP-SW-01-110419	RP-01	Alkalinity	Surface Water	4/19/2011	1	NA	NA	
	RP-SW-01-110419	RP-01	Alpha Spec -Uranium isotopes	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-01-110419	RP-01	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/19/2011	1	500 ml poly	None	
	RP-SW-01-110419	RP-01	Gamma Spec - Thorium	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		04/22/11		4/22/11	8:45			4/22/11		4-27-11	12:30

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RP-SW-01-110419	RP-01	Gross Alpha/Beta	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-01-110419	RP-01	Total Dissolved Solids	Surface Water	4/19/2011	1	500 ml poly	None	
	RP-SW-01-110419	RP-01	Total Radium (226+228)	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-01-110419	RP-01	TAL Metals/Hg	Surface Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Alkalinity	Surface Water	4/19/2011	1	NA	NA	
	RP-SW-BG-041911	RP-BG	Alpha Spec -Uranium isotopes	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Anions (NO2,NO3,Cl,SO4)	Surface Water	4/19/2011	1	500 ml poly	None	
	RP-SW-BG-041911	RP-BG	Gamma Spec - Thorium	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Gross Alpha/Beta	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Total Dissolved Solids	Surface Water	4/19/2011	1	500 ml poly	None	
	RP-SW-BG-041911	RP-BG	Total Radium (226+228)	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	TAL Metals/Hg	Surface Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Alkalinity	Ground Water	4/21/2011	1	NA	NA	
	SPOP35-110421	SPOP35	Alpha Spec -Uranium isotopes	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Anions (NO2,NO3,Cl,SO4)	Ground Water	4/21/2011	1	500 ml poly	None	
	SPOP35-110421	SPOP35	Gamma Spec - Thorium	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Gross Alpha/Beta	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Total Dissolved Solids	Ground Water	4/21/2011	1	500 ml poly	None	
	SPOP35-110421	SPOP35	Total Radium (226+228)	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		04/22/11		4/22/11	8:45			4/22/11		4-27-11	2:30

USEPA
DateShipped: 4/22/2011
CarrierName: hand delivered
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 0603
Contact Name: [redacted]
Contact Phone: [redacted]

No: 6-042211-001353-0001
Cooler #:
Lab: Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	SPOP35-110421	SPOP35	TAL Metals/Hg	Ground Water	4/21/2011	1	500 ml poly	HNO3 pH<2	
	RM-SED-BG-110419	RM-BG	Gross Alpha/Beta	Sediment	4/19/2011	1	8 oz glass	None	
	MW-RM-110420		Alpha spec-uranium isotopes Alpha Spec-thorium isotopes		4-20-11/0934				

Special Instructions: 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		04/22/11		4/22/11	8:45			4/22/11		4-27-11	12:30

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Analytical Reports

for

Summit Enviromental Technologies

Site Number: 0603

Case Narrative

ARS INTERNATIONAL

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

June 2, 2011

Summit Environmental
2709 Pan American Fwy. NE, Suite A/C
Albuquerque, NM 87107

Site Number: 0603
ARS SDG: ARS1-11-00897

Dear Mr. Chavez and Ms. Gilger ;

On April 27, 2011, ARS International received ten (10) solid samples and twenty five (25) aqueous samples to be analyzed for Isotopic Uranium and Isotopic Thorium via Alpha Spectroscopy. The solid samples are reported on ARS1-11-00895 and the aqueous samples are reported on ARS1-11-00897.

The samples were processed and counted using the appropriate counting equipment and QA/QC for this type of analysis. Results of the analysis and QA/QC are attached in the data package.

The client and QA/QC samples were counted with a count time sufficient to meet quality control parameters for counting equipment and were within acceptance criteria and statistical sound detection limits.

If you have any questions please do not hesitate to call at 225.381.2991 or email projectmanagers@amrad.com.

Sincerely,

Virgene Mulligan

Laboratory Management
ARS International

ARS INTERNATIONAL
2609 North River Road • Port Allen, Louisiana 70767
1 (800) 401-4277 • Fax (225) 381-2996

PROJECT SAMPLE IDENTIFICATION
CROSS-REFERENCE
TO ARS SAMPLE LABORATORY IDs

Site Number 0603

Summit Environmental SAMPLE ID NUMBER	American Radiation Services SAMPLE ID NUMBER(S)
MW-1-110419	ARS1-11-00897-001
MW-2-110421	ARS1-11-00897-002
MW-2-2-110421	ARS1-11-00897-003
JPOP41S-110421	ARS1-11-00897-004
MD-SW-110420	ARS1-11-00897-005
MW-3-110420	ARS1-11-00897-006
MW-4-110420	ARS1-11-00897-007
MW-6-110420	ARS1-11-00897-008
MW-7-1I0419	ARS1-1I-00897-009
MW-8-I10419	ARS1-11-00897-010
MW-MD-02-110420	ARS1-11-00897-011
MW-MD-110420	ARS1-11-00897-012
NPOP20E-110420	ARS1-11-00897-013
PR-SW-01-110420	ARS1-11-00897-014
RB-01-110420	ARS1-11-00897-015
RB-02-110421	ARS1-11-00897-016
RM-JM-SW-02-110420	ARS1-11-00897-017
RM-JW-SW-110420	ARS1-11-00897-018
RM-SW-BG-110419	ARS1-11-00897-019
RP-JM-SW-01-110420	ARS1-11-00897-020

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RP-JM-SW-110420	ARS1-11-00897-021
RP-SW-01-110419	ARS1-11-00897-022
RP-SW-BG-041911	ARS1-11-00897-023
SPOP35-110421	ARS1-11-00897-024
MW-RM-110420	ARS1-11-00897-025

SAMPLE RECEIPT

The samples were received in good condition. The ten solid samples were checked in on ARS1-11-00895, and the twenty five aqueous samples were checked in on ARS1-11-00897.

ANALYTICAL METHODS

A Gross Alpha/Beta screen was performed for internal use. The data for this screen in included in your report under duplicate reports.

Samples for Uranium and Thorium procedures were digested prior to analyses utilizing the MARS total digestion system followed by a sequential separation using an Eichrom Ion Exchange Resin per Eichrom procedures ACW-03-15 and ACW-10. The samples were then electroplated on stainless steel disks and analyzed using alpha spectroscopy.

ANALYTICAL RESULTS

The result data that are flagged with "U" indicate that the activity is below the MDC.

The method blank for Th-230 failed evaluation criteria for samples ARS1-B11-01657-05 and 06. However, review of the data shows that both samples have activities that are less than the MDC and are less than the value of the blank. The results can be reported.

The tracer recovery for ARS1-B11-01985-04, and 05 are biased low; however, after management review the data is being released as valid.

The method blank is biased high for ARS1-B11-01985;however, method blank evaluation was performed per procedure and results are being released as valid.

The Method Blank for ARS1-B11-01664 is elevated; however, method blank evaluation was performed per procedure and the QC is being released as valid.

Tracer recovery for ARS1-B11-01664-14 is biased low; however, after management review the results are being released as valid.

Tracer recovery for ARS1-B11-01984-17 is low. This is a rerun and the results are comparable to the first run. There is an obvious matrix interference with this sample.

ARS INTERNATIONAL

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American Radiation Services Project Manager/Laboratory Director's Comments:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

"I certify that this electronic image and all hardcopies produced from this image accurately represent the data and is in compliance with the Summit Environmental specific requirements, both technically and for completeness, other than the conditions detailed above or in the sample data package narrative. Release, by submission through email, the data contained in this electronic image and the computer-readable EDD (as applicable), has been authorized by the laboratory Manager/Technical Director or the Manager's designee."

Virginia Mulligan	Laboratory Management, ARS International	6-2-11
Signature	**Title**	**Date**

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Analysis Results

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-1-110419	**ARS Sample ID:**	ARS1-11-00897-001
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	3.743	0.520	0.075	0.031		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	64%
U-235	0.161	0.062	0.038	0.012		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	64%
U-238	0.826	0.156	0.041	0.015		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	64%
TH-228	0.044	0.025	0.010	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	79%
TH-230	0.122	0.046	0.033	0.012		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	79%
TH-232	0.007	0.020	0.039	0.014	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	79%

NOTES: LEVEL IV DELIVERABLE

Vmulligan

Project Manager Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.

LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-2-110421	**ARS Sample ID:**	ARS1-11-00897-002
Sample Collection Date:	04/21/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	63.555	7.743	0.051	0.020		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	75%
U-235	2.232	0.334	0.012	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	75%
U-238	54.374	6.633	0.042	0.016		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	75%
TH-228	0.013	0.015	0.012	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	70%
TH-230	0.004	0.027	0.055	0.022	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	70%
TH-232	-0.071	0.042	0.101	0.045	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	70%

NOTES: LEVEL IV DELIVERABLE

Vmulligan

Project Manager Review

Notes: *American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.*

LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL
2609 North River Road, Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-2-2-110421	**ARS Sample ID:**	ARS1-11-00897-003
Sample Collection Date:	04/21/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	62.708	7.639	0.054	0.022		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	74%
U-235	2.490	0.365	0.033	0.010		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	74%
U-238	54.411	6.636	0.035	0.013		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	74%
TH-228	0.008	0.012	0.011	0.000	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	73%
TH-230	0.042	0.037	0.054	0.022	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	73%
TH-232	-0.004	0.018	0.045	0.017	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	73%

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	JPOP41S-110421	**ARS Sample ID:**	ARS1-11-00897-004
Sample Collection Date:	04/21/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	63261.388	7653.729	9.051	3.850		pCi/L	ARS-026/Elchrom ACW-03	05/28/11 14:09	JB	1%
U-235	72121.573	8725.834	1.567	0.000		pCi/L	ARS-026/Elchrom ACW-03	05/28/11 14:09	JB	1%
U-238	114131.786	13801.934	1.349	0.000		pCi/L	ARS-026/Elchrom ACW-03	05/28/11 14:09	JB	1%
TH-228	0.247	0.150	0.164	0.058		pCi/L	ARS-031/Elchrom ACW-10	05/05/11 03:52	JB	80%
TH-230	1.492	0.373	0.187	0.070		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	80%
TH-232	0.087	0.090	0.127	0.040	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	80%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MD-SW-110420	**ARS Sample ID:**	ARS1-11-00897-005
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	4.858	0.662	0.054	0.020		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	57%
U-235	0.306	0.090	0.016	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	57%
U-238	2.811	0.413	0.070	0.028		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	57%
TH-228	0.043	0.029	0.013	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	59%
TH-230	0.419	0.105	0.053	0.020		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	59%
TH-232	0.020	0.027	0.046	0.016	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	59%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-3-110420	**ARS Sample ID:**	ARS1-11-00897-006
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	17.713	2.201	0.046	0.018		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	75%
U-235	0.650	0.132	0.033	0.010		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	75%
U-238	15.436	1.926	0.081	0.035		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	75%
TH-228	0.008	0.022	0.043	0.016	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	77%
TH-230	0.645	0.127	0.042	0.016		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	77%
TH-232	0.031	0.027	0.036	0.013	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	77%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-4-110420	**ARS Sample ID:**	ARS1-11-00897-007
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	118.950	14.432	0.038	0.014		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	84%
U-235	4.579	0.615	0.011	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	84%
U-238	108.225	13.136	0.038	0.014		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	84%
TH-228	0.000	0.016	0.038	0.013	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	76%
TH-230	0.129	0.054	0.057	0.023		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	76%
TH-232	0.008	0.016	0.030	0.009	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	76%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-6-110420	**ARS Sample ID:**	ARS1-11-00897-008
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	73.205	8.904	0.010	0.000		pCi/L	ARS-026/Elchrom ACW-03	05/28/11 14:09	JB	82%
U-235	2.629	0.378	0.011	0.000		pCi/L	ARS-026/Elchrom ACW-03	05/28/11 14:09	JB	82%
U-238	61.798	7.525	0.050	0.020		pCi/L	ARS-026/Elchrom ACW-03	05/28/11 14:09	JB	82%
TH-228	0.026	0.029	0.045	0.018	U	pCi/L	ARS-031/Elchrom ACW-10	05/05/11 03:52	JB	75%
TH-230	0.674	0.129	0.044	0.017		pCi/L	ARS-031/Elchrom ACW-10	05/05/11 03:52	JB	75%
TH-232	0.041	0.030	0.040	0.015		pCi/L	ARS-031/Elchrom ACW-10	05/05/11 03:52	JB	75%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-7-110419	**ARS Sample ID:**	ARS1-11-00897-009
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	3.803	0.531	0.045	0.016		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	61%
U-235	0.062	0.040	0.041	0.013		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	61%
U-238	0.443	0.113	0.084	0.035		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	61%
TH-228	0.036	0.024	0.011	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	72%
TH-230	0.485	0.104	0.036	0.013		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	72%
TH-232	0.039	0.024	0.011	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:52	JB	72%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-8-110419	**ARS Sample ID:**	ARS1-11-00897-010
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	5.210	0.706	0.054	0.020		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	57%
U-235	0.059	0.040	0.043	0.014		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	57%
U-238	1.955	0.308	0.071	0.029		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	57%
TH-228	0.004	0.018	0.037	0.013	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	72%
TH-230	0.938	0.166	0.042	0.016		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	72%
TH-232	0.012	0.020	0.037	0.013	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	72%

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1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-MD-02-110420	**ARS Sample ID:**	ARS1-11-00897-011
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	29.059	3.645	0.185	0.081		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	34%
U-235	1.066	0.241	0.091	0.032		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	34%
U-238	21.357	2.713	0.169	0.073		pCi/L	ARS-026/Eichrom ACW-03	05/28/11 14:09	JB	34%
TH-228	-0.004	0.018	0.044	0.016	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	73%
TH-230	0.693	0.133	0.029	0.009		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	73%
TH-232	0.024	0.022	0.029	0.009	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	73%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-MD-110420	**ARS Sample ID:**	ARS1-11-00897-012
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	31.289	3.843	0.036	0.013		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	76%
U-235	1.001	0.179	0.033	0.010		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	76%
U-238	22.773	2.814	0.068	0.029		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	76%
TH-228	0.009	0.022	0.043	0.015	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	64%
TH-230	0.859	0.160	0.052	0.020		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	64%
TH-232	0.009	0.012	0.012	0.000	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	64%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	NPOP20E-110420	**ARS Sample ID:**	ARS1-11-00897-013
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	36513.126	4475.259	2.203	0.696		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	1%
U-235	40367.118	4947.878	2.553	0.807		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	1%
U-238	64338.356	7882.096	2.198	0.695		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	1%
TH-228	0.037	0.073	0.138	0.043	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	80%
TH-230	1.854	0.434	0.198	0.074		pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	80%
TH-232	0.110	0.161	0.275	0.113	U	pCi/L	ARS-031/Eichrom ACW-10	05/05/11 03:53	JB	80%

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ARS INTERNATIONAL
2609 North River Road, Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	PR-SW-01-110420	**ARS Sample ID:**	ARS1-11-00897-014
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	17.445	2.253	0.141	0.058		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	30%
U-235	0.565	0.168	0.029	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	30%
U-238	14.624	1.911	0.101	0.038		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	30%
TH-228	0.034	0.039	0.031	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	26%
TH-230	1.573	0.324	0.103	0.036		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	26%
TH-232	0.088	0.082	0.119	0.045	U	pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	26%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RB-01-110420	**ARS Sample ID:**	ARS1-11-00897-015
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	0.124	0.058	0.060	0.023		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	59%
U-235	0.006	0.030	0.062	0.023	U	pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	59%
U-238	0.065	0.063	0.100	0.043	U	pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	59%
TH-228	0.079	0.059	0.030	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	26%
TH-230	1.062	0.261	0.150	0.059		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	26%
TH-232	0.080	0.157	0.274	0.121	U	pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	26%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00897
Client Sample ID: RB-02-110421
Sample Collection Date: 04/21/11
Sample Matrix: Aqueous

Request or PO Number: N/A
ARS Sample ID: ARS1-11-00897-016
Date Received: 04/27/11
Report Date: 06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	0.111	0.056	0.067	0.027		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	68%
U-235	0.010	0.014	0.014	0.000	U	pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	68%
U-238	0.138	0.051	0.012	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	68%
TH-228	0.053	0.060	0.048	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	18%
TH-230	0.672	0.250	0.226	0.090		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	18%
TH-232	0.086	0.112	0.185	0.069	U	pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	18%

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ARS INTERNATIONAL
2609 North River Road, Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RM-JM-SW-02-110420	**ARS Sample ID:**	ARS1-11-00897-017
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	28.334	3.489	0.038	0.014		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	67%
U-235	0.961	0.177	0.044	0.016		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	67%
U-238	23.591	2.916	0.011	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	67%
TH-228	0.027	0.026	0.036	0.013	U	pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	73%
TH-230	0.871	0.156	0.041	0.015		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	73%
TH-232	0.111	0.044	0.028	0.009		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	73%

NOTES: LEVEL IV DELIVERABLE

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Project Manager Review

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RM-JM-SW-110420	**ARS Sample ID:**	ARS1-11-00897-018
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	37.997	4.652	0.053	0.022		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	76%
U-235	1.541	0.246	0.012	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	76%
U-238	33.431	4.100	0.045	0.018		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	76%
TH-228	0.036	0.024	0.011	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	73%
TH-230	0.545	0.114	0.043	0.016		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	73%
TH-232	0.139	0.051	0.037	0.013		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	73%

NOTES: LEVEL IV DELIVERABLE

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Project Manager Review

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RM-SW-BG-110419	**ARS Sample ID:**	ARS1-11-00897-019
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	4.119	0.588	0.066	0.025		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	49%
U-235	0.100	0.054	0.019	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	49%
U-238	2.230	0.355	0.066	0.025		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	49%
TH-228	0.071	0.042	0.048	0.018		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	69%
TH-230	0.727	0.143	0.047	0.018		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	69%
TH-232	0.126	0.051	0.040	0.014		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	69%

NOTES: LEVEL IV DELIVERABLE

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Project Manager Review

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ARS INTERNATIONAL
2609 North River Road, Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RP-JM-SW-01-110420	**ARS Sample ID:**	ARS1-11-00897-020
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	32.398	3.979	0.070	0.029		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	77%
U-235	1.236	0.211	0.034	0.011		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	77%
U-238	29.257	3.599	0.052	0.021		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	77%
TH-228	0.026	0.027	0.040	0.014	U	pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	72%
TH-230	0.755	0.147	0.060	0.024		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	72%
TH-232	0.077	0.038	0.031	0.010		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	72%

NOTES: LEVEL IV DELIVERABLE

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RP-JM-SW-110420	**ARS Sample ID:**	ARS1-11-00897-021
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	28.476	3.505	0.056	0.023		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	70%
U-235	1.071	0.190	0.043	0.015		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	70%
U-238	24.247	2.993	0.075	0.032		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	70%
TH-228	0.226	0.071	0.051	0.020		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	67%
TH-230	0.702	0.138	0.050	0.019		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	67%
TH-232	0.142	0.054	0.045	0.017		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	67%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RP-SW-01-110419	**ARS Sample ID:**	ARS1-11-00897-022
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	85.099	10.338	0.031	0.011		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	83%
U-235	3.236	0.449	0.011	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	83%
U-238	78.787	9.575	0.025	0.008		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	83%
TH-228	0.104	0.043	0.011	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	69%
TH-230	1.073	0.184	0.038	0.013		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	69%
TH-232	0.110	0.044	0.011	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	69%

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	RP-SW-BG-041911	**ARS Sample ID:**	ARS1-11-00897-023
Sample Collection Date:	04/19/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	6.242	0.840	0.061	0.023		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	50%
U-235	0.216	0.078	0.018	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	50%
U-238	3.793	0.541	0.041	0.013		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	50%
TH-228	0.161	0.057	0.038	0.014		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	70%
TH-230	1.202	0.200	0.044	0.016		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	70%
TH-232	0.073	0.038	0.038	0.013		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	70%

NOTES: LEVEL IV DELIVERABLE

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ARS INTERNATIONAL
2609 North River Road, Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00897
Client Sample ID: SPOP35-110421
Sample Collection Date: 04/21/11
Sample Matrix: Aqueous

Request or PO Number: N/A
ARS Sample ID: ARS1-11-00897-024
Date Received: 04/27/11
Report Date: 06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	3658.397	448.367	0.208	0.066		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	10%
U-235	4154.134	509.134	0.241	0.076		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	10%
U-238	5951.706	729.152	0.207	0.066		pCi/L	ARS-026/Eichrom ACW-03	05/29/11 16:05	JB	10%
TH-228	0.075	0.039	0.041	0.015		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	79%
TH-230	0.592	0.117	0.027	0.009		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	79%
TH-232	0.100	0.041	0.027	0.009		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	79%

NOTES: LEVEL IV DELIVERABLE

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ARS INTERNATIONAL

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-11-00897	**Request or PO Number:**	N/A
Client Sample ID:	MW-RM-110420	**ARS Sample ID:**	ARS1-11-00897-025
Sample Collection Date:	04/20/11	**Date Received:**	04/27/11
Sample Matrix:	Aqueous	**Report Date:**	06/02/11

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
U-234	11.645	1.471	0.011	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	68%
U-235	0.733	0.146	0.013	0.000		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	68%
U-238	30.024	3.693	0.049	0.019		pCi/L	ARS-026/Eichrom ACW-03	05/10/11 13:21	JB	68%
TH-228	0.012	0.021	0.038	0.014	U	pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	70%
TH-230	1.035	0.179	0.048	0.019		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	70%
TH-232	0.104	0.042	0.011	0.000		pCi/L	ARS-031/Eichrom ACW-10	05/06/11 10:32	JB	70%

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LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

QC Results per Analytical Batch

Analytical Batch	ARS1-B11-01664
SDG	ARS1-11-00897
Analysis	Uranium in Water
Analysis Test Method	ARS-026/Elchrom ACW-03-15
Analysis Code	ASP-A-024
Report Units	pCi/L

Acceptable QC Performance Ranges

QC Sample Type	Performance Items and Ranges		
Laboratory Control Sample	Recovery (%):	> 75	< 125
Matrix Spike	Recovery (%):	> 60	< 140
Duplicate	Replicate Error Ratio (RER):		< 1
	Duplicate Error Ratio (DER):		< 3
	Relative Percent Difference (RPD %):		≤ 25

Laboratory Control Sample

Analysis Date: 05/10/11 13:21 — Analysis Technician: JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	Expected Value	LCS Rec (%)	MDC
ARS1-B11-01664-01	LCS	U-238	20.7	2.6	16.8	123	0.064

Duplicate RER/DER/RPD

Analysis Date: 05/10/11 13:21 — Analysis Technician: JBROWN

Analyte	Result LCS	CSU LCS (2s)	Results LCSD	CSU LCSD (2s)	RER	DER	RPD
U-238	20.7	2.6	17.1	2.1	0.77	2.11	19.0

Method Blank

Analysis Date: 05/10/11 13:21, 05/10/11 13:21 — Analysis Technician: JBROWN, JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	MDC	Qual
ARS1-B11-01664-03	MBL	U-234	0.054	0.036	0.047	
ARS1-B11-01664-03	MBL	U-235	0.008	0.016	0.031	U
ARS1-B11-01664-03	MBL	U-238	0.039	0.028	0.033	

Heather Wright

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ARS INTERNATIONAL

QC Results per Analytical Batch

Analytical Batch	ARS1-B11-01984
SDG	ARS1-11-00897
Analysis	Uranium in Water
Analysis Test Method	ARS-026/Eichrom ACW-03-15
Analysis Code	ASP-A-024
Report Units	pCi/L

Acceptable QC Performance Ranges

QC Sample Type	Performance Items and Ranges		
Laboratory Control Sample	Recovery (%):	> 75	< 125
Matrix Spike	Recovery (%):	> 60	< 140
Duplicate	Replicate Error Ratio (RER):		< 1
	Duplicate Error Ratio (DER):		< 3
	Relative Percent Difference (RPD %):		≤ 25

Laboratory Control Sample

Analysis Date: 05/28/11 14:08 | Analysis Technician: JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	Expected Value	LCS Rec (%)	MDC
ARS1-B11-01984-01	LCS	U-238	17.6	2.2	17.0	104	0.021

Duplicate RER/DER/RPD

Analysis Date: 05/28/11 14:09 | Analysis Technician: JBROWN

Analyte	Result LCS	CSU LCS (2s)	Results LCSD	CSU LCSD (2s)	RER	DER	RPD
U-238	17.6	2.2	17.0	2.1	0.14	0.39	3.5

Method Blank

Analysis Date: 05/28/11 14:09 05/28/11 14:09 | Analysis Technician: JBROWN JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	MDC	Qual
ARS1-B11-01984-03	MBL	U-234	0.174	0.047	0.037	
ARS1-B11-01984-03	MBL	U-235	0.015	0.017	0.027	U
ARS1-B11-01984-03	MBL	U-238	0.120	0.056	0.079	

Virgene Mulligan

Virgene Mulligan

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ARS INTERNATIONAL

QC Results per Analytical Batch

Analytical Batch	ARS1-B11-01657
SDG	ARS1-11-00897
Analysis	Thorium in Water
Analysis Test Method	ARS-031/Eichrom ACW-10
Analysis Code	ASP-A-008
Report Units	pCi/L

Acceptable QC Performance Ranges

QC Sample Type	Performance Items and Ranges		
Laboratory Control Sample	Recovery (%):	> 75	< 125
Matrix Spike	Recovery (%):	> 60	< 140
Duplicate	Replicate Error Ratio (RER):		< 1
	Duplicate Error Ratio (DER):		< 3
	Relative Percent Difference (RPD %):		≤ 25

Laboratory Control Sample

Analysis Date: 05/05/11 03:52 | Analysis Technician: JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	Expected Value	LCS Rec (%)	MDC
ARS1-B11-01657-01	LCS	TH-230	5.59	0.70	5.86	95	0.034

Duplicate RER/DER/RPD

Analysis Date: 05/05/11 03:52 | Analysis Technician: JBROWN

Analyte	Result LCS	CSU LCS (2s)	Results LCSD	CSU LCSD (2s)	RER	DER	RPD
TH-230	5.59	0.70	5.75	0.72	0.11	0.31	2.8

Method Blank

Analysis Date: 05/05/11 03:52 | Analysis Technician: JBROWN
05/05/11 03:52 | JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	MDC	Qual
ARS1-B11-01657-03	MBL	TH-228	0.029	0.016	0.013	
ARS1-B11-01657-03	MBL	TH-230	0.043	0.022	0.026	
ARS1-B11-01657-03	MBL	TH-232	0.023	0.015	0.017	

Heather Wright

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ARS INTERNATIONAL

QC Results per Analytical Batch

Analytical Batch	ARS1-B11-01660
SDG	ARS1-11-00897
Analysis	Thorium in Water
Analysis Test Method	ARS-031/Eichrom ACW-10
Analysis Code	ASP-A-008
Report Units	pCi/L

Acceptable QC Performance Ranges

QC Sample Type	Performance Items and Ranges		
Laboratory Control Sample	Recovery (%):	> 75	< 125
Matrix Spike	Recovery (%):	> 60	< 140
Duplicate	Replicate Error Ratio (RER):		< 1
	Duplicate Error Ratio (DER):		< 3
	Relative Percent Difference (RPD %):		≤ 25

Laboratory Control Sample

Analysis Date: 05/06/11 10:32 — Analysis Technician: JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	Expected Value	LCS Rec (%)	MDC
ARS1-B11-01660-01	LCS	TH-230	5.77	0.73	5.82	99	0.039

Duplicate RER/DER/RPD

Analysis Date: 05/06/11 10:32 — Analysis Technician: JBROWN

Analyte	Result LCS	CSU LCS (2s)	Results LCSD	CSU LCSD (2s)	RER	DER	RPD
TH-230	5.77	0.73	6.42	0.81	0.43	1.18	10.7

Method Blank

Analysis Date: 05/06/11 10:32, 05/06/11 10:32 — Analysis Technician: JBROWN, JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	MDC	Qual
ARS1-B11-01660-03	MBL	TH-228	0.0039	0.0077	0.015	U
ARS1-B11-01660-03	MBL	TH-230	0.278	0.058	0.028	
ARS1-B11-01660-03	MBL	TH-232	0.045	0.021	0.018	

Jamie Armstrong

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ARS INTERNATIONAL

QC Results per Analytical Batch

Analytical Batch	ARS1-B11-01985
SDG	ARS1-11-00897
Analysis	Thorium in Water
Analysis Test Method	ARS-031/Eichrom ACW-10
Analysis Code	ASP-A-008
Report Units	pCi/L

Acceptable QC Performance Ranges

QC Sample Type	Performance Items and Ranges		
Laboratory Control Sample	Recovery (%):	> 75	< 125
Matrix Spike	Recovery (%):	> 60	< 140
Duplicate	Replicate Error Ratio (RER):		< 1
	Duplicate Error Ratio (DER):		< 3
	Relative Percent Difference (RPD %):		≤ 25

Laboratory Control Sample

Analysis Date: 05/28/11 14:08 — Analysis Technician: JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	Expected Value	LCS Rec (%)	MDC
ARS1-B11-01985-01	LCS	TH-230	6.78	0.85	5.79	117	0.037

Duplicate RER/DER/RPD

Analysis Date: 05/28/11 14:08 — Analysis Technician: JBROWN

Analyte	Result LCS	CSU LCS (2s)	Results LCSD	CSU LCSD (2s)	RER	DER	RPD
TH-230	6.78	0.85	6.39	0.81	0.24	0.66	5.9

Method Blank

Analysis Date: 05/28/11 14:08, 05/28/11 14:08 — Analysis Technician: JBROWN, JBROWN

Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (2s)	MDC	Qual
ARS1-B11-01985-03	MBL	TH-228	0.013	0.011	0.014	U
ARS1-B11-01985-03	MBL	TH-230	0.140	0.038	0.027	
ARS1-B11-01985-03	MBL	TH-232	0.017	0.014	0.018	U

Heather Wright

Heather Wright

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American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Uranium Alpha Spectroscopy Samples

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	5109.000000
Count Mins	1440.000000
BKG Counts	14.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212453
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1237.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.031200
Tracer EFF	0.212453
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**17.331466**	**17.331466**	**OK**
CU	**0.477210**	**0.477210**	**OK**
TPU	**2.148361**	**2.148361**	**OK**
MDA	**0.068438**	**0.068438**	**OK**
DL	**0.029610**	**0.029610**	**OK**
BP MDA	**0.422241**	**0.422241**	**OK**
BP DL	**0.206955**	**0.206955**	**OK**
DL QSAS			
Gross Count Rate	**3.547917**	**3.547917**	**OK**
BKG Count Rate	**0.009722**	**0.009722**	**OK**
Net Count Rate	**3.538194**	**3.538194**	**OK**
Δ t 1 (t2 - t1)	**6.860208**	**6.860208**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.437523**	**9.437523**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.433711**	**0.433711**	**OK**
Chem Rec Factor	**0.442562**	**0.442562**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.204149**	**0.204149**	**OK**
K MDA	**293.973970**	**293.973970**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_1A
Instr keV	59.44017029
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	180.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212453
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1237.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.031200
Tracer EFF	0.212453
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.705784**	**0.705784**	**OK**
CU	**0.103971**	**0.103971**	**OK**
TPU	**0.134486**	**0.134486**	**OK**
MDA	**0.029031**	**0.029031**	**OK**
DL	**0.009173**	**0.009173**	**OK**
BP MDA	**0.163601**	**0.163601**	**OK**
BP DL	**0.076622**	**0.076622**	**OK**
DL QSAS			
Gross Count Rate	**0.125000**	**0.125000**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.124306**	**0.124306**	**OK**
Δ t 1 (t2 - t1)	**6.860208**	**6.860208**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.437523**	**9.437523**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.433711**	**0.433711**	**OK**
Chem Rec Factor	**0.442562**	**0.442562**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.176124**	**0.176124**	**OK**
K MDA	**253.618839**	**253.618839**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_1A
Instr keV	55.66129303
Version/Date	2.0 -- 4/20/2006

Reviewed by: SOR **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	6118.000000
Count Mins	1440.000000
BKG Counts	12.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212453
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1237.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.031200
Tracer EFF	0.212453
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	20.729004	20.729004	OK
CU	0.520964	0.520964	OK
TPU	2.558910	2.558910	OK
MDA	0.063917	0.063917	OK
DL	0.027359	0.027359	OK
BP MDA	0.351362	0.351362	OK
BP DL	0.171449	0.171449	OK
DL QSAS			
Gross Count Rate	4.248611	4.248611	OK
BKG Count Rate	0.008333	0.008333	OK
Net Count Rate	4.240278	4.240278	OK
Δ t 1 (t2 - t1)	6.860208	6.860208	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.437523	9.437523	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.433711	0.433711	OK
Chem Rec Factor	0.442562	0.442562	OK
Sys Err	0.061664	0.061664	OK
K	0.204558	0.204558	OK
K MDA	294.563112	294.563112	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_1A
Instr keV	54.32730484
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1206.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.192201
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1206.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.032000
Tracer EFF	0.192201
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.216140**	**4.216140**	**OK**
CU	**0.238846**	**0.238846**	**OK**
TPU	**0.562764**	**0.562764**	**OK**
MDA	**0.037741**	**0.037741**	**OK**
DL	**0.014122**	**0.014122**	**OK**
BP MDA	**0.181046**	**0.181046**	**OK**
BP DL	**0.085959**	**0.085959**	**OK**
DL QSAS			
Gross Count Rate	**0.837500**	**0.837500**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**0.835417**	**0.835417**	**OK**
Δ t 1 (t2 - t1)	**6.860208**	**6.860208**	**OK**
DF	**0.999811**	**0.999811**	**OK**
Tracer DPM	**9.444845**	**9.444845**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.465872**	**0.465872**	**OK**
Chem Rec Factor	**0.475380**	**0.475380**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.198147**	**0.198147**	**OK**
K MDA	**285.332065**	**285.332065**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_1B
Instr keV	37.7613678
Version/Date	2.0 -- 4/20/2006

Reviewed by: SRh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	4548.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.192201
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1206.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.032000
Tracer EFF	0.192201
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**15.899341**	**15.899341**	**OK**
CU	**0.463004**	**0.463004**	**OK**
TPU	**1.976595**	**1.976595**	**OK**
MDA	**0.049381**	**0.049381**	**OK**
DL	**0.019948**	**0.019948**	**OK**
BP MDA	**0.422509**	**0.422509**	**OK**
BP DL	**0.206955**	**0.206955**	**OK**
DL QSAS			
Gross Count Rate	**3.158333**	**3.158333**	**OK**
BKG Count Rate	**0.004167**	**0.004167**	**OK**
Net Count Rate	**3.154167**	**3.154167**	**OK**
Δ t 1 (t2 - t1)	**6.860208**	**6.860208**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.444845**	**9.444845**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.465872**	**0.465872**	**OK**
Chem Rec Factor	**0.475380**	**0.475380**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.198383**	**0.198383**	**OK**
K MDA	**285.672222**	**285.672222**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_1B
Instr keV	35.82033157
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	180.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.192201
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1206.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.032000
Tracer EFF	0.192201
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.722236	0.722236	OK
CU	0.107288	0.107288	OK
TPU	0.138312	0.138312	OK
MDA	0.037694	0.037694	OK
DL	0.013349	0.013349	OK
BP MDA	0.163912	0.163912	OK
BP DL	0.076622	0.076622	OK
DL QSAS			
Gross Count Rate	0.125000	0.125000	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.123611	0.123611	OK
Δ t 1 (t2 - t1)	6.860208	6.860208	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.444845	9.444845	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.465872	0.465872	OK
Chem Rec Factor	0.475380	0.475380	OK
Sys Err	0.061664	0.061664	OK
K	0.171150	0.171150	OK
K MDA	246.456709	246.456709	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_1B
Instr keV	12.16941738
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	4884.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.192201
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi :-- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	1206.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.032000
Tracer EFF	0.192201
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	17.062323	17.062323	OK
CU	0.478527	0.478527	OK
TPU	2.116954	2.116954	OK
MDA	0.009467	0.009467	OK
DL	0.000000	0.000000	OK
BP MDA	0.351630	0.351630	OK
BP DL	0.171449	0.171449	OK
DL QSAS			
Gross Count Rate	3.391667	3.391667	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	3.391667	3.391667	OK
Δ t 1 (t2 - t1)	6.860208	6.860208	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.444845	9.444845	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.465872	0.465872	OK
Chem Rec Factor	0.475380	0.475380	OK
Sys Err	0.061664	0.061664	OK
K	0.198781	0.198781	OK
K MDA	286.244726	286.244726	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_1B
Instr keV	38.64440918
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDR **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1174.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216391
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1174.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.033100
Tracer EFF	0.216391
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.220634	4.220634	OK
CU	0.241435	0.241435	OK
TPU	0.564359	0.564359	OK
MDA	0.009743	0.009743	OK
DL	0.000000	0.000000	OK
BP MDA	0.181291	0.181291	OK
BP DL	0.085959	0.085959	OK
DL QSAS			
Gross Count Rate	0.815278	0.815278	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.815278	0.815278	OK
Δ t 1 (t2 - t1)	6.860208	6.860208	OK
DF	0.999811	0.999811	OK
Tracer DPM	9.454912	9.454912	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.403387	0.403387	OK
Chem Rec Factor	0.411620	0.411620	OK
Sys Err	0.061664	0.061664	OK
K	0.193165	0.193165	OK
K MDA	278.157250	278.157250	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_2A
Instr keV	28.96851158
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	20.000000
Count Mins	1440.000000
BKG Counts	5.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216391
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1174.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.033100
Tracer EFF	0.216391
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.053862**	**0.053862**	**OK**
CU	**0.035190**	**0.035190**	**OK**
TPU	**0.035787**	**0.035787**	**OK**
MDA	**0.047089**	**0.047089**	**OK**
DL	**0.018679**	**0.018679**	**OK**
BP MDA	**0.422754**	**0.422754**	**OK**
BP DL	**0.206955**	**0.206955**	**OK**
DL QSAS			
Gross Count Rate	**0.013889**	**0.013889**	**OK**
BKG Count Rate	**0.003472**	**0.003472**	**OK**
Net Count Rate	**0.010417**	**0.010417**	**OK**
Δ t 1 (t2 - t1)	**6.860208**	**6.860208**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.454912**	**9.454912**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.403387**	**0.403387**	**OK**
Chem Rec Factor	**0.411620**	**0.411620**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.193395**	**0.193395**	**OK**
K MDA	**278.488854**	**278.488854**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_2A
Instr keV	8.187438965
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	3.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216391
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1174.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.033100
Tracer EFF	0.216391
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.008324**	**0.008324**	**OK**
CU	**0.016316**	**0.016316**	**OK**
TPU	**0.016347**	**0.016347**	**OK**
MDA	**0.030645**	**0.030645**	**OK**
DL	**0.009683**	**0.009683**	**OK**
BP MDA	**0.164195**	**0.164195**	**OK**
BP OL	**0.076622**	**0.076622**	**OK**
DL QSAS			
Gross Count Rate	**0.002083**	**0.002083**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.001389**	**0.001389**	**OK**
Δ t 1 (t2 - t1)	**6.860208**	**6.860208**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.454912**	**9.454912**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.403387**	**0.403387**	**OK**
Chem Rec Factor	**0.411620**	**0.411620**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.166847**	**0.166847**	**OK**
K MDA	**240.259435**	**240.259435**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_ZA
Instr keV	4.912463665
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	13.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216391
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/3/11 4:42 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1174.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.033100
Tracer EFF	0.216391
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.039420**	**0.039420**	**OK**
CU	**0.027203**	**0.027203**	**OK**
TPU	**0.027618**	**0.027618**	**OK**
MDA	**0.033292**	**0.033292**	**OK**
DL	**0.011790**	**0.011790**	**OK**
BP MDA	**0.351874**	**0.351874**	**OK**
BP DL	**0.171449**	**0.171449**	**OK**
DL QSAS			
Gross Count Rate	**0.009028**	**0.009028**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.007639**	**0.007639**	**OK**
Δ t 1 (t2 - t1)	**6.860208**	**6.860208**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.454912**	**9.454912**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.403387**	**0.403387**	**OK**
Chem Rec Factor	**0.411620**	**0.411620**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.193783**	**0.193783**	**OK**
K MDA	**279.046962**	**279.046962**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_1_2A
Instr keV	7.368695259
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	887.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219564
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	887.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.219564
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.304566**	**8.304566**	**OK**
CU	**0.548379**	**0.548379**	**OK**
TPU	**1.143731**	**1.143731**	**OK**
MDA	**0.087174**	**0.087174**	**OK**
DL	**0.030872**	**0.030872**	**OK**
BP MDA	**0.368651**	**0.368651**	**OK**
BP DL	**0.171980**	**0.171980**	**OK**
DL QSAS			
Gross Count Rate	**0.615972**	**0.615972**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.614583**	**0.614583**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**0.999448**	**0.999448**	**OK**
Tracer DPM	**9.298413**	**9.298413**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.304737**	**0.304737**	**OK**
Chem Rec Factor	**0.310956**	**0.310956**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.074005**	**0.074005**	**OK**
K MDA	**106.567884**	**106.567884**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	014
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_2B
Instr keV	33.09716034
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1869.000000
Count Mins	1440.000000
BKG Counts	7.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219564
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	887.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.219564
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	17.445285	17.445285	OK
CU	0.795373	0.795373	OK
TPU	2.253478	2.253478	OK
MDA	0.140725	0.140725	OK
DL	0.057667	0.057667	OK
BP MDA	0.851436	0.851436	OK
BP DL	0.413911	0.413911	OK
DL QSAS			
Gross Count Rate	1.297917	1.297917	OK
BKG Count Rate	0.004861	0.004861	OK
Net Count Rate	1.293056	1.293056	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.298413	9.298413	OK
Tracer At	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.304737	0.304737	OK
Chem Rec Factor	0.310956	0.310956	OK
Sys Err	0.061664	0.061664	OK
K	0.074121	0.074121	OK
K MDA	106.733710	106.733710	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	014
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_2B
Instr keV	34.36228943
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDR Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	52.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219564
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	887.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.219564
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.564715**	**0.564715**	**OK**
CU	**0.153491**	**0.153491**	**OK**
TPU	**0.167982**	**0.167982**	**OK**
MDA	**0.029430**	**0.029430**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.335262**	**0.335262**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**0.036111**	**0.036111**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.036111**	**0.036111**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.298413**	**9.298413**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.304737**	**0.304737**	**OK**
Chem Rec Factor	**0.310956**	**0.310956**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.063946**	**0.063946**	**OK**
K MDA	**92.081902**	**92.081902**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	014
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_2B
Instr keV	11.08153439
Version/Date	2.0 -- 4/20/2006

Reviewed by: SOL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1567.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219564
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	887.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.219564
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**14.623981**	**14.623981**	**OK**
CU	**0.726164**	**0.726164**	**OK**
TPU	**1.910820**	**1.910820**	**OK**
MDA	**0.100692**	**0.100692**	**OK**
DL	**0.037676**	**0.037676**	**OK**
BP MDA	**0.709664**	**0.709664**	**OK**
BP DL	**0.342898**	**0.342898**	**OK**
DL QSAS			
Gross Count Rate	**1.088194**	**1.088194**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**1.086111**	**1.086111**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.298413**	**9.298413**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.304737**	**0.304737**	**OK**
Chem Rec Factor	**0.310956**	**0.310956**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.074269**	**0.074269**	**OK**
K MDA	**106.947622**	**106.947622**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	014
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	PR-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_28
Instr keV	38.09555817
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1675.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212170
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.212170
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.337261**	**8.337261**	**OK**
CU	**0.399633**	**0.399633**	**OK**
TPU	**1.084000**	**1.084000**	**OK**
MDA	**0.036670**	**0.036670**	**OK**
DL	**0.011586**	**0.011586**	**OK**
BP MDA	**0.356719**	**0.356719**	**OK**
BP DL	**0.171980**	**0.171980**	**OK**
DL QSAS			
Gross Count Rate	**1.163194**	**1.163194**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**1.162500**	**1.162500**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**0.999448**	**0.999448**	**OK**
Tracer DPM	**9.335021**	**9.335021**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.594164**	**0.594164**	**OK**
Chem Rec Factor	**0.606290**	**0.606290**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.139434**	**0.139434**	**OK**
K MDA	**200.785369**	**200.785369**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-05
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	015
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RB-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_3A
Instr keV	27.50323486
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	29.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212170
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	1675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.212170
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.124318**	**0.124318**	**OK**
CU	**0.055989**	**0.055989**	**OK**
TPU	**0.057970**	**0.057970**	**OK**
MDA	**0.059750**	**0.059750**	**OK**
DL	**0.023137**	**0.023137**	**OK**
BP MDA	**0.839522**	**0.839522**	**OK**
BP DL	**0.413911**	**0.413911**	**OK**
DL QSAS			
Gross Count Rate	**0.020139**	**0.020139**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**0.017361**	**0.017361**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.335021**	**9.335021**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.594164**	**0.594164**	**OK**
Chem Rec Factor	**0.606290**	**0.606290**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.139651**	**0.139651**	**OK**
K MDA	**201.097802**	**201.097802**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-05
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	015
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RB-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_3A
Instr keV	13.09677887
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	4.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212170
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.212170
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.005764	0.005764	OK
CU	0.029890	0.029890	OK
TPU	0.029898	0.029898	OK
MDA	0.062071	0.062071	OK
DL	0.023225	0.023225	OK
BP MDA	0.321452	0.321452	OK
BP DL	0.153245	0.153245	OK
DL QSAS			
Gross Count Rate	0.002778	0.002778	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	0.000694	0.000694	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.335021	9.335021	OK
Tracer At	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.594164	0.594164	OK
Chem Rec Factor	0.606290	0.606290	OK
Sys Err	0.061664	0.061664	OK
K	0.120481	0.120481	OK
K MDA	173.492219	173.492219	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-05
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	015
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RB-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_3A
Instr keV	4.911292076
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	27.000000
Count Mins	1440.000000
BKG Counts	14.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212170
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1675.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.212170
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.064516**	**0.064516**	**OK**
CU	**0.062283**	**0.062283**	**OK**
TPU	**0.062769**	**0.062769**	**OK**
MDA	**0.099846**	**0.099846**	**OK**
DL	**0.043198**	**0.043198**	**OK**
BP MDA	**0.697774**	**0.697774**	**OK**
BP DL	**0.342898**	**0.342898**	**OK**
DL QSAS			
Gross Count Rate	**0.018750**	**0.018750**	**OK**
BKG Count Rate	**0.009722**	**0.009722**	**OK**
Net Count Rate	**0.009028**	**0.009028**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.335021**	**9.335021**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.594164**	**0.594164**	**OK**
Chem Rec Factor	**0.606290**	**0.606290**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.139931**	**0.139931**	**OK**
K MDA	**201.500835**	**201.500835**	**OK**
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01664		
Batch ID	ARS1-B11-01664-05		
Analysis Code	ASP-A-024		
SDG	ARS1-11-00897		
Fraction	015		
Client	Summit Environmental Technologies		
Client Profile	Cuyahoga Falls		
Client ID	RB-01-110420		
Instr File Name	ApexAlpha		
Instr Detector	A_1_3A		
Instr keV	8.185486794		
Version/Date	2.0 -- 4/20/2006		

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1866.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.206113
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1866.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.206113
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.328858**	**8.328858**	**OK**
CU	**0.378212**	**0.378212**	**OK**
TPU	**1.075336**	**1.075336**	**OK**
MDA	**0.032881**	**0.032881**	**OK**
DL	**0.010389**	**0.010389**	**OK**
BP MDA	**0.355315**	**0.355315**	**OK**
BP DL	**0.171975**	**0.171975**	**OK**
DL QSAS			
Gross Count Rate	**1.295833**	**1.295833**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**1.295139**	**1.295139**	**OK**
Δ t 1 (t2 - t1)	**19.056250**	**19.056250**	**OK**
DF	**0.999475**	**0.999475**	**OK**
Tracer DPM	**9.325869**	**9.325869**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.682079**	**0.682079**	**OK**
Chem Rec Factor	**0.695999**	**0.695999**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.155500**	**0.155500**	**OK**
K MDA	**223.920263**	**223.920263**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	016
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RB-02-110421
Instr File Name	ApexAlpha
Instr Detector	A_1_3B
Instr keV	27.29480934
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	32.000000
Count Mins	1440.000000
BKG Counts	7.000000
BKG Mins	1440.000000
Instrument Efficiency	0.206113
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1866.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.206113
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.111476**	**0.111476**	**OK**
CU	**0.054580**	**0.054580**	**OK**
TPU	**0.056218**	**0.056218**	**OK**
MDA	**0.066975**	**0.066975**	**OK**
DL	**0.027446**	**0.027446**	**OK**
BP MDA	**0.838130**	**0.838130**	**OK**
BP DL	**0.413911**	**0.413911**	**OK**
DL QSAS			
Gross Count Rate	**0.022222**	**0.022222**	**OK**
BKG Count Rate	**0.004861**	**0.004861**	**OK**
Net Count Rate	**0.017361**	**0.017361**	**OK**
Δ t 1 (t2 - t1)	**19.056250**	**19.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.325869**	**9.325869**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.682079**	**0.682079**	**OK**
Chem Rec Factor	**0.695999**	**0.695999**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.155738**	**0.155738**	**OK**
K MDA	**224.262520**	**224.262520**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	016
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RB-02-110421
Instr File Name	ApexAlpha
Instr Detector	A_1_3B
Instr keV	13.51308155
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.206113
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1866.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.206113
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.010337**	**0.010337**	**OK**
CU	**0.014327**	**0.014327**	**OK**
TPU	**0.014381**	**0.014381**	**OK**
MDA	**0.014007**	**0.014007**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.319839**	**0.319839**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**0.001389**	**0.001389**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.001389**	**0.001389**	**OK**
Δ t 1 (t2 - t1)	**19.056250**	**19.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.325869**	**9.325869**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.682079**	**0.682079**	**OK**
Chem Rec Factor	**0.695999**	**0.695999**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.134359**	**0.134359**	**OK**
K MDA	**193.477012**	**193.477012**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	016
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RB-02-110421
Instr File Name	ApexAlpha
Instr Detector	A_1_3B
Instr keV	4.913847923
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	31.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.206113
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1866.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.206113
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.137954	0.137954	OK
CU	0.048564	0.048564	OK
TPU	0.051346	0.051346	OK
MDA	0.012060	0.012060	OK
DL	0.000000	0.000000	OK
BP MDA	0.696385	0.696385	OK
BP DL	0.342898	0.342898	OK
DL QSAS			
Gross Count Rate	0.021528	0.021528	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.021528	0.021528	OK
Δ t 1 (t2 - t1)	19.056250	19.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.325869	9.325869	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.682079	0.682079	OK
Chem Rec Factor	0.695999	0.695999	OK
Sys Err	0.061664	0.061664	OK
K	0.156050	0.156050	OK
K MDA	224.711977	224.711977	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	016
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RB-02-110421
Instr File Name	ApexAlpha
Instr Detector	A_1_3B
Instr keV	10.23718262
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2012.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225930
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2012.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.225930
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.304566**	**8.304566**	**OK**
CU	**0.363147**	**0.363147**	**OK**
TPU	**1.067369**	**1.067369**	**OK**
MDA	**0.030405**	**0.030405**	**OK**
DL	**0.009607**	**0.009607**	**OK**
BP MDA	**0.354413**	**0.354413**	**OK**
BP DL	**0.171980**	**0.171980**	**OK**
DL QSAS			
Gross Count Rate	**1.397222**	**1.397222**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**1.396528**	**1.396528**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**0.999448**	**0.999448**	**OK**
Tracer DPM	**9.298413**	**9.298413**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.672946**	**0.672946**	**OK**
Chem Rec Factor	**0.686680**	**0.686680**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.168164**	**0.168164**	**OK**
K MDA	**242.155949**	**242.155949**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-07
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	017
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_4A
Instr keV	29.44181824
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	6874.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225930
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2012.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.225930
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	28.334317	28.334317	OK
CU	0.670122	0.670122	OK
TPU	3.489450	3.489450	OK
MDA	0.038304	0.038304	OK
DL	0.013565	0.013565	OK
BP MDA	0.837219	0.837219	OK
BP DL	0.413911	0.413911	OK
DL QSAS			
Gross Count Rate	4.773611	4.773611	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	4.772222	4.772222	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.298413	9.298413	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.672946	0.672946	OK
Chem Rec Factor	0.686680	0.686680	OK
Sys Err	0.061664	0.061664	OK
K	0.168426	0.168426	OK
K MDA	242.532758	242.532758	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-07
Analysis Code	ASP-A-024
SDG	ARS1-I1-00897
Fraction	017
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_4A
Instr keV	36.94655609
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	203.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225930
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2012.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.225930
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.960623**	**0.960623**	**OK**
CU	**0.134119**	**0.134119**	**OK**
TPU	**0.177391**	**0.177391**	**OK**
MDA	**0.044399**	**0.044399**	**OK**
DL	**0.015724**	**0.015724**	**OK**
BP MDA	**0.318784**	**0.318784**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**0.140972**	**0.140972**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.139583**	**0.139583**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.298413**	**9.298413**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.672946**	**0.672946**	**OK**
Chem Rec Factor	**0.686680**	**0.686680**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.145305**	**0.145305**	**OK**
K MDA	**209.239215**	**209.239215**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-07
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	017
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_4A
Instr keV	20.18749237
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	5733.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225930
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2012.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.016000
Tracer EFF	0.225930
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	23.590764	23.590764	OK
CU	0.610671	0.610671	OK
TPU	2.915855	2.915855	OK
MDA	0.011151	0.011151	OK
DL	0.000000	0.000000	OK
BP MDA	0.695476	0.695476	OK
BP DL	0.342898	0.342898	OK
DL QSAS			
Gross Count Rate	3.981250	3.981250	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	3.981250	3.981250	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.298413	9.298413	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.672946	0.672946	OK
Chem Rec Factor	0.686680	0.686680	OK
Sys Err	0.061664	0.061664	OK
K	0.168763	0.168763	OK
K MDA	243.018833	243.018833	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-07
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	017
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_4A
Instr keV	42.40550995
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2192.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216447
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2192.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.216447
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.312740**	**8.312740**	**OK**
CU	**0.348001**	**0.348001**	**OK**
TPU	**1.063245**	**1.063245**	**OK**
MDA	**0.010277**	**0.010277**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.353499**	**0.353499**	**OK**
BP DL	**0.171980**	**0.171980**	**OK**
DL QSAS			
Gross Count Rate	**1.522222**	**1.522222**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**1.522222**	**1.522222**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**0.999448**	**0.999448**	**OK**
Tracer DPM	**9.307565**	**9.307565**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.764898**	**0.764898**	**OK**
Chem Rec Factor	**0.780509**	**0.780509**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.183119**	**0.183119**	**OK**
K MDA	**263.691650**	**263.691650**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	018
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_48
Instr keV	30.84774017
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDK **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	10041.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216447
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2192.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.216447
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	37.996688	37.996688	OK
CU	0.743880	0.743880	OK
TPU	4.652156	4.652156	OK
MDA	0.053415	0.053415	OK
DL	0.021577	0.021577	OK
BP MDA	0.836307	0.836307	OK
BP DL	0.413911	0.413911	OK
DL QSAS			
Gross Count Rate	6.972917	6.972917	OK
BKG Count Rate	0.004167	0.004167	OK
Net Count Rate	6.968750	6.968750	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.307565	9.307565	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.764898	0.764898	OK
Chem Rec Factor	0.780509	0.780509	OK
Sys Err	0.061664	0.061664	OK
K	0.183404	0.183404	OK
K MDA	264.101969	264.101969	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	018
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_4B
Instr keV	39.53868103
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDR Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	351.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216447
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	2192.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.216447
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.540504	1.540504	OK
CU	0.161163	0.161163	OK
TPU	0.246249	0.246249	OK
MDA	0.011894	0.011894	OK
DL	0.000000	0.000000	OK
BP MDA	0.317726	0.317726	OK
BP DL	0.153245	0.153245	OK
DL QSAS			
Gross Count Rate	0.243750	0.243750	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.243750	0.243750	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.307565	9.307565	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.764898	0.764898	OK
Chem Rec Factor	0.780509	0.780509	OK
Sys Err	0.061664	0.061664	OK
K	0.158227	0.158227	OK
K MDA	227.847526	227.847526	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	018
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_4B
Instr keV	42.83360672
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	8851.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.216447
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2192.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.216447
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	33.431423	33.431423	OK
CU	0.696962	0.696962	OK
TPU	4.100208	4.100208	OK
MDA	0.045405	0.045405	OK
DL	0.017582	0.017582	OK
BP MDA	0.694565	0.694565	OK
BP DL	0.342898	0.342898	OK
DL QSAS			
Gross Count Rate	6.146528	6.146528	OK
BKG Count Rate	0.002778	0.002778	OK
Net Count Rate	6.143750	6.143750	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.307565	9.307565	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.764898	0.764898	OK
Chem Rec Factor	0.780509	0.780509	OK
Sys Err	0.061664	0.061664	OK
K	0.183772	0.183772	OK
K MDA	264.631273	264.631273	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	018
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_4B
Instr keV	36.84606552
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1358.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209210
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1358.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.209210
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.337491**	**8.337491**	**OK**
CU	**0.444428**	**0.444428**	**OK**
TPU	**1.101327**	**1.101327**	**OK**
MDA	**0.057120**	**0.057120**	**OK**
DL	**0.020229**	**0.020229**	**OK**
BP MDA	**0.359894**	**0.359894**	**OK**
BP DL	**0.171985**	**0.171985**	**OK**
DL QSAS			
Gross Count Rate	**0.943056**	**0.943056**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.941667**	**0.941667**	**OK**
Δ t 1 (t2 - t1)	**21.056250**	**21.056250**	**OK**
DF	**0.999420**	**0.999420**	**OK**
Tracer DPM	**9.335021**	**9.335021**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.488105**	**0.488105**	**OK**
Chem Rec Factor	**0.498066**	**0.498066**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.112944**	**0.112944**	**OK**
K MDA	**162.638865**	**162.638865**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	019
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SW-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_5A
Instr keV	31.55294228
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	674.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209210
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1358.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.209210
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.119182**	**4.119182**	**OK**
CU	**0.313068**	**0.313068**	**OK**
TPU	**0.588101**	**0.588101**	**OK**
MDA	**0.066108**	**0.066108**	**OK**
DL	**0.024736**	**0.024736**	**OK**
BP MDA	**0.842682**	**0.842682**	**OK**
BP DL	**0.413911**	**0.413911**	**OK**
DL QSAS			
Gross Count Rate	**0.468056**	**0.468056**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**0.465972**	**0.465972**	**OK**
Δ t 1 (t2 - t1)	**21.056250**	**21.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.335021**	**9.335021**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.488105**	**0.488105**	**OK**
Chem Rec Factor	**0.498066**	**0.498066**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.113123**	**0.113123**	**OK**
K MDA	**162.896426**	**162.896426**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	019
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SW-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_SA
Instr keV	24.95882797
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	14.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209210
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1358.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.209210
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.099619	0.099619	OK
CU	0.052184	0.052184	OK
TPU	0.053555	0.053555	OK
MDA	0.019283	0.019283	OK
DL	0.000000	0.000000	OK
BP MDA	0.325115	0.325115	OK
BP DL	0.153245	0.153245	OK
DL QSAS			
Gross Count Rate	0.009722	0.009722	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.009722	0.009722	OK
Δ t 1 (t2 - t1)	21.056250	21.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.335021	9.335021	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.488105	0.488105	OK
Chem Rec Factor	0.498066	0.498066	OK
Sys Err	0.061664	0.061664	OK
K	0.097594	0.097594	OK
K MDA	140.534916	140.534916	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	019
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SW-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_5A
Instr keV	6.112156391
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	367.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209210
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1358.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.209210
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**2.230079**	**2.230079**	**OK**
CU	**0.230981**	**0.230981**	**OK**
TPU	**0.354962**	**0.354962**	**OK**
MDA	**0.065976**	**0.065976**	**OK**
DL	**0.024687**	**0.024687**	**OK**
BP MDA	**0.700928**	**0.700928**	**OK**
BP DL	**0.342898**	**0.342898**	**OK**
DL QSAS			
Gross Count Rate	**0.254861**	**0.254861**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**0.252778**	**0.252778**	**OK**
Δ t 1 (t2 - t1)	**21.056250**	**21.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.335021**	**9.335021**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.488105**	**0.488105**	**OK**
Chem Rec Factor	**0.498066**	**0.498066**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.113349**	**0.113349**	**OK**
K MDA	**163.222899**	**163.222899**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	019
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RM-SW-BG-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_5A
Instr keV	35.00598907
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2083.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.204735
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	2083.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.018000
Tracer EFF	0.204735
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.320913**	**8.320913**	**OK**
CU	**0.357856**	**0.357856**	**OK**
TPU	**1.067442**	**1.067442**	**OK**
MDA	**0.037146**	**0.037146**	**OK**
DL	**0.013155**	**0.013155**	**OK**
BP MDA	**0.354057**	**0.354057**	**OK**
BP DL	**0.171980**	**0.171980**	**OK**
DL QSAS			
Gross Count Rate	**1.446528**	**1.446528**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**1.445139**	**1.445139**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**0.999448**	**0.999448**	**OK**
Tracer DPM	**9.316717**	**9.316717**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.766952**	**0.766952**	**OK**
Chem Rec Factor	**0.782604**	**0.782604**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.173676**	**0.173676**	**OK**
K MDA	**250.092739**	**250.092739**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	020
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_58
Instr keV	34.6806488
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	8125.000000
Count Mins	1440.000000
BKG Counts	10.000000
BKG Mins	1440.000000
Instrument Efficiency	0.204735
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2083.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.018000
Tracer EFF	0.204735
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	32.397551	32.397551	OK
CU	0.705762	0.705762	OK
TPU	3.978680	3.978680	OK
MDA	0.069559	0.069559	OK
DL	0.029370	0.029370	OK
BP MDA	0.836865	0.836865	OK
BP DL	0.413911	0.413911	OK
DL QSAS			
Gross Count Rate	5.642361	5.642361	OK
BKG Count Rate	0.006944	0.006944	OK
Net Count Rate	5.635417	5.635417	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.316717	9.316717	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.766952	0.766952	OK
Chem Rec Factor	0.782604	0.782604	OK
Sys Err	0.061664	0.061664	OK
K	0.173946	0.173946	OK
K MDA	250.481898	250.481898	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	020
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_58
Instr keV	35.38989639
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	268.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.204735
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2083.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.018000
Tracer EFF	0.204735
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.235555	1.235555	OK
CU	0.148759	0.148759	OK
TPU	0.210781	0.210781	OK
MDA	0.034072	0.034072	OK
DL	0.010765	0.010765	OK
BP MDA	0.318373	0.318373	OK
BP DL	0.153245	0.153245	OK
DL QSAS			
Gross Count Rate	0.186111	0.186111	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.185417	0.185417	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.316717	9.316717	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.766952	0.766952	OK
Chem Rec Factor	0.782604	0.782604	OK
Sys Err	0.061664	0.061664	OK
K	0.150067	0.150067	OK
K MDA	216.097141	216.097141	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	020
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_SB
Instr keV	31.37195396
Version/Date	2.0 -- 4/20/2006

Reviewed by: SRh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	7348.000000
Count Mins	1440.000000
BKG Counts	5.000000
BKG Mins	1440.000000
Instrument Efficiency	0.204735
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2083.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.018000
Tracer EFF	0.204735
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	29.256856	29.256856	OK
CU	0.669642	0.669642	OK
TPU	3.598847	3.598847	OK
MDA	0.052250	0.052250	OK
DL	0.020726	0.020726	OK
BP MDA	0.695122	0.695122	OK
BP DL	0.342898	0.342898	OK
DL QSAS			
Gross Count Rate	5.102778	5.102778	OK
BKG Count Rate	0.003472	0.003472	OK
Net Count Rate	5.099306	5.099306	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.316717	9.316717	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.766952	0.766952	OK
Chem Rec Factor	0.782604	0.782604	OK
Sys Err	0.061664	0.061664	OK
K	0.174294	0.174294	OK
K MDA	250.983904	250.983904	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	020
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-01-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_5B
Instr keV	34.7035675
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2076.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225003
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2076.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.012000
Tracer EFF	0.225003
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.271871**	**8.271871**	**OK**
CU	**0.356348**	**0.356348**	**OK**
TPU	**1.061352**	**1.061352**	**OK**
MDA	**0.037052**	**0.037052**	**OK**
DL	**0.013122**	**0.013122**	**OK**
BP MDA	**0.354030**	**0.354030**	**OK**
BP DL	**0.171980**	**0.171980**	**OK**
DL QSAS			
Gross Count Rate	**1.441667**	**1.441667**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**1.440278**	**1.440278**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**0.999448**	**0.999448**	**OK**
Tracer DPM	**9.261805**	**9.261805**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.699641**	**0.699641**	**OK**
Chem Rec Factor	**0.713920**	**0.713920**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.174118**	**0.174118**	**OK**
K MDA	**250.729261**	**250.729261**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	021
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_6A
Instr keV	39.60801315
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	7157.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225003
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2076.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.012000
Tracer EFF	0.225003
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**28.476493**	**28.476493**	**OK**
CU	**0.660577**	**0.660577**	**OK**
TPU	**3.504503**	**3.504503**	**OK**
MDA	**0.056176**	**0.056176**	**OK**
DL	**0.022692**	**0.022692**	**OK**
BP MDA	**0.836837**	**0.836837**	**OK**
BP DL	**0.413911**	**0.413911**	**OK**
DL QSAS			
Gross Count Rate	**4.970139**	**4.970139**	**OK**
BKG Count Rate	**0.004167**	**0.004167**	**OK**
Net Count Rate	**4.965972**	**4.965972**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.261805**	**9.261805**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.699641**	**0.699641**	**OK**
Chem Rec Factor	**0.713920**	**0.713920**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.174388**	**0.174388**	**OK**
K MDA	**251.119410**	**251.119410**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	021
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_6A
Instr keV	39.67454147
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	234.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225003
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2076.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.012000
Tracer EFF	0.225003
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**1.070866**	**1.070866**	**OK**
CU	**0.138982**	**0.138982**	**OK**
TPU	**0.189913**	**0.189913**	**OK**
MDA	**0.042881**	**0.042881**	**OK**
DL	**0.015186**	**0.015186**	**OK**
BP MDA	**0.318341**	**0.318341**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**0.162500**	**0.162500**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.161111**	**0.161111**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.261805**	**9.261805**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.699641**	**0.699641**	**OK**
Chem Rec Factor	**0.713920**	**0.713920**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.150449**	**0.150449**	**OK**
K MDA	**216.647140**	**216.647140**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	021
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_6A
Instr keV	29.86603737
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDR **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	6113.000000
Count Mins	1440.000000
BKG Counts	12.000000
BKG Mins	1440.000000
Instrument Efficiency	0.225003
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	2076.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.012000
Tracer EFF	0.225003
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**24.246621**	**24.246621**	**OK**
CU	**0.609620**	**0.609620**	**OK**
TPU	**2.993196**	**2.993196**	**OK**
MDA	**0.074825**	**0.074825**	**OK**
DL	**0.032027**	**0.032027**	**OK**
BP MDA	**0.695095**	**0.695095**	**OK**
BP DL	**0.342898**	**0.342898**	**OK**
DL QSAS			
Gross Count Rate	**4.245139**	**4.245139**	**OK**
BKG Count Rate	**0.008333**	**0.008333**	**OK**
Net Count Rate	**4.236806**	**4.236806**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.261805**	**9.261805**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.699641**	**0.699641**	**OK**
Chem Rec Factor	**0.713920**	**0.713920**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.174738**	**0.174738**	**OK**
K MDA	**251.622694**	**251.622694**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	021
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-JM-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_1_6A
Instr keV	42.12785339
Version/Date	2.0 -- 4/20/2006

Reviewed by: SOh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2481.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224300
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2481.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.224300
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.08188S
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	8.337491	8.337491	OK
CU	0.328079	0.328079	OK
TPU	1.059736	1.059736	OK
MDA	0.009107	0.009107	OK
DL	0.000000	0.000000	OK
BP MDA	0.352338	0.352338	OK
BP DL	0.171985	0.171985	OK
DL QSAS			
Gross Count Rate	1.722917	1.722917	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	1.722917	1.722917	OK
Δ t 1 (t2 - t1)	21.056250	21.056250	OK
DF	0.999420	0.999420	OK
Tracer DPM	9.335021	9.335021	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.832978	0.832978	OK
Chem Rec Factor	0.849977	0.849977	OK
Sys Err	0.061664	0.061664	OK
K	0.206647	0.206647	OK
K MDA	297.571552	297.571552	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	022
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_6B
Instr keV	64.28845215
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	25365.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224300
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2481.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.224300
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	85.098517	85.098517	OK
CU	1.047399	1.047399	OK
TPU	10.338243	10.338243	OK
MDA	0.031170	0.031170	OK
DL	0.011039	0.011039	OK
BP MDA	0.835138	0.835138	OK
BP DL	0.413911	0.413911	OK
DL QSAS			
Gross Count Rate	17.614583	17.614583	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	17.613194	17.613194	OK
Δ t 1 (t2 - t1)	21.056250	21.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.335021	9.335021	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.832978	0.832978	OK
Chem Rec Factor	0.849977	0.849977	OK
Sys Err	0.061664	0.061664	OK
K	0.206974	0.206974	OK
K MDA	298.042798	298.042798	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	022
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_6B
Instr keV	76.40910339
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	832.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224300
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2481.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.224300
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**3.235728**	**3.235728**	**OK**
CU	**0.219870**	**0.219870**	**OK**
TPU	**0.448642**	**0.448642**	**OK**
MDA	**0.010539**	**0.010539**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.316371**	**0.316371**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**0.577778**	**0.577778**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.577778**	**0.577778**	**OK**
Δ t 1 (t2 - t1)	**21.056250**	**21.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.335021**	**9.335021**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.832978**	**0.832978**	**OK**
Chem Rec Factor	**0.849977**	**0.849977**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.178562**	**0.178562**	**OK**
K MDA	**257.129149**	**257.129149**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	022
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_6B
Instr keV	67.9863205
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	23530.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224300
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	2481.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.020000
Tracer EFF	0.224300
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	78.787135	78.787135	OK
CU	1.006765	1.006765	OK
TPU	9.575325	9.575325	OK
MDA	0.024654	0.024654	OK
DL	0.007790	0.007790	OK
BP MDA	0.693399	0.693399	OK
BP DL	0.342898	0.342898	OK
DL QSAS			
Gross Count Rate	16.340278	16.340278	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	16.339583	16.339583	OK
Δ t 1 (t2 - t1)	21.056250	21.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.335021	9.335021	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.832978	0.832978	OK
Chem Rec Factor	0.849977	0.849977	OK
Sys Err	0.061664	0.061664	OK
K	0.207389	0.207389	OK
K MDA	298.640126	298.640126	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	022
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-01-110419
Instr File Name	ApexAlpha
Instr Detector	A_1_6B
Instr keV	76.08847046
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDR **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1473.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220520
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	1473.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.220520
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.312969**	**8.312969**	**OK**
CU	**0.424965**	**0.424965**	**OK**
TPU	**1.090888**	**1.090888**	**OK**
MDA	**0.041580**	**0.041580**	**OK**
DL	**0.013138**	**0.013138**	**OK**
BP MDA	**0.358535**	**0.358535**	**OK**
BP DL	**0.171985**	**0.171985**	**OK**
DL QSAS			
Gross Count Rate	**1.022917**	**1.022917**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**1.022222**	**1.022222**	**OK**
Δ t 1 (t2 - t1)	**21.056250**	**21.056250**	**OK**
DF	**0.999420**	**0.999420**	**OK**
Tracer DPM	**9.307565**	**9.307565**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.504167**	**0.504167**	**OK**
Chem Rec Factor	**0.514456**	**0.514456**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.122967**	**0.122967**	**OK**
K MDA	**177.072726**	**177.072726**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	023
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_2_1A
Instr keV	29.11910248
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1110.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220520
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1473.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.220520
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	6.241784	6.241784	OK
CU	0.368693	0.368693	OK
TPU	0.839661	0.839661	OK
MDA	0.060720	0.060720	OK
DL	0.022720	0.022720	OK
BP MDA	0.841326	0.841326	OK
BP DL	0.413911	0.413911	OK
DL QSAS			
Gross Count Rate	0.770833	0.770833	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	0.768750	0.768750	OK
Δ t 1 (t2 - t1)	21.056250	21.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.307565	9.307565	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.504167	0.504167	OK
Chem Rec Factor	0.514456	0.514456	OK
Sys Err	0.061664	0.061664	OK
K	0.123162	0.123162	OK
K MDA	177.353146	177.353146	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	023
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_2_1A
Instr keV	31.36332893
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	33.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220520
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1473.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.220520
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.215676**	**0.215676**	**OK**
CU	**0.073587**	**0.073587**	**OK**
TPU	**0.078067**	**0.078067**	**OK**
MDA	**0.017712**	**0.017712**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.323544**	**0.323544**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**0.022917**	**0.022917**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.022917**	**0.022917**	**OK**
Δ t 1 (t2 - t1)	**21.056250**	**21.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.307565**	**9.307565**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.504167**	**0.504167**	**OK**
Chem Rec Factor	**0.514456**	**0.514456**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.106255**	**0.106255**	**OK**
K MDA	**153.007098**	**153.007098**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	023
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_2_1A
Instr keV	11.45227432
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	675.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220520
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1473.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.017000
Tracer EFF	0.220520
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	3.792726	3.792726	OK
CU	0.286762	0.286762	OK
TPU	0.540698	0.540698	OK
MDA	0.041432	0.041432	OK
DL	0.013091	0.013091	OK
BP MDA	0.699574	0.699574	OK
BP DL	0.342898	0.342898	OK
DL QSAS			
Gross Count Rate	0.468750	0.468750	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.468056	0.468056	OK
Δ t 1 (t2 - t1)	21.056250	21.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.307565	9.307565	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.504167	0.504167	OK
Chem Rec Factor	0.514456	0.514456	OK
Sys Err	0.061664	0.061664	OK
K	0.123409	0.123409	OK
K MDA	177.708592	177.708592	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	023
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	RP-SW-BG-041911
Instr File Name	ApexAlpha
Instr Detector	A_2_1A
Instr keV	29.78630257
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	252.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.214772
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	252.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.214772
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.328858**	**8.328858**	**OK**
CU	**1.053197**	**1.053197**	**OK**
TPU	**1.456890**	**1.456890**	**OK**
MDA	**0.403531**	**0.403531**	**OK**
OL	**0.156259**	**0.156259**	**OK**
BP MDA	**0.434225**	**0.434225**	**OK**
BP DL	**0.171975**	**0.171975**	**OK**
DL QSAS			
Gross Count Rate	**0.175000**	**0.175000**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**0.172222**	**0.172222**	**OK**
Δ t 1 (t2 - t1)	**19.056250**	**19.056250**	**OK**
DF	**0.999475**	**0.999475**	**OK**
Tracer DPM	**9.325869**	**9.325869**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.087044**	**0.087044**	**OK**
Chem Rec Factor	**0.088820**	**0.088820**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.020678**	**0.020678**	**OK**
K MDA	**29.775992**	**29.775992**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-14
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	024
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	SPOP35-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_1B
Instr keV	10.00212955
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDR **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	124641.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.214772
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	252.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.214772
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4179.500807**	**4179.500807**	**OK**
CU	**23.203873**	**23.203873**	**OK**
TPU	**505.669165**	**505.669165**	**OK**
MDA	**0.311520**	**0.311520**	**OK**
DL	**0.110323**	**0.110323**	**OK**
BP MDA	**0.916920**	**0.916920**	**OK**
BP DL	**0.413911**	**0.413911**	**OK**
DL QSAS			
Gross Count Rate	**86.556250**	**86.556250**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**86.554861**	**86.554861**	**OK**
Δ t 1 (t2 - t1)	**19.056250**	**19.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.325869**	**9.325869**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.087044**	**0.087044**	**OK**
Chem Rec Factor	**0.088820**	**0.088820**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.020709**	**0.020709**	**OK**
K MDA	**29.821504**	**29.821504**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-14
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	024
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	SPOP35-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_1B
Instr keV	4.879087925
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	59058.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.214772
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	252.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.214772
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**2295.457018**	**2295.457018**	**OK**
CU	**18.513857**	**18.513857**	**OK**
TPU	**278.047112**	**278.047112**	**OK**
MDA	**0.286180**	**0.286180**	**OK**
DL	**0.090423**	**0.090423**	**OK**
BP MDA	**0.411166**	**0.411166**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**41.012500**	**41.012500**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**41.011806**	**41.011806**	**OK**
Δ t 1 (t2 - t1)	**19.056250**	**19.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.325869**	**9.325869**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.087044**	**0.087044**	**OK**
Chem Rec Factor	**0.088820**	**0.088820**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.017867**	**0.017867**	**OK**
K MDA	**25.727774**	**25.727774**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-14
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	024
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	SPOP35-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_1B
Instr keV	137.4632874
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	119549.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.214772
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-D241
Tracer Std - Isotope	U-232
Tracer Counts	252.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.019000
Tracer EFF	0.214772
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4000.699980**	**4000.699980**	**OK**
CU	**22.679602**	**22.679602**	**OK**
TPU	**484.058142**	**484.058142**	**OK**
MDA	**0.360387**	**0.360387**	**OK**
DL	**0.134847**	**0.134847**	**OK**
BP MDA	**0.775017**	**0.775017**	**OK**
BP DL	**0.342898**	**0.342898**	**OK**
DL QSAS			
Gross Count Rate	**83.020139**	**83.020139**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**83.018056**	**83.018056**	**OK**
Δ t 1 (t2 - t1)	**19.056250**	**19.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.325869**	**9.325869**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.087044**	**0.087044**	**OK**
Chem Rec Factor	**0.088820**	**0.088820**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.020751**	**0.020751**	**OK**
K MDA	**29.881271**	**29.881271**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-14
Analysis Code	ASP-A-D24
SDG	ARS1-11-00897
Fraction	024
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	SPOP35-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_1B
Instr keV	227.3585358
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDK **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2020.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223188
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2020.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.015000
Tracer EFF	0.223188
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.081885
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.296392**	**8.296392**	**OK**
CU	**0.362339**	**0.362339**	**OK**
TPU	**1.066165**	**1.066165**	**OK**
MDA	**0.038193**	**0.038193**	**OK**
DL	**0.013526**	**0.013526**	**OK**
BP MDA	**0.354363**	**0.354363**	**OK**
BP DL	**0.171980**	**0.171980**	**OK**
DL QSAS			
Gross Count Rate	**1.402778**	**1.402778**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**1.401389**	**1.401389**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**0.999448**	**0.999448**	**OK**
Tracer DPM	**9.289261**	**9.289261**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.684258**	**0.684258**	**OK**
Chem Rec Factor	**0.698222**	**0.698222**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.168915**	**0.168915**	**OK**
K MDA	**243.238267**	**243.238267**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	025
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-RM-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_2A
Instr keV	32.61607742
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2837.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223188
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2020.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.015000
Tracer EFF	0.223188
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.197185
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**11.645340**	**11.645340**	**OK**
CU	**0.428527**	**0.428527**	**OK**
TPU	**1.471252**	**1.471252**	**OK**
MDA	**0.011124**	**0.011124**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.837170**	**0.837170**	**OK**
BP DL	**0.413911**	**0.413911**	**OK**
DL QSAS			
Gross Count Rate	**1.970139**	**1.970139**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**1.970139**	**1.970139**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.289261**	**9.289261**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.684258**	**0.684258**	**OK**
Chem Rec Factor	**0.698222**	**0.698222**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.169178**	**0.169178**	**OK**
K MDA	**243.616759**	**243.616759**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	025
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-RM-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_2A
Instr keV	36.27605438
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDR **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	154.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223188
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2020.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.015000
Tracer EFF	0.223188
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.073005
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.732725**	**0.732725**	**OK**
CU	**0.115728**	**0.115728**	**OK**
TPU	**0.145723**	**0.145723**	**OK**
MDA	**0.012894**	**0.012894**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP MDA	**0.318726**	**0.318726**	**OK**
BP DL	**0.153245**	**0.153245**	**OK**
DL QSAS			
Gross Count Rate	**0.106944**	**0.106944**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.106944**	**0.106944**	**OK**
Δ t 1 (t2 - t1)	**20.056250**	**20.056250**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.289261**	**9.289261**	**OK**
Tracer Δt	**335.087500**	**335.087500**	**OK**
Tracer DF	**0.990812**	**0.990812**	**OK**
Tracer Recovery	**0.684258**	**0.684258**	**OK**
Chem Rec Factor	**0.698222**	**0.698222**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.145954**	**0.145954**	**OK**
K MDA	**210.174411**	**210.174411**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	025
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-RM-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_2A
Instr keV	11.46146107
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDL **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	7333.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223188
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/10/11 1:21 PM
Activity Units = pCi -- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	5-0241
Tracer Std - Isotope	U-232
Tracer Counts	2020.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.015000
Tracer EFF	0.223188
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.163355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	30.023964	30.023964	OK
CU	0.687763	0.687763	OK
TPU	3.693313	3.693313	OK
MDA	0.049223	0.049223	OK
DL	0.019060	0.019060	OK
BP MDA	0.695426	0.695426	OK
BP DL	0.342898	0.342898	OK
DL QSAS			
Gross Count Rate	5.092361	5.092361	OK
BKG Count Rate	0.002778	0.002778	OK
Net Count Rate	5.089583	5.089583	OK
Δ t 1 (t2 - t1)	20.056250	20.056250	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.289261	9.289261	OK
Tracer Δt	335.087500	335.087500	OK
Tracer DF	0.990812	0.990812	OK
Tracer Recovery	0.684258	0.684258	OK
Chem Rec Factor	0.698222	0.698222	OK
Sys Err	0.061664	0.061664	OK
K	0.169517	0.169517	OK
K MDA	244.105007	244.105007	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01664
Batch ID	ARS1-B11-01664-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	025
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-RM-110420
Instr File Name	ApexAlpha
Instr Detector	A_2_2A
Instr keV	38.88392258
Version/Date	2.0 -- 4/20/2006

Reviewed by: SDh Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2423.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213413
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:08 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2423.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.044500
Tracer EFF	0.213413
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.264512**	**4.264512**	**OK**
TPU	**0.542662**	**0.542662**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP DL	**0.086815**	**0.086815**	**OK**
DL QSAS			
Gross Count Rate	**1.682639**	**1.682639**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**1.682639**	**1.682639**	**OK**
Δ t 1 (t2 - t1)	**1.949028**	**1.949028**	**OK**
DF	**0.999946**	**0.999946**	**OK**
Tracer DPM	**9.559244**	**9.559244**	**OK**
Tracer Δt	**353.120139**	**353.120139**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.835363**	**0.835363**	**OK**
Chem Rec Factor	**0.852411**	**0.852411**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.394568**	**0.394568**	**OK**
K MDA	**568.177604**	**568.177604**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_3B
Instr keV	39.81627655
Version/Date	2.0 -- 4/20/2006

Reviewed by: DFM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	9650.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213413
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:08 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2423.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.044500
Tracer EFF	0.213413
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**16.960923**	**16.960923**	**OK**
TPU	**2.077676**	**2.077676**	**OK**
DL	**0.007084**	**0.007084**	**OK**
BP DL	**0.136641**	**0.136641**	**OK**
DL QSAS			
Gross Count Rate	**6.701389**	**6.701389**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**6.699306**	**6.699306**	**OK**
Δ t 1 (t2 - t1)	**1.949028**	**1.949028**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.559244**	**9.559244**	**OK**
Tracer Δt	**353.120139**	**353.120139**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.835363**	**0.835363**	**OK**
Chem Rec Factor	**0.852411**	**0.852411**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.394985**	**0.394985**	**OK**
K MDA	**568.778020**	**568.778020**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_3B
Instr keV	44.50381088
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	348.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213413
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:08 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2423.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.044500
Tracer EFF	0.213413
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.707154**	**0.707154**	**OK**
TPU	**0.113458**	**0.113458**	**OK**
DL	**0.004741**	**0.004741**	**OK**
BP DL	**0.015438**	**0.015438**	**OK**
DL QSAS			
Gross Count Rate	**0.241667**	**0.241667**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.240972**	**0.240972**	**OK**
Δ t 1 (t2 - t1)	**1.949028**	**1.949028**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.559244**	**9.559244**	**OK**
Tracer Δt	**353.120139**	**353.120139**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.835363**	**0.835363**	**OK**
Chem Rec Factor	**0.852411**	**0.852411**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.340763**	**0.340763**	**OK**
K MDA	**490.699281**	**490.699281**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_3B
Instr keV	47.43571854
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	10054.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213413
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:08 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2423.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.044500
Tracer EFF	0.213413
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**17.634120**	**17.634120**	**OK**
TPU	**2.158996**	**2.158996**	**OK**
DL	**0.008164**	**0.008164**	**OK**
BP DL	**0.158855**	**0.158855**	**OK**
DL QSAS			
Gross Count Rate	**6.981944**	**6.981944**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**6.979167**	**6.979167**	**OK**
Δ t 1 (t2 - t1)	**1.949028**	**1.949028**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.559244**	**9.559244**	**OK**
Tracer Δt	**353.120139**	**353.120139**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.835363**	**0.835363**	**OK**
Chem Rec Factor	**0.852411**	**0.852411**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.395776**	**0.395776**	**OK**
K MDA	**569.917864**	**569.917864**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-01
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_3B
Instr keV	44.36736298
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2366.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224954
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2366.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046800
Tracer EFF	0.224954
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.273902	4.273902	OK
TPU	0.544498	0.544498	OK
DL	0.000000	0.000000	OK
BP DL	0.086815	0.086815	OK
DL QSAS			
Gross Count Rate	1.643056	1.643056	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	1.643056	1.643056	OK
Δ t 1 (t2 - t1)	1.949722	1.949722	OK
DF	0.999946	0.999946	OK
Tracer DPM	9.580294	9.580294	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.772164	0.772164	OK
Chem Rec Factor	0.787922	0.787922	OK
Sys Err	0.061664	0.061664	OK
K	0.384439	0.384439	OK
K MDA	553.592461	553.592461	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4A
Instr keV	38.41609192
Version/Date	2.0 -- 4/20/2006

Reviewed by: DHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	9438.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224954
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2366.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046800
Tracer EFF	0.224954
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	17.028841	17.028841	OK
TPU	2.086601	2.086601	OK
DL	0.004198	0.004198	OK
BP DL	0.136641	0.136641	OK
DL QSAS			
Gross Count Rate	6.554167	6.554167	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	6.553472	6.553472	OK
Δ t 1 (t2 - t1)	1.949722	1.949722	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.580294	9.580294	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.772164	0.772164	OK
Chem Rec Factor	0.787922	0.787922	OK
Sys Err	0.061664	0.061664	OK
K	0.384845	0.384845	OK
K MDA	554.177475	554.177475	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4A
Instr keV	43.13824081
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	343.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224954
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2366.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046800
Tracer EFF	0.224954
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.715327**	**0.715327**	**OK**
TPU	**0.115134**	**0.115134**	**OK**
DL	**0.004866**	**0.004866**	**OK**
BP DL	**0.015438**	**0.015438**	**OK**
DL QSAS			
Gross Count Rate	**0.238194**	**0.238194**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**0.237500**	**0.237500**	**OK**
Δ t 1 (t2 - t1)	**1.949722**	**1.949722**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.580294**	**9.580294**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.772164**	**0.772164**	**OK**
Chem Rec Factor	**0.787922**	**0.787922**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.332016**	**0.332016**	**OK**
K MDA	**478.103019**	**478.103019**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4A
Instr keV	14.2139082
Version/Date	2.0 -- 4/20/2006

Reviewed by: DTM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	9439.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.224954
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2366.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046800
Tracer EFF	0.224954
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**16.991181**	**16.991181**	**OK**
TPU	**2.082010**	**2.082010**	**OK**
DL	**0.008379**	**0.008379**	**OK**
BP DL	**0.158855**	**0.158855**	**OK**
DL QSAS			
Gross Count Rate	**6.554861**	**6.554861**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**6.552083**	**6.552083**	**OK**
Δ t 1 (t2 - t1)	**1.949722**	**1.949722**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.580294**	**9.580294**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.772164**	**0.772164**	**OK**
Chem Rec Factor	**0.787922**	**0.787922**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.385617**	**0.385617**	**OK**
K MDA	**555.288060**	**555.288060**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-02
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4A
Instr keV	46.86788177
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1986.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1986.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046600
Tracer EFF	0.215817
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.273086	4.273086	OK
TPU	0.549676	0.549676	OK
DL	0.007086	0.007086	OK
BP DL	0.086815	0.086815	OK
DL QSAS			
Gross Count Rate	1.379167	1.379167	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	1.377778	1.377778	OK
Δ t 1 (t2 - t1)	1.949722	1.949722	OK
DF	0.999946	0.999946	OK
Tracer DPM	9.578464	9.578464	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.675037	0.675037	OK
Chem Rec Factor	0.688813	0.688813	OK
Sys Err	0.061664	0.061664	OK
K	0.322432	0.322432	OK
K MDA	464.301491	464.301491	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4B
Instr keV	40.27577209
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	91.000000
Count Mins	1440.000000
BKG Counts	10.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1986.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046600
Tracer EFF	0.215817
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.174271	0.174271	OK
TPU	0.047325	0.047325	OK
DL	0.015828	0.015828	OK
BP DL	0.136641	0.136641	OK
DL QSAS			
Gross Count Rate	0.063194	0.063194	OK
BKG Count Rate	0.006944	0.006944	OK
Net Count Rate	0.056250	0.056250	OK
Δ t 1 (t2 - t1)	1.949722	1.949722	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.578464	9.578464	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.675037	0.675037	OK
Chem Rec Factor	0.688813	0.688813	OK
Sys Err	0.061664	0.061664	OK
K	0.322772	0.322772	OK
K MDA	464.792146	464.792146	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4B
Instr keV	25.77999306
Version/Date	2.0 -- 4/20/2006

Reviewed by: YM Date: 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	9.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1986.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046600
Tracer EFF	0.215817
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.014963	0.014963	OK
TPU	0.017029	0.017029	OK
DL	0.010049	0.010049	OK
BP DL	0.015438	0.015438	OK
DL QSAS			
Gross Count Rate	0.006250	0.006250	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	0.004167	0.004167	OK
Δ t 1 (t2 - t1)	1.949722	1.949722	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.578464	9.578464	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.675037	0.675037	OK
Chem Rec Factor	0.688813	0.688813	OK
Sys Err	0.061664	0.061664	OK
K	0.278464	0.278464	OK
K MDA	400.988020	400.988020	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4B
Instr keV	6.138093472
Version/Date	2.0 -- 4/20/2006

Reviewed by: NHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	109.000000
Count Mins	1440.000000
BKG Counts	53.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215817
Sample Aliquot	1.000000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	5/26/11 3:21 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1986.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.046600
Tracer EFF	0.215817
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.120243**	**0.120243**	**OK**
TPU	**0.055502**	**0.055502**	**OK**
DL	**0.036366**	**0.036366**	**OK**
BP DL	**0.158855**	**0.158855**	**OK**
DL QSAS			
Gross Count Rate	**0.075694**	**0.075694**	**OK**
BKG Count Rate	**0.036806**	**0.036806**	**OK**
Net Count Rate	**0.038889**	**0.038889**	**OK**
Δ t 1 (t2 - t1)	**1.949722**	**1.949722**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.578464**	**9.578464**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.675037**	**0.675037**	**OK**
Chem Rec Factor	**0.688813**	**0.688813**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.323419**	**0.323419**	**OK**
K MDA	**465.723600**	**465.723600**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-03
Analysis Code	
SDG	QC Sample
Fraction	N/A QC Sample
Client	QC Sample
Client Profile	
Client ID	N/A QC Sample
Instr File Name	ApexAlpha
Instr Detector	A_2_4B
Instr keV	8.593330383
Version/Date	2.0 -- 4/20/2006

Reviewed by: MM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1910.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1910.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.047200
Tracer EFF	0.218973
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	8.559824	8.559824	OK
TPU	1.103473	1.103473	OK
DL	0.000000	0.000000	OK
BP DL	0.173808	0.173808	OK
DL QSAS			
Gross Count Rate	1.326389	1.326389	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	1.326389	1.326389	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	0.998924	0.998924	OK
Tracer DPM	9.583955	9.583955	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.640125	0.640125	OK
Chem Rec Factor	0.653189	0.653189	OK
Sys Err	0.061664	0.061664	OK
K	0.154955	0.154955	OK
K MDA	223.135438	223.135438	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-1-110419
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	29.66066933
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	846.000000
Count Mins	1440.000000
BKG Counts	9.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1910.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.047200
Tracer EFF	0.218973
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	3.743295	3.743295	OK
TPU	0.519977	0.519977	OK
DL	0.031213	0.031213	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	0.587500	0.587500	OK
BKG Count Rate	0.006250	0.006250	OK
Net Count Rate	0.581250	0.581250	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.583955	9.583955	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.640125	0.640125	OK
Chem Rec Factor	0.653189	0.653189	OK
Sys Err	0.061664	0.061664	OK
K	0.155278	0.155278	OK
K MDA	223.599824	223.599824	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-1-110419
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	27.81350517
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	32.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1910.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.047200
Tracer EFF	0.218973
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.160701	0.160701	OK
TPU	0.061514	0.061514	OK
DL	0.012060	0.012060	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.022222	0.022222	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.021528	0.021528	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.583955	9.583955	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.640125	0.640125	OK
Chem Rec Factor	0.653189	0.653189	OK
Sys Err	0.061664	0.061664	OK
K	0.133962	0.133962	OK
K MDA	192.905317	192.905317	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-1-110419
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	4.889849663
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	187.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.218973
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1910.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.047200
Tracer EFF	0.218973
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.825716	0.825716	OK
TPU	0.156280	0.156280	OK
DL	0.014684	0.014684	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	0.129861	0.129861	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.128472	0.128472	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.583955	9.583955	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.640125	0.640125	OK
Chem Rec Factor	0.653189	0.653189	OK
Sys Err	0.061664	0.061664	OK
K	0.155589	0.155589	OK
K MDA	224.047987	224.047987	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-04
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	001
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-1-110419
Instr File Name	ApexAlpha
Instr Detector	A_2_5A
Instr keV	16.5469017
Version/Date	2.0 -- 4/20/2006

Reviewed by: DHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2184.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2184.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.042400
Tracer EFF	0.213046
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	8.520119	8.520119	OK
TPU	1.090226	1.090226	OK
DL	0.015741	0.015741	OK
BP DL	0.173798	0.173798	OK
DL QSAS			
Gross Count Rate	1.516667	1.516667	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	1.514583	1.514583	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	0.998979	0.998979	OK
Tracer DPM	9.540025	9.540025	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.754745	0.754745	OK
Chem Rec Factor	0.770148	0.770148	OK
Sys Err	0.061664	0.061664	OK
K	0.177766	0.177766	OK
K MDA	255.982341	255.982341	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-05
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_5B
Instr keV	63.23594666
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	16307.000000
Count Mins	1440.000000
BKG Counts	5.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2184.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.042400
Tracer EFF	0.213046
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	63.555318	63.555318	OK
TPU	7.743076	7.743076	OK
DL	0.020280	0.020280	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	11.324306	11.324306	OK
BKG Count Rate	0.003472	0.003472	OK
Net Count Rate	11.320833	11.320833	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.540025	9.540025	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.754745	0.754745	OK
Chem Rec Factor	0.770148	0.770148	OK
Sys Err	0.061664	0.061664	OK
K	0.178126	0.178126	OK
K MDA	256.500959	256.500959	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-05
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_5B
Instr keV	65.6692276
Version/Date	2.0 -- 4/20/2006

Reviewed by: VTM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	494.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2184.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.042400
Tracer EFF	0.213046
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	2.232365	2.232365	OK
TPU	0.333989	0.333989	OK
DL	0.000000	0.000000	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.343056	0.343056	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.343056	0.343056	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.540025	9.540025	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.754745	0.754745	OK
Chem Rec Factor	0.770148	0.770148	OK
Sys Err	0.061664	0.061664	OK
K	0.153674	0.153674	OK
K MDA	221.289969	221.289969	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-05
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_5B
Instr keV	50.82377243
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	13978.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213046
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2184.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	3.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.042400
Tracer EFF	0.213046
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	54.374245	54.374245	OK
TPU	6.633272	6.633272	OK
DL	0.015678	0.015678	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	9.706944	9.706944	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	9.704861	9.704861	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.540025	9.540025	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.754745	0.754745	OK
Chem Rec Factor	0.770148	0.770148	OK
Sys Err	0.061664	0.061664	OK
K	0.178483	0.178483	OK
K MDA	257.015062	257.015062	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-05
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	002
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_2_5B
Instr keV	67.47711945
Version/Date	2.0 -- 4/20/2006

Reviewed by: DFM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2231.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2231.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.041200
Tracer EFF	0.223028
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
0 Variables Intact Test	OK

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	8.510311	8.510311	OK
TPU	1.087573	1.087573	OK
DL	0.008878	0.008878	OK
BP DL	0.173798	0.173798	OK
DL QSAS			
Gross Count Rate	1.549306	1.549306	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	1.548611	1.548611	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	0.998979	0.998979	OK
Tracer DPM	9.529043	9.529043	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.738013	0.738013	OK
Chem Rec Factor	0.753074	0.753074	OK
Sys Err	0.061664	0.061664	OK
K	0.181969	0.181969	OK
K MDA	262.035087	262.035087	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	48.20111465
Version/Date	2.0 -- 4/20/2006

Reviewed by: DHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	16471.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2231.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.041200
Tracer EFF	0.223028
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**62.708051**	**62.708051**	**OK**
TPU	**7.639258**	**7.639258**	**OK**
DL	**0.021703**	**0.021703**	**OK**
BP DL	**0.273282**	**0.273282**	**OK**
DL QSAS			
Gross Count Rate	**11.438194**	**11.438194**	**OK**
BKG Count Rate	**0.004167**	**0.004167**	**OK**
Net Count Rate	**11.434028**	**11.434028**	**OK**
Δ t 1 (t2 - t1)	**37.089583**	**37.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.529043**	**9.529043**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.738013**	**0.738013**	**OK**
Chem Rec Factor	**0.753074**	**0.753074**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.182337**	**0.182337**	**OK**
K MDA	**262.565967**	**262.565967**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	58.67838669
Version/Date	2.0 -- 4/20/2006

Reviewed by: VTM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	565.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2231.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.041200
Tracer EFF	0.223028
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	2.489820	2.489820	OK
TPU	0.364593	0.364593	OK
DL	0.010270	0.010270	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.392361	0.392361	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.391667	0.391667	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.529043	9.529043	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.738013	0.738013	OK
Chem Rec Factor	0.753074	0.753074	OK
Sys Err	0.061664	0.061664	OK
K	0.157307	0.157307	OK
K MDA	226.522407	226.522407	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	47.90333176
Version/Date	2.0 -- 4/20/2006

Reviewed by: YHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	14317.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.223028
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2231.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.041200
Tracer EFF	0.223028
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**54.410578**	**54.410578**	**OK**
TPU	**6.636238**	**6.636238**	**OK**
DL	**0.012505**	**0.012505**	**OK**
BP DL	**0.317709**	**0.317709**	**OK**
DL QSAS			
Gross Count Rate	**9.942361**	**9.942361**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**9.940972**	**9.940972**	**OK**
Δ t 1 (t2 - t1)	**37.089583**	**37.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.529043**	**9.529043**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.738013**	**0.738013**	**OK**
Chem Rec Factor	**0.753074**	**0.753074**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.182703**	**0.182703**	**OK**
K MDA	**263.092227**	**263.092227**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-06
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	003
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-2-2-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1A
Instr keV	63.52745819
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	17.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	17.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039800
Tracer EFF	0.209818
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.498868**	**8.498868**	**OK**
TPU	**4.168638**	**4.168638**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP DL	**0.173798**	**0.173798**	**OK**
DL QSAS			
Gross Count Rate	**0.011806**	**0.011806**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.011806**	**0.011806**	**OK**
Δ t 1 (t2 - t1)	**37.089583**	**37.089583**	**OK**
DF	**0.998979**	**0.998979**	**OK**
Tracer DPM	**9.516230**	**9.516230**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.005988**	**0.005988**	**OK**
Chem Rec Factor	**0.006111**	**0.006111**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.001389**	**0.001389**	**OK**
K MDA	**2.000266**	**2.000266**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-07
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	JPOP41S-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	4.894890308
Version/Date	2.0 -- 4/20/2006

Reviewed by: DTM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	126807.000000
Count Mins	1440.000000
BKG Counts	11.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	17.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039800
Tracer EFF	0.209818
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	63261.387801	63261.387801	OK
TPU	7653.728603	7653.728603	OK
DL	3.849554	3.849554	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	88.060417	88.060417	OK
BKG Count Rate	0.007639	0.007639	OK
Net Count Rate	88.052778	88.052778	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.516230	9.516230	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.005988	0.005988	OK
Chem Rec Factor	0.006111	0.006111	OK
Sys Err	0.061664	0.061664	OK
K	0.001392	0.001392	OK
K MDA	2.004319	2.004319	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-07
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	JPOP41S-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	223.4042358
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	124711.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	17.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039800
Tracer EFF	0.209818
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	72121.572782	72121.572782	OK
TPU	8725.834438	8725.834438	OK
DL	0.000000	0.000000	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	86.604861	86.604861	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	86.604861	86.604861	OK
Δ t 1 (t2 - t1)	37.089583	37.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.516230	9.516230	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.005988	0.005988	OK
Chem Rec Factor	0.006111	0.006111	OK
Sys Err	0.061664	0.061664	OK
K	0.001201	0.001201	OK
K MDA	1.729177	1.729177	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-07
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	JPOP41S-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	91.45392609
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	229215.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.209818
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/21/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	17.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039800
Tracer EFF	0.209818
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**114131.786030**	**114131.786030**	**OK**
TPU	**13801.934285**	**13801.934285**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP DL	**0.317709**	**0.317709**	**OK**
DL QSAS			
Gross Count Rate	**159.177083**	**159.177083**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**159.177083**	**159.177083**	**OK**
Δ t 1 (t2 - t1)	**37.089583**	**37.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.516230**	**9.516230**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.005988**	**0.005988**	**OK**
Chem Rec Factor	**0.006111**	**0.006111**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.001395**	**0.001395**	**OK**
K MDA	**2.008336**	**2.008336**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-07
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	004
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	JPOP41S-110421
Instr File Name	ApexAlpha
Instr Detector	A_3_1B
Instr keV	103.445076
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1705.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1705.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039100
Tracer EFF	0.220569
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	8.493380	8.493380	OK
TPU	1.103105	1.103105	OK
DL	0.016408	0.016408	OK
BP DL	0.173803	0.173803	OK
DL QSAS			
Gross Count Rate	1.184028	1.184028	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	1.182639	1.182639	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	0.998951	0.998951	OK
Tracer DPM	9.509824	9.509824	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.571037	0.571037	OK
Chem Rec Factor	0.582691	0.582691	OK
Sys Err	0.061664	0.061664	OK
K	0.139242	0.139242	OK
K MDA	200.509098	200.509098	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MD-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_2B
Instr keV	30.2557621
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	979.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1705.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039100
Tracer EFF	0.220569
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**4.857634**	**4.857634**	**OK**
TPU	**0.661914**	**0.661914**	**OK**
DL	**0.020055**	**0.020055**	**OK**
BP DL	**0.273282**	**0.273282**	**OK**
DL QSAS			
Gross Count Rate	**0.679861**	**0.679861**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**0.677778**	**0.677778**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.509824**	**9.509824**	**OK**
Tracer At	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.571037**	**0.571037**	**OK**
Chem Rec Factor	**0.582691**	**0.582691**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.139528**	**0.139528**	**OK**
K MDA	**200.920861**	**200.920861**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MD-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_2B
Instr keV	29.02689934
Version/Date	2.0 -- 4/20/2006

Reviewed by: DHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	53.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1705.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039100
Tracer EFF	0.220569
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**0.305758**	**0.305758**	**OK**
TPU	**0.090232**	**0.090232**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP DL	**0.030876**	**0.030876**	**OK**
DL QSAS			
Gross Count Rate	**0.036806**	**0.036806**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.036806**	**0.036806**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.509824**	**9.509824**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.571037**	**0.571037**	**OK**
Chem Rec Factor	**0.582691**	**0.582691**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.120375**	**0.120375**	**OK**
K MDA	**173.339591**	**173.339591**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MD-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_2B
Instr keV	8.S58202744
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	572.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.220569
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1705.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	2.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039100
Tracer EFF	0.220569
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	2.811395	2.811395	OK
TPU	0.412600	0.412600	OK
DL	0.028305	0.028305	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	0.397222	0.397222	OK
BKG Count Rate	0.004167	0.004167	OK
Net Count Rate	0.393056	0.393056	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.509824	9.509824	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.571037	0.571037	OK
Chem Rec Factor	0.582691	0.582691	OK
Sys Err	0.061664	0.061664	OK
K	0.139808	0.139808	OK
K MDA	201.323567	201.323567	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-08
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	005
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MD-SW-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_2B
Instr keV	30.83281708
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM Date: 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	2223.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2223.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039000
Tracer EFF	0.219087
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.492563**	**8.492563**	**OK**
TPU	**1.085434**	**1.085434**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP DL	**0.173803**	**0.173803**	**OK**
DL QSAS			
Gross Count Rate	**1.543750**	**1.543750**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**1.543750**	**1.543750**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**0.998951**	**0.998951**	**OK**
Tracer DPM	**9.508909**	**9.508909**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.750513**	**0.750513**	**OK**
Chem Rec Factor	**0.765830**	**0.765830**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.181777**	**0.181777**	**OK**
K MDA	**261.758441**	**261.758441**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-3-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	35.24778366
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	4650.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2223.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039000
Tracer EFF	0.219087
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	17.712814	17.712814	OK
TPU	2.200638	2.200638	OK
DL	0.017739	0.017739	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	3.229167	3.229167	OK
BKG Count Rate	0.002778	0.002778	OK
Net Count Rate	3.226389	3.226389	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.508909	9.508909	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.750513	0.750513	OK
Chem Rec Factor	0.765830	0.765830	OK
Sys Err	0.061664	0.061664	OK
K	0.182150	0.182150	OK
K MDA	262.295984	262.295984	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-3-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	34.71844101
Version/Date	2.0 -- 4/20/2006

Reviewed by: NJM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	148.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2223.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039000
Tracer EFF	0.219087
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.649610	0.649610	OK
TPU	0.131690	0.131690	OK
DL	0.010281	0.010281	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.102778	0.102778	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.102083	0.102083	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.508909	9.508909	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.750513	0.750513	OK
Chem Rec Factor	0.765830	0.765830	OK
Sys.Err	0.061664	0.061664	OK
K	0.157145	0.157145	OK
K MDA	226.289488	226.289488	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-3-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	33.72981262
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	4073.000000
Count Mins	1440.000000
BKG Counts	16.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219087
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2223.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.039000
Tracer EFF	0.219087
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	OK

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	15.436320	15.436320	OK
TPU	1.925623	1.925623	OK
DL	0.035406	0.035406	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	2.828472	2.828472	OK
BKG Count Rate	0.011111	0.011111	OK
Net Count Rate	2.817361	2.817361	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.508909	9.508909	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.750513	0.750513	OK
Chem Rec Factor	0.765830	0.765830	OK
Sys Err	0.061664	0.061664	OK
K	0.182515	0.182515	OK
K MDA	262.821705	262.821705	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-09
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	006
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-3-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3A
Instr keV	35.34767532
Version/Date	2.0 -- 4/20/2006

Reviewed by: DTM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2408.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2408.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038100
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.485206**	**8.485206**	**OK**
TPU	**1.080144**	**1.080144**	**OK**
DL	**0.008201**	**0.008201**	**OK**
BP DL	**0.173803**	**0.173803**	**OK**
DL QSAS			
Gross Count Rate	**1.672222**	**1.672222**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**1.671528**	**1.671528**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**0.998951**	**0.998951**	**OK**
Tracer DPM	**9.500672**	**9.500672**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.838960**	**0.838960**	**OK**
Chem Rec Factor	**0.856081**	**0.856081**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.196993**	**0.196993**	**OK**
K MDA	**283.670177**	**283.670177**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-4-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	67.77412415
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	33815.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Allquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2408.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038100
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**118.950490**	**118.950490**	**OK**
TPU	**14.432226**	**14.432226**	**OK**
DL	**0.014175**	**0.014175**	**OK**
BP DL	**0.273282**	**0.273282**	**OK**
DL QSAS			
Gross Count Rate	**23.482639**	**23.482639**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**23.480556**	**23.480556**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.500672**	**9.500672**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.838960**	**0.838960**	**OK**
Chem Rec Factor	**0.856081**	**0.856081**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.197398**	**0.197398**	**OK**
K MDA	**284.252718**	**284.252718**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-4-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	82.13598633
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	1123.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2408.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038100
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	OK

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	4.579335	4.579335	OK
TPU	0.614862	0.614862	OK
DL	0.000000	0.000000	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.779861	0.779861	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.779861	0.779861	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.500672	9.500672	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.838960	0.838960	OK
Chem Rec Factor	0.856081	0.856081	OK
Sys Err	0.061664	0.061664	OK
K	0.170300	0.170300	OK
K MDA	245.232126	245.232126	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-4-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	88.02515411
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	30828.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.212397
Sample Allquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2408.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038100
Tracer EFF	0.212397
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**108.225319**	**108.225319**	**OK**
TPU	**13.135856**	**13.135856**	**OK**
DL	**0.014147**	**0.014147**	**OK**
BP DL	**0.317709**	**0.317709**	**OK**
DL QSAS			
Gross Count Rate	**21.408333**	**21.408333**	**OK**
BKG Count Rate	**0.002083**	**0.002083**	**OK**
Net Count Rate	**21.406250**	**21.406250**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.500672**	**9.500672**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.838960**	**0.838960**	**OK**
Chem Rec Factor	**0.856081**	**0.856081**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.197793**	**0.197793**	**OK**
K MDA	**284.822446**	**284.822446**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-10
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	007
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-4-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_3B
Instr keV	84.92006683
Version/Date	2.0 -- 4/20/2006

Reviewed by: YHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2382.000000
Count Mins	1440.000000
BKG Counts	4.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2382.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038000
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.484389**	**8.484389**	**OK**
TPU	**1.080825**	**1.080825**	**OK**
DL	**0.016600**	**0.016600**	**OK**
BP DL	**0.173803**	**0.173803**	**OK**
DL QSAS			
Gross Count Rate	**1.654167**	**1.654167**	**OK**
BKG Count Rate	**0.002778**	**0.002778**	**OK**
Net Count Rate	**1.651389**	**1.651389**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**0.998951**	**0.998951**	**OK**
Tracer DPM	**9.499757**	**9.499757**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.816074**	**0.816074**	**OK**
Chem Rec Factor	**0.832728**	**0.832728**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.194639**	**0.194639**	**OK**
K MDA	**280.279463**	**280.279463**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-6-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	57.33830643
Version/Date	2.0 -- 4/20/2006

Reviewed by: VJM **Date:** 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	20560.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2382.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038000
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	OK

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	73.205024	73.205024	OK
TPU	8.904002	8.904002	OK
DL	0.000000	0.000000	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	14.277778	14.277778	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	14.277778	14.277778	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.499757	9.499757	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.816074	0.816074	OK
Chem Rec Factor	0.832728	0.832728	OK
Sys Err	0.061664	0.061664	OK
K	0.195038	0.195038	OK
K MDA	280.855041	280.855041	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-6-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	66.15758514
Version/Date	2.0 -- 4/20/2006

Reviewed by: UPM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	637.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2382.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038000
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	2.628963	2.628963	OK
TPU	0.377675	0.377675	OK
DL	0.000000	0.000000	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.442361	0.442361	OK
BKG Count Rate	0.000000	0.000000	OK
Net Count Rate	0.442361	0.442361	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.499757	9.499757	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.816074	0.816074	OK
Chem Rec Factor	0.832728	0.832728	OK
Sys Err	0.061664	0.061664	OK
K	0.168264	0.168264	OK
K MDA	242.300863	242.300863	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-6-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	51.39112854
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	17397.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.215743
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2382.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	4.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.038000
Tracer EFF	0.215743
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
0 **Variables Intact Test**	OK

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	61.797762	61.797762	OK
TPU	7.525208	7.525208	OK
DL	0.020249	0.020249	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	12.081250	12.081250	OK
BKG Count Rate	0.004167	0.004167	OK
Net Count Rate	12.077083	12.077083	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.499757	9.499757	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.816074	0.816074	OK
Chem Rec Factor	0.832728	0.832728	OK
Sys Err	0.061664	0.061664	OK
K	0.195429	0.195429	OK
K MDA	281.417960	281.417960	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-11
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	008
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-6-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_4B
Instr keV	65.5785675
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1753.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1753.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	8.473997	8.473997	OK
TPU	1.098436	1.098436	OK
DL	0.011252	0.011252	OK
BP DL	0.173808	0.173808	OK
DL QSAS			
Gross Count Rate	1.217361	1.217361	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	1.216667	1.216667	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	0.998924	0.998924	OK
Tracer DPM	9.487859	9.487859	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.609085	0.609085	OK
Chem Rec Factor	0.621515	0.621515	OK
Sys Err	0.061664	0.061664	OK
K	0.143576	0.143576	OK
K MDA	206.750144	206.750144	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-7-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	27.4553318
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	790.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1753.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**3.803448**	**3.803448**	**OK**
TPU	**0.531220**	**0.531220**	**OK**
DL	**0.015880**	**0.015880**	**OK**
BP DL	**0.273282**	**0.273282**	**OK**
DL QSAS			
Gross Count Rate	**0.548611**	**0.548611**	**OK**
BKG Count Rate	**0.001389**	**0.001389**	**OK**
Net Count Rate	**0.547222**	**0.547222**	**OK**
Δ t 1 (t2 - t1)	**39.089583**	**39.089583**	**OK**
DF	**1.000000**	**1.000000**	**OK**
Tracer DPM	**9.487859**	**9.487859**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.609085**	**0.609085**	**OK**
Chem Rec Factor	**0.621515**	**0.621515**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.143875**	**0.143875**	**OK**
K MDA	**207.180428**	**207.180428**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-7-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	26.25976372
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	12.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1753.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.061542	0.061542	OK
TPU	0.040231	0.040231	OK
DL	0.013015	0.013015	OK
8P DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.008333	0.008333	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.007639	0.007639	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.487859	9.487859	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.609085	0.609085	OK
Chem Rec Factor	0.621515	0.621515	OK
Sys Err	0.061664	0.061664	OK
K	0.124125	0.124125	OK
K MDA	178.739882	178.739882	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-7-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	4.898194313
Version/Date	2.0 -- 4/20/2006

Reviewed by: VPM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	102.000000
Count Mins	1440.000000
BKG Counts	10.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1753.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036700
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.443169	0.443169	OK
TPU	0.113369	0.113369	OK
DL	0.035437	0.035437	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	0.070833	0.070833	OK
BKG Count Rate	0.006944	0.006944	OK
Net Count Rate	0.063889	0.063889	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.487859	9.487859	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.609085	0.609085	OK
Chem Rec Factor	0.621515	0.621515	OK
Sys Err	0.061664	0.061664	OK
K	0.144164	0.144164	OK
K MDA	207.595682	207.595682	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-12
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	009
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-7-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	29.63407707
Version/Date	2.0 -- 4/20/2006

Reviewed by: UPM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1677.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1677.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.478084**	**8.478084**	**OK**
TPU	**1.102220**	**1.102220**	**OK**
DL	**0.011768**	**0.011768**	**OK**
BP DL	**0.173808**	**0.173808**	**OK**
DL QSAS			
Gross Count Rate	**1.164583**	**1.164583**	**OK**
BKG Count Rate	**0.000694**	**0.000694**	**OK**
Net Count Rate	**1.163889**	**1.163889**	**OK**
Δ t 1 (t2 - t1)	**39.089583**	**39.089583**	**OK**
DF	**0.998924**	**0.998924**	**OK**
Tracer DPM	**9.492435**	**9.492435**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.566944**	**0.566944**	**OK**
Chem Rec Factor	**0.578514**	**0.578514**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.137282**	**0.137282**	**OK**
K MDA	**197.686186**	**197.686186**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-8-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	34.43494797
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	1035.000000
Count Mins	1440.000000
BKG Counts	3.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1677.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	5.209553	5.209553	OK
TPU	0.705724	0.705724	OK
DL	0.020341	0.020341	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	0.718750	0.718750	OK
BKG Count Rate	0.002083	0.002083	OK
Net Count Rate	0.716667	0.716667	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.492435	9.492435	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.566944	0.566944	OK
Chem Rec Factor	0.578514	0.578514	OK
Sys Err	0.061664	0.061664	OK
K	0.137568	0.137568	OK
K MDA	198.097607	198.097607	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-8-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	29.59216309
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	11.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1677.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	0.058512	0.058512	OK
TPU	0.040352	0.040352	OK
DL	0.013612	0.013612	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.007639	0.007639	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.006944	0.006944	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.492435	9.492435	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.566944	0.566944	OK
Chem Rec Factor	0.578514	0.578514	OK
Sys Err	0.061664	0.061664	OK
K	0.118683	0.118683	OK
K MDA	170.903899	170.903899	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-8-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	7.349233627
Version/Date	2.0 -- 4/20/2006

Reviewed by: NFM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	394.000000
Count Mins	1440.000000
BKG Counts	6.000000
BKG Mins	1440.000000
Instrument Efficiency	0.219040
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/19/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1677.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.219040
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.954713	1.954713	OK
TPU	0.30791B	0.30791B	OK
DL	0.028708	0.028708	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	0.273611	0.273611	OK
BKG Count Rate	0.004167	0.004167	OK
Net Count Rate	0.269444	0.269444	OK
Δ t 1 (t2 - t1)	39.089583	39.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.492435	9.492435	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.566944	0.566944	OK
Chem Rec Factor	0.578514	0.578514	OK
Sys Err	0.061664	0.061664	OK
K	0.137844	0.137844	OK
K MDA	198.494656	198.494656	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-13
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	010
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-8-110419
Instr File Name	ApexAlpha
Instr Detector	A_3_6A
Instr keV	29.63024139
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	1003.000000
Count Mins	1440.000000
BKG Counts	0.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1003.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.217225
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	**8.477850**	**8.477850**	**OK**
TPU	**1.151159**	**1.151159**	**OK**
DL	**0.000000**	**0.000000**	**OK**
BP DL	**0.173803**	**0.173803**	**OK**
DL QSAS			
Gross Count Rate	**0.696528**	**0.696528**	**OK**
BKG Count Rate	**0.000000**	**0.000000**	**OK**
Net Count Rate	**0.696528**	**0.696528**	**OK**
Δ t 1 (t2 - t1)	**38.089583**	**38.089583**	**OK**
DF	**0.998951**	**0.998951**	**OK**
Tracer DPM	**9.492435**	**9.492435**	**OK**
Tracer Δt	**353.120833**	**353.120833**	**OK**
Tracer DF	**0.990320**	**0.990320**	**OK**
Tracer Recovery	**0.342122**	**0.342122**	**OK**
Chem Rec Factor	**0.349104**	**0.349104**	**OK**
Sys Err	**0.061664**	**0.061664**	**OK**
K	**0.082159**	**0.082159**	**OK**
K MDA	**118.308298**	**118.308298**	**OK**

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-14
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	011
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6B
Instr keV	36.30580902
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM **Date:** 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	3462.000000
Count Mins	1440.000000
BKG Counts	17.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1003.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.217225
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	29.059161	29.059161	OK
TPU	3.644972	3.644972	OK
DL	0.080909	0.080909	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	2.404167	2.404167	OK
BKG Count Rate	0.011806	0.011806	OK
Net Count Rate	2.392361	2.392361	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.492435	9.492435	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.342122	0.342122	OK
Chem Rec Factor	0.349104	0.349104	OK
Sys Err	0.061664	0.061664	OK
K	0.082327	0.082327	OK
K MDA	118.551254	118.551254	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-14
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	011
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6B
Instr keV	38.73160934
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	111.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1003.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.217225
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.065731	1.065731	OK
TPU	0.241017	0.241017	OK
DL	0.032167	0.032167	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.077083	0.077083	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	0.075694	0.075694	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.492435	9.492435	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.342122	0.342122	OK
Chem Rec Factor	0.349104	0.349104	OK
Sys Err	0.061664	0.061664	OK
K	0.071026	0.071026	OK
K MDA	102.277214	102.277214	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-14
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	011
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6B
Instr keV	19.59401321
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2551.000000
Count Mins	1440.000000
BKG Counts	14.000000
BKG Mins	1440.000000
Instrument Efficiency	0.217225
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/28/11 2:09 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	1003.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	0.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.037200
Tracer EFF	0.217225
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	21.357220	21.357220	OK
TPU	2.713140	2.713140	OK
DL	0.073277	0.073277	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	1.771528	1.771528	OK
BKG Count Rate	0.009722	0.009722	OK
Net Count Rate	1.761806	1.761806	OK
Δ t 1 (t2 - t1)	38.089583	38.089583	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.492435	9.492435	OK
Tracer Δt	353.120833	353.120833	OK
Tracer DF	0.990320	0.990320	OK
Tracer Recovery	0.342122	0.342122	OK
Chem Rec Factor	0.349104	0.349104	OK
Sys Err	0.061664	0.061664	OK
K	0.082492	0.082492	OK
K MDA	118.788866	118.788866	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-14
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	011
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-02-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_6B
Instr keV	36.32271194
Version/Date	2.0 -- 4/20/2006

Reviewed by: VFM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	2175.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/29/11 4:05 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.997000
Halflife Days 1 - Result Isotope	25162.037037
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2175.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036600
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.082712
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-232		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	8.472946	8.472946	OK
TPU	1.084271	1.084271	OK
DL	0.009067	0.009067	OK
BP DL	0.173808	0.173808	OK
DL QSAS			
Gross Count Rate	1.510417	1.510417	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	1.509722	1.509722	OK
Δ t 1 (t2 - t1)	39.170139	39.170139	OK
DF	0.998922	0.998922	OK
Tracer DPM	9.486944	9.486944	OK
Tracer Δt	354.201389	354.201389	OK
Tracer DF	0.990290	0.990290	OK
Tracer Recovery	0.755889	0.755889	OK
Chem Rec Factor	0.771315	0.771315	OK
Sys Err	0.061664	0.061664	OK
K	0.178182	0.178182	OK
K MDA	256.581368	256.581368	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	012
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	29.19708061
Version/Date	2.0 -- 4/20/2006

Reviewed by: VHM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	8047.000000
Count Mins	1440.000000
BKG Counts	2.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/29/11 4:05 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.998000
Halflife Days 1 - Result Isotope	89745370.370370
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2175.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036600
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.130190
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	**OK**

Isotope	U-234		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	31.289388	31.289388	OK
TPU	3.842995	3.842995	OK
DL	0.012796	0.012796	OK
BP DL	0.273282	0.273282	OK
DL QSAS			
Gross Count Rate	5.588194	5.588194	OK
BKG Count Rate	0.001389	0.001389	OK
Net Count Rate	5.586806	5.586806	OK
Δ t 1 (t2 - t1)	39.170139	39.170139	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.486944	9.486944	OK
Tracer Δt	354.201389	354.201389	OK
Tracer DF	0.990290	0.990290	OK
Tracer Recovery	0.755889	0.755889	OK
Chem Rec Factor	0.771315	0.771315	OK
Sys Err	0.061664	0.061664	OK
K	0.178553	0.178553	OK
K MDA	257.115930	257.115930	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	012
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	38.52608109
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ Date: 6-2-11

Procedure	ARS-026
Variable	**Value**
Counts	223.000000
Count Mins	1440.000000
BKG Counts	1.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/29/11 4:05 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	0.861000
Halflife Days 1 - Result Isotope	257060185185.185000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2175.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036600
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.014709
Activity Units	pCi
Aliquot Units	L
0 Variables Intact Test	OK

Isotope	U-235		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	1.000809	1.000809	OK
TPU	0.179219	0.179219	OK
DL	0.010488	0.010488	OK
BP DL	0.030876	0.030876	OK
DL QSAS			
Gross Count Rate	0.154861	0.154861	OK
BKG Count Rate	0.000694	0.000694	OK
Net Count Rate	0.154167	0.154167	OK
Δ t 1 (t2 - t1)	39.170139	39.170139	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.486944	9.486944	OK
Tracer Δt	354.201389	354.201389	OK
Tracer DF	0.990290	0.990290	OK
Tracer Recovery	0.755889	0.755889	OK
Chem Rec Factor	0.771315	0.771315	OK
Sys Err	0.061664	0.061664	OK
K	0.154042	0.154042	OK
K MDA	221.820524	221.820524	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	012
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	45.06338501
Version/Date	2.0 -- 4/20/2006

Reviewed by: JPM Date: 6-2-11

Calculation Verification

Procedure	ARS-026
Variable	**Value**
Counts	5877.000000
Count Mins	1440.000000
BKG Counts	10.000000
BKG Mins	1440.000000
Instrument Efficiency	0.213233
Sample Aliquot	0.500000
Aliquot Conversion Factor	1.000000
Sample Collection Date (t1)	4/20/11 12:00 PM
Midpoint Count Date (t2)	5/29/11 4:05 PM
Activity Units = pCi --- UCF =	2.2200
CF	1.9600
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	1631944444444.440000
TPUF_Calibration Factor	0.000000
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.058330
TPUF_Decay Ingrowth Factor	0.000000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Tracer ID	S-0241
Tracer Std - Isotope	U-232
Tracer Counts	2175.000000
Tracer Count Mins	1440.000000
Tracer BKG Counts	1.000000
Tracer BKG Mins	1440.000000
Tracer Ref Date	6/9/10 11:15 AM
Tracer DPM/g	9.1520
Tracer Net Wt Added g	1.036600
Tracer EFF	0.213233
Tracer Plating Rec	0.980000
Tracer Abundance	0.997000
Tracer Halflife Days	25162.0370
Sb	0.151355
Activity Units	pCi
Aliquot Units	L
Variables Intact Test	OK

Isotope	U-238		
Calculated Values	**Excel**	**VBA**	**V/V**
ACT	22.772857	22.772857	OK
TPU	2.813556	2.813556	OK
DL	0.028555	0.028555	OK
BP DL	0.317709	0.317709	OK
DL QSAS			
Gross Count Rate	4.081250	4.081250	OK
BKG Count Rate	0.006944	0.006944	OK
Net Count Rate	4.074306	4.074306	OK
Δ t 1 (t2 - t1)	39.170139	39.170139	OK
DF	1.000000	1.000000	OK
Tracer DPM	9.486944	9.486944	OK
Tracer Δt	354.201389	354.201389	OK
Tracer DF	0.990290	0.990290	OK
Tracer Recovery	0.755889	0.755889	OK
Chem Rec Factor	0.771315	0.771315	OK
Sys Err	0.061664	0.061664	OK
K	0.178911	0.178911	OK
K MDA	257.631271	257.631271	OK

Batch Identifiers and Other Related Information	
Batch	ARS1-B11-01984
Batch ID	ARS1-B11-01984-15
Analysis Code	ASP-A-024
SDG	ARS1-11-00897
Fraction	012
Client	Summit Environmental Technologies
Client Profile	Cuyahoga Falls
Client ID	MW-MD-110420
Instr File Name	ApexAlpha
Instr Detector	A_3_5A
Instr keV	38.45557404
Version/Date	2.0 -- 4/20/2006

Reviewed by: _____ **Date:** 6-2-11

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Analytical Reports

for

Summit Environmental Technologies

Uranium Alpha Spectroscopy Laboratory Records

Analysis Batch Report

Analysis Batch ID **ARS1-B11-01664**

Method	ARS-026	Analysis	ASP-A-024	Matrix	AQ
Description	Uranium in Water				

ABatch Sample ID	Type	Blind Iso1	Blind Iso2	Blind Iso3	SDG	FR	Run	Client ID	Isotope Group	Lab Deadline
ARS1-B11-01664-01	LCS	B-11686								
ARS1-B11-01664-02	LCSD	B-11687								
ARS1-B11-01664-03	MBL									
ARS1-B11-01664-04	TRG				**ARS1-11-00897**	014	1	PR-SW-01-110420	STD	05/03/11
ARS1-B11-01664-05	TRG				**ARS1-11-00897**	015	1	RB-01-110420	STD	05/03/11
ARS1-B11-01664-06	TRG				**ARS1-11-00897**	016	1	RB-02-110421	STD	05/03/11
ARS1-B11-01664-07	TRG				**ARS1-11-00897**	017	1	RM-JM-SW-02-110420	STD	05/03/11
ARS1-B11-01664-08	TRG				**ARS1-11-00897**	018	1	RM-JM-SW-110420	STD	05/03/11
ARS1-B11-01664-09	TRG				**ARS1-11-00897**	019	1	RM-SW-BG-110419	STD	05/03/11
ARS1-B11-01664-10	TRG				**ARS1-11-00897**	020	1	RP-JM-SW-01-110420	STD	05/03/11
ARS1-B11-01664-11	TRG				**ARS1-11-00897**	021	1	RP-JM-SW-110420	STD	05/03/11
ARS1-B11-01664-12	TRG				**ARS1-11-00897**	022	1	RP-SW-01-110419	STD	05/03/11
ARS1-B11-01664-13	TRG				**ARS1-11-00897**	023	1	RP-SW-BG-041911	STD	05/03/11
ARS1-B11-01664-14	TRG				**ARS1-11-00897**	024	1	SPOP35-110421	STD	05/03/11
ARS1-B11-01664-15	TRG				**ARS1-11-00897**	025	1	MW-RM-110420	STD	05/03/11

Technical Notes

Batch	ARS1-B11-01664
Analysis Code	ASP-A-024
Procedure No	ARS-026
Matrix	AQ

#	Date	Dept	Batch Technical Notes	User ID
1	05/03/11 16:56	CHEMISTRY	B11-01664-14 had a black film that plated onto the disk, I am unsure what this can be attributed to. As a result tracer recovery/activity could be affected.	JBROWN
2	05/11/11 16:39	COUNTROOM	The following spectral anomalies were identified in the counting results for this batch: The identified U-235 centroid energy for B11-01664-06 (ARS1-11-00897-016) is high out of acceptable range. Also, B11-01664-14 (ARS1-11-00897-024) sample spectrum shows gross peak trailing and attenuation, so much so that individual analytes cannot be readily or confidently identified. A check recount of the sample was conducted on another detector verified to be accurate. The results confirm the original count. ARS laboratory supervision is informed and the sample must be rerun.	ABAILEY
3	05/11/11 17:03	MGMT	The Method Blank for U-234 and U-238 is elevated; however, method blank evaluation was performed per procedure and the QC is being released as valid.	HWRIGHT
4	06/02/11 16:08	REPORTING	Tracer recovery for ARS1-B11-01664-14 is biased low; however, after management review the results are being released as valid.	HWRIGHT

American Radiation Services
Baton Rouge Laboratory

LCS Report
Analytical Batch: ARS1-B11-01664

BlindID	ABatch	ABatchSampleID	BlindGroup	StdID	Isotope	ExpectedAddition	ExpectedValue	EmptyWt	GrossWt	NetWt	UserID	ModDate	ExpectedValue_CT	MidPointCountDate	KnownValue
B-11686	ARS1-B11-01664	ARS1-B11-01664-01	B-UU238	S-0028	U-238	1	15.7364287	13.4873	14.5527	1.0654	VMULLIGAN	4/28/2011	15.7364287	5/10/2011	16.76559114
B-11687	ARS1-B11-01664	ARS1-B11-01664-02	B-UU238	S-0028	U-238	1	15.7364287	13.2134	14.2803	1.0669	VMULLIGAN	4/28/2011	15.7364287	5/10/2011	16.78919578

ARS1-B11-01664

ABatch	ABatchSampleID	ClientID	SampleType	EmptyWt	FilledWt	NetWt	Exp Val	StdID	Isotope	TracerDate	UserID	ModDate	HL days	Ref Date	Cert dpm/g	Curr ACT
ARS1-B11-01664	ARS1-B11-01664-01		LCS	105.731	106.762	1.031	9.353	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-02		LCSD	103.202	104.234	1.032	9.360	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-03		MBL	91.595	92.628	1.033	9.370	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-04	PR-SW-01-110420	TRG	438.201	439.217	1.016	9.215	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-05	RB-01-110420	TRG	412.006	413.026	1.020	9.251	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-06	RB-02-110421	TRG	350.882	351.901	1.019	9.242	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-07	RM-JM-SW-02-110420	TRG	443.465	444.481	1.016	9.215	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-08	RM-JM-SW-110420	TRG	430.832	431.849	1.017	9.224	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-09	RM-SW-BG-110419	TRG	398.207	399.227	1.020	9.251	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-10	RP-JM-SW-01-110420	TRG	302.277	303.295	1.018	9.233	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-11	RP-JM-SW-110420	TRG	446.576	447.588	1.012	9.178	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-12	RP-SW-01-110419	TRG	449.028	450.048	1.020	9.251	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-13	RP-SW-BG-041911	TRG	377.133	378.150	1.017	9.224	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-14	SPOP35-110421	TRG	383.444	384.463	1.019	9.242	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070
ARS1-B11-01664	ARS1-B11-01664-15	MW-RM-110420	TRG	408.572	409.587	1.015	9.206	S-0241	U-232	5/3/2011	JBROWN	5/3/2011	25162.037	6/9/2010	9.152	9.070

American Radiation Services
Baton Rouge Laboratory

ARS-026

Printed: 5/3/2011 4:43 PM

ID_31001_026	ABatch	ABatchSampleID	ClientID	Aliquot	AliquotUnits	UserID	ModDate	IC_ID	BalanceSerialNumber
8831	ARS1-B11-01664	ARS1-B11-01664-01		1	L	JBROWN	05/03/2011 16:42:18		
8832	ARS1-B11-01664	ARS1-B11-01664-02		1	L	JBROWN	05/03/2011 16:42:18		
8833	ARS1-B11-01664	ARS1-B11-01664-03		1	L	JBROWN	05/03/2011 16:42:18		
8834	ARS1-B11-01664	ARS1-B11-01664-04	PR-SW-01-110420	0.5	L	JBROWN	05/03/2011 16:42:18	85950	
8835	ARS1-B11-01664	ARS1-B11-01664-05	RB-01-110420	0.5	L	JBROWN	05/03/2011 16:42:18	85951	
8836	ARS1-B11-01664	ARS1-B11-01664-06	RB-02-110421	0.5	L	JBROWN	05/03/2011 16:42:18	85952	
8837	ARS1-B11-01664	ARS1-B11-01664-07	RM-JM-SW-02-110420	0.5	L	JBROWN	05/03/2011 16:42:18	85953	
8838	ARS1-B11-01664	ARS1-B11-01664-08	RM-JM-SW-110420	0.5	L	JBROWN	05/03/2011 16:42:18	85954	
8839	ARS1-B11-01664	ARS1-B11-01664-09	RM-SW-BG-110419	0.5	L	JBROWN	05/03/2011 16:42:18	85955	
8840	ARS1-B11-01664	ARS1-B11-01664-10	RP-JM-SW-01-110420	0.5	L	JBROWN	05/03/2011 16:42:19	85956	
8841	ARS1-B11-01664	ARS1-B11-01664-11	RP-JM-SW-110420	0.5	L	JBROWN	05/03/2011 16:42:19	85957	
8842	ARS1-B11-01664	ARS1-B11-01664-12	RP-SW-01-110419	0.5	L	JBROWN	05/03/2011 16:42:19	85958	
8843	ARS1-B11-01664	ARS1-B11-01664-13	RP-SW-BG-041911	0.5	L	JBROWN	05/03/2011 16:42:19	85959	
8844	ARS1-B11-01664	ARS1-B11-01664-14	SPOP35-110421	0.5	L	JBROWN	05/03/2011 16:42:19	85960	
8845	ARS1-B11-01664	ARS1-B11-01664-15	MW-RM-110420	0.5	L	JBROWN	05/03/2011 16:42:19	85961	

5/10/2011 13:20:48

Apex-Alpha™

ASSIGNED SAMPLES REPORT

Date : 5/10/2011
Time : 13:20:48
User : countroom

SAMPLE	CHAMBER	GEOMETRY	DEVICE	CERTIFICATE
11-01664-01	A_1_1A	Shelf 2	Alpha Analyst10139	
11-01664-02	A_1_1B	Shelf 2	Alpha Analyst10139	
11-01664-03	A_1_2A	Shelf 2	Alpha Analyst10139	
11-01664-04	A_1_2B	Shelf 2	Alpha Analyst10139	
11-01664-05	A_1_3A	Shelf 2	Alpha Analyst10139	
11-01664-06	A_1_3B	Shelf 2	Alpha Analyst10139	
11-01664-07	A_1_4A	Shelf 2	Alpha Analyst10139	
11-01664-08	A_1_4B	Shelf 2	Alpha Analyst10139	
11-01664-09	A_1_5A	Shelf 2	Alpha Analyst10139	
11-01664-10	A_1_5B	Shelf 2	Alpha Analyst10139	
11-01664-11	A_1_6A	Shelf 2	Alpha Analyst10139	
11-01664-12	A_1_6B	Shelf 2	Alpha Analyst10139	
11-01664-13	A_2_1A	Shelf 2	Alpha Analyst10139	
11-01664-14	A_2_1B	Shelf 2	Alpha Analyst10139	
11-01664-15	A_2_2A	Shelf 2	Alpha Analyst10139	

ALPHA SPECTRUM ANALYSIS

Sample Description: LCS
Batch Identification: B11-01664
Sample Identification: 11-01664-01
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 1A
Chamber Serial Number: 10043743A
Detector Serial Number: 57895
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:01
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2125 +/- 0.0044 on 4/9/10 20:56:03
Effective Efficiency: 0.2125 +/- 0.0044

Peak Match Tolerance: 0.100 MeV

PEAK AREA REPORT

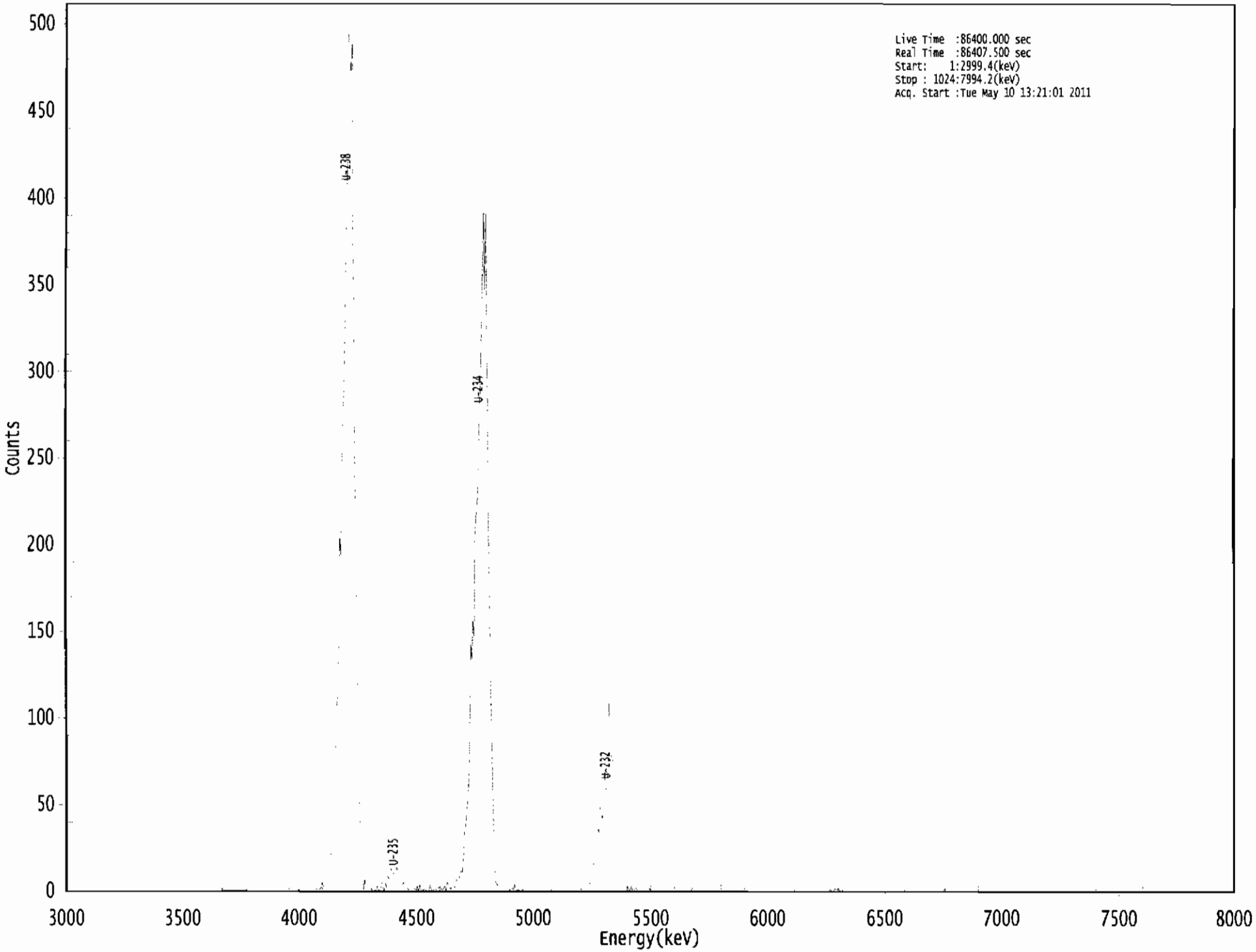
Nuclide	Energy (MeV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5.313	1237.00	35.17	0.00	0.00E+000	49.0
U-234	4.774	5109.00	71.48	0.00	0.00E+000	59.4
U-235	4.407	180.00	13.42	0.00	0.00E+000	55.7
U-238	4.207	6118.00	78.22	0.00	0.00E+000	54.3

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	1.8250E+000	3.51	3.9923E-003	2.06
U-234	7.5375E+000	2.49	3.9923E-003	2.06
U-235	3.2760E-001	7.73	4.9250E-003	2.06
U-238	8.9874E+000	2.42	3.9752E-003	2.06

Errors quoted at 1.000 sigma

0000012245.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: LCSD
Batch Identification: B11-01664
Sample Identification: 11-01664-02
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 1B
Chamber Serial Number: 10043743B
Detector Serial Number: 57896
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:03
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1922 +/- 0.0040 on 4/9/10 20:56:53
Effective Efficiency: 0.1922 +/- 0.0040

Peak Match Tolerance: 0.100 MeV

PEAK AREA REPORT

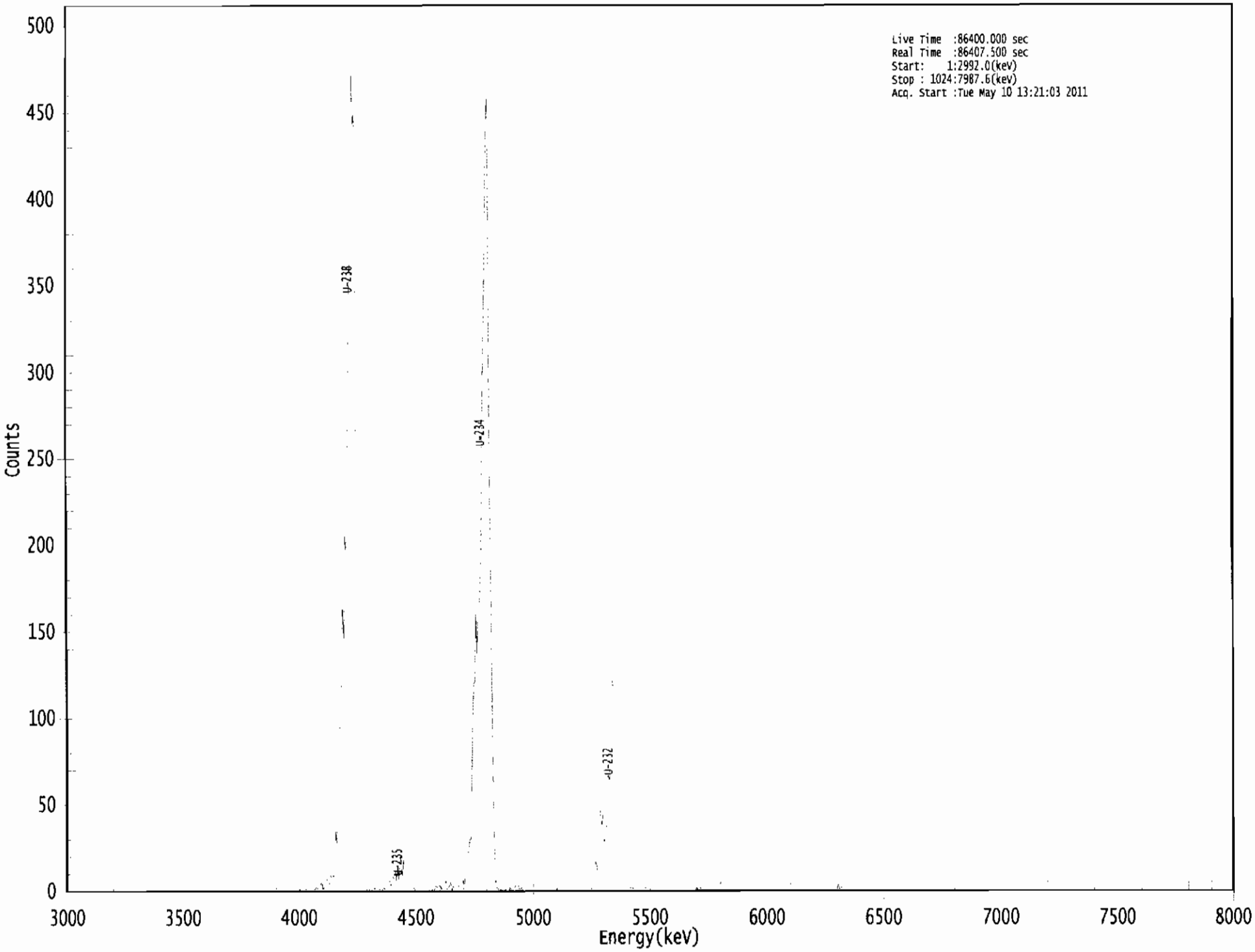
Nuclide	Energy (MeV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5.320	1206.00	34.73	0.00	0.00E+000	37.8
U-234	4.780	4548.00	67.44	0.00	0.00E+000	35.8
U-235	4.416	180.00	13.42	0.00	0.00E+000	12.2
U-238	4.213	4884.00	69.89	0.00	0.00E+000	38.6

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	1.9667E+000	3.54	4.4130E-003	2.06
U-234	7.4168E+000	2.54	4.4130E-003	2.06
U-235	3.6212E-001	7.73	5.4439E-003	2.06
U-238	7.9306E+000	2.51	4.3940E-003	2.06

Errors quoted at 1.000 sigma

0000012246.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: MBL
Batch Identification: B11-01664
Sample Identification: 11-01664-03
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 2A
Chamber Serial Number: 10043744A
Detector Serial Number: 57897
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:05
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/9/10 20:57:28
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

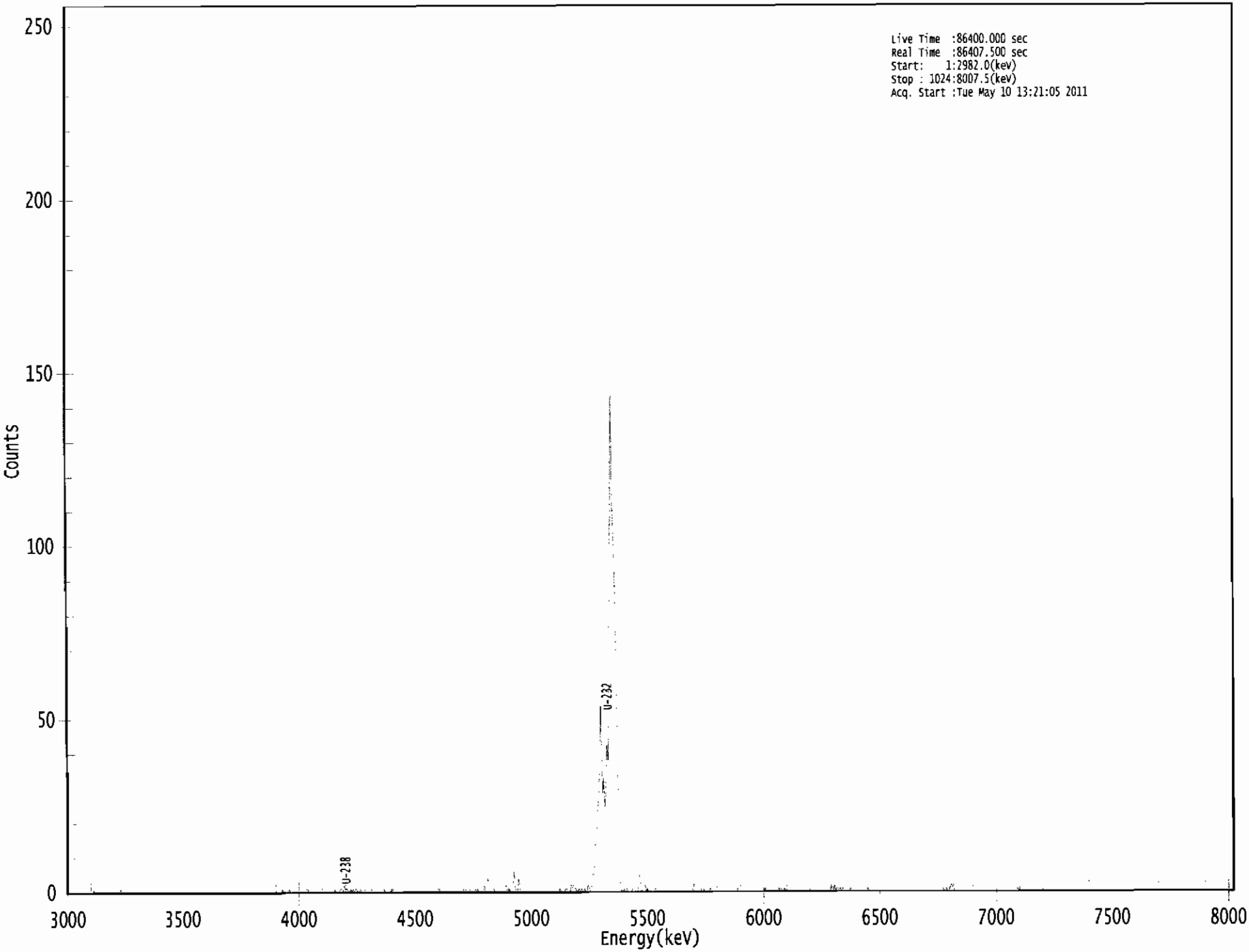
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5320.806	1174.00	34.26	0.00	0.00E+000	29.0
U-234	4773.130	20.00	4.47	0.00	0.00E+000	8.2
U-235	4372.273	3.00	1.73	0.00	0.00E+000	4.9
U-238	4191.646	13.00	3.61	0.00	0.00E+000	7.4

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	1.7005E+000	3.57	3.9196E-003	2.05
U-234	2.8970E-002	22.45	3.9196E-003	2.05
U-235	5.3607E-003	57.77	4.8354E-003	2.05
U-238	1.8750E-002	27.81	3.9028E-003	2.05

Errors quoted at 1.000 sigma

0000012247.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-014
Batch Identification: B11-01664
Sample Identification: 11-01664-04
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 2B
Chamber Serial Number: 10043744B
Detector Serial Number: 57898
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:06
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2196 +/- 0.0045 on 4/9/10 20:58:18
Effective Efficiency: 0.2196 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

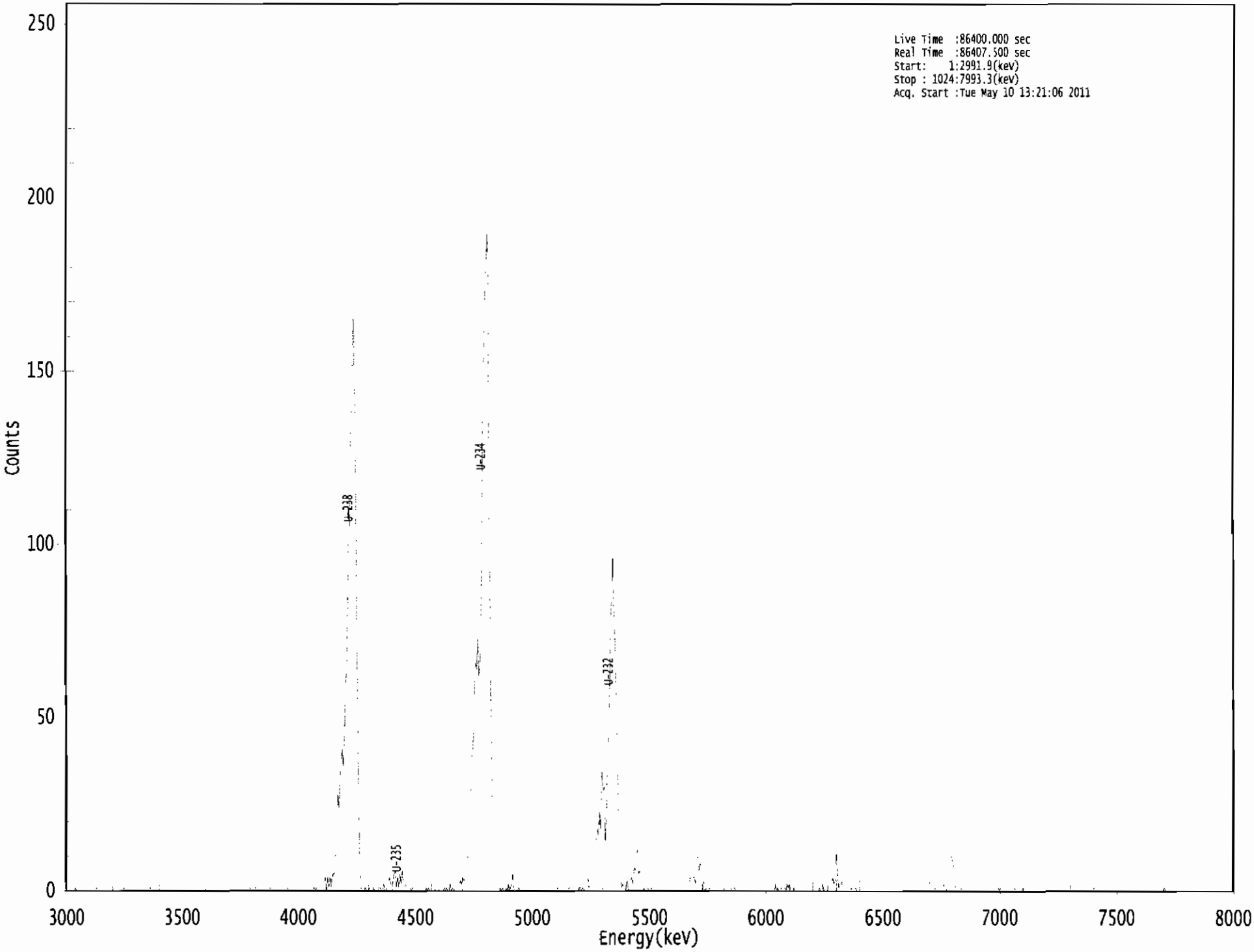
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5322.763	887.00	29.78	0.00	0.00E+000	33.1
U-234	4781.101	1869.00	43.23	0.00	0.00E+000	34.4
U-235	4415.175	52.00	7.21	0.00	0.00E+000	11.1
U-238	4212.368	1567.00	39.59	0.00	0.00E+000	38.1

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	1.2662E+000	3.94	3.8630E-003	2.05
U-234	2.6681E+000	3.09	3.8630E-003	2.05
U-235	9.1575E-002	14.02	4.7655E-003	2.05
U-238	2.2274E+000	3.26	3.8464E-003	2.05

Errors quoted at 1.000 sigma

0000012248.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-015
Batch Identification: B11-01664
Sample Identification: 11-01664-05
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 3A
Chamber Serial Number: 10043745A
Detector Serial Number: 57907
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:08
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2122 +/- 0.0044 on 4/11/10 09:13:21
Effective Efficiency: 0.2122 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

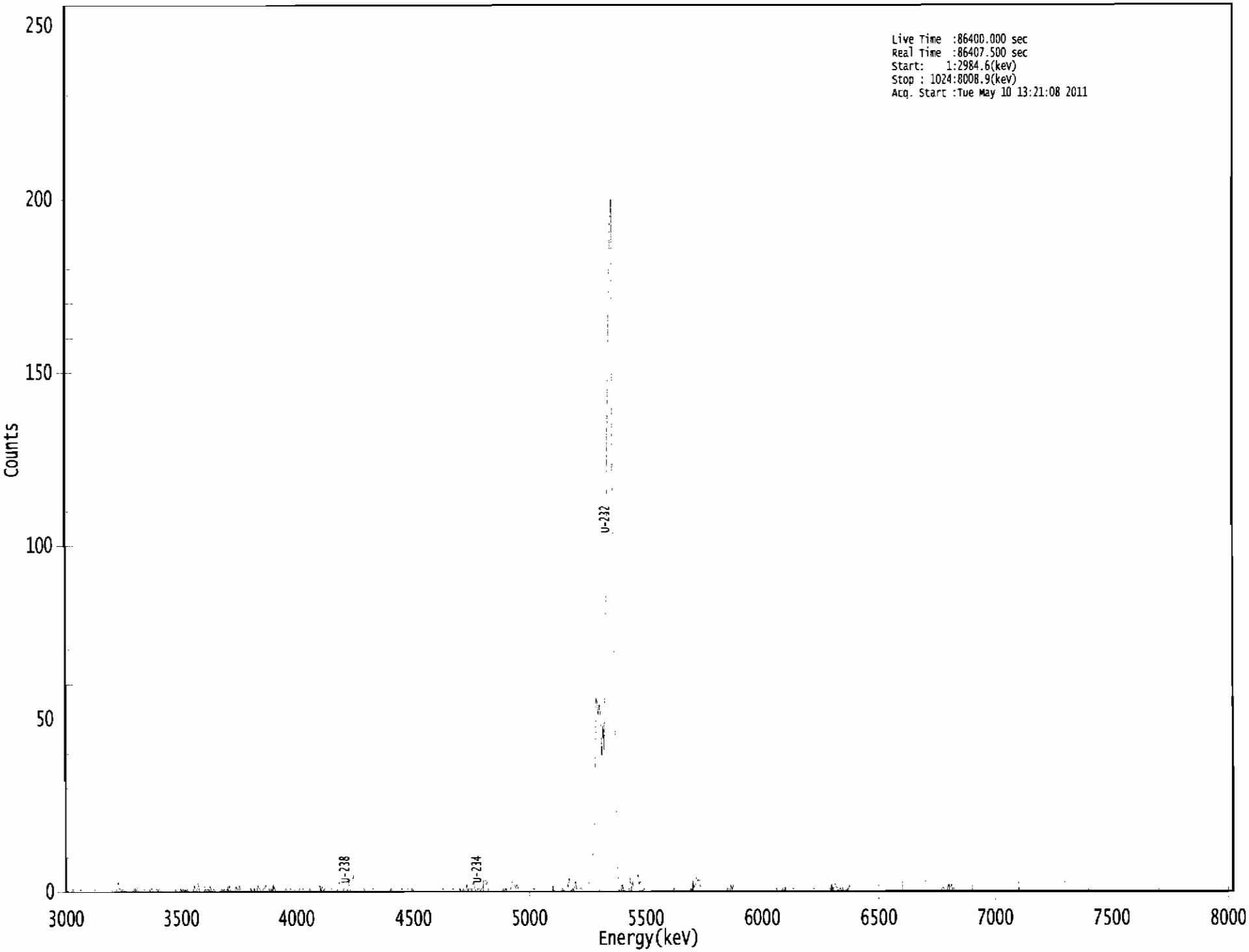
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5320.750	1675.00	40.93	0.00	0.00E+000	27.5
U-234	4762.656	29.00	5.39	0.00	0.00E+000	13.1
U-235	4439.569	4.00	2.00	0.00	0.00E+000	4.9
U-238	4195.869	27.00	5.20	0.00	0.00E+000	8.2

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.4745E+000	3.19	3.9976E-003	2.06
U-234	4.2842E-002	18.68	3.9976E-003	2.06
U-235	7.2897E-003	50.04	4.9315E-003	2.06
U-238	3.9716E-002	19.35	3.9805E-003	2.06

Errors quoted at 1.000 sigma

0000012249.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-016
Batch Identification: B11-01664
Sample Identification: 11-01664-06
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 3B
Chamber Serial Number: 10043745B
Detector Serial Number: 57908
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:10
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2061 +/- 0.0042 on 4/11/10 09:13:55
Effective Efficiency: 0.2061 +/- 0.0042

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

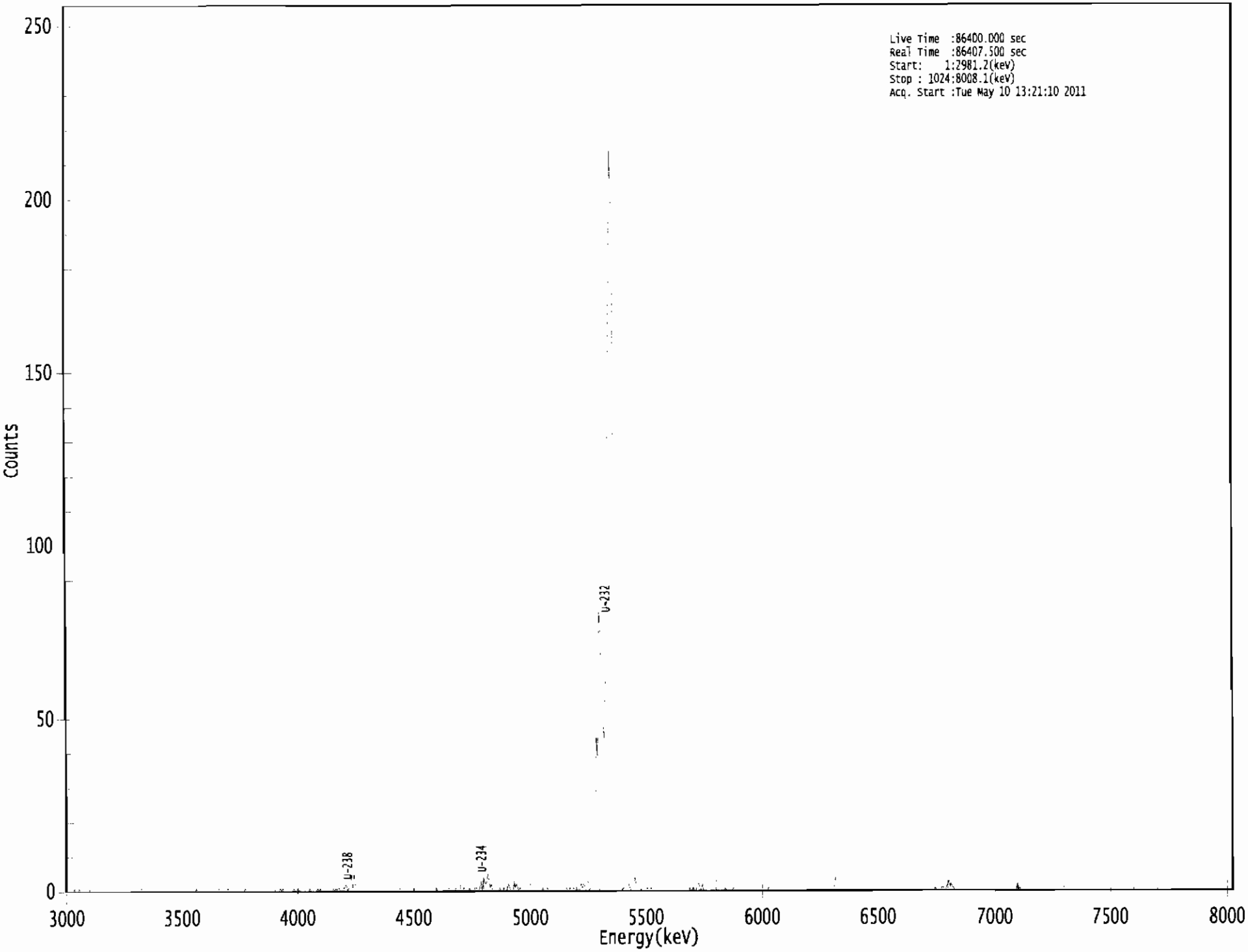
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5321.652	1866.00	43.20	0.00	0.00E+000	27.3
U-234	4779.085	32.00	5.66	0.00	0.00E+000	13.5
U-235	4452.928	2.00	1.41	0.00	0.00E+000	4.9
U-238	4203.987	31.00	5.57	0.00	0.00E+000	10.2

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.8377E+000	3.10	4.1151E-003	2.06
U-234	4.8663E-002	17.80	4.1151E-003	2.06
U-235	3.7520E-003	70.74	5.0765E-003	2.06
U-238	4.6940E-002	18.08	4.0974E-003	2.06

Errors quoted at 1.000 sigma

0000012250.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-017
Batch Identification: B11-01664
Sample Identification: 11-01664-07
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 4A
Chamber Serial Number: 10043746A
Detector Serial Number: 57909
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:12
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2259 +/- 0.0046 on 4/11/10 09:14:49
Effective Efficiency: 0.2259 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

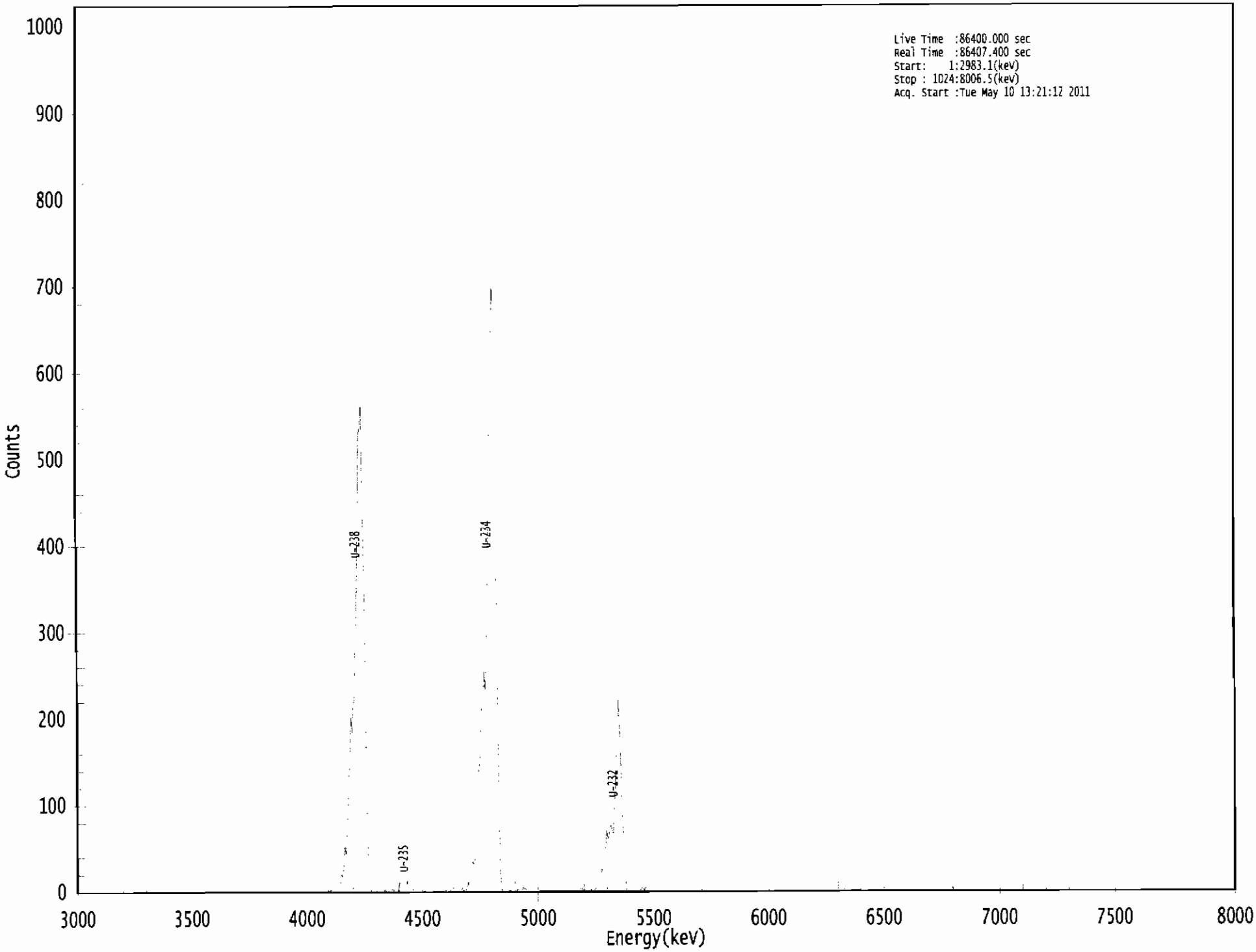
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5317.579	2012.00	44.86	0.00	0.00E+000	29.4
U-234	4777.062	6874.00	82.91	0.00	0.00E+000	36.9
U-235	4408.120	203.00	14.25	0.00	0.00E+000	20.2
U-238	4207.106	5733.00	75.72	0.00	0.00E+000	42.4

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.7913E+000	3.03	3.7542E-003	2.05
U-234	9.5365E+000	2.38	3.7542E-003	2.05
U-235	3.4742E-001	7.31	4.6312E-003	2.05
U-238	7.9194E+000	2.44	3.7380E-003	2.05

Errors quoted at 1.000 sigma

0000012251.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-018
Batch Identification: B11-01664
Sample Identification: 11-01664-08
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 4B
Chamber Serial Number: 10043746B
Detector Serial Number: 57910
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:15
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/11/10 09:15:19
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

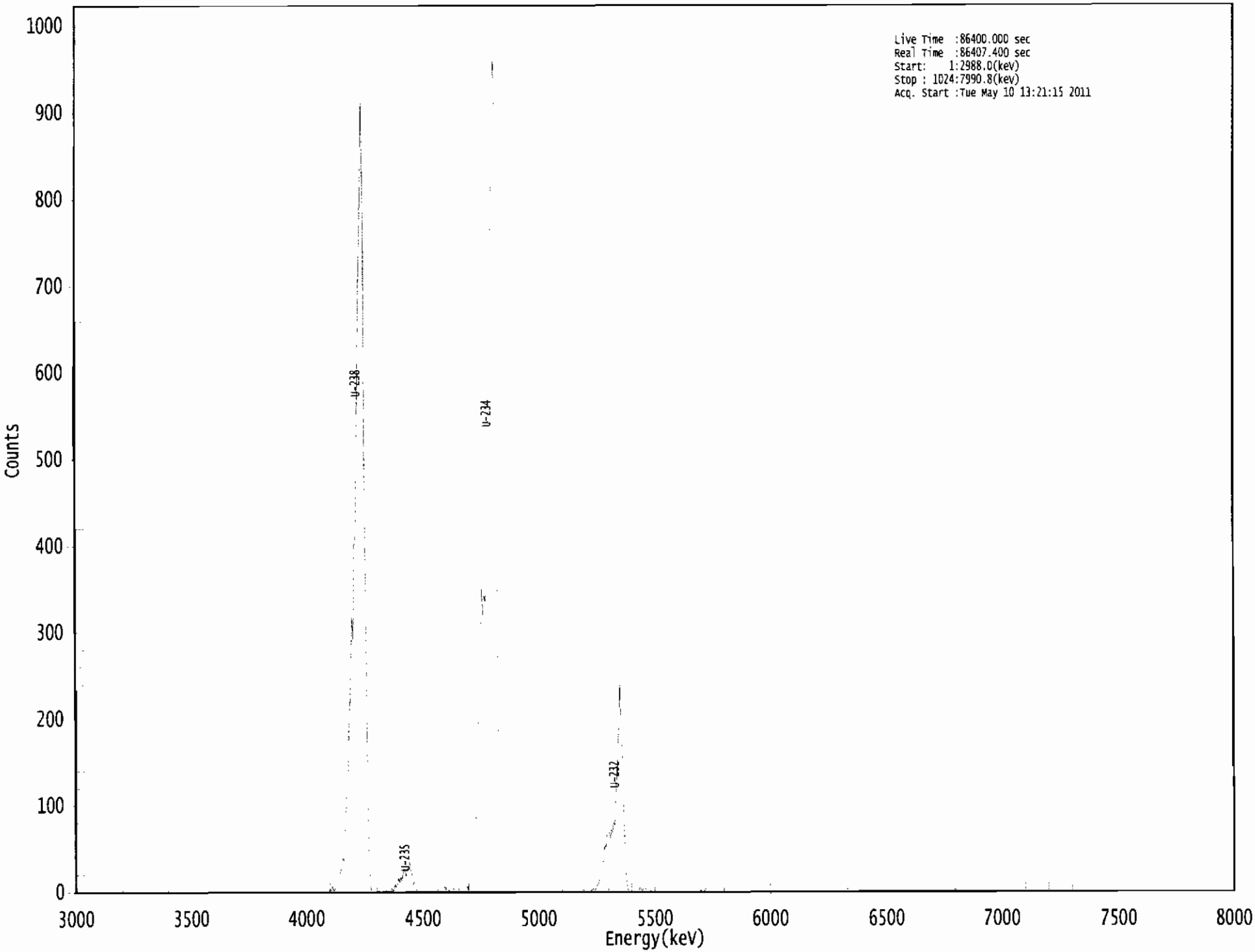
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5319.642	2192.00	46.82	0.00	0.00E+000	30.8
U-234	4778.994	10041.00	100.20	0.00	0.00E+000	39.5
U-235	4413.929	351.00	18.73	0.00	0.00E+000	42.8
U-238	4212.021	8851.00	94.08	0.00	0.00E+000	36.8

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.1743E+000	2.96	3.9186E-003	2.05
U-234	1.4540E+001	2.28	3.9186E-003	2.05
U-235	6.2703E-001	5.72	4.8341E-003	2.05
U-238	1.2762E+001	2.31	3.9018E-003	2.05

Errors quoted at 1.000 sigma

0000012253.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-019
Batch Identification: B11-01664
Sample Identification: 11-01664-09
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 5A
Chamber Serial Number: 10043747A
Detector Serial Number: 57911
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:16
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2092 +/- 0.0043 on 4/11/10 18:32:55
Effective Efficiency: 0.2092 +/- 0.0043

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

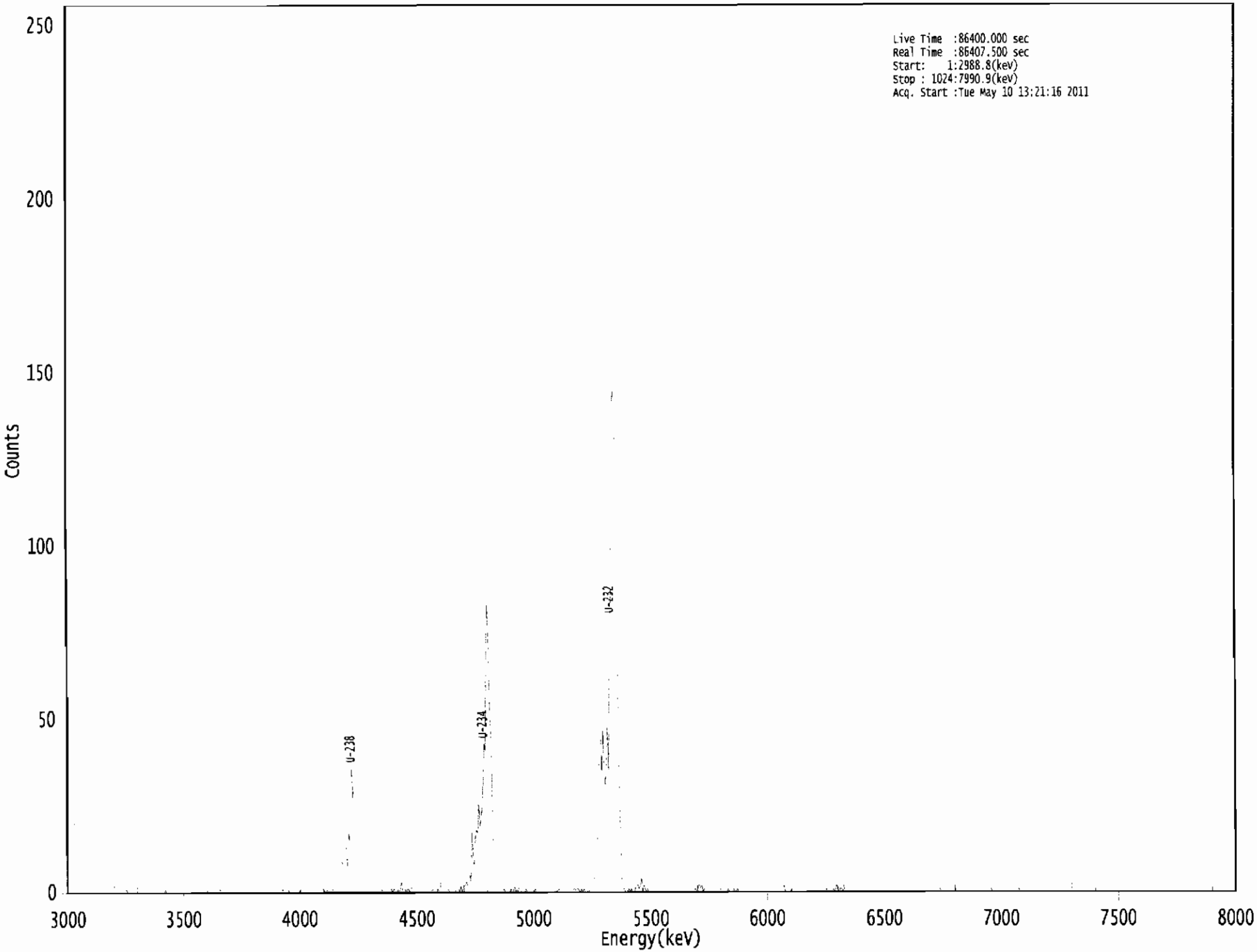
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5320.229	1358.00	36.85	0.00	0.00E+000	31.6
U-234	4778.064	674.00	25.96	0.00	0.00E+000	25.0
U-235	4425.989	14.00	3.74	0.00	0.00E+000	6.1
U-238	4212.030	367.00	19.16	0.00	0.00E+000	35.0

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.0346E+000	3.41	4.0542E-003	2.06
U-234	1.0098E+000	4.37	4.0542E-003	2.06
U-235	2.5875E-002	26.81	5.0013E-003	2.06
U-238	5.4748E-001	5.61	4.0368E-003	2.06

Errors quoted at 1.000 sigma

0000012254.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-020
Batch Identification: B11-01664
Sample Identification: 11-01664-10
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 5B
Chamber Serial Number: 10043747B
Detector Serial Number: 57912
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:19
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2047 +/- 0.0042 on 4/11/10 18:33:27
Effective Efficiency: 0.2047 +/- 0.0042

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

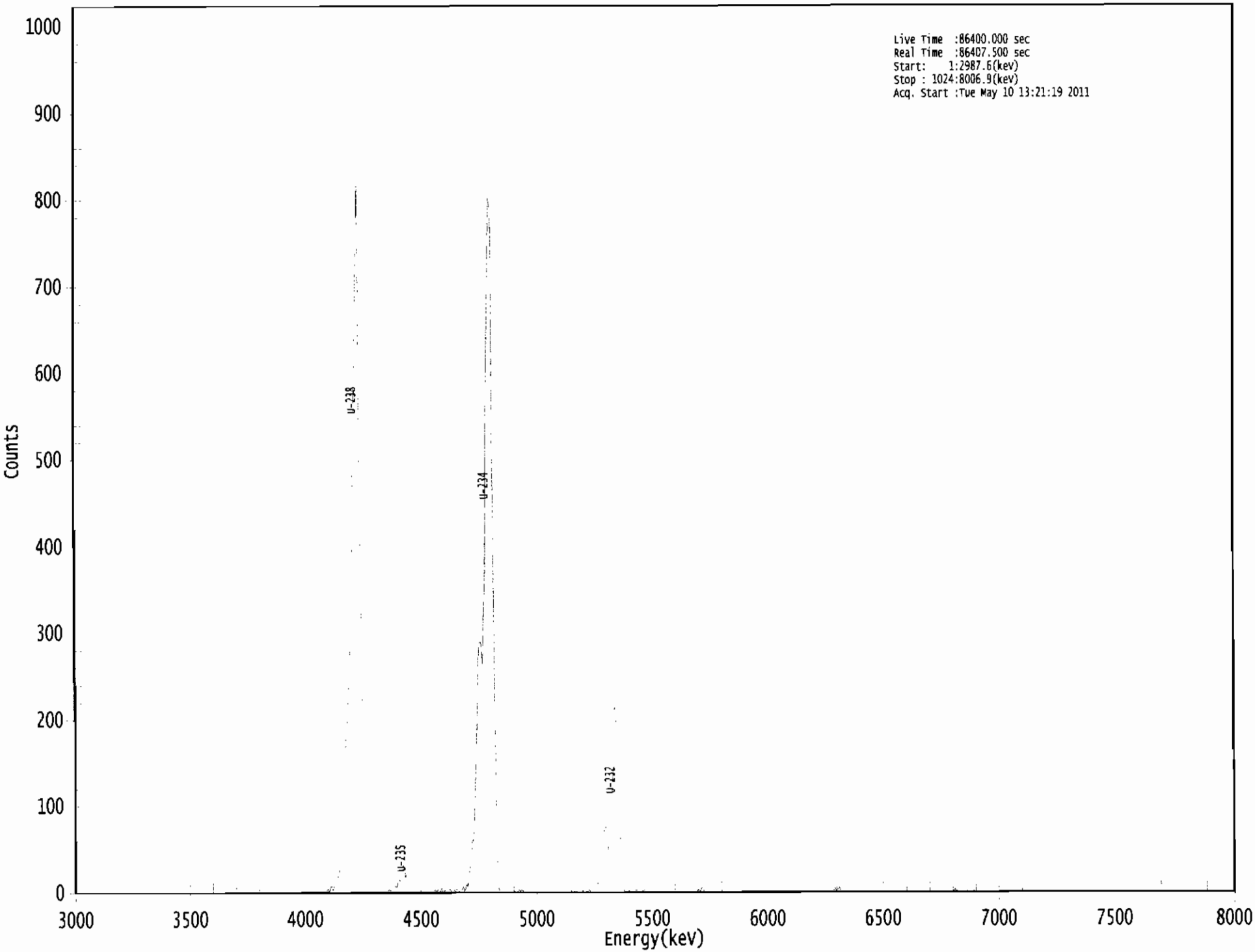
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5315.233	2083.00	45.64	0.00	0.00E+000	34.7
U-234	4774.116	8125.00	90.14	0.00	0.00E+000	35.4
U-235	4403.631	268.00	16.37	0.00	0.00E+000	31.4
U-238	4204.225	7348.00	85.72	0.00	0.00E+000	34.7

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.1890E+000	3.01	4.1428E-003	2.06
U-234	1.2439E+001	2.34	4.1428E-003	2.06
U-235	5.0615E-001	6.45	5.1106E-003	2.06
U-238	1.1201E+001	2.37	4.1250E-003	2.06

Errors quoted at 1.000 sigma

0000012255.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-021
Batch Identification: B11-01664
Sample Identification: 11-01664-11
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 6A
Chamber Serial Number: 10043748A
Detector Serial Number: 57913
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:21
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/11/10 18:33:56
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

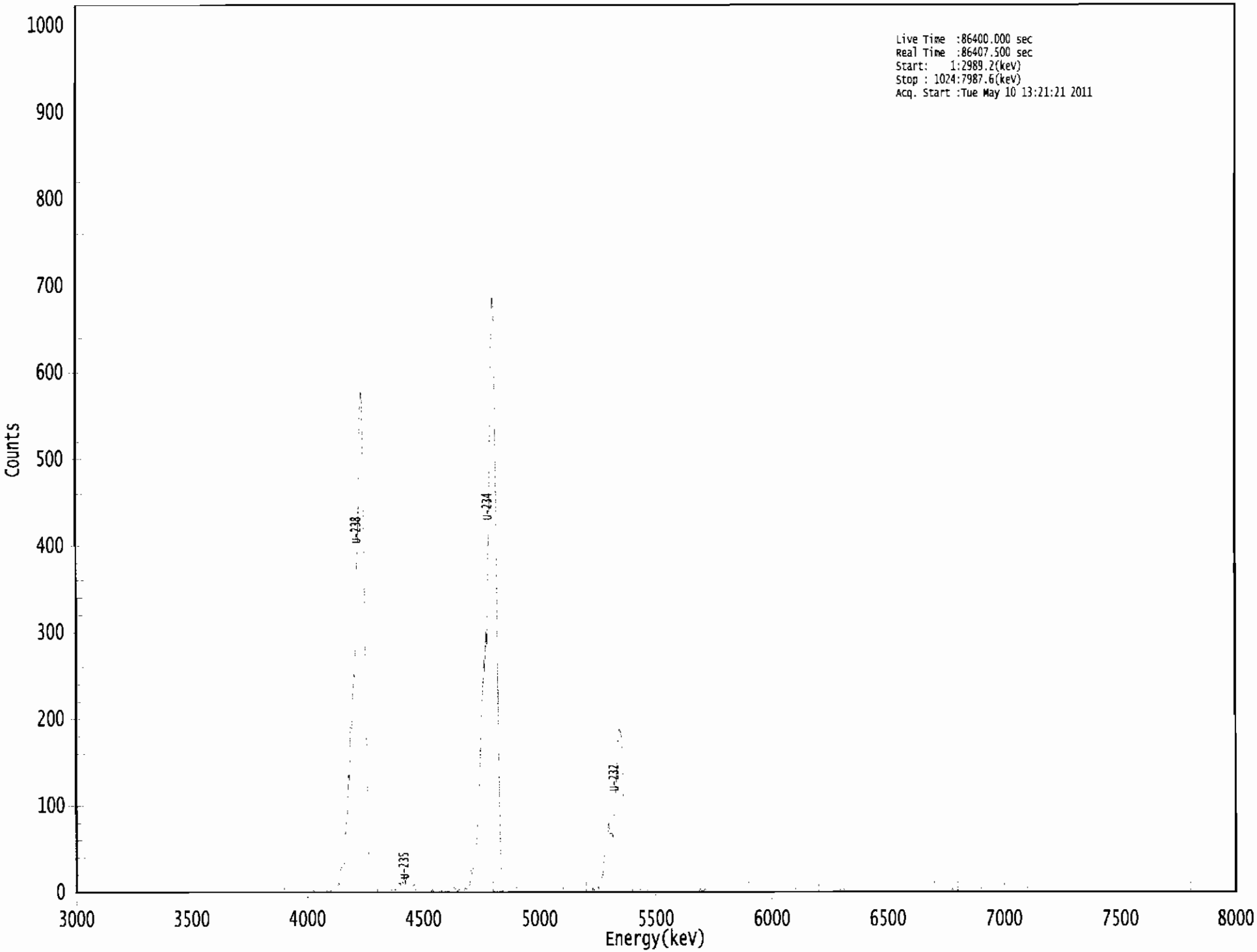
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5316.871	2076.00	45.56	0.00	0.00E+000	39.6
U-234	4778.088	7157.00	84.60	0.00	0.00E+000	39.7
U-235	4410.927	234.00	15.30	0.00	0.00E+000	29.9
U-238	4209.464	6113.00	78.19	0.00	0.00E+000	42.1

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.8920E+000	3.00	3.7696E-003	2.05
U-234	9.9700E+000	2.37	3.7696E-003	2.05
U-235	4.0213E-001	6.85	4.6503E-003	2.05
U-238	8.4792E+000	2.42	3.7534E-003	2.05

Errors quoted at 1.000 sigma

0000012256.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-022
Batch Identification: B11-01664
Sample Identification: 11-01664-12
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 6B
Chamber Serial Number: 10043748B
Detector Serial Number: 57914
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:23
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2243 +/- 0.0046 on 4/11/10 18:34:27
Effective Efficiency: 0.2243 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

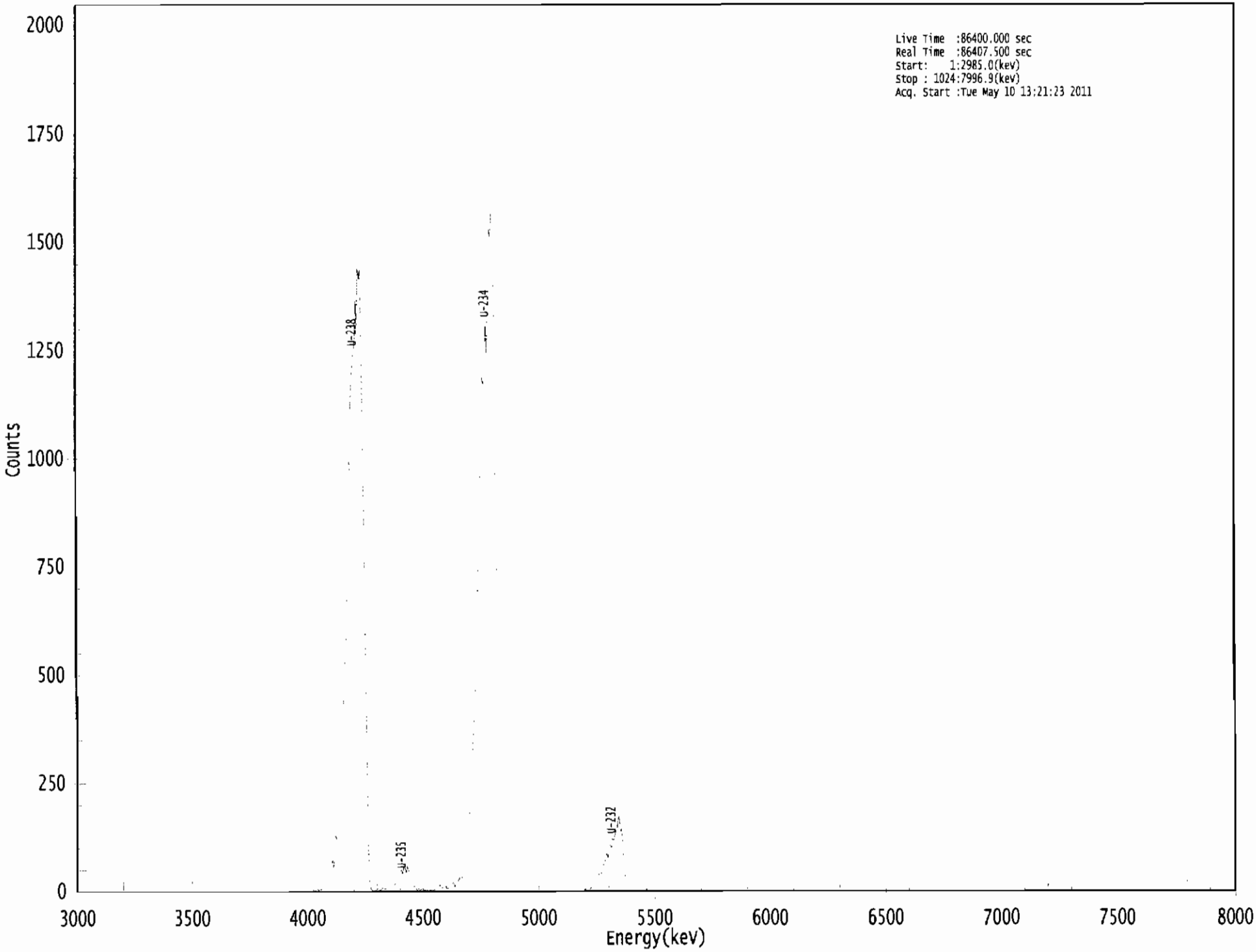
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5303.550	2481.00	49.81	0.00	0.00E+000	64.3
U-234	4760.986	25365.00	159.26	0.00	0.00E+000	76.4
U-235	4397.835	832.00	28.84	0.00	0.00E+000	68.0
U-238	4190.700	23530.00	153.39	0.00	0.00E+000	76.1

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.4670E+000	2.87	3.7814E-003	2.05
U-234	3.5445E+001	2.15	3.7814E-003	2.05
U-235	1.4343E+000	4.03	4.6649E-003	2.05
U-238	3.2740E+001	2.15	3.7652E-003	2.05

Errors quoted at 1.000 sigma

0000012257.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-023
Batch Identification: B11-01664
Sample Identification: 11-01664-13
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:25
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86428.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2205 +/- 0.0045 on 4/12/10 10:36:04
Effective Efficiency: 0.2205 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

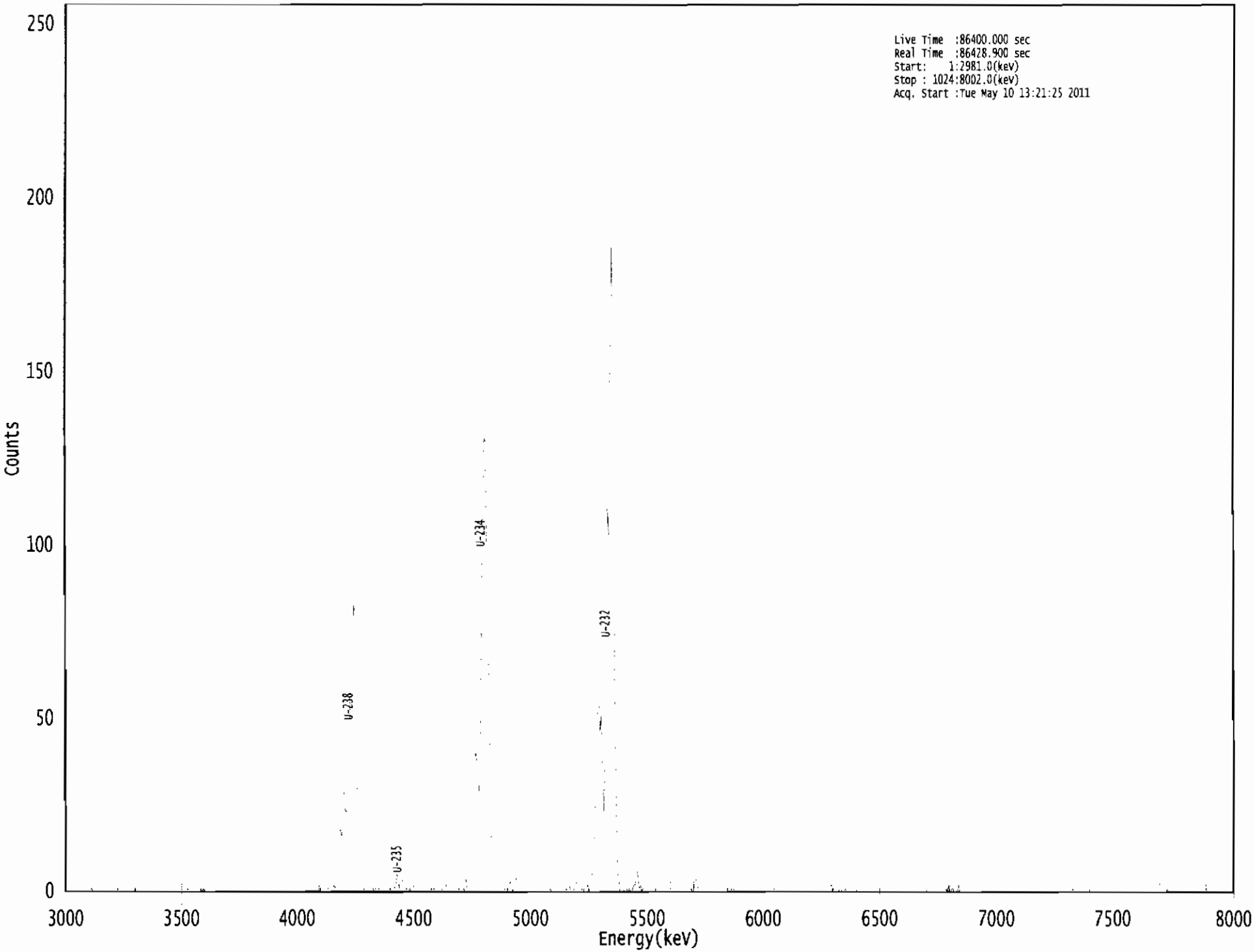
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5314.520	1473.00	38.38	0.00	0.00E+000	29.1
U-234	4777.094	1110.00	33.32	0.00	0.00E+000	31.4
U-235	4414.618	33.00	5.74	0.00	0.00E+000	11.5
U-238	4209.434	675.00	25.98	0.00	0.00E+000	29.8

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.0937E+000	3.32	3.8462E-003	2.06
U-234	1.5777E+000	3.64	3.8462E-003	2.06
U-235	5.7863E-002	17.53	4.7448E-003	2.06
U-238	9.5530E-001	4.36	3.8297E-003	2.06

Errors quoted at 1.000 sigma

0000012258.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-024
Batch Identification: B11-01664
Sample Identification: 11-01664-14
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:27
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86429.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2148 +/- 0.0044 on 4/13/10 09:49:08
Effective Efficiency: 0.2148 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

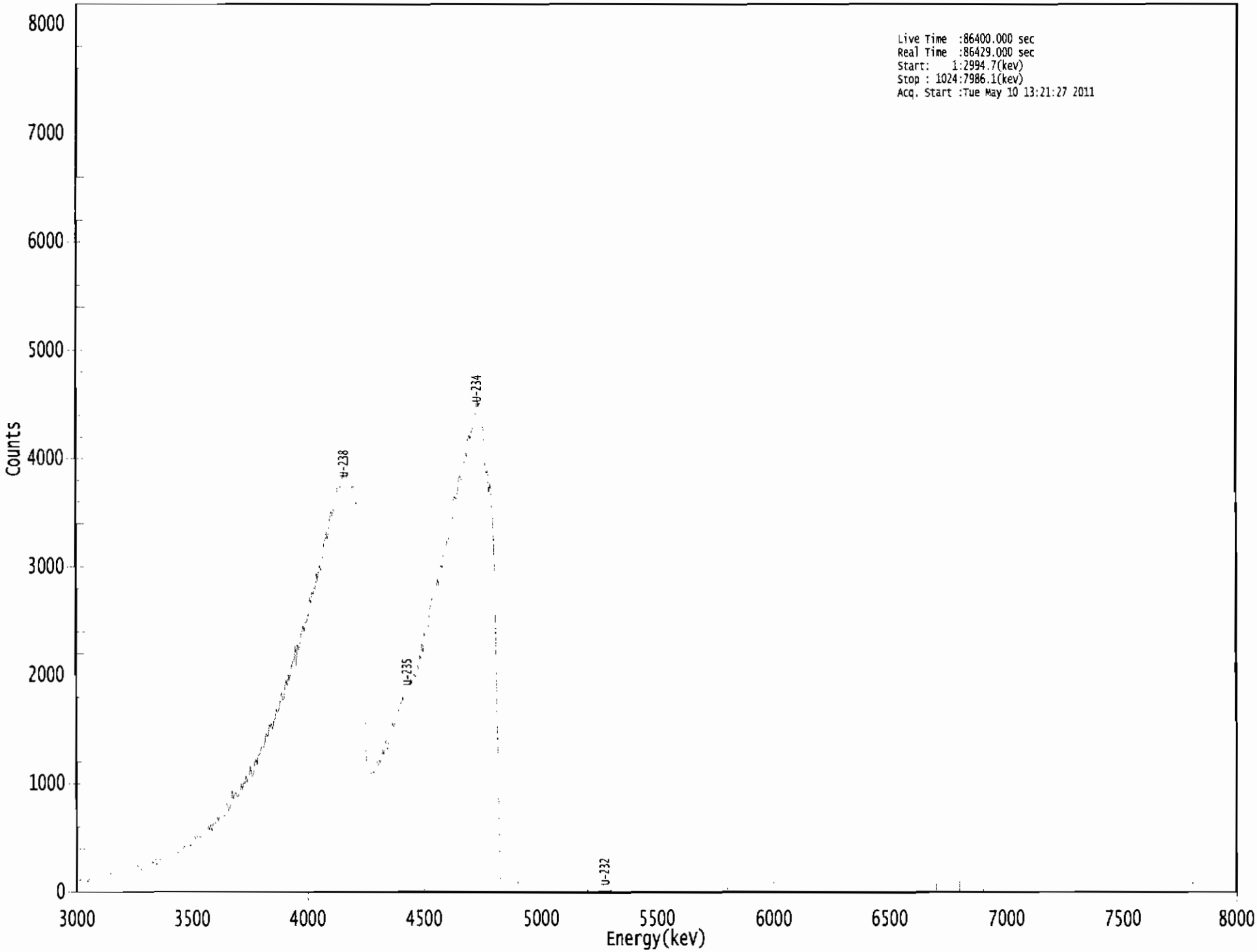
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5274.654	252.00	15.87	0.00	0.00E+000	10.0
U-234	4730.023	124641.0	353.05	0.00	0.00E+000	4.9
U-235	4427.907	59058.00	243.02	0.00	0.00E+000	137.5
U-238	4160.958	119549.0	345.76	0.00	0.00E+000	227.4

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.6777E-001	6.63	3.9492E-003	2.05
U-234	1.8190E+002	2.07	3.9492E-003	2.05
U-235	1.0633E+002	2.10	4.8718E-003	2.05
U-238	1.7372E+002	2.08	3.9323E-003	2.05

Errors quoted at 1.000 sigma

0000012261.CNF



ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-025
Batch Identification: B11-01664
Sample Identification: 11-01664-15
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:29
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86428.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2232 +/- 0.0046 on 4/12/10 10:37:23
Effective Efficiency: 0.2232 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

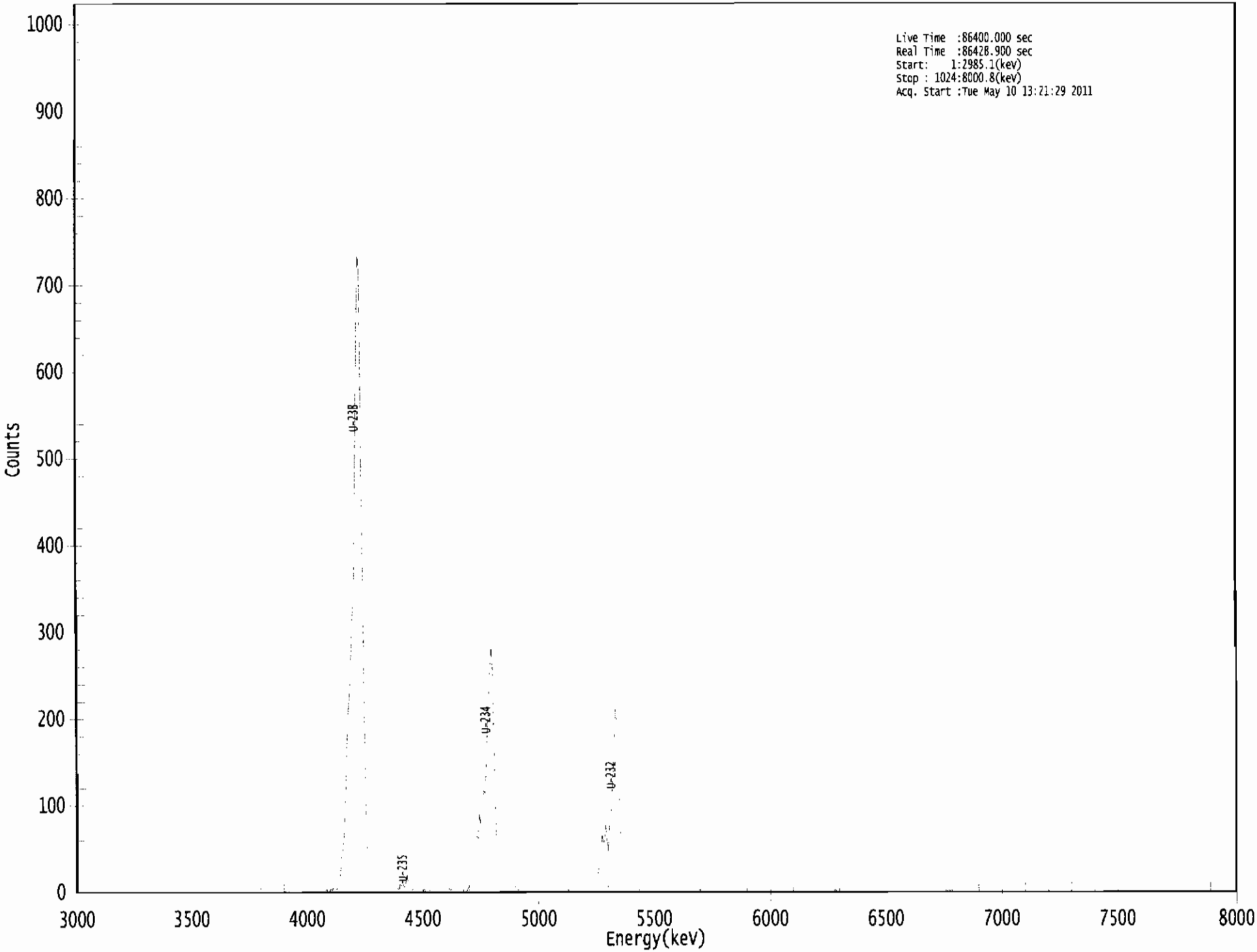
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	5302.995	2020.00	44.94	0.00	0.00E+000	32.6
U-234	4765.309	2837.00	53.26	0.00	0.00E+000	36.3
U-235	4401.880	154.00	12.41	0.00	0.00E+000	11.5
U-238	4200.495	7333.00	85.63	0.00	0.00E+000	38.9

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.8368E+000	3.03	3.8003E-003	2.05
U-234	3.9842E+000	2.78	3.8003E-003	2.05
U-235	2.6680E-001	8.32	4.6881E-003	2.05
U-238	1.0254E+001	2.36	3.7840E-003	2.05

Errors quoted at 1.000 sigma

0000012260.CNF



Apex Alpha Instrument Data Transfer Report

#	Report ID	Batch Sample ID	Isotope	Gross Area	Count Mins	BKG Counts	BKG Count Mins	EFF	Analysis Date	Date
1	ApexAlpha	ARS1-B11-01664-01	U-232	1237	1440	0	1440	0.21	05/10/11 13:21	A_1
2	ApexAlpha	ARS1-B11-01664-01	U-234	5109	1440	14	1440	0.21	05/10/11 13:21	A_1
3	ApexAlpha	ARS1-B11-01664-01	U-235	180	1440	1	1440	0.21	05/10/11 13:21	A_1
4	ApexAlpha	ARS1-B11-01664-01	U-238	6118	1440	12	1440	0.21	05/10/11 13:21	A_1
5	ApexAlpha	ARS1-B11-01664-02	U-232	1206	1440	3	1440	0.19	05/10/11 13:21	A_1
6	ApexAlpha	ARS1-B11-01664-02	U-234	4548	1440	6	1440	0.19	05/10/11 13:21	A_1
7	ApexAlpha	ARS1-B11-01664-02	U-235	180	1440	2	1440	0.19	05/10/11 13:21	A_1
8	ApexAlpha	ARS1-B11-01664-02	U-238	4884	1440	0	1440	0.19	05/10/11 13:21	A_1
9	ApexAlpha	ARS1-B11-01664-03	U-232	1174	1440	0	1440	0.22	05/10/11 13:21	A_1
10	ApexAlpha	ARS1-B11-01664-03	U-234	20	1440	5	1440	0.22	05/10/11 13:21	A_1
11	ApexAlpha	ARS1-B11-01664-03	U-235	3	1440	1	1440	0.22	05/10/11 13:21	A_1
12	ApexAlpha	ARS1-B11-01664-03	U-238	13	1440	2	1440	0.22	05/10/11 13:21	A_1
13	ApexAlpha	ARS1-B11-01664-04	U-232	887	1440	2	1440	0.22	05/10/11 13:21	A_1
14	ApexAlpha	ARS1-B11-01664-04	U-234	1869	1440	7	1440	0.22	05/10/11 13:21	A_1
15	ApexAlpha	ARS1-B11-01664-04	U-235	52	1440	0	1440	0.22	05/10/11 13:21	A_1
16	ApexAlpha	ARS1-B11-01664-04	U-238	1567	1440	3	1440	0.22	05/10/11 13:21	A_1
17	ApexAlpha	ARS1-B11-01664-05	U-232	1675	1440	1	1440	0.21	05/10/11 13:21	A_1
18	ApexAlpha	ARS1-B11-01664-05	U-234	29	1440	4	1440	0.21	05/10/11 13:21	A_1
19	ApexAlpha	ARS1-B11-01664-05	U-235	4	1440	3	1440	0.21	05/10/11 13:21	A_1
20	ApexAlpha	ARS1-B11-01664-05	U-238	27	1440	14	1440	0.21	05/10/11 13:21	A_1
21	ApexAlpha	ARS1-B11-01664-06	U-232	1866	1440	1	1440	0.21	05/10/11 13:21	A_1
22	ApexAlpha	ARS1-B11-01664-06	U-234	32	1440	7	1440	0.21	05/10/11 13:21	A_1
23	ApexAlpha	ARS1-B11-01664-06	U-235	2	1440	0	1440	0.21	05/10/11 13:21	A_1
24	ApexAlpha	ARS1-B11-01664-06	U-238	31	1440	0	1440	0.21	05/10/11 13:21	A_1
25	ApexAlpha	ARS1-B11-01664-07	U-232	2012	1440	1	1440	0.23	05/10/11 13:21	A_1
26	ApexAlpha	ARS1-B11-01664-07	U-234	6874	1440	2	1440	0.23	05/10/11 13:21	A_1
27	ApexAlpha	ARS1-B11-01664-07	U-235	203	1440	2	1440	0.23	05/10/11 13:21	A_1
28	ApexAlpha	ARS1-B11-01664-07	U-238	5733	1440	0	1440	0.23	05/10/11 13:21	A_1
29	ApexAlpha	ARS1-B11-01664-08	U-232	2192	1440	0	1440	0.22	05/10/11 13:21	A_1
30	ApexAlpha	ARS1-B11-01664-08	U-234	10041	1440	6	1440	0.22	05/10/11 13:21	A_1
31	ApexAlpha	ARS1-B11-01664-08	U-235	351	1440	0	1440	0.22	05/10/11 13:21	A_1
32	ApexAlpha	ARS1-B11-01664-08	U-238	8851	1440	4	1440	0.22	05/10/11 13:21	A_1
33	ApexAlpha	ARS1-B11-01664-09	U-232	1358	1440	2	1440	0.21	05/10/11 13:21	A_1
34	ApexAlpha	ARS1-B11-01664-09	U-234	674	1440	3	1440	0.21	05/10/11 13:21	A_1
35	ApexAlpha	ARS1-B11-01664-09	U-235	14	1440	0	1440	0.21	05/10/11 13:21	A_1
36	ApexAlpha	ARS1-B11-01664-09	U-238	367	1440	3	1440	0.21	05/10/11 13:21	A_1
37	ApexAlpha	ARS1-B11-01664-10	U-232	2083	1440	2	1440	0.20	05/10/11 13:21	A_1
38	ApexAlpha	ARS1-B11-01664-10	U-234	8125	1440	10	1440	0.20	05/10/11 13:21	A_1
39	ApexAlpha	ARS1-B11-01664-10	U-235	268	1440	1	1440	0.20	05/10/11 13:21	A_1
40	ApexAlpha	ARS1-B11-01664-10	U-238	7348	1440	5	1440	0.20	05/10/11 13:21	A_1
41	ApexAlpha	ARS1-B11-01664-11	U-232	2076	1440	2	1440	0.23	05/10/11 13:21	A_1
42	ApexAlpha	ARS1-B11-01664-11	U-234	7157	1440	6	1440	0.23	05/10/11 13:21	A_1
43	ApexAlpha	ARS1-B11-01664-11	U-235	234	1440	2	1440	0.23	05/10/11 13:21	A_1
44	ApexAlpha	ARS1-B11-01664-11	U-238	6113	1440	12	1440	0.23	05/10/11 13:21	A_1
45	ApexAlpha	ARS1-B11-01664-12	U-232	2481	1440	0	1440	0.22	05/10/11 13:21	A_1
46	ApexAlpha	ARS1-B11-01664-12	U-234	25365	1440	2	1440	0.22	05/10/11 13:21	A_1
47	ApexAlpha	ARS1-B11-01664-12	U-235	832	1440	0	1440	0.22	05/10/11 13:21	A_1
48	ApexAlpha	ARS1-B11-01664-12	U-238	23530	1440	1	1440	0.22	05/10/11 13:21	A_1
49	ApexAlpha	ARS1-B11-01664-13	U-232	1473	1440	1	1440	0.22	05/10/11 13:21	A_2
50	ApexAlpha	ARS1-B11-01664-13	U-234	1110	1440	3	1440	0.22	05/10/11 13:21	A_2
51	ApexAlpha	ARS1-B11-01664-13	U-235	33	1440	0	1440	0.22	05/10/11 13:21	A_2
52	ApexAlpha	ARS1-B11-01664-13	U-238	675	1440	1	1440	0.22	05/10/11 13:21	A_2

Apex Alpha Instrument Data Transfer Report

#	Report ID	Batch Sample ID	Isotope	Gross Area	Count Mins	BKG Counts	BKG Count Mins	EFF	Analysis Date	Date
53	ApexAlpha	ARS1-B11-01664-14	U-232	252	1440	4	1440	0.21	05/10/11 13:21	A_2
54	ApexAlpha	ARS1-B11-01664-14	U-234	124641	1440	2	1440	0.21	05/10/11 13:21	A_2
55	ApexAlpha	ARS1-B11-01664-14	U-235	59058	1440	1	1440	0.21	05/10/11 13:21	A_2
56	ApexAlpha	ARS1-B11-01664-14	U-238	119549	1440	3	1440	0.21	05/10/11 13:21	A_2
57	ApexAlpha	ARS1-B11-01664-15	U-232	2020	1440	2	1440	0.22	05/10/11 13:21	A_2
58	ApexAlpha	ARS1-B11-01664-15	U-234	2837	1440	0	1440	0.22	05/10/11 13:21	A_2
59	ApexAlpha	ARS1-B11-01664-15	U-235	154	1440	0	1440	0.22	05/10/11 13:21	A_2
60	ApexAlpha	ARS1-B11-01664-15	U-238	7333	1440	4	1440	0.22	05/10/11 13:21	A_2

ABatchSampleID	SDG	Fraction	ClientID	Run	Isotope	ACT	TPU	TPU1s	TPU2s	MDA	DL	CU	CU1s	CU2s	ActivityReportUnits
ARS1-B11-01664-01				1	U-232	4.212871913	0.560689336	0.286065988	0.560689336	0.009229493	0	0.234773717	0.11978251	0.23477372	pCi
ARS1-B11-01664-01				1	U-234	17.33146645	2.148360578	1.096102336	2.148360578	0.06843818	0.029609839	0.47720982	0.2434744	0.47720982	pCi
ARS1-B11-01664-01				1	U-235	0.705783531	0.13448557	0.068615087	0.13448557	0.029030819	0.009172746	0.10397139	0.05304663	0.10397139	pCi
ARS1-B11-01664-01				1	U-238	20.72900425	2.558909876	1.305566263	2.558909876	0.063917177	0.027358556	0.520964283	0.2657981	0.52096428	pCi
ARS1-B11-01664-02				1	U-232	4.216140239	0.562764456	0.287124722	0.562764456	0.037741364	0.014121829	0.238846369	0.12186039	0.23884637	pCi
ARS1-B11-01664-02				1	U-234	15.89934077	1.976594802	1.008466736	1.976594802	0.0493814	0.019947502	0.463003818	0.23622644	0.46300382	pCi
ARS1-B11-01664-02				1	U-235	0.722236374	0.136312073	0.070567384	0.138312073	0.037694247	0.0133492	0.107287993	0.05473877	0.10728799	pCi
ARS1-B11-01664-02				1	U-238	17.06232308	2.116954101	1.080078623	2.116954101	0.009467423	0	0.478526954	0.2441464	0.47852695	pCi
ARS1-B11-01664-03				1	U-232	4.220634187	0.564358749	0.287938137	0.564358749	0.009742691	0	0.241434726	0.12318098	0.24143473	pCi
ARS1-B11-01664-03				1	U-234	0.05386212	0.035786979	0.018258663	0.035786979	0.047089474	0.018679192	0.035189918	0.01795404	0.03518992	pCi
ARS1-B11-01664-03				1	U-235	0.008324335	0.016346686	0.008340146	0.016346686	0.030645051	0.009682789	0.016315696	0.00832433	0.0163157	pCi
ARS1-B11-01664-03				1	U-238	0.039419888	0.027617526	0.014090574	0.027617526	0.033291887	0.01179013	0.027203476	0.01387932	0.02720348	pCi
ARS1-B11-01664-04	ARS1-11-00897	014	PR-SW-01-110420	1	U-232	8.30456574	1.143730999	0.583536224	1.143730999	0.087174481	0.03087234	0.548378739	0.27978507	0.54837874	pCi
ARS1-B11-01664-04	ARS1-11-00897	014	PR-SW-01-110420	1	U-234	17.44528511	2.253477615	1.149733477	2.253477615	0.140724545	0.057667127	0.795373072	0.40580259	0.79537307	pCi
ARS1-B11-01664-04	ARS1-11-00897	014	PR-SW-01-110420	1	U-235	0.564714659	0.167981663	0.08570493	0.167981663	0.029430322	0	0.153491193	0.07831183	0.15349119	pCi
ARS1-B11-01664-04	ARS1-11-00897	014	PR-SW-01-110420	1	U-238	14.62398112	1.910820331	0.974908332	1.910820331	0.10069248	0.037676487	0.726164087	0.37049188	0.72616409	pCi
ARS1-B11-01664-05	ARS1-11-00897	015	RB-01-110420	1	U-232	8.337260881	1.083999796	0.553061121	1.083999796	0.036669816	0.011566409	0.399632699	0.20389423	0.3996327	pCi
ARS1-B11-01664-05	ARS1-11-00897	015	RB-01-110420	1	U-234	0.124317619	0.057970379	0.029576724	0.057970379	0.05974966	0.023136815	0.055989388	0.02856601	0.05598939	pCi
ARS1-B11-01664-05	ARS1-11-00897	015	RB-01-110420	1	U-235	0.005763947	0.02989806	0.015254112	0.02989806	0.062070918	0.02322531	0.029889943	0.01524997	0.02986994	pCi
ARS1-B11-01664-05	ARS1-11-00897	015	RB-01-110420	1	U-238	0.064515862	0.062769426	0.032025217	0.062769426	0.099845957	0.04319844	0.062283233	0.03177716	0.06228323	pCi
ARS1-B11-01664-06	ARS1-11-00897	016	RB-02-110421	1	U-232	8.328857655	1.075336012	0.548640822	1.075336012	0.032881181	0.010389329	0.378211591	0.1929651	0.37821159	pCi
ARS1-B11-01664-06	ARS1-11-00897	016	RB-02-110421	1	U-234	0.111476496	0.056218106	0.028682707	0.056218106	0.066975314	0.027445631	0.054579767	0.02784682	0.05457977	pCi
ARS1-B11-01664-06	ARS1-11-00897	016	RB-02-110421	1	U-235	0.010337145	0.014380925	0.007337206	0.014380925	0.014006832	0	0.014326553	0.00730947	0.01432655	pCi
ARS1-B11-01664-06	ARS1-11-00897	016	RB-02-110421	1	U-238	0.137954374	0.051346061	0.02619697	0.051346061	0.012059882	0	0.04856358	0.02477734	0.04856358	pCi
ARS1-B11-01664-07	ARS1-11-00897	017	RM-JM-SW-02-110420	1	U-232	8.30456574	1.067369343	0.544576196	1.067369343	0.030405045	0.009606955	0.363147297	0.18527923	0.3631473	pCi
ARS1-B11-01664-07	ARS1-11-00897	017	RM-JM-SW-02-110420	1	U-234	28.33431683	3.489449598	1.780331427	3.489449598	0.036304104	0.013565178	0.670121575	0.34189876	0.67012157	pCi
ARS1-B11-01664-07	ARS1-11-00897	017	RM-JM-SW-02-110420	1	U-235	0.960622987	0.17739053	0.090505373	0.17739053	0.044398943	0.01572363	0.13411888	0.068428	0.13411888	pCi
ARS1-B11-01664-07	ARS1-11-00897	017	RM-JM-SW-02-110420	1	U-238	23.59076426	2.915854981	1.487681113	2.915854981	0.011151399	0	0.61067074	0.3115667	0.61067074	pCi
ARS1-B11-01664-08	ARS1-11-00897	018	RM-JM-SW-110420	1	U-232	8.312739525	1.063244943	0.54247191	1.063244943	0.010277155	0	0.348000581	0.17755132	0.34800058	pCi
ARS1-B11-01664-08	ARS1-11-00897	018	RM-JM-SW-110420	1	U-234	37.99668754	4.652156387	2.373549177	4.652156387	0.053414575	0.021576693	0.743879573	0.37953039	0.74387957	pCi
ARS1-B11-01664-08	ARS1-11-00897	018	RM-JM-SW-110420	1	U-235	1.540503892	0.246249374	0.125637436	0.246249374	0.011893919	0	0.161162989	0.08222601	0.16116299	pCi
ARS1-B11-01664-08	ARS1-11-00897	018	RM-JM-SW-110420	1	U-238	33.43142295	4.100207788	2.091942749	4.100207788	0.045404782	0.017582059	0.696962143	0.35559293	0.69696214	pCi
ARS1-B11-01664-09	ARS1-11-00897	019	RM-SW-BG-110419	1	U-232	8.337490553	1.101327041	0.561901552	1.101327041	0.057120418	0.020228867	0.444427773	0.22674886	0.44442777	pCi
ARS1-B11-01664-09	ARS1-11-00897	019	RM-SW-BG-110419	1	U-234	4.119181833	0.588100849	0.300051453	0.588100849	0.066108395	0.024736028	0.313068123	0.15972863	0.31306612	pCi
ARS1-B11-01664-09	ARS1-11-00897	019	RM-SW-BG-110419	1	U-235	0.099619372	0.053554772	0.027323863	0.053554772	0.019283464	0	0.052183818	0.0266244	0.05218382	pCi
ARS1-B11-01664-09	ARS1-11-00897	019	RM-SW-BG-110419	1	U-238	2.230079254	0.354961567	0.18110284	0.354961567	0.065976167	0.024686552	0.230980782	0.11784734	0.23098078	pCi
ARS1-B11-01664-10	ARS1-11-00897	020	RP-JM-SW-01-110420	1	U-232	8.320913311	1.067441874	0.544613201	1.067441874	0.03714622	0.01315512	0.357855765	0.18257947	0.35785577	pCi
ARS1-B11-01664-10	ARS1-11-00897	020	RP-JM-SW-01-110420	1	U-234	32.3975508	3.978680266	2.029938911	3.978660266	0.069559227	0.029370041	0.705762381	0.36008285	0.70576238	pCi
ARS1-B11-01664-10	ARS1-11-00897	020	RP-JM-SW-01-110420	1	U-235	1.235555446	0.210781006	0.10754133	0.210781006	0.034071541	0.010765442	0.148758979	0.07589744	0.14875898	pCi
ARS1-B11-01664-10	ARS1-11-00897	020	RP-JM-SW-01-110420	1	U-238	29.25685624	3.598847175	1.836146518	3.598847175	0.052249938	0.020726217	0.66964169	0.34165392	0.66964169	pCi
ARS1-B11-01664-11	ARS1-11-00897	021	RP-JM-SW-110420	1	U-232	8.2718706	1.0613521	0.541506173	1.0613521	0.037051918	0.013121723	0.356347587	0.18180999	0.35634759	pCi
ARS1-B11-01664-11	ARS1-11-00897	021	RP-JM-SW-110420	1	U-234	28.47649254	3.504503061	1.788011766	3.504503061	0.056176041	0.022692181	0.660576721	0.33702894	0.66057672	pCi
ARS1-B11-01664-11	ARS1-11-00897	021	RP-JM-SW-110420	1	U-235	1.070865743	0.189913054	0.096894416	0.189913054	0.042880788	0.015185984	0.138982178	0.07090927	0.13898218	pCi
ARS1-B11-01664-11	ARS1-11-00897	021	RP-JM-SW-110420	1	U-238	24.24662061	2.993196108	1.527140871	2.993196108	0.074824898	0.032027402	0.609620145	0.31103069	0.60962015	pCi
ARS1-B11-01664-12	ARS1-11-00897	022	RP-SW-01-110419	1	U-232	8.337490553	1.059736214	0.540681742	1.059736214	0.009107053	0	0.328078707	0.1673871	0.32807871	pCi
ARS1-B11-01664-12	ARS1-11-00897	022	RP-SW-01-110419	1	U-234	85.09851669	10.33824254	5.274613542	10.33824254	0.03117002	0.011038683	1.047398613	0.53438705	1.04739861	pCi
ARS1-B11-01664-12	ARS1-11-00897	022	RP-SW-01-110419	1	U-235	3.235728052	0.448642357	0.228899162	0.448642357	0.010539451	0	0.219870226	0.11217869	0.21987023	pCi
ARS1-B11-01664-12	ARS1-11-00897	022	RP-SW-01-110419	1	U-238	78.78713513	9.575325008	4.885369902	9.575325008	0.024654298	0.007789915	1.006764985	0.5136556	1.00676498	pCi
ARS1-B11-01664-13	ARS1-11-00897	023	RP-SW-BG-041911	1	U-232	8.312968522	1.090887826	0.556575422	1.090887826	0.041580444	0.013137999	0.424964977	0.21681887	0.42496498	pCi
ARS1-B11-01664-13	ARS1-11-00897	023	RP-SW-BG-041911	1	U-234	6.241783844	0.839661373	0.428398659	0.839661373	0.060719652	0.022719702	0.368692886	0.18810862	0.36869289	pCi
ARS1-B11-01664-13	ARS1-11-00897	023	RP-SW-BG-041911	1	U-235	0.215676269	0.078067475	0.039830344	0.078067475	0.017711597	0	0.073587062	0.03754442	0.07358706	pCi
ARS1-B11-01664-13	ARS1-11-00897	023	RP-SW-BG-041911	1	U-238	3.79272602	0.540697938	0.275866295	0.540697938	0.041431664	0.01309099	0.286761599	0.14630694	0.2867616	pCi
ARS1-B11-01664-14	ARS1-11-00897	024	SPOP35-110421	1	U-232	8.328857655	1.45689	0.743311224	1.45689	0.403530643	0.156258861	1.053197484	0.53734566	1.05319748	pCi
ARS1-B11-01664-14	ARS1-11-00897	024	SPOP35-110421	1	U-234	4179.500807	505.6691648	257.9944718	505.6691648	0.31152017	0.110323074	23.20387277	11.8387106	23.2038728	pCi
ARS1-B11-01664-14	ARS1-11-00897	024	SPOP35-110421	1	U-235	2295.457018	278.0471122	141.8607716	278.0471122	0.286179541	0.090422952	18.51385676	9.44584529	18.5138568	pCi
ARS1-B11-01664-14	ARS1-11-00897	024	SPOP35-110421	1	U-238	4000.69998	484.0581422	246.9684399	484.0581422	0.360386989	0.134847364	22.67960201	11.5712255	22.679602	pCi
ARS1-B11-01664-15	ARS1-11-00897	025	MW-RM-110420	1	U-232	8.296391955	1.066165375	0.543961926	1.066165375	0.038193004	0.013525832	0.362338721	0.18486669	0.36233872	pCi
ARS1-B11-01664-15	ARS1-11-00897	025	MW-RM-110420	1	U-234	11.64534003	1.471252351	0.750638955	1.471252351	0.011124029	0	0.428527382	0.21863642	0.42852738	pCi
ARS1-B11-01664-15	ARS1-11-00897	025	MW-RM-110420	1	U-235	0.732724784	0.145723305	0.074348625	0.145723305	0.012894053	0	0.115727506	0.05904465	0.11572751	pCi
ARS1-B11-01664-15	ARS1-11-00897	025	MW-RM-110420	1	U-238	30.02396421	3.693312948	1.884343341	3.693312948	0.049222773	0.019060496	0.687762738	0.35089936	0.68776274	pCi

ABatchSampleID	SDG	Fraction	AliquotReportUnits	ChemRecovery	TracerRecovery	SampleCounts	SampleCountMins	BKG_Counts	BKG_CountMins	EFF	ALIQ	SampleCollDate	MidPointCountDate	BP_E
ARS1-B11-01664-01			L		0.43371112	1237	1440	0	1440	0.212452739	1	5/3/2011	5/10/2011	0.08942
ARS1-B11-01664-01			L		0.43371112	5109	1440	14	1440	0.212452739	1	5/3/2011	5/10/2011	0.20822
ARS1-B11-01664-01			L		0.43371112	180	1440	1	1440	0.212452739	1	5/3/2011	5/10/2011	0.0763
ARS1-B11-01664-01			L		0.43371112	6118	1440	12	1440	0.212452739	1	5/3/2011	5/10/2011	0.17113
ARS1-B11-01664-02			L		0.465872184	1206	1440	3	1440	0.192200825	1	5/3/2011	5/10/2011	0.08942
ARS1-B11-01664-02			L		0.465872184	4548	1440	6	1440	0.192200825	1	5/3/2011	5/10/2011	0.20822
ARS1-B11-01664-02			L		0.465872184	180	1440	2	1440	0.192200825	1	5/3/2011	5/10/2011	0.0763
ARS1-B11-01664-02			L		0.465872184	4884	1440	0	1440	0.192200825	1	5/3/2011	5/10/2011	0.17113
ARS1-B11-01664-03			L		0.403387443	1174	1440	0	1440	0.216391131	1	5/3/2011	5/10/2011	0.08942
ARS1-B11-01664-03			L		0.403387443	20	1440	5	1440	0.216391131	1	5/3/2011	5/10/2011	0.20822
ARS1-B11-01664-03			L		0.403387443	3	1440	1	1440	0.216391131	1	5/3/2011	5/10/2011	0.0763
ARS1-B11-01664-03			L		0.403387443	13	1440	2	1440	0.216391131	1	5/3/2011	5/10/2011	0.17113
ARS1-B11-01664-04	ARS1-11-00897	014	L		0.304736528	887	1440	2	1440	0.219564006	0.5	4/20/2011	5/10/2011	0.17891
ARS1-B11-01664-04	ARS1-11-00897	014	L		0.304736528	1869	1440	7	1440	0.219564006	0.5	4/20/2011	5/10/2011	0.41644
ARS1-B11-01664-04	ARS1-11-00897	014	L		0.304736528	52	1440	0	1440	0.219564006	0.5	4/20/2011	5/10/2011	0.15263
ARS1-B11-01664-04	ARS1-11-00897	014	L		0.304736528	1567	1440	3	1440	0.219564006	0.5	4/20/2011	5/10/2011	0.34226
ARS1-B11-01664-05	ARS1-11-00897	015	L		0.594164196	1675	1440	1	1440	0.212170452	0.5	4/20/2011	5/10/2011	0.17891
ARS1-B11-01664-05	ARS1-11-00897	015	L		0.594164196	29	1440	4	1440	0.212170452	0.5	4/20/2011	5/10/2011	0.41644
ARS1-B11-01664-05	ARS1-11-00897	015	L		0.594164196	4	1440	3	1440	0.212170452	0.5	4/20/2011	5/10/2011	0.15263
ARS1-B11-01664-05	ARS1-11-00897	015	L		0.594164196	27	1440	14	1440	0.212170452	0.5	4/20/2011	5/10/2011	0.34226
ARS1-B11-01664-06	ARS1-11-00897	016	L		0.682078859	1866	1440	1	1440	0.206113368	0.5	4/21/2011	5/10/2011	0.17891
ARS1-B11-01664-06	ARS1-11-00897	016	L		0.682078859	32	1440	7	1440	0.206113368	0.5	4/21/2011	5/10/2011	0.41644
ARS1-B11-01664-06	ARS1-11-00897	016	L		0.682078859	2	1440	0	1440	0.206113368	0.5	4/21/2011	5/10/2011	0.15263
ARS1-B11-01664-06	ARS1-11-00897	016	L		0.682078859	31	1440	0	1440	0.206113368	0.5	4/21/2011	5/10/2011	0.34226
ARS1-B11-01664-07	ARS1-11-00897	017	L		0.672946381	2012	1440	1	1440	0.22593005	0.5	4/20/2011	5/10/2011	0.17891
ARS1-B11-01664-07	ARS1-11-00897	017	L		0.672946381	6874	1440	2	1440	0.22593005	0.5	4/20/2011	5/10/2011	0.41644
ARS1-B11-01664-07	ARS1-11-00897	017	L		0.672946381	203	1440	2	1440	0.22593005	0.5	4/20/2011	5/10/2011	0.15263
ARS1-B11-01664-07	ARS1-11-00897	017	L		0.672946381	5733	1440	0	1440	0.22593005	0.5	4/20/2011	5/10/2011	0.34226
ARS1-B11-01664-08	ARS1-11-00897	018	L		0.764898331	2192	1440	0	1440	0.216447204	0.5	4/20/2011	5/10/2011	0.17891
ARS1-B11-01664-08	ARS1-11-00897	018	L		0.764898331	10041	1440	6	1440	0.216447204	0.5	4/20/2011	5/10/2011	0.41644
ARS1-B11-01664-08	ARS1-11-00897	018	L		0.764898331	351	1440	0	1440	0.216447204	0.5	4/20/2011	5/10/2011	0.15263
ARS1-B11-01664-08	ARS1-11-00897	016	L		0.764898331	8851	1440	4	1440	0.216447204	0.5	4/20/2011	5/10/2011	0.34226
ARS1-B11-01664-09	ARS1-11-00897	019	L		0.488104681	1358	1440	2	1440	0.209210098	0.5	4/19/2011	5/10/2011	0.1789
ARS1-B11-01664-09	ARS1-11-00897	019	L		0.488104681	674	1440	3	1440	0.209210098	0.5	4/19/2011	5/10/2011	0.41644
ARS1-B11-01664-09	ARS1-11-00897	019	L		0.488104681	14	1440	0	1440	0.209210098	0.5	4/19/2011	5/10/2011	0.15263
ARS1-B11-01664-09	ARS1-11-00897	019	L		0.488104661	367	1440	3	1440	0.209210098	0.5	4/19/2011	5/10/2011	0.34226
ARS1-B11-01664-10	ARS1-11-00897	020	L		0.766951641	2083	1440	2	1440	0.2047351	0.5	4/20/2011	5/10/2011	0.17891
ARS1-B11-01664-10	ARS1-11-00897	020	L		0.766951841	8125	1440	10	1440	0.2047351	0.5	4/20/2011	5/10/2011	0.41644
ARS1-B11-01664-10	ARS1-11-00897	020	L		0.766951841	268	1440	1	1440	0.2047351	0.5	4/20/2011	5/10/2011	0.15263
ARS1-B11-01664-10	ARS1-11-00897	020	L		0.766951841	7348	1440	5	1440	0.2047351	0.5	4/20/2011	5/10/2011	0.34226
ARS1-B11-01664-11	ARS1-11-00897	021	L		0.699641497	2076	1440	2	1440	0.225003242	0.5	4/20/2011	5/10/2011	0.17891
ARS1-B11-01664-11	ARS1-11-00897	021	L		0.699641497	7157	1440	6	1440	0.225003242	0.5	4/20/2011	5/10/2011	0.41644
ARS1-B11-01664-11	ARS1-11-00897	021	L		0.699641497	234	1440	2	1440	0.225003242	0.5	4/20/2011	5/10/2011	0.15263
ARS1-B11-01664-11	ARS1-11-00897	021	L		0.699641497	6113	1440	12	1440	0.225003242	0.5	4/20/2011	5/10/2011	0.34226
ARS1-B11-01664-12	ARS1-11-00897	022	L		0.832977624	2481	1440	0	1440	0.224300042	0.5	4/19/2011	5/10/2011	0.1789
ARS1-B11-01664-12	ARS1-11-00897	022	L		0.832977624	25365	1440	2	1440	0.224300042	0.5	4/19/2011	5/10/2011	0.41644
ARS1-B11-01664-12	ARS1-11-00897	022	L		0.832977624	832	1440	0	1440	0.224300042	0.5	4/19/2011	5/10/2011	0.15263
ARS1-B11-01664-12	ARS1-11-00897	022	L		0.832977624	23530	1440	1	1440	0.224300042	0.5	4/19/2011	5/10/2011	0.34226
ARS1-B11-01664-13	ARS1-11-00897	023	L		0.504166714	1473	1440	1	1440	0.220520407	0.5	4/19/2011	5/10/2011	0.1789
ARS1-B11-01664-13	ARS1-11-00897	023	L		0.504166714	1110	1440	3	1440	0.220520407	0.5	4/19/2011	5/10/2011	0.41644
ARS1-B11-01664-13	ARS1-11-00897	023	L		0.504166714	33	1440	0	1440	0.220520407	0.5	4/19/2011	5/10/2011	0.15263
ARS1-B11-01664-13	ARS1-11-00897	023	L		0.504166714	675	1440	1	1440	0.220520407	0.5	4/19/2011	5/10/2011	0.34226
ARS1-B11-01664-14	ARS1-11-00897	024	L		0.087043538	252	1440	4	1440	0.214771703	0.5	4/21/2011	5/10/2011	0.17891
ARS1-B11-01664-14	ARS1-11-00897	024	L		0.087043538	124641	1440	2	1440	0.214771703	0.5	4/21/2011	5/10/2011	0.41644
ARS1-B11-01664-14	ARS1-11-00897	024	L		0.087043538	59058	1440	1	1440	0.214771703	0.5	4/21/2011	5/10/2011	0.15263
ARS1-B11-01664-14	ARS1-11-00897	024	L		0.087043538	119549	1440	3	1440	0.214771703	0.5	4/21/2011	5/10/2011	0.34226
ARS1-B11-01664-15	ARS1-11-00897	025	L		0.684257641	2020	1440	2	1440	0.22318837	0.5	4/20/2011	5/10/2011	0.17891
ARS1-B11-01664-15	ARS1-11-00897	025	L		0.684257641	2837	1440	0	1440	0.22318837	0.5	4/20/2011	5/10/2011	0.41644
ARS1-B11-01664-15	ARS1-11-00897	025	L		0.684257641	154	1440	0	1440	0.22318837	0.5	4/20/2011	5/10/2011	0.15263
ARS1-B11-01664-15	ARS1-11-00897	025	L		0.684257641	7333	1440	4	1440	0.22318837	0.5	4/20/2011	5/10/2011	0.34226

ABatchSampleID	SDG	Fraction	BP_MDA	Sb_Val	UCF	CF	GrossCountRate	BKGCountRate	NetCountRate	PlatingRecovery	InstFileName	DetectorID	InstrumentkeV	NuclideAbd	TracerMeasACT
ARS1-B11-01664-01			0.187699509	0.085188939	2.22	1.96	0.859027778	0	0.859027778	0.98	ApexAlpha	A_1_1A	48.96336365		
ARS1-B11-01664-01			0.424772588	0.198393553	2.22	1.96	3.547916667	0.009722222	3.538194444	0.98	ApexAlpha	A_1_1A	59.44017029		
ARS1-B11-01664-01			0.162992066	0.072714185	2.22	1.96	0.125	0.000694444	0.124305556	0.98	ApexAlpha	A_1_1A	55.66129303		
ARS1-B11-01664-01			0.350734066	0.163054942	2.22	1.96	4.248611111	0.008333333	4.240277778	0.98	ApexAlpha	A_1_1A	54.32730484		
ARS1-B11-01664-02			0.187967722	0.085188939	2.22	1.96	0.8375	0.002083333	0.835416667	0.98	ApexAlpha	A_1_1B	37.7613678		
ARS1-B11-01664-02			0.425040481	0.198393553	2.22	1.96	3.158333333	0.004166667	3.154166667	0.98	ApexAlpha	A_1_1B	35.82033157		
ARS1-B11-01664-02			0.163302586	0.072714185	2.22	1.96	0.125	0.001388889	0.123611111	0.98	ApexAlpha	A_1_1B	12.16941738		
ARS1-B11-01664-02			0.351001423	0.163054942	2.22	1.96	3.391666667	0	3.391666667	0.98	ApexAlpha	A_1_1B	38.64440918		
ARS1-B11-01664-03			0.188212707	0.085188939	2.22	1.96	0.815277778	0	0.815277778	0.98	ApexAlpha	A_1_2A	28.96851158		
ARS1-B11-01664-03			0.425285174	0.198393553	2.22	1.96	0.013888889	0.003472222	0.010416667	0.98	ApexAlpha	A_1_2A	8.187438965		
ARS1-B11-01664-03			0.163586213	0.072714185	2.22	1.96	0.002083333	0.000694444	0.001388869	0.98	ApexAlpha	A_1_2A	4.912463665		
ARS1-B11-01664-03			0.351245627	0.163054942	2.22	1.96	0.009027778	0.001388889	0.007638889	0.98	ApexAlpha	A_1_2A	7.368695259		
ARS1-B11-01664-04	ARS1-11-00897	014	0.38249961	0.085188939	2.22	1.96	0.615972222	0.001388889	0.614583333	0.98	ApexAlpha	A_1_2B	33.09716034		
ARS1-B11-01664-04	ARS1-11-00897	014	0.856498546	0.198393553	2.22	1.96	1.297916667	0.004861111	1.293055556	0.98	ApexAlpha	A_1_2B	34.36228943		
ARS1-B11-01664-04	ARS1-11-00897	014	0.334043801	0.072714185	2.22	1.96	0.036111111	0	0.036111111	0.98	ApexAlpha	A_1_2B	11.08153439		
ARS1-B11-01664-04	ARS1-11-00897	014	0.708407507	0.163054942	2.22	1.96	1.088194444	0.002083333	1.086111111	0.98	ApexAlpha	A_1_2B	38.09555817		
ARS1-B11-01664-05	ARS1-11-00897	015	0.370566809	0.085188939	2.22	1.96	1.163194444	0.000694444	1.1625	0.98	ApexAlpha	A_1_3A	27.50323486		
ARS1-B11-01664-05	ARS1-11-00897	015	0.844584284	0.198393553	2.22	1.96	0.020138889	0.002777778	0.017361111	0.98	ApexAlpha	A_1_3A	13.09677887		
ARS1-B11-01664-05	ARS1-11-00897	015	0.320233776	0.072714185	2.22	1.96	0.002777778	0.002083333	0.000694444	0.98	ApexAlpha	A_1_3A	4.911292076		
ARS1-B11-01664-05	ARS1-11-00897	015	0.696517076	0.163054942	2.22	1.96	0.01875	0.009722222	0.009027778	0.98	ApexAlpha	A_1_3A	8.185486794		
ARS1-B11-01664-06	ARS1-11-00897	016	0.369162496	0.085188939	2.22	1.96	1.295833333	0.000694444	1.295138889	0.98	ApexAlpha	A_1_3B	27.29480934		
ARS1-B11-01664-06	ARS1-11-00897	016	0.8431923	0.198393553	2.22	1.96	0.022222222	0.004861111	0.017361111	0.98	ApexAlpha	A_1_3B	13.51308155		
ARS1-B11-01664-06	ARS1-11-00897	016	0.318620311	0.072714185	2.22	1.96	0.001388889	0	0.001388889	0.98	ApexAlpha	A_1_3B	4.913847923		
ARS1-B11-01664-06	ARS1-11-00897	016	0.695127883	0.163054942	2.22	1.96	0.021527778	0	0.021527778	0.98	ApexAlpha	A_1_3B	10.23718262		
ARS1-B11-01664-07	ARS1-11-00897	017	0.368260945	0.085188939	2.22	1.96	1.397222222	0.000694444	1.396527778	0.98	ApexAlpha	A_1_4A	29.44181824		
ARS1-B11-01664-07	ARS1-11-00897	017	0.842282002	0.198393553	2.22	1.96	4.773611111	0.001388889	4.772222222	0.98	ApexAlpha	A_1_4A	36.94655609		
ARS1-B11-01664-07	ARS1-11-00897	017	0.317565162	0.072714185	2.22	1.96	0.140972222	0.001388889	0.139583333	0.98	ApexAlpha	A_1_4A	20.18749237		
ARS1-B11-01664-07	ARS1-11-00897	017	0.694219399	0.163054942	2.22	1.96	3.98125	0	3.98125	0.98	ApexAlpha	A_1_4A	42.40550995		
ARS1-B11-01664-08	ARS1-11-00897	018	0.367346965	0.085188939	2.22	1.96	1.522222222	0	1.522222222	0.98	ApexAlpha	A_1_4B	30.84774017		
ARS1-B11-01664-08	ARS1-11-00897	018	0.841369442	0.198393553	2.22	1.96	6.972916667	0.004166667	6.96875	0.98	ApexAlpha	A_1_4B	39.53868103		
ARS1-B11-01664-08	ARS1-11-00897	018	0.316507398	0.072714185	2.22	1.96	0.24375	0	0.24375	0.98	ApexAlpha	A_1_4B	42.83360672		
ARS1-B11-01664-08	ARS1-11-00897	018	0.693308664	0.163054942	2.22	1.96	6.146527778	0.002777778	6.14375	0.98	ApexAlpha	A_1_4B	36.84606552		
ARS1-B11-01664-09	ARS1-11-00897	019	0.37374233	0.085188939	2.22	1.96	0.943055556	0.001388889	0.941666667	0.98	ApexAlpha	A_1_5A	31.55294228		
ARS1-B11-01664-09	ARS1-11-00897	019	0.847744598	0.198393553	2.22	1.96	0.468055556	0.002083333	0.465972222	0.98	ApexAlpha	A_1_5A	24.95882797		
ARS1-B11-01664-09	ARS1-11-00897	019	0.323896943	0.072714185	2.22	1.96	0.009722222	0	0.009722222	0.98	ApexAlpha	A_1_5A	6.112156391		
ARS1-B11-01664-09	ARS1-11-00897	019	0.699671063	0.163054942	2.22	1.96	0.254861111	0.002083333	0.252777778	0.98	ApexAlpha	A_1_5A	35.00598907		
ARS1-B11-01664-10	ARS1-11-00897	020	0.36790579	0.085188939	2.22	1.96	1.446527778	0.001388889	1.445138889	0.98	ApexAlpha	A_1_5B	34.68064888		
ARS1-B11-01664-10	ARS1-11-00897	020	0.841927399	0.198393553	2.22	1.96	5.642361111	0.006944444	5.635416667	0.98	ApexAlpha	A_1_5B	35.38989639		
ARS1-B11-01664-10	ARS1-11-00897	020	0.317154136	0.072714185	2.22	1.96	0.186111111	0.000694444	0.185416667	0.98	ApexAlpha	A_1_5B	31.37195396		
ARS1-B11-01664-10	ARS1-11-00897	020	0.693865505	0.163054942	2.22	1.96	5.102777778	0.003472222	5.099305556	0.98	ApexAlpha	A_1_5B	34.7035675		
ARS1-B11-01664-11	ARS1-11-00897	021	0.367878281	0.085188939	2.22	1.96	1.441666667	0.001388889	1.440277778	0.98	ApexAlpha	A_1_6A	39.60801315		
ARS1-B11-01664-11	ARS1-11-00897	021	0.841899933	0.198393553	2.22	1.96	4.970138889	0.004166667	4.965972222	0.98	ApexAlpha	A_1_6A	39.67454147		
ARS1-B11-01664-11	ARS1-11-00897	021	0.317122299	0.072714185	2.22	1.96	0.1625	0.001388889	0.161111111	0.98	ApexAlpha	A_1_6A	29.86603737		
ARS1-B11-01664-11	ARS1-11-00897	021	0.693838094	0.163054942	2.22	1.96	4.245138889	0.008333333	4.236805556	0.98	ApexAlpha	A_1_6A	42.12785339		
ARS1-B11-01664-12	ARS1-11-00897	022	0.366186699	0.085188939	2.22	1.96	1.722916667	0	1.722916667	0.98	ApexAlpha	A_1_6B	64.28845215		
ARS1-B11-01664-12	ARS1-11-00897	022	0.840200914	0.198393553	2.22	1.96	17.61458333	0.001388889	17.61319444	0.98	ApexAlpha	A_1_6B	76.40910339		
ARS1-B11-01664-12	ARS1-11-00897	022	0.31515293	0.072714185	2.22	1.96	0.577777778	0	0.577777778	0.98	ApexAlpha	A_1_6B	67.9863205		
ARS1-B11-01664-12	ARS1-11-00897	022	0.692142467	0.163054942	2.22	1.96	16.34027778	0.000694444	16.33958333	0.98	ApexAlpha	A_1_6B	76.08847046		
ARS1-B11-01664-13	ARS1-11-00897	023	0.372384092	0.085188939	2.22	1.96	1.022916667	0.000694444	1.022222222	0.98	ApexAlpha	A_2_1A	29.11910248		
ARS1-B11-01664-13	ARS1-11-00897	023	0.846388508	0.198393553	2.22	1.96	0.770833333	0.002083333	0.76875	0.98	ApexAlpha	A_2_1A	31.36332893		
ARS1-B11-01664-13	ARS1-11-00897	023	0.322325076	0.072714185	2.22	1.96	0.022916667	0	0.022916667	0.98	ApexAlpha	A_2_1A	11.45227432		
ARS1-B11-01664-13	ARS1-11-00897	023	0.698317685	0.163054942	2.22	1.96	0.46875	0.000694444	0.468055556	0.98	ApexAlpha	A_2_1A	29.78630257		
ARS1-B11-01664-14	ARS1-11-00897	024	0.448072894	0.085188939	2.22	1.96	0.175	0.002777778	0.172222222	0.98	ApexAlpha	A_2_1B	10.00212955		
ARS1-B11-01664-14	ARS1-11-00897	024	0.921982269	0.198393553	2.22	1.96	86.55625	0.001388889	86.55486111	0.98	ApexAlpha	A_2_1B	4.879087925		
ARS1-B11-01664-14	ARS1-11-00897	024	0.409947115	0.072714185	2.22	1.96	41.0125	0.000694444	41.01180556	0.98	ApexAlpha	A_2_1B	137.4632874		
ARS1-B11-01664-14	ARS1-11-00897	024	0.77376026	0.163054942	2.22	1.96	83.02013889	0.002083333	83.01805556	0.98	ApexAlpha	A_2_1B	227.3585358		
ARS1-B11-01664-15	ARS1-11-00897	025	0.368211149	0.085188939	2.22	1.96	1.402777778	0.001388889	1.401388889	0.98	ApexAlpha	A_2_2A	32.61607742		
ARS1-B11-01664-15	ARS1-11-00897	025	0.842232284	0.198393553	2.22	1.96	1.970138889	0	1.970138889	0.98	ApexAlpha	A_2_2A	36.27605438		
ARS1-B11-01664-15	ARS1-11-00897	025	0.317507532	0.072714185	2.22	1.96	0.106944444	0	0.106944444	0.98	ApexAlpha	A_2_2A	11.46146107		
ARS1-B11-01664-15	ARS1-11-00897	025	0.69416978	0.163054942	2.22	1.96	5.092361111	0.002777778	5.089583333	0.98	ApexAlpha	A_2_2A	38.88392258		

ABatchSampleID	SDG	Fraction	TracerKnownACT	TracerIsotope	TracerRefDate	TracerRefACT	TracerKnown	Halflife1	Halflife2	Halflife3	TPUF_1	TPUF_2	TPUF_3	TPUF_4	TPUF_5	TPUF_6	DeltaT1	Delta
ARS1-B11-01664-01				U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-01				U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-01				U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-01				U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-02				U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-02				U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-02				U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-02				U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-03				U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-03				U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-03				U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-03				U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	6.860208333	
ARS1-B11-01664-04	ARS1-11-00897	014		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-04	ARS1-11-00897	014		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-04	ARS1-11-00897	014		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-04	ARS1-11-00897	014		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-05	ARS1-11-00897	015		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-05	ARS1-11-00897	015		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-05	ARS1-11-00897	015		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-05	ARS1-11-00897	015		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-06	ARS1-11-00897	016		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-06	ARS1-11-00897	016		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-06	ARS1-11-00897	016		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-06	ARS1-11-00897	016		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-07	ARS1-11-00897	017		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-07	ARS1-11-00897	017		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-07	ARS1-11-00897	017		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-07	ARS1-11-00897	017		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-08	ARS1-11-00897	018		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-08	ARS1-11-00897	018		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-08	ARS1-11-00897	018		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-08	ARS1-11-00897	018		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-09	ARS1-11-00897	019		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-09	ARS1-11-00897	019		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-09	ARS1-11-00897	019		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-09	ARS1-11-00897	019		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-10	ARS1-11-00897	020		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-10	ARS1-11-00897	020		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-10	ARS1-11-00897	020		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-10	ARS1-11-00897	020		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-11	ARS1-11-00897	021		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-11	ARS1-11-00897	021		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-11	ARS1-11-00897	021		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-11	ARS1-11-00897	021		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-12	ARS1-11-00897	022		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-12	ARS1-11-00897	022		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-12	ARS1-11-00897	022		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-12	ARS1-11-00897	022		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-13	ARS1-11-00897	023		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-13	ARS1-11-00897	023		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-13	ARS1-11-00897	023		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-13	ARS1-11-00897	023		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	21.05625	
ARS1-B11-01664-14	ARS1-11-00897	024		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-14	ARS1-11-00897	024		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-14	ARS1-11-00897	024		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-14	ARS1-11-00897	024		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	19.05625	
ARS1-B11-01664-15	ARS1-11-00897	025		U-232	6/9/2010			25162.03704			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-15	ARS1-11-00897	025		U-232	6/9/2010			89745370.37			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-15	ARS1-11-00897	025		U-232	6/9/2010			2.5706E+11			0	0.02	0.05833	0	0	0	20.05625	
ARS1-B11-01664-15	ARS1-11-00897	025		U-232	6/9/2010			1.63194E+12			0	0.02	0.05833	0	0	0	20.05625	

ABatchSampleID	SDG	Fraction	DeltaT3	DeltaT4	DeltaT5	DeltaT6	DF1	DF2	DF3	IF1	IF2	SysErr	K_Val	K_MDA	AnalysisCode	UserID	ModDate
ARS1-B11-01664-01							0.999811037					0.061663514	0.203905506	293.6239281		ABAILEY	5/11/2011
ARS1-B11-01664-01							0.999999947					0.061663514	0.20414859	293.9739701		ABAILEY	5/11/2011
ARS1-B11-01664-01							1					0.061663514	0.176124194	253.6166394		ABAILEY	5/11/2011
ARS1-B11-01664-01							1					0.061663514	0.204557717	294.5631119		ABAILEY	5/11/2011
ARS1-B11-01664-02							0.999811037					0.061663514	0.198147267	285.3320648		ABAILEY	5/11/2011
ARS1-B11-01664-02							0.999999947					0.061663514	0.198383487	285.6722217		ABAILEY	5/11/2011
ARS1-B11-01664-02							1					0.061663514	0.171150493	246.4567093		ABAILEY	5/11/2011
ARS1-B11-01664-02							1					0.061663514	0.19878106	286.2447263		ABAILEY	5/11/2011
ARS1-B11-01664-03							0.999811037					0.061663514	0.193164757	278.1572503		ABAILEY	5/11/2011
ARS1-B11-01664-03							0.999999947					0.061663514	0.193395037	278.4688538		ABAILEY	5/11/2011
ARS1-B11-01664-03							1					0.061663514	0.16684663	240.2594347		ABAILEY	5/11/2011
ARS1-B11-01664-03							1					0.061663514	0.193782613	279.0469624		ABAILEY	5/11/2011
ARS1-B11-01664-04	ARS1-11-00897	014					0.999447656					0.061663514	0.074005475	106.5678842	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-04	ARS1-11-00897	014					0.999999845					0.061663514	0.074120632	106.7337099	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-04	ARS1-11-00897	014					1					0.061663514	0.063945765	92.08190226	ASP-A-024	ABAILEY	5/11/2011
AR51-B11-01664-04	ARS1-11-00897	014					1					0.061663514	0.074269182	106.9476217	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-05	ARS1-11-00897	015					0.999447656					0.061663514	0.139434284	200.7653687	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-05	ARS1-11-00897	015					0.999999845					0.061663514	0.139651252	201.0978022	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-05	AR51-11-00897	015					1					0.061663514	0.120480708	173.492219	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-05	ARS1-11-00897	015					1					0.061663514	0.139931135	201.500835	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-06	ARS1-11-00897	016					0.999475189					0.061663514	0.155500183	223.9202634	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-06	AR51-11-00897	016					0.999999853					0.061663514	0.155737861	224.26252	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-06	ARS1-11-00897	016					1					0.061663514	0.134359036	193.4770121	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-06	AR51-11-00897	016					1					0.061663514	0.156049984	224.7119769	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-07	ARS1-11-00897	017					0.999447656					0.061663514	0.168163854	242.1559493	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-07	ARS1-11-00897	017					0.999999845					0.061663514	0.168425526	242.5327578	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-07	ARS1-11-00897	017					1					0.061663514	0.145305011	209.2392152	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-07	AR51-11-00897	017					1					0.061663514	0.166763078	243.016833	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-08	AR51-11-00697	018					0.999447656					0.061663514	0.183119201	263.6916498	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-08	AR51-11-00897	018					0.999999845					0.061663514	0.183404145	264.1019691	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-08	ARS1-11-00897	016					1					0.061663514	0.158227448	227.8475257	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-08	ARS1-11-00897	018					1					0.061663514	0.183771717	264.6312726	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-09	ARS1-11-00697	019					0.999420125					0.061663514	0.112943656	162.6388649	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-09	ARS1-11-00897	019					0.999999837					0.061663514	0.113122518	162.8964263	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-09	ARS1-11-00897	019					1					0.061663514	0.097593691	140.5349157	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-09	ARS1-11-00897	019					1					0.061663514	0.113349235	163.2228986	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-10	ARS1-11-00897	020					0.999447656					0.061663514	0.173675513	250.0927389	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-10	ARS1-11-00897	020					0.999999845					0.061663514	0.173945762	250.4818975	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-10	ARS1-11-00897	020					1					0.061663514	0.150067459	216.0971414	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-10	AR51-11-00897	020					1					0.061663514	0.174294378	250.9839041	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-11	ARS1-11-00897	021					0.999447656					0.061663514	0.174117542	250.7292607	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-11	ARS1-11-00897	021					0.999999845					0.061663514	0.174388479	251.1194098	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-11	ARS1-11-00897	021					1					0.061663514	0.150449402	216.6471396	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-11	ARS1-11-00897	021					1					0.061663514	0.174737982	251.622694	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-12	ARS1-11-00897	022					0.999420125					0.061663514	0.206646911	297.5715515	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-12	ARS1-11-00897	022					0.999999837					0.061663514	0.206974165	298.0427978	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-12	ARS1-11-00897	022					1					0.061663514	0.178561909	257.1291489	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-12	ARS1-11-00897	022					1					0.061663514	0.207388977	298.6401265	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-13	AR51-11-00897	023					0.999420125					0.061663514	0.122967171	177.0727263	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-13	ARS1-11-00897	023					0.999999837					0.061663514	0.123161907	177.3531458	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-13	AR51-11-00897	023					1					0.061663514	0.106254929	153.0070975	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-13	ARS1-11-00897	023					1					0.061663514	0.123408744	177.7085918	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-14	AR51-11-00897	024					0.999475189					0.061663514	0.020677772	29.77599213	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-14	ARS1-11-00897	024					0.999999853					0.061663514	0.020709378	29.82150399	ASP-A-024	ABAILEY	5/11/2011
AR51-B11-01664-14	ARS1-11-00897	024					1					0.061663514	0.01786651	25.72777427	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-14	ARS1-11-00897	024					1					0.061663514	0.020750883	29.88127093	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-15	ARS1-11-00897	025					0.999447656					0.061663514	0.168915463	243.2362668	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-15	ARS1-11-00897	025					0.999999845					0.061663514	0.169178305	243.6167595	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-15	ARS1-11-00897	025					1					0.061663514	0.145954452	210.1744112	ASP-A-024	ABAILEY	5/11/2011
ARS1-B11-01664-15	ARS1-11-00897	025					1					0.061663514	0.169517366	244.1050072	ASP-A-024	ABAILEY	5/11/2011

Alpha Spectroscopy Count Log Book – Canberra System

Sample Number	Batch Number	Chamber Number	Spectrum Number	Type of Analysis	Analysis Date and Time	Analyst Initials	Count Time (seconds)
11-01663-11	B11-01663	A32B	12215	U	5-9-11 1105	[illegible]	86400
11-01663-12	↓	A33A	12216	↓	↓	[illegible]	↓
11-01663-13	↓	A33B	12219	↓	↓	[illegible]	↓
11-01663-14	↓	A34B	12218	↓	↓	[illegible]	↓
11-01663-15	↓	A36A	12220	↓	↓	[illegible]	↓
11-01663-16	↓	A36B	12217	↓	↓	[illegible]	↓ LSW 5-10-11
11-01664-01	B11-01664	A11A	12245	↓	5-10-11 1322	[illegible]	↓
11-01664-02	↓	A11B	12246	↓	↓	[illegible]	↓
11-01664-03	↓	A12A	12247	↓	↓	[illegible]	↓
11-01664-04	↓	A12B	12248	↓	↓	[illegible]	↓
11-01664-05	↓	A13A	12249	↓	↓	[illegible]	↓
11-01664-06	↓	A13B	12250	↓	↓	[illegible]	↓
11-01664-07	↓	A14A	12251	↓	↓	[illegible]	↓
11-01664-08	↓	A14B	12253	↓	↓	[illegible]	↓
11-01664-09	↓	A15A	12254	↓	↓	[illegible]	↓

Reviewed By: LSW Date: 5-17-11
Initials

Alpha Spectroscopy Count Log Book – Canberra System

Sample Number	Batch Number	Chamber Number	Spectrum Number	Type of Analysis	Analysis Date and Time	Analyst Initials	Count Time (seconds)
11-01664-10	B11-01664	A15B	12255	U	5-10-11 1322	[illegible]	86400
11-01664-11	↓	A16A	12256	↓	↓	[illegible]	↓
11-01664-12	↓	A16B	12257	↓	↓	[illegible]	↓
11-01664-13	↓	A21A	12258	↓	↓	[illegible]	↓
11-01664-14	↓	A21B	~~12259~~ 12261 [illegible] 5-11-11	↓	↓	[illegible]	↓
11-01664-15	↓	A22A	12260	↓	↓	[illegible]	↓
A25A	Source Check	A25A	N/A	Source	5-10-11 1330 ~~1430~~ [illegible] 5-11	[illegible]	7200
A36B	↓	A36B	N/A	↓	↓	[illegible]	↓
11-01664-14	B11-01664	A11A	12262	U	5-11-11 1633	[illegible]	3600
11-01786-04	B11-01786A	A11A	12408	Th	5-11-11 1835	[illegible]	86400
11-01786-05	↓	A11B	12409	↓	↓	[illegible]	↓
11-01786-06	↓	A12A	12410	↓	↓	[illegible]	↓
11-01786-07	↓	A12B	12411	↓	↓	[illegible]	↓
11-01786-08	↓	A13A	12412	↓	↓	[illegible]	↓
11-01786-09	↓	A13B	12413	↓	↓	[illegible]	↓

Reviewed By: LSW Initials Date: 5-17-11

AMERICAN RADIATION SERVICES, INC.

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American Radiation Services Analytical Reports

for

Summit Environmental Technologies

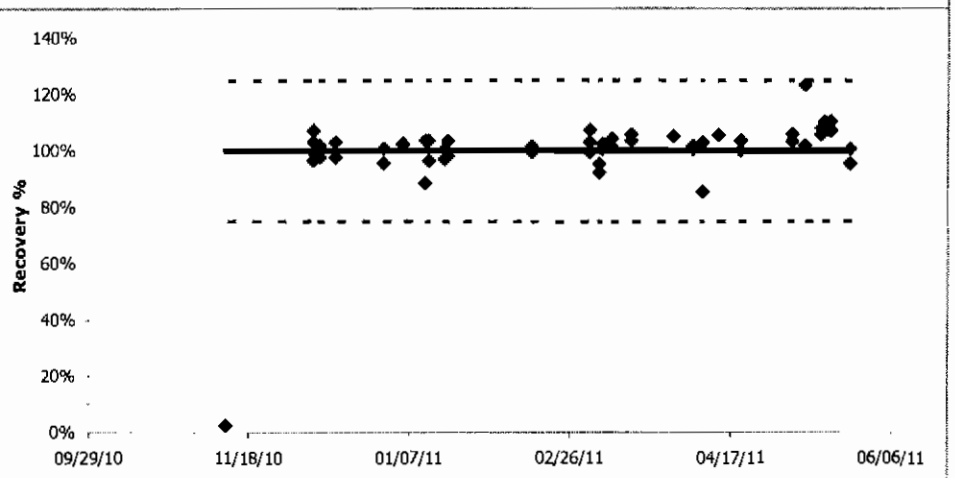
Uranium Alpha Spectroscopy Control Charts

American Radiation Services
Baton Rouge Laboratory

QC Chart

Printed: 6/2/2011 4:48 PM
Page 1 of 1

U LCS



Average	STDEV	n	UCL	LCL
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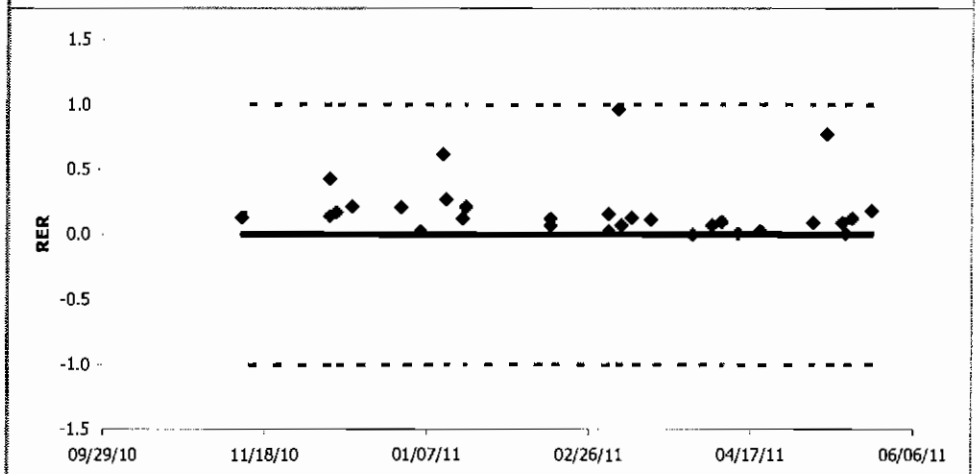
U RER



		n	UCL	LCL
		30	1.0000	-1.0000

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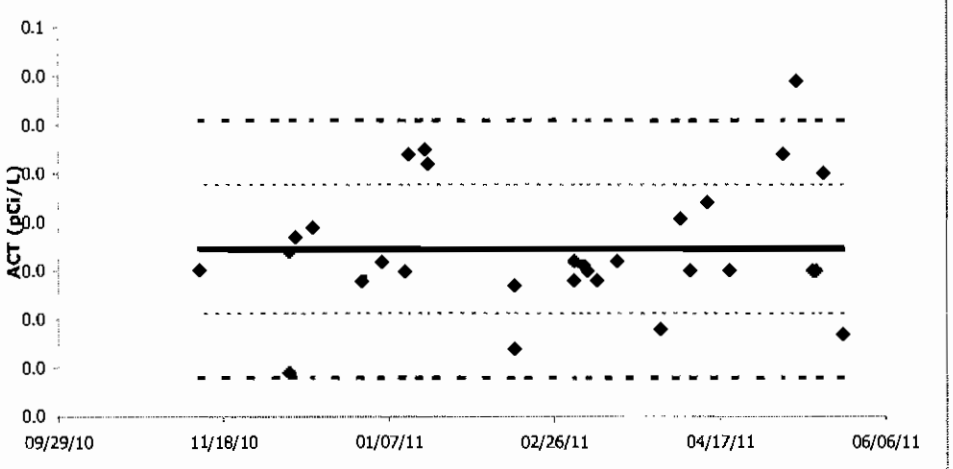

Average	STDEV	n	UCL	LCL
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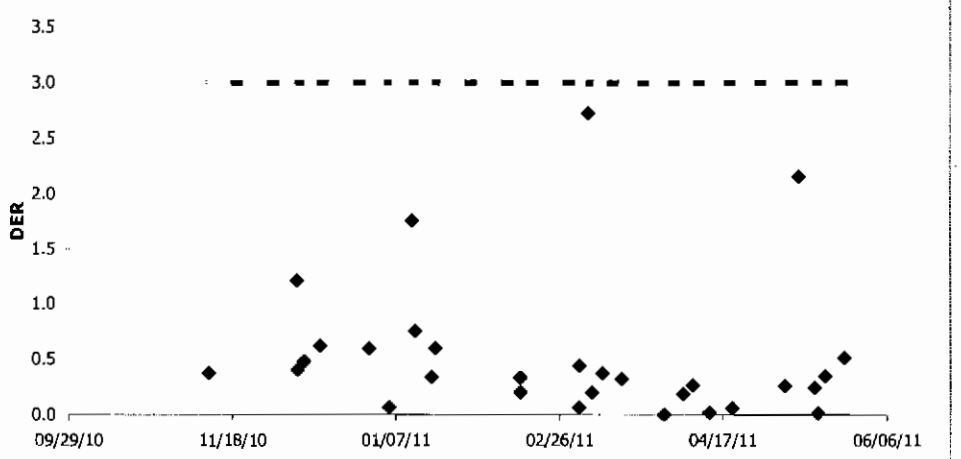
U DER



		n	UCL	
		30	3.0000	

Analysis Batch Report

Analysis Batch ID **ARS1-B11-01984**

Method	ARS-026	Analysis	ASP-A-024	Matrix	AQ
Description	Uranium in Water				

ABatch Sample ID	Type	Blind Iso1	Blind Iso2	Blind Iso3	SDG	FR	Run	Client ID	Isotope Group	Lab Deadline
ARS1-B11-01984-01	LCS	B-11798								
ARS1-B11-01984-02	LCSD	B-11799								
ARS1-B11-01984-03	MBL									
ARS1-B11-01984-04	TRG				**ARS1-11-00897**	001	2	MW-1-110419	STD	05/03/11
ARS1-B11-01984-05	TRG				**ARS1-11-00897**	002	2	MW-2-110421	STD	05/03/11
ARS1-B11-01984-06	TRG				**ARS1-11-00897**	003	2	MW-2-2-110421	STD	05/03/11
ARS1-B11-01984-07	TRG				**ARS1-11-00897**	004	2	JPOP41S-110421	STD	05/03/11
ARS1-B11-01984-08	TRG				**ARS1-11-00897**	005	2	MD-SW-110420	STD	05/03/11
ARS1-B11-01984-09	TRG				**ARS1-11-00897**	006	2	MW-3-110420	STD	05/03/11
ARS1-B11-01984-10	TRG				**ARS1-11-00897**	007	2	MW-4-110420	STD	05/03/11
ARS1-B11-01984-11	TRG				**ARS1-11-00897**	008	2	MW-6-110420	STD	05/03/11
ARS1-B11-01984-12	TRG				**ARS1-11-00897**	009	2	MW-7-110419	STD	05/03/11
ARS1-B11-01984-13	TRG				**ARS1-11-00897**	010	2	MW-8-110419	STD	05/03/11
ARS1-B11-01984-14	TRG				**ARS1-11-00897**	011	2	MW-MD-02-110420	STD	05/03/11
ARS1-B11-01984-15	TRG				**ARS1-11-00897**	012	2	MW-MD-110420	STD	05/03/11
ARS1-B11-01984-16	TRG				**ARS1-11-00897**	013	2	NPOP20E-110420	STD	05/03/11
ARS1-B11-01984-17	TRG				**ARS1-11-00897**	024	2	SPOP35-110421	STD	05/03/11

ARS1-B11-01984

ABatch	ABatchSampleID	ClientID	SampleType	EmptyWt	FilledWt	NetWt	Exp Val	StdID	Isotope	TracerDate	UserID	ModDate	HL days	Ref Date	Cert dpm/g	Curr ACT
ARS1-B11-01984	ARS1-B11-01984-01		LCS	81.675	82.720	1.045	9.467	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-02		LCSD	73.488	74.535	1.047	9.488	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-03		MBL	63.405	64.451	1.047	9.486	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-04	MW-1-110419	TRG	1.778	2.825	1.047	9.492	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-05	MW-2-110421	TRG	1.784	2.827	1.042	9.448	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-06	MW-2-2-110421	TRG	1.857	2.898	1.041	9.437	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-07	JPOP41S-110421	TRG	1.768	2.808	1.040	9.425	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-08	MD-SW-110420	TRG	1.744	2.783	1.039	9.418	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-09	MW-3-110420	TRG	1.827	2.866	1.039	9.417	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-10	MW-4-110420	TRG	1.736	2.774	1.038	9.409	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-11	MW-6-110420	TRG	1.745	2.783	1.038	9.408	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-12	MW-7-110419	TRG	1.744	2.781	1.037	9.397	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-13	MW-8-110419	TRG	1.800	2.837	1.037	9.401	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-14	MW-MD-02-110420	TRG	1.764	2.802	1.037	9.401	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-15	MW-MD-110420	TRG	1.802	2.839	1.037	9.396	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-16	NPOP20E-110420	TRG	1.811	2.848	1.037	9.399	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064
ARS1-B11-01984	ARS1-B11-01984-17	SPOP35-110421	TRG	1.868	2.905	1.037	9.395	S-0241	U-232	5/26/2011	JBROWN	5/26/2011	25162.037	6/9/2010	9.152	9.064

ARS-026

ID_31001_026	ABatch	ABatchSampleID	ClientID	Aliquot	AliquotUnits	UserID	ModDate	IC_ID	BalanceSerialNumber
9154	ARS1-B11-01984	ARS1-B11-01984-01		1	L	JBROWN	05/26/2011 15:21:24		
9155	ARS1-B11-01984	ARS1-B11-01984-02		1	L	JBROWN	05/26/2011 15:21:24		
9156	ARS1-B11-01984	ARS1-B11-01984-03		1	L	JBROWN	05/26/2011 15:21:24		
9157	ARS1-B11-01984	ARS1-B11-01984-04	MW-1-110419	0.5	L	JBROWN	05/26/2011 15:21:24	87939	
9158	ARS1-B11-01984	ARS1-B11-01984-05	MW-2-110421	0.5	L	JBROWN	05/26/2011 15:21:24	87940	
9159	ARS1-B11-01984	ARS1-B11-01984-06	MW-2-2-110421	0.5	L	JBROWN	05/26/2011 15:21:24	87941	
9160	ARS1-B11-01984	ARS1-B11-01984-07	JPOP41S-110421	0.5	L	JBROWN	05/26/2011 15:21:24	87942	
9161	ARS1-B11-01984	ARS1-B11-01984-08	MD-SW-110420	0.5	L	JBROWN	05/26/2011 15:21:24	87942	
9162	ARS1-B11-01984	ARS1-B11-01984-09	MW-3-110420	0.5	L	JBROWN	05/26/2011 15:21:24	87942	
9163	ARS1-B11-01984	ARS1-B11-01984-10	MW-4-110420	0.5	L	JBROWN	05/26/2011 15:21:24	87942	
9164	ARS1-B11-01984	ARS1-B11-01984-11	MW-6-110420	0.5	L	JBROWN	05/26/2011 15:21:25	87942	
9165	ARS1-B11-01984	ARS1-B11-01984-12	MW-7-110419	0.5	L	JBROWN	05/26/2011 15:21:25	87942	
9166	ARS1-B11-01984	ARS1-B11-01984-13	MW-8-110419	0.5	L	JBROWN	05/26/2011 15:21:25	87942	
9167	ARS1-B11-01984	ARS1-B11-01984-14	MW-MD-02-110420	0.5	L	JBROWN	05/26/2011 15:21:25	87942	
9168	ARS1-B11-01984	ARS1-B11-01984-15	MW-MD-110420	0.5	L	JBROWN	05/26/2011 15:21:25	87942	
9169	ARS1-B11-01984	ARS1-B11-01984-16	NPOP20E-110420	0.5	L	JBROWN	05/26/2011 15:21:25	87942	
9170	ARS1-B11-01984	ARS1-B11-01984-17	SPOP35-110421	0.5	L	JBROWN	05/26/2011 15:21:25	87942	

Standards Activity as of: 05/29/11 16:

Active	Std ID	Isotope	PSCLT	Verification Date	Exp Date	Status	Ref Date	Ref ACT (dpm)	ACT at Date Above (dpm/g)	Halflife (days)	Parent ID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

USEPA

DateShipped 4/22/2011
CarrierName hand delivered
AirbillNo

CHAIN OF CUSTODY RECORD

Site # 0603
Contact Name [redacted]
Contact Phone [redacted]

No: 6-042211-001353-0001

Cooler #
Lab Summit Environmental
Lab Phone: 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	MW 8-110419	MW 8	Gross Alpha/Beta	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-8-110419	MW 8	Total Dissolved Solids	Ground Water	4/19/2011	1	500 ml poly	None	
	MW-8-110419	MW 8	Total Radium (226+228)	Ground Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	MW-8-110419	MW-8	TAL Metals/Hg	Ground Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Alkalinity	Ground Water	4/20/2011	1	NA	NA	
	MW-MD-02-110420	MW-MD	Alpha Spec -Uranium isotopes	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Anions (NO2,NO3 Cl SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-02-110420	MW-MD	Gamma Spec - Thorium	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-02-110420	MW-MD	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-02-110420	MW-MD	TAL Metals/Hg	Ground Water	4/20/2011	1	500 ml poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Alkalinity	Ground Water	4/20/2011	1	NA	NA	
	MW-MD-110420	MW-MD	Alpha Spec -Uranium isotopes	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Anions (NO2,NO3 Cl SO4)	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-110420	MW-MD	Gamma Spec - Thorium	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Gross Alpha/Beta	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	
	MW-MD-110420	MW-MD	Total Dissolved Solids	Ground Water	4/20/2011	1	500 ml poly	None	
	MW-MD-110420	MW-MD	Total Radium (226+228)	Ground Water	4/20/2011	1	1 L poly	HNO3 pH<2	

Special Instructions 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time

[redacted]

USEPA

DateShipped 4/22/2011
CarrierName hand delivered
AirbillNo

CHAIN OF CUSTODY RECORD

Site # 0603
Contact Name [redacted]
Contact Phone [redacted]

No: 6-042211-001353-0001

Cooler #
Lab Summit Environmental
Lab Phone 505-345-3335

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	RP-SW-01-110419	RP-01	Gross Alpha/Beta	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-01-110419	RP-01	Total Dissolved Solids	Surface Water	4/19/2011	1	500 ml poly	None	
	RP-SW-01-110419	RP-01	Total Radium (226+228)	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-01-110419	RP-01	TAL Metals/Hg	Surface Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Alkalinity	Surface Water	4/19/2011	1	NA	NA	
	RP-SW-BG-041911	RP-BG	Alpha Spec -Uranium isotopes	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Anions (NO2 NO3 Cl SO4)	Surface Water	4/19/2011	1	500 ml poly	None	
	RP-SW-BG-041911	RP-BG	Gamma Spec - Thorium	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Gross Alpha/Beta	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	Total Dissolved Solids	Surface Water	4/19/2011	1	500 ml poly	None	
	RP-SW-BG-041911	RP-BG	Total Radium (226+228)	Surface Water	4/19/2011	1	1 L poly	HNO3 pH<2	
	RP-SW-BG-041911	RP-BG	TAL Metals/Hg	Surface Water	4/19/2011	1	500 ml poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Alkalinity	Ground Water	4/21/2011	1	NA	NA	
	SPOP35-110421	SPOP35	Alpha Spec -Uranium isotopes	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Anions (NO2 NO3 Cl SO4)	Ground Water	4/21/2011	1	500 ml poly	None	
	SPOP35-110421	SPOP35	Gamma Spec - Thorium	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Gross Alpha/Beta	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	
	SPOP35-110421	SPOP35	Total Dissolved Solids	Ground Water	4/21/2011	1	500 ml poly	None	
	SPOP35-110421	SPOP35	Total Radium (226+228)	Ground Water	4/21/2011	1	1 L poly	HNO3 pH<2	

Special Instructions 5-7 day TAT
Level IV Deliverable

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
			[signature]	[illegible]	3:15		[signature]	[illegible]			

Technical Notes

ARS INTERNATIONAL		ARS1-B11-01984	
		ASP-A-024	
		ARS-026	
		AQ	
1	05/27/11 12:27	**CHEMISTRY**	B11-01984-07,16,17 did not plate well, there is a black film covering the entire plate. Tracer recovery/activity could be affected as a result.	JBROWN

5/28/2011 14:07:38

Apex-Alpha™

ASSIGNED SAMPLES REPORT

Date : 5/28/2011
Time : 14:07:38
User : countroom

SAMPLE	CHAMBER	GEOMETRY	DEVICE	CERTIFICATE
11-01985-01	A_1_1A	Shelf 2	Alpha Analyst10139	
11-01985-02	A_1_1B	Shelf 2	Alpha Analyst10139	
11-01985-03	A_1_2A	Shelf 2	Alpha Analyst10139	
11-01985-04	A_1_2B	Shelf 2	Alpha Analyst10139	
11-01985-05	A_1_3A	Shelf 2	Alpha Analyst10139	
11-01985-06	A_1_3B	Shelf 2	Alpha Analyst10139	
11-01985-07	A_1_4A	Shelf 2	Alpha Analyst10139	
11-01985-08	A_1_4B	Shelf 2	Alpha Analyst10139	
11-01985-09	A_1_5A	Shelf 2	Alpha Analyst10139	
11-01985-10	A_1_5B	Shelf 2	Alpha Analyst10139	
11-01985-11	A_1_6A	Shelf 2	Alpha Analyst10139	
11-01985-12	A_1_6B	Shelf 2	Alpha Analyst10139	
11-01985-13	A_2_1A	Shelf 2	Alpha Analyst10139	
11-01985-14	A_2_1B	Shelf 2	Alpha Analyst10139	
11-01985-15	A_2_2A	Shelf 2	Alpha Analyst10139	
11-01984-01	A_2_3B	Shelf 2	Alpha Analyst10139	
11-01984-02	A_2_4A	Shelf 2	Alpha Analyst10139	
11-01984-03	A_2_4B	Shelf 2	Alpha Analyst10139	
11-01984-04	A_2_5A	Shelf 2	Alpha Analyst10139	
11-01984-05	A_2_5B	Shelf 2	Alpha Analyst10139	
11-01984-06	A_3_1A	Shelf 2	Alpha Analyst10139	
11-01984-07	A_3_1B	Shelf 2	Alpha Analyst10139	
11-01984-08	A_3_2B	Shelf 2	Alpha Analyst10139	
11-01984-09	A_3_3A	Shelf 2	Alpha Analyst10139	
11-01984-10	A_3_3B	Shelf 2	Alpha Analyst10139	
11-01984-11	A_3_4B	Shelf 2	Alpha Analyst10139	
11-01984-12	A_3_5A	Shelf 2	Alpha Analyst10139	
11-01984-13	A_3_6A	Shelf 2	Alpha Analyst10139	
11-01984-14	A_3_6B	Shelf 2	Alpha Analyst10139	

5/29/2011 16:04:17

Apex-Alpha™

ASSIGNED SAMPLES REPORT

Date : 5/29/2011
Time : 16:04:17
User : countroom

SAMPLE	CHAMBER	GEOMETRY	DEVICE	CERTIFICATE
11-01946-01	A_1_1A	Shelf 2	Alpha Analyst10139	
11-01946-02	A_1_1B	Shelf 2	Alpha Analyst10139	
11-01946-03	A_1_2A	Shelf 2	Alpha Analyst10139	
11-01946-04	A_1_2B	Shelf 2	Alpha Analyst10139	
11-01946-05	A_1_3A	Shelf 2	Alpha Analyst10139	
11-01946-06	A_1_3B	Shelf 2	Alpha Analyst10139	
11-01946-07	A_1_4A	Shelf 2	Alpha Analyst10139	
11-01946-08	A_1_4B	Shelf 2	Alpha Analyst10139	
11-01946-09	A_1_5A	Shelf 2	Alpha Analyst10139	
11-01946-10	A_1_5B	Shelf 2	Alpha Analyst10139	
11-01946-11	A_1_6A	Shelf 2	Alpha Analyst10139	
11-01947-01	A_2_1A	Shelf 2	Alpha Analyst10139	
11-01947-02	A_2_1B	Shelf 2	Alpha Analyst10139	
11-01947-03	A_2_2A	Shelf 2	Alpha Analyst10139	
11-01947-04	A_2_3B	Shelf 2	Alpha Analyst10139	
11-01947-05	A_2_4A	Shelf 2	Alpha Analyst10139	
11-01947-06	A_2_4B	Shelf 2	Alpha Analyst10139	
11-01947-07	A_2_5A	Shelf 2	Alpha Analyst10139	
11-01947-08	A_2_5B	Shelf 2	Alpha Analyst10139	
11-01947-09	A_3_1A	Shelf 2	Alpha Analyst10139	
11-01947-10	A_3_1B	Shelf 2	Alpha Analyst10139	
11-01947-11	A_3_2B	Shelf 2	Alpha Analyst10139	
11-01984-15	A_3_5A	Shelf 2	Alpha Analyst10139	
11-01984-16	A_3_6A	Shelf 2	Alpha Analyst10139	
11-01984-17	A_3_6B	Shelf 2	Alpha Analyst10139	

****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: LCS
Batch Identification: B11-01984 A
Sample Identification: 11-01984-01
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 3B
Chamber Serial Number: 12044981B
Detector Serial Number: 55799
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:29
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.7 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2134 +/- 0.0044 on 5/24/10 08:35:23
Effective Efficiency: 0.2134 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

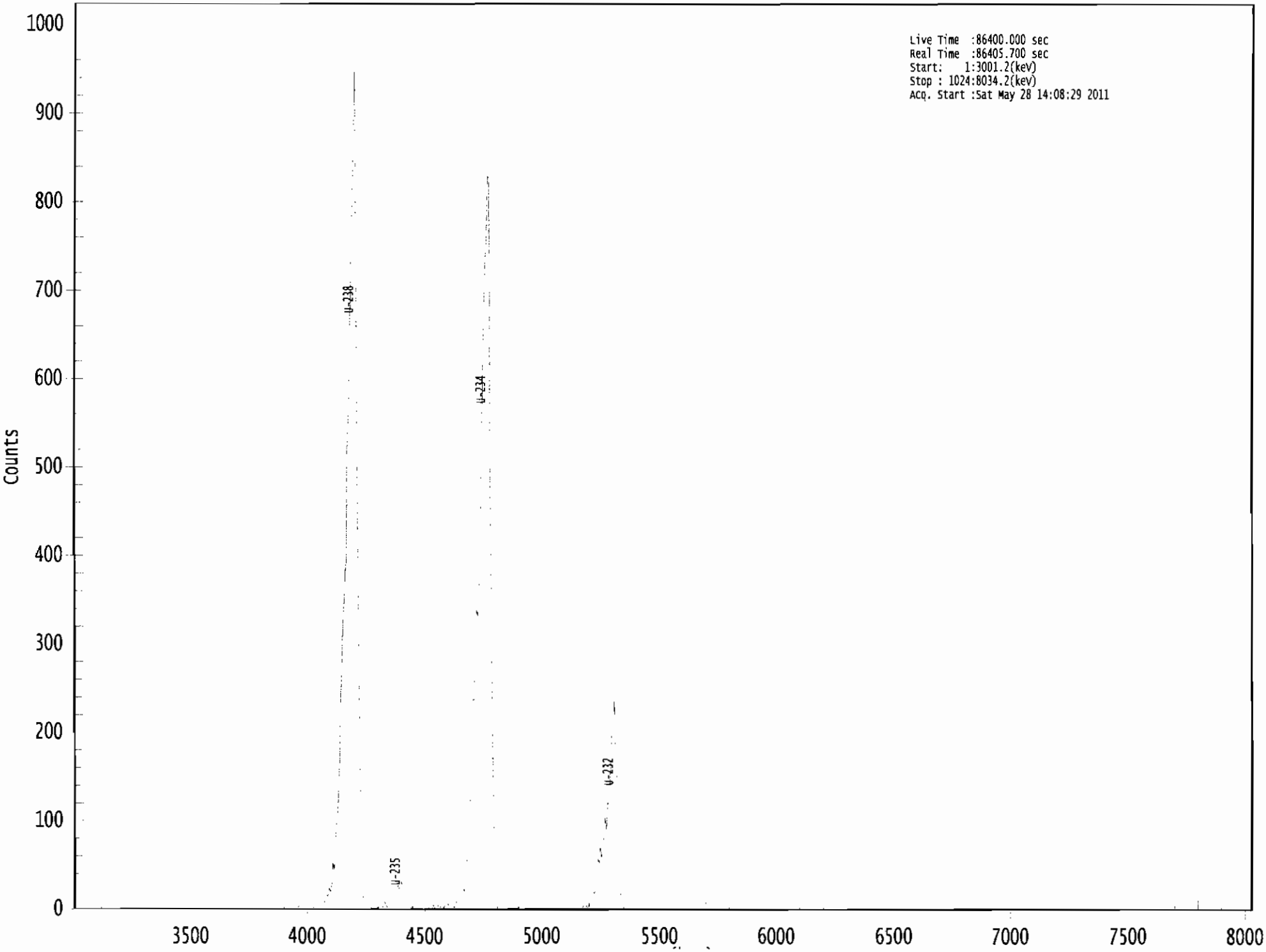
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5287.604	2423.00	49.22	0.00	0.00E+000	39
U-234	4748.538	9650.00	98.23	0.00	0.00E+000	44
U-235	4380.521	348.00	18.65	0.00	0.00E+000	47
U-238	4181.897	10054.00	100.27	0.00	0.00E+000	44

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.5587E+000	2.89	3.9743E-003	2.06
U-234	1.4173E+001	2.29	3.9743E-003	2.06
U-235	6.3051E-001	5.74	4.9028E-003	2.06
U-238	1.4703E+001	2.28	3.9573E-003	2.06

Errors quoted at 1.000 sigma

0000012945.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: LCSD
Batch Identification: B11-01984 A
Sample Identification: 11-01984-02
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4A
Chamber Serial Number: 12044982A
Detector Serial Number: 55800
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:32
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/13/10 09:49:41
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

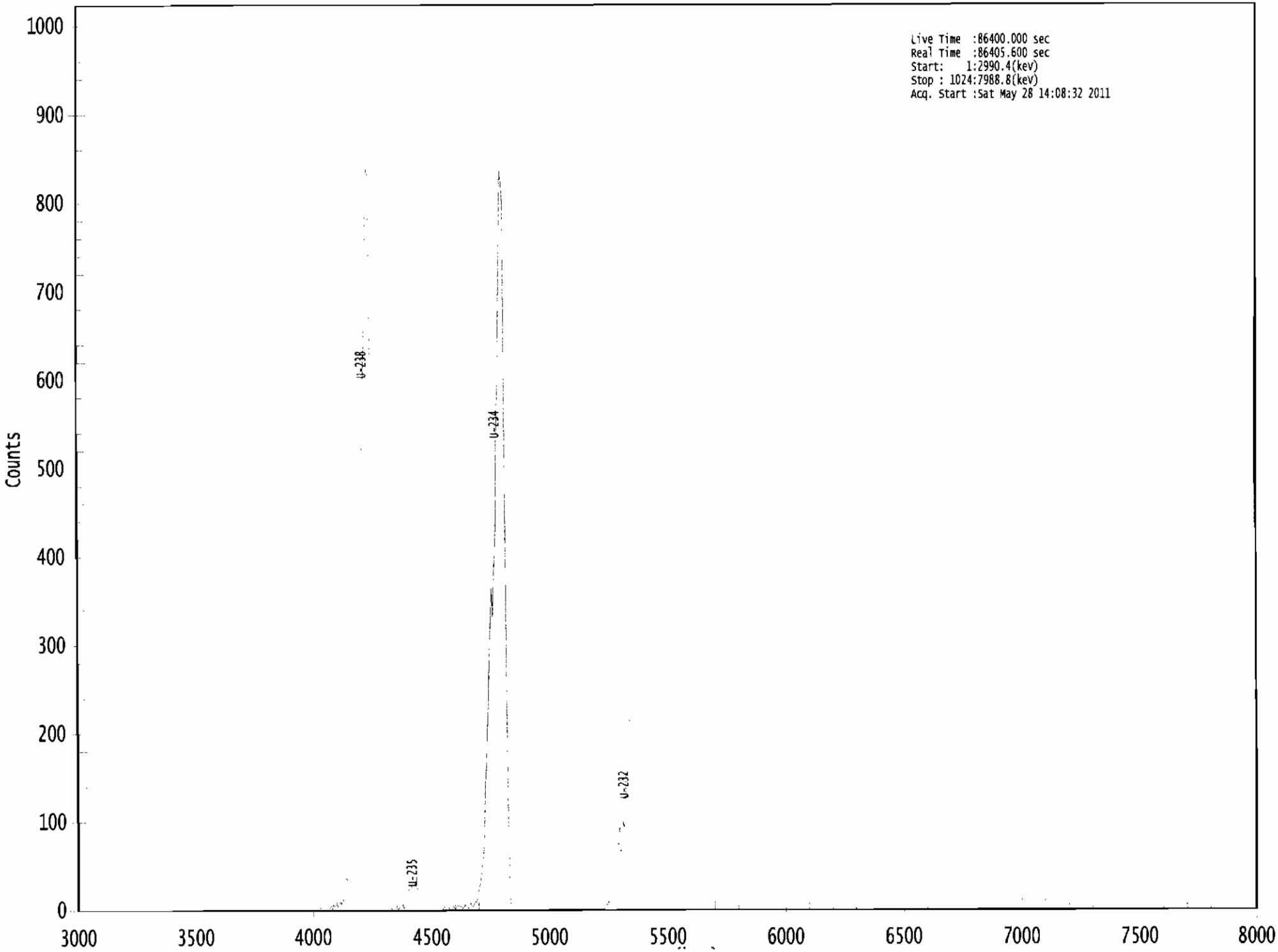
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5313.184	2366.00	48.64	0.00	0.00E+000	38
U-234	4775.059	9438.00	97.15	0.00	0.00E+000	43
U-235	4410.339	343.00	18.52	0.00	0.00E+000	14
U-238	4208.217	9439.00	97.15	0.00	0.00E+000	46

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.2967E+000	2.90	3.7704E-003	2.05
U-234	1.3150E+001	2.30	3.7704E-003	2.05
U-235	5.8957E-001	5.78	4.6513E-003	2.05
U-238	1.3095E+001	2.30	3.7543E-003	2.05

Errors quoted at 1.000 sigma

0000012946.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: MBL
Batch Identification: B11-01984 A
Sample Identification: 11-01984-03
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4B
Chamber Serial Number: 12044982B
Detector Serial Number: 55801
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:34
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2158 +/- 0.0044 on 4/13/10 09:50:10
Effective Efficiency: 0.2158 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

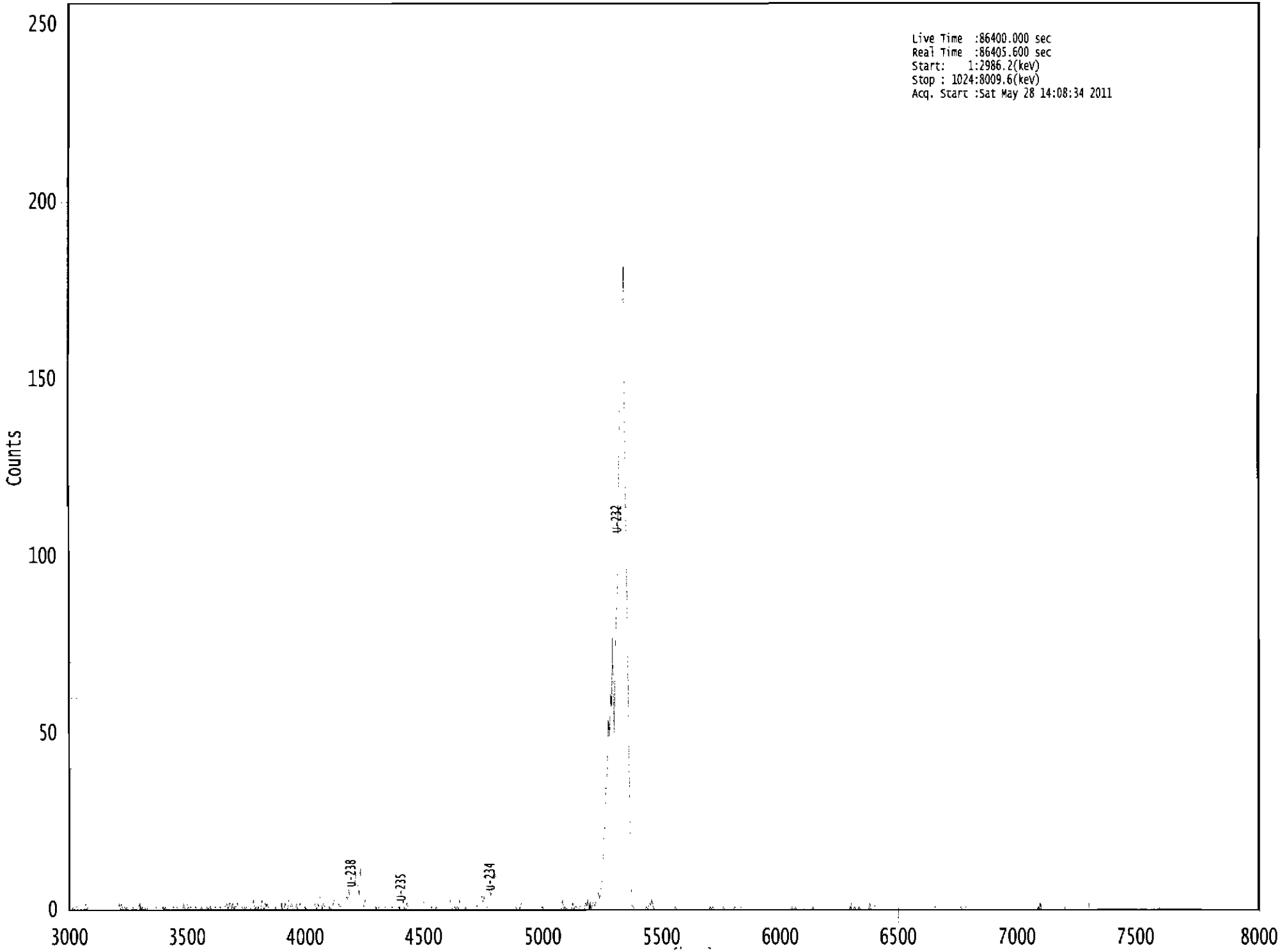
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5310.375	1986.00	44.56	0.00	0.00E+000	40
U-234	4767.426	91.00	9.54	0.00	0.00E+000	25
U-235	4397.654	9.00	3.00	0.00	0.00E+000	6
U-238	4185.897	109.00	10.44	0.00	0.00E+000	8

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.8844E+000	3.04	3.9301E-003	2.05
U-234	1.3216E-001	10.68	3.9301E-003	2.05
U-235	1.6125E-002	33.40	4.8482E-003	2.05
U-238	1.5763E-001	9.80	3.9132E-003	2.05

Errors quoted at 1.000 sigma

0000012947.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-001
Batch Identification: B11-01984 A
Sample Identification: 11-01984-04
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5A
Chamber Serial Number: 12044983A
Detector Serial Number: 55802
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:36
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/13/10 20:11:11
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

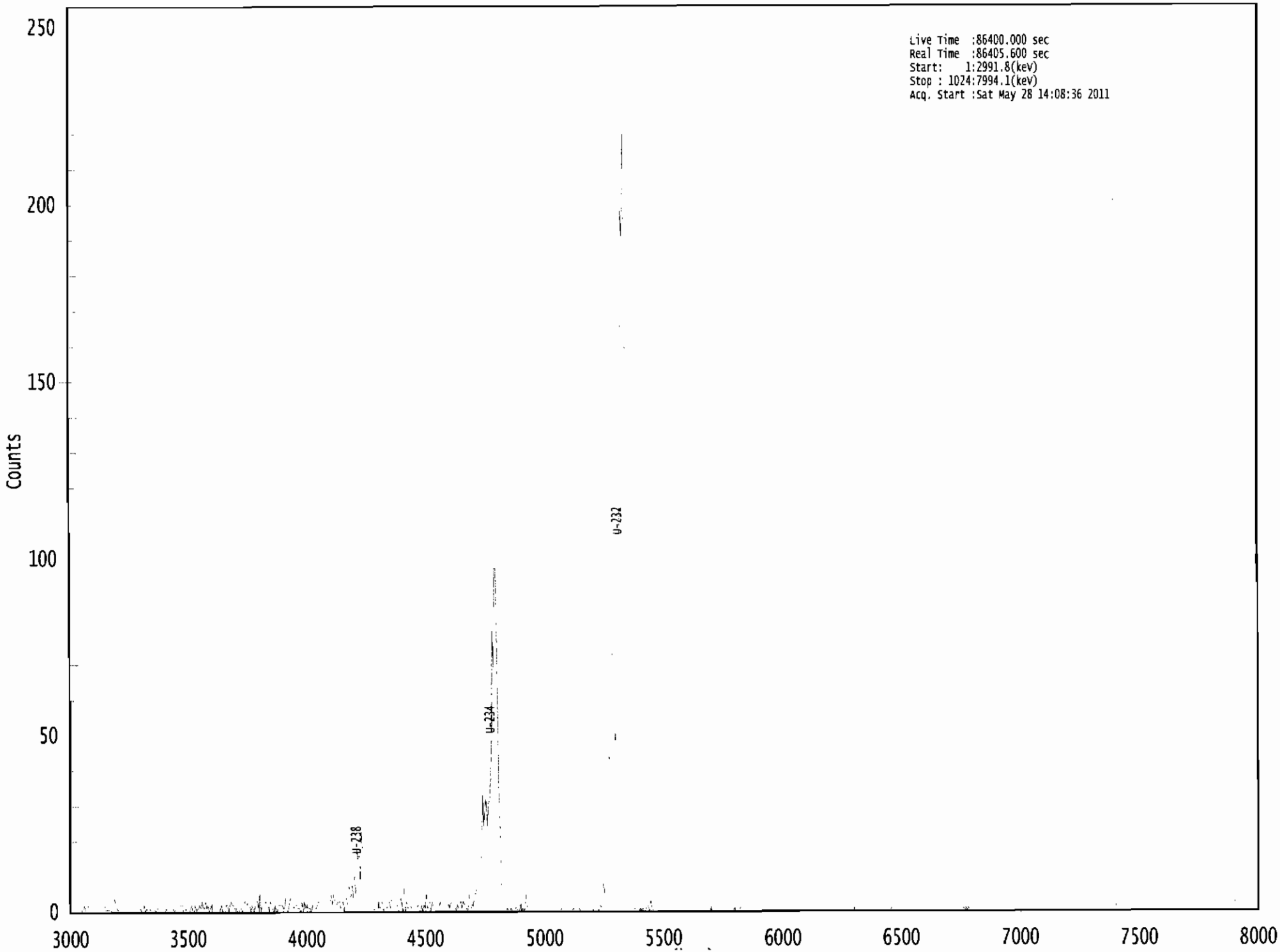
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5310.789	1910.00	43.70	0.00	0.00E+000	29
U-234	4770.362	846.00	29.09	0.00	0.00E+000	27
U-235	4406.175	32.00	5.66	0.00	0.00E+000	4
U-238	4205.097	187.00	13.67	0.00	0.00E+000	16

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.7340E+000	3.08	3.8734E-003	2.06
U-234	1.2110E+000	4.01	3.8734E-003	2.06
U-235	5.6506E-002	17.80	4.7783E-003	2.06
U-238	2.6652E-001	7.60	3.8568E-003	2.06

Errors quoted at 1.000 sigma

0000012948.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-002
Batch Identification: B11-01984 A
Sample Identification: 11-01984-05
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5B
Chamber Serial Number: 12044983B
Detector Serial Number: 55803
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:38
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2130 +/- 0.0044 on 4/13/10 20:11:42
Effective Efficiency: 0.2130 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

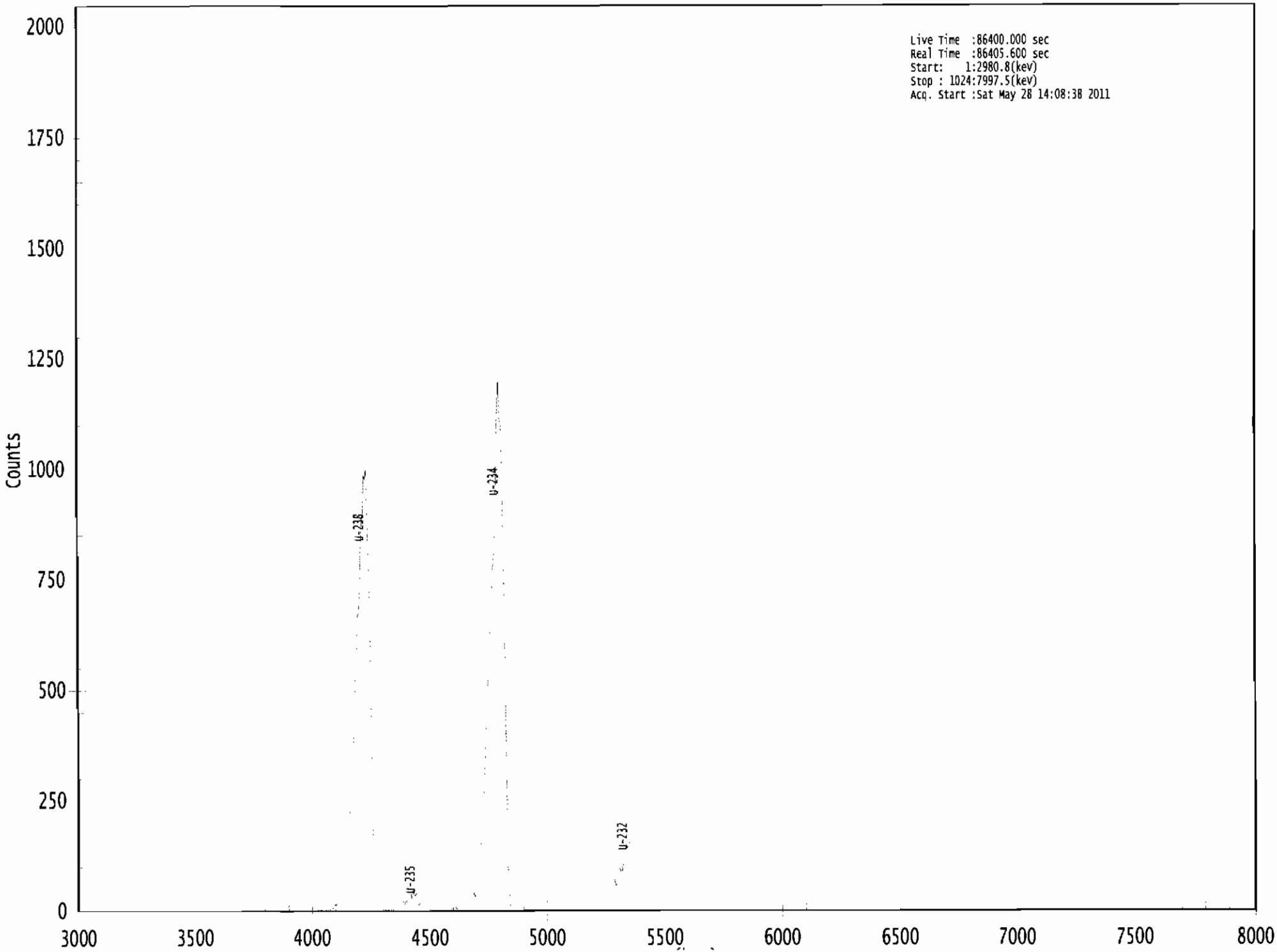
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5304.102	2184.00	46.73	0.00	0.00E+000	63
U-234	4763.822	16307.00	127.70	0.00	0.00E+000	65
U-235	4400.724	494.00	22.23	0.00	0.00E+000	50
U-238	4192.753	13978.00	118.23	0.00	0.00E+000	67

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.2132E+000	2.97	3.9812E-003	2.06
U-234	2.3991E+001	2.20	3.9812E-003	2.06
U-235	8.9658E-001	4.95	4.9113E-003	2.06
U-238	2.0477E+001	2.22	3.9641E-003	2.06

Errors quoted at 1.000 sigma

0000012949.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-003
Batch Identification: B11-01984 A
Sample Identification: 11-01984-06
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1A
Chamber Serial Number: 12044985A
Detector Serial Number: 55806
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:40
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2230 +/- 0.0046 on 5/28/10 09:42:00
Effective Efficiency: 0.2230 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

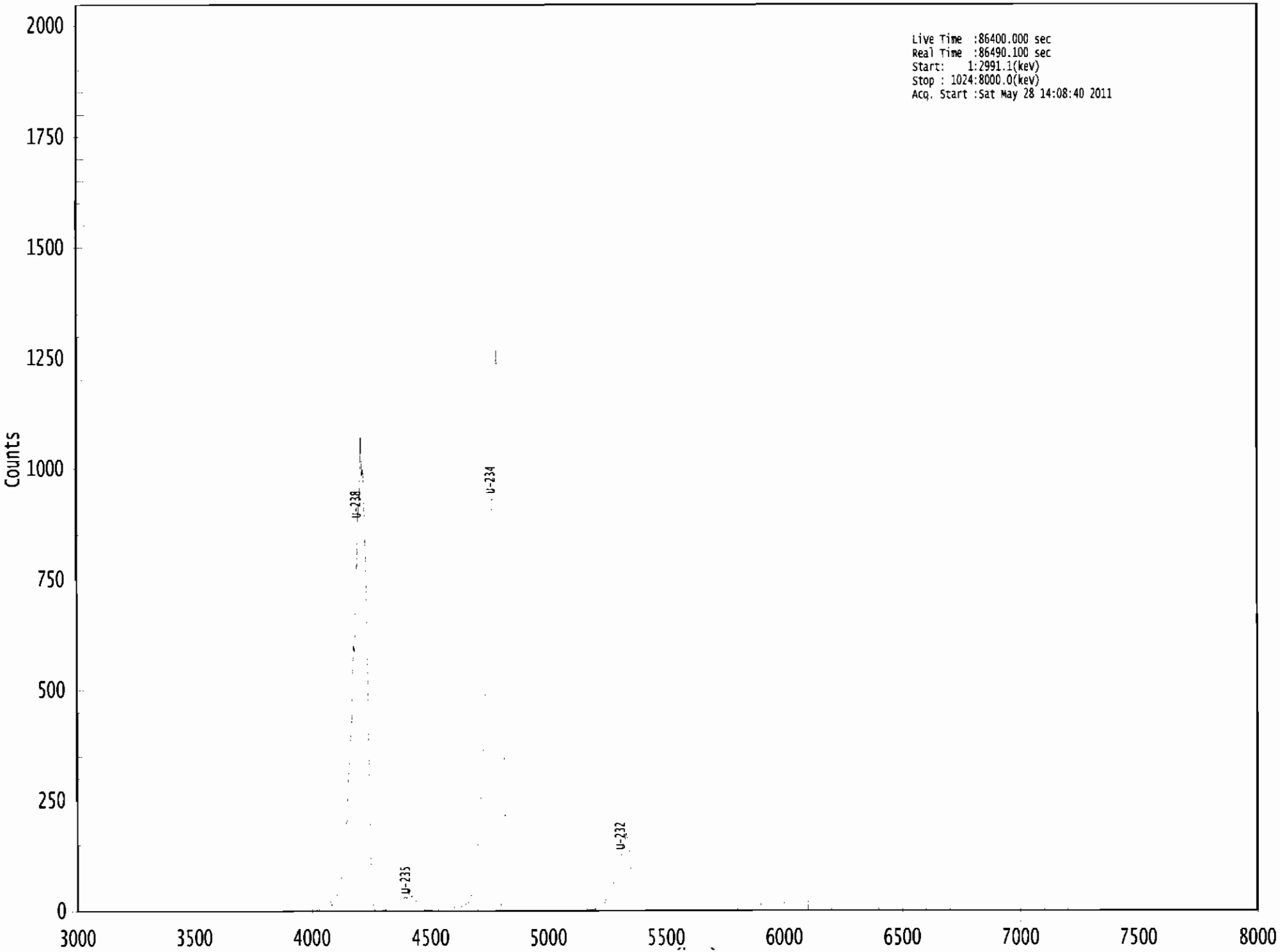
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5300.980	2231.00	47.23	0.00	0.00E+000	48
U-234	4759.832	16471.00	128.34	0.00	0.00E+000	58
U-235	4391.997	565.00	23.77	0.00	0.00E+000	47
U-238	4190.832	14317.00	119.65	0.00	0.00E+000	63

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.1354E+000	2.95	3.8030E-003	2.06
U-234	2.3148E+001	2.20	3.8030E-003	2.06
U-235	9.7955E-001	4.68	4.6915E-003	2.06
U-238	2.0035E+001	2.22	3.7867E-003	2.06

Errors quoted at 1.000 sigma

0000012950.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-004
Batch Identification: B11-01984 A
Sample Identification: 11-01984-07
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1B
Chamber Serial Number: 12044985B
Detector Serial Number: 55807
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:42
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2098 +/- 0.0043 on 4/18/10 15:12:35
Effective Efficiency: 0.2098 +/- 0.0043

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

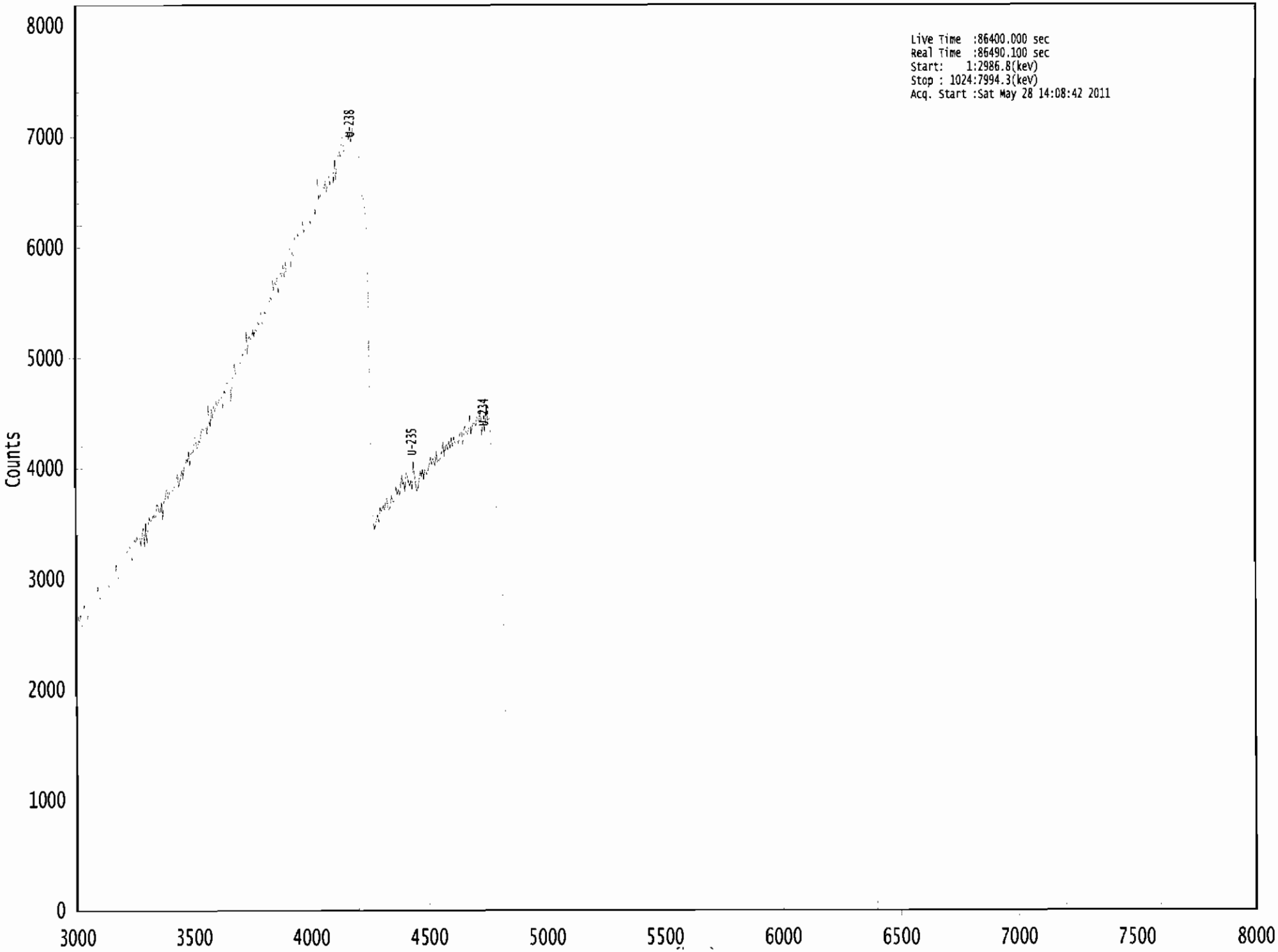
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5271.308	17.00	4.12	0.00	0.00E+000	4
U-234	4730.237	126807.0	356.10	0.00	0.00E+000	223
U-235	4424.233	124711.0	353.14	0.00	0.00E+000	91
U-238	4162.931	229215.0	478.76	0.00	0.00E+000	103

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.5396E-002	24.34	4.0424E-003	2.06
U-234	1.8943E+002	2.08	4.0424E-003	2.06
U-235	2.2983E+002	2.08	4.9868E-003	2.06
U-238	3.4095E+002	2.07	4.0251E-003	2.06

Errors quoted at 1.000 sigma

0000012872.CNF



****
***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-005
Batch Identification: B11-01984 A
Sample Identification: 11-01984-08
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 2B
Chamber Serial Number: 12045128B
Detector Serial Number: 55809
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:44
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2206 +/- 0.0045 on 4/18/10 15:13:08
Effective Efficiency: 0.2206 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

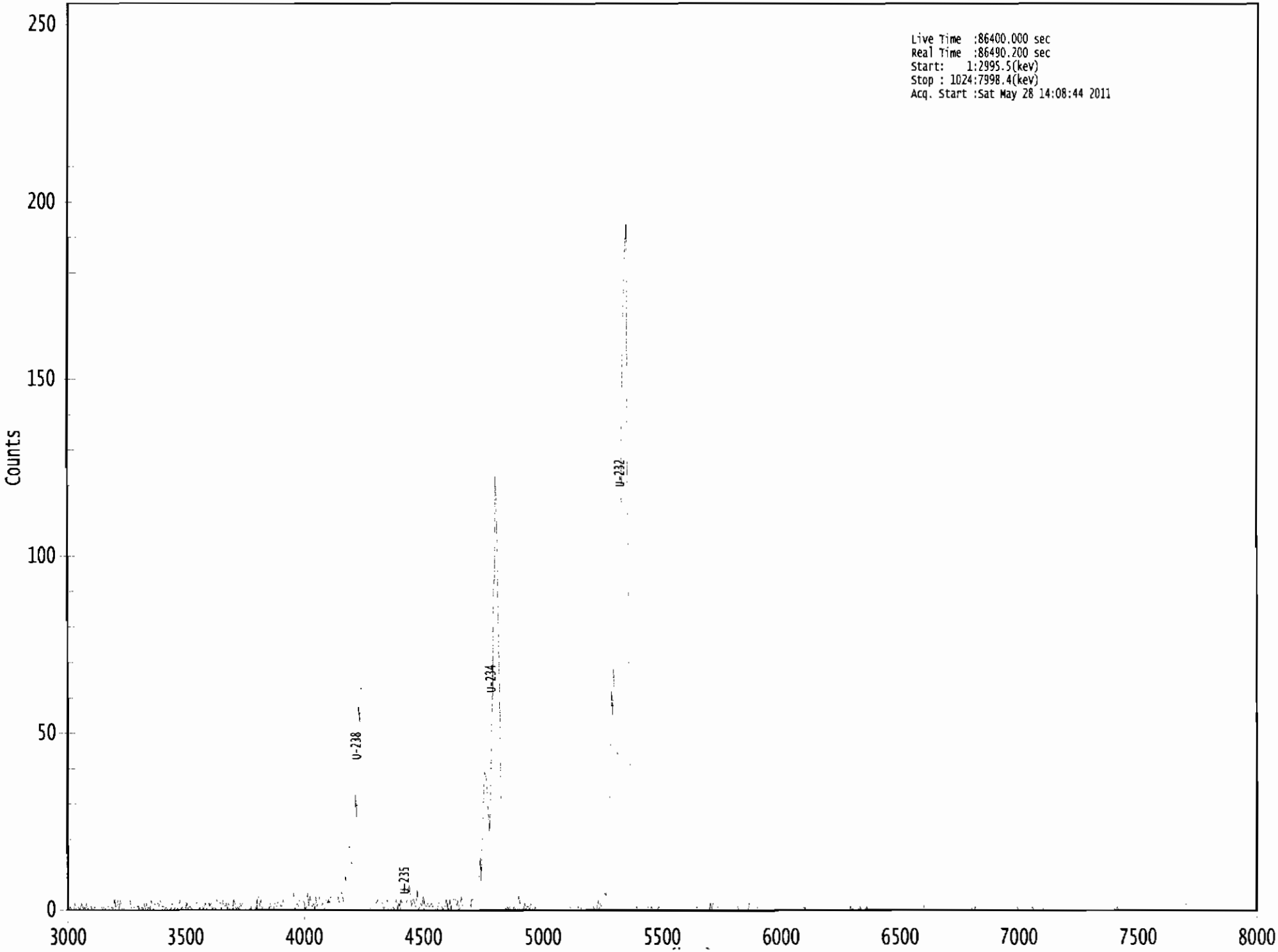
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5326.463	1705.00	41.29	0.00	0.00E+000	30
U-234	4786.485	979.00	31.29	0.00	0.00E+000	29
U-235	4419.855	53.00	7.28	0.00	0.00E+000	8
U-238	4216.234	572.00	23.92	0.00	0.00E+000	30

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.4229E+000	3.18	3.8454E-003	2.05
U-234	1.3912E+000	3.80	3.8454E-003	2.05
U-235	9.2911E-002	13.89	4.7438E-003	2.05
U-238	8.0935E-001	4.66	3.8289E-003	2.05

Errors quoted at 1.000 sigma

0000012951.CNF



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***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-006
Batch Identification: B11-01984 A
Sample Identification: 11-01984-09
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3A
Chamber Serial Number: 12045129A
Detector Serial Number: 55810
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:46
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2191 +/- 0.0045 on 4/18/10 15:15:02
Effective Efficiency: 0.2191 +/- 0.0045

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

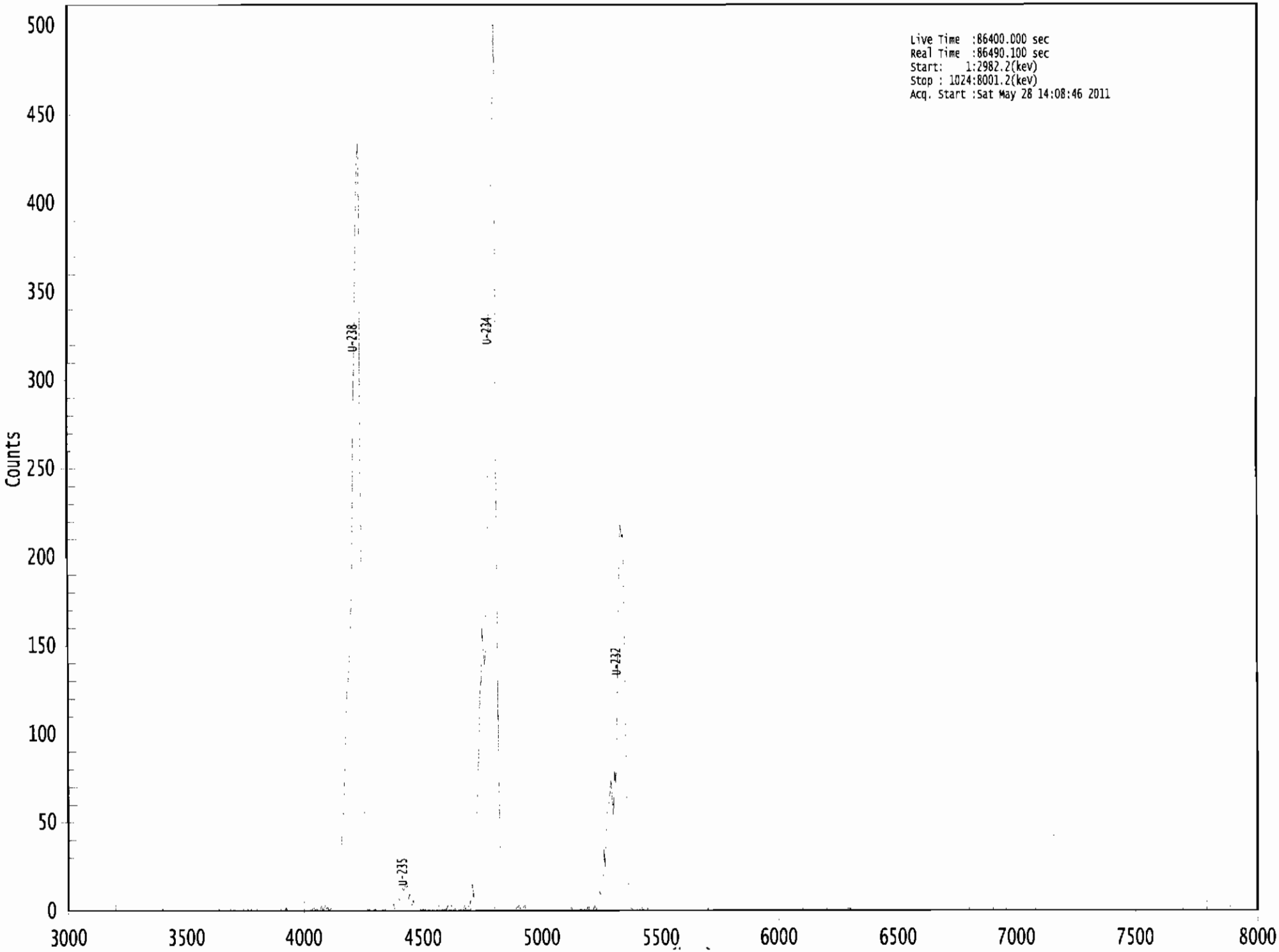
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5303.421	2223.00	47.15	0.00	0.00E+000	35
U-234	4765.245	4650.00	68.19	0.00	0.00E+000	34
U-235	4399.003	148.00	12.17	0.00	0.00E+000	33
U-238	4197.465	4073.00	63.82	0.00	0.00E+000	35

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.1804E+000	2.95	3.8714E-003	2.06
U-234	6.6526E+000	2.53	3.8714E-003	2.06
U-235	2.6120E-001	8.47	4.7758E-003	2.06
U-238	5.8021E+000	2.59	3.8548E-003	2.06

Errors quoted at 1.000 sigma

0000012952.CNF



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***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-007
Batch Identification: B11-01984 A
Sample Identification: 11-01984-10
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3B
Chamber Serial Number: 12045129B
Detector Serial Number: 55811
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:48
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2124 +/- 0.0044 on 4/18/10 15:15:32
Effective Efficiency: 0.2124 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

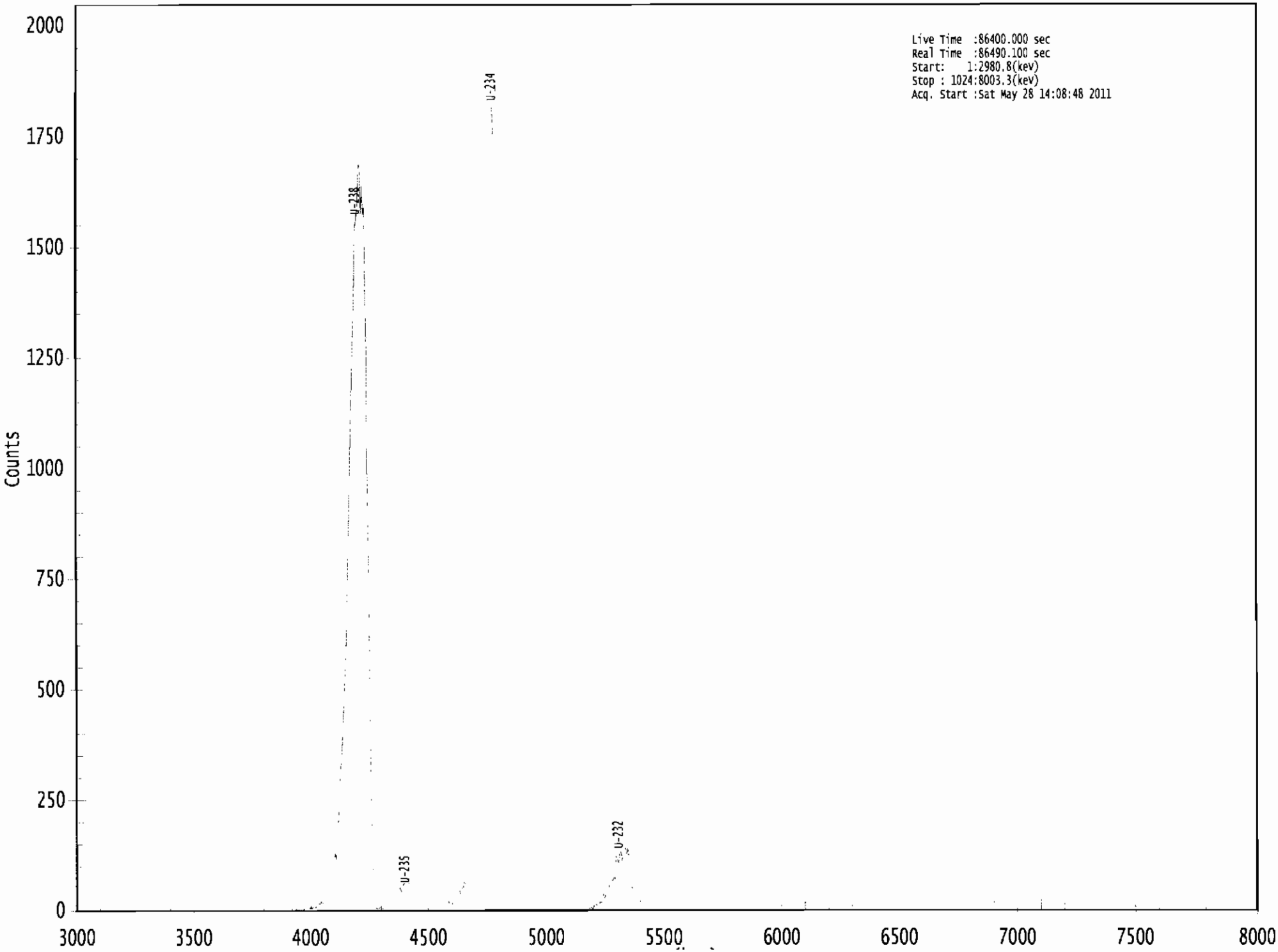
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5294.104	2408.00	49.07	0.00	0.00E+000	67
U-234	4750.711	33815.00	183.89	0.00	0.00E+000	82
U-235	4383.236	1123.00	33.51	0.00	0.00E+000	88
U-238	4178.813	30828.00	175.58	0.00	0.00E+000	84

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.5536E+000	2.89	3.9934E-003	2.06
U-234	4.9902E+001	2.13	3.9934E-003	2.06
U-235	2.0444E+000	3.62	4.9263E-003	2.06
U-238	4.5299E+001	2.13	3.9762E-003	2.06

Errors quoted at 1.000 sigma

0000012953.CNF



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***** A L P H A S P E C T R U M A N A L Y S I S *****
****

Sample Description: ARS1-11-00897-008
Batch Identification: B11-01984 A
Sample Identification: 11-01984-11
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 4B
Chamber Serial Number: 12045130B
Detector Serial Number: 55813
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:50
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2157 +/- 0.0044 on 4/18/10 15:16:34
Effective Efficiency: 0.2157 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

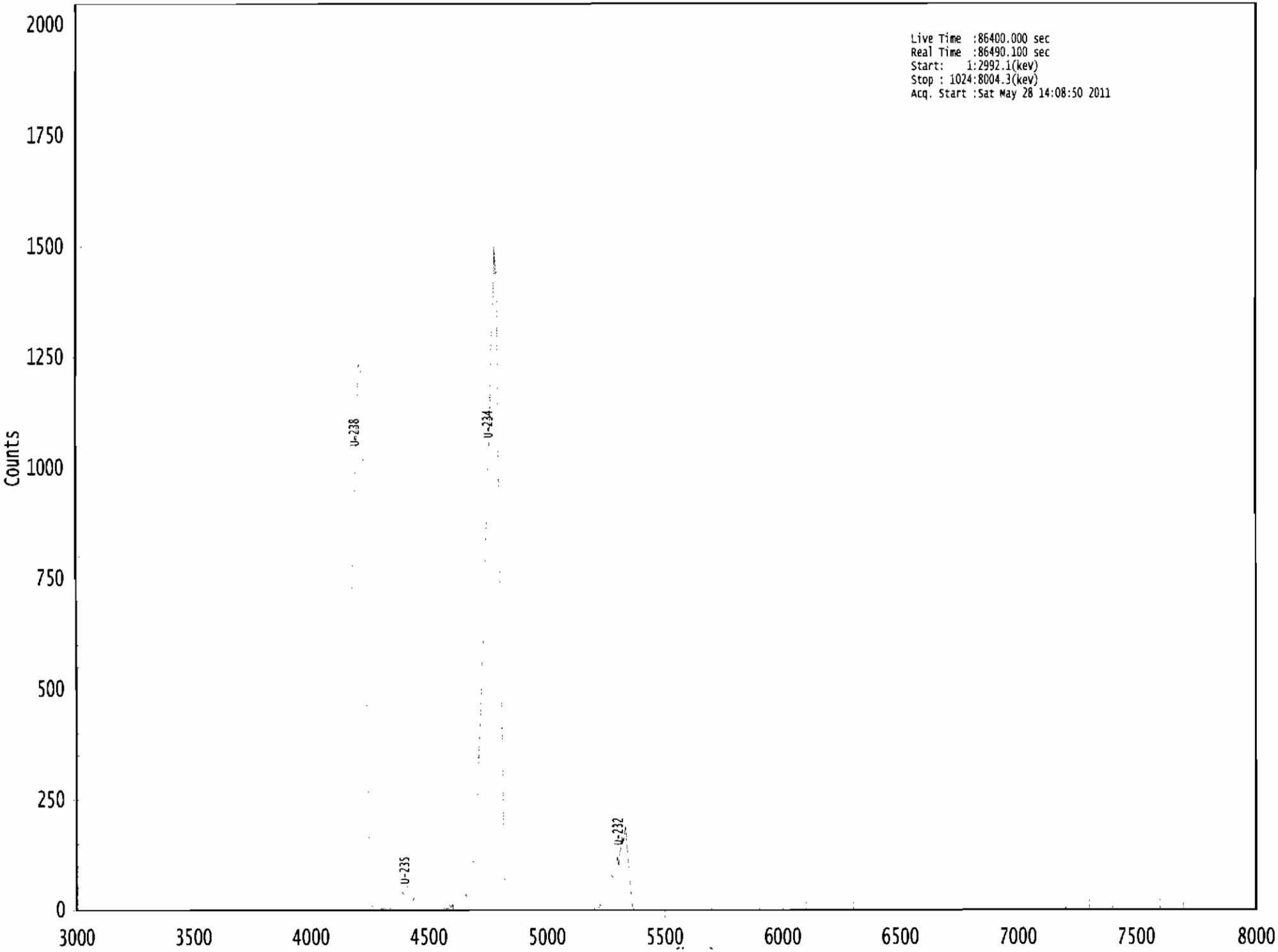
Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5299.331	2382.00	48.81	0.00	0.00E+000	57
U-234	4757.238	20560.00	143.39	0.00	0.00E+000	66
U-235	4392.632	637.00	25.24	0.00	0.00E+000	51
U-238	4186.939	17397.00	131.90	0.00	0.00E+000	65

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	3.4607E+000	2.90	3.9314E-003	2.05
U-234	2.9870E+001	2.17	3.9314E-003	2.05
U-235	1.1417E+000	4.46	4.8499E-003	2.05
U-238	2.5167E+001	2.19	3.9145E-003	2.05

Errors quoted at 1.000 sigma

0000012954.CNF



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***** A L P H A S P E C T R U M A N A L Y S I S *****
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Sample Description: ARS1-11-00897-009
Batch Identification: B11-01984 A
Sample Identification: 11-01984-12
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 5A
Chamber Serial Number: 12045131A
Detector Serial Number: 55814
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:52
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2132 +/- 0.0044 on 4/19/10 14:24:55
Effective Efficiency: 0.2132 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

Nuclide	Energy (keV)	Gross Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWH (ke
U-232	5313.767	1753.00	41.87	0.00	0.00E+000	27
U-234	4774.800	790.00	28.11	0.00	0.00E+000	26
U-235	4439.090	12.00	3.46	0.00	0.00E+000	4
U-238	4202.151	102.00	10.10	0.00	0.00E+000	29

NUCLIDE ACTIVITY REPORT

Nuclide	Activity (pCi/units)	Activity Error %	MDA (pCi/units)	MDA Error %
U-232	2.5768E+000	3.15	3.9777E-003	2.06
U-234	1.1613E+000	4.11	3.9777E-003	2.06
U-235	2.1760E-002	28.94	4.9070E-003	2.06
U-238	1.4929E-001	10.11	3.9606E-003	2.06

Errors quoted at 1.000 sigma