Paragon Analytics

Radiochemistry Case Narrative
Lead-210 by Liquid Scintillation

CSU Dep't Ecological Radiological Health Sciences

Tissue Samples

Paragon WO 0805200

1. This report consists of the analytical results and supporting documentation for 28 tissue samples received by Paragon Analytics on 05/29/08.
2. These samples were prepared according to procedure PA SOP726R6, with procedure modifications outlined in QASS 356713.
3. These samples were analyzed for the presence of ^{210}Pb according to procedure PA SOP704R9. The analyses were completed on 06/16/08.
4. Sample volume was insufficient to allow preparation of a duplicate. A laboratory control sample duplicate (LCSD) was prepared in lieu of a client sample duplicate for both batches.
5. The analysis results for these samples are reported in on an 'as received' basis in units of pCi/gram.
6. Upon analysis of these samples, it was noted that the quench factor (SQP(E) #) was outside of the useful calibration range for this analysis. Thus, an approximate volume of 10 µL of nitro-methane was added to the samples and associated QC to bring them into the usable calibration range.
7. ICP-AES measurement of lead carrier concentrations prior to chemical separation for most samples in this work order showed concentrations less than the amount known to have been added to the samples in the form of lead carrier. To avoid a low bias in the final analytical results the known concentration of the carrier was used in chemical yield calculations in lieu of the pre-separation measurement. These samples are identified with an "LB" flag on the Radiochemistry ICP Worksheet, which can be found in Section 5 of this report.
8. In the analysis of the raw data, "Window 2" is monitored for high-energy beta contamination. Sample 0805200-2 had a "Window 2" count rate slightly above the upper control limit of 0.73 cpm at 0.737 cpm, established from calibration on 06/11/08 through 06/16/08. The sample had observed activity at a level below the achieved MDC. It is believed that the data quality is unaffected and the results are submitted without further qualification.
9. The requested detection limit of 1.0 pCi/gram was not met for samples 0805200-4 and -12. The observed activity for these samples is above the achieved detection limit, as indicated on the final reports by an 'M3' qualifier. Results are submitted without further qualification.

10. The daily check run performed on 06/14/08 failed the check for the count rate on all parameters. Suspected loading error. The prior and subsequent daily check runs were in control for all parameters. It is believed that the data quality for the analysis of these samples is unaffected. The results are submitted without further qualification.

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

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

Linda Arend — 06/25/08
Linda Arend
Radiochemistry Primary Reviewer
Date

Lindsay Seaman — 6/25/08
Radiochemistry Final Reviewer
Date

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PARAGON ANALYTICS
Radiochemistry Data Package

Section 1

CHAIN OF CUSTODY

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0805200
Client Name: CSU Dep't Ecological Radiological Health Scie
Client Project Name: Tissue samples
Client Project Number:
Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
CSUPR-1	0805200-1	liver	TISSUE	20-May-08	
CSUPR-2	0805200-2	lung	TISSUE	20-May-08	
CSUPR-3	0805200-3	muscle	TISSUE	20-May-08	
CSUPR-4	0805200-4	bone	TISSUE	20-May-08	
CSUPR-5	0805200-5	liver	TISSUE	20-May-08	
CSUPR-6	0805200-6	lung	TISSUE	20-May-08	
CSUPR-7	0805200-7	muscle	TISSUE	20-May-08	
CSUPR-8	0805200-8	bone	TISSUE	20-May-08	
CSUPR-9	0805200-9	liver	TISSUE	20-May-08	
CSUPR-10	0805200-10	lung	TISSUE	20-May-08	
CSUPR-11	0805200-11	muscle	TISSUE	20-May-08	
CSUPR-12	0805200-12	bone	TISSUE	20-May-08	
CSUPR-13	0805200-13	liver	TISSUE	19-May-08	
CSUPR-14	0805200-14	lung	TISSUE	19-May-08	
CSUPR-15	0805200-15	muscle	TISSUE	19-May-08	
CSUPR-16	0805200-16	bone	TISSUE	19-May-08	
CSUPR-17	0805200-17	liver	TISSUE	19-May-08	
CSUPR-18	0805200-18	lung	TISSUE	19-May-08	
CSUPR-19	0805200-19	muscle	TISSUE	19-May-08	
CSUPR-20	0805200-20	bone	TISSUE	19-May-08	
CSUPR-21	0805200-21	liver	TISSUE	19-May-08	
CSUPR-22	0805200-22	lung	TISSUE	19-May-08	
CSUPR-23	0805200-23	muscle	TISSUE	19-May-08	
CSUPR-24	0805200-24	bone	TISSUE	19-May-08	
CSUPR-25	0805200-25	carcass	TISSUE	20-May-08	
CSUPR-26	0805200-26	liver	TISSUE	07-Apr-08	
CSUPR-27	0805200-27	lung	TISSUE	07-Apr-08	
CSUPR-28	0805200-28	muscle	TISSUE	07-Apr-08	
CSUPR-29	0805200-29	bone	TISSUE	07-Apr-08	
CSUPR-30	0805200-30	liver	TISSUE	12-Apr-08	
CSUPR-31	0805200-31	lung	TISSUE	12-Apr-08	
CSUPR-32	0805200-32	muscle	TISSUE	12-Apr-08	

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0805200
Client Name: CSU Dep't Ecological Radiological Health Scie
Client Project Name: Tissue samples
Client Project Number:
Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
CSUPR-33	0805200-33	bone	TISSUE	12-Apr-08	
CSUPR-34	0805200-34	liver	TISSUE	13-Apr-08	
CSUPR-35	0805200-35	lung	TISSUE	13-Apr-08	
CSUPR-36	0805200-36	muscle	TISSUE	13-Apr-08	
CSUPR-37	0805200-37	bone	TISSUE	13-Apr-08	

COC for CSU Tissue Samples received 5/27/08 0805200

Samples delivered from Ward Whicker at CSU to Paragon Analytics on May 27, 2009

Sample #	LabID	species	tissue	Collection Date	Analytes requested U-nat	Th-230	Ra-226	Po-210	Pb-210
CSUPR-1	1	CTAIL	liver	5/20/2008		X		X	X
CSUPR-2	2	CTAIL	lung	5/20/2008				X	X
CSUPR-3	3	CTAIL	muscle	5/20/2008	X			X	
CSUPR-4	4	‡ CTAIL	bone	5/20/2008	X	X	X		X
CSUPR-5	5	CTAIL	liver	5/20/2008		X		X	X
CSUPR-6	6	CTAIL	lung	5/20/2008				X	X
CSUPR-7	7	CTAIL	muscle	5/20/2008	X			X	
CSUPR-8	8	‡ CTAIL	bone	5/20/2008	X	X	X		X
CSUPR-9	9	CTAIL	liver	5/20/2008		X		X	X
CSUPR-10	10	CTAIL	lung	5/20/2008				X	X
CSUPR-11	11	CTAIL	muscle	5/20/2008	X			X	
CSUPR-12	12	‡ CTAIL	bone	5/20/2008	X	X	X		X
CSUPR-13	13	JACK	liver	5/19/2008		X		X	X
CSUPR-14	14	JACK	lung	5/19/2008				X	X
CSUPR-15	15	JACK	muscle	5/19/2008	X			X	
CSUPR-16	16	‡ JACK	bone	5/19/2008	X	X	X		X
CSUPR-17	17	JACK	liver	5/19/2008		X		X	X
CSUPR-18	18	JACK	lung	5/19/2008				X	X
CSUPR-19	19	JACK	muscle	5/19/2008	X			X	
CSUPR-20	20	‡ JACK	bone	5/19/2008	X	X	X		X
CSUPR-21	21	JACK	liver	5/19/2008		X		X	X
CSUPR-22	22	JACK	lung	5/19/2008				X	X
CSUPR-23	23	JACK	muscle	5/19/2008	X			X	
CSUPR-24	24	‡ JACK	bone	5/19/2008	X	X	X		X
CSUPR-25	25	K-RAT	carcass	5/20/2008	X	X	X		X
CSUPR-26	26	COW	liver	4/7/2008	X	X		X	X
CSUPR-27	27	COW	lung	4/7/2008				X	X
CSUPR-28	28	COW	muscle	4/7/2008	X			X	
CSUPR-29	29	COW	bone	4/7/2008	X	X	X		X
CSUPR-30	30	COW	liver	4/12/2008	X	X		X	X
CSUPR-31	31	COW	lung	4/12/2008				X	X
CSUPR-32	32	COW	muscle	4/12/2008	X			X	
CSUPR-33	33	COW	bone	4/12/2008	X	X	X		X
CSUPR-34	34	COW	liver	4/13/2008	X	X		X	X
CSUPR-35	35	COW	lung	4/13/2008				X	X
CSUPR-36	36	COW	muscle	4/13/2008	X			X	
CSUPR-37	37	COW	bone	4/13/2008	X	X	X		X

‡ add'l bone (Femur and lower legs) recieved from Ward Whicker 6/5/08 ~ 4:30 pm 6/5/08

Note: original bone samples (all species) were scapula.

CONDITION OF SAMPLE UPON RECEIPT FORM **Paragon Analytics**

Client: CSU Workorder No: 0805200

Project Manager: LS Initials: CT Date: 5-29-08

1.	Does this project require any **special handling** in addition to standard Paragon procedures?		YES	(NO)
2.	Are custody **seals** on **shipping containers** intact?	(NONE)	(YES)	NO
3.	Are Custody seals on **sample containers** intact?	(NONE)	YES	NO
4.	Is there a **COC (Chain-of-Custody) present** or other representative documents?		(YES)	NO
5.	Are the **COC and bottle labels complete and legible**?		(YES)	NO
6.	Is the **COC in agreement** with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7.	Were **airbills / shipping documents** present and/or removable?	(DROP OFF)	~~YES~~ CT 5-29-08	NO
8.	Are all aqueous **samples requiring preservation preserved correctly?** (excluding volatiles)	(N/A)	(YES)	NO
9.	Are all aqueous **non-preserved samples pH 4-9**?	(N/A)	(YES)	NO
10.	Is there **sufficient sample** for the requested analyses?		(YES)	NO
11.	Were all samples placed in the **proper containers** for the requested analyses?		(YES)	NO
12.	Are all samples within **holding times** for the requested analyses?		(YES)	NO
13.	Were all sample containers received **intact**? (not broken or leaking, etc.)		(YES)	NO
14.	Are all samples requiring no headspace (VOC, GRO, Rx CN/S, radon), headspace free? **Size of bubble**: ____ < green pea ____> green pea	(N/A)	(YES)	NO
15.	Were samples checked for and free from the presence of **residual chlorine?** (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	(N/A)	YES	NO
16.	Were the samples **shipped on ice**?		(YES)	NO
17.	Were cooler temperatures measured at 0.1-6.0°C? **IR gun used*:** (#2) #4	RAD ONLY	YES	(NO)

Cooler #:	1							
Temperature (°C):	~~13~~ CT 5-29-08							
No. of custody seals on cooler:	0							
DOT Survey/ Acceptance Information — External µR/hr reading:	NA							
Background µR/hr reading:	13							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? **YES / NO / NA** (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16

Samples received frozen

If applicable, was the client contacted? **YES / NO / NA** Contact: _____ Date/Time: _____

Project Manager Signature / Date: 5/29/08

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

Form 201r20.xls (12/27/07)

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PARAGON ANALYTICS
Radiochemistry Data Package

Section 2

SAMPLE RESULTS SUMMARY

Lead-210 Analysis by Liquid Scintilation Sample Results Summary

Client Name: CSU Dep't Ecological Radiological Health Sciences
Client Project Name: Tissue samples
Client Project Number:

Laboratory Name: **Paragon Analytics**
PAI Work Order: 0805200

Reported on: Wednesday, June 25, 2008
9:29:12 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0805200-1	CSUPR-1	Sample	Pb-210	0.172 +/- 0.070	0.086	pCi/g	TISSUE	PB080606-1	6/13/2008	LT
0805200-2	CSUPR-2	Sample	Pb-210	0.058 +/- 0.072	0.116	pCi/g	TISSUE	PB080606-1	6/13/2008	U
0805200-4	CSUPR-4	Sample	Pb-210	1.44 +/- 0.73	1.01	pCi/g	TISSUE	PB080606-1	6/14/2008	M3
0805200-5	CSUPR-5	Sample	Pb-210	0.097 +/- 0.058	0.085	pCi/g	TISSUE	PB080606-1	6/14/2008	LT
0805200-6	CSUPR-6	Sample	Pb-210	0.023 +/- 0.083	0.139	pCi/g	TISSUE	PB080606-1	6/14/2008	U
0805200-8	CSUPR-8	Sample	Pb-210	0.53 +/- 0.62	0.99	pCi/g	TISSUE	PB080606-1	6/14/2008	U
0805200-9	CSUPR-9	Sample	Pb-210	0.102 +/- 0.080	0.124	pCi/g	TISSUE	PB080606-1	6/14/2008	U
0805200-10	CSUPR-10	Sample	Pb-210	0.045 +/- 0.064	0.105	pCi/g	TISSUE	PB080606-1	6/14/2008	U
0805200-12	CSUPR-12	Sample	Pb-210	1.17 +/- 0.73	1.08	pCi/g	TISSUE	PB080606-1	6/14/2008	M3

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

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

Abbreviations:

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

BDL - Below Detection Limit

Lead-210 Analysis by Liquid Scintilation Sample Results Summary

Client Name: CSU Dep't Ecological Radiological Health Sciences
Client Project Name: Tissue samples
Client Project Number:

Laboratory Name: **Paragon Analytics**
PAI Work Order: 0805200

Reported on: Wednesday, June 25, 2008
9:29:12 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0805200-13	CSUPR-13	Sample	Pb-210	0.189 +/- 0.072	0.084	pCi/g	TISSUE	PB080606-1	6/14/2008	LT
0805200-14	CSUPR-14	Sample	Pb-210	0.013 +/- 0.050	0.083	pCi/g	TISSUE	PB080606-1	6/15/2008	U
0805200-16	CSUPR-16	Sample	Pb-210	0.54 +/- 0.29	0.42	pCi/g	TISSUE	PB080606-1	6/15/2008	LT
0805200-17	CSUPR-17	Sample	Pb-210	0.058 +/- 0.055	0.087	pCi/g	TISSUE	PB080606-1	6/15/2008	U
0805200-18	CSUPR-18	Sample	Pb-210	0.038 +/- 0.053	0.087	pCi/g	TISSUE	PB080606-1	6/15/2008	U
0805200-20	CSUPR-20	Sample	Pb-210	0.44 +/- 0.29	0.43	pCi/g	TISSUE	PB080606-1	6/15/2008	LT
0805200-21	CSUPR-21	Sample	Pb-210	0.102 +/- 0.057	0.081	pCi/g	TISSUE	PB080606-1	6/15/2008	LT
0805200-22	CSUPR-22	Sample	Pb-210	-0.010 +/- 0.053	0.089	pCi/g	TISSUE	PB080606-1	6/15/2008	U
0805200-24	CSUPR-24	Sample	Pb-210	1.19 +/- 0.40	0.40	pCi/g	TISSUE	PB080606-1	6/16/2008	

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

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

Abbreviations:

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

BDL - Below Detection Limit

Lead-210 Analysis by Liquid Scintilation Sample Results Summary

Client Name: CSU Dep't Ecological Radiological Health Sciences
Client Project Name: Tissue samples
Client Project Number:

Laboratory Name: **Paragon Analytics**
PAI Work Order: 0805200

Reported on: Wednesday, June 25, 2008
9:29:12 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0805200-25	CSUPR-25	Sample	Pb-210	0.14 +/- 0.14	0.22	pCi/g	TISSUE	PB080606-2	6/11/2008	U
0805200-26	CSUPR-26	Sample	Pb-210	0.191 +/- 0.078	0.096	pCi/g	TISSUE	PB080606-2	6/11/2008	LT
0805200-27	CSUPR-27	Sample	Pb-210	0.011 +/- 0.060	0.101	pCi/g	TISSUE	PB080606-2	6/12/2008	U
0805200-29	CSUPR-29	Sample	Pb-210	1.47 +/- 0.61	0.75	pCi/g	TISSUE	PB080606-2	6/12/2008	
0805200-30	CSUPR-30	Sample	Pb-210	0.097 +/- 0.063	0.093	pCi/g	TISSUE	PB080606-2	6/12/2008	LT
0805200-31	CSUPR-31	Sample	Pb-210	0.045 +/- 0.058	0.094	pCi/g	TISSUE	PB080606-2	6/12/2008	U
0805200-33	CSUPR-33	Sample	Pb-210	1.43 +/- 0.47	0.46	pCi/g	TISSUE	PB080606-2	6/12/2008	
0805200-34	CSUPR-34	Sample	Pb-210	0.104 +/- 0.079	0.120	pCi/g	TISSUE	PB080606-2	6/12/2008	U
0805200-35	CSUPR-35	Sample	Pb-210	0.003 +/- 0.059	0.100	pCi/g	TISSUE	PB080606-2	6/12/2008	U

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

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

Abbreviations:

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

BDL - Below Detection Limit

Lead-210 Analysis by Liquid Scintilation Sample Results Summary

Client Name: CSU Dep't Ecological Radiological Health Sciences
Client Project Name: Tissue samples
Client Project Number:

Laboratory Name: **Paragon Analytics**
PAI Work Order: 0805200

Reported on: Wednesday, June 25, 2008
9:29:12 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0805200-37	CSUPR-37	Sample	Pb-210	0.44 +/- 0.41	0.65	pCi/g	TISSUE	PB080606-2	6/13/2008	U

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

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

Abbreviations:

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

BDL - Below Detection Limit

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PARAGON ANALYTICS
Radiochemistry Data Package

Section 3

QC RESULTS SUMMARY

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Method Blank Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Lab ID: PB080606-1MB

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 16-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes

Final Aliquot: 3.32 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.018 +/- 0.066	0.110	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	749.4	ug	84.6	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

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

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Method Blank Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Lab ID: PB080606-2MB

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 13-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes

Final Aliquot: 3.32 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.016 +/- 0.068	0.114	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	676.4	ug	81.4	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

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

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Laboratory Control Sample(s)

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Lab ID: PB080606-1LCS

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 16-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 29.64 minutes

Final Aliquot: 3.32 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14255-04-0	Pb-210	5.4 +/- 1.4	0.3	5.30	103	70 - 130	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.8	778.5	ug	87.9	40 - 110 %	

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Laboratory Control Sample(s)

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Lab ID: PB080606-1LCSD

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 16-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 29.64 minutes

Final Aliquot: 3.32 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14255-04-0	Pb-210	5.0 +/- 1.3	0.3	5.30	94.4	70 - 130	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.8	721.0	ug	81.4	40 - 110 %	

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Laboratory Control Sample(s)

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Lab ID: PB080606-2LCS

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 13-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 29.64 minutes

Final Aliquot: 3.32 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14255-04-0	Pb-210	5.2 +/- 1.3	0.3	5.30	98.7	70 - 130	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	668.3	ug	80.4	40 - 110 %	

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Laboratory Control Sample(s)

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Lab ID: PB080606-2LCSD

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 13-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 29.64 minutes

Final Aliquot: 3.32 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14255-04-0	Pb-210	4.8 +/- 1.2	0.3	5.30	91.1	70 - 130	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	833.1	736.4	ug	88.4	40 - 110 %	

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Duplicate Sample Results (DER)

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID:
Lab ID: PB080606-1LCSD

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 16-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 29.64 minutes

Final Aliquot: 3.32 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
14255-04-0	Pb-210	5.4 +/- 1.4	5.0 +/- 1.3	0.23	2.13	P

Comments:

Duplicate Qualifiers/Flags:

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio (see PAI SOP 715)
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Duplicate Sample Results (DER)

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID:
Lab ID: PB080606-2LCSD

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 06-Jun-08
Date Prepared: 06-Jun-08
Date Analyzed: 13-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 29.64 minutes

Final Aliquot: 3.32 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
14255-04-0	Pb-210	5.2 +/- 1.3	4.8 +/- 1.2	0.23	2.13	P

Comments:

Duplicate Qualifiers/Flags:

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio (see PAI SOP 715)
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: *PB0805200-1*

PARAGON ANALYTICS
Radiochemistry Data Package

4

Section 4

INDIVIDUAL SAMPLE RESULTS

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-1
Lab ID: 0805200-1

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 13-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.17 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.172 +/- 0.070	0.086	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	757.6	ug	85.5	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-2
Lab ID: 0805200-2

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 13-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 3.43 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.058 +/- 0.072	0.116	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	689.3	ug	77.8	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID:	CSUPR-4
Lab ID:	0805200-4

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.334 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	1.44 +/- 0.73	1.01	1	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	805.4	ug	90.9	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-5
Lab ID: 0805200-5

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.15 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.097 +/- 0.058	0.085	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	774.8	ug	87.5	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-6
Lab ID: 0805200-6

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 2.79 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.023 +/- 0.083	0.139	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	696.9	ug	78.7	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-8
Lab ID: 0805200-8

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.350 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.53 +/- 0.62	0.99	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	799.2	ug	90.2	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID:	CSUPR-9
Lab ID:	0805200-9

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 3.06 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.102 +/- 0.080	0.124	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	716.3	ug	80.9	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-10
Lab ID: 0805200-10

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.17 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.045 +/- 0.064	0.105	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	640.2	ug	72.3	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID:	CSUPR-12
Lab ID:	0805200-12

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.318 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	1.17 +/- 0.73	1.08	1	M3

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	890.5	788.6	ug	88.6	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-13
Lab ID: 0805200-13

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 14-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.17 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.189 +/- 0.072	0.084	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	778.0	ug	87.8	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-14
Lab ID: 0805200-14

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 15-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.19 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.013 +/- 0.050	0.083	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	776.2	ug	87.6	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-16
Lab ID: 0805200-16

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 15-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.887 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.54 +/- 0.29	0.42	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	767.9	ug	86.7	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID:	CSUPR-17
Lab ID:	0805200-17

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 15-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.21 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.058 +/- 0.055	0.087	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	741.6	ug	83.7	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-18
Lab ID: 0805200-18

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 15-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.17 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.038 +/- 0.053	0.087	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	757.4	ug	85.5	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-20
Lab ID: 0805200-20

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 15-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.820 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.44 +/- 0.29	0.43	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	767.3	ug	86.6	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID:	CSUPR-21
Lab ID:	0805200-21

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 15-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.26 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.102 +/- 0.057	0.081	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	794.6	ug	89.7	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-22
Lab ID: 0805200-22

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 15-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.22 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	-0.010 +/- 0.053	0.089	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	720.2	ug	81.3	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-24
Lab ID: 0805200-24

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 19-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 16-Jun-08

Prep Batch: PB080606-1
QCBatchID: PB080606-1-1
Run ID: PB080606-1A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.952 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	1.19 +/- 0.40	0.40	1	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	885.7	721.5	ug	81.5	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-25
Lab ID: 0805200-25

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 20-May-08
Date Prepared: 06-Jun-08
Date Analyzed: 11-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 1.66 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.14 +/- 0.14	0.22	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	682.5	ug	82.1	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-26
Lab ID: 0805200-26

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 07-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 11-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.29 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.191 +/- 0.078	0.096	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	621.7	ug	74.8	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-27
Lab ID: 0805200-27

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 07-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 12-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.24 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.011 +/- 0.060	0.101	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	592.6	ug	71.3	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-29
Lab ID: 0805200-29

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 07-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 12-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.543 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	1.47 +/- 0.61	0.75	1	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	851.1	637.6	ug	74.9	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-30
Lab ID: 0805200-30

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 12-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 12-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.16 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.097 +/- 0.063	0.093	1	LT

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	653.0	ug	78.6	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-31
Lab ID: 0805200-31

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 12-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 12-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.17 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.045 +/- 0.058	0.094	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	660.2	ug	79.4	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-33
Lab ID: 0805200-33

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 12-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 12-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.802 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	1.43 +/- 0.47	0.46	1	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	688.9	ug	82.9	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-34
Lab ID: 0805200-34

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 13-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 12-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.26 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.104 +/- 0.079	0.120	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	505.8	ug	60.8	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-35
Lab ID: 0805200-35

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 13-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 12-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 4.22 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.003 +/- 0.059	0.100	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	831.3	607.7	ug	73.1	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

Lead-210 Analysis by Liquid Scintilation

PAI 704 Rev 9

Sample Results

Lab Name: **Paragon Analytics**
Work Order Number: 0805200
Client Name: CSU Dep't Ecological Radiological Health Sciences
ClientProject ID: Tissue samples

Field ID: CSUPR-37
Lab ID: 0805200-37

Sample Matrix: TISSUE
Prep SOP: PAI 726 Rev 6
Date Collected: 13-Apr-08
Date Prepared: 06-Jun-08
Date Analyzed: 13-Jun-08

Prep Batch: PB080606-2
QCBatchID: PB080606-2-1
Run ID: PB080606-2A
Count Time: 177.72 minutes
Report Basis: As Received

Final Aliquot: 0.615 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
14255-04-0	Pb-210	0.44 +/- 0.41	0.65	1	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
LEAD	859.5	669.7	ug	77.9	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

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

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

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *PB0805200-1*

PARAGON ANALYTICS
Radiochemistry Data Package

5

Section 5

RAW DATA

Lead-210 Analysis by Liquid Scintilation Raw Data Report

Laboratory Name: **Paragon Analytics** **Prep SOP:** PAI 726 **Reported on:** Tuesday, June 17, 2008

PAI Work Order: 0805200 **Analytical SOP:** PAI 704 3:04:19 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0805200-1	Pb-210	5/20/2008	PB080606-1	6/13/2008	760.82	TISSUE	5.03 g	Q1220	PB080606-1A	6/13/2008	3.702	84.62%	177.72	0.172	0.086	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.16	NA	4.17 g	27-01	Manual Entry	6:22 PM	2.550	NA	85.5%	0.070	NA	As Received	NA	LT
0805200-2	Pb-210	5/20/2008	PB080606-1	6/13/2008	766.47	TISSUE	4.14 g	Q1220	PB080606-1A	6/13/2008	2.830	83.30%	177.72	0.058	0.116	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.21	NA	3.43 g	28-01	Manual Entry	9:24 PM	2.543	NA	77.8%	0.072	NA	As Received	NA	U
0805200-4	Pb-210	5/20/2008	PB080606-1	6/13/2008	763.82	TISSUE	0.403 g	Q1220	PB080606-1A	6/14/2008	3.359	83.99%	177.72	1.44	1.01	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.18	NA	0.334 g	29-01	Manual Entry	12:27 AM	2.547	NA	90.9%	0.73	NA	As Received	NA	M3
0805200-5	Pb-210	5/20/2008	PB080606-1	6/13/2008	762.81	TISSUE	5 g	Q1220	PB080606-1A	6/14/2008	3.207	84.21%	177.72	0.097	0.085	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.19	NA	4.15 g	30-01	Manual Entry	3:30 AM	2.548	NA	87.5%	0.058	NA	As Received	NA	LT
0805200-6	Pb-210	5/20/2008	PB080606-1	6/13/2008	760.56	TISSUE	3.37 g	Q1220	PB080606-1A	6/14/2008	2.645	84.66%	177.72	0.023	0.139	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.41	NA	2.79 g	31-01	Manual Entry	6:32 AM	2.550	NA	78.7%	0.083	NA	As Received	NA	U
0805200-8	Pb-210	5/20/2008	PB080606-1	6/13/2008	768.89	TISSUE	0.422 g	Q1220	PB080606-1A	6/14/2008	2.847	82.57%	177.72	0.53	0.99	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.21	NA	0.35 g	32-01	Manual Entry	9:35 AM	2.541	NA	90.2%	0.62	NA	As Received	NA	U
0805200-9	Pb-210	5/20/2008	PB080606-1	6/13/2008	762.88	TISSUE	3.7 g	Q1220	PB080606-1A	6/14/2008	3.021	84.20%	177.72	0.102	0.124	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.2	NA	3.06 g	33-01	Manual Entry	12:38 PM	2.548	NA	80.9%	0.080	NA	As Received	NA	U
0805200-10	Pb-210	5/20/2008	PB080606-1	6/13/2008	771.16	TISSUE	5.02 g	Q1220	PB080606-1A	6/14/2008	2.785	81.80%	177.72	0.045	0.105	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.82	NA	4.17 g	34-01	Manual Entry	4:32 PM	2.538	NA	72.3%	0.064	NA	As Received	NA	U
0805200-12	Pb-210	5/20/2008	PB080606-1	6/13/2008	760.61	TISSUE	0.384 g	Q1220	PB080606-1A	6/14/2008	3.168	84.65%	177.72	1.17	1.08	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.53	NA	0.318 g	35-01	Manual Entry	7:34 PM	2.550	NA	88.6%	0.73	NA	As Received	NA	M3
0805200-13	Pb-210	5/19/2008	PB080606-1	6/13/2008	765.4	TISSUE	5.03 g	Q1220	PB080606-1A	6/14/2008	3.827	83.59%	177.72	0.189	0.084	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.29	NA	4.17 g	36-01	Manual Entry	10:35 PM	2.545	NA	87.8%	0.072	NA	As Received	NA	LT
0805200-14	Pb-210	5/19/2008	PB080606-1	6/13/2008	758.48	TISSUE	5.06 g	Q1220	PB080606-1A	6/15/2008	2.645	85.01%	177.72	0.013	0.083	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.64	NA	4.19 g	37-01	Manual Entry	1:37 AM	2.553	NA	87.6%	0.050	NA	As Received	NA	U

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

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

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

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'

M - Requested MDC not met.

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

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

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

B - Analyte concentration greater than MDC.

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

Notes:

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

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

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Lead-210 Analysis by Liquid Scintilation Raw Data Report

Laboratory Name: **Paragon Analytics** **Prep SOP:** PAI 726 **Reported on:** Tuesday, June 17, 2008

PAI Work Order: 0805200 **Analytical SOP:** PAI 704 3:04:19 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0805200-16	Pb-210	5/19/2008	PB080606-1	6/13/2008	774.29	TISSUE	1.07 g	Q1220	PB080606-1A	6/15/2008	3.270	80.57%	177.72	0.54	0.42	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.34	NA	0.887 g	39-01	Manual Entry	7:40 AM	2.534	NA	86.7%	0.29	NA	As Received	NA	LT
0805200-17	Pb-210	5/19/2008	PB080606-1	6/13/2008	762.06	TISSUE	5.08 g	Q1220	PB080606-1A	6/15/2008	2.932	84.37%	177.72	0.058	0.087	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.37	NA	4.21 g	46-01	Manual Entry	10:43 AM	2.549	NA	83.7%	0.055	NA	As Received	NA	U
0805200-18	Pb-210	5/19/2008	PB080606-1	6/13/2008	765.56	TISSUE	5.03 g	Q1220	PB080606-1A	6/15/2008	2.797	83.55%	177.72	0.038	0.087	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.39	NA	4.17 g	47-01	Manual Entry	1:44 PM	2.545	NA	85.5%	0.053	NA	As Received	NA	U
0805200-20	Pb-210	5/19/2008	PB080606-1	6/13/2008	763.09	TISSUE	0.989 g	Q1220	PB080606-1A	6/15/2008	3.134	84.15%	177.72	0.44	0.43	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.19	NA	0.82 g	48-01	Manual Entry	5:40 PM	2.547	NA	86.6%	0.29	NA	As Received	NA	LT
0805200-21	Pb-210	5/19/2008	PB080606-1	6/13/2008	764.95	TISSUE	5.14 g	Q1220	PB080606-1A	6/15/2008	3.269	83.71%	177.72	0.102	0.081	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.52	NA	4.26 g	49-01	Manual Entry	8:43 PM	2.545	NA	89.7%	0.057	NA	As Received	NA	LT
0805200-22	Pb-210	5/19/2008	PB080606-1	6/13/2008	763.5	TISSUE	5.1 g	Q1220	PB080606-1A	6/15/2008	2.481	84.06%	177.72	-0.010	0.089	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.92	NA	4.22 g	50-01	Manual Entry	11:45 PM	2.547	NA	81.3%	0.053	NA	As Received	NA	U
0805200-24	Pb-210	5/19/2008	PB080606-1	6/13/2008	767.05	TISSUE	1.15 g	Q1220	PB080606-1A	6/16/2008	4.242	83.14%	177.72	1.19	0.40	pCi/g	NA	
SMP	Trg. Analyte		PB080606-1-1	10:00:00 AM	0.14	NA	0.952 g	51-01	Manual Entry	2:48 AM	2.543	NA	81.5%	0.40	NA	As Received	NA	
0805200-25	Pb-210	5/20/2008	PB080606-2	6/11/2008	755.27	TISSUE	2 g	Q1220	PB080606-2A	6/11/2008	2.932	85.40%	177.72	0.14	0.22	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.95	NA	1.66 g	03-01	Manual Entry	6:46 PM	2.560	NA	82.1%	0.14	NA	As Received	NA	U
0805200-26	Pb-210	4/7/2008	PB080606-2	6/11/2008	763.05	TISSUE	5.18 g	Q1220	PB080606-2A	6/11/2008	3.692	84.16%	177.72	0.191	0.096	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.3	NA	4.29 g	04-01	Manual Entry	9:49 PM	2.551	NA	74.8%	0.078	NA	As Received	NA	LT
0805200-27	Pb-210	4/7/2008	PB080606-2	6/11/2008	758.47	TISSUE	5.11 g	Q1220	PB080606-2A	6/12/2008	2.616	85.01%	177.72	0.011	0.101	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.23	NA	4.24 g	05-01	Manual Entry	12:52 AM	2.556	NA	71.3%	0.060	NA	As Received	NA	U
0805200-29	Pb-210	4/7/2008	PB080606-2	6/11/2008	760.82	TISSUE	0.655 g	Q1220	PB080606-2A	6/12/2008	3.669	84.62%	177.72	1.47	0.75	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.46	NA	0.543 g	06-01	Manual Entry	3:54 AM	2.553	NA	74.9%	0.61	NA	As Received	NA	

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

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

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

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'

M - Requested MDC not met.

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

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

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

B - Analyte concentration greater than MDC.

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

Notes:

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

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

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Lead-210 Analysis by Liquid Scintilation Raw Data Report

Laboratory Name: **Paragon Analytics** **Prep SOP:** PAI 726 **Reported on:** Monday, June 16, 2008

PAI Work Order: 0805200 **Analytical SOP:** PAI 704 12:43:21 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0805200-30	Pb-210	4/12/2008	PB080606-2	6/11/2008	756.47	TISSUE	5.02 g	Q1220	PB080606-2A	6/12/2008	3.157	85.27%	177.72	0.097	0.093	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.35	NA	4.16 g	07-01	Manual Entry	6:57 AM	2.558	NA	78.6%	0.063	NA	As Received	NA	LT
0805200-31	Pb-210	4/12/2008	PB080606-2	6/11/2008	765.95	TISSUE	5.03 g	Q1220	PB080606-2A	6/12/2008	2.819	83.45%	177.72	0.045	0.094	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0	NA	4.17 g	08-01	Manual Entry	10:00 AM	2.547	NA	79.4%	0.058	NA	As Received	NA	U
0805200-33	Pb-210	4/12/2008	PB080606-2	6/11/2008	759.52	TISSUE	0.968 g	Q1220	PB080606-2A	6/12/2008	4.338	84.84%	177.72	1.43	0.46	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.14	NA	0.802 g	10-01	Manual Entry	4:57 PM	2.555	NA	82.9%	0.47	NA	As Received	NA	
0805200-34	Pb-210	4/13/2008	PB080606-2	6/11/2008	766.66	TISSUE	5.14 g	Q1220	PB080606-2A	6/12/2008	3.044	83.25%	177.72	0.104	0.120	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.2	NA	4.26 g	11-01	Manual Entry	7:59 PM	2.547	NA	60.8%	0.079	NA	As Received	NA	U
0805200-35	Pb-210	4/13/2008	PB080606-2	6/11/2008	761.75	TISSUE	5.09 g	Q1220	PB080606-2A	6/12/2008	2.572	84.44%	177.72	0.003	0.100	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0	NA	4.22 g	12-01	Manual Entry	11:00 PM	2.552	NA	73.1%	0.059	NA	As Received	NA	U
0805200-37	Pb-210	4/13/2008	PB080606-2	6/11/2008	764.68	TISSUE	0.741 g	Q1220	PB080606-2A	6/13/2008	2.938	83.78%	177.72	0.44	0.65	pCi/g	NA	
SMP	Trg. Analyte		PB080606-2-1	12:10:00 PM	0.37	NA	0.615 g	13-01	Manual Entry	2:02 AM	2.549	NA	77.9%	0.41	NA	As Received	NA	U
PB080606-1	Pb-210	6/6/2008	PB080606-1	6/13/2008	765.76	TISSUE	4 g	Q1220	PB080606-1A	6/16/2008	2.639	83.50%	177.72	0.018	0.110	pCi/g	NA	
MB	Trg. Analyte	10:18:09 AM	PB080606-1-1	10:00:00 AM	0	NA	3.32 g	52-01	Manual Entry	5:51 AM	2.544	NA	84.6%	0.066	NA	As Received	NA	U
PB080606-1	Pb-210	6/6/2008	PB080606-1	6/13/2008	764.92	TISSUE	4 g	Q1220	PB080606-1A	6/16/2008	32.047	83.72%	29.64	5.4	0.3	pCi/g	NA	103
LCS	Trg. Analyte	10:18:09 AM	PB080606-1-1	10:00:00 AM	0	NA	3.32 g	53-01	Manual Entry	8:51 AM	2.545	NA	87.9%	1.4	NA	As Received	NA	P
PB080606-1	Pb-210	6/6/2008	PB080606-1	6/13/2008	768.93	TISSUE	4 g	Q1220	PB080606-1A	6/16/2008	27.325	82.56%	29.64	5.0	0.3	pCi/g	0.23	94.4
LCSD	Trg. Analyte	10:18:09 AM	PB080606-1-1	10:00:00 AM	0.24	NA	3.32 g	54-01	Manual Entry	9:24 AM	2.541	NA	81.4%	1.3	NA	As Received	NA	P
PB080606-2	Pb-210	6/6/2008	PB080606-2	6/11/2008	762.84	TISSUE	4 g	Q1220	PB080606-2A	6/13/2008	2.634	84.21%	177.72	0.016	0.114	pCi/g	NA	
MB	Trg. Analyte	10:36:40 AM	PB080606-2-1	12:10:00 PM	0.42	NA	3.32 g	14-01	Manual Entry	5:04 AM	2.551	NA	81.4%	0.068	NA	As Received	NA	U
PB080606-2	Pb-210	6/6/2008	PB080606-2	6/11/2008	759.22	TISSUE	4 g	Q1220	PB080606-2A	6/13/2008	28.877	84.89%	29.64	5.2	0.3	pCi/g	NA	98.7
LCS	Trg. Analyte	10:36:40 AM	PB080606-2-1	12:10:00 PM	0	NA	3.32 g	15-01	Manual Entry	8:03 AM	2.555	NA	80.4%	1.3	NA	As Received	NA	P

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

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

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

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'

M - Requested MDC not met.

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

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

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

B - Analyte concentration greater than MDC.

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

Notes:

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

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

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Lead-210 Analysis by Liquid Scintilation Raw Data Report

Laboratory Name: **Paragon Analytics**
PAI Work Order: 0805200

Prep SOP: PAI 726
Analytical SOP: PAI 704

Reported on: Monday, June 16, 2008
12:43:21 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
PB080606-2	Pb-210	6/6/2008	PB080606-2	6/11/2008	763.17	TISSUE	4 g	Q1220	PB080606-2A	6/13/2008	29.011	84.14%	29.64	4.8	0.3	pCi/g	0.23	91.1
LCSD	Trg. Analyte	10:36:40 AM	PB080606-2-1	12:10:00 PM	0	NA	3.32 g	16-01	Manual Entry	8:35 AM	2.551	NA	88.4%	1.2	NA	As Received	NA	P

Comments:

Data Package ID: *PB0805200-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

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

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

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'

M - Requested MDC not met.

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

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

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

B - Analyte concentration greater than MDC.

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

Notes:

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

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

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Luminescence Correction Quantulus 1220
PB080606-1

	WIN 1 (190-325)					WIN 2 (800-1024)					
Sample ID	count rate spectrum 11	count rate spectrum 12	lumex corrected	% lumex	% lumex check	count rate spectrum 11	count rate spectrum 12	lumex corrected	% lumex	Wind 2 check	
PB080606-1CB1	0.006	2.577	2.571	0.23	OK	0.000	0.568	0.568	0.00		
PB080606-1CB2	0.006	2.487	2.481	0.24	OK	0.000	0.557	0.557	0.00		WINDOW 2 CL'S
PB080606-1CB3	0.006	2.594	2.588	0.23	OK	0.000	0.568	0.568	0.00		
0805200-1	0.006	3.708	3.702	0.16	OK	0.000	0.641	0.641	0.00	OK	
0805200-2	0.006	2.836	2.830	0.21	OK	0.000	0.737	0.737	0.00	HIGH	
0805200-4	0.006	3.365	3.359	0.18	OK	0.000	0.613	0.613	0.00	OK	
0805200-5	0.006	3.213	3.207	0.19	OK	0.000	0.568	0.568	0.00	OK	
0805200-6	0.011	2.656	2.645	0.41	OK	0.000	0.557	0.557	0.00	OK	
0805200-8	0.006	2.853	2.847	0.21	OK	0.000	0.703	0.703	0.00	OK	
0805200-9	0.006	3.027	3.021	0.20	OK	0.000	0.619	0.619	0.00	OK	
0805200-10	0.023	2.808	2.785	0.82	OK	0.000	0.664	0.664	0.00	OK	
0805200-12	0.017	3.185	3.168	0.53	OK	0.000	0.540	0.540	0.00	OK	
0805200-13	0.011	3.838	3.827	0.29	OK	0.000	0.580	0.580	0.00	OK	A
0805200-14	0.017	2.662	2.645	0.64	OK	0.000	0.647	0.647	0.00	OK	
0805200-16	0.011	3.281	3.270	0.34	OK	0.006	0.551	0.545	1.09	OK	
0805200-17	0.011	2.943	2.932	0.37	OK	0.000	0.580	0.580	0.00	OK	
0805200-18	0.011	2.808	2.797	0.39	OK	0.000	0.647	0.647	0.00	OK	
0805200-20	0.006	3.140	3.134	0.19	OK	0.000	0.546	0.546	0.00	OK	
0805200-21	0.017	3.286	3.269	0.52	OK	0.000	0.580	0.580	0.00	OK	
0805200-22	0.023	2.504	2.481	0.92	OK	0.000	0.557	0.557	0.00	OK	
0805200-24	0.006	4.248	4.242	0.14	OK	0.000	0.636	0.636	0.00	OK	
PB080606-1MB	0.000	2.639	2.639	0.00	OK	0.000	0.518	0.518	0.00	OK	
PB080606-1LCS	0.000	32.047	32.047	0.00	OK	0.000	0.607	0.607	0.00	OK	B
PB080606-1LCSD	0.067	27.392	27.325	0.24	OK	0.000	0.607	0.607	0.00	OK	

% lumex LCL=	0.00
% lumex UCL=	10.00

A	Wind 2 LCL=	0.40
	Wind 2 UCL=	0.73
B	Wind 2 LCL=	0.15
	Wind 2 UCL=	0.98

R:\INST\LSC\QUANTULUS\LUMEX CORRECTION\ 2008\PB080606-1LC

Spectrum report

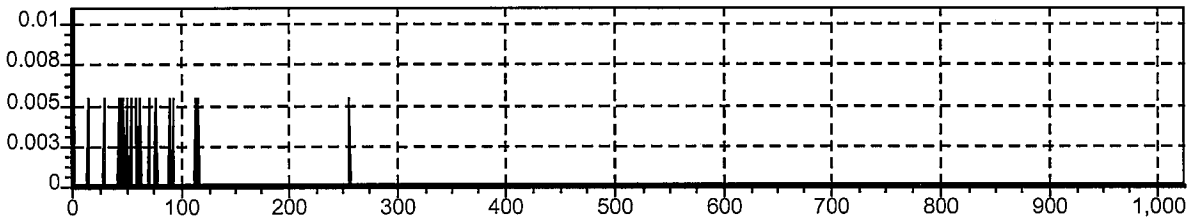
6/16/08 7:31:21 AM

```
   Setup information
\my documents\default.ini

Window 1 = 190..325 190..325, MCA 11 mode CPM
   volume 10 ml
Window 2 = 800..1024 800..1024, MCA 11 mode CPM
   volume 10 ml
Window 3 = 190..325 190..325, MCA 12 mode CPM
   volume 10 ml
Window 4 = 800..1024 800..1024, MCA 12 mode CPM
   volume 10 ml
```

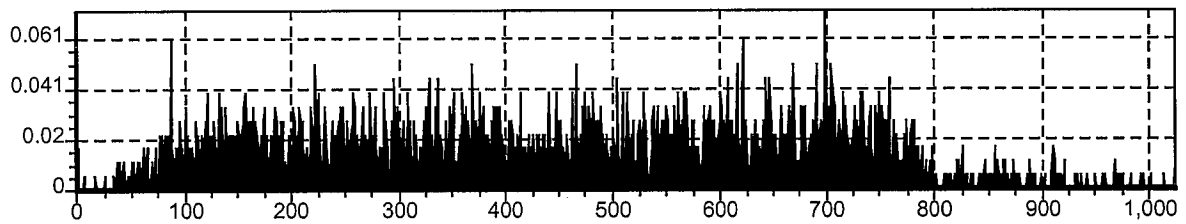
file :C:\ Pb-210\ PB-0613\ Q012601N.001
spectrum :11
counting time :10662.98 s
SQP(E) :761.32
counting :6/13/08 6:16:00 PM
sampling :6/13/08 6:16:00 PM
ID: PB080606-1CB1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



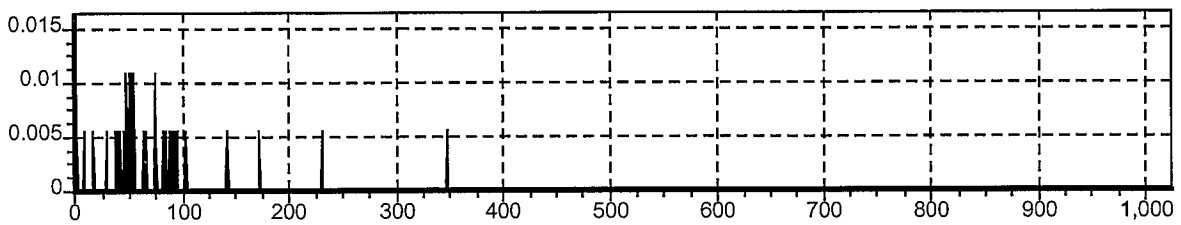
file :C:\ Pb-210\ PB-0613\ Q012601N.001
spectrum :12
counting time :10662.98 s
SQP(E) :761.32
counting :6/13/08 6:16:00 PM
sampling :6/13/08 6:16:00 PM
ID: PB080606-1CB1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.577	0.120				0.000		
800..1024	0.568	0.057				0.000		



file :C:\ Pb-210\ PB-0613\ Q022701N.001
spectrum :11
counting time :10662.99 s
SQP(E) :760.82
counting :6/13/08 9:19:00 PM
sampling :6/13/08 9:19:00 PM
ID: 0805200-1

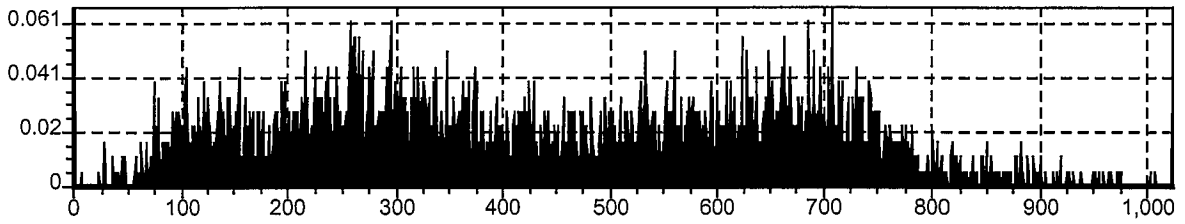
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



DJ 6/16/08

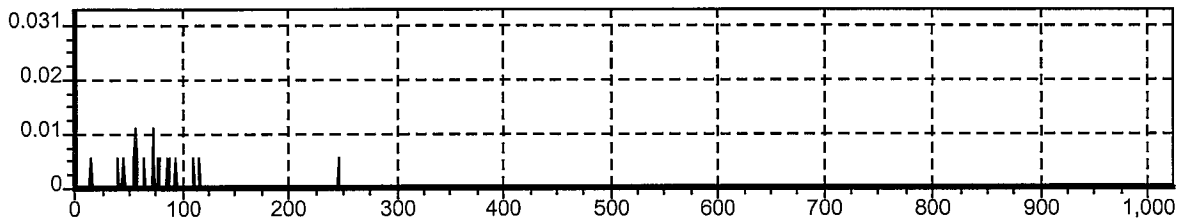
file :C:\ Pb-210\ PB-0613\
Q022701N.001
spectrum :12
counting time :10662.99 s
SQP(E) :760.82
counting :6/13/08 9:19:00 PM
sampling :6/13/08 9:19:00 PM
ID: 0805200-1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.708	0.144				0.000		
800..1024	0.641	0.060				0.000		



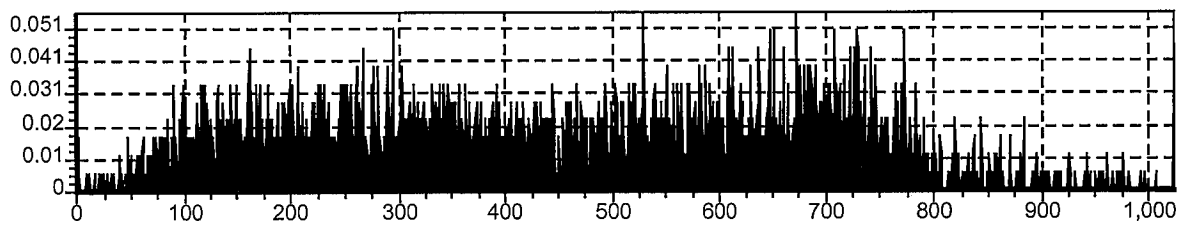
file :C:\ Pb-210\ PB-0613\
Q032801N.001
spectrum :11
counting time :10662.97 s
SQP(E) :766.47
counting :6/14/08 12:21:00 AM
sampling :6/14/08 12:21:00 AM
ID: 0805200-2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0613\
Q032801N.001
spectrum :12
counting time :10662.97 s
SQP(E) :766.47
counting :6/14/08 12:21:00 AM
sampling :6/14/08 12:21:00 AM
ID: 0805200-2

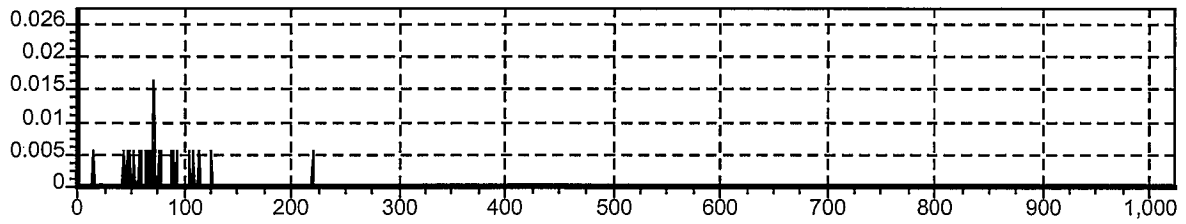
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.836	0.126				0.000		
800..1024	0.737	0.064				0.000		



file :C:\ Pb-210\ PB-0613\
Q042901N.001
spectrum :11
counting time :10662.96 s
SQP(E) :763.82
counting :6/14/08 3:24:00 AM
sampling :6/14/08 3:24:00 AM
ID: 0805200-4

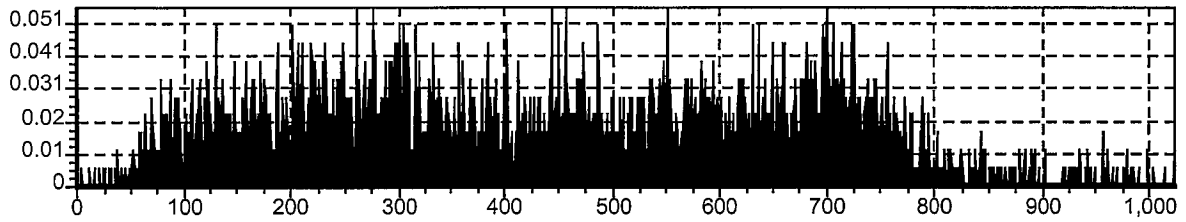
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								

6/16/08



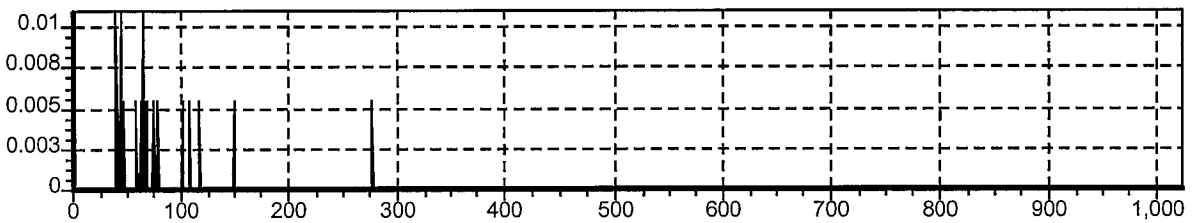
file :C:\ Pb-210\ PB-0613\
Q042901N.001
spectrum :12
counting time :10662.96 s
SQP(E) :763.82
counting :6/14/08 3:24:00 AM
sampling :6/14/08 3:24:00 AM
ID: 0805200-4

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.365	0.138				0.000		
800..1024	0.613	0.059				0.000		



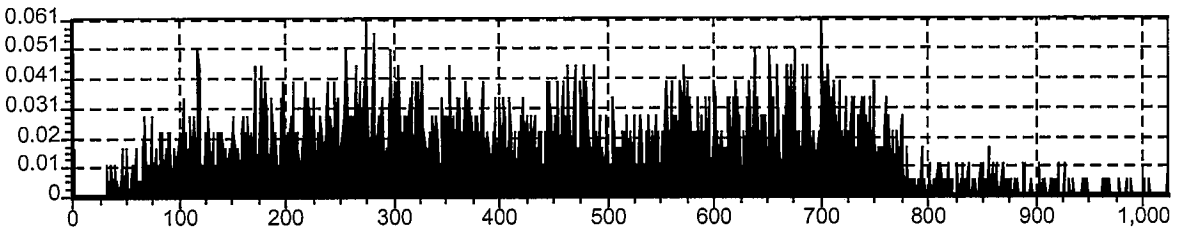
file :C:\ Pb-210\ PB-0613\
Q053001N.001
spectrum :11
counting time :10662.99 s
SQP(E) :762.81
counting :6/14/08 6:27:00 AM
sampling :6/14/08 6:27:00 AM
ID: 0805200-5

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0613\
Q053001N.001
spectrum :12
counting time :10662.99 s
SQP(E) :762.81
counting :6/14/08 6:27:00 AM
sampling :6/14/08 6:27:00 AM
ID: 0805200-5

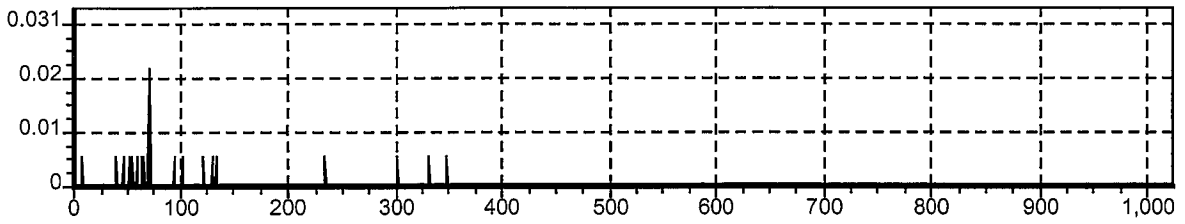
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.213	0.134				0.000		
800..1024	0.568	0.057				0.000		



6/16/08

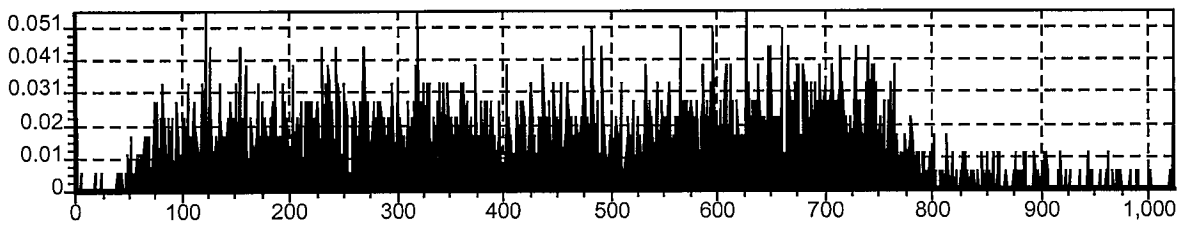
file :C:\ Pb-210\ PB-0613\
Q063101N.001
spectrum :11
counting time :10662.98 s
SQP(E) :760.56
counting :6/14/08 9:29:00 AM
sampling :6/14/08 9:29:00 AM
ID: 0805200-6

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



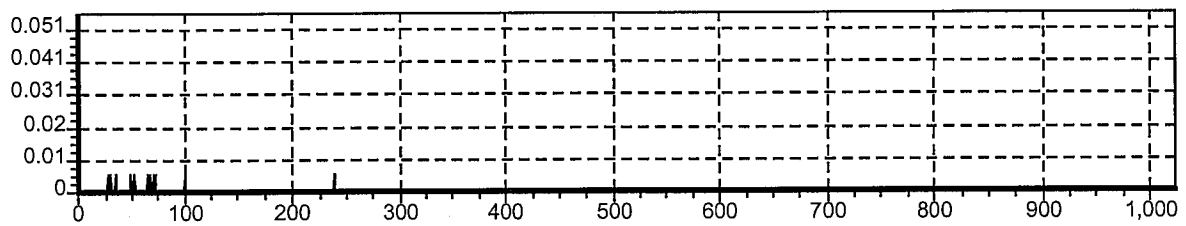
file :C:\ Pb-210\ PB-0613\
Q063101N.001
spectrum :12
counting time :10662.98 s
SQP(E) :760.56
counting :6/14/08 9:29:00 AM
sampling :6/14/08 9:29:00 AM
ID: 0805200-6

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.656	0.122				0.000		
800..1024	0.557	0.056				0.000		



file :C:\ Pb-210\ PB-0613\
Q073201N.001
spectrum :11
counting time :10663.01 s
SQP(E) :768.89
counting :6/14/08 12:32:00 PM
sampling :6/14/08 12:32:00 PM
ID: 0805200-8

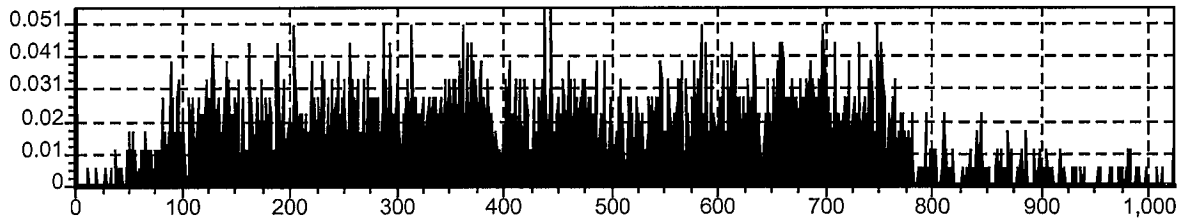
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0613\
Q073201N.001
spectrum :12
counting time :10663.01 s
SQP(E) :768.89
counting :6/14/08 12:32:00 PM
sampling :6/14/08 12:32:00 PM
ID: 0805200-8

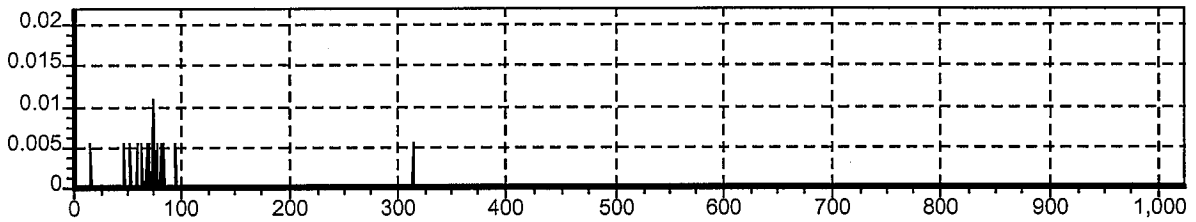
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.853	0.127				0.000		
800..1024	0.703	0.063				0.000		

6/16/08



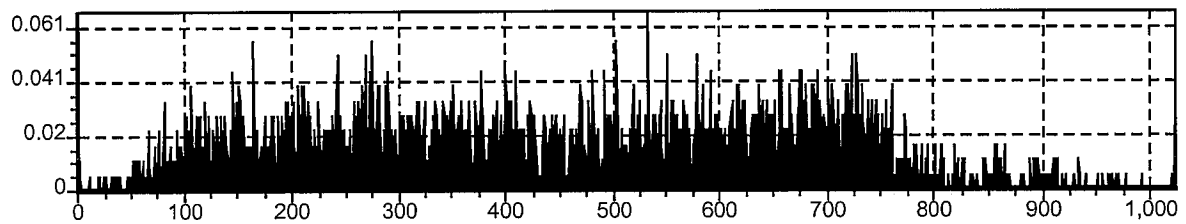
file :C:\ Pb-210\ PB-0613\
Q083301N.001
spectrum :11
counting time :10663.00 s
SQP(E) :762.88
counting :6/14/08 3:35:00 PM
sampling :6/14/08 3:35:00 PM
ID: 0805200-9

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



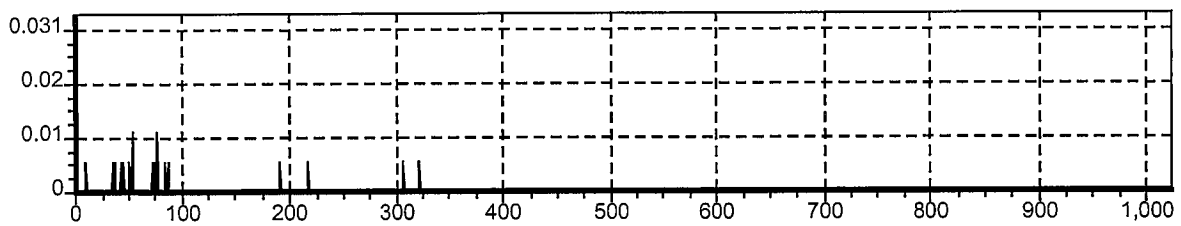
file :C:\ Pb-210\ PB-0613\
Q083301N.001
spectrum :12
counting time :10663.00 s
SQP(E) :762.88
counting :6/14/08 3:35:00 PM
sampling :6/14/08 3:35:00 PM
ID: 0805200-9

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.027	0.131				0.000		
800..1024	0.619	0.059				0.000		



file :C:\ Pb-210\ PB-0614\
Q013401N.001
spectrum :11
counting time :10662.98 s
SQP(E) :771.16
counting :6/14/08 7:29:00 PM
sampling :6/14/08 7:29:00 PM
ID: 0805200-10

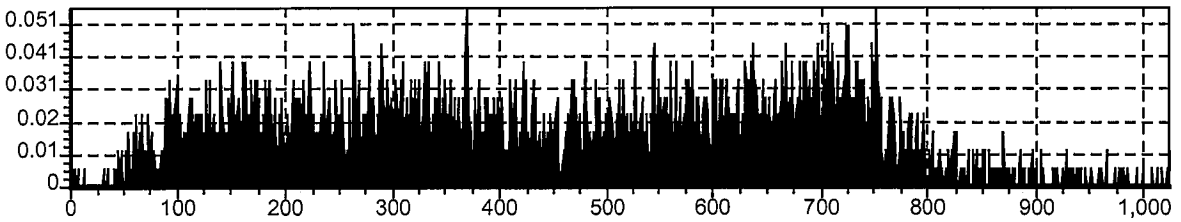
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.023	0.011				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



6/16/08

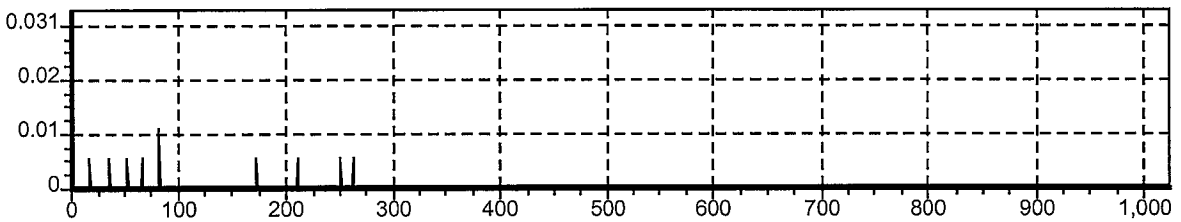
file :C:\ Pb-210\ PB-0614\
Q013401N.001
spectrum :12
counting time :10662.98 s
SQP(E) :771.16
counting :6/14/08 7:29:00 PM
sampling :6/14/08 7:29:00 PM
ID: 0805200-10

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.808	0.126				0.000		
800..1024	0.664	0.061				0.000		



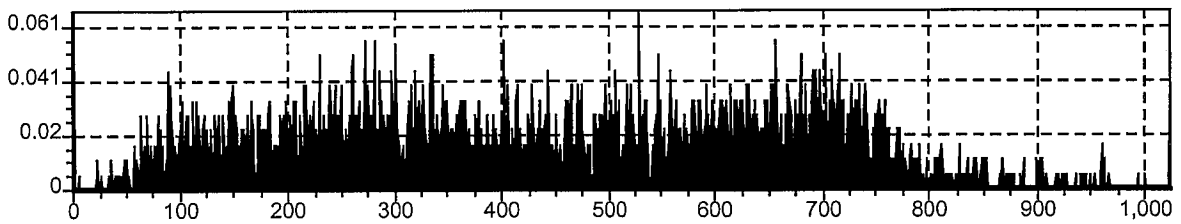
file :C:\ Pb-210\ PB-0614\
Q023501N.001
spectrum :11
counting time :10662.97 s
SQP(E) :760.61
counting :6/14/08 10:31:00 PM
sampling :6/14/08 10:31:00 PM
ID: 0805200-12

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.017	0.010				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0614\
Q023501N.001
spectrum :12
counting time :10662.97 s
SQP(E) :760.61
counting :6/14/08 10:31:00 PM
sampling :6/14/08 10:31:00 PM
ID: 0805200-12

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.185	0.134				0.000		
800..1024	0.540	0.055				0.000		



file :C:\ Pb-210\ PB-0614\
Q033601N.001
spectrum :11
counting time :10662.98 s
SQP(E) :765.40
counting :6/15/08 1:32:00 AM
sampling :6/15/08 1:32:00 AM
ID: 0805200-13

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								

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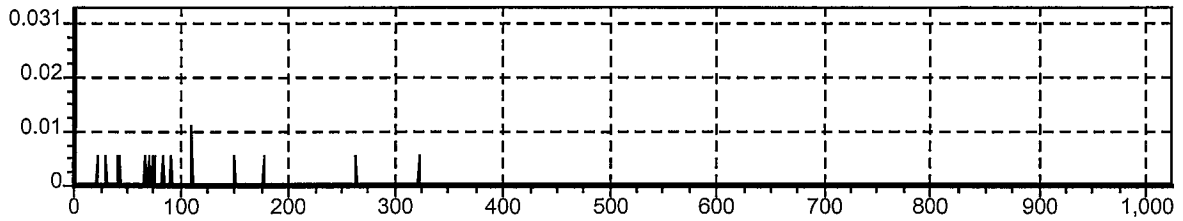
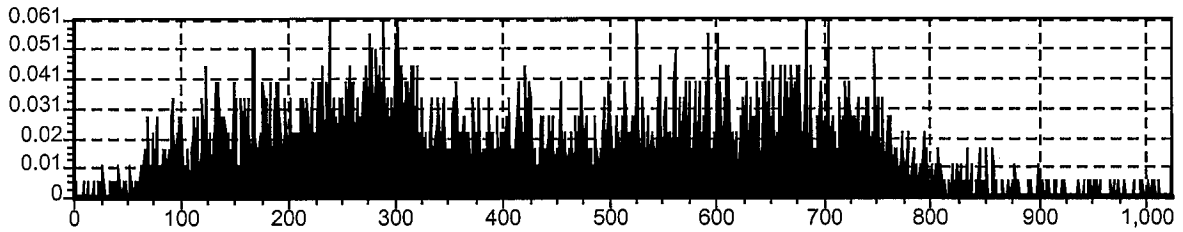


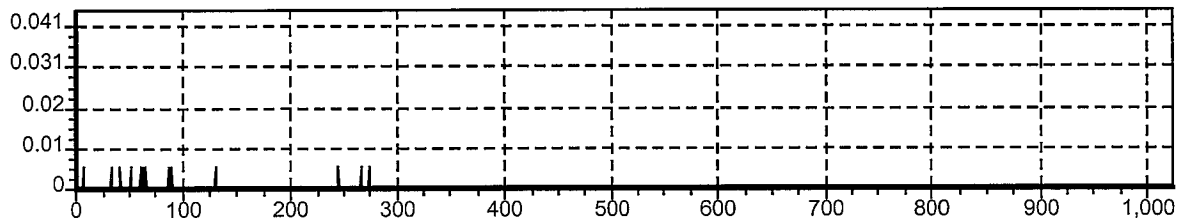
file :C:\ Pb-210\ PB-0614\
Q033601N.001
spectrum :12
counting time :10662.98 s
SQP(E) :765.40
counting :6/15/08 1:32:00 AM
sampling :6/15/08 1:32:00 AM
ID: 0805200-13

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.838	0.147				0.000		
800..1024	0.580	0.057				0.000		



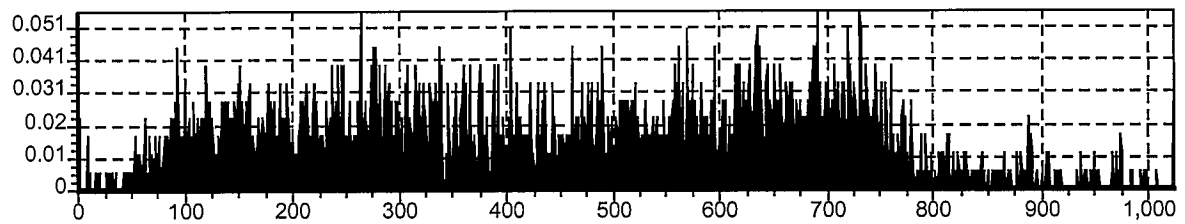
file :C:\ Pb-210\ PB-0614\
Q043701N.001
spectrum :11
counting time :10662.97 s
SQP(E) :758.48
counting :6/15/08 4:34:00 AM
sampling :6/15/08 4:34:00 AM
ID: 0805200-14

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.017	0.010				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0614\
Q043701N.001
spectrum :12
counting time :10662.97 s
SQP(E) :758.48
counting :6/15/08 4:34:00 AM
sampling :6/15/08 4:34:00 AM
ID: 0805200-14

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.662	0.122				0.000		
800..1024	0.647	0.060				0.000		



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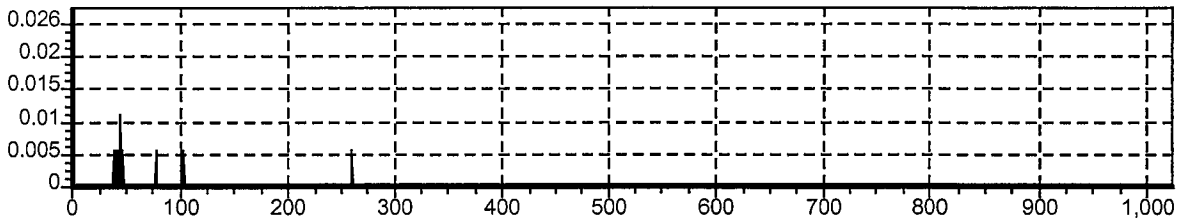
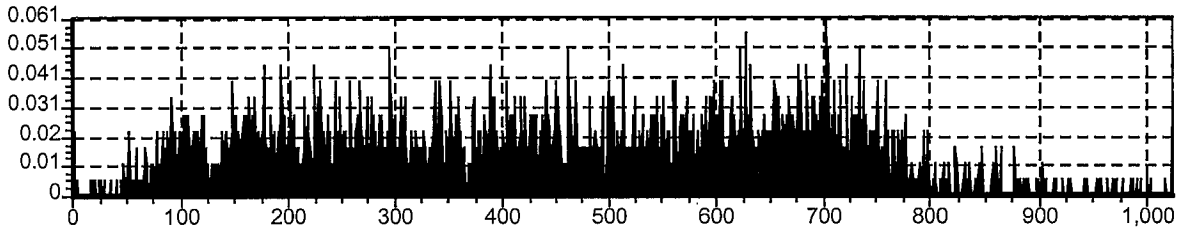
file :C:\ Pb-210\ PB-0614\
Q053801N.001
spectrum :11
counting time :10662.98 s
SQP(E) :766.72
counting :6/15/08 7:36:00 AM
sampling :6/15/08 7:36:00 AM
ID: PB080606-1CB2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



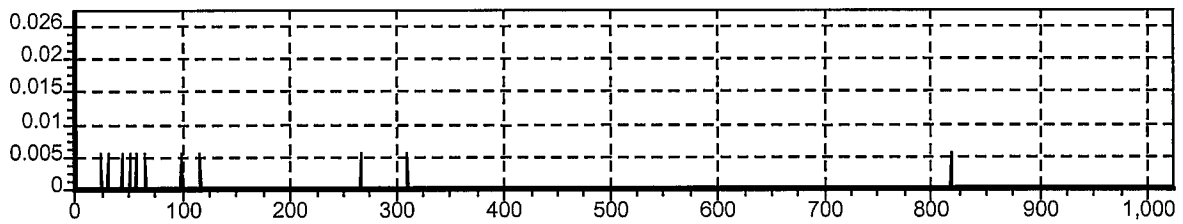
file :C:\ Pb-210\ PB-0614\
Q053801N.001
spectrum :12
counting time :10662.98 s
SQP(E) :766.72
counting :6/15/08 7:36:00 AM
sampling :6/15/08 7:36:00 AM
ID: PB080606-1CB2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.487	0.118				0.000		
800..1024	0.557	0.056				0.000		



file :C:\ Pb-210\ PB-0614\
Q063901N.001
spectrum :11
counting time :10663.00 s
SQP(E) :774.29
counting :6/15/08 10:37:00 AM
sampling :6/15/08 10:37:00 AM
ID: 0805200-16

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.006	0.006				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0614\
Q063901N.001
spectrum :12
counting time :10663.00 s
SQP(E) :774.29
counting :6/15/08 10:37:00 AM
sampling :6/15/08 10:37:00 AM
ID: 0805200-16

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.281	0.136				0.000		
800..1024	0.551	0.056				0.000		

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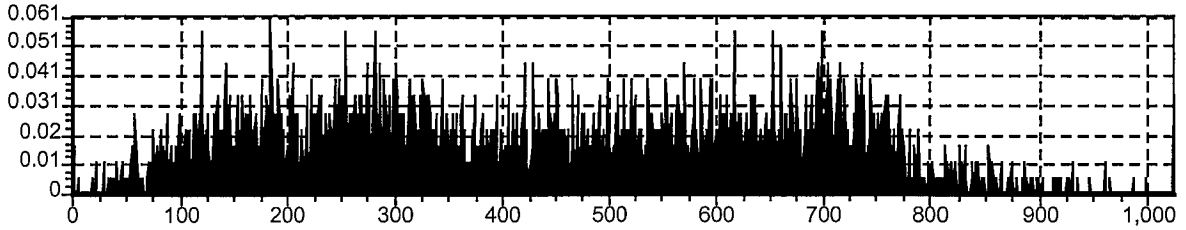
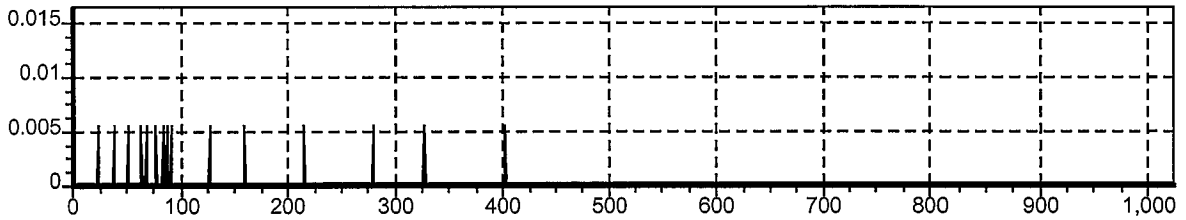


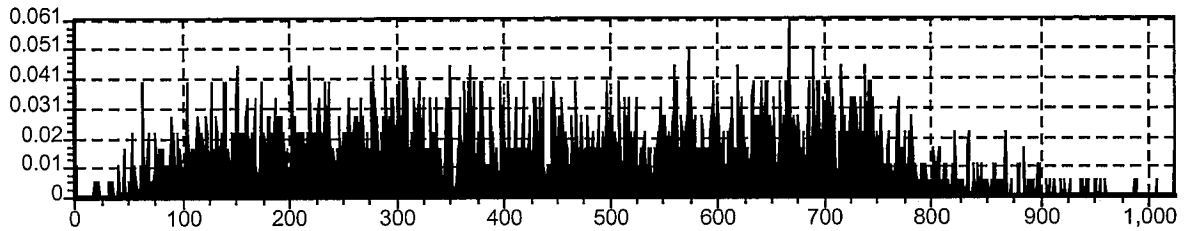
file :C:\ Pb-210\ PB-0614\
Q074601N.001
spectrum :11
counting time :10662.99 s
SQP(E) :762.06
counting :6/15/08 1:40:00 PM
sampling :6/15/08 1:40:00 PM
ID: 0805200-17

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



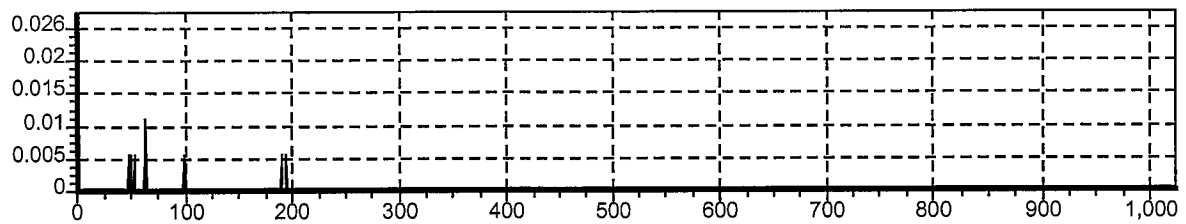
file :C:\ Pb-210\ PB-0614\
Q074601N.001
spectrum :12
counting time :10662.99 s
SQP(E) :762.06
counting :6/15/08 1:40:00 PM
sampling :6/15/08 1:40:00 PM
ID: 0805200-17

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.943	0.129				0.000		
800..1024	0.580	0.057				0.000		



file :C:\ Pb-210\ PB-0614\
Q084701N.001
spectrum :11
counting time :10662.98 s
SQP(E) :765.56
counting :6/15/08 4:41:00 PM
sampling :6/15/08 4:41:00 PM
ID: 0805200-18

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



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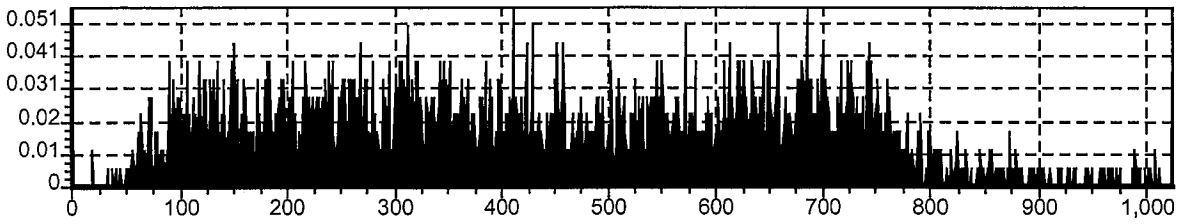
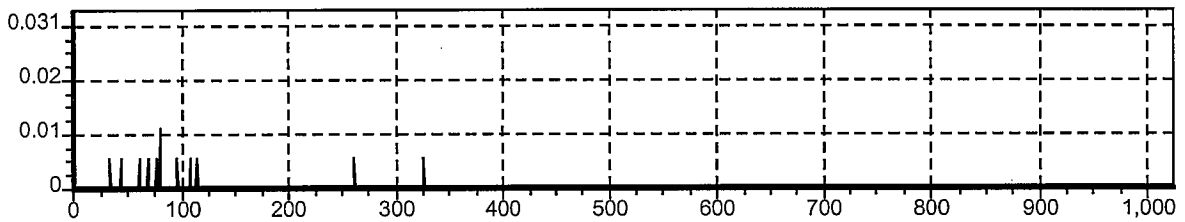
file :C:\ Pb-210\ PB-0614\
Q084701N.001
spectrum :12
counting time :10662.98 s
SQP(E) :765.56
counting :6/15/08 4:41:00 PM
sampling :6/15/08 4:41:00 PM
ID: 0805200-18

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.808	0.126				0.000		
800..1024	0.647	0.060				0.000		



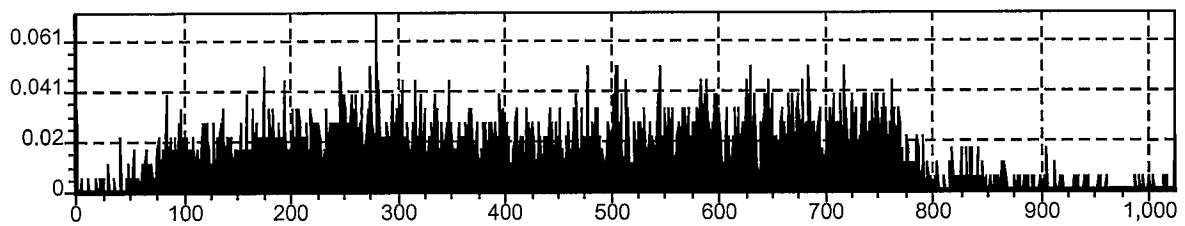
file :C:\ Pb-210\ PB-0615\
Q014801N.001
spectrum :11
counting time :10662.98 s
SQP(E) :763.09
counting :6/15/08 8:37:00 PM
sampling :6/15/08 8:37:00 PM
ID: 0805200-20

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0615\
Q014801N.001
spectrum :12
counting time :10662.98 s
SQP(E) :763.09
counting :6/15/08 8:37:00 PM
sampling :6/15/08 8:37:00 PM
ID: 0805200-20

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.140	0.133				0.000		
800..1024	0.546	0.055				0.000		



file :C:\ Pb-210\ PB-0615\
Q024901N.001
spectrum :11
counting time :10663.02 s
SQP(E) :764.95
counting :6/15/08 11:40:00 PM
sampling :6/15/08 11:40:00 PM
ID: 0805200-21

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.017	0.010				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								

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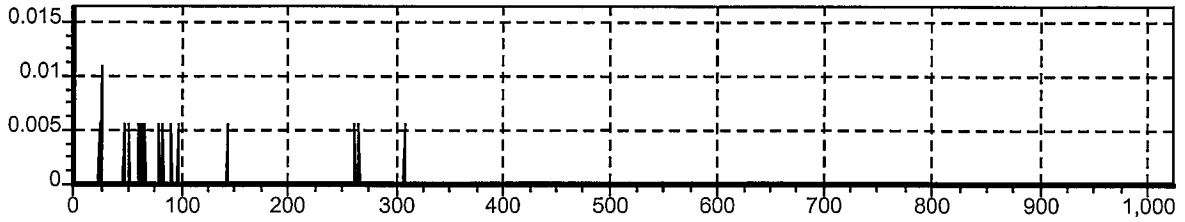
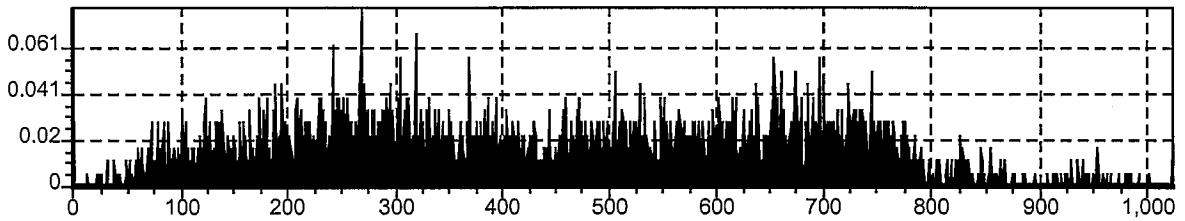


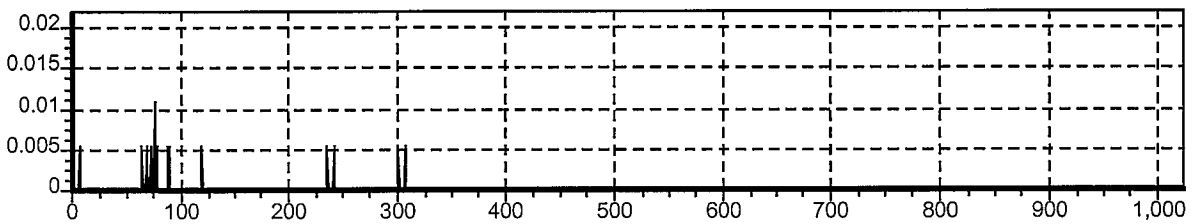
file :C:\ Pb-210\ PB-0615\ Q024901N.001
spectrum :12
counting time :10663.02 s
SQP(E) :764.95
counting :6/15/08 11:40:00 PM
sampling :6/15/08 11:40:00 PM
ID: 0805200-21

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.286	0.136				0.000		
800..1024	0.580	0.057				0.000		



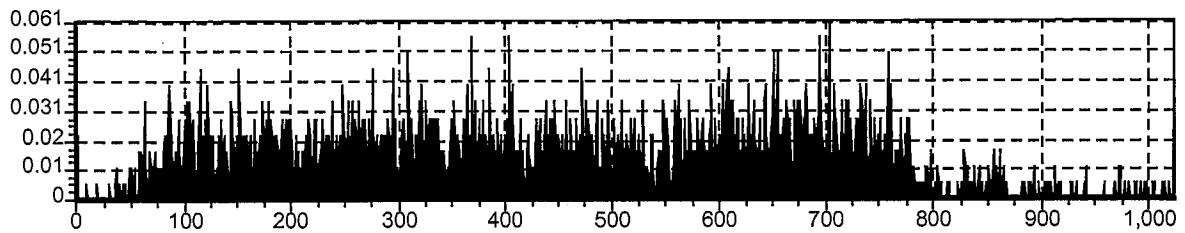
file :C:\ Pb-210\ PB-0615\ Q035001N.001
spectrum :11
counting time :10663.03 s
SQP(E) :763.50
counting :6/16/08 2:42:00 AM
sampling :6/16/08 2:42:00 AM
ID: 0805200-22

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.023	0.011				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0615\ Q035001N.001
spectrum :12
counting time :10663.03 s
SQP(E) :763.50
counting :6/16/08 2:42:00 AM
sampling :6/16/08 2:42:00 AM
ID: 0805200-22

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.504	0.119				0.000		
800..1024	0.557	0.056				0.000		



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Spectrum report

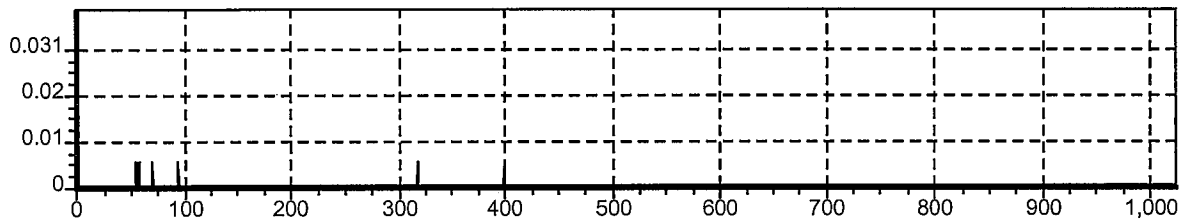
6/16/08 2:31:30 PM

```
   Setup information
\my documents\default.ini

Window 1 = 190..325 190..325, MCA 11 mode CPM
   volume 10 ml
Window 2 = 800..1024 800..1024, MCA 11 mode CPM
   volume 10 ml
Window 3 = 190..325 190..325, MCA 12 mode CPM
   volume 10 ml
Window 4 = 800..1024 800..1024, MCA 12 mode CPM
   volume 10 ml
```

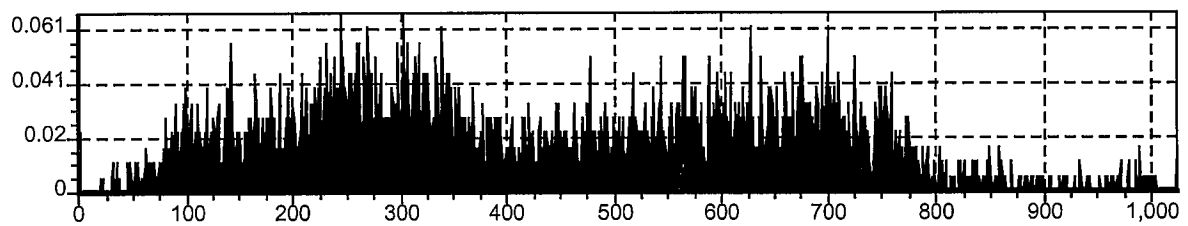
file :C:\ Pb-210\ PB-0615\ Q045101N.001
spectrum :11
counting time :10663.03 s
SQP(E) :767.05
counting :6/16/08 5:45:00 AM
sampling :6/16/08 5:45:00 AM
ID: 0805200-24

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



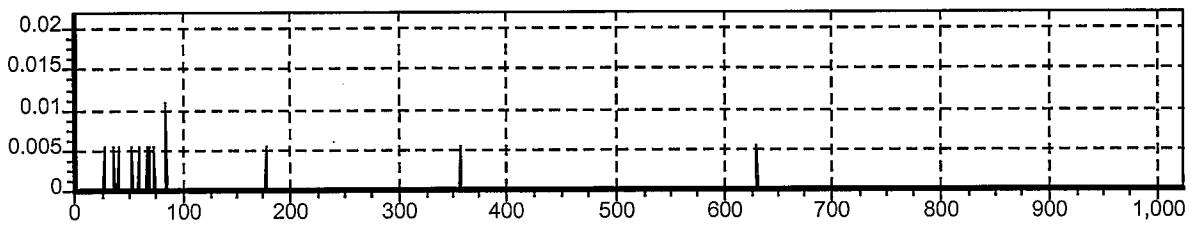
file :C:\ Pb-210\ PB-0615\ Q045101N.001
spectrum :12
counting time :10663.03 s
SQP(E) :767.05
counting :6/16/08 5:45:00 AM
sampling :6/16/08 5:45:00 AM
ID: 0805200-24

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	4.248	0.155				0.000		
800..1024	0.636	0.060				0.000		



file :C:\ Pb-210\ PB-0615\ Q055201N.001
spectrum :11
counting time :10663.05 s
SQP(E) :765.76
counting :6/16/08 8:48:00 AM
sampling :6/16/08 8:48:00 AM
ID: PB080606-1MB

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



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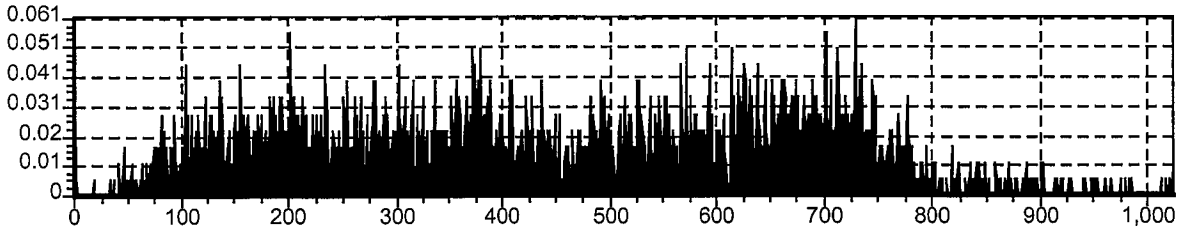
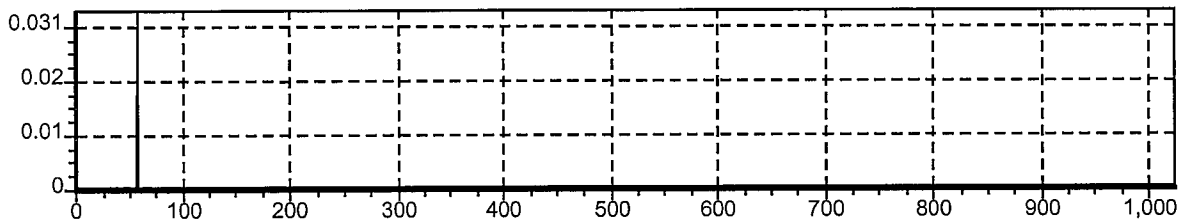
file :C:\ Pb-210\ PB-0615\
Q055201N.001
spectrum :12
counting time :10663.05 s
SQP(E) :765.76
counting :6/16/08 8:48:00 AM
sampling :6/16/08 8:48:00 AM
ID: PB080606-1MB

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.639	0.122				0.000		
800..1024	0.518	0.054				0.000		



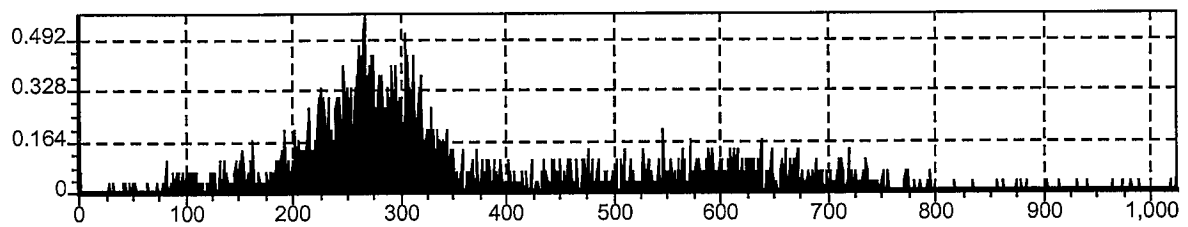
file :C:\ Pb-210\ PB-0615\
Q065301N.001
spectrum :11
counting time :1778.62 s
SQP(E) :764.92
counting :6/16/08 9:20:00 AM
sampling :6/16/08 9:20:00 AM
ID: PB080606-1LCS

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0615\
Q065301N.001
spectrum :12
counting time :1778.62 s
SQP(E) :764.92
counting :6/16/08 9:20:00 AM
sampling :6/16/08 9:20:00 AM
ID: PB080606-1LCS

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	32.047	1.040				0.000		
800..1024	0.607	0.143				0.000		



file :C:\ Pb-210\ PB-0615\
Q075401N.001
spectrum :11
counting time :1778.63 s
SQP(E) :768.93
counting :6/16/08 9:53:00 AM
sampling :6/16/08 9:53:00 AM
ID: PB080606-1LCSD

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.067	0.048				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								

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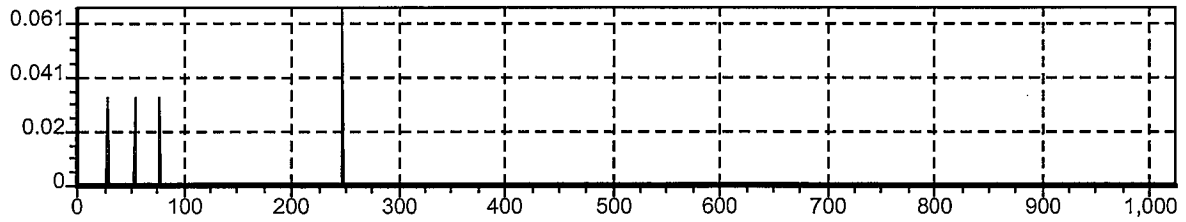
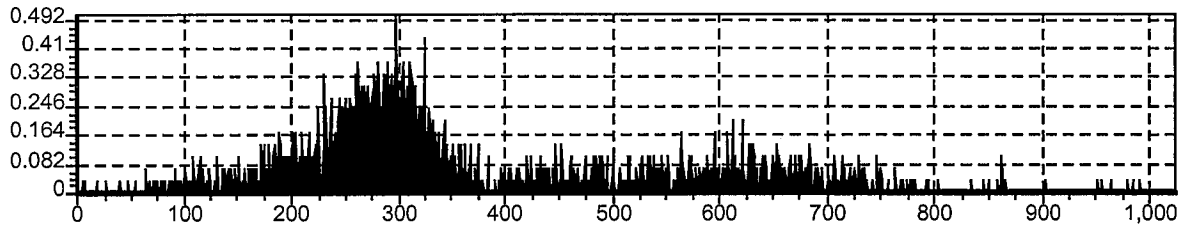


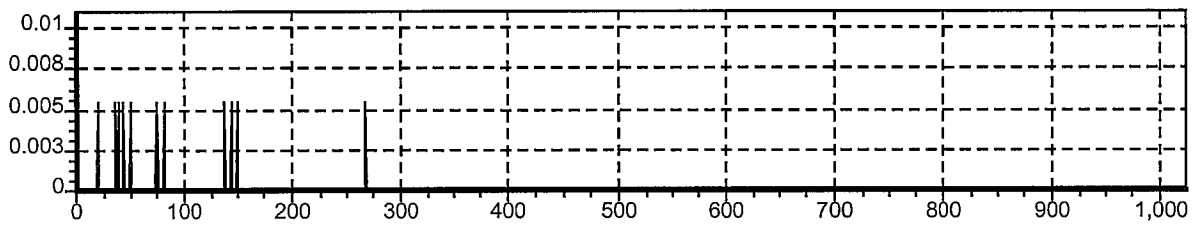
file :C:\ Pb-210\ PB-0615\
Q075401N.001
spectrum :12
counting time :1778.63 s
SQP(E) :768.93
counting :6/16/08 9:53:00 AM
sampling :6/16/08 9:53:00 AM
ID: PB080606-1LCSD

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	27.392	0.961				0.000		
800..1024	0.607	0.143				0.000		



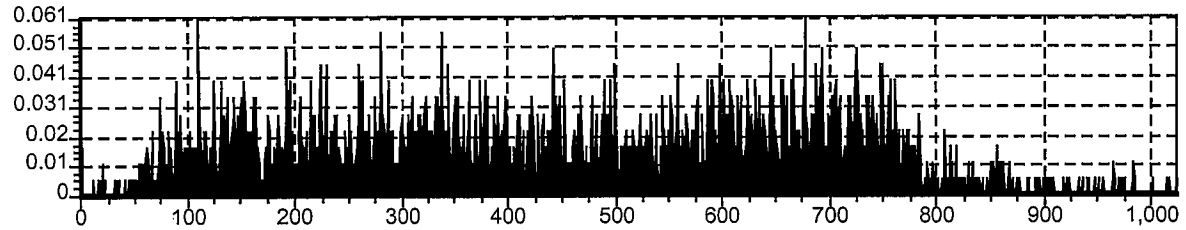
file :C:\ Pb-210\ PB-0615\
Q085501N.001
spectrum :11
counting time :10663.06 s
SQP(E) :763.05
counting :6/16/08 12:56:00 PM
sampling :6/16/08 12:56:00 PM
ID: PB080606-1CB3

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0615\
Q085501N.001
spectrum :12
counting time :10663.06 s
SQP(E) :763.05
counting :6/16/08 12:56:00 PM
sampling :6/16/08 12:56:00 PM
ID: PB080606-1CB3

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.594	0.121				0.000		
800..1024	0.568	0.057				0.000		



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Luminescence Correction Quantulus 1220
PB080606-2

	WIN 1 (190-325)					WIN 2 (800-1024)					
Sample ID	count rate spectrum 11	count rate spectrum 12	lumex corrected	% lumex	% lumex check	count rate spectrum 11	count rate spectrum 12	lumex corrected	% lumex	Wind 2 check	
PB080606-2CB1	0.006	2.617	2.611	0.23	OK	0.000	0.641	0.641	0.00		WINDOW 2 CL'S
PB080606-2CB2	0.006	2.560	2.554	0.23	OK	0.000	0.580	0.580	0.00		
PB080606-2CB3	0.011	2.481	2.470	0.44	OK	0.000	0.602	0.602	0.00		
0805200-25	0.028	2.960	2.932	0.95	OK	0.000	0.613	0.613	0.00	OK	A
0805200-26	0.011	3.703	3.692	0.30	OK	0.000	0.754	0.754	0.00	OK	
0805200-27	0.006	2.622	2.616	0.23	OK	0.000	0.647	0.647	0.00	OK	
0805200-29	0.017	3.686	3.669	0.46	OK	0.000	0.608	0.608	0.00	OK	
0805200-30	0.011	3.168	3.157	0.35	OK	0.000	0.557	0.557	0.00	OK	
0805200-31	0.000	2.819	2.819	0.00	OK	0.000	0.591	0.591	0.00	OK	
0805200-33	0.006	4.344	4.338	0.14	OK	0.000	0.703	0.703	0.00	OK	
0805200-34	0.006	3.050	3.044	0.20	OK	0.000	0.501	0.501	0.00	OK	
0805200-35	0.000	2.572	2.572	0.00	OK	0.000	0.619	0.619	0.00	OK	
0805200-37	0.011	2.949	2.938	0.37	OK	0.000	0.495	0.495	0.00	OK	
PB080606-2MB	0.011	2.645	2.634	0.42	OK	0.000	0.512	0.512	0.00	OK	
PB080606-2LCS	0.000	28.877	28.877	0.00	OK	0.000	0.540	0.540	0.00	OK	B
PB080606-2LCSD	0.000	29.011	29.011	0.00	OK	0.000	0.439	0.439	0.00	OK	

% lumex LCL=	0.00
% lumex UCL=	10.00

A	Wind 2 LCL=	0.43
	Wind 2 UCL=	0.78
B	Wind 2 LCL=	0.18
	Wind 2 UCL=	1.04

R:\INST\LSC\QUANTULUS\LUMEX CORRECTION\ 2008\PB080606-2LC

Spectrum report

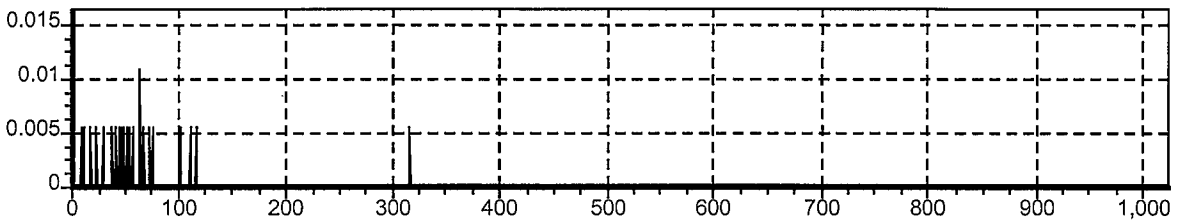
6/16/08 7:25:18 AM

```
   Setup information
\my documents\default.ini

Window 1 = 190..325 190..325, MCA 11 mode CPM
   volume 10 ml
Window 2 = 800..1024 800..1024, MCA 11 mode CPM
   volume 10 ml
Window 3 = 190..325 190..325, MCA 12 mode CPM
   volume 10 ml
Window 4 = 800..1024 800..1024, MCA 12 mode CPM
   volume 10 ml
```

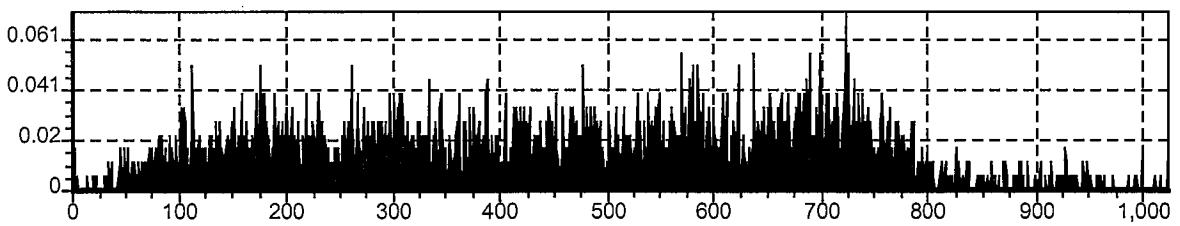
file :C:\ Pb-210\ PB-0611\ Q010201N.001
spectrum :11
counting time :10662.95 s
SQP(E) :772.93
counting :6/11/08 6:41:00 PM
sampling :6/11/08 6:41:00 PM
ID: PB080606-2CB1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



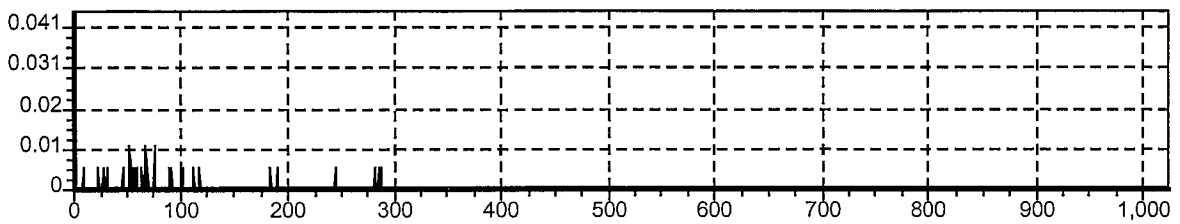
file :C:\ Pb-210\ PB-0611\ Q010201N.001
spectrum :12
counting time :10662.95 s
SQP(E) :772.93
counting :6/11/08 6:41:00 PM
sampling :6/11/08 6:41:00 PM
ID: PB080606-2CB1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.617	0.121				0.000		
800..1024	0.641	0.060				0.000		



file :C:\ Pb-210\ PB-0611\ Q020301N.001
spectrum :11
counting time :10662.94 s
SQP(E) :755.27
counting :6/11/08 9:43:00 PM
sampling :6/11/08 9:43:00 PM
ID: 0805200-25

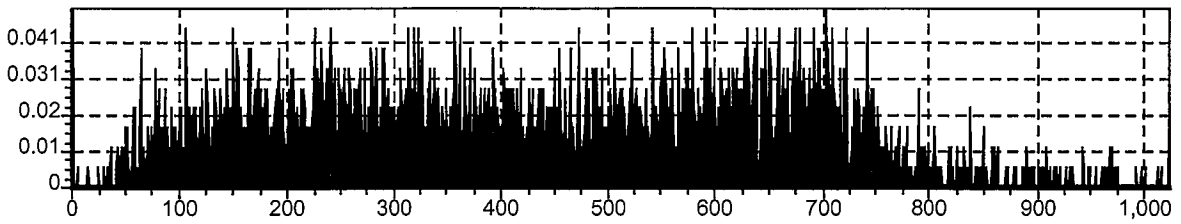
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.028	0.013				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



JS 6/16/08

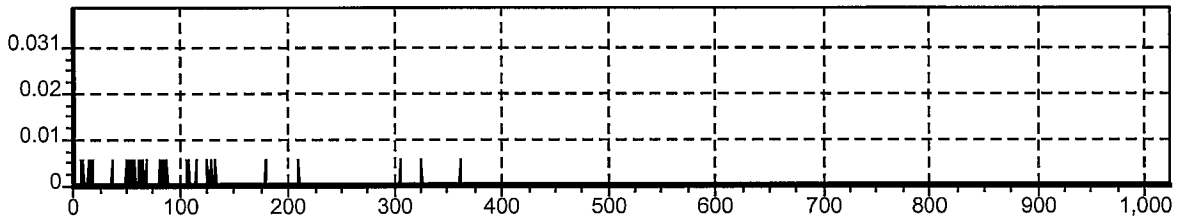
file :C:\ Pb-210\ PB-0611\
Q020301N.001
spectrum :12
counting time :10662.94 s
SQP(E) :755.27
counting :6/11/08 9:43:00 PM
sampling :6/11/08 9:43:00 PM
ID: 0805200-25

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.960	0.129				0.000		
800..1024	0.613	0.059				0.000		



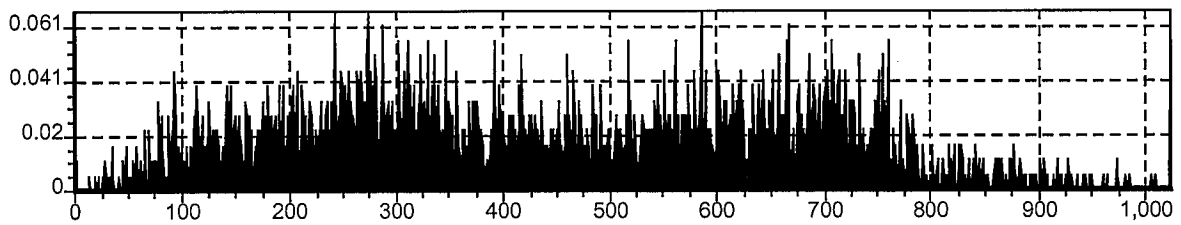
file :C:\ Pb-210\ PB-0611\
Q030401N.001
spectrum :11
counting time :10662.92 s
SQP(E) :763.05
counting :6/12/08 12:46:00 AM
sampling :6/12/08 12:46:00 AM
ID: 0805200-26

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0611\
Q030401N.001
spectrum :12
counting time :10662.92 s
SQP(E) :763.05
counting :6/12/08 12:46:00 AM
sampling :6/12/08 12:46:00 AM
ID: 0805200-26

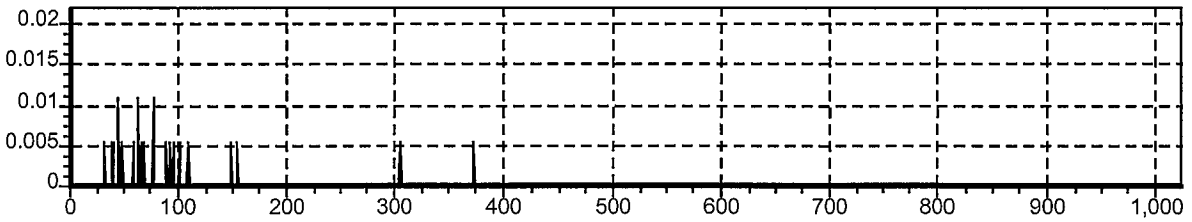
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.703	0.144				0.000		
800..1024	0.754	0.065				0.000		



file :C:\ Pb-210\ PB-0611\
Q040501N.001
spectrum :11
counting time :10662.89 s
SQP(E) :758.47
counting :6/12/08 3:49:00 AM
sampling :6/12/08 3:49:00 AM
ID: 0805200-27

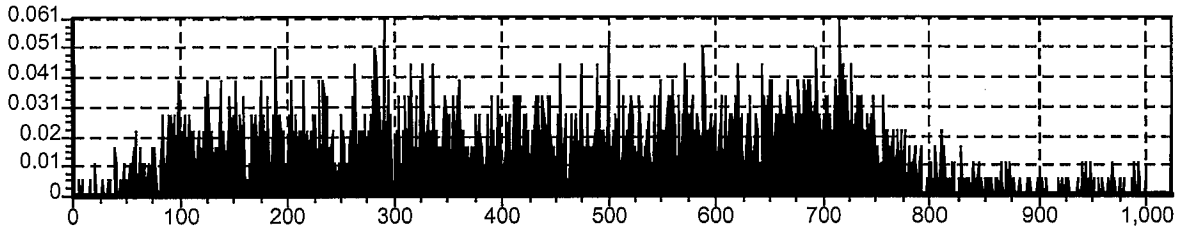
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								

JKB
6/16/08



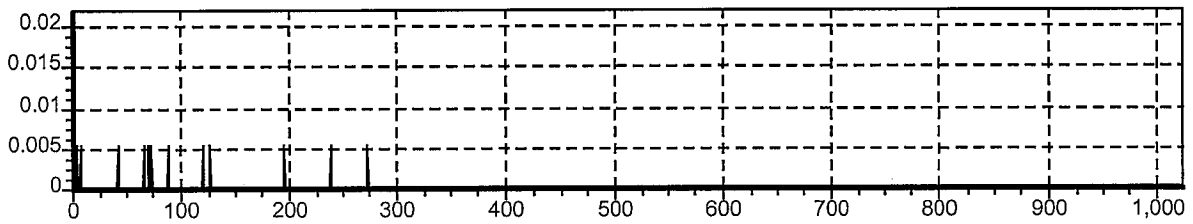
file :C:\ Pb-210\ PB-0611\
Q040501N.001
spectrum :12
counting time :10662.89 s
SQP(E) :758.47
counting :6/12/08 3:49:00 AM
sampling :6/12/08 3:49:00 AM
ID: 0805200-27

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.622	0.121				0.000		
800..1024	0.647	0.060				0.000		



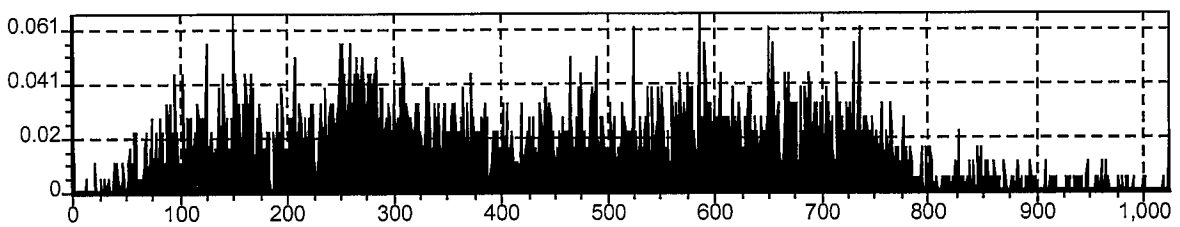
file :C:\ Pb-210\ PB-0611\
Q050601N.001
spectrum :11
counting time :10662.86 s
SQP(E) :760.82
counting :6/12/08 6:51:00 AM
sampling :6/12/08 6:51:00 AM
ID: 0805200-29

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.017	0.010				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0611\
Q050601N.001
spectrum :12
counting time :10662.86 s
SQP(E) :760.82
counting :6/12/08 6:51:00 AM
sampling :6/12/08 6:51:00 AM
ID: 0805200-29

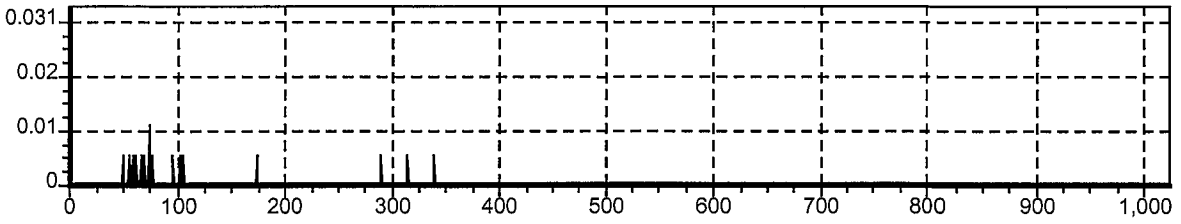
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.686	0.144				0.000		
800..1024	0.608	0.058				0.000		



6/16/08

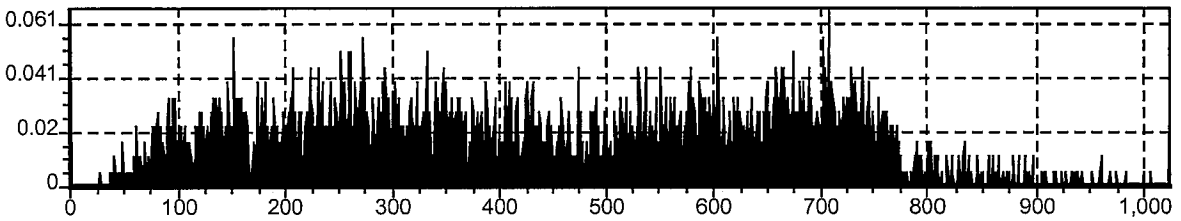
file :C:\ Pb-210\ PB-0611\
Q060701N.001
spectrum :11
counting time :10662.94 s
SQP(E) :756.47
counting :6/12/08 9:54:00 AM
sampling :6/12/08 9:54:00 AM
ID: 0805200-30

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



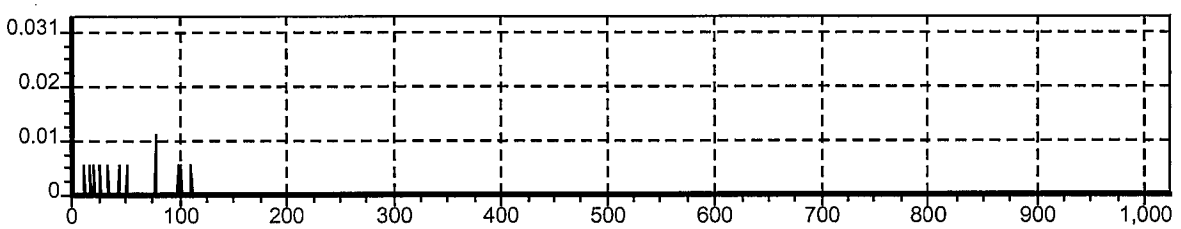
file :C:\ Pb-210\ PB-0611\
Q060701N.001
spectrum :12
counting time :10662.94 s
SQP(E) :756.47
counting :6/12/08 9:54:00 AM
sampling :6/12/08 9:54:00 AM
ID: 0805200-30

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.168	0.134				0.000		
800..1024	0.557	0.056				0.000		



file :C:\ Pb-210\ PB-0611\
Q070801N.001
spectrum :11
counting time :10662.97 s
SQP(E) :765.95
counting :6/12/08 12:57:00 PM
sampling :6/12/08 12:57:00 PM
ID: 0805200-31

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0611\
Q070801N.001
spectrum :12
counting time :10662.97 s
SQP(E) :765.95
counting :6/12/08 12:57:00 PM
sampling :6/12/08 12:57:00 PM
ID: 0805200-31

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.819	0.126				0.000		
800..1024	0.591	0.058				0.000		

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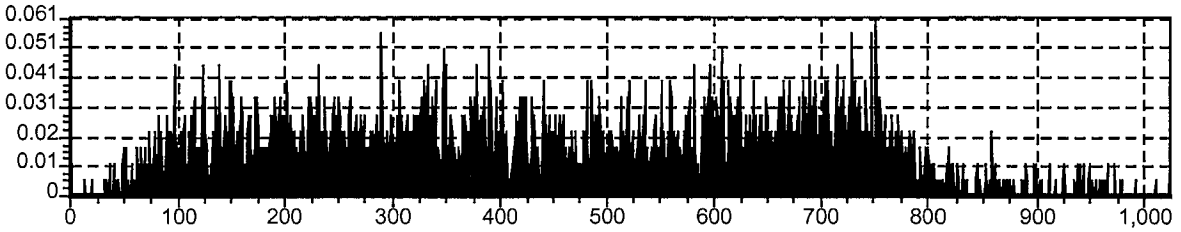
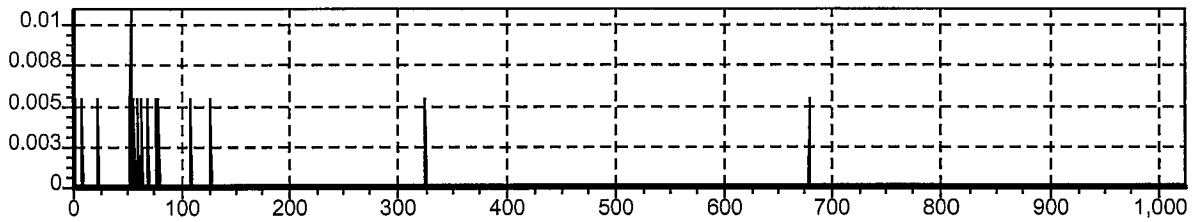


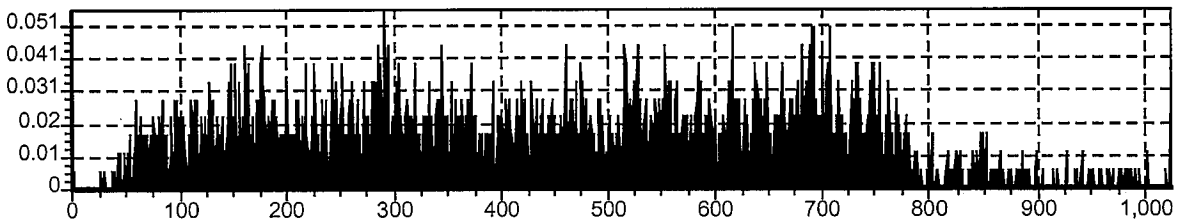
file :C:\ Pb-210\ PB-0611\
Q080901N.001
spectrum :11
counting time :10662.97 s
SQP(E) :761.31
counting :6/12/08 3:59:00 PM
sampling :6/12/08 3:59:00 PM
ID: PB080606-2CB2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



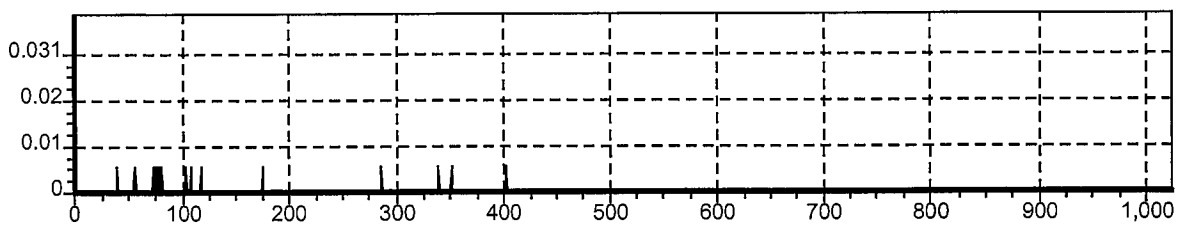
file :C:\ Pb-210\ PB-0611\
Q080901N.001
spectrum :12
counting time :10662.97 s
SQP(E) :761.31
counting :6/12/08 3:59:00 PM
sampling :6/12/08 3:59:00 PM
ID: PB080606-2CB2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.560	0.120				0.000		
800..1024	0.580	0.057				0.000		



file :C:\ Pb-210\ PB-0612\
Q011001N.001
spectrum :11
counting time :10662.99 s
SQP(E) :759.52
counting :6/12/08 7:54:00 PM
sampling :6/12/08 7:54:00 PM
ID: 0805200-33

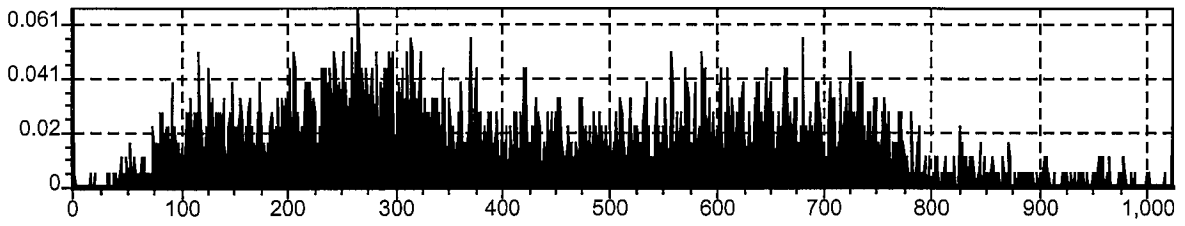
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



6/16/08

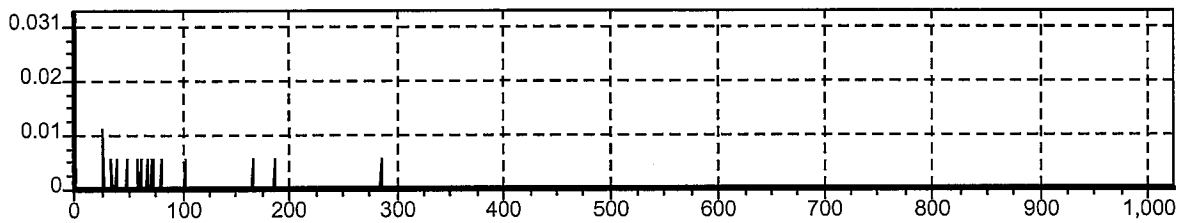
file :C:\ Pb-210\ PB-0612\
Q011001N.001
spectrum :12
counting time :10662.99 s
SQP(E) :759.52
counting :6/12/08 7:54:00 PM
sampling :6/12/08 7:54:00 PM
ID: 0805200-33

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	4.344	0.156				0.000		
800..1024	0.703	0.063				0.000		



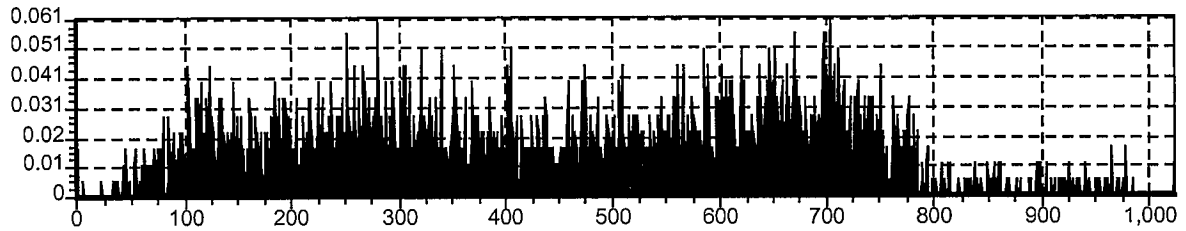
file :C:\ Pb-210\ PB-0612\
Q021101N.001
spectrum :11
counting time :10663.01 s
SQP(E) :766.66
counting :6/12/08 10:56:00 PM
sampling :6/12/08 10:56:00 PM
ID: 0805200-34

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.006	0.006				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0612\
Q021101N.001
spectrum :12
counting time :10663.01 s
SQP(E) :766.66
counting :6/12/08 10:56:00 PM
sampling :6/12/08 10:56:00 PM
ID: 0805200-34

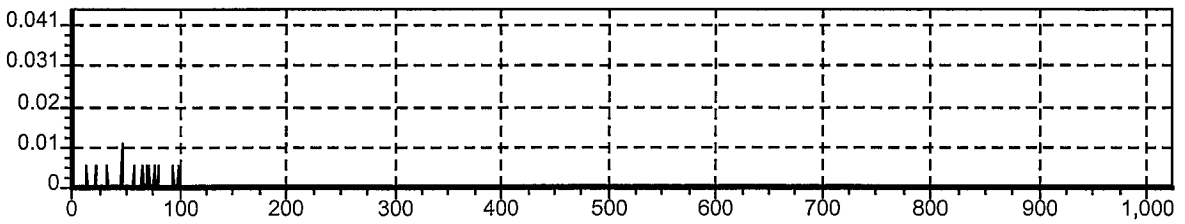
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.050	0.131				0.000		
800..1024	0.501	0.053				0.000		



file :C:\ Pb-210\ PB-0612\
Q031201N.001
spectrum :11
counting time :10663.00 s
SQP(E) :761.75
counting :6/13/08 1:57:00 AM
sampling :6/13/08 1:57:00 AM
ID: 0805200-35

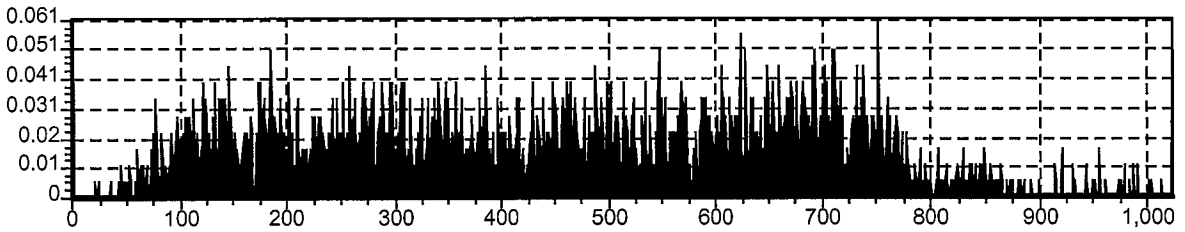
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								

6/16/08



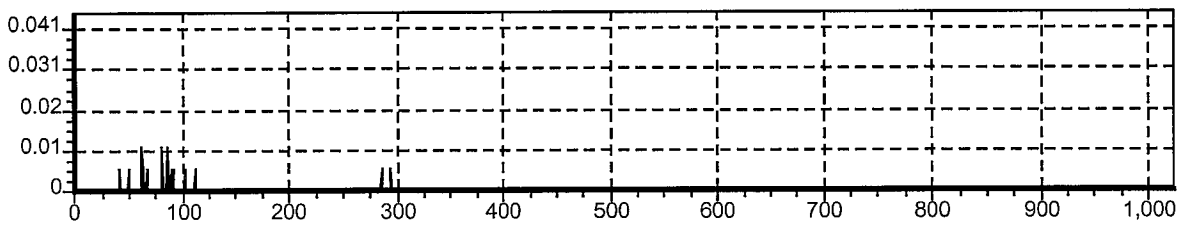
file :C:\ Pb-210\ PB-0612\
Q031201N.001
spectrum :12
counting time :10663.00 s
SQP(E) :761.75
counting :6/13/08 1:57:00 AM
sampling :6/13/08 1:57:00 AM
ID: 0805200-35

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.572	0.120				0.000		
800..1024	0.619	0.059				0.000		



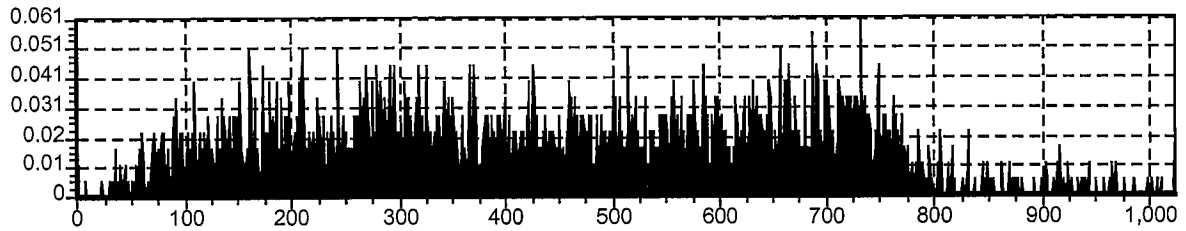
file :C:\ Pb-210\ PB-0612\
Q041301N.001
spectrum :11
counting time :10662.96 s
SQP(E) :764.68
counting :6/13/08 4:59:00 AM
sampling :6/13/08 4:59:00 AM
ID: 0805200-37

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0612\
Q041301N.001
spectrum :12
counting time :10662.96 s
SQP(E) :764.68
counting :6/13/08 4:59:00 AM
sampling :6/13/08 4:59:00 AM
ID: 0805200-37

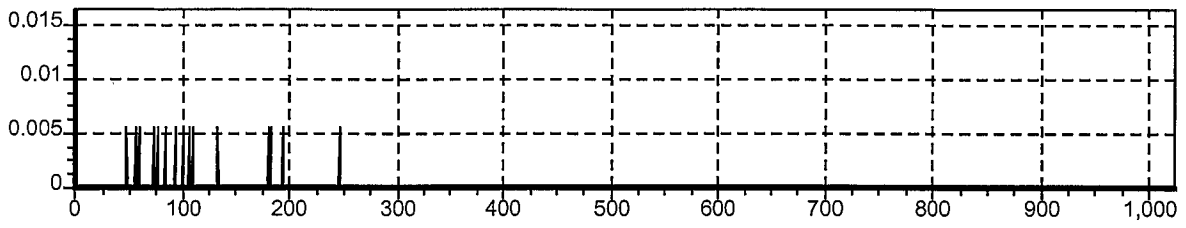
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.949	0.129				0.000		
800..1024	0.495	0.053				0.000		



6/16/08

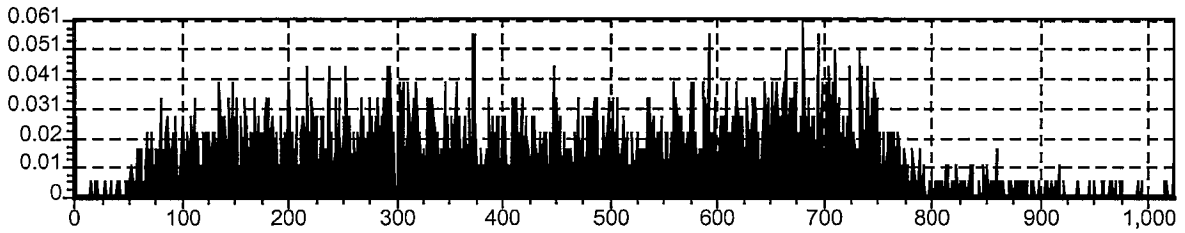
file :C:\ Pb-210\ PB-0612\
Q051401N.001
spectrum :11
counting time :10662.97 s
SQP(E) :762.84
counting :6/13/08 8:01:00 AM
sampling :6/13/08 8:01:00 AM
ID: PB080606-2MB

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



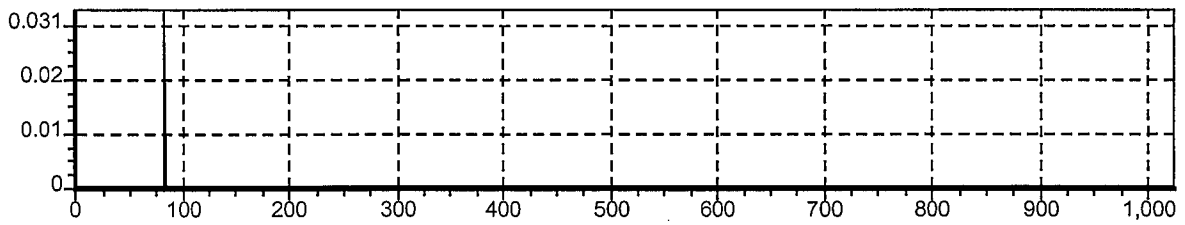
file :C:\ Pb-210\ PB-0612\
Q051401N.001
spectrum :12
counting time :10662.97 s
SQP(E) :762.84
counting :6/13/08 8:01:00 AM
sampling :6/13/08 8:01:00 AM
ID: PB080606-2MB

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.645	0.122				0.000		
800..1024	0.512	0.054				0.000		



file :C:\ Pb-210\ PB-0612\
Q061501N.001
spectrum :11
counting time :1778.61 s
SQP(E) :759.22
counting :6/13/08 8:32:00 AM
sampling :6/13/08 8:32:00 AM
ID: PB080606-2LCS

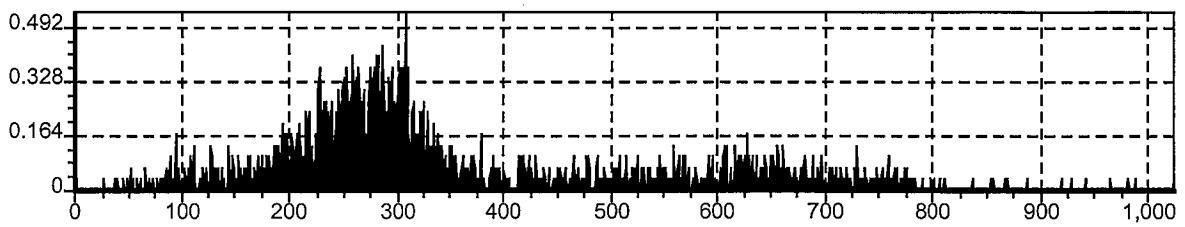
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0612\
Q061501N.001
spectrum :12
counting time :1778.61 s
SQP(E) :759.22
counting :6/13/08 8:32:00 AM
sampling :6/13/08 8:32:00 AM
ID: PB080606-2LCS

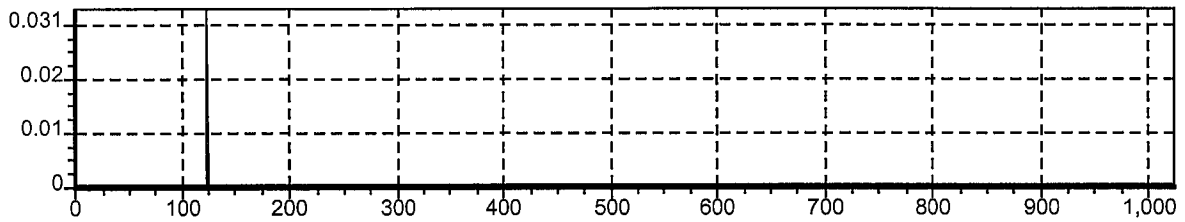
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	28.877	0.987				0.000		
800..1024	0.540	0.135				0.000		

KZ 029 6/16/08



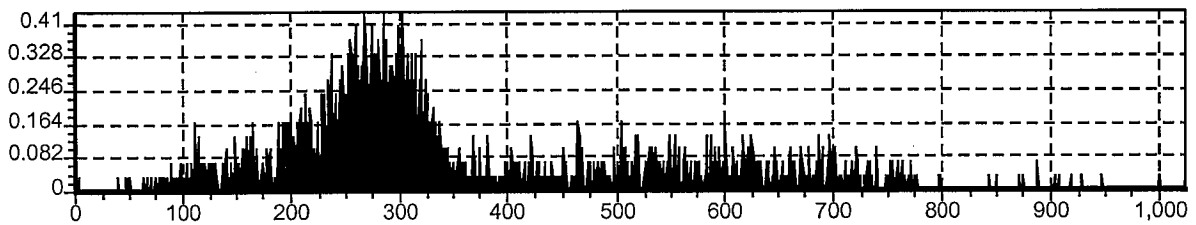
file :C:\ Pb-210\ PB-0612\
Q071601N.001
spectrum :11
counting time :1778.62 s
SQP(E) :763.17
counting :6/13/08 9:04:00 AM
sampling :6/13/08 9:04:00 AM
ID: PB080606-2LCSD

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



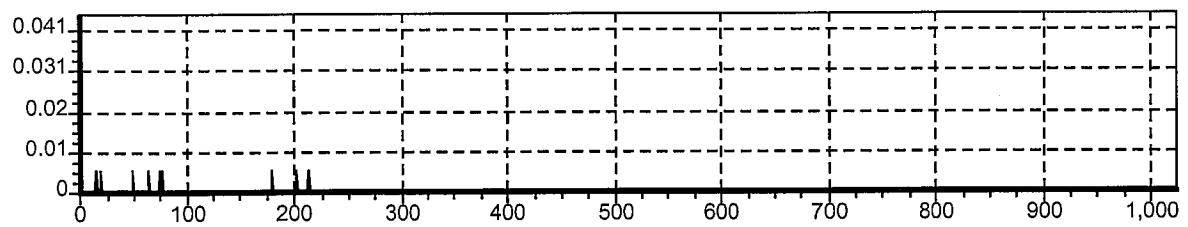
file :C:\ Pb-210\ PB-0612\
Q071601N.001
spectrum :12
counting time :1778.62 s
SQP(E) :763.17
counting :6/13/08 9:04:00 AM
sampling :6/13/08 9:04:00 AM
ID: PB080606-2LCSD

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	29.011	0.989				0.000		
800..1024	0.439	0.122				0.000		



file :C:\ Pb-210\ PB-0612\
Q081701N.001
spectrum :11
counting time :10663.03 s
SQP(E) :769.93
counting :6/13/08 12:06:00 PM
sampling :6/13/08 12:06:00 PM
ID: PB080606-2CB3

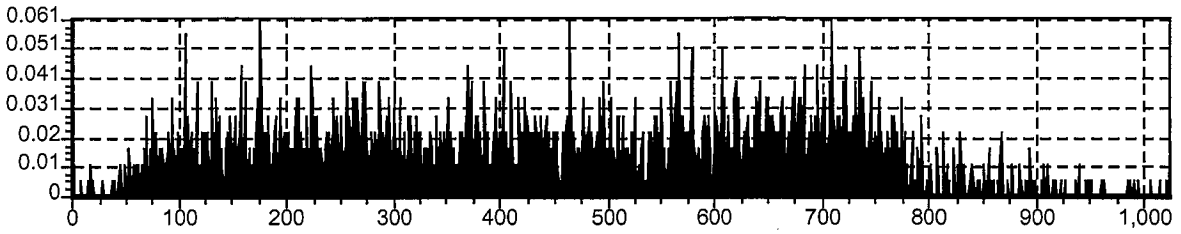
	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.011	0.008				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



6/16/08

file :C:\ Pb-210\ PB-0612\ Q081701N.001
spectrum :12
counting time :10663.03 s
SQP(E) :769.93
counting :6/13/08 12:06:00 PM
sampling :6/13/08 12:06:00 PM
ID: PB080606-2CB3

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.481	0.118				0.000		
800..1024	0.602	0.058				0.000		



JS 6/18/08

357957

Paragon Analytics

LSC Run Log

Instrument ID: Quantulus 1220

	Load Date	Sample ID	CountTime (min.)	Position	Protocol	File Name	Batch ID	Position Check	Initials	Comments
1	6/4/08	C080602-1CB1	69.13	2	C-14	C-0604	C080602-1	JS	JS	N/A
2		0805174-2		3						
3		-2D		4						
4		-5		5						
5		-5MS	29.64	6						
6		-8	69.13	7						
7		0805193-2		8						
8		C080602-1CB2		9						
9		0805206-5		10						
10	6/5/08	Daily QC	10	56-59	—	QC-0605	—	JS	JS	N/A
11		0805206-5D	69.13	11	C-14	C-0605	C080602-1			
12		-5MS	29.64	12						
13		0805208-3	69.13	13						
14		C080602-1MB		14						Recount-High SQP(E)
15		-1LCS	29.64	15						
16		-1CB3	69.13	16						
17	6/5/08	Daily QC	10	56-59	—	QC-0605X	—	JS	JS	N/A
18		C080602-1MB	69.13	27	C-14	C-0605~~X~~ZO	C080602-1			
19	6/6/08	Daily QC	10	56-59	—	QC-0606 JS 6/6/08	—	JS	JS	
20	6/8/08				—	QC-0608	—			N/A
21	6/10/08				—	QC-0610	—			
22	6/11/08				—	QC-0611	—			
23		PB080606-2CB1	177.72	2	Pb-210	PB-0611	PB080606-2	JS	JS	N/A
24		0805200-25		3						
25		-26		4						
26		-27		5						
27		~~28~~ 29		6						
28		~~29~~ 30		7						
29		~~30~~ 31		8						
30		PB080606-2CB2		9						

Reviewed by / Date JS 6/16/08

FORM 700_Quantulusr0.xls (7/11/2004)

357958 **Paragon Analytics**

LSC Run Log

Instrument ID: Quantulus 1220

	Load Date	Sample ID	CountTime (min.)	Position	Protocol	File Name	Batch ID	Position Check	Initials	Comments
1	6/12/08	Daily QC	10	56-59	—	QC-0612	—	✓	✓	N/A
2		0805200-33	177.72	10	Pb-210	PB-0612	PB080606-2			
3		-34		11						
4		-35		12						
5		-37		13						
6		PB080606-2MB		14						
7		-2LCS	29.64	15						
8		-2LCSD		16						
9		-2CB3	177.72	17						
10	6/13/08	Daily QC	10	56-59	—	QC-0613	—	✓	✓	N/A
11		PB080606-1CB1	177.72	26	Pb-210	PB-0613	PB080606-1			
12		0805200-1		27						
13		-2		28						
14		-4		29						
15		-5		30						
16		-6		31						
17		-8		32						
18		-9		33						
19	6/14/08	Daily QC	10	56-59	—	QC-0614	—	✓	✓	N/A
20		0805200-10	177.72	34	Pb-210	PB-0614	PB080606-1			
21		-12		35						
22		-13		36						
23		-14		37						
24		PB080606-1CB2		38						
25		0805200-16		39						
26		-17		46						
27		-18		47						
28	6/15/08	Daily QC	10	56-59	—	QC-0615	—	✓	✓	N/A
29		0805200-20	177.72	48	Pb-210	PB-0615	PB080606-1			
30		-21		49						

Reviewed by / Date 9b 6/17/08

FORM 700_Quantulusr0.xls (7/11/2004)

357959

Paragon Analytics

LSC Run Log

Instrument ID: Quantulus 1220

	Load Date	Sample ID	CountTime (min.)	Position	Protocol	File Name	Batch ID	Position Check	Initials	Comments
1	6/15/08	0805200-22	177.72	50	Pb-210	PB-0615	PB080606-1	JS	JS	N/A
2		-24		51						
3		PB080606-1MB		52						
4		-1LCS	29.64	53						
5		-1LCSD		54						
6		-1CB3	177.72	55						
7	6/16/08	Daily QC	10	56-59	—	QC-0616	—	JS	JS	N/A
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

JS 6/16/08

Reviewed by / Date JS 6/16/08

FORM 700_Quantulusr0.xls (7/11/2004)

Radiochemistry ICP Worksheet

Paragon Analytics

Prep Batch: PB080606-1

Prep Procedure: **Pb210_LiqS**

Reviewed By: **emf** EMF

Review Date: **6/17/2008**

LEAD Recovery Results

Reference Carrier

LabID	QC Type	Carr Vol	Ref Carr Dil Vol	Ref Carr ICP Alq	Ref Carr ICP Dil Vol	Ref Carr ICP Run	Ref Carr ICP Conc
PB080606-1	CAR	1	201	1	10	IR080616-1A1	0.5261787

Samples

Prep Num	LabID	QC Type	Init Samp Alq (g)	Car Vol (ml)	Samp Dil Vol (ml)	Init ICP Alq (ml)	Init ICP Dil Vol (ml)	Pre-Con Vol (ml)	Post Con Vol (ml)	Pre-Sep Vol (ml)	Post Sep Vol (ml)	Fin ICP Alq (ml)	Fin ICP Dil Vol (ml)	Initial ICP Run	Final ICP Run	Init ICP Conc (ug/ml)	Fin ICP Conc (ug/ml)	Init Samp Mass (ug)	Ref Mass (ug)	Flag	Fin Samp Mass (ug)	% Yield	Final Sample Alq
1	0805200-1	SMP	5.0256	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.50782	0.746341	854.8303	885.7342	LB	757.5729	85.53%	4.167
1	0805200-2	SMP	4.14	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.50795	0.679114	855.0483	885.7342	LB	689.3347	77.83%	3.433
1	0805200-4	SMP	0.403	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51614	0.793433	868.8277	885.7342	LB	805.3738	90.93%	0.3342
1	0805200-5	SMP	5	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51955	0.763340	874.5724	885.7342	LB	774.8285	87.48%	4.146
1	0805200-6	SMP	3.366	1	201	0	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51369	0.686541		885.7342		696.8731	78.68%	2.791
1	0805200-8	SMP	0.422	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.52180	0.787392	878.3716	885.7342	LB	799.2421	90.23%	0.3499
1	0805200-9	SMP	3.696	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.48934	0.705685	823.7188	885.7342	LB	716.3058	80.87%	3.065
1	0805200-10	SMP	5.024	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.50528	0.630668	850.5474	885.7342	LB	640.1595	72.27%	4.166
1	0805200-12	SMP	0.384	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.52902	0.776878	890.5108	885.7342		788.5704	88.55%	0.3184
1	0805200-13	SMP	5.0283	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.49501	0.766471	833.2672	885.7342	LB	778.0065	87.84%	4.169
1	0805200-14	SMP	5.056	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.50149	0.764716	844.1771	885.7342	LB	776.2248	87.64%	4.192
1	0805200-16	SMP	1.0696	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.52418	0.756515	882.3751	885.7342	LB	767.9007	86.70%	0.8869
1	0805200-17	SMP	5.076	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.49813	0.730568	838.5229	885.7342	LB	741.563	83.72%	4.209
1	0805200-18	SMP	5.0292	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.48694	0.746186	819.6888	885.7342	LB	757.4161	85.51%	4.170
1	0805200-20	SMP	0.989	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.52484	0.755950	883.4761	885.7342	LB	767.3275	86.63%	0.8201
1	0805200-21	SMP	5.1352	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51780	0.782776	871.631	885.7342	LB	794.5568	89.71%	4.258
1	0805200-22	SMP	5.0952	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.52174	0.709542	878.2618	885.7342	LB	720.2208	81.31%	4.225
1	0805200-24	SMP	1.1478	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51713	0.710812	870.5009	885.7342	LB	721.5098	81.46%	0.9517
1	PB080606-1CB1	MB	4	0	0	0	0	0	0	0	0	0	0			0	0		0			0.00%	
1	PB080606-1CB2	MB	4	0	0	0	0	0	0	0	0	0	0			0	0		0			0.00%	
1	PB080606-1CB3	MB	4	0	0	0	0	0	0	0	0	0	0			0	0		0			0.00%	
1	PB080606-1	MB	4	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51712	0.738326	870.481	885.7342	LB	749.4377	84.61%	3.317
1	PB080606-1	LCS	4	1	202	1	10	201	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51833	0.766963	876.8834	885.7562	LB	778.506	87.89%	3.317
1	PB080606-1	LCSD	4	1	202	1	10	201	6	5.05	5.05	0.05	10.05	IR080616-1A1	IR080616-1A1	0.51296	0.710324	867.8048	885.7562	LB	721.0139	81.40%	3.317

Paragon Analytics

LIMS Version: 6.160A

FLAG - LB: low bias (<= 15%) 15%: low bias (>15%)

Z: Negative init. conc. treated as zer

Supersedes: N/A

1R080616-1A1

Sample Id1	Pb	Ba	Sr	Al	Ca	Fe	K	Mg	Na	Y
CCV	0.4940	0.5033	0.5033	50.8605	50.7272	20.8282	20.1569	50.8343	20.6133	10.0498
CCB	0.0012	0.0001	0.0001	0.0022	0.0071	0.0085	0.0157	0.0072	0.0065	0.0017
Y 0805229-1	-0.0017	0.0043	0.0135	0.0029	0.2712	0.0650	0.0271	-0.0005	0.5582	6.3153
Y 0805229-1D	-0.0013	0.0012	0.0063	0.0090	0.2712	0.0602	0.0316	0.0012	0.3920	6.3141
Y 0806013-1	0.0000	0.0004	0.0023	0.0044	0.2209	0.0377	0.0274	-0.0010	0.2337	5.1933
Y 0806013-2	0.0001	0.0009	0.0052	0.0029	0.2881	0.0865	0.0346	-0.0038	0.3747	5.9934
Y 0806013-3	-0.0019	0.0010	0.0053	0.0180	0.2559	0.0535	0.0122	-0.0067	0.3569	5.8909
Y 0806013-4	-0.0016	0.0026	0.0090	-0.0017	0.2441	0.0399	0.0220	-0.0084	0.3231	5.7888
Y 0806013-5	-0.0012	0.0022	0.0078	-0.0011	0.2354	0.0664	0.0101	-0.0070	0.3453	5.4803
Y RA080605-2MB	-0.0013	0.0021	0.0123	-0.0039	0.2606	0.0600	0.0243	-0.0089	0.4612	6.2792
Y RA080605-2LCS	-0.0011	0.0075	0.0220	-0.0018	0.2684	0.0526	0.0220	-0.0103	0.4030	6.2460
RA080605-2RC	-0.0010	-0.0002	0.0000	-0.0079	0.3993	0.0010	0.0089	-0.0149	-0.0098	9.1266
CCV	0.4886	0.4996	0.4995	50.5678	50.1585	20.6769	20.0697	50.5180	20.5823	9.9536
CCB	0.0003	0.0000	0.0001	0.0006	0.0031	0.0077	0.0072	0.0026	0.0042	0.0038
I 0805200-1	0.5078	0.0000	0.0003	0.0176	0.1446	0.3906	5.2425	0.5466	1.7362	0.0021
F 0805200-1	0.7463	0.0002	0.0152	0.0007	18.5697	0.0041	0.0388	0.0007	1.6045	0.0013
I 0805200-2	0.5079	0.0014	0.0008	0.0194	0.8305	0.2821	3.2524	0.2554	2.8363	0.0000
F 0805200-2	0.6791	0.0002	0.0091	-0.0046	18.8295	-0.0128	0.0117	-0.0070	1.5662	-0.0011
I 0805200-4	0.5161	0.0241	0.0334	-0.0015	29.5348	-0.0042	0.2862	0.5368	0.6128	-0.0015
F 0805200-4	0.7934	0.0008	0.0173	-0.0042	20.6760	0.0019	0.0330	-0.0053	1.9983	-0.0019
I 0805200-5	0.5195	0.0000	0.0000	0.0044	0.2476	0.3382	4.9367	0.5890	2.7389	-0.0021
F 0805200-5	0.7633	0.0001	0.0064	-0.0072	20.0562	-0.0044	0.0540	-0.0087	1.6016	-0.0024
I 0805200-6	0.5137	0.0015	0.0010	0.0086	0.8462	0.3444	2.4731	0.2196	2.5869	-0.0027
F 0805200-6	0.6865	0.0001	0.0089	-0.0081	21.2289	-0.0064	0.0316	-0.0113	1.3526	-0.0029
CCV	0.4912	0.4966	0.4985	50.0948	51.1799	20.9625	19.6549	50.6772	20.2299	10.0310
CCB	0.0007	0.0000	0.0001	0.0044	0.0165	0.0095	0.0358	0.0065	0.0065	0.0015
I 0805200-8	0.5218	0.0207	0.0328	0.0024	34.1874	0.0062	0.3505	0.6219	0.7083	-0.0013
F 0805200-8	0.7874	0.0005	0.0124	-0.0004	21.0847	-0.0046	0.0519	-0.0017	1.0222	-0.0015
I 0805200-9	0.4893	0.0002	0.0002	0.0110	0.1887	0.2579	2.9248	0.3454	1.9160	-0.0019
F 0805200-9	0.7057	0.0002	0.0106	-0.0026	20.6327	-0.0053	0.0437	-0.0041	3.7584	-0.0025
I 0805200-10	0.5053	0.0014	0.0011	0.0145	0.9582	0.8330	3.8247	0.2436	4.1382	-0.0025
F 0805200-10	0.6307	0.0002	0.0105	0.0004	20.5144	0.0073	0.0243	-0.0077	3.1767	-0.0027
I 0805200-12	0.5290	0.0231	0.0562	-0.0009	30.2363	-0.0022	0.3299	0.5625	0.6419	-0.0026
F 0805200-12	0.7769	0.0007	0.0209	0.0013	20.7219	-0.0115	0.0206	-0.0077	1.1709	-0.0031
I 0805200-13	0.4950	0.0001	0.0001	0.0262	0.1765	0.7394	5.1296	0.5303	2.3766	-0.0030
F 0805200-13	0.7665	0.0002	0.0076	0.0026	20.6095	-0.0054	0.0285	-0.0087	1.1166	-0.0031
CCV	0.4887	0.5010	0.4994	50.3816	49.7018	20.5562	20.0231	50.2328	20.5027	9.9336
CCB	0.0002	0.0001	0.0001	0.0185	0.0189	0.0116	0.0075	0.0079	0.0078	0.0021
I 0805200-14	0.5015	0.0013	0.0011	0.0332	0.7192	0.5605	3.9120	0.2807	3.7292	-0.0017
F 0805200-14	0.7647	0.0002	0.0086	0.0081	19.2446	-0.0084	0.0194	-0.0029	2.1203	-0.0022
I 0805200-16	0.5242	0.0848	0.1231	0.0125	88.5977	0.0665	0.7601	1.7313	2.3293	-0.0023
F 0805200-16	0.7565	0.0022	0.0478	0.0048	20.5777	-0.0064	0.0210	-0.0041	0.9915	-0.0024
I 0805200-17	0.4981	0.0004	0.0007	0.0174	0.4217	0.3518	5.4539	0.6080	3.3133	-0.0026
F 0805200-17	0.7306	0.0002	0.0094	0.0016	20.2259	0.0209	0.0337	-0.0094	1.3269	-0.0029

1R080616-1A1

Sample Id1	Pb	Ba	Sr	Al	Ca	Fe	K	Mg	Na	Y
I 0805200-18	0.4869	0.0001	0.0002	0.0130	0.2629	0.8625	3.7462	0.2364	3.1609	-0.0027
F 0805200-18	0.7462	0.0001	0.0069	-0.0031	19.7983	-0.0055	0.0374	-0.0082	1.4418	-0.0031
I 0805200-20	0.5248	0.0980	0.1347	-0.0002	85.0675	0.0401	0.8001	2.0531	1.8182	-0.0032
F 0805200-20	0.7560	0.0016	0.0277	-0.0050	20.4079	-0.0096	0.0388	-0.0079	1.3333	-0.0031
CCV	0.4888	0.4991	0.4987	50.4769	50.3003	20.7474	19.9740	50.5642	20.4714	9.9827
CCB	0.0022	0.0002	0.0002	0.0156	0.0338	0.0160	0.0288	0.0159	0.0096	0.0039
I 0805200-21	0.5178	0.0005	0.0009	0.0204	0.4433	0.3508	5.4118	0.5798	3.4660	-0.0003
F 0805200-21	0.7828	0.0003	0.0110	0.0121	20.5895	0.0081	0.0409	-0.0043	1.7911	-0.0020
I 0805200-22	0.5217	0.0004	0.0006	0.0139	0.3828	0.7582	4.5182	0.2494	3.7891	-0.0024
F 0805200-22	0.7095	0.0002	0.0122	-0.0002	19.5452	-0.0063	0.0332	-0.0046	1.7686	-0.0026
I 0805200-24	0.5171	0.1052	0.1666	0.0009	98.3490	0.0417	0.9665	2.0014	2.3241	-0.0028
F 0805200-24	0.7108	0.0026	0.0558	0.0007	20.7369	-0.0031	0.0234	-0.0041	2.1317	-0.0029
I PB080606-1MB	0.5171	-0.0001	0.0000	-0.0006	0.0770	-0.0108	0.0339	-0.0063	0.0008	-0.0031
F PB080606-1MB	0.7383	0.0000	0.0131	-0.0031	17.7125	-0.0107	0.0320	-0.0108	0.7489	-0.0032
I PB080606-1LCS	0.5183	0.0003	-0.0001	-0.0024	0.0255	0.0410	0.0351	-0.0060	-0.0086	-0.0031
F PB080606-1LCS	0.7670	0.0001	0.0120	0.0005	19.3986	-0.0067	0.0084	-0.0099	1.4956	-0.0032
CCV	0.4956	0.5024	0.5026	50.6123	51.2491	21.1003	19.9235	50.9098	20.4780	10.0744
CCB	0.0019	0.0002	0.0002	0.0220	0.0299	0.0168	0.0065	0.0154	0.0087	0.0036
I PB080606-1LCSD	0.5130	0.0013	-0.0001	0.0130	0.0134	-0.0023	0.0311	-0.0007	-0.0072	-0.0019
F PB080606-1LCSD	0.7103	0.0002	0.0147	0.0145	19.2033	-0.0032	0.0262	-0.0046	1.7508	-0.0022
PB080606-1RC	0.5262	0.0001	-0.0001	0.0068	0.0094	0.0315	0.0365	-0.0041	-0.0085	-0.0026
CCV	0.4898	0.5013	0.5005	50.3626	50.5959	20.9019	19.8670	50.4868	20.4271	9.9984
CCB	0.0014	0.0002	0.0002	0.0316	0.0283	0.0137	0.0260	0.0176	0.0104	0.0044

Radiochemistry ICP Worksheet

Paragon Analytics

Prep Batch: PB080606-2

Prep Procedure: **Pb210_LiqS**

Reviewed By: EMF EMF Review Date: **6/12/2008**

LEAD Recovery Results

Reference Carrier

LabID	QC Type	Carr Vol	Ref Carr Dil Vol	Ref Carr ICP Alq	Ref Carr ICP Dil Vol	Ref Carr ICP Run	Ref Carr ICP Conc
PB080606-2	CAR	1	201	1	10	IR080612-1A1	0.4938442

Samples

Prep Num	LabID	QC Type	Init Samp Alq (g)	Car Vol (ml)	Samp Dil Vol (ml)	Init ICP Alq (ml)	Init ICP Dil Vol (ml)	Pre-Con Vol (ml)	Post Con Vol (ml)	Pre-Sep Vol (ml)	Post Sep Vol (ml)	Fin ICP Alq (ml)	Fin ICP Dil Vol (ml)	Initial ICP Run	Final ICP Run	Init ICP Conc (ug/ml)	Fin ICP Conc (ug/ml)	Init Samp Mass (ug)	Ref Mass (ug)	Flag	Fin Samp Mass (ug)	% Yield	Final Sample Alq
1	0805200-25	SMP	2.0025	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.46721	0.672355	786.4623	831.3043	LB	682.4744	82.10%	1.660
1	0805200-26	SMP	5.1766	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.48037	0.612436	808.631	831.3043	LB	621.6528	74.78%	4.292
1	0805200-27	SMP	5.1127	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.47600	0.583802	801.2695	831.3043	LB	592.5883	71.28%	4.239
1	0805200-29	SMP	0.65462	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.50559	0.628177	851.0789	831.3043		637.6313	74.92%	0.5428
1	0805200-30	SMP	5.0175	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.47731	0.643365	803.4688	831.3043	LB	653.048	78.56%	4.160
1	0805200-31	SMP	5.0272	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.481	0.650406	809.6805	831.3043	LB	660.1943	79.42%	4.168
1	0805200-33	SMP	0.96773	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.48964	0.678680	824.2263	831.3043	LB	688.8946	82.87%	0.8024
1	0805200-34	SMP	5.1356	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.47528	0.498253	800.0483	831.3043	LB	505.7514	60.84%	4.258
1	0805200-35	SMP	5.0864	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.477	0.59869	802.9484	831.3043	LB	607.7	73.10%	4.218
1	0805200-37	SMP	0.74124	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.51057	0.659754	859.4654	831.3043		669.6837	77.92%	0.6146
1	PB080606-2	MB	4	1	201	1	10	200	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.48156	0.666372	810.6312	831.3043	LB	676.4003	81.37%	3.317
1	PB080606-2	LCS	4	1	202	1	10	201	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.47174	0.658412	798.0657	831.3249	LB	668.3212	80.39%	3.317
1	PB080606-2	LCSD	4	1	202	1	10	201	6	5.05	5.05	0.05	10.05	IR080612-1A1	IR080612-1A1	0.49243	0.725434	833.076	831.3249		736.3522	88.39%	3.317

FLAG - LB: low bias (<= 15%) 15%: low bias (>15%)

Z: Negative init. conc. treated as zer

Supersedes: N/A

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1R080612-1A1

Sample Id1	Pb	Ba	Sr	Al	Ca	Fe	K	Mg	Na	Y
CCV	0.4835	0.4879	0.4877	48.6787	48.7524	20.0133	19.3105	49.4736	19.6507	9.8167
CCB	0.0001	-0.0001	0.0000	-0.0273	-0.0040	-0.0018	-0.0211	-0.0002	-0.0262	0.0000
I 0805237-1	0.2052	0.3835	1.1671	16.6490	172.1209	29.0513	2.3555	71.1339	0.2366	0.0106
F 0805237-1	-0.0012	0.0120	0.5742	0.0112	0.2951	0.0299	-0.0534	0.0943	-0.0294	-0.0017
I 0805237-2	0.0675	0.2973	1.0676	24.4762	81.4427	44.7436	3.0708	48.3335	0.1028	0.0081
F 0805237-2	-0.0030	0.0052	0.5161	0.0074	0.0740	0.0162	-0.0332	0.0302	-0.0322	-0.0020
I 0805237-2D	0.0706	0.2997	1.0754	24.5717	81.1839	45.5209	3.1093	47.5172	0.1014	0.0079
F 0805237-2D	-0.0038	0.0080	0.4675	0.0252	0.1208	0.0374	-0.0694	0.0518	-0.0310	-0.0025
I 0805237-3	0.2742	0.5322	1.1173	17.4425	120.3679	34.1244	2.6058	66.5840	0.1900	0.0085
F 0805237-3	-0.0029	0.0213	0.4436	0.0445	0.4450	0.0742	-0.0706	0.1490	-0.0297	-0.0028
I 0805237-4	1.0232	0.4466	1.0931	12.8465	168.9273	23.6994	1.9651	105.8350	0.2198	0.0052
F 0805237-4	-0.0025	0.0089	0.4896	0.0515	0.2149	0.0145	-0.0929	0.1126	-0.0269	-0.0028
CCV	0.4661	0.4884	0.4821	48.9181	46.5213	19.3255	19.7560	48.4192	20.0820	9.5777
CCB	-0.0009	0.0000	0.0004	-0.0042	0.0309	0.0088	-0.0341	0.0216	-0.0207	0.0009
I 0805237-5	0.1526	0.5314	1.1222	11.6381	229.2286	21.4342	1.8014	104.0812	0.2484	0.0063
F 0805237-5	-0.0034	0.0124	0.5096	-0.0044	0.2610	0.0037	-0.0606	0.0829	-0.0293	-0.0024
I 0805237-6	0.2398	0.3772	1.1669	18.0003	148.7366	32.9013	2.4962	62.9365	0.1883	0.0103
F 0805237-6	-0.0037	0.0079	0.5537	0.0042	0.2401	0.0201	-0.0648	0.0838	-0.0328	-0.0024
I SR080610-1MB	-0.0018	0.0000	1.0501	-0.0224	0.0514	0.0086	-0.0318	0.0214	-0.0348	-0.0025
F SR080610-1MB	-0.0039	0.0000	0.4755	-0.0184	0.0410	-0.0001	-0.0402	0.0163	-0.0351	-0.0025
I SR080610-1LCS	-0.0035	0.0001	1.0390	-0.0248	0.0352	-0.0040	-0.0156	0.0125	-0.0336	-0.0026
F SR080610-1LCS	-0.0045	0.0000	0.4441	-0.0146	0.0252	-0.0060	-0.0652	0.0086	-0.0359	-0.0026
SR080610-1RC	-0.0025	0.0000	1.0640	-0.0155	0.0208	-0.0116	-0.0448	0.0111	-0.0351	-0.0027
I 0805200-25	0.4672	0.0033	0.0180	0.0019	9.4667	0.1134	2.2671	0.4149	0.7574	-0.0027
CCV	0.4649	0.4875	0.4817	48.2721	46.9279	19.5390	19.5060	48.3279	19.7892	9.6348
CCB	-0.0017	0.0000	0.0003	-0.0025	0.0133	-0.0028	-0.0351	0.0121	-0.0203	0.0013
F 0805200-25	0.6724	0.0004	0.0064	0.0777	17.7339	0.0345	-0.0499	0.0223	1.4646	-0.0012
I 0805200-26	0.4804	0.0000	0.0008	0.0021	0.1287	0.4864	3.4907	0.3749	3.1663	-0.0016
F 0805200-26	0.6124	0.0000	0.0080	0.0070	17.6893	-0.0117	-0.0434	0.0012	0.9069	-0.0020
I 0805200-27	0.4760	0.0016	0.0023	0.0818	0.4896	0.4902	3.5047	0.2865	4.0573	-0.0023
F 0805200-27	0.5838	0.0003	0.0071	0.0110	18.4517	-0.0032	-0.0527	-0.0002	2.0413	-0.0024
I 0805200-29	0.5056	0.1312	0.1395	-0.0040	81.3654	0.0045	0.0346	1.4870	2.6109	-0.0027
F 0805200-29	0.6282	0.0014	0.0259	0.0098	16.9312	-0.0214	-0.0745	-0.0046	1.2050	-0.0027
I 0805200-30	0.4773	-0.0001	0.0002	0.0045	0.1175	0.2010	4.8274	0.3858	1.7272	-0.0027
F 0805200-30	0.6434	0.0000	0.0082	-0.0078	16.9283	-0.0213	-0.0453	-0.0053	1.6740	-0.0028
I 0805200-31	0.4810	0.0009	0.0013	0.0530	0.5449	0.3563	2.9097	0.2273	4.3160	-0.0029
CCV	0.4700	0.4884	0.4837	48.6176	47.6489	19.7400	19.4872	48.6866	19.8459	9.6693
CCB	-0.0002	0.0000	0.0002	-0.0044	0.0180	0.0009	-0.0207	0.0130	-0.0176	0.0024
F 0805200-31	0.6504	0.0001	0.0084	-0.0083	17.2511	-0.0173	-0.0267	0.0009	1.0361	-0.0012
I 0805200-33	0.4896	0.1011	0.1027	-0.0123	72.7751	0.0753	0.1300	1.1380	2.6827	-0.0021
F 0805200-33	0.6787	0.0008	0.0113	-0.0102	17.7853	-0.0030	-0.0390	-0.0021	1.6626	-0.0022
I 0805200-34	0.4753	0.0002	0.0007	-0.0040	0.1912	0.3880	2.8263	0.3076	1.5522	-0.0023
F 0805200-34	0.4983	0.0003	0.0083	-0.0142	31.7910	-0.0108	-0.0388	-0.0033	2.2874	-0.0026
I 0805200-35	0.4770	0.0006	0.0012	-0.0034	0.2761	0.5037	2.5366	0.2893	2.7470	-0.0024

Sample Id1	Pb	Ba	Sr	Al	Ca	Fe	K	Mg	Na	Y
F 0805200-35	0.5987	-0.0001	0.0036	-0.0148	16.4823	-0.0145	-0.0689	-0.0074	1.2359	-0.0028
I 0805200-37	0.5106	0.1064	0.1333	-0.0201	67.7594	-0.0080	0.1339	1.3925	2.2441	-0.0028
F 0805200-37	0.6598	0.0003	0.0088	0.0021	21.6917	-0.0146	-0.0833	-0.0039	1.8603	-0.0028
I PB080606-2MB	0.4816	-0.0003	-0.0002	-0.0142	0.0223	0.0094	-0.0708	-0.0067	-0.0355	-0.0029
CCV	0.4609	0.4882	0.4816	48.3165	45.6019	19.1595	19.6766	47.8597	19.9468	9.5280
CCB	0.0013	0.0000	0.0002	0.0108	0.0198	-0.0027	-0.0576	0.0142	-0.0170	0.0026
F PB080606-2MB	0.6664	0.0001	0.0029	0.0280	11.5029	-0.0118	-0.0648	0.0093	1.4897	-0.0003
I PB080606-2LCS	0.4717	-0.0001	-0.0001	0.0000	0.0137	-0.0127	-0.0504	-0.0026	-0.0310	-0.0021
F PB080606-2LCS	0.6584	0.0000	0.0034	0.0189	17.5689	-0.0080	-0.0553	-0.0028	1.2964	-0.0023
I PB080606-2LCSD	0.4924	-0.0002	-0.0002	0.0015	0.0040	-0.0126	-0.0369	-0.0023	-0.0350	-0.0024
F PB080606-2LCSD	0.7254	0.0001	0.0065	0.0072	28.2185	-0.0146	-0.0562	-0.0058	2.1082	-0.0025
PB080606-2RC	0.4938	0.0010	-0.0001	0.0062	0.0165	-0.0224	-0.0413	-0.0053	-0.0327	-0.0026
I 0806039-1	-0.0025	0.0033	0.0072	0.0396	1.2379	0.0299	-0.0016	0.1927	0.2157	-0.0026
F 0806039-1	-0.0029	0.0082	-0.0002	0.1010	-0.0050	0.0104	-0.0230	-0.0102	0.3185	-0.0028
I 0806039-2	-0.0037	0.0036	0.0082	0.0364	1.4335	0.0923	0.0265	0.2196	0.2468	-0.0027
F 0806039-2	-0.0027	0.0341	-0.0001	0.1311	-0.0018	0.0096	-0.0067	-0.0102	1.0434	-0.0029
CCV	0.4652	0.4856	0.4815	48.2441	47.0094	19.5254	19.4171	48.2590	19.8004	9.5920
CCB	0.0003	0.0000	0.0002	0.0047	0.0158	0.0021	-0.0369	0.0153	-0.0173	0.0032
I 0806040-1	-0.0036	0.0010	0.1095	-0.0169	14.5790	-0.0145	0.1792	2.5524	3.9618	-0.0019
F 0806040-1	-0.0030	0.0243	0.0007	-0.0055	0.0108	-0.0231	-0.0158	-0.0044	0.8102	-0.0023
I 0806040-2	-0.0044	0.0012	0.1206	-0.0188	16.0323	-0.0175	0.1955	2.8087	4.3308	-0.0024
F 0806040-2	-0.0040	0.0254	0.0007	-0.0036	0.0216	-0.0174	-0.0100	-0.0005	0.8163	-0.0025
I 0806043-1	-0.0031	0.0034	0.0059	0.0142	1.0654	0.0259	0.0279	0.1593	0.1694	-0.0024
F 0806043-1	-0.0047	0.0292	0.0000	0.0019	-0.0043	-0.0050	-0.0207	-0.0060	0.9055	-0.0026
I RE080610-1MB	-0.0036	-0.0002	-0.0002	-0.0197	-0.0129	-0.0241	-0.0390	-0.0072	-0.0187	-0.0028
F RE080610-1MB	-0.0029	0.0265	-0.0002	0.0019	-0.0133	-0.0186	-0.0302	-0.0079	0.8820	-0.0028
I RE080610-1LCS	-0.0031	-0.0003	-0.0002	-0.0152	-0.0144	-0.0250	-0.0123	-0.0084	-0.0192	-0.0028
F RE080610-1LCS	-0.0032	0.0313	-0.0002	-0.0049	-0.0086	-0.0203	-0.0432	-0.0100	1.0660	-0.0029
CCV	0.4679	0.4879	0.4831	48.4625	47.0436	19.5933	19.4570	48.3806	19.8500	9.6248
CCB	0.0011	0.0001	0.0002	0.0218	0.0176	0.0011	-0.0432	0.0197	-0.0154	0.0041
I RE080610-1LCSD	-0.0041	-0.0003	-0.0002	0.0513	-0.0133	-0.0068	-0.0244	-0.0072	-0.0269	-0.0024
F RE080610-1LCSD	-0.0043	0.0232	-0.0002	0.0053	-0.0122	-0.0147	-0.0228	-0.0035	0.7383	-0.0021
RE080610-1RC	-0.0036	1.0670	0.0001	-0.0042	-0.0137	-0.0262	-0.0156	-0.0084	-0.0355	-0.0024
CCV	0.4699	0.4893	0.4848	48.4171	47.5062	19.7431	19.4600	48.4201	19.8520	9.6547
CCB	-0.0011	0.0004	0.0003	0.0260	0.0234	0.0060	-0.0169	0.0286	-0.0132	0.0056

PARAGON ANALYTICS
Radiochemistry Data Package

Section 6

QUALITY ASSURANCE SUMMARY REPORTS

6

Paragon Analytics

QUALITY ASSURANCE SUMMARY SHEET

PAR W.O. # / BATCH 0805200
TEST various
METHOD Prep
SOP/REV (PREP) Various
SOP/REV (ANAL) _____

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

TE 6/7/08

The following applies to animal tissue samples 0805200-1 to –37:

1. The entire sample was placed in a drying oven for %moisture analysis.
2. The entire dried sample was then placed into a 220mL polypropylene cup.
3. A common digestion was performed by adding 25mL each of HCl and HNO_3 to the sample cups. The samples were capped, placed on the steambath, uncapped after four hours, and allowed to dry.
4. Step 3 was repeated to ensure a total digestion of the samples.
5. After the second digestion, the dried samples were brought up in 10mL HNO_3 and ~80mL DI water and placed on the steambath for 30minutes.
6. The samples were removed from the steambath and diluted with DI water to a total volume of 100ml. TE 6/7/08
7. TE 6/7/08 At this time, Paragon received extra volume from the client for bone samples 4, 8, 12, 16, 20, and 24. Steps 1-6 were performed on the extra volumes. These extra sample volumes were then combined with the original sample. The samples were evaporated to less than 100ml on the steambath and then brought to a total volume of 100ml with DI water.
8. The sample digestates were then split to target the necessary analyses aliquots provided by the project manager using the following equation:

$$\text{Sample Size(g)} = \frac{\text{(Original Sample Wet Weight(g))} * \text{(Digestate Volume Taken for Analysis(ml))}}{\text{(Total Volume of Digestate(ml))}}$$

All wet weights and digestate splits are listed on the "Animal Tissue Digestate Splits" spreadsheets.

9. All samples were spike/traced for the individual analyses following the digestate splits.
10. Two sets of reagent blanks, LCS's, and LCSD's were created at step 3 for analyses containing more than 20 samples. As all samples were prepped together, the QC are interchangeable. Due to limited sample volume, the LCSD's were created to meet QC requirements.

TE 6/7/08

TECHNICIAN/ANALYST T Elliot DATE 6/7/08

DEPARTMENT MANAGER [signature] DATE 6/7/08

365713 FORM 302r6.doc (4/22/04)

PARAGON ANALYTICS
Radiochemistry Data Package

Section 7

LABORATORY BENCH SHEETS

7

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: PB080606-1

Prep Procedure: Pb210_LiqS

Analytical QASS / NCR? Y / (N) N/A

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Report Units	Cnt 1 File/Inst	Cnt 1 Rack-Pos	Cnt 1 Pos Chk By	Cnt 2 File/Inst	Cnt 2 Rack-Pos	Cnt 2 Pos Chk By	Cnt 3 File/Inst	Cnt 3 Rack-Pos	Cnt 3 Pos Chk By	Notes
1	0805200-1	SMP	5.0256	4.1672	g	pCi/g	PB-0613	27								Add 10rL Nitro
1	0805200-2	SMP	4.14	3.4328	g	pCi/g		28								
1	0805200-4	SMP	0.403	0.3342	g	pCi/g		29								
1	0805200-5	SMP	5	4.1459	g	pCi/g		30								
1	0805200-6	SMP	3.366	2.7910	g	pCi/g		31								
1	0805200-8	SMP	0.422	0.3499	g	pCi/g		32								
1	0805200-9	SMP	3.696	3.0647	g	pCi/g		33								
1	0805200-10	SMP	5.024	4.1658	g	pCi/g	PB-0614	34								
1	0805200-12	SMP	0.384	0.3184	g	pCi/g		35								
1	0805200-13	SMP	5.0283	4.1694	g	pCi/g		36								
1	0805200-14	SMP	5.056	4.1924	g	pCi/g		37								
1	0805200-16	SMP	1.0696	0.8869	g	pCi/g		39								
1	0805200-17	SMP	5.076	4.209	g	pCi/g		46								
1	0805200-18	SMP	5.0292	4.1701	g	pCi/g		47								
1	0805200-20	SMP	0.989	0.8201	g	pCi/g	PB-0615	48								
1	0805200-21	SMP	5.1352	4.2580	g	pCi/g		49								
1	0805200-22	SMP	5.0952	4.2249	g	pCi/g		50								
1	0805200-24	SMP	1.1478	0.9517	g	pCi/g		51								
1	PB080606-1CB	MB	4		g	pCi/g	PB-0613	26								
1	PB080606-1CB	MB	4		g	pCi/g	PB-0614	38								
1	PB080606-1CB	MB	4		g	pCi/g	PB-0615	55								
1	PB080606-1	MB	4	3.3167	g	pCi/g		52								
1	PB080606-1	LCS	4	3.3168	g	pCi/g		53								
1	PB080606-1	LCSD	4	3.3168	g	pCi/g		54								

06/17/08

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247963	1,001.529	pCi/ml	NA	1	ml	RS006

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006
S1	Po-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006

Supersedes: N/A

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: PB080606-1

Sample Barcodes

0805200-1 PB080606-1PS1	0805200-2 PB080606-1PS2
0805200-4 PB080606-1PS3	0805200-5 PB080606-1PS4
0805200-6 PB080606-1PS5	0805200-8 PB080606-1PS6
0805200-9 PB080606-1PS7	0805200-10 PB080606-1PS8
0805200-12 PB080606-1PS9	0805200-13 PB080606-1PS10
0805200-14 PB080606-1PS11	0805200-16 PB080606-1PS12
0805200-17 PB080606-1PS13	0805200-18 PB080606-1PS14
0805200-20 PB080606-1PS15	0805200-21 PB080606-1PS16
0805200-22 PB080606-1PS17	0805200-24 PB080606-1PS18
PB080606-1CB1MB PB080606-1PS19	PB080606-1CB2MB PB080606-1PS20
PB080606-1CB3MB PB080606-1PS21	PB080606-1MB PB080606-1PS22
PB080606-1LCS PB080606-1PS23	PB080606-1LCSD PB080606-1PS24
PB080606-1CAR PB080606-1PS25	

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB080606-1

Prep Procedure: Pb210_LiqS

Reviewed By: emf EMF **Review Date:** 6/17/2008

Non-Routine Pre-Treatment? (Y) N **Batch:** SEE QASS **Re-Prep?** Y (N) **Batch:** N/A **Prep QASS / NCR?** (Y) N 365713

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Erin Finsley
Prep Date: 6/6/2008
Prep Dept: RS

Balance: 27
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes
1	1	0805200-1	SMP		5.0256	4.167164	As Received	06/13/08 10:00	T1	
2	1	0805200-2	SMP		4.14	3.432836	As Received	06/13/08 10:00	T1	
3	1	0805200-4	SMP		0.403	0.334163	As Received	06/13/08 10:00	T1	
4	1	0805200-5	SMP		5	4.145937	As Received	06/13/08 10:00	T1	
5	1	0805200-6	SMP		3.366	2.791045	As Received	06/13/08 10:00	T1	
6	1	0805200-8	SMP		0.422	0.349917	As Received	06/13/08 10:00	T1	
7	1	0805200-9	SMP		3.696	3.064677	As Received	06/13/08 10:00	T1	
8	1	0805200-10	SMP		5.024	4.165838	As Received	06/13/08 10:00	T1	
9	1	0805200-12	SMP		0.384	0.318408	As Received	06/13/08 10:00	T1	
10	1	0805200-13	SMP		5.0283	4.169403	As Received	06/13/08 10:00	T1	
11	1	0805200-14	SMP		5.056	4.192372	As Received	06/13/08 10:00	T1	
12	1	0805200-16	SMP		1.0696	0.886899	As Received	06/13/08 10:00	T1	
13	1	0805200-17	SMP	EMF 6/17/08	5.076	4.208955	As Received	06/13/08 10:00	T1	EMF 6/17/08
14	1	0805200-18	SMP		5.0292	4.170149	As Received	06/13/08 10:00	T1	
15	1	0805200-20	SMP		0.989	0.820066	As Received	06/13/08 10:00	T1	
16	1	0805200-21	SMP		5.1352	4.258043	As Received	06/13/08 10:00	T1	
17	1	0805200-22	SMP		5.0952	4.224876	As Received	06/13/08 10:00	T1	
18	1	0805200-24	SMP		1.1478	0.951741	As Received	06/13/08 10:00	T1	
19	1	PB080606-1CB1	MB		4					
20	1	PB080606-1CB2	MB		4	EMF 6/17/08				
21	1	PB080606-1CB3	MB		4					
22	1	PB080606-1	MB		4	3.31675	As Received	06/13/08 10:00	T1	
23	1	PB080606-1	LCS		4	3.316832	As Received	06/13/08 10:00	T1,S1	
24	1	PB080606-1	LCSD		4	3.316832	As Received	06/13/08 10:00	T1,S1	

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB080606-1

Prep Procedure: Pb210_LiqS

Reviewed By: emf EMF **Review Date:** 6/17/2008

Non-Routine Pre-Treatment? (Y) / N **Batch:** SEEQASS **Re-Prep?** Y / (N) **Batch:** N/A **Prep QASS / NCR?** (Y) / N 265713

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Erin Finsley
Prep Date: 6/6/2008
Prep Dept: RS

Balance: 27
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes

Comments

UG LLT #97-080103. Due to limited sample volume no client duplicate was prepared; instead a LCS duplicate was prepared.

Spiked By: Erin Finsley **Date:** 6/9/2008

Witnessed By: Derek B. Caduff **Date:** 6/9/2008

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247963	1,001.529	pCi/ml	NA	1	ml	RS006

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006
S1	Po-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB080606-1

Prep Procedure: Pb210_LiqS

Prep Batch Not Validated!!!

Reviewed By:

Review Date:

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep?** Y / N **Batch:** _____ **Prep QASS / NCR?** Y / N _____

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Erin Finsley EMF
Prep Date: 6/6/2008
Prep Dept: RS

Balance: 27
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes
1	1	0805200-1	SMP		5.0256	2	As Received	1000 6/13/08	T1	
2	1	0805200-2	SMP		4.14	2	As Received		T1	
3	1	0805200-4	SMP		0.403	2	As Received		T1	
4	1	0805200-5	SMP		5	2	As Received		T1	
5	1	0805200-6	SMP		0.3366	2	As Received		T1	
6	1	0805200-8	SMP		0.422	2	As Received		T1	
7	1	0805200-9	SMP		3.696	2	As Received		T1	
8	1	0805200-10	SMP		5.024	2	As Received		T1	
9	1	0805200-12	SMP		0.384	2	As Received		T1	
10	1	0805200-13	SMP		5.0283	2	As Received		T1	
11	1	0805200-14	SMP		5.056	2	As Received		T1	
12	1	0805200-16	SMP		1.0696	2	As Received		T1	
13	1	0805200-17	SMP		5.076	2	As Received		T1	
14	1	0805200-18	SMP		5.0292	2	As Received		T1	
15	1	0805200-20	SMP		0.989	2	As Received		T1	
16	1	0805200-21	SMP		5.1352	2	As Received		T1	
17	1	0805200-22	SMP		5.0952	2	As Received		T1	
18	1	0805200-24	SMP		1.1478	2	As Received		T1	
19	1	PB080606-1	MB		4	2	As Received		T1	
20	1	PB080606-1	LCS		4	2	As Received		T1,S1	
21	1	PB080606-1	LCSD		4	2	As Received		T1,S1	

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB080606-1

Prep Procedure: Pb210_LiqS

Prep Batch Not Validated!!!

Reviewed By: **Review Date:**

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep? Y / N** **Batch:** _____ **Prep QASS / NCR? Y / N** _____

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Erin Finsley EMF
Prep Date: 6/6/2008
Prep Dept: RS

Balance: 27
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes

Comments
UG LLT #97-080103.

Spiked By: Erin Finsley EMF **Date:** 6/9/08
Witnessed By: DPC **Date:** 6/9/08

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247963	1,001.529	pCi/ml	NA	1	ml	RS006

exp: 12/13/08

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006
S1	Po-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006

exp: 7/14/08

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: PB080606-2

Prep Procedure: Pb210_LiqS

Analytical QASS / NCR? Y (N) N/A

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Report Units	Cnt 1 File/Inst	Cnt 1 Rack-Pos	Cnt 1 Pos Chk By	Cnt 2 File/Inst	Cnt 2 Rack-Pos	Cnt 2 Pos Chk By	Cnt 3 File/Inst	Cnt 3 Rack-Pos	Cnt 3 Pos Chk By	Notes
1	0805200-25	SMP	2.0025	1.6604	g	pCi/g	PB-0611	3	25							Add 10rC Nitro
1	0805200-26	SMP	5.1766	4.2924	g	pCi/g		4								
1	0805200-27	SMP	5.1127	4.2394	g	pCi/g		5								
1	0805200-29	SMP	0.6546	0.5428	g	pCi/g		6								
1	0805200-30	SMP	5.0175	4.1604	g	pCi/g		7								
1	0805200-31	SMP	5.0272	4.1685	g	pCi/g		8								
1	0805200-33	SMP	0.9677	0.8024	g	pCi/g	PB-0612	10								
1	0805200-34	SMP	5.1356	4.2584	g	pCi/g		11								
1	0805200-35	SMP	5.0864	4.2176	g	pCi/g		12								
1	0805200-37	SMP	0.7412	0.6146	g	pCi/g		13								
1	PB080606-2CB'	MB	4	4	g	pCi/g	PB-0611	2								
1	PB080606-2CB:	MB	4	4	g	pCi/g		9								
1	PB080606-2CB:	MB	4	4	g	pCi/g	PB-0612	17								
1	PB080606-2	MB	4	3.3167	g	pCi/g		14								
1	PB080606-2	LCS	4	3.3168	g	pCi/g		15								
1	PB080606-2	LCSD	4	3.3168	g	pCi/g		16								

6/16/08

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247963	1,001.529	pCi/ml	NA	1	ml	RS006

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006
S1	Po-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: PB080606-2

Sample Barcodes

0805200-25 PB080606-2PS1	0805200-26 PB080606-2PS2
0805200-27 PB080606-2PS3	0805200-29 PB080606-2PS4
0805200-30 PB080606-2PS5	0805200-31 PB080606-2PS6
0805200-33 PB080606-2PS7	0805200-34 PB080606-2PS8
0805200-35 PB080606-2PS9	0805200-37 PB080606-2PS10
PB080606-2CB1MB PB080606-2PS11	PB080606-2CB2MB PB080606-2PS12
PB080606-2CB3MB PB080606-2PS13	PB080606-2MB PB080606-2PS14
PB080606-2LCS PB080606-2PS15	PB080606-2LCSD PB080606-2PS16
PB080606-2CAR PB080606-2PS17	

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB080606-2

Prep Procedure: Pb210_LiqS

Reviewed By: emf EMF **Review Date:** 6/12/2008

Non-Routine Pre-Treatment? (Y) / N **Batch:** SEE QASS **Re-Prep?** Y / (N) **Batch:** N/A **Prep QASS / NCR?** (Y) / N 365713

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Erin Finsley
Prep Date: 6/6/2008
Prep Dept: RS

Balance: 27
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes
1	1	0805200-25	SMP		2.0025	1.660448	As Received	06/11/08 12:10	T1	
2	1	0805200-26	SMP		5.1766	4.292372	As Received	06/11/08 12:10	T1	
3	1	0805200-27	SMP		5.1127	4.239387	As Received	06/11/08 12:10	T1	
4	1	0805200-29	SMP		0.65462	0.542803	As Received	06/11/08 12:10	T1	
5	1	0805200-30	SMP		5.0175	4.160448	As Received	06/11/08 12:10	T1	
6	1	0805200-31	SMP		5.0272	4.168491	As Received	06/11/08 12:10	T1	
7	1	0805200-33	SMP		0.96773	0.80243	As Received	06/11/08 12:10	T1	EMF 6/12/08
8	1	0805200-34	SMP		5.1356	4.258375	As Received	06/11/08 12:10	T1	
9	1	0805200-35	SMP		5.0864	4.217579	As Received	06/11/08 12:10	T1	
10	1	0805200-37	SMP		0.74124	0.614627	As Received	06/11/08 12:10	T1	
11	1	PB080606-2CB1	MB		4	4				
12	1	PB080606-2CB2	MB		4	4				EMF 6/12/08
13	1	PB080606-2CB3	MB		4	4				
14	1	PB080606-2	MB		4	3.31675	As Received	06/11/08 12:10	T1	
15	1	PB080606-2	LCS		4	3.316832	As Received	06/11/08 12:10	T1,S1	
16	1	PB080606-2	LCSD		4	3.316832	As Received	06/11/08 12:10	T1,S1	

EMF 6/12/08

Comments
UG LLT LOT #97-080103.

Spiked By: Erin Finsley **Date:** 6/9/2008

Witnessed By: Derek B. Caduff **Date:** 6/9/2008

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247963	1,001.529	pCi/ml	NA	1	ml	RS006

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006
S1	Po-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB080606-2

Prep Procedure: Pb210_LiqS

Prep Batch Not Validated!!!

Reviewed By:

Review Date:

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep? Y / N** **Batch:** _____ **Prep QASS / NCR? Y / N** _____

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Erin Finsley
Prep Date: 6/6/2008
Prep Dept: RS

Balance: 27
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq g	Fin Alq g	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes
1	1	0805200-25	SMP		2.0025	2	As Received	12:10 6/11/08	T1	
2	1	0805200-26	SMP		5.1766	2	As Received		T1	
3	1	0805200-27	SMP		5.1127	2	As Received		T1	
4	1	0805200-29	SMP		0.65462	2	As Received		T1	
5	1	0805200-30	SMP		5.0175	2	As Received		T1	
6	1	0805200-31	SMP		5.0272	2	As Received		T1	
7	1	0805200-33	SMP		0.96773	2	As Received		T1	
8	1	0805200-34	SMP		5.1356	2	As Received		T1	
9	1	0805200-35	SMP		5.0864	2	As Received		T1	
10	1	0805200-37	SMP		0.74124	2	As Received		T1	
11	1	PB080606-2	MB		4	2	As Received		T1	
12	1	PB080606-2	LCS		4	2	As Received		T1,S1	
13	1	PB080606-2	LCSD		4	2	As Received		T1,S1	

Comments
UG LLT LOT #97-080103.

Spiked By: Erin Finsley EMF **Date:** 6/9/08
Witnessed By: DBC **Date:** 6/9/08

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247963	1,001.529	pCi/ml	NA	1	ml	RS006

exp: 12/13/08

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006
S1	Po-210	823.3020.41	47.137	DPM/ml	06/06/08	1	ml	RS006

exp: 7/14/08

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: TE

ANALYSIS DATE: 5/30/08 METHOD: Prep

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0805200	1	wet	As Rec'd	soft animal tissue
	2			↓
	3			
	4			bone
	5			soft animal tissue
	6			↓
	7			
	8			bone
	9			soft animal tissue
	10			↓
	11			
	12			bone
	13			soft animal tissue
	14			↓
	15			
	16			bone
	17			soft animal tissue
	18			↓
	19			
✓	20	✓	✓	bone

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: TE

ANALYSIS DATE: 5/30/08 METHOD: Prep

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0805200	21	wet	As Rec'd	soft animal tissue
	22			↓
	23			
	24			bone
	25			carcass
	26			soft animal tissue
	27			↓
	28			
	29			bone
	30			soft animal tissue
	31			↓
	32			
	33			bone
	34			soft animal tissue
	35			↓
	36			
	37	✓	✓	bone
			TE 5/30/08	

Percent Moisture

Method SOP642M Revision 0

Lab Name: Paragon Analytics

Date Extracted: 06/02/2008
Date Analyzed: 06/02/2008
Analyst: Tambrae Elhart

Balance ID: 25
Oven ID: 18
In Oven: 5/30/2008 @ 6:00:00 PM
Out of Oven: 6/1/2008 @ 12:00:00 PM

Validated By: tde
Validation Date: 06/02/2008
Validation Time: 5:30:37 PM

Run ID	Prep Batch ID	QC Batch ID	Lab ID	QC Type	Dish Wt	Wet Wt	Dry Wt	Dry Wt-Dish Wt	Percent Moisture	Percent Solids	RPD
MOI080602-1A	MOI080602-1	MOI080602-1-1	MOI080602-1	MB	0	2.22	2.22	2.22	0.0	100.0	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-1	SMP	2.25	13.96	5.93	3.68	73.6	26.4	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-2	SMP	2.25	4.6	3.28	1.03	77.6	22.4	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-3	SMP	2.24	21.08	7.16	4.92	76.7	23.3	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-4	SMP	2.23	1.18	2.95	0.72	39.0	61.0	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-5	SMP	2.23	12.5	5.49	3.26	73.9	26.1	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-6	SMP	2.22	3.74	2.97	0.75	79.9	20.1	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-7	SMP	2.24	26.79	8.91	6.67	75.1	24.9	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-8	SMP	2.24	1.2	2.96	0.72	40.0	60.0	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-9	SMP	2.24	7.7	4.06	1.82	76.4	23.6	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-10	SMP	2.23	7.85	3.76	1.53	80.5	19.5	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-11	SMP	2.25	26.77	8.59	6.34	76.3	23.7	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-12	SMP	2.22	1.45	2.97	0.75	48.3	51.7	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-13	SMP	2.25	13.59	5.82	3.57	73.7	26.3	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-14	SMP	2.25	12.64	5.05	2.80	77.8	22.2	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-15	SMP	2.26	33.65	10.31	8.05	76.1	23.9	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-16	SMP	2.26	4.1	4.69	2.43	40.7	59.3	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-17	SMP	2.25	18.8	7.08	4.83	74.3	25.7	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-18	SMP	2.25	11.43	4.87	2.62	77.1	22.9	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-19	SMP	2.26	42.59	12.87	10.61	75.1	24.9	
MOI080602-1A	MOI080602-1	MOI080602-1-1	0805200-20	SMP	2.25	3.48	4.42	2.17	37.6	62.4	

Percent Moisture

Method SOP642M Revision 0

Lab Name: Paragon Analytics

Date Extracted: 06/02/2008
Date Analyzed: 06/02/2008
Analyst: Tambrae Elhart

Balance ID: 25
Oven ID: 18
In Oven: 5/30/2008 @ 6:00:00 PM
Out of Oven: 6/1/2008 @ 12:00:00 PM

Validated By: tde
Validation Date: 06/02/2008
Validation Time: 5:49:18 PM

Run ID	Prep Batch ID	QC Batch ID	Lab ID	QC Type	Dish Wt	Wet Wt	Dry Wt	Dry Wt-Dish Wt	Percent Moisture	Percent Solids	RPD
MOI080602-3A	MOI080602-3	MOI080602-3-1	MOI080602-3	MB	0	2.25	2.25	2.25	0.0	100.0	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-21	SMP	2.2	18.34	6.89	4.69	74.4	25.6	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-22	SMP	2.25	15.44	5.44	3.19	79.3	20.7	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-23	SMP	2.21	44.29	12.69	10.48	76.3	23.7	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-24	SMP	2.21	4.04	4.89	2.68	33.7	66.3	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-25	SMP	2.21	8.01	4.16	1.95	75.7	24.3	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-26	SMP	2.21	23.53	7.33	5.12	78.2	21.8	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-27	SMP	2.23	11.89	4.92	2.69	77.4	22.6	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-28	SMP	2.23	26.13	5.42	3.19	87.8	12.2	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-29	SMP	2.26	9.22	9.88	7.62	17.4	82.6	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-30	SMP	2.25	20.07	7.54	5.29	73.6	26.4	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-31	SMP	2.26	15.71	5.34	3.08	80.4	19.6	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-32	SMP	2.25	19.9	6.3	4.05	79.6	20.4	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-33	SMP	2.22	13.63	12.52	10.30	24.4	75.6	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-34	SMP	2.22	13.88	5.09	2.87	79.3	20.7	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-35	SMP	2.26	14.96	5.11	2.85	80.9	19.1	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-36	SMP	2.24	25.8	7.5	5.26	79.6	20.4	
MOI080602-3A	MOI080602-3	MOI080602-3-1	0805200-37	SMP	2.22	10.44	10.66	8.44	19.2	80.8	

QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicate
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
SMP	Field Sample	SYS	Sample Yield Spike

Comments:

DUP = Sample Duplicate
Wet Wt = Sample Wet Wt - Dish Wt
Dry Wt = Sample Dry Wt + Dish Wt
Dry Wt - Dish Wt = Sample Dry Wt - Dish Wt
All weight values shown above are expressed in grams.

$$RPD = \frac{(\text{Sample Value - Duplicate Value})}{2} \times 100$$

$$\% \text{ Solids} = \frac{\text{Dry Weight}}{\text{Wet Weight}} \times 100$$

$$\% \text{ Moisture} = \frac{(\text{Wet Weight - Dry Weight})}{\text{Wet Weight}} \times 100$$

Percent Moisture

Method SOP642M Revision 0

Lab Name: Paragon Analytics

Balance ID: 25
Oven ID: 5
In Oven: 6/5/2008 @ 9:35:00 AM
Out of Oven: 6/6/2008 @ 5:15:00 AM

Date Extracted: 06/05/2008
Date Analyzed: 06/05/2008
Analyst: Tambrae Elhart

Validated By: tde
Validation Date: 06/06/2008
Validation Time: 8:47:06 AM

Run ID	Prep Batch ID	QC Batch ID	Lab ID	QC Type	Dish Wt	Wet Wt	Dry Wt	Dry Wt-Dish Wt	Percent Moisture	Percent Solids	RPD
MOI080606-1A	MOI080606-1	MOI080606-1-1	MOI080606-1	MB	0	2.24	2.24	2.24	0.0	100.0	
MOI080606-1A	MOI080606-1	MOI080606-1-1	0805200-4	SMP	2.25	6.88	6.89	4.64	32.6	67.4	
MOI080606-1A	MOI080606-1	MOI080606-1-1	0805200-8	SMP	2.26	7.24	6.68	4.42	39.0	61.0	
MOI080606-1A	MOI080606-1	MOI080606-1-1	0805200-12	SMP	2.24	6.23	5.95	3.71	40.4	59.6	
MOI080606-1A	MOI080606-1	MOI080606-1-1	0805200-16	SMP	2.24	11.18	9.85	7.61	31.9	68.1	
MOI080606-1A	MOI080606-1	MOI080606-1-1	0805200-20	SMP	2.21	10.45	10.03	7.82	25.2	74.8	
MOI080606-1A	MOI080606-1	MOI080606-1-1	0805200-24	SMP	2.24	15.09	13.06	10.82	28.3	71.7	

QC Types

CAR	Carrier reference sample
LCS	Laboratory Control Sample
MB	Method Blank
MSD	Laboratory Matrix Spike Duplicate
SMP	Field Sample

DUP	Laboratory Duplicate
LCSD	Laboratory Control Sample Duplicate
MS	Laboratory Matrix Spike
REP	Sample replicate
SYS	Sample Yield Spike

Comments:

DUP = Sample Duplicate
Wet Wt = Sample Wet Wt - Dish Wt
Dry Wt = Sample Dry Wt + Dish Wt
Dry Wt - Dish Wt = Sample Dry Wt - Dish Wt
All weight values shown above are expressed in grams.

$$RPD = \frac{(\text{Sample Value - Duplicate Value})}{2} \times 100$$

$$\%\ \text{Solids} = \frac{\text{Dry Weight}}{\text{Wet Weight}} \times 100$$

$$\%\ \text{Moisture} = \frac{(\text{Wet Weight - Dry Weight})}{\text{Wet Weight}} \times 100$$

Animal Tissue Digestate Splits

Sample ID	Original Wet Wt (g)	Total Digest. Volume (ml)	Digestate Volume Taken for Analysis (ml)				
			Po-210	Pb-210	Th-ISO	Ra-226	U6020
0805200-1	13.96	100	4	36	36	NA	NA
0805200-2	4.6	100	10	90	NA	NA	NA
0805200-3	21.08	100	3	NA	NA	NA	24
0805200-4	8.06	100	NA	5	28	50	17
0805200-5	12.5	100	4	40	40	NA	NA
0805200-6	3.74	100	10	90	NA	NA	NA
0805200-7	26.79	100	2	NA	NA	NA	19
0805200-8	8.44	100	NA	5	28	50	17
0805200-9	7.7	100	4	48	48	NA	NA
0805200-10	7.85	100	7	64	NA	NA	NA
0805200-11	26.77	100	2	NA	NA	NA	19
0805200-12	7.68	100	NA	5	28	50	17
0805200-13	13.59	100	4	37	37	NA	NA
0805200-14	12.64	100	4	40	NA	NA	NA
0805200-15	33.65	100	2	NA	NA	NA	15
0805200-16	15.28	100	NA	7	33	33	20
0805200-17	18.8	100	3	27	27	NA	NA
0805200-18	11.43	100	5	44	NA	NA	NA
0805200-19	42.59	100	2	NA	NA	NA	12
0805200-20*	13.93	100	NA	7.1	35.7	35.7	21.5
0805200-MB	20	100	2.5	20	20	20	20
0805200-LCS	20	100	2.5	20	20	20	20
0805200-LCSD	20	100	2.5	20	20	20	20

1. *=sample not enough to take full aliquots, analysis aliquot adjusted proportionally
2. Samples split using graduated cylinder or calibrated pipet

Animal Tissue Digestate Splits

Sample ID	Original Wet Wt (g)	Total Digest. Volume (ml)	Digestate Volume Taken for Analysis (ml)				
			Po-210	Pb-210	Th-ISO	Ra-226	U6020
0805200-21	18.34	100	3	28	28	NA	NA
0805200-22	15.44	100	4	33	NA	NA	NA
0805200-23	44.29	100	2	NA	NA	NA	12
0805200-24	19.13	100	NA	6	27	27	16
0805200-25	8.01	100	NA	25	25	25	25
0805200-26	23.53	100	3	22	22	NA	NA
0805200-27	11.89	100	5	43	NA	NA	NA
0805200-28	26.13	100	2	NA	NA	NA	20
0805200-29*	9.22	100	NA	7.1	35.7	35.7	21.5
0805200-30	20.07	100	3	25	25	NA	NA
0805200-31	15.71	100	4	32	NA	NA	NA
0805200-32	19.9	100	3	NA	NA	NA	26
0805200-33*	13.63	100	NA	7.1	35.7	35.7	21.5
0805200-34	13.88	100	4	37	37	NA	NA
0805200-35	14.96	100	4	34	NA	NA	NA
0805200-36	25.8	100	2	NA	NA	NA	20
0805200-37*	10.44	100	NA	7.1	35.7	35.7	21.5
0805200-MB	20	100	2.5	20	20	20	20
0805200-LCS	20	100	2.5	20	20	20	20
0805200-LCSD	20	100	2.5	20	20	20	20

1. *=sample not enough to take full aliquots, analysis aliquot adjusted proportionally
2. Samples split using graduated cylinder or calibrated pipet

PARAGON ANALYTICS
Radiochemistry Data Package

Section 8

STANDARDS TRACEABILITY DOCUMENTS

8

Radiochemistry Solution Report

Solution Id:	247963	Name:	LEAD CARRIER<7>	Type:	IR
		Lot:		Vendor Name:	

Final Vol:	1000	Dept:	RS	Prep By	EMF	on	12/13/2007	Reviewed By	JRK	on	12/19/2007
Units:	mL	Location:	SR/RA	Opened By		on		Verified By		on	
Matrix:	WATER	ExpireDate:	12/13/2008	Received By		on		Deactivated By		on	

Comment:

Component Name	Component ID	Volume Added	Units
Lead nitrate<2>	Y32609	1.6009	g

CompName	Calibrated Primary Act/Conc	Calibration Date	Reference Date	1/2 Life (Yrs)	Final Act/Conc	Summed Conc	Units
LEAD	625604		1/8/2008		1001.529		pCi/ml

Associated Parent IDs

Y32609

Abbreviations: NC = Not Calculated for reagents when the volume added is not entered.
NE = Not Entered

(Prnt) = Secular equilibrium; parent half life used to calculate concentration.

Prepare a working level dilution of Pb-210 of appox. 50dpm/mL. Dilute RSO #823 to 1L in 1M HNO_3. (Lot# 061860)

Bal 12

1) Determine density of 1.0M HNO_3
Mass of empty 100mL class A flask: 64.1197g
Mass of flask + 100mL 1.0M HNO_3: 167.0040g
Net mass of 1.0M HNO_3: 102.8843g

D = 1.0288g/mL

2) Transfer approx. 1.13g of standard to Nalgene bottle (1L)
Bal 12
Mass of bottle w/out lid: 74.7598g
mass of bottle + standard: 75.9347g
Net mass of standard: 1.1749g

3) Dilute to 1000mL w/ 1.0M HNO_3
bal 12
mass of bottle + standard + 1.0M HNO_3: 1141.0
mass of bottle: 74.7598g
net mass of std: 1066.24g

4) Final Activity

$$\frac{(3.831\times10^4\ dps)\left(\frac{60\ dpm}{dps}\right)(1.1749g)(1.0288g/mL)}{(52.10846g)(1066.24g)} = 50.007\ dpm/mL$$

RG 11/3/06

Stnd ID: **823.3020.41**

Description: **Pb-210**
Expiration: **8/10/2007**
Activity: **50.00** **dpm/mL**

2s Uncertainty: **1.65** **dpm/mL**
Ref. Date: **7/13/2006**
Ref Time: **N/A**
Prep Date: **8/4/2006** **Prep by:** **AB**
Matrix/Comp. **1.0M HNO3**
Half Life (y): **2.23E+01**

RG 11/3/06

Reverification Log		
Analysis Date	Initials	Expiration Date
7/14/2007	RG	7/14/2008

RG 11/3/06

RG 11/3/06

Continued on Page

Read and Understood By

Amanda Barlage — Signed — 8/4/06 — Date

Renee Gallegos — Signed — 11/3/06 — Date

ANALYTICS
An Isotope Products Laboratories Company

RSO# 823
Rec'd 7/17/06 KAA

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404-352-8677
Fax 404-352-2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

73351-307

Pb-210 50 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Pb-210
ACTIVITY (dps):	3.831 E4
HALF-LIFE:	22.3 years
CALIBRATION DATE:	July 13, 2006 12:00 EST
RELATIVE EXPANDED UNCERTAINTY (k=2):	3.3%

Impurities: γ-impurities <0.1%
α-impurities (other than decay products) <0.01%

52.10846 grams 1M HNO_3 solution.

P O NUMBER 71239 6-13-06, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 7-13-06

PARAGON ANALYTICS
Radiochemistry Data Package

Section 9

ADDITIONAL SUPPORTING DOCUMENTATION

9

Liquid Scintillation Counter

Instrumentation Calibration

Initial Efficiency Calibration
Standards Traceability

Pb-210 Quench Curve Efficiency and Background Determination

Quantulus
6/13/2008

Polynomial Coefficient		
	Efficiency	Background
x^0	8.0590E+01	3.5177E+00
x^1	-3.7275E-01	-1.1605E-03
x^2	5.6901E-04	
x^3	-2.8501E-07	

SQP(E) Range	
Low =	608.73
High =	774.96

Calib. Date : 9/27/2007

Sample ID	Pos#	SQP(E)	Obs.CPM	Corr. BCPM	CPM Corr.Fact.	SQP(E) Check
PB080606-1CB1	26	761.32	2.571	2.634	0.063	OK
PB080606-1CB2	38	766.72	2.481	2.628	0.147	OK
PB080606-1CB3	55	763.05	2.588	2.632	0.044	OK
				Average=	0.085	

Sample ID	Pos #	SQP(E)	Efficiency	Background	SQP(E) Check
0805200-1	27	760.82	0.8462	2.550	OK
0805200-2	28	766.47	0.8330	2.543	OK
0805200-4	29	763.82	0.8399	2.547	OK
0805200-5	30	762.81	0.8421	2.548	OK
0805200-6	31	760.56	0.8466	2.550	OK
0805200-8	32	768.89	0.8257	2.541	OK
0805200-9	33	762.88	0.8420	2.548	OK
0805200-10	34	771.16	0.8180	2.538	OK
0805200-12	35	760.61	0.8465	2.550	OK
0805200-13	36	765.40	0.8359	2.545	OK
0805200-14	37	758.48	0.8501	2.553	OK
0805200-16	39	774.29	0.8057	2.534	OK
0805200-17	46	762.06	0.8437	2.549	OK
0805200-18	47	765.56	0.8355	2.545	OK
0805200-20	48	763.09	0.8415	2.547	OK
0805200-21	49	764.95	0.8371	2.545	OK
0805200-22	50	763.50	0.8406	2.547	OK
0805200-24	51	767.05	0.8314	2.543	OK
PB080606-1MB	52	765.76	0.8350	2.544	OK
PB080606-1LCS	53	764.92	0.8372	2.545	OK
PB080606-1LCSD	54	768.93	0.8256	2.541	OK

R:\INST\LSC\QUANTULUS\QCURVE_EFF_BKG_CORR\2008\PB080606-1_PB210

Pb-210 Quench Curve Efficiency and Background Determination

Quantulus
6/11/2008

Polynomial Coefficient		
	Efficiency	Background
x^0	8.0590E+01	3.5177E+00
x^1	-3.7275E-01	-1.1605E-03
x^2	5.6901E-04	
x^3	-2.8501E-07	

SQP(E) Range	
Low =	608.73
High =	774.96

Calib. Date : 9/27/2007

Sample ID	Pos#	SQP(E)	Obs.CPM	Corr. BCPM	CPM Corr.Fact.	SQP(E) Check
PB080606-2CB1	2	772.93	2.611	2.621	0.010	OK
PB080606-2CB2	9	761.31	2.554	2.634	0.080	OK
PB080606-2CB3	17	769.93	2.470	2.624	0.154	OK
				Average=	0.081	

Sample ID	Pos #	SQP(E)	Efficiency	Background	SQP(E) Check
0805200-25	3	755.27	0.8540	2.560	OK
0805200-26	4	763.05	0.8416	2.551	OK
0805200-27	5	758.47	0.8501	2.556	OK
0805200-29	6	760.82	0.8462	2.553	OK
0805200-30	7	756.47	0.8527	2.558	OK
0805200-31	8	765.95	0.8345	2.547	OK
0805200-33	10	759.52	0.8484	2.555	OK
0805200-34	11	766.66	0.8325	2.547	OK
0805200-35	12	761.75	0.8444	2.552	OK
0805200-37	13	764.68	0.8378	2.549	OK
PB080606-2MB	14	762.84	0.8421	2.551	OK
PB080606-2LCS	15	759.22	0.8489	2.555	OK
PB080606-2LCSD	16	763.17	0.8414	2.551	OK

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Pb-210 "Window 2" Control Limits (Q1220)

The background count rate is determined from the average of the reagent blanks for the batch. Window 2 control limits are established using the average count rate from the three reagent blanks associated with each prep batch +/- 3X the estimated poisson uncertainty.

UPDATED 10/20/2006 mbc

COUNT DATE	OBS #	Sample ID	Count Duration (min.)	**Average count Duration (min.)**	Count Rate (CPM)	Batch Average Reagent Blank	**Lower Control Limit**	**Upper Control Limit**
6/11/2008	259	PB080606-2CB1	177.72		0.641			
6/12/2008	260	PB080606-2CB2	177.72		0.580			
6/13/2008	261	PB080606-2CB3	177.72	**177.72**	0.602	0.61	**0.43**	**0.78**
		29.64 MIN CTS	29.64				**0.18**	**1.04**
6/13/2008	262	PB080606-1CB1	177.72		0.568			
6/15/2008	263	PB080606-1CB2	177.72		0.557			
6/16/2008	264	PB080606-1CB3	177.72	**177.72**	0.568	0.56	**0.40**	**0.73**
		29.64 MIN CTS	29.64				**0.15**	**0.98**

R:\INST\LSC\QUANTULUS\CB'S_BKG_WIND2_CKS\rb_Pb210 (WINDOW 2)

Pb-210 Quench Curve (Quantulus)
9/27/2007

Standard : 707.2613.27
Ref. Date : 6/18/2003
Spike Act. : 5938.01 dpm/mL
Spike Vol. : 1.0 mL

Bkg. Coefficients	
Ax=	-1.1605E-03
B=	3.5177E+00

Eff. Coefficients	
Ax^3=	-2.8501E-07
Bx^2=	5.6901E-04
Cx=	-3.7275E-01
D=	8.0590E+01

Non-Spiked/ Background				
Sample ID	SQP(E)	CPM	Calc. Bkg.	Sigma Diff.
0721525-B01	777.16	2.363	2.62	1.27
0721525-B02	750.38	2.531	2.65	0.56
0721525-B03	736.50	3.054	2.66	-1.72
0721525-B04	716.64	2.936	2.69	-1.12
0721525-B05	698.65	2.649	2.71	0.27
0721525-B06	677.38	2.751	2.73	-0.09
0721525-B07	664.98	2.447	2.75	1.47
0721525-B08	654.76	2.835	2.76	-0.35
0721525-B09	636.40	2.633	2.78	0.69
0721525-B10	625.25	2.936	2.79	-0.65
0721525-B11	617.52	2.903	2.80	-0.46
0721525-B12	608.73	2.700	2.81	0.52

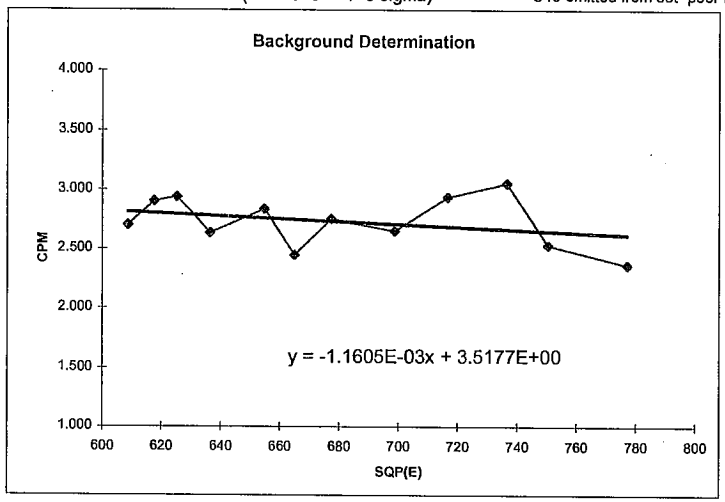
(BKG CLs = +/- 3 sigma)

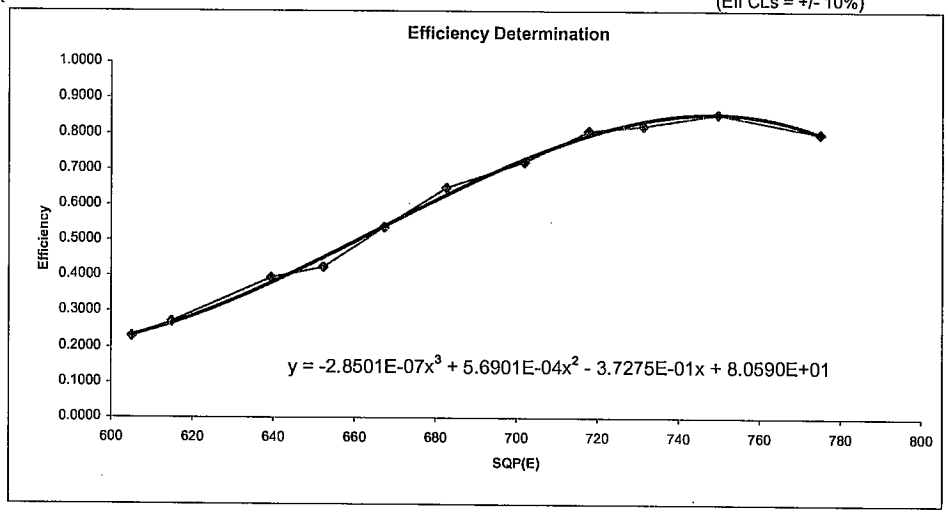
Spiked / Efficiency									
Sample ID	SQP(E)	CPM	Corr. Bkg.	Yield	Bkgd. Corr. OBS CPM	Yield/Vol/Decay Corr. KNOWN DPM	Efficiency	Calc. Eff.	% Diff.
0721525-S01	774.96	3048.775	2.62	0.8837	3046.16	3795.80	0.8025	0.8029	0.04%
0721525-S02	749.74	3373.610	2.65	0.9163	3370.96	3935.83	0.8565	0.8571	0.07%
0721525-S03	731.23	3210.762	2.67	0.9073	3208.09	3897.17	0.8232	0.8370	1.68%
0721525-S04	717.84	3101.494	2.68	0.8923	3098.81	3832.74	0.8085	0.7979	-1.32%
0721525-S05	701.97	2833.204	2.70	0.9138	2830.50	3925.09	0.7211	0.7310	1.37%
0721525-S06	682.73	2560.227	2.73	0.9182	2557.50	3943.99	0.6485	0.6295	-2.92%
0721525-S07	667.38	2227.830	2.74	0.9646	2225.09	4143.29	0.5370	0.5401	0.58%
0721525-S08	652.35	1822.050	2.76	1.0000	1819.29	4295.35	0.4235	0.4518	6.68%
0721525-S09	639.56	1513.523	2.78	0.8930	1510.75	3835.75	0.3939	0.3805	-3.40%
0721525-S10**	622.63	1332.029	2.80	0.9020	1329.23	3874.40	0.3431	0.2978	-13.21%
0721525-S11	614.98	1102.412	2.80	0.9459	1099.61	4062.97	0.2706	0.2668	-1.43%
0721525-S12	605.15	889.292	2.82	0.8970	886.48	3852.93	0.2301	0.2345	1.91%

** S10 omitted from set- poor fit

(Eff CLs = +/- 10%)

WINDOW 2 CONTROL LIMITS	
Sample ID	CPM
0721525-B01	0.743
0721525-B02	0.641
0721525-B03	0.304
0721525-B04	0.338
0721525-B05	0.304
0721525-B06	0.152
0721525-B07	0.186
0721525-B08	0.152
0721525-B09	0.169
0721525-B10	0.169
0721525-B11	0.169
0721525-B12	0.169
0721525-S01	0.608
0721525-S02	0.439
0721525-S03	0.371
0721525-S04	0.473
0721525-S05	0.608
0721525-S06	0.236
0721525-S07	0.169
0721525-S08	0.169
0721525-S09	0.270
0721525-S10**	0.101
0721525-S11	0.169
0721525-S12	0.101
AVERAGE =	0.31
UCL =	0.87
LCL =	-0.25





CALIBRATION SQP(E) RANGE

UCL =	774.96
LCL =	608.73

Lindsay Dearman — Instrument Technician — 10/5/07 Date

Supervisory Review — 10/8/07 Date

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^{210}Pb Efficiency Calibration Verification / Method Blank Verification 9/30/07

Calibration Source Check

Quantulus

Nuclide: ^{210}Pb

Half Life: 2.23E+01 years

Calibration Check Source:

Spike Standard: 823.3020.41

Reference Date : 7/13/2006

Spiked DPM/mL : 50.00

Spike Volume : 1.0 mL

Spiked into : 10 mL

Current Spk. Act. : 2.17 pCi/mL

ACCEPTANCE CRITERIA= 70%-130%

Calibration Check Source Count

Sample ID	Position	Prep Date	Analysis Date	Cnt. Dur	Volume	GrsCPM	BkgCPM	Efficiency	Activity	Units	Chem. Yield	LCS Recovery:	Pass/Fail
0721528-S1	29	9/28/2007	9/30/2007	59.26	8.264	28.958	2.620	0.807	2.10	pCi/mL	84.79%	96.8%	PASS
0721528-S2	30	9/28/2007	9/30/2007	59.26	8.264	30.122	2.684	0.799	2.14	pCi/mL	87.67%	98.5%	PASS
0721528-S3	31	9/28/2007	10/1/2007	59.26	8.264	17.010	2.775	0.384	2.21	pCi/mL	91.50%	101.8%	PASS

Method Blank Check Count

1σ IU	1σ PU
0.056	0.0974

Sample ID	Position	Prep Date	Analysis Date	Cnt. Dur	Volume	GrsCPM	BkgCPM	Efficiency	Chem. Yield	k (denom.	activity	MDC	Pass/Fail	Units	2σ CU	2σ IU	2σ PU	2σ TPU
0721528-B1	26	9/28/2007	10/1/2007	59.26	8.258	2.953	2.629	0.835	88.31%	13.513	0.0240	0.08	PASS	pCi/mL	0.045	0.00269	0.00509	0.046
0721528-B2	27	9/28/2007	9/30/2007	59.26	8.258	3.223	2.692	0.772	85.82%	12.148	0.0437	0.09	PASS	pCi/mL	0.052	0.00489	0.00928	0.053
0721528-B3	28	9/28/2007	10/1/2007	59.26	8.258	2.886	2.777	0.375	85.73%	5.896	0.0186	0.18	PASS	pCi/mL	0.105	0.00208	0.00394	0.105

Pb-210 Background Correction and Efficiency Determination

Quantulus
9/30/2007

Quadratic Coefficients		
	Background	Efficiency
x^0	3.5177E+00	8.0590E+01
x^1	-1.1605E-03	-3.7275E-01
x^2		5.6901E-04
x^3		-2.8501E-07

SQP(E) Range	
Low =	608.73
High =	774.96

Calib. Date : 9/27/2007

Sample ID	Pos#	SQP(E)	Calc. BCPM	Efficiency	SQP(E)Check
0721528-S1	29	773.94	2.620	0.8072	OK
0721528-S2	30	718.05	2.684	0.7986	OK
0721528-S3	31	640.29	2.775	0.3844	OK
0721528-B1	26	765.78	2.629	0.8349	OK
0721528-B2	27	711.22	2.692	0.7723	OK
0721528-B3	28	638.58	2.777	0.3753	OK

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Luminescence Correction Quantulus 1220
9/27/2007

	WIN 1 (190-325)					WIN 2 (800-1024)				
Sample ID	count rate spectrum 11	count rate spectrum 12	lumex corrected	% lumex	% lumex check	count rate spectrum 11	count rate spectrum 12	lumex corrected	% lumex	Wind 2 check
0721525-B01	0.000	2.363	2.363	0.00	OK	0.000	0.743	0.743	0.00	
0721525-B02	0.034	2.565	2.531	1.33	OK	0.000	0.641	0.641	0.00	
0721525-B03	0.000	3.054	3.054	0.00	OK	0.000	0.304	0.304	0.00	
0721525-B04	0.000	2.936	2.936	0.00	OK	0.000	0.338	0.338	0.00	
0721525-B05	0.000	2.649	2.649	0.00	OK	0.000	0.304	0.304	0.00	
0721525-B06	0.000	2.751	2.751	0.00	OK	0.000	0.152	0.152	0.00	
0721525-B07	0.017	2.464	2.447	0.69	OK	0.000	0.186	0.186	0.00	
0721525-B08	0.000	2.835	2.835	0.00	OK	0.000	0.152	0.152	0.00	
0721525-B09	0.000	2.633	2.633	0.00	OK	0.000	0.169	0.169	0.00	
0721525-B10	0.000	2.936	2.936	0.00	OK	0.000	0.169	0.169	0.00	
0721525-B11	0.000	2.903	2.903	0.00	OK	0.000	0.169	0.169	0.00	
0721525-B12	0.000	2.700	2.700	0.00	OK	0.000	0.169	0.169	0.00	
0721525-S01	0.000	3048.775	3048.775	0.00	OK	0.000	0.608	0.608	0.00	
0721525-S02	0.034	3373.644	3373.610	0.00	OK	0.000	0.439	0.439	0.00	
0721525-S03	0.000	3210.762	3210.762	0.00	OK	0.000	0.371	0.371	0.00	
0721525-S04	0.000	3101.494	3101.494	0.00	OK	0.000	0.473	0.473	0.00	
0721525-S05	0.000	2833.204	2833.204	0.00	OK	0.000	0.608	0.608	0.00	
0721525-S06	0.000	2560.227	2560.227	0.00	OK	0.000	0.236	0.236	0.00	
0721525-S07	0.034	2227.864	2227.830	0.00	OK	0.000	0.169	0.169	0.00	
0721525-S08	0.000	1822.050	1822.050	0.00	OK	0.000	0.169	0.169	0.00	
0721525-S09	0.000	1513.523	1513.523	0.00	OK	0.000	0.270	0.270	0.00	
0721525-S10	0.034	1332.063	1332.029	0.00	OK	0.000	0.101	0.101	0.00	
0721525-S11	0.000	1102.412	1102.412	0.00	OK	0.000	0.169	0.169	0.00	
0721525-S12	0.000	889.292	889.292	0.00	OK	0.000	0.101	0.101	0.00	
0721528-S1	0.000	28.958	28.958	0.00	OK	0.000	0.675	0.675	0.00	OK
0721528-S2	0.000	30.122	30.122	0.00	OK	0.000	0.371	0.371	0.00	OK
0721528-S3	0.000	17.010	17.010	0.00	OK	0.000	0.169	0.169	0.00	OK
0721528-B1	0.017	2.970	2.953	0.57	OK	0.000	0.675	0.675	0.00	OK
0721528-B2	0.000	3.223	3.223	0.00	OK	0.000	0.338	0.338	0.00	OK
0721528-B3	0.000	2.886	2.886	0.00	OK	0.000	0.084	0.084	0.00	OK

% lumex LCL=	0.00
% lumex UCL=	10.00

Wind 2 LCL=	-0.25
Wind 2 UCL=	0.87

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Spectrum report

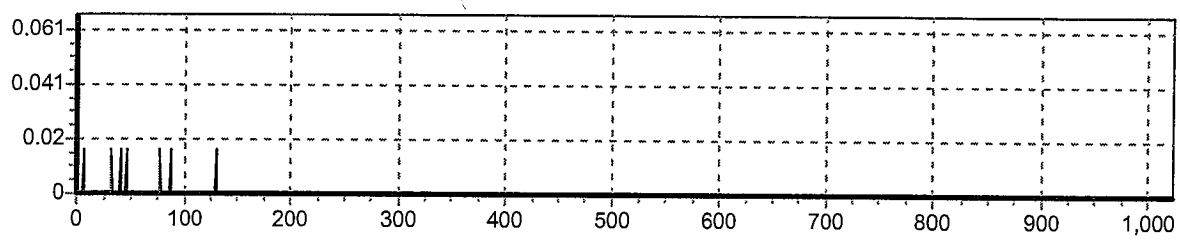
9/28/07 9:01:11 AM

```
   Setup information
\my documents\default.ini

Window 1 = 190..325 190..325, MCA 11 mode CPM
   volume 10 ml
Window 2 = 800..1024 800..1024, MCA 11 mode CPM
   volume 10 ml
Window 3 = 190..325 190..325, MCA 12 mode CPM
   volume 10 ml
Window 4 = 800..1024 800..1024, MCA 12 mode CPM
   volume 10 ml
```

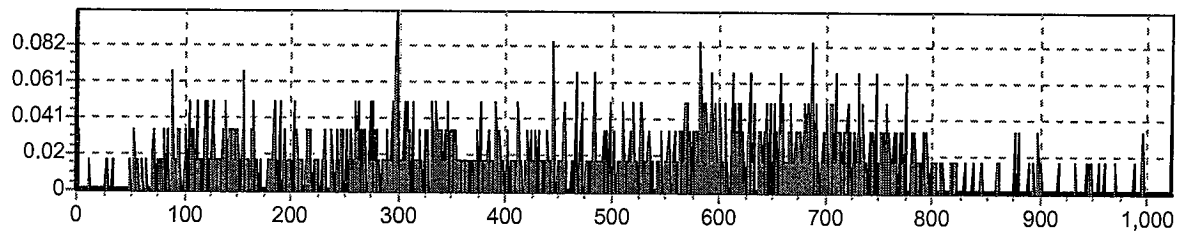
file :C:\ Pb-210\ PB-0927\ Q010501N.001
spectrum :11
counting time :3555.55 s
SQP(E) :777.16
counting :9/27/07 3:15:00 PM
sampling :9/27/07 3:15:00 PM
ID: 0721525-B01

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



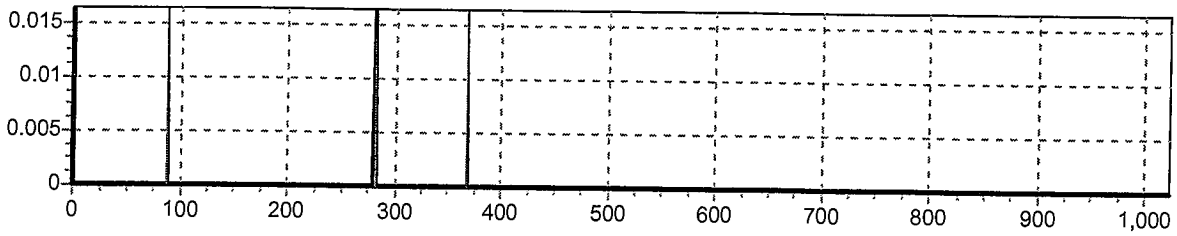
file :C:\ Pb-210\ PB-0927\ Q010501N.001
spectrum :12
counting time :3555.55 s
SQP(E) :777.16
counting :9/27/07 3:15:00 PM
sampling :9/27/07 3:15:00 PM
ID: 0721525-B01

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.363	0.200				0.000		
800..1024	0.743	0.112				0.000		



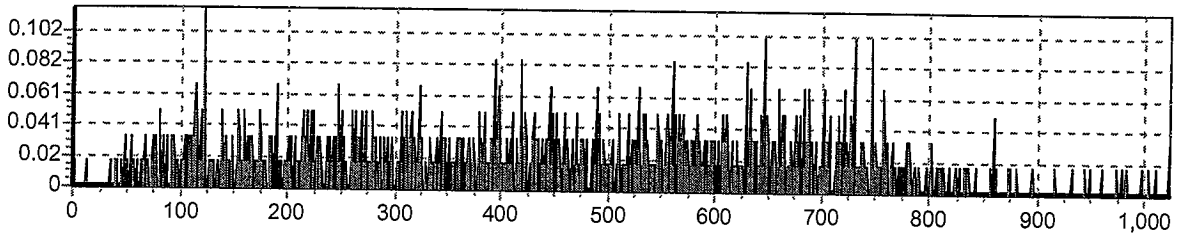
file :C:\ Pb-210\ PB-0927\ Q020601N.001
spectrum :11
counting time :3555.54 s
SQP(E) :750.38
counting :9/27/07 4:17:00 PM
sampling :9/27/07 4:17:00 PM
ID: 0721525-B02

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.034	0.024				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



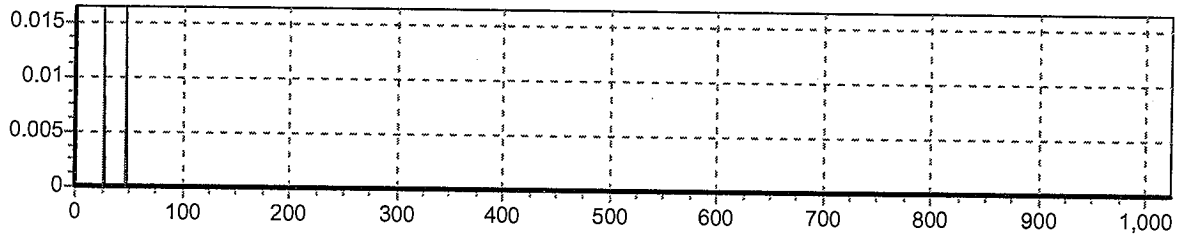
file :C:\ Pb-210\ PB-0927\
Q020601N.001
spectrum :12
counting time :3555.54 s
SQP(E) :750.38
counting :9/27/07 4:17:00 PM
sampling :9/27/07 4:17:00 PM
ID: 0721525-B02

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.565	0.208				0.000		
800..1024	0.641	0.104				0.000		



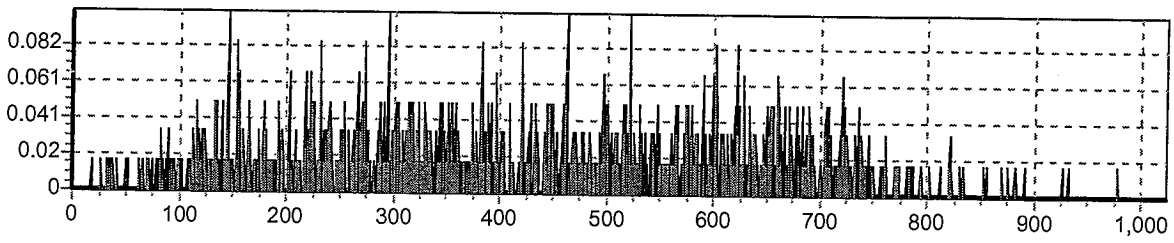
file :C:\ Pb-210\ PB-0927\
Q030701N.001
spectrum :11
counting time :3555.54 s
SQP(E) :736.50
counting :9/27/07 5:18:00 PM
sampling :9/27/07 5:18:00 PM
ID: 0721525-B03

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



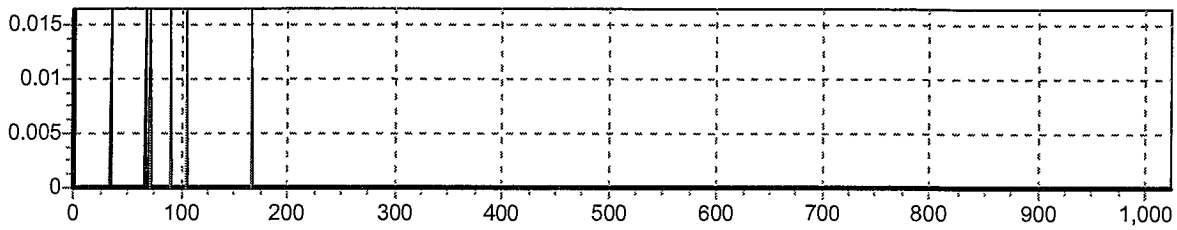
file :C:\ Pb-210\ PB-0927\
Q030701N.001
spectrum :12
counting time :3555.54 s
SQP(E) :736.50
counting :9/27/07 5:18:00 PM
sampling :9/27/07 5:18:00 PM
ID: 0721525-B03

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.054	0.227				0.000		
800..1024	0.304	0.072				0.000		



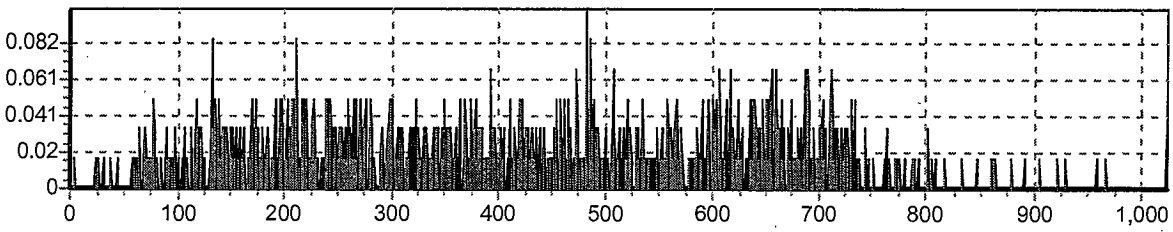
file :C:\ Pb-210\ PB-0927\
Q040801N.001
spectrum :11
counting time :3555.54 s
SQP(E) :716.64
counting :9/27/07 6:20:00 PM
sampling :9/27/07 6:20:00 PM
ID: 0721525-B04

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



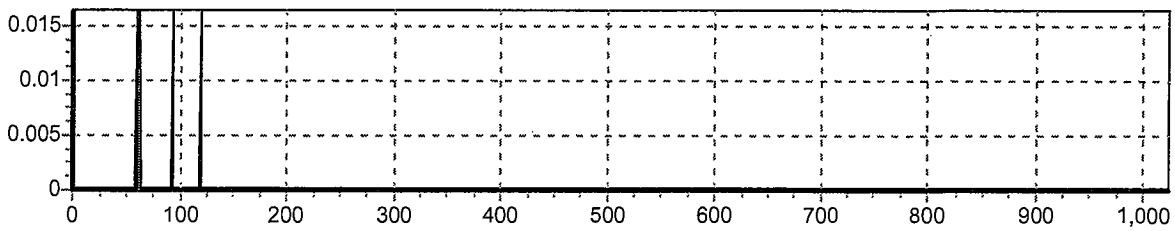
file :C:\ Pb-210\ PB-0927\
Q040801N.001
spectrum :12
counting time :3555.54 s
SQP(E) :716.64
counting :9/27/07 6:20:00 PM
sampling :9/27/07 6:20:00 PM
ID: 0721525-B04

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.936	0.223				0.000		
800..1024	0.338	0.075				0.000		



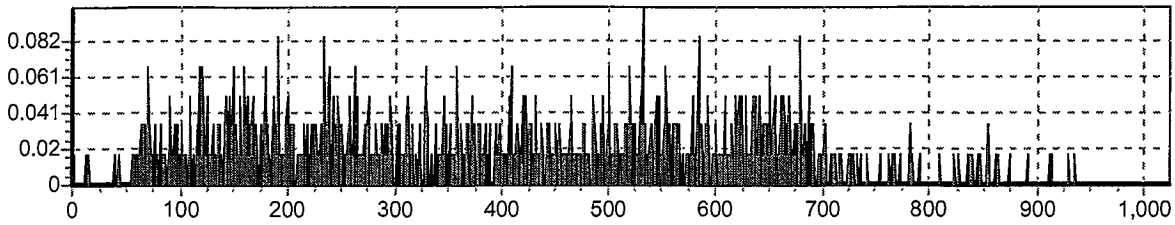
file :C:\ Pb-210\ PB-0927\
Q050901N.001
spectrum :11
counting time :3555.53 s
SQP(E) :698.65
counting :9/27/07 7:21:00 PM
sampling :9/27/07 7:21:00 PM
ID: 0721525-B05

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



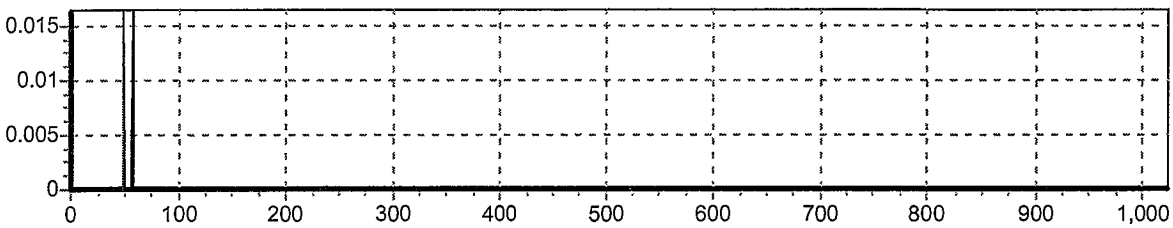
file :C:\ Pb-210\ PB-0927\
Q050901N.001
spectrum :12
counting time :3555.53 s
SQP(E) :698.65
counting :9/27/07 7:21:00 PM
sampling :9/27/07 7:21:00 PM
ID: 0721525-B05

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.649	0.211				0.000		
800..1024	0.304	0.072				0.000		



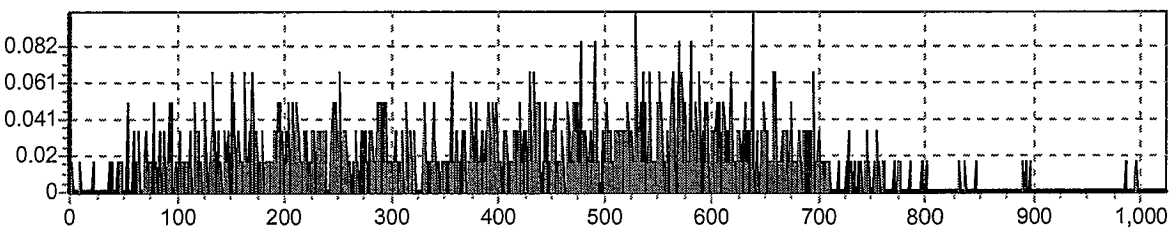
file :C:\ Pb-210\ PB-0927\
Q061001N.001
spectrum :11
counting time :3555.56 s
SQP(E) :677.38
counting :9/27/07 8:23:00 PM
sampling :9/27/07 8:23:00 PM
ID: 0721525-B06

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



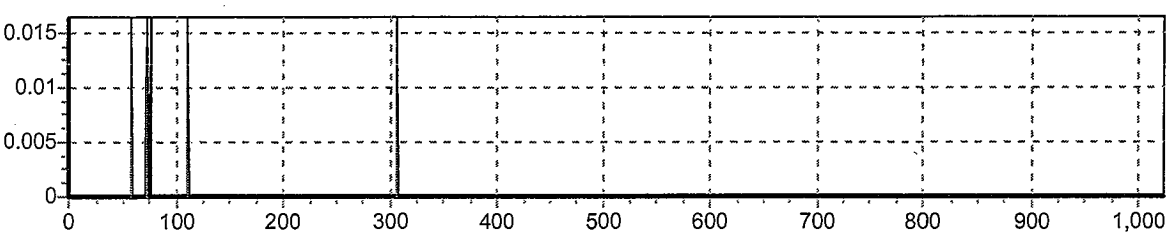
file :C:\ Pb-210\ PB-0927\
Q061001N.001
spectrum :12
counting time :3555.56 s
SQP(E) :677.38
counting :9/27/07 8:23:00 PM
sampling :9/27/07 8:23:00 PM
ID: 0721525-B06

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.751	0.215				0.000		
800..1024	0.152	0.051				0.000		



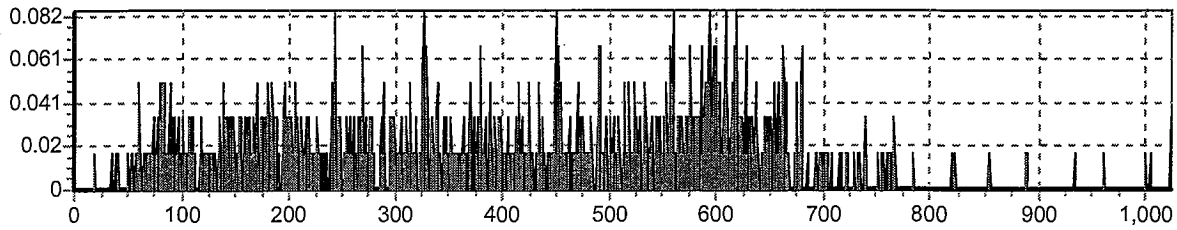
file :C:\ Pb-210\ PB-0927\
Q071101N.001
spectrum :11
counting time :3555.55 s
SQP(E) :664.98
counting :9/27/07 9:25:00 PM
sampling :9/27/07 9:25:00 PM
ID: 0721525-B07

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.017	0.017				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



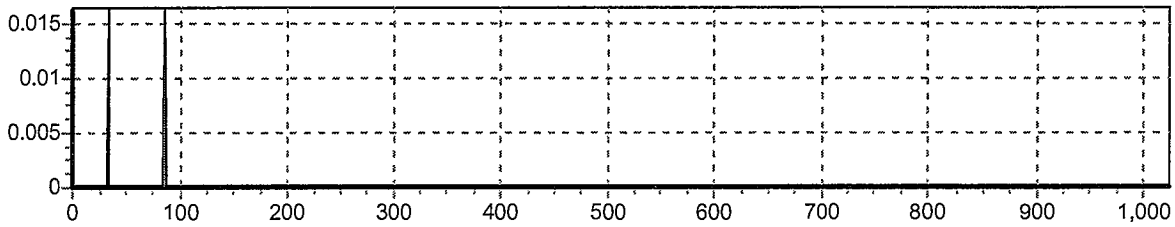
file :C:\ Pb-210\ PB-0927\
Q071101N.001
spectrum :12
counting time :3555.55 s
SQP(E) :664.98
counting :9/27/07 9:25:00 PM
sampling :9/27/07 9:25:00 PM
ID: 0721525-B07

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.464	0.204				0.000		
800..1024	0.186	0.056				0.000		



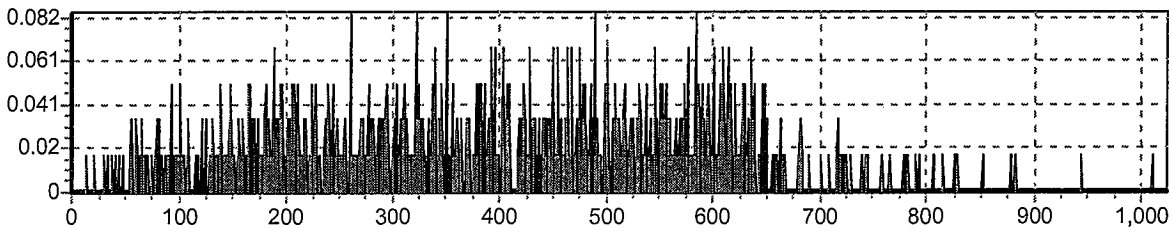
file :C:\ Pb-210\ PB-0927\
Q081201N.001
spectrum :11
counting time :3555.54 s
SQP(E) :654.76
counting :9/27/07 10:26:00 PM
sampling :9/27/07 10:26:00 PM
ID: 0721525-B08

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



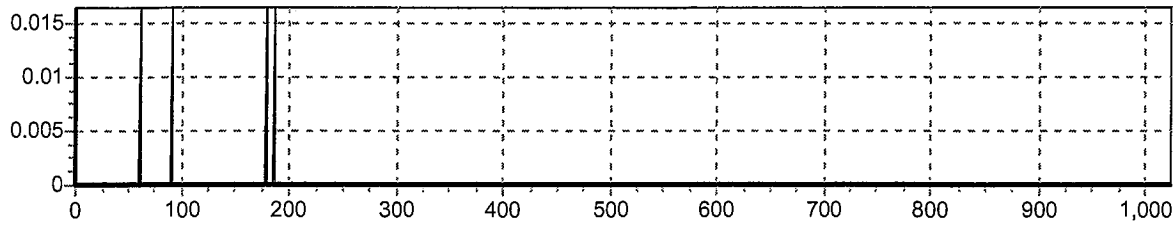
file :C:\ Pb-210\ PB-0927\
Q081201N.001
spectrum :12
counting time :3555.54 s
SQP(E) :654.76
counting :9/27/07 10:26:00 PM
sampling :9/27/07 10:26:00 PM
ID: 0721525-B08

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.835	0.219				0.000		
800..1024	0.152	0.051				0.000		



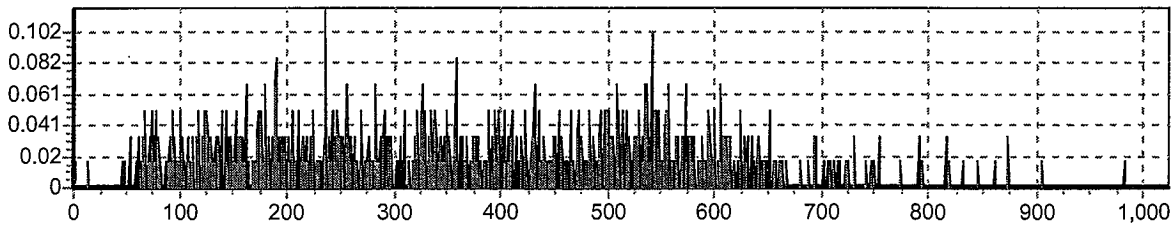
file :C:\ Pb-210\ PB-0927\
Q091301N.001
spectrum :11
counting time :3555.54 s
SQP(E) :636.40
counting :9/27/07 11:28:00 PM
sampling :9/27/07 11:28:00 PM
ID: 0721525-B09

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



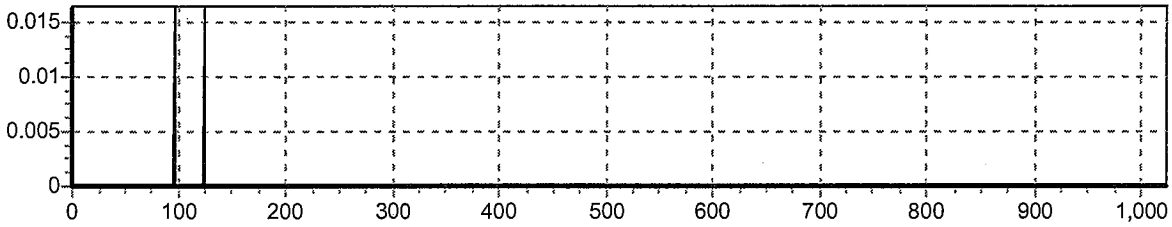
file :C:\ Pb-210\ PB-0927\
Q091301N.001
spectrum :12
counting time :3555.54 s
SQP(E) :636.40
counting :9/27/07 11:28:00 PM
sampling :9/27/07 11:28:00 PM
ID: 0721525-B09

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.633	0.211				0.000		
800..1024	0.169	0.053				0.000		



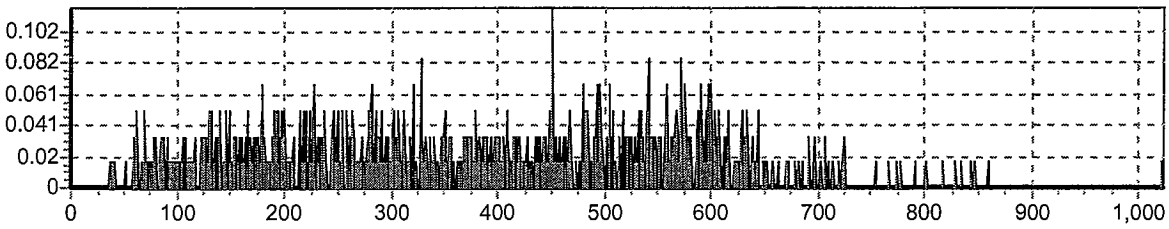
file :C:\ Pb-210\ PB-0927\
Q101401N.001
spectrum :11
counting time :3555.53 s
SQP(E) :625.25
counting :9/28/07 12:30:00 AM
sampling :9/28/07 12:30:00 AM
ID: 0721525-B10

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



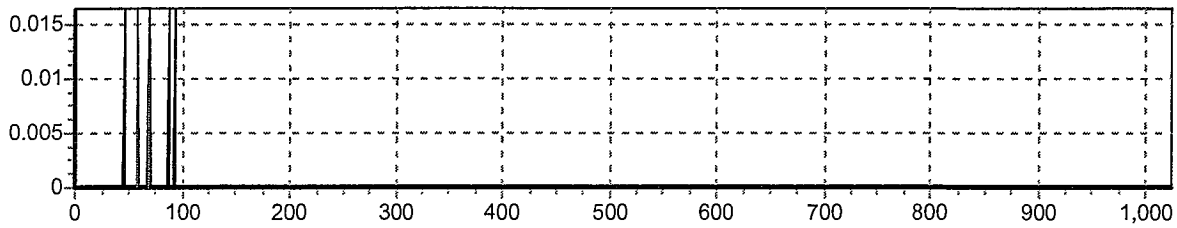
file :C:\ Pb-210\ PB-0927\
Q101401N.001
spectrum :12
counting time :3555.53 s
SQP(E) :625.25
counting :9/28/07 12:30:00 AM
sampling :9/28/07 12:30:00 AM
ID: 0721525-B10

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.936	0.223				0.000		
800..1024	0.169	0.053				0.000		



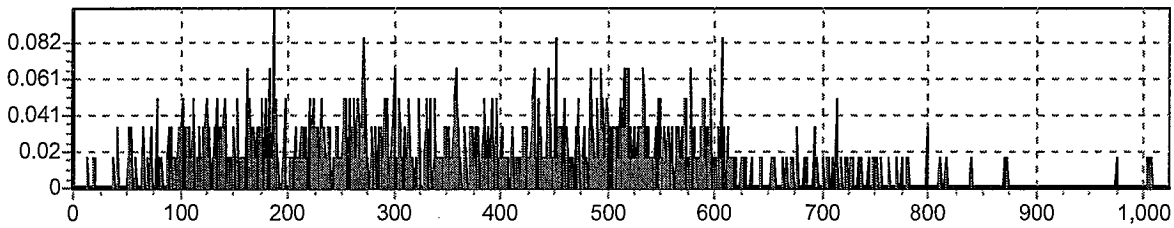
file :C:\ Pb-210\ PB-0927\
Q111501N.001
spectrum :11
counting time :3555.52 s
SQP(E) :617.52
counting :9/28/07 1:31:00 AM
sampling :9/28/07 1:31:00 AM
ID: 0721525-B11

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



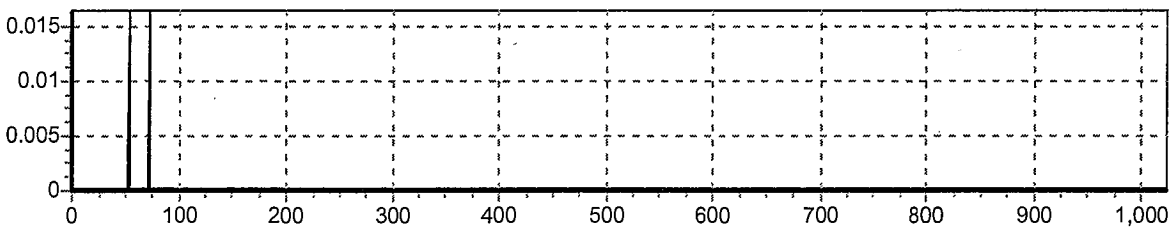
file :C:\ Pb-210\ PB-0927\
Q111501N.001
spectrum :12
counting time :3555.52 s
SQP(E) :617.52
counting :9/28/07 1:31:00 AM
sampling :9/28/07 1:31:00 AM
ID: 0721525-B11

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.903	0.221				0.000		
800..1024	0.169	0.053				0.000		



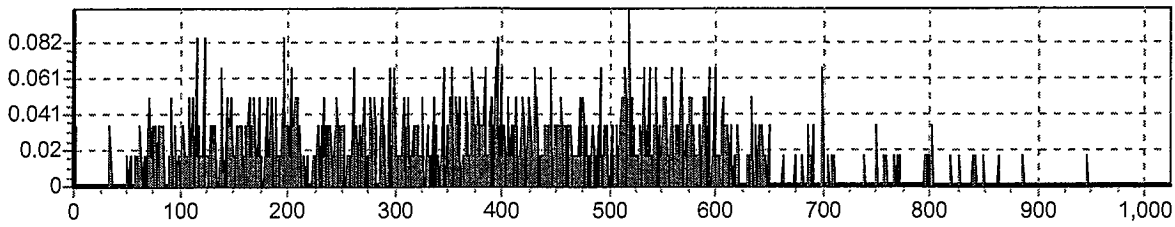
file :C:\ Pb-210\ PB-0927\
Q121601N.001
spectrum :11
counting time :3555.50 s
SQP(E) :608.73
counting :9/28/07 2:33:00 AM
sampling :9/28/07 2:33:00 AM
ID: 0721525-B12

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0927\
Q121601N.001
spectrum :12
counting time :3555.50 s
SQP(E) :608.73
counting :9/28/07 2:33:00 AM
sampling :9/28/07 2:33:00 AM
ID: 0721525-B12

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.700	0.213				0.000		
800..1024	0.169	0.053				0.000		


0.082
0.061
0.041
0.02
0
0
100
200
300
400
500
600
700
800
900
1,000

Spectrum report

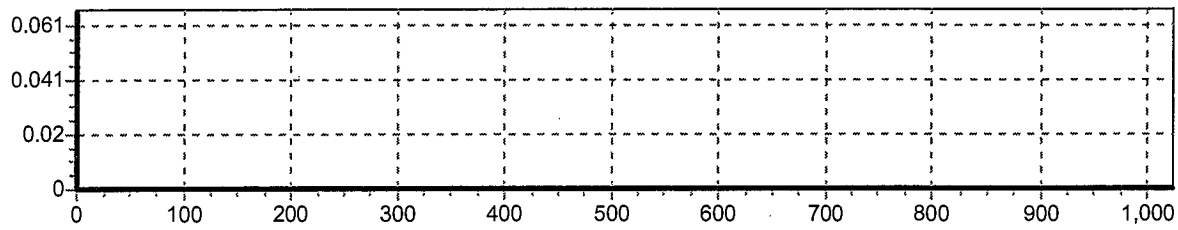
9/28/07 10:03:45 AM

```
   Setup information
\my documents\default.ini

Window 1 = 190..325 190..325, MCA 11 mode CPM
   volume 10 ml
Window 2 = 800..1024 800..1024, MCA 11 mode CPM
   volume 10 ml
Window 3 = 190..325 190..325, MCA 12 mode CPM
   volume 10 ml
Window 4 = 800..1024 800..1024, MCA 12 mode CPM
   volume 10 ml
```

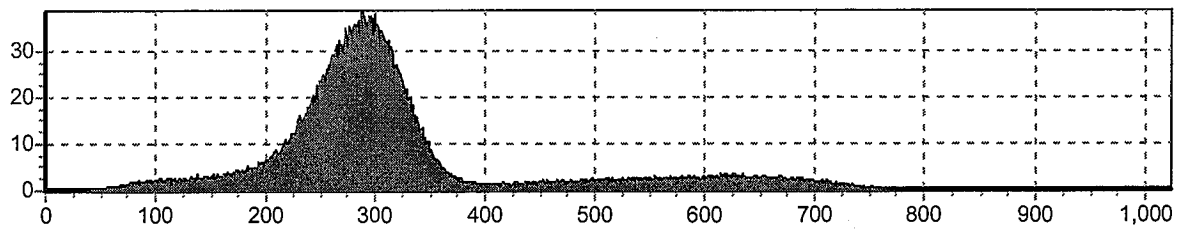
file :C:\ Pb-210\ PB-0928\
Q012501N.001
spectrum :11
counting time :1777.48 s
SQP(E) :774.96
counting :9/28/07 3:58:00 AM
sampling :9/28/07 3:58:00 AM
ID: 0721525-S01

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



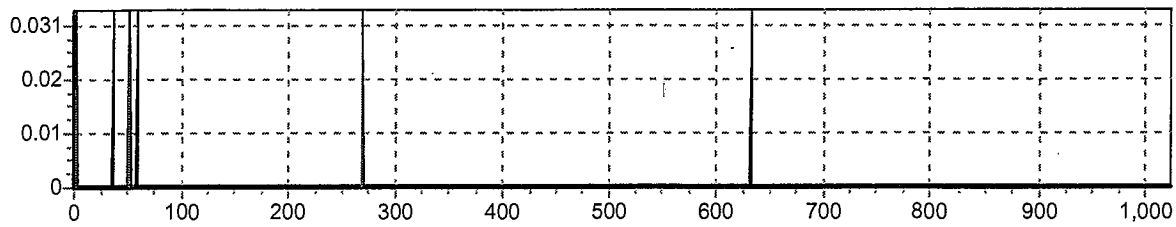
file :C:\ Pb-210\ PB-0928\
Q012501N.001
spectrum :12
counting time :1777.48 s
SQP(E) :774.96
counting :9/28/07 3:58:00 AM
sampling :9/28/07 3:58:00 AM
ID: 0721525-S01

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3048.775	10.145				0.000		
800..1024	0.608	0.143				0.000		



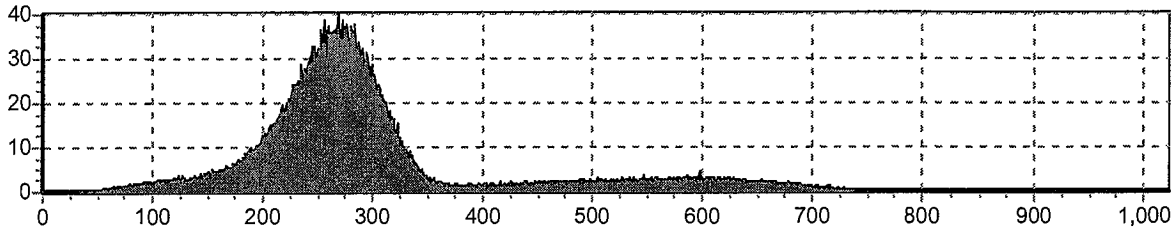
file :C:\ Pb-210\ PB-0928\
Q022601N.001
spectrum :11
counting time :1777.44 s
SQP(E) :749.74
counting :9/28/07 4:30:00 AM
sampling :9/28/07 4:30:00 AM
ID: 0721525-S02

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.034	0.034				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



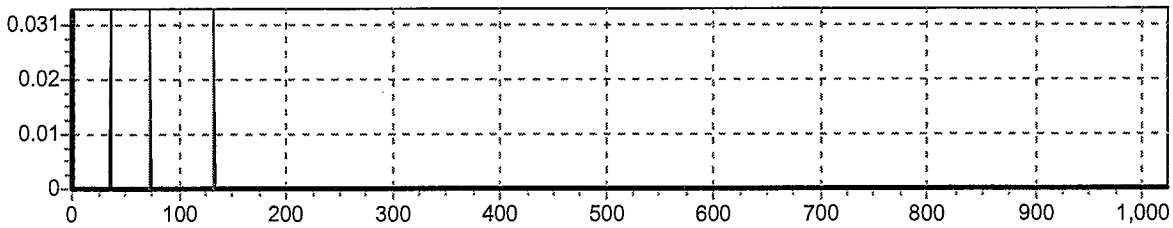
file :C:\ Pb-210\ PB-0928\
Q022601N.001
spectrum :12
counting time :1777.44 s
SQP(E) :749.74
counting :9/28/07 4:30:00 AM
sampling :9/28/07 4:30:00 AM
ID: 0721525-S02

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3373.644	10.672				0.000		
800..1024	0.439	0.122				0.000		



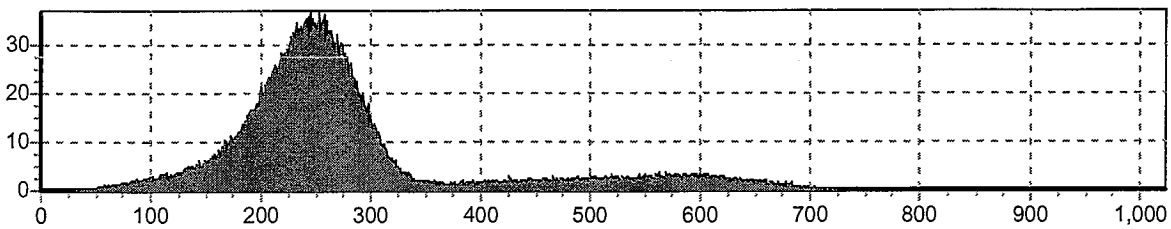
file :C:\ Pb-210\ PB-0928\
Q032701N.001
spectrum :11
counting time :1777.47 s
SQP(E) :731.23
counting :9/28/07 5:01:00 AM
sampling :9/28/07 5:01:00 AM
ID: 0721525-S03

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



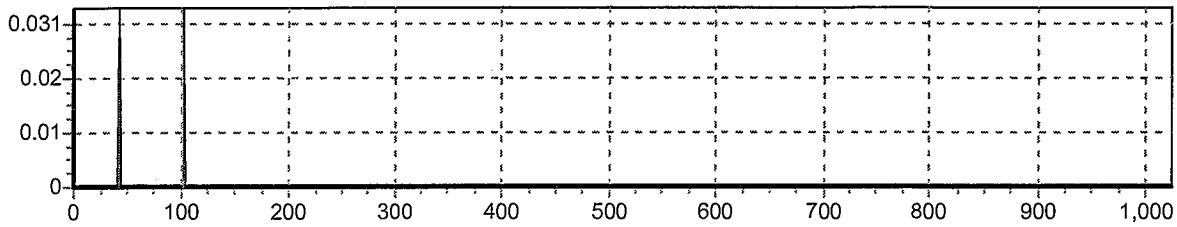
file :C:\ Pb-210\ PB-0928\
Q032701N.001
spectrum :12
counting time :1777.47 s
SQP(E) :731.23
counting :9/28/07 5:01:00 AM
sampling :9/28/07 5:01:00 AM
ID: 0721525-S03

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3210.762	10.411				0.000		
800..1024	0.371	0.112				0.000		



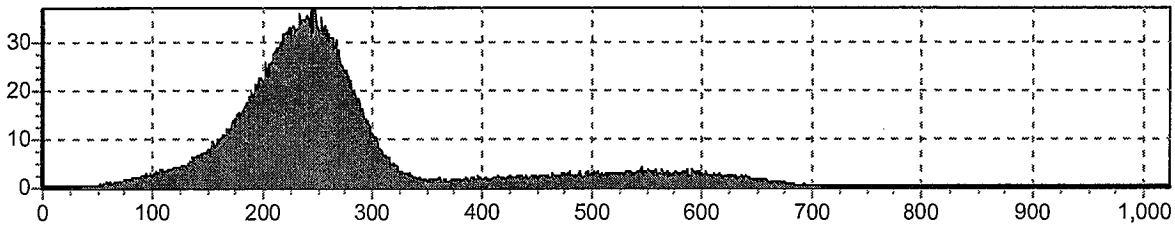
file :C:\ Pb-210\ PB-0928\
Q042801N.001
spectrum :11
counting time :1777.47 s
SQP(E) :717.84
counting :9/28/07 5:33:00 AM
sampling :9/28/07 5:33:00 AM
ID: 0721525-S04

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



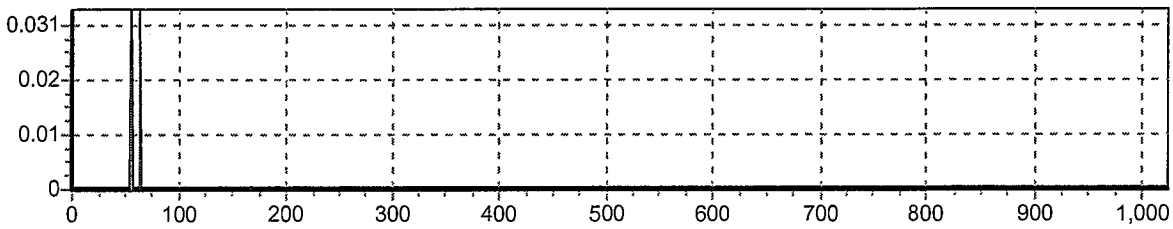
file :C:\ Pb-210\ PB-0928\
Q042801N.001
spectrum :12
counting time :1777.47 s
SQP(E) :717.84
counting :9/28/07 5:33:00 AM
sampling :9/28/07 5:33:00 AM
ID: 0721525-S04

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3101.494	10.232				0.000		
800..1024	0.473	0.126				0.000		



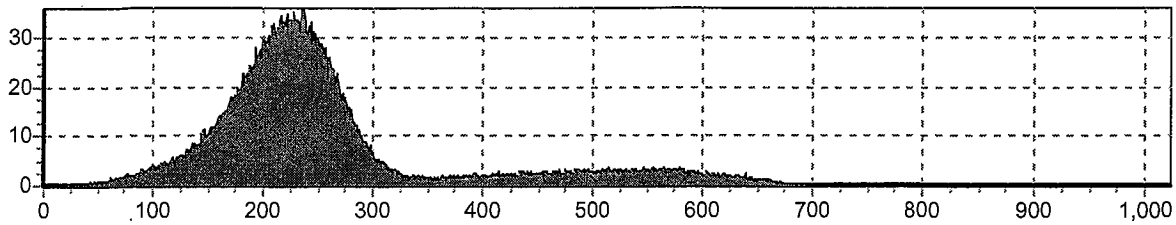
file :C:\ Pb-210\ PB-0928\
Q052901N.001
spectrum :11
counting time :1777.49 s
SQP(E) :701.97
counting :9/28/07 6:05:00 AM
sampling :9/28/07 6:05:00 AM
ID: 0721525-S05

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



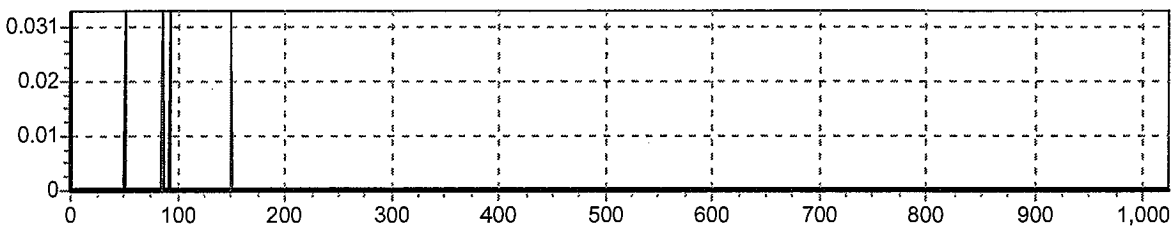
file :C:\ Pb-210\ PB-0928\
Q052901N.001
spectrum :12
counting time :1777.49 s
SQP(E) :701.97
counting :9/28/07 6:05:00 AM
sampling :9/28/07 6:05:00 AM
ID: 0721525-S05

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2833.204	9.779				0.000		
800..1024	0.608	0.143				0.000		



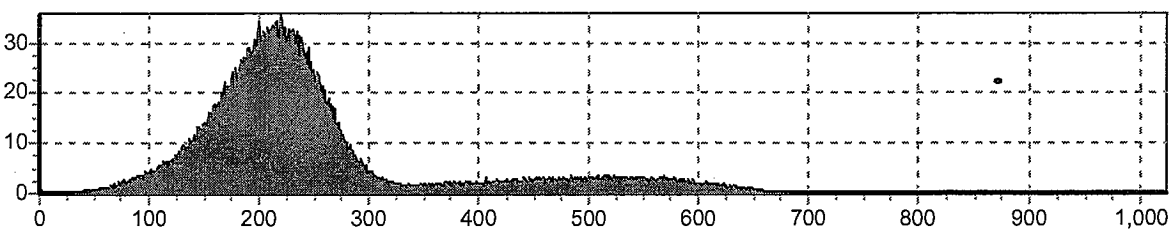
file :C:\ Pb-210\ PB-0928\
Q063001N.001
spectrum :11
counting time :1777.48 s
SQP(E) :682.73
counting :9/28/07 6:36:00 AM
sampling :9/28/07 6:36:00 AM
ID: 0721525-S06

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



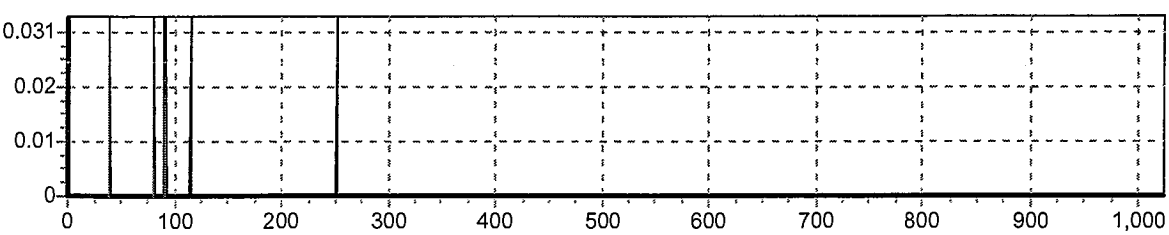
file :C:\ Pb-210\ PB-0928\
Q063001N.001
spectrum :12
counting time :1777.48 s
SQP(E) :682.73
counting :9/28/07 6:36:00 AM
sampling :9/28/07 6:36:00 AM
ID: 0721525-S06

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2560.227	9.296				0.000		
800..1024	0.236	0.089				0.000		



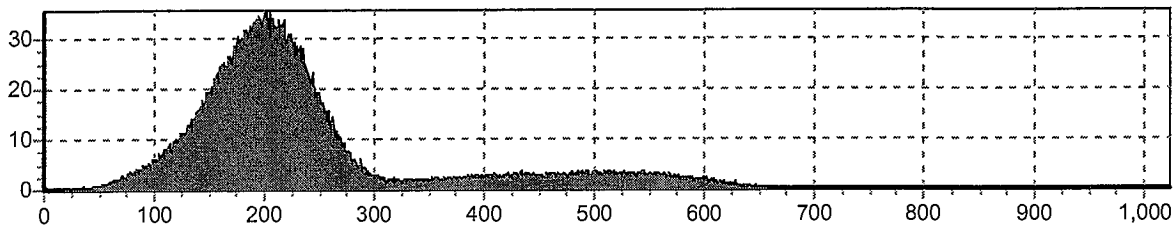
file :C:\ Pb-210\ PB-0928\
Q073101N.001
spectrum :11
counting time :1777.46 s
SQP(E) :667.38
counting :9/28/07 7:08:00 AM
sampling :9/28/07 7:08:00 AM
ID: 0721525-S07

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.034	0.034				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



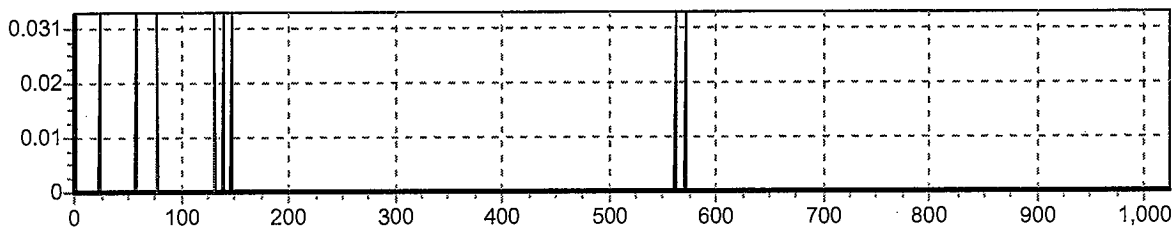
file :C:\ Pb-210\ PB-0928\
Q073101N.001
spectrum :12
counting time :1777.46 s
SQP(E) :667.38
counting :9/28/07 7:08:00 AM
sampling :9/28/07 7:08:00 AM
ID: 0721525-S07

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2227.864	8.672				0.000		
800..1024	0.169	0.075				0.000		



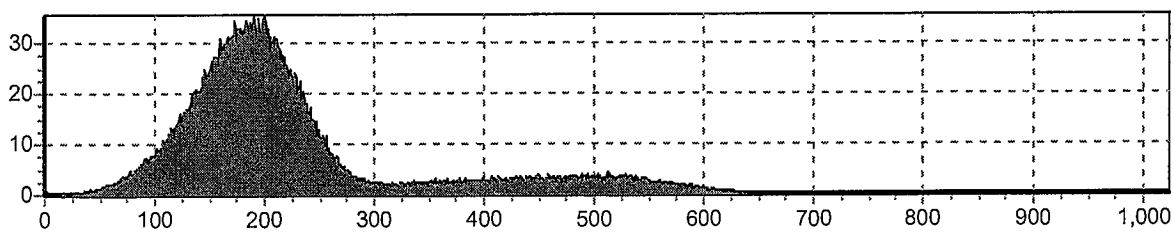
file :C:\ Pb-210\ PB-0928\
Q083201N.001
spectrum :11
counting time :1777.46 s
SQP(E) :652.35
counting :9/28/07 7:40:00 AM
sampling :9/28/07 7:40:00 AM
ID: 0721525-S08

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



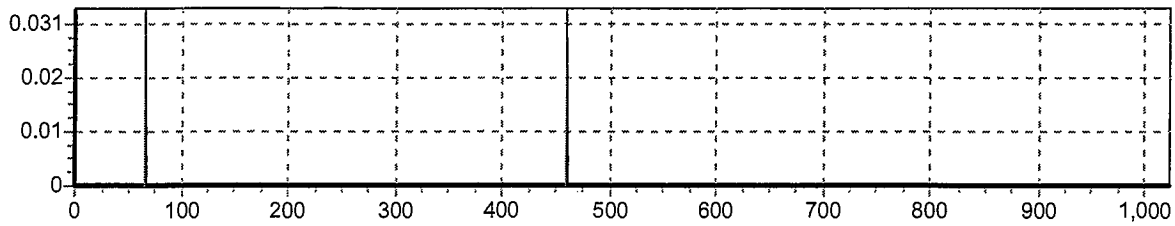
file :C:\ Pb-210\ PB-0928\
Q083201N.001
spectrum :12
counting time :1777.46 s
SQP(E) :652.35
counting :9/28/07 7:40:00 AM
sampling :9/28/07 7:40:00 AM
ID: 0721525-S08

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	1822.050	7.843				0.000		
800..1024	0.169	0.075				0.000		



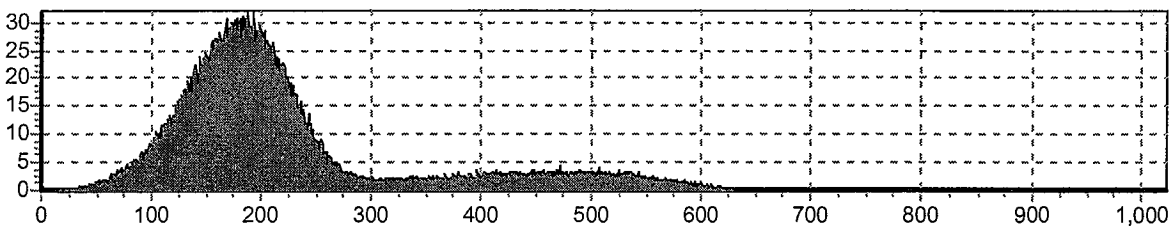
file :C:\ Pb-210\ PB-0928\
Q093301N.001
spectrum :11
counting time :1777.57 s
SQP(E) :639.56
counting :9/28/07 8:11:00 AM
sampling :9/28/07 8:11:00 AM
ID: 0721525-S09

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



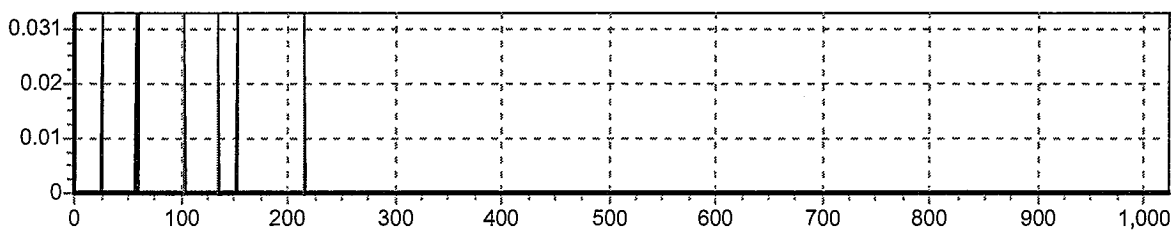
file :C:\ Pb-210\ PB-0928\
Q093301N.001
spectrum :12
counting time :1777.57 s
SQP(E) :639.56
counting :9/28/07 8:11:00 AM
sampling :9/28/07 8:11:00 AM
ID: 0721525-S09

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	1513.523	7.148				0.000		
800..1024	0.270	0.095				0.000		



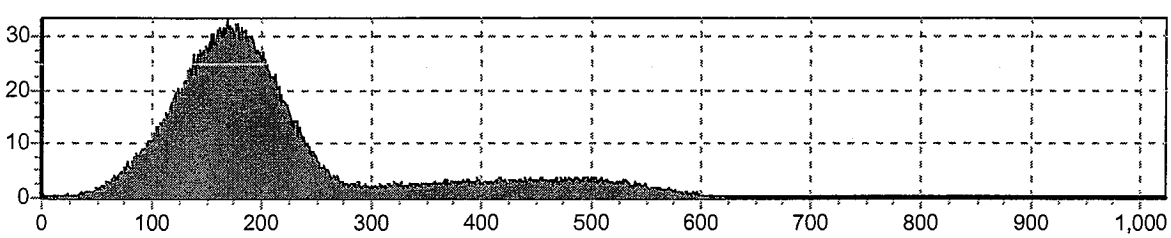
file :C:\ Pb-210\ PB-0928\
Q103401N.001
spectrum :11
counting time :1777.53 s
SQP(E) :622.63
counting :9/28/07 8:43:00 AM
sampling :9/28/07 8:43:00 AM
ID: 0721525-S10

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.034	0.034				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



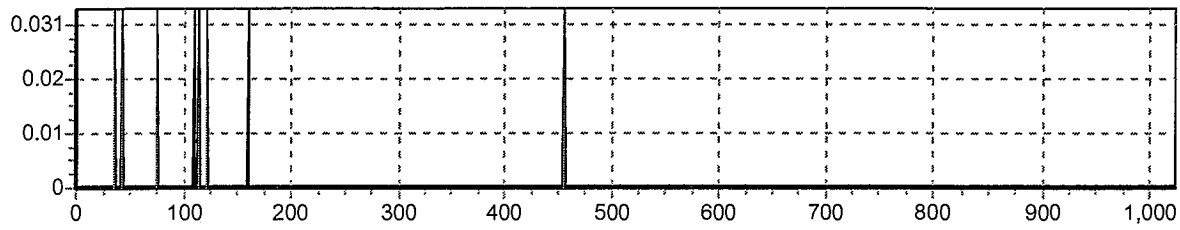
file :C:\ Pb-210\ PB-0928\
Q103401N.001
spectrum :12
counting time :1777.53 s
SQP(E) :622.63
counting :9/28/07 8:43:00 AM
sampling :9/28/07 8:43:00 AM
ID: 0721525-S10

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	1332.063	6.705				0.000		
800..1024	0.101	0.058				0.000		



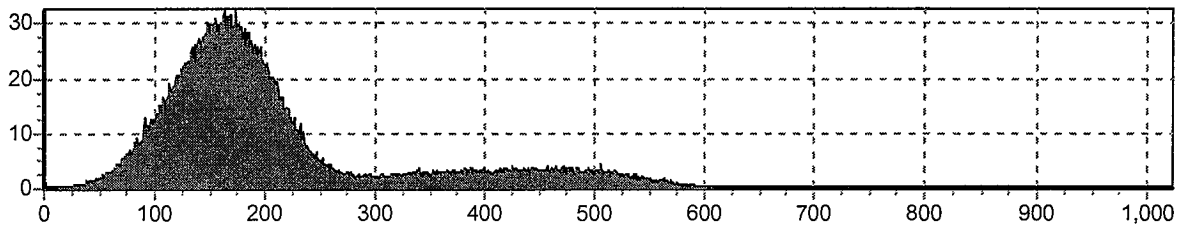
file :C:\ Pb-210\ PB-0928\
Q113501N.001
spectrum :11
counting time :1777.56 s
SQP(E) :614.98
counting :9/28/07 9:15:00 AM
sampling :9/28/07 9:15:00 AM
ID: 0721525-S11

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



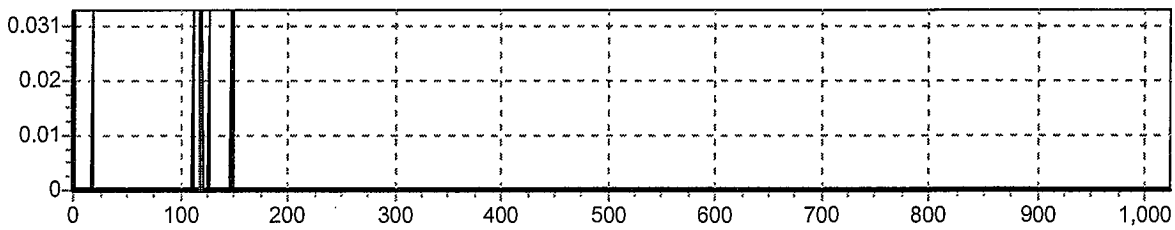
file :C:\ Pb-210\ PB-0928\
Q113501N.001
spectrum :12
counting time :1777.56 s
SQP(E) :614.98
counting :9/28/07 9:15:00 AM
sampling :9/28/07 9:15:00 AM
ID: 0721525-S11

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	1102.412	6.100				0.000		
800..1024	0.169	0.075				0.000		



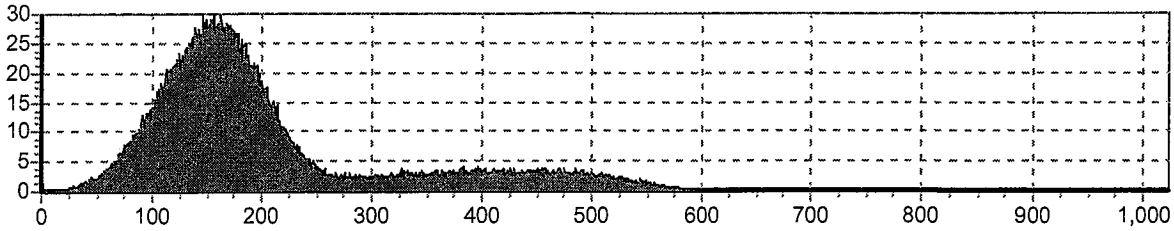
file :C:\ Pb-210\ PB-0928\
Q123601N.001
spectrum :11
counting time :1777.62 s
SQP(E) :605.15
counting :9/28/07 9:46:00 AM
sampling :9/28/07 9:46:00 AM
ID: 0721525-S12

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-0928\
Q123601N.001
spectrum :12
counting time :1777.62 s
SQP(E) :605.15
counting :9/28/07 9:46:00 AM
sampling :9/28/07 9:46:00 AM
ID: 0721525-S12

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	889.292	5.479				0.000		
800..1024	0.101	0.058				0.000		


30
25
20
15
10
5
0
0
100
200
300
400
500
600
700
800
900
1,000

Spectrum report

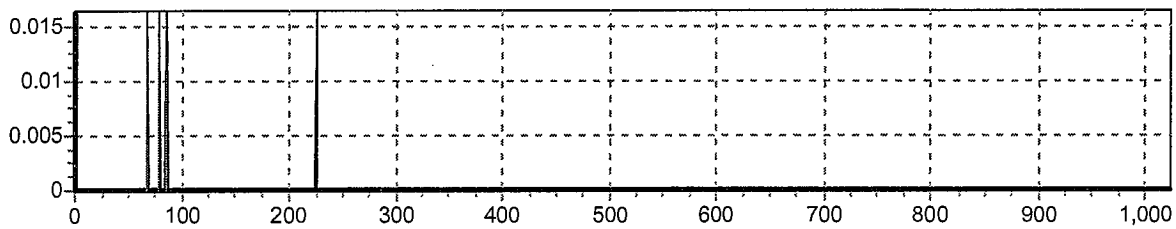
10/1/07 12:24:18 PM

```
   Setup information
\my documents\default.ini

Window 1 = 190..325 190..325, MCA 11 mode CPM
   volume 10 ml
Window 2 = 800:.1024 800..1024, MCA 11 mode CPM
   volume 10 ml
Window 3 = 190..325 190..325, MCA 12 mode CPM
   volume 10 ml
Window 4 = 800..1024 800..1024, MCA 12 mode CPM
   volume 10 ml
```

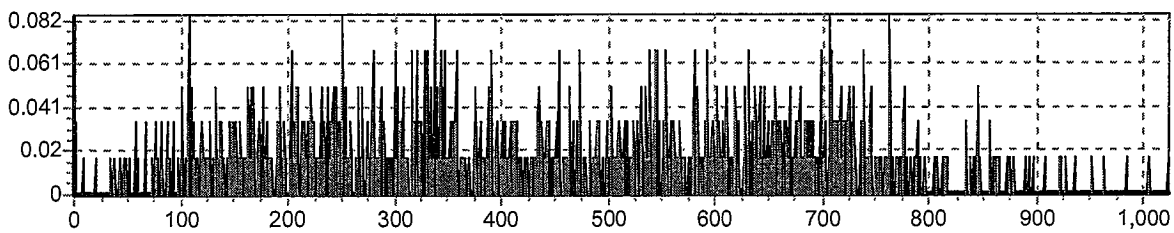
file :C:\ Pb-210\ PB-1001\ Q012601N.001
spectrum :11
counting time :3555.52 s
SQP(E) :765.78
counting :10/1/07 9:49:00 AM
sampling :10/1/07 9:49:00 AM
ID: 0721528-B1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.017	0.017				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



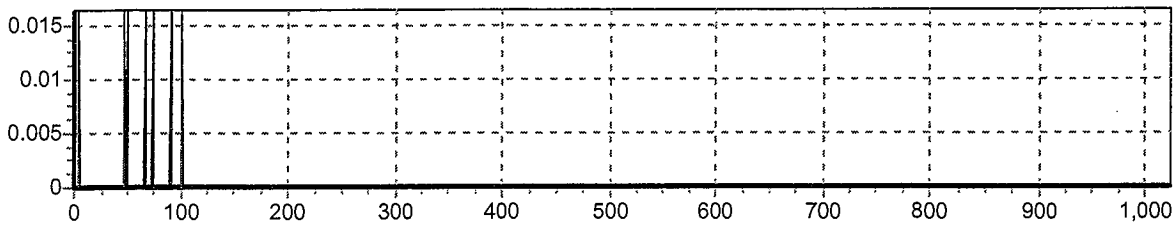
file :C:\ Pb-210\ PB-1001\ Q012601N.001
spectrum :12
counting time :3555.52 s
SQP(E) :765.78
counting :10/1/07 9:49:00 AM
sampling :10/1/07 9:49:00 AM
ID: 0721528-B1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.970	0.224				0.000		
800..1024	0.675	0.107				0.000		



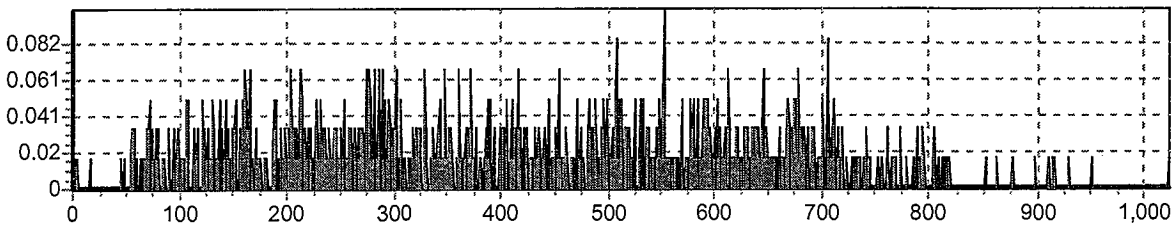
file :C:\ Pb-210\ PB-0930\ Q022701N.001
spectrum :11
counting time :3555.54 s
SQP(E) :711.22
counting :9/30/07 7:21:00 PM
sampling :9/30/07 7:21:00 PM
ID: 0721528-B2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



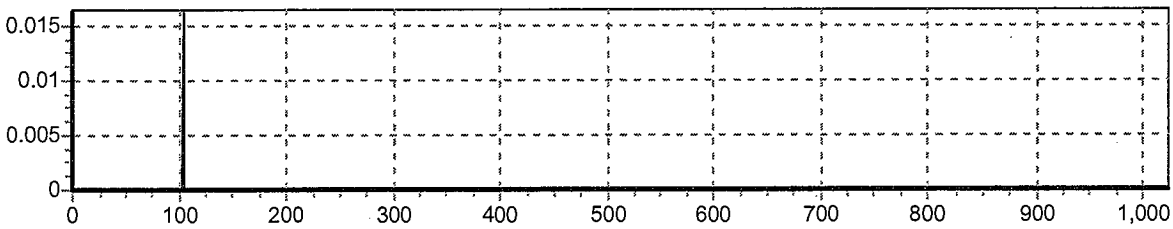
file :C:\ Pb-210\ PB-0930\
Q022701N.001
spectrum :12
counting time :3555.54 s
SQP(E) :711.22
counting :9/30/07 7:21:00 PM
sampling :9/30/07 7:21:00 PM
ID: 0721528-B2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	3.223	0.233				0.000		
800..1024	0.338	0.075				0.000		



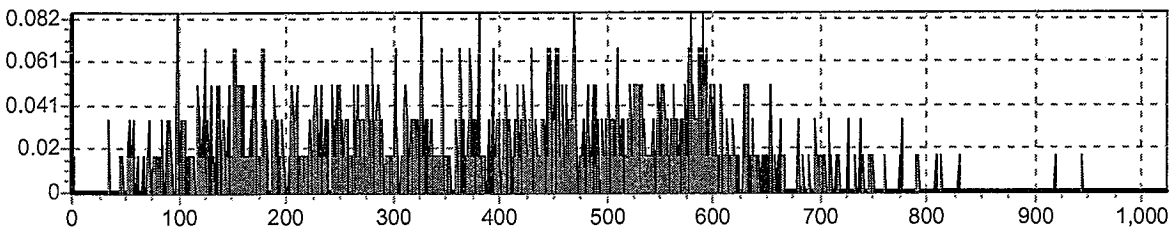
file :C:\ Pb-210\ PB-1001\
Q022801N.001
spectrum :11
counting time :3555.55 s
SQP(E) :638.58
counting :10/1/07 10:50:00 AM
sampling :10/1/07 10:50:00 AM
ID: 0721528-B3

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



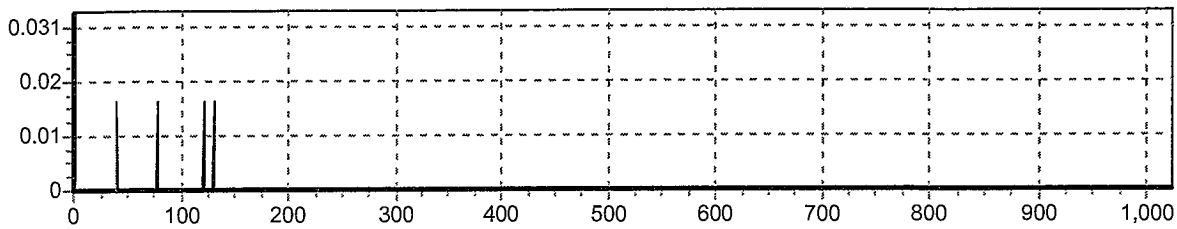
file :C:\ Pb-210\ PB-1001\
Q022801N.001
spectrum :12
counting time :3555.55 s
SQP(E) :638.58
counting :10/1/07 10:50:00 AM
sampling :10/1/07 10:50:00 AM
ID: 0721528-B3

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	2.886	0.221				0.000		
800..1024	0.084	0.038				0.000		



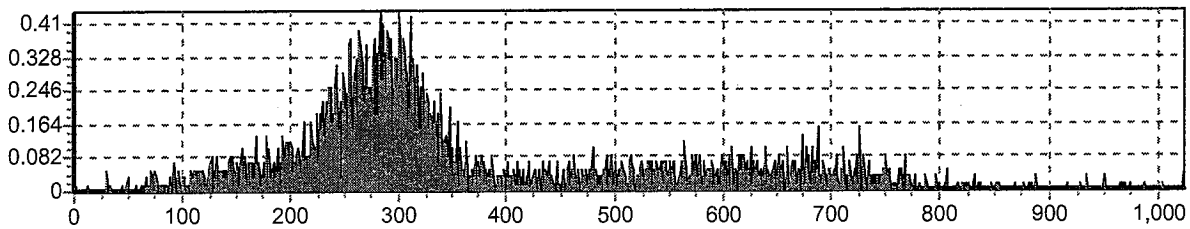
file :C:\ Pb-210\ PB-0930\
Q042901N.001
spectrum :11
counting time :3555.54 s
SQP(E) :773.94
counting :9/30/07 9:25:00 PM
sampling :9/30/07 9:25:00 PM
ID: 0721528-S1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



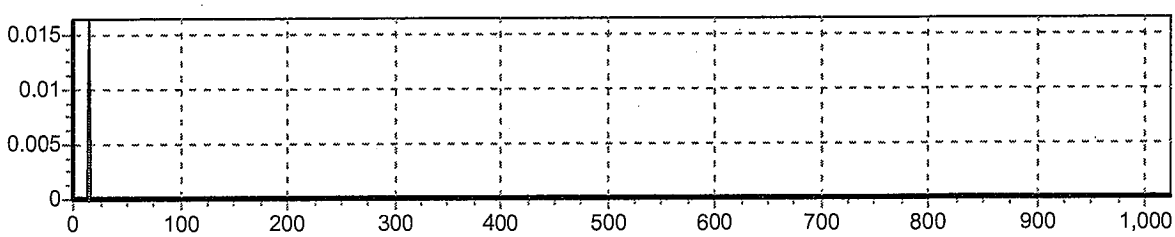
file :C:\ Pb-210\ PB-0930\
Q042901N.001
spectrum :12
counting time :3555.54 s
SQP(E) :773.94
counting :9/30/07 9:25:00 PM
sampling :9/30/07 9:25:00 PM
ID: 0721528-S1

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	28.958	0.699				0.000		
800..1024	0.675	0.107				0.000		



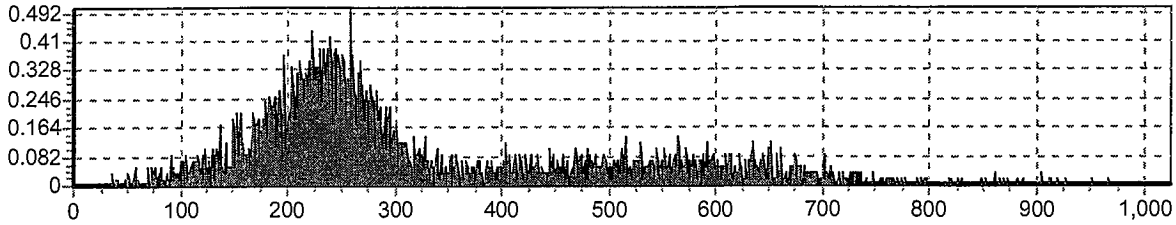
file :C:\ Pb-210\ PB-0930\
Q053001N.001
spectrum :11
counting time :3555.53 s
SQP(E) :718.05
counting :9/30/07 10:26:00 PM
sampling :9/30/07 10:26:00 PM
ID: 0721528-S2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



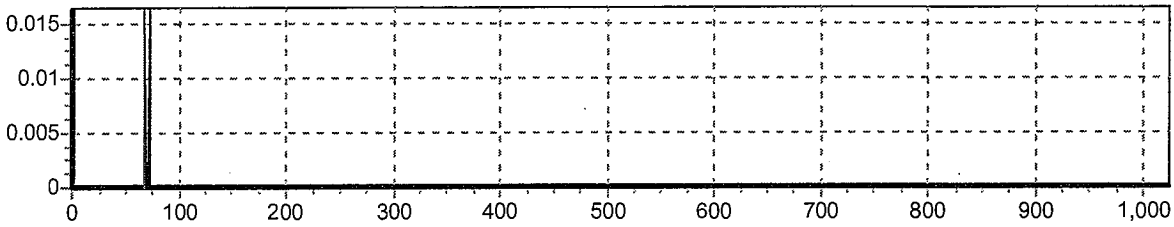
file :C:\ Pb-210\ PB-0930\
Q053001N.001
spectrum :12
counting time :3555.53 s
SQP(E) :718.05
counting :9/30/07 10:26:00 PM
sampling :9/30/07 10:26:00 PM
ID: 0721528-S2

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	30.122	0.713				0.000		
800..1024	0.371	0.079				0.000		



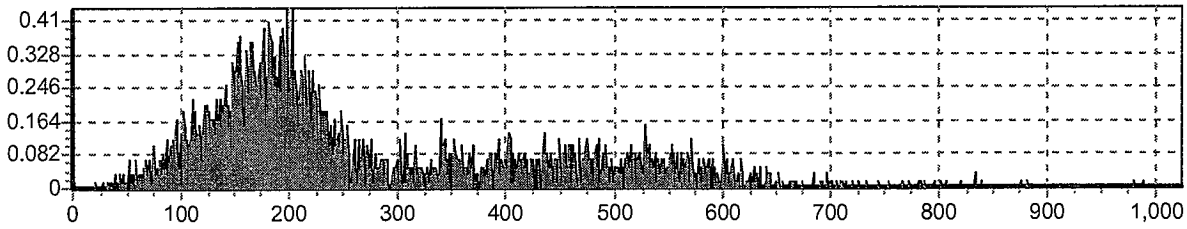
file :C:\ Pb-210\ PB-1001\
Q033101N.001
spectrum :11
counting time :3555.54 s
SQP(E) :640.29
counting :10/1/07 11:52:00 AM
sampling :10/1/07 11:52:00 AM
ID: 0721528-S3

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325	0.000	0.000				0.000		
800..1024	0.000	0.000				0.000		
190..325								
800..1024								



file :C:\ Pb-210\ PB-1001\
Q033101N.001
spectrum :12
counting time :3555.54 s
SQP(E) :640.29
counting :10/1/07 11:52:00 AM
sampling :10/1/07 11:52:00 AM
ID: 0721528-S3

	C rate	Error	D rate	D error	Eff	BG	FM	MDA
190..325								
800..1024								
190..325	17.010	0.536				0.000		
800..1024	0.169	0.053				0.000		



319865 **Paragon Analytics**

LSC Run Log

Instrument ID: Quantulus 1220

	Load Date	Sample ID	CountTime (min.)	Position	Protocol	File Name	Batch ID	Position Check	Initials	Comments
1	9/27/07	0721525-B01	59.26	5	Pb-210	PB-0927	PB070921-1	JS	JS	Calibration Blanks
2		-B02		6						
3		-B03		7						
4		-B04		8						
5		-B05		9						
6		-B06		10						
7		-B07		11						
8		-B08		12						
9		-B09		13						
10		-B10		14						
11		-B11		15						
12		-B12		16						
13	9/28/07	Daily QC	10	56-59	—	QC-0928	—	JS	JS	N/A
14		0721525-S01	29.63	25	Pb-210	PB-0928	PB070921-1			Calibration Spikes
15		-S02		26						
16		-S03		27						
17		-S04		28						
18		-S05		29						
19		-S06		30						
20		-S07		31						
21		-S08		32						
22		-S09		33						
23		-S10		34						
24		-S11		35						
25		-S12		36						
26	9/28/07	Daily QC	10	56-59	~~Pb-3~~ NA	QC-0928X	—	JS	JS	N/A
27		0721522-B01	59.26	22	C-14	C-0928	C-070920-1			Calibration Blanks
28		-B02		23						
29		-B03		24						
30		-B04		25						

Reviewed by / Date JS 10/1/07

FORM 700_Quantulusr0.xls (7/11/2004)

319866 **Paragon Analytics**

LSC Run Log

Instrument ID: Quantulus 1220

	Load Date	Sample ID	CountTime (min.)	Position	Protocol	File Name	Batch ID	Position Check	Initials	Comments
1	9/28/07	0721522-B05	59.26	26	C-14	C-0928	C-070920-1	dJ	dJ	Calibration Blanks
2		-B06		27						
3		-B07		28						
4		-B08		29						
5		-B09		30						
6		-B10		31						
7		-B11		32						
8		-B12		33						
9		-S01	29.60	2		C-0928X				Calibration Spikes
10		-S02		3						
11		-S03		4						
12		-S04		5						
13		-S05		6						
14		-S06		7						
15		-S07		8						
16		-S08		9						
17		-S09		10						
18		-S10		11						
19		-S11		12						
20		-S12		13						
21	9/29/07	Daily QC	10	56-59	—	QC-0929	—	dJ	dJ	N/A
22	9/30/07				—	QC-0930	—			
23		0721528-B1	59.26	26	Pb-210	PB-0930	PB070928-1	dJ	dJ	ICB's × Recount-Sample high
24		-B2		27						
25		-B3		28						× Recount-add nitro
26		-S1		29						ICV's
27		-S2		30						
28		-S3		31						× Recount-add nitro
29		Daily QC	10	56-59	—	QC-0930	—			N/A
30							dJ 9/30/07			

Reviewed by / Date dJ 10/1/07

FORM 700_Quantulusr0.xls (7/11/2004)

319867 **Paragon Analytics**

LSC Run Log

Instrument ID: Quantulus 1220

	Load Date	Sample ID	CountTime (min.)	Position	Protocol	File Name	Batch ID	Position Check	Initials	Comments
1	9/30/07	0721528-B1	59.26	26	Pb-210	PB-1001	PB0709 28-1	JS	JS	N/A-Pb ICB's & ICV's
2	↓	-B2	↓	27	↓	-0930	↓	↓	↓	↓
3	↓	-B3	↓	28	JS 10/1/07	-1001	↓	↓	↓	↓
4	↓	-S1	↓	29	↓	-0930	↓	↓	↓	↓
5	↓	-S2	↓	30	↓	↓	↓	↓	↓	↓
6	↓	-S3	↓	31	↓	-1001	↓	↓	↓	↓
7	10/1/07	Daily QC	10	56-59	—	QC-1001	—	JS	JS	N/A
8	10/1/07	0721528-B1	59.26	26	Pb-210	PB-1001	PB0709 28-1	JS	JS	N/A
9	↓	-B3	↓	MC 10/4/07 29 29	↓	↓	↓	↓	↓	↓
10	↓	-S3	↓	31	↓	↓	↓	↓	↓	↓
11	↓	Daily QC	10	56-59	—	QC-1001	—	↓	↓	↓
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

JS 10/1/07

Reviewed by / Date JS 10/1/07

FORM 700_Quantulusr0.xls (7/11/2004)

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: PB070921-1

Prep Procedure: Pb210_LiqS- Calibration Set

Analytical QASS / NCR? Y / (N) N/A

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Cnt 1 File/Inst	Cnt 1 Rack-Pos	Cnt 1 Pos Chk By	Cnt 2 File/Inst	Cnt 2 Rack-Pos	Cnt 2 Pos Chk By	Cnt 3 File/Inst	Cnt 3 Rack-Pos	Cnt 3 Pos Chk By	Notes
1	0721525-B01	MB	10	8.257575	ml	PB-0927	5								
1	0721525-B02	MB	10	8.257575	ml		6								
1	0721525-B03	MB	10	8.257575	ml		7								
1	0721525-B04	MB	10	8.257575	ml		8								
1	0721525-B05	MB	10	8.257575	ml		9								
1	0721525-B06	MB	10	8.257575	ml		10								
1	0721525-B07	MB	10	8.257575	ml		11								
1	0721525-B08	MB	10	8.257575	ml		12								
1	0721525-B09	MB	10	8.257575	ml		13								
1	0721525-B10	MB	10	8.257575	ml		14								
1	0721525-B11	MB	10	8.257575	ml		15								
1	0721525-B12	MB	10	8.257575	ml		16								
1	0721525-S01	LCS	10	8.263889	ml	PB-0928	25								
1	0721525-S02	LCS	10	8.263889	ml		26								
1	0721525-S03	LCS	10	8.263889	ml		27								
1	0721525-S04	LCS	10	8.263889	ml		28								
1	0721525-S05	LCS	10	8.263889	ml		29								
1	0721525-S06	LCS	10	8.263889	ml		30								
1	0721525-S07	LCS	10	8.263889	ml		31								
1	0721525-S08	LCS	10	8.263889	ml		32								
1	0721525-S09	LCS	10	8.263889	ml		33								
1	0721525-S10	LCS	10	8.263889	ml		34								
1	0721525-S11	LCS	10	8.263889	ml		35								
1	0721525-S12	LCS	10	8.263889	ml		36								

CS 9/30/07

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247953	1,003.219	ppm	NA	1	ppm	RS006

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	707.2613.27	5,201.283	DPM/ml	09/21/07	1	ml	RS006

Sample Barcodes

0721525-B01MB PB070921-1PS1	0721525-B02MB PB070921-1PS2
0721525-B03MB PB070921-1PS3	0721525-B04MB PB070921-1PS4
0721525-B05MB PB070921-1PS5	0721525-B06MB PB070921-1PS6
0721525-B07MB PB070921-1PS7	0721525-B08MB PB070921-1PS8
0721525-B09MB PB070921-1PS9	0721525-B10MB PB070921-1PS10
0721525-B11MB PB070921-1PS11	0721525-B12MB PB070921-1PS12
0721525-S01LCS PB070921-1PS13	0721525-S02LCS PB070921-1PS14
0721525-S03LCS PB070921-1PS15	0721525-S04LCS PB070921-1PS16
0721525-S05LCS PB070921-1PS17	0721525-S06LCS PB070921-1PS18
0721525-S07LCS PB070921-1PS19	0721525-S08LCS PB070921-1PS20
0721525-S09LCS PB070921-1PS21	0721525-S10LCS PB070921-1PS22
0721525-S11LCS PB070921-1PS23	0721525-S12LCS PB070921-1PS24
PB070921-1RCCAR PB070921-1PS25	

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB070921-1

Prep Procedure: Pb210_LiqS

Reviewed By: EMF EMF **Review Date:** 9/28/2007

Non-Routine Pre-Treatment? Y / (N) **Batch:** NA **Re-Prep?** Y / (N) **Batch:** NA **Prep QASS / NCR?** (Y) / N 327725

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: liquid

Prep Analyst: Erin Finsley
Prep Date: 9/21/2007
Prep Dept: RS

Balance:
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq ml	Fin Alq ml	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes
1	1	0721525-B01	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	0
2	1	0721525-B02	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	15
3	1	0721525-B03	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	30
4	1	0721525-B04	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	45
5	1	0721525-B05	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	60
6	1	0721525-B06	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	75
7	1	0721525-B07	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	90
8	1	0721525-B08	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	105
9	1	0721525-B09	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	120
10	1	0721525-B10	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	135
11	1	0721525-B11	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	150
12	1	0721525-B12	MB		10	8.257575	Unfiltered	09/26/07 11:10	T1	165
13	1	0721525-S01	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	0
14	1	0721525-S02	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	15
15	1	0721525-S03	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	30
16	1	0721525-S04	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	45
17	1	0721525-S05	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	60
18	1	0721525-S06	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	75
19	1	0721525-S07	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	90
20	1	0721525-S08	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	105
21	1	0721525-S09	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	120
22	1	0721525-S10	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	135
23	1	0721525-S11	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	150
24	1	0721525-S12	LCS		10	8.263889	Unfiltered	09/26/07 11:10	T1,S1	165

Comments
UG LLT LOT #97-061202. Nitromethane added in 15 uL increments.

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB070921-1

Prep Procedure: Pb210_LiqS

Reviewed By: EMF EMF **Review Date:** 9/28/2007

Non-Routine Pre-Treatment? Y / (N) **Batch:** N/A **Re-Prep?** Y / (N) **Batch:** N/A **Prep QASS / NCR?** (Y) / N 327225

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: liquid

Prep Analyst: Erin Finsley
Prep Date: 9/21/2007
Prep Dept: RS

Balance:
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq ml	Fin Alq ml	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes

Spiked By: Erin Finsley **Date:** 9/21/2007

Witnessed By: Jeff Kujawa **Date:** 9/21/2007

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247953	1,003.219	ppm	NA	1	ppm	RS006

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	707.2613.27	5,201.283	DPM/ml	09/21/07	1	ml	RS006

Comments

UG LLT LOT #97-061202. Nitromethane added in 15 uL increments.

Paragon Analytics

Radiochemistry Prep Worksheet

Prep Batch: PB070921-1

Prep Procedure: Pb210_LiqS

Prep Batch Not Validated!!!

Reviewed By:

Review Date:

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep?** Y / N **Batch:** _____ **Prep QASS / NCR?** Y / N _____

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: liquid

Prep Analyst: Erin Finsley EMF
Prep Date: 9/21/07
Prep Dept: RS

Balance:
Balance:

Cocktail:
Cocktail Pipet:
Aliquot Pipet:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq ml	Fin Alq ml	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes Nitromethane Added (ml)
1	1	0721525-B01	MB		10	8.257575	Unfiltered	11:10 9/26	T1	0
2	1	0721525-B02	MB		10	8.257575	Unfiltered		T1	15
3	1	0721525-B03	MB		10	8.257575	Unfiltered		T1	30
4	1	0721525-B04	MB		10	8.257575	Unfiltered		T1	45
5	1	0721525-B05	MB		10	8.257575	Unfiltered		T1	60
6	1	0721525-B06	MB		10	8.257575	Unfiltered		T1	75
7	1	0721525-B07	MB		10	8.257575	Unfiltered		T1	90
8	1	0721525-B08	MB		10	8.257575	Unfiltered		T1	105
9	1	0721525-B09	MB		10	8.257575	Unfiltered		T1	120
10	1	0721525-B10	MB		10	8.257575	Unfiltered		T1	135
11	1	0721525-B11	MB		10	8.257575	Unfiltered		T1	150
12	1	0721525-B12	MB		10	8.257575	Unfiltered		T1	165
13	1	0721525-S01	LCS		10	8.263889	Unfiltered		T1,S1	0
14	1	0721525-S02	LCS		10	8.263889	Unfiltered		T1,S1	15
15	1	0721525-S03	LCS		10	8.263889	Unfiltered		T1,S1	30
16	1	0721525-S04	LCS		10	8.263889	Unfiltered		T1,S1	45
17	1	0721525-S05	LCS		10	8.263889	Unfiltered		T1,S1	60
18	1	0721525-S06	LCS		10	8.263889	Unfiltered		T1,S1	75
19	1	0721525-S07	LCS		10	8.263889	Unfiltered		T1,S1	90
20	1	0721525-S08	LCS		10	8.263889	Unfiltered		T1,S1	105
21	1	0721525-S09	LCS		10	8.263889	Unfiltered		T1,S1	120
22	1	0721525-S10	LCS		10	8.263889	Unfiltered		T1,S1	135
23	1	0721525-S11	LCS		10	8.263889	Unfiltered		T1,S1	150
24	1	0721525-S12	LCS		10	8.263889	Unfiltered		T1,S1	165

Comments
UG LLT LOT #97-061202.

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB070921-1

Prep Procedure: Pb210_LiqS

Prep Batch Not Validated!!!

Reviewed By: **Review Date:**

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep? Y / N** **Batch:** _____ **Prep QASS / NCR? Y / N** _____

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: liquid

Prep Analyst: Erin Finsley EMF
Prep Date: 9/21/07
Prep Dept: RS

Balance:
Balance:

Cocktail:
Cocktail Pipet:
Aliquot Pipet:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq ml	Fin Alq ml	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes

Spiked By: EMF **Date:** 9/21/07
Witnessed By: JK **Date:** 9/21/07

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247953	1,003.219	ppm	NA	1	ppm	RS006

Exp. 7/6/08

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	707.2613.27	5,201.283	DPM/ml	09/21/07	1	ml	RS006

Exp. 7/14/08

Comments
UG LLT LOT #97-061202.

Radiochemistry ICP Worksheet

Paragon Analytics

Prep Batch: PB070921-1

Prep Procedure: **Pb210_LiqS**

Reviewed By: **EMF** Review Date: **9/28/2007**

LEAD Recovery Results

Reference Carrier

LabID	QC Type	Carr Vol	Ref Carr Dil Vol	Ref Carr ICP Alq	Ref Carr ICP Dil Vol	Ref Carr ICP Run	Ref Carr ICP Conc
PB070921-1RC	CAR	1	10	0.1	10		0.9707

Samples

Prep Num	LabID	QC Type	Init Samp Alq (ml)	Car Vol (ml)	Samp Dil Vol (ml)	Init ICP Alq (ml)	Init ICP Dil Vol (ml)	Pre-Con Vol (ml)	Post Con Vol (ml)	Pre-Sep Vol (ml)	Post Sep Vol (ml)	Fin ICP Alq (ml)	Fin ICP Dil Vol (ml)	Initial ICP Run	Final ICP Run	Init ICP Conc (ug/ml)	Fin ICP Conc (ug/ml)	Init Samp Mass (ug)	Ref Mass (ug)	Flag	Fin Samp Mass (ug)	% Yield	Final Sample Alq
1	0721525-B01	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9297	1.4327	861.367	817.5941		730.677	84.83%	8.258
1	0721525-B02	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9449	1.6502	875.4498	817.5941		841.602	96.13%	8.258
1	0721525-B03	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9304	1.5406	862.0156	817.5941		785.706	91.15%	8.258
1	0721525-B04	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9322	1.5228	863.6832	817.5941		776.628	89.92%	8.258
1	0721525-B05	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9318	1.6349	863.3127	817.5941		833.799	96.58%	8.258
1	0721525-B06	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9424	1.634	873.1335	817.5941		833.34	95.44%	8.258
1	0721525-B07	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9277	1.5555	859.514	817.5941		793.305	92.30%	8.258
1	0721525-B08	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9165	1.5673	849.1371	817.5941		799.3229	94.13%	8.258
1	0721525-B09	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9177	1.5047	850.249	817.5941		767.397	90.26%	8.258
1	0721525-B10	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9273	1.542	859.1433	817.5941		786.42	91.54%	8.258
1	0721525-B11	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9477	1.6124	878.0441	817.5941		822.324	93.65%	8.258
1	0721525-B12	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.9275	1.5766	859.3287	817.5941		804.0659	93.57%	8.258
1	0721525-S01	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8495	1.4889	859.2692	818.2192		759.339	88.37%	8.264
1	0721525-S02	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8499	1.5446	859.6738	818.2192		787.746	91.63%	8.264
1	0721525-S03	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8551	1.5387	864.9335	818.2192		784.7369	90.73%	8.264
1	0721525-S04	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8543	1.5118	864.1244	818.2192		771.018	89.23%	8.264
1	0721525-S05	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8376	1.518	847.2324	818.2192		774.18	91.38%	8.264
1	0721525-S06	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8537	1.5546	863.5174	818.2192		792.846	91.82%	8.264
1	0721525-S07	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8352	1.5978	844.8047	818.2192		814.878	96.46%	8.264
1	0721525-S08	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8076	1.6632	816.8874	818.2192	LB	848.232	103.67%	8.264
1	0721525-S09	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8468	1.4998	856.5381	818.2192		764.8979	89.30%	8.264
1	0721525-S10	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8585	1.5358	868.3727	818.2192		783.258	90.20%	8.264
1	0721525-S11	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8601	1.6136	869.991	818.2192		822.936	94.59%	8.264
1	0721525-S12	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10	IR070927-1A1	IR070927-1A1	0.8596	1.5293	869.4854	818.2192		779.9429	89.70%	8.264

FLAG - LB: low bias (<= 15%) 15%: low bias (>15%)

Z: Negative init. conc. treated as zer

Supersedes: N/A

1R070927-1A1

Sample Id1	Ba	Sr	Y	Pb
CCV	0.5007	0.4999	9.9726	0.4887
CCB	0.0004	0.0004	0.0083	0.0008
I 0721525-B01	0.0000	0.0000	0.0005	0.9297
F 0721525-B01	0.0003	0.0010	-0.0029	1.4327
I 0721525-B02	-0.0002	0.0001	-0.0055	0.9449
F 0721525-B02	0.0000	0.0007	-0.0068	1.6502
I 0721525-B03	-0.0003	-0.0003	-0.0074	0.9304
F 0721525-B03	-0.0001	0.0005	-0.0079	1.5406
I 0721525-B04	-0.0003	-0.0004	-0.0081	0.9322
F 0721525-B04	0.0000	0.0007	-0.0082	1.5228
I 0721525-B05	-0.0004	-0.0004	-0.0083	0.9318
F 0721525-B05	-0.0001	0.0010	-0.0084	1.6349
CCV	0.4984	0.4974	9.9190	0.4855
CCB	0.0002	0.0002	0.0032	0.0032
I 0721525-B06	0.0000	-0.0002	-0.0031	0.9424
F 0721525-B06	0.0002	0.0007	-0.0042	1.6340
I 0721525-B07	-0.0002	-0.0003	-0.0062	0.9277
F 0721525-B07	0.0000	0.0003	-0.0072	1.5555
I 0721525-B08	-0.0004	-0.0004	-0.0078	0.9165
F 0721525-B08	-0.0001	0.0003	-0.0080	1.5673
I 0721525-B09	-0.0003	-0.0004	-0.0082	0.9177
F 0721525-B09	-0.0001	0.0001	-0.0083	1.5047
I 0721525-B10	-0.0004	-0.0004	-0.0084	0.9273
F 0721525-B10	0.0000	0.0006	-0.0084	1.5420
CCV	0.4952	0.4942	9.8815	0.4839
CCB	0.0002	0.0001	0.0036	0.0024
I 0721525-B11	-0.0001	-0.0002	-0.0036	0.9477
F 0721525-B11	0.0001	0.0004	-0.0044	1.6124
I 0721525-B12	-0.0002	-0.0003	-0.0061	0.9275
F 0721525-B12	-0.0001	0.0003	-0.0071	1.5766
I 0721525-S01	-0.0003	-0.0004	-0.0078	0.8495
F 0721525-S01	-0.0002	0.0000	-0.0080	1.4889
I 0721525-S02	-0.0003	-0.0004	-0.0082	0.8499
F 0721525-S02	-0.0001	0.0004	-0.0084	1.5446
I 0721525-S03	-0.0003	-0.0003	-0.0084	0.8551
F 0721525-S03	0.0002	0.0007	-0.0080	1.5387
CCV	0.4922	0.4918	9.8773	0.4860
CCB	0.0003	0.0002	0.0042	0.0024
I 0721525-S04	-0.0001	-0.0002	-0.0034	0.8543
F 0721525-S04	0.0001	0.0008	-0.0046	1.5118
I 0721525-S05	-0.0002	-0.0003	-0.0064	0.8376
F 0721525-S05	0.0000	0.0006	-0.0074	1.5180
I 0721525-S06	-0.0003	-0.0003	-0.0078	0.8537
F 0721525-S06	-0.0001	0.0006	-0.0081	1.5546

Sample Id1	Ba	Sr	Y	Pb
I 0721525-S07	-0.0003	-0.0004	-0.0082	0.8352
F 0721525-S07	-0.0001	0.0002	-0.0083	1.5978
I 0721525-S08	-0.0003	-0.0004	-0.0083	0.8076
F 0721525-S08	-0.0001	0.0007	-0.0083	1.6632
CCV	0.4951	0.4950	9.8966	0.4899
CCB	0.0002	0.0002	0.0047	0.0029
I 0721525-S09	-0.0001	-0.0002	-0.0036	0.8468
F 0721525-S09	0.0001	0.0005	-0.0045	1.4998
I 0721525-S10	-0.0002	-0.0003	-0.0062	0.8585
F 0721525-S10	0.0001	0.0006	-0.0071	1.5358
I 0721525-S11	-0.0003	-0.0004	-0.0076	0.8601
F 0721525-S11	-0.0001	0.0004	-0.0080	1.6136
I 0721525-S12	-0.0003	-0.0003	-0.0081	0.8596
F 0721525-S12	0.0000	0.0006	-0.0083	1.5293
~~PB070921-1RC~~	~~-0.0004~~	~~-0.0004~~	~~-0.0084~~	~~1.8411~~
CCV	0.4931	0.4932	9.9036	0.4878
CCB	0.0003	0.0002	0.0051	0.0044

1R070928-1A1

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Sample Id1	Ba	Sr	Y	Pb
CCV	0.5000	0.5033	10.2328	0.5177
CCB	0.0003	0.0003	0.0057	0.0003
I 070822-15	0.0006	0.0005	0.0063	-0.0010
F 070822-15	0.0006	0.9716	0.0035	-0.0002
F 0709004-11	0.0006	0.9605	0.0020	-0.0016
F 0709050-13	0.0005	0.9516	0.0011	-0.0021
I 0709078-1	0.0156	0.0176	0.0005	-0.0020
F 0709078-1	0.0008	1.1528	0.0003	-0.0025
F 0709078-1D	0.0009	1.1754	0.0002	-0.0018
F SR070920-1MB	0.0004	0.7933	0.0000	-0.0020
F SR070920-1LCS	0.0004	0.9333	-0.0001	-0.0013
SR070920-1RC	0.0000	1.0705	0.0000	-0.0011
CCV	0:4992	0.5001	10.1461	0.5079
CCB	0.0003	0.0021	0.0066	0.0002
0721525-RC	0.0003	0.0002	0.0000	0.9707
CCV	0.4937	0.4964	10.1638	0.5143
CCB	0.0004	0.0004	0.0077	0.0013

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: PB070928-1

Prep Procedure: Pb210_LiqS - ICB's & ICV's

Analytical QASS / NCR? Y / (N) N/A

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Cnt 1 File/Inst	Cnt 1 Rack-Pos	Cnt 1 Pos Chk By	Cnt 2 File/Inst	Cnt 2 Rack-Pos	Cnt 2 Pos Chk By	Cnt 3 File/Inst	Cnt 3 Rack-Pos	Cnt 3 Pos Chk By	Notes
1	0721528-B1	MB	10	8.257575	ml	PB0930	26 X	JS	PB-1001	26	JS	~~JS 10/2/07~~			+10 mL Nitro
1	0721528-B2	MB	10	8.257575	ml		27								+50 mL Nitro
1	0721528-B3	MB	10	8.257575	ml		28 X		PB-1001	28	JS				+120 mL Nitro
1	0721528-S1	LCS	10	8.263889	ml		29					~~JS 10/2/07~~			+ 5 mL Nitro
1	0721528-S2	LCS	10	8.263889	ml		30								+50 mL Nitro
1	0721528-S3	LCS	10	8.263889	ml		31 X		PB-1001	31	JS	~~JS 10/2/07~~			+120 mL Nitro

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247953	1,003.219	ppm	NA	1	ppm	RS006

X Add Nitro-recount

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	48.159	DPM/ml	09/28/07	1	ml	RS006
S1	Po-210	823.3020.41	48.159	DPM/ml	09/28/07	1	ml	RS006

Sample Barcodes

0721528-B1MB
PB070928-1PS1

0721528-B2MB
PB070928-1PS2

0721528-B3MB
PB070928-1PS3

0721528-RCCAR
PB070928-1PS7

0721528-S1LCS
PB070928-1PS8

0721528-S2LCS
PB070928-1PS9

0721528-S3LCS
PB070928-1PS10

Supersedes: EMF 10/2/07 ~~N/A~~ N/A

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: PB070928-1

Prep Procedure: Pb210_LiqS

Reviewed By: MSC for EMF **Review Date:** 10/2/2007

Non-Routine Pre-Treatment? Y / (N) **Batch:** NA **Re-Prep?** Y / (N) **Batch:** NA **Prep QASS / NCR?** Y / (N) NA

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: liquid

Prep Analyst: Erin Finsley
Prep Date: 9/28/2007
Prep Dept: RS

Balance:
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq ml	Fin Alq ml	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes
1	1	0721528-B1	MB		10	8.257575	Unfiltered	09/28/07 18:04	T1	
2	1	0721528-B2	MB		10	8.257575	Unfiltered	09/28/07 18:04	T1	
3	1	0721528-B3	MB		10	8.257575	Unfiltered	09/28/07 18:04	T1	
4	1	0721528-S1	LCS		10	8.263889	Unfiltered	09/28/07 18:04	T1,S1	
5	1	0721528-S2	LCS		10	8.263889	Unfiltered	09/28/07 18:04	T1,S1	
6	1	0721528-S3	LCS		10	8.263889	Unfiltered	09/28/07 18:04	T1,S1	

EMF 10/2/07

EMF 10/2/07

Spiked By: Erin Finsley **Date:** 9/28/2007

Witnessed By: Monica S. Carlblom **Date:** 9/28/2007

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247953	1,003.219	ppm	NA	1	ppm	RS006

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	48.159	DPM/ml	09/28/07	1	ml	RS006
S1	Po-210	823.3020.41	48.159	DPM/ml	09/28/07	1	ml	RS006

Comments
UG LLT LOT #97-061202.

Paragon Analytics

Radiochemistry Prep Worksheet

Prep Batch: PB070928-1

Prep Procedure: Pb210_LiqS

Prep Batch Not Validated!!!

Reviewed By:

Review Date:

Non-Routine Pre-Treatment? Y / N **Batch:** _____ **Re-Prep? Y / N** **Batch:** _____ **Prep QASS / NCR? Y / N** _____

Prep SOP: PAI 726 **Rev:** 6
Prep SOP: NONE
Matrix Class: liquid

Prep Analyst: Erin Finsley EMF
Prep Date: 9/28/2007
Prep Dept: RS

Balance:
Balance:

Cocktail: UG LLT
Cocktail Pipet: T002
Aliquot Pipet: RS015

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq ml	Fin Alq ml	Prep Basis	Ingrowth Date/Time	Standards	Prep Notes
1	1	0721528-B1	MB		10	10	Unfiltered	1804 on 9/28/07	T1	
2	1	0721528-B2	MB		10	10	Unfiltered		T1	
3	1	0721528-B3	MB		10	10	Unfiltered		T1	
4	1	0721528-S1	LCS		10	10	Unfiltered		T1,S1	
5	1	0721528-S2	LCS		10	10	Unfiltered		T1,S1	
6	1	0721528-S3	LCS		10	10	Unfiltered		T1,S1	

Spiked By: Erin Finsley EMF **Date:** 9/28/2007

Witnessed By: MSA **Date:** 9/28/07

Tracer/Carrier Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
T1	LEAD	247953	1,003.219	ppm	NA	1	ppm	RS006

T1 exp: 2/6/08

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Pb-210	823.3020.41	48.159	DPM/ml	09/28/07	1	ml	RS006
S1	Po-210	823.3020.41	48.159	DPM/ml	09/28/07	1	ml	RS006

S1 exp: 7/14/08

Comments
UG LLT LOT #97-061202.

Radiochemistry ICP Worksheet

Paragon Analytics

Prep Batch: **PB070928-1**

Prep Procedure: **Pb210_LiqS**

Reviewed By: MSC FOR EMC Review Date: **10/2/2007**

LEAD Recovery Results

Reference Carrier

LabID	QC Type	Carr Vol	Ref Carr Dil Vol	Ref Carr ICP Alq	Ref Carr ICP Dil Vol	Ref Carr ICP Run	Ref Carr ICP Conc
0721528-RC	CAR	1	10	0.1	11		0.94

Samples

Prep Num	LabID	QC Type	Init Samp Alq (ml)	Car Vol (ml)	Samp Dil Vol (ml)	Init ICP Alq (ml)	Init ICP Dil Vol (ml)	Pre-Con Vol (ml)	Post Con Vol (ml)	Pre-Sep Vol (ml)	Post Sep Vol (ml)	Fin ICP Alq (ml)	Fin ICP Dil Vol (ml)	Initial ICP Run	Final ICP Run	Init ICP Conc (ug/ml)	Fin ICP Conc (ug/ml)	Init Samp Mass (ug)	Ref Mass (ug)	Flag	Fin Samp Mass (ug)	% Yield	Final Sample Alq
1	0721528-B1	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10			0.906	1.5081	839.4089	870.9099	LB	769.131	88.31%	8.258
1	0721528-B2	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10			0.9353	1.4655	866.5554	870.9099	LB	747.405	85.82%	8.258
1	0721528-B3	MB	10	1	11	0.1	10	10.9	6	5.1	5.1	0.1	10			0.9333	1.464	864.7024	870.9099	LB	746.64	85.73%	8.258
1	0721528-S1	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10			0.8618	1.4493	871.7106	871.5757		739.143	84.79%	8.264
1	0721528-S2	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10			0.8531	1.4983	862.9106	871.5757	LB	764.133	87.67%	8.264
1	0721528-S3	LCS	10	1	12	0.1	10	11.9	6	5.1	5.1	0.1	10			0.8464	1.5637	856.1335	871.5757	LB	797.4869	91.50%	8.264

FLAG - LB: low bias (<= 15%) 15%: low bias (>15%)

Z: Negative init. conc. treated as zer

Supersedes: JMT

1R071001-1A

Sample Id1	Ba	Sr	Y	Pb
CCV	0.5028	0.5015	9.9998	0.4917
CCB	0.0005	0.0004	0.0084	0.0010
I 0709052-7	0.1313	0.0623	0.0081	0.5501
F 0709052-7	0.0568	0.0192	0.0084	0.0000
I 0709052-8	0.1172	0.0531	0.0027	0.5026
F 0709052-8	0.0594	0.0191	0.0060	-0.0013
I 0709052-9	0.1214	0.0550	0.0015	0.3891
F 0709052-9	0.0600	0.0200	0.0069	-0.0003
I 0709052-10	0.1296	0.0605	0.0012	0.5373
F 0709052-10	0.0586	0.0197	0.0076	-0.0019
CCV	0.5026	0.5023	9.9944	0.4920
CCB	0.0003	0.0003	0.0045	-0.0004
I 0709052-11	0.1324	0.0611	0.0055	0.5479
F 0709052-11	0.0588	0.0199	0.0070	-0.0006
I 0709052-12	0.1273	0.0617	0.0023	0.5405
F 0709052-12	0.0579	0.0203	0.0051	-0.0011
I RA070921-1MB	0.1221	0.0562	0.0016	0.4476
F RA070921-1MB	0.0577	0.0196	0.0046	-0.0016
I RA070921-1LCS	0.1227	0.0567	0.0012	0.5081
F RA070921-1LCS	0.0584	0.0187	0.0032	0.0004
I RA070921-1LCSD	0.1273	0.0600	0.0012	0.5403
F RA070921-1LCSD	0.0576	0.0196	0.0028	-0.0016
RA070921-1RC	2.1022	0.0008	0.0000	-0.0003
I 0721528-B1	0.0014	0.0003	0.0001	0.9060
CCV	0.4923	0.4946	9.9378	0.4926
CCB	0.0008	0.0003	0.0053	0.0005
F 0721528-B1	0.0012	0.0023	0.0043	1.5081
I 0721528-B2	0.0010	0.0004	0.0029	0.9353
F 0721528-B2	0.0006	0.0015	0.0015	1.4655
I 0721528-B3	0.0006	0.0003	0.0009	0.9333
F 0721528-B3	0.0003	0.0011	0.0006	1.4640
I 0721528-S1	0.0026	0.0005	0.0004	0.8618
F 0721528-S1	0.0006	0.0018	0.0002	1.4493
I 0721528-S2	0.0006	0.0003	0.0002	0.8531
F 0721528-S2	0.0005	0.0016	0.0002	1.4983
I 0721528-S3	0.0009	0.0010	0.0002	0.8464
CCV	0.4998	0.5026	10.0263	0.5012
CCB	0.0004	0.0003	0.0065	0.0012
F 0721528-S3	0.0080	0.0057	0.0080	1.5637
PB070928-1RC	0.0009	0.0006	0.0028	0.9400
CCV	0.4989	0.5022	10.0554	0.5076
CCB	0.0005	0.0004	0.0080	0.0008

Paragon Analytics

QUALITY ASSURANCE SUMMARY SHEET

PAR W.O. # / BATCH 0721525
TEST Pb-210
METHOD P/CP
SOP/REV (PREP) 7216 R6
SOP/REV (ANAL)

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

Due to unusually low ICP recovery in the reference carrier, the analyst suspected the original RC had not been well mixed. The RC was re-aliquoted and ~~all samples~~ EMF 9/28/07 submitted for analysis. This data was used for reporting.

EMF 9/28/07

TECHNICIAN/ANALYST Eric Finsley DATE 9/28/07

DEPARTMENT MANAGER [signature] DATE 9/28/07

327725

FORM 302r6.doc (4/22/04)

Stable Chemistry Solution Report

Solution Id:	247953	Name:	LEAD CARRIER<4>	Type:	IR
		Lot:	multiple	Vendor Name:	multiple

Final Vol:	1000	Dept:	RS	Prep By	ALB	on	2/6/2007	Reviewed By	MNP	on	2/14/2007
Units:	mL	Location:	SR/RA	Opened By		on		Verified By		on	
Matrix:	WATER	ExpireDate:	2/6/2008	Received By		on		Deactivated By		on	

Comment:

Component Name	Component ID	Volume Added	Units
Lead nitrate<1>	45235551	1.6036	g

Constituent Name	Conc of Primary Soln	FinalConc	Summed Conc	Units
LEAD	625604	1003.219		ppm

Associated Parent IDs

45235551

Abbreviations: NC = Not Calculated for reagents when the volume added is not entered.
NE = Not Entered

707.2613.27

PROJECT Pb-210 Calibration Source — Notebook No. 2613 — Continued From Page — 27

Standard Reverified 11/11/05. New Expiration DATE: 11/11/06.

Prepare a calibration source at approximately 1000 DPM/mL by diluting ampoule 707 with 1M HNO_3.

1) Determine the density of 1N HNO_3 — Bal #47

Mass of empty 100mL class A volumetric flask 62.6229g

Mass of flask and 100mL 1M HNO_3 165.6054g

Net mass of 1M HNO_3 102.9825g

Lot # 43095 — P = 1.0298 g/mL

2) Transfer contents of ampoule 707 to a 250mL polypropylene bottle.

Mass of open ampoule in a 50mL beaker

CW 10/30/03 ~~Mass of empty bottle w/o lid~~ 38.1201g Bal #46

~~Mass of bottle + standard~~ Mass of empty ampoule in a 50mL beaker. 32.9277g

Net mass of Std. 5.1924g

3). Dilute with 1M HNO_3 to final volume

Mass of empty bottle ~~from above~~ CW 10/30/03 (CW 10/30/03) 24.263g Bal #16

Mass of bottle, std, + 1M HNO_3 229.14g Bal #26

Net mass of Std + 1M HNO_3 202.88g

RG 12/7/05

4) Final Activity Calculation — RG 7/14/07

STANDARD REVERIFIED 7/14/2007
NEW EXPIRATION DATE: 7/14/2008

$$\frac{(1.984\times10^4\ dps)(60\ \frac{DPM}{DPS})(5.1924g)(1.0298\ g/mL)}{(5.28365g)(202.88g)} = 5938.01\ dpm/mL$$

SD 11/14/03

CW 10/30/03

ANALYTICS
1380 Seaboard Ind Blvd. Atlanta, GA 30318 USA 404-352-8677
Pb-210
SRS 66338-307 Amount 0.536 µCi QA
Date 06/18/03 12:00 EST Exp. ——
PO # EW060603, Item 2
5.28365 g 1M HNO3 solution
CAUTION RADIOACTIVE MATERIAL

CW 10/30/03

Stnd ID: 707.2613.27 RG 12/4/04
Description: Pb-210
Expiration: 11/15/05
Activity: 5938.01 dpm/mL
NCR REQUIRED FOR ICP/MS
2s Uncertainty: 118.76 dpm/mL
Ref. Date: 6/18/03
Ref Time: N/A
Prep Date: 10/30/03
Prep by: CW
Matrix/Comp. 1.0 M HNO3
Half Life (y): 2.23E+01 RG 12/4/04
SD 11/14/03

RG 12/4/04

Stnd ID: 707.2613.27
Description: Pb-210
Expiration: 11/7/04
Activity: 5938.01 dpm/mL
2s Uncertainty: 118.76 dpm/mL
Ref. Date: 6/18/03
Ref Time: N/A
Prep Date: 10/30/03 Prep by: CW
Matrix/Comp. 1M HNO3
Half Life (y): 2.23E+01
SD 11/14/03

Preparers

Signed: Cheryl Wagner — Date: 10/30/03

Signed: [signature] — Date: 11/14/03

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source PAI ID 0707 rec'd 6-23-03

66338-307

Pb-210 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Pb-210
ACTIVITY (dps):	1.984 E4
HALF-LIFE:	22.3 years
CALIBRATION DATE:	June 18, 2003 12:00 EST
TOTAL UNCERTAINTY*:	2.0%
SYSTEMATIC:	1.3%
RANDOM:	0.7%

*95% Confidence Level

Impurities: γ-impurities (other than decay products) <0.1%

5.28365 grams 1M HNO_3 solution.

P O NUMBER EW060603, Item 2

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 6/18/03

Prepare a working level dilution of Pb-210 of approx. 50dpm/mL. Dilute RSO #823 to 1L in 1M HNO_3. (Lot# 061860)

Bal 12

1) Determine density of 1.0M HNO_3
Mass of empty 100mL class A flask: 64.1197g
Mass of flask + 100mL 1.0M HNO_3: 167.0040g
Net mass of 1.0M HNO_3: 102.8843g

D = 1.0288g/mL

2) Transfer approx. 1.13g of standard to Nalgene bottle (1L)
Bal 12
Mass of bottle w/out lid: 74.7598g
mass of bottle + standard: 75.9347g
Net mass of standard: 1.1749g

3) Dilute to 1000mL w/ 1.0M HNO_3
bal 12
mass of bottle + standard + 1.0M HNO_3: 1141.0
mass of bottle: 74.7598g
net mass of std: 1066.24g

4) Final Activity

$$\frac{(3.831\times10^{4}\,dps)\left(\frac{60\,dpm}{dps}\right)(1.1749g)(1.0288g/mL)}{(52.10846g)(1066.24g)} = 50.007\,dpm/mL$$

RG 11/3/06

Stnd ID: 823.3020.41

Description: Pb-210
Expiration: 8/10/2007
Activity: 50.00 dpm/mL

2s Uncertainty: 1.65 dpm/mL
Ref. Date: 7/13/2006
Ref Time: N/A
Prep Date: 8/4/2006 Prep by: AB
Matrix/Comp. 1.0M HNO3
Half Life (y): 2.23E+01

RG 11/3/06

Reverification Log		
Analysis Date	Initials	Expiration Date
7/14/2007	RG	7/14/2008

RG 11/3/06

Continued on Page

Read and Understood By

Amanda Barbage — Signed — 8/4/06 — Date
Renee Gallegos — Signed — 11/3/06 — Date

ANALYTICS
An Isotope Products Laboratories Company

RSO# 823
Rec'd 7/17/06 KGA

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404-352-8677
Fax 404-352-2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

73351-307

Pb-210 50 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Pb-210
ACTIVITY (dps):	3.831 E4
HALF-LIFE:	22.3 years
CALIBRATION DATE:	July 13, 2006 12:00 EST
RELATIVE EXPANDED UNCERTAINTY (k=2):	3.3%

Impurities: γ-impurities <0.1%
α-impurities (other than decay products) <0.01%

52.10846 grams 1M HNO_3 solution.

P O NUMBER 71239 6-13-06, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 7-13-06

DAILY INSTRUMENT PERFORMANCE CHECKS - QUANTULUS

Daily IPCs consist of the following standards;

Efficiency Check -

PerkinElmer Tritium Standard	PerkinElmer C-14 Standard	PerkinElmer Background Std
Lot 6008512	Lot 6008513	10/1/2003
265900.00 dpm	127500 dpm	
10/24/03 REF	10/24/03 REF	Paragon Reagent Blank
10/24/08 EXP	10/24/08 EXP	12/9/2003

Interim Control Limits 9/4/2007

	Decay Corrected Tritium	Carbon-14	Reagent Blank	Quench Factor
UCL	167789.43	133354.16	14.50	862.20
Mean Value	152535.84	121231.05	11.31	783.82
LCL	137282.26	109107.95	8.12	705.44

Obs	Filename	Date	H-3 CPM	Decay Corrected H-CPM		C-14 CPM		PAI RB CPM		Quench SQP(E)	
785	QC-0927	9/27/2007	121992.60	152256.82	OK	121358.60	OK	11.11	OK	791.02	OK
786	QC-0928	9/28/2007	121645.44	151847.00	OK	121264.88	OK	13.43	OK	784.92	OK
787	QC-0928X	9/28/2007	121747.46	151974.35	OK	120989.29	OK	10.80	OK	783.88	OK
788	QC-0929	9/29/2007	121571.43	151778.07	OK	121240.76	OK	10.80	OK	786.50	OK
789	QC-0930	9/30/2007	121761.73	152039.14	OK	121183.16	OK	11.61	OK	787.17	OK
790	QC-0930	9/30/2007	121818.69	152110.27	OK	121091.89	OK	14.34	OK	785.40	OK
791	QC-1001	10/1/2007	121761.12	152061.88	OK	121337.19	OK	11.41	OK	788.89	OK

Liquid Scintillation Counter

Quality Control Data

Daily Instrument Performance Checks

DAILY INSTRUMENT PERFORMANCE CHECKS - QUANTULUS

Daily IPCs consist of the following standards;

Efficiency Check -

PerkinElmer Tritium Standard	PerkinElmer C-14 Standard	PerkinElmer Background Std
Lot 6008512	Lot 6008513	10/1/2003
265900.00 dpm	127500 dpm	
10/24/03 REF	10/24/03 REF	Paragon Reagent Blank
10/24/08 EXP	10/24/08 EXP	12/9/2003

HISTORICAL CONTROL LIMITS 12/18/2007

	Decay Corrected Tritium	Carbon-14	Reagent Blank	Quench Factor
UCL	156490.26	124873.64	15.40	808.61
Mean Value	151932.29	121236.54	12.10	785.06
LCL	147374.32	117599.44	8.80	761.51

Obs	Filename	Date	H-3 CPM	Decay Corrected H-CPM		C-14 CPM		PAI RB CPM		Quench SQP(E)	
272	QC-0611	6/11/2008	116452.12	151253.83	OK	121433.07	OK	10.10	OK	786.55	OK
273	QC-0612	6/12/2008	116078.67	150792.08	OK	121197.66	OK	11.31	OK	785.17	OK
274	QC-0613	6/13/2008	116206.50	150981.47	OK	121026.95	OK	13.13	OK	786.09	OK
275	QC-0614	6/14/2008	1.11	1.44	Low	28.87	Low	1.01	Low	495.71	Low
276	QC-0615	6/15/2008	115953.72	150699.61	OK	121139.45	OK	11.00	OK	785.17	OK
277	QC-0616	6/16/2008	116010.67	150796.93	OK	121253.73	OK	10.20	OK	784.76	OK