PARAGON ANALYTICS
Radiochemistry Data Package

Section 6

LABORATORY BENCH SHEETS

6

Radiochemistry Ir ·ument Worksheet

Paragon ..alytics

Prep Batch: AB040 2

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / (N) NA

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0403061-1	SMP	1	1	sample		AB A0316B	2	S							
1	0403061-2	SMP	1	1	sample			3								
1	0403061-3	SMP	1	1	sample			4								
1	0403061-4	SMP	1	1	sample			5								
1	0403061-4	DUP	1	1	sample		AB A0316C	1	S							Cnt Dup
1	0403061-5	SMP	1	1	sample		AB A0316B	6	S							
1	0403061-6	SMP	1	1	sample			7								
1	0403061-7	SMP	1	1	sample			8								
1	0403061-8	SMP	1	1	sample		AB A0316C	2	S							
1	0403061-9	SMP	1	1	sample			3								
1	0403061-10	SMP	1	1	sample			4								
1	0403061-11	SMP	1	1	sample			5								
1	0403061-12	SMP	1	1	sample			6								
1	0403061-13	SMP	1	1	sample			7								
1	0403061-14	SMP	1	1	sample			8								
1	0403061-14	DUP	1	1	sample		AB A0316D	1	77							Cnt Dup
1	0403061-15	SMP	1	1	sample			2								
1	0403061-16	SMP	1	1	sample			3								
1	0403061-17	SMP	1	1	sample			4								
1	0403061-18	SMP	1	1	sample			5								
1	0403061-19	SMP	1	1	sample			6								
1	0403061-20	SMP	1	1	sample			7								
1	AB040312-2A	LCS	1	1	sample		AB A0316E	9	77							
1	AB040312-2B	LCS	1	1	sample			10								
1	AB040312-2	MB	1	1	sample		AB A0316D	8	77							

S 3/25/04

00012

Supersedes: NA

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040312-2

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / N NX

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.145	DPM/sample	03/12/04	1	sample	

000128

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB040[illegible]

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / N/A NA

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0403061-21	SMP	1	1	sample		ABA0316H	1	LCB							
1	0403061-22	SMP	1	1	sample			2								
1	0403061-23	SMP	1	1	sample			3								
1	0403061-24	SMP	1	1	sample			4								
1	0403061-25	SMP	1	1	sample			5								
1	0403061-26	SMP	1	1	sample			6								
1	0403061-27	SMP	1	1	sample			7								
1	0403061-27	DUP	1	1	sample		ABA0317	1	7/7							Cnt Dup
1	0403061-28	SMP	1	1	sample		ABA0316H	8	LCB							
1	0403061-29	SMP	1	1	sample			9								
1	0403061-30	SMP	1	1	sample			10								
1	0403061-31	SMP	1	1	sample			11								
1	0403061-32	SMP	1	1	sample		ABA0317	2	7/7							
1	0403061-33	SMP	1	1	sample			3								
1	0403061-34	SMP	1	1	sample			4								
1	0403061-35	SMP	1	1	sample			5								
1	0403061-36	SMP	1	1	sample			6								
1	0403061-37	SMP	1	1	sample		ABA0316H	12	LCB							
1	0403061-37	DUP	1	1	sample		ABA0317	7	7/7							Cnt Dup
1	0403061-38	SMP	1	1	sample			8								
1	0403061-39	SMP	1	1	sample			9 10	S3/17/04							
1	0403061-40	SMP	1	1	sample			10 11								
1	AB040312-3A	LCS	1	1	sample		ABA0317A	9								
1	AB040312-3B	LCS	1	1	sample		ABA0317B	12								
1	AB040312-3	MB	1	1	sample		ABA0317	12								S3/25/04

000123

Supersedes: NA

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB0493[illegible]

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / (N) NA

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.136	DPM/sample	03/12/04	1	sample	

0001[illegible]

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040[illegible]

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / N NA

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0403061-41	SMP	1	1	sample		ABA0317C	1	gf	*AB030323G	9	7/7				
1	0403061-41	DUP	1	1	sample		ABA0317D	2	gf							Cnt Dup
1	0403061-42	SMP	1	1	sample		ABA0317C	2	gf	*AB030323G	10	7/7				
1	0403061-43	SMP	1	1	sample			3	*		11					
1	0403061-44	SMP	1	1	sample			4	*		12					
1	0403061-45	SMP	1	1	sample			5								
1	0403061-46	SMP	1	1	sample			6								
1	0403061-47	SMP	1	1	sample			7								
1	0403061-48	SMP	1	1	sample			8								
1	0403061-49	SMP	1	1	sample			9								
1	0403061-50	SMP	1	1	sample			10								
1	0403061-51	SMP	1	1	sample			11								
1	0403061-52	SMP	1	1	sample			12								
1	0403061-52	DUP	1	1	sample		ABA0317D	1	gf							Cnt Dup
1	0403061-53	SMP	1	1	sample			3								
1	AB040312-4A	LCS	1	1	sample		ABA0317E	5								
1	AB040312-4B	LCS	1	1	sample			6								
1	AB040312-4	MB	1	1	sample		ABA0317D	4								

*Recount - high guard counts. 7/7 3-23-04

S 3/25/04

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.130	DPM/sample	03/12/04	1	sample	

000132

Supersedes: NA

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040312-2

Prep Procedure: GAB_No_Att

Reviewed By: JXC JC Review Date: 3/15/04

Non-Routine Pre-Treatment? Y / (N) Batch: NA Re-Prep? Y / (N) Batch: NA Prep QASS / NCR? Y / (N) NA

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403061-1	SMP		1	1	As Received		
2	1	0403061-2	SMP		1	1	As Received		
3	1	0403061-3	SMP		1	1	As Received		
4	1	0403061-4	SMP		1	1	As Received		JC 3/15/04
5	1	0403061-4	DUP		1	1	As Received		COUNT DUPLICATE
6	1	0403061-5	SMP		1	1	As Received		
7	1	0403061-6	SMP		1	1	As Received		
8	1	0403061-7	SMP		1	1	As Received		
9	1	0403061-8	SMP		1	1	As Received		
10	1	0403061-9	SMP		1	1	As Received		
11	1	0403061-10	SMP		1	1	As Received		
12	1	0403061-11	SMP		1	1	As Received		
13	1	0403061-12	SMP		1	1	As Received		
14	1	0403061-13	SMP		1	1	As Received		JC 3/15/04
15	1	0403061-14	SMP		1	1	As Received		
16	1	0403061-14	DUP		1	1	As Received		COUNT DUPLICATE
17	1	0403061-15	SMP		1	1	As Received		
18	1	0403061-16	SMP		1	1	As Received		
19	1	0403061-17	SMP		1	1	As Received		
20	1	0403061-18	SMP		1	1	As Received		
21	1	0403061-19	SMP		1	1	As Received		
22	1	0403061-20	SMP		1	1	As Received		JC 3/15/04
23	1	AB040312-2A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040312-2B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040312-2	MB		1	1	As Received		JC 3/15/04

JC 3/15/04

Spiked By: N/A Date: N/A
Witnessed By: N/A Date: N/A

Relinquished By: see
Date: previous
Received By:
Date:

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.145	DPM/sample	03/12/04	1	sample	

Comments

Radiochemistry Pr[illegible] Worksheet

Paragon Analytics

Prep Batch: AB040[illegible]

Prep Procedure: GAB_No_Att

Reviewed By: JXC JC **Review Date:** 3/15/04

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

Prep SOP: PAI 702 **Rev:** 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aiq sample	Fin Aiq sample	Prep Basis	Standards	Prep Notes
1	1	0403061-21	SMP		1	1	As Received		
2	1	0403061-22	SMP		1	1	As Received		
3	1	0403061-23	SMP		1	1	As Received		
4	1	0403061-24	SMP		1	1	As Received		
5	1	0403061-25	SMP		1	1	As Received		
6	1	0403061-26	SMP		1	1	As Received		JC 3/15/04
7	1	0403061-27	SMP		1	1	As Received		
8	1	0403061-27	DUP		1	1	As Received		COUNT DUPLICATE
9	1	0403061-28	SMP		1	1	As Received		
10	1	0403061-29	SMP		1	1	As Received		
11	1	0403061-30	SMP		1	1	As Received		
12	1	0403061-31	SMP		1	1	As Received		
13	1	0403061-32	SMP		1	1	As Received		
14	1	0403061-33	SMP		1	1	As Received		
15	1	0403061-34	SMP		1	1	As Received		
16	1	0403061-35	SMP		1	1	As Received		
17	1	0403061-36	SMP		1	1	As Received		JC 3/15/04
18	1	0403061-37	SMP		1	1	As Received		
19	1	0403061-37	DUP		1	1	As Received		COUNT DUPLICATE
20	1	0403061-38	SMP		1	1	As Received		
21	1	0403061-39	SMP		1	1	As Received		JC 3/15/04
22	1	0403061-40	SMP		1	1	As Received		
23	1	AB040312-3A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040312-3B	LCS		1	1	As Received	S2	BETA SOURCE JC 3/15/04
25	1	AB040312-3	MB		1	1	As Received		

JC 3/15/04

Spiked By: N/A **Date:** N/A

Witnessed By: N/A **Date:** N/A

Relinquished By: see
Date: previous
Received By:
Date:

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.136	DPM/sample	03/12/04	1	sample	

Comments

000133

Supersedes: 8/10/04 10:32

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040312-4

Prep Procedure: GAB_No_Att

Reviewed By: JXC JC Review Date: 3/15/04

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

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aiq sample	Fin Aiq sample	Prep Basis	Standards	Prep Notes
1	1	0403061-41	SMP		1	1	As Received		JC 3/15/04
2	1	0403061-41	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403061-42	SMP		1	1	As Received		
4	1	0403061-43	SMP		1	1	As Received		
5	1	0403061-44	SMP		1	1	As Received		
6	1	0403061-45	SMP		1	1	As Received		
7	1	0403061-46	SMP		1	1	As Received		
8	1	0403061-47	SMP		1	1	As Received		
9	1	0403061-48	SMP		1	1	As Received		
10	1	0403061-49	SMP		1	1	As Received		
11	1	0403061-50	SMP		1	1	As Received		
12	1	0403061-51	SMP		1	1	As Received		JC 3/15/04
13	1	0403061-52	SMP		1	1	As Received		
14	1	0403061-52	DUP		1	1	As Received		COUNT DUPLICATE JC 3/15/04
15	1	0403061-53	SMP		1	1	As Received		
16	1	AB040312-4A	LCS		1	1	As Received	S1	ALPHA SOURCE
17	1	AB040312-4B	LCS		1	1	As Received	S2	BETA SOURCE JC 3/15/04
18	1	AB040312-4	MB		1	1	As Received		

JC 3/15/04

Spiked By: N/A Date: N/A
Witnessed By: N/A Date: N/A

Relinquished By: see
Date: prevn
Received By:
Date:

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.130	DPM/sample	03/12/04	1	sample	

Comments

000132

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040312

Prep Procedure: GAB

Reviewed By: JC Review Date: 3/12/04

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

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aiq sample	Fin Aiq sample	Prep Basis	Standards	Prep Notes
1	1	0403061-1	SMP		1	1	As Received		
2	1	0403061-2	SMP		1	1	As Received		
3	1	0403061-3	SMP		1	1	As Received		
4	1	0403061-4	SMP		1	1	As Received		JC 3/12/04
5	1	0403061-4	DUP		1	1	As Received		COUNT DUPLICATE
6	1	0403061-5	SMP		1	1	As Received		
7	1	0403061-6	SMP		1	1	As Received		
8	1	0403061-7	SMP		1	1	As Received		
9	1	0403061-8	SMP		1	1	As Received		
10	1	0403061-9	SMP		1	1	As Received		
11	1	0403061-10	SMP		1	1	As Received		
12	1	0403061-11	SMP		1	1	As Received		
13	1	0403061-12	SMP		1	1	As Received		
14	1	0403061-13	SMP		1	1	As Received		JC 3/12/04
15	1	0403061-14	SMP		1	1	As Received		
16	1	0403061-14	DUP		1	1	As Received		COUNT DUPLICATE
17	1	0403061-15	SMP		1	1	As Received		
18	1	0403061-16	SMP		1	1	As Received		
19	1	0403061-17	SMP		1	1	As Received		
20	1	0403061-18	SMP		1	1	As Received		
21	1	0403061-19	SMP		1	1	As Received		
22	1	0403061-20	SMP		1	1	As Received		JC 3/12/04
23	1	AB040312-2A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040312-2B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040312-2	MB		1	1	As Received		JC 3/12/04

JC 3/12/04

JC 3/12/04

DRAFT

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: G
Date: 03/12/04
Received By: S
Date: 3/15/04

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.145	DPM/sample	03/12/04	1	sample	

Comments

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040312-3

Prep Procedure: GAB

Reviewed By: jxc JC Review Date: 3/12/04

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

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aiq sample	Fin Aiq sample	Prep Basis	Standards	Prep Notes
1	1	0403061-21	SMP		1	1	As Received		
2	1	0403061-22	SMP		1	1	As Received		
3	1	0403061-23	SMP		1	1	As Received		
4	1	0403061-24	SMP		1	1	As Received		
5	1	0403061-25	SMP		1	1	As Received		
6	1	0403061-26	SMP		1	1	As Received		
7	1	0403061-27	SMP		1	1	As Received		JC 3/12/04
8	1	0403061-27	DUP		1	1	As Received		COUNT DUPLICATE
9	1	0403061-28	SMP		1	1	As Received		
10	1	0403061-29	SMP		1	1	As Received		
11	1	0403061-30	SMP		1	1	As Received		
12	1	0403061-31	SMP		1	1	As Received		
13	1	0403061-32	SMP		1	1	As Received		
14	1	0403061-33	SMP		1	1	As Received		
15	1	0403061-34	SMP		1	1	As Received		
16	1	0403061-35	SMP		1	1	As Received		
17	1	0403061-36	SMP		1	1	As Received		JC 3/12/04
18	1	0403061-37	SMP		1	1	As Received		
19	1	0403061-37	DUP		1	1	As Received		COUNT DUPLICATE
20	1	0403061-38	SMP		1	1	As Received		
21	1	0403061-39	SMP		1	1	As Received		JC 3/12/04
22	1	0403061-40	SMP		1	1	As Received		
23	1	AB040312-3A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040312-3B	LCS		1	1	As Received	S2	BETA SOURCE JC 3/12/04
25	1	AB040312-3	MB		1	1	As Received		

JC 3/12/04

DRAFT

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: [illegible]
Date: 03/12/04

Received By: [illegible]
Date: 3/15/04

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.136	DPM/sample	03/12/04	1	sample	

Comments

Paragon Analytics

Radiochemistry Pr Worksheet

Prep Batch: AB040

Prep Procedure: GAB

Reviewed By: jxc JC Review Date: 3/12/04

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

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403061-41	SMP		1	1	As Received		
2	1	0403061-41	DUP		1	1	As Received		COUNT DUPLICATE JC 3/12/04
3	1	0403061-42	SMP		1	1	As Received		
4	1	0403061-43	SMP		1	1	As Received		
5	1	0403061-44	SMP		1	1	As Received		
6	1	0403061-45	SMP		1	1	As Received		
7	1	0403061-46	SMP		1	1	As Received		
8	1	0403061-47	SMP		1	1	As Received		
9	1	0403061-48	SMP		1	1	As Received		
10	1	0403061-49	SMP		1	1	As Received		
11	1	0403061-50	SMP		1	1	As Received		
12	1	0403061-51	SMP		1	1	As Received		
13	1	0403061-52	SMP		1	1	As Received		
14	1	0403061-52	DUP		1	1	As Received		COUNT DUPLICATE JC 3/12/04
15	1	0403061-53	SMP		1	1	As Received		
16	1	AB040312-4A	LCS		1	1	As Received	S1	ALPHA SOURCE
17	1	AB040312-4B	LCS		1	1	As Received	S2	BETA SOURCE JC 3/12/04
18	1	AB040312-4	MB		1	1	As Received		

DRAFT

JC 3/12/04

Spiked By: N/A Date: N/A
Witnessed By: N/A Date: N/A

Relinquished By: [signature]
Date: 03/12/04
Received By: [signature]
Date: 3/15/04

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.573	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.130	DPM/sample	03/12/04	1	sample	

Comments

000137

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JC

ANALYSIS DATE: 3/12/04 METHOD: 6<B

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403061	1-10	Dry (AR)	Swipe	none
↓	11-20	↓	↓	↓

JC 3/12/04

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JC

ANALYSIS DATE: 3/12/04 METHOD: GaB

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403061	21-30	Dry (AR)	SWIPE	none
↓	31-40	↓	↓	↓

JC 3/12/04

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JC

ANALYSIS DATE: 3/12/04 METHOD: 6αβ

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403061	41-50	Dry(AR)	swipe	none
↓	51-53	↓	↓	↓

JC 3/12/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 7

STANDARDS TRACEABILITY DOCUMENTS

7

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-00601
rec'd 12-05-01

62752A-307

Am-241 47 mm Diameter Membrane Filter in Stainless Steel Planchet

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting. The calibration was checked by alpha counting after source preparation.

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:	Am-241
ACTIVITY (dps):	166.4
HALF-LIFE:	4.322 E2 years
CALIBRATION DATE:	December 1, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.0%
SYSTEMATIC:	4.7%
RANDOM:	0.3%

*99% Confidence Level

Impurities: γ-impurities <0.1%

Diameter of active area: 43 mm. Low smooth bottom planchet. Source covering 0.5 mg/cm^2 mylar.

No expiration date has been given for this source due to the fragile nature of the mylar covering. This source should be carefully tested for leakage at least every six months. If leakage is detected this source should be disposed of by approved radioactive waste disposal procedures.

P O NUMBER 001703, Item 2

SOURCE PREPARED BY: M. Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: M. [illegible] 12-4-01

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

PAT ID 0729
rec'd 10-30-03

66949-307

Sr-90 47 mm Diameter Membrane Filter in Stainless Steel Planchet

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting. The calibration was checked by beta counting after source preparation.

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:	Sr-90
ACTIVITY (dps):	3.450 E2
HALF-LIFE:	28.79 years
CALIBRATION DATE:	October 21, 2003 12:00 EST
RELATIVE EXPANDED UNCERTAINTY (k=2):	3.3%

Impurities: γ-impurities <0.1%

Diameter of active area: 43 mm. Low smooth bottom planchet. Source covering 0.85 mg/cm^2 mylar.

No expiration date has been given for this source due to the fragile nature of the mylar covering. This source should be carefully tested for leakage at least every six months. If leakage is detected this source should be disposed of by approved radioactive waste disposal procedures.

NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta activity for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 64.08 hours.

P O NUMBER EW091503, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: D M M 10-27-03

PARAGON ANALYTICS
Radiochemistry Data Package

Section 8

CHAIN OF CUSTODY

8

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403061
Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
Client Project Number: 101115
Client PO Number: 23482CO#501

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
030204-31-01	0403061-1		WIPE	03-Mar-04	14:30
030204-31-02	0403061-2		WIPE	03-Mar-04	14:30
030204-31-03	0403061-3		WIPE	03-Mar-04	14:30
030204-31-04	0403061-4		WIPE	03-Mar-04	14:30
030204-31-05	0403061-5		WIPE	03-Mar-04	14:30
030204-31-06	0403061-6		WIPE	03-Mar-04	14:30
030204-31-07	0403061-7		WIPE	03-Mar-04	14:30
030204-31-08	0403061-8		WIPE	03-Mar-04	14:30
030204-31-09	0403061-9		WIPE	03-Mar-04	14:30
030204-31-10	0403061-10		WIPE	03-Mar-04	14:30
030204-31-11	0403061-11		WIPE	03-Mar-04	14:30
030204-31-12	0403061-12		WIPE	03-Mar-04	14:30
030204-31-13	0403061-13		WIPE	03-Mar-04	14:30
030204-31-14	0403061-14		WIPE	03-Mar-04	14:30
030204-31-15	0403061-15		WIPE	03-Mar-04	14:30
030204-31-16	0403061-16		WIPE	03-Mar-04	14:30
030204-31-17	0403061-17		WIPE	03-Mar-04	14:30
030204-31-18	0403061-18		WIPE	03-Mar-04	14:30
030204-31-19	0403061-19		WIPE	03-Mar-04	14:30
030204-31-20	0403061-20		WIPE	03-Mar-04	14:30
030204-31-21	0403061-21		WIPE	03-Mar-04	14:30
030204-31-22	0403061-22		WIPE	03-Mar-04	14:30
030204-31-23	0403061-23		WIPE	03-Mar-04	14:30
030204-31-24	0403061-24		WIPE	03-Mar-04	14:30
030204-31-25	0403061-25		WIPE	03-Mar-04	14:30
030204-31-26	0403061-26		WIPE	03-Mar-04	14:30
030204-31-27	0403061-27		WIPE	03-Mar-04	14:30
030204-31-28	0403061-28		WIPE	03-Mar-04	14:30
030204-31-29	0403061-29		WIPE	03-Mar-04	14:30
030204-31-30	0403061-30		WIPE	03-Mar-04	14:30
030204-31-31	0403061-31		WIPE	03-Mar-04	14:32
030204-31-32	0403061-32		WIPE	03-Mar-04	14:32

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403061
Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
Client Project Number: 101115
Client PO Number: 23482CO#501

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
030204-31-33	0403061-33		WIPE	03-Mar-04	14:32
030204-31-34	0403061-34		WIPE	03-Mar-04	14:32
030204-31-35	0403061-35		WIPE	03-Mar-04	14:32
030204-31-36	0403061-36		WIPE	03-Mar-04	14:32
030204-31-37	0403061-37		WIPE	03-Mar-04	14:32
030204-31-38	0403061-38		WIPE	03-Mar-04	14:32
030204-31-39	0403061-39		WIPE	03-Mar-04	14:32
030204-31-40	0403061-40		WIPE	03-Mar-04	14:32
030204-31-41	0403061-41		WIPE	03-Mar-04	14:32
030204-31-42	0403061-42		WIPE	03-Mar-04	14:32
030204-31-43	0403061-43		WIPE	03-Mar-04	14:32
030204-31-44	0403061-44		WIPE	03-Mar-04	14:32
030204-31-45	0403061-45		WIPE	03-Mar-04	14:32
030204-31-46	0403061-46		WIPE	03-Mar-04	14:32
030204-31-47	0403061-47		WIPE	03-Mar-04	14:32
030204-31-48	0403061-48		WIPE	03-Mar-04	14:32
030204-31-49	0403061-49		WIPE	03-Mar-04	14:32
030204-31-20FD	0403061-50		WIPE	03-Mar-04	14:32
030204-31-35FD	0403061-51		WIPE	03-Mar-04	14:32
030204-31-45FD	0403061-52		WIPE	03-Mar-04	14:32
030204-31-FB	0403061-53		WIPE	03-Mar-04	14:32

Shaw
Shaw Environmental & Infrastructure, Inc.

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

0403061

Reference Document No: A1507-030204-31
PAGE 1 of 3
Bill to:

Project No.	101115	Sample Shipment Date	3-8-04
Project name	EPA NEIC EDDP	Lab Destination	Paragon Analytics, Inc.
Sample Coordinator	James Nelson / 303-233-1279	Lab Contact	Debbie Fazio
Project Manager	Randy Rodgers / 865-694-7457	Project Contact/phone	Ben Dettorre / 865-670-2669
Sample Team Members	T. TRENT J. STEPHENS	Carrier Waybill No.	

Report to: Ben Dettore
312 Directors Drive
Knoxville, TN 37923

ONE SAMPLE PER LINE

	Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
1	030204-31 - 01	RmA1507 FSS Location A-01	3-3-04 1430	Smear		
2	02	02				
3	03	03				
4	04	04				
5	05	05				
6	06	06				
7	07	07				
8	08	08				

Special Instructions:

Possible Hazard Identification:
Non-haz ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:
Return to Client ☐ Disposal by Lab ☒ Archive ☐

Turnaround Time Required:
Normal ☒ Rush ☐

QC Level:
I. ☐ II. ☐ III. ☐ Project Specific: Defined in QAPP

1. Relinquished by (Signature/Affiliation)	Date: 3-5-04 Time: 0805	1. Received by (Signature/Affiliation)	Date: 3-5-04 Time: 0805
2. Relinquished by (Signature/Affiliation)	Date: 3-8-04 Time: 1007	2. Received by (Signature/Affiliation) Paul Sabourin	Date: 3-8-04 Time: 1007
3. Relinquished by Paul Sabourin (Signature/Affiliation)	Date: 3-8-04 Time: 255	3. Received by (Signature/Affiliation)	Date: 3-8-04 Time: 1635

Comments:
ANALYSIS: GROSS Alpha/Beta - MDC (reporting limits) <1.1 dpm/smear for alpha
Received by 1635 <100 dpm/smear for beta

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Shaw
Shaw Environmental & Infrastructure, Inc.

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A1507-030204-31

0403061

Project Name/Project No. EPA NEIC EDDP / 101115 Lab Destination Paragon Analytics, Inc. Sample Shipment Date

ONE SAMPLE PER LINE

	Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
9	030204-31 - 09	RmA1507 ESS Location A-09	3-3-04 1430	Smear		
10	-10	10				
11	-11	11				
12	-12	12				
13	-13	13				
14	-14	14				
15	-15	15				
16	-16	16				
17	-17	17				
18	-18	18				
19	-19	19				
20	-20	20				
21	-21	21				
22	-22	22				
23	-23	23				
24	-24	24				
25	-25	25				
26	-26	26				
27	-27	27				
28	-28	28				
29	-29	29				
30	-30	30				

Shaw
Shaw Environmental & Infrastructure, Inc.

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A1507-0 204-31

0403061

Project Name/Project No. EPA NEIC EDDP / 101115 Lab Destination Paragon Analytics, Inc. Sample Shipment Date

ONE SAMPLE PER LINE

	Sample Number (Client ID)	Sample Description	Date/Time, Collected	Sample Type	Condition on Receipt	Disposal Record
31	030204-31 - 31	RmA1507 FSS Location A-31	3-3-04 1432	Smear		
32	32	32				
33	33	33				
34	34	34				
35	35	35				
36	36	36				
37	37	37				
38	38	38				
39	39	39				
40	40	BS-1507 - 1				
41	41	- 2				
42	42	- 3				
43	43	- 4				
44	44	- 5				
45	45	- 6				
46	46	- 7				
47	47	- 8				
48	48	- 9				
49	49	- 10				
50	-20FD	Rm 1507 FSS Loc. A-20 Field Dup				
51	-35 FD	-35 Field Dup				
52	-45FD	BS-1507-6 Field Dup				
53	-FB	Field Blank				

000149

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw Neic WORKORDER NO: 040306 1

PROJECT MANAGER: DF INITIALS: CW DATE: 3-9-04

1. Does this project require any special handling in addition to standard Paragon procedures?		Yes	No
IS PRE-SCREENING REQUIRED? (radiochemistry, DOE, etc.)		Yes	No
2. Are custody seals on shipping containers intact? How many custody seals are provided? _____	N/A	Yes	No
3. Are the custody seals on sample containers intact?	N/A	Yes	No
4. Is there a Chain-of-Custody (COC) or other representative documents, letters, or shipping memos?		Yes	No
5. Is the COC complete? Relinquished: Yes ✓ No___ Analyses Requested: Yes ✓ No___	N/A	Yes	No
6. Is the COC in agreement with the samples received? No. of Samples: Yes ✓ No___ Sample ID's: Yes ✓ No___ Matrix: Yes ✓ No___ No. of Containers: Yes ✓ No___	N/A	Yes	No
7. Were COC (if applicable) and sample labels legible?		Yes	No
8. Were airbills present and/or removable?	N/A	Yes	No
9. Are all aqueous samples requiring chemical preservation preserved correctly (excluding volatile organics)?	N/A	Yes	No
Are all aqueous non-preserved samples at the correct pH?		Yes	No
10. Is there enough sample for requested analyses? If so, were samples placed in the proper containers?		Yes	No
11. Are all samples within holding times for the requested analyses?		Yes	No
12. Were all sample containers received intact? (not broken or leaking, etc.)		Yes	No
13. Are samples requiring no headspace (volatiles, reactive cyanide/sulfide, radon), headspace free? Size of bubble: ___ < green pea; ___ > green pea (List sample IDs and affected containers on Page 2)	N/A	Yes	No
14. Were samples checked for and free from the presence of residual chlorine?	N/A	Yes	No
15. Were the sample(s) shipped on ice?	N/A	Yes	No
16. Were cooler temperatures measured at 0.1 - 6 °C ? IR Gun Used*: 1 2	N/A	Yes	No
17. Were all samples cooled that should have been cooled?	N/A	Yes	No

Cooler #'s Box _____ _____ _____ _____ _____

Temperature ambient _____ _____ _____ _____ °C

Project Manager Signature / Date: Debbie Fazio 3/9/04

A NO RESPONSE TO ANY QUESTION EXCEPT # 1 REQUIRES THE COMPLETION OF PAGE 2 OF THIS FORM

* IR Gun #1 (original): Raytek, SN SC-PM3/T29403
IR Gun #2 (newer): Oakton, SN 2SCIR1201

PARAGON ANALYTICS
Radiochemistry Data Package

Section 9

ADDITIONAL SUPPORTING DOCUMENTATION

9

Gas Proportional Counter

Instrument Calibration

Background Calibration

LB4100-A Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.149	0.000	0.500	PASS	2.340	0.000	3.000	PASS	A1 (01)
A2 (02)	0.094	0.000	0.500	PASS	1.950	0.000	3.000	PASS	A2 (02)
A3 (03)	0.128	0.000	0.500	PASS	2.080	0.000	3.000	PASS	A3 (03)
A4 (04)	0.118	0.000	0.500	PASS	1.911	0.000	3.000	PASS	A4 (04)
B1 (05)	0.072	0.000	0.500	PASS	1.780	0.000	3.000	PASS	B1 (05)
B2 (06)	0.097	0.000	0.500	PASS	1.692	0.000	3.000	PASS	B2 (06)
B3 (07)	0.098	0.000	0.500	PASS	1.871	0.000	3.000	PASS	B3 (07)
B4 (08)	0.105	0.000	0.500	PASS	1.697	0.000	3.000	PASS	B4 (08)
C1 (09)	0.073	0.000	0.500	PASS	1.661	0.000	3.000	PASS	C1 (09)
C2 (10)	0.075	0.000	0.500	PASS	1.728	0.000	3.000	PASS	C2 (10)
C3 (11)	0.132	0.000	0.500	PASS	1.782	0.000	3.000	PASS	C3 (11)
C4 (12)	0.137	0.000	0.500	PASS	1.821	0.000	3.000	PASS	C4 (12)
D1 (13)	#REF!	0.000	0.500	#REF!	#REF!	0.000	3.000	#REF!	D1 (13)
D2 (14)	#REF!	0.000	0.500	#REF!	#REF!	0.000	3.000	#REF!	D2 (14)
D3 (15)	#REF!	0.000	0.500	#REF!	#REF!	0.000	3.000	#REF!	D3 (15)
D4 (16)	#REF!	0.000	0.500	#REF!	#REF!	0.000	3.000	#REF!	D4 (16)

Reviewed by: LCB Date: 3/15/04

Interim Control Limits set 1/31/04. CJ 1/31/04.

LB4100-B Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.087	0.044	0.150	PASS	1.378	1.244	1.486	PASS	A1 (01)
A2 (02)	0.097	0.050	0.235	PASS	1.276	1.255	1.493	PASS	A2 (02)
A3 (03)	0.071	0.037	0.173	PASS	1.338	1.251	1.518	PASS	A3 (03)
A4 (04)	0.102	0.001	0.193	PASS	1.355	1.225	1.540	PASS	A4 (04)
B1 (05)	0.111	-0.006	0.283	PASS	1.594	1.428	1.981	PASS	B1 (05)
B2 (06)	0.101	0.008	0.247	PASS	1.398	1.339	1.770	PASS	B2 (06)
B3 (07)	0.081	0.039	0.259	PASS	1.441	1.421	1.747	PASS	B3 (07)
B4 (08)	0.107	-0.027	0.316	PASS	1.537	1.498	1.741	PASS	B4 (08)
C1 (09)	0.128	0.046	0.174	PASS	1.626	1.324	1.754	PASS	C1 (09)
C2 (10)	0.089	0.042	0.205	PASS	1.550	1.327	1.733	PASS	C2 (10)
C3 (11)	0.111	0.067	0.219	PASS	1.527	1.344	1.766	PASS	C3 (11)
C4 (12)	0.073	-0.012	0.216	PASS	1.509	1.338	1.726	PASS	C4 (12)
D1 (13)	0.127	0.028	0.206	PASS	1.547	1.302	1.759	PASS	D1 (13)
D2 (14)	0.130	0.017	0.207	PASS	2.103	1.730	2.319	PASS	D2 (14)
D3 (15)	0.104	0.044	0.147	PASS	1.715	1.566	2.045	PASS	D3 (15)
D4 (16)	0.117	0.022	0.206	PASS	1.841	1.405	2.033	PASS	D4 (16)

Reviewed by: TJZ Date: 3-20-04

Control Limits set 1/26/04.
CJ 1/26/04

Gas Proportional Counter

Quality Control Data

Daily Background Checks

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.150	0.000	0.298	PASS	2.500	1.748	2.932	PASS	A1 (01)
A2 (02)	0.100	-0.025	0.213	PASS	1.817	1.409	2.491	PASS	A2 (02)
A3 (03)	0.083	-0.011	0.267	PASS	2.183	1.521	2.639	PASS	A3 (03)
A4 (04)	0.183	-0.015	0.251	PASS	2.017	1.376	2.446	PASS	A4 (04)
B1 (05)	0.117	-0.032	0.176	PASS	1.817	1.263	2.297	PASS	B1 (05)
B2 (06)	0.100	-0.024	0.218	PASS	1.600	1.188	2.196	PASS	B2 (06)
B3 (07)	0.017	-0.023	0.219	PASS	1.883	1.341	2.401	PASS	B3 (07)
B4 (08)	0.083	-0.020	0.230	PASS	1.950	1.192	2.202	PASS	B4 (08)
C1 (09)	0.150	-0.032	0.178	PASS	1.817	1.162	2.160	PASS	C1 (09)
C2 (10)	0.117	-0.031	0.181	PASS	1.650	1.219	2.237	PASS	C2 (10)
C3 (11)	0.150	-0.009	0.273	PASS	2.117	1.265	2.299	PASS	C3 (11)
C4 (12)	0.150	-0.006	0.280	PASS	2.117	1.298	2.344	PASS	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

Reviewed by: LCB Date: 3/16/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKA0313W Date: 3/13/04 Analyst: CJ

000156

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.183	0.000	0.298	PASS	2.217	1.748	2.932	PASS	A1 (01)
A2 (02)	0.033	-0.025	0.213	PASS	2.083	1.409	2.491	PASS	A2 (02)
A3 (03)	0.117	-0.011	0.267	PASS	2.150	1.521	2.639	PASS	A3 (03)
A4 (04)	0.133	-0.015	0.251	PASS	2.383	1.376	2.446	PASS	A4 (04)
B1 (05)	0.050	-0.032	0.176	PASS	1.783	1.263	2.297	PASS	B1 (05)
B2 (06)	0.117	-0.024	0.218	PASS	2.133	1.188	2.196	PASS	B2 (06)
B3 (07)	0.050	-0.023	0.219	PASS	1.750	1.341	2.401	PASS	B3 (07)
B4 (08)	0.067	-0.020	0.230	PASS	1.783	1.192	2.202	PASS	B4 (08)
C1 (09)	0.183	-0.032	0.178	FLAG-HIGH	1.833	1.162	2.160	PASS	C1 (09)
C2 (10)	0.050	-0.031	0.181	PASS	1.650	1.219	2.237	PASS	C2 (10)
C3 (11)	0.117	-0.009	0.273	PASS	2.017	1.265	2.299	PASS	C3 (11)
C4 (12)	0.100	-0.006	0.280	PASS	2.117	1.298	2.344	PASS	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

-Det 9 is uncounted in file BKA03174.

Reviewed by: G Date: 3/17/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKA0313W Date: 3/13/04 Analyst: CJ

000157

BK^0317.XLD

Printed 3/17/04 7:54 AM

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B2 (06)
B3 (07)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B3 (07)
B4 (08)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B4 (08)
C1 (09)	0.083	-0.032	0.178	PASS	1.450	1.162	2.160	PASS	C1 (09)
C2 (10)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C2 (10)
C3 (11)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C3 (11)
C4 (12)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

Reviewed by: 77 Date: 3-17-04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKA0313W Date: 3/13/04 Analyst: CJ

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.117	0.000	0.298	PASS	2.350	1.748	2.932	PASS	A1 (01)
A2 (02)	0.067	-0.025	0.213	PASS	1.933	1.409	2.491	PASS	A2 (02)
A3 (03)	0.117	-0.011	0.267	PASS	2.200	1.521	2.639	PASS	A3 (03)
A4 (04)	0.117	-0.015	0.251	PASS	2.167	1.376	2.446	PASS	A4 (04)
B1 (05)	0.117	-0.032	0.176	PASS	1.867	1.263	2.297	PASS	B1 (05)
B2 (06)	0.033	-0.024	0.218	PASS	1.900	1.188	2.196	PASS	B2 (06)
B3 (07)	0.083	-0.023	0.219	PASS	1.850	1.341	2.401	PASS	B3 (07)
B4 (08)	0.033	-0.020	0.230	PASS	1.733	1.192	2.202	PASS	B4 (08)
C1 (09)	0.117	-0.032	0.178	PASS	1.967	1.162	2.160	PASS	C1 (09)
C2 (10)	0.100	-0.031	0.181	PASS	1.650	1.219	2.237	PASS	C2 (10)
C3 (11)	0.067	-0.009	0.273	PASS	2.067	1.265	2.299	PASS	C3 (11)
C4 (12)	0.100	-0.006	0.280	PASS	1.867	1.298	2.344	PASS	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

Reviewed by: _____ Date: 3/18/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKA0313W Date: 3/13/04 Analyst: CJ

000159

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.067	-0.027	0.201	PASS	1.517	0.923	1.833	PASS	A1 (01)
A2 (02)	0.133	-0.024	0.218	PASS	1.700	0.839	1.713	PASS	A2 (02)
A3 (03)	0.100	-0.032	0.174	PASS	1.283	0.890	1.786	PASS	A3 (03)
A4 (04)	0.117	-0.022	0.226	PASS	1.517	0.904	1.806	PASS	A4 (04)
B1 (05)	0.133	-0.018	0.240	PASS	1.683	1.105	2.083	PASS	B1 (05)
B2 (06)	0.083	-0.022	0.224	PASS	1.567	0.940	1.856	PASS	B2 (06)
B3 (07)	0.117	-0.029	0.191	PASS	1.467	0.976	1.906	PASS	B3 (07)
B4 (08)	0.233	-0.020	0.234	PASS	1.700	1.057	2.017	PASS	B4 (08)
C1 (09)	0.100	-0.011	0.267	PASS	1.800	1.132	2.120	PASS	C1 (09)
C2 (10)	0.100	-0.027	0.205	PASS	1.900	1.068	2.032	PASS	C2 (10)
C3 (11)	0.133	-0.018	0.240	PASS	1.717	1.048	2.006	PASS	C3 (11)
C4 (12)	0.083	-0.032	0.178	PASS	1.783	1.033	1.985	PASS	C4 (12)
D1 (13)	0.150	-0.011	0.265	PASS	1.500	1.065	2.029	PASS	D1 (13)
D2 (14)	0.067	-0.010	0.270	PASS	2.000	1.541	2.665	PASS	D2 (14)
D3 (15)	0.083	-0.021	0.229	PASS	1.867	1.208	2.222	PASS	D3 (15)
D4 (16)	0.083	-0.015	0.249	PASS	2.200	1.316	2.366	PASS	D4 (16)

Reviewed by: LCB Date: 3/23/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.050	-0.027	0.201	PASS	1.367	0.923	1.833	PASS	A1 (01)
A2 (02)	0.117	-0.024	0.218	PASS	1.250	0.839	1.713	PASS	A2 (02)
A3 (03)	0.067	-0.032	0.174	PASS	1.517	0.890	1.786	PASS	A3 (03)
A4 (04)	0.100	-0.022	0.226	PASS	1.517	0.904	1.806	PASS	A4 (04)
B1 (05)	0.100	-0.018	0.240	PASS	1.850	1.105	2.083	PASS	B1 (05)
B2 (06)	0.050	-0.022	0.224	PASS	1.383	0.940	1.856	PASS	B2 (06)
B3 (07)	0.083	-0.029	0.191	PASS	1.500	0.976	1.906	PASS	B3 (07)
B4 (08)	0.117	-0.020	0.234	PASS	1.633	1.057	2.017	PASS	B4 (08)
C1 (09)	0.083	-0.011	0.267	PASS	1.533	1.132	2.120	PASS	C1 (09)
C2 (10)	0.100	-0.027	0.205	PASS	1.567	1.068	2.032	PASS	C2 (10)
C3 (11)	0.133	-0.018	0.240	PASS	1.667	1.048	2.006	PASS	C3 (11)
C4 (12)	0.067	-0.032	0.178	PASS	1.367	1.033	1.985	PASS	C4 (12)
D1 (13)	0.217	-0.011	0.265	PASS	1.517	1.065	2.029	PASS	D1 (13)
D2 (14)	0.117	-0.010	0.270	PASS	2.100	1.541	2.665	PASS	D2 (14)
+ D3 (15)	0.017	-0.021	0.229	PASS	2.233	1.208	2.222	FLAG-HIGH	D3 (15)
D4 (16)	0.133	-0.015	0.249	PASS	2.350	1.316	2.366	PASS	D4 (16)

Det 15 recounted in file BKB0324A.

Reviewed by: KF Date: 3-24-04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B2 (06)
B3 (07)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B3 (07)
B4 (08)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B4 (08)
C1 (09)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C1 (09)
C2 (10)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C2 (10)
C3 (11)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C3 (11)
C4 (12)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
+ D3 (15)	0.083	-0.021	0.229	PASS	11.100	1.208	2.222	FLAG-HIGH	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

+ Det 15 off line B 3/24.

Reviewed by: TZ Date: 3-24-04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

Gas Proportional Counter

Quality Control Data

Daily Instrument Performance Checks

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2202	0.2085	0.2546	PASS	0.8291	0.7959	0.9352	PASS	A1 (01)
A2 (02)	0.2116	0.2062	0.2574	PASS	0.8108	0.7892	0.9828	PASS	A2 (02)
A3 (03)	0.2228	0.2062	0.2690	PASS	0.8475	0.7715	0.9888	PASS	A3 (03)
A4 (04)	0.2192	0.1880	0.2528	PASS	0.7946	0.7382	0.9417	PASS	A4 (04)
B1 (05)	0.2399	0.2257	0.2534	PASS	0.8842	0.8564	0.9214	PASS	B1 (05)
B2 (06)	0.2513	0.2387	0.2630	PASS	0.9325	0.9020	0.9548	PASS	B2 (06)
B3 (07)	0.2315	0.2186	0.2492	PASS	0.9032	0.8665	0.9156	PASS	B3 (07)
B4 (08)	0.2635	0.2435	0.2799	PASS	0.9426	0.9071	0.9634	PASS	B4 (08)
C1 (09)	0.2682	0.2476	0.2862	PASS	0.8999	0.8520	0.9638	PASS	C1 (09)
C2 (10)	0.2290	0.2133	0.2394	PASS	0.8637	0.8366	0.8885	PASS	C2 (10)
C3 (11)	0.2421	0.2148	0.2570	PASS	0.9023	0.8661	0.9334	PASS	C3 (11)
C4 (12)	0.2482	0.2402	0.2658	PASS	0.9444	0.8990	0.9597	PASS	C4 (12)
D1 (13)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D1 (13)
D2 (14)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D2 (14)
D3 (15)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D3 (15)
D4 (16)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D4 (16)

Reviewed by: CCB Date: 3/16/04

Historical Control Limits established 03/03/04. CJ

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2237	0.2085	0.2546	PASS	0.8199	0.7959	0.9352	PASS	A1 (01)
A2 (02)	0.2180	0.2062	0.2574	PASS	0.8307	0.7892	0.9828	PASS	A2 (02)
A3 (03)	0.2178	0.2062	0.2690	PASS	0.7967	0.7715	0.9888	PASS	A3 (03)
A4 (04)	0.2023	0.1880	0.2528	PASS	0.7952	0.7382	0.9417	PASS	A4 (04)
B1 (05)	0.2438	0.2257	0.2534	PASS	0.8685	0.8564	0.9214	PASS	B1 (05)
B2 (06)	0.2494	0.2387	0.2630	PASS	0.9406	0.9020	0.9548	PASS	B2 (06)
B3 (07)	0.2322	0.2186	0.2492	PASS	0.9084	0.8665	0.9156	PASS	B3 (07)
B4 (08)	0.2643	0.2435	0.2799	PASS	0.9341	0.9071	0.9634	PASS	B4 (08)
C1 (09)	0.2675	0.2476	0.2862	PASS	0.9096	0.8520	0.9638	PASS	C1 (09)
C2 (10)	0.2216	0.2133	0.2394	PASS	0.8480	0.8366	0.8885	PASS	C2 (10)
C3 (11)	0.2392	0.2148	0.2570	PASS	0.8978	0.8661	0.9334	PASS	C3 (11)
C4 (12)	0.2533	0.2402	0.2658	PASS	0.9325	0.8990	0.9597	PASS	C4 (12)
D1 (13)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D1 (13)
D2 (14)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D2 (14)
D3 (15)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D3 (15)
D4 (16)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D4 (16)

Reviewed by: LCB Date: 3/17/04

Historical Control Limits established 03/03/04. CJ

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2133	0.2085	0.2546	PASS	0.8179	0.7959	0.9352	PASS	A1 (01)
A2 (02)	0.2097	0.2062	0.2574	PASS	0.8071	0.7892	0.9828	PASS	A2 (02)
A3 (03)	0.2223	0.2062	0.2690	PASS	0.8351	0.7715	0.9888	PASS	A3 (03)
A4 (04)	0.2105	0.1880	0.2528	PASS	0.8082	0.7382	0.9417	PASS	A4 (04)
B1 (05)	0.2397	0.2257	0.2534	PASS	0.8871	0.8564	0.9214	PASS	B1 (05)
B2 (06)	0.2588	0.2387	0.2630	PASS	0.9118	0.9020	0.9548	PASS	B2 (06)
B3 (07)	0.2406	0.2186	0.2492	PASS	0.8899	0.8665	0.9156	PASS	B3 (07)
B4 (08)	0.2668	0.2435	0.2799	PASS	0.9359	0.9071	0.9634	PASS	B4 (08)
C1 (09)	0.2619	0.2476	0.2862	PASS	0.8989	0.8520	0.9638	PASS	C1 (09)
C2 (10)	0.2229	0.2133	0.2394	PASS	0.8760	0.8366	0.8885	PASS	C2 (10)
C3 (11)	0.2397	0.2148	0.2570	PASS	0.9286	0.8661	0.9334	PASS	C3 (11)
C4 (12)	0.2450	0.2402	0.2658	PASS	0.9307	0.8990	0.9597	PASS	C4 (12)
D1 (13)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D1 (13)
D2 (14)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D2 (14)
D3 (15)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D3 (15)
D4 (16)	#VALUE!	#VALUE!	#VALUE!	OFFLINE	#VALUE!	#VALUE!	#VALUE!	OFFLINE	D4 (16)

Reviewed by: _____ Date: 3/18/04

Historical Control Limits established 03/03/04. CJ

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2473	0.2277	0.2583	PASS	0.8673	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2457	0.2314	0.2605	PASS	0.8765	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2480	0.2291	0.2588	PASS	0.8890	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2429	0.2302	0.2602	PASS	0.8829	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2388	0.2342	0.2646	PASS	0.8850	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2283	0.2219	0.2484	PASS	0.8578	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2499	0.2343	0.2656	PASS	0.9089	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2394	0.2236	0.2616	PASS	0.8995	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2516	0.2453	0.2752	PASS	0.9273	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2500	0.2311	0.2644	PASS	0.9106	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2494	0.2362	0.2674	PASS	0.8925	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2414	0.2241	0.2531	PASS	0.8733	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2536	0.2332	0.2660	PASS	0.9050	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2611	0.2375	0.2664	PASS	0.8939	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2543	0.2387	0.2733	PASS	0.8883	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2472	0.2381	0.2666	PASS	0.9152	0.8823	0.9367	PASS	D4 (16)

—detectors 5, 6 are offline β

Reviewed by: LCB Date: 3/23/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2413	0.2277	0.2583	PASS	0.8588	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2419	0.2314	0.2605	PASS	0.8664	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2412	0.2291	0.2588	PASS	0.9034	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2533	0.2302	0.2602	PASS	0.8769	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2499	0.2342	0.2646	PASS	0.8888	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2382	0.2219	0.2484	PASS	0.8567	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2522	0.2343	0.2656	PASS	0.9173	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2416	0.2236	0.2616	PASS	0.8910	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2568	0.2453	0.2752	PASS	0.9140	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2404	0.2311	0.2644	PASS	0.9060	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2515	0.2362	0.2674	PASS	0.8923	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2342	0.2241	0.2531	PASS	0.8712	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2568	0.2332	0.2660	PASS	0.9040	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2572	0.2375	0.2664	PASS	0.8978	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2571	0.2387	0.2733	PASS	0.9008	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2528	0.2381	0.2666	PASS	0.9123	0.8823	0.9367	PASS	D4 (16)

-Det 5,6 offline β for today.

Reviewed by: S Date: 3/24/04

Control Limits established 12/21/03. JME

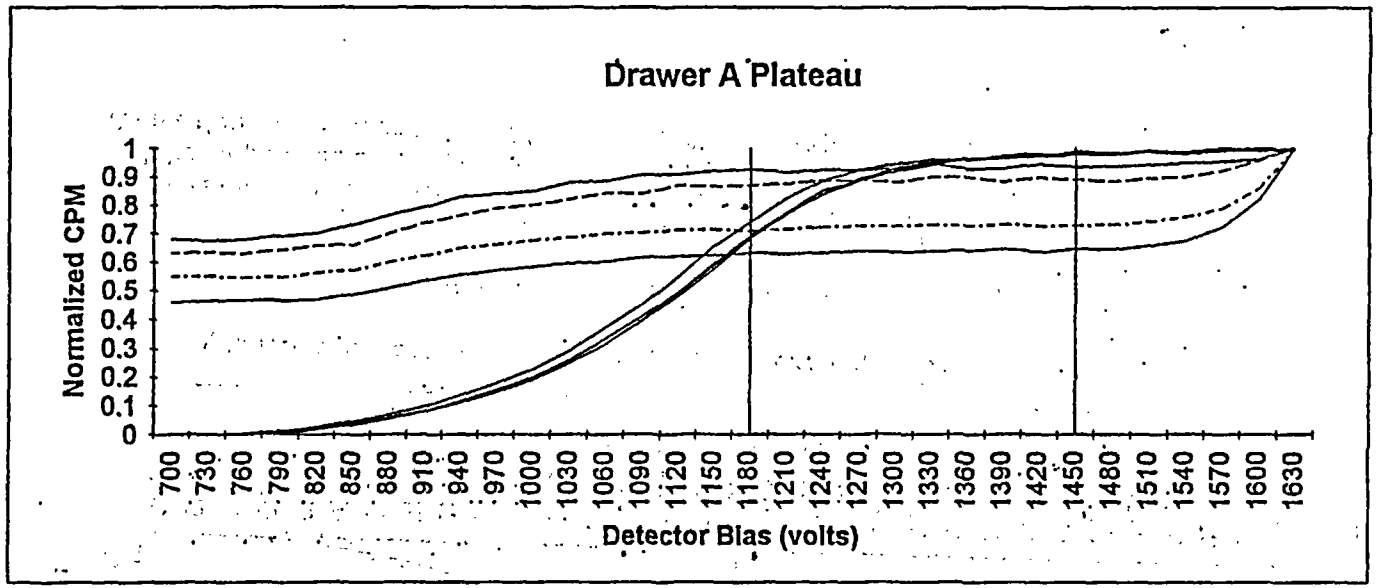
Gas Proportional Counter

Instrument Calibration

Initial Efficiency Calibration
Standards Traceability

Unit Type: LB4100/W-A
Date Performed: 1/29/04 08:56
FileName: PTA0129A
Batch ID: DRAWER A PLATEAU

Unit Id: Orange
Application Revision: B
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1447.5

Optimum alpha only operating voltage: 1180

	A1	A2	A3	A4
Beta slope at beta voltage	0.92%	1.77%	1.88%	2.16%
Alpha slope at beta voltage	0.56%	0.28%	1.54%	1.11%
Alpha slope at alpha voltage	1.02%	1.74%	1.52%	0.95%

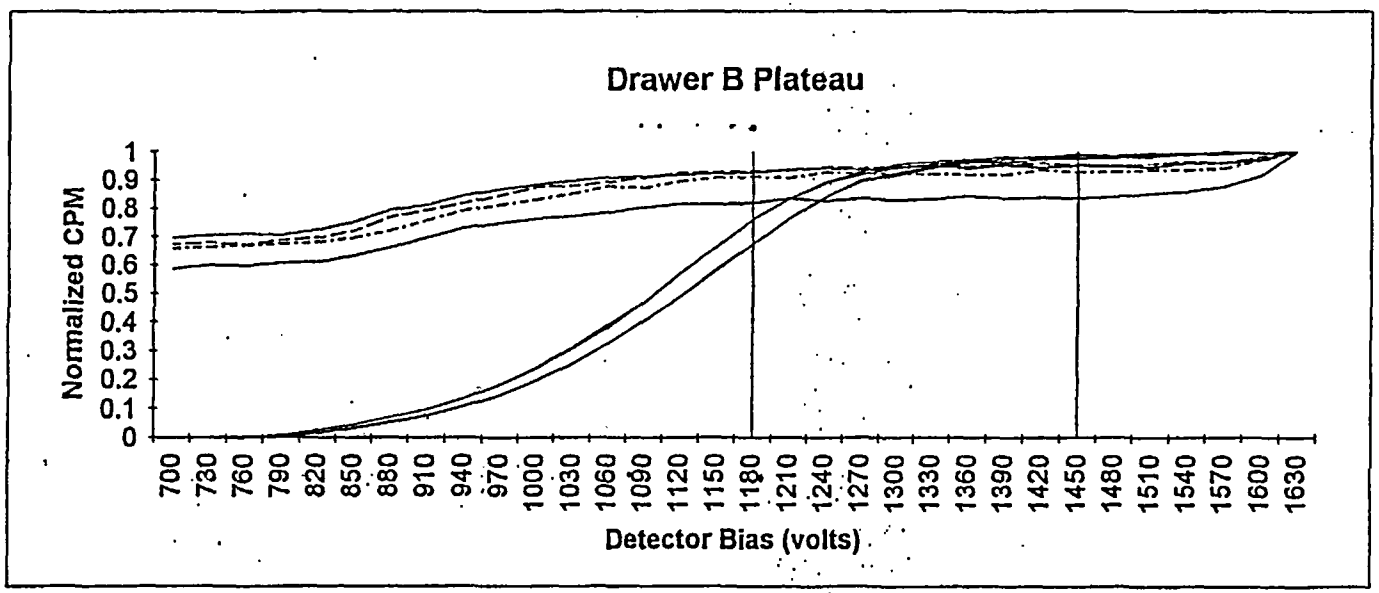
000170

Printed 1/29/04 3:23 PM

g 2/6/04

Unit Type: LB4100/W-A
Date Performed: 1/28/04 11:08
FileName: PTA0128B
Batch ID: DRAWER B PLATEAU

Unit Id: Orange
Application Revision: B
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1447.5

Optimum alpha only operating voltage: 1180

	B1	B2	B3	B4
Beta slope at beta voltage	1.14%	0.11%	0.85%	2.10%
Alpha slope at beta voltage	-0.54%	-0.10%	1.37%	0.88%
Alpha slope at alpha voltage	2.29%	1.61%	1.63%	2.40%

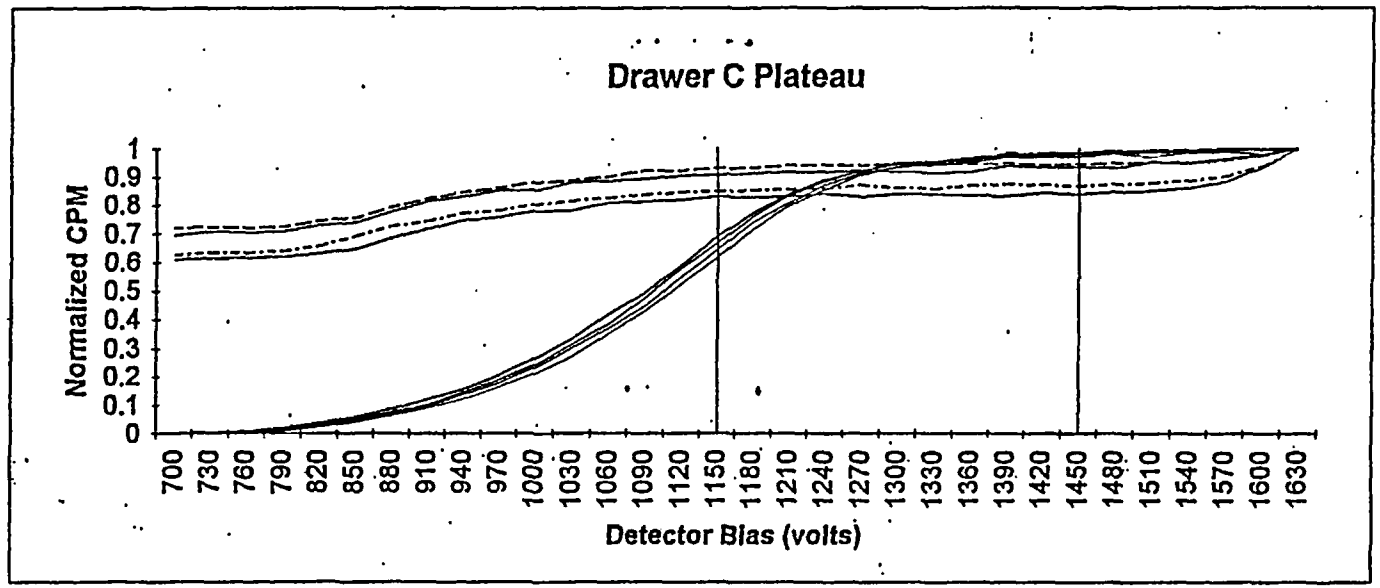
Printed 1 '04 9:05 AM

9 2/4

000171

Unit Type: LB4100/W-A
Date Performed: 1/29/04 08:53
FileName: PTA0129C
Batch ID: DRAWER C PLATEAU

Unit Id: Orange
Application Revision: B
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1447.5

Optimum alpha only operating voltage: 1150

	C1	C2	C3	C4
Beta slope at beta voltage	0.35%	0.29%	1.43%	1.56%
Alpha slope at beta voltage	0.84%	0.49%	1.42%	0.53%
Alpha slope at alpha voltage	2.02%	1.76%	1.84%	1.77%

Printed 1/29/04 3:25 PM

92/6/04

000172

1/28/04 Plateaus are performed on Drawers A, B, C

Plateau parameters are:

Starting volts: 700
Ending volts: 1650
Volts per step: 30
Count time per step: 5 min
Time between steps: .10 min

Count preset: 40,000
Weak count time: 10 min
Weak count limit: 10

Filenames: PT0128AA (data from wrong file not saved.) PT0129C
~~PT0128B~~ PT0128B PT0129A

Sources Used:	Det			
Am241 - 410	1	3	~~9~~	
411	2	4	~~10~~	
412	5	7	9	11
413	6	8	10	12
Sr90 - 406	3	1	~~11~~	
407	4	2	~~12~~	
408	7	5	11	9
409	8	6	12	10

8/29/04

Operating voltage:

Drawer A: ~~1447.5~~ 1447.5
Drawer B: 1447.5
Drawer C: 1447.5

5/21/04

1/29/04 Set ROI's on Drawers A, B, C

Source Used	Det		
Sr90/Y90 - 406	1	5	9
407	2	6	10
408	3	7	11
409	4	8	12

Continued on Page

Read and Understood By

Signed	Date	Signed	Date
Clare Lemien	2/10/04	Leah Balko	2/10/04

LB4100-A Raw Counts for Am-241 Wipe Efficiency Calibration (Control ID 1126)								
Detector ID	A1 (01)	A2 (02)	A3 (03)	A4 (04)	B1 (05)	B2 (06)	B3 (07)	B4 (08)
total time	4.59	4.38	4.46	4.33	4.21	4.09	4.32	4.37
Alpha counts	10004	10012	10024	10015	10001	10010	10007	10021
Alpha BKG CPM	0.156	0.094	0.103	0.091	0.084	0.079	0.111	0.07
Alpha CPM	2179.3647	2285.75075	2247.43063	2312.84203	2375.45044	2447.3538	2316.32419	2293.065011
Alpha Efficiency	0.23029719	0.24153919	0.23748984	0.24440198	0.25101792	0.2586161	0.24476997	0.242312141
archived STDEV	0.01196657	0.0125505	0.01233983	0.01269918	0.01304328	0.0134379	0.0127185	0.012590448
Beta CPM	421.450277	431.552644	413.343852	353.188305	399.999238	491.70653	471.840593	435.1969382
A>B x-talk	0.1934	0.1888	0.1839	0.1527	0.1684	0.2009	0.2037	0.1898
Data file	EAW0302A	EAW0302B	EAW0302C	EAW0302D	EAW0302E	EAW0302F	EAW0302G	EAW0302H
Detector ID	C1 (09)	C2 (10)	C3 (11)	C4 (12)				
total time	4.15	4.26	4.24	4.41				
Alpha counts	10008	10006	10014	10010				
Alpha BKG CPM	0.09	0.108	0.086	0.081				
Alpha CPM	2411.47627	2348.71829	2361.70645	2269.76027				
Alpha Efficiency	0.25482487	0.24819313	0.24956561	0.23984951				
archived STDEV	0.01324093	0.01289639	0.01296751	0.01246275				
Beta CPM	307.812554	399.139967	449.531094	442.728202				
A>B x-talk	0.1276	0.1699	0.1903	0.1951				
Data file	EAW0302I	EAW0302J	EAW0302K	EAW0302L				

OK
3/8/04

000174

Source Database for OSUM for LB4100-A
Number of sources in table: 105

Application Revision: A

Control ID	Isotope	Type	Half-Life (Days)	DPM	Std dev	Date	Status	Alpha/Beta Archive File
1121	Am-241	Alpha	157856.78	11101.11	555.06	18-Mar-99	PAI	Am241R-02/04
1122	Sr-90/Y-90	Beta	10511.61	2206.59	110.33	18-Mar-99	PAI	Sr90F-02/04
1123	Th-230	Alpha	27539096	1980.14	99.01	2-Jul-02	PAI	Th230-02/04
1124	Sr-89	Beta	50.53	2256.7	112.84	15-Dec-03	PAI	Sr89-02/04
1125	Pb-210	Beta	8145.075	5938.01	296.90	18-Jun-03	PAI	Pb210-02/04
1126	Am-241	Alpha	157856.78	9624	481.20	1-Sep-93	PAI	AmWipe-03/04
1127	Sr-90/Y-90	Beta	10511.61	37044	1852.20	10-Dec-01	PAI	Sr90Wipe-03/04

000175

2/23/04 Pb-210 Calibration - Pb-210 on flat planchets (w/ foil)
Benchsheet: 14009PB-XLS Source ID: 1125

Sources:		Det			Filenames:
0414009-S1		A1	B1	C1	EPB0223A
-S2		A2	B2	C2	EPB0223B
-S3		A3	B3	C3	EPB0223C
-S5		A4	B4	C4	~~EPB0223D~~

2/23/04 w/ foil

3/2/04 Am-241 wipe Calibration - Am241 on filter
Source: T3 Source ID: 1126 log file: Amwipe-03/04

Filenames: EAW0302A, EAW0302B, EAW0302C, EAW0302D
EAW0302E, EAW0302F, EAW0302G, EAW0302H
EAW0302I, EAW0302J, EAW0302K, EAW0302L

α → β crosstalk is calculated for each detector using the following equation:
counts in β channels / counts in α channels

3/2/04 Sr90 wipe Calibration - Sr90 on filter
Source: 602 Source ID: 1127 log file: Sr-wipe-03/04

Filenames: ESW0302A, ESW0302B, ESW0302C, ESW0302D
ESW0302E, ESW0302F, ESW0302G, ESW0302H
ESW0302I, ESW0302J, ESW0302K, ESW0302L

β → α crosstalk is calculated for each detector using the following equation:
counts in α channels / counts in β channels

Continued on Page

Read and Understood By

Claire Service — Signed — 3/2/04 — Date
[illegible] — Signed — 3-3-04 — Date

269550 a
(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100A**

SOP 724 Rev 8

Date: 3/2/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 650	A 0.1
2 800	B ↓
	C
	D NP

Bkg.	Cal. File ID
Dr A	BKA0228W
Dr B	↓
Dr C	
Dr D	NP

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	LCB		P		PB	g	P	P	✓	9	LCB		P		LCB		P		✓
2	↓		↓		↓		P		✓	10	↓		↓		↓		↓		✓
3							↓		✓	11									✓
4									✓	12									✓
5									✓	13	NP				NP				OL
6									✓	14	↓				↓				↓
7									✓	15									
8	↓		↓		↓		↓		✓	16	↓				↓				↓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-12	DR checks	N/A	N/A	EFA0302	30	0700	LCB	g	3/2/04	NA
1-12	Bkg checks	N/A	N/A	BKA0302	60	0710	g	g	3/2/04	
3/2/04 ~~1-12~~	BKG Recount	NA	NA	BXA0302A	60	0836	g	g	3/2/04	
9	0215044-S1	150442 10 XLS	Pb210 ICV	PBA0302	30	0933	g	g	3/2/04	
10	-S2									
11	-S3									
12	-S5									
5	0215044-S1	150442 10 XLS		PBA0302A	30	1056	g	g	3/2/04	
6	-S2									
7	-S3									
8	-S5									
1	0215044-S1			PBA0302B	30	1205	g	g	3/2/04	
2	-S2									
3	-S3									
4	-S5									
9	0413050-S10	13050 Pb	Pb210	PBA0302C	30	1373	g	g	3/2/04	
									g 3/2/04	

Form 780r6.frm (4/6/2001)

Reviewed by g Date 3/3/04

Comments:

000L7

269550

pg _____ b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 3/2/04

Instrument: **LB4100A**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1	73	NA	Am241 Wipe Cal.	EAW0302A	30	1320	g	g	3/2/04	NA
2	↓	↓	↓	EAW0302B	↓	1326	↓	↓	↓	↓
3				EAW0302C		1336				
4				EAW0302D		1341				
5				EAW0302E		1346				
6				EAW0302F		1351				
7				EAW0302G		1413				
8				EAW0302H		1421				
9				EAW0302I		1429				
10				EAW0302J		1434				
11				EAW0302K		1439				
12	↓	↓	↓	EAW0302L	↓	1443	↓	↓	↓	
1	602	NA	S190 Wipe Cal	ESW0302A	30	1431	g	g	3/2/04	
2	↓	↓	↓	ESW0302B	↓	1435	↓	↓	↓	
3				ESW0302C		1436				
4				ESW0302D		1438				
5				ESW0302E		1439				
6				ESW0302F		1440				
7				ESW0302G		1442				
8				ESW0302H		1443				
9				ESW0302I		1449				
10				ESW0302J		1503				
11				ESW0302K		1505				
12	↓	↓	↓	ESW0302L	↓	1506	↓	↓	↓	
1	0413050-56	NA	Pb1cv	PBA0302D	30	1446	g	g	3/2/04	
2	↓	↓	↓	PBA0302E	↓	1579	↓	↓	↓	
3	↓	↓	↓	PBA0302F	↓	1557	↓	↓	↓	↓

Form 780r6.frm (4/6/2001)

Reviewed g 3/2/04 Date 3/2/04

Comments:

000178

ANALYTICS

Analytics, Inc.
1380 Seaboard Industrial Boulevard
Atlanta, Georgia 30318
404 352-8677

#73

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

47007-307

Am-241 47 mm Membrane Filter in Stainless Steel Planchet

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

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.

Source prepared by: B. D. MacDonald
B. D. MacDonald, Physicist

ISOTOPE:	Am-241
ACTIVITY (dps):	160.4
HALF-LIFE:	432.2 years
CALIBRATION DATE:	September 1, 1993 12:00 EST
TOTAL ERROR:	4.0%
SYSTEMATIC ERROR:	2.6%
RANDOM ERROR:	1.4%

43 mm active area. Low smooth bottom planchet. Source covering 0.85 mg/cm^2 mylar.

No expiration date has been given for this source due to the fragile nature of the mylar covering. This source should be carefully tested for leakage at least every six months. If leakage is detected this source should be disposed of by approved radioactive waste disposal procedures.

P O NUMBER 35829, Item 1

Q A APPROVED 9-30-93

Am-241 Standard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:	160.4	dps	4335.1	pCi/s

	Det	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery	Ave Rec w/in 5% (PAI)	Ave w/in 2 Std Dev (ICPT)	2 Std Dev w/in 10% Ave (ICPT)
Count 1	2	4290			99.0%	100.7%		
Count 2	8	4430			102.2%	Pass	Pass	Pass
Count 3	3	4370	4363.33	114.70	100.8%			

*The standard deviation is calculated using "n" degrees of freedom.

r:\inst\gamma\VerOtherTests.xls(Am-241 b)

000180

031983D02.SPC Analyzed by

****

SEEKER G A M M A A N A L Y S I S R E S U L T S PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #1

Sampling Start:	09/01/1993 08:00:00	Counting Start:	12/23/2003 13:00:46
Sampling Stop:	09/01/1993 08:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1811 Sec
Collection Efficiency	1.0000	Spc. File	.031983D02.SPC

Detector #: 2 (Detector 2)

Energy(keV) = -0.74 + 0.500*Ch + 0.00E+00*Ch^2 + 0.00E+00*Ch^3 12/23/2003

FWHM(keV) = 0.57 + 0.018*En + 4.33E-04*En^2 + 0.00E+00*En^3 01/03/2003

Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.54	120.45	1472	80	18	64	0.74 a	
2	92.46	186.22	15	11	6	10	0.39 a	
3	510.84	1022.25	21	18	13	24	2.06 a	Wide Pk

031983D02.SPC Analyzed by

****

SEEKER B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET021218.BKG (0324008-22 Weekly Bkg.)

Bkg.File Detector #: 2

==========

BACKGROUND SUBTRACT RESULTS

==========

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	92.46	15	11	6	5	12	9	NET<CL
3	510.84	21	18	13	-22	20	18	NET<CL

031983D02.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif

Sampling Start:	09/01/1993 08:00:00	Counting Start:	12/23/2003 13:00:46
Sampling Stop:	09/01/1993 08:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1811 Sec
Collection Efficiency	1.0000	Spectrum File	.031983D02.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 2 (Detector 2)

Efficiency File: (D02)(Sh07).EFF (Geo 7 Eff Cal)

Eff.=1/[3.98E-04*En^-4.25E+00 + 6.03E+01*En^8.84E-01] 10/23/2003

Library File: . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)	MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.29E+03 +- 2.32E+02	1.12E+02	5.20E+01	3.79E+06
Cd-109	88.02		MDA	4.65E+04	2.03E+04	1.11E+04
Co-57	122.07		MDA	6.62E+04	2.86E+04	6.50E+03
Ce-139	165.85		MDA	7.73E+08	3.30E+08	3.30E+03
Hg-203	279.18		MDA	1.69E+25	7.36E+24	1.12E+03
Sn-113	391.68		MDA	7.86E+10	3.35E+10	2.76E+03
Cs-137	661.62		MDA	1.12E+01	4.35E+00	2.64E+05
Y-88	898.02		MDA	6.39E+11	2.68E+11	2.56E+03
Co-60	1173.21		MDA	5.30E+01	2.10E+01	4.62E+04

MEASURED TOTAL: 4.29E+03 +- 2.32E+02 pCi/sample

UNKNOWN,SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	92.46	186.22	5	12	9	10	0.39	Deleted
3	510.84	1022.25	-22	20	18	24	2.06	Deleted

031863D08.SPC Analyzed by 77

****

SEEKER G A M M A A N A L Y S I S R E S U L T S PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 14:28:01
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1814 Sec
Collection Efficiency	1.0000	Spc. File	.031863D08.SPC

Detector #: 8 (Detector 8)

Energy(keV) = -0.30 + 0.500*Ch +-2.15E-08*Ch^2 + 5.68E-11*Ch^3 12/23/2003
FWHM(keV) = 0.72 + 0.014*En + 5.05E-04*En^2 + 0.00E+00*En^3 01/02/2003
Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.51	119.62	6649	167	29	174	0.78	a HiResid
2	511.36	1023.16	43	22	14	30	2.04	a

031863D08.SPC Analyzed by

****

SEEKER B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET081218.BKG (0324008-28 Weekly Bkg.)

Bkg.File Detector #: 8

==========

BACKGROUND SUBTRACT RESULTS

==========

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	511.36	43	22	14	-6	23	19	NET<CL

031863D08.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 14:28:01
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1814 Sec
Collection Efficiency	1.0000	Spectrum File	.031863D08.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 8 (Detector 8)

Efficiency File: (D08)(Sh07).EFF (Geo 7 Eff Cal)

Eff.=1/[5.93E-02*En^-1.85E+00 + 7.21E+01*En^9.67E-01] 10/29/2003

Library File: . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)		MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.43E+03	+- 1.11E+02	4.09E+01	1.96E+01	3.79E+06
Cd-109	88.02		MDA	. . . .	3.43E+04	1.53E+04	1.11E+04
Co-57	122.07		MDA	. . . .	9.29E+04	4.20E+04	6.50E+03
Ce-139	165.85		MDA	. . . .	1.21E+09	5.41E+08	3.30E+03
Hg-203	279.18		MDA	. . . .	1.88E+25	8.21E+24	1.12E+03
Sn-113	391.68		MDA	. . . .	7.96E+10	3.33E+10	2.76E+03
Cs-137	661.62		MDA	. . . .	2.03E+01	8.71E+00	2.64E+05
Y-88	898.02		MDA	. . . .	7.56E+11	3.18E+11	2.56E+03
Co-60	1173.21		MDA	. . . .	4.79E+01	1.73E+01	4.62E+04

MEASURED TOTAL: 4.43E+03 +- 1.11E+02 pCi/sample

UNKNOWN,SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	511.36	1023.16	-6	23	19	30	2.04	Deleted

031552D03.SPC Analyzed by 77

****

SEEKER G A M M A A N A L Y S I S R E S U L T S PS Version 1:8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 16:52:24
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1832 Sec
Collection Efficiency	1.0000	Spc. File	.031552D03.SPC

Detector #: 3 (Detector 3)

Energy(keV) = -0.81 + 0.501*Ch + 0.00E+00*Ch^2 + 0.00E+00*Ch^3 12/23/2003

FWHM(keV) = 0.77 + 0.011*En + 7.64E-04*En^2 + 0.00E+00*En^3 06/26/2003

Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.59	120.60	2039	95	24	121	0.84	a
2	92.67	186.64	22	12	7	12	0.54	a
3	510.77	1021.33	43	20	12	23	2.04	a

031552D03.SPC Analyzed by

****

SEEKER B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET031218.BKG (0324008-23 Weekly Bkg.)

Bkg.File Detector #: 3

==========

BACKGROUND SUBTRACT RESULTS

==========

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	92.67	22	12	7	4	14	11	NET<CL
3	510.77	43	20	12	-3	21	18	NET<CL

031552D03.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 16:52:24
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time.	1832 Sec
Collection Efficiency	1.0000	Spectrum File	.031552D03.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 3 (Detector 3)

Efficiency File: (D03)(Sh07).EFF (Geo 7 Eff Cal)

Eff.=1/[8.04E-04*En^-3.88E+00 + 6.88E+01*En^9.22E-01] 11/11/2003

Library File: . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)		MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.37E+03	+- 2.04E+02	1.11E+02	5.25E+01	3.79E+06
Cd-109	88.02		MDA	. . . .	5.68E+04	2.57E+04	1.11E+04
Co-57	122.07		MDA	. . . .	8.15E+04	3.62E+04	6.50E+03
Ce-139	165.85		MDA	. . . .	9.23E+08	4.01E+08	3.30E+03
Hg-203	279.18		MDA	. . . .	1.72E+25	7.46E+24	1.12E+03
Sn-113	391.68		MDA	. . . .	8.53E+10	3.63E+10	2.76E+03
Cs-137	661.62		MDA	. . . .	1.56E+01	6.39E+00	2.64E+05
Y-88	898.02		MDA	. . . .	9.16E+11	4.00E+11	2.56E+03
Co-60	1173.21		MDA	. . . .	5.00E+01	1.87E+01	4.62E+04

MEASURED TOTAL: 4.37E+03 +- 2.04E+02 pCi/sample

UNKNOWN,SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	92.67	186.64	4	14	11	12	0.54	Deleted
3	510.77	1021.33	-3	21	18	23	2.04	Deleted

Paragon Analytics, Inc.

Gamma Spectrometer Run Log

Date: 12-23-03 Reviewed By/Date: 77 12-23-03

Sample ID	Ver[1]	Det. No.	Geo[2]	Count Dur. (min.)[3]	Start Time	Analyst	File ID/Comments	Exported?
03 10 127-8	77	3	26	30	11:50	77	031548D03.SPC	77
03 24 019-10	77	10	9*	45	12:16	77	031954D10.SPC	77
GS02335LCS1	77	3	17	30	12:43	77	031549D03.SPC	77
" LCS2	"	6	26	"	"	"	031683D06.SPC	"
Empty 565	"	87	13	30	12:59	77	031824D07.SPC	" 77 12-23-03
Std # 73	"	2	**7	30	13:00	77	031983D02.SPC	"
Std # 601	"	8	"	"	"	"	031862D08.SPC	"
03 24 019-S10	"	10	9*	30	13:06	77	031955D10.SPC	"
Std # 73	77	8	**7	30	14:28	77	031863D08.SPC	77
Std # 601	"	2	"	"	"	"	031984D02.SPC	"
03 12 042-1		7	13	1000	14:53	77		
" -1D		10	"	"	"	"		
GS031212-2MB	77	6	"	"	"	"		77
03 10 126-2	—	3	13	—	14:33	77		77 12-23-03
Std # 601	77	3	**7	30	16:14	77	031550D03.SPC	77
03 24 019-3F	"	2	NA	30	16:15	77	031985D02.SPC	"
" -4	77	"	"	"	16:52	77	031986D02.SPC	77
Std # 73	"	3	**7	30	16:52	77	031551D03.SPC	"
								77 12-23-03

[1] Analyst will verify the position, detector, and geometry when the sample is removed from the detector.

[2] Calibration geometry. * New Geo; on blank 1/2 of filter

[3] Count Duration. ** Counted on pucks 77 12-23-03

267683 B

Form 754r9.frm 9/19/2000

LB4100-A Raw Counts for Sr-90 Wipe Efficiency Calibration (Control ID 1127)								
Detector ID	A1 (01)	A2 (02)	A3 (03)	A4 (04)	B1 (05)	B2 (06)	B3 (07)	B4 (08)
total time	0.7	0.71	0.71	0.7	0.67	0.67	0.69	0.67
Beta counts	10014	10038	10079	10110	10115	10068	10103	10077
Beta BKG CPM	2.297	2.009	2.127	2.008	1.901	1.692	2.002	1.874
Beta CPM	14303.4173	14136.0192	14193.6476	14440.849	15095.1139	15025.174	14640.027	15038.4245
Beta Efficiency	0.40740078	0.4026329	0.40427434	0.4113153	0.42995065	0.4279586	0.4169886	0.42833605
archived STDEV	0.02116887	0.02092017	0.02100389	0.0213685	0.02233639	0.0222348	0.0216635	0.02225405
Alpha CPM	9.844	8.35670423	8.34770423	15.623286	15.604673	25.294134	8.5846522	16.3479104
B>A x-talk	0.0007	0.0006	0.0006	0.0011	0.0010	0.0017	0.0006	0.0011
Data file	ESW0302A	ESW0302B	ESW0302C	ESW0302D	ESW0302E	ESW0302F	ESW0302G	ESW0302H
Detector ID	C1 (09)	C2 (10)	C3 (11)	C4 (12)				
total time	0.7	0.69	0.67	0.69				
Beta counts	10122	10011	10115	10178				
Beta BKG CPM	1.826	1.799	1.884	1.943				
Beta CPM	14458.174	14506.8967	15095.1309	14748.782				
Beta Efficiency	0.41180901	0.41319705	0.42995164	0.4200867				
archived STDEV	0.02139365	0.02147011	0.02233644	0.0218215				
Alpha CPM	7.05285714	23.0804058	11.8542985	7.1653768				
B>A x-talk	0.0005	0.0016	0.0008	0.0005				
Data file	ESW0302I	ESW0302J	ESW0302K	ESW0302L				

53/51.*

000191

Source Database for OSUM for LB4100-A
Number of sources in table: 105

Application Revision: A

Control ID	Isotope	Type	Half-Life (Days)	DPM	Std dev	Date	Status	Alpha/Beta Archive File
1122	Sr-90/Y-90	Beta	10511.61	2206.59	110.33	18-Mar-99	PAI	Sr90F-02/04
1123	Th-230	Alpha	27539096	1980.14	99.01	2-Jul-02	PAI	Th230-02/04
1124	Sr-89	Beta	50.53	2256.7	112.84	15-Dec-03	PAI	Sr89-02/04
1125	Pb-210	Beta	8145.075	5938.01	296.90	18-Jun-03	PAI	Pb210-02/04
1126	Am-241	Alpha	157856.78	9624	481.20	1-Sep-93	PAI	AmWipe-03/04
1127	Sr-90/Y-90	Beta	10511.61	37044	1852.20	10-Dec-01	PAI	Sr90Wipe-03/04

000192

2/23/04 Pb-210 Calibration - Pb-210 on flat planchets (w/ foil)
Benchsheet: 14009PB.XLS Source ID: 1125

Sources:		Det			Filenames:
0414009-S1		A1	B1	C1	EPB0223A
-S2		A2	B2	C2	EPB0223B
-S3		A3	B3	C3	EPB1223C
-S5		A4	B4	C4	~~EPB0223D~~

2/23/04 Pb-210 wipe

3/2/04 Am-241 wipe Calibration - Am-241 on filter
Source: 73 Source ID: 1126 log file: Amwipe-03/04

Filenames: EAW0302A, EAW0302B, EAW0302C, EAW0302D
EAW0302E, EAW0302F, EAW0302G, EAW0302H
EAW0302I, EAW0302J, EAW0302K, EAW0302L

α → β crosstalk is calculated for each detector using the following equation:
counts in β channels / counts in α channels

3/2/04 Sr90 wipe Calibration - Sr90 on filter
Source: 602 Source ID: 1127 log file: Srwipe-03/04

Filenames: ESW0302A, ESW0302B, ESW0302C, ESW0302D
ESW0302E, ESW0302F, ESW0302G, ESW0302H
ESW0302I, ESW0302J, ESW0302K, ESW0302L

β → α crosstalk is calculated for each detector using the following equation:
counts in α channels / counts in β channels

Continued on Page

Read and Understood By

Claire Service 3/2/04 [signature] 3-3-04
Signed Date Signed Date

269550 a
(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100A**

SOP 72 Rev 8

Date: 3/2/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 6.5V	A 0.1
2 8.0V	B ↓
	C
	D NP

Bkg.	Cal. File ID
Dr A	BKA0228W
Dr B	↓
Dr C	
Dr D	NP

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	LCB		P		PCB	g	P	P	✓	9	LCB		P		LCB		P		✓
2	↓		↓		↓		P		✓	10	↓		↓		↓		↓		✓
3									✓	11									✓
4									✓	12									✓
5									✓	13	NP				NP				OL
6									✓	14									
7									✓	15									
8	↓		↓		↓		✓		✓	16	↓				↓				✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-12	DR checks	N/A	N/A	EFA0302	30	0700	LCB	g	3/2/04	NA
1-12	Bkg Checks	N/A	N/A	BKA0302	60	0710	g	g	3/2/04	
3/2/04 ~~1-12~~ 1	BKG Recount	NA	NA	BKA0302A	60	0836	g	g	3/2/04	
9	0215044-S1	15044210.XLS	Pb210 ICV	PBA0302	30	0933	g	g	3/2/04	
10	-S2	↓	↓	↓	↓	↓	↓	↓	↓	↓
11	-S3	↓	↓	↓	↓	↓	↓	↓	↓	↓
12	-S5	↓	↓	↓	↓	↓	↓	↓	↓	↓
5	0215044-S1	15044210.XLS		PBA0302A	30	1056	g	g	3/2/04	
6	-S2	↓	↓		↓	↓	↓	↓	↓	
7	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
8	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
1	0215044-S1			PBA0302B	30	1205	g	g	3/2/04	
2	-S2	↓	↓		↓	↓	↓	↓	↓	
3	-S3	↓	↓		↓	↓	↓	↓	↓	
4	-S5	↓	↓		↓	↓	↓	↓	↓	
9	0413050-S6	13050 Pb	Pb210	PBA0302C	30	1323	g	g	3/2/04	✓
								✓	g 3/2/04	

Form 780r6.frm (4/6/2001)

Reviewed by g Date 3/3/04

Comments:

000194

269550

pg _____ b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 3/2/04

Instrument: **LB4100A**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1	73	NA	Am241 Wipe Cal.	EAW0302A	30	1320	g	g	3/2/04	NA
2				EAW0302B		1326				
3				EAW0302C		1336				
4				EAW0302D		1341				
5				EAW0302E		1346				
6				EAW0302F		1351				
7				EAW0302G		1413				
8				EAW0302H		1421				
9				EAW0302I		1429				
10				EAW0302J		1434				
11				EAW0302K		1439				
12				EAW0302L		1443				
1	602	NA	Sr90 Wipe Cal	ESW0302A	30	1431	g	g	3/2/04	
2				ESW0302B		1435				
3				ESW0302C		1436				
4				ESW0302D		1438				
5				ESW0302E		1439				
6				ESW0302F		1440				
7				ESW0302G		1442				
8				ESW0302H		1443				
9				ESW0302I		1449				
10				ESW0302J		1503				
11				ESW0302K		1505				
12				ESW0302L		1506				
1	0413050-56	NA	Pb1CV	PBA0302D	30	1446	g	g	3/2/04	
2				PBA0302E		1519				
3				PBA0302F		1557				

Form 780r6.frm (4/6/2001)

Reviewed 3/2/04 g Date 3/2/04

Comments:

000195

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

FAI ID 0602
rec'd 12-11-01
12-14-01

62753A-307

Sr-90 47 mm Diameter Membrane Filter in Stainless Steel Planchet

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by the Department Des Applications Et De La Métrologie Des Rayonnements Ionisants (DAMRI),' Paris, France, as Number 25931.

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:	Sr-90
ACTIVITY (dps):	308.7
HALF-LIFE:	28.79 years
CALIBRATION DATE:	December 10, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.0%

*99% Confidence Level

Impurities: γ-impurities <0.1%

43 mm active area. Low smooth bottom. Source covering 0.85 mg/cm^2 mylar.

NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta emission rate for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 3.19 hours.

P O NUMBER 001703, Item 3

PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 12-10-01

New Standard Verification

WO#

Date 12/21/03

Previously Verified Standard

STD 602		
Nuclide	Sr-90	
Half Life	28.78	
Init. Activity	37044	dpm
Ref. Date	12/10/01	
Vol.	1.0	
Current Spiked Act.	35277.50	dpm

Standard to be Verified

STD 729		
Nuclide	Sr-90	
Half Life	28.78	y
Init. Activity	41400	dpm
Ref. Date	10/21/03	
Vol.	1.000	
Current Spiked Act.	41233.81	dpm

Standards Sample ID	Pos.	GCPM	BCPM	NCPM	% Yield	DPM Added	Eff.	Ave. Eff.	Calibrated Efficiency	Calc DPM	Avg. DPM	2 StdDev	Obs w/in 5% of Cert. (PAI Req.)	Cert. Value w/in 2sig (ICPT Req.)	2sig<10% of mean (ICPT Req.)
602	D1	14798.60	1.54	14797.06	100%	35277.50	0.4194		0.4195						
602	D2	14789.40	2.07	14787.33	100%	35277.50	0.4192		0.4195						
602	D3	14812.00	1.91	14810.09	100%	35277.50	0.4198	0.4195	0.4195						
729	D1	17396.20	1.54	17394.66	100%	41233.81	0.4219		0.4195	41467.32					
729	D2	17555.60	2.07	17553.53	100%	41233.81	0.4257		0.4195	41846.06					
729	D3	17515.20	1.91	17513.29	100%	41233.81	0.4247	0.4241	0.4195	41750.14	41687.84	321.55	PASS	HIGH	PASS
													1.01		

r:instrgtpstwipe

OK RG 12/24/03.
Required NCR for ICPT work

000197

PAI - Gas Flow Proportional Sample Analysis LB 7100 B

Unit Type:	LB4100-B	Data file name:	SRB1221
Counting Unit ID:	Aqua	Batch ID:	VER
High Voltage Mode:	Simultaneous	Count Preset (m):	5
Application Revision:	2	Batch Ended:	12/21/03 11:56
Application Version:	Standard		
Rev. 07/29/03 JE			

Background logfile:	BKGABW		
Date of Bkg. Cal:	12/21/03		
Alpha efficiency logfile:	Am241-11/03	Alpha prog. logfile:	n/a
Alpha attenuation calibration:	ABA1103.XLS	Alpha prog. attenuation:	n/a
Beta efficiency logfile:	Sr90R-11/03	Beta prog. logfile:	n/a
Beta attenuation calibration:	ABA1103.XLS	Beta prog. attenuation:	n/a

y = b*m*(a*(mass-x0))		y = b*m*(a*(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b*-mass		y = m*mass + b	
a ->b xtalk m=	0.2740	b ->a xtalk m=	-2.00E-06
a ->b xtalk b=	1.0010	b ->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	602	12/21/03 11:56	5.00	0.0	27.400	0.140	10.359	0.2111	1.246	n/a	n/a	14798.600	1.543	7.508	0.4115	1.000	n/a	n/a
D2	729	12/21/03 11:56	5.00	0.0	28.200	0.105	12.289	0.2101	1.246	n/a	n/a	17555.600	2.070	7.727	0.4102	1.000	n/a	n/a

JE
12/23/03

000198

PAI - Gas Flow Proportional Sampl...

Unit Type: LB4100-B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Data file name: SRB1221A
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:02

Backgro... e: BKGABW
Date o... el: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = a*m^b (a passbaseline)		y = a*m^b (a passbaseline)	
Alpha b=	1.24350	Beta b=	1.0000
m=	0.99409	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b*mass		y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.90E-05
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
D2	602	12/21/03 12:02	5.00	0.0	25.600	0.105	10.353	0.2101	1.246	n/a	n/a	14789.400	2.070	7.014	0.4102	1.000	n/a	n/a
D3	729	12/21/03 12:02	5.00	0.0	31.400	0.138	12.261	0.2103	1.246	n/a	n/a	17515.200	1.906	6.604	0.4195	1.000	n/a	n/a

SE 12/23/03

000199

PAI - Gas Flow Proportional Sample Analyzer

Unit Type: LB4100-B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Date file name: SRB1221B
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:09

Background logfile: BKGABW
Date of Bkg. Cal: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = b*m^(x*(mass-x0))		y = b*m^(x*(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
x=	1.0000	x=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b*-mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.00E-05
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	729	12/21/03 12:09	5.00	0.0	30.400	0.140	12.177	0.2111	1.246	n/a	n/a	17396.200	1.543	8.330	0.4115	1.000	n/a	n/a
D3	602	12/21/03 12:09	5.00	0.0	25.200	0.138	10.368	0.2103	1.246	n/a	n/a	14812.000	1.906	6.905	0.4195	1.000	n/a	n/a

AG 12/23/03

000200

pg 265874 a
(cont. from pg NA b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 1 Rev 8

Date: 12/21/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 700	A 0.1
2 800	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB1221
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	JE		P		NP		*		✓	9	JE		P		NP		*		✓
2									✓	10		JE	R	P					✓
3									✓	11			P						✓
4									✓	12									✓
5									✓	13									✓
6									✓	14									✓
7									✓	15									✓
8									✓	16									✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
1-16	DR Check	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	EFB1221A	30	1125	JE	JE	12/21/03	
1	B312072-1	AB 631215-3	2/P	ABB1221	1000	1132	JE	JE	12/22/03	
2	-1D									
3	.2									
4	-2MS									
5	A003215-3MB									
6	-3LCS									
13 13	602	–	Sr-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14 14	729									
159	73	–	Am-241 wipe Ver	AMB1221	5	1151	JE			
10	601	–								
17 10	602	–	Sr-90 wipe Ver	SRB1221A	5	1157	JE	JE	12/21/03	
15 11	729	–								
13 10	73	–	Am-241 wipe Ver	AMB1221A	3	1158	JE			
14 11	601	–								
15 15	602	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	

Form 780r6.frm (4/6/2001)

Reviewed by JE Date 12/22/03

Comments: * Since weekly BKG just finished, daily BKG were not done. JE 12/21/03.

000201

Pg _____

Low Background Gas Flow Proportional Counter Run Log

Date: 12/21/03

Instrument: LB4100B

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
13	729	—	Sr-90 Wipe Vers	SRB1221B	5	1204	JE	JE	12/21/03	NA
11	~~[illegible]~~ 73	—	Am241 Wipe Vers	AMB1221B	5	1205	JE			
9	601	—								

12/22/03

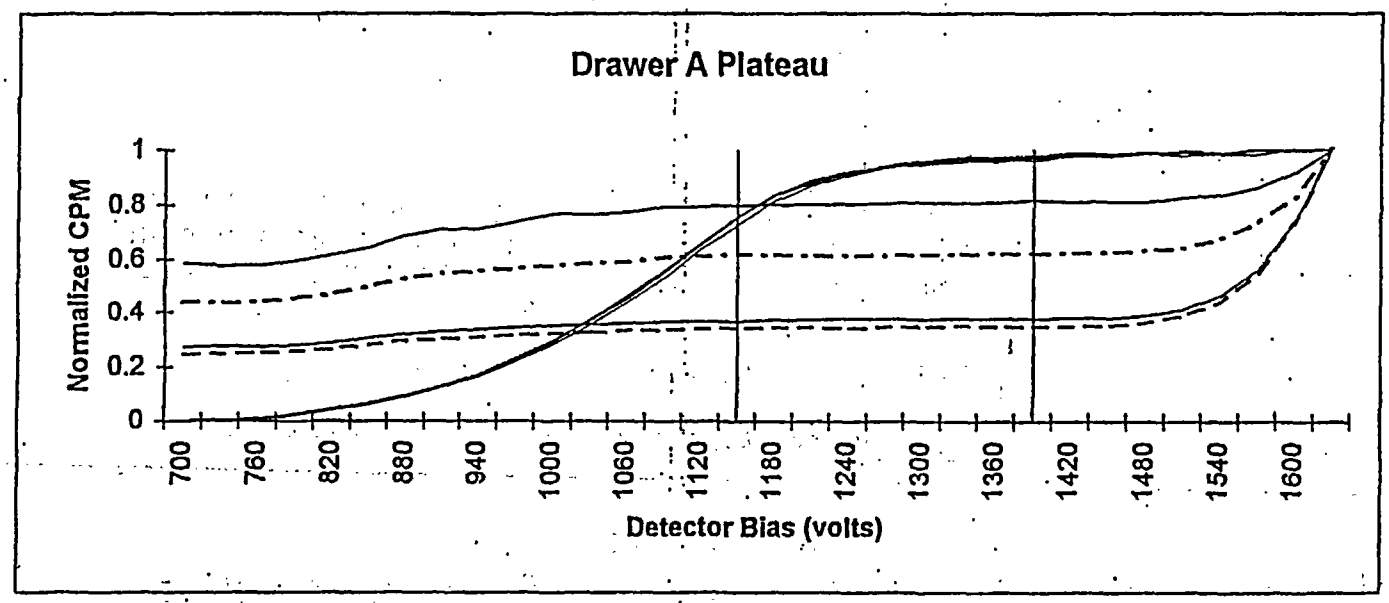
Form 780r6.frm (4/6/2001)

Reviewed JE Date 12/22/03

Comments:

Unit Type: LB4100/W
Date Performed: 11/11/03 09:19
FileName: PTB1111A
Batch ID: DRAWER A

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1147.5

	A1	A2	A3	A4
Beta slope at beta voltage	1.73%	1.36%	2.04%	1.59%
Alpha slope at beta voltage	0.75%	0.45%	0.63%	0.66%
Alpha slope at alpha voltage	1.76%	1.86%	1.20%	0.79%

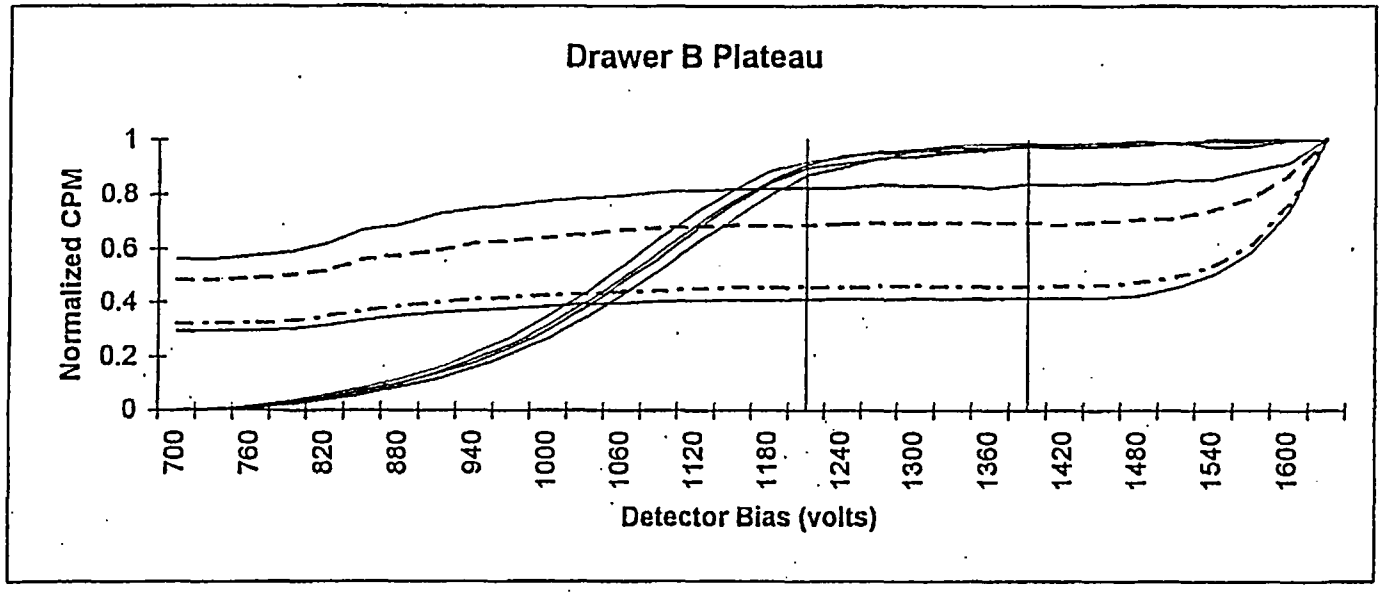
11/13/03

Printed 11/11/03 3:38 PM

000203

Unit Type: LB4100/W
Date Performed: 11/11/03 09:19
FileName: PTB1111B
Batch ID: DRAWER B

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1200

	B1	B2	B3	B4
Beta slope at beta voltage	0.25%	1.73%	1.96%	1.01%
Alpha slope at beta voltage	1.26%	0.14%	0.86%	0.88%
Alpha slope at alpha voltage	1.42%	0.92%	0.63%	0.59%

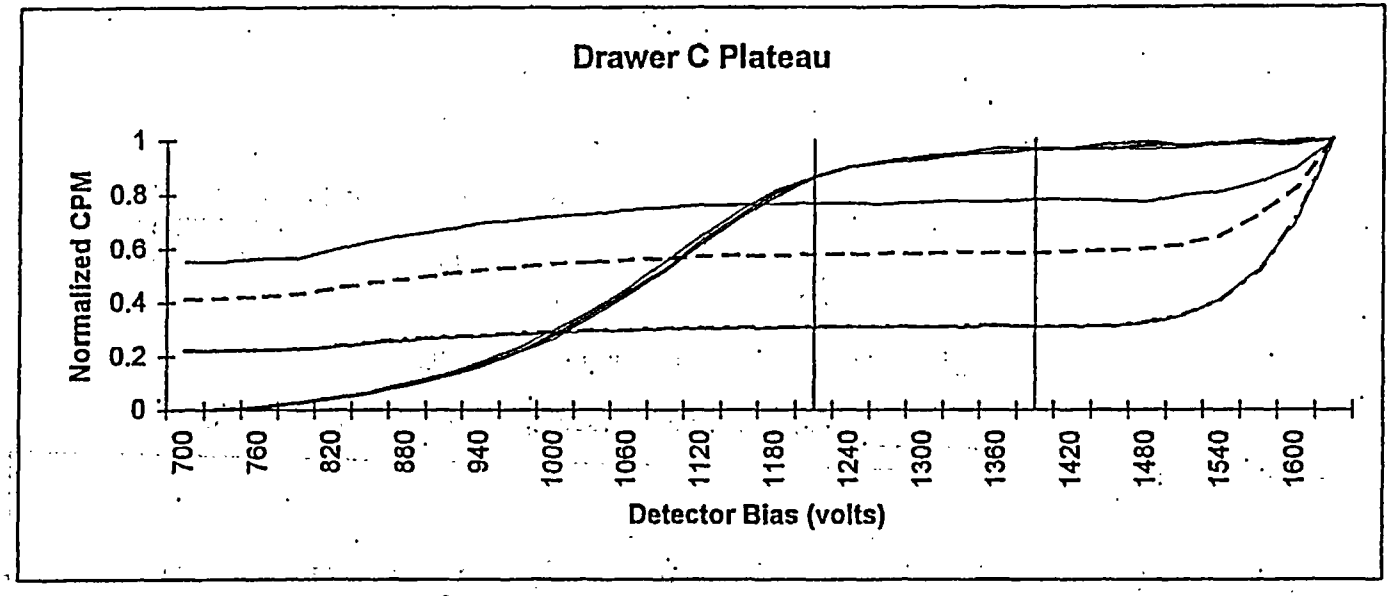
JE 11/13/03

Printed 11/11/03 3:39 PM

000204

Unit Type: LB4100/W
Date Performed: 11/11/03 15:41
FileName: PTB1111C
Batch ID: DRAWER C

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

Optimum alpha only operating voltage: 1200

	C1	C2	C3	C4
Beta slope at beta voltage	1.97%	2.08%	1.59%	2.05%
Alpha slope at beta voltage	0.49%	0.66%	0.69%	-0.24%
Alpha slope at alpha voltage	0.44%	1.15%	1.08%	1.14%

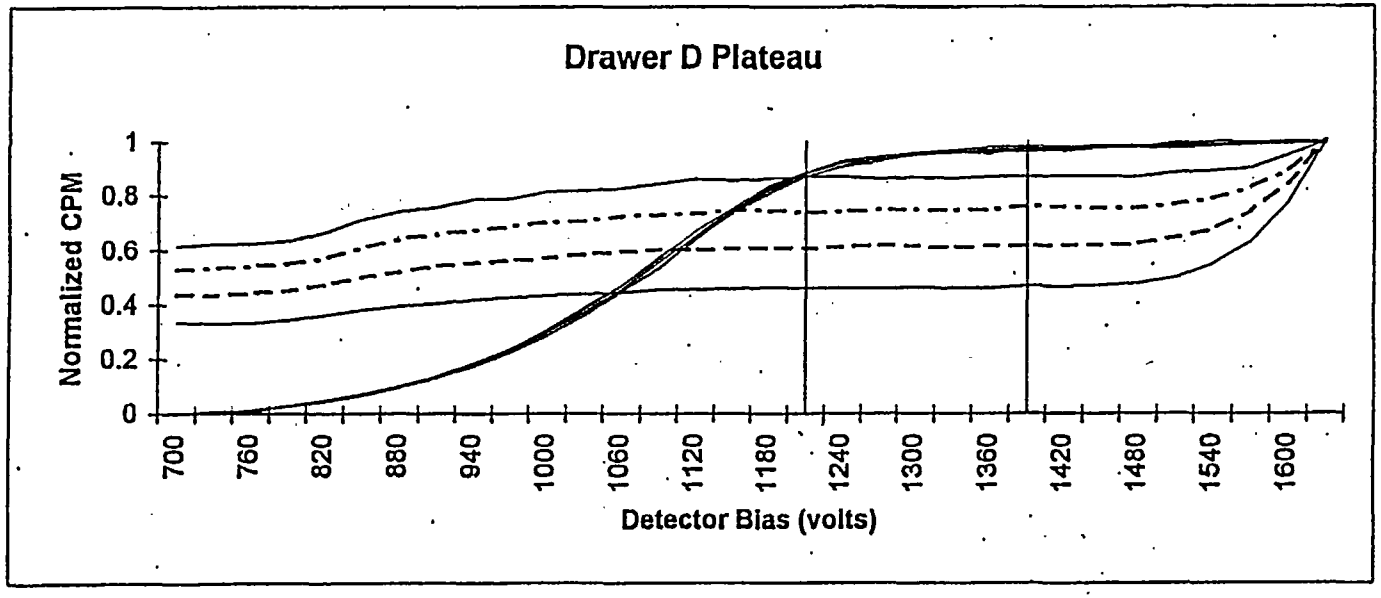
11/13/03

Printed 11/12/03 11:16 AM

000205

Unit Type: LB4100/W
Date Performed: 11/11/03 15:42
FileName: PTB1111D
Batch ID: DRAWER D

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

Optimum alpha only operating voltage: 1200

	D1	D2	D3	D4
Beta slope at beta voltage	1.81%	2.16%	1.11%	1.43%
Alpha slope at beta voltage	1.57%	0.87%	0.73%	0.96%
Alpha slope at alpha voltage	0.20%	1.53%	0.77%	0.04%

Printed 11/12/03 11:17 AM

JE 11/13/03

000206

LB4100-B Raw counts for Am-241 Wipe Efficiency Calibrations (Control ID #1123)

Detector ID	A1	A2	A3	A4	B1	B2	B3	B4
total time	4.27	4.3	4.22	4.27	4.02	4.1	4.19	4.11
Alpha counts	10006	10014	10018	10013	10018	10018	10017	10004
Alpha CPM	2343.22653	2328.69021	2373.83165	2344.84187	2491.8978	2443.29863	2390.49012	2433.92526
Alpha BKG CPM	0.099	0.147	0.102	0.123	0.142	0.116	0.202	0.138
Alpha Efficiency	0.24753988	0.24600426	0.25077303	0.24771054	0.26324562	0.25811158	0.25253286	0.25712138
archived STDEV	0.01286245	0.01278248	0.01303016	0.01287116	0.01367825	0.01341147	0.01312166	0.01336038
Beta CPM	376.084564	400.380465	418.200246	411.18437	508.465005	480.072317	451.732621	483.022533
A>B x-talk	0.1605	0.1719	0.1762	0.1754	0.2040	0.1965	0.1890	0.1985
Data file	EAW1226	EAW1226A	EAW1226B	EAW1226C	EAW1226D	EAW1226E	EAW1226F	EAW1226G

Detector ID	C1	C2	C3	C4	D1	D2	D3	D4
total time	4.12	4.14	4.19	4.28	4.25	4.21	4.1	4.14
total counts	10014	10007	10013	10015	10013	2381.84274	10020	10009
Alpha CPM	2430.48452	2417.02276	2389.57247	2339.86127	2355.86	2381.84274	2443.76444	2417.51185
Alpha BKG CPM	0.098	0.127	0.165	0.092	0.14	0.105	0.138	0.138
Alpha Efficiency	0.2567579	0.2553358	0.25243593	0.24718442	0.24887454	0.25161938	0.25816083	0.25538749
archived STDEV	0.01334123	0.01326752	0.01311671	0.01284376	0.01293165	0.01307389	0.01341399	0.01327015
Beta CPM	438.150825	444.041174	452.285947	423.234355	428.339353	425.958504	403.703756	429.892512
A>B x-talk	0.1803	0.1837	0.1893	0.1809	0.1818	0.1788	0.1652	0.1778
Data file	EAW1226H	EAW1226I	EAW1226J	EAW1226K	EAW1226L	EAW1226M	EAW1226N	EAW1226O

1/5/04

Source Database for OSUM for LB4100-B

Number of sources in table: 45

Application Revision: A

Control ID	Isotope	Type	Half-Life (days)	DPM	Std dev	Date	Status	Alpha/Beta Archive File
1121	Sr-90/Y-90	Beta	10446.15	22065.912	1103.30	18-Mar-99	PAI	Sr90R-11/03
1122	Am-241	Alpha	157861.05	11101.11	555.06	18-Mar-99	PAI	Am241-11/03
1123	Am-241	Alpha	157861.05	9624	481.20	1-Sep-93	PAI	AmWipe-11/03
1124	Sr-90/Y-90	Beta	10511.6072	37044	1852.20	10-Dec-01	PAI	SrWipe-11/03

000208

PROJECT LB4100 - B

Notebook No. 1898

Continued From Page

12/11/03 JE Complete computer back-up was performed. Scandisk was done and the computer's C:/ drive was defragged.
Filename ~~12/11~~ 12/11/03 LB4100 B
PG 12/16/03

12/24/03 JE

Am-241 wipe Calibration
Am-241 on filter

Source: 73 Source ID: 1123 log file: Am Wipe 11/03

Filenames: EAM1226, EAM1226A, EAM1226B, EAM1226C, EAM1226D, EAM1226E, EAM1226F, EAM1226G, EAM1226H, EAM1226I, EAM1226J, EAM1226K, EAM1226L, EAM1226M, EAM1226N, EAM1226O.

2→β x-talk is calculated for each detector using the following equation:
counts in Beta channels / counts in Alpha channels

12/26/03 JE

Sr-90 wipe Calibration
Sr-90 on filter

Source: 602 Source ID: 1124 log file: ~~Sr90~~ Sr Wipe-11/03

Filenames: ESR1226, ESR1226A, ESR1226B, ESR1226C, ESR1226D, ESR1226E, ESR1226F, ESR1226G, ESR1226H, ESR1226I, ESR1226J, ESR1226K, ESR1226L, ESR1226M, ESR1226N, ESR1226O

b→2 x-talk is calculated for each detector using the following equation:
counts in ~~Beta~~ Alpha channels / counts in Beta channels

Continued on Page

Read and Understood By

Clare Brown 1/2/04 Signed Date

Julie Fellingson 1/2/04 Signed Date

pg 265878 a
(cont. from pg 1A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

SOP 72 Rev 8

Instrument: LB4100B

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 700	A 0.1
2 2000	B
	C
	D

Bkg.	Cal. File ID
Dr A	BkB1220W
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	JE		P		JE		P		✓	9	JE		P		JE		P		✓
2									✓	10									✓
3									✓	11									✓
4									✓	12									✓
5									✓	13									✓
6									✓	14									✓
7									✓	15									✓
8	✓				✓		✓		✓	16	✓		✓		✓		✓		✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	0312081-1	ABO31222-1	α/β	ABB1226	60	10~~26~~42 JE	JE	JE	12/26/03	
2	-1D					12/26/03				
3	-1AS									
4	-1ASD									
5	-2									
6	-3									
7	AB031222-1AB									
8	-1LCS									
9	0312082-1	SR031222-2	Sr-90	SRB1226	60	10~~26~~40 JE	JE			
10	-2					12/26/03				
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

Form 780r6.frm (4/6/2001)

Reviewed by CJ Date 12/29/03

Comments:

000210

pg 265870 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
16	0312082-9	SR031222-2	Sr-90	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-16			SRB1226A	60	1230	JE	JE	12/26/03	
2	0312128-4									
3	-4D									
4	SR031222-2LB									
5	-2LCS									
6	SR031222-3LCS	SR031222-3	Sr-90	SRB1226B	60	~~1223~~ 1230	JE			
7	0312118-1	ABO31222-2	α/β	ABB1226A	60	1223	JE			
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	ABO31222-2	α/β	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10MS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	ABO31222-2LB									
8	-2LCS									
1	73	NA	Am-241 Wipe Calib.	EAW1226	10	1459	JE	JE	12/26/03	
2				A		1505	JE			

Form 780r6.frm (4/6/2001)

Reviewed _____ Date 12/29/03

Comments:

000211

pg 265879 a
(cont. from pg NA b)
265878
12/26/03

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 72 rev 8

Date: 12/26/03

Instrument Background and Response Checklist *See page 265878a for Daily Check info. 12/26/03

P-10 Supply	P-10 Flow
1 750	A 0.1
2 1.000	B
	C
	D. 9

Bkg.	Cal. File ID
Dr A	BK B1220
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1										~~9~~									
2										10									
3										~~11~~									
4										12									
5										13									
6										14									
7										15									
8										~~16~~									

12/26/03

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
3	23	NA	Am-241 wipe Cell	EA B1226B	10	1511	JE	JE	12/26/03	NA
4				C		1516				
5				D		1522				
6				E		1527				
7				F		1533				
8				G		1540				
9				H		1545				
10				I		1552				
11				J		1556				
12				K		1603				
13				L		1607				
14				M		1616				
15				N	7.24.03	14621				
16				O		1626				
1	602	NA	Sr-90 wipe Cell	EGB1226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

Reviewed by G. Date: 12/29/03

Form 780rG.frm (4/6/2001)

Comments:

000212

ANALYTICS

Analytics, Inc. #73
1550 Seaboard Industrial Boulevard
Atlanta, Georgia 30318
404 352-8677

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

47007-307

Am-241 47 mm Membrane Filter in Stainless Steel Planchet

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

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.

Source prepared by: B. D. MacDonald
B. D. MacDonald, Physicist

ISOTOPE:	Am-241
ACTIVITY (dps):	160.4
HALF-LIFE:	432.2 years
CALIBRATION DATE:	September 1, 1993 12:00 EST
TOTAL ERROR:	4.0%
SYSTEMATIC ERROR:	2.6%
RANDOM ERROR:	1.4%

43 mm active area. Low smooth bottom planchet. Source covering 0.85 mg/cm^2 mylar.

No expiration date has been given for this source due to the fragile nature of the mylar covering. This source should be carefully tested for leakage at least every six months. If leakage is detected this source should be disposed of by approved radioactive waste disposal procedures.

P O NUMBER 35829, Item 1

Q A APPROVED 9-30-93

Am-241 Standard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:	160.4	dps	4335.1	pCi/s

	Det	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery	Ave Rec w/in 5% (PAI)	Ave w/in 2 Std Dev (ICPT)	2 Std Dev w/in 10% Ave (ICPT)
Count 1	2	4290			99.0%	100.7%		
Count 2	8	4430			102.2%	Pass	Pass	Pass
Count 3	3	4370	4363.33	114.70	100.8%			

*The standard deviation is calculated using "n" degrees of freedom.

r:\inst\gamma\VerOtherTests.xls(Am-241 b)

000214

031983D02.SPC Analyzed by 73

****

SEEKER GAMMA ANALYSIS RESULTS PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #1

Sampling Start:	09/01/1993 08:00:00	Counting Start:	12/23/2003 13:00:46
Sampling Stop:	09/01/1993 08:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1811 Sec
Collection Efficiency	1.0000	Spc. File	031983D02.SPC

Detector #: 2 (Detector 2)

Energy(keV) = -0.74 + 0.500*Ch + 0.00E+00*Ch^2 + 0.00E+00*Ch^3 12/23/2003

FWHM(keV) = 0.57 + 0.018*En + 4.33E-04*En^2 + 0.00E+00*En^3 01/03/2003

Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.54	120.45	1472	80	18	64	0.74	a
2	92.46	186.22	15	11	6	10	0.39	a
3	510.84	1022.25	21	18	13	24	2.06	a Wide Pk

031983D02.SPC Analyzed by

****

SEEKER . B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET021218.BKG (0324008-22 Weekly Bkg.)

Bkg.File Detector #: 2

==========

BACKGROUND SUBTRACT RESULTS

==========

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	92.46	15	11	6	5	12	9	NET<CL
3	510.84	21	18	13	-22	20	18	NET<CL

031983D02.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #1

Sampling Start:	09/01/1993 08:00:00	Counting Start:	12/23/2003 13:00:46
Sampling Stop:	09/01/1993 08:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1811 Sec
Collection Efficiency	1.0000	Spectrum File	.031983D02.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 2 (Detector 2)

Efficiency File: (D02)(Sh07).EFF (Geo 7 Eff Cal)

Eff.=1/[3.98E-04*En^-4.25E+00 + 6.03E+01*En^8.84E-01] 10/23/2003

Library File: . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)	MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.29E+03 +- 2.32E+02	1.12E+02	5.20E+01	3.79E+06
Cd-109	88.02		MDA	4.65E+04	2.03E+04	1.11E+04
Co-57	122.07		MDA	6.62E+04	2.86E+04	6.50E+03
Ce-139	165.85		MDA	7.73E+08	3.30E+08	3.30E+03
Hg-203	279.18		MDA	1.69E+25	7.36E+24	1.12E+03
Sn-113	391.68		MDA	7.86E+10	3.35E+10	2.76E+03
Cs-137	661.62		MDA	1.12E+01	4.35E+00	2.64E+05
Y-88	898.02		MDA	6.39E+11	2.68E+11	2.56E+03
Co-60	1173.21		MDA	5.30E+01	2.10E+01	4.62E+04

MEASURED TOTAL: 4.29E+03 +- 2.32E+02 pCi/sample

UNKNOWN, SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	92.46	186.22	5	12	9	10	0.39	Deleted
3	510.84	1022.25	-22	20	18	24	2.06	Deleted

031863D08.SPC Analyzed by 77

****

SEEKER G A M M A A N A L Y S I S R E S U L T S PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 14:28:01
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1814 Sec
Collection Efficiency	1.0000	Spc. File	031863D08.SPC

Detector #: 8 (Detector 8)

Energy(keV)= -0.30 + 0.500*Ch +-2.15E-08*Ch^2 + 5.68E-11*Ch^3 12/23/2003
FWHM(keV) = 0.72 + 0.014*En + 5.05E-04*En^2 + 0.00E+00*En^3 01/02/2003
Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.51	119.62	6649	167	29	174	0.78 a	HiResid
2	511.36	1023.16	43	22	14	30	2.04 a	

031863D08.SPC Analyzed by

****

SEEKER B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET081218.BKG (0324008-28 Weekly Bkg.)

Bkg.File Detector #: 8

==========

BACKGROUND SUBTRACT RESULTS

==========

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	511.36	43	22	14	-6	23	19	NET<CL

031863D08.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 14:28:01
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1814 Sec
Collection Efficiency	1.0000	Spectrum File	.031863D08.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 8 (Detector 8)

Efficiency File: (D08)(Sh07).EFF (Geo 7 Eff Cal)

Eff.=1/[5.93E-02*En^-1.85E+00 + 7.21E+01*En^9.67E-01] 10/29/2003

Library File: . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)		MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.43E+03	+- 1.11E+02	4.09E+01	1.96E+01	3.79E+06
Cd-109	88.02		MDA	. . . .	3.43E+04	1.53E+04	1.11E+04
Co-57	122.07		MDA	. . . .	9.29E+04	4.20E+04	6.50E+03
Ce-139	165.85		MDA	. . . .	1.21E+09	5.41E+08	3.30E+03
Hg-203	279.18		MDA	. . . .	1.88E+25	8.21E+24	1.12E+03
Sn-113	391.68		MDA	. . . .	7.96E+10	3.33E+10	2.76E+03
Cs-137	661.62		MDA	. . . .	2.03E+01	8.71E+00	2.64E+05
Y-88	898.02		MDA	. . . .	7.56E+11	3.18E+11	2.56E+03
Co-60	1173.21		MDA	. . . .	4.79E+01	1.73E+01	4.62E+04

MEASURED TOTAL: 4.43E+03 +- 1.11E+02 pCi/sample

UNKNOWN,SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	511.36	1023.16	-6	23	19	30	2.04	Deleted

031552D03.SPC Analyzed by 77

****

SEEKER G A M M A A N A L Y S I S R E S U L T S PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 16:52:24
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1832 Sec
Collection Efficiency	1.0000	Spc. File	.031552D03.SPC

Detector #: 3 (Detector 3)

Energy(keV) = -0.81 + 0.501*Ch + 0.00E+00*Ch^2 + 0.00E+00*Ch^3 12/23/2003

FWHM(keV) = 0.77 + 0.011*En + 7.64E-04*En^2 + 0.00E+00*En^3 06/26/2003

Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.59	120.60	2039	95	24	121	0.84	a
2	92.67	186.64	22	12	7	12	0.54	a
3	510.77	1021.33	43	20	12	23	2.04	a

031552D03.SPC Analyzed by

****

SEEKER B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

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Background File:. . . . . DET031218.BKG (0324008-23 Weekly Bkg.)

Bkg.File Detector #: 3

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BACKGROUND SUBTRACT RESULTS

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PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	92.67	22	12	7	4	14	11	NET<CL
3	510.77	43	20	12	-3	21	18	NET<CL

031552D03.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 16:52:24
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1832 Sec
Collection Efficiency	1.0000	Spectrum File	.031552D03.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 3 (Detector 3)

Efficiency File: (D03)(Sh07).EFF (Geo 7 Eff Cal)
Eff.=1/[8.04E-04*En^-3.88E+00 + 6.88E+01*En^9.22E-01] 11/11/2003

Library File: . . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)	MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.37E+03 +- 2.04E+02	1.11E+02	5.25E+01	3.79E+06
Cd-109	88.02		MDA	5.68E+04	2.57E+04	1.11E+04
Co-57	122.07		MDA	8.15E+04	3.62E+04	6.50E+03
Ce-139	165.85		MDA	9.23E+08	4.01E+08	3.30E+03
Hg-203	279.18		MDA	1.72E+25	7.46E+24	1.12E+03
Sn-113	391.68		MDA	8.53E+10	3.63E+10	2.76E+03
Cs-137	661.62		MDA	1.56E+01	6.39E+00	2.64E+05
Y-88	898.02		MDA	9.16E+11	4.00E+11	2.56E+03
Co-60	1173.21		MDA	5.00E+01	1.87E+01	4.62E+04

MEASURED TOTAL: 4.37E+03 +- 2.04E+02 pCi/sample

UNKNOWN, SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	92.67	186.64	4	14	11	12	0.54	Deleted
3	510.77	1021.33	-3	21	18	23	2.04	Deleted

Paragon Analytics, Inc.

Gamma Spectrometer Run Log

Date: 12-23-03 Reviewed By/Date: 77 12-23-03

Sample ID	Ver[1]	Det. No.	Geo[2]	Count Dur. (min.)[3]	Start Time	Analyst	File ID/Comments	Exported?
03 10 127-8	77	3	26	30	11:50	77	031548D03.SPC	77
03 24 019-10	77	10	9*	45	12:16	77	031954D10.SPC	77
GS02335LCS1	77	3	17	30	12:43	77	031549D03.SPC	77
" LCS2	"	6	26	"	"	"	031683D06.SPC	"
Empty 565	"	87	13	30	12:59	77	031824D07.SPC	" 77 12-23-03
Std # 73	"	2	**7	30	13:00	77	031983D02.SPC	"
Std # 601	"	8	"	"	"	"	031862D08.SPC	"
03 24 019-S10	"	10	9*	30	13:06	77	031955D10.SPC	"
Std # 73	77	8	**7	30	14:28	77	031863D08.SPC	77
Std # 601	"	2	"	"	"	"	031984D02.SPC	"
03 12 042-1		7	13	1000	14:33	77		
" -1D		10						
GS031212-2MB	77	6						77
03 10 126-2	—	3	13	—	14:33	77		77 12-23-03
Std # 601	77	3	**7	30	16:14	77	031550D03.SPC	77
03 24 019-3F	"	2	NA	30	16:15	77	031985D02.SPC	"
" -4	77	"	"	"	16:52	77	031986D02.SPC	77
Std # 73	"	3	**7	30	16:52	77	031551D03.SPC	"
								77 12-23-03

[1] Analyst will verify the position, detector, and geometry when the sample is removed from the detector.

[2] Calibration geometry. * New Geo; on blank 1/2 of filter

[3] Count Duration. ** Counted on puck 77 12-23-03

267583

B

Form 754r9.frm 9/19/2001

LB4100-B Raw counts for Sr-90 Wipe Efficiency Calibrations (Control ID #1124)

Detector ID	A1	A2	A3	A4	B1	B2	B3	B4
total time	0.7	0.7	0.69	0.69	0.68	0.67	0.68	0.69
total counts	10117	10115	10107	10051	10066	10082	10093	10124
Beta CPM	14451.4241	14448.52	14646.3581	14565.2047	14801.2072	15046.1262	14840.9191	14670.8148
Beta BKG CPM	1.433	1.48	1.468	1.462	1.734	1.635	1.728	1.649
Beta Efficiency	0.40980287	0.40972054	0.41533073	0.41302949	0.41972161	0.42666688	0.4208478	0.41602375
archived STDEV	0.02128958	0.02128538	0.02157715	0.02145978	0.02180691	0.0221671	0.02186435	0.0216125
Alpha CPM	41.3295714	51.2815714	49.1733623	47.703087	20.4462353	35.7048955	26.2685882	27.3982319
B>A x-talk	0.0029	0.0035	0.0034	0.0033	0.0014	0.0024	0.0018	0.00186753
Data file	ESW1226L	ESW1226M	ESW1226N	ESW1226O	ESW1226H	ESW1226I	ESW1226J	ESW1226K

Detector ID	C1	C2	C3	C4	D1	D2	D3	D4
total time	0.68	0.68	0.69	0.68	0.69	0.67	0.69	0.66
total counts	10076	10059	10110	10068	10115	10035	10092	10017
Beta CPM	14815.9921	14791.0361	14650.5219	14804.3504	14657.8773	14975.5419	14624.181	15175.5227
Beta BKG CPM	1.655	1.611	1.652	1.532	1.543	2.07	1.906	1.906
Beta Efficiency	0.42014058	0.41943292	0.41544836	0.41981057	0.41565703	0.42466516	0.41470157	0.43033614
archived STDEV	0.02182828	0.02179218	0.02158316	0.02181144	0.02159379	0.02206505	0.02154509	0.02236041
Alpha CPM	42.5490588	41.0494706	52.008913	16.0844706	52.033913	40.1935075	34.6446087	48.3638485
B>A x-talk	0.0029	0.0028	0.0035	-0.0011	0.0035	0.0027	0.0024	0.0032
Data file	ESW1226	ESW1226A	ESW1226B	ESW1226C	ESW1226D	ESW1226E	ESW1226F	ESW1226G

FE
1/5/04

Source Database for OSUM for LB4100-B

Number of sources in table: 45

Application Revision: A

Control ID	Isotope	Type	Half-Life (days)	DPM	Std dev	Date	Status	Alpha/Beta Archive File
1121	Sr-90/Y-90	Beta	10446.15	22065.912	1103.30	18-Mar-99	PAI	Sr90R-11/03
1122	Am-241	Alpha	157861.05	11101.11	555.06	18-Mar-99	PAI	Am241-11/03
1123	Am-241	Alpha	157861.05	9624	481.20	1-Sep-93	PAI	AmWipe-11/03
1124	Sr-90/Y-90	Beta	10511.6072	37044	1852.20	10-Dec-01	PAI	SrWipe-11/03

000226

12/11/03 JE Complete computer back-up was performed. Scandisk was done and the computer's C/ drive was defragged.
Filename ~~12/11/03~~ 12/11/03 LB4100 B
RG 12/16/03

12/24/03 JE

Am 241 wipe Calibration
Am-241 on filter

Source: 73 Source ID: 1123 log file: Am Wipe 11/03

Filenames: EAM1226, EAM1226A, EAM1226B, EAM1226C, EAM1226D, EAM1226E, EAM1226F, EAM1226G, EAM1226H, EAM1226I, EAM1226J, EAM1226K, EAM1226L, EAM1226M, EAM1226N, EAM1226O.

α→β x-talk is calculated for each detector using the following equation:
counts in Beta channels / counts in Alpha channels

12/26/03 JE

Sr-90 wipe Calibration
Sr-90 on filter

Source: 602 Source ID: 1124 log file: ~~Sr 90~~ ~~12/26/03~~ Sr Wipe - 11/03

Filenames: ESR1226, ESR1226A, ESR1226B, ESR1226C, ESR1226D, ESR1226E, ESR1226F, ESR1226G, ESR1226H, ESR1226I, ESR1226J, ESR1226K, ESR1226L, ESR1226M, ESR1226N, ESR1226O.

β→α x-talk is calculated for each detector using the following equation:
counts in ~~Beta~~ Alpha channels / counts in Beta channels
~~1/3/04~~

Continued on Page

Read and Understood By

Clare Lewis 1/2/04
Signed Date

Julie Fellingham 1/2/04
Signed Date

pg 265878 a
(cont. from pg 1A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

SOP (Rev 8

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 700	A 0.1
2 2000	B
	C
	D

Bkg.	Cal. File ID
Dr A	BkBi220 ✓
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	JE		P		JE		P		✓	9	JE		P		JE		P		✓
2									✓	10									✓
3									✓	11									✓
4									✓	12									✓
5									✓	13									✓
6									✓	14									✓
7									✓	15									✓
8	✓				✓		✓		✓	16	✓		✓		✓		✓		✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	03120 81-1	AB031222-1	2/8	ABB1226	60	10~~26~~48	JE	JE	12/26/03	
2	-1D									
3	-1.45									
4	-1MSD									
5	-2									
6	-3									
7	AD031222-1AB									
8	-1LCS									
9	03120 82-1	SR031222-2	Sr-90	SRB1226	60	10~~26~~40	JE			
10	-2									
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									✓

Form 780r6.frm (4/6/2001)

Reviewed by Cf Date 12/29/03

Comments:

000228

pg 265878 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
16	0312082-9	SR031222-2	Sr-90	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-10			SRB1226A	60	1230	JE	JE	12/26/03	
2	0312128-4									
3	-4D									
4	SR031222-2MB									
5	-2LCS									
6	SR031222-3LCS	SR031222-3	Sr-90	SRB1226B	60	~~1223~~ 1230	JE			
7	0312118-1	ABO31222-2	2/B	ABB1226A	60	1223	JE			
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	ABO31222-2	2/B	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10MS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	ABO31222-2MB									
8	-2LCS									
1	73	NA	Am-241 Wipe Calib.	EAW1226	10	1459	JE	JE	12/26/03	
2				A		1505	JE			

Form 780r6.frm (4/6/2001)

Reviewed _____ Date 12/29/03

Comments:

000229

pg 265879 a
(cont. from pg ~~44~~ b)
265878
12/26/03

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP Rev 8

Date: 12/26/03

Instrument Background and Response Checklist *See page 265878a for Daily Check info. 12/26/03

P-10 Supply	P-10 Flow
1 1700	A 0.1
2 2.000	B
	C
	D

Bkg.	Cal. File ID
Dr A	BkB1220
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1										~~9~~									
2										10									
3										~~11~~									
4										12									
5										13									
6										14									
7										15									
8										~~16~~									

12/26/03

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
3	73	NA	Am241 4µ Calb	EA01226B	10	1511	JE	JE	12/26/03	NA
4				G		1516				
5				D		1522				
6				E		1527				
7				F		1533				
8				G		1540				
9				H		1545				
10				I		1552				
11				J		1556				
12				K		1603				
13				L		1607				
14				M		1616				
15				N	7/24/03	1621				
16				O		1626				
1	602	NA	Sr90 4µ Calb	ES01226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

Form 780r6.frm (4/6/2001)

Reviewed by [signature] Date 12/29/03

Comments:

000230

pg 265879 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
			Sr-90 w/ Gelk							
4	CO2	NA	~~Sr-90 w/ Gelk~~	ESW1226O	2	1529	JE	JE	12/26/03	NA
5			Sr-90 w/ Gelk	H		1515				
6				I		1517				
7				J		1519				
8				K		1520				
9				ESW1226		1500				
10				A		1501				
11				B		1503				
12				C		1506				
13				D		1508				
14				E		1509				
15				F		1512				
16				G		1513				
1.1	BKG Check	NA	NA	BKB1226A	60	1633	JE	JE	12/26/03	
1	03102215-16	SR031210-2	Sr-90	SRB1226C	1400	1748	JE	JE	12/27/03	
2	-17									
3	-18									
4	-19									
5	-20									
6	-21									
7	-21D									
8	-22									
9	SR031210-24B									
10	-2LCS									
11	03120811-1	SR031222-1	Sr-90	SRB1226D	200	1751	JE			
12	-1D									
13	-2									
14	-3									
15	SR031222-1dt									
16	-1LCS									

Form 780r6.frm (4/6/2001)

Comments:

Reviewed ~~[illegible]~~ Date 12/27/03

1751 JE JE 12/27/03 NA

SP

000231

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 I.D. 0602
rec'd 12-11-01
EW 12-14-01

62753A-307

Sr-90 47 mm Diameter Membrane Filter in Stainless Steel Planchet

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by the Department Des Applications Et De La Metrologie Des Rayonnements Ionisants (DAMRI), Paris, France, as Number 25931.

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:	Sr-90
ACTIVITY (dps):	308.7
HALF-LIFE:	28.79 years
CALIBRATION DATE:	December 10, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.0%

*99% Confidence Level

Impurities: γ-impurities <0.1%

43 mm active area. Low smooth bottom. Source covering 0.85 mg/cm^2 mylar.

NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta emission rate for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 3.19 hours.

P O NUMBER 001703, Item 3

PREPARED BY: M. Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 12-10-01

New Standard Verification

WO#

Date 12/21/03

Previously Verified Standard

STD 602		
Nuclide	Sr-90	
Half Life	28.78	
Init. Activity	37044	dpm
Ref. Date	12/10/01	
Vol.	1.0	
Current Spiked Act.	35277.50	dpm

Standard to be Verified

STD 729		
Nuclide	Sr-90	
Half Life	28.78	y
Init. Activity	41400	dpm
Ref. Date	10/21/03	
Vol.	1.000	
Current Spiked Act.	41233.81	dpm

Standards Sample ID	Pos.	GCPM	BCPM	NCPM	% Yield	DPM Added	Eff.	Ave. Eff.	Calibrated Efficiency	Calc DPM	Avg. DPM	2 StdDev	Obs w/in 5% of Cert. (PAI Req.)	Cert. Value w/in 2sig (ICPT Req.)	2sig<10% of mean (ICPT Req.)
602	D1	14798.60	1.54	14797.06	100%	35277.50	0.4194		0.4195						
602	D2	14789.40	2.07	14787.33	100%	35277.50	0.4192		0.4195						
602	D3	14812.00	1.91	14810.09	100%	35277.50	0.4198	0.4195	0.4195						
729	D1	17396.20	1.54	17394.66	100%	41233.81	0.4219		0.4195	41467.32					
729	D2	17555.60	2.07	17553.53	100%	41233.81	0.4257		0.4195	41846.06					
729	D3	17515.20	1.91	17513.29	100%	41233.81	0.4247	0.4241	0.4195	41750.14	41687.84	321.55	PASS	HIGH	PASS
													1.01		

OK RG 12/24/03.
Requires NCR for ICPT work.

PAI - Gas Flow Proportional Sample Analysis LB 4100 -6

Unit Type: LB4100 -6
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Data file name: SRB1221
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 11:56

Background logfile: BKGABW
Date of Bkg. Cal: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0060	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m *b^-mass		y = m*mass + b	
a ->b xtalk m=	0.2749	b ->a xtalk m=	-2.09E-05
a ->b xtalk b=	1.0010	b ->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	602	12/21/03 11:56	5.00	0.0	27.400	0.140	10.359	0.2111	1.248	n/a	n/a	14798.600	1.543	7.508	0.4115	1.000	n/a	n/a
D2	729	12/21/03 11:56	5.00	0.0	28.200	0.105	12.289	0.2101	1.246	n/a	n/a	17855.600	2.070	7.727	0.4102	1.000	n/a	n/a

JE
12/23/03

000234

FMI - Gas Flow Proportional

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Data file name: SRB1Z21A
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:02

Backgr[illegible]e: BKGABW
Date [illegible]st: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = b+m*(a*(mass-xo))		y = b+m*(a*(mass-xo))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99490	m=	0.9999
a=	1.0000	a=	1.0000
xo=	0.0000	xo=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.002-06
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D2	602	12/21/03 12:02	5.00	0.0	25.600	0.105	10.353	0.2101	1.246	n/a	n/a	14789.400	2.070	7.014	0.4102	1.000	n/a	n/a
D3	729	12/21/03 12:02	5.00	0.0	31.400	0.138	12.261	0.2103	1.246	n/a	n/a	17515.200	1.908	8.604	0.4198	1.000	n/a	n/a

SG 12/23/03

000235

PAI - Gas Flow Proportional Sample ...

Unit Type: LB4100 -8
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Data file name: SRB1221B
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:09

Background logfile: BKGABW
Date of Bkg. Cal: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = a*m^b*mass-avg		y = a* m^b*mass-avg	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.00E-06
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
Q1	729	12/21/03 12:09	5.00	0.0	30.400	0.140	12.177	0.2111	1.248	n/a	n/a	17396.200	1.543	8.330	0.4115	1.000	n/a	n/a
D3	602	12/21/03 12:09	5.00	0.0	25.200	0.138	10.368	0.2103	1.248	n/a	n/a	14812.000	1.906	8.905	0.4195	1.000	n/a	n/a

AG 12/23/03

000236

pg 265874 a
(cont. from pg NA b)

Parag Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

SOP Rev 8

Date: 12/21/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1700	A 0.1
2800	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB1221
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	JE		P		NP		*		✓	9	JE		P		NP		*		✓
2									✓	10		JE	R	P					✓
3									✓	11			P						✓
4									✓	12									✓
5									✓	13									✓
6									✓	14									✓
7									✓	15									✓
8									✓	16									✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	EFB1221A	30	1125	JE	JE	12/21/03	
1	03120672-1	AB 03 1215-3	2/B	ABB1221	1000	1132	JE	JE	12/22/03	
2	-1D									
3	-2									
4	-2MS									
5	AB03 1215-3MB									
6	-3LCS									
13 13	602	–	Sr-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14 14	729	–								
159	73	–	Am-241 wipe Ver	AMB1221	5	1151	JE			
10 9	601	–								
17 10	602	–	Sr-90 wipe Ver	SRB1221A	5	1157	JE	JE	12/21/03	
15 11	729	–								
13 10	73	–	Am-241 wipe Ver	AMB1221A	5	1158	JE			
14 11	601	–								
16 15	602	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	

Form 780r6.frm (4/6/2001)

Reviewed by JE Date 12/22/03

Comments: * Since weekly BKG just finished, daily BKG were not done. JE 12/21/03.

000237

Low Background Gas Flow Proportional Counter Run Log

Date: 12/21/03

Instrument: LB4100B

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
13	729	—	Sr-90 wipe Vol	SRB1221B	5	1204	JE	JE	12/21/03	N/A
11	~~[illegible]~~ 73	—	Am241 wipe Vol	AMB1221B	5	1205	JE	↓	↓	↓
9	601	—	↓	↓	↓	↓	↓	↓	↓	↓

12/22/03

Form 780r6.frm (4/6/2001)

Reviewed JE Date 12/22/03

Comments:

030204-31-01	GROSS BETA	-0.39	DPM/sample	1.68	N	U	P
030204-31-02	GROSS BETA	-0.25	DPM/sample	1.73	N	U	P
030204-31-03	GROSS BETA	0.24	DPM/sample	1.64	N	U	P
030204-31-04	GROSS BETA	0.46	DPM/sample	1.51	N	U	P
030204-31-04-LR	GROSS BETA	0.68	DPM/sample	1.82	N	UNC	P
030204-31-05	GROSS BETA	0.14	DPM/sample	1.48	N	U	P
030204-31-06	GROSS BETA	0.37	DPM/sample	1.6	N	U	P
030204-31-07	GROSS BETA	-0.16	DPM/sample	1.48	N	U	P
030204-31-08	GROSS BETA	0.32	DPM/sample	1.68	N	U	P
030204-31-09	GROSS BETA	0.01	DPM/sample	1.73	N	U	P
030204-31-10	GROSS BETA	0.35	DPM/sample	1.63	N	U	P
030204-31-11	GROSS BETA	0.9	DPM/sample	1.51	N	U	P
030204-31-12	GROSS BETA	-0.12	DPM/sample	1.48	N	U	P
030204-31-13	GROSS BETA	-0.15	DPM/sample	1.59	N	U	P
030204-31-14	GROSS BETA	0.28	DPM/sample	1.48	N	U	P
030204-31-14-LR	GROSS BETA	-0.24	DPM/sample	1.82	N	UNC	P
030204-31-15	GROSS BETA	-0.16	DPM/sample	1.69	N	U	P
030204-31-16	GROSS BETA	-0.05	DPM/sample	1.73	N	U	P
030204-31-17	GROSS BETA	0.05	DPM/sample	1.64	N	U	P
030204-31-18	GROSS BETA	0.15	DPM/sample	1.51	N	U	P
030204-31-19	GROSS BETA	0.5	DPM/sample	1.49	N	U	P
030204-31-20	GROSS BETA	0.6	DPM/sample	1.59	N	U	P
030204-31-20FD	GROSS BETA	0.8	DPM/sample	1.55	N	U	P
030204-31-21	GROSS BETA	0.09	DPM/sample	1.82	N	U	P
030204-31-22	GROSS BETA	0.87	DPM/sample	1.69	N	U	P
030204-31-23	GROSS BETA	1.04	DPM/sample	1.73	N	U	P
030204-31-24	GROSS BETA	0.79	DPM/sample	1.63	N	U	P
030204-31-25	GROSS BETA	0.78	DPM/sample	1.51	N	U	P
030204-31-26	GROSS BETA	-0.42	DPM/sample	1.48	N	U	P
030204-31-27	GROSS BETA	0.89	DPM/sample	1.59	N	U	P
030204-31-27-LR	GROSS BETA	0.12	DPM/sample	1.82	N	UNC	P
030204-31-28	GROSS BETA	0.79	DPM/sample	1.48	N	U	P
030204-31-29	GROSS BETA	0.48	DPM/sample	1.53	N	U	P
030204-31-30	GROSS BETA	0.05	DPM/sample	1.55	N	U	P
030204-31-31	GROSS BETA	-0.03	DPM/sample	1.51	N	U	P
030204-31-32	GROSS BETA	0.34	DPM/sample	1.69	N	U	P
030204-31-33	GROSS BETA	0.41	DPM/sample	1.74	N	U	P
030204-31-34	GROSS BETA	0.11	DPM/sample	1.63	N	U	P
030204-31-35	GROSS BETA	0.29	DPM/sample	1.51	N	U	P
030204-31-35FD	GROSS BETA	-0.11	DPM/sample	1.51	N	U	P
030204-31-36	GROSS BETA	-0.03	DPM/sample	1.49	N	U	P
030204-31-37	GROSS BETA	1.27	DPM/sample	1.56	N	U	P
030204-31-37-LR	GROSS BETA	-0.01	DPM/sample	1.6	N	UNC	P
030204-31-38	GROSS BETA	0.58	DPM/sample	1.49	N	U	P
030204-31-39	GROSS BETA	0.18	DPM/sample	1.55	N	U	P
030204-31-40	GROSS BETA	-0.48	DPM/sample	1.52	N	U	P
030204-31-41	GROSS BETA	-0.35	DPM/sample	1.48	N	U	P
030204-31-41-LR	GROSS BETA	-0.16	DPM/sample	1.69	N	UNC	P
030204-31-42	GROSS BETA	-0.31	DPM/sample	1.45	N	U	P
030204-31-43	GROSS BETA	1.25	DPM/sample	1.47	N	U	P
030204-31-44	GROSS BETA	-0.02	DPM/sample	1.43	N	U	P

SAMPLE NO.	PARAMETER	RESULT	UNITS	[illegible]	[illegible]	[illegible]	[illegible]
030204-31-45	GROSS BETA	0.63	DPM/sample	1.51	N	U	P
030204-31-45FD	GROSS BETA	0.25	DPM/sample	1.57	N	U	P
030204-31-45FD-LR	GROSS BETA	0.35	DPM/sample	1.82	N	UNC	P
030204-31-46	GROSS BETA	0.61	DPM/sample	1.48	N	U	P
030204-31-47	GROSS BETA	0.17	DPM/sample	1.6	N	U	P
030204-31-48	GROSS BETA	0.07	DPM/sample	1.49	N	U	P
030204-31-49	GROSS BETA	0.78	DPM/sample	1.53	N	U	P
030204-31-FB	GROSS BETA	0.62	DPM/sample	1.73	N	U	P

030204-31-01	GROSS ALPHA	-0.27	DPM/sample	0.71	N	U	P
030204-31-02	GROSS ALPHA	-0.08	DPM/sample	0.82	N	U	P
030204-31-03	GROSS ALPHA	0.04	DPM/sample	0.77	N	U	P
030204-31-04	GROSS ALPHA	0.02	DPM/sample	0.61	N	U	P
030204-31-04-LR	GROSS ALPHA	-0.18	DPM/sample	0.9	N	UNC	P
030204-31-05	GROSS ALPHA	-0.19	DPM/sample	0.67	N	U	P
030204-31-06	GROSS ALPHA	-0.08	DPM/sample	0.71	N	U	P
030204-31-07	GROSS ALPHA	-0.19	DPM/sample	0.74	N	U	P
030204-31-08	GROSS ALPHA	-0.15	DPM/sample	0.71	N	U	P
030204-31-09	GROSS ALPHA	-0.17	DPM/sample	0.82	N	U	P
030204-31-10	GROSS ALPHA	-0.08	DPM/sample	0.77	N	U	P
030204-31-11	GROSS ALPHA	0.06	DPM/sample	0.61	N	U	P
030204-31-12	GROSS ALPHA	-0.19	DPM/sample	0.67	N	U	P
030204-31-13	GROSS ALPHA	-0.2	DPM/sample	0.71	N	U	P
030204-31-14	GROSS ALPHA	-0.4	DPM/sample	0.74	N	U	P
030204-31-14-LR	GROSS ALPHA	-0.05	DPM/sample	0.9	N	UNC	P
030204-31-15	GROSS ALPHA	-0.1	DPM/sample	0.71	N	U	P
030204-31-16	GROSS ALPHA	-0.12	DPM/sample	0.82	N	U	P
030204-31-17	GROSS ALPHA	0.04	DPM/sample	0.77	N	U	P
030204-31-18	GROSS ALPHA	0.06	DPM/sample	0.61	N	U	P
030204-31-19	GROSS ALPHA	0.08	DPM/sample	0.67	N	U	P
030204-31-20	GROSS ALPHA	-0.2	DPM/sample	0.71	N	U	P
030204-31-20FD	GROSS ALPHA	-0.23	DPM/sample	0.63	N	U	P
030204-31-21	GROSS ALPHA	-0.09	DPM/sample	0.9	N	U	P
030204-31-22	GROSS ALPHA	0.02	DPM/sample	0.71	N	U	P
030204-31-23	GROSS ALPHA	-0.12	DPM/sample	0.82	N	U	P
030204-31-24	GROSS ALPHA	-0.08	DPM/sample	0.77	N	U	P
030204-31-25	GROSS ALPHA	0.02	DPM/sample	0.61	N	U	P
030204-31-26	GROSS ALPHA	-0.27	DPM/sample	0.67	N	U	P
030204-31-27	GROSS ALPHA	-0.24	DPM/sample	0.71	N	U	P
030204-31-27-LR	GROSS ALPHA	0.04	DPM/sample	0.9	N	UNC	P
030204-31-28	GROSS ALPHA	-0.15	DPM/sample	0.74	N	U	P
030204-31-29	GROSS ALPHA	0.61	DPM/sample	0.6	Y	LT	P
030204-31-30	GROSS ALPHA	0.17	DPM/sample	0.63	N	U	P
030204-31-31	GROSS ALPHA	-0.33	DPM/sample	0.79	N	U	P
030204-31-32	GROSS ALPHA	0.14	DPM/sample	0.71	N	U	P
030204-31-33	GROSS ALPHA	0.04	DPM/sample	0.82	N	U	P
030204-31-34	GROSS ALPHA	-0.08	DPM/sample	0.77	N	U	P
030204-31-35	GROSS ALPHA	0.1	DPM/sample	0.61	N	U	P
030204-31-35FD	GROSS ALPHA	-0.17	DPM/sample	0.79	N	U	P
030204-31-36	GROSS ALPHA	0	DPM/sample	0.67	N	U	P
030204-31-37	GROSS ALPHA	-0.28	DPM/sample	0.83	N	U	P
030204-31-37-LR	GROSS ALPHA	-0.12	DPM/sample	0.71	N	UNC	P
030204-31-38	GROSS ALPHA	0.05	DPM/sample	0.74	N	U	P
030204-31-39	GROSS ALPHA	0.09	DPM/sample	0.63	N	U	P
030204-31-40	GROSS ALPHA	-0.01	DPM/sample	0.79	N	U	P
030204-31-41	GROSS ALPHA	-0.28	DPM/sample	0.76	N	U	P
030204-31-41-LR	GROSS ALPHA	-0.06	DPM/sample	0.71	N	UNC	P
030204-31-42	GROSS ALPHA	0.11	DPM/sample	0.66	N	U	P
030204-31-43	GROSS ALPHA	0.44	DPM/sample	0.74	N	U	P
030204-31-44	GROSS ALPHA	0.1	DPM/sample	0.62	N	U	P

030204-31-45	GROSS ALPHA	-0.06	DPM/sample	0.61	N	U	P
030204-31-45FD	GROSS ALPHA	0.18	DPM/sample	0.83	N	U	P
030204-31-45FD-LR	GROSS ALPHA	0	DPM/sample	0.9	N	UNC	P
030204-31-46	GROSS ALPHA	-0.08	DPM/sample	0.67	N	U	P
030204-31-47	GROSS ALPHA	-0.08	DPM/sample	0.71	N	U	P
030204-31-48	GROSS ALPHA	0.01	DPM/sample	0.74	N	U	P
030204-31-49	GROSS ALPHA	0.3	DPM/sample	0.6	N	U	P
030204-31-FB	GROSS ALPHA	-0.29	DPM/sample	0.82	N	U	P

Laboratory A1902

Final Status Data Summary T[illegible], Beta and Alpha Scan Data
Survey Unit: Laboratory A1505/1507
Building 53, Denver Federal Center

Laboratory ID		Action Criteria	Individual Measurements										
Beta Scan													
A1505/1507	Bkg. Value	$MDCR_{Surveyor}$											
Floor Tile	401	802.0	409.0	383.0	388.0	294.0	315.0	333.0	292.0	313.0	No. of meas./locs	10
Wall Board	345	690.0	339.0	400.0							Maximum	409.0
											Mean	346.6
											Standard Deviation	44.60
											No. > $MDCR_{Surveyor}$	0
Alpha Scan												
A1505/1507		Bkg. Value										
Floor Tile		5.5	3.0	5.0	3.0	5.0	2.0	7.0	3.0	6.0	No. of meas./locs	10
Wall Board		5.5	6.0	5.0							Maximum	7.0
											Mean	4.5
											Standard Deviation	1.65
											No. > Scan MDC	0

Notes:
Bold values exceed respective criteria.
Kcpm - Thousand counts per minute.
Bkg. - Background.

Final Status Data Summary Table: Direct Beta Measurements
Survey Unit: Laboratory A1505/1507
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements													
Systematic Direct Read Locations																
A1505/1507															No. of meas./locs	39
Wall	1,000 dpm/100cm^2	1,000 dpm/100cm^2	239	-28	-47	151	152	77	-47	-117	-53	300	55	25	Maximum	632.0
Wall	1,000 dpm/100cm^2	1,000 dpm/100cm^2	632	-210	224	-364	-100	-173	-218	-291	-92	-672	-1984		Mean	57.8
Floor	1,000 dpm/100cm^2	1,000 dpm/100cm^2	-61	228	210	294	332	171	317	294	136	363	394		Standard Deviation	430.2
Floor	1,000 dpm/100cm^2	1,000 dpm/100cm^2	407	474	462	282	493								No. > Administrative Goal	0
															No. > Release Criteria	0
Bias Direct Read Locations																
A1505/1507															No. of meas./locs	10
Wall	1,000 dpm/100cm^2	1,000 dpm/100cm^2	84	983	-1258										Maximum	983.0
Floor	1,000 dpm/100cm^2	1,000 dpm/100cm^2	626	93	950	-250	-185	-191	-391						Mean	46.1
															Standard Deviation	676.9
															No. > Administrative Goal	0
															No. > Release Criteria	0

Quality Control; Field Duplicate Performance (Criteria <20%)	*1st*	*2nd*	*RPD*
A1505/1507			
Location A-06	152	116	27
Location A-26	210	220	-5
Location BS-1505/1507-08	-1258	-1747	-33

Notes:
Bold values exceed respective criteria.
cm^2 - Square centimeters.
DCGL - Derived concentration value representing the upper limit criteria. .
RPD - Relative percent difference.
dpm - Disintegrations per minute.
ALARA - As low as reasonably achievable.

Final Status Data Summary Ta... Direct Alpha Measurements
Survey Unit: Laboratory A1507/1507
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements														
Systematic Direct Read Locations																	
A1505/1507																No. of meas./locs	39
Wall	30[a] dpm/100cm^2	100 dpm/100cm^2	3	-13	-37	-18	-22	-22	-18	23	18	0	-6	-17		Maximum	36.0
Wall	30[a] dpm/100cm^2	100 dpm/100cm^2	-20	-18	31	-7	-22	-20	-36	-37	-34	-34	-36			Mean	-6.4
Floor	30[a] dpm/100cm^2	100 dpm/100cm^2	-10	-9	0	-6	21	25	18	21	36	29	-19			Standard Deviation	20.8
Floor	30[a] dpm/100cm^2	100 dpm/100cm^2	-7	-16	1	4	4									No. > Administrative Goal	1
																No. > Release Criteria	0
Bias Direct Read Locations																	
A1505/1507																No. of meas./locs	10
Wall	30[a] dpm/100cm^2	100 dpm/100cm^2	-23	-33	-12											Maximum	5.0
Floor	30[a] dpm/100cm^2	100 dpm/100cm^2	5	-16	-12	5	-16	-22	-3							Mean	-12.7
																Standard Deviation	12.2
																No. > Administrative Goal	0
																No. > Release Criteria	0

Quality Control; Field Duplicate Performance (Criteria <20%)	*1st*	*2nd*	*RPD*
A1505/1507			
Location A-06	-22	-21	5
Location A-26	0	-9	-200
Location BS-1505/1507-08	-12	-11	9

Notes:
Bold values exceed respective criteria.
cm^2 - Square centimeters.
DCGL - Derived concentration value representing the upper limit criteria.
RPD - Relative percent difference.
dpm - Disintegrations per minute.
ALARA - As low as reasonably achievable.
[a] - Approximate sensitivity of field instrument

Final Status Data Summary Table: Beta Wipe Sample Results
Survey Unit: Laboratory A1505/1507
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements		
Systematic Direct Read Locations					
A1505/1507				No. of meas./locs	39
Wall	200 dpm/100cm^2	200 dpm/100cm^2	All sample results were reported as non-detected at < 1.9 dpm/100cm^2	Maximum	na
Wall	200 dpm/100cm^2	200 dpm/100cm^2		Mean	na
Floor	200 dpm/100cm^2	200 dpm/100cm^2		Standard Deviation	na
				No. > Administrative Goal	0
				No. > Release Criteria	0
Bias Direct Read Locations					
A1505/1507				No. of meas./locs	10
Wall	200 dpm/100cm^2	200 dpm/100cm^2	All sample results were reported as non-detected at < 1.9 dpm/100cm^2	Maximum	na
Floor	200 dpm/100cm^2	200 dpm/100cm^2		Mean	na
				Standard Deviation	na
				No. > Administrative Goal	0
				No. > Release Criteria	0

Quality Control; Field Duplicate Performance (Criteria <20%)	*Regular*	*Field Duplicate*	*Field Splits*	*RPD*
A1505/1507				
Location A-20	nd	nd	nd	nc
Location A-35	nd	nd	nd	nc
Location BS-1507-06	nd	nd	nd	nc

Notes:
Bold values exceed respective criteria.
cm^2 - Square centimeters.
DCGL - Derived concentration value representing the upper limit criteria.
RPD - Relative percent difference.
dpm - Disintegrations per minute.
ALARA - As low as reasonably achievable.
nd - non-detected
nc - not calculated

Final Status Data Summary Table. Alpha Wipe Sample Results
Survey Unit: Laboratory A1505/1507
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements		
Systematic Direct Read Locations					
A1505/1507				No. of meas./locs	39
Wall	1.1 dpm/100cm^2	20 dpm/100cm^2	There was one floor sample location with a result of 0.61 dpm/100cm^2,	Maximum	0.6
Wall	1.1 dpm/100cm^2	20 dpm/100cm^2	just over it's respecive MDC of 0.60 dpm/100cm2	Mean	na
Floor	1.1 dpm/100cm^2	20 dpm/100cm^2	All other sample results were reported as non-detected at < 0.90 dpm/100cm^2	Standard Deviation	na
				No. > Administrative Goal	0
				No. > Release Criteria	0
Bias Direct Read Locations					
A1505/1507				No. of meas./locs	10
Wall	1.1 dpm/100cm^2	20 dpm/100cm^2	All sample results were reported as non-detected at < 0.90 dpm/100cm^2	Maximum	na
Floor	1.1 dpm/100cm^2	20 dpm/100cm^2		Mean	na
				Standard Deviation	na
				No. > Administrative Goal	0
				No. > Release Criteria	0

Quality Control; Field Duplicate Performance (Criteria <20%)	*Regular*	*Field Duplicate*	*Field Splits*	*RPD*
A1505/1507				
Location A-20	nd	nd	nd	nc
Location A-35	nd	nd	nd	nc
Location BS-1507-06	nd	nd	nd	nc

Notes:
Bold values exceed respective criteria.
cm^2 - Square centimeters.
DCGL - Derived concentration value representing the upper limit criteria.
RPD - Relative percent difference.
dpm - Disintegrations per minute.
ALARA - As low as reasonably achievable.
nd - non-detected
nc - not calculated

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115	DATE: 03-04-04	TIME START: 1600	TIME COMPLETE: 1700	PAGE 1 OF 10
LOCATION: EPA NEIC RM 1902	SURVEYOR(S): Stephens / Trent				
Denver Federal Center, CO	SURVEY NUMBER: 030404-35				
Denver, CO	MAP ID: LAB A1902				

ACCEPTABLE SURFACE CONTAMINATION LEVELS
Loose 20 dpm/100cm² Alpha 200 dpm/100cm² Beta-Gamma
Total 100 dpm/100cm² Alpha 1,000 dpm/100cm² Beta-Gamma

ACCEPTABLE SCAN LIMITS
$MDCR_{surveyor}$ Beta
$MDCR_{surveyor}$ Alpha

Source Check Data	Contamination Surveys				Radiation Surveys
	α (TOTAL)	α (TOTAL)	β-γ (TOTAL)	β-γ (TOTAL)	Beta-Gamma
Instrument	184904 / 185768	185774	184904 / 185768	185774	NA
Source Type and I.D.	Th-230, 1170/89	Th-230, 1170/89	Cs-137, 92CS5000	Cs-137, 92CS5000	
Source Strength in dpm	13800	13800	769565	769565	Cs
Efficiency	0.13 / 0.15	0.15	0.16 / 0.17	0.16	
MDC in dpm/100 cm²	See attached instrument sheets for material specific backgrounds and MDC's.				Sat. ☐ Unsat. ☐
Background in cpm					mrem/hr or µrem/hr

REASON FOR SURVEY
☒ PROCEDURE NO. FINAL STATUS SURVEY PLAN
☐ SPECIAL SCANS
☐ ROUTNE

Contamination ☒ By Shift ☐ Daily ☐ Weekly ☐ Monthly ☐
Radiation ☐ By Shift ☐ Daily ☐ Weekly ☐ Monthly ☐

COMMENTS:

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #		
	ALPHA (TOTAL) 2360 / 185774	BETA-GAMMA (TOTAL) 2360 / 185774
	ALPHA (TOTAL) 2360 / 185768	BETA-GAMMA (TOTAL) 2360 / 185768
	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☒	Item or Location
1					FT	C-1
2					FT	D-6
3					FT	F-2
4					FT	G-5
5					FT	H-1
6					FT	J-4
7					WB	B-3
8					WB	B-14
9	N				FT	L-9
10					FT	K-6
11						
12						
13						
14			A			
15						
16						
17					N	
18						
19						A
20						
21						
22						
23						
24						
25						

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RCS REVIEW [signature] DATE 3-5-04

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room Rm A 1902	PAGE 2 OF 10
COMMENTS:	SURVEYOR(S): Trent / Stephens	SURVEY NUMBER: 030404-35	DATE: 03/04/04
RCS REVIEW: [signature]	DATE: 3.5.04	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.	

Grid Intersection ___,___

Background Check (cpm)

	Alpha	Beta	Time
1)	6	311	0730
2)	5	327	1600
#	2360	185768	

Grid Intersection ___,___

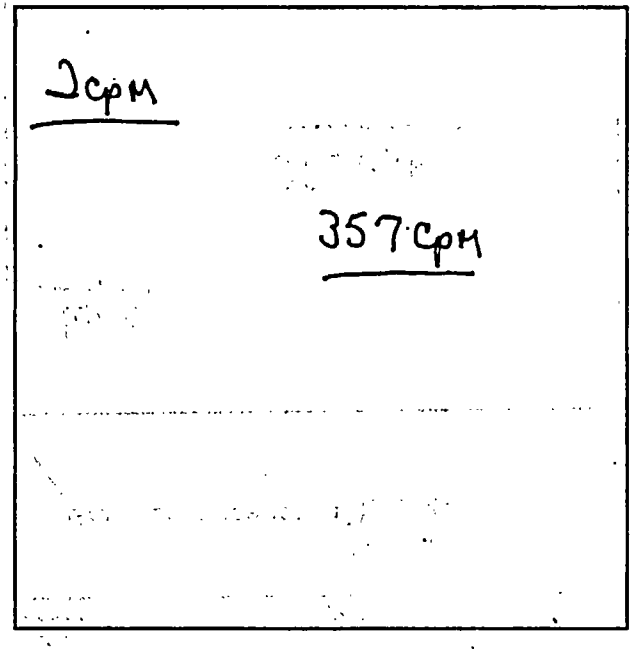
Background Check (cpm)

	Alpha	Beta	Time
1)	5	389	0730
2)	6	392	1600
#	2360	185774	

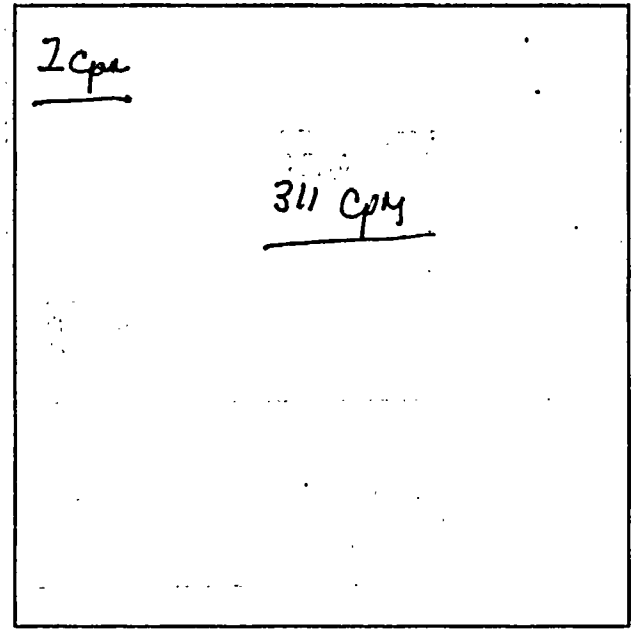
Contamination / R[illegible]ation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room A 1902	PAGE 3 OF 10
COMMENTS:	SURVEYOR(S): Trent Stephens / SURVEY NUMBER: 030404-35	DATE: 03/04/04
RCS REVIEW: [signature] DATE: 3.5.04	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.	

Grid Intersection C, 1



Grid Intersection D, 6



Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room A.1902	PAGE 4 OF 10
COMMENTS:	SURVEYOR(S): Trent Stephens	SURVEY NUMBER: 030404-35	DATE: 03/04/04
RCS REVIEW: [signature]	DATE: 3-5-04	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.	

Grid Intersection F,2

1cpm

288cpm

Grid Intersection K,5

3cpm

306cpm

Contamination / R[illegible]ation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room A 1902	PAGE 5 OF 10
COMMENTS:	SURVEYOR(S): Trent / Stephens	SURVEY NUMBER: 030404-35	DATE: 03/04/04
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW: [signature]	DATE: 3.5.04		

Grid Intersection H, 1

4 cpm

273 cpm

Grid Intersection J, 4

1 cpm

298 cpm

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room A 1902	PAGE 6 OF 10
COMMENTS:	SURVEYOR(S): Trent Stephens	SURVEY NUMBER: 030404-35	DATE: 03/04/04
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW: [signature]	DATE: 3.5.04		

Grid Intersection B, 3

3cpm

323cpm

Grid Intersection B, 14

4cpm

281cpm

Contamination / R[illegible]ation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room A 1902	PAGE 7 OF 10
COMMENTS:	SURVEYOR(S): Trent / Stephens	SURVEY NUMBER: 030404-35	DATE: 03/04/04
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW:	DATE: 3.5.04		

Grid Intersection L.9

7cpm

312cpm

Grid Intersection K.6

3cpm

339cpm

MDCRsurveyor Scanning Levels for Specific Materials

23-60	185768	/	Instr. Eff.	0.17 / Setup MDC	1641

Wall Board	**(WB)**	BKGD CPM	230.00	MDCR surveyor	345	gross cpm
Floor tile	**(FT)**	BKGD CPM	275.22	MDCR surveyor	401	gross cpm
Wood	**(wo)**	BKGD CPM	210.12	MDCR surveyor	320	gross cpm
Concrete Floor	**(CF)**	BKGD CPM	357.50	MDCR surveyor	500	gross cpm
Metal	**(ME)**	BKGD CPM	256.10	MDCR surveyor	377	gross cpm
Concret Block	**(CB)**	BKGD CPM	446.00	MDCR surveyor	606	gross cpm
Glass	**(GL)**	BKGD CPM	304.00	MDCR surveyor	436	gross cpm
Countertop	**(CT)**	BKGD CPM	232.08	MDCR surveyor	347	gross cpm

3-5-04

P. 8 of 10

030404-35

MDCRsurveyor Scanning Levels for Specific Materials

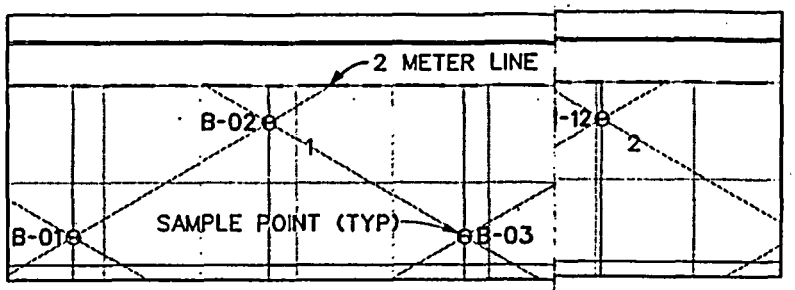
23-60	185774	/	Instr. Eff.	0.18 / Setup MDC	1711

Wall Board	**(WB)**	BKGD CPM	271.18	MDCR surveyor	396	gross cpm
Floor Tile	**(FT)**	BKGD CPM	347.86	MDCR surveyor	489	gross cpm
Wood	**(wo)**	BKGD CPM	250.42	MDCR surveyor	370	gross cpm
Concrete Floor	**(CF)**	BKGD CPM	498.62	MDCR surveyor	667	gross cpm
Metal	**(ME)**	BKGD CPM	325.46	MDCR surveyor	462	gross cpm
Concrete Block	**(CB)**	BKGD CPM	530.62	MDCR surveyor	705	gross cpm
Glass	**(GL)**	BKGD CPM	370.34	MDCR surveyor	516	gross cpm
Countertop	**(CT)**	BKGD CPM	286.78	MDCR surveyor	415	gross cpm

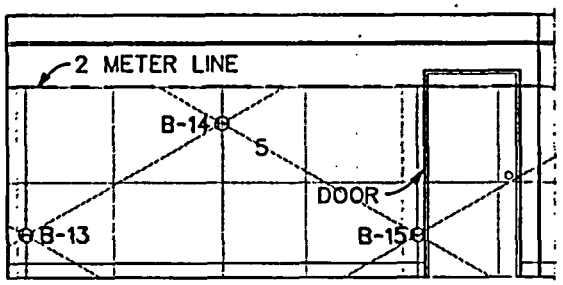
3.5.04

030404-35

Pg 9 of 10



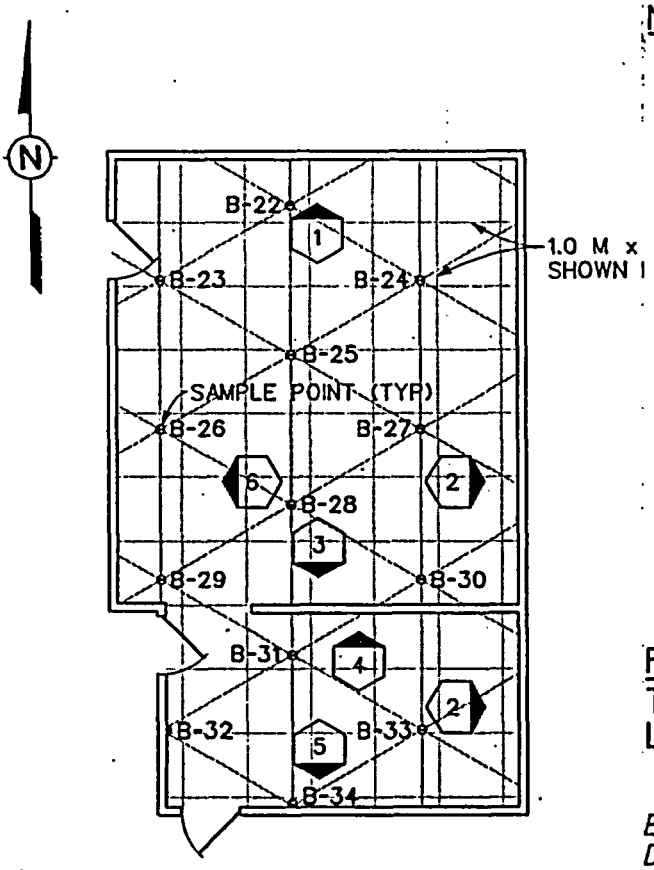
ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m

NOTES

1. WALL SURFACE AREA: 82.6136 SQ. M.
   FLOOR SURFACE AREA: 60.7755 SQ. M.
   TOTAL SURFACE AREA: 143.3891 SQ. M.
2. THE LENGTH OF EACH LEG OF THE TRIANGULAR SAMPLING GRID IS 2.349 METERS



PLAN VIEW
SCALE: 1" = 3.0 m

FIGURE 3-10
TRIANGULAR SAMPLING GRID FOR LABORATORY A1902

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Shaw Shaw Environmental, Inc.

STARTING DATE: 25NOV03 | INITIATOR: R.COLLINS | TECH. REVIEW: R.COLLINS | DWG. NO.: 101115_neic_0008.dgn
DRAWN BY: C.E.TUMLIN | CADD REVIEW: C.BENTLEY | PROJ. MGR.: R.L.ROGERS | PROJ. NO.: 101115

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030404-35 Ig 1 of 1
Yellen 3.5.04

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115
LOCATION: EPA NEIC	SURVEYOR(S): J. STEPHENS / T. TRENT
Denver Federal Center, CO	SURVEY NUMBER: 03 04 04 - 36
Denver, CO	MAP ID: LAB A1902

ACCEPTABLE SURFACE CONTAMINATION LEVELS
Loose 20 dpm/100cm² Alpha 200 dpm/100cm² Beta-Gamma
Total 100 dpm/100cm² Alpha 1,000 dpm/100cm² Beta-Gamma

ACCEPTABLE SCAN LIMITS
$MDCR_{surveyor}$ Beta
$MDCR_{surveyor}$ Alpha

Source Check Data	Contamination Surveys				Radiation Surveys
[redacted]	α (TOTAL)	α (TOTAL)	β-γ (TOTAL)	β-γ (TOTAL)	Beta-Gamma
Instrument	184904 / 185768	185774	184904 / 185768	185774	NA
Source Type and I.D.	Th-230, 1170/89	Th-230, 1170/89	Cs-137, 92C85000	Cs-137, 92C85000	
Source Strength in dpm	13800	13800	769565	769565	Cs
Efficiency	0.13 / 0.15	0.15	0.16 / 0.17	0.18	[redacted]
MDC in dpm/100 cm²	See attached instrument sheets for material specific backgrounds and MDC's.				Sat. ☐ Unsat. ☐
Background in cpm					mrem/hr or µrem/hr

REASON FOR SURVEY
☑ PROCEDURE NO. FINAL STATUS SURVEY PLAN - DIRECT Readings
☐ SPECIAL
☐ ROUTINE

Contamination ☑ By Shift ☐ Daily ☐ Weekly ☐ Monthly ☐
Radiation ☐ By Shift ☐ Daily ☐ Weekly ☐ Monthly ☐

COMMENTS: Item 1-17 - 2360 185768 18-34 2360 185774
35-36 - 2360 185768 37 - 2360 185774
38-42 - 2360 185768 43-47 - 2360 185774

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #
ALPHA (TOTAL) 2360 , 185774 BETA-GAMMA (TOTAL) 2360 , 185774
ALPHA (TOTAL) 2360 , 185768 BETA-GAMMA (TOTAL) 2360 , 185768
ALPHA (TOTAL) N/A BETA-GAMMA (TOTAL) N/A

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DATE: 03-04-04 TIME START: 0855 TIME COMPLETE: 1300 PAGE 1 OF 10

[redacted]	Alpha Loose	Alpha Total	Beta-Gamma Loose	Beta-Gamma Total	Alpha cpm ☐ Beta cpm ☐ Material ☑	Item or Location
Item #	dpm/100cm²	dpm/100cm²	dpm/100cm²	dpm/100cm²		
1	NA	-7	NA	814	WBD	B-01
2		1		273		B-02
3		-15		-59		B-03
4		-7		589		B-04
5		-37		223		B-05
6		-22		839		B-06
7		-19		522		B-07
8		-30		190		B-08
9		-36		235		B-09
10		-46		-69		B-10
11		-47		216		B-11
12		-36		213		B-12
13		-48		156		B-13
14		-41		212		B-14
15		-37		296		B-15
16		-6		160		B-16
17		-29		273		B-17
18		-17		-134		B-18
19		-7		-89	WBD	B-19
20		-21		567	WO	B-20
21		0		-183	WBD	B-21
22		4		-286	WBD	B-22
23		16		52	FT	B-23
24		-8		-52	FT	B-24
25		11		-26	FT	B-25

RCS REVIEW [signature] DATE 3-16-04

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT (CONTINUATION SHEET)

PROJECT NUMBER: 101115 | DATE: 03-04-04 | PAGE 2 OF 10

LOCATION: EPA NEIC
Denver Federal Center, Building 53
Denver, CO

SURVEYOR(S): J. STEPHENS / T. TRENT
SURVEY NUMBER: 030404-36
MAP ID: LAB A1902

COMMENTS:

RCS REVIEW [signature] DATE 3-16-04

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☑	Item or Location
26	NA	-2	NA	376	FT	B - 26
27		-5		-104		B - 27
28		18		-140		B - 28
29		1		-62		B - 29
30		6		-284		B - 30
31		14		-113		B - 31
32		43		-144		B - 32
33		53		-174		B - 33
34		84		-65	FT	B - 34
35		-5		251	WBD	Replicate B-02
36		-13		-137	WBD	Replicate B-03
37		12		-92	FT	Replicate B-31
38		1		1203		BS-1902-01
39		18		1161		BS-1902-02
40		-22		1239		BS-1902-03
41		-6		1158		BS-1902-04
42		-10		1019		BS-1902-05
43		8		-447		BS-1902-06
44		-9		-6		BS-1902-07
45		-16		14		BS-1902-08
46		1		-626		BS-1902-09
47		-3		30	FT	BS-1902-10
48			NA			
49						
50						

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
51						
52						
53						
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60			NA			
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Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room LAB A1902	PAGE 3 OF 10
COMMENTS:	SURVEYOR(S): J. STEPHENS / T. TRENT	SURVEY NUMBER: 030404-36	DATE: 03-04-04
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW: [signature]	DATE: 3.16.04		

Background Checks (cpm)

2360 - 185768

alpha	beta	Time
6	311	0730
5	327	1600

Background Checks (cpm)

2360 - 185774

alpha	beta	Time
5	389	0730
6	392	~~1600~~ 3.16.04 1600

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room LAB A1902	PAGE 4 OF 10
COMMENTS:		SURVEYOR(S): J. STEPHENS / T. TRENT	SURVEY NUMBER: 030404-36 / DATE: 03-04-04
		NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.	
RCS REVIEW:	DATE: 3.16.04		

Replicate Count B-02

Gross Total Counts

ORIGINAL

52 / 4725

Replicate

48 / 4690

#2360 185768

Replicate Count B-03

Gross Total Counts

ORIGINAL

41 / 4192

Replicate

42 / 4066

#2360 185768

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room LAB A1902	PAGE 5 OF 10
COMMENTS:	SURVEYOR(S): J. STEPHENS / T. TRENT	SURVEY NUMBER: 030404-36	DATE: 03-04-04
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW:	DATE: 3-16-04		

Replicate Count B-31

Gross Total Counts

ORIGINAL

39/5026

Replicate

38/5061

#2360 185274

030404-36

3-16-04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 185768

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Effciency 0.0375 dpm/cpm

Wall Board	**WB**	1.82	cpm	**MDC**	53	dpm/100cm2	**Sample Count Time**	15.00	min
Floor Tile	**FT**	2.22	cpm	**MDC**	58	dpm/100cm2	**Sample Count Time**	15.00	min
Wood	**WO**	3.10	cpm	**MDC**	68	dpm/100cm2	**Sample Count Time**	15.00	min
Cement Floor	**CF**	5.52	cpm	**MDC**	89	dpm/100cm2	**Sample Count Time**	15.00	min
Metal	**ME**	1.84	cpm	**MDC**	53	dpm/100cm2	**Sample Count Time**	15.00	min
Concrete Block	**CB**	2.50	cpm	**MDC**	61	dpm/100cm2	**Sample Count Time**	15.00	min
Glass	**GL**	4.38	cpm	**MDC**	79	dpm/100cm2	**Sample Count Time**	15.00	min
Counter Top	**CT**	1.68	cpm	**MDC**	51	dpm/100cm2	**Sample Count Time**	15.00	min
Black&White Floor Tile	**(BWFT)**	16.10	cpm	**MDC**	149	dpm/100cm2	**Sample Count Time**	15.00	min
Wall Board Downstairs	**(WBD)**	3.42	cpm	**MDC**	71	dpm/100cm2	**Sample Count Time**	15	min

JMilan
3.16.04

Material Specific Background and MDC Sheet for Beta Measurements

Instrument/SN: Ludlum 2360 / 185768

Probe/SN: Ludlum 43-68 / RN012714

Background Count Time 5.00 minutes

Total Instrument Effciency 0.0850 dpm/cpm

Wall Board	(WB)	230.00	cpm	MDC	242	dpm/100cm2	Sample Count Time	15.00	min
Floor Tile	(FT)	275.22	cpm	MDC	265	dpm/100cm2	Sample Count Time	15.00	min
Wood	(WO)	210.12	cpm	MDC	232	dpm/100cm2	Sample Count Time	15.00	min
Cement Floor	(CF)	357.50	cpm	MDC	302	dpm/100cm2	Sample Count Time	15.00	min
Metal	(ME)	256.10	cpm	MDC	256	dpm/100cm2	Sample Count Time	15.00	min
Concrete Block	(CB)	446.00	cpm	MDC	337	dpm/100cm2	Sample Count Time	15.00	min
Glass	(GL)	304.00	cpm	MDC	278	dpm/100cm2	Sample Count Time	15.00	min
Counter Top	(CT)	232.08	cpm	MDC	244	dpm/100cm2	Sample Count Time	15.00	min
Black&White Floor Tile	(BWFT)	385.38	cpm	MDC	313	dpm/100cm2	Sample Count Time	15.00	min
Wall Board Downstairs	(WBD)	285.78	cpm	MDC	270	dpm/100cm2	Sample Count Time	15.00	min

030404-36
JHlm
3-16-04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 185774

Probe/SN: Ludlum 43-68 / RN012713

Background count time 5 minutes

Total Instrument Effciency 0.0375 dpm/cpm

Wall Board	**WB**	2.30	cpm	**MDC**	59	dpm/100cm2	**Sample Count Time**	15.00	min
Floor Tile	**FT**	1.96	cpm	**MDC**	55	dpm/100cm2	**Sample Count Time**	15.00	min
Wood	**WO**	2.24	cpm	**MDC**	58	dpm/100cm2	**Sample Count Time**	15.00	min
Cement Floor	**CF**	3.54	cpm	**MDC**	72	dpm/100cm2	**Sample Count Time**	15.00	min
Metal	**ME**	1.10	cpm	**MDC**	42	dpm/100cm2	**Sample Count Time**	15.00	min
Concrete Block	**CB**	1.72	cpm	**MDC**	51	dpm/100cm2	**Sample Count Time**	15.00	min
Glass	**GL**	3.74	cpm	**MDC**	74	dpm/100cm2	**Sample Count Time**	15.00	min
Counter Top	**CT**	2.30	cpm	**MDC**	59	dpm/100cm2	**Sample Count Time**	15.00	min
Black&White Floor Tile	**(BWFT)**	5.04	cpm	**MDC**	85	dpm/100cm2	**Sample Count Time**	15.00	min
Wall Board Downstairs	**(WBD)**	2.06	cpm	**MDC**	56	dpm/100cm2	**Sample Count Time**	15	min

030404-36

3.16.04

Material Specific Background and MDC Sheet for Beta Measurements

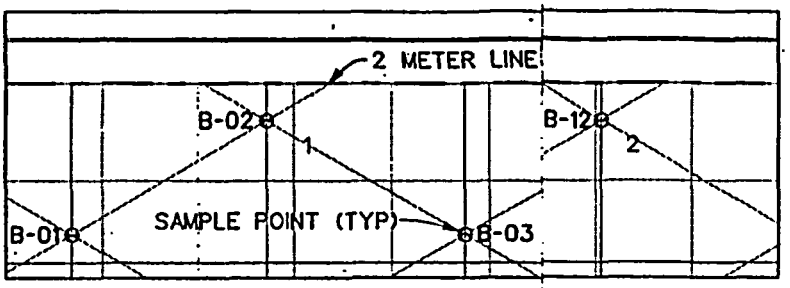
Instrument/SN: Ludlum 2360 / 185774

Probe/SN: Ludlum 43-68 / RN012713

Background Count Time 5.00 minutes

Total Instrument Effciency 0.0900 dpm/cpm

Wall Board	(WB)	271.18	cpm	MDC	248	dpm/100cm2	Sample Count Time	15.00	min
Floor Tile	(FT)	347.86	cpm	MDC	281	dpm/100cm2	Sample Count Time	15.00	min
Wood	(WO)	250.42	cpm	MDC	239	dpm/100cm2	Sample Count Time	15.00	min
Cement Floor	(CF)	498.62	cpm	MDC	336	dpm/100cm2	Sample Count Time	15.00	min
Metal	(ME)	325.46	cpm	MDC	272	dpm/100cm2	Sample Count Time	15.00	min
Concrete Block	(CB)	530.62	cpm	MDC	347	dpm/100cm2	Sample Count Time	15.00	min
Glass	(GL)	370.34	cpm	MDC	290	dpm/100cm2	Sample Count Time	15.00	min
Counter Top	(CT)	286.78	cpm	MDC	255	dpm/100cm2	Sample Count Time	15.00	min
Black&White Floor Tile	(BWFT)	393.98	cpm	MDC	299	dpm/100cm2	Sample Count Time	15.00	min
Wall Board Downstairs	(WBD)	306.64	cpm	MDC	264	dpm/100cm2	Sample Count Time	15.00	min



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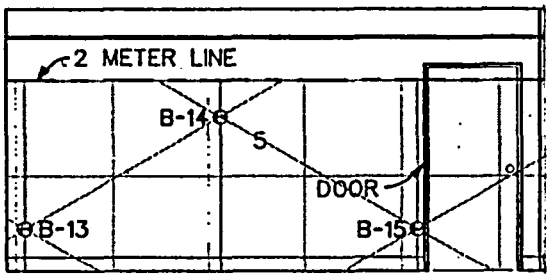
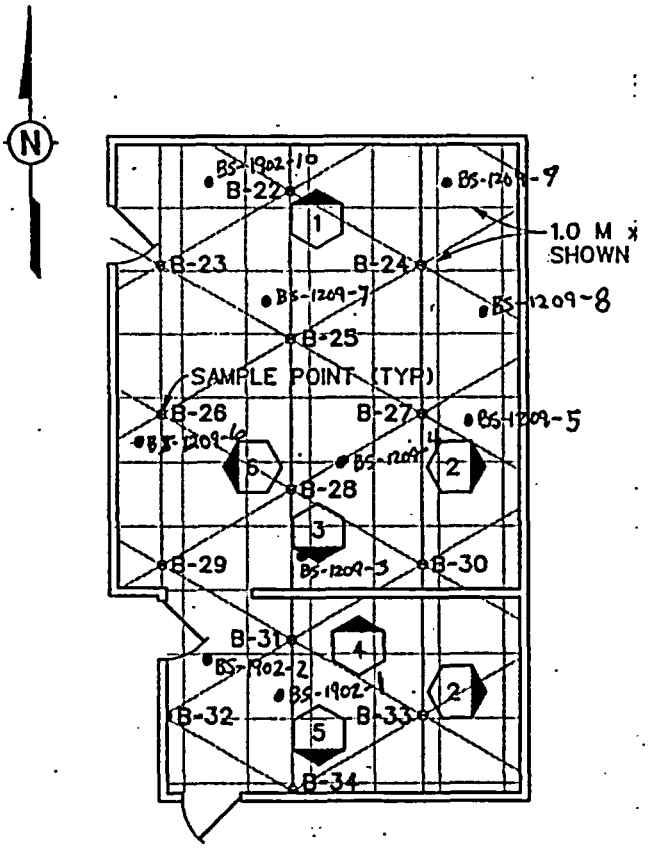
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m



PLAN VIEW
SCALE: 1" = 3.0 m

NOTES

1. WALL SURFACE AREA: 82.6136 SQ. M.

   FLOOR SURFACE AREA: 60.7755 SQ. M.

   TOTAL SURFACE AREA: 143.3891 SQ. M.

2. THE LENGTH OF EACH LEG OF THE TRIANGULAR SAMPLING GRID IS 2.349 METERS

FIGURE 3-10
TRIANGULAR SAMPLING GRID FOR LABORATORY A1902

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Shaw Shaw Environmental, Inc.

STARTING DATE: 25NOV03	INITIATOR: R.COLLINS	TECH. REVIEW: R.COLLINS	DWG. NO.: 101115_neic_0008.dgn
DRAWN BY: C.E.TUMLIN	CADD REVIEW: C.BENTLEY	PROJ. MGR.: R.L.ROGERS	PROJ. NO.: 101115

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Shellar 3-16-04 030404-36

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115	DATE: 03-04-04	TIME START: 1300 / TIME COMPLETE: 1340 / PAGE 1 OF 3
LOCATION: EPA NEIC Rm 1902	SURVEYOR(S): Trent / Stephens		
Denver Federal Center, CO	SURVEY NUMBER: 030404-37		
Denver, CO	MAP ID: LAB A1902		

ACCEPTABLE SURFACE CONTAMINATION LEVELS
Loose 20 dpm/100cm² Alpha 200 dpm/100cm² Beta-Gamma
Total 100 dpm/100cm² Alpha 1,000 dpm/100cm² Beta-Gamma

ACCEPTABLE SCAN LIMITS

Source Check Data	Contamination Surveys				Radiation Surveys
	α (LOOSE)	α (TOTAL)	β-γ (LOOSE)	β-γ (TOTAL)	Beta-Gamma
Instrument	*NOTE	NA	*NOTE	NA	NA
Source Type and I.D.					
Source Strength in dpm					µCi
Efficiency					
MDC in dpm/100 cm²					Sat. ☐ Unsat. ☐
Background in cpm					mrem/hr or yrem/hr

REASON FOR SURVEY
- ☒ PROCEDURE NO. FINAL STATUS SURVEY PLAN
- ☐ SPECIAL Smears
- ☐ ROUTINE

Contamination ☒ By SNR ☐ Daily ☐ Weekly ☐ Monthly ☐
Radiation ☐ By SNR ☐ Daily ☐ Weekly ☐ Monthly ☐

COMMENTS: NOTE: SEE DATA PACKGE FROM PARAGON ANALYTICS, INC. FOR REMOVABLE ACTIVITY RESULTS AND INSTRUMENT INFORMATION.

Contamination Survey INSTRUMENT / SERIAL #		
	ALPHA (LOOSE) PERFORMED BY PARAGON ANALYTICS, INC.	BETA-GAMMA (LOOSE) PERFORMED BY PARAGON ANALYTICS, INC.
	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A
Radiation Survey INSTRUMENT / SERIAL #	BETA-GAMMA Meter N/A	BETA-GAMMA Probe N/A

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Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
1	*NOTE	NA	*NOTE	NA	NA	B-01
2						B-02
3						B-03
4						B-04
5						B-05
6						B-06
7						B-07
8						B-08
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20						B-20
21						B-21
22						B-22
23						B-23
24						B-24
25						B-25

RCS REVIEW [signature] DATE 3-5-04

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT (CONTINUATION SHEET)

PROJECT NUMBER: 101115 | DATE: 030404 | PAGE 2 OF 3

LOCATION: EPA NEIC RM A 1902
Denver Federal Center, Building 53
Denver, CO

SURVEYOR(S): Stephens / Trent
SURVEY NUMBER: 030404-37
MAP ID: LAB A1902

COMMENTS:

RCS REVIEW [signature] DATE 3-5-04

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
26						B-26
27						B-27
28						B-28
29						B-29
30						B-30
31						B-31
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33						B-33
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40						03
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42						05
43						06
44						07
45						08
46						09
47						10
48						
49						N A
50						

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
51						
52						
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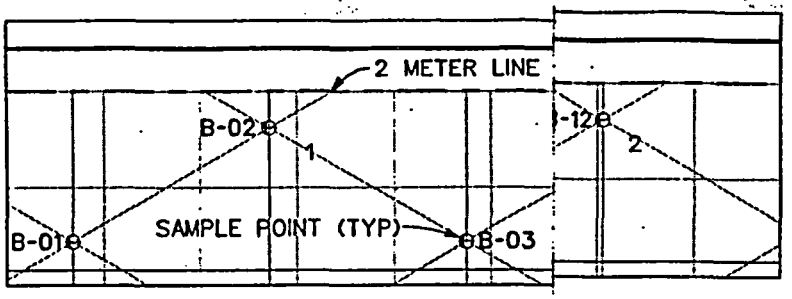
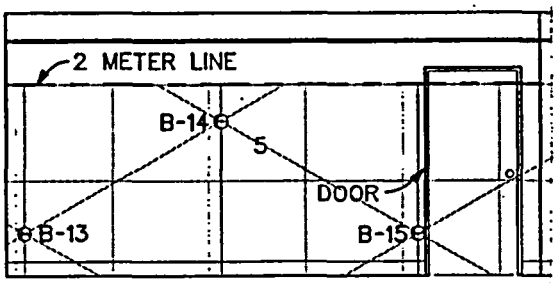


ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m

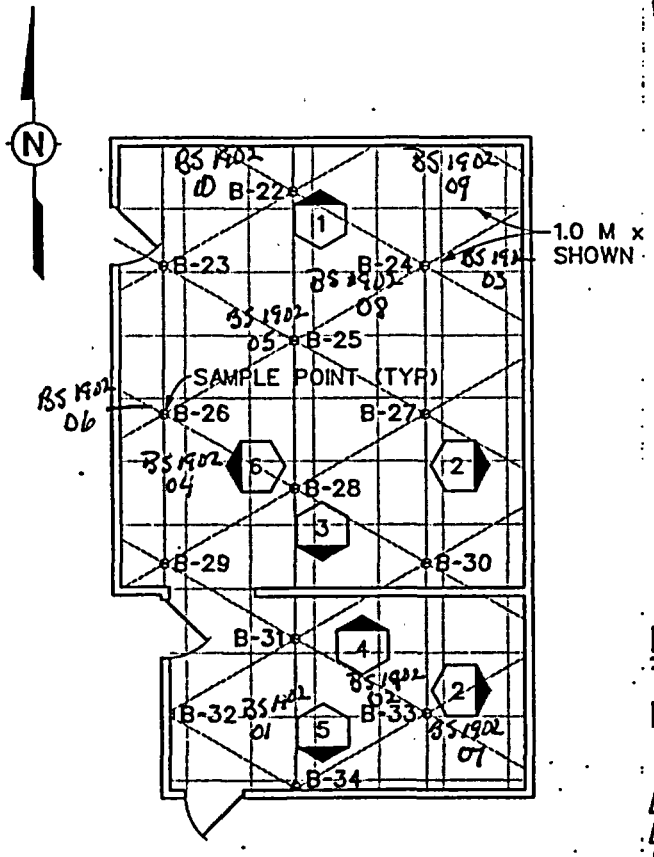
NOTES

1. WALL SURFACE AREA: 82.6136 SQ. M.

   FLOOR SURFACE AREA: 60.7755 SQ. M.

   TOTAL SURFACE AREA: 143.3891 SQ. M.

2. THE LENGTH OF EACH LEG OF THE TRIANGULAR SAMPLING GRID IS 2.349 METERS



PLAN VIEW
SCALE: 1" = 3.0 m

FIGURE 3-10
TRIANGULAR SAMPLING GRID FOR LABORATORY A1902

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Shaw Environmental, Inc.

DWG. NO.: 5_neic_0008.dgn
PROJ. NO.: 101115
TECH. REVIEW: R.COLLINS
PROJ. MGR.: R.L.ROGERS
INITIATOR: R.COLLINS
CADD REVIEW: C.BENTLEY
STARTING DATE: 25NOV03
DRAWN BY: C.E.TUMLIN
r2d2-b&w-tabloid.plt
standard.tbl
3/3/2004
8:39:40 AM
1:999.99 mm / IN.
ctumlin
C:\cadd\Design\101115_neic_0008.dgn

PARAGON ANALYTICS
225 Commerce Drive ◆ Fort Collins, CO 80524 ◆ (800) 443-1511 ◆ (970) 490-1511 ◆ FAX (970) 490-1522

April 1, 2004

Mr. Eddie Weaver
Shaw E & I
312 Directors Drive
Knoxville, TN 37923

Re: Paragon Workorder: 04-03-085
Client Project Name: EPA NEIC EDDP
Client Project Number: 101115

Dear Mr. Weaver:

Forty-eight filter samples were received from Shaw E & I on March 11, 2004. The samples were scheduled for Gross Alpha/Beta (pages 1-215) analysis. The results for this analysis are contained in the enclosed reports.

Thank you for your confidence in Paragon Analytics. Should you have any questions, please call.

Sincerely,

Debbie Fazio

Paragon Analytics
Debbie Fazio
Project Manager

DJF/ja
Enclosure: Report

APR 0 5 2004

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403085
Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
Client Project Number: 101115
Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
030404-36-01	0403085-1		FILTER	04-Mar-04	15:00
030404-36-02	0403085-2		FILTER	04-Mar-04	15:00
030404-36-03	0403085-3		FILTER	04-Mar-04	15:00
030404-36-04	0403085-4		FILTER	04-Mar-04	15:00
030404-36-05	0403085-5		FILTER	04-Mar-04	15:00
030404-36-06	0403085-6		FILTER	04-Mar-04	15:00
030404-36-07	0403085-7		FILTER	04-Mar-04	15:00
030404-36-08	0403085-8		FILTER	04-Mar-04	15:00
030404-36-09	0403085-9		FILTER	04-Mar-04	15:00
030404-36-010	0403085-10		FILTER	04-Mar-04	15:00
030404-36-011	0403085-11		FILTER	04-Mar-04	15:00
030404-36-012	0403085-12		FILTER	04-Mar-04	15:00
030404-36-013	0403085-13		FILTER	04-Mar-04	15:00
030404-36-014	0403085-14		FILTER	04-Mar-04	15:00
030404-36-015	0403085-15		FILTER	04-Mar-04	15:00
030404-36-016	0403085-16		FILTER	04-Mar-04	15:00
030404-36-017	0403085-17		FILTER	04-Mar-04	15:00
030404-36-018	0403085-18		FILTER	04-Mar-04	15:00
030404-36-019	0403085-19		FILTER	04-Mar-04	15:00
030404-36-020	0403085-20		FILTER	04-Mar-04	15:00
030404-36-021	0403085-21		FILTER	04-Mar-04	15:00
030404-36-022	0403085-22		FILTER	04-Mar-04	15:00
030404-36-023	0403085-23		FILTER	04-Mar-04	15:00
030404-36-024	0403085-24		FILTER	04-Mar-04	15:00
030404-36-025	0403085-25		FILTER	04-Mar-04	15:00
030404-36-026	0403085-26		FILTER	04-Mar-04	15:00
030404-36-027	0403085-27		FILTER	04-Mar-04	15:00
030404-36-028	0403085-28		FILTER	04-Mar-04	15:00
030404-36-029	0403085-29		FILTER	04-Mar-04	15:00
030404-36-030	0403085-30		FILTER	04-Mar-04	15:00
030404-36-031	0403085-31		FILTER	04-Mar-04	15:03
030404-36-032	0403085-32		FILTER	04-Mar-04	15:03

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403085
Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
Client Project Number: 101115
Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
030404-36-033	0403085-33		FILTER	04-Mar-04	15:03
030404-36-034	0403085-34		FILTER	04-Mar-04	15:03
030404-36-035	0403085-35		FILTER	04-Mar-04	15:03
030404-36-036	0403085-36		FILTER	04-Mar-04	15:03
030404-36-037	0403085-37		FILTER	04-Mar-04	15:03
030404-36-038	0403085-38		FILTER	04-Mar-04	15:03
030404-36-039	0403085-39		FILTER	04-Mar-04	15:03
030404-36-040	0403085-40		FILTER	04-Mar-04	15:03
030404-36-041	0403085-41		FILTER	04-Mar-04	15:03
030404-36-042	0403085-42		FILTER	04-Mar-04	15:03
030404-36-043	0403085-43		FILTER	04-Mar-04	15:03
030404-36-044	0403085-44		FILTER	04-Mar-04	15:03
030404-36-01 FD	0403085-45		FILTER	04-Mar-04	15:03
030404-36-08 FD	0403085-46		FILTER	04-Mar-04	15:03
030404-36-10FD	0403085-47		FILTER	04-Mar-04	15:03
030404-36-FB	0403085-48		FILTER	04-Mar-04	15:03

Shaw
Shaw Environmental & Infrastructure, Inc.

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A1902-0404-36
PAGE 1 of 3

Bill to:

Project No.	101115	Sample Shipment Date	3-11-04		
Project name	EPA NEIC EDDP	Lab Destination	Paragon Analytics, Inc.		
Sample Coordinator	James Nelson / 303-233-1279	Lab Contact	Debbie Fazio / 970-490-1511		
Project Manager	Randy Rodgers / 865-694-7457	Project Contact/phone	Ben Dettorre / 865-670-2669	Report to:	Ben Dettore
Sample Team Members	T. Trent	Carrier Waybill No.			312 Directors Drive
	J. Sthephens				Knoxville, TN 37923

ONE SAMPLE PER LINE 0403085

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
030404-36-01 (1)	Rm A1902 FSS Location B-01	3-4-04 / 1500	Smear		
030404-36-02 (2)	Rm A1902 FSS Location B-02	3-4-04 / 1500	Smear		
030404-36-03 (3)	Rm A1902 FSS Location B-03	3-4-04 / 1500	Smear		
030404-36-04 (4)	Rm A1902 FSS Location B-04	3-4-04 / 1500	Smear		
030404-36-05 (5)	Rm A1902 FSS Location B-05	3-4-04 / 1500	Smear		
030404-36-06 (6)	Rm A1902 FSS Location B-06	3-4-04 / 1500	Smear		
030404-36-07 (7)	Rm A1902 FSS Location B-07	3-4-04 / 1500	Smear		
030404-36-08 (8)	Rm A1902 FSS Location B-08	3-4-04 / 1500	Smear		

Special Instructions:

Possible Hazard Identification:
Non-haz ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:
Return to Client ☐ Disposal by Lab ☒ Archive ☐

Turnaround Time Required:
Normal ☒ Rush ☐

QC Level:
I. ☐ II. ☐ III. ☐ Project Specific: Defined in QAPP

1. Relinquished by (Signature/Affiliation)	Date: 3-11-04 Time: 1408	1. Received by (Signature/Affiliation) G Hoy 368 QEC	Date: 3/11/04 Time: 1410
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation) PAT	Date: 3/11/04 Time: 1545
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: ANALYSIS: GROSS Alpha/Beta - MDC (Reporting Limits) < 1.1 dpm/smear for alpha
< 100 dpm/smear for beta

Shaw
Shaw Environmental & Infrastructure, Inc.

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A1902-030404-36

Project Name/Project No. EPA NEIC EDDP / 101115 Lab Destination Paragon Analytics, Inc. Sample Shipment Date 3-11-04

ONE SAMPLE PER LINE 0403085

Sample Number (Client ID)		Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
030404-36-09	9	Rm A1902 FSS Location B-09	3-4-04 / 1500	Smear		
030404-36-10	10	Rm A1902 FSS Location B-10	3-4-04 / 1500	Smear		
030404-36-11	11	Rm A1902 FSS Location B-11	3-4-04 / 1500	Smear		
030404-36-12	12	Rm A1902 FSS Location B-12	3-4-04 / 1500	Smear		
030404-36-13	13	Rm A1902 FSS Location B-13	3-4-04 / 1500	Smear		
030404-36-14	14	Rm A1902 FSS Location B-14	3-4-04 / 1500	Smear		
030404-36-15	15	Rm A1902 FSS Location B-15	3-4-04 / 1500	Smear		
030404-36-16	16	Rm A1902 FSS Location B-16	3-4-04 / 1500	Smear		
030404-36-17	17	Rm A1902 FSS Location B-17	3-4-04 / 1500	Smear		
030404-36-18	18	Rm A1902 FSS Location B-18	3-4-04 / 1500	Smear		
030404-36-19	19	Rm A1902 FSS Location B-19	3-4-04 / 1500	Smear		
030404-36-20	20	Rm A1902 FSS Location B-20	3-4-04 / 1500	Smear		
030404-36-21	21	Rm A1902 FSS Location B-21	3-4-04 / 1500	Smear		
030404-36-22	22	Rm A1902 FSS Location B-22	3-4-04 / 1500	Smear		
030404-36-23	23	Rm A1902 FSS Location B-23	3-4-04 / 1500	Smear		
030404-36-24	24	Rm A1902 FSS Location B-24	3-4-04 / 1500	Smear		
030404-36-25	25	Rm A1902 FSS Location B-25	3-4-04 / 1500	Smear		
030404-36-26	26	Rm A1902 FSS Location B-26	3-4-04 / 1500	Smear		
030404-36-27	27	Rm A1902 FSS Location B-27	3-4-04 / 1500	Smear		
030404-36-28	28	Rm A1902 FSS Location B-28	3-4-04 / 1500	Smear		
030404-36-29	29	Rm A1902 FSS Location B-29	3-4-04 / 1500	Smear		
030404-3[illegible]0	30	Rm A1902 FSS Location B-30	3-4-04 / 1500	Smear		

Shaw
Shaw Environmental & Infrastructure, Inc.

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A1902-0304 36

Page 3 of 3

Project Name/Project No. EPA NEIC EDDP / 101115 Lab Destination Paragon Analytics, Inc. Sample Shipment Date 3-11-04

ONE SAMPLE PER LINE 6403085

Sample Number (Client ID)		Sample Description		Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
030404-36-31	31	Rm A1902 FSS Location	B-31	3-4-04 / 1503	Smear		
030404-36-32	32	Rm A1902 FSS Location	B-32	3-4-04 / 1503	Smear		
030404-36-33	33	Rm A1902 FSS Location	B-33	3-4-04 / 1503	Smear		
030404-36-34	34	Rm A1902 FSS Location	B-34	3-4-04 / 1503	Smear		
030404-36-35	35	Rm A1902 FSS Location	BS-1902-01	3-4-04 / 1503	Smear		
030404-36-36	36	Rm A1902 FSS Location	BS-1902-02	3-4-04 / 1503	Smear		
030404-36-37	37	Rm A1902 FSS Location	BS-1902-03	3-4-04 / 1503	Smear		
030404-36-38	38	Rm A1902 FSS Location	BS-1902-04	3-4-04 / 1503	Smear		
030404-36-39	39	Rm A1902 FSS Location	BS-1902-05	3-4-04 / 1503	Smear		
030404-36-40	40	Rm A1902 FSS Location	BS-1902-06	3-4-04 / 1503	Smear		
030404-36-41	41	Rm A1902 FSS Location	BS-1902-07	3-4-04 / 1503	Smear		
030404-36-42	42	Rm A1902 FSS Location	BS-1902-08	3-4-04 / 1503	Smear		
030404-36-43	43	Rm A1902 FSS Location	BS-1902-09	3-4-04 / 1503	Smear		
030404-36-44	44	Rm A1902 FSS Location	BS-1902-10	3-4-04 / 1503	Smear		
030404-36-01 FD	45	Rm A1902 FSS Location Field Dup	BS-1902-01	3-4-04 / 1503	Smear		
030404-36-08 FD	46	Rm A1902 FSS Location Field Dup	BS-1902-08	3-4-04 / 1503	Smear		
030404-36-10 FD	47	Rm A1902 FSS Location Field Dup	BS-1902-10	3-4-04 / 1503	Smear		
030404-36-FB	48	Field Blank		3-4-04 / 1503	Smear		
NA		NA		NA	NA	NA	NA

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw Knox Federal Center WORKORDER NO: 0403085

PROJECT MANAGER: DF INITIALS: DHO DATE: 3-11-04

1. Does this project require any special handling in addition to standard Paragon procedures?		Yes	No
IS PRE-SCREENING REQUIRED? (radiochemistry, DOE, etc.)		Yes	No
2. Are custody seals on shipping containers intact? How many custody seals are provided? _____	N/A	Yes	No
3. Are the custody seals on sample containers intact?	N/A	Yes	No
4. Is there a Chain-of-Custody (COC) or other representative documents, letters, or shipping memos?		Yes	No
5. Is the COC complete? Relinquished: Yes X No___ Analyses Requested: Yes X No___	N/A	Yes	No
6. Is the COC in agreement with the samples received? No. of Samples: Yes X No___ Sample ID's: Yes X No___ Matrix: Yes X No___ No. of Containers: Yes X No___	N/A	Yes	No
7. Were COC (if applicable) and sample labels legible?		Yes	No
8. Were airbills present and/or removable?	N/A	Yes	No
9. Are all aqueous samples requiring chemical preservation preserved correctly (excluding volatile organics)?	N/A	Yes	No
Are all aqueous non-preserved samples at the correct pH?		Yes	No
10. Is there enough sample for requested analyses? If so, were samples placed in the proper containers?		Yes	No
11. Are all samples within holding times for the requested analyses?		Yes	No
12. Were all sample containers received intact? (not broken or leaking, etc.)		Yes	No
13. Are samples requiring no headspace (volatiles, reactive cyanide/sulfide, radon), headspace free? Size of bubble: ___ < green pea; ___ > green pea (List sample IDs and affected containers on Page 2)	N/A	Yes	No
14. Were samples checked for and free from the presence of residual chlorine?	N/A	Yes	No
15. Were the sample(s) shipped on ice?	N/A	Yes	No
16. Were cooler temperatures measured at 0.1 - 6 °C ? IR Gun Used*: 1 2	N/A	Yes	No
17. Were all samples cooled that should have been cooled?	N/A	Yes	No

Cooler #'s _____

Temperature ambient _____ °C

Project Manager Signature / Date: Debbie Fazio 3/12/04

A NO RESPONSE TO ANY QUESTION EXCEPT # 1 REQUIRES THE COMPLETION OF PAGE 2 OF THIS FORM

* IR Gun #1 (original): Raytek, SN SC-PM3/T29403
IR Gun #2 (newer): Oakton, SN 2SCIR1201

Paragon Analytics

Radiochemistry Case Narrative
Gross Alpha/Beta

Shaw E & I Inc.

EPA NEIC EDDP / 101115

PAI WO 0403085

1. This report consists of the analytical results and supporting documentation for 48 filter samples received by Paragon on 3/11/04.

2. These samples were prepared according to Paragon Analytics procedure SOP702R16.

3. The samples submitted by the client were placed in stainless steel counting planchets and were analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics, Inc. procedure PAI SOP724R8. The analyses were completed on 3/31/04. Calibrations and calculations are defined in Paragon Analytics, Inc. procedure PAI SOP702R16. Gross Alpha and Gross Beta results are referenced to NIST traceable planchet sources containing ^{241}Am and ^{90}Sr, respectively.

4. The analysis results for these samples are reported on an 'as received' basis in units of DPM/sample.

5. A blank filter is placed in a stainless steel counting planchet and analyzed as the method blank.

6. Sample volumes were insufficient to allow preparation of duplicates. Duplicate analyses of samples 030404-36-07, 030404-36-017, 030404-36-028, 030404-36-038, and 030404-36-041 (PA ID 0403085-7, -17, -28, -38, and -41) were performed in lieu of prepared duplicates.

7. Sample 030404-36-038 and its duplicate analysis (PA ID 0403085-38 and -38D) were originally counted on 3/24/04 and 3/25/04, respectively. The DER value between the two was outside the control limit of 2.13. The duplicate was recounted on 3/30/04, and the results were comparable to the first duplicate count on 3/25/04. Therefore it was concluded that the count on 3/24/04 for sample 0403085-38 was loaded into the detector incorrectly. All of the samples counted on 3/24/04 in file ABB0324 were recounted on 3/31/04 in file ABB0331. The DER value is now in control and results are reported from the sample count on 3/31/04 and the duplicate count on 3/30/04. Please refer to QASS 263250.

8. PAI follows the convention outlined in ANSI N42.23 for reporting significant digits in the TPU and MDC results. ANSI N42.23 states that the TPU result should be rounded to two significant digits and that the MDC result should be rounded to the same decimal place as the

TPU result. In practice, this could result in an MDC result with a reported value of 0 for samples with significant activity, including the batch laboratory control sample.

9. The magnitude of the negative activity for samples 030404-36-01 FD and 030404-36-08 FD (PAI ID 0403085-45 and -46) is greater than the 2 sigma TPU. The analyst's review of the data does not indicate a problem with the instrument data or the subsequent reporting systems. The data quality is not believed to be affected and the results are submitted without qualification. Under typical conditions, where background level sample data is normally distributed and analyzed by paired observations, this event is likely to occur at least 2.5% of the time.

10. The duplicate error ratio (DER) for the gross beta analysis of sample 030404-36-017 (PAI Sample ID 0403085-17) and its duplicate sample 0403085-17D was elevated above our warning limit. DER is defined as :

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

Where: S = sample result, D = duplicate result, σ_s = 1 sigma uncertainty of sample result, and σ_D = 1 sigma uncertainty of the duplicate result. The warning limit for DER is 1.42. This sample = 1.65. Results are acceptable according to PA SOP 715.

11. No anomalous situations were encountered during the preparation or analysis of these samples. All 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.

Radiochemistry Instrument Technician — Date: 3-31-04

Radiochemistry Final Data Review — Date: 3/31/04

1

PARAGON ANALYTICS
Radiochemistry Data Package

Section 1

SAMPLE RESULTS SUMMARY

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:21 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-1	030404-36-01	Sample	GROSS ALPHA	-0.01 +/- 0.31	0.79	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-1	030404-36-01	Sample	GROSS BETA	-0.07 +/- 0.63	1.47	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-2	030404-36-02	Sample	GROSS ALPHA	0.10 +/- 0.34	0.79	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-2	030404-36-02	Sample	GROSS BETA	0.23 +/- 0.74	1.66	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-3	030404-36-03	Sample	GROSS ALPHA	0.06 +/- 0.30	0.72	DPM/sample	FILTER	AB040312-5	3/29/04	U
0403085-3	030404-36-03	Sample	GROSS BETA	0.13 +/- 0.66	1.51	DPM/sample	FILTER	AB040312-5	3/29/04	U
0403085-4	030404-36-04	Sample	GROSS ALPHA	0.04 +/- 0.27	0.68	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-4	030404-36-04	Sample	GROSS BETA	0.28 +/- 0.63	1.41	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-5	030404-36-05	Sample	GROSS ALPHA	0.11 +/- 0.31	0.71	DPM/sample	FILTER	AB040312-5	3/23/04	U

omments:

ta Package ID: *ABF0403085-1*

ffiers/Flags:
Result is less than the sample specific MDC.
Result is less than Requested MDC, greater than sample specific MDC.
Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Chemical Yield outside default limits.
he requested MDC was not met.
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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:21 PM

Lab ample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-5	030404-36-05	Sample	GROSS BETA	0.37 +/- 0.62	1.36	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-6	030404-36-06	Sample	GROSS ALPHA	-0.06 +/- 0.21	0.62	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-6	030404-36-06	Sample	GROSS BETA	-0.09 +/- 0.58	1.37	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-7	030404-36-07	Sample	GROSS ALPHA	0.02 +/- 0.30	0.75	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-7	030404-36-07	Sample	GROSS BETA	1.36 +/- 0.79	1.54	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-8	030404-36-08	Sample	GROSS ALPHA	0.18 +/- 0.30	0.64	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-8	030404-36-08	Sample	GROSS BETA	0.25 +/- 0.63	1.40	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-9	030404-36-09	Sample	GROSS ALPHA	0.23 +/- 0.34	0.71	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-9	030404-36-09	Sample	GROSS BETA	0.70 +/- 0.70	1.47	DPM/sample	FILTER	AB040312-5	3/23/04	U

mments:

ta Package ID: *ABF0403085-1*

lers/Flags:
lesult is less than the sample specific MDC.
esult is less than Requested MDC, greater than sample specific MDC.
hemical Yield is in control at 100-110%. Quantitative Yield is assumed.
hemical Yield outside default limits.
e requested MDC was not met.
he 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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:21 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-10	030404-36-010	Sample	GROSS ALPHA	-0.17 +/- 0.26	0.76	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-10	030404-36-010	Sample	GROSS BETA	-0.17 +/- 0.63	1.48	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-11	030404-36-011	Sample	GROSS ALPHA	-0.09 +/- 0.23	0.66	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-11	030404-36-011	Sample	GROSS BETA	0.61 +/- 0.68	1.45	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-12	030404-36-012	Sample	GROSS ALPHA	0.37 +/- 0.38	0.74	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-12	030404-36-012	Sample	GROSS BETA	0.18 +/- 0.65	1.47	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-13	030404-36-013	Sample	GROSS ALPHA	0.06 +/- 0.25	0.62	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-13	030404-36-013	Sample	GROSS BETA	0.11 +/- 0.63	1.43	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-14	030404-36-014	Sample	GROSS ALPHA	0.11 +/- 0.34	0.79	DPM/sample	FILTER	AB040312-5	3/23/04	U

mments:

ta Package ID: *ABF0403085-1*

ters/Flags:
Result is less than the sample specific MDC.
Result is less than Requested MDC, greater than sample specific MDC.
Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Chemical Yield outside default limits.
The requested MDC was not met.
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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:21 PM

Lab ample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-14	030404-36-014	Sample	GROSS BETA	0.37 +/- 0.67	1.47	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-15	030404-36-015	Sample	GROSS ALPHA	-0.06 +/- 0.30	0.79	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-15	030404-36-015	Sample	GROSS BETA	0.20 +/- 0.74	1.66	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-16	030404-36-016	Sample	GROSS ALPHA	0.06 +/- 0.26	0.63	DPM/sample	FILTER	AB040312-5	3/29/04	U
0403085-16	030404-36-016	Sample	GROSS BETA	0.15 +/- 0.66	1.49	DPM/sample	FILTER	AB040312-5	3/29/04	U
0403085-17	030404-36-017	Sample	GROSS ALPHA	0.06 +/- 0.31	0.75	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-17	030404-36-017	Sample	GROSS BETA	1.85 +/- 0.84	1.54	DPM/sample	FILTER	AB040312-5	3/23/04	LT
0403085-18	030404-36-018	Sample	GROSS ALPHA	0.03 +/- 0.29	0.72	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-18	030404-36-018	Sample	GROSS BETA	0.79 +/- 0.66	1.36	DPM/sample	FILTER	AB040312-5	3/23/04	U

mments:

ta Package ID: *ABF0403085-1*

ers/Flags:
esult is less than the sample specific MDC.
esult is less than Requested MDC, greater than sample specific MDC.
hemical Yield is in control at 100-110%. Quantitative Yield is assumed.
hemical Yield outside default limits.
e requested MDC was not met.
he 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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lent Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:21 PM

Lab ample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-19	030404-36-019	Sample	GROSS ALPHA	0.37 +/- 0.35	0.62	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-19	030404-36-019	Sample	GROSS BETA	0.85 +/- 0.67	1.37	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-20	030404-36-020	Sample	GROSS ALPHA	0.09 +/- 0.31	0.72	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-20	030404-36-020	Sample	GROSS BETA	0.13 +/- 0.61	1.39	DPM/sample	FILTER	AB040312-5	3/23/04	U
0403085-21	030404-36-021	Sample	GROSS ALPHA	0.12 +/- 0.31	0.71	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-21	030404-36-021	Sample	GROSS BETA	0.25 +/- 0.66	1.46	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-22	030404-36-022	Sample	GROSS ALPHA	-0.17 +/- 0.26	0.77	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-22	030404-36-022	Sample	GROSS BETA	0.35 +/- 0.67	1.48	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-23	030404-36-023	Sample	GROSS ALPHA	-0.01 +/- 0.25	0.66	DPM/sample	FILTER	AB040312-6	3/23/04	U

mments:

ta Package ID: *ABF0403085-1*

ters/Flags:
esult is less than the sample specific MDC.
esult is less than Requested MDC, greater than sample specific MDC.
hemical Yield is in control at 100-110%. Quantitative Yield is assumed.
hemical Yield outside default limits.
e requested MDC was not met.
he 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

0008

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004 2:06:22 PM

Lab ample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-23	030404-36-023	Sample	GROSS BETA	-0.09 +/- 0.62	1.45	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-24	030404-36-024	Sample	GROSS ALPHA	0.13 +/- 0.32	0.74	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-24	030404-36-024	Sample	GROSS BETA	0.47 +/- 0.67	1.46	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-25	030404-36-025	Sample	GROSS ALPHA	0.30 +/- 0.34	0.66	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-25	030404-36-025	Sample	GROSS BETA	1.02 +/- 0.74	1.49	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-26	030404-36-026	Sample	GROSS ALPHA	0.21 +/- 0.30	0.64	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-26	030404-36-026	Sample	GROSS BETA	0.21 +/- 0.72	1.61	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-27	030404-36-027	Sample	GROSS ALPHA	-0.12 +/- 0.27	0.78	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-27	030404-36-027	Sample	GROSS BETA	-0.04 +/- 0.72	1.65	DPM/sample	FILTER	AB040312-6	3/31/04	U

mments:

ta Package ID: *ABF0403085-1*

ers/Flags:
esult is less than the sample specific MDC.
esult is less than Requested MDC, greater than sample specific MDC.
hemical Yield is in control at 100-110%. Quantitative Yield is assumed.
hemical Yield outside default limits.
e requested MDC was not met.
he 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

000009

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:22 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-28	030404-36-028	Sample	GROSS ALPHA	-0.06 +/- 0.21	0.62	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-28	030404-36-028	Sample	GROSS BETA	0.71 +/- 0.68	1.43	DPM/sample	FILTER	AB040312-6	3/23/04	U
0403085-29	030404-36-029	Sample	GROSS ALPHA	0.12 +/- 0.29	0.68	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-29	030404-36-029	Sample	GROSS BETA	-0.57 +/- 0.60	1.48	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-30	030404-36-030	Sample	GROSS ALPHA	0 +/- 0.29	0.74	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-30	030404-36-030	Sample	GROSS BETA	0.10 +/- 0.66	1.50	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-31	030404-36-031	Sample	GROSS ALPHA	-0.06 +/- 0.25	0.69	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-31	030404-36-031	Sample	GROSS BETA	-0.05 +/- 0.64	1.48	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-32	030404-36-032	Sample	GROSS ALPHA	-0.06 +/- 0.22	0.63	DPM/sample	FILTER	AB040312-6	3/31/04	U

mments:

ta Package ID: *ABF0403085-1*

lers/Flags:
esult is less than the sample specific MDC.
esult is less than Requested MDC, greater than sample specific MDC.
hemical Yield is in control at 100-110%. Quantitative Yield is assumed.
hemical Yield outside default limits.
e requested MDC was not met.
he 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

000010

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004 2:06:22 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-32	030404-36-032	Sample	GROSS BETA	-0.15 +/- 0.63	1.49	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-33	030404-36-033	Sample	GROSS ALPHA	0.19 +/- 0.31	0.67	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-33	030404-36-033	Sample	GROSS BETA	0.28 +/- 0.66	1.46	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-34	030404-36-034	Sample	GROSS ALPHA	0.09 +/- 0.31	0.73	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-34	030404-36-034	Sample	GROSS BETA	0.14 +/- 0.63	1.42	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-35	030404-36-035	Sample	GROSS ALPHA	0.38 +/- 0.38	0.74	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-35	030404-36-035	Sample	GROSS BETA	0.05 +/- 0.62	1.43	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-36	030404-36-036	Sample	GROSS ALPHA	0.06 +/- 0.27	0.66	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-36	030404-36-036	Sample	GROSS BETA	0.23 +/- 0.64	1.44	DPM/sample	FILTER	AB040312-6	3/31/04	U

mments:

ta Package ID: *ABF0403085-1*

fiers/Flags:
Result is less than the sample specific MDC.
Result is less than Requested MDC, greater than sample specific MDC.
Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Chemical Yield outside default limits.
e requested MDC was not met.
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

00011

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:22 PM

Lab ample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-37	030404-36-037	Sample	GROSS ALPHA	0.12 +/- 0.30	0.68	DPM/sample	FILTER	AB040312-6	3/25/04	U
0403085-37	030404-36-037	Sample	GROSS BETA	0.42 +/- 0.64	1.41	DPM/sample	FILTER	AB040312-6	3/25/04	U
0403085-38	030404-36-038	Sample	GROSS ALPHA	-0.02 +/- 0.30	0.78	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-38	030404-36-038	Sample	GROSS BETA	-0.42 +/- 0.60	1.45	DPM/sample	FILTER	AB040312-6	3/31/04	U
0403085-39	030404-36-039	Sample	GROSS ALPHA	0.18 +/- 0.29	0.62	DPM/sample	FILTER	AB040312-6	3/25/04	U
0403085-39	030404-36-039	Sample	GROSS BETA	0.15 +/- 0.60	1.37	DPM/sample	FILTER	AB040312-6	3/25/04	U
0403085-40	030404-36-040	Sample	GROSS ALPHA	0.30 +/- 0.36	0.72	DPM/sample	FILTER	AB040312-6	3/25/04	U
0403085-40	030404-36-040	Sample	GROSS BETA	0.13 +/- 0.61	1.39	DPM/sample	FILTER	AB040312-6	3/25/04	U
0403085-41	030404-36-041	Sample	GROSS ALPHA	0.15 +/- 0.32	0.71	DPM/sample	FILTER	AB040312-7	3/25/04	U

mments:

ta Package ID: *ABF0403085-1*

ers/Flags:
esult is less than the sample specific MDC.
esult is less than Requested MDC, greater than sample specific MDC.
hemical Yield is in control at 100-110%. Quantitative Yield is assumed.
hemical Yield outside default limits.
e requested MDC was not met.
he 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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:22 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-41	030404-36-041	Sample	GROSS BETA	0.30 +/- 0.66	1.46	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-42	030404-36-042	Sample	GROSS ALPHA	-0.21 +/- 0.25	0.77	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-42	030404-36-042	Sample	GROSS BETA	0.33 +/- 0.67	1.48	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-43	030404-36-043	Sample	GROSS ALPHA	-0.13 +/- 0.21	0.66	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-43	030404-36-043	Sample	GROSS BETA	-0.36 +/- 0.60	1.45	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-44	030404-36-044	Sample	GROSS ALPHA	0.09 +/- 0.32	0.74	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-44	030404-36-044	Sample	GROSS BETA	0.86 +/- 0.71	1.46	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-45	030404-36-01 FD	Sample	GROSS ALPHA	-0.18 +/- 0.16	0.62	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-45	030404-36-01 FD	Sample	GROSS BETA	0.35 +/- 0.64	1.43	DPM/sample	FILTER	AB040312-7	3/25/04	U

mments:

ta Package ID: *ABF0403085-1*

fiers/Flags:
Result is less than the sample specific MDC.
Result is less than Requested MDC, greater than sample specific MDC.
Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Chemical Yield outside default limits.
e requested MDC was not met.
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

000013

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Sample Results Summary

Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
lient Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Reported on: Wednesday, March 31, 2004
2:06:23 PM

Lab ample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403085-46	030404-36-08 FD	Sample	GROSS ALPHA	-0.25 +/- 0.24	0.79	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-46	030404-36-08 FD	Sample	GROSS BETA	0.29 +/- 0.66	1.46	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-47	030404-36-10FD	Sample	GROSS ALPHA	-0.10 +/- 0.29	0.79	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-47	030404-36-10FD	Sample	GROSS BETA	0.16 +/- 0.73	1.66	DPM/sample	FILTER	AB040312-7	3/25/04	U
0403085-48	030404-36-FB	Sample	GROSS ALPHA	-0.05 +/- 0.29	0.77	DPM/sample	FILTER	AB040312-7	3/26/04	U
0403085-48	030404-36-FB	Sample	GROSS BETA	0.46 +/- 0.68	1.49	DPM/sample	FILTER	AB040312-7	3/26/04	U

mments:

ta Package ID: *ABF0403085-1*

ers/Flags:
esult is less than the sample specific MDC.
esult is less than Requested MDC, greater than sample specific MDC.
hemical Yield is in control at 100-110%. Quantitative Yield is assumed.
hemical Yield outside default limits.
e requested MDC was not met.
he 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

PARAGON ANALYTICS

Radiochemistry Data Package

2

Section 2

QC RESULTS SUMMARY

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-5MB

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.13 +/- 0.20	0.64	U
12587-47-2	GROSS BETA	0.33 +/- 0.63	1.40	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-6MB

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0325f

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.05 +/- 0.23	0.64	U
12587-47-2	GROSS BETA	0.20 +/- 0.62	1.40	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-7MB

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0325h

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.12 +/- 0.31	0.71	U
12587-47-2	GROSS BETA	0.05 +/- 0.59	1.36	U

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-5ALCS

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0323j

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-46-1	GROSS ALPHA	11100 +/- 1800	0	9950	111	70 - 130	P,M3

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-5BLCS

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0323j

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	41200 +/- 6600	0	41000	100	70 - 130	P

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-6ALCS

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0325l

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-46-1	GROSS ALPHA	11100 +/- 1800	0	9950	112	70 - 130	P,M3

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-6BLCS

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0325i

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	41100 +/- 6600	0	41000	100	70 - 130	P

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-7ALCS

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0325j

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-46-1	GROSS ALPHA	11100 +/- 1800	0	9950	111	70 - 130	P,M3

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: *ABF0403085-1*

000023

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Lab ID: AB040312-7BLCS

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 12-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0325j

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	41300 +/- 6600	0	41000	101	70 - 130	P

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-07
Lab ID: 0403085-7DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.02 +/- 0.30	-0.15 +/- 0.24	0.44	2.13	U
12587-47-2	GROSS BETA	1.36 +/- 0.79	0.54 +/- 0.64	0.81	2.13	U

Comments:

Duplicate Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-017
Lab ID: 0403085-17DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.06 +/- 0.31	-0.13 +/- 0.22	0.48	2.13	U
12587-47-2	GROSS BETA	1.85 +/- 0.84	0.13 +/- 0.62	1.65	2.13	U,W

Comments:

Duplicate Qualifiers/Flags:

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

Abbreviations:

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

Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-028
Lab ID: 0403085-28DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	-0.06 +/- 0.21	-0.04 +/- 0.25	0.05	2.13	U
12587-47-2	GROSS BETA	0.71 +/- 0.68	0.44 +/- 0.66	0.29	2.13	U

Comments:

Duplicate Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-038
Lab ID	0403085-38DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 30-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0330a

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	-0.02 +/- 0.30	-0.06 +/- 0.23	0.10	2.13	U
12587-47-2	GROSS BETA	-0.42 +/- 0.60	-0.25 +/- 0.60	0.20	2.13	U

Comments:

Duplicate Qualifiers/Flags:

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

Abbreviations:

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

Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-041
Lab ID: 0403085-41DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325h

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.15 +/- 0.32	0.16 +/- 0.31	0.00	2.13	U
12587-47-2	GROSS BETA	0.30 +/- 0.66	0.20 +/- 0.63	0.11	2.13	U

Comments:

Duplicate Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

PARAGON ANALYTICS
Radiochemistry Data Package

3

Section 3

INDIVIDUAL SAMPLE RESULTS

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-01
Lab ID: 0403085-1

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323h

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.01 +/- 0.31	0.79	U
12587-47-2	GROSS BETA	-0.07 +/- 0.63	1.47	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

FieldID: 030404-36-02
LabID: 0403085-2

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323h

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.10 +/- 0.34	0.79	U
12587-47-2	GROSS BETA	0.23 +/- 0.74	1.66	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-03
Lab ID: 0403085-3

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 29-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0329f

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.06 +/- 0.30	0.72	U
12587-47-2	GROSS BETA	0.13 +/- 0.66	1.51	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID:	030404-36-04
Lab ID:	0403085-4

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.04 +/- 0.27	0.68	U
12587-47-2	GROSS BETA	0.28 +/- 0.63	1.41	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-05
Lab ID: 0403085-5

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.11 +/- 0.31	0.71	U
12587-47-2	GROSS BETA	0.37 +/- 0.62	1.36	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-06
Lab ID: 0403085-6

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.21	0.62	U
12587-47-2	GROSS BETA	-0.09 +/- 0.58	1.37	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-07	**Sample Matrix:** FILTER	**Prep Batch:** AB040312-5	**Final Aliquot:** 1.00 sample
Lab ID: 0403085-7	**Prep SOP:** PAI 702 Rev 16	**QCBatchID:** AB040312-5-1	**Prep Basis:** As Received
	Date Collected: 04-Mar-04	**Run ID:** ab040312-5d	**Moisture(%):** NA
	Date Prepared: 12-Mar-04	**Count Time:** 100 minutes	**Result Units:** DPM/sample
	Date Analyzed: 23-Mar-04	**Report Basis:** As Received	**File Name:** abb0323h

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.02 +/- 0.30	0.75	U
12587-47-2	GROSS BETA	1.36 +/- 0.79	1.54	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-07
Lab ID: 0403085-7DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.15 +/- 0.24	0.72	U
12587-47-2	GROSS BETA	0.54 +/- 0.64	1.38	U

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID:	030404-36-08
Lab ID:	0403085-8

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323I

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.18 +/- 0.30	0.64	U
12587-47-2	GROSS BETA	0.25 +/- 0.63	1.40	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-09
Lab ID: 0403085-9

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.23 +/- 0.34	0.71	U
12587-47-2	GROSS BETA	0.70 +/- 0.70	1.47	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID:	030404-36-010
Lab ID:	0403085-10

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.17 +/- 0.26	0.76	U
12587-47-2	GROSS BETA	-0.17 +/- 0.63	1.48	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-011
Lab ID	0403085-11

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.09 +/- 0.23	0.66	U
12587-47-2	GROSS BETA	0.61 +/- 0.68	1.45	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-012
Lab ID: 0403085-12

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.37 +/- 0.38	0.74	U
12587-47-2	GROSS BETA	0.18 +/- 0.65	1.47	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-013
Lab ID: 0403085-13

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.06 +/- 0.25	0.62	U
12587-47-2	GROSS BETA	0.11 +/- 0.63	1.43	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-38-014
Lab ID: 0403085-14

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.11 +/- 0.34	0.79	U
12587-47-2	GROSS BETA	0.37 +/- 0.67	1.47	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

FieldID:	030404-36-015
Lab ID:	0403085-15

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.30	0.79	U
12587-47-2	GROSS BETA	0.20 +/- 0.74	1.66	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-016
Lab Id: 0403085-16

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 29-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0329f

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.06 +/- 0.26	0.63	U
12587-47-2	GROSS BETA	0.15 +/- 0.66	1.49	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-017
Lab ID	0403085-17

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.06 +/- 0.31	0.75	U
12587-47-2	GROSS BETA	1.85 +/- 0.84	1.54	LT

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-017
Lab ID: 0403085-17DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.13 +/- 0.22	0.68	U
12587-47-2	GROSS BETA	0.13 +/- 0.62	1.40	U,W

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID:	030404-36-018
Lab ID:	0403085-18

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.03 +/- 0.29	0.72	U
12587-47-2	GROSS BETA	0.79 +/- 0.66	1.36	U

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 Propegated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-019
Lab ID: 0403085-19

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323l

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.37 +/- 0.35	0.62	U
12587-47-2	GROSS BETA	0.85 +/- 0.67	1.37	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

FieldID:	030404-36-020
LabID:	0403085-20

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-5
QCBatchID: AB040312-5-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323I

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.09 +/- 0.31	0.72	U
12587-47-2	GROSS BETA	0.13 +/- 0.61	1.39	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-021
Lab ID: 0403085-21

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323m

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.12 +/- 0.31	0.71	U
12587-47-2	GROSS BETA	0.25 +/- 0.66	1.46	U

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)

DL - Below Detection Limit

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-022
Lab ID: 0403085-22

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323m

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.17 +/- 0.26	0.77	U
12587-47-2	GROSS BETA	0.35 +/- 0.67	1.48	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

FieldID: 030404-36-023
LabID: 0403085-23

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323m

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.01 +/- 0.25	0.66	U
12587-47-2	GROSS BETA	-0.09 +/- 0.62	1.45	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-024
Lab ID: 0403085-24

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323m

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.13 +/- 0.32	0.74	U
12587-47-2	GROSS BETA	0.47 +/- 0.67	1.46	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-025
Lab ID: 0403085-25

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.30 +/- 0.34	0.66	U
12587-47-2	GROSS BETA	1.02 +/- 0.74	1.49	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-026
Lab ID: 0403085-26

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.21 +/- 0.30	0.64	U
12587-47-2	GROSS BETA	0.21 +/- 0.72	1.61	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-027
Lab ID: 0403085-27

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.12 +/- 0.27	0.78	U
12587-47-2	GROSS BETA	-0.04 +/- 0.72	1.65	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-028
Lab ID: 0403085-28

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 23-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0323m

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.21	0.62	U
12587-47-2	GROSS BETA	0.71 +/- 0.68	1.43	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-028
Lab ID	0403085-28DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.04 +/- 0.25	0.67	U
12587-47-2	GROSS BETA	0.44 +/- 0.66	1.45	U

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-029
Lab ID: 0403085-29

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.12 +/- 0.29	0.68	U
12587-47-2	GROSS BETA	-0.57 +/- 0.60	1.48	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID:	030404-36-030
Lab ID:	0403085-30

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0 +/- 0.29	0.74	U
12587-47-2	GROSS BETA	0.10 +/- 0.66	1.50	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-031
Lab ID: 0403085-31

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.25	0.69	U
12587-47-2	GROSS BETA	-0.05 +/- 0.64	1.48	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID:	030404-36-032
Lab ID:	0403085-32

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.22	0.63	U
12587-47-2	GROSS BETA	-0.15 +/- 0.63	1.49	U

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)

DL - Below Detection Limit

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-033
Lab ID: 0403085-33

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.19 +/- 0.31	0.67	U
12587-47-2	GROSS BETA	0.28 +/- 0.66	1.46	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-034
Lab ID: 0403085-34

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.09 +/- 0.31	0.73	U
12587-47-2	GROSS BETA	0.14 +/- 0.63	1.42	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-035
Lab ID: 0403085-35

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.38 +/- 0.38	0.74	U
12587-47-2	GROSS BETA	0.05 +/- 0.62	1.43	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-036
Lab ID	0403085-36

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.06 +/- 0.27	0.66	U
12587-47-2	GROSS BETA	0.23 +/- 0.64	1.44	U

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)

DL - Below Detection Limit

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-037
Lab ID: 0403085-37

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325f

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.12 +/- 0.30	0.68	U
12587-47-2	GROSS BETA	0.42 +/- 0.64	1.41	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-038
Lab ID: 0403085-38

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 31-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0331

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.02 +/- 0.30	0.78	U
12587-47-2	GROSS BETA	-0.42 +/- 0.60	1.45	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-038
Lab ID	0403085-38DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 30-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0330a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.23	0.66	U
12587-47-2	GROSS BETA	-0.25 +/- 0.60	1.43	U

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-039
Lab ID: 0403085-39

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325f

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.18 +/- 0.29	0.62	U
12587-47-2	GROSS BETA	0.15 +/- 0.60	1.37	U

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)

DL - Below Detection Limit

Data Package ID: *ABF0403085-1*

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Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-040
Lab ID	0403085-40

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-6
QCBatchID: AB040312-6-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325f

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.30 +/- 0.36	0.72	U
12587-47-2	GROSS BETA	0.13 +/- 0.61	1.39	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-041
Lab ID	0403085-41

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.15 +/- 0.32	0.71	U
12587-47-2	GROSS BETA	0.30 +/- 0.66	1.46	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-041
Lab ID	0403085-41DUP

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325h

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.16 +/- 0.31	0.68	U
12587-47-2	GROSS BETA	0.20 +/- 0.63	1.41	U

Comments:

Qualifiers/Flags:

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

Abbreviations:

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

Data Package ID: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-042
Lab ID: 0403085-42

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.21 +/- 0.25	0.77	U
12587-47-2	GROSS BETA	0.33 +/- 0.67	1.48	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-043
Lab ID: 0403085-43

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.13 +/- 0.21	0.66	U
12587-47-2	GROSS BETA	-0.36 +/- 0.60	1.45	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID	030404-36-044
Lab ID	0403085-44

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.09 +/- 0.32	0.74	U
12587-47-2	GROSS BETA	0.86 +/- 0.71	1.46	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-01 FD
Lab ID: 0403085-45

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.18 +/- 0.16	0.62	U
12587-47-2	GROSS BETA	0.35 +/- 0.64	1.43	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID:	030404-36-08 FD
Lab ID:	0403085-46

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.25 +/- 0.24	0.79	U
12587-47-2	GROSS BETA	0.29 +/- 0.66	1.46	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-10FD
Lab ID: 0403085-47

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 25-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0325g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.10 +/- 0.29	0.79	U
12587-47-2	GROSS BETA	0.16 +/- 0.73	1.66	U

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: *ABF0403085-1*

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403085
Client Name: Shaw E & I Inc.
ClientProject ID: EPA NEIC EDDP 101115

Field ID: 030404-36-FB
Lab ID: 0403085-48

Sample Matrix: FILTER
Prep SOP: PAI 702 Rev 16
Date Collected: 04-Mar-04
Date Prepared: 12-Mar-04
Date Analyzed: 26-Mar-04

Prep Batch: AB040312-7
QCBatchID: AB040312-7-1
Run ID: ab040312-5d
Count Time: 100 minutes
Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0326

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.05 +/- 0.29	0.77	U
12587-47-2	GROSS BETA	0.46 +/- 0.68	1.49	U

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: *ABF0403085-1*

PARAGON ANALYTICS
Radiochemistry Data Package

4

Section 4

RAW DATA

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 702 | **Reported on:** Wednesday, March 31, 2004

PAI Work Order: 0403085 | **Analytical SOP:** PAI 724 | 2:03:49 PM

Sample ID / QC Type	Nuclide / Type	Sample Date/Time	Prep Batch / QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix / %Moist.	Samp Aiq / Analy Aiq	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
0403085-1	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.130	24.89%	100	-0.01	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	D1	abb0323h	12:12 PM	0.127	NA	NA	0.31	NA	As Received	NA	U
0403085-1	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.540	41.57%	100	-0.07	1.47	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	D1	abb0323h	12:12 PM	1.547	NA	NA	0.63	NA	As Received	NA	U
0403085-2	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.160	25.16%	100	0.10	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	D2	abb0323h	12:12 PM	0.130	NA	NA	0.34	NA	As Received	NA	U
0403085-2	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	2.230	42.47%	100	0.23	1.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	D2	abb0323h	12:12 PM	2.103	NA	NA	0.74	NA	As Received	NA	U
0403085-3	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/29/04	0.130	25.71%	100	0.06	0.72	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	B4	abb0329f	12:57 PM	0.112	NA	NA	0.30	NA	As Received	NA	U
0403085-3	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/29/04	1.720	41.60%	100	0.13	1.51	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	B4	abb0329f	12:57 PM	1.642	NA	NA	0.66	NA	As Received	NA	U
0403085-4	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.100	24.75%	100	0.04	0.68	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	A1	abb0323l	2:27 PM	0.087	NA	NA	0.27	NA	As Received	NA	U
0403085-4	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.510	40.98%	100	0.28	1.41	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	A1	abb0323l	2:27 PM	1.378	NA	NA	0.63	NA	As Received	NA	U
0403085-5	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.130	24.60%	100	0.11	0.71	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	A2	abb0323l	2:27 PM	0.097	NA	NA	0.31	NA	As Received	NA	U
0403085-5	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.450	40.97%	100	0.37	1.36	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	A2	abb0323l	2:27 PM	1.276	NA	NA	0.62	NA	As Received	NA	U
0403085-6	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.060	25.08%	100	-0.06	0.62	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 s	A3	abb0323l	2:27 PM	0.071	NA	NA	0.21	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

00085

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Aiq Analy Aiq	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
0403085-6	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.310	41.53%	100	-0.09	1.37	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A3	abb0323l	2:27 PM	1.338	NA	NA	0.58	NA	As Received	NA	U
0403085-7	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.130	25.54%	100	0.02	0.75	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D4	abb0323h	12:12 PM	0.117	NA	NA	0.30	NA	As Received	NA	U
0403085-7	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	2.450	43.03%	100	1.36	1.54	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D4	abb0323h	12:12 PM	1.841	NA	NA	0.79	NA	As Received	NA	U
0403085-7	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.070	24.77%	100	-0.15	0.72	DPM/sample	0.44	
DUP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A4	abb0323l	2:27 PM	0.102	NA	NA	0.24	NA	As Received	NA	U
0403085-7	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.590	41.30%	100	0.54	1.38	DPM/sample	0.81	
DUP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A4	abb0323l	2:27 PM	1.355	NA	NA	0.64	NA	As Received	NA	U
0403085-8	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.130	25.25%	100	0.18	0.64	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	B3	abb0323l	2:27 PM	0.081	NA	NA	0.30	NA	As Received	NA	U
0403085-8	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.570	42.08%	100	0.25	1.40	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	B3	abb0323l	2:27 PM	1.441	NA	NA	0.63	NA	As Received	NA	U
0403085-9	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.170	25.71%	100	0.23	0.71	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	B4	abb0323l	2:27 PM	0.107	NA	NA	0.34	NA	As Received	NA	U
0403085-9	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.860	41.60%	100	0.70	1.47	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	B4	abb0323l	2:27 PM	1.537	NA	NA	0.70	NA	As Received	NA	U
0403085-10	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.090	25.68%	100	-0.17	0.76	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C1	abb0323l	2:27 PM	0.128	NA	NA	0.26	NA	As Received	NA	U
0403085-10	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.570	42.01%	100	-0.17	1.48	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C1	abb0323l	2:27 PM	1.626	NA	NA	0.63	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

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

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

Abbreviations:

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MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio
BDL - Below Detection Limit

0086

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403085-11	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.070	25.53%	100	-0.09	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C2	abb0323l	2:27 PM	0.089	NA	NA	0.23	NA	As Received	NA	U
0403085-11	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.620	41.94%	100	0.61	1.45	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C2	abb0323l	2:27 PM	1.550	NA	NA	0.68	NA	As Received	NA	U
0403085-12	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.210	25.24%	100	0.37	0.74	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C3	abb0323l	2:27 PM	0.111	NA	NA	0.38	NA	As Received	NA	U
0403085-12	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.640	41.54%	100	0.18	1.47	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C3	abb0323l	2:27 PM	1.527	NA	NA	0.65	NA	As Received	NA	U
0403085-13	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.090	24.72%	100	0.06	0.62	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C4	abb0323l	2:27 PM	0.073	NA	NA	0.25	NA	As Received	NA	U
0403085-13	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.570	41.98%	100	0.11	1.43	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C4	abb0323l	2:27 PM	1.509	NA	NA	0.63	NA	As Received	NA	U
0403085-14	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.160	24.89%	100	0.11	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D1	abb0323l	2:27 PM	0.127	NA	NA	0.34	NA	As Received	NA	U
0403085-14	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.730	41.57%	100	0.37	1.47	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D1	abb0323l	2:27 PM	1.547	NA	NA	0.67	NA	As Received	NA	U
0403085-15	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.120	25.16%	100	-0.06	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D2	abb0323l	2:27 PM	0.130	NA	NA	0.30	NA	As Received	NA	U
0403085-15	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	2.210	42.47%	100	0.20	1.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D2	abb0323l	2:27 PM	2.103	NA	NA	0.74	NA	As Received	NA	U
0403085-16	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/29/04	0.100	25.66%	100	0.06	0.63	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C1	abb0329f	12:57 PM	0.080	NA	NA	0.26	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
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MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio
BDL - Below Detection Limit

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID / QC Type	Nuclide / Type	Sample Date/Time	Prep Batch / QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix / %Moist.	Samp Alq / Analy Alq	Inst ID / Det ID	AnRunID / File Name	Count Date/Time	GrossCPM / BkgCPM	BaseEff / ProgEff	CntDur(min) / Yield	Activity +/- / 2 s TPU	MDC / DecLev	ReportUnits / ReportBasis	DER / RPD	%Spk. Recov / Flags
0403085-16	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/29/04	1.720	42.01%	100	0.15	1.49	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	C1	abb0329f	12:57 PM	1.639	NA	NA	0.66	NA	As Received	NA	U
0403085-17	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.140	25.54%	100	0.06	0.75	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D4	abb0323l	2:27 PM	0.117	NA	NA	0.31	NA	As Received	NA	U
0403085-17	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	2.660	43.03%	100	1.85	1.54	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	D4	abb0323l	2:27 PM	1.841	NA	NA	0.84	NA	As Received	NA	LT
0403085-17	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.060	24.75%	100	-0.13	0.68	DPM/sample	0.48	
DUP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A1	abb0323l	4:36 PM	0.087	NA	NA	0.22	NA	As Received	NA	U
0403085-17	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.440	40.98%	100	0.13	1.40	DPM/sample	1.65	
DUP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A1	abb0323l	4:36 PM	1.378	NA	NA	0.62	NA	As Received	NA	U,W
0403085-18	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.110	24.60%	100	0.03	0.72	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A2	abb0323l	4:36 PM	0.097	NA	NA	0.29	NA	As Received	NA	U
0403085-18	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.620	40.97%	100	0.79	1.36	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A2	abb0323l	4:36 PM	1.276	NA	NA	0.66	NA	As Received	NA	U
0403085-19	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.170	25.08%	100	0.37	0.62	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A3	abb0323l	4:36 PM	0.071	NA	NA	0.35	NA	As Received	NA	U
0403085-19	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.720	41.53%	100	0.85	1.37	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A3	abb0323l	4:36 PM	1.338	NA	NA	0.67	NA	As Received	NA	U
0403085-20	GROSS ALPHA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.130	24.77%	100	0.09	0.72	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A4	abb0323l	4:36 PM	0.102	NA	NA	0.31	NA	As Received	NA	U
0403085-20	GROSS BETA	3/4/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.430	41.30%	100	0.13	1.39	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-5-1	NA	NA	NA	1 #	A4	abb0323l	4:36 PM	1.355	NA	NA	0.61	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 702 | **Reported on:** Wednesday, March 31, 2004

PAI Work Order: 0403085 | **Analytical SOP:** PAI 724 | 2:03:49 PM

Sample ID / QC Type	Nuclide / Type	Sample Date/Time	Prep Batch / QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix / %Moist.	Samp Alq / Analy Alq	Inst ID / Det ID	AnRunID / File Name	Count Date/Time	GrossCPM / BkgCPM	BaseEff / ProgEff	CntDur(min) / Yield	Activity +/- / 2 s TPU	MDC / DecLev	ReportUnits / ReportBasis	DER / RPD	%Spk. Recov / Flags
0403085-21	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.140	25.71%	100	0.12	0.71	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	B4	abb0323m	4:36 PM	0.107	NA	NA	0.31	NA	As Received	NA	U
0403085-21	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.670	41.60%	100	0.25	1.46	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	B4	abb0323m	4:36 PM	1.537	NA	NA	0.66	NA	As Received	NA	U
0403085-22	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.090	25.68%	100	-0.17	0.77	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C1	abb0323m	4:36 PM	0.128	NA	NA	0.26	NA	As Received	NA	U
0403085-22	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.790	42.01%	100	0.35	1.48	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C1	abb0323m	4:36 PM	1.626	NA	NA	0.67	NA	As Received	NA	U
0403085-23	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.090	25.53%	100	-0.01	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C2	abb0323m	4:36 PM	0.089	NA	NA	0.25	NA	As Received	NA	U
0403085-23	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.530	41.94%	100	-0.09	1.45	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C2	abb0323m	4:36 PM	1.550	NA	NA	0.62	NA	As Received	NA	U
0403085-24	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.150	25.24%	100	0.13	0.74	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C3	abb0323m	4:36 PM	0.111	NA	NA	0.32	NA	As Received	NA	U
0403085-24	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.750	41.54%	100	0.47	1.46	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C3	abb0323m	4:36 PM	1.527	NA	NA	0.67	NA	As Received	NA	U
0403085-25	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.170	25.54%	100	0.30	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D4	abb0331	9:35 AM	0.086	NA	NA	0.34	NA	As Received	NA	U
0403085-25	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	2.180	43.03%	100	1.02	1.49	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D4	abb0331	9:35 AM	1.711	NA	NA	0.74	NA	As Received	NA	U
0403085-26	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.140	25.82%	100	0.21	0.64	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D3	abb0331	9:35 AM	0.082	NA	NA	0.30	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403085-26	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.990	41.47%	100	0.21	1.61	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D3	abb0331	9:35 AM	1.878	NA	NA	0.72	NA	As Received	NA	U
0403085-27	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.100	25.16%	100	-0.12	0.78	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D2	abb0331	9:35 AM	0.125	NA	NA	0.27	NA	As Received	NA	U
0403085-27	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	2.090	42.47%	100	-0.04	1.65	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D2	abb0331	9:35 AM	2.088	NA	NA	0.72	NA	As Received	NA	U
0403085-28	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	0.060	24.72%	100	-0.06	0.62	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C4	abb0323m	4:36 PM	0.073	NA	NA	0.21	NA	As Received	NA	U
0403085-28	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/23/04	1.820	41.98%	100	0.71	1.43	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C4	abb0323m	4:36 PM	1.509	NA	NA	0.68	NA	As Received	NA	U
0403085-28	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.080	24.89%	100	-0.04	0.67	DPM/sample	0.05	
DUP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D1	abb0331	9:35 AM	0.085	NA	NA	0.25	NA	As Received	NA	U
0403085-28	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.720	41.57%	100	0.44	1.45	DPM/sample	0.29	
DUP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	D1	abb0331	9:35 AM	1.523	NA	NA	0.66	NA	As Received	NA	U
0403085-29	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.120	24.72%	100	0.12	0.68	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C4	abb0331	9:35 AM	0.089	NA	NA	0.29	NA	As Received	NA	U
0403085-29	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.390	41.98%	100	-0.57	1.48	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C4	abb0331	9:35 AM	1.608	NA	NA	0.60	NA	As Received	NA	U
0403085-30	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.120	25.24%	100	0	0.74	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C3	abb0331	9:35 AM	0.113	NA	NA	0.29	NA	As Received	NA	U
0403085-30	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.680	41.54%	100	0.10	1.50	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040312-6-1	NA	NA	NA	1 s	C3	abb0331	9:35 AM	1.614	NA	NA	0.66	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

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
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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.
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Notes:

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Abbreviations:

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BDL - Below Detection Limit

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403085-31	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.090	25.53%	100	-0.06	0.69	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	C2	abb0331	9:35 AM	0.100	NA	NA	0.25	NA	As Received	NA	U
0403085-31	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.610	41.94%	100	-0.05	1.48	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	C2	abb0331	9:35 AM	1.615	NA	NA	0.64	NA	As Received	NA	U
0403085-32	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.070	25.68%	100	-0.06	0.63	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	C1	abb0331	9:35 AM	0.080	NA	NA	0.22	NA	As Received	NA	U
0403085-32	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.590	42.01%	100	-0.15	1.49	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	C1	abb0331	9:35 AM	1.639	NA	NA	0.63	NA	As Received	NA	U
0403085-33	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.140	25.25%	100	0.19	0.67	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	B3	abb0331	9:35 AM	0.090	NA	NA	0.31	NA	As Received	NA	U
0403085-33	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.720	42.08%	100	0.28	1.46	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	B3	abb0331	9:35 AM	1.574	NA	NA	0.66	NA	As Received	NA	U
0403085-34	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.130	24.77%	100	0.09	0.73	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A4	abb0331	9:35 AM	0.104	NA	NA	0.31	NA	As Received	NA	U
0403085-34	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.500	41.30%	100	0.14	1.42	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A4	abb0331	9:35 AM	1.419	NA	NA	0.63	NA	As Received	NA	U
0403085-35	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.210	25.08%	100	0.38	0.74	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A3	abb0331	9:35 AM	0.110	NA	NA	0.38	NA	As Received	NA	U
0403085-35	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.500	41.53%	100	0.05	1.43	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A3	abb0331	9:35 AM	1.442	NA	NA	0.62	NA	As Received	NA	U
0403085-36	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.100	24.75%	100	0.06	0.68	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A1	abb0331	9:35 AM	0.081	NA	NA	0.27	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
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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

000091

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403085-36	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.550	40.98%	100	0.23	1.44	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A1	abb0331	9:35 AM	1.441	NA	NA	0.64	NA	As Received	NA	U
0403085-37	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	0.120	24.75%	100	0.12	0.68	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A1	abb0325f	11:05 AM	0.087	NA	NA	0.30	NA	As Received	NA	U
0403085-37	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	1.570	40.98%	100	0.42	1.41	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A1	abb0325f	11:05 AM	1.378	NA	NA	0.64	NA	As Received	NA	U
0403085-38	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	0.120	24.60%	100	-0.02	0.78	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A2	abb0331	9:35 AM	0.121	NA	NA	0.30	NA	As Received	NA	U
0403085-38	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/31/04	1.320	40.97%	100	-0.42	1.45	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A2	abb0331	9:35 AM	1.471	NA	NA	0.60	NA	As Received	NA	U
0403085-38	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/30/04	0.070	24.75%	100	-0.06	0.66	DPM/sample	0.10	
DUP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A1	abb0330a	11:05 AM	0.081	NA	NA	0.23	NA	As Received	NA	U
0403085-38	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/30/04	1.350	40.98%	100	-0.25	1.43	DPM/sample	0.20	
DUP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A1	abb0330a	11:05 AM	1.441	NA	NA	0.60	NA	As Received	NA	U
0403085-39	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	0.120	25.08%	100	0.18	0.62	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A3	abb0325f	11:05 AM	0.071	NA	NA	0.29	NA	As Received	NA	U
0403085-39	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	1.420	41.53%	100	0.15	1.37	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A3	abb0325f	11:05 AM	1.338	NA	NA	0.60	NA	As Received	NA	U
0403085-40	GROSS ALPHA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	0.180	24.77%	100	0.30	0.72	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A4	abb0325f	11:05 AM	0.102	NA	NA	0.36	NA	As Received	NA	U
0403085-40	GROSS BETA	3/4/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	1.440	41.30%	100	0.13	1.39	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-6-1	NA	NA	NA	1 s	A4	abb0325f	11:05 AM	1.355	NA	NA	0.61	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics | **Prep SOP:** PAI 702 | **Reported on:** Wednesday, March 31, 2004 2:03:49 PM

PAI Work Order: 0403085 | **Analytical SOP:** PAI 724

Sample ID / QC Type	Nuclide / Type	Sample Date/Time	Prep Batch / QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix / %Moist.	Samp Alq / Analy Alq	Inst ID / Det ID	AnRunID / File Name	Count Date/Time	GrossCPM / BkgCPM	BaseEff / ProgEff	CntDur(min) / Yield	Activity +/- / 2 s TPU	MDC / DecLev	ReportUnits / ReportBasis	DER / RPD	%Spk. Recov / Flags
0403085-41	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.150	25.71%	100	0.15	0.71	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	B4	abb0325g	11:05 AM	0.107	NA	NA	0.32	NA	As Received	NA	U
0403085-41	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	1.690	41.60%	100	0.30	1.46	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	B4	abb0325g	11:05 AM	1.537	NA	NA	0.68	NA	As Received	NA	U
0403085-41	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.130	24.75%	100	0.16	0.68	DPM/sample	0.00	
DUP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	A1	abb0325h	12:57 PM	0.087	NA	NA	0.31	NA	As Received	NA	U
0403085-41	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	1.480	40.98%	100	0.20	1.41	DPM/sample	0.11	
DUP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	A1	abb0325h	12:57 PM	1.378	NA	NA	0.63	NA	As Received	NA	U
0403085-42	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.080	25.68%	100	-0.21	0.77	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C1	abb0325g	11:05 AM	0.128	NA	NA	0.25	NA	As Received	NA	U
0403085-42	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	1.780	42.01%	100	0.33	1.48	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C1	abb0325g	11:05 AM	1.626	NA	NA	0.67	NA	As Received	NA	U
0403085-43	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.060	25.53%	100	-0.13	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C2	abb0325g	11:05 AM	0.089	NA	NA	0.21	NA	As Received	NA	U
0403085-43	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	1.410	41.94%	100	-0.36	1.45	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C2	abb0325g	11:05 AM	1.550	NA	NA	0.60	NA	As Received	NA	U
0403085-44	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.140	25.24%	100	0.09	0.74	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C3	abb0325g	11:05 AM	0.111	NA	NA	0.32	NA	As Received	NA	U
0403085-44	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	1.910	41.54%	100	0.86	1.46	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C3	abb0325g	11:05 AM	1.527	NA	NA	0.71	NA	As Received	NA	U
0403085-45	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.030	24.72%	100	-0.18	0.62	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C4	abb0325g	11:05 AM	0.073	NA	NA	0.16	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
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0093

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403085-45	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	1.660	41.98%	100	0.35	1.43	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C4	abb0325g	11:05 AM	1.509	NA	NA	0.64	NA	As Received	NA	U
0403085-46	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.070	24.89%	100	-0.25	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	D1	abb0325g	11:05 AM	0.127	NA	NA	0.24	NA	As Received	NA	U
0403085-46	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	1.680	41.57%	100	0.29	1.46	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	D1	abb0325g	11:05 AM	1.547	NA	NA	0.66	NA	As Received	NA	U
0403085-47	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	0.110	25.16%	100	-0.10	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	D2	abb0325g	11:05 AM	0.130	NA	NA	0.29	NA	As Received	NA	U
0403085-47	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/25/04	2.190	42.47%	100	0.16	1.66	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	D2	abb0325g	11:05 AM	2.103	NA	NA	0.73	NA	As Received	NA	U
0403085-48	GROSS ALPHA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/26/04	0.120	25.68%	100	-0.05	0.77	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C1	abb0326	10:20 AM	0.128	NA	NA	0.29	NA	As Received	NA	U
0403085-48	GROSS BETA	3/4/04	AB040312-7	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/26/04	1.840	42.01%	100	0.46	1.49	DPM/sample	NA	
SMP	Trg. Analyte	3:03:00 PM	AB040312-7-1	NA	NA	NA	1 #	C1	abb0326	10:20 AM	1.626	NA	NA	0.68	NA	As Received	NA	U
AB040312-5A	GROSS ALPHA	3/12/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	2795.500	25.25%	10	11100	0	DPM/sample	NA	111
LCS	Trg. Analyte	12:51:55 PM	AB040312-5-1	NA	NA	NA	1 #	B3	abb0323j	4:08 PM	0.081	NA	NA	1800	NA	As Received	NA	P,M3
AB040312-5B	GROSS BETA	3/12/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	17142.699	41.60%	10	41200	0	DPM/sample	NA	100
LCS	Trg. Analyte	12:51:55 PM	AB040312-5-1	NA	NA	NA	1 #	B4	abb0323j	4:08 PM	1.537	NA	NA	6600	NA	As Received	NA	P
AB040312-5	GROSS ALPHA	3/12/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	0.050	25.25%	100	-0.13	0.64	DPM/sample	NA	
MB	Trg. Analyte	12:51:55 PM	AB040312-5-1	NA	NA	NA	1 #	B3	abb0323l	4:36 PM	0.081	NA	NA	0.20	NA	As Received	NA	U
AB040312-5	GROSS BETA	3/12/04	AB040312-5	NA	NA	FILTER	1 #	LB4100-b	ab040312-5d	3/23/04	1.590	42.08%	100	0.33	1.40	DPM/sample	NA	
MB	Trg. Analyte	12:51:55 PM	AB040312-5-1	NA	NA	NA	1 #	B3	abb0323l	4:36 PM	1.441	NA	NA	0.63	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
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Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403085

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Wednesday, March 31, 2004
2:03:49 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
AB040312-6A	GROSS ALPHA	3/12/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	2793.400	25.08%	10	11100	0	DPM/sample	NA	112
LCS	Trg. Analyte	12:58:41 PM	AB040312-6-1	NA	NA	NA	1 s	A3	abb0325l	12:46 PM	0.071	NA	NA	1800	NA	As Received	NA	P,M3
AB040312-6B	GROSS BETA	3/12/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	16966.801	41.30%	10	41100	0	DPM/sample	NA	100
LCS	Trg. Analyte	12:58:41 PM	AB040312-6-1	NA	NA	NA	1 s	A4	abb0325l	12:46 PM	1.355	NA	NA	6600	NA	As Received	NA	P
AB040312-6	GROSS ALPHA	3/12/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	0.070	25.25%	100	-0.05	0.64	DPM/sample	NA	
MB	Trg. Analyte	12:58:41 PM	AB040312-6-1	NA	NA	NA	1 s	B3	abb0325f	11:05 AM	0.081	NA	NA	0.23	NA	As Received	NA	U
AB040312-6	GROSS BETA	3/12/04	AB040312-6	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	1.540	42.08%	100	0.20	1.40	DPM/sample	NA	
MB	Trg. Analyte	12:58:41 PM	AB040312-6-1	NA	NA	NA	1 s	B3	abb0325f	11:05 AM	1.441	NA	NA	0.62	NA	As Received	NA	U
AB040312-7A	GROSS ALPHA	3/12/04	AB040312-7	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	2841.100	25.68%	10	11100	0	DPM/sample	NA	111
LCS	Trg. Analyte	1:04:40 PM	AB040312-7-1	NA	NA	NA	1 s	C1	abb0325j	1:42 PM	0.128	NA	NA	1800	NA	As Received	NA	P,M3
AB040312-7B	GROSS BETA	3/12/04	AB040312-7	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	17332.598	41.94%	10	41300	0	DPM/sample	NA	101
LCS	Trg. Analyte	1:04:40 PM	AB040312-7-1	NA	NA	NA	1 s	C2	abb0325j	1:42 PM	1.550	NA	NA	6600	NA	As Received	NA	P
AB040312-7	GROSS ALPHA	3/12/04	AB040312-7	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	0.130	24.60%	100	0.12	0.71	DPM/sample	NA	
MB	Trg. Analyte	1:04:40 PM	AB040312-7-1	NA	NA	NA	1 s	A2	abb0325h	12:57 PM	0.097	NA	NA	0.31	NA	As Received	NA	U
AB040312-7	GROSS BETA	3/12/04	AB040312-7	NA	NA	FILTER	1 s	LB4100-b	ab040312-5d	3/25/04	1.320	40.97%	100	0.05	1.36	DPM/sample	NA	
MB	Trg. Analyte	1:04:40 PM	AB040312-7-1	NA	NA	NA	1 s	A2	abb0325h	12:57 PM	1.276	NA	NA	0.59	NA	As Received	NA	U

Comments:

Data Package ID: *ABF0403085-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

000095

PAI - C Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0323H
Batch ID: AB040312-5
Count Preset (m): 100
Batch Ended: 3/23/04 13:53

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration y = b*m^(x*(mass-x0))		Beta Attenuation Calibration (mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	0403085-1	3/23/04 13:53	100.00	0.0	0.130	0.127	0.005	0.2489	n/a	n/a	n/a	1.540	1.547	0.0236	0.4167	n/a	n/a	n/a
D2	0403085-2	3/23/04 13:53	100.00	0.0	0.160	0.130	0.006	0.2518	n/a	n/a	n/a	2.230	2.103	0.0288	0.4247	n/a	n/a	n/a
+ D3	0403085-3	3/23/04 13:53	100.00	0.0	0.130	0.104	0.005	0.2582	n/a	n/a	n/a	2.150	1.715	0.0215	0.4147	n/a	n/a	n/a
D4	0403085-7	3/23/04 13:53	100.00	0.0	0.130	0.117	0.009	0.2554	n/a	n/a	n/a	2.450	1.941	0.0231	0.4303	n/a	n/a	n/a

+Recounted in file ABB0329F, dlt offline on 3/29.
TZ
3-29-04

TZ
3-29-04

000096

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0323I
Batch ID: AB040312-5
Count Preset (m): 100
Batch Ended: 3/23/04 15:58

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m *b^-mass		y = m*mass + b	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
A1	0403085-4	3/23/04 15:58	100.00	0.0	0.100	0.087	0.004	0.2475	n/a	n/a	n/a	1.510	1.378	0.0160	0.4098	n/a	n/a	n/a
A2	0403085-5	3/23/04 15:58	100.00	0.0	0.130	0.097	0.005	0.2460	n/a	n/a	n/a	1.450	1.276	0.0224	0.4097	n/a	n/a	n/a
A3	0403085-6	3/23/04 15:58	100.00	0.0	0.060	0.071	0.004	0.2508	n/a	n/a	n/a	1.310	1.338	0.0106	0.4153	n/a	n/a	n/a
A4	0403085-7D	3/23/04 15:58	100.00	0.0	0.070	0.102	0.005	0.2477	n/a	n/a	n/a	1.590	1.365	0.0123	0.4130	n/a	n/a	n/a
C1	0403085-10	3/23/04 15:58	100.00	0.0	0.090	0.128	0.005	0.2568	n/a	n/a	n/a	1.570	1.626	0.0162	0.4201	n/a	n/a	n/a
C2	0403085-11	3/23/04 15:58	100.00	0.0	0.070	0.089	0.005	0.2553	n/a	n/a	n/a	1.820	1.550	0.0129	0.4194	n/a	n/a	n/a
C3	0403085-12	3/23/04 15:58	100.00	0.0	0.210	0.111	0.006	0.2524	n/a	n/a	n/a	1.640	1.527	0.0397	0.4154	n/a	n/a	n/a
C4	0403085-13	3/23/04 15:58	100.00	0.0	0.090	0.073	0.002	0.2472	n/a	n/a	n/a	1.570	1.509	0.0183	0.4198	n/a	n/a	n/a
B3	0403085-8	3/23/04 15:58	100.00	0.0	0.130	0.081	0.003	0.2525	n/a	n/a	n/a	1.570	1.441	0.0248	0.4208	n/a	n/a	n/a
B4	0403085-9	3/23/04 15:58	100.00	0.0	0.170	0.107	0.003	0.2571	n/a	n/a	n/a	1.860	1.537	0.0337	0.4160	n/a	n/a	n/a
D1	0403085-14	3/23/04 15:58	100.00	0.0	0.160	0.127	0.006	0.2489	n/a	n/a	n/a	1.730	1.547	0.0281	0.4157	n/a	n/a	n/a
D2	0403085-15	3/23/04 15:58	100.00	0.0	0.120	0.130	0.006	0.2516	n/a	n/a	n/a	2.210	2.103	0.0215	0.4247	n/a	n/a	n/a
+ D3	0403085-16	3/23/04 15:58	100.00	0.0	0.130	0.104	0.005	0.2582	n/a	n/a	n/a	2.040	1.715	0.0215	0.4147	n/a	n/a	n/a
D4	0403085-17	3/23/04 15:58	100.00	0.0	0.140	0.117	0.008	0.2554	n/a	n/a	n/a	2.660	1.841	0.0249	0.4303	n/a	n/a	n/a

+ Recounted in file ABB0329F; det offline m 3/29
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3-29-04

000097

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3-29

PAI - G[illegible] Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80323J
Batch ID: AB040312-6
Count Preset (m): 10
Batch Ended: 3/23/04 16:23

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Att[illegible] Calibration
y = b*m^(e*(mass-x0))		y [illegible] /mass-x0))
Alpha b=	0.00000	Beta [illegible] 0.0000
m=	0.00000	m= 0.0000
e=	0.0000	e= 0.0000
x0=	0.0000	x0= 0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk
y = m *b^-mass		y = m*mass + b
a ->b xtalk m=	0.0000	b ->a xtalk m= 0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b= 0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
B3	AB040312-6ALCS	3/23/04 16:23	10.00	0.0	2795.500	0.081	1.186	0.2525	n/a	n/a	n/a	670.200	1.441	528.2676	0.4208	n/a	n/a	n/a
B4	AB040312-6BLCS	3/23/04 16:23	10.00	0.0	37.100	0.107	32.015	0.2571	n/a	n/a	n/a	17142.700	1.537	7.3628	0.4160	n/a	n/a	n/a

000098

XZ
3-29-04

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80323L
Batch ID: AB040312-5
Count Preset (m): 100
Batch Ended: 3/23/04 18:10

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(x*(mass-x0))		y = b*m^(x*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
x=	0.0000	x=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
A1	0403085-17D	3/23/04 18:10	100.00	0.0	0.060	0.087	0.004	0.2475	n/a	n/a	n/a	1.440	1.378	0.0096	0.4098	n/a	n/a	n/a
A2	0403085-18	3/23/04 18:10	100.00	0.0	0.110	0.097	0.006	0.2460	n/a	n/a	n/a	1.620	1.276	0.0189	0.4097	n/a	n/a	n/a
A3	0403085-19	3/23/04 18:10	100.00	0.0	0.170	0.071	0.006	0.2508	n/a	n/a	n/a	1.720	1.338	0.0299	0.4153	n/a	n/a	n/a
A4	0403085-20	3/23/04 18:10	100.00	0.0	0.130	0.102	0.005	0.2477	n/a	n/a	n/a	1.430	1.355	0.0228	0.4130	n/a	n/a	n/a
B3	AB040312-5MB	3/23/04 18:10	100.00	0.0	0.050	0.081	0.003	0.2525	n/a	n/a	n/a	1.590	1.441	0.0094	0.4208	n/a	n/a	n/a

000099

53/31/04

PAI - G[illegible] Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0323M
Batch ID: AB040312-6
Count Preset (m): 100
Batch Ended: 3/23/04 18:11

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Att[illegible] Calibration
y = b*m^(a*(mass-x0))		y = [illegible] (mass-x0))
Alpha b=	0.00000	Beta b= 0.0000
m=	0.0000	m= 0.0000
a=	0.0000	a= 0.0000
x0=	0.0000	x0= 0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk
y = m*b^-mass		y = m*mass + b
a->b xtalk m=	0.0000	b->a xtalk m= 0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b= 0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
C1	0403085-22	3/23/04 18:11	100.00	0.0	0.090	0.128	0.005	0.2569	n/a	n/a	n/a	1.790	1.626	0.0162	0.4201	n/a	n/a	n/a
C2	0403085-23	3/23/04 18:11	100.00	0.0	0.090	0.089	0.004	0.2553	n/a	n/a	n/a	1.530	1.550	0.0165	0.4194	n/a	n/a	n/a
C3	0403085-24	3/23/04 18:11	100.00	0.0	0.150	0.111	0.006	0.2524	n/a	n/a	n/a	1.750	1.527	0.0284	0.4154	n/a	n/a	n/a
C4	0403085-28	3/23/04 18:11	100.00	0.0	0.060	0.073	0.002	0.2472	n/a	n/a	n/a	1.920	1.509	0.0109	0.4198	n/a	n/a	n/a
B4	0403085-21	3/23/04 18:11	100.00	0.0	0.140	0.107	0.003	0.2571	n/a	n/a	n/a	1.670	1.537	0.0278	0.4160	n/a	n/a	n/a

000100

S 3/31/04

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80325F
Batch ID: AB040312-6
Count Preset (m): 100
Batch Ended: 3/25/04 12:46

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A1	0403085-37	3/25/04 12:46	100.00	0.0	0.120	0.097	0.004	0.2475	n/a	n/a	n/a	1.570	1.378	0.0193	0.4098	n/a	n/a	n/a
A2	0403085-38D	3/25/04 12:46	100.00	0.0	0.110	0.097	0.005	0.2460	n/a	n/a	n/a	1.480	1.276	0.0189	0.4097	n/a	n/a	n/a
A3	0403085-39	3/25/04 12:46	100.00	0.0	0.120	0.071	0.006	0.2508	n/a	n/a	n/a	1.420	1.338	0.0211	0.4153	n/a	n/a	n/a
A4	0403085-40	3/25/04 12:46	100.00	0.0	0.180	0.102	0.005	0.2477	n/a	n/a	n/a	1.440	1.356	0.0316	0.4130	n/a	n/a	n/a
B3	AB040312-6MB	3/25/04 12:46	100.00	0.0	0.070	0.081	0.003	0.2525	n/a	n/a	n/a	1.540	1.441	0.0132	0.4208	n/a	n/a	n/a

- sample is recounted in file AB80330A to verify activity and so samp+dupcan in different detectors. S 3/31/04

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PAI - G[illegible] Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100-B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0325G
Batch ID: AB040312-7
Count Preset (m): 100
Batch Ended: 3/25/04 12:47

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Att[illegible] Calibration
y = b*m^(n*(mass-x0))		y = [illegible] (mass-x0))
Alpha b=	0.00000	Beta b= 0.0000
m=	0.00000	m= 0.0000
n=	0.0000	n= 0.0000
x0=	0.0000	x0= 0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk
y = m*b^-mass		y = m*mass + b
a->b xtalk m=	0.0000	b->a xtalk m= 0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b= 0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
C1	0403085-42	3/25/04 12:47	100.00	0.0	0.090	0.128	0.005	0.2569	n/a	n/a	n/a	1.790	1.626	0.0144	0.4201	n/a	n/a	n/a
B4	0403085-41	3/25/04 12:47	100.00	0.0	0.160	0.107	0.003	0.2571	n/a	n/a	n/a	1.690	1.537	0.0298	0.4160	n/a	n/a	n/a
C2	0403085-43	3/25/04 12:47	100.00	0.0	0.080	0.099	0.004	0.2553	n/a	n/a	n/a	1.410	1.550	0.0110	0.4194	n/a	n/a	n/a
C3	0403085-44	3/25/04 12:47	100.00	0.0	0.140	0.111	0.007	0.2524	n/a	n/a	n/a	1.910	1.527	0.0265	0.4154	n/a	n/a	n/a
C4	0403085-45	3/25/04 12:47	100.00	0.0	0.030	0.073	0.002	0.2472	n/a	n/a	n/a	1.660	1.509	0.0054	0.4198	n/a	n/a	n/a
D1	0403085-46	3/25/04 12:47	100.00	0.0	0.070	0.127	0.006	0.2489	n/a	n/a	n/a	1.680	1.547	0.0127	0.4157	n/a	n/a	n/a
D2	0403085-47	3/25/04 12:47	100.00	0.0	0.110	0.130	0.008	0.2516	n/a	n/a	n/a	2.190	2.103	0.0197	0.4247	n/a	n/a	n/a
+ D4	0403085-48	3/25/04 12:47	100.00	0.0	0.110	0.117	0.008	0.2554	n/a	n/a	n/a	2.420	1.841	0.0196	0.4303	n/a	n/a	n/a

+ Recounted in file ABB0326, dlt offline on 3/26/04.
TZ 3.29.04

TZ
3-29-04

000102

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80325H
Batch ID: AB040312-7
Count Preset (m): 100
Batch Ended: 3/25/04 14:31

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A1	0403085-41D	3/25/04 14:31	100.00	0.0	0.130	0.087	0.004	0.2475	n/a	n/a	n/a	1.480	1.378	0.0209	0.4098	n/a	n/a	n/a
A2	AB040312-7MB	3/25/04 14:31	100.00	0.0	0.130	0.097	0.005	0.2460	n/a	n/a	n/a	1.320	1.278	0.0224	0.4097	n/a	n/a	n/a

000103

17
3-29

PAI - G[illegible] Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80325I
Batch ID: AB040312-6
Count Preset (m): 10
Batch Ended: 3/25/04 13:03

Background logfile: BKGASW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration y = b*m^(a*(mass-x0))		Beta Att[illegible] Calibration y = [illegible] /mass-x0))	
Alpha b=	0.00000	B[illegible]	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		**Beta to Alpha X-talk y = m*mass + b**	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A3	AB040312-6ALCS	3/25/04 13:03	10.00	0.0	2793.400	0.071	2.255	0.2508	n/a	n/a	n/a	671.800	1.338	492.1160	0.4153	n/a	n/a	n/a
A4	AB040312-6BLCS	3/25/04 13:03	10.00	0.0	28.000	0.102	55.569	0.2477	n/a	n/a	n/a	16966.800	1.355	4.9100	0.4130	n/a	n/a	n/a

000104

12
3-29-04

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0325J
Batch ID: AB040312-7
Count Preset (m): 10
Batch Ended: 3/25/04 13:58

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(e^(mass-x0))		y = b*m^(e^(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
e=	0.0000	e=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
C1	AB040312-7ALCS	3/25/04 13:58	10.00	0.0	2841.100	0.128	1.898	0.2568	n/a	n/a	n/a	661.000	1.626	512.1737	0.4201	n/a	n/a	n/a
C2	AB040312-7BLCS	3/25/04 13:58	10.00	0.0	22.700	0.089	48.103	0.2553	n/a	n/a	n/a	17332.600	1.550	4.1703	0.4194	n/a	n/a	n/a

000105

TZ
3-31-04

PAI - G[illegible] Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0326
Batch ID: AB040312-7
Count Preset (m): 100
Batch Ended: 3/26/04 12:05

Background logfile: BKGABW
Date of Bkg. Cal: 3/20/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Att[illegible] Calibration
y = b*m^(a*(mass-x0))		y [illegible] mass-x0))
Alpha b=	0.00000	Beta [illegible] 0.0000
m=	0.0000	m= 0.0000
a=	0.0000	a= 0.0000
x0=	0.0000	x0= 0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk
y = m *b^-mass		y = m*mass + b
a ->b xtalk m=	0.0000	b ->a xtalk m= 0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b= 0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
C1	0403085-48	3/26/04 12:05	100.00	0.0	0.120	0.128	0.005	0.2568	n/a	n/a	n/a	1.840	1.626	0.0216	0.4201	n/a	n/a	n/a

000106

TT
3-29-04

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80329F
Batch ID: AB040312-5
Count Preset (m): 100
Batch Ended: 3/29/04 14:32

Background logfile: BKGABW
Date of Bkg. Cal: 3/27/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(e^(mass-x0))		y = b*m^(e^(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
e=	0.0000	e=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m *b^-mass		y = m*mass + b	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.00E+00
a -> b xtalk b=	0.0000	b -> a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
B4	0403085-3	3/29/04 14:32	100.00	0.0	0.130	0.112	0.003	0.2571	n/a	n/a	n/a	1.720	1.642	0.0258	0.4160	n/a	n/a	n/a
C1	0403085-16	3/29/04 14:32	100.00	0.0	0.100	0.080	0.005	0.2568	n/a	n/a	n/a	1.720	1.639	0.0180	0.4201	n/a	n/a	n/a

000107

S 3/31/04

PAI - G- Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0330A
Batch ID: AB040312-6
Count Preset (m): 100
Batch Ended: 3/30/04 12:47

Background logfile: BKGABW
Date of Bkg. Cal: 3/27/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration y = b*m^(x*(mass-x0))		Beta Att Calibration y = /mass-x0))	
Alpha b=	0.00000	Be...	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m *b^-mass		**Beta to Alpha X-talk y = m*mass + b**	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A1	0403086-38D	3/30/04 12:47	100.00	0.0	0.070	0.081	0.004	0.2475	n/a	n/a	n/a	1.350	1.441	0.0112	0.4098	n/a	n/a	n/a

000108

53/31/04

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0331
Batch ID: AB040312-6
Count Preset (m): 100
Batch Ended: 3/31/04 11:14

Background logfile: BKGABW
Date of Bkg. Cal: 3/27/04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.00E+00
a -> b xtalk b=	0.0000	b -> a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A1	0403085-38	3/31/04 11:14	100.00	0.0	0.100	0.081	0.004	0.2475	n/a	n/a	n/a	1.550	1.441	0.0160	0.4098	n/a	n/a	n/a
A2	0403085-38	3/31/04 11:14	100.00	0.0	0.120	0.121	0.005	0.2460	n/a	n/a	n/a	1.320	1.471	0.0206	0.4097	n/a	n/a	n/a
A3	0403085-35	3/31/04 11:14	100.00	0.0	0.210	0.110	0.005	0.2508	n/a	n/a	n/a	1.500	1.442	0.0370	0.4153	n/a	n/a	n/a
A4	0403085-34	3/31/04 11:14	100.00	0.0	0.130	0.104	0.005	0.2477	n/a	n/a	n/a	1.500	1.419	0.0228	0.4130	n/a	n/a	n/a
C1	0403085-32	3/31/04 11:14	100.00	0.0	0.070	0.080	0.005	0.2568	n/a	n/a	n/a	1.590	1.639	0.0126	0.4201	n/a	n/a	n/a
C2	0403085-31	3/31/04 11:14	100.00	0.0	0.090	0.100	0.004	0.2553	n/a	n/a	n/a	1.610	1.615	0.0165	0.4194	n/a	n/a	n/a
C3	0403085-30	3/31/04 11:14	100.00	0.0	0.120	0.113	0.006	0.2524	n/a	n/a	n/a	1.680	1.614	0.0227	0.4154	n/a	n/a	n/a
C4	0403085-29	3/31/04 11:14	100.00	0.0	0.120	0.089	0.002	0.2472	n/a	n/a	n/a	1.390	1.608	0.0217	0.4198	n/a	n/a	n/a
B3	0403085-33	3/31/04 11:14	100.00	0.0	0.140	0.090	0.003	0.2525	n/a	n/a	n/a	1.720	1.574	0.0285	0.4208	n/a	n/a	n/a
D1	0403085-28D	3/31/04 11:14	100.00	0.0	0.080	0.085	0.006	0.2489	n/a	n/a	n/a	1.720	1.523	0.0145	0.4157	n/a	n/a	n/a
D2	0403085-27	3/31/04 11:14	100.00	0.0	0.100	0.125	0.006	0.2516	n/a	n/a	n/a	2.090	2.088	0.0179	0.4247	n/a	n/a	n/a
D3	0403085-26	3/31/04 11:14	100.00	0.0	0.140	0.082	0.005	0.2582	n/a	n/a	n/a	1.990	1.878	0.0231	0.4147	n/a	n/a	n/a
D4	0403085-25	3/31/04 11:14	100.00	0.0	0.170	0.086	0.007	0.2554	n/a	n/a	n/a	2.180	1.711	0.0302	0.4303	n/a	n/a	n/a

000109

TZ
3-31-04

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(cont. from pg N/A b)

Paragon Analytics, Inc.

SOP 724 R

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

Date: 3/23/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1600	A 0.1
2450	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB0319W
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	LCB		P		LCB		P		✓	9	LCB		P		LCB		P		✓
2									✓	10									✓
3									✓	11									✓
4									✓	12									✓
5			LB						OLB	13									✓
6			LB						OLB	14									✓
7			P						✓	15									✓
8									✓	16									✓

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Checks	–	–	EFB0323	30	0845	LCB	LCB	3/23/04	N/A
1-16	Bkg Checks	–	–	BKB0323	60	0857	LCB	LCB	3/23/04	
1	AB040317-LCSD	AB040317-1	AB	ABB0323	60	1007	TT	TT	3-23-04	
16	0403062-41	AB040312-10	AB	ABB0323A	100	1017	TT			
15	-42									
14	-43									
13	-44									
12	-45									
11	-46									
10	-47									
9	-48									
8	-49									
7	-50									
4	AB040312-DMB									
2	-10ALCS			ABB0323B	10	1019	TT	TT	3-23-04	
3	-10BLCS									

Form 780r6.frm (4/6/2001)

Reviewed by TT Date 3-23-04

Comments:

000110

pg 273591 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date: 3/23/04

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1	0403119-1	AB040319-3	AB	ABB0323C	10	1125	XZ	XZ	3-23-04	NA
2	-2									
3	AB040319-3ALCS									
3	0403119-1D			ABB0323D	10	1138	XZ			
2	AB040319-3BLCS									
1	-3MB									
1	0403062-45D	AB040312-10	AB	ABB0323E	100	1211	XZ	XZ	3-23-04	
2	0403092-6	AB040316-1	AB	ABB0323F	120	1209	XZ			
3	-6D									
4	-6MS									
7	AB040316-1MB									
8	-1LCS									
9	0403061-41	AB040312-4	AB	ABB0323G	100	1212	XZ			
10	-42									
11	-43									
12	-44									
13	0403085-1	AB040312-5	AB	ABB0323H	100	1213	XZ			
14	-2									
15	-3									
16	-7									
1	-4			ABB0323I	100	1417	XZ	XZ	3-23-04	
2	-5									
3	-6									
4	-7D									
7	-8									
8	-9									
9	-10									
10	-11									
11	-12									
12	-13									

Form 780r6.frm (4/6/2001)

Reviewed XZ Date 3-23-04

Comments:

000111

pg 273592 a
(cont. from pg 273591 b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 724 R 7

Date: 3·23·04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1600	A 0.1
2450	B
	C
	D ✓

Bkg.	Cal. File ID
Dr A	BKB0319W
Dr B	
Dr C	
Dr D	✓

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	*				*					9	*				*				
2	↓				↓					10	↓				↓				
3	↓				↓					11	↓				↓				
4	↓				↓					12	↓				↓				
5	↓				↓					13	↓				↓				
6	↓				↓					14	↓				↓				
7	↓				↓					15	↓				↓				
8	✓				✓					16	✓				✓				

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

* Daily Check WPO on pg 273591 a. 7/23/04

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
13	0403085-14	AB040312-5	AB	ABB0323J	100	1417	TZ	TZ	3.23.04	NA
14	-15									
15	-16									
16	-17									
7	AB040312-5LCS			ABB0323J	10	1613	TZ			
8	-5LCS									
13	0403101-1	AB040318-1	AB	ABB0323K	60	1621	TZ	LCB	3/23/04	
14	AB040318-1MB									
15	-1LCS									
16	-1LCSD									
1	0403085-17D	AB040312-5	AB	ABB0323L	100	1630	TZ	LCB		
2	-18									
3	-19									
4	-20									
7	AB040312-5MB									
8	0403085-21	AB040312-6		ABB0323M	100	1630	TZ	LCB		

Form 780r6.frm (4/6/2001)

Reviewed by LCB Date 3/24/04

Comments:

000112

pg 273592 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Date: 3-23-04

Instrument: LB4100B

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
9	0403085-22	AB040312-6	AB	ABB0323H	100	1630	TZ	LCB	3/24/04	N/A
10	-23									
11	-24									
12	-28									

TZ 3-23-04

Form 780r6.frm (4/6/2001)

Reviewed LCB Date 3/24/04

Comments:

000113

pg 03594 a

(cont. from pg N/A b)

Paragon Analytics, Inc.

SOP 724 R 1

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date: 3/25/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1600	A 0.1
21800	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB0319W
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	LCB		P		LCB		P		✓	9	LCB		P		LCB		P		✓
2									✓	10									✓
3									✓	11						LCB	R	P	✓
4									✓	12							R	P	✓
5			OLB				BLB		OLB	13							P		✓
6			OLB				BLB		OLB	14									✓
7			P				P		✓	15		LCB	R			LCB	R	HB	OLB
8						LCB	R	P	✓	16			P				P		✓

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Checks	N/A	N/A	EFB0325	30	0621	LCB	LCB	3/25/04	N/A
15	DR Recount	N/A	N/A	EFB0325A	30	0642	LCB	LCB	3/25/04	
1-16	Bkg Checks	N/A	N/A	BLB0325	60	0653	LCB	LCB	3/25/04	
8,11,12,15	Bkg Recount	N/A	N/A	BKB0325A	60	0817	LCB		3/25/04	
1	AB040318-1CCS	AB040318-1	α/β	ABB0325	60	0829	LCB	TZ	3-25-04	TZ 3-25-04
2	0403062-42	AB040312-10	α/β	ABB0325A	100	0830	LCB			N/A
1	0403140-2	AB040322-4	AB	ABB0325B	10	1018	TZ	TZ	3-25-04	
2	-3									
3	-4									
4	-5									
7	-6									
8	-7									
9	-8									
10	-10									
11	-11									
12	-12									

Form 780r6.frm (4/6/2001)

Reviewed by TZ Date 3-25-04

Comments:

000114

pg 273594 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date 3/25/04

Det	SmpID	Batch	Test	File ID	Cnt Dur (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
13	0403140-13	AB040322-4	AB	ABB0325B	10	10:18	TT	TT	3-25-04	NA
14	-14									
16	-18									
1	-8D			ABB0325C	10	10:35	TT			
2	-15									
3	-16									
4	-17									
7	-18D									
8	-19									
9	-20									
10	-22									
11	-23									
12	AB040322-4ALCS									
13	-4BLCS									
14	-4MB									
16	0403140-28	AB040322-5		ABB0325D	10	10:36	TT			
1	-24			ABB0325E	10	10:50	TT			
2	-25									
3	-26									
4	-27									
7	-28D									
8	AB040322-5ALCS									
9	-5BLCS									
10	-5MB									
1	0403085-37	AB040312-6	AB	ABB0325F	100	11:05	TT		3/25/04	
2	-38D									
3	-39									
4	-40									
7	AB040312-6MB									
									TT 3-25-04	

Form 780r6.frm (4/6/2001)

Reviewed [signature] Date 3/25/04

Comments:

000115

pg 273595 a

(cont. from pg 273594 b)

Paragon Analytics, Inc.

SOP 724 R

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

Date: 3.25.04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 600	A 0.1
2 1800	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB0319W
Dr B	
Dr C	
Dr D	

Det.	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	*				*					9	*				*				
2										10									
3										11									
4										12									
5										13									
6										14									
7										15									
8										16									

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

*Daily Check info found on pg. 273594a. 273-25-04

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
8	0403085-41	AB040312-7	AB	AB03256	100	1106	TZ	g	3/25/04	NB
9	-42									
10	-43									
11	-44									
12	-45									
13	-46									
14	-47									
16	-48									
1	-41D			AB03257H	~~100~~ 100	1251	TZ	g	3/25/04	
2	AB040312-7MB									
3	AB040312-6ALCS	AB040312-6		AB03257I	10			g	3/25/04	
4	-6BLCS									
9	AB040312-7ALCS	AB040312-7		AB03257J	10	1347	g	g	3/25/04	
10	-7BLCS			AB03257J	10					
									g	3/25/04

Form 780r6.frm (4/6/2001)

Reviewed by g Date 3/25/04

Comments:

000116

pg 273596 a
(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 724 Rev 8

Date: 3/26/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1600	A 0.1
21600	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB0319W.
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	LCB		P		LCB		P		✓	9	LCB		P		LCB		P		✓
2						g	R	P	✓	10									✓
3							P		✓	11									✓
4							✓		✓	12									✓
5			OLB				OLB		OLB	13									✓
6			OLB				OLB		OLB	14									✓
7			P				P		✓	15						g	R	P	✓
8							✓		✓	16						✓	L	HB	OLB

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Checks	—	—	F FB0326	30	0743	LCB	LCB	3/26/04	N/A
1-16	Bkg Checks	—	—	BKB0326	60	0753	LCB	g	3/26/04	
2,15,16	Bkg Recount	—	—	BKB0326A	60	0857	g	g	3/26/04	
9	0403085-48	ABB40312-7	α/B	ABB1326	100	1024	g	TZ	3-26-04	
10	0403140-18	ABB40322-4	L	ABB0326A	10	1025	L	L	L	
11	0403140-28	ABB40322-5	L	ABB0326B	L	1026	L	L	L	
1-16	Weekly Bkg	—	—	BKB0326W	1000	1448	TZ	g	3/27/04	
				3-26-04						
									TZ 3-26-04	

Form 780r6.frm (4/6/2001)

Reviewed by TZ Date 3-26-04

Comments:

pg 273598 a

(cont. from pg NA b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 724 Re

Date: 3/29/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 1600	A 0.1
2 1160	B
	C
	D

Bkg.	Cal. File ID
Dr A	LB0326W
Dr B	
Dr C	
Dr D	LB0327W

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	S		P		S		P		✓	9	S		P		S		P		✓
2									✓	10									✓
3									✓	11									✓
4									✓	12									✓
5			OLB				OLB		OLB	13									✓
6			OLB				OLB		OLB	14			✓						✓
7			P				P		✓	15			R	P					✓
8	✓		✓		✓		✓		✓	16	✓	S	P		✓		✓		✓

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB0329	30	0849	S	S	3/29/04	NA
15	DR Recount	NA	NA	EFB0329A	30	0856	S	S	3/29/04	
1-16	Bkg Checks	NA	NA	BKB0329	600	0911	S	S	3/29/04	
1	0403192-2	LB0326-1	α/B	LB0329	10	1020	S	S	3/29/04	
2	-3									
3	-4									
4	-5									
7	-6									
8	-7									
9	-8									
10	-10									
11	-11									
12	-12									
13	-13									
14	-14									
									S 3/29/04	

Form 780r6.frm (4/6/2001)

Reviewed by S 3/29/04 Date 3/29/04

Comments:

000118

pg 273599 a

(cont. from pg 273598 b)

Paragon Analytics, Inc.

SOP 724 Rev 8

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date: 3-29-04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 600	A 0.1
2 1150	B
	C
	D

Bkg.	Cal. File ID
Dr A	BK130320W
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	*				*					9	*				*				
2										10									
3										11									
4										12									
5										13									
6										14									
7										15									
8										16									

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog * Daily QC Info on Ps. 273598a. 7/2 3-29-04

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
11	0403 104-8	AB040324-1	AB	ABB0329D	60	1144	7/2	7/2	3-29-04	NA
12	-9									
13	-10									
14	0403 137-4									
16	-5									
1	AB040324-1MMB			ABB0329E	60	1248	7/2	7/7	3-29-04	
2	-1MLCS									
3	-1PMB									
4	-1PLCS									
7	-1PLCSD									
8	0403 085-3	AB040312-5	AB	ABB0329F	100	1251	7/2	7/2	3-29-04	
9	-16									
10	0403 141-2	AB040325-4	AB	ABB0329G	90	1256	7/2			
11	-3									
12	-4									
13	-5									

Form 780r6.frm (4/6/2001)

Reviewed by 7/7 Date 3-29-04

Comments:

001119

pg 76401 a
(cont. from pg N/A b)

Paragon Analytics, Inc.

SOP 724 I

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date: 3/30/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 600	A 0.1
2 950	B
	C
	D 0.1

Bkg.	Cal. File ID
Dr A	BKB0326W
Dr B	
Dr C	
Dr D	BKB0327W

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	LCB		P		LCB		P		✓	9	LCB		P		LCB		P		✓
2									✓	10						G	R	P	✓
3									✓	11							P		✓
4						G	R	P	✓	12									✓
5			OL				OLB		OLB	13									✓
6			OL				OLB		OLB	14									✓
7			P				P		✓	15									✓
8							L		✓	16						G	R	P	✓

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Check	N/A	N/A	EFB0330	30	0647	LCB	LCB	3/30/04	N/A
1-16	Bkg checks	N/A	N/A	BKB0330	60	0658	LCB	G	3/30/04	
4,10,16	Bkg Recount	NA	NA	BKB0330A	60	0802	[illegible]	[illegible]	3/30/04	
1	04 03 141-25D	AB040325-5	AB	ABB0330	90	922	[illegible]	[illegible]	3/30/04	
2	-34									
3	-35									
4	-37									
7	-38									
8	-39D									
9	-40									
10	-42									
11	-43									
12	-44									
13	-45									
14	-46									
15	-47									

Form 780r6.frm (4/6/2001)

Reviewed by [illegible] Date 3-30-04

Comments:

000012

pg 276401 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
16	AB040325-5MB	AB040325-5	AB	ABB0330	90	922	TT		3/31/04	NA
1	0403085-38D	AB040312-6	α/β	ABB0330A	100	1107		TT	3-30-04	
2	0403141-48	AB040325-6		ABB0330B	90	1109				
3	-49									
4	-51									
7	-52									
8	-53									
9	-54									
10	-55									
11	-56									
12	-58									
13	-59									
14	-60									
15	-61									
16	-62									
1	-52D			ABB0330C	90	1259	TT	TT	3.30.04	
2	-59D									
3	-63									
4	AB040325-6MB									
9	-6ALCS			ABB0330D	10	1300	TT	TT	3.30.04	
10	-6BLCS									
										3/31/04

Form 780r6.frm (4/6/2001)

Reviewed _____ Date 3/31/04

Comments:

000121

pg 216402 a
(cont. from pg NA b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 724 Rev 0

Date: 3/31/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1	A 0.1
2	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB032603
Dr B	
Dr C	
Dr D	BKB0327

Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line	Det	DR 1	DR 2	DR Stat	Cmnt	Bkg 1	Bkg 2	Bkg Stat	Cmnt	On-line
1	P		P		P		P		✓	9	P		P		P		P		✓
2									✓	10									✓
3									✓	11									✓
4			✓				✓		✓	12	✓								✓
5			OLB				OLB		OLB	13	~~OLB~~ NP			Stat NA					✓
6			OLB				OLB		OLB	14									✓
7			P				P		✓	15									✓
8	✓		P		✓	P	R	P	✓	16	✓		✓		✓		✓		✓

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

3/31/04

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DRchecks	NA	NA	EFB0331	30	0810			3/31/04	NA
1-16	BKG checks	NA	NA	~~EFB0331~~ BKB0331	60	0820			3/31/04	
8	BKG 1 Recount	NA	NA	BKB0331A	60	0923			3/31/04	
1	040308 5-36	AB040312-6	<1G	AB0331	100	0933				
2	-38									
3	-35									
4	-34									
7	-33									
9	-32									
10	-31									
11	-30									
12	-29									
13	-28									
14	-27									
15	-26									
16	-25									

Form 780rc frm (4/6/2001)

Reviewed by [illegible] Date 3-31-04

Comments:

000122

PARAGON ANALYTICS
Radiochemistry Data Package

Section 5

QUALITY ASSURANCE SUMMARY REPORTS

5

Paragon Analytics, Inc.

QUALITY ASSURANCE SUMMARY SHEET

263250

PAI W.O. # / BATCH 0403085 / ABD40312-6
TEST Gross
METHOD Gross
SOP/REV (PREP) –
SOP/REV (ANAL) 724R8

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.

Sample 0403085-38 was first counted on in file ABB0324 3/24/04. The duplicate analysis of 0403085-38D was counted on 3/25/04. The DER between these counts was above the upper control limit for gross beta. 0403085-38D was recounted on 3/30/04 and the beta was comparable to the count on 3/25/04. Therefore it is ~~concluded~~ 3/31/04 concluded that the wrong sample was loaded into the detector and counted as 0403085-38. Sample 0403085-38 ~~beta~~ 3/31/04 and the ~~remaining~~ 3/31/04 remaining samples from file ABB0324 were recounted on 3/31/04 in file ABB0331. The DER is in control and the results from file ABB0331 are reported.

3/31/04

TECHNICIAN/ANALYST Clare Lenich DATE 3/31/04

DEPARTMENT MANAGER [signature] DATE 3-31-04

FORM 302r5.FRM (04/30/01)

PARAGON ANALYTICS
Radiochemistry Data Package

Section 6

LABORATORY BENCH SHEETS

6

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB04[illegible]

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / N NA

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0403085-1	SMP	1	1	sample		ABB0323H	13	77							
1	0403085-2	SMP	1	1	sample			14								
1	0403085-3	SMP	1	1	sample			15		*ABB0329F	8	77				
1	0403085-4	SMP	1	1	sample		ABB0323I	~~12~~ 1	77							
1	0403085-5	SMP	1	1	sample			2								
1	0403085-6	SMP	1	1	sample			3								
1	0403085-7	SMP	1	1	sample		ABB0323H	16	77							
1	0403085-7	DUP	1	1	sample		ABB0323I	4	77							Cnt Dup
1	0403085-8	SMP	1	1	sample			7								
1	0403085-9	SMP	1	1	sample			8								
1	0403085-10	SMP	1	1	sample			9								
1	0403085-11	SMP	1	1	sample			10								
1	0403085-12	SMP	1	1	sample			11								
1	0403085-13	SMP	1	1	sample			12								
1	0403085-14	SMP	1	1	sample			13								
1	0403085-15	SMP	1	1	sample			14								
1	0403085-16	SMP	1	1	sample			15		*ABB0329F	9	77				
1	0403085-17	SMP	1	1	sample			16								
1	0403085-17	DUP	1	1	sample		ABB0323L	1	77							Cnt Dup
1	0403085-18	SMP	1	1	sample			2								
1	0403085-19	SMP	1	1	sample			3								
1	0403085-20	SMP	1	1	sample			4								
1	AB040312-5A	LCS	1	1	sample		ABB0323J	7	77							
1	AB040312-5B	LCS	1	1	sample			8								
1	AB040312-5	MB	1	1	sample		ABB0323L	7	77							

*Recount - Det 15 offline 3/24:
77 3.24.04

53/31/12

0001126

Supersedes: NA

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch AB0403125

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / N NA

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.569	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.001	DPM/sample	03/12/04	1	sample	

000127

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: ABC48

Prep Procedure: GAB_No_Att

Analytical QASS / NCR: 263250 7/23-31-04

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0403085-21	SMP	1	1	sample		ABB0323M	8	77							
1	0403085-22	SMP	1	1	sample			9								
1	0403085-23	SMP	1	1	sample			10								
1	0403085-24	SMP	1	1	sample			11								
1	0403085-25	SMP	1	1	sample		ABB0324	1	72	ABB0331	16					
1	0403085-26	SMP	1	1	sample			2			15					
1	0403085-27	SMP	1	1	sample			3			14					
1	0403085-28	SMP	1	1	sample		ABB0323M	12	77							
1	0403085-28	DUP	1	1	sample		ABB0324	4	72	ABB0331	13					Cnt Dup
1	0403085-29	SMP	1	1	sample			7			12					
1	0403085-30	SMP	1	1	sample			8			11					
1	0403085-31	SMP	1	1	sample			9			10					
1	0403085-32	SMP	1	1	sample			10			9					
1	0403085-33	SMP	1	1	sample			11			7					
1	0403085-34	SMP	1	1	sample			12			4					
1	0403085-35	SMP	1	1	sample			13			3					
1	0403085-36	SMP	1	1	sample			14			21	3/31/04				
1	0403085-37	SMP	1	1	sample		ABB0325F	1	72							
1	0403085-38	SMP	1	1	sample		ABB0324	16	77	ABB0331	12	3/31/04				
1	0403085-38	DUP	1	1	sample		ABB0325F	2	72*	ABB0330A	1	77				Cnt Dup
1	0403085-39	SMP	1	1	sample			3								
1	0403085-40	SMP	1	1	sample			4								
1	AB040312-6A	LCS	1	1	sample		ABB0325I	3	60							
1	AB040312-6B	LCS	1	1	sample			4								
1	AB040312-6	MB	1	1	sample		ABB0325F	7	72							

* Recount in file ABB0330A to verify activity data from ~~first~~ count in ~~ABB0325F~~ ABB0330A is reported. 3/31/04

00012

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB0493126

Prep Procedure: GAB_No_Att

Analytical QAS8 / NCR? ~~Y~~ ~~N~~ ~~NA~~ 223-3/04 263250

Prep Num	LabID	QC Type	Init Aiq	Fin Aiq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.569	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,504.994	DPM/sample	03/12/04	1	sample	

00012

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB040[illegible]

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / (N) NA

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0403085-41	SMP	1	1	sample		ABB0325G	8	77							
1	0403085-41	DUP	1	1	sample		ABB0325H	1	8							Cnt Dup
1	0403085-42	SMP	1	1	sample		ABB0325G	9	77							
1	0403085-43	SMP	1	1	sample			10								
1	0403085-44	SMP	1	1	sample			11								
1	0403085-45	SMP	1	1	sample			12								
1	0403085-46	SMP	1	1	sample			13								
1	0403085-47	SMP	1	1	sample			14								
1	0403085-48	SMP	1	1	sample			16		ABB0326	9	77				
1	AB040312-7A	LCS	1	1	sample		ABB0325J	9	8							
1	AB040312-7B	LCS	1	1	sample			10								
1	AB040312-7	MB	1	1	sample		ABB0325H	2								

53/31/07

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.568	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,504.989	DPM/sample	03/12/04	1	sample	

00012

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040312-5

Prep Procedure: GAB_No_Att

Reviewed By: ATF

Review Date: 3/15/04

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

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aiq sample	Fin Aiq sample	Prep Basis	# of Filters	Standards	Prep Notes
1	1	0403085-1	SMP		1	1	As Received			
2	1	0403085-2	SMP		1	1	As Received			
3	1	0403085-3	SMP		1	1	As Received			
4	1	0403085-4	SMP		1	1	As Received			
5	1	0403085-5	SMP		1	1	As Received			
6	1	0403085-6	SMP		1	1	As Received			
7	1	0403085-7	SMP		1	1	As Received			03/15/04
8	1	0403085-7	DUP		1	1	As Received			COUNT DUPLICATE
9	1	0403085-8	SMP		1	1	As Received			
10	1	0403085-9	SMP		1	1	As Received			
11	1	0403085-10	SMP		1	1	As Received			
12	1	0403085-11	SMP		1	1	As Received			
13	1	0403085-12	SMP		1	1	As Received			
14	1	0403085-13	SMP		1	1	As Received			
15	1	0403085-14	SMP		1	1	As Received			
16	1	0403085-15	SMP		1	1	As Received			03/15/04
17	1	0403085-16	SMP		1	1	As Received			
18	1	0403085-17	SMP		1	1	As Received			03/15/04
19	1	0403085-17	DUP		1	1	As Received			COUNT DUPLICATE
20	1	0403085-18	SMP		1	1	As Received			
21	1	0403085-19	SMP		1	1	As Received			
22	1	0403085-20	SMP		1	1	As Received			03/15/04
23	1	AB040312-5A	LCS		1	1	As Received		S1	ALPHA SOURCE
24	1	AB040312-5B	LCS		1	1	As Received		S2	BETA SOURCE
25	1	AB040312-5	MB		1	1	As Received			03/15/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By:
Date: 03/15/04
Received By:
Date: 3/16/04

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.569	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,505.001	DPM/sample	03/12/04	1	sample	

Comments

00013

Paragon Analytics

Radiochemistry P[illegible] Worksheet

Prep Batch: AB04[illegible]

Prep Procedure: GAB_No_Att

Reviewed By: ATF

Review Date: 3/15/04

Non-Routine Pre-Treatment? Y / (N) Batch: NA Re-Prep? Y / (N) Batch: NA Prep QASS / NCR? Y / (N) NA

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	# of Filters	Standards	Prep Notes
1	1	0403085-21	SMP		1	1	As Received			
2	1	0403085-22	SMP		1	1	As Received			
3	1	0403085-23	SMP		1	1	As Received			
4	1	0403085-24	SMP		1	1	As Received			
5	1	0403085-25	SMP		1	1	As Received			
6	1	0403085-26	SMP		1	1	As Received			
7	1	0403085-27	SMP		1	1	As Received			
8	1	0403085-28	SMP		1	1	As Received			
9	1	0403085-28	DUP		1	1	As Received			COUNT DUPLICATE
10	1	0403085-29	SMP		1	1	As Received			
11	1	0403085-30	SMP		1	1	As Received			
12	1	0403085-31	SMP		1	1	As Received			
13	1	0403085-32	SMP		1	1	As Received			
14	1	0403085-33	SMP		1	1	As Received			
15	1	0403085-34	SMP		1	1	As Received			
16	1	0403085-35	SMP		1	1	As Received			
17	1	0403085-36	SMP		1	1	As Received			
18	1	0403085-37	SMP		1	1	As Received			
19	1	0403085-38	SMP		1	1	As Received			
20	1	0403085-38	DUP		1	1	As Received			COUNT DUPLICATE
21	1	0403085-39	SMP		1	1	As Received			
22	1	0403085-40	SMP		1	1	As Received			
23	1	AB040312-6A	LCS		1	1	As Received		S1	ALPHA SOURCE
24	1	AB040312-6B	LCS		1	1	As Received		S2	BETA SOURCE
25	1	AB040312-6	MB		1	1	As Received			

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By:
Date: 03/15/04
Received By:
Date: 3/16/04

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.569	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,504.994	DPM/sample	03/12/04	1	sample	

Comments

Paragon Analytics
LIMS Version: 4.342C

Supersedes:

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040312-7

Prep Procedure: GAB_No_Att

Reviewed By: ATF

Review Date: 3/15/04

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

Prep SOP: PAI 702 Rev: 16
Prep SOP: NONE
Matrix Class: solid

Prep Analyst: Joanne Cucinotta JC
Prep Date: 3/12/04
Prep Dept: RS

Balance:
Balance:

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	# of Filters	Standards	Prep Notes
1	1	0403085-41	SMP		1	1	As Received			03/15/04
2	1	0403085-41	DUP		1	1	As Received			COUNT DUPLICATE
3	1	0403085-42	SMP		1	1	As Received			
4	1	0403085-43	SMP		1	1	As Received			
5	1	0403085-44	SMP		1	1	As Received			03/15/04
6	1	0403085-45	SMP		1	1	As Received			
7	1	0403085-46	SMP		1	1	As Received			
8	1	0403085-47	SMP		1	1	As Received			
9	1	0403085-48	SMP		1	1	As Received			
10	1	AB040312-7A	LCS		1	1	As Received		S1	ALPHA SOURCE
11	1	AB040312-7B	LCS		1	1	As Received		S2	BETA SOURCE
12	1	AB040312-7	MB		1	1	As Received			03/15/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By:
Date: 03/15/04

Received By:
Date: 3/16/04

Spike Solution Information

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.568	DPM/sample	03/12/04	1	sample	
S2	Sr-90	729	20,504.989	DPM/sample	03/12/04	1	sample	

Comments

000123

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JC

ANALYSIS DATE: 3/12/04 METHOD: G&B

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403085	1-10	Dry (AR)	Swipe	none
↓	11-20	↓	↓	↓

JC 3/12/04

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JC

ANALYSIS DATE: 3/12/04 METHOD: GαB

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403085	21.30	Dry(R)	swipe	none
↓	31.40	↓	↓	↓
				JC 3/12/04

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: JC

ANALYSIS DATE: 3/12/04 METHOD: GαB

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403085	41-45	Dry (AR)	swipe	None
↓	46-48	↓	↓	↓
				JC 3/12/04

000136

PARAGON ANALYTICS
Radiochemistry Data Package

Section 7

STANDARDS TRACEABILITY DOCUMENTS

7

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-00601
rec'd 12-05-01

62752A-307

Am-241 47 mm Diameter Membrane Filter in Stainless Steel Planchet

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting. The calibration was checked by alpha counting after source preparation.

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:	Am-241
ACTIVITY (dps):	166.4
HALF-LIFE:	4.322 E2 years
CALIBRATION DATE:	December 1, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.0%
SYSTEMATIC:	4.7%
RANDOM:	0.3%

*99% Confidence Level

Impurities: γ-impurities <0.1%

Diameter of active area: 43 mm. Low smooth bottom planchet. Source covering 0.5 mg/cm^2 mylar.

No expiration date has been given for this source due to the fragile nature of the mylar covering. This source should be carefully tested for leakage at least every six months. If leakage is detected this source should be disposed of by approved radioactive waste disposal procedures.

P O NUMBER 001703, Item 2

SOURCE PREPARED BY: M. Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: M. [illegible] 12-4-01

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

PAT ID 0729
rec'd 10-30-03

66949-307

Sr-90 47 mm Diameter Membrane Filter in Stainless Steel Planchet

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting. The calibration was checked by beta counting after source preparation.

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:	Sr-90
ACTIVITY (dps):	3.450 E2
HALF-LIFE:	28.79 years
CALIBRATION DATE:	October 21, 2003 12:00 EST
RELATIVE EXPANDED UNCERTAINTY (k=2):	3.3%

Impurities: γ-impurities <0.1%

Diameter of active area: 43 mm. Low smooth bottom planchet. Source covering 0.85 mg/cm^2 mylar.

No expiration date has been given for this source due to the fragile nature of the mylar covering. This source should be carefully tested for leakage at least every six months. If leakage is detected this source should be disposed of by approved radioactive waste disposal procedures.

NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta activity for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 64.08 hours.

P O NUMBER EW091503, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: D M Mc 10-27-03

PARAGON ANALYTICS
Radiochemistry Data Package

Section 8

CHAIN OF CUSTODY

8

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403085
Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
Client Project Number: 101115
Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
030404-36-01	0403085-1		FILTER	04-Mar-04	15:00
030404-36-02	0403085-2		FILTER	04-Mar-04	15:00
030404-36-03	0403085-3		FILTER	04-Mar-04	15:00
030404-36-04	0403085-4		FILTER	04-Mar-04	15:00
030404-36-05	0403085-5		FILTER	04-Mar-04	15:00
030404-36-06	0403085-6		FILTER	04-Mar-04	15:00
030404-36-07	0403085-7		FILTER	04-Mar-04	15:00
030404-36-08	0403085-8		FILTER	04-Mar-04	15:00
030404-36-09	0403085-9		FILTER	04-Mar-04	15:00
030404-36-010	0403085-10		FILTER	04-Mar-04	15:00
030404-36-011	0403085-11		FILTER	04-Mar-04	15:00
030404-36-012	0403085-12		FILTER	04-Mar-04	15:00
030404-36-013	0403085-13		FILTER	04-Mar-04	15:00
030404-36-014	0403085-14		FILTER	04-Mar-04	15:00
030404-36-015	0403085-15		FILTER	04-Mar-04	15:00
030404-36-016	0403085-16		FILTER	04-Mar-04	15:00
030404-36-017	0403085-17		FILTER	04-Mar-04	15:00
030404-36-018	0403085-18		FILTER	04-Mar-04	15:00
030404-36-019	0403085-19		FILTER	04-Mar-04	15:00
030404-36-020	0403085-20		FILTER	04-Mar-04	15:00
030404-36-021	0403085-21		FILTER	04-Mar-04	15:00
030404-36-022	0403085-22		FILTER	04-Mar-04	15:00
030404-36-023	0403085-23		FILTER	04-Mar-04	15:00
030404-36-024	0403085-24		FILTER	04-Mar-04	15:00
030404-36-025	0403085-25		FILTER	04-Mar-04	15:00
030404-36-026	0403085-26		FILTER	04-Mar-04	15:00
030404-36-027	0403085-27		FILTER	04-Mar-04	15:00
030404-36-028	0403085-28		FILTER	04-Mar-04	15:00
030404-36-029	0403085-29		FILTER	04-Mar-04	15:00
030404-36-030	0403085-30		FILTER	04-Mar-04	15:00
030404-36-031	0403085-31		FILTER	04-Mar-04	15:03
030404-36-032	0403085-32		FILTER	04-Mar-04	15:03

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403085
Client Name: Shaw E & I Inc.
Client Project Name: EPA NEIC EDDP
Client Project Number: 101115
Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
030404-36-033	0403085-33		FILTER	04-Mar-04	15:03
030404-36-034	0403085-34		FILTER	04-Mar-04	15:03
030404-36-035	0403085-35		FILTER	04-Mar-04	15:03
030404-36-036	0403085-36		FILTER	04-Mar-04	15:03
030404-36-037	0403085-37		FILTER	04-Mar-04	15:03
030404-36-038	0403085-38		FILTER	04-Mar-04	15:03
030404-36-039	0403085-39		FILTER	04-Mar-04	15:03
030404-36-040	0403085-40		FILTER	04-Mar-04	15:03
030404-36-041	0403085-41		FILTER	04-Mar-04	15:03
030404-36-042	0403085-42		FILTER	04-Mar-04	15:03
030404-36-043	0403085-43		FILTER	04-Mar-04	15:03
030404-36-044	0403085-44		FILTER	04-Mar-04	15:03
030404-36-01 FD	0403085-45		FILTER	04-Mar-04	15:03
030404-36-08 FD	0403085-46		FILTER	04-Mar-04	15:03
030404-36-10FD	0403085-47		FILTER	04-Mar-04	15:03
030404-36-FB	0403085-48		FILTER	04-Mar-04	15:03

Shaw
Shaw Environmental & Infrastructure, Inc.

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A19 030404-36
PAGE 1 of 3

Bill to:

Project No.	101115	Sample Shipment Date	3-11-04		
Project name	EPA NEIC EDDP	Lab Destination	Paragon Analytics, Inc.		
Sample Coordinator	James Nelson / 303-233-1279	Lab Contact	Debbie Fazio / 970-490-1511		
Project Manager	Randy Rodgers / 865-694-7457	Project Contact/phone	Ben Dettorre / 865-670-2669	Report to:	Ben Dettore
Sample Team Members	T. Trent	Carrier Waybill No.			312 Directors Drive
	J. Sthephens				Knoxville, TN 37923

ONE SAMPLE PER LINE 0403085

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
030404-36-01 (1)	Rm A1902 FSS Location B-01	3-4-04 / 1500	Smear		
030404-36-02 (2)	Rm A1902 FSS Location B-02	3-4-04 / 1500	Smear		
030404-36-03 (3)	Rm A1902 FSS Location B-03	3-4-04 / 1500	Smear		
030404-36-04 (4)	Rm A1902 FSS Location B-04	3-4-04 / 1500	Smear		
030404-36-05 (5)	Rm A1902 FSS Location B-05	3-4-04 / 1500	Smear		
030404-36-06 (6)	Rm A1902 FSS Location B-06	3-4-04 / 1500	Smear		
030404-36-07 (7)	Rm A1902 FSS Location B-07	3-4-04 / 1500	Smear		
030404-36-08 (8)	Rm A1902 FSS Location B-08	3-4-04 / 1500	Smear		

Special Instructions:

Possible Hazard Identification:
Non-haz ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:
Return to Client ☐ Disposal by Lab ☒ Archive ☐

Turnaround Time Required:
Normal ☒ Rush ☐

QC Level:
I. ☐ II. ☐ III. ☐ Project Specific: Defined in QAPP

1. Relinquished by (Signature/Affiliation)	Date: 3-11-04 Time: 1408	1. Received by (Signature/Affiliation)	Date: 3/11/04 Time: 1410
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: 3/11/04 Time: 1545
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: ANALYSIS: GROSS Alpha/Beta - MDC (Reporting Limits) < 1.1 dpm/smear for alpha
< 100 dpm/smear for beta

000143

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ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A1902-030404-36

Project Name/Project No. EPA NEIC EDDP / 101115 Lab Destination Paragon Analytics, Inc. Sample Shipment Date 3-11-04

ONE SAMPLE PER LINE

0403085

Sample Number (Client ID)		Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
030404-36-09	9	Rm A1902 FSS Location B-09	3-4-04 / 1500	Smear		
030404-36-10	10	Rm A1902 FSS Location B-10	3-4-04 / 1500	Smear		
030404-36-11	11	Rm A1902 FSS Location B-11	3-4-04 / 1500	Smear		
030404-36-12	12	Rm A1902 FSS Location B-12	3-4-04 / 1500	Smear		
030404-36-13	13	Rm A1902 FSS Location B-13	3-4-04 / 1500	Smear		
030404-36-14	14	Rm A1902 FSS Location B-14	3-4-04 / 1500	Smear		
030404-36-15	15	Rm A1902 FSS Location B-15	3-4-04 / 1500	Smear		
030404-36-16	16	Rm A1902 FSS Location B-16	3-4-04 / 1500	Smear		
030404-36-17	17	Rm A1902 FSS Location B-17	3-4-04 / 1500	Smear		
030404-36-18	18	Rm A1902 FSS Location B-18	3-4-04 / 1500	Smear		
030404-36-19	19	Rm A1902 FSS Location B-19	3-4-04 / 1500	Smear		
030404-36-20	20	Rm A1902 FSS Location B-20	3-4-04 / 1500	Smear		
030404-36-21	21	Rm A1902 FSS Location B-21	3-4-04 / 1500	Smear		
030404-36-22	22	Rm A1902 FSS Location B-22	3-4-04 / 1500	Smear		
030404-36-23	23	Rm A1902 FSS Location B-23	3-4-04 / 1500	Smear		
030404-36-24	24	Rm A1902 FSS Location B-24	3-4-04 / 1500	Smear		
030404-36-25	25	Rm A1902 FSS Location B-25	3-4-04 / 1500	Smear		
030404-36-26	26	Rm A1902 FSS Location B-26	3-4-04 / 1500	Smear		
030404-36-27	27	Rm A1902 FSS Location B-27	3-4-04 / 1500	Smear		
030404-36-28	28	Rm A1902 FSS Location B-28	3-4-04 / 1500	Smear		
030404-36-29	29	Rm A1902 FSS Location B-29	3-4-04 / 1500	Smear		
030404[illegible]30	30	Rm A1902 FSS Location B-30	3-4-04 / 1500	Smear		

000144

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ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: A1902-03 04-36

Page 3 of 3

Project Name/Project No. EPA NEIC EDDP / 101115 Lab Destination Paragon Analytics, Inc. Sample Shipment Date 3-11-04

ONE SAMPLE PER LINE 0403085

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
030404-36-31 (31)	Rm A1902 FSS Location B-31	3-4-04 / 1503	Smear		
030404-36-32 (32)	Rm A1902 FSS Location B-32	3-4-04 / 1503	Smear		
030404-36-33 (33)	Rm A1902 FSS Location B-33	3-4-04 / 1503	Smear		
030404-36-34 (34)	Rm A1902 FSS Location B-34	3-4-04 / 1503	Smear		
030404-36-35 (35)	Rm A1902 FSS Location BS-1902-01	3-4-04 / 1503	Smear		
030404-36-36 (36)	Rm A1902 FSS Location BS-1902-02	3-4-04 / 1503	Smear		
030404-36-37 (37)	Rm A1902 FSS Location BS-1902-03	3-4-04 / 1503	Smear		
030404-36-38 (38)	Rm A1902 FSS Location BS-1902-04	3-4-04 / 1503	Smear		
030404-36-39 (39)	Rm A1902 FSS Location BS-1902-05	3-4-04 / 1503	Smear		
030404-36-40 (40)	Rm A1902 FSS Location BS-1902-06	3-4-04 / 1503	Smear		
030404-36-41 (41)	Rm A1902 FSS Location BS-1902-07	3-4-04 / 1503	Smear		
030404-36-42 (42)	Rm A1902 FSS Location BS-1902-08	3-4-04 / 1503	Smear		
030404-36-43 (43)	Rm A1902 FSS Location BS-1902-09	3-4-04 / 1503	Smear		
030404-36-44 (44)	Rm A1902 FSS Location BS-1902-10	3-4-04 / 1503	Smear		
030404-36-01 FD (45)	Rm A1902 FSS Location BS-1902-01 Field Dup	3-4-04 / 1503	Smear		
030404-36-08 FD (46)	Rm A1902 FSS Location BS-1902-08 Field Dup	3-4-04 / 1503	Smear		
030404-36-10 FD (47)	Rm A1902 FSS Location BS-1902-10 Field Dup	3-4-04 / 1503	Smear		
030404-36-FB (48)	Field Blank	3-4-04 / 1503	Smear		
NA	NA	NA	NA	NA	NA

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw Knox Federal Center WORKORDER NO: 0403085

ROJECT MANAGER: DF INITIALS: DMT DATE: 3-11-04

1. Does this project require any special handling in addition to standard Paragon procedures?		Yes	No
IS PRE-SCREENING REQUIRED? (radiochemistry, DOE, etc.)		Yes	No
2. Are custody seals on shipping containers intact? How many custody seals are provided? _____	N/A	Yes	No
3. Are the custody seals on sample containers intact?	N/A	Yes	No
4. Is there a Chain-of-Custody (COC) or other representative documents, letters, or shipping memos?		Yes	No
5. Is the COC complete? Relinquished: Yes X No___ Analyses Requested: Yes X No___	N/A	Yes	No
6. Is the COC in agreement with the samples received? No. of Samples: Yes X No___ Sample ID's: Yes X No___ Matrix: Yes X No___ No. of Containers: Yes X No___	N/A	Yes	No
7. Were COC (if applicable) and sample labels legible?		Yes	No
8. Were airbills present and/or removable?	N/A	Yes	No
9. Are all aqueous samples requiring chemical preservation preserved correctly (excluding volatile organics)?	N/A	Yes	No
Are all aqueous non-preserved samples at the correct pH?		Yes	No
10. Is there enough sample for requested analyses? If so, were samples placed in the proper containers?		Yes	No
11. Are all samples within holding times for the requested analyses?		Yes	No
12. Were all sample containers received intact? (not broken or leaking, etc.)		Yes	No
13. Are samples requiring no headspace (volatiles, reactive cyanide/sulfide, radon), headspace free? Size of bubble: ___ < green pea; ___ > green pea (List sample IDs and affected containers on Page 2)	N/A	Yes	No
14. Were samples checked for and free from the presence of residual chlorine?	N/A	Yes	No
15. Were the sample(s) shipped on ice?	N/A	Yes	No
16. Were cooler temperatures measured at 0.1 - 6 °C ? IR Gun Used*: 1 2	N/A	Yes	No
17. Were all samples cooled that should have been cooled?	N/A	Yes	No

Cooler #'s _____ _____ _____ _____ _____ _____

Temperature ambient _____ _____ _____ _____ _____ °C

Project Manager Signature / Date: Debbie Fazio 3/12/04

A NO RESPONSE TO ANY QUESTION EXCEPT # 1 REQUIRES THE COMPLETION OF PAGE 2 OF THIS FORM

* IR Gun #1 (original): Raytek, SN SC-PM3/T29403.
IR Gun #2 (newer): Oakton, SN 2SCIR1201

PARAGON ANALYTICS
Radiochemistry Data Package

Section 9

ADDITIONAL SUPPORTING DOCUMENTATION

9

Gas Proportional Counter

Instrument Calibration

Background Calibration

LB4100-B Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.087	0.044	0.150	PASS	1.378	1.244	1.486	PASS	A1 (01)
A2 (02)	0.097	0.050	0.235	PASS	1.276	1.255	1.493	PASS	A2 (02)
A3 (03)	0.071	0.037	0.173	PASS	1.338	1.251	1.518	PASS	A3 (03)
A4 (04)	0.102	0.001	0.193	PASS	1.355	1.225	1.540	PASS	A4 (04)
B1 (05)	0.111	-0.006	0.283	PASS	1.594	1.428	1.981	PASS	B1 (05)
B2 (06)	0.101	0.008	0.247	PASS	1.398	1.339	1.770	PASS	B2 (06)
B3 (07)	0.081	0.039	0.259	PASS	1.441	1.421	1.747	PASS	B3 (07)
B4 (08)	0.107	-0.027	0.316	PASS	1.537	1.498	1.741	PASS	B4 (08)
C1 (09)	0.128	0.046	0.174	PASS	1.626	1.324	1.754	PASS	C1 (09)
C2 (10)	0.089	0.042	0.205	PASS	1.550	1.327	1.733	PASS	C2 (10)
C3 (11)	0.111	0.067	0.219	PASS	1.527	1.344	1.766	PASS	C3 (11)
C4 (12)	0.073	-0.012	0.216	PASS	1.509	1.338	1.726	PASS	C4 (12)
D1 (13)	0.127	0.028	0.206	PASS	1.547	1.302	1.759	PASS	D1 (13)
D2 (14)	0.130	0.017	0.207	PASS	2.103	1.730	2.319	PASS	D2 (14)
D3 (15)	0.104	0.044	0.147	PASS	1.715	1.566	2.045	PASS	D3 (15)
D4 (16)	0.117	0.022	0.206	PASS	1.841	1.405	2.033	PASS	D4 (16)

Reviewed by: 7/2 Date: 3-20-04

Control Limits set 1/26/04.
CJ 1/26/04

000149

BKB0319W.XLD

Printed 3/20/04 3:45 PM

LB4100-B Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.081	0.044	0.150	PASS	1.441	1.244	1.486	PASS	A1 (01)
A2 (02)	0.121	0.050	0.235	PASS	1.471	1.255	1.493	PASS	A2 (02)
A3 (03)	0.110	0.037	0.173	PASS	1.442	1.251	1.518	PASS	A3 (03)
A4 (04)	0.104	0.001	0.193	PASS	1.419	1.225	1.540	PASS	A4 (04)
B1 (05)	0.157	-0.006	0.283	PASS	1.734	1.428	1.981	OFFLINE	B1 (05)
B2 (06)	0.095	0.008	0.247	PASS	1.493	1.339	1.770	OFFLINE	B2 (06)
B3 (07)	0.090	0.039	0.259	PASS	1.574	1.421	1.747	PASS	B3 (07)
B4 (08)	0.112	-0.027	0.316	PASS	1.642	1.498	1.741	PASS	B4 (08)
C1 (09)	0.080	0.046	0.174	PASS	1.639	1.324	1.754	PASS	C1 (09)
C2 (10)	0.100	0.042	0.205	PASS	1.615	1.327	1.733	PASS	C2 (10)
C3 (11)	0.113	0.067	0.219	PASS-	1.614	1.344	1.766	PASS	C3 (11)
C4 (12)	0.089	-0.012	0.216	PASS	1.608	1.338	1.726	PASS	C4 (12)
D1 (13)	0.085	0.028	0.206	PASS	1.523	1.302	1.759	PASS	D1 (13)
D2 (14)	0.125	0.017	0.207	PASS	2.088	1.730	2.319	PASS	D2 (14)
D3 (15)	0.105	0.044	0.147	PASS	2.188	1.566	2.045	FLAG-HIGH	D3 (15)
D4 (16)	0.102	0.022	0.206	PASS	2.237	1.405	2.033	FLAG-HIGH	D4 (16)

-15,16 are recounted in file BKB0327W.

Reviewed by: 8 Date: 3/27/04

Control Limits set 1/26/04.
CJ 1/26/04

000150

LB4100-B Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	0.044	0.150	#REF!	#REF!	1.244	1.486	#REF!	A1 (01)
A2 (02)	#REF!	0.050	0.235	#REF!	#REF!	1.255	1.493	#REF!	A2 (02)
A3 (03)	#REF!	0.037	0.173	#REF!	#REF!	1.251	1.518	#REF!	A3 (03)
A4 (04)	#REF!	0.001	0.193	#REF!	#REF!	1.225	1.540	#REF!	A4 (04)
B1 (05)	#REF!	-0.006	0.283	#REF!	#REF!	1.428	1.981	OFFLINE	B1 (05)
B2 (06)	#REF!	0.008	0.247	#REF!	#REF!	1.339	1.770	OFFLINE	B2 (06)
B3 (07)	#REF!	0.039	0.259	#REF!	#REF!	1.421	1.747	#REF!	B3 (07)
B4 (08)	#REF!	-0.027	0.316	#REF!	#REF!	1.498	1.741	#REF!	B4 (08)
C1 (09)	#REF!	0.046	0.174	#REF!	#REF!	1.324	1.754	#REF!	C1 (09)
C2 (10)	#REF!	0.042	0.205	#REF!	#REF!	1.327	1.733	#REF!	C2 (10)
C3 (11)	#REF!	0.067	0.219	#REF!	#REF!	1.344	1.766	#REF!	C3 (11)
C4 (12)	#REF!	-0.012	0.216	#REF!	#REF!	1.338	1.726	#REF!	C4 (12)
D1 (13)	#REF!	0.028	0.206	#REF!	#REF!	1.302	1.759	#REF!	D1 (13)
D2 (14)	#REF!	0.017	0.207	#REF!	#REF!	1.730	2.319	#REF!	D2 (14)
D3 (15)	0.082	0.044	0.147	PASS	1.878	1.566	2.045	PASS	D3 (15)
D4 (16)	0.086	0.022	0.206	PASS	1.711	1.405	2.033	PASS	D4 (16)

Reviewed by: _____ Date: 3/27/07

Control Limits set 1/26/04.
CJ 1/26/04

Gas Proportional Counter

Quality Control Data

Daily Background Checks

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.067	-0.027	0.201	PASS	1.517	0.923	1.833	PASS	A1 (01)
A2 (02)	0.133	-0.024	0.218	PASS	1.700	0.839	1.713	PASS	A2 (02)
A3 (03)	0.100	-0.032	0.174	PASS	1.283	0.890	1.786	PASS	A3 (03)
A4 (04)	0.117	-0.022	0.226	PASS	1.517	0.904	1.806	PASS	A4 (04)
B1 (05)	0.133	-0.018	0.240	PASS	1.683	1.105	2.083	PASS	B1 (05)
B2 (06)	0.083	-0.022	0.224	PASS	1.567	0.940	1.856	PASS	B2 (06)
B3 (07)	0.117	-0.029	0.191	PASS	1.467	0.976	1.906	PASS	B3 (07)
B4 (08)	0.233	-0.020	0.234	PASS	1.700	1.057	2.017	PASS	B4 (08)
C1 (09)	0.100	-0.011	0.267	PASS	1.800	1.132	2.120	PASS	C1 (09)
C2 (10)	0.100	-0.027	0.205	PASS	1.900	1.068	2.032	PASS	C2 (10)
C3 (11)	0.133	-0.018	0.240	PASS	1.717	1.048	2.006	PASS	C3 (11)
C4 (12)	0.083	-0.032	0.178	PASS	1.783	1.033	1.985	PASS	C4 (12)
D1 (13)	0.150	-0.011	0.265	PASS	1.500	1.065	2.029	PASS	D1 (13)
D2 (14)	0.067	-0.010	0.270	PASS	2.000	1.541	2.665	PASS	D2 (14)
D3 (15)	0.083	-0.021	0.229	PASS	1.867	1.208	2.222	PASS	D3 (15)
D4 (16)	0.083	-0.015	0.249	PASS	2.200	1.316	2.366	PASS	D4 (16)

Reviewed by: LCB Date: 3/23/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

000153

BKB0323.XLD

Printed 3/23/04 10:00 AM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.050	-0.027	0.201	PASS	1.367	0.923	1.833	PASS	A1 (01)
A2 (02)	0.117	-0.024	0.218	PASS	1.250	0.839	1.713	PASS	A2 (02)
A3 (03)	0.067	-0.032	0.174	PASS	1.517	0.890	1.786	PASS	A3 (03)
A4 (04)	0.100	-0.022	0.226	PASS	1.517	0.904	1.806	PASS	A4 (04)
B1 (05)	0.100	-0.018	0.240	PASS	1.850	1.105	2.083	PASS	B1 (05)
B2 (06)	0.050	-0.022	0.224	PASS	1.383	0.940	1.856	PASS	B2 (06)
B3 (07)	0.083	-0.029	0.191	PASS	1.500	0.976	1.906	PASS	B3 (07)
B4 (08)	0.117	-0.020	0.234	PASS	1.633	1.057	2.017	PASS	B4 (08)
C1 (09)	0.083	-0.011	0.267	PASS	1.533	1.132	2.120	PASS	C1 (09)
C2 (10)	0.100	-0.027	0.205	PASS	1.567	1.068	2.032	PASS	C2 (10)
C3 (11)	0.133	-0.018	0.240	PASS	1.667	1.048	2.006	PASS	C3 (11)
C4 (12)	0.067	-0.032	0.178	PASS	1.367	1.033	1.985	PASS	C4 (12)
D1 (13)	0.217	-0.011	0.265	PASS	1.517	1.065	2.029	PASS	D1 (13)
D2 (14)	0.117	-0.010	0.270	PASS	2.100	1.541	2.665	PASS	D2 (14)
+ D3 (15)	0.017	-0.021	0.229	PASS	2.233	1.208	2.222	FLAG-HIGH	D3 (15)
D4 (16)	0.133	-0.015	0.249	PASS	2.350	1.316	2.366	PASS	D4 (16)

Det 15 recounted in file BKB0324A.

Reviewed by: KF Date: 3-24-04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B2 (06)
B3 (07)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B3 (07)
B4 (08)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B4 (08)
C1 (09)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C1 (09)
C2 (10)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C2 (10)
C3 (11)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C3 (11)
C4 (12)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
+ D3 (15)	0.083	-0.021	0.229	PASS	11.100	1.208	2.222	FLAG-HIGH	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

+ Det 15 off line β 3/24.

Reviewed by: TZ Date: 3-24-04

Control limits established from prevolus weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

000155

BKB0324A.XLD

Printed 3/24/04 12:15 PM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.083	-0.027	0.201	PASS	1.300	0.923	1.833	PASS	A1 (01)
A2 (02)	0.167	-0.024	0.218	PASS	1.333	0.839	1.713	PASS	A2 (02)
A3 (03)	0.133	-0.032	0.174	PASS	1.550	0.890	1.786	PASS	A3 (03)
A4 (04)	0.117	-0.022	0.226	PASS	1.250	0.904	1.806	PASS	A4 (04)
B1 (05)	0.217	-0.018	0.240	PASS	1.767	1.105	2.083	OFFLINE	B1 (05)
B2 (06)	0.167	-0.022	0.224	PASS	1.633	0.940	1.856	OFFLINE	B2 (06)
B3 (07)	0.067	-0.029	0.191	PASS	1.500	0.976	1.906	PASS	B3 (07)
B4 (08)	0.250	-0.020	0.234	FLAG-HIGH	1.617	1.057	2.017	PASS	B4 (08)
C1 (09)	0.067	-0.011	0.267	PASS	1.583	1.132	2.120	PASS	C1 (09)
C2 (10)	0.083	-0.027	0.205	PASS	1.483	1.068	2.032	PASS	C2 (10)
C3 (11)	0.217	-0.018	0.240	PASS	2.017	1.048	2.006	FLAG-HIGH	C3 (11)
C4 (12)	0.233	-0.032	0.178	FLAG-HIGH	1.683	1.033	1.985	PASS	C4 (12)
D1 (13)	0.133	-0.011	0.265	PASS	1.833	1.065	2.029	PASS	D1 (13)
D2 (14)	0.233	-0.010	0.270	PASS	2.200	1.541	2.665	PASS	D2 (14)
D3 (15)	0.183	-0.021	0.229	PASS	2.733	1.208	2.222	FLAG-HIGH	D3 (15)
D4 (16)	0.150	-0.015	0.249	PASS	2.333	1.316	2.366	PASS	D4 (16)

– detectors 8, 11, 12, 15 will be recounted in file BKB0325A

Reviewed by: LGB Date: 3/25/04

Control limits established from prevolus weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

000156

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B2 (06)
B3 (07)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B3 (07)
B4 (08)	0.200	-0.020	0.234	PASS	1.450	1.057	2.017	PASS	B4 (08)
C1 (09)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C1 (09)
C2 (10)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C2 (10)
C3 (11)	0.133	-0.018	0.240	PASS	1.800	1.048	2.006	PASS	C3 (11)
C4 (12)	0.083	-0.032	0.178	PASS	1.617	1.033	1.985	PASS	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	0.117	-0.021	0.229	PASS	2.667	1.208	2.222	FLAG-HIGH	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

Det. 15 is offline B for today.

Reviewed by: _____ Date: 3/25/04

Control limits established from prevolus weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

000157

BKB0325A.XLD

Printed 3/25/04 9:24 AM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.167	-0.027	0.201	PASS	1.517	0.923	1.833	PASS	A1 (01)
A2 (02)	0.233	-0.024	0.218	FLAG-HIGH	1.783	0.839	1.713	FLAG-HIGH	A2 (02)
A3 (03)	0.083	-0.032	0.174	PASS	1.517	0.890	1.786	PASS	A3 (03)
A4 (04)	0.117	-0.022	0.226	PASS	1.717	0.904	1.806	PASS	A4 (04)
B1 (05)	0.217	-0.018	0.240	PASS	1.850	1.105	2.083	OFFLINE	B1 (05)
B2 (06)	0.150	-0.022	0.224	PASS	1.283	0.940	1.856	OFFLINE	B2 (06)
B3 (07)	0.183	-0.029	0.191	PASS	1.267	0.976	1.906	PASS	B3 (07)
B4 (08)	0.133	-0.020	0.234	PASS	1.617	1.057	2.017	PASS	B4 (08)
C1 (09)	0.200	-0.011	0.267	PASS	1.450	1.132	2.120	PASS	C1 (09)
C2 (10)	0.150	-0.027	0.205	PASS	1.383	1.068	2.032	PASS	C2 (10)
C3 (11)	0.200	-0.018	0.240	PASS	1.850	1.048	2.006	PASS	C3 (11)
C4 (12)	0.133	-0.032	0.178	PASS	1.700	1.033	1.985	PASS	C4 (12)
D1 (13)	0.033	-0.011	0.265	PASS	1.800	1.065	2.029	PASS	D1 (13)
D2 (14)	0.200	-0.010	0.270	PASS	1.833	1.541	2.665	PASS	D2 (14)
D3 (15)	0.133	-0.021	0.229	PASS	2.367	1.208	2.222	FLAG-HIGH	D3 (15)
D4 (16)	0.083	-0.015	0.249	PASS	2.450	1.316	2.366	FLAG-HIGH	D4 (16)

-det 2, 15, 16 are recounted in file BKB0326A.

Reviewed by: _____ Date: 3/26/04

Control limits established from prevoius weekly background determinations:
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	0.050	-0.024	0.218	PASS	1.583	0.839	1.713	PASS	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B2 (06)
B3 (07)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B3 (07)
B4 (08)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B4 (08)
C1 (09)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C1 (09)
C2 (10)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C2 (10)
C3 (11)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C3 (11)
C4 (12)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	0.133	-0.021	0.229	PASS	1.950	1.208	2.222	PASS	D3 (15)
D4 (16)	0.100	-0.015	0.249	PASS	2.367	1.316	2.366	FLAG-HIGH	D4 (16)

-det 16 is offline β for today.

Reviewed by: _____ Date: 3/26/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0319W Date: 3/19/04 Analyst: KF

151148

QUALITY ASSURANCE SUMMARY SHEET

3/27/04

PAI W.O. # / Batch Gas Flow Proportional Count
TEST —

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from login-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.

When weekly background counts are completed the morning of a new day, it is not necessary to perform daily BKG checks. However daily Efficiency checks will be run.

CM
11/17/98

TECHNICIAN/ANALYST CM DATE 11/17/98

RESOURCE MANAGER [illegible] DATE 11/17/98

FRM 302FC2.FRM (12/Jan/98)

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.167	-0.029	0.191	PASS	1.350	0.976	1.906	PASS	A1 (01)
A2 (02)	0.133	-0.014	0.256	PASS	1.317	1.001	1.941	PASS	A2 (02)
A3 (03)	0.183	-0.018	0.238	PASS	1.200	0.977	1.907	PASS	A3 (03)
A4 (04)	0.083	-0.021	0.229	PASS	1.283	0.958	1.880	PASS	A4 (04)
B1 (05)	0.183	0.004	0.310	PASS	1.400	1.224	2.244	OFFLINE	B1 (05)
B2 (06)	0.150	-0.024	0.214	PASS	1.217	1.020	1.966	OFFLINE	B2 (06)
B3 (07)	0.083	-0.026	0.206	PASS	1.617	1.088	2.060	PASS	B3 (07)
B4 (08)	0.217	-0.018	0.242	PASS	1.400	1.146	2.138	PASS	B4 (08)
C1 (09)	0.133	-0.030	0.190	PASS	1.633	1.143	2.135	PASS	C1 (09)
C2 (10)	0.083	-0.022	0.222	PASS	1.583	1.123	2.107	PASS	C2 (10)
C3 (11)	0.083	-0.017	0.243	PASS	1.500	1.122	2.106	PASS	C3 (11)
C4 (12)	0.100	-0.027	0.205	PASS	1.767	1.117	2.099	PASS	C4 (12)
D1 (13)	0.050	-0.028	0.198	PASS	1.700	1.045	2.001	PASS	D1 (13)
D2 (14)	0.067	-0.012	0.262	PASS	2.100	1.528	2.648	PASS	D2 (14)
D3 (15)	0.050	-0.029	0.193	PASS	1.617	1.347	2.409	PASS	D3 (15)
D4 (16)	0.117	-0.028	0.200	PASS	1.683	1.204	2.218	PASS	D4 (16)

Reviewed by: _____ Date: 3/29/04

Control limits established from prevolus weekly background determinations.
Weekly Background File: BKB0326W Date: 3/26/04 Analyst: CJ

BKB0329.XLD

Printed 3/29/04 10:12 AM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.100	-0.029	0.191	PASS	1.400	0.976	1.906	PASS	A1 (01)
A2 (02)	0.250	-0.014	0.256	PASS	1.417	1.001	1.941	PASS	A2 (02)
A3 (03)	0.150	-0.018	0.238	PASS	1.583	0.977	1.907	PASS	A3 (03)
A4 (04)	0.233	-0.021	0.229	FLAG-HIGH	1.750	0.958	1.880	PASS	A4 (04)
B1 (05)	0.150	0.004	0.310	PASS	1.717	1.224	2.244	OFFLINE	B1 (05)
B2 (06)	0.117	-0.024	0.214	PASS	1.783	1.020	1.966	OFFLINE	B2 (06)
B3 (07)	0.183	-0.026	0.206	PASS	1.500	1.088	2.060	PASS	B3 (07)
B4 (08)	0.167	-0.018	0.242	PASS	1.317	1.146	2.138	PASS	B4 (08)
C1 (09)	0.150	-0.030	0.190	PASS	1.417	1.143	2.135	PASS	C1 (09)
C2 (10)	0.267	-0.022	0.222	FLAG-HIGH	1.367	1.123	2.107	PASS	C2 (10)
C3 (11)	0.133	-0.017	0.243	PASS	1.850	1.122	2.106	PASS	C3 (11)
C4 (12)	0.117	-0.027	0.205	PASS	1.650	1.117	2.099	PASS	C4 (12)
D1 (13)	0.183	-0.028	0.198	PASS	1.833	1.045	2.001	PASS	D1 (13)
D2 (14)	0.200	-0.012	0.262	PASS	2.133	1.528	2.648	PASS	D2 (14)
D3 (15)	0.083	-0.029	0.193	PASS	1.817	1.347	2.409	PASS	D3 (15)
D4 (16)	0.217	-0.028	0.200	FLAG-HIGH	1.717	1.204	2.218	PASS	D4 (16)

-4,10,16 are recounted in file BKB0330.A.

Reviewed by: _____ Date: 3/30/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0326W Date: 3/26/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	0.100	-0.021	0.229	PASS	1.467	0.958	1.880	PASS	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B2 (06)
B3 (07)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B3 (07)
B4 (08)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B4 (08)
C1 (09)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C1 (09)
C2 (10)	0.133	-0.022	0.222	PASS	1.567	1.123	2.107	PASS	C2 (10)
C3 (11)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C3 (11)
C4 (12)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D3 (15)
D4 (16)	0.150	-0.028	0.200	PASS	1.617	1.204	2.218	PASS	D4 (16)

Reviewed by: XZ Date: 3·30·04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0326W Date: 3/26/04 Analyst: CJ

000163

BKB0330A.XLD

Printed 3/30/04 9:12 AM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.067	-0.029	0.191	PASS	1.483	0.976	1.906	PASS	A1 (01)
A2 (02)	0.117	-0.014	0.256	PASS	1.400	1.001	1.941	PASS	A2 (02)
A3 (03)	0.067	-0.018	0.238	PASS	1.467	0.977	1.907	PASS	A3 (03)
A4 (04)	0.117	-0.021	0.229	PASS	1.550	0.958	1.880	PASS	A4 (04)
B1 (05)	0.217	0.004	0.310	PASS	1.900	1.224	2.244	OFFLINE	B1 (05)
B2 (06)	0.133	-0.024	0.214	PASS	1.717	1.020	1.966	OFFLINE	B2 (06)
B3 (07)	0.167	-0.026	0.206	PASS	1.667	1.088	2.060	PASS	B3 (07)
B4 (08)	0.250	-0.018	0.242	FLAG-HIGH	1.867	1.146	2.138	PASS	B4 (08)
C1 (09)	0.083	-0.030	0.190	PASS	1.550	1.143	2.135	PASS	C1 (09)
C2 (10)	0.133	-0.022	0.222	PASS	1.617	1.123	2.107	PASS	C2 (10)
C3 (11)	0.050	-0.017	0.243	PASS	1.300	1.122	2.106	PASS	C3 (11)
C4 (12)	0.200	-0.027	0.205	PASS	1.583	1.117	2.099	PASS	C4 (12)
D1 (13)	0.133	-0.028	0.198	PASS	1.350	1.045	2.001	PASS	D1 (13)
D2 (14)	0.100	-0.012	0.262	PASS	2.183	1.528	2.648	PASS	D2 (14)
D3 (15)	0.150	-0.029	0.193	PASS	2.067	1.347	2.409	PASS	D3 (15)
D4 (16)	0.083	-0.028	0.200	PASS	1.500	1.204	2.218	PASS	D4 (16)

- Det 8 is recounted in file BKB0331A.

Reviewed by: _____ Date: 3/31/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0326W Date: 3/26/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	OFFLINE	B2 (06)
B3 (07)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B3 (07)
B4 (08)	0.150	-0.018	0.242	PASS	1.750	1.146	2.138	PASS	B4 (08)
C1 (09)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C1 (09)
C2 (10)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C2 (10)
C3 (11)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C3 (11)
C4 (12)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	C4 (12)
D1 (13)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D1 (13)
D2 (14)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D2 (14)
D3 (15)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D3 (15)
D4 (16)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

Reviewed by: _____ Date: 2/31/04

Control limits established from prevoius weekly background determinations.
Weekly Background File: BKB0326W Date: 3/26/04 Analyst: CJ

BKB0331A.XLD

Printed 3/31/04 11:14 AM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.083	-0.029	0.191	PASS	1.450	0.976	1.906	PASS	A1 (01)
A2 (02)	0.133	-0.014	0.256	PASS	1.583	1.001	1.941	PASS	A2 (02)
A3 (03)	0.100	-0.018	0.238	PASS	1.433	0.977	1.907	PASS	A3 (03)
A4 (04)	0.100	-0.021	0.229	PASS	1.333	0.958	1.880	PASS	A4 (04)
B1 (05)	0.083	0.004	0.310	PASS	1.433	1.224	2.244	OFFLINE	B1 (05)
B2 (06)	0.083	-0.024	0.214	PASS	1.617	1.020	1.966	OFFLINE	B2 (06)
B3 (07)	0.083	-0.026	0.206	PASS	1.483	1.088	2.060	PASS	B3 (07)
B4 (08)	0.117	-0.018	0.242	PASS	1.667	1.146	2.138	PASS	B4 (08)
C1 (09)	0.117	-0.030	0.190	PASS	1.200	1.143	2.135	PASS	C1 (09)
C2 (10)	0.100	-0.022	0.222	PASS	1.567	1.123	2.107	PASS	C2 (10)
C3 (11)	0.150	-0.017	0.243	PASS	1.633	1.122	2.106	PASS	C3 (11)
C4 (12)	0.000	-0.027	0.205	PASS	1.450	1.117	2.099	PASS	C4 (12)
D1 (13)	0.050	-0.028	0.198	PASS	1.467	1.045	2.001	PASS	D1 (13)
D2 (14)	0.050	-0.012	0.262	PASS	2.183	1.528	2.648	PASS	D2 (14)
D3 (15)	0.117	-0.029	0.193	PASS	1.783	1.347	2.409	PASS	D3 (15)
D4 (16)	0.050	-0.028	0.200	PASS	1.467	1.204	2.218	PASS	D4 (16)

- daily checks were run again after sample counts to bracket. g 3/31/04

Reviewed by: g Date: 3/31/04

Control limits established from prevous weekly background determinations.
Weekly Background File: BKB0326W Date: 3/26/04 Analyst: CJ

Gas Proportional Counter

Quality Control Data

Daily Instrument Performance Checks

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2473	0.2277	0.2583	PASS	0.8673	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2457	0.2314	0.2605	PASS	0.8765	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2480	0.2291	0.2588	PASS	0.8890	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2429	0.2302	0.2602	PASS	0.8829	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2388	0.2342	0.2646	PASS	0.8850	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2283	0.2219	0.2484	PASS	0.8578	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2499	0.2343	0.2656	PASS	0.9089	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2394	0.2236	0.2616	PASS	0.8995	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2516	0.2453	0.2752	PASS	0.9273	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2500	0.2311	0.2644	PASS	0.9106	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2494	0.2362	0.2674	PASS	0.8925	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2414	0.2241	0.2531	PASS	0.8733	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2536	0.2332	0.2660	PASS	0.9050	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2611	0.2375	0.2664	PASS	0.8939	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2543	0.2387	0.2733	PASS	0.8883	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2472	0.2381	0.2666	PASS	0.9152	0.8823	0.9367	PASS	D4 (16)

—detectors 5, 6 are offline β

Reviewed by: LCB Date: 3/23/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2413	0.2277	0.2583	PASS	0.8588	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2419	0.2314	0.2605	PASS	0.8664	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2412	0.2291	0.2588	PASS	0.9034	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2533	0.2302	0.2602	PASS	0.8769	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2499	0.2342	0.2646	PASS	0.8888	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2382	0.2219	0.2484	PASS	0.8567	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2522	0.2343	0.2656	PASS	0.9173	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2416	0.2236	0.2616	PASS	0.8910	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2568	0.2453	0.2752	PASS	0.9140	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2404	0.2311	0.2644	PASS	0.9060	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2515	0.2362	0.2674	PASS	0.8923	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2342	0.2241	0.2531	PASS	0.8712	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2568	0.2332	0.2660	PASS	0.9040	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2572	0.2375	0.2664	PASS	0.8978	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2571	0.2387	0.2733	PASS	0.9008	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2528	0.2381	0.2666	PASS	0.9123	0.8823	0.9367	PASS	D4 (16)

-Det 5,6 offline β for today.

Reviewed by: S Date: 3/24/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check

Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2514	0.2277	0.2583	PASS	0.8612	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2455	0.2314	0.2605	PASS	0.8720	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2414	0.2291	0.2588	PASS	0.8887	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2422	0.2302	0.2602	PASS	0.8787	0.8514	0.9123	PASS	A4 (04)
— B1 (05)	0.2487	0.2342	0.2646	PASS	0.8935	0.9050	0.9663	OFFLINE	B1 (05)
— B2 (06)	0.2337	0.2219	0.2484	PASS	0.8579	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	0.2429	0.2343	0.2656	PASS	0.9199	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2378	0.2236	0.2616	PASS	0.8814	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2540	0.2453	0.2752	PASS	0.9367	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2429	0.2311	0.2644	PASS	0.9048	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2411	0.2362	0.2674	PASS	0.9031	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2461	0.2241	0.2531	PASS	0.8732	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2492	0.2332	0.2660	PASS	0.9068	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2527	0.2375	0.2664	PASS	0.9028	0.8713	0.9377	PASS	D2 (14)
+ D3 (15)	0.2634	0.2387	0.2733	PASS	0.8808	0.8858	0.9433	FLAG-LOW	D3 (15)
D4 (16)	0.2501	0.2381	0.2666	PASS	0.9083	0.8823	0.9367	PASS	D4 (16)

— detectors 5, 6 are offline β
+ detector 15 is recounted in file EFB0325A

Reviewed by: LGB Date: 3/25/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	#VALUE!	0.2277	0.2583	#VALUE!	#VALUE!	0.8448	0.8995	#VALUE!	A1 (01)
A2 (02)	#VALUE!	0.2314	0.2605	#VALUE!	#VALUE!	0.8428	0.8989	#VALUE!	A2 (02)
A3 (03)	#VALUE!	0.2291	0.2588	#VALUE!	#VALUE!	0.8661	0.9191	#VALUE!	A3 (03)
A4 (04)	#VALUE!	0.2302	0.2602	#VALUE!	#VALUE!	0.8514	0.9123	#VALUE!	A4 (04)
B1 (05)	#VALUE!	0.2342	0.2646	#VALUE!	#VALUE!	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	#VALUE!	0.2219	0.2484	#VALUE!	#VALUE!	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	#VALUE!	0.2343	0.2656	#VALUE!	#VALUE!	0.8782	0.9579	#VALUE!	B3 (07)
B4 (08)	#VALUE!	0.2236	0.2616	#VALUE!	#VALUE!	0.8623	0.9360	#VALUE!	B4 (08)
C1 (09)	#VALUE!	0.2453	0.2752	#VALUE!	#VALUE!	0.8863	0.9595	#VALUE!	C1 (09)
C2 (10)	#VALUE!	0.2311	0.2644	#VALUE!	#VALUE!	0.8750	0.9478	#VALUE!	C2 (10)
C3 (11)	#VALUE!	0.2362	0.2674	#VALUE!	#VALUE!	0.8588	0.9345	#VALUE!	C3 (11)
C4 (12)	#VALUE!	0.2241	0.2531	#VALUE!	#VALUE!	0.8415	0.9081	#VALUE!	C4 (12)
D1 (13)	#VALUE!	0.2332	0.2660	#VALUE!	#VALUE!	0.8681	0.9355	#VALUE!	D1 (13)
D2 (14)	#VALUE!	0.2375	0.2664	#VALUE!	#VALUE!	0.8713	0.9377	#VALUE!	D2 (14)
D3 (15)	0.2624	0.2387	0.2733	PASS	0.8948	0.8858	0.9433	PASS	D3 (15)
D4 (16)	#VALUE!	0.2381	0.2666	#VALUE!	#VALUE!	0.8823	0.9367	#VALUE!	D4 (16)

Reviewed by: LCB Date: 3/25/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2460	0.2277	0.2583	PASS	0.8723	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2406	0.2314	0.2605	PASS	0.8664	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2433	0.2291	0.2588	PASS	0.9034	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2474	0.2302	0.2602	PASS	0.8947	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2429	0.2342	0.2646	PASS	0.8811	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2362	0.2219	0.2484	PASS	0.8659	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	0.2428	0.2343	0.2656	PASS	0.9023	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2406	0.2236	0.2616	PASS	0.8651	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2655	0.2453	0.2752	PASS	0.9198	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2444	0.2311	0.2644	PASS	0.9201	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2513	0.2362	0.2674	PASS	0.8993	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2374	0.2241	0.2531	PASS	0.8823	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2477	0.2332	0.2660	PASS	0.9024	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2532	0.2375	0.2664	PASS	0.8928	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2570	0.2387	0.2733	PASS	0.8941	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2535	0.2381	0.2666	PASS	0.9320	0.8823	0.9367	PASS	D4 (16)

— detectors 5, 6 are offline β

Reviewed by: LCB Date: 3/26/04

Control Limits established 12/21/03. JME

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EFB0326.XLD

Printed 3/26/04 7:51 AM

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2464	0.2277	0.2583	PASS	0.8719	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2447	0.2314	0.2605	PASS	0.8602	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2404	0.2291	0.2588	PASS	0.8992	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2438	0.2302	0.2602	PASS	0.8760	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2492	0.2342	0.2646	PASS	0.9012	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2334	0.2219	0.2484	PASS	0.8428	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	0.2543	0.2343	0.2656	PASS	0.8818	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2476	0.2236	0.2616	PASS	0.8817	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2598	0.2453	0.2752	PASS	0.9199	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2509	0.2311	0.2644	PASS	0.9098	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2567	0.2362	0.2674	PASS	0.8796	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2474	0.2241	0.2531	PASS	0.8799	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2491	0.2332	0.2660	PASS	0.8773	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2498	0.2375	0.2664	PASS	0.8767	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2524	0.2387	0.2733	PASS	0.8789	0.8858	0.9433	FLAG-LOW	D3 (15)
D4 (16)	0.2611	0.2381	0.2666	PASS	0.8868	0.8823	0.9367	PASS	D4 (16)

- det 15 is offline β for today.

Reviewed by: _____ Date: 3/27/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2447	0.2277	0.2583	PASS	0.8553	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2465	0.2314	0.2605	PASS	0.8893	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2389	0.2291	0.2588	PASS	0.8896	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2431	0.2302	0.2602	PASS	0.8923	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2533	0.2342	0.2646	PASS	0.8797	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2362	0.2219	0.2484	PASS	0.8665	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	0.2487	0.2343	0.2656	PASS	0.9090	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2400	0.2236	0.2616	PASS	0.8676	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2581	0.2453	0.2752	PASS	0.9194	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2461	0.2311	0.2644	PASS	0.9186	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2499	0.2362	0.2674	PASS	0.8884	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2354	0.2241	0.2531	PASS	0.8754	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2450	0.2332	0.2660	PASS	0.8929	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2575	0.2375	0.2664	PASS	0.9061	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2518	0.2387	0.2733	PASS	0.8787	0.8858	0.9433	FLAG-LOW	D3 (15)
D4 (16)	0.2499	0.2381	0.2666	PASS	0.9208	0.8823	0.9367	PASS	D4 (16)

-det 15 recounted in file EFB0329A.

Reviewed by: _____ Date: 3/29/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	#VALUE!	0.2277	0.2583	#VALUE!	#VALUE!	0.8448	0.8995	#VALUE!	A1 (01)
A2 (02)	#VALUE!	0.2314	0.2605	#VALUE!	#VALUE!	0.8428	0.8989	#VALUE!	A2 (02)
A3 (03)	#VALUE!	0.2291	0.2588	#VALUE!	#VALUE!	0.8661	0.9191	#VALUE!	A3 (03)
A4 (04)	#VALUE!	0.2302	0.2602	#VALUE!	#VALUE!	0.8514	0.9123	#VALUE!	A4 (04)
B1 (05)	#VALUE!	0.2342	0.2646	#VALUE!	#VALUE!	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	#VALUE!	0.2219	0.2484	#VALUE!	#VALUE!	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	#VALUE!	0.2343	0.2656	#VALUE!	#VALUE!	0.8782	0.9579	#VALUE!	B3 (07)
B4 (08)	#VALUE!	0.2236	0.2616	#VALUE!	#VALUE!	0.8623	0.9360	#VALUE!	B4 (08)
C1 (09)	#VALUE!	0.2453	0.2752	#VALUE!	#VALUE!	0.8863	0.9595	#VALUE!	C1 (09)
C2 (10)	#VALUE!	0.2311	0.2644	#VALUE!	#VALUE!	0.8750	0.9478	#VALUE!	C2 (10)
C3 (11)	#VALUE!	0.2362	0.2674	#VALUE!	#VALUE!	0.8588	0.9345	#VALUE!	C3 (11)
C4 (12)	#VALUE!	0.2241	0.2531	#VALUE!	#VALUE!	0.8415	0.9081	#VALUE!	C4 (12)
D1 (13)	#VALUE!	0.2332	0.2660	#VALUE!	#VALUE!	0.8681	0.9355	#VALUE!	D1 (13)
D2 (14)	#VALUE!	0.2375	0.2664	#VALUE!	#VALUE!	0.8713	0.9377	#VALUE!	D2 (14)
D3 (15)	0.2600	0.2387	0.2733	PASS	0.8977	0.8858	0.9433	PASS	D3 (15)
D4 (16)	#VALUE!	0.2381	0.2666	#VALUE!	#VALUE!	0.8823	0.9367	#VALUE!	D4 (16)

Reviewed by: _____ Date: 3/09/05

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2499	0.2277	0.2583	PASS	0.8605	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2421	0.2314	0.2605	PASS	0.8728	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2458	0.2291	0.2588	PASS	0.9074	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2469	0.2302	0.2602	PASS	0.8843	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2435	0.2342	0.2646	PASS	0.9035	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2295	0.2219	0.2484	PASS	0.8747	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	0.2553	0.2343	0.2656	PASS	0.9364	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2414	0.2236	0.2616	PASS	0.8715	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2569	0.2453	0.2752	PASS	0.9355	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2459	0.2311	0.2644	PASS	0.8920	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2584	0.2362	0.2674	PASS	0.9075	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2362	0.2241	0.2531	PASS	0.8641	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2423	0.2332	0.2660	PASS	0.9025	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2499	0.2375	0.2664	PASS	0.8986	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2558	0.2387	0.2733	PASS	0.8966	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2506	0.2381	0.2666	PASS	0.9200	0.8823	0.9367	PASS	D4 (16)

Reviewed by: _____ Date: 3/30/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2443	0.2277	0.2583	PASS	0.8536	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2399	0.2314	0.2605	PASS	0.8522	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2455	0.2291	0.2588	PASS	0.8888	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2477	0.2302	0.2602	PASS	0.8823	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2466	0.2342	0.2646	PASS	0.8733	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2240	0.2219	0.2484	PASS	0.8423	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	0.2590	0.2343	0.2656	PASS	0.9272	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2430	0.2236	0.2616	PASS	0.8754	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2674	0.2453	0.2752	PASS	0.9273	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2499	0.2311	0.2644	PASS	0.9061	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2583	0.2362	0.2674	PASS	0.8920	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2483	0.2241	0.2531	PASS	0.8792	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2492	0.2332	0.2660	PASS	0.8920	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2533	0.2375	0.2664	PASS	0.8950	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2555	0.2387	0.2733	PASS	0.8971	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2590	0.2381	0.2666	PASS	0.9301	0.8823	0.9367	PASS	D4 (16)

Reviewed by: _____ Date: 3/31/04

Control Limits established 12/21/03. JME

LB4100 - B
Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2500	0.2277	0.2583	PASS	0.8672	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2553	0.2314	0.2605	PASS	0.8785	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2399	0.2291	0.2588	PASS	0.9092	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2439	0.2302	0.2602	PASS	0.8795	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2512	0.2342	0.2646	PASS	0.9156	0.9050	0.9663	OFFLINE	B1 (05)
B2 (06)	0.2373	0.2219	0.2484	PASS	0.8642	0.8585	0.9286	OFFLINE	B2 (06)
B3 (07)	0.2532	0.2343	0.2656	PASS	0.9170	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2388	0.2236	0.2616	PASS	0.8740	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2620	0.2453	0.2752	PASS	0.9347	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2444	0.2311	0.2644	PASS	0.8845	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2440	0.2362	0.2674	PASS	0.8970	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2431	0.2241	0.2531	PASS	0.8652	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2440	0.2332	0.2660	PASS	0.8903	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2537	0.2375	0.2664	PASS	0.9069	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2560	0.2387	0.2733	PASS	0.8908	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2520	0.2381	0.2666	PASS	0.9059	0.8823	0.9367	PASS	D4 (16)

Reviewed by: S Date: 3/31/04

Control Limits established 12/21/03. JME

-Daily checks were recounted after sample counts to bracket. S 3/31/04

000178

EFB0331A.XLD

Printed 3/31/04 11:35 AM

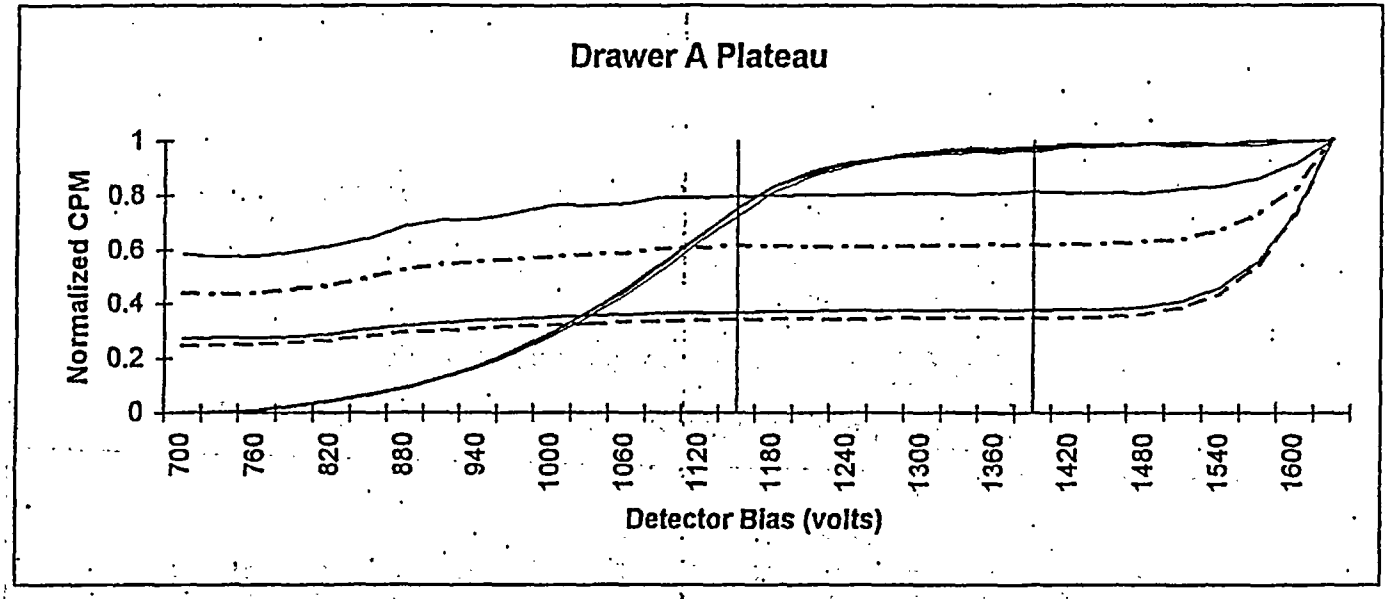
Gas Proportional Counter

Instrument Calibration

Initial Efficiency Calibration Standards Traceability

Unit Type: LB4100/W
Date Performed: 11/11/03 09:19
FileName: PTB1111A
Batch ID: DRAWER A

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1147.5

	A1	A2	A3	A4
Beta slope at beta voltage	1.73%	1.36%	2.04%	1.59%
Alpha slope at beta voltage	0.75%	0.45%	0.63%	0.66%
Alpha slope at alpha voltage	1.76%	1.86%	1.20%	0.79%

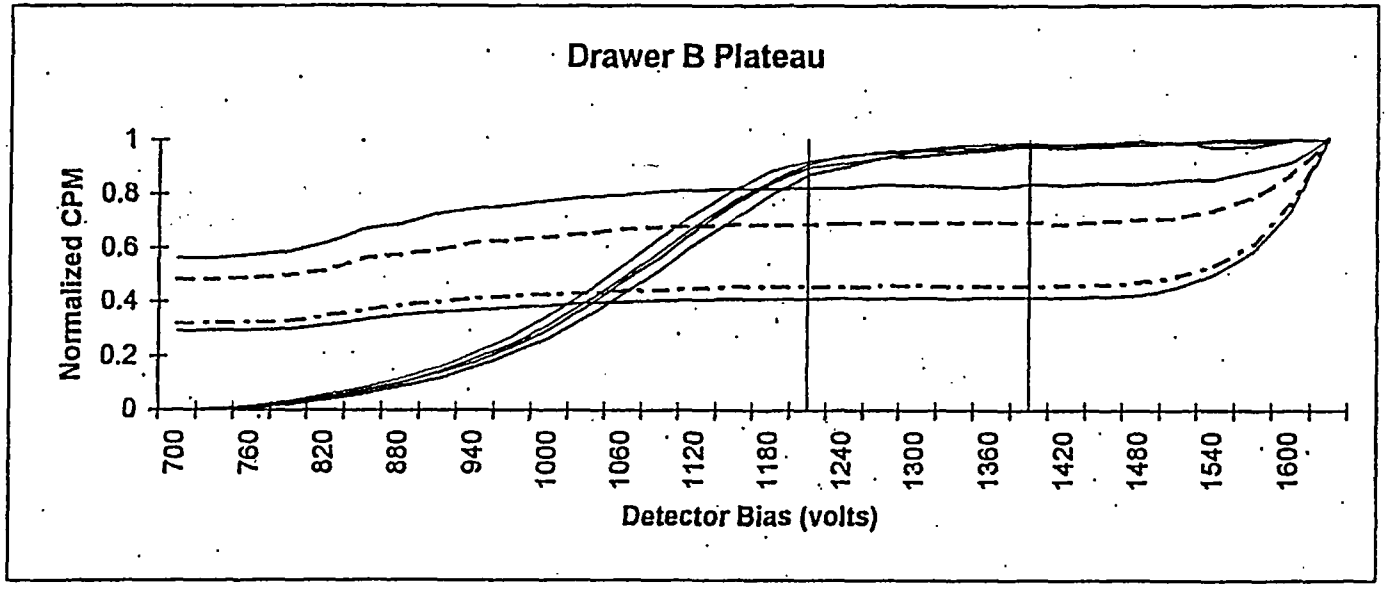
11/13/03

Printed 11/11/03 3:38 PM

000180

Unit Type: LB4100/W
Date Performed: 11/11/03 09:19
FileName: PTB1111B
Batch ID: DRAWER B

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1200

	B1	B2	B3	B4
Beta slope at beta voltage	0.25%	1.73%	1.96%	1.01%
Alpha slope at beta voltage	1.26%	0.14%	0.86%	0.88%
Alpha slope at alpha voltage	1.42%	0.92%	0.63%	0.59%

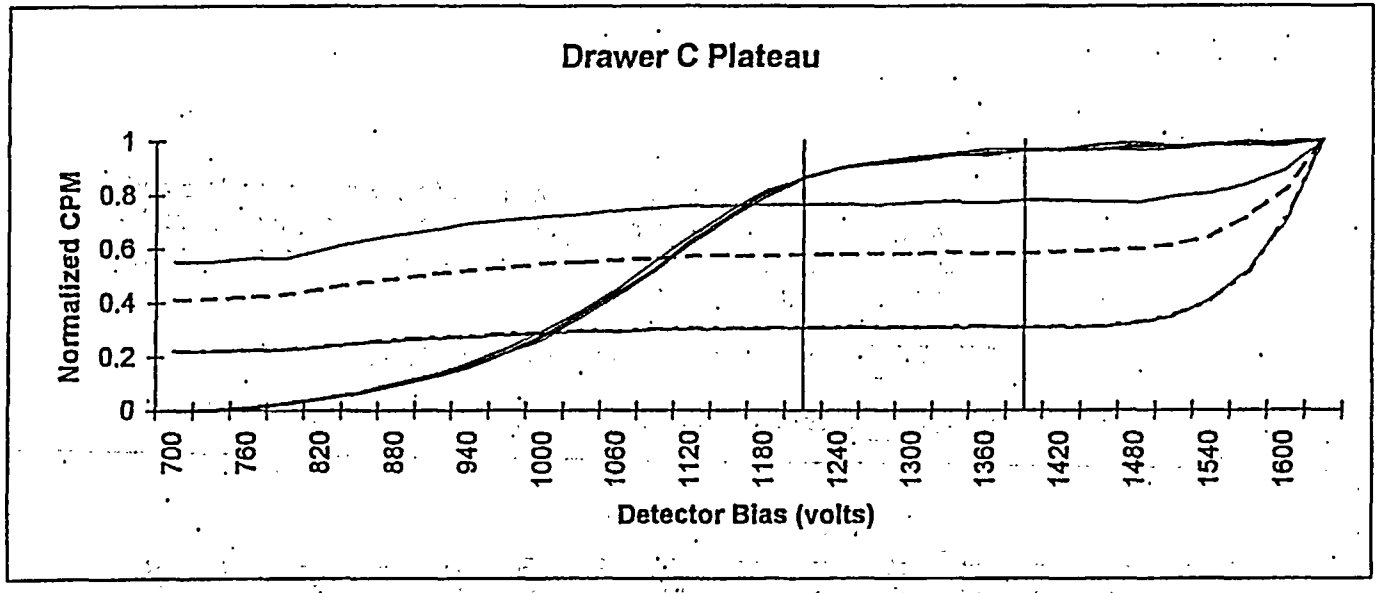
JE 11/13/03

Printed 11/11/03 3:39 PM

000181

Unit Type: LB4100/W
Date Performed: 11/11/03 15:41
FileName: PTB1111C
Batch ID: DRAWER C

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

Optimum alpha only operating voltage: 1200

	C1	C2	C3	C4
Beta slope at beta voltage	1.97%	2.08%	1.59%	2.05%
Alpha slope at beta voltage	0.49%	0.66%	0.69%	-0.24%
Alpha slope at alpha voltage	0.44%	1.15%	1.08%	1.14%

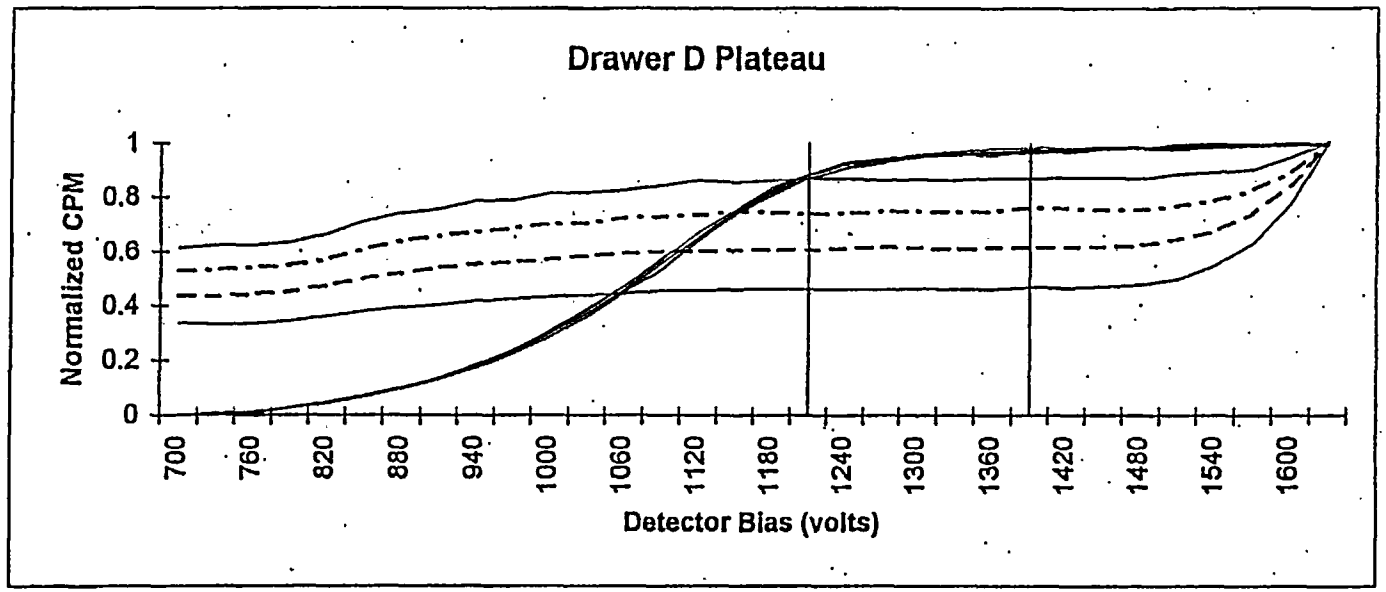
11/13/03

Printed 11/12/03 11:16 AM

000182

Unit Type: LB4100/W
Date Performed: 11/11/03 15:42
FileName: PTB1111D
Batch ID: DRAWER D

Unit Id: Aqua
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

Optimum alpha only operating voltage: 1200

	D1	D2	D3	D4
Beta slope at beta voltage	1.81%	2.16%	1.11%	1.43%
Alpha slope at beta voltage	1.57%	0.87%	0.73%	0.96%
Alpha slope at alpha voltage	0.20%	1.53%	0.77%	0.04%

Printed 11/12/03 11:17 AM

JE 11/13/03

000183

LB4100-B Raw counts for Am-241 Wipe Efficiency Calibrations (Control ID #1123)

Detector ID	A1	A2	A3	A4	B1	B2	B3	B4
total time	4.27	4.3	4.22	4.27	4.02	4.1	4.19	4.11
Alpha counts	10006	10014	10018	10013	10018	10018	10017	10004
Alpha CPM	2343.22653	2328.69021	2373.83165	2344.84187	2491.8978	2443.29863	2390.49012	2433.92526
Alpha BKG CPM	0.099	0.147	0.102	0.123	0.142	0.116	0.202	0.138
Alpha Efficiency	0.24753988	0.24600426	0.25077303	0.24771054	0.26324562	0.25811158	0.25253286	0.25712138
archived STDEV	0.01286245	0.01278248	0.01303016	0.01287116	0.01367825	0.01341147	0.01312166	0.01336038
Beta CPM	376.084564	400.380465	418.200246	411.18437	508.465005	480.072317	451.732621	483.022533
A>B x-talk	0.1605	0.1719	0.1762	0.1754	0.2040	0.1965	0.1890	0.1985
Data file	EAW1226	EAW1226A	EAW1226B	EAW1226C	EAW1226D	EAW1226E	EAW1226F	EAW1226G

Detector ID	C1	C2	C3	C4	D1	D2	D3	D4
total time	4.12	4.14	4.19	4.28	4.25	4.21	4.1	4.14
total counts	10014	10007	10013	10015	10013	2381.84274	10020	10009
Alpha CPM	2430.48452	2417.02276	2389.57247	2339.86127	2355.86	2381.84274	2443.76444	2417.51185
Alpha BKG CPM	0.098	0.127	0.165	0.092	0.14	0.105	0.138	0.138
Alpha Efficiency	0.2567579	0.2553358	0.25243593	0.24718442	0.24887454	0.25161938	0.25816083	0.25538749
archived STDEV	0.01334123	0.01326752	0.01311671	0.01284376	0.01293165	0.01307389	0.01341399	0.01327015
Beta CPM	438.150825	444.041174	452.285947	423.234355	428.339353	425.958504	403.703756	429.892512
A>B x-talk	0.1803	0.1837	0.1893	0.1809	0.1818	0.1788	0.1652	0.1778
Data file	EAW1226H	EAW1226I	EAW1226J	EAW1226K	EAW1226L	EAW1226M	EAW1226N	EAW1226O

1/5/04

Source Database for OSUM for LB4100-B

Number of sources in table: 45

Application Revision: A

Control ID	Isotope	Type	Half-Life (days)	DPM	Std dev	Date	Status	Alpha/Beta Archive File
1121	Sr-90/Y-90	Beta	10446.15	22065.912	1103.30	18-Mar-99	PAI	Sr90R-11/03
1122	Am-241	Alpha	157861.05	11101.11	555.06	18-Mar-99	PAI	Am241-11/03
1123	Am-241	Alpha	157861.05	9624	481.20	1-Sep-93	PAI	AmWipe-11/03
1124	Sr-90/Y-90	Beta	10511.6072	37044	1852.20	10-Dec-01	PAI	SrWipe-11/03

000185

PROJECT LB4100-B

Notebook No. 1898

Continued From Page

12/11/03 JE Complete computer back-up was performed. Scandisk was done and the computer's C:/ drive was defraged.

Filename ~~12/11/03~~ 12/11/03 LB4100-B

PG 12/16/03

12/26/03 JE

Am-241 wipe Calibration

Am-241 on filter

Source: 73 Source ID: 1123 log file: Am Wipe-11/03

Filenames: EAM1226, EAM1226A, EAM1226B, EAM1226C, EAM1226D, EAM1226E, EAM1226F, EAM1226G, EAM1226H, EAM1226I, EAM1226J, EAM1226K, EAM1226L, EAM1226M, EAM1226N, EAM1226O.

α→β x-talk is calculated for each detector using the following equation:

counts in Beta channels / counts in Alpha channels

12/26/03 JE

Sr-90 wipe Calibration

Sr-90 on filter

Source: 602 Source ID: 1124 log file: ~~Sr-90~~ ~~12/26/03~~ Sr Wipe-11/03

Filenames: ESR1226, ESR1226A, ESR1226B, ESR1226C, ESR1226D, ESR1226E, ESR1226F, ESR1226G, ESR1226H, ESR1226I, ESR1226J, ESR1226K, ESR1226L, ESR1226M, ESR1226N, ESR1226O

β→α x-talk is calculated for each detector using the following equation:

counts in ~~Beta~~ Alpha channels / counts in Beta channels

~~JE 1/3/04~~

Continued on Page

Read and Understood By

Clare Brown 1/2/04 Signed Date

Julie Fellingson 1/2/04 Signed Date

000186

pg 265878 a
(cont. from pg NA b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

SOP (Rev 8

Instrument: **LB4100B**

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1700	A 0.1
2 2000	B
	C
	D

Bkg.	Cal. File ID
Dr A	BkB1220W
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	JE		P		JE		P		✓	9	JE		P		JE		P		✓
2	↓		↓		↓		↓		✓	10	↓		↓		↓		↓		✓
3	↓		↓		↓		↓		✓	11	↓		↓		↓		↓		✓
4	↓		↓		↓		↓		✓	12	↓		↓		↓		↓		✓
5	↓		↓		↓		↓		✓	13	↓		↓		↓		↓		✓
6	↓		↓		↓		↓		✓	14	↓		↓		↓		↓		✓
7	↓		↓		↓		↓		✓	15	↓		↓		↓		↓		✓
8	↓		↓		↓		↓		✓	16	↓		↓		↓		↓		✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	0312081-1	AB031222-1	α/β	ABB1226	60	10~~26~~40	JE	JE	12/20/03	
2	-1D					12/26/03				
3	-1AS									
4	-1ASD									
5	-2									
6	-3									
7	AB031222-1AB									
8	-1LCS									
9	0312082-1	SR031222-2	Sr-90	SRB1226	60	103~~0~~40	JE			
10	-2					12/26/03				
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

Form 780r6.frm (4/6/2001)

Reviewed by CJ Date 12/29/03

Comments:

000187

pg 265870 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: LB4100B

Det	SmplD	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
16	0312082-9	SR031222-2	Sr-90	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-10			SRB1226A	60	1230	JE	JE	12/26/03	
2	0312128-4									
3	-4D									
4	SR031222-2LB									
5	-2LCS									
6	SR031222-3LCS	SR031222-3	Sr-90	SRB1226B	60	~~1223~~ 1230	JE			
7	0312118-1	AB031222-2	α/β	ABB1226A	60	1223	JE			
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	AB031222-2	α/β	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10MS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	AB031222-2LB									
8	-2LCS									
1	73	NA	Am-241 Wipe Calib.	EAW1226	10	1459	JE	JE	12/26/03	
2				A		1505	JE			

Form 780r6.frm (4/6/2001)

Reviewed _____ Date 12/29/03

Comments:

000188

pg 265879 a
(cont. from pg ~~NA~~ 265878 b)
12/26/03

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 7 Rev 8

Date: 12/26/03

Instrument Background and Response Checklist *See page 265878a for Daily Check info. 12/26/03

P-10 Supply	P-10 Flow
1 750	A 0.1
2 2000	B
	C
	D

Bkg.	Cal. File ID
Dr A	BK B1220
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1										~~9~~									
2										10									
3										~~11~~									
4										12									
5										13									
6										14									
7										15									
8										~~16~~									

12/26/03

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
3	73	NA	Am241 wipe Calib	EA121226B	10	1511	JE	JE	12/26/03	NA
4				C		1516				
5				D		1522				
6				E		1527				
7				F		1533				
8				G		1540				
9				H		1545				
10				I		1552				
11				J		1556				
12				K		1603				
13				L		1607				
14				M		1616				
15				N	12/26/03	1621				
16				O		1626				
1	602	NA	Sr90 wipe Calib	ES121226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

Form 780r6.frm (4/6/2001)

Reviewed by G Date 12/29/03

Comments:

000189

ANALYTICS

Analytics, Inc.
1380 Seaboard Industrial Boulevard
Atlanta, Georgia 30318
404 352-8677

73

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

47007-307

Am-241 47 mm Membrane Filter in Stainless Steel Planchet

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

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.

Source prepared by: B. D. MacDonald
B. D. MacDonald, Physicist

ISOTOPE:	Am-241
ACTIVITY (dps):	160.4
HALF-LIFE:	432.2 years
CALIBRATION DATE:	September 1, 1993 12:00 EST
TOTAL ERROR:	4.0%
SYSTEMATIC ERROR:	2.6%
RANDOM ERROR:	1.4%

43 mm active area. Low smooth bottom planchet. Source covering 0.85 mg/cm^2 mylar.

No expiration date has been given for this source due to the fragile nature of the mylar covering. This source should be carefully tested for leakage at least every six months. If leakage is detected this source should be disposed of by approved radioactive waste disposal procedures.

P O NUMBER 35829, Item 1

Q A APPROVED [illegible] 9-30-93

Am-241 Standard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:	160.4	dps	4335.1	pCi/s

	Det	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery	Ave Rec w/in 5% (PAI)	Ave w/in 2 Std Dev (ICPT)	2 Std Dev w/in 10% Ave (ICPT)
Count 1	2	4290			99.0%	100.7%		
Count 2	8	4430			102.2%	Pass	Pass	Pass
Count 3	3	4370	4363.33	114.70	100.8%			

*The standard deviation is calculated using "n" degrees of freedom.

r:\inst\gamma\VerOtherTests.xls(Am-241 b)

031983D02.SPC Analyzed by TT

****

SEEKER G A M M A A N A L Y S I S R E S U L T S PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #1

Sampling Start:	09/01/1993 08:00:00	Counting Start:	12/23/2003 13:00:46
Sampling Stop:	09/01/1993 08:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1811 Sec
Collection Efficiency	1.0000	Spc. File	031983D02.SPC

Detector #: 2 (Detector 2)

Energy(keV) = -0.74 + 0.500*Ch + 0.00E+00*Ch^2 + 0.00E+00*Ch^3 12/23/2003

FWHM(keV) = 0.57 + 0.018*En + 4.33E-04*En^2 + 0.00E+00*En^3 01/03/2003

Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.54	120.45	1472	80	18	64	0.74	a
2	92.46	186.22	15	11	6	10	0.39	a
3	510.84	1022.25	21	18	13	24	2.06	a Wide Pk

031983D02.SPC Analyzed by

****

SEEKER . B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET021218.BKG (0324008-22 Weekly Bkg.)

Bkg.File Detector #: 2

==========

BACKGROUND SUBTRACT RESULTS

==========

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	92.46	15	11	6	5	12	9	NET<CL
3	510.84	21	18	13	-22	20	18	NET<CL

031983D02.SPC Analyzed by

****

SEEKER FINAL ACTIVITY REPORT Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif

Sampling Start:	09/01/1993 08:00:00	Counting Start:	12/23/2003 13:00:46
Sampling Stop:	09/01/1993 08:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1811 Sec
Collection Efficiency	1.0000	Spectrum File	.031983D02.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 2 (Detector 2)

Efficiency File: (D02)(Sh07).EFF (Geo 7 Eff Cal).

Eff.=1/[3.98E-04*En^-4.25E+00 + 6.03E+01*En^8.84E-01] 10/23/2003

Library File: . . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)	MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.29E+03 +- 2.32E+02	1.12E+02	5.20E+01	3.79E+06
Cd-109	88.02		MDA	4.65E+04	2.03E+04	1.11E+04
Co-57	122.07		MDA	6.62E+04	2.86E+04	6.50E+03
Ce-139	165.85		MDA	7.73E+08	3.30E+08	3.30E+03
Hg-203	279.18		MDA	1.69E+25	7.36E+24	1.12E+03
Sn-113	391.68		MDA	7.86E+10	3.35E+10	2.76E+03
Cs-137	661.62		MDA	1.12E+01	4.35E+00	2.64E+05
Y-88	898.02		MDA	6.39E+11	2.68E+11	2.56E+03
Co-60	1173.21		MDA	5.30E+01	2.10E+01	4.62E+04

MEASURED TOTAL: 4.29E+03 +- 2.32E+02 pCi/sample

UNKNOWN, SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	92.46	186.22	5	12	9	10	0.39	Deleted
3	510.84	1022.25	-22	20	18	24	2.06	Deleted

031863D08.SPC Analyzed by YF

****

SEEKER GAMMA ANALYSIS RESULTS PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 14:28:01
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1814 Sec
Collection Efficiency	1.0000	Spc. File	.031863D08.SPC

Detector #: 8 (Detector 8)

Energy(keV)= -0.30 + 0.500*Ch +-2.15E-08*Ch^2 + 5.68E-11*Ch^3 12/23/2003
FWHM(keV) = 0.72 + 0.014*En + 5.05E-04*En^2 + 0.00E+00*En^3 01/02/2003
Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.51	119.62	6649	167	29	174	0.78 a	HiResid
2	511.36	1023.16	43	22	14	30	2.04 a	

031863D08.SPC Analyzed by

****

SEEKER B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET081218.BKG (0324008-28 Weekly Bkg.)

Bkg.File Detector #: 8

==========

BACKGROUND SUBTRACT RESULTS

==========

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	511.36	43	22	14	-6	23	19	NET<CL

031863D08.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 14:28:01
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1814 Sec
Collection Efficiency	1.0000	Spectrum File	.031863D08.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 8 (Detector 8)

Efficiency File: (D08)(Sh07).EFF (Geo 7 Eff Cal)

Eff.=1/[5.93E-02*En^-1.85E+00 + 7.21E+01*En^9.67E-01] 10/29/2003

Library File: . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)	MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.43E+03 +- 1.11E+02	4.09E+01	1.96E+01	3.79E+06
Cd-109	88.02		MDA	3.43E+04	1.53E+04	1.11E+04
Co-57	122.07		MDA	9.29E+04	4.20E+04	6.50E+03
Ce-139	165.85		MDA	1.21E+09	5.41E+08	3.30E+03
Hg-203	279.18		MDA	1.88E+25	8.21E+24	1.12E+03
Sn-113	391.68		MDA	7.96E+10	3.33E+10	2.76E+03
Cs-137	661.62		MDA	2.03E+01	8.71E+00	2.64E+05
Y-88	898.02		MDA	7.56E+11	3.18E+11	2.56E+03
Co-60	1173.21		MDA	4.79E+01	1.73E+01	4.62E+04

MEASURED TOTAL: 4.43E+03 +- 1.11E+02 pCi/sample

UNKNOWN,SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	511.36	1023.16	-6	23	19	30	2.04	Deleted

031552D03.SPC Analyzed by 77

****

SEEKER G A M M A A N A L Y S I S R E S U L T S PS Version 1.8.4

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 16:52:24
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04E+004 Hrs
Buildup Time.	0.00E+000 Hrs	Live Time	1800 Sec
Sample Size	1.00E+000 sample	Real Time	1832 Sec
Collection Efficiency	1.0000	Spc. File	.031552D03.SPC

Detector #: 3 (Detector 3)

Energy(keV) = -0.81 + 0.501*Ch + 0.00E+00*Ch^2 + 0.00E+00*Ch^3 12/23/2003

FWHM(keV) = 0.77 + 0.011*En + 7.64E-04*En^2 + 0.00E+00*En^3 06/26/2003

Where En = Sqrt(Energy in keV)

Search Sensitivity: 1.00 | Sigma Multiplier: 2.00 | Search Start/End: 95/4000

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET/MDA COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	59.59	120.60	2039	95	24	121	0.84	a
2	92.67	186.64	22	12	7	12	0.54	a
3	510.77	1021.33	43	20	12	23	2.04	a

031552D03.SPC Analyzed by

****

SEEKER B A C K G R O U N D S U B T R A C T R E S U L T S Vers. 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Background File:. . . . . DET031218.BKG (0324008-23 Weekly Bkg.)

Bkg.File Detector #: 3

BACKGROUND SUBTRACT RESULTS

PK#	ENERGY (keV)	OLD NET COUNTS	OLD UN-CERTAINTY	OLD CR.LEVEL	NEW NET COUNTS	NEW UN-CERTAINTY	NEW CR.LEVEL	FLAG
2	92.67	22	12	7	4	14	11	NET<CL
3	510.77	43	20	12	-3	21	18	NET<CL

031552D03.SPC Analyzed by

****

SEEKER F I N A L A C T I V I T Y R E P O R T Version 2.2.1

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

Sampling Start:	09/01/1993 12:00:00	Counting Start:	12/23/2003 16:52:24
Sampling Stop:	09/01/1993 12:00:00	Decay Time.	9.04e+004 Hrs
Buildup Time.	0.00e+000 Hrs	Live Time	1800 Sec
Sample Size	1.00e+000 sample	Real Time	1832 Sec
Collection Efficiency	1.0000	Spectrum File	031552D03.SPC
Cr. Level Confidence Interval:	95 %	Det. Limit Confidence Interval:	95 %

Detector #: 3 (Detector 3)

Efficiency File: (D03)(Sh07).EFF (Geo 7 Eff Cal)

Eff.=1/[8.04E-04*En^-3.88E+00 + 6.88E+01*En^9.22E-01] 11/11/2003

Library File: . . . .ANALYTICAL.LIB (Analytical)

MEASURED or MDA CONCENTRATIONS

Nuclide	ENERGY (keV)	NET	Concentration (pCi/sample)	MDA	Critical Level	Halflife (hrs)
Am-241	59.54		4.37E+03 +- 2.04E+02	1.11E+02	5.25E+01	3.79E+06
Cd-109	88.02		MDA	5.68E+04	2.57E+04	1.11E+04
Co-57	122.07		MDA	8.15E+04	3.62E+04	6.50E+03
Ce-139	165.85		MDA	9.23E+08	4.01E+08	3.30E+03
Hg-203	279.18		MDA	1.72E+25	7.46E+24	1.12E+03
Sn-113	391.68		MDA	8.53E+10	3.63E+10	2.76E+03
Cs-137	661.62		MDA	1.56E+01	6.39E+00	2.64E+05
Y-88	898.02		MDA	9.16E+11	4.00E+11	2.56E+03
Co-60	1173.21		MDA	5.00E+01	1.87E+01	4.62E+04

MEASURED TOTAL: 4.37E+03 +- 2.04E+02 pCi/sample

UNKNOWN,SUM or ESCAPE PEAKS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
2	92.67	186.64	4	14	11	12	0.54	Deleted
3	510.77	1021.33	-3	21	18	23	2.04	Deleted

Paragon Analytics, Inc.

Gamma Spectrometer Run Log

Date: 12-23-03 Reviewed By/Date: 77 12-23-03

Sample ID	Ver[1]	Det. No.	Geo[2]	Count Dur. (min.)[3]	Start Time	Analyst	File ID/Comments	Exported?
03 10 127-8	77	3	26	30	11:50	77	031548D03.SPC	77
03 24 019-10	77	10	9*	45	12:16	77	031954D10.SPC	77
GS02335LCS1	77	3	17	30	12:43	77	031549D03.SPC	77
" LCS2	"	6	26	"	"	"	031683D06.SPC	"
Empty 565	"	87	13	30	12:59	77	031824D07.SPC	" 77 12-23-03
Std # 73	"	2	**7	30	13:00	77	031983D02.SPC	"
Std # 601	"	8	"	"	"	"	031862D08.SPC	"
03 24 019-S10	"	10	9*	30	13:06	77	031955D10.SPC	"
Std # 73	77	8	**7	30	14:28	77	031863D08.SPC	77
Std # 601	"	2	"	"	"	"	031984D02.SPC	"
03 12 042-1		7	13	1000	14:33	77		
" -1D		10	"	"	"	"		
GS031212-2MB	77	6	"	"	"	"		77
03 10 126-2	—	3	13	—	14:33	77		77 12-23-03
Std # 601	77	3	**7	30	16:14	77	031550D03.SPC	77
03 24 019-3F	"	2	NA	30	16:15	77	031985D02.SPC	"
" -4	77	"	"	"	16:52	77	031986D02.SPC	77
Std # 73	"	3	**7	30	16:52	77	031551D03.SPC	"
								77 12-23-03

[1] Analyst will verify the position, detector, and geometry when the sample is removed from the detector.

[2] Calibration geometry. * New Geo; on blank 1/2 of filter.

[3] Count Duration. ** Counted on puck. 77 12-23-03

267683

B

Form 754r9.frm 9/19/2000

000201

LB4100-B Raw counts for Sr-90 Wipe Efficiency Calibrations (Control ID #1124)

Detector ID	A1	A2	A3	A4	B1	B2	B3	B4
total time	0.7	0.7	0.69	0.69	0.68	0.67	0.68	0.69
total counts	10117	10115	10107	10051	10066	10082	10093	10124
Beta CPM	14451.4241	14448.52	14646.3581	14565.2047	14801.2072	15046.1262	14840.9191	14670.8148
Beta BKG CPM	1.433	1.48	1.468	1.462	1.734	1.635	1.728	1.649
Beta Efficiency	0.40980287	0.40972054	0.41533073	0.41302949	0.41972161	0.42666688	0.4208478	0.41602375
archived STDEV	0.02128958	0.02128538	0.02157715	0.02145978	0.02180691	0.0221671	0.02186435	0.0216125
Alpha CPM	41.3295714	51.2815714	49.1733623	47.703087	20.4462353	35.7048955	26.2685882	27.3982319
B>A x-talk	0.0029	0.0035	0.0034	0.0033	0.0014	0.0024	0.0018	0.00186753
Data file	ESW1226L	ESW1226M	ESW1226N	ESW1226O	ESW1226H	ESW1226I	ESW1226J	ESW1226K

Detector ID	C1	C2	C3	C4	D1	D2	D3	D4
total time	0.68	0.68	0.69	0.68	0.69	0.67	0.69	0.66
total counts	10076	10059	10110	10068	10115	10035	10092	10017
Beta CPM	14815.9921	14791.0361	14650.5219	14804.3504	14657.8773	14975.5419	14624.181	15175.5227
Beta BKG CPM	1.655	1.611	1.652	1.532	1.543	2.07	1.906	1.906
Beta Efficiency	0.42014058	0.41943292	0.41544836	0.41981057	0.41565703	0.42466516	0.41470157	0.43033614
archived STDEV	0.02182828	0.02179218	0.02158316	0.02181144	0.02159379	0.02206505	0.02154509	0.02236041
Alpha CPM	42.5490588	41.0494706	52.008913	16.0844706	52.033913	40.1935075	34.6446087	48.3638485
B>A x-talk	0.0029	0.0028	0.0035	0.0011	0.0035	0.0027	0.0024	0.0032
Data file	ESW1226	ESW1226A	ESW1226B	ESW1226C	ESW1226D	ESW1226E	ESW1226F	ESW1226G

AE
1/5/04

Source Database for OSUM for LB4100-B

Number of sources in table: 45

Application Revision: A

Control ID	Isotope	Type	Half-Life (days)	DPM	Std dev	Date	Status	Alpha/Beta Archive File
1121	Sr-90/Y-90	Beta	10446.15	22065.912	1103.30	18-Mar-99	PAI	Sr90R-11/03
1122	Am-241	Alpha	157861.05	11101.11	555.06	18-Mar-99	PAI	Am241-11/03
1123	Am-241	Alpha	157861.05	9624	481.20	1-Sep-93	PAI	AmWipe-11/03
1124	Sr-90/Y-90	Beta	10511.6072	37044	1852.20	10-Dec-01	PAI	SrWipe-11/03

000203

12/11/03 JE Complete computer back-up was performed. Scandisk was done and the computer's C/ drive was defraged
File name ~~12/1~~ 12/11/03 12/11/03 LB4100 B
RG 12/16/03

12/24/03 JE **Am-241 wipe Calibration**
Am-241 on filter

Source: 73 Source ID: 1123 log file: Am Wipe 11/03

Filenames: EAM1226, EAM1226A, EAM1226B, EAM1226C, EAM1226D, EAM1226E, EAM1226F, EAM1226G, EAM1226H, EAM1226I, EAM1226J, EAM1226K, EAM1226L, EAM1226M, EAM1226N, EAM1226O.

α→β x-talk is calculated for each detector using the following equation:
counts in Beta channels / counts in Alpha channels

12/26/03 JE **Sr-90 wipe Calibration**
Sr-90 on filter

Source: 602 Source ID: 1124 log file: ~~Sr 90~~ ~~12/26/03~~ Sr Wipe - 11/03

Filenames: ESR1226, ESR1226A, ESR1226B, ESR1226C, ESR1226D, ESR1226E, ESR1226F, ESR1226G, ESR1226H, ESR1226I, ESR1226J, ESR1226K, ESR1226L, ESR1226M, ESR1226N, ESR1226O.

β→α x-talk is calculated for each detector using the following equation:
counts in ~~Beta~~ Alpha channels / counts in Beta channels

Continued on Page

Read and Understood By

Clare Brown 1/2/04 Signed Date
Julie Ellingson 1/2/04 Signed

pg 265878 a
(cont. from pg 1A b)

Parag Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

SOP Rev 8

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1700	A 0.1
2 2000	B
	C
	D

Bkg.	Cal. File ID
Dr A	BkB1220✓
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	JE		P		JE		P		✓	9	JE		P		JE		P		✓
2									✓	10									✓
3									✓	11									✓
4									✓	12									✓
5									✓	13									✓
6									✓	14									✓
7									✓	15									✓
8									✓	16									✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	0312081-1	AB031222-1	2/B	ABB1226	60	10~~26~~42	JE	JE	12/26/03	
2	-1D					12/26/03				
3	-1AS									
4	-1ASD									
5	-2									
6	-3									
7	AD031222-1AB									
8	-1LCS									
9	0312082-1	SR031222-2	S1-92	SRB1226	60	10~~30~~40	JE			
10	-2					12/26/03				
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									✓

Form 780r6.frm (4/6/2001)

Reviewed by Cf Date 12/29/03

Comments:

000205

pg 265878 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
16	0312082-9	SR031222-2	S1-9.0	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-10			SRB1226A	60	1230	JE	JE	12/26/03	
2	0312128-4									
3	-4D									
4	SR031222-2MB									
5	-2LCS									
6	SR031222-3LCS	SR031222-3	S1-9.0	SRB1226B	60	~~1223~~ 1230	JE			
7	0312118-1	ABO31222-2	2/B	ABB1226A	60	1223	JE			
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	ABO31222-2	2/B	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10MS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	ABO31222-2MB									
8	-2LCS									
1	73	NA	In-24 Wipe Calib.	EAW1226	10	1459	JE	JE	12/26/03	
2				A		1505	JE			

Form 780r6.frm (4/6/2001)

Reviewed _____ Date 12/29/03

Comments:

000206

pg 265879 a
(cont. from pg ~~NA~~ b)
265878
ya 12/26/03

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP (Rev 8

Date: 12/26/03

Instrument Background and Response Checklist *See page 265878a for Daily Check info. ya 12/26/03

P-10 Supply	P-10 Flow
1 750	A 0.1
2 2.500	B
	C
	D

Bkg.	Cal. File ID
Dr A	Bk B1226
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1										9									
2										10									
3										11									
4										12									
5										13									
6										14									
7										15									
8										16									

12/26/03

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
3	73	NA	Am241 4π Calb	EA121226B	10	1511	JE	JE	12/26/03	NA
4				G		1516				
5				D		1522				
6				E		1527				
7				F		1533				
8				G		1540				
9				H		1545				
10				I		1552				
11				J		1556				
12				K		1603				
13				L		1607				
14				M		1616				
15				N		~~1/14/03~~ 14621				
16				O		1626				
1	602	NA	Sr90 4π Calb	ESr121226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

Form 780r6.frm (4/6/2001)

Reviewed by [signature] Date 12/29/03

Comments:

000207

pg 265879 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
			Sr-90 w/ Gel							
4	CO2	NA	~~Sr-90 w/ Gel~~	ESW1226O	2	1529	JE	JE	12/26/03	NA
5			Sr-90 w/ Gel	H		1515				
6				I		1517				
7				J		1519				
8				K		1520				
9				ESW1226		1500				
10				A		1501				
11				B		1503				
12				C		1506				
13				D		1508				
14				E		1509				
15				F		1512				
16				G		1513				
1.1	BKG Check	NA	NA	BKB1226A	60	1633	JE	JE	12/26/03	
1	0310215-16	SR031210-2	Sr-90	SRB1226C	1000	1748	JE	JE	12/27/03	
2	-17									
3	-18									
4	-19									
5	-20									
6	-21									
7	-21D									
8	-22									
9	SR031210-2.4B									
10	-2LCS									
11	0312081-1	SR031222-1	Sr-90	SRB1226D	200	1751	JE			
12	-1D									
13	-2									
14	-2									
15	SR031222-1.4B					1751	JE	JE	12/27/03	NA
16	-1LCS									

Form 780r6.frm (4/6/2001)

Reviewed [illegible] Date 12/27/03

Comments:

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

FAI ID 0602
rec'd 12-11-01
EW 12-14-01

62753A-307

Sr-90 47 mm Diameter Membrane Filter in Stainless Steel Planchet

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by the Department Des Applications Et De La Metrologie Des Rayonnements Ionisants (DAMRI), Paris, France, as Number 25931.

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:	Sr-90
ACTIVITY (dps):	308.7
HALF-LIFE:	28.79 years
CALIBRATION DATE:	December 10, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.0%

*99% Confidence Level

Impurities: γ-impurities <0.1%

43 mm active area. Low smooth bottom. Source covering 0.85 mg/cm^2 mylar.

NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta emission rate for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 3.19 hours.

P O NUMBER 001703, Item 3

PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 12-10-01

New Standard Verification

WO#

Date 12/21/03

Previously Verified Standard

STD 602		
Nuclide	Sr-90	
Half Life	28.78	
Init. Activity	37044	dpm
Ref. Date	12/10/01	
Vol.	1.0	
Current Spiked Act.	35277.50	dpm

Standard to be Verified

STD 729		
Nuclide	Sr-90	
Half Life	28.78	y
Init. Activity	41400	dpm
Ref. Date	10/21/03	
Vol.	1.000	
Current Spiked Act.	41233.81	dpm

Standards Sample ID	Pos.	GCPM	BCPM	NCPM	% Yield	DPM Added	Eff.	Ave. Eff.	Calibrated Efficiency	Calc DPM	Avg. DPM	2 StdDev	Obs w/in 5% of Cert. (PAI Req.)	Cert. Value w/in 2sig (ICPT Req.)	2sig<10% of mean (ICPT Req.)
602	D1	14798.60	1.54	14797.06	100%	35277.50	0.4194		0.4195						
602	D2	14789.40	2.07	14787.33	100%	35277.50	0.4192		0.4195						
602	D3	14812.00	1.91	14810.09	100%	35277.50	0.4198	0.4195	0.4195						
729	D1	17396.20	1.54	17394.66	100%	41233.81	0.4219		0.4195	41467.32					
729	D2	17555.60	2.07	17553.53	100%	41233.81	0.4257		0.4195	41846.06					
729	D3	17515.20	1.91	17513.29	100%	41233.81	0.4247	0.4241	0.4195	41750.14	41687.84	321.55	PASS 1.01	HIGH	PASS

r:\lsr\gtpswipe

OK RG 12/24/03.
Requires NCR for ICPT work.

000210

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Data file name: SRB1221
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 11:56

Background logfile: BKGABW
Date of Bkg. Cal: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = b*m^(x*mass-x0))		y = b*m^(x*mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a->b xtalk m=	0.2749	b->a xtalk m=	-2.90E-05
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	602	12/21/03 11:56	5.00	0.0	27.400	0.140	10.359	0.2111	1.248	n/a	n/a	14798.600	1.543	7.508	0.4115	1.000	n/a	n/a
D2	729	12/21/03 11:56	5.00	0.0	28.200	0.105	12.289	0.2101	1.248	n/a	n/a	17555.600	2.070	7.727	0.4102	1.000	n/a	n/a

JE
12/23/03

000211

PAI - Gas Flow Proportional Sample Analysis

Unit Type: LB4100-B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Data file name: SRB1221A
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:02

Background: BKGABW
Date of Analysis: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = b*m^(x*mass-xo)		y = b*m^(x*mass-xo)	
Alpha bx	1.24558	Beta bx	1.0000
m=	0.99400	m=	0.9999
x=	1.0000	x=	1.0000
xo=	0.0000	xo=	0.0000
Alpha to Beta X-talk y = m*b^-mass		Beta to Alpha X-talk y = m*mass + b	
a -> b xtalk m=	0.2740	b -> a xtalk m=	-2.00E-06
a -> b xtalk b=	1.0010	b -> a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D2	602	12/21/03 12:02	5.00	0.0	25.600	0.105	10.353	0.2101	1.248	n/a	n/a	14789.400	2.070	7.014	0.4102	1.000	n/a	n/a
D3	729	12/21/03 12:02	5.00	0.0	31.400	0.138	12.261	0.2103	1.248	n/a	n/a	17515.200	1.908	8.604	0.4195	1.000	n/a	n/a

SG 12/23/03

000212

PAI - Gas Flow Proportional Sample Analysis

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev. 07/29/03 JE

Data file name: SRB1221B
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:09

Background logfile: BKGABW
Date of Bkg. Cal: 12/21/03
Alpha efficiency logfile: Am241-11/03
Alpha attenuation calibration: ABA1103.XLS
Beta efficiency logfile: Sr90R-11/03
Beta attenuation calibration: ABA1103.XLS

Alpha prog. logfile: n/a
Alpha prog. attenuation: n/a
Beta prog. logfile: n/a
Beta prog. attenuation: n/a

y = a*m*(e^(-b*mass)+x0)		y = a*m*(e^(-b*mass)+x0)	
Alpha a=	1.24550	Beta a=	1.0000
m=	0.99400	m=	0.9939
b=	1.0000	b=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b*mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.00E-06
a->b xtalk b=	1.0810	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	729	12/21/03 12:09	5.00	0.0	30.400	0.140	12.177	0.2111	1.248	n/a	n/a	17396.200	1.543	8.330	0.4115	1.000	n/a	n/a
D3	602	12/21/03 12:09	6.00	0.0	25.200	0.138	10.368	0.2103	1.248	n/a	n/a	14812.000	1.908	6.905	0.4195	1.000	n/a	n/a

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12/23/03

000213

pg 265874 a
(cont. from pg NA b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP Rev 8

Date: 12/21/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1700	A 0.1
2800	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB1221
Dr B	
Dr C	
Dr D	

Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On line	Det	DR 1	DR 2	DR Stat	cmnt	Bkg 1	Bkg 2	Bkg Stat	cmnt	On-line
1	JE		P		NP		*		✓	9	JE		P		NP		*		✓
2									✓	10		JE	R	P					✓
3									✓	11			P						✓
4									✓	12									✓
5									✓	13									✓
6									✓	14									✓
7									✓	15									✓
8	✓				✓		✓		✓	16	✓		✓		✓		JE		✓

P = passes; R = Recount, H = high; L = low; W = weekly; α = Alpha; B = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed.

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Check	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	EFB1221A	30	1125	JE	JE	12/21/03	
1	03120721	AB 631215-3	2 P	ABB1221	1000	1132	JE	JE	12/22/03	
2	-1D									
3	.2									
4	.2MS									
5	A0031215-3HB									
6	-3LCS									
13 13	602	–	Sr-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14 14	729	–								
15 9	73	–	Am-241 wipe Ver	AMB1221	5	1151	JE			
10	601	–								
14 10	602	–	Sr-90 wipe Ver	SRB1221A	5	1157	JE	JE	12/21/03	
15 11	729	–								
13 10	73	–	Am-241 wipe Ver	AMB1221A	5	1158	JE			
14 11	601	–								
15 15	602	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	

Form 780r6.frm (4/6/2001)

Reviewed by JE Date 12/22/03

Comments: * Since weekly BKG just finished, daily BKG were not done. JE 12/21/03.

000214

Low Background Gas Flow Proportional Counter Run Log

Date: 12/21/03

Instrument: LB4100B

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
13	729	—	Sr-90 wipe Vcs	SRB1221B	5	1204	JE	JE	12/21/03	NA
11	~~[illegible]~~ 73	—	Am-241 wipe Vcs	AMB1221B	5	1205	JE			
9	601	—								

12/22/03

Form 780r6.frm (4/6/2001)

Reviewed JE Date 12/22/03

Comments:

000215

SAMPLE NO.	PARAMETER	RESULT	UNITS	DETECTION LIMIT	DETECTED	QUALIFIER	CODE
030404-36-01	GROSS BETA	-0.07	DPM/sample	1.47	N	U	P
030404-36-01 FD	GROSS BETA	0.35	DPM/sample	1.43	N	U	P
030404-36-010	GROSS BETA	-0.17	DPM/sample	1.48	N	U	P
030404-36-011	GROSS BETA	0.61	DPM/sample	1.45	N	U	P
030404-36-012	GROSS BETA	0.18	DPM/sample	1.47	N	U	P
030404-36-013	GROSS BETA	0.11	DPM/sample	1.43	N	U	P
030404-36-014	GROSS BETA	0.37	DPM/sample	1.47	N	U	P
030404-36-015	GROSS BETA	0.2	DPM/sample	1.66	N	U	P
030404-36-016	GROSS BETA	0.15	DPM/sample	1.49	N	U	P
030404-36-017	GROSS BETA	1.85	DPM/sample	1.54	Y	LT	P
030404-36-017-LR	GROSS BETA	0.13	DPM/sample	1.4	N	U,WNC	P
030404-36-018	GROSS BETA	0.79	DPM/sample	1.36	N	U	P
030404-36-019	GROSS BETA	0.85	DPM/sample	1.37	N	U	P
030404-36-02	GROSS BETA	0.23	DPM/sample	1.66	N	U	P
030404-36-020	GROSS BETA	0.13	DPM/sample	1.39	N	U	P
030404-36-021	GROSS BETA	0.25	DPM/sample	1.46	N	U	P
030404-36-022	GROSS BETA	0.35	DPM/sample	1.48	N	U	P
030404-36-023	GROSS BETA	-0.09	DPM/sample	1.45	N	U	P
030404-36-024	GROSS BETA	0.47	DPM/sample	1.46	N	U	P
030404-36-025	GROSS BETA	1.02	DPM/sample	1.49	N	U	P
030404-36-026	GROSS BETA	0.21	DPM/sample	1.61	N	U	P
030404-36-027	GROSS BETA	-0.04	DPM/sample	1.65	N	U	P
030404-36-028	GROSS BETA	0.71	DPM/sample	1.43	N	U	P
030404-36-028-LR	GROSS BETA	0.44	DPM/sample	1.45	N	UNC	P
030404-36-029	GROSS BETA	-0.57	DPM/sample	1.48	N	U	P
030404-36-03	GROSS BETA	0.13	DPM/sample	1.51	N	U	P
030404-36-030	GROSS BETA	0.1	DPM/sample	1.5	N	U	P
030404-36-031	GROSS BETA	-0.05	DPM/sample	1.48	N	U	P
030404-36-032	GROSS BETA	-0.15	DPM/sample	1.49	N	U	P
030404-36-033	GROSS BETA	0.28	DPM/sample	1.46	N	U	P
030404-36-034	GROSS BETA	0.14	DPM/sample	1.42	N	U	P
030404-36-035	GROSS BETA	0.05	DPM/sample	1.43	N	U	P
030404-36-036	GROSS BETA	0.23	DPM/sample	1.44	N	U	P
030404-36-037	GROSS BETA	0.42	DPM/sample	1.41	N	U	P
030404-36-038	GROSS BETA	-0.42	DPM/sample	1.45	N	U	P
030404-36-038-LR	GROSS BETA	-0.25	DPM/sample	1.43	N	UNC	P
030404-36-039	GROSS BETA	0.15	DPM/sample	1.37	N	U	P
030404-36-04	GROSS BETA	0.28	DPM/sample	1.41	N	U	P
030404-36-040	GROSS BETA	0.13	DPM/sample	1.39	N	U	P
030404-36-041	GROSS BETA	0.3	DPM/sample	1.46	N	U	P
030404-36-041-LR	GROSS BETA	0.2	DPM/sample	1.41	N	UNC	P
030404-36-042	GROSS BETA	0.33	DPM/sample	1.48	N	U	P
030404-36-043	GROSS BETA	-0.36	DPM/sample	1.45	N	U	P
030404-36-044	GROSS BETA	0.86	DPM/sample	1.46	N	U	P
030404-36-05	GROSS BETA	0.37	DPM/sample	1.36	N	U	P
030404-36-06	GROSS BETA	-0.09	DPM/sample	1.37	N	U	P
030404-36-07	GROSS BETA	1.36	DPM/sample	1.54	N	U	P
030404-36-07-LR	GROSS BETA	0.54	DPM/sample	1.38	N	UNC	P
030404-36-08	GROSS BETA	0.25	DPM/sample	1.4	N	U	P
030404-36-08 FD	GROSS BETA	0.29	DPM/sample	1.46	N	U	P
030404-36-09	GROSS BETA	0.7	DPM/sample	1.47	N	U	P

SAMPLE NO	PARAMETER	RESULT	UNITS	DETECT LIMIT	DETECT	QUALIFIER	USE
030404-36-10FD	GROSS BETA	0.16	DPM/sample	1.66	N	U	P
030404-36-FB	GROSS BETA	0.46	DPM/sample	1.49	N	U	P

SAMPLE ID	PARAMETER	RESULT	UNITS	DETECT LIMIT	DETECT	QUALIFIER	USE
030404-36-01	GROSS ALPHA	-0.01	DPM/sample	0.79	N	U	P
030404-36-01 FD	GROSS ALPHA	-0.18	DPM/sample	0.62	N	U	P
030404-36-010	GROSS ALPHA	-0.17	DPM/sample	0.76	N	U	P
030404-36-011	GROSS ALPHA	-0.09	DPM/sample	0.66	N	U	P
030404-36-012	GROSS ALPHA	0.37	DPM/sample	0.74	N	U	P
030404-36-013	GROSS ALPHA	0.06	DPM/sample	0.62	N	U	P
030404-36-014	GROSS ALPHA	0.11	DPM/sample	0.79	N	U	P
030404-36-015	GROSS ALPHA	-0.06	DPM/sample	0.79	N	U	P
030404-36-016	GROSS ALPHA	0.06	DPM/sample	0.63	N	U	P
030404-36-017	GROSS ALPHA	0.06	DPM/sample	0.75	N	U	P
030404-36-017-LR	GROSS ALPHA	-0.13	DPM/sample	0.68	N	UNC	P
030404-36-018	GROSS ALPHA	0.03	DPM/sample	0.72	N	U	P
030404-36-019	GROSS ALPHA	0.37	DPM/sample	0.62	N	U	P
030404-36-02	GROSS ALPHA	0.1	DPM/sample	0.79	N	U	P
030404-36-020	GROSS ALPHA	0.09	DPM/sample	0.72	N	U	P
030404-36-021	GROSS ALPHA	0.12	DPM/sample	0.71	N	U	P
030404-36-022	GROSS ALPHA	-0.17	DPM/sample	0.77	N	U	P
030404-36-023	GROSS ALPHA	-0.01	DPM/sample	0.66	N	U	P
030404-36-024	GROSS ALPHA	0.13	DPM/sample	0.74	N	U	P
030404-36-025	GROSS ALPHA	0.3	DPM/sample	0.66	N	U	P
030404-36-026	GROSS ALPHA	0.21	DPM/sample	0.64	N	U	P
030404-36-027	GROSS ALPHA	-0.12	DPM/sample	0.78	N	U	P
030404-36-028	GROSS ALPHA	-0.06	DPM/sample	0.62	N	U	P
030404-36-028-LR	GROSS ALPHA	-0.04	DPM/sample	0.67	N	UNC	P
030404-36-029	GROSS ALPHA	0.12	DPM/sample	0.68	N	U	P
030404-36-03	GROSS ALPHA	0.06	DPM/sample	0.72	N	U	P
030404-36-030	GROSS ALPHA	0	DPM/sample	0.74	N	U	P
030404-36-031	GROSS ALPHA	-0.06	DPM/sample	0.69	N	U	P
030404-36-032	GROSS ALPHA	-0.06	DPM/sample	0.63	N	U	P
030404-36-033	GROSS ALPHA	0.19	DPM/sample	0.67	N	U	P
030404-36-034	GROSS ALPHA	0.09	DPM/sample	0.73	N	U	P
030404-36-035	GROSS ALPHA	0.38	DPM/sample	0.74	N	U	P
030404-36-036	GROSS ALPHA	0.06	DPM/sample	0.66	N	U	P
030404-36-037	GROSS ALPHA	0.12	DPM/sample	0.68	N	U	P
030404-36-038	GROSS ALPHA	-0.02	DPM/sample	0.78	N	U	P
030404-36-038-LR	GROSS ALPHA	-0.06	DPM/sample	0.66	N	UNC	P
030404-36-039	GROSS ALPHA	0.18	DPM/sample	0.62	N	U	P
030404-36-04	GROSS ALPHA	0.04	DPM/sample	0.68	N	U	P
030404-36-040	GROSS ALPHA	0.3	DPM/sample	0.72	N	U	P
030404-36-041	GROSS ALPHA	0.15	DPM/sample	0.71	N	U	P
030404-36-041-LR	GROSS ALPHA	0.16	DPM/sample	0.68	N	UNC	P
030404-36-042	GROSS ALPHA	-0.21	DPM/sample	0.77	N	U	P
030404-36-043	GROSS ALPHA	-0.13	DPM/sample	0.66	N	U	P
030404-36-044	GROSS ALPHA	0.09	DPM/sample	0.74	N	U	P
030404-36-05	GROSS ALPHA	0.11	DPM/sample	0.71	N	U	P
030404-36-06	GROSS ALPHA	-0.06	DPM/sample	0.62	N	U	P
030404-36-07	GROSS ALPHA	0.02	DPM/sample	0.75	N	U	P
030404-36-07-LR	GROSS ALPHA	-0.15	DPM/sample	0.72	N	UNC	P
030404-36-08	GROSS ALPHA	0.18	DPM/sample	0.64	N	U	P
030404-36-08 FD	GROSS ALPHA	-0.25	DPM/sample	0.79	N	U	P
030404-36-09	GROSS ALPHA	0.23	DPM/sample	0.71	N	U	P

SAMPLE NO	PARAMETER	RESULT	UNITS	DETECT LIMIT	DETECT	QUALIFIER	LAB
030404-36-10FD	GROSS ALPHA	-0.1	DPM/sample	0.79	N	U	P
030404-36-FB	GROSS ALPHA	-0.05	DPM/sample	0.77	N	U	P