

**Final
Final Status Survey Report
EPA National Enforcement
Investigations Center
Denver Federal Center
Lakewood, Colorado**

**Volume 3 of 3
Appendix F (continued)**

**Contract No. DACA45-96-D-0007
Task Order No. 0043**

In Support of:



**EPA National Enforcement
Investigations Center
Environmental Due Diligence Process
Denver Federal Center
Lakewood, Colorado**

Prepared For:



**US Army Corps
of Engineers
Omaha District**

**106 S. 15th Street
Omaha, Nebraska 68102-1618**

June 2004

Laboratory B2109

Final Status Data Summary : Beta and Alpha Scan Data
Survey Unit: Laboratory B2109
Building 53, Denver Federal Center

(1 of 5)

Laboratory ID

Action Criteria Individual Measurements

Beta Scans

<u>B2109</u>	<u>Bkg. Value</u>	<u>MDCR_{Surveyor}</u>											
Floor Tile	401	802.0	349.0	377.0	404.0	381.0	444.0	417.0	420.0	380.0	403.0	413.0	
Wall Board	345	690.0											

No. of meas./locs	10
Maximum	444.0
Mean	398.8
Standard Deviation	27.28
No. > MDCR _{Surveyor}	0

Alpha Scans

<u>B2109</u>	<u>Bkg. Value</u>												
Floor Tile		5.8	4.0	2.0	5.0	1.0	4.0	4.0	2.0	3.0	1.0	3.0	
Wall Board													

No. of meas./locs	10
Maximum	5.0
Mean	2.9
Standard Deviation	1.37
No. > Scan MDC	0

Notes:

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

470094

Final Status Data Summary Table: Direct Beta Measurements
Survey Unit: Laboratory B2109
Building 53, Denver Federal Center

(2 of 5)

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements											
<i>Systematic Direct Read Locations</i>														
<u>B2109</u>													No. of meas./locs	30
Wall	1,000 dpm/100cm ²	1,000 dpm/100cm ²	643	331	444	381	482	454	751	617	44		Maximum	751.0
Wall	1,000 dpm/100cm ²	1,000 dpm/100cm ²	515	4	-128	381	-105	7	421				Mean	-2632.5
Floor	1,000 dpm/100cm ²	1,000 dpm/100cm ²	-5937	-6053	-5808	-6072	-5890	-6031	-5896	-6252	-6119		Standard Deviation	3225.7
Floor	1,000 dpm/100cm ²	1,000 dpm/100cm ²	-6070	-5885	-6100	-5988	-6115						No. > Administrative Goal	0
													No. > Release Criteria	0
<i>Bias Direct Read Locations</i>														
<u>B2109</u>													No. of meas./locs	10
Wall	1,000 dpm/100cm ²	1,000 dpm/100cm ²	619										Maximum	619.0
Floor	1,000 dpm/100cm ²	1,000 dpm/100cm ²	-896	-976	58	-5859	-6027	-6504	-6557	-6461	-6565		Mean	-3916.8
													Standard Deviation	3153.9
													No. > Administrative Goal	0
													No. > Release Criteria	0
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>														
<u>B2109</u>														
Location E-08		1st	2nd	RPD										
Location E-11		464	489	-5										
		326	400	-20										

Notes:

Bold values exceed respective criteria.

cm² - 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 Table: Direct Alpha Measurements
Survey Unit: Laboratory B2109
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	(3 of 5) Individual Measurements												
<i>Systematic Direct Read Locations</i>															
<u>B2109</u>														No. of meas./locs	30
Wall	30 ^a dpm/100cm ²	100 dpm/100cm ²	-12	8	-2	-7	-10	-12	-3	-5	-23	Maximum	15.0		
Wall	30 ^a dpm/100cm ²	100 dpm/100cm ²	-22	-23	-27	-20	-23	-26	-27	Mean	-12.4				
Floor	30 ^a dpm/100cm ²	100 dpm/100cm ²	12	-6	9	15	-3	-7	-14	-16	-11	Standard Deviation	12.7		
Floor	30 ^a dpm/100cm ²	100 dpm/100cm ²	-34	-19	-12	-27	-25	No. > Administrative Goal	0						
													No. > Release Criteria	0	
<i>Bias Direct Read Locations</i>															
<u>B2109</u>														No. of meas./locs	10
Wall	30 ^a dpm/100cm ²	100 dpm/100cm ²	-12	Maximum	-12.0										
Floor	30 ^a dpm/100cm ²	100 dpm/100cm ²	-24	-30	-15	-19	-16	-24	-29	-35	-34	Mean	-23.8		
													Standard Deviation	8.1	
													No. > Administrative Goal	0	
													No. > Release Criteria	0	
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>															
<u>B2109</u>			1st	2nd	RPD										
Location E-08			5	-2	467										
Location E-11			12	19	-45										

- Notes:
- Bold values exceed respective criteria.
 - cm² - 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 B2109
Building 53, Denver Federal Center

(4 of 5)

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements		
<i>Systematic Direct Read Locations</i>					
<u>B2109</u>				No. of meas./locs	30
Wall	200 dpm/100cm ²	200 dpm/100cm ²	There was one floor sample location with a result of 80 dpm/100cm ² , exceeding its respective MDC of 1.0 dpm/100cm ² All other sample results were reported as non-detected at < 1.8 dpm/100cm ²	Maximum	80.0
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
<i>Bias Direct Read Locations</i>					
<u>B2109</u>				No. of meas./locs	10
Wall	200 dpm/100cm ²	200 dpm/100cm ²	All sample results were reported as non-detected at < 1.8 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
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>					
<u>B2109</u>					
Location E-08	Regular	Field Duplicate	Field Splits	RPD	
Location E-11	nd	nd	nd	nc	
	nd	nd	nd	nc	

Notes:

Bold values exceed respective criteria.

cm² - 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 B2109
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	(5 of 5)		Individual Measurements		No. of meas./locs	
<i>Systematic Direct Read Locations</i>								
<u>B2109</u>								
Wall	1.1 dpm/100cm ²	20 dpm/100cm ²			All sample results were reported as non-detected at < 1.0 dpm/100cm ²		30	
Wall	1.1 dpm/100cm ²	20 dpm/100cm ²					na	
Floor	1.1 dpm/100cm ²	20 dpm/100cm ²					na	
							na	
							No. > Administrative Goal	0
							No. > Release Criteria	0
<i>Blas Direct Read Locations</i>								
<u>B2109</u>								
Wall	1.1 dpm/100cm ²	20 dpm/100cm ²			All sample results were reported as non-detected at < 1.0 dpm/100cm ²		10	
Floor	1.1 dpm/100cm ²	20 dpm/100cm ²					na	
							na	
							na	
							No. > Administrative Goal	0
							No. > Release Criteria	0
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>								
<u>B2109</u>								
Location B-01		Regular	Field Duplicate	Field Splits	RPD			
Location B-08		nd	nd	nd	nc			
Location B-10		nd	nd	nd	nc			
		nd	nd	nd	nc			

Notes:

Bold values exceed respective criteria.

cm² - 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

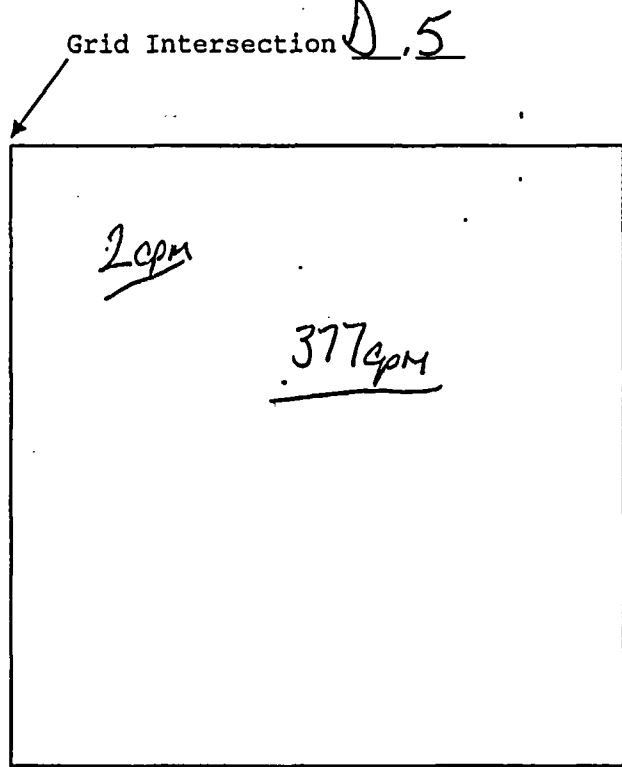
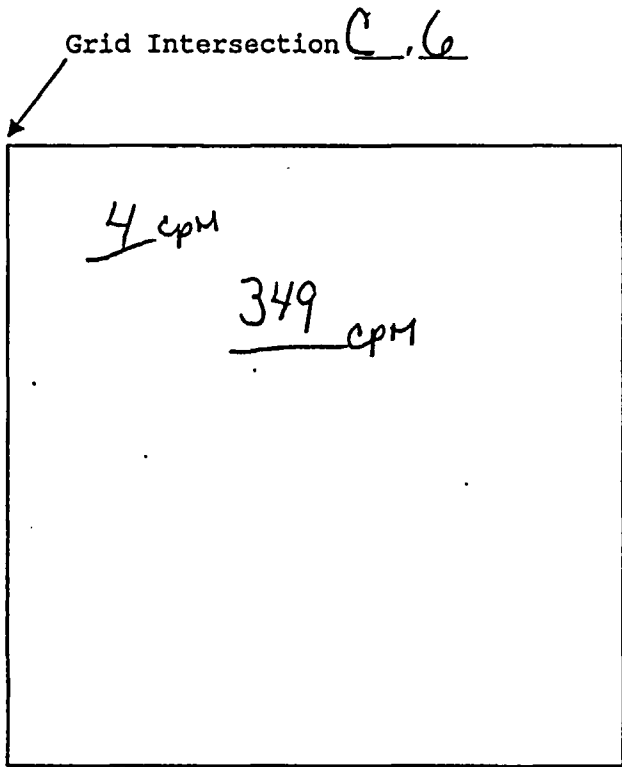
nc - not calculated

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER 101115		DATE 0207-04	TIME START 0915	TIME COMPLETE 0930	PAGE 1 OF 10								
LOCATION: EPA NEIC Rm 2109		SURVEYOR(S): Wase / Trent				Alpha		Beta-Gamma		Alpha cpm <input checked="" type="checkbox"/>	Item or Location				
Denver Federal Center, CO		SURVEY NUMBER: 022704-23				Loose		Total		Loose		Total		Beta cpm <input checked="" type="checkbox"/>	
Denver, CO		MAP ID: LAB B2109		Item #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	Material <input checked="" type="checkbox"/>						
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose <u>20</u> dpm/100cm ² Alpha <u>200</u> dpm/100cm ² Beta-Gamma Total <u>100</u> dpm/100cm ² Alpha <u>1,000</u> dpm/100cm ² Beta-Gamma				ACCEPTABLE SCAN LIMITS MDC _{survey} Beta MDC _{survey} Alpha				1		FT		C-6			
Source Check Data		Contamination Surveys				Radiation Surveys		Beta-Gamma		2		FT		D-5	
		α (TOTAL)		β-γ (TOTAL)						3		FT		C-3	
Instrument		184804 / 185768		185774		184804 / 185768		185774		4		FT		C-1	
Source Type and ID.		Th-230, 117089		Th-230, 117089		Cs-137, 92CS5000		Cs-137, 92CS5000		5		FT		E-2	
Source Strength in dpm		13800		13800		799505		799505		6		FT		H-1	
Efficiency		0.13 / 0.15		0.15		0.16 / 0.17		0.18		7		FT		E-5	
MDC in dpm/100 cm ²		See attached instrument sheets for material specific backgrounds and MDC's.				Set. <input type="checkbox"/> Unset. <input type="checkbox"/>		8		9		FT		E-4	
Background in cpm						NA		NA		NA		10		FT	
REASON FOR SURVEY		<input checked="" type="checkbox"/> PROCEDURE NO. <u>FINAL STATUS SURVEY PLAN</u> <input checked="" type="checkbox"/> SPECIAL <u>Judgmental SCAN</u> <input type="checkbox"/> ROUTINE				11		12		13		A			
Contamination		<input checked="" type="checkbox"/> By SMR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly				14		15		16		17			
Radiation		<input type="checkbox"/> By SMR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly				18		19		20		21			
COMMENTS:		1-5 # 185768 6-10 # 184904				22		23		24		25			
SADS - See Attached Data Sheet		Contamination Survey		ALPHA (TOTAL) 2360 <u>184904</u>		BETA-GAMMA (TOTAL) 2360 <u>185768</u>		INSTRUMENT / SERIAL #		ALPHA (TOTAL) <u>NA</u>		BETA-GAMMA (TOTAL) <u>NA</u>			
				ALPHA (TOTAL) <u>NA</u>		BETA-GAMMA (TOTAL) <u>NA</u>									
THE KNOWING & WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		RCS REVIEW <u>[Signature]</u> DATE <u>3.2.04</u>													

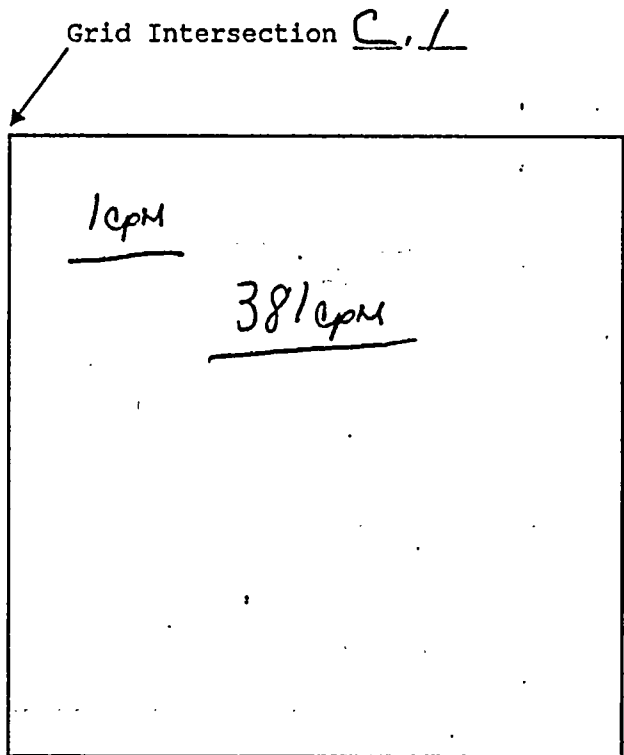
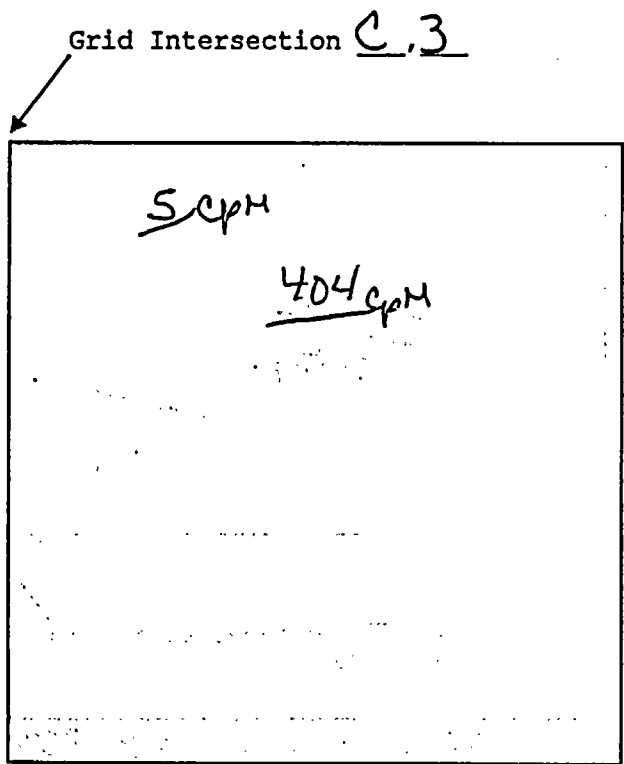
Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room <i>Rm 2109</i>	PAGE 2 OF 10	
COMMENTS:	SURVEYOR(S): <i>W. H. H. H.</i>	SURVEY NUMBER: <i>022707-23</i>	DATE: <i>02-27-04</i>
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: <i>[Signature]</i>	DATE: <i>3.2.04</i>		



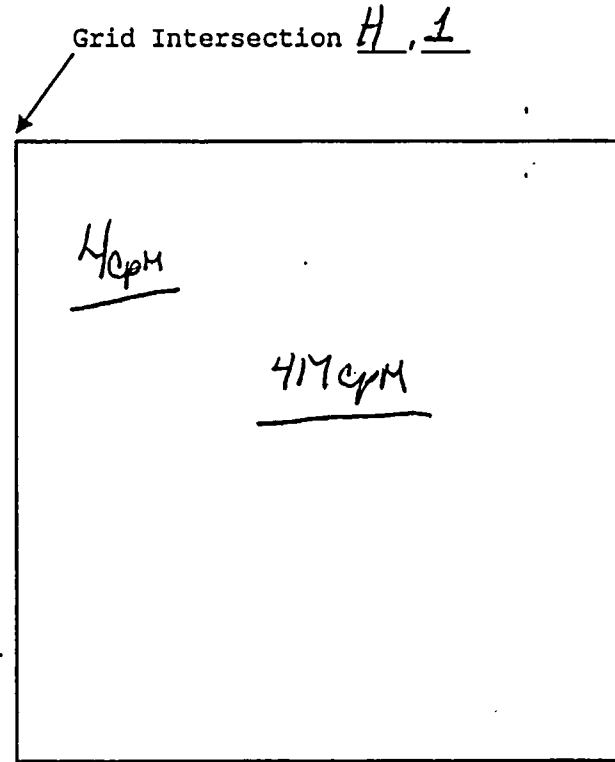
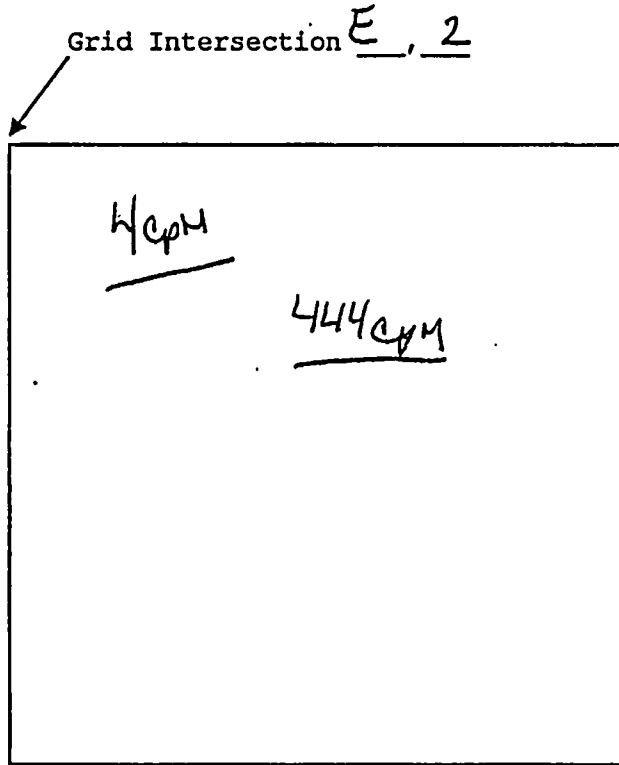
Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: Laboratory-Room RM 2109	PAGE 3 OF 10	
COMMENTS:	SURVEYOR(S) Wise/Kent	SURVEY NUMBER: 022704-23	DATE: 02-27-04
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: <i>[Signature]</i>	DATE: 3.2.04		



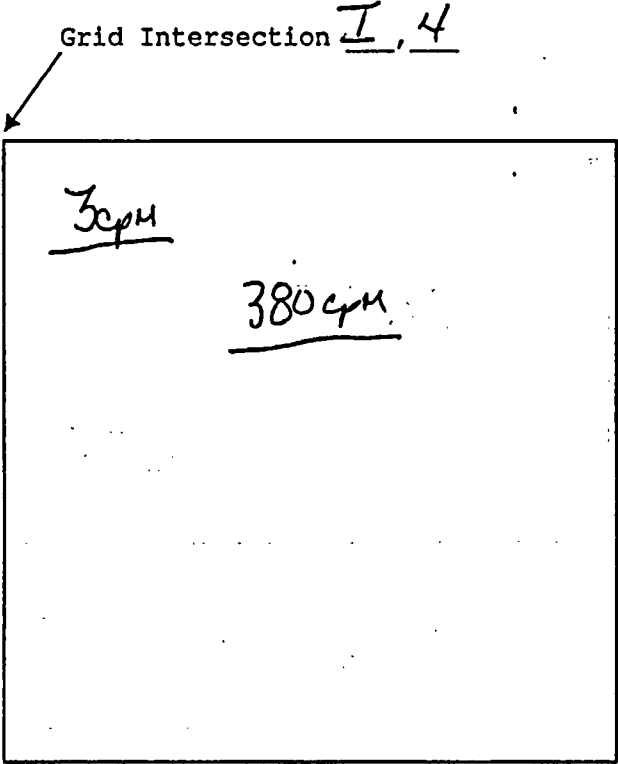
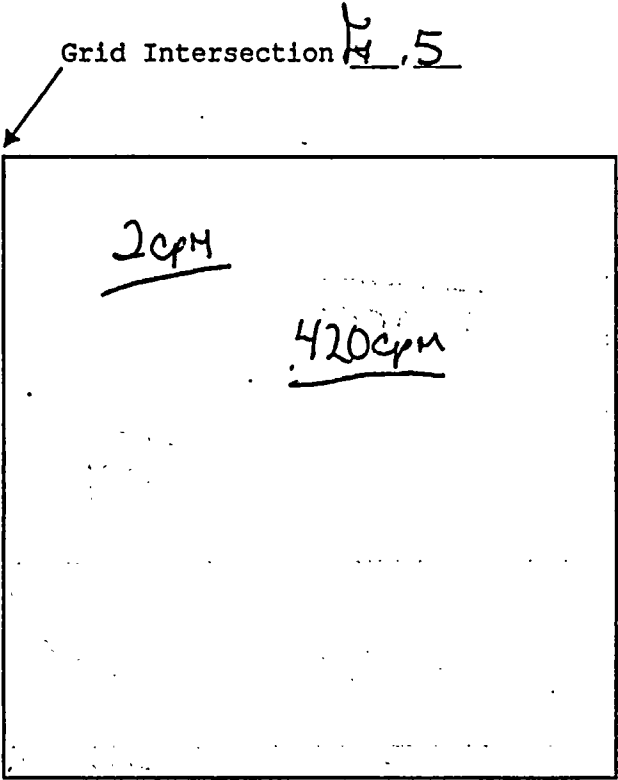
Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room RM 2109	PAGE 4 OF 10	
COMMENTS:	SURVEYOR(S): Wise / Grant	SURVEY NUMBER: 022704-23	DATE: 02-27-04
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: <i>[Signature]</i>	DATE: 3.2.04		



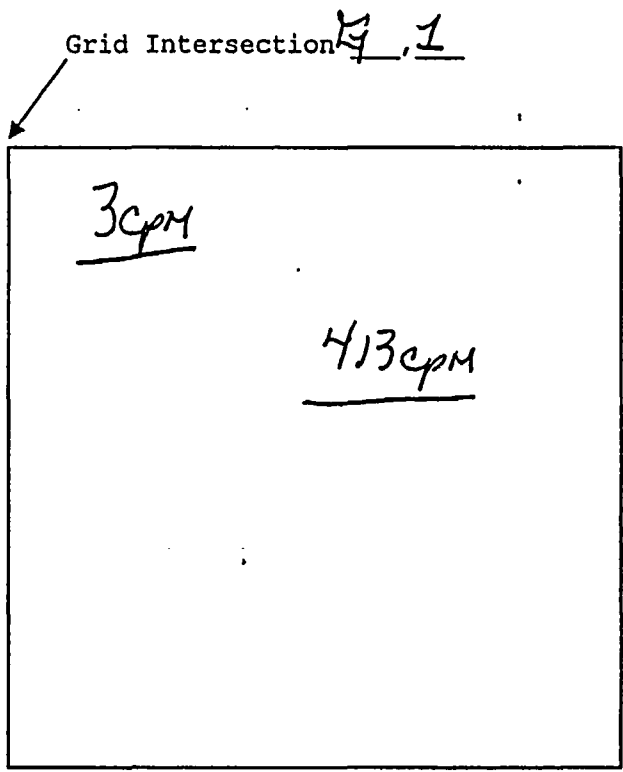
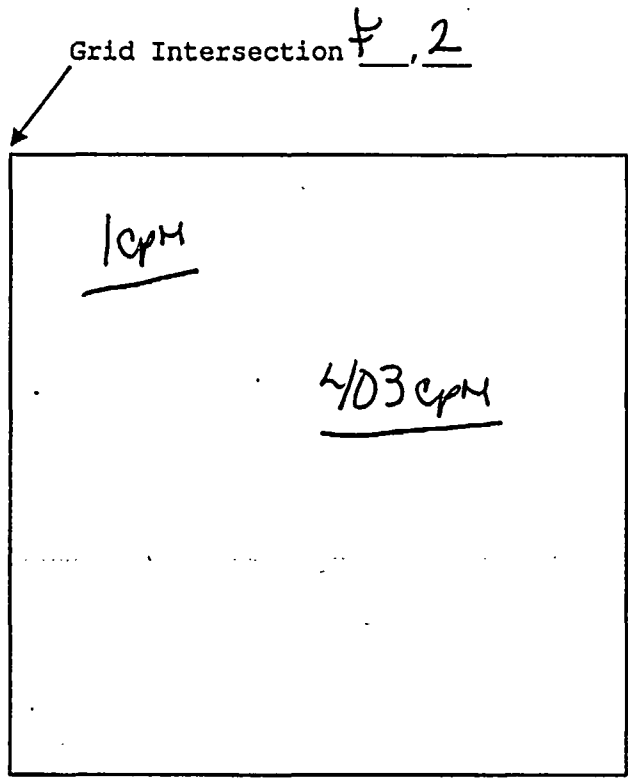
Contamination / Ionization Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room <u>Rm 2109</u>	PAGE 5 OF 10	
COMMENTS:	SURVEYOR(S): <u>Walt / Kent</u>	SURVEY NUMBER: <u>022701-23</u>	DATE: <u>02-27-04</u>
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: <u>[Signature]</u>	DATE: <u>3-2-04</u>		



Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room RM 2109	PAGE 6 OF 10	
COMMENTS:	SURVEYOR(S): Wise / Trent	SURVEY NUMBER: 022704-23	DATE: 02-27-04
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: <i>[Signature]</i>	DATE: 3.2.04		



Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room <i>RM 2109</i>	PAGE 7 OF 10	
COMMENTS:	SURVEYOR(S): <i>Wise/Trent</i>	SURVEY NUMBER: <i>022704-23</i>	DATE: <i>02-27-04</i>
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: <i>[Signature]</i>	DATE: <i>3-2-04</i>		

Grid Intersection __, __

Background Check (cpm)

Alpha (1) 4	Beta (1) 381
(2) 5	(2) 422

184904

Time start 0845
1530

Grid Intersection __, __

Background Check (cpm)

Alpha (1) 8	Beta (1) 335
(2) 6	(2) 387

185768

Time start 0845
1530

MDCRsurveyor Scanning Levels for Specific Materials

23-60

184904

/

Instr. Eff.

0.16 / Setup MDC

1788

Wall Board (WB)

BKGD CPM 265.14 MDCR surveyor 388 gross cpm

Floor tile (FT)

BKGD CPM 303.36 MDCR surveyor 435 gross cpm

Wood (wo)

BKGD CPM 180.64 MDCR surveyor 282 gross cpm

Concrete Floor (CF)

BKGD CPM 449.28 MDCR surveyor 609 gross cpm

Metal (ME)

BKGD CPM 311.78 MDCR surveyor 445 gross cpm

Concrete Block (CB)

BKGD CPM 475.30 MDCR surveyor 640 gross cpm

Glass (GL)

BKGD CPM 350.32 MDCR surveyor 492 gross cpm

Countertop (CT)

BKGD CPM 292.52 MDCR surveyor 422 gross cpm

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3.2.04

Page of
022704-23

MDCR surveyor 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)

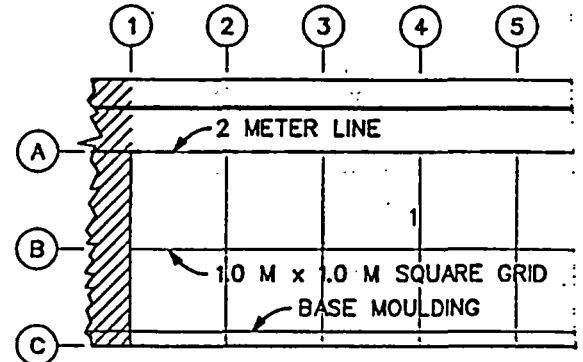
BKGD CPM 232.08 MDCR surveyor 347 gross cpm

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3-2-04

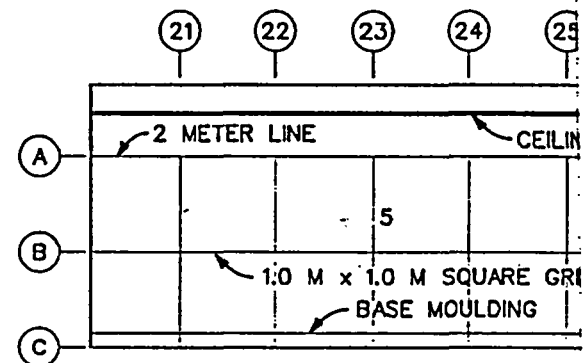
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022704-23

Handwritten signature

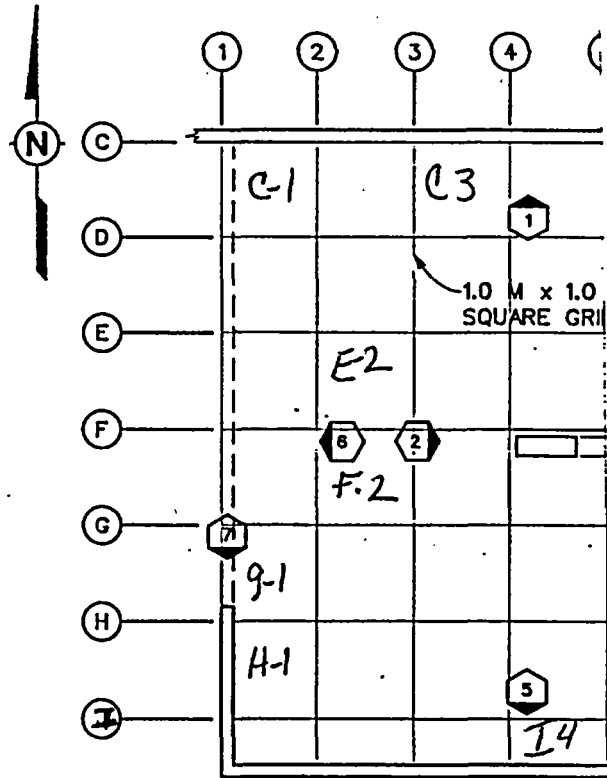
DWG. NO.: 101115_neic_0010.dgn
 PROJ. NO.: 101115
 TECH. REVIEW: R. COLLINS
 PROJ. MGR.: R.L. ROGERS
 INITIATOR: R. COLLINS
 CADD REVIEW: C. BENTLEY
 STARTING DATE: 25NOV03
 DRAWN BY: C.E. TUMLIN
 12/2/2003 1:36:23 PM
 r2d2-btw-tablet.dpi
 Standard_Color_Mod.tbl
 2:0.0000. m:mm / in.
 ctumlin
 101115_neic_0010.dgn



ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m



PLAN VIEW
SCALE: 1" = 2.0 m

NOTES

- 1. WALL SURFACE AREA: 49.9054 SQ. M.
- FLOOR SURFACE AREA: 39.0999 SQ. M.
- TOTAL SURFACE AREA: 89.0053 SQ. M.

FIGURE 3-12
REFERENCE GRID FOR
LABORATORY B2109

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER: 101115		DATE: 02-27-04	TIME START: 0940	TIME COMPLETE: 1500	PAGE 1 OF 9																		
LOCATION: EPA NEIC		SURVEYOR(S): K. WISE / T. TRENT		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Alpha</td> <td colspan="2">Beta-Gamma</td> <td>Alpha cpm</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Loose</td> <td>Total</td> <td>Loose</td> <td>Total</td> <td>Beta cpm</td> <td><input type="checkbox"/></td> </tr> <tr> <td colspan="2">Material</td> <td colspan="2"></td> <td></td> <td><input type="checkbox"/></td> </tr> </table>		Alpha		Beta-Gamma		Alpha cpm	<input type="checkbox"/>	Loose	Total	Loose	Total	Beta cpm	<input type="checkbox"/>	Material					<input type="checkbox"/>	Item or Location	
Alpha		Beta-Gamma				Alpha cpm	<input type="checkbox"/>																		
Loose	Total	Loose	Total	Beta cpm	<input type="checkbox"/>																				
Material					<input type="checkbox"/>																				
Denver Federal Center, CO		SURVEY NUMBER: 022704 - 24																							
Denver, CO		MAP ID: LAB B2109		Item #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²																	
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose 20 dpm/100cm ² Alpha 200 dpm/100cm ² Beta-Gamma Total 100 dpm/100cm ² Alpha 1,000 dpm/100cm ² Beta-Gamma				ACCEPTABLE SCAN LIMITS MDCR _{surveys} Beta MDCR _{surveys} Alpha				1	NA	-12	NA	643	WB	E-01											
Source Check Data				Contamination Surveys				2		8				E-02											
Radiation Surveys				Beta-Gamma				3		-2		444		E-03											
								4		-7		381		E-04											
								5		-10		482		E-05											
								6		-12		454		E-06											
Instrument				NA				7		-3		751		E-07											
Source Type and ID.				Th-230, 1170/89 Th-230, 1170/89 Cs-137, 92C85000 Cs-137, 92C85000				8		-5		617		E-08	See Resurvey										
Source Strength in dpm				13800 13800 789585 789585				9		-23		44		E-09											
Efficiency				0.13 / 0.15 0.15 0.16 / 0.17 0.18				10		-22		515		E-10											
MDC in dpm/100 cm ²				See attached instrument sheets for material specific backgrounds and MDC's.				11		-23		4		E-11	See Resurvey										
Background in cpm								12		-27		-128		E-12											
REASON FOR SURVEY				<input checked="" type="checkbox"/> PROCEDURE NO. FINAL STATUS SURVEY PLAN - DIRECT READINGS <input type="checkbox"/> SPECIAL <input type="checkbox"/> ROUTINE				13		-20		381		E-13											
Contamination				<input checked="" type="checkbox"/> By Shift <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly				14		-23		-105		E-14											
Radiation				<input type="checkbox"/> By Shift <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly				15		-26		7		E-15											
COMMENTS				Item # 1-16 - 2360 185768 # 17-32 - 2360 184904 # 33-35 - 2360 185768 # 36-42 - 2360 184904				16		-27		421	WB	E-16											
BADs - See Attached Data Sheet								17		12		-5937	BWFT	E-17											
Contamination Survey				ALPHA (TOTAL) 2360 184904 BETA-GAMMA (TOTAL) 2360 184904				18		-6		-6053		E-18											
INSTRUMENT / SERIAL #				ALPHA (TOTAL) 2360 185768 BETA-GAMMA (TOTAL) 2360 185768				19		9		-5808		E-19											
				ALPHA (TOTAL) N/A BETA-GAMMA (TOTAL) N/A				20		15		-6072		E-20											
								21		-3		-5890		E-21											
								22		-7		-6031		E-22											
								23		-14		-5896		E-23											
								24		-16		-6252		E-24											
								25		11		-6119	BWFT	E-25											
THE KNOWING & WILLFUL RECORDING OF FALSE, FETTEROUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.						RCS REVIEW		DATE 3-16-04																	

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT (CONTINUATION SHEET)						PROJECT NUMBER: 101115	DATE: 02-27-04	PAGE 2 of 9					
LOCATION: EPA NEIC			SURVEYOR(S): K WISE / T. TRENT			COMMENTS:							
Denver Federal Center, Building 53			SURVEY NUMBER: 022704-24										
Denver, CO			MAP ID: LAB B2109										
RCS REVIEW DATE 3-16-04													
Item #	Alpha		Beta-Gamma		Alpha cpm	Item or Location	Item #	Alpha		Beta-Gamma		Alpha cpm	Item or Location
	LOOSE	TOTAL	LOOSE	TOTAL	Beta cpm			Material	LOOSE	TOTAL	LOOSE	TOTAL	
dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	Material	Item or Location	Item #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	Material	Item or Location
26	NA	-34	NA	-6070	BWFT	E-26	/						
27		-19		-5885		E-27							
28		-12		-6100		E-28							
29		-27		-5988		E-29							
30		-25		-6115	BWFT	E-30							
31		-3		-6693	WB	Replicate E-8		56	See summary				
32		-5		-6553	WB	Replicate E-11		57	See summary				
33		-24		-896	FT	BS-2109-01		58					
34		-12		619	WB	BS-2109-02		59					
35		-30		-976	BWFT	BS-2109-03		60					
36		-15		58		BS-2109-04		61					
37		-19		-5859		BS-2109-05		62					
38		-16		-6027		BS-2109-06		63					
39		-24		-6504		BS-2109-07		64					
40		-29		-6567		BS-2109-08		65					
41		-35		-6461		BS-2109-09		66					
42		-34		-6565	BWFT	BS-2109-10		67					
43								68					
44								69					
45								70					
46							71						
47							72						
48							73						
49							74						
50							75						

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room LAB B2109	PAGE 3 OF 9
COMMENTS:	SURVEYOR(S): K. WISE / T. TRENT	SURVEY NUMBER: 022704-24
		DATE: 02-27-04
	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: <i>[Signature]</i>	DATE: 3-16-04	

Background Checks (cpm)

2360 - 184904

alpha	beta	Time
4	381	0845
5	422	1530

Background Checks (cpm)

2360 - 185768

alpha	beta	Time
8	335	0845
6	387	1530

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room LAB B2109	PAGE 4 OF 9
COMMENTS:	SURVEYOR(S): K. WISE / T. TRENT	SURVEY NUMBER: 022704-24
		DATE: 02-27-04
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: <i>[Signature]</i>	DATE: 3-16-04	

Replicate E-8

Gross Total Counts

ORIGINAL WITH 2360 #185768

24 / 4441

Replicate with 2360 #184904

19 / 4611

Replicate E-11

Gross Total Counts

ORIGINAL WITH #185768

11 / 3456

Replicate with 2360 #184904

18 / 4822

* NOTE: Replicates performed with different instrument from original.
 See supplementary survey for replicate data with same instrument as the original. *[Signature]* 3-16-04

Material Specific Background and MDC Sheet for Alpha Measurements

Pa 5 of 7
1704-24
J. Hillman
3-16-04

Instrument/SN:

Ludlum 2360 / 185768

Background count time 5 minutes

Probe/SN:

Ludlum 43-68 / RN012714

Total Instrument Efficiency 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

Material Specific Background and MDC Sheet for Beta Measurements

lg 6 of 7
022704-24
J. Miller
3.16.14

Instrument/SN: Ludlum 2360 / 185768

Background Count Time 5.00 minutes

Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Efficiency 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

Material Specific Background and MDC Sheet for Alpha Measurements

Pa 7 of 7
22704-24
J. Miller
3-16-04

Instrument/SN:

Ludlum 2360 / 184904

Background count time 5 minutes

Probe/SN:

Ludlum 43-68 / PR138731

Total Instrument Efficiency 0.0325 dpm/cpm

Wall Board	WB	1.40	cpm	MDC	54	dpm/100cm2	Sample Count Time	15.00	min
Floor Tile	FT	2.24	cpm	MDC	67	dpm/100cm2	Sample Count Time	15.00	min
Wood	WO	2.10	cpm	MDC	65	dpm/100cm2	Sample Count Time	15.00	min
Cement Floor	CF	4.40	cpm	MDC	92	dpm/100cm2	Sample Count Time	15.00	min
Metal	ME	1.66	cpm	MDC	58	dpm/100cm2	Sample Count Time	15.00	min
Concrete Block	CB	1.92	cpm	MDC	62	dpm/100cm2	Sample Count Time	15.00	min
Glass	GL	5.04	cpm	MDC	98	dpm/100cm2	Sample Count Time	15.00	min
Counter Top	CT	2.20	cpm	MDC	66	dpm/100cm2	Sample Count Time	15.00	min
Black&White Floor Tile	(BWFT)	3.36	cpm	MDC	81	dpm/100cm2	Sample Count Time	15.00	min
Wall Board Downstairs	(WBD)	1.22	cpm	MDC	51	dpm/100cm2	Sample Count Time	15.00	min

Material Specific Background and MDC Sheet for Beta Measurements

022704-24
J. Miller
 3-16-04

Instrument/SN: Ludlum 2360 / 184904 Background Count Time 5.00 minutes
 Probe/SN: Ludlum 43-68 / PR138731 Total Instrument Efficiency 0.0800 dpm/cpm

Wall Board	(WB)	265.14	cpm	MDC	276	dpm/100cm ²	Sample Count Time	15.00	min
Floor Tile	(FT)	303.36	cpm	MDC	296	dpm/100cm ²	Sample Count Time	15.00	min
Wood	(WO)	180.64	cpm	MDC	229	dpm/100cm ²	Sample Count Time	15.00	min
Cement Floor	(CF)	449.28	cpm	MDC	359	dpm/100cm ²	Sample Count Time	15.00	min
Metal	(ME)	311.78	cpm	MDC	300	dpm/100cm ²	Sample Count Time	15.00	min
Concrete Block	(CB)	475.30	cpm	MDC	369	dpm/100cm ²	Sample Count Time	15.00	min
Glass	(GL)	350.32	cpm	MDC	317	dpm/100cm ²	Sample Count Time	15.00	min
Counter Top	(CT)	292.52	cpm	MDC	290	dpm/100cm ²	Sample Count Time	15.00	min
Black&White Floor Tile	(BWFT)	982.02	cpm	MDC	530	dpm/100cm ²	Sample Count Time	15.00	min
Wall Board Downstairs	(WBD)	270.32	cpm	MDC	279	dpm/100cm ²	Sample Count Time	15.00	min

19 1 01 1
022704-24
E-16.04

2:0.0000 m/mm / IN.
cturnin
10115_neic_0011.dgm

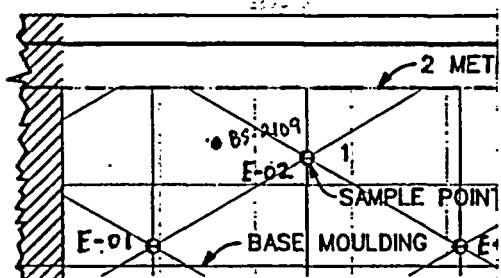
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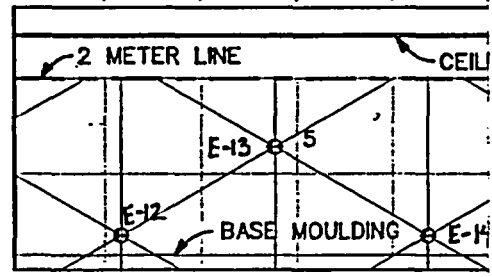
INITIATOR: R.COLLINS
CADD REVIEW: C.BENTLEY

TECH. REVIEW: R.COLLINS
PROJ. MGR.: R.L.ROGERS

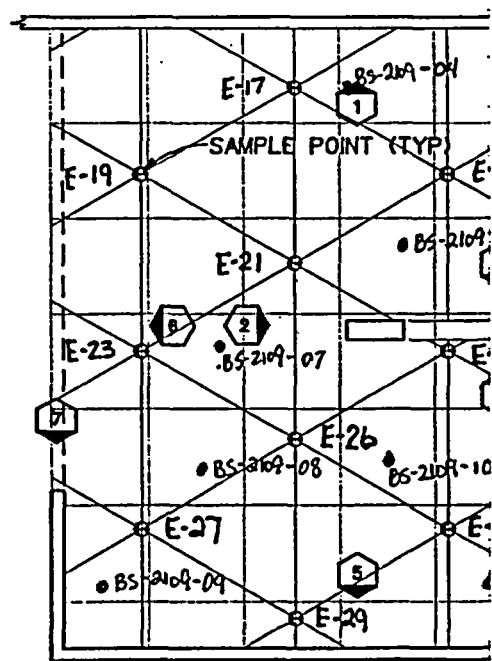
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PROJ. NO.: 10115



ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m



PLAN VIEW
SCALE: 1" = 2.0 m

NOTES

1. WALL SURFACE AREA: 49.9054 SQ. M.
FLOOR SURFACE AREA: 39.0999 SQ. M.
TOTAL SURFACE AREA: 89.0053 SQ. M.
2. THE LENGTH OF EACH LEG OF THE TRIANGULAR SAMPLING GRID IS 1.851 METERS

FIGURE 3-13
TRIANGULAR GRID FOR
LABORATORY B2109

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO



Contamination / Radiation Survey Report

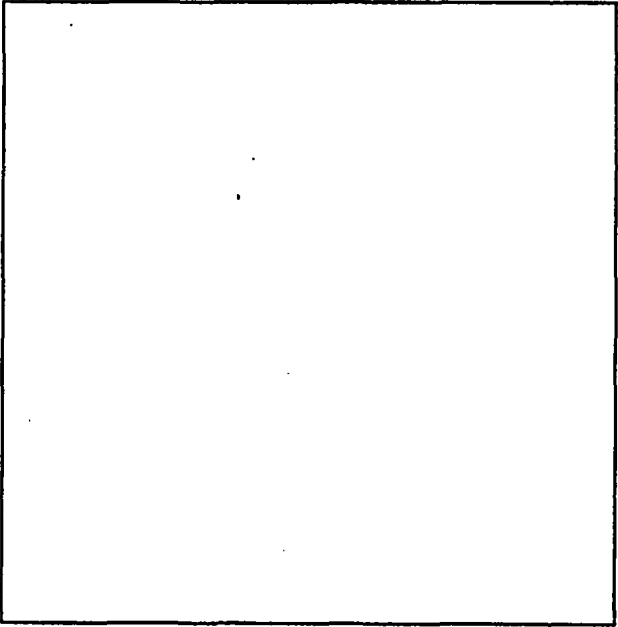
CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER: 101115		DATE: 03-05-04	TIME START: 1530	TIME COMPLETE: 1700	PAGE 1 OF 6
LOCATION: EPA NEIC		SURVEYOR(S): T. TRENT		Alpha		Beta-Gamma	
Denver Federal Center, CO		SURVEY NUMBER: 030504-44		Loose		Total	
Denver, CO		MAP ID: LAB B2109		Loose		Total	
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose 20 dpm/100cm ² Alpha 200 dpm/100cm ² Beta-Gamma Total 100 dpm/100cm ² Alpha 1,000 dpm/100cm ² Beta-Gamma		ACCEPTABLE SCAN LIMITS MDC _{Surveyor} Beta MDC _{Surveyor} Alpha		Item #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²
Source Check Data		Contamination Surveys		Radiation Surveys		Rem of Location	
		α		β		Beta-Gamma	
		(TOTAL)		(TOTAL)		(TOTAL)	
Instrument	184904 / 185768	185774	184904 / 185768	185774	1	NA	5
Source Type and ID	Th-230, 1170/89	Th-230, 1170/89	Cs-137, 92CS5000	Cs-137, 92CS5000	2	↓	-2
Source Strength in dpm	13800	13800	769565	769565	3	↓	12
Efficiency	0.13 / 0.15	0.15	0.16 / 0.17	0.18	4	↓	19
MDC in dpm/100 cm ²	See attached instrument sheets for material specific backgrounds and MDC's.			Set. <input type="checkbox"/> Unset. <input type="checkbox"/>	5		
Background in cpm				mrem/hr or μrem/hr	6		
REASON FOR SURVEY	<input checked="" type="checkbox"/> PROCEDURE NO. FINAL STATUS SURVEY PLAN				7		
	<input type="checkbox"/> SPECIAL				8		
	<input type="checkbox"/> ROUTINE				9		
Contamination	<input checked="" type="checkbox"/> By SNR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly				10		
Radiation	<input type="checkbox"/> By SNR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly				11		
COMMENTS:	Replicate Survey for data points E-08 and E-11 in LAB B2109				12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		
					21		
					22		
SADS - See Attached Data Sheet					23		
Contamination Survey	ALPHA (TOTAL) 2360, 185768		BETA-GAMMA (TOTAL) 2360, 185768		24		
INSTRUMENT / SERIAL #	ALPHA (TOTAL) N/A		BETA-GAMMA (TOTAL) N/A		25		
	ALPHA (TOTAL) N/A		BETA-GAMMA (TOTAL) N/A				
THE KNOWING & 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: 3-17-04		

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room LAB B2109	PAGE 2 OF 6	
COMMENTS:	SURVEYOR(S): T. TRENT	SURVEY NUMBER: 030504-44	DATE: 03-05-04
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: <i>[Signature]</i>	DATE: 3-17-04		

Background Checks (cpm)

alpha	beta
7 /	329
5 /	322



Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room LAB B2109	PAGE 3 OF 6	
COMMENTS:	SURVEYOR(S): T. TRENT	SURVEY NUMBER: 030504-44	DATE: 03-05-04
RCS REVIEW: <i>J. Miller</i> DATE: 3-17-04		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.	
Replicate Counts E-08		Replicate Counts E-11	
31 / 4196		36 / 3974	
26 / 4235		41 / 4092	

Material Specific Background and MDC Sheet for Alpha Measurements

Pg 4 of 6
030504-44

J. Miller 3-07-04

Instrument/SN: Ludlum 2360 / 185768

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Efficiency 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	15.00	min

Material Specific Background and MDC Sheet for Beta Measurements

Pa 5 of 6
0504-44
J. Miller 3-17-04

Instrument/SN: Ludlum 2360 / 185768

Background Count Time 5.00 minutes

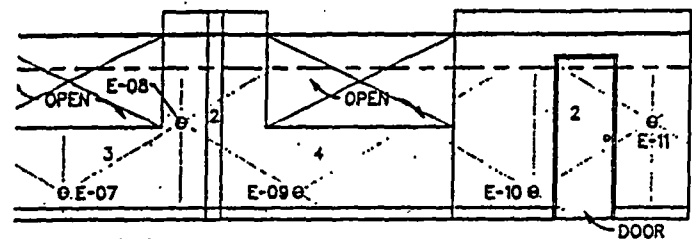
Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Efficiency 0.0850 dpm/cpm

Wall Board	(WB)	230.00	cpm	MDC	242	dpm/100cm ²	Sample Count Time	15.00	min
Floor Tile	(FT)	275.22	cpm	MDC	265	dpm/100cm ²	Sample Count Time	15.00	min
Wood	(WO)	210.12	cpm	MDC	232	dpm/100cm ²	Sample Count Time	15.00	min
Cement Floor	(CF)	357.50	cpm	MDC	302	dpm/100cm ²	Sample Count Time	15.00	min
Metal	(ME)	256.10	cpm	MDC	256	dpm/100cm ²	Sample Count Time	15.00	min
Concrete Block	(CB)	446.00	cpm	MDC	337	dpm/100cm ²	Sample Count Time	15.00	min
Glass	(GL)	304.00	cpm	MDC	278	dpm/100cm ²	Sample Count Time	15.00	min
Counter Top	(CT)	232.08	cpm	MDC	244	dpm/100cm ²	Sample Count Time	15.00	min
Black&White Floor Tile	(BWFT)	385.38	cpm	MDC	313	dpm/100cm ²	Sample Count Time	15.00	min
Wall Board Downstairs	(WBD)	285.78	cpm	MDC	270	dpm/100cm ²	Sample Count Time	15.00	min

19 4 01
030504-44

J. Miller
3-17-04



1.0 M SQUARE GRID
FOR REFERENCE ONLY (TYP)

NOTES

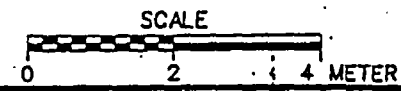
1. WALL SURFACE AREA: 49.9054 SQ. M.
FLOOR SURFACE AREA: 39.0999 SQ. M.
TOTAL SURFACE AREA: 89.0053 SQ. M.
2. THE LENGTH OF EACH LEG OF THE TRIANGULAR SAMPLING GRID IS 1.851 METERS

1.0 M SQUARE GRID
FOR REFERENCE ONLY (TYP)

E POINT
TRIANGULAR

FIGURE 3-13
TRIANGULAR SAMPLING GRID FOR
LABORATORY B2109

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO



Shaw Shaw Environmental, Inc.

Contamination / Radiation Survey Report

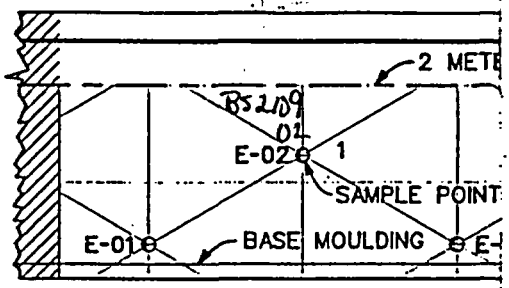
CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER: 101115		DATE: 022704	TIME START: 1510	TIME COMPLETE: 1530	PAGE 1 of 3			
LOCATION: EPA NEIC <i>Rm 2109</i>		SURVEYOR(S): <i>Frank</i>		Alpha		Beta-Gamma		Alpha cpm <input type="checkbox"/>	Item or Location	
Denver Federal Center, CO		SURVEY NUMBER: 022704-25								
Denver, CO		MAP ID: LAB: B2109		Loose		Total		Beta cpm <input type="checkbox"/>		
				dpm/100cm ²		dpm/100cm ²		Material <input type="checkbox"/>		
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose 20 dpm/100cm ² Alpha 200 dpm/100cm ² Beta-Gamma Total 100 dpm/100cm ² Alpha 1,000 dpm/100cm ² Beta-Gamma				ACCEPTABLE SCAN LIMITS						
Source Check Data		Contamination Surveys			Radiation Surveys					
		a	a	B-T	B-T	Beta-Gamma				
		(LOOSE)	(TOTAL)	(LOOSE)	(TOTAL)					
Instrument		*NOTE	NA	*NOTE	NA	NA			E-01	
Source Type and ID									E-02	
Source Strength in dpm									E-03	
Efficiency									E-04	
MDC in dpm/100 cm ²									E-05	
Background in cpm									E-06	
REASON FOR SURVEY		<input checked="" type="checkbox"/> PROCEDURE NO. <u>FINAL STATUS SURVEY PLAN</u> <input type="checkbox"/> SPECIAL <u>Smear Survey</u> <input type="checkbox"/> ROUTINE _____								
Contamination		<input checked="" type="checkbox"/> By SHR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>								
Radiation		<input type="checkbox"/> By SHR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>								
COMMENTS: NOTE: SEE DATA PACKAGE FROM PARAGON ANALYTICS, INC. FOR REMOVABLE ACTIVITY RESULTS AND INSTRUMENT INFORMATION.										
Contamination Survey		ALPHA (LOOSE) PERFORMED BY PARAGON ANALYTICS, INC.			BETA-GAMMA (LOOSE) PERFORMED BY PARAGON ANALYTICS, INC.					
INSTRUMENT / SERIAL #		ALPHA (TOTAL) N/A			BETA-GAMMA (TOTAL) N/A					
Radiation Survey INSTRUMENT / SERIAL #		BETA-GAMMA Meter N/A			BETA-GAMMA Probe N/A					
				1	*NOTE	NA	*NOTE	NA	NA	E-01
				2						E-02
				3						E-03
				4						E-04
				5						E-05
				6						E-06
				7						E-07
				8						E-08
				9						E-09
				10						E-10
				11						E-11
				12						E-12
				13						E-13
				14						E-14
				15						E-15
				16						E-16
				17						E-17
				18						E-18
				19						E-19
				20						E-20
				21						E-21
				22						E-22
				23						E-23
				24						E-24
				25						E-25
THE KNOWING & WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.				RCS REVIEW <i>[Signature]</i> DATE 3.2.04						

Contamination / Radiation Survey Report

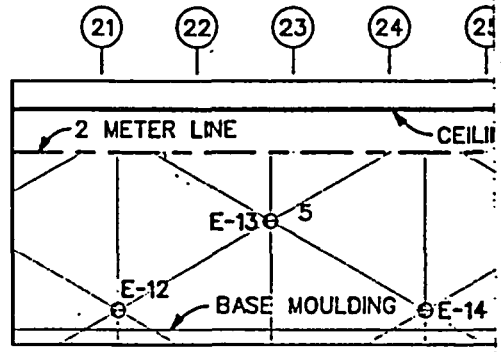
CONTAMINATION / RADIATION SURVEY REPORT (CONTINUATION SHEET)						PROJECT NUMBER: 101115		DATE: 022704		PAGE 2 OF 3							
LOCATION: EPA NEIC		Rm 2109		SURVEYOR(S): Wise / Floret		COMMENTS:											
Denver Federal Center, Building 53				SURVEY NUMBER: 022704-25													
Denver, CO				MAP ID: LAB B2109													
RCS REVIEW _____						DATE _____											
Item #	Alpha		Beta-Gamma		Alpha cpm	Beta cpm	Material	Item or Location	Item #	Alpha		Beta-Gamma		Alpha cpm	Beta cpm	Material	Item or Location
	LOOSE	TOTAL	LOOSE	TOTAL						LOOSE	TOTAL						
	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²						dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²				
26							E-26		51								
27							E-27		52								
28							E-28		53								
29							E-29		54								
30							E-30		55								
31							B2109 01		56								
32							02		57								
33							03		58								
34							04		59								
35							05		60								
36							06		61								
37							07		62								
38							08		63								
39							09		64								
40							10		65								
41							Indicate E-08 FD		66								
42							↓ ↓ E-11 FD		67								
43									68								
44									69								
45									70								
46									71								
47									72								
48									73								
49									74								
50									75								

19 9 07 -
082704-25

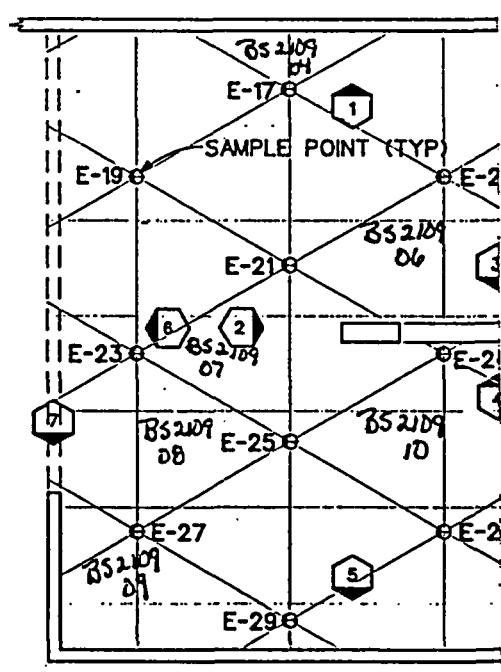
STARTING DATE: 25NOV03	INITIATOR: R.COLLINS	TECH. REVIEW: R.COLLINS	DWG. NO.: 10115_nec_0011.dgn
DRAWN BY: C.E.TUMLIN	CADD REVIEW: C.BENTLEY	PROJ. MGR.: R.L.ROGERS	PROJ. NO.: 10115
r2d2-b&w-tableid.plt Standard_Color_Mod.tbl 12/17/03 01:35:47 PM			
2:10,000 m/mm / IN. 1stout 10115_nec_0011.dgn			



ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m



PLAN VIEW
SCALE: 1" = 2.0 m

NOTES

1. WALL SURFACE AREA: 49.9054 SQ. M.
FLOOR SURFACE AREA: 39.0999 SQ. M.
TOTAL SURFACE AREA: 89.0053 SQ. M.
2. THE LENGTH OF EACH LEG OF THE TRIANGULAR SAMPLING GRID IS 1.851 METERS

FIGURE 3-13
TRIANGULAR SAMPLING GRID FOR LABORATORY B2109

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO





PARAGON ANALYTICS

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

March 17, 2004

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

Re: Paragon Workorder: 04-03-011
Client Project Name: Denver NEIC
Client Project Number: 101115

Dear Mr. Weaver:

Forty-three wipe samples were received from Shaw E & I on March 1, 2004. The samples were scheduled for Gross Alpha/Beta (pages 1-219) 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,

Paragon Analytics
Debbie Fazio
Project Manager

DJF/ja

Enclosure: Report

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: B216 022704-24

PAGE 1 of 3

Bill to: _____

Project No. <u>101115</u>	Sample Shipment Date <u>3-01-04</u>
Project name <u>EPA NEIC EDDP</u>	Lab Destination <u>Paragon Analytics, Inc.</u>
Sample Coordinator <u>James Nelson / 303-233-1279</u>	Lab Contact <u>Debbie FAZIO</u>
Project Manager <u>Randy Rodgers / 865-694-7457</u>	Project Contact/phone <u>Ben Dettorre / 865-670-2669</u>
Sample Team Members <u>K WISE</u>	Carrier Waybill No. <u>NA</u>
<u>T TRENT</u>	

Report to: Ben Dettorre
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 <u>022704-24-1</u>	<u>Rm B2109 FSS Location E B-01</u>	<u>2/27/04 1500</u>	<u>Smear</u>		
2 <u>2</u>	<u>E B-02</u>				
3 <u>3</u>	<u>E B-03</u>				
4 <u>4</u>	<u>E B-04</u>				
5 <u>5</u>	<u>E B-05</u>				
6 <u>6</u>	<u>E B-06</u>				
7 <u>7</u>	<u>E B-07</u>				
8 <u>8</u>	<u>E B-08</u>				

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 OAPP

1. Relinquished by <u>[Signature]</u> Date: <u>3-1-04</u> Time: <u>1042</u>	1. Received by <u>[Signature]</u> Date: <u>3-1-04</u> Time: <u>1042</u>
2. Relinquished by <u>[Signature]</u> Date: <u>3-1-04</u> Time: <u>1400 1421</u>	2. Received by <u>[Signature]</u> Date: <u>3-1-04</u> Time: <u>1420</u>
3. Relinquished by _____ Date: _____ Time: _____	3. Received by <u>[Signature]</u> Date: <u>3-2-04</u> Time: <u>1300</u> <small>Ⓢ Samples received 3/1/04. Processed on 3/2/04.</small>

Comments: ANALYSIS: Gross Alpha/Beta - MDC (reporting limits) of < 1.1 dpm/smear for alpha < 100 dpm/smear for beta



040301

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: B2109-022704-24

Page 2 of 3

Project Name/Project No. EPA NEIC EDDP / 101115

Lab Destination Paragon Analytics, Inc.

Sample Shipment Date

3-01-04

ONE SAMPLE PER LINE

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
9	Rm B2109 FSS Location E B-09	2/27/04 1500	Smear		
10	E B-10				
11	E B-11				
12	E B-12				
13	E B-13				
14	E B-14				
15	E B-15				
16	E B-16				
17	E B-17				
18	E B-18				
19	E B-19				
20	E B-20				
21	E B-21				
22	E B-22				
23	E B-23				
24	E B-24				
25	E B-25	1502			
26	E B-26				
27	E B-27				
28	E B-28				
29	E B-29				
30	E B-30				

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403011

PROJECT MANAGER: Deb Fabrizio INITIALS: DF DATE: 3/2/04

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

Cooler #'s 1
 Temperature Ambient (Red Only) °C
 Project Manager Signature / Date: Deb Fabrizio 3/4/04

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

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

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403011

PROJECT MANAGER: Deb Fazio INITIALS: DW DATE: 3/2/04

- Custody seals broken (on outside of shipping container or on sample containers).
- No Chain-of-Custody (COC) present.
- Number of samples on the COC do not match the number of samples received.
- Aqueous samples not preserved correctly (see pH discussion below).
- SVOC samples contained residual chlorine (list sample IDs and affected containers below).
- Samples received at inappropriate temperature.
- Insufficient sample to perform requested analyses.
- Extraction or analytical holding times expired in transit.
- Broken/leaking bottles and intact bottles received in same cooler (list affected sample IDs below).
- No analyses requested.
- Incorrect sample type received.
- VOAs, reactive CN/S, radon not headspace free (list sample IDs and affected vials below).
- Airbills not present and/or removable (record applicable shipper's tracking number below).
- Other (describe below).

Describe discrepancy:

COC are not properly relinquished by client.

Was the client contacted? No; Yes: Name _____ Date/Time _____

Was the pH of any sample adjusted by the laboratory? No; Yes (see Table below):

NOTE: No pH adjustments shall be made without prior consent of Project Manager. After pH adjustment, hold metals and radchem samples ≥ 16 hr before analysis.

Sample ID	Initial pH	Final pH (wait 30 min)	Type of Reagent Used	Lot No. of Reagent Used	Initials / Date / Time

Was the laboratory directed to proceed with the analysis of any samples yielding the presence of residual chlorine? No; Yes (see notes above).

Project Manager Signature / Date: Deb Fazio 3/4/04



Paragon Analytics

Radiochemistry Case Narrative

Gross Alpha/Beta

Shaw E & I Inc.
Denver NEIC / 101115
Paragon WO 0403011

1. This report consists of the analytical results and supporting documentation for 43 filter samples received by Paragon on 03/01/04.
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 procedure SOP724R8. The analyses were completed on 03/11/04. Calibrations and calculations are defined in Paragon Analytics procedure 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. Sample volumes were insufficient to allow preparation of duplicates. Duplicate analyses of samples 022704-20-01, 022704-20-11, 022704-20-21, and 022704-20-31 (Paragon ID 0403011-1, -11, -21, and -31) were performed in lieu of prepared duplicates.
6. 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.

Leah Balko
Leah Balko
Radiochemistry Instrument Technician

3/16/04
Date

Kim Fick
Radiochemistry Final Data Review

3-16-04
Date

000001

PARAGON ANALYTICS
Radiochemistry Data Package

Section 1

**SAMPLE RESULTS
SUMMARY**

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403011

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022704-24-01	0403011-1		WIPE	27-Feb-04	15:00
022704-24-02	0403011-2		WIPE	27-Feb-04	15:00
022704-24-03	0403011-3		WIPE	27-Feb-04	15:00
022704-24-04	0403011-4		WIPE	27-Feb-04	15:00
022704-24-05	0403011-5		WIPE	27-Feb-04	15:00
022704-24-06	0403011-6		WIPE	27-Feb-04	15:00
022704-24-07	0403011-7		WIPE	27-Feb-04	15:00
022704-24-08	0403011-8		WIPE	27-Feb-04	15:00
022704-24-09	0403011-9		WIPE	27-Feb-04	15:00
022704-24-10	0403011-10		WIPE	27-Feb-04	15:00
022704-24-11	0403011-11		WIPE	27-Feb-04	15:00
022704-24-12	0403011-12		WIPE	27-Feb-04	15:00
022704-24-13	0403011-13		WIPE	27-Feb-04	15:00
022704-24-14	0403011-14		WIPE	27-Feb-04	15:00
022704-24-15	0403011-15		WIPE	27-Feb-04	15:00
022704-24-16	0403011-16		WIPE	27-Feb-04	15:00
022704-24-17	0403011-17		WIPE	27-Feb-04	15:00
022704-24-18	0403011-18		WIPE	27-Feb-04	15:00
022704-24-19	0403011-19		WIPE	27-Feb-04	15:00
022704-24-20	0403011-20		WIPE	27-Feb-04	15:00
022704-24-21	0403011-21		WIPE	27-Feb-04	15:00
022704-24-22	0403011-22		WIPE	27-Feb-04	15:00
022704-24-23	0403011-23		WIPE	27-Feb-04	15:00
022704-24-24	0403011-24		WIPE	27-Feb-04	15:00
022704-24-25	0403011-25		WIPE	27-Feb-04	15:02
022704-24-26	0403011-26		WIPE	27-Feb-04	15:02
022704-24-27	0403011-27		WIPE	27-Feb-04	15:02
022704-24-28	0403011-28		WIPE	27-Feb-04	15:02
022704-24-29	0403011-29		WIPE	27-Feb-04	15:02
022704-24-30	0403011-30		WIPE	27-Feb-04	15:02
022704-24-31	0403011-31		WIPE	27-Feb-04	15:02
022704-24-32	0403011-32		WIPE	27-Feb-04	15:02

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403011

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022704-24-33	0403011-33		WIPE	27-Feb-04	15:02
022704-24-34	0403011-34		WIPE	27-Feb-04	15:02
022704-24-35	0403011-35		WIPE	27-Feb-04	15:02
022704-24-36	0403011-36		WIPE	27-Feb-04	15:02
022704-24-37	0403011-37		WIPE	27-Feb-04	15:02
022704-24-38	0403011-38		WIPE	27-Feb-04	15:02
022704-24-39	0403011-39		WIPE	27-Feb-04	15:02
022704-24-40	0403011-40		WIPE	27-Feb-04	15:02
022704-24-8FD	0403011-41		WIPE	27-Feb-04	15:02
022704-24-11FD	0403011-42		WIPE	27-Feb-04	15:02
022704-24-FB	0403011-43		WIPE	27-Feb-04	15:02

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

Page: 1 of 10
 Reported on: Tuesday, March 16, 2004
 11:42:00 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-1	022704-24-01	Sample	GROSS ALPHA	-0.01 +/- 0.51	0.96	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-1	022704-24-01	Sample	GROSS BETA	0.1 +/- 1.1	1.8	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-2	022704-24-02	Sample	GROSS ALPHA	0.06 +/- 0.34	0.64	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-2	022704-24-02	Sample	GROSS BETA	0.60 +/- 0.99	1.64	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-3	022704-24-03	Sample	GROSS ALPHA	0.01 +/- 0.41	0.79	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-3	022704-24-03	Sample	GROSS BETA	-0.1 +/- 1.0	1.7	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-4	022704-24-04	Sample	GROSS ALPHA	-0.22 +/- 0.30	0.69	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-4	022704-24-04	Sample	GROSS BETA	0.5 +/- 1.0	1.7	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-5	022704-24-05	Sample	GROSS ALPHA	0.12 +/- 0.33	0.60	DPM/sample	WIPE	AB040305-5	3/10/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

5000

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

Page: 2 of 10
 Reported on: Tuesday, March 16, 2004
 11:42:00 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-5	022704-24-05	Sample	GROSS BETA	-0.12 +/- 0.88	1.52	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-8	022704-24-08	Sample	GROSS ALPHA	-0.18 +/- 0.25	0.60	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-8	022704-24-08	Sample	GROSS BETA	0.66 +/- 0.88	1.43	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-7	022704-24-07	Sample	GROSS ALPHA	0.19 +/- 0.38	0.66	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-7	022704-24-07	Sample	GROSS BETA	-0.24 +/- 0.93	1.61	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-8	022704-24-08	Sample	GROSS ALPHA	0.34 +/- 0.41	0.65	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-8	022704-24-08	Sample	GROSS BETA	-0.09 +/- 0.89	1.53	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-9	022704-24-09	Sample	GROSS ALPHA	-0.05 +/- 0.33	0.66	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-9	022704-24-09	Sample	GROSS BETA	0.28 +/- 0.92	1.58	DPM/sample	WIPE	AB040305-5	3/10/04	U

Comments:

Data Package ID: *abf0403011-1*

- | | |
|--|--|
| <p>Qualifiers/Flags:</p> <ul style="list-style-type: none"> U - Result is less than the sample specific MDC. LT - Result is less than Requested MDC, greater than sample specific MDC. Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed. Y2 - Chemical Yield outside default limits. M - The requested MDC was not met. M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC. | <p>Abbreviations:</p> <ul style="list-style-type: none"> 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.

Laboratory Name: Paragon Analytics

Page: 3 of 10

Client Project Name: Denver NEIC

PAI Work Order: 0403011

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:42:00 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-10	022704-24-10	Sample	GROSS ALPHA	0.01 +/- 0.36	0.69	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-10	022704-24-10	Sample	GROSS BETA	0.46 +/- 0.94	1.57	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-11	022704-24-11	Sample	GROSS ALPHA	-0.21 +/- 0.31	0.70	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-11	022704-24-11	Sample	GROSS BETA	-0.47 +/- 0.85	1.50	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-12	022704-24-12	Sample	GROSS ALPHA	0.05 +/- 0.38	0.72	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-12	022704-24-12	Sample	GROSS BETA	-0.63 +/- 0.91	1.60	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-13	022704-24-13	Sample	GROSS ALPHA	-0.29 +/- 0.35	0.79	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-13	022704-24-13	Sample	GROSS BETA	-0.14 +/- 0.99	1.71	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-14	022704-24-14	Sample	GROSS ALPHA	0.27 +/- 0.41	0.69	DPM/sample	WIPE	AB040305-5	3/10/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

0005

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

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 Reported on: Tuesday, March 16, 2004
 11:42:01 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-14	022704-24-14	Sample	GROSS BETA	0.30 +/- 0.99	1.66	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-15	022704-24-15	Sample	GROSS ALPHA	0 +/- 0.30	0.60	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-15	022704-24-15	Sample	GROSS BETA	0.07 +/- 0.89	1.51	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-16	022704-24-16	Sample	GROSS ALPHA	-0.02 +/- 0.30	0.60	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-16	022704-24-16	Sample	GROSS BETA	0.50 +/- 0.87	1.44	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-17	022704-24-17	Sample	GROSS ALPHA	0.03 +/- 0.34	0.66	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-17	022704-24-17	Sample	GROSS BETA	0.62 +/- 0.97	1.60	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-18	022704-24-18	Sample	GROSS ALPHA	0.01 +/- 0.33	0.65	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-18	022704-24-18	Sample	GROSS BETA	0.67 +/- 0.93	1.53	DPM/sample	WIPE	AB040305-5	3/10/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

Date Printed: Tuesday, March 16, 2004

Paragon Analytics
 LIMS Version: 4.343C

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90000

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

Page: 5 of 10
 Reported on: Tuesday, March 16, 2004
 11:42:01 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-19	022704-24-19	Sample	GROSS ALPHA	0.26 +/- 0.40	0.66	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-19	022704-24-19	Sample	GROSS BETA	0.08 +/- 0.91	1.56	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-20	022704-24-20	Sample	GROSS ALPHA	0.09 +/- 0.38	0.69	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-20	022704-24-20	Sample	GROSS BETA	-0.18 +/- 0.91	1.57	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-21	022704-24-21	Sample	GROSS ALPHA	0.14 +/- 0.35	0.63	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-21	022704-24-21	Sample	GROSS BETA	0.43 +/- 0.83	1.39	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-22	022704-24-22	Sample	GROSS ALPHA	0.26 +/- 0.43	0.73	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-22	022704-24-22	Sample	GROSS BETA	0.72 +/- 0.87	1.42	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-23	022704-24-23	Sample	GROSS ALPHA	0.46 +/- 0.45	0.67	DPM/sample	WIPE	AB040305-6	3/11/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

00007

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

Page: 6 of 10
 Reported on: Tuesday, March 16, 2004
 11:42:01 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-23	022704-24-23	Sample	GROSS BETA	0.45 +/- 0.84	1.41	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-24	022704-24-24	Sample	GROSS ALPHA	0.30 +/- 0.43	0.72	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-24	022704-24-24	Sample	GROSS BETA	0.25 +/- 0.83	1.40	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-25	022704-24-25	Sample	GROSS ALPHA	-0.10 +/- 0.42	0.84	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-25	022704-24-25	Sample	GROSS BETA	80 +/- 13	1	DPM/sample	WIPE	AB040305-6	3/11/04	LT
0403011-26	022704-24-26	Sample	GROSS ALPHA	-0.15 +/- 0.36	0.76	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-26	022704-24-26	Sample	GROSS BETA	1.44 +/- 0.96	1.47	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-27	022704-24-27	Sample	GROSS ALPHA	-0.10 +/- 0.39	0.77	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-27	022704-24-27	Sample	GROSS BETA	0.39 +/- 0.86	1.44	DPM/sample	WIPE	AB040305-6	3/11/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

80000000

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

Page: 7 of 10
 Reported on: Tuesday, March 16, 2004
 11:42:01 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-28	022704-24-28	Sample	GROSS ALPHA	0.18 +/- 0.40	0.69	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-28	022704-24-28	Sample	GROSS BETA	0.67 +/- 0.91	1.48	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-29	022704-24-29	Sample	GROSS ALPHA	0.20 +/- 0.51	0.89	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-29	022704-24-29	Sample	GROSS BETA	0.35 +/- 0.89	1.49	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-30	022704-24-30	Sample	GROSS ALPHA	0.33 +/- 0.44	0.73	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-30	022704-24-30	Sample	GROSS BETA	0.15 +/- 0.84	1.43	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-31	022704-24-31	Sample	GROSS ALPHA	0.28 +/- 0.45	0.76	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-31	022704-24-31	Sample	GROSS BETA	0.41 +/- 0.87	1.45	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-32	022704-24-32	Sample	GROSS ALPHA	-0.24 +/- 0.33	0.74	DPM/sample	WIPE	AB040305-6	3/11/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

600

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

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 Reported on: Tuesday, March 16, 2004
 11:42:01 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-32	022704-24-32	Sample	GROSS BETA	0.43 +/- 0.93	1.56	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-33	022704-24-33	Sample	GROSS ALPHA	0.12 +/- 0.42	0.76	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-33	022704-24-33	Sample	GROSS BETA	0.87 +/- 0.93	1.51	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-34	022704-24-34	Sample	GROSS ALPHA	-0.07 +/- 0.35	0.71	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-34	022704-24-34	Sample	GROSS BETA	-0.08 +/- 0.96	1.65	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-35	022704-24-35	Sample	GROSS ALPHA	-0.25 +/- 0.34	0.76	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-35	022704-24-35	Sample	GROSS BETA	0.75 +/- 0.89	1.44	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-36	022704-24-36	Sample	GROSS ALPHA	-0.15 +/- 0.34	0.73	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-36	022704-24-36	Sample	GROSS BETA	0.04 +/- 0.83	1.42	DPM/sample	WIPE	AB040305-6	3/11/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

00010

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

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Client Project Name: Denver NEIC

PAI Work Order: 0403011

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:42:02 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-37	022704-24-37	Sample	GROSS ALPHA	-0.03 +/- 0.47	0.89	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-37	022704-24-37	Sample	GROSS BETA	0.35 +/- 0.89	1.49	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-38	022704-24-38	Sample	GROSS ALPHA	-0.02 +/- 0.35	0.69	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-38	022704-24-38	Sample	GROSS BETA	0.60 +/- 0.90	1.48	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-39	022704-24-39	Sample	GROSS ALPHA	-0.22 +/- 0.36	0.77	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-39	022704-24-39	Sample	GROSS BETA	0.80 +/- 0.89	1.44	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-40	022704-24-40	Sample	GROSS ALPHA	-0.26 +/- 0.34	0.75	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-40	022704-24-40	Sample	GROSS BETA	0.13 +/- 0.86	1.47	DPM/sample	WIPE	AB040305-6	3/11/04	U
0403011-41	022704-24-8FD	Sample	GROSS ALPHA	0.08 +/- 0.41	0.76	DPM/sample	WIPE	AB040305-7	3/11/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

LIMS Version: 4.343C

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0011

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403011

Page: 10 of 10
 Reported on: Tuesday, March 16, 2004
 11:42:02 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403011-41	022704-24-8FD	Sample	GROSS BETA	0.16 +/- 0.85	1.45	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403011-42	022704-24-11FD	Sample	GROSS ALPHA	-0.11 +/- 0.34	0.71	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403011-42	022704-24-11FD	Sample	GROSS BETA	-0.29 +/- 0.95	1.65	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403011-43	022704-24-FB	Sample	GROSS ALPHA	0.03 +/- 0.39	0.74	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403011-43	022704-24-FB	Sample	GROSS BETA	0.93 +/- 0.97	1.56	DPM/sample	WIPE	AB040305-7	3/11/04	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

Abbreviations:

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

00012

2

PARAGON ANALYTICS
Radiochemistry Data Package

Section 2

**QC RESULTS
SUMMARY**

000013

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

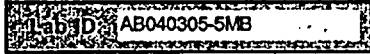
PAI 724 Rev 8
Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.07 +/- 0.38	0.71	U
12587-47-2	GROSS BETA	0.83 +/- 0.93	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.

Abbreviations:

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

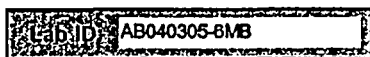
- M - Requested MDC not met.
- B - Analyte concentration greater than MDC.
- B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.35	0.68	U
12587-47-2	GROSS BETA	-0.40 +/- 0.80	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.

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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Lab ID: AB040305-7MB

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.03 +/- 0.39	0.76	U
12587-47-2	GROSS BETA	0.68 +/- 0.92	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.

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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

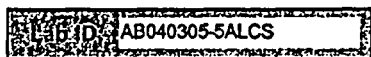
Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



AB040305-5ALCS

Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 05-Mar-04

Date Prepared: 05-Mar-04

Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5

QC Batch ID: AB040305-5-1

Run ID: ab040305-3a

Count Time: 10 minutes

Final Aliquot: 1.00 sample

Result Units: DPM/sample

File Name: aba0310c

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-48-1	GROSS ALPHA	11300 +/- 1800	0	9950	113	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 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)

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

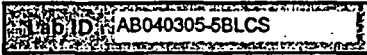
Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: aba0310e

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	41200 +/- 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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

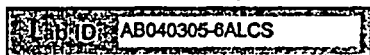
Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311b

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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

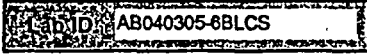
Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311b

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	41600 +/- 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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

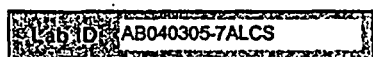
Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311e

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-48-1	GROSS ALPHA	11000 +/- 1800	0	9950	110	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

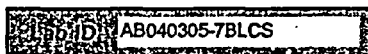
Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311e

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	41200 +/- 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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

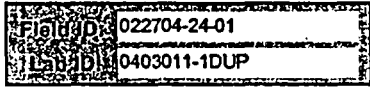
Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	-0.01 +/- 0.51	0.02 +/- 0.33	0.05	2.13	U
12587-47-2	GROSS BETA	0.1 +/- 1.1	0.33 +/- 0.98	0.13	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Flag ID	022704-24-11
Lab ID	0403011-11DUP

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	-0.21 +/- 0.31	-0.06 +/- 0.50	0.26	2.13	U
12587-47-2	GROSS BETA	-0.47 +/- 0.85	0.6 +/- 1.1	0.80	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: ABF0403011-1

Date Printed: Tuesday, March 16, 2004

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Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

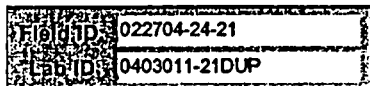
Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311a

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-48-1	GROSS ALPHA	0.14 +/- 0.35	-0.19 +/- 0.36	0.68	2.13	U
12587-47-2	GROSS BETA	0.43 +/- 0.83	0.30 +/- 0.89	0.10	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: ABF0403011-1

Date Printed: Tuesday, March 16, 2004

Paragon Analytics
LIMS Version: 4.343C

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Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID:	022704-24-31
Lab ID:	0403011-31DUP

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0311a

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.28 +/- 0.45	0.18 +/- 0.42	0.15	2.13	U
12587-47-2	GROSS BETA	0.41 +/- 0.87	0.22 +/- 0.92	0.15	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: ABF0403011-1

Date Printed: Tuesday, March 16, 2004

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LIMS Version: 4.343C

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PARAGON ANALYTICS
Radiochemistry Data Package

3

Section 3

**INDIVIDUAL
SAMPLE RESULTS**

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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: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Field ID:	022704-24-01
Lab ID:	0403011-1

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.01 +/- 0.51	0.96	U
12587-47-2	GROSS BETA	0.1 +/- 1.1	1.8	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

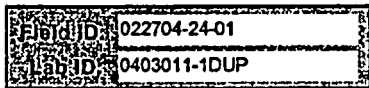
Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.02 +/- 0.33	0.64	U
12587-47-2	GROSS BETA	0.33 +/- 0.98	1.64	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client/Project ID: Denver NEIC 101115

Field ID	022704-24-02
Lab ID	0403011-2

Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 27-Feb-04

Date Prepared: 05-Mar-04

Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5

QCBatchID: AB040305-5-1

Run ID: ab040305-3a

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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.06 +/- 0.34	0.64	U
12587-47-2	GROSS BETA	0.60 +/- 0.99	1.64	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)

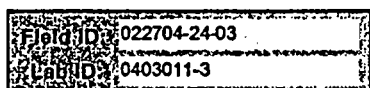
BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.41	0.79	U
12587-47-2	GROSS BETA	-0.1 +/- 1.0	1.7	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

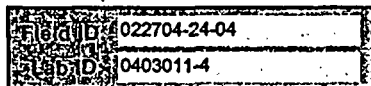
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.22 +/- 0.30	0.69	U
12587-47-2	GROSS BETA	0.5 +/- 1.0	1.7	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

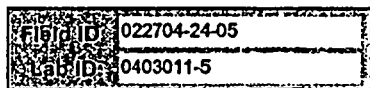
PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.12 +/- 0.33	0.60	U
12587-47-2	GROSS BETA	-0.12 +/- 0.88	1.52	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Field ID	022704-24-06
Lab ID	0403011-6

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.18 +/- 0.25	0.60	U
12587-47-2	GROSS BETA	0.66 +/- 0.88	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Field ID:	022704-24-07
Lab ID:	0403011-7

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.19 +/- 0.38	0.66	U
12587-47-2	GROSS BETA	-0.24 +/- 0.93	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:

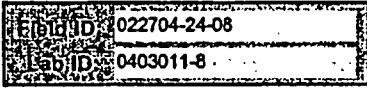
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.34 +/- 0.41	0.65	U
12587-47-2	GROSS BETA	-0.09 +/- 0.89	1.53	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:

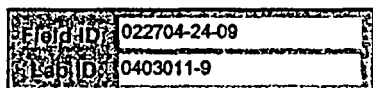
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.05 +/- 0.33	0.66	U
12587-47-2	GROSS BETA	0.28 +/- 0.92	1.56	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Field ID	022704-24-10
Lab ID	0403011-10

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.36	0.69	U
12587-47-2	GROSS BETA	0.46 +/- 0.94	1.57	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

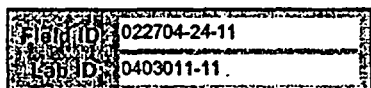
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.21 +/- 0.31	0.70	U
12587-47-2	GROSS BETA	-0.47 +/- 0.85	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID	022704-24-11
Lab ID	0403011-11DUP

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.50	0.96	U
12587-47-2	GROSS BETA	0.6 +/- 1.1	1.8	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 the reported 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: ABF0403011-1

Date Printed: Tuesday, March 16, 2004

Paragon Analytics
LIMS Version: 4.343C

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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: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID:	022704-24-12
Lab ID:	0403011-12

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0301b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.05 +/- 0.38	0.72	U
12587-47-2	GROSS BETA	-0.63 +/- 0.91	1.60	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client/Project ID: Denver NEIC 101115

Field ID:	022704-24-13
Lab ID:	0403011-13

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.29 +/- 0.35	0.79	U
12587-47-2	GROSS BETA	-0.14 +/- 0.99	1.71	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Field ID:	022704-24-14
Lab ID:	0403011-14

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.27 +/- 0.41	0.69	U
12587-47-2	GROSS BETA	0.30 +/- 0.99	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115

Field ID	022704-24-15
Lab ID	0403011-15

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0 +/- 0.30	0.60	U
12587-47-2	GROSS BETA	0.07 +/- 0.89	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

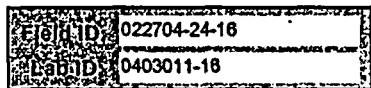
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.02 +/- 0.30	0.60	U
12587-47-2	GROSS BETA	0.50 +/- 0.87	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)

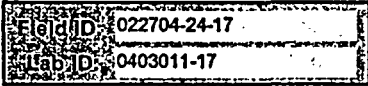
BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.03 +/- 0.34	0.66	U
12587-47-2	GROSS BETA	0.62 +/- 0.97	1.60	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

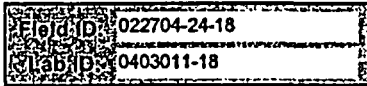
PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.33	0.65	U
12587-47-2	GROSS BETA	0.67 +/- 0.93	1.53	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)

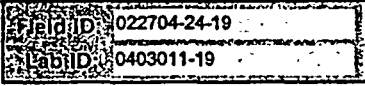
BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QCBatchID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.26 +/- 0.40	0.66	U
12587-47-2	GROSS BETA	0.08 +/- 0.91	1.56	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:

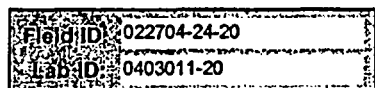
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-5
QC Batch ID: AB040305-5-1
Run ID: ab040305-3a
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: aba0310d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.09 +/- 0.38	0.69	U
12587-47-2	GROSS BETA	-0.18 +/- 0.91	1.57	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

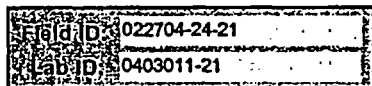
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.14 +/- 0.35	0.63	U
12587-47-2	GROSS BETA	0.43 +/- 0.83	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

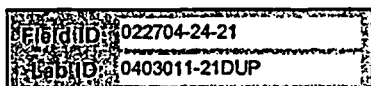
Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 27-Feb-04

Date Prepared: 05-Mar-04

Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6

QC Batch ID: AB040305-6-1

Run ID: ab040305-3a

Count Time: 100 minutes

Report Basis: As Received

Final Aliquot: 1.00 sample

Prep Basis: As Received

Molsture(%): NA

Result Units: DPM/sample

File Name: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.19 +/- 0.36	0.76	U
12587-47-2	GROSS BETA	0.30 +/- 0.89	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.

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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Field ID:	022704-24-22
Lab ID:	0403011-22

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.26 +/- 0.43	0.73	U
12587-47-2	GROSS BETA	0.72 +/- 0.87	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

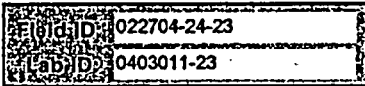
PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.46 +/- 0.45	0.67	U
12587-47-2	GROSS BETA	0.45 +/- 0.84	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client/Project ID: Denver NEIC 101115

Field ID:	022704-24-24
Lab ID:	0403011-24

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QC Batch ID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.30 +/- 0.43	0.72	U
12587-47-2	GROSS BETA	0.25 +/- 0.83	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID:	022704-24-25
Lab ID:	0403011-25

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
-				
12587-46-1	GROSS ALPHA	-0.10 +/- 0.42	0.84	U
12587-47-2	GROSS BETA	• 80 +/- 13	1	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Field ID	022704-24-28
Lab ID	0403011-28

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.15 +/- 0.36	0.76	U
12587-47-2	GROSS BETA	1.44 +/- 0.96	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:

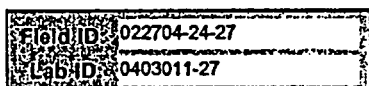
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.10 +/- 0.39	0.77	U
12587-47-2	GROSS BETA	0.39 +/- 0.86	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:

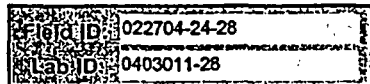
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.18 +/- 0.40	0.69	U
12587-47-2	GROSS BETA	0.67 +/- 0.91	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)

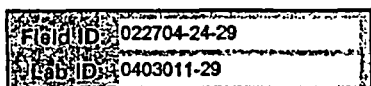
BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.20 +/- 0.51	0.89	U
12587-47-2	GROSS BETA	0.35 +/- 0.89	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID	022704-24-30
Lab ID	0403011-30

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.33 +/- 0.44	0.73	U
12587-47-2	GROSS BETA	0.15 +/- 0.84	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)

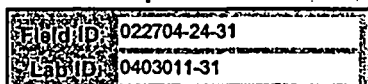
BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.28 +/- 0.45	0.76	U
12587-47-2	GROSS BETA	0.41 +/- 0.87	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

File ID	022704-24-31
Lab ID	0403011-31DUP

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.18 +/- 0.42	0.74	U
12587-47-2	GROSS BETA	0.22 +/- 0.92	1.57	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

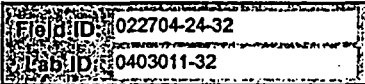
PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.24 +/- 0.33	0.74	U
12587-47-2	GROSS BETA	0.43 +/- 0.93	1.56	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Field ID:	022704-24-33
Lab ID:	0403011-33

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.12 +/- 0.42	0.76	U
12587-47-2	GROSS BETA	0.87 +/- 0.93	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:

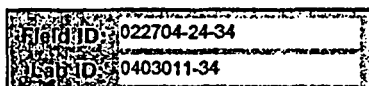
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QC Batch ID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.07 +/- 0.35	0.71	U
12587-47-2	GROSS BETA	-0.08 +/- 0.96	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:

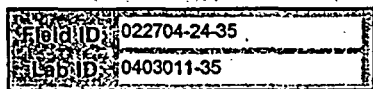
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.25 +/- 0.34	0.76	U
12587-47-2	GROSS BETA	0.75 +/- 0.89	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:

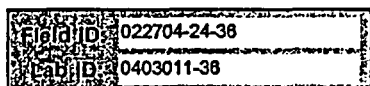
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I, Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.15 +/- 0.34	0.73	U
12587-47-2	GROSS BETA	0.04 +/- 0.83	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

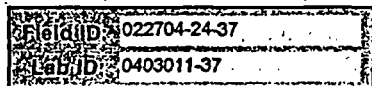
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403011

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-6
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.03 +/- 0.47	0.89	U
12587-47-2	GROSS BETA	0.35 +/- 0.89	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)

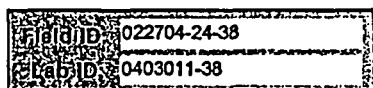
BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-6 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QC Batch ID: AB040305-6-1 Prep Basis: As Received
Date Collected: 27-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 11-Mar-04 Report Basis: As Received File Name: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.02 +/- 0.35	0.69	U
12587-47-2	GROSS BETA	0.60 +/- 0.90	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:

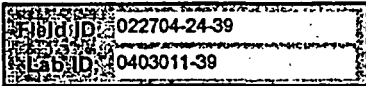
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-6 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QC Batch ID: AB040305-6-1 Prep Basis: As Received
Date Collected: 27-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 11-Mar-04 Report Basis: As Received File Name: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.22 +/- 0.36	0.77	U
12587-47-2	GROSS BETA	0.80 +/- 0.89	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:

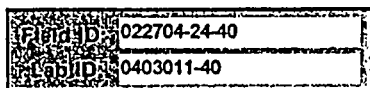
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04
Prep Batch: AB040305-8
QCBatchID: AB040305-6-1
Run ID: ab040305-3a
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: abb0311a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.26 +/- 0.34	0.75	U
12587-47-2	GROSS BETA	0.13 +/- 0.86	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: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Field ID	022704-24-8FD
Lab ID	0403011-41

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
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: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.08 +/- 0.41	0.76	U
12587-47-2	GROSS BETA	0.16 +/- 0.85	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)

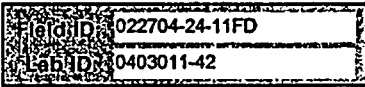
BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04
Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
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: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.11 +/- 0.34	0.71	U
12587-47-2	GROSS BETA	-0.29 +/- 0.95	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:

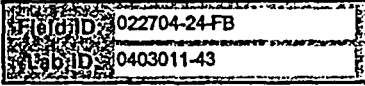
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403011-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403011
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 27-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.03 +/- 0.39	0.74	U
12587-47-2	GROSS BETA	0.93 +/- 0.97	1.56	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: ABF0403011-1

PARAGON ANALYTICS
Radiochemistry Data Package

Section 4

4

RAW DATA

000075

Gross Alpha/Beta Analysis by GFC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrx %Moist	Samp Aliq Analy Aliq	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
SMP	GROSS ALPHA Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A1	aba0301b	3:06 PM	0.171	NA	100	-0.01	0.68	DPM/sample As Received	NA	U
SMP	GROSS BETA Trg. Analyte	3:00:00 PM	AB040305-5	NA		NA	1 #	*A1	aba0301b	3:06 PM	2.370	40.74%	100	0.1	1.8	DPM/sample As Received	NA	U
0403011-1 DUP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a A2	ab040305-3a aba0310d	3/10/04 5:16 PM	0.080 0.075	24.15% NA	100 NA	0.02 0.33	0.64 NA	DPM/sample As Received	0.05 NA	U
0403011-1 DUP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a A2	ab040305-3a aba0310d	3/10/04 5:16 PM	1.990 1.842	40.26% NA	100 NA	0.33 0.98	1.64 NA	DPM/sample As Received	0.13 NA	U
0403011-2 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a *A2	ab040305-3a aba0301b	3/10/04 3:06 PM	0.090 0.075	24.15% NA	100 NA	0.06 0.34	0.64 NA	DPM/sample As Received	NA	U
0403011-2 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a *A2	ab040305-3a aba0301b	3/10/04 3:06 PM	2.100 1.842	40.26% NA	100 NA	0.60 0.99	1.64 NA	DPM/sample As Received	NA	U
0403011-3 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a *A3	ab040305-3a aba0301b	3/10/04 3:06 PM	0.120 0.117	23.75% NA	100 NA	0.01 0.41	0.79 NA	DPM/sample As Received	NA	U
0403011-3 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a *A3	ab040305-3a aba0301b	3/10/04 3:06 PM	2.010 2.037	40.43% NA	100 NA	-0.1 1.0	1.7 NA	DPM/sample As Received	NA	U
0403011-4 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a *A4	ab040305-3a aba0301b	3/10/04 3:06 PM	0.040 0.091	24.44% NA	100 NA	-0.22 0.30	0.69 NA	DPM/sample As Received	NA	U
0403011-4 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a *A4	ab040305-3a aba0301b	3/10/04 3:06 PM	2.190 1.972	41.13% NA	100 NA	0.5 1.0	1.7 NA	DPM/sample As Received	NA	U
0403011-5 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA		WIPE NA	1 # 1 #	LB4100-a *B1	ab040305-3a aba0301b	3/10/04 3:06 PM	0.100 0.068	25.10% NA	100 NA	0.12 0.33	0.60 NA	DPM/sample As Received	NA	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403011

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Monday, March 15, 2004
12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff PropEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLay	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403011-5 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "B1	ab040305-3a aba0301b	3/10/04 3:06 PM	1.750 1.786	43.00% NA	100 NA	-0.12 0.88	1.52 NA	DPM/sample As Received	NA NA	NA U
0403011-6 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "B2	ab040305-3a aba0301b	3/10/04 3:06 PM	0.030 0.073	25.86% NA	100 NA	-0.18 0.25	0.60 NA	DPM/sample As Received	NA NA	NA U
0403011-6 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "B2	ab040305-3a aba0301b	3/10/04 3:06 PM	1.870 1.581	42.80% NA	100 NA	0.66 0.88	1.43 NA	DPM/sample As Received	NA NA	NA U
0403011-7 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "B3	ab040305-3a aba0301b	3/10/04 3:06 PM	0.130 0.082	24.48% NA	100 NA	0.19 0.38	0.66 NA	DPM/sample As Received	NA NA	NA U
0403011-7 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "B3	ab040305-3a aba0301b	3/10/04 3:06 PM	1.810 1.883	41.70% NA	100 NA	-0.24 0.93	1.81 NA	DPM/sample As Received	NA NA	NA U
0403011-8 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "B4	ab040305-3a aba0301b	3/10/04 3:06 PM	0.160 0.076	24.23% NA	100 NA	0.34 0.41	0.65 NA	DPM/sample As Received	NA NA	NA U
0403011-8 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "B4	ab040305-3a aba0301b	3/10/04 3:06 PM	1.790 1.798	42.83% NA	100 NA	-0.09 0.89	1.53 NA	DPM/sample As Received	NA NA	NA U
0403011-9 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "C1	ab040305-3a aba0301b	3/10/04 3:06 PM	0.080 0.090	25.48% NA	100 NA	-0.05 0.33	0.66 NA	DPM/sample As Received	NA NA	NA U
0403011-9 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "C1	ab040305-3a aba0301b	3/10/04 3:06 PM	1.860 1.735	41.18% NA	100 NA	0.28 0.92	1.56 NA	DPM/sample As Received	NA NA	NA U
0403011-10 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "C2	ab040305-3a aba0301b	3/10/04 3:06 PM	0.100 0.094	24.82% NA	100 NA	0.01 0.36	0.69 NA	DPM/sample As Received	NA NA	NA U
0403011-10 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1# 1#	LB4100-a "C2	ab040305-3a aba0301b	3/10/04 3:06 PM	1.980 1.774	41.32% NA	100 NA	0.46 0.94	1.57 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: *abf0403011-1*

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 1.23
- + - Duplicate RPD not within limits.
- LT - Result is less than Request MDC, greater than sample specific MDC
- * - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

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

Notes:

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

Abbreviations:

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

Gross Alpha/Beta Analysis by GFC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403011-11 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C3	ab040305-3a aba0301b	3/10/04 3:06 PM	0.050 0.101	24.96% NA	100 NA	-0.21 0.31	0.70 NA	DPM/sample As Received	NA NA	U
0403011-11 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C3	ab040305-3a aba0301b	3/10/04 3:06 PM	1.560 1.751	43.00% NA	100 NA	-0.47 0.85	1.50 NA	DPM/sample As Received	NA NA	U
0403011-11 DUP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A1	ab040305-3a aba0310d	3/10/04 5:18 PM	0.160 0.171	23.03% NA	100 NA	-0.06 0.50	0.96 NA	DPM/sample As Received	0.28 NA	U
0403011-11 DUP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A1	ab040305-3a aba0310d	3/10/04 5:18 PM	2.570 2.280	40.74% NA	100 NA	0.6 1.1	1.8 NA	DPM/sample As Received	0.80 NA	U
0403011-12 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C4	ab040305-3a aba0301b	3/10/04 3:08 PM	0.110 0.098	23.99% NA	100 NA	0.05 0.38	0.72 NA	DPM/sample As Received	NA NA	U
0403011-12 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C4	ab040305-3a aba0301b	3/10/04 3:08 PM	1.670 1.914	42.01% NA	100 NA	-0.63 0.91	1.60 NA	DPM/sample As Received	NA NA	U
0403011-13 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A3	ab040305-3a aba0310d	3/10/04 5:16 PM	0.050 0.117	23.75% NA	100 NA	-0.29 0.35	0.79 NA	DPM/sample As Received	NA NA	U
0403011-13 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A3	ab040305-3a aba0310d	3/10/04 5:16 PM	1.990 2.037	40.43% NA	100 NA	-0.14 0.99	1.71 NA	DPM/sample As Received	NA NA	U
0403011-14 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A4	ab040305-3a aba0310d	3/10/04 5:18 PM	0.160 0.091	24.44% NA	100 NA	0.27 0.41	0.69 NA	DPM/sample As Received	NA NA	U
0403011-14 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A4	ab040305-3a aba0310d	3/10/04 5:18 PM	2.120 1.972	41.13% NA	100 NA	0.30 0.99	1.66 NA	DPM/sample As Received	NA NA	U
0403011-15 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B1	ab040305-3a aba0310d	3/10/04 5:05 PM	0.070 0.068	25.10% NA	100 NA	0 0.30	0.60 NA	DPM/sample As Received	NA NA	U

Comments:

Data Package ID: abf0403011-1

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

01078

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Aliq Analy Aliq	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
0403011-15 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B1	ab040305-3a aba0310d	3/10/04 5:05 PM	1.830 1.786	43.00% NA	100 NA	0.07 0.89	1.51 NA	DPM/sample As Received	NA NA	NA U
0403011-16 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B2	ab040305-3a aba0310d	3/10/04 5:05 PM	0.070 0.073	25.86% NA	100 NA	-0.02 0.30	0.60 NA	DPM/sample As Received	NA NA	NA U
0403011-16 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B2	ab040305-3a aba0310d	3/10/04 5:05 PM	1.810 1.581	42.80% NA	100 NA	0.50 0.87	1.44 NA	DPM/sample As Received	NA NA	NA U
0403011-17 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B3	ab040305-3a aba0310d	3/10/04 5:05 PM	0.090 0.082	24.48% NA	100 NA	0.03 0.34	0.66 NA	DPM/sample As Received	NA NA	NA U
0403011-17 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B3	ab040305-3a aba0310d	3/10/04 5:05 PM	2.160 1.883	41.70% NA	100 NA	0.62 0.97	1.60 NA	DPM/sample As Received	NA NA	NA U
0403011-18 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B4	ab040305-3a aba0310d	3/10/04 5:05 PM	0.080 0.076	24.23% NA	100 NA	0.01 0.33	0.65 NA	DPM/sample As Received	NA NA	NA U
0403011-18 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B4	ab040305-3a aba0310d	3/10/04 5:05 PM	2.100 1.798	42.83% NA	100 NA	0.67 0.93	1.53 NA	DPM/sample As Received	NA NA	NA U
0403011-19 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C1	ab040305-3a aba0310d	3/10/04 5:16 PM	0.160 0.090	25.48% NA	100 NA	0.26 0.40	0.68 NA	DPM/sample As Received	NA NA	NA U
0403011-19 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C1	ab040305-3a aba0310d	3/10/04 5:16 PM	1.790 1.735	41.18% NA	100 NA	0.08 0.91	1.56 NA	DPM/sample As Received	NA NA	NA U
0403011-20 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C2	ab040305-3a aba0310d	3/10/04 5:16 PM	0.120 0.094	24.82% NA	100 NA	0.09 0.38	0.69 NA	DPM/sample As Received	NA NA	NA U
0403011-20 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C2	ab040305-3a aba0310d	3/10/04 5:16 PM	1.720 1.774	41.32% NA	100 NA	-0.18 0.91	1.57 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Date Printed: Tuesday, March 16, 2004

Paragon Analytics
LIMS Version: 4.343C

Page 4 of 10

Gross Alpha/Beta Analysis by GFC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CritDur(min) Yield	Activity +/- 2 s TPU	MDC DeclEv	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403011-21 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0311	3/11/04 8:55 AM	0.110 0.071	24.75% NA	100 NA	0.14 0.35	0.63 NA	DPM/sample As Received	NA NA	U
0403011-21 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0311	3/11/04 8:55 AM	1.530 1.338	40.98% NA	100 NA	0.43 0.63	1.39 NA	DPM/sample As Received	NA NA	U
0403011-21 DUP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a ebb0311a	3/11/04 10:48 AM	0.080 0.122	25.54% NA	100 NA	-0.19 0.36	0.76 NA	DPM/sample As Received	0.66 NA	U
0403011-21 DUP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a abb0311a	3/11/04 10:48 AM	1.900 1.758	43.03% NA	100 NA	0.30 0.89	1.50 NA	DPM/sample As Received	0.10 NA	U
0403011-22 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A2	ab040305-3a abb0311	3/11/04 8:55 AM	0.170 0.101	24.60% NA	100 NA	0.28 0.43	0.73 NA	DPM/sample As Received	NA NA	U
0403011-22 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A2	ab040305-3a abb0311	3/11/04 8:55 AM	1.720 1.394	40.97% NA	100 NA	0.72 0.87	1.42 NA	DPM/sample As Received	NA NA	U
0403011-23 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A3	ab040305-3a abb0311	3/11/04 8:55 AM	0.210 0.088	25.08% NA	100 NA	0.46 0.45	0.67 NA	DPM/sample As Received	NA NA	U
0403011-23 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A3	ab040305-3a abb0311	3/11/04 8:55 AM	1.620 1.397	41.53% NA	100 NA	0.45 0.84	1.41 NA	DPM/sample As Received	NA NA	U
0403011-24 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A4	ab040305-3a abb0311	3/11/04 8:55 AM	0.180 0.101	24.77% NA	100 NA	0.30 0.43	0.72 NA	DPM/sample As Received	NA NA	U
0403011-24 SMP	GROSS BETA Trg. Analyte	2/27/04 3:00:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A4	ab040305-3a abb0311	3/11/04 8:55 AM	1.500 1.365	41.30% NA	100 NA	0.25 0.83	1.40 NA	DPM/sample As Received	NA NA	U
0403011-25 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B3	ab040305-3a abb0311	3/11/04 8:55 AM	0.130 0.094	25.25% NA	100 NA	-0.10 0.42	0.84 NA	DPM/sample As Received	NA NA	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403011

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Monday, March 15, 2004
12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC BatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s_TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403011-25 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B3	ab040305-3a abb0311	3/11/04 8:55 AM	35.180 1.470	42.08% NA	100 NA	80 13	1 NA	DPM/sample As Received	NA NA	NA LT
0403011-26 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0311	3/11/04 8:55 AM	0.090 0.125	25.71% NA	100 NA	-0.15 0.36	0.76 NA	DPM/sample As Received	NA NA	NA U
0403011-26 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0311	3/11/04 8:55 AM	2.190 1.572	41.60% NA	100 NA	1.44 0.96	1.47 NA	DPM/sample As Received	NA NA	NA U
0403011-27 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0311	3/11/04 8:55 AM	0.110 0.130	25.68% NA	100 NA	-0.10 0.39	0.77 NA	DPM/sample As Received	NA NA	NA U
0403011-27 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0311	3/11/04 8:55 AM	1.710 1.528	42.01% NA	100 NA	0.39 0.88	1.44 NA	DPM/sample As Received	NA NA	NA U
0403011-28 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0311	3/11/04 8:55 AM	0.150 0.099	25.53% NA	100 NA	0.18 0.40	0.69 NA	DPM/sample As Received	NA NA	NA U
0403011-28 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0311	3/11/04 8:55 AM	1.920 1.610	41.94% NA	100 NA	0.67 0.91	1.48 NA	DPM/sample As Received	NA NA	NA U
0403011-29 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0311	3/11/04 8:55 AM	0.230 0.172	25.24% NA	100 NA	0.20 0.51	0.89 NA	DPM/sample As Received	NA NA	NA U
0403011-29 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0311	3/11/04 8:55 AM	1.770 1.583	41.54% NA	100 NA	0.35 0.89	1.49 NA	DPM/sample As Received	NA NA	NA U
0403011-30 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0311	3/11/04 8:55 AM	0.190 0.106	24.72% NA	100 NA	0.33 0.44	0.73 NA	DPM/sample As Received	NA NA	NA U
0403011-30 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0311	3/11/04 8:55 AM	1.580 1.482	41.98% NA	100 NA	0.15 0.84	1.43 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: abf0403011-1

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

000081

Gross Alpha/Beta Analysis by GC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DeclEv	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403011-31 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0311	3/11/04 8:55 AM	0.190 0.115	24.89% NA	100 NA	0.28 0.45	0.76 NA	DPM/sample As Received	NA NA	NA U
0403011-31 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0311	3/11/04 8:55 AM	1.700 1.497	41.57% NA	100 NA	0.41 0.87	1.45 NA	DPM/sample As Received	NA NA	NA U
0403011-31 DUP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0311a	3/11/04 10:48 AM	0.170 0.118	25.82% NA	100 NA	0.18 0.42	0.74 NA	DPM/sample As Received	0.15 NA	NA U
0403011-31 DUP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0311a	3/11/04 10:48 AM	1.880 1.762	41.47% NA	100 NA	0.22 0.92	1.57 NA	DPM/sample As Received	0.15 NA	NA U
0403011-32 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0311	3/11/04 8:55 AM	0.060 0.118	25.82% NA	100 NA	-0.24 0.33	0.74 NA	DPM/sample As Received	NA NA	NA U
0403011-32 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0311	3/11/04 8:55 AM	1.950 1.762	41.47% NA	100 NA	0.43 0.93	1.56 NA	DPM/sample As Received	NA NA	NA U
0403011-33 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a abb0311	3/11/04 8:55 AM	0.160 0.122	25.54% NA	100 NA	0.12 0.42	0.76 NA	DPM/sample As Received	NA NA	NA U
0403011-33 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a abb0311	3/11/04 8:55 AM	2.160 1.758	43.03% NA	100 NA	0.87 0.93	1.51 NA	DPM/sample As Received	NA NA	NA U
0403011-34 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0311a	3/11/04 10:48 AM	0.090 0.102	25.16% NA	100 NA	-0.07 0.35	0.71 NA	DPM/sample As Received	NA NA	NA U
0403011-34 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0311a	3/11/04 10:48 AM	2.060 2.079	42.47% NA	100 NA	-0.08 0.96	1.65 NA	DPM/sample As Received	NA NA	NA U
0403011-35 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0311a	3/11/04 10:48 AM	0.060 0.115	24.89% NA	100 NA	-0.25 0.34	0.76 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: abf0403011-1

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

280082

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403011-35 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0311a	3/11/04 10:48 AM	1.820 1.497	41.57% NA	100 NA	0.75 0.89	1.44 NA	DPM/sample As Received	NA NA	NA U
0403011-36 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0311a	3/11/04 10:48 AM	0.070 0.106	24.72% NA	100 NA	-0.15 0.34	0.73 NA	DPM/sample As Received	NA NA	NA U
0403011-36 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0311a	3/11/04 10:48 AM	1.510 1.482	41.98% NA	100 NA	0.04 0.83	1.42 NA	DPM/sample As Received	NA NA	NA U
0403011-37 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0311a	3/11/04 10:48 AM	0.170 0.172	25.24% NA	100 NA	-0.03 0.47	0.89 NA	DPM/sample As Received	NA NA	NA U
0403011-37 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0311a	3/11/04 10:48 AM	1.760 1.583	41.54% NA	100 NA	0.35 0.89	1.49 NA	DPM/sample As Received	NA NA	NA U
0403011-38 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0311a	3/11/04 10:48 AM	0.100 0.099	25.53% NA	100 NA	-0.02 0.35	0.69 NA	DPM/sample As Received	NA NA	NA U
0403011-38 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0311a	3/11/04 10:48 AM	1.880 1.610	41.94% NA	100 NA	0.60 0.90	1.48 NA	DPM/sample As Received	NA NA	NA U
0403011-39 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0311a	3/11/04 10:48 AM	0.080 0.130	25.68% NA	100 NA	-0.22 0.36	0.77 NA	DPM/sample As Received	NA NA	NA U
0403011-39 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0311a	3/11/04 10:48 AM	1.880 1.528	42.01% NA	100 NA	0.80 0.89	1.44 NA	DPM/sample As Received	NA NA	NA U
0403011-40 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0311a	3/11/04 10:48 AM	0.060 0.125	25.71% NA	100 NA	-0.26 0.34	0.75 NA	DPM/sample As Received	NA NA	NA U
0403011-40 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-8 AB040305-8-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0311a	3/11/04 10:48 AM	1.640 1.572	41.60% NA	100 NA	0.13 0.86	1.47 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

Page 8 of 10

LIMS Version: 4.343C

0403011-35

Gross Alpha/Beta Analysis by GC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytcs

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date / Time	Quench Factor %Lum	Matrix %Moist	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403011-41 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1* 1*	LB4100-b D1	ab040305-3a abb0311d	3/11/04 12:57 PM	0.140 0.115	24.89% NA	100 NA	0.08 0.41	0.76 NA	DPM/sample As Received	NA NA	NA U
0403011-41 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1* 1*	LB4100-b D1	ab040305-3a abb0311d	3/11/04 12:57 PM	1,590 1,497	41.57% NA	100 NA	0.18 0.85	1.45 NA	DPM/sample As Received	NA NA	NA U
0403011-42 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1* 1*	LB4100-b D2	ab040305-3a abb0311d	3/11/04 12:57 PM	0.080 0.102	25.16% NA	100 NA	-0.11 0.34	0.71 NA	DPM/sample As Received	NA NA	NA U
0403011-42 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1* 1*	LB4100-b D2	ab040305-3a abb0311d	3/11/04 12:57 PM	1,970 2,079	42.47% NA	100 NA	-0.29 0.95	1.65 NA	DPM/sample As Received	NA NA	NA U
0403011-43 SMP	GROSS ALPHA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1* 1*	LB4100-b D3	ab040305-3a abb0311d	3/11/04 12:57 PM	0.130 0.118	25.82% NA	100 NA	0.03 0.39	0.74 NA	DPM/sample As Received	NA NA	NA U
0403011-43 SMP	GROSS BETA Trg. Analyte	2/27/04 3:02:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1* 1*	LB4100-b D3	ab040305-3a abb0311d	3/11/04 12:57 PM	2,170 1,762	41.47% NA	100 NA	0.93 0.97	1.56 NA	DPM/sample As Received	NA NA	NA U
AB040305-5A LCS	GROSS ALPHA Trg. Analyte	3/5/04 2:22:57 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1* 1*	LB4100-a C4	ab040305-3a aba0310c	3/10/04 5:05 PM	2704,200 0.098	23.99% NA	10 NA	11300 1800	0 NA	DPM/sample As Received	NA NA	113 P,M3
AB040305-5B LCS	GROSS BETA Trg. Analyte	3/5/04 2:22:57 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1* 1*	LB4100-a C4	ab040305-3a aba0310e	3/10/04 5:21 PM	17327,801 1,914	42.01% NA	10 NA	41200 6600	0 NA	DPM/sample As Received	NA NA	101 P
AB040305-5 MB	GROSS ALPHA Trg. Analyte	3/5/04 2:22:57 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1* 1*	LB4100-a C3	ab040305-3a aba0310d	3/10/04 5:18 PM	0.120 0.101	24.96% NA	100 NA	0.07 0.38	0.71 NA	DPM/sample As Received	NA NA	NA U
AB040305-5 MB	GROSS BETA Trg. Analyte	3/5/04 2:22:57 PM	AB040305-5 AB040305-5-1	NA NA		WIPE NA	1* 1*	LB4100-a C3	ab040305-3a aba0310d	3/10/04 5:18 PM	2,130 1,751	43.00% NA	100 NA	0.83 0.93	1.50 NA	DPM/sample As Received	NA NA	NA U
AB040305-6A LCS	GROSS ALPHA Trg. Analyte	3/5/04 2:28:05 PM	AB040305-6 AB040305-6-1	NA NA		WIPE NA	1* 1*	LB4100-b A1	ab040305-3a abb0311b	3/11/04 10:53 AM	2743,200 0.071	24.75% NA	10 NA	11100 1800	0 NA	DPM/sample As Received	NA NA	111 P,M3

Comments:

Data Package ID: abf0403011-1

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403011

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spic Recov Flags
AB040305-6B	GROSS BETA	3/5/04	AB040305-6	NA		WIPE	1*	LB4100-b	ab040305-3a	3/11/04	17046.301	40.97%	10	41600	0	DPM/sample	NA	101
LCS	Trg. Analyte	2:26:05 PM	AB040305-6-1	NA		NA	1*	A2	abb0311b	10:53 AM	1.394	NA	NA	6800	NA	As Received	NA	P
AB040305-6	GROSS ALPHA	3/5/04	AB040305-6	NA		WIPE	1*	LB4100-b	ab040305-3a	3/11/04	0.100	25.25%	100	0.01	0.68	DPM/sample	NA	
MB	Trg. Analyte	2:26:05 PM	AB040305-6-1	NA		NA	1*	B3	abb0311a	10:48 AM	0.094	NA	NA	0.35	NA	As Received	NA	U
AB040305-6	GROSS BETA	3/5/04	AB040305-6	NA		WIPE	1*	LB4100-b	ab040305-3a	3/11/04	1.320	42.08%	100	-0.40	1.41	DPM/sample	NA	
MB	Trg. Analyte	2:26:05 PM	AB040305-6-1	NA		NA	1*	B3	abb0311a	10:48 AM	1.470	NA	NA	0.80	NA	As Received	NA	U
AB040305-7A	GROSS ALPHA	3/5/04	AB040305-7	NA		WIPE	1*	LB4100-b	ab040305-3a	3/11/04	2822.500	25.68%	10	11000	0	DPM/sample	NA	110
LCS	Trg. Analyte	2:28:33 PM	AB040305-7-1	NA		NA	1*	C1	abb0311e	2:44 PM	0.130	NA	NA	1800	NA	As Received	NA	P,M3
AB040305-7B	GROSS BETA	3/5/04	AB040305-7	NA		WIPE	1*	LB4100-b	ab040305-3a	3/11/04	17300.600	41.94%	10	41200	0	DPM/sample	NA	101
LCS	Trg. Analyte	2:28:33 PM	AB040305-7-1	NA		NA	1*	C2	abb0311e	2:44 PM	1.610	NA	NA	6600	NA	As Received	NA	P
AB040305-7	GROSS ALPHA	3/5/04	AB040305-7	NA		WIPE	1*	LB4100-b	ab040305-3a	3/11/04	0.120	25.54%	100	-0.03	0.76	DPM/sample	NA	
MB	Trg. Analyte	2:28:33 PM	AB040305-7-1	NA		NA	1*	D4	abb0311d	12:57 PM	0.122	NA	NA	0.39	NA	As Received	NA	U
AB040305-7	GROSS BETA	3/5/04	AB040305-7	NA		WIPE	1*	LB4100-b	ab040305-3a	3/11/04	2.070	43.03%	100	0.68	1.50	DPM/sample	NA	
MB	Trg. Analyte	2:28:33 PM	AB040305-7-1	NA		NA	1*	D4	abb0311d	12:57 PM	1.756	NA	NA	0.92	NA	As Received	NA	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

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- Y2 - Chemical Yield outside default limits.
- W - DER is greater than Warning Limit of 1.42
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- 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).
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Abbreviations:

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

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

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IMS Version: 4.343C

000085

PAI - C-13 Flow Proportional Sample Analysis LB4100-A

Unit Type: LB4100-A/W
 Counting Unit ID: Orange
 High Voltage Mode: Simultaneous
 Application Revision: C
 Application Version: PAI
 Rev.12/28/03 JE

Data file name: ABA0301B
 Batch ID: AB040305-6
 Count Preset (m): 100
 Batch Endcd: 3/10/04 16:42

Background logfile: B...
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency logfile: AmWipe-03/04
 Alpha attenuation calibration: n/a
 Beta efficiency logfile: Sr90Wipe-03/04
 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-a))		y = b*m*(e^(mass-a))	
Alpha b=	0.0000	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-tak		Beta to Alpha X-tak	
y = m*b*a*mass		y = m*b*a*mass	
a->b stak m=	0.0000	b->a stak m=	0.0000
a->b stak b=	0.0000	b->a stak 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.
B1	0403011-5	3/10/04 18:42	100.00	0.0	0.100	0.068	0.002	0.2310	n/a	n/a	n/a	1.750	1.788	0.0188	0.4300	n/a	n/a	n/a
B2	0403011-6	3/10/04 18:42	100.00	0.0	0.030	0.073	0.003	0.2588	n/a	n/a	n/a	1.870	1.581	0.0080	0.4280	n/a	n/a	n/a
B3	0403011-7	3/10/04 18:42	100.00	0.0	0.130	0.082	0.001	0.2448	n/a	n/a	n/a	1.810	1.883	0.0285	0.4170	n/a	n/a	n/a
C1	0403011-9	3/10/04 18:42	100.00	0.0	0.080	0.090	0.003	0.2548	n/a	n/a	n/a	1.860	1.735	0.0102	0.4118	n/a	n/a	n/a
B4	0403011-8	3/10/04 18:42	100.00	0.0	0.160	0.078	0.002	0.2423	n/a	n/a	n/a	1.790	1.798	0.0304	0.4283	n/a	n/a	n/a
C2	0403011-10	3/10/04 18:42	100.00	0.0	0.100	0.094	0.003	0.2482	n/a	n/a	n/a	1.980	1.774	0.0170	0.4132	n/a	n/a	n/a
C3	0403011-11	3/10/04 18:42	100.00	0.0	0.050	0.101	0.001	0.2488	n/a	n/a	n/a	1.560	1.751	0.0095	0.4300	n/a	n/a	n/a
C4	0403011-12	3/10/04 18:42	100.00	0.0	0.110	0.098	0.001	0.2388	n/a	n/a	n/a	1.670	1.814	0.0215	0.4201	n/a	n/a	n/a
A1	0403011-1	3/10/04 18:42	100.00	0.0	0.170	0.171	0.002	0.2303	n/a	n/a	n/a	2.370	0.890	0.0000	0.4132	n/a	n/a	n/a
A2	0403011-2	3/10/04 18:42	100.00	0.0	0.090	0.075	0.001	0.2315	n/a	n/a	n/a	2.100	1.842	0.0170	0.4025	n/a	n/a	n/a
A3	0403011-3	3/10/04 18:42	100.00	0.0	0.120	0.117	0.001	0.2375	n/a	n/a	n/a	2.010	2.037	0.0221	0.4043	n/a	n/a	n/a
A4	0403011-4	3/10/04 18:42	100.00	0.0	0.040	0.091	0.002	0.2444	n/a	n/a	n/a	2.190	1.972	0.0081	0.4113	n/a	n/a	n/a

LCB 3/15/04

980000

PAI - Gas Flow Proportional Sample Analysis LB4100-A

Unit Type: LB4100-A/W
 Counting Unit ID: Orange
 High Voltage Mode: Simultaneous
 Application Revision: C
 Application Version: PAI
 Rev.12/28/03 JE

Data file name: ABA0310C
 Batch ID: AB040305-6
 Count Preset (m): 10
 Batch Ended: 3/10/04 17:13

Background logfile: BKGAB
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency logfile: AmWipe-03/04
 Alpha attenuation calibration: n/a
 Beta efficiency logfile: Sr90Wipe-03/04
 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 $y = b * m^a / (c * (mass - x)^d)$		Beta Attenuation Calibration $y = b * m^a / (c * (mass - x)^d)$	
Alpha b0	0.0000	Beta b0	0.0000
m0	0.0000	m0	0.0000
a0	0.0000	a0	0.0000
x0	0.0000	x0	0.0000
Alpha to Beta X-talk $y = m^a * b - mass$		Beta to Alpha X-talk $y = m^a * mass + b$	
a -> b xtalk m0	0.0000	b -> a xtalk m0	0.000+00
a -> b xtalk b0	0.0000	b -> a xtalk b0	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.
C4	AB040305-5ALLS	3/10/04 17:13	10.00	0.0	2704.200	0.088	0.320	0.2398	n/a	n/a	n/a	640.000	1.914	527.5894	0.4201	n/a	n/a	n/a

LGB 3/15/04

000087

PAI - Gas Flow Proportional Sample Analysis LB4100-A

Unit Type: LB4100-A/W
 Counting Unit ID: Orange
 High Voltage Mode: Simultaneous
 Application Revision: C
 Application Version: PAI
 Rev.12/29/03 JE

Data file name: ABA0310D
 Batch ID: AB040305-5
 Count Preset (n): 100
 Batch Ended: 3/10/04 18:53

Background log file:
 Date of Bkg. Cal: 3/11/04
 Alpha efficiency log file: AmWipe-03/04
 Alpha attenuation calibration: n/a
 Beta efficiency log file: Sr90Wipe-03/04
 Beta attenuation calibration: n/a

Alpha prog. log file: n/a
 Alpha prog. attenuation: n/a
 Beta prog. log file: n/a
 Beta prog. attenuation: n/a

Alpha Attenuation Calibration $y = b \cdot m^a (a = \text{mass} - 20)$		Beta Attenuation Calibration $y = b \cdot m^a (a = \text{mass} - 20)$	
Alpha b0	0.0000	Beta b0	0.0000
ma	0.0000	mb	0.0000
pa	0.0000	pb	0.0000
ra	0.0000	rb	0.0000
Alpha to Beta X-talk $y = m^a \cdot \text{mass}$		Beta to Alpha X-talk $y = m^a \cdot \text{mass} + b$	
a → b xtalk m0	0.0000	b → a xtalk m0	0.000000
a → b xtalk b0	0.0000	b → a xtalk b0	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.
B1	0403011-15	3/10/04 18:49	100.00	0.0	0.070	0.068	0.002	0.2510	n/a	n/a	n/a	1.830	1.788	0.0118	0.4300	n/a	n/a	n/a
B2	0403011-16	3/10/04 18:49	100.00	0.0	0.070	0.073	0.003	0.2586	n/a	n/a	n/a	1.810	1.581	0.0141	0.4280	n/a	n/a	n/a
B3	0403011-17	3/10/04 18:49	100.00	0.0	0.090	0.082	0.001	0.2448	n/a	n/a	n/a	2.160	1.883	0.0183	0.4170	n/a	n/a	n/a
B4	0403011-18	3/10/04 18:49	100.00	0.0	0.080	0.076	0.002	0.2423	n/a	n/a	n/a	2.100	1.798	0.0152	0.4283	n/a	n/a	n/a
C1	0403011-19	3/10/04 18:52	100.00	0.0	0.160	0.090	0.003	0.2548	n/a	n/a	n/a	1.790	1.735	0.0204	0.4118	n/a	n/a	n/a
C2	0403011-20	3/10/04 18:52	100.00	0.0	0.120	0.094	0.003	0.2482	n/a	n/a	n/a	1.720	1.774	0.0204	0.4132	n/a	n/a	n/a
C3	AB040305-5MB	3/10/04 18:52	100.00	0.0	0.120	0.101	0.002	0.2498	n/a	n/a	n/a	2.130	1.751	0.0228	0.4300	n/a	n/a	n/a
A1	0403011-11D	3/10/04 18:53	100.00	0.0	0.160	0.171	0.002	0.2303	n/a	n/a	n/a	2.570	2.280	0.0309	0.4074	n/a	n/a	n/a
A2	0403011-1D	3/10/04 18:53	100.00	0.0	0.080	0.075	0.001	0.2415	n/a	n/a	n/a	1.990	1.842	0.0151	0.4026	n/a	n/a	n/a
A3	0403011-13	3/10/04 18:53	100.00	0.0	0.050	0.117	0.001	0.2375	n/a	n/a	n/a	1.990	2.037	0.0092	0.4043	n/a	n/a	n/a
A4	0403011-14	3/10/04 18:53	100.00	0.0	0.160	0.091	0.002	0.2444	n/a	n/a	n/a	2.120	1.972	0.0244	0.4113	n/a	n/a	n/a

LLB 3/15/04

880000

PAI - Gas Flow Proportional Sample Analysis LB4100-A

Unit Type: LB4100-A/W
 Counting Unit ID: Orange
 High Voltage Mode: Simultaneous
 Application Revision: C
 Application Version: PAI
 Rev.12/28/03 JE

Data file name: ABA0310E
 Batch ID: AB040305-3
 Count Preset (mj): 10
 Batch Ended: 3/18/04 17:27

Background logfile: BKGAB
 Date of Bkg. Cal: 2/7/04
 Alpha efficiency logfile: AmWipe-03/04
 Alpha attenuation calibration: n/a
 Beta efficiency logfile: Sr90Wipe-03/04
 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 $y = b^*m^*(a^*(mass-x))$		Beta Attenuation Calibration $y = b^*m^*(a^*(mass-x))$	
Alpha b0	0.0000	Beta b0	0.0100
m0	0.0000	m0	0.0000
a0	0.0000	a0	0.0000
x0w	0.0000	x0w	0.0000
Alpha to Beta X-talk $y = m^*b^*mass + b$		Beta to Alpha X-talk $y = m^*mass + b$	
a->b xtalk m0	0.0000	b->a xtalk m0	0.000000
a->b xtalk b0	0.0000	b->a xtalk b0	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.		
CA	AB040305-SBLCS	3/18/04 17:27	10.00	0.0	0.700	0.098	0.602	0.2398	n/a	n/a	n/a	17327.800	1.914	1.3972	0.4201	n/a	n/a	n/a		

LLS 3/15/04

680000

PAI 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.12/28/03 JE

Data file name: ABB0311
 Batch ID: AB040305-8
 Count Preset (m): 100
 Batch Ended: 3/11/04 10:31

Background logfile: BKGABW
 Date of Bkg. Cal: 3/7/04
 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	
$y = b \cdot m^2 / (a \cdot (\text{mass} - c))$		$y = b \cdot m^2 / (a \cdot (\text{mass} - c))$	
Alpha ba	0.00000	ba	0.00000
ma	0.00000	ma	0.00000
sa	0.00000	sa	0.00000
rsa	0.00000	rsa	0.00000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m \cdot b - \text{mass}$		$y = m \cdot b - \text{mass}$	
a -> b xtalk ma	0.00000	b -> a xtalk ma	0.00000
a -> b xtalk ba	0.00000	b -> a xtalk ba	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	0403011-21	3/11/04 10:31	100.00	0.0	0.110	0.071	0.004	0.2475	n/a	n/a	n/a	1.630	1.338	0.0177	0.4098	n/a	n/a	n/a
A2	0403011-22	3/11/04 10:31	100.00	0.0	0.170	0.101	0.006	0.2460	n/a	n/a	n/a	1.720	1.384	0.0292	0.4087	n/a	n/a	n/a
A3	0403011-23	3/11/04 10:31	100.00	0.0	0.210	0.088	0.005	0.2508	n/a	n/a	n/a	1.620	1.397	0.0370	0.4163	n/a	n/a	n/a
A4	0403011-24	3/11/04 10:31	100.00	0.0	0.180	0.101	0.005	0.2477	n/a	n/a	n/a	1.500	1.365	0.0318	0.4130	n/a	n/a	n/a
C1	0403011-27	3/11/04 10:31	100.00	0.0	0.110	0.130	0.005	0.2568	n/a	n/a	n/a	1.710	1.628	0.0198	0.4201	n/a	n/a	n/a
C2	0403011-28	3/11/04 10:31	100.00	0.0	0.150	0.089	0.005	0.2553	n/a	n/a	n/a	1.920	1.610	0.0278	0.4194	n/a	n/a	n/a
C3	0403011-29	3/11/04 10:31	100.00	0.0	0.230	0.172	0.008	0.2524	n/a	n/a	n/a	1.770	1.583	0.0435	0.4154	n/a	n/a	n/a
C4	0403011-30	3/11/04 10:31	100.00	0.0	0.190	0.106	0.002	0.2472	n/a	n/a	n/a	1.580	1.482	0.0344	0.4198	n/a	n/a	n/a
B3	0403011-25	3/11/04 10:31	100.00	0.0	0.130	0.094	0.082	0.2525	n/a	n/a	n/a	35.180	1.470	0.0246	0.4208	n/a	n/a	n/a
B4	0403011-26	3/11/04 10:31	100.00	0.0	0.090	0.125	0.004	0.2571	n/a	n/a	n/a	2.190	1.672	0.0178	0.4160	n/a	n/a	n/a
D1	0403011-31	3/11/04 10:31	100.00	0.0	0.190	0.115	0.006	0.2489	n/a	n/a	n/a	1.700	1.497	0.0345	0.4167	n/a	n/a	n/a
D3	0403011-32	3/11/04 10:31	100.00	0.0	0.080	0.118	0.005	0.2592	n/a	n/a	n/a	1.950	1.762	0.0099	0.4147	n/a	n/a	n/a
D4	0403011-33	3/11/04 10:31	100.00	0.0	0.160	0.122	0.007	0.2554	n/a	n/a	n/a	2.160	1.758	0.0285	0.4303	n/a	n/a	n/a

LCS 3/15/04

060000

PAI - 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: ABB0311A
 Batch ID: AB040305-6
 Count Preset (m): 100
 Batch Ended: 3/11/04 12:25

Background logfile: BKQABW
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency logfile: AmWipe-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency logfile: S/Wipe-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	
$y = b/m * (m/mass - x0)$		$y = b/m * (m/mass - x0)$	
Alpha b0	0.00000	Alpha b0	0.00000
m	0.00000	m	0.00000
a	0.00000	a	0.00000
x0	0.00000	x0	0.00000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m * b - mass$		$y = n/mass + b$	
a -> b xtalk m	0.00000	b -> a xtalk m	0.00000
a -> b xtalk b	0.00000	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	AB040305-6MB	3/11/04 12:25	100.00	0.0	0.100	0.094	0.002	0.2525	n/a	n/a	n/a	1.320	1.470	0.0189	0.4208	n/a	n/a	n/a	n/a	
B4	0403011-40	3/11/04 12:25	100.00	0.0	0.060	0.125	0.003	0.2571	n/a	n/a	n/a	1.840	1.672	0.0119	0.4180	n/a	n/a	n/a	n/a	
C1	0403011-39	3/11/04 12:25	100.00	0.0	0.060	0.130	0.005	0.2568	n/a	n/a	n/a	1.880	1.528	0.0144	0.4201	n/a	n/a	n/a	n/a	
C2	0403011-38	3/11/04 12:25	100.00	0.0	0.100	0.099	0.005	0.2563	n/a	n/a	n/a	1.880	1.610	0.0184	0.4184	n/a	n/a	n/a	n/a	
C3	0403011-37	3/11/04 12:25	100.00	0.0	0.170	0.172	0.006	0.2524	n/a	n/a	n/a	1.760	1.683	0.0322	0.4164	n/a	n/a	n/a	n/a	
C4	0403011-36	3/11/04 12:25	100.00	0.0	0.070	0.108	0.002	0.2472	n/a	n/a	n/a	1.510	1.482	0.0127	0.4188	n/a	n/a	n/a	n/a	
D1	0403011-35	3/11/04 12:25	100.00	0.0	0.060	0.115	0.006	0.2489	n/a	n/a	n/a	1.820	1.487	0.0109	0.4167	n/a	n/a	n/a	n/a	
D2	0403011-34	3/11/04 12:25	100.00	0.0	0.090	0.102	0.006	0.2516	n/a	n/a	n/a	2.060	2.079	0.0161	0.4247	n/a	n/a	n/a	n/a	
D3	0403011-31D	3/11/04 12:25	100.00	0.0	0.170	0.118	0.004	0.2582	n/a	n/a	n/a	1.880	1.762	0.0281	0.4147	n/a	n/a	n/a	n/a	
D4	0403011-21D	3/11/04 12:25	100.00	0.0	0.080	0.122	0.006	0.2554	n/a	n/a	n/a	1.900	1.768	0.0142	0.4303	n/a	n/a	n/a	n/a	

LCB 3/15/04

000091

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100-B
 Counting Unit ID: Aqua
 High Voltage Mode: Simultaneous
 Application Revision: 2
 Rev.12/28/03 JE

Data file name: A880311B
 Batch ID: AB040305-6
 Count Preset (m): 10
 Batch Ended: 3/11/04 10:56

Background logfile: BKGABW
 Date of Bkg. Cal: 3/7/04
 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	
$y = b/m^2 (e^{-mass \cdot d})$		$y = b/m^2 (e^{-mass \cdot d})$	
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	
$y = m \cdot b \cdot mass$		$y = m \cdot mass \cdot b$	
a → b xtalk m=	0.0000	b → a xtalk m=	0.000000
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	AB040305-6ALCS	3/11/04 10:56	10.00	0.0	2743.200	0.071	1.828	0.2475	n/a	n/a	n/a	688.300	1.338	440.2787	0.4088	n/a	n/a	n/a
A2	AB040305-6BLCS	3/11/04 10:56	10.00	0.0	18.400	0.101	60.602	0.2460	n/a	n/a	n/a	17048.300	1.394	3.3365	0.4087	n/a	n/a	n/a

7/2 3-16-04

000092

PAI - 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: ABB0311D
 Batch ID: AB040305-7
 Count Preset (m): 100
 Batch Ended: 3/11/04 14:32

Background logfile: BKGABW
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency logfile: AmWpse-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency logfile: SrWpse-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
$y = b \cdot m^2 / (a \cdot (\text{mass} - x))$	$y = b \cdot m^2 / (a \cdot (\text{mass} - x))$
Alpha b = 0.0000	a = 0.0000
m = 0.0000	m = 0.0000
a = 0.0000	a = 0.0000
x = 0.0000	x = 0.0000
Alpha to Beta X-talk	Beta to Alpha X-talk
$y = m \cdot b \cdot \text{mass}$	$y = m \cdot \text{mass} + b$
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	0403010-42	3/11/04 14:32	100.00	0.0	0.130	0.130	0.005	0.2568	n/a	n/a	n/a	1.810	1.628	0.0234	0.4201	n/a	n/a	n/a
C2	0403010-43	3/11/04 14:32	100.00	0.0	0.170	0.099	0.005	0.2553	n/a	n/a	n/a	1.740	1.610	0.0312	0.4194	n/a	n/a	n/a
B4	0403010-41	3/11/04 14:32	100.00	0.0	0.120	0.125	0.003	0.2571	n/a	n/a	n/a	1.790	1.672	0.0238	0.4180	n/a	n/a	n/a
C3	0403010-44	3/11/04 14:32	100.00	0.0	0.150	0.172	0.007	0.2524	n/a	n/a	n/a	1.870	1.683	0.0284	0.4154	n/a	n/a	n/a
C4	0403010-45	3/11/04 14:32	100.00	0.0	0.130	0.106	0.001	0.2472	n/a	n/a	n/a	1.290	1.482	0.0235	0.4188	n/a	n/a	n/a
D1	0403011-41	3/11/04 14:32	100.00	0.0	0.140	0.115	0.008	0.2489	n/a	n/a	n/a	1.690	1.497	0.0255	0.4167	n/a	n/a	n/a
D2	0403011-42	3/11/04 14:32	100.00	0.0	0.080	0.102	0.005	0.2516	n/a	n/a	n/a	1.970	2.079	0.0143	0.4247	n/a	n/a	n/a
D3	0403011-43	3/11/04 14:32	100.00	0.0	0.130	0.118	0.005	0.2582	n/a	n/a	n/a	2.170	1.782	0.0215	0.4147	n/a	n/a	n/a
D4	AB040306-7MB	3/11/04 14:32	100.00	0.0	0.120	0.122	0.007	0.2554	n/a	n/a	n/a	2.070	1.758	0.0213	0.4303	n/a	n/a	n/a

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3-16-04

000093

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.12/28/03 JE

Data File name: ABB0311E
 Batch ID: AB040305-7
 Count Preset (m): 10
 Batch Ended: 3/11/04 14:53

Background logfile: BKGABW
 Date of Bkg. Cal: 3/7/04
 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	
$y = b \cdot m^a (r \cdot \text{mass} - c)$		$y = b \cdot m^a (r \cdot \text{mass} - c)$	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
c=	0.0000	c=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m \cdot b \cdot \text{mass} + b$		$y = m \cdot \text{mass} + b$	
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	AB040305-7ALCS	3/11/04 14:53	10.00	0.0	2822.600	0.130	1.912	0.2568	n/a	n/a	n/a	685.700	1.528	608.8208	0.4201	n/a	n/a	n/a
C2	AB040305-7BLCS	3/11/04 14:53	10.00	0.0	20.300	0.099	48.014	0.2553	n/a	n/a	n/a	17300.800	1.810	3.7284	0.4184	n/a	n/a	n/a

LAB 3/15/04

760000

1 of 1

Instrument: **LB4100A**

Date: 3/10/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1650	A 0.1
21100	B ↓
	C ↓
	D NP

Bkg. Cal. File ID

Dr A	BVA0306W
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	RGB		P		LCB		P		✓	9	LCB		P		LCB		P		✓
2	↓				↓				✓	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	EFA0310	30632	0632	LCB	LCB	3/10/04	N/A
1-12	Bkg Checks	N/A	N/A	BVA0310	60	0639	LCB	LCB	3/10/04	
1	0415008-51	NP	NP P6210	PBA0310	60	0917	g	g	3/10/04	
1	0403012-21D	AB040305-4	LCB	AB0310	100	12348	g	g	3/10/04	
2	-31D									
3	-32									
4	-33									
5	-34									
6	-35									
7	-36									
8	-37									
9	-38									
10	-39									
11	-40									
12	AB040305-4MB									
1	AB040305-1ALCS	AB040305-4	LCB	AB0310A	10	1438	g	g	3/10/04	
2	L-1BLCS									

000055

269558

pg _____ b

Paragon Analytics, Inc.
 Low Background Gas Flow Proportional Counter Run Log
 Instrument: **LB4100A**

Date: 3/10/04

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1	0403011-1	AB040305-5	2/3	ABA0310A ABA0301B	100	1501	S	77	3-10-04	NA
2	-2									
3	-3									
4	-4									
5	-5									
6	-6									
7	-7									
8	-8									
9	-9									
10	-10									
11	-11									
12	-12									
12	AB040305-5A/C			ABA0310C	10	1703	77	77	3-10-04	
1	0403011-11D			ABA0310D	100	1708	77	L-B	3/11/04	
2	-10									
3	-13									
4	-14									
5	-15									
6	-16									
7	-17									
8	-18									
9	-19									
10	-20									
11	AB040305-5MB									
12	AB040305-5B/C			ABA0310E	10	1717	77	77	3-10-04	
									77 3-10-04	

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

Reviewed L67

Date 3/11/04

Comments:

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

Paragon Analytics, Inc.

SOP 724 Rev 2

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

Date: 3/11/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 650	A 0.1
2 900	B
	C ↓
	D ↓

Bkg. Cal. File ID

Dr A	BK0306W
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						LCB	R	P	✓	10									✓
3						LCB	↓	P	✓	11									✓
4							P		✓	12									✓
5			LB				↓		OLB	13									✓
6			LB			CB	R	P	OLB	14					LCB	R	P		✓
7			P				P		✓	15							P		✓
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	N/A	N/A	EFB0311	30	0609	LCB	LCB	3/11/04	N/A
1-16	Bkg Checks	N/A	N/A	BKB0311	60	0621	LCB	LCB	3/11/04	
2,3,6,7	Bkg Recounts	N/A	N/A	BKB0311A	60	0726	LCB	LCB	3/11/04	
14	Bkg Recount	N/A	N/A	BKB0311B	60	0842	LCB	S		
1	0403011-21	AB040305-6	L/B	ABB0311	100	0850	LCB	S		
2	-22									
3	-23									
4	-24									
7	-25									
8	-26									
9	-27									
10	-28									
11	-29									
12	-30									
13	-31									
15	↓ -32	↓	↓	↓	↓	↓	↓	↓	↓	↓

LCB 3/11/04

000097

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

Reviewed by LCB

Date 3/11/04

Comments:

Date 3/11/04

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
16	0403011-33	AB040305-6	21B	ABB0311	100	0850	LCB	5	3/11/04	N/A
14	0403011-21D	AB040305-6		ABB0311A		1044	5	5	3/11/04	
15	-31D									
14	-34									
13	-35									
12	-36									
11	-37									
10	-38									
9	-39									
8	-40									
7	AB040305-6UB									
1	AB040305-6ALC	AB040305-6	21B	ABB0311B	10	1046	5	5	3/11/04	
2	-66LC									
1	0403010-11D	AB040305-7	21B	ABB0311C	100	1107	5	5	3/11/04	
1	RA040308-4	RA040308-1	RA225	RA0311	250	1248	5	LCB	3/12/04	
2	-4D									
3	-4RD2									
4	RA040308-1MB									
7	-11LS									
8	0403010-41	AB040305-7	21B	ABB0311D	100	1251	5	LCB	3/11/04	
9	-42									
10	-43									
11	-44									
12	-45									
13	0403011-41									
14	-42									
15	-43									
16	AB040305-7MB									
8	Carby 1GG	N/A	21B	ABB0311E	1000	1441	LCB	LCB	3/12/04	
9	AB040305-7ALC	AB040305-7	21B	ABB0311E	10			LCB	3/11/04	
10	-76LC									

3/11/04

Comments:

860000

PARAGON ANALYTICS
Radiochemistry Data Package

Section 5

**QUALITY ASSURANCE
SUMMARY REPORTS**

5

000099

No *NON-CONFORMANCE REPORTS* or
QUALITY ASSURANCE SUMMARY SHEETS
are included in this data package.

PARAGON ANALYTICS
Radiochemistry Data Package

Section 6

**LABORATORY
BENCH SHEETS**

6

000101

Radiochemistry Instrument Worksheet

Paragon Analytics



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	0403011-1	SMP	1	1	sample											
1	0403011-1	DUP	1	1	sample											
1	0403011-2	SMP	1	1	sample											
1	0403011-3	SMP	1	1	sample											<i>see previous sheet</i>
1	0403011-4	SMP	1	1	sample											
1	0403011-5	SMP	1	1	sample											
1	0403011-6	SMP	1	1	sample											
1	0403011-7	SMP	1	1	sample											
1	0403011-8	SMP	1	1	sample											
1	0403011-9	SMP	1	1	sample											
1	0403011-10	SMP	1	1	sample											
1	0403011-11	SMP	1	1	sample											
1	0403011-11	DUP	1	1	sample											
1	0403011-12	SMP	1	1	sample											
1	0403011-13	SMP	1	1	sample											
1	0403011-14	SMP	1	1	sample											
1	0403011-15	SMP	1	1	sample											
1	0403011-16	SMP	1	1	sample											
1	0403011-17	SMP	1	1	sample											
1	0403011-18	SMP	1	1	sample											
1	0403011-19	SMP	1	1	sample											
1	0403011-20	SMP	1	1	sample											
1	AB040305-6A	LCS	1	1	sample											
1	AB040305-6B	LCS	1	1	sample											
1	AB040305-6	MB	1	1	sample											

2000102

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: ABO40305-5

Prep Procedure: GAB_No_Att

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

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	9,947.872 DPM/sample	03/05/04	1	sample		
S2	Sr-90	729	20,514.382 DPM/sample	03/05/04	1	sample		

00010

Radiochemistry Instrument Worksheet

Paragon Analytics



Prep Procedure: **GAB**

D R A F T

Analytical QASS / NCR? Y / N _____

Prep Num	LabID	QC Type	Init Alq	Fin Alq	Units	Residual Mass (mg)	Cnt 1 File <i>LAB ID</i>	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	0403011-1	SMP	1	1	sample		<i>ABAO310B</i>	1	<i>77</i>								
1	0403011-1	DUP	1	1	sample		<i>ABAO310D</i>	2	<i>LCB</i>								<i>Count Dep</i>
1	0403011-2	SMP	1	1	sample		<i>ABAO310B</i>	2	<i>77</i>								
1	0403011-3	SMP	1	1	sample			3									
1	0403011-4	SMP	1	1	sample			4									
1	0403011-5	SMP	1	1	sample			5									
1	0403011-6	SMP	1	1	sample			6									
1	0403011-7	SMP	1	1	sample			7									
1	0403011-8	SMP	1	1	sample			8									
1	0403011-9	SMP	1	1	sample			9									
1	0403011-10	SMP	1	1	sample			10									
1	0403011-11	SMP	1	1	sample			11									
1	0403011-11	DUP	1	1	sample		<i>ABAO310D</i>	1	<i>LCB</i>								<i>Count Dep</i>
1	0403011-12	SMP	1	1	sample		<i>ABAO310B</i>	12	<i>77</i>								
1	0403011-13	SMP	1	1	sample		<i>ABAO310D</i>	3	<i>LCB</i>								
1	0403011-14	SMP	1	1	sample			4									
1	0403011-15	SMP	1	1	sample			5									
1	0403011-16	SMP	1	1	sample			6									
1	0403011-17	SMP	1	1	sample			7									
1	0403011-18	SMP	1	1	sample			8									
1	0403011-19	SMP	1	1	sample			9									
1	0403011-20	SMP	1	1	sample			10									
1	AB040305-6A	LCS	1	1	sample		<i>ABAO310C</i>	12	<i>77</i>								
1	AB040305-6B	LCS	1	1	sample		<i>ABAO310E</i>	12	<i>77</i>								
1	AB040305-5	MB	1	1	sample		<i>ABAO310D</i>	11	<i>LCB</i>								

D R A F T

00010

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AM040305

Prep Procedure: **GAB**

Analytical QASS / NCR? Y / N _____

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
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Spike Solution Information								
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947,872 DPM/sample		03/05/04	1	sample	
S2	Sr-90	729	20,514,382 DPM/sample		03/05/04	1	sample	

000100

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y 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	0403011-21	SMP	1	1	sample											
1	0403011-21	DUP	1	1	sample											
1	0403011-22	SMP	1	1	sample											
1	0403011-23	SMP	1	1	sample											
1	0403011-24	SMP	1	1	sample											<i>see previous sheet</i>
1	0403011-25	SMP	1	1	sample											
1	0403011-26	SMP	1	1	sample											
1	0403011-27	SMP	1	1	sample											
1	0403011-28	SMP	1	1	sample											
1	0403011-29	SMP	1	1	sample											
1	0403011-30	SMP	1	1	sample											
1	0403011-31	SMP	1	1	sample											
1	0403011-31	DUP	1	1	sample											
1	0403011-32	SMP	1	1	sample											
1	0403011-33	SMP	1	1	sample											
1	0403011-34	SMP	1	1	sample											
1	0403011-35	SMP	1	1	sample											
1	0403011-38	SMP	1	1	sample											
1	0403011-37	SMP	1	1	sample											
1	0403011-38	SMP	1	1	sample											
1	0403011-39	SMP	1	1	sample											
1	0403011-40	SMP	1	1	sample											
1	AB040305-6A	LCS	1	1	sample											
1	AB040305-6B	LCS	1	1	sample											
1	AB040305-6	MB	1	1	sample											

000100

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB02030546

Prep Procedure: GAB_No_Att

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

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

Smk Solution Information								
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.379	DPM/sample	03/05/04	1	sample	

000107

Prep Procedure: GAB

DRAFT

Analytical QASS / NCR? Y / N

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	0403011-21	SMP	1	1	sample		ABB0311	1	g							
1	0403011-21	DUP	1	1	sample		ABB0311A	16	g							
1	0403011-22	SMP	1	1	sample		ABB0311	2	g							
1	0403011-23	SMP	1	1	sample			3								
1	0403011-24	SMP	1	1	sample			4								
1	0403011-25	SMP	1	1	sample			7								
1	0403011-26	SMP	1	1	sample			8								
1	0403011-27	SMP	1	1	sample			9	g							
1	0403011-28	SMP	1	1	sample			10								
1	0403011-29	SMP	1	1	sample			11								
1	0403011-30	SMP			sample			12								
1	0403011-31	SMP			sample			13								
1	0403011-31	DUP	1	1	sample		ABB0311A	15	g							2/15/04
1	0403011-32	SMP	1	1	sample		ABB0311	15	g							
1	0403011-33	SMP	1	1	sample			16								
1	0403011-34	SMP	1	1	sample		ABB0311A	14	g							
1	0403011-35	SMP	1	1	sample			13								
1	0403011-36	SMP	1	1	sample			12								
1	0403011-37	SMP	1	1	sample			11								
1	0403011-38	SMP	1	1	sample			10								
1	0403011-39	SMP	1	1	sample			9								
1	0403011-40	SMP	1	1	sample			8								
1	AB040305-6A	LCS	1	1	sample		ABB0311C	1	g							
1	AB040305-6B	LCS	1	1	sample			2								
1	AB040305-6	MB	1	1	sample		ABB0311A	7	g							

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000100

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: 7-14-04-03-0

Prep Procedure: **GAB**

D R A F T

Analytical QASS / NCR? Y / N _____

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
D R A F T																

Spike Solution Information								
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Allquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.379	DPM/sample	03/05/04	1	sample	

00010

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y N NA

Prep Num	LabID	QC Type	Inlt 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	0403010-41	SMP	1	1	sample												
1	0403010-41	DUP	1	1	sample												
1	0403010-42	SMP	1	1	sample												
1	0403010-43	SMP	1	1	sample												
1	0403010-44	SMP	1	1	sample												
1	0403010-45	SMP	1	1	sample												
1	0403011-41	SMP	1	1	sample												
1	0403011-42	SMP	1	1	sample												
1	0403011-43	SMP	1	1	sample												
1	AB040305-7A	LCS	1	1	sample												
1	AB040305-7B	LCS	1	1	sample												
1	AB040305-7	MB	1	1	sample												

see premium sheet

Spike Solution Information							
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample
S2	Sr-90	729	20,514.377	DPM/sample	03/05/04	1	sample

000110

Radiochemistry Instrument Worksheet

Prep Entry: AB040305-7

Paragon Analytics

DRAFT

Prep Procedure: **GAB**

Analytical QASS / NCR? Y / N

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	0403010-41	SMP	1	1	sample		ABB0311D	8	LCB								
1	0403010-41	DUP	1	1	sample		ABB0311C	1	g								
1	0403010-42	SMP	1	1	sample		ABB0311D	9	LCB								
1	0403010-43	SMP	1	1	sample			10									
1	0403010-44	SMP	1	1	sample			11									
1	0403010-45	SMP	1	1	sample			12									
1	0403011-41	SMP	1	1	sample			13									
1	0403011-42	SMP	1	1	sample			14									
1	0403011-43	SMP	1	1	sample			15									
1	AB040305-7A	LCS	1	1	sample		ABB0311E	9	g								
1	AB040305-7B	LCS	1	1	sample			10									
1	AB040305-7	MB	1	1	sample		ABB0311D	16	LCB								

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Allquot	Units	Pipet ID
S1	Am-241	601	9,947.872 DPM/sample		03/05/04	1	sample	
S2	Sr-90	729	20,514.377 DPM/sample		03/05/04	1	sample	

000117

Radiochemistry Prep Worksheet

Paragon **Analytics**

Prep Batch: **AB040**

Prep Procedure: **GAB_No_Att**

Reviewed By: ATF *[Signature]*

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 Analyst: Adrienne Freda *[Signature]* Balance: _____
 Prep SOP: NONE Prep Date: 3/5/04 Balance: _____
 Matrix Class: solid Prep Dept: RS

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403011-1	SMP		1	1	As Received		<u>LAB 3/15/04</u>
2	1	0403011-1	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403011-2	SMP		1	1	As Received		
4	1	0403011-3	SMP		1	1	As Received		
5	1	0403011-4	SMP		1	1	As Received		
6	1	0403011-5	SMP		1	1	As Received		
7	1	0403011-6	SMP		1	1	As Received		
8	1	0403011-7	SMP		1	1	As Received		<u>LAB 3/15/04</u>
9	1	0403011-8	SMP		1	1	As Received		
10	1	0403011-9	SMP		1	1	As Received		
11	1	0403011-10	SMP		1	1	As Received		
12	1	0403011-11	SMP		1	1	As Received		
13	1	0403011-11	DUP		1	1	As Received		COUNT DUPLICATE
14	1	0403011-12	SMP		1	1	As Received		
15	1	0403011-13	SMP		1	1	As Received		
16	1	0403011-14	SMP		1	1	As Received		
17	1	0403011-15	SMP		1	1	As Received		
18	1	0403011-15	SMP		1	1	As Received		<u>LAB 3/15/04</u>
19	1	0403011-17	SMP		1	1	As Received		
20	1	0403011-18	SMP		1	1	As Received		
21	1	0403011-19	SMP		1	1	As Received		
22	1	0403011-20	SMP		1	1	As Received		
23	1	AB040305-5A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-5B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-5	MB		1	1	As Received		<u>LAB 3/15/04</u>

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

Relinquished By: see
 Date: previous
 Received By: Sheet
 Date: _____

Spiked Solution Information								
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.382	DPM/sample	03/05/04	1	sample	

00012
Comments

Radiochemistry Prep Worksheet

Paragon Analytics

Print Batch: AB040305

Prep Procedure: **GAB**

Reviewed By: ATF *[Signature]*

Review Date: 3/9/04

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

Prep SOP: PAI 702 Rev: 16

Prep Analyst: Adrienne Freda *[Signature]*

Balance:

Prep SOP: NONE

Prep Date: 3/5/04

Balance:

Matrix Class: solid

Prep Dept: RS

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403011-1	SMP		1	1	As Received		<i>[Signature]</i>
2	1	0403011-1	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403011-2	SMP		1	1	As Received		
4	1	0403011-3	SMP		1	1	As Received		
5	1	0403011-4	SMP		1	1	As Received		
6	1	0403011-5	SMP		1	1	As Received		
7	1	0403011-6	SMP		1	1	As Received		<i>[Signature]</i>
8	1	0403011-7	SMP		1	1	As Received		
9	1	0403011-8	SMP		1	1	As Received		
10	1	0403011-9	SMP		1	1	As Received		
11	1	0403011-10	SMP		1	1	As Received		
12	1	0403011-11	SMP		1	1	As Received		
13	1	0403011-11	DUP		1	1	As Received		COUNT DUPLICATE
14	1	0403011-12	SMP		1	1	As Received		
15	1	0403011-13	SMP		1	1	As Received		
16	1	0403011-14	SMP		1	1	As Received		
17	1	0403011-15	SMP		1	1	As Received		<i>[Signature]</i>
18	1	0403011-16	SMP		1	1	As Received		
19	1	0403011-17	SMP		1	1	As Received		
20	1	0403011-18	SMP		1	1	As Received		
21	1	0403011-19	SMP		1	1	As Received		
22	1	0403011-20	SMP		1	1	As Received		
23	1	AB040305-5A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-5B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-5	MB		1	1	As Received		<i>[Signature]</i>

Spiked By: N/A

Date: N/A

Relinquished By: see

Witnessed By: N/A

Date: N/A

Date: previous

Received By: snick

Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Allquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.382	DPM/sample	03/05/04	1	sample	

Comments

Radiochemistry Prep Worksheet

Paragon **lytics**

Prep Bag: B040

Prep Procedure: **GAB**

Reviewed By: ATF *[Signature]*

Review Date: 3/5/04

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

Prep SOP: PAI 702 Rev: 16 Prep Analyst: Adrienne Freda *[Signature]* Balance: _____
 Prep SOP: NONE Prep Date: 3/5/04 Balance: _____

Matrix Class: solid Prep Dept: RS

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403011-1	SMP		1	1	As Received		
2	1	0403011-2	SMP		1	1	As Received		
3	1	0403011-3	SMP		1	1	As Received		
4	1	0403011-4	SMP		1	1	As Received		
5	1	0403011-5	SMP		1	1	As Received		
6	1	0403011-6	SMP		1	1	As Received		
7	1	0403011-7	SMP		1	1	As Received		
8	1	0403011-8	SMP		1	1	As Received		
9	1	0403011-9	SMP		1	1	As Received		
10	1	0403011-10	SMP		1	1	As Received		
11	1	0403011-11	SMP		1	1	As Received		
12	1	0403011-12	SMP		1	1	As Received		
13	1	0403011-13	SMP		1	1	As Received		
14	1	0403011-14	SMP		1	1	As Received		
15	1	0403011-15	SMP		1	1	As Received		
16	1	0403011-16	SMP		1	1	As Received		
17	1	0403011-17	SMP		1	1	As Received		
18	1	0403011-18	SMP		1	1	As Received		
19	1	0403011-19	SMP		1	1	As Received		
20	1	0403011-20	SMP		1	1	As Received		
21	1	AB040305-5A	LCS		1	1	As Received	S1	ALPHA SOURCE
22	1	AB040305-5B	LCS		1	1	As Received	S2	BETA SOURCE
23	1	AB040305-5	MB		1	1	As Received		

DRAFT

03/05/04

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

Relinquished By: *NT*
 Date: 3/5/04
 Received By: *S*
 Date: 3/6/04

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.382	DPM/sample	03/05/04	1	sample	

Comments: _____

Radiochemistry Prep Worksheet

Prep Batch: AB040305-6

Paragon Analytics

Prep Procedure: GAB_No_Att

Reviewed By: ATF *[Signature]*

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: Adrienne Freda *[Signature]*
Prep Date: 3/5/04
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	0403011-21	SMP		1	1	As Received		<u>LCB 3/15/04</u>
2	1	0403011-21	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403011-22	SMP		1	1	As Received		
4	1	0403011-23	SMP		1	1	As Received		
5	1	0403011-24	SMP		1	1	As Received		
6	1	0403011-25	SMP		1	1	As Received		
7	1	0403011-26	SMP		1	1	As Received		<u>LCB 3/15/04</u>
8	1	0403011-27	SMP		1	1	As Received		
9	1	0403011-28	SMP		1	1	As Received		
10	1	0403011-29	SMP		1	1	As Received		
11	1	0403011-30	SMP		1	1	As Received		
12	1	0403011-31	SMP		1	1	As Received		
13	1	0403011-31	DUP		1	1	As Received		COUNT DUPLICATE
14	1	0403011-32	SMP		1	1	As Received		
15	1	0403011-33	SMP		1	1	As Received		
16	1	0403011-34	SMP		1	1	As Received		
17	1	0403011-35	SMP		1	1	As Received		
18	1	0403011-36	SMP		1	1	As Received		<u>LCB 3/15/04</u>
19	1	0403011-37	SMP		1	1	As Received		
20	1	0403011-38	SMP		1	1	As Received		
21	1	0403011-39	SMP		1	1	As Received		
22	1	0403011-40	SMP		1	1	As Received		
23	1	AB040305-8A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-8B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-8	MB		1	1	As Received		<u>LCB 3/15/04</u>

Spiked By: N/A

Date: N/A

Relinquished By: see

Witnessed By: N/A

Date: N/A

Date: previous sheet

Received By: sheet
Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.378	DPM/sample	03/05/04	1	sample	

000115

Comments

Radiochemistry Prep Worksheet

Paragon **C**lytics



Prep Procedure: **GAB**

Reviewed By: ATF *[Signature]*

Review Date: 3/9/04

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: Adrienne Freda *[Signature]*
 Prep Date: 3/5/04
 Prep Dept: RS

Balance:
 Balance:

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403011-21	SMP		1	1	As Received		<i>[Signature]</i>
2	1	0403011-21	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403011-22	SMP		1	1	As Received		
4	1	0403011-23	SMP		1	1	As Received		
5	1	0403011-24	SMP		1	1	As Received		
6	1	0403011-25	SMP		1	1	As Received		<i>[Signature]</i>
7	1	0403011-26	SMP		1	1	As Received		
8	1	0403011-27	SMP		1	1	As Received		
9	1	0403011-28	SMP		1	1	As Received		
10	1	0403011-29	SMP		1	1	As Received		
11	1	0403011-30	SMP		1	1	As Received		
12	1	0403011-31	SMP		1	1	As Received		
13	1	0403011-31	DUP		1	1	As Received		COUNT DUPLICATE
14	1	0403011-32	SMP		1	1	As Received		
15	1	0403011-33	SMP		1	1	As Received		
16	1	0403011-34	SMP		1	1	As Received		
17	1	0403011-35	SMP		1	1	As Received		<i>[Signature]</i>
18	1	0403011-36	SMP		1	1	As Received		
19	1	0403011-37	SMP		1	1	As Received		
20	1	0403011-38	SMP		1	1	As Received		
21	1	0403011-39	SMP		1	1	As Received		
22	1	0403011-40	SMP		1	1	As Received		
23	1	AB040305-6A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-6B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-6	MB		1	1	As Received		<i>[Signature]</i>

DRAFT

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

Relinquished By: See
 Date: previous
 Received By: Sheet
 Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872 DPM/sample		03/05/04	1	sample	
S2	Sr-90	729	20,514.379 DPM/sample		03/05/04	1	sample	

000-18
 Comments

Radiochemistry Prep Worksheet

Prep Batch: AB040305-6

Paragon Analytics

Prep Procedure: GAB

Reviewed By: ATF *Q*

Review Date: 3/5/04

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

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

Prep Analyst: Adrienne Freda *Q*
 Prep Date: 3/5/04
 Prep Dept: RS

Balance:
 Balance:

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403011-21	SMP		1	1	As Received		
2	1	0403011-22	SMP		1	1	As Received		
3	1	0403011-23	SMP		1	1	As Received		
4	1	0403011-24	SMP		1	1	As Received		
5	1	0403011-25	SMP		1	1	As Received		
6	1	0403011-26	SMP		1	1	As Received		
7	1	0403011-27	SMP		1	1	As Received		
8	1	0403011-28	SMP		1	1	As Received		
9	1	0403011-29	SMP		1	1	As Received		
10	1	0403011-30	SMP		1	1	As Received		
11	1	0403011-31	SMP		1	1	As Received		
12	1	0403011-32	SMP		1	1	As Received		
13	1	0403011-33	SMP		1	1	As Received		
14	1	0403011-34	SMP		1	1	As Received		
15	1	0403011-35	SMP		1	1	As Received		
16	1	0403011-36	SMP		1	1	As Received		
17	1	0403011-37	SMP		1	1	As Received		
18	1	0403011-38	SMP		1	1	As Received		
19	1	0403011-39	SMP		1	1	As Received		
20	1	0403011-40	SMP		1	1	As Received		
21	1	AB040305-6A	LCS		1	1	As Received	S1	ALPHA SOURCE
22	1	AB040305-6B	LCS		1	1	As Received	S2	BETA SOURCE
23	1	AB040305-6	MB		1	1	As Received		

DRAFT

Q 03/05/04

Q 03/05/04

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

Relinquished By: NT
 Date: 3/5/04
 Received By: _____
 Date: 3/6/04

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.379	DPM/sample	03/05/04	1	sample	

Comments _____

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB0410

Prep Procedure: GAB_No_Att

Reviewed By: ATF *g*

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 Analyst: Adrienne Freda *g*

Balance:

Prep SOP: NONE

Prep Date: 3/5/04

Balance:

Matrix Class: solid

Prep Dept: RS

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-41	SMP		1	1	As Received		<u>LAB 3/15/04</u>
2	1	0403010-41	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403010-42	SMP		1	1	As Received		
4	1	0403010-43	SMP		1	1	As Received		
5	1	0403010-44	SMP		1	1	As Received		
6	1	0403010-45	SMP		1	1	As Received		<u>LAB 3/15/04</u>
7	1	0403011-41	SMP		1	1	As Received		
8	1	0403011-42	SMP		1	1	As Received		
9	1	0403011-43	SMP		1	1	As Received		
10	1	AB040305-7A	LCS		1	1	As Received	S1	ALPHA SOURCE
11	1	AB040305-7B	LCS		1	1	As Received	S2	BETA SOURCE
12	1	AB040305-7	MB		1	1	As Received		<u>LAB 3/15/04</u>

Spiked By: N/A

Date: N/A

Relinquished By: SEO

Witnessed By: N/A

Date: N/A

Date: previous

Received By: sheet

Date:

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

080118

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305

Prep Procedure: **GAB**

Reviewed By: ATF *[Signature]*

Review Date: 3/9/04

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

Prep SOP: PAI 702 Rev: 16

Prep Analyst: Adrienne Freda *[Signature]*

Balance:

DRAFT

Prep SOP: NONE

Prep Date: 3/5/04

Balance:

Matrix Class: solid

Prep Dept: RS

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-41	SMP		1	1	As Received		<i>[Signature]</i> 03/05/04
2	1	0403010-41	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403010-42	SMP		1	1	As Received		_____
4	1	0403010-43	SMP		1	1	As Received		_____
5	1	0403010-44	SMP		1	1	As Received		_____
6	1	0403010-45	SMP		1	1	As Received		_____
7	1	0403011-41	SMP		1	1	As Received		_____
8	1	0403011-42	SMP		1	1	As Received		_____
9	1	0403011-43	SMP		1	1	As Received		_____
10	1	AB040305-7A	DCS		1	1	As Received	S1	ALPHA SOURCE
11	1	AB040305-7B	LCS		1	1	As Received	S2	BETA SOURCE
12	1	AB040305-7	MB		1	1	As Received		<i>[Signature]</i> 03/05/04

Spiked By: N/A

Date: N/A

Relinquished By: sel

Date: previous

Witnessed By: N/A

Date: N/A

Received By: sheet

Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

00011

[Handwritten] 03/05/04

Radiochemistry Prep Worksheet

Paragon Analytics

PROPERTY OF PARAGON ANALYTICS

Prep Procedure: **GAB**

Reviewed By: ATF

Review Date: 3/5/04

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

Prep SOP: PAI 702 Rev: 16

Prep Analyst: Adrienne Freda

Balance:

Prep SOP: NONE

Prep Date: 3/5/04

Balance:

DRAFT

Matrix Class: solid

Prep Dept: RS

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-41	SMP		1	1	As Received		
2	1	0403010-42	SMP		1	1	As Received		
3	1	0403010-43	SMP		1	1	As Received		
4	1	0403010-44	SMP		1	1	As Received		
5	1	0403010-45	SMP		1	1	As Received		
6	1	0403011-41	SMP		1	1	As Received		
7	1	0403011-42	SMP		1	1	As Received		
8	1	0403011-43	SMP		1	1	As Received		
9	1	AB040305-7A	LCS		1	1	As Received	S1	ALPHA SOURCE
10	1	AB040305-7B	LCS		1	1	As Received	S2	BETA SOURCE
11	1	AB040305-7	MB		1	1	As Received		

Spiked By: N/A

Date: N/A

Witnessed By: N/A

Date: N/A

Relinquished By: ATF

Date: 3/5/04

Received By: ATF

Date: 3/10/04

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

000123

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: *[Signature]*

ANALYSIS DATE: 03/05/04

METHOD: GROSS α B

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403010	1-45	DRY(w)	SWIPE	None
0403011	1-43	↓	↓	↓
<i>[Signature]</i> 03/05/04				

PARAGON ANALYTICS
Radiochemistry Data Package

Section 7

STANDARDS
TRACEABILITY
DOCUMENTS

7

000122

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/cm² 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:

W.M. [Signature] 12-4-01

CERTIFICATE OF CALIBRATION
Standard Radionuclide SourcePAT 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/cm² 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, RadiochemistQ A APPROVED: DM Mjt 10-27-03

000124

PARAGON ANALYTICS
Radiochemistry Data Package.

Section 8

CHAIN OF CUSTODY

8

000125

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403011

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022704-24-01	0403011-1		WIPE	27-Feb-04	15:00
022704-24-02	0403011-2		WIPE	27-Feb-04	15:00
022704-24-03	0403011-3		WIPE	27-Feb-04	15:00
022704-24-04	0403011-4		WIPE	27-Feb-04	15:00
022704-24-05	0403011-5		WIPE	27-Feb-04	15:00
022704-24-06	0403011-6		WIPE	27-Feb-04	15:00
022704-24-07	0403011-7		WIPE	27-Feb-04	15:00
022704-24-08	0403011-8		WIPE	27-Feb-04	15:00
022704-24-09	0403011-9		WIPE	27-Feb-04	15:00
022704-24-10	0403011-10		WIPE	27-Feb-04	15:00
022704-24-11	0403011-11		WIPE	27-Feb-04	15:00
022704-24-12	0403011-12		WIPE	27-Feb-04	15:00
022704-24-13	0403011-13		WIPE	27-Feb-04	15:00
022704-24-14	0403011-14		WIPE	27-Feb-04	15:00
022704-24-15	0403011-15		WIPE	27-Feb-04	15:00
022704-24-16	0403011-16		WIPE	27-Feb-04	15:00
022704-24-17	0403011-17		WIPE	27-Feb-04	15:00
022704-24-18	0403011-18		WIPE	27-Feb-04	15:00
022704-24-19	0403011-19		WIPE	27-Feb-04	15:00
022704-24-20	0403011-20		WIPE	27-Feb-04	15:00
022704-24-21	0403011-21		WIPE	27-Feb-04	15:00
022704-24-22	0403011-22		WIPE	27-Feb-04	15:00
022704-24-23	0403011-23		WIPE	27-Feb-04	15:00
022704-24-24	0403011-24		WIPE	27-Feb-04	15:00
022704-24-25	0403011-25		WIPE	27-Feb-04	15:02
022704-24-26	0403011-26		WIPE	27-Feb-04	15:02
022704-24-27	0403011-27		WIPE	27-Feb-04	15:02
022704-24-28	0403011-28		WIPE	27-Feb-04	15:02
022704-24-29	0403011-29		WIPE	27-Feb-04	15:02
022704-24-30	0403011-30		WIPE	27-Feb-04	15:02
022704-24-31	0403011-31		WIPE	27-Feb-04	15:02
022704-24-32	0403011-32		WIPE	27-Feb-04	15:02

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403011

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022704-24-33	0403011-33		WIPE	27-Feb-04	15:02
022704-24-34	0403011-34		WIPE	27-Feb-04	15:02
022704-24-35	0403011-35		WIPE	27-Feb-04	15:02
022704-24-36	0403011-36		WIPE	27-Feb-04	15:02
022704-24-37	0403011-37		WIPE	27-Feb-04	15:02
022704-24-38	0403011-38		WIPE	27-Feb-04	15:02
022704-24-39	0403011-39		WIPE	27-Feb-04	15:02
022704-24-40	0403011-40		WIPE	27-Feb-04	15:02
022704-24-8FD	0403011-41		WIPE	27-Feb-04	15:02
022704-24-11FD	0403011-42		WIPE	27-Feb-04	15:02
022704-24-FB	0403011-43		WIPE	27-Feb-04	15:02



Shaw Environmental & Infrastructure, Inc.

0403011

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: 132105 22704-24

PAGE 1 of 3

Bill to:

Project No. 101115 Sample Shipment Date 3-01-04

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 K WISE Carrier Waybill No. NA

T TRENT

Report to: Ben Dettorre

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 022704-24-1	Rm B2109 ESS Location	13-01	Smear		
2		B-02			
3		B-03			
4		B-04			
5		B-05			
6		B-06			
7		B-07			
8		B-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 _____ Date: 3-1-04

(Signature/Affiliation)

Time: 1042

1. Received by _____ Date: 3-1-04

(Signature/Affiliation)

Time: 1042

2. Relinquished by _____ Date: 3-1-04

(Signature/Affiliation)

Time: 1400 1421

2. Received by _____ Date: 3-1-04

(Signature/Affiliation)

Time: 1420

3. Relinquished by _____ Date: _____

(Signature/Affiliation) _____

Time: _____

3. Received by _____ Date: 3-2-04

(Signature/Affiliation)

Time: 1300

() Samples received 3/1/04. Processed on 3/1/04.*

Comments:

ANALYSIS: Gross Alpha/Beta - MDC (reporting limits) of < 1.1 dpm/smear for alpha
< 100 dpm/smear for beta

128



0403011

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: 132109-022704-24

Pg 2 of 3

Project Name/Project No. EPA NEIC EDDP / 101115

Lab Destination Paragon Analytics, Inc.

Sample Shipment Date 3-01-04

ONE SAMPLE PER LINE

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
9	022704-24-09 Rm B2109 ESS Location	B-09 2/27/04 1500	Smear		
10		B-10			
11		B-11			
12		B-12			
13		B-13			
14		B-14			
15		B-15			
16		B-16			
17		B-17			
18		B-18			
19		B-19			
20		B-20			
21		B-21			
22		B-22			
23		B-23			
24		B-24			
25		B-25 1502			
26		B-26			
27		B-27			
28		B-28			
29		B-29			
30		B-30			

04030129

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403011

PROJECT MANAGER: Deb Fazio INITIALS: DF DATE: 3/2/04

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

Cooler #'s 1
 Temperature Ambient (Rad Only) °C
 Project Manager Signature / Date: Deb Fazio 3/4/04

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

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

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403011

PROJECT MANAGER: Deb Fazio INITIALS: DF DATE: 3/2/04

- Custody seals broken (on outside of shipping container or on sample containers).
- No Chain-of-Custody (COC) present.
- Number of samples on the COC do not match the number of samples received.
- Aqueous samples not preserved correctly (see pH discussion below).
- SVOC samples contained residual chlorine (list sample IDs and affected containers below).
- Samples received at inappropriate temperature.
- Insufficient sample to perform requested analyses.
- Extraction or analytical holding times expired in transit.
- Broken/leaking bottles and intact bottles received in same cooler (list affected sample IDs below).
- No analyses requested.
- Incorrect sample type received.
- VOAs, reactive CN/S, radon not headspace free (list sample IDs and affected vials below).
- Airbills not present and/or removable (record applicable shipper's tracking number below).
- Other (describe below).

Describe discrepancy:

COC are not properly relinquished by client.

Was the client contacted? No; Yes: Name _____ Date/Time _____

Was the pH of any sample adjusted by the laboratory? No; Yes (see Table below):

NOTE: No pH adjustments shall be made without prior consent of Project Manager. After pH adjustment, hold metals and radchem samples ≥ 16 hr before analysis.

Sample ID	Initial pH	Final pH (wait 30 min)	Type of Reagent Used	Lot No. of Reagent Used	Initials / Date / Time

Was the laboratory directed to proceed with the analysis of any samples yielding the presence of residual chlorine? No; Yes (see notes above).

Project Manager Signature / Date: Deb Fazio 3/4/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 9

**ADDITIONAL
SUPPORTING
DOCUMENTATION**

9

000133

Gas Proportional Counter

Instrument Calibration

Background Calibration:

**LB4100-A Weekly Instrument Calibration and Check
Background Determinations**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.171	0.000	0.500	PASS	2.280	0.000	3.000	PASS	A1 (01)
A2 (02)	0.075	0.000	0.500	PASS	1.842	0.000	3.000	PASS	A2 (02)
A3 (03)	0.117	0.000	0.500	PASS	2.037	0.000	3.000	PASS	A3 (03)
A4 (04)	0.091	0.000	0.500	PASS	1.972	0.000	3.000	PASS	A4 (04)
B1 (05)	0.068	0.000	0.500	PASS	1.786	0.000	3.000	PASS	B1 (05)
B2 (06)	0.073	0.000	0.500	PASS	1.581	0.000	3.000	PASS	B2 (06)
B3 (07)	0.082	0.000	0.500	PASS	1.883	0.000	3.000	PASS	B3 (07)
B4 (08)	0.076	0.000	0.500	PASS	1.798	0.000	3.000	PASS	B4 (08)
C1 (09)	0.090	0.000	0.500	PASS	1.735	0.000	3.000	PASS	C1 (09)
C2 (10)	0.094	0.000	0.500	PASS	1.774	0.000	3.000	PASS	C2 (10)
C3 (11)	0.101	0.000	0.500	PASS	1.751	0.000	3.000	PASS	C3 (11)
C4 (12)	0.098	0.000	0.500	PASS	1.914	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: 3/8/04

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

000135

BKA0306W.XLD

Printed 3/8/04 6:49 AM

**LB4100-B Weekly Instrument Calibration and Check
Background Determinations**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.071	0.044	0.150	PASS	1.338	1.244	1.486	PASS	A1 (01)
A2 (02)	0.101	0.050	0.235	PASS	1.394	1.255	1.493	PASS	A2 (02)
A3 (03)	0.088	0.037	0.173	PASS	1.397	1.251	1.518	PASS	A3 (03)
A4 (04)	0.101	0.001	0.193	PASS	1.365	1.225	1.540	PASS	A4 (04)
B1 (05)	0.136	-0.006	0.283	PASS	1.638	1.428	1.981	PASS	B1 (05)
B2 (06)	0.106	0.008	0.247	PASS	1.376	1.339	1.770	PASS	B2 (06)
B3 (07)	0.094	0.039	0.259	PASS	1.470	1.421	1.747	PASS	B3 (07)
B4 (08)	0.125	-0.027	0.316	PASS	1.572	1.498	1.741	PASS	B4 (08)
C1 (09)	0.130	0.046	0.174	PASS	1.528	1.324	1.754	PASS	C1 (09)
C2 (10)	0.099	0.042	0.205	PASS	1.610	1.327	1.733	PASS	C2 (10)
C3 (11)	0.172	0.067	0.219	PASS	1.583	1.344	1.766	PASS	C3 (11)
C4 (12)	0.106	-0.012	0.216	PASS	1.482	1.338	1.726	PASS	C4 (12)
D1 (13)	0.115	0.028	0.206	PASS	1.497	1.302	1.759	PASS	D1 (13)
D2 (14)	0.102	0.017	0.207	PASS	2.079	1.730	2.319	PASS	D2 (14)
D3 (15)	0.118	0.044	0.147	PASS	1.762	1.566	2.045	PASS	D3 (15)
D4 (16)	0.122	0.022	0.206	PASS	1.756	1.405	2.033	PASS	D4 (16)

Reviewed by: UCB

Date: 3/8/04

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

000136

BKE 3W.XLD

Printed 3/8/04 38 AM

Gas Proportional Counter
Quality Control Data
Daily Instrument Performance
Checks

000145

**LB4100-A Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.167	0.011	0.331	PASS	2.317	1.695	2.865	PASS	A1 (01)
A2 (02)	0.133	-0.031	0.181	PASS	2.083	1.316	2.368	PASS	A2 (02)
A3 (03)	0.150	-0.015	0.249	PASS	2.000	1.484	2.590	PASS	A3 (03)
A4 (04)	0.117	-0.026	0.208	PASS	2.000	1.428	2.516	PASS	A4 (04)
B1 (05)	0.100	-0.033	0.169	PASS	1.983	1.268	2.304	PASS	B1 (05)
B2 (06)	0.067	-0.032	0.178	PASS	1.683	1.094	2.068	PASS	B2 (06)
B3 (07)	0.133	-0.029	0.193	PASS	1.817	1.352	2.414	PASS	B3 (07)
B4 (08)	0.133	-0.031	0.183	PASS	1.967	1.279	2.317	PASS	B4 (08)
C1 (09)	0.100	-0.026	0.206	PASS	1.883	1.225	2.245	PASS	C1 (09)
C2 (10)	0.083	-0.025	0.213	PASS	1.983	1.258	2.290	PASS	C2 (10)
C3 (11)	0.067	-0.022	0.224	PASS	2.017	1.239	2.263	PASS	C3 (11)
C4 (12)	0.083	-0.023	0.219	PASS	2.317	1.378	2.450	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: 3/10/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

000138

**LB4100-A Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.200	0.011	0.331	PASS	2.233	1.695	2.865	PASS	A1 (01)
A2 (02)	0.167	-0.031	0.181	PASS	1.483	1.316	2.368	PASS	A2 (02)
A3 (03)	0.150	-0.015	0.249	PASS	2.367	1.484	2.590	PASS	A3 (03)
A4 (04)	0.050	-0.026	0.208	PASS	2.117	1.428	2.516	PASS	A4 (04)
B1 (05)	0.050	-0.033	0.169	PASS	1.850	1.268	2.304	PASS	B1 (05)
B2 (06)	0.067	-0.032	0.178	PASS	1.567	1.094	2.068	PASS	B2 (06)
B3 (07)	0.100	-0.029	0.193	PASS	1.533	1.352	2.414	PASS	B3 (07)
B4 (08)	0.100	-0.031	0.183	PASS	1.850	1.279	2.317	PASS	B4 (08)
C1 (09)	0.067	-0.026	0.206	PASS	1.883	1.225	2.245	PASS	C1 (09)
C2 (10)	0.183	-0.025	0.213	PASS	1.767	1.258	2.290	PASS	C2 (10)
C3 (11)	0.167	-0.022	0.224	PASS	1.717	1.239	2.263	PASS	C3 (11)
C4 (12)	0.117	-0.023	0.219	PASS	1.767	1.378	2.450	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: CCB

Date: 3/11/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

000139

BKAC XLD

Printed 3/11/04 1 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	GPM	LCL	UCL	Flag	GPM	LCL	UCL	Flag	
A1 (01)	0.067	-0.032	0.174	PASS	1.333	0.890	1.786	PASS	A1 (01)
A2 (02)	0.283	-0.022	0.224	FLAG-HIGH	1.400	0.937	1.851	PASS	A2 (02)
A3 (03)	0.250	-0.027	0.203	FLAG-HIGH	1.483	0.939	1.855	PASS	A3 (03)
A4 (04)	0.150	-0.022	0.224	PASS	1.367	0.913	1.817	PASS	A4 (04)
B1 (05)	0.233	-0.007	0.279	PASS	1.600	1.142	2.134	PASS	B1 (05)
B2 (06)	0.250	-0.020	0.232	FLAG-HIGH	1.700	0.922	1.830	PASS	B2 (06)
B3 (07)	0.200	-0.025	0.213	PASS	1.583	1.000	1.940	PASS	B3 (07)
B4 (08)	0.133	-0.012	0.262	PASS	1.667	1.086	2.058	PASS	B4 (08)
C1 (09)	0.100	-0.010	0.270	PASS	1.800	1.049	2.007	PASS	C1 (09)
C2 (10)	0.150	-0.023	0.221	PASS	1.483	1.119	2.101	PASS	C2 (10)
C3 (11)	0.217	0.011	0.333	PASS	1.583	1.096	2.070	PASS	C3 (11)
C4 (12)	0.117	-0.020	0.232	PASS	1.367	1.011	1.953	PASS	C4 (12)
D1 (13)	0.133	-0.016	0.246	PASS	1.750	1.023	1.971	PASS	D1 (13)
D2 (14)	0.233	-0.022	0.226	FLAG-HIGH	1.983	1.521	2.637	PASS	D2 (14)
D3 (15)	0.150	-0.015	0.251	PASS	1.450	1.248	2.276	PASS	D3 (15)
D4 (16)	0.233	-0.013	0.257	PASS	1.867	1.243	2.269	PASS	D4 (16)

- detectors 2, 3, 6, 14 ^{3/11} will be recounted in file BKB0311A
+ detector 14 will be recounted in file BKB0311B

Reviewed by: LCB

Date: 3/11/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/8/04 Analyst: CJ

000170

BKB0311.XLD

Printed 3/11/04 7:24 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	0.183	-0.022	0.224	PASS	1.350	0.937	1.851	PASS	A2 (02)
A3 (03)	0.067	-0.027	0.203	PASS	1.367	0.939	1.855	PASS	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)	0.117	-0.020	0.232	PASS	1.500	0.922	1.830	PASS	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)	0.083	-0.023	0.221	PASS	1.633	1.119	2.101	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)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

Reviewed by: LCB

Date: 3/11/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000141

BKBA.XLD

Printed 3/11/04 8:41 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
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)	#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)	0.117	-0.022	0.226	PASS	2.150	1.521	2.637	PASS	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: _____ *J*

Date: 3/11/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000142

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.217	-0.032	0.174	FLAG-HIGH	1.350	0.890	1.786	PASS	A1 (01)
A2 (02)	0.217	-0.022	0.224	PASS	1.667	0.937	1.851	PASS	A2 (02)
A3 (03)	0.133	-0.027	0.203	PASS	1.467	0.939	1.855	PASS	A3 (03)
A4 (04)	0.050	-0.022	0.224	PASS	1.367	0.913	1.817	PASS	A4 (04)
B1 (05)	0.267	-0.007	0.279	PASS	1.717	1.142	2.134	PASS	B1 (05)
B2 (06)	0.267	-0.020	0.232	FLAG-HIGH	1.350	0.922	1.830	PASS	B2 (06)
B3 (07)	0.300	-0.025	0.213	FLAG-HIGH	1.583	1.000	1.940	PASS	B3 (07)
B4 (08)	0.133	-0.012	0.262	PASS	1.783	1.086	2.058	PASS	B4 (08)
C1 (09)	0.083	-0.010	0.270	PASS	1.433	1.049	2.007	PASS	C1 (09)
C2 (10)	0.150	-0.023	0.221	PASS	1.417	1.119	2.101	PASS	C2 (10)
C3 (11)	0.183	0.011	0.333	PASS	1.700	1.096	2.070	PASS	C3 (11)
C4 (12)	0.100	-0.020	0.232	PASS	1.767	1.011	1.953	PASS	C4 (12)
D1 (13)	0.083	-0.016	0.246	PASS	1.550	1.023	1.971	PASS	D1 (13)
D2 (14)	0.300	-0.022	0.226	FLAG-HIGH	2.000	1.521	2.637	PASS	D2 (14)
D3 (15)	0.200	-0.015	0.251	PASS	1.967	1.248	2.276	PASS	D3 (15)
D4 (16)	0.167	-0.013	0.257	PASS	2.050	1.243	2.269	PASS	D4 (16)

- Det 1, 6, 7, 14 will be recounted in file BKB0312A.

Reviewed by: _____

Date: 3/12/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000143

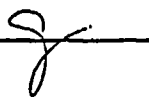
BKB 2.XLD

Printed 04 9:06 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.017	-0.032	0.174	PASS	1.683	0.890	1.786	PASS	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)	0.100	-0.020	0.232	PASS	1.517	0.922	1.830	PASS	B2 (06)
B3 (07)	0.183	-0.025	0.213	PASS	1.567	1.000	1.940	PASS	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)	0.117	-0.022	0.226	PASS	2.000	1.521	2.637	PASS	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: 3/12/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000144

Gas Proportional Counter
Quality Control Data
Daily Instrument Performance
Checks

000145

**LB4100-A Daily Instrument Performance Check
Efficiency Determinations**

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2325	0.2085	0.2546	PASS	0.8578	0.7959	0.9352	PASS	A1 (01)
A2 (02)	0.2282	0.2062	0.2574	PASS	0.8609	0.7892	0.9828	PASS	A2 (02)
A3 (03)	0.2236	0.2062	0.2690	PASS	0.8506	0.7715	0.9888	PASS	A3 (03)
A4 (04)	0.2137	0.1880	0.2528	PASS	0.8233	0.7382	0.9417	PASS	A4 (04)
B1 (05)	0.2379	0.2257	0.2534	PASS	0.8898	0.8564	0.9214	PASS	B1 (05)
B2 (06)	0.2507	0.2387	0.2630	PASS	0.9235	0.9020	0.9548	PASS	B2 (06)
B3 (07)	0.2248	0.2186	0.2492	PASS	0.8866	0.8665	0.9156	PASS	B3 (07)
B4 (08)	0.2597	0.2435	0.2799	PASS	0.9359	0.9071	0.9634	PASS	B4 (08)
C1 (09)	0.2551	0.2476	0.2862	PASS	0.9002	0.8520	0.9638	PASS	C1 (09)
C2 (10)	0.2253	0.2133	0.2394	PASS	0.8514	0.8366	0.8885	PASS	C2 (10)
C3 (11)	0.2348	0.2148	0.2570	PASS	0.9063	0.8661	0.9334	PASS	C3 (11)
C4 (12)	0.2575	0.2402	0.2658	PASS	0.9296	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: 3/10/04

Historical Control Limits established 03/03/04. CJ

971000

**LB4100-A Daily Instrument Performance Check
Efficiency Determinations**

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2276	0.2085	0.2546	PASS	0.8599	0.7959	0.9352	PASS	A1 (01)
A2 (02)	0.2246	0.2062	0.2574	PASS	0.8725	0.7892	0.9828	PASS	A2 (02)
A3 (03)	0.2353	0.2062	0.2690	PASS	0.8716	0.7715	0.9888	PASS	A3 (03)
A4 (04)	0.2272	0.1880	0.2528	PASS	0.8435	0.7382	0.9417	PASS	A4 (04)
B1 (05)	0.2396	0.2257	0.2534	PASS	0.8915	0.8564	0.9214	PASS	B1 (05)
B2 (06)	0.2593	0.2387	0.2630	PASS	0.9413	0.9020	0.9548	PASS	B2 (06)
B3 (07)	0.2233	0.2186	0.2492	PASS	0.8756	0.8665	0.9156	PASS	B3 (07)
B4 (08)	0.2612	0.2435	0.2799	PASS	0.9332	0.9071	0.9634	PASS	B4 (08)
C1 (09)	0.2670	0.2476	0.2862	PASS	0.8863	0.8520	0.9638	PASS	C1 (09)
C2 (10)	0.2339	0.2133	0.2394	PASS	0.8527	0.8366	0.8885	PASS	C2 (10)
C3 (11)	0.2359	0.2148	0.2570	PASS	0.9213	0.8661	0.9334	PASS	C3 (11)
C4 (12)	0.2507	0.2402	0.2658	PASS	0.9288	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: 3/11/04

Historical Control Limits established 03/03/04. CJ

000147

EFA .XLD

Printed 3 4 6:24 AM

Printed 3/11/04 4 AM

LB4100 - B
Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2437	0.2277	0.2583	PASS	0.8558	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2463	0.2314	0.2605	PASS	0.8696	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2453	0.2291	0.2588	PASS	0.8933	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2384	0.2302	0.2602	PASS	0.8767	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2468	0.2342	0.2646	PASS	0.8886	0.9050	0.9663	FLAG-LOW	B1 (05)
B2 (06)	0.2248	0.2219	0.2484	PASS	0.8531	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2466	0.2343	0.2656	PASS	0.9167	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2340	0.2236	0.2616	PASS	0.8812	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2551	0.2453	0.2752	PASS	0.9231	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2537	0.2311	0.2644	PASS	0.8985	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2507	0.2362	0.2674	PASS	0.8933	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2390	0.2241	0.2531	PASS	0.8890	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2588	0.2332	0.2660	PASS	0.9014	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2512	0.2375	0.2664	PASS	0.9001	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2572	0.2387	0.2733	PASS	0.8928	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2555	0.2381	0.2666	PASS	0.9180	0.8823	0.9367	PASS	D4 (16)

- detectors 5, 6 are offline β

Reviewed by: LWB

Date: 3/11/04

Control Limits established 12/21/03. JME

000148

EFB0311.XLD

Printed 3/11/04 6:17 AM

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2416	0.2277	0.2583	PASS	0.8690	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2535	0.2314	0.2605	PASS	0.8779	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2370	0.2291	0.2588	PASS	0.8807	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2525	0.2302	0.2602	PASS	0.8797	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2452	0.2342	0.2646	PASS	0.9076	0.9050	0.9663	PASS	B1 (05)
B2 (06)	0.2298	0.2219	0.2484	PASS	0.8471	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2449	0.2343	0.2656	PASS	0.9161	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2409	0.2236	0.2616	PASS	0.8624	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2651	0.2453	0.2752	PASS	0.9280	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2480	0.2311	0.2644	PASS	0.9027	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2516	0.2362	0.2674	PASS	0.8960	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2432	0.2241	0.2531	PASS	0.8804	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2563	0.2332	0.2660	PASS	0.9180	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2540	0.2375	0.2664	PASS	0.8999	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2614	0.2387	0.2733	PASS	0.8985	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2614	0.2381	0.2666	PASS	0.8941	0.8823	0.9367	PASS	D4 (16)

- detector 6 is offline β

Reviewed by: LCB

Date: 3/12/04

Control Limits established 12/21/03. JME

000149

EFE 2.XLD

Printed 3/12/04 7:56 AM

Gas Proportional Counter

Instrument Calibration

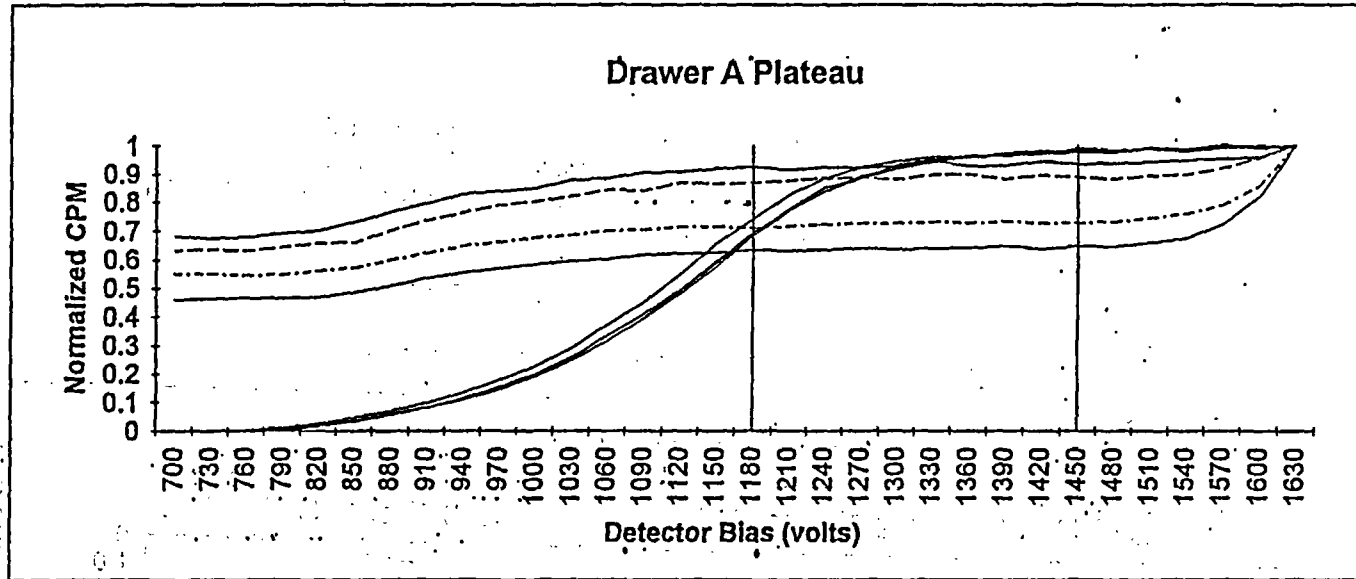
Initial Efficiency Calibration

Standards Traceability

000150

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:

Optimum alpha only operating voltage:

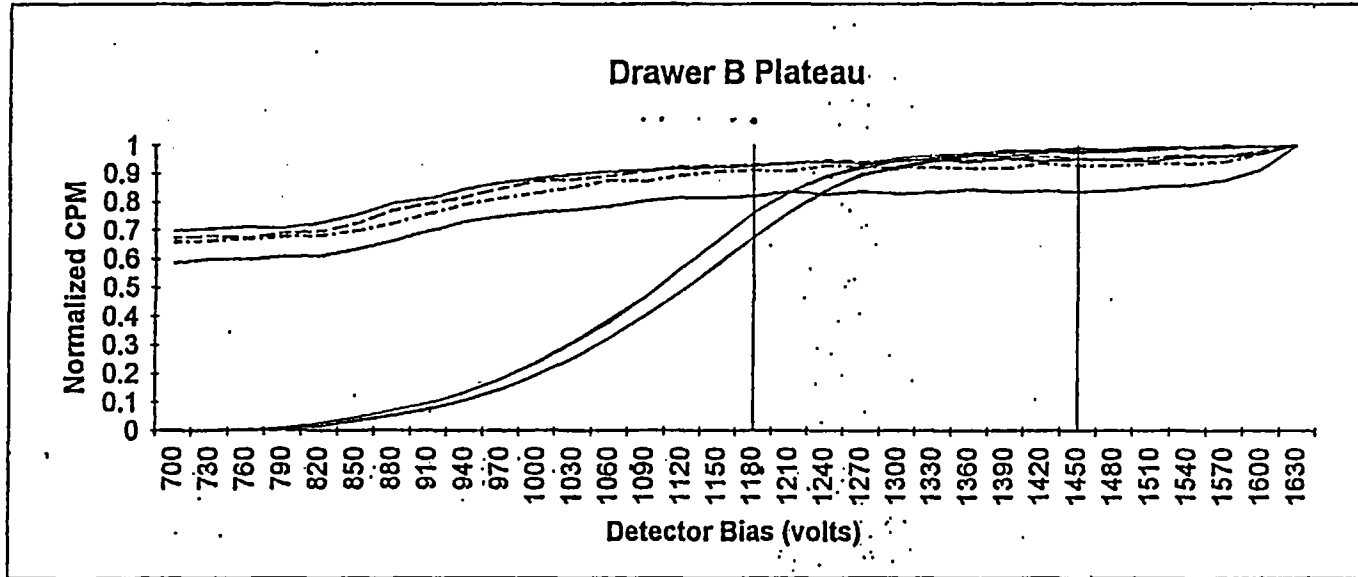
	A1	A2	A3	A4
Beta slope at beta voltage	0.92%	1.77%	1.88%	2.16%
Alpha slope at beta voltage	0.56%	0.28%	1.54%	1.11%
Alpha slope at alpha voltage	1.02%	1.74%	1.52%	0.95%

000151

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

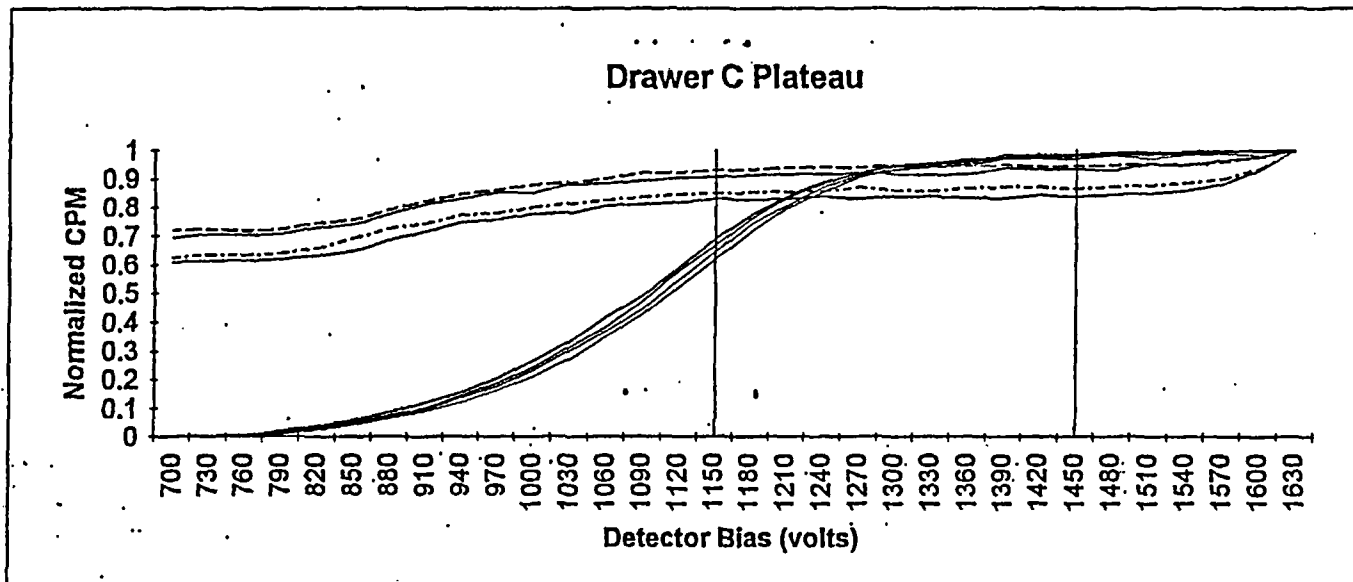
	B1	B2	B3	B4
Beta slope at beta voltage	1.14%	0.11%	0.85%	2.10%
Alpha slope at beta voltage	-0.54%	-0.10%	1.37%	0.88%
Alpha slope at alpha voltage	2.29%	1.61%	1.63%	2.40%

000152

gafel

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:

Optimum alpha only operating voltage:

	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%

000153

gs/6/04

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

File names: PTD128 A A ^(Data from 406 file not used.) PTD129 C
~~PTD128 B~~ PTD128 B PTD129 A

Sources Used:

Det

Am 241 - 410

1 3 8

41

2 4 10

412

5 7 9 11

413

6 8 10 12

Sr 90 - 406

3 1 14

407

4 2 12

408

7 5 11 9

409

8 6 12 10

Operating voltage:

Drawer A: ~~1447.5~~ 1447.5

Drawer B: 1447.5

Drawer C: 1447.5

1/20/04 Set ROI's on Drawers A, B, C

Source Used

Det

Sr 90/4-90 - 406

1 5 9

407

2 6 10

408

3 7 11

409

4 8 12

Continued on Page

Read and Understood By

Clare Jensen

2/10/04

Leah Balho

2/10/04

Signed

Date

Signed

000154

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
 2/3
 3/8/04

000155

Sources

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

000156

PROJECT LB4700-A

Continued From Page _____

2/23/04 Pb-210 Calibration - Pb-210 on flat plauchets (w/ foil)
 Benchsheet: 17009PB.XLS Source ID: 1125

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

2/24/04 Am-241 wipe Calibration - Am-241 on filter

Source: 73 Source ID: 1126 log file: AmWipe-03/04

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

$\alpha \rightarrow \beta$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \beta \text{ channels}}{\text{counts in } \alpha \text{ channels}}$$

2/24/04 Sr-90 wipe Calibration - Sr-90 on filter

Source: 602 Source ID: 1127 log file: SrWipe-03/04

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

$\beta \rightarrow \alpha$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \alpha \text{ channels}}{\text{counts in } \beta \text{ channels}}$$

Continued on Page _____

Read and Understood By

Clair Service

Signed

3/2/04

Date

Tei [Signature]

Signed

3.3.04

000157

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 <u>6.5V</u>	A <u>0.1</u>
2 <u>8.0V</u>	B ↓
	C ↓
	D NP

Bkg. Cal. File ID

Dr A: <u>BKA0228W</u>
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	R	P	✓	9	LCB		P		LCB		P		✓
2									✓	10									✓
3									✓	11									✓
4									✓	12			↓						✓
5									✓	13	MP				MP				✓
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

93/2/4

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	MS
1-12	Bkg checks	N/A	N/A	BKA0302	60	0710	g	g	3/2/04	
9	0215044-S1	15044210.XLS	Pb 210 1CV	PBA0302	30	0836	g	g	3/2/04	
10	-S2									
11	-S3									
12	-S5									
5	0216094-S1	15044210.XLS		PBA0302A	30	1056	g	g	3/2/04	
6	-S2									
7	-S3									
8	-S5									
1	0215094-S1			PBA0302B	30	1205	g	g	3/2/04	
2	-S2									
3	-S3									
4	-S5									
9	0413052-S10	1309D Pb	Pb 210	PBA0302C	30	1373	g	g	3/2/04	

Form 780f6.frm (4/6/2001)

Reviewed by g Date 3/2/04

Comments:

000158

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	Au 241 Wipe (a)	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	Sr 90 Wipe (a)	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	Pb 1 CV	PB10302D	30	1446	g	g	3/2/04	
2				PB10302E		1519				
3				PB10302F		1557				

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

Reviewed g

Date 3/2/04

Comments:

000159

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/cm² 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 D. M. [Signature] 9-20-93

000160

Am-241 Standard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.: 160.4 dps 4335.1 pCi/s						Ave Rec w/in 5% (PAI)	Ave w/in 2 Std Dev (ICPT)	2 Std Dev w/in 10% Ave (ICPT)
	Det	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery			
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)

000161

 SEEKER G A M M A A N A L Y S I S R E S U L T S P S 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 BACKGROUND SUBTRACT RESULTS 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

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)	N T	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 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

Table with 9 columns: PK.#, ENERGY (keV), ADDRESS CHANNEL, NET/MDA COUNTS, UN-CERTAINTY, C.L. COUNTS, BKG COUNTS, FWHM (keV), FLAG. Contains 2 rows of peak data.

031863D08.SPC Analyzed by

SEEKER BACKGROUND SUBTRACT RESULTS 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

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 %
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```

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 E (keV)	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

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-----
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 BACKGROUND SUBTRACT RESULTS 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 FINAL ACTIVITY REPORT 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:

Table with 7 columns: Nuclide, ENERGY (keV), N T, Concentration (pCi/sample), MDA, Critical Level, Halflife (hrs). Rows include Am-241, Cd-109, Co-57, Ce-139, Hg-203, Sn-113, Cs-137, Y-88, Co-60.

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

UNKNOWN, SUM or ESCAPE PEAKS

Table with 9 columns: PK.#, ENERGY (keV), ADDRESS CHANNEL, NET COUNTS, UN-CERTAINTY, C.L. COUNTS, BKG COUNTS, FWHM (keV), FLAG. Rows 2 and 3 show deleted peaks.

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				

000172

53/01.7

Sources

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

000173

PROJECT LB4100-A

Continued From Page

2/23/04 Pb-210 Calibration - Pb-210 on flat plaquettes (w/ foil)
 Benchrest: 14009PB-XL-C Source ID: 1125

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

3/2/04 Am-241 wipe Calibration - Am-241 on filter

Source: 73 Source ID: 1126 log file: AmWipe-03/04

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

$\lambda \rightarrow \beta$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \beta \text{ channels}}{\text{counts in } \lambda \text{ channels}}$$

3/2/04 Sr-90 wipe Calibration - Sr-90 on filter

Source: 602 Source ID: 1127 log file: SrWipe-03/04

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

$\beta \rightarrow \lambda$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \lambda \text{ channels}}{\text{counts in } \beta \text{ channels}}$$

Continued on Page

Read and Understood By

Clare Terina

Signed

3/2/04

Date

[Signature]

Signed

3-3-04

Date

000174

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

Paragon Analytics, Inc.
Low Background Gas Flow Proportional Counter Log
Instrument: LB4100A

SOP 724 v. 8

Date: 3/2/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1650	A 0.1
2800	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	R	P	✓	9	LCB		P		LCB		P		✓
2						g	P		✓	10									✓
3									✓	11									✓
4									✓	12									✓
5									✓	13	MP				NP				✓
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	
9	0215044-S1	15044210.XLS	Pb 210 1CV	PBA0302	30	0836	g	g	3/2/04	
10	-S2									
11	-S3									
12	-S5									
5	0215044-S1	15044210.XLS		PBA0302A	30	1050	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	0213050-S10	13050 Pb	Pb 210	PBA0302C	30	1313	g	g	3/2/04	

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

Reviewed by g Date 3/2/04

000175

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	Au241 Wipe Cal.	EAU0302A	30	1320	g	g	3/2/04	NA
2				EAU0302B		1326				
3				EAU0302C		1330				
4				EAU0302D		1341				
5				EAU0302E		1346				
6				EAU0302F		1351				
7				EAU0302G		1413				
8				EAU0302H		1421				
9				EAU0302I		1429				
10				EAU0302J		1434				
11				EAU0302K		1439				
12				EAU0302L		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	Pb1 CV	PBA0302D	30	1446	g	g	3/2/04	
2				PBA0302E		1519				
3				PBA0302F		1557				

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

Reviewed

Date 3/2/04

Comments:

000176

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

62753A-307

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

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/cm² 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:

UM Inty 12-10-01

000177

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	14797.08	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

instr: ghw/wipc

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

000178

Unit Type: LB4100-B
 Counting Unit ID: Aqua
 High Voltage Mode: Simultaneous
 Application Revision: 2
 Application Version: Standard
 Rev. 07/28/03 JE

Data file name: BR81221
 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

$y = b \cdot m \cdot (w \cdot \text{mass} - x \cdot y)$		$y = a \cdot m \cdot (w \cdot \text{mass} - x \cdot y)$	
Alpha b ₀	1.24550	Beta b ₀	1.0000
m ₀	0.99400	m ₀	0.9999
a ₀	1.0000	a ₀	1.0000
x ₀	0.0000	x ₀	0.0000
Alpha to Beta X-talk $y = m \cdot b \cdot \text{mass} + b$		Beta to Alpha X-talk $y = m \cdot \text{mass} + b$	
a → b xtalk m ₀	0.2740	b → a xtalk m ₀	-2.00E-06
a → b xtalk b ₀	1.0010	b → a xtalk b ₀	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 xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	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	7.608	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	17555.800	2.070	7.727	0.4102	1.000	n/a	n/a

000179

JE
12/23/03

Unit Type: LB4100-B
 Counting Unit ID: Arpa
 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: 12/21/03
 Alpha efficiency log file: Am241-11/03
 Alpha attenuation calibration: ABA1103.XLS
 Beta efficiency log file: Sr90R-11/03
 Beta attenuation calibration: ABA1103.XLS

Alpha prog. log file: n/a
 Alpha prog. attenuation: n/a
 Beta prog. log file: n/a
 Beta prog. attenuation: n/a

y = m * (x/mass - 200)		y = m * (x/mass - 200)	
Alpha b ₀	1.24550	Beta b ₀	1.0000
m ₀	0.99400	m ₀	0.9999
a ₀	1.0000	a ₀	1.0000
z ₀	0.0000	z ₀	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	0.2740	b → a xtalk m ₀	-2.90E-08
a → b xtalk b ₀	1.0010	b → a xtalk b ₀	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 xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.		
D2	602	12/21/03 12:02	8.00	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	8.00	0.0	31.400	0.138	12.261	0.2103	1.248	n/a	n/a	17515.200	1.906	8.604	0.4195	1.000	n/a	n/a		

SG
 12/23/03

000180

Unit Type: LB4100 -B
 Counting Unit ID: Aqua
 High Voltage Mode: Simultaneous
 Application Revision: 2
 Application Version: Standard
 Rev. 07/20/03 JE

Data File Name: SR81221B
 Batch ID: VER
 Count Press (m): 5
 Batch Ended: 12/21/03 12:09

Background logfile: BKGASW
 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 / (r * mass * AUF)		y = a * m / (r * mass * AUF)	
Alpha b2	1.24550	Beta b2	1.0000
m2	0.99499	m2	0.9999
a2	1.0000	a2	1.0000
z2a	0.0000	z2a	0.0000
Alpha to Beta X-talk y = m * b * mass		Beta to Alpha X-talk y = m * mass * b	
a -> b xtalk m2	0.2749	b -> a xtalk m2	-2.00E-08
a -> b xtalk b2	1.0019	b -> a xtalk b2	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.
01	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	1.246	n/a	n/a	14812.000	1.908	6.905	0.4195	1.000	n/a	n/a

000181

46
12/23/03

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	3KB1221
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	36	1125	JE	SE	12/21/03	
1	12312072-1	AB631215-3	2/P	40A1221	1000	1132	JE	JE	12/22/03	30/100
2	-1D									
3	-2									
4	-2MS									
5	AD051215-3HR									
6	-3LCS									
13-13	602	-	5r-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14-14	729	-	t	t	t	t	t	t	t	
15-15	73	-	Am-241 wipe Ver	AMB1221	5	1151	JE			
16-16	601	-	t	t	t	t	t	t	t	
17-17	602	-	5r-90 wipe Ver	SRB1221A	5	1157	JE	SE	12/21/03	
18-18	729	-	t	t	t	t	t	t	t	
19-19	73	-	Am-241 wipe Ver	AMB1221A	5	1158	JE			
20-20	601	-	t	t	t	t	t	t	t	
21-21	602	-	5r-90 wipe Ver	SRB1221B	5	1204	SE	JE	12/21/03	

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

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

Reviewed by JE

Date 12/22/03

000182

Low Background Gas Flow Proportional Counter Run Log

Instrument: LB4100B

Date: 12/21/03

Det	SupID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
13	729	-	SI-90 mpc Ver	SR01221B	5	1209	JE	JE	12/21/03	NA
11	729 73	-	Ant 241 mpc Ver	AMB1221B	5	1205	JE	↓	↓	↓
9	601	-	t	↓	↓	↓	↓	↓	↓	↓
<div style="position: relative; height: 400px;"> 12/22/03 1166 </div>										

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

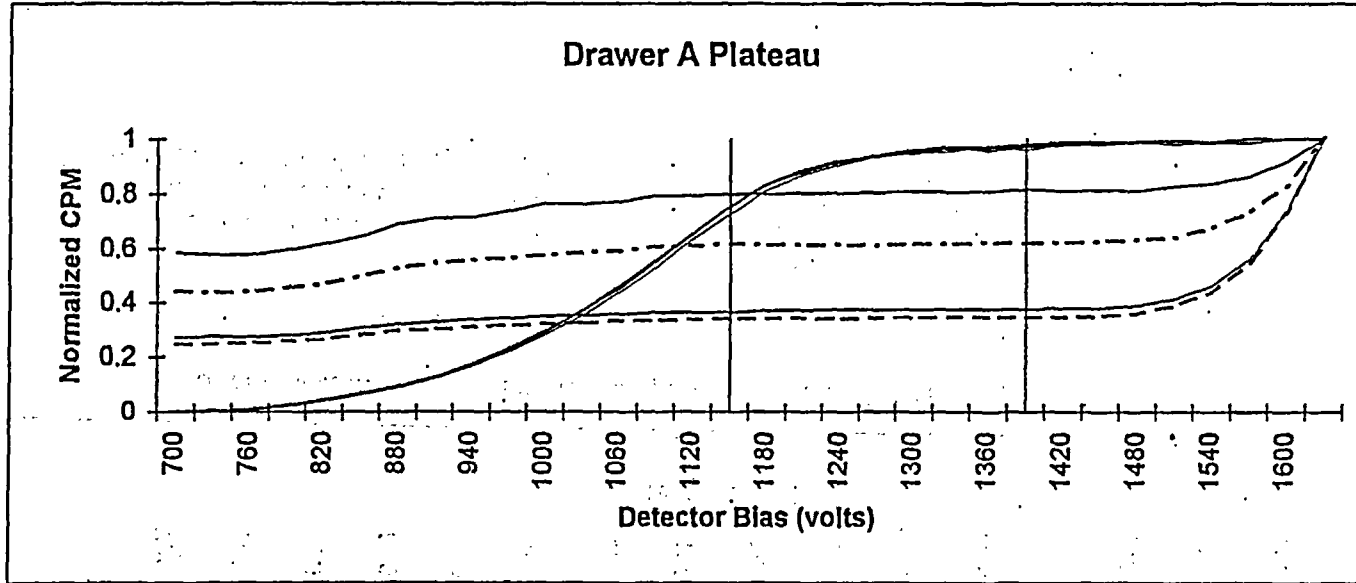
Reviewed AG Date 12/22/03

Comments:

000183

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**

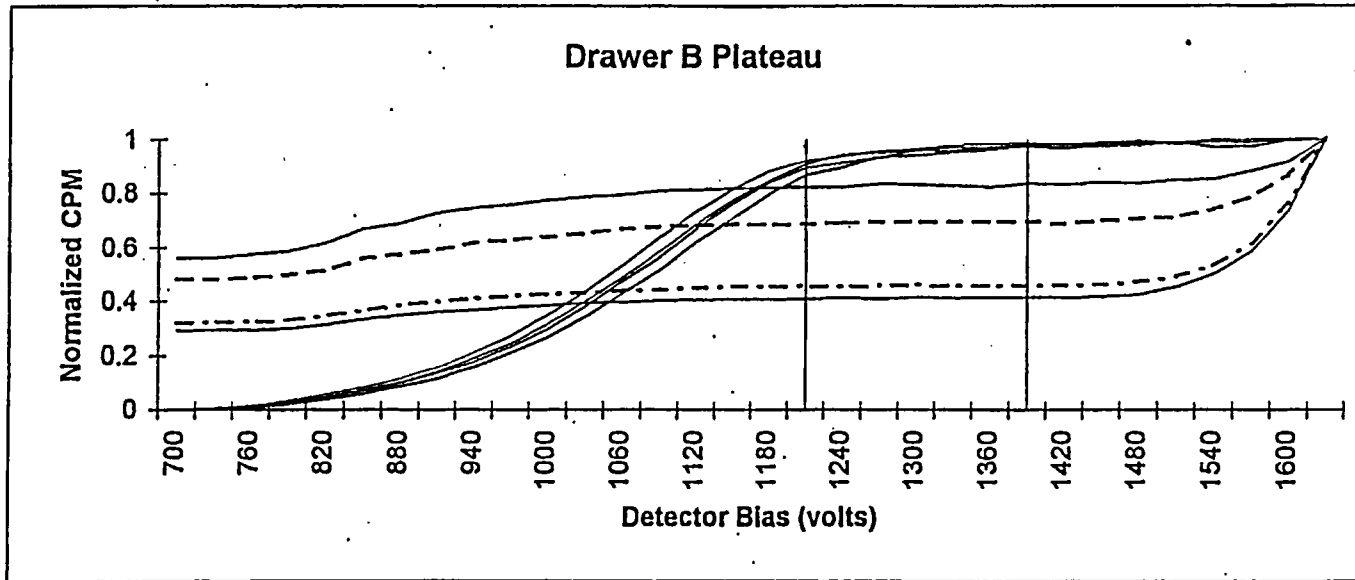
	A1	A2	A3	A4
Beta slope at beta voltage	1.73%	1.36%	2.04%	1.59%
Alpha slope at beta voltage	0.75%	0.45%	0.63%	0.66%
Alpha slope at alpha voltage	1.76%	1.86%	1.20%	0.79%

AK
11/13/03

781000

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:

Optimum alpha only operating voltage:

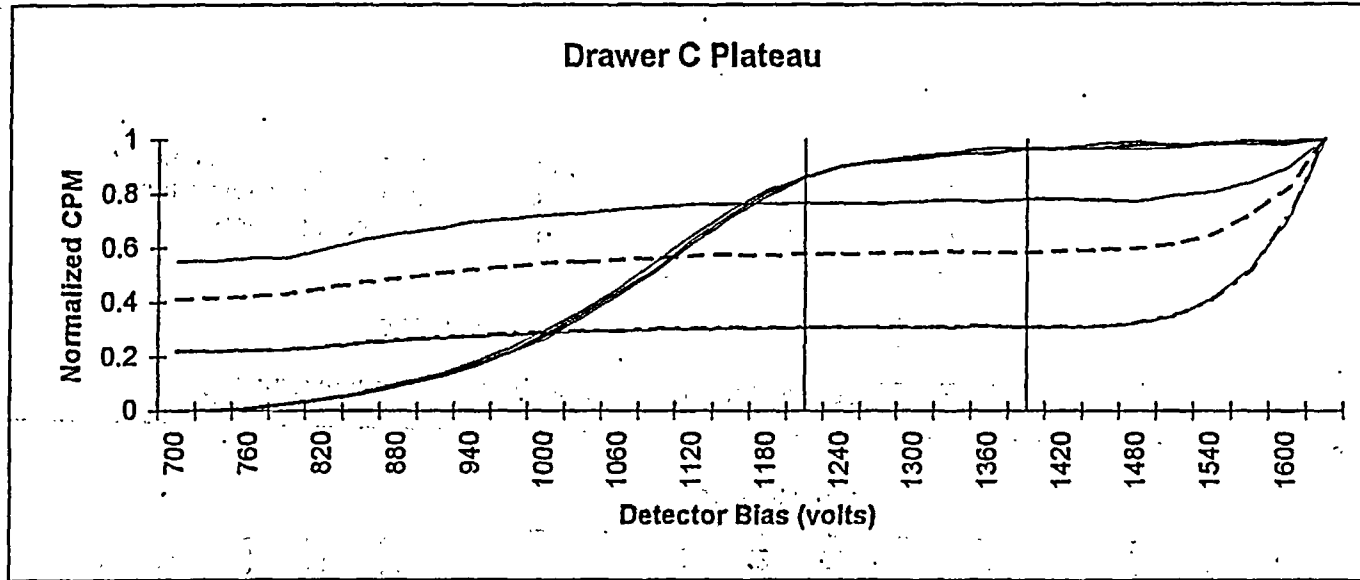
	B1	B2	B3	B4
Beta slope at beta voltage	0.25%	1.73%	1.96%	1.01%
Alpha slope at beta voltage	1.26%	0.14%	0.86%	0.88%
Alpha slope at alpha voltage	1.42%	0.92%	0.63%	0.59%

000185

AK
 11/13/03

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:

Optimum alpha only operating voltage:

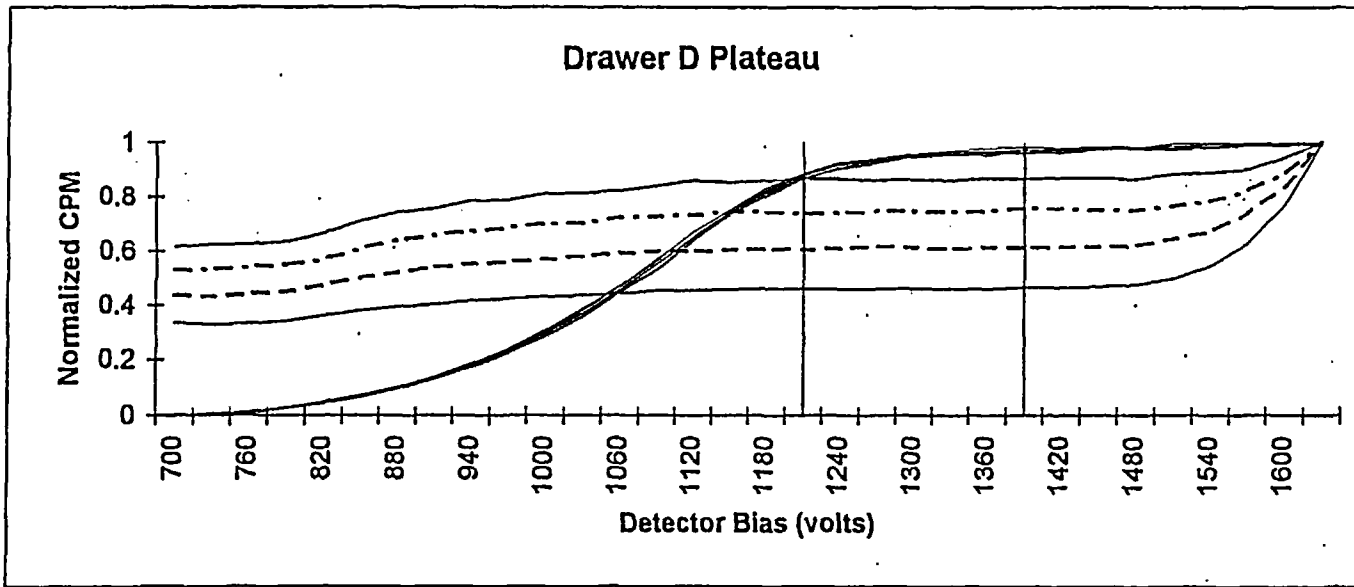
	C1	C2	C3	C4
Beta slope at beta voltage	1.97%	2.08%	1.59%	2.05%
Alpha slope at beta voltage	0.49%	0.66%	0.69%	-0.24%
Alpha slope at alpha voltage	0.44%	1.15%	1.08%	1.14%

981000

JG
11/13/03

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:

Optimum alpha only operating voltage:

	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%

481000

Printed 11/11/03 11:17 AM

GE
 11/13/03

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

881000

EAW1226.XLD

Printed 1/5/04 10:28 AM

AK
1/5/04

SOURCES.XLS

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

000189

12/11/03
JE

Complete computer back-up was performed.
Scandisk was done and the computer's C:\
drive was defragmented.

File name ~~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: F3 Source ID: 1123 log file: Am Wipe-11/03

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

Xtalk 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
Sr Wipe-11/03

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

Xtalk is calculated for each detector using
the following equation:
counts in ^{12/26/04} Beta channels / counts in Beta channels
Alpha

Continued on Page

Read and Understood By

Clare Smith

Signed

1/2/04

Date

Salie Ellingsen

Signed

1/2/04 000190

Date

pg 265878 a
(cont. from pg NA b)

Paragon Analytics, Inc.
Low Background Gas Flow Proportional Counter Log
Instrument: **LB4100B**

SOP 724 Rev 8

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1700	A 0.1
2200	B
	C
	D

Bkg. Cal. File ID

Dr A	BK81220W
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	BK81226	60	0908	JE	JE	12/26/03	
	0312082-1	AB031222-1	2/B	ABB1224	60	102642	JE	JE	12/20/03	
2	-1D									
3	-1A5									
4	-1A5D									
5	-2									
6	-3									
7	AB031222-1A3									
8	-165									
9	0312082-1	SR031222-2	Si-9a	SAB1226	60	102640	JE			
10	-2									
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

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

Comments:

Reviewed by CF Date 12/29/03

000191

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	SI-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	0312128-4									
4	SR031222-248									
5	0312128-4									
6	SR031222-3105	SR031222-3	SI-9.0	SRB1226B	60	1223 1230	JE			
7	0312118-1	AB031222-2	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	AB031222-2	2/B	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10115									
3	-11									
4	-12									
5	-13									
6	-13D									
7	AB031222-248									
8	2105									
1	73	NA	10-241 4/c 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:

000192

pg 265879 a

(cont. from pg NA b)

265879

12/26/03

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 724 Rev 8

Date: 12/26/03

Instrument Background and Response Checklist *See pages 265879a for Daily Check info 12/26/03

P-10 Supply	P-10 Flow
1 750	A 0.1
2 2500	B
	C
	D

Bkg. Cal. File ID

Dr A Bk B1220L
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

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
3	73	NA	Am-241 wipe Cct	EAB1226B	20	1511	JE	SE	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		1621				
16				O		1626				
1	602	NA	Sr-90 wipe Cct	ES61226L	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:

000193

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

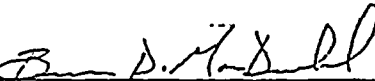
47007-307

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, 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/cm² 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

 9-20-93

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:\instl\gammaVerOtherTests.xls(Am-241 b)

000195

031983D02.SPC Analyzed by 72

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

Table with 8 columns: PK.#, ENERGY (keV), ADDRESS CHANNEL, NET/MDA COUNTS, UN-CERTAINTY, C.L. COUNTS, BKG COUNTS, FWHM (keV), FLAG. Contains 3 rows of peak data.

031983D02.SPC Analyzed by

SEEKER BACKGROUND SUBTRACT RESULTS 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

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 E (keV)	Concentration (pCi/sample)	MDA	Critical Level	Half-life (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

SEEKER G A M M A A N A L Y S I S R E S U L T S P S 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

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 E (keV)	Concentration (pCi/sample)	MDA	Critical Level	Half-life (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

SEEKER GAMMA ANALYSIS RESULTS 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

Table with 9 columns: PK.#, ENERGY (keV), ADDRESS CHANNEL, NET/MDA COUNTS, UN-CERTAINTY, C.L. COUNTS, BKG COUNTS, FWHM (keV), FLAG. Contains 3 rows of peak data.

031552D03.SPC Analyzed by

SEEKER BACKGROUND SUBTRACT RESULTS 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

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 E (keV)	Concentration (pCi/sample)	MDA	Critical Level	Half-life (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

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	0.41585703	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

000206

ESW1226L.XLD

Printed 1/5/04 11:28 AM

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

000207

12/11/03
JE Complete computer back-up was performed.
Second disk was done and the computer's C:\
drive was defragmented.
File name ~~12/11/03~~ 12/11/03 LB4100-B
Pg. 12/10/03

12/26/03
JE Am-241 wipe Calibration
Am-241 on filter
Source: 73 Source ID: 1123 log file: Am Wipe 11/03
File names: 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:
 $\frac{\text{counts in Beta channels}}{\text{counts in Alpha channels}}$

12/26/03
JE Sr-90 wipe Calibration
Sr-90 on filter
Source: 602 Source ID: 1124 log file: Sr-90
Sr Wipe - 11/03
File names: 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:
 $\frac{\text{counts in Beta channels}}{\text{Alpha}}$

Continued on page

Read and Understood By

Claire Smith

Signed

1/2/04

Date

Salie Edrington

Signed

1/2/04

000208

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

Paragon Analytics, Inc.
 Low Background Gas Flow Proportional Counter Log
 Instrument: **LB4100B**

SOP 72 v 8

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow	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
1 700	A 0.1	1	JE		P		JE		P		✓	9	JE		P		JE		P		✓
2 2000	B	2									✓	10									✓
	C	3									✓	11									✓
	D	4									✓	12									✓
		5									✓	13									✓
		6									✓	14									✓
		7									✓	15									✓
		8									✓	16									✓

Bkg. Cal. File ID

Dr A	Bk B1220W
Dr B	
Dr C	
Dr D	

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	NR	BK81226	60	0908	JE	JE	12/26/03	
1	0312081-1	AB031222-1	2/B	ABB1222	60	102642	JE	JE	12/20/03	
2	-1D									
3	-1A5									
4	-1MSD									
5	-2									
6	-3									
7	AD031222-1A3									
8	-1L65									
9	0312082-1	SR031222-2	51-90	SRB1226	60	102040	JE			
10	-2									
11	-3									
12	-41									
13	-5									
14	-6									
15	-8									

Form 780r6.1rtn (4/6/2001)

Comments:

Reviewed by CJ Date 12/29/03

000209

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	SR031222-24B									
5	-210									
6	SR031222-3LS	SR031222-3	S1-9.0	SRB1226B	60	1223	JE			
7	0312118-1	AB031222-2	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	AB031222-2	2/B	AB01226B	60	1339	JE	JE	12/26/03	
2	-10AS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	AB031222-2MB									
8	-210S									
1	73	NA	1m-24 1/2 Cc/b.	EAW1226	10	1459	JE	JE	12/26/03	
2	4			A		1505	JE			

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

Reviewed _____ Date 12/29/03

Comments:

000210

pg 265879 a
 (cont. from pg NA b)

Paragon Analytics, Inc.
 Low Background Gas Flow Proportional Counter Log

SOP 724 Rev 8

Instrument: **LB4100B**

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 2500	B
	C
	D 9

Bkg. Cal. File ID

Dr A Bk B, 220 W
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

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
3	73	NA	Am 241 4.72 Calib	ESR1226B	10	1511	JE	SE	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	724/03	14621				
16				O		1626				
1	602	NA	Si 30 wpa Calib	ESR1226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

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

Reviewed by Gj Date 12/29/03

Comments:

000211

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
4	C02	NA	Si-90 wip. Cell	ESW12260	12	1529	JE	JE	12/24/03	NA
5			Si-90 wip. Cell	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				
1-15	BKG Check	NA	NA	BKB1226A	60	1633	JE	JE	12/26/03	
1	0310215-16	SR031210-2	Si-90	SRB1226C	1000	1748	JE	JE	12/27/03	
2	-17									
3	-18									
4	-19									
5	-20									
6	-21									
7	-21D									
8	-22									
9	SR031210-24B									
10	-21C5									
11	0312081-1	SR031222-1	Si-90	SRB1226D	200	1751	JE			
12	-1D									
13	-2									
14										
15	Form 780r6.frm (4/6/2001)									
15	SR031222-121									
Comments:										
16	-145									

Reviewed 1751 Date 12/27/03

000212

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

62753A-307

FAT ID 0602
rec'd 12-11-01
EJW 12-14-01

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/cm² 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:

UM, mty 12-10-01

000213

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

rinse wipe

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

000214

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: YER
 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

Alpha Attenuation (mass=0)		Beta Attenuation (mass=0)	
$y = b \cdot m^2 (e^{(mass-a)})$		$y = b \cdot m^2 (e^{(mass-a)})$	
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 $y = m \cdot b \cdot mass$		Beta to Alpha X-talk $y = m \cdot mass + b$	
a to b xtalk m:	0.2740	b to a xtalk m:	-2.0000e-06
a to b xtalk b:	1.0010	b to 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 xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
D1	602	12/21/03 11:58	5.00	0.0	27.400	0.140	10.358	0.2111	1.248	n/a	n/a	14798.600	1.643	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

000215

76
 12/23/03

PAI - Gas Flow Proportional Sample Analysis LB4100-B

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

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

Background: BK0A9W
 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: 1/n
 Beta prog. logfile: n/a
 Beta prog. attenuation: n/a

y = b*m ² /(mass-x0)		y = b*m ² /(mass-x0)	
Alpha bz	1.24550		1.0000
m	0.98400		0.8999
a	1.0000		1.0000
x0	0.0000		0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b ² -mass		y = m*b ² -mass	
a -> b xtalk m	0.2748	b -> a xtalk m	-2.00E-08
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 xlik CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xlik 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	1.248	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	12.281	0.2103	1.248	n/a	n/a	17515.200	1.906	8.604	0.4195	1.000	n/a	n/a

000216

SG
12/23/03

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Urn 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: SRS1221B
 Batch ID: VER
 Count Preset (m): 5
 Batch Ended: 12/21/03 12:09

Background logfile: BKQASW
 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

Alpha prog. logfile: BKQASW		Beta prog. logfile: n/a	
$y = b/m * (e^{(mass-x0)})$	$y = b/m * (e^{(mass-x0)})$		
Alpha b= 1.24550	Beta b= 1.0000		
m= 0.99400	m= 0.9990		
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						Beta Activity							
					Gross CPM	Bkg. CPM	b>a xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	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	1.643	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	1.808	8.905	0.4195	1.000	n/a	n/a

000217

AL
 12/23/03

pg 265874 a
(cont. from pg NA b)

Paragon Analytics, Inc.
Low Background Gas Flow Proportional Counter Log
Instrument: **LB4100B**

SOP 72 Rev. 8

Date: 12/21/03

Instrument Background and Response Checklist

P-10 Supply		P-10 Flow		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	700	A	0.1	1	JE		P		NP	*			✓	9	JE		P		NP				✓
2	800	B		2									✓	10		JE	R	P					✓
		C		3									✓	11			P						✓
		D		4									✓	12									✓
				5									✓	13									✓
				6									✓	14									✓
				7									✓	15									✓
				8									✓	16									✓

Bkg. Cal. File ID
Dr A 3KB1221
Dr B
Dr C
Dr D

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
1-16	DR Check	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	E.FB1221A	36	1125	JE	SE	12/21/03	
1	12312072-1	AB 63 1215-3	2/P	40B1221	1000	1132	JE	JE	12/22/03	2/2/03
2	-1D									
3	.2									
4	.2MS									
5	AB031215-3148									
6	.3LCS									
13 13	602	-	Si-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 7	601	-								
14 10	602	-	Si-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	-	Si-90 wipe Ver	SRB1221B	5	1204	SE	JE	12/21/03	

Form 7811r6.frm (4/6/2001)

Comments: * Since weekly bkg just finished, daily bkg were not done: 7/6 12/21/03.

Reviewed by 96 Date 12/22/03

000218

Paragon Analytics, Inc.
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
B	729	-	SI-90 _{low} pc V _{0.5}	SRB1221B	5	1209	JE	JE	12/21/03	NA
11	729 73	-	Att 2-41 _{low} pc V _{0.5}	AMB1221B	5	1205	JE	↓	↓	↓
9	601	-	↓	↓	↓	↓	N	↓	↓	↓
12/22/03										

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

Reviewed AG Date 12/22/03

Comments:

000219

022704-24-01	GROSS BETA	0.1	DPM/sample	1.8	N	U	P
022704-24-01-LR	GROSS BETA	0.33	DPM/sample	1.64	N	UNC	P
022704-24-02	GROSS BETA	0.6	DPM/sample	1.64	N	U	P
022704-24-03	GROSS BETA	-0.1	DPM/sample	1.7	N	U	P
022704-24-04	GROSS BETA	0.5	DPM/sample	1.7	N	U	P
022704-24-05	GROSS BETA	-0.12	DPM/sample	1.52	N	U	P
022704-24-06	GROSS BETA	0.66	DPM/sample	1.43	N	U	P
022704-24-07	GROSS BETA	-0.24	DPM/sample	1.61	N	U	P
022704-24-08	GROSS BETA	-0.09	DPM/sample	1.53	N	U	P
022704-24-09	GROSS BETA	0.28	DPM/sample	1.56	N	U	P
022704-24-10	GROSS BETA	0.46	DPM/sample	1.57	N	U	P
022704-24-11	GROSS BETA	-0.47	DPM/sample	1.5	N	U	P
022704-24-11FD	GROSS BETA	-0.29	DPM/sample	1.65	N	U	P
022704-24-11-LR	GROSS BETA	0.6	DPM/sample	1.8	N	UNC	P
022704-24-12	GROSS BETA	-0.63	DPM/sample	1.6	N	U	P
022704-24-13	GROSS BETA	-0.14	DPM/sample	1.71	N	U	P
022704-24-14	GROSS BETA	0.3	DPM/sample	1.66	N	U	P
022704-24-15	GROSS BETA	0.07	DPM/sample	1.51	N	U	P
022704-24-16	GROSS BETA	0.5	DPM/sample	1.44	N	U	P
022704-24-17	GROSS BETA	0.62	DPM/sample	1.6	N	U	P
022704-24-18	GROSS BETA	0.67	DPM/sample	1.53	N	U	P
022704-24-19	GROSS BETA	0.08	DPM/sample	1.56	N	U	P
022704-24-20	GROSS BETA	-0.18	DPM/sample	1.57	N	U	P
022704-24-21	GROSS BETA	0.43	DPM/sample	1.39	N	U	P
022704-24-21-LR	GROSS BETA	0.3	DPM/sample	1.5	N	UNC	P
022704-24-22	GROSS BETA	0.72	DPM/sample	1.42	N	U	P
022704-24-23	GROSS BETA	0.45	DPM/sample	1.41	N	U	P
022704-24-24	GROSS BETA	0.25	DPM/sample	1.4	N	U	P
022704-24-25	GROSS BETA	80	DPM/sample	1	<u>Y</u>	<u>LT</u>	<u>P</u>
022704-24-26	GROSS BETA	1.44	DPM/sample	1.47	N	U	P
022704-24-27	GROSS BETA	0.39	DPM/sample	1.44	N	U	P
022704-24-28	GROSS BETA	0.67	DPM/sample	1.48	N	U	P
022704-24-29	GROSS BETA	0.35	DPM/sample	1.49	N	U	P
022704-24-30	GROSS BETA	0.15	DPM/sample	1.43	N	U	P
022704-24-31	GROSS BETA	0.41	DPM/sample	1.45	N	U	P
022704-24-31-LR	GROSS BETA	0.22	DPM/sample	1.57	N	UNC	P
022704-24-32	GROSS BETA	0.43	DPM/sample	1.56	N	U	P
022704-24-33	GROSS BETA	0.87	DPM/sample	1.51	N	U	P
022704-24-34	GROSS BETA	-0.08	DPM/sample	1.65	N	U	P
022704-24-35	GROSS BETA	0.75	DPM/sample	1.44	N	U	P
022704-24-36	GROSS BETA	0.04	DPM/sample	1.42	N	U	P
022704-24-37	GROSS BETA	0.35	DPM/sample	1.49	N	U	P
022704-24-38	GROSS BETA	0.6	DPM/sample	1.48	N	U	P
022704-24-39	GROSS BETA	0.8	DPM/sample	1.44	N	U	P
022704-24-40	GROSS BETA	0.13	DPM/sample	1.47	N	U	P
022704-24-8FD	GROSS BETA	0.16	DPM/sample	1.45	N	U	P
022704-24-FB	GROSS BETA	0.93	DPM/sample	1.56	N	U	P

022704-24-01	GROSS ALPHA	-0.01	DPM/sample	0.96	N	U	P
022704-24-01-LR	GROSS ALPHA	0.02	DPM/sample	0.64	N	UNC	P
022704-24-02	GROSS ALPHA	0.06	DPM/sample	0.64	N	U	P
022704-24-03	GROSS ALPHA	0.01	DPM/sample	0.79	N	U	P
022704-24-04	GROSS ALPHA	-0.22	DPM/sample	0.69	N	U	P
022704-24-05	GROSS ALPHA	0.12	DPM/sample	0.6	N	U	P
022704-24-06	GROSS ALPHA	-0.18	DPM/sample	0.6	N	U	P
022704-24-07	GROSS ALPHA	0.19	DPM/sample	0.66	N	U	P
022704-24-08	GROSS ALPHA	0.34	DPM/sample	0.65	N	U	P
022704-24-09	GROSS ALPHA	-0.05	DPM/sample	0.66	N	U	P
022704-24-10	GROSS ALPHA	0.01	DPM/sample	0.69	N	U	P
022704-24-11	GROSS ALPHA	-0.21	DPM/sample	0.7	N	U	P
022704-24-11FD	GROSS ALPHA	-0.11	DPM/sample	0.71	N	U	P
022704-24-11-LR	GROSS ALPHA	-0.06	DPM/sample	0.96	N	UNC	P
022704-24-12	GROSS ALPHA	0.05	DPM/sample	0.72	N	U	P
022704-24-13	GROSS ALPHA	-0.29	DPM/sample	0.79	N	U	P
022704-24-14	GROSS ALPHA	0.27	DPM/sample	0.69	N	U	P
022704-24-15	GROSS ALPHA	0	DPM/sample	0.6	N	U	P
022704-24-16	GROSS ALPHA	-0.02	DPM/sample	0.6	N	U	P
022704-24-17	GROSS ALPHA	0.03	DPM/sample	0.66	N	U	P
022704-24-18	GROSS ALPHA	0.01	DPM/sample	0.65	N	U	P
022704-24-19	GROSS ALPHA	0.26	DPM/sample	0.66	N	U	P
022704-24-20	GROSS ALPHA	0.09	DPM/sample	0.69	N	U	P
022704-24-21	GROSS ALPHA	0.14	DPM/sample	0.63	N	U	P
022704-24-21-LR	GROSS ALPHA	-0.19	DPM/sample	0.76	N	UNC	P
022704-24-22	GROSS ALPHA	0.26	DPM/sample	0.73	N	U	P
022704-24-23	GROSS ALPHA	0.46	DPM/sample	0.67	N	U	P
022704-24-24	GROSS ALPHA	0.3	DPM/sample	0.72	N	U	P
022704-24-25	GROSS ALPHA	-0.1	DPM/sample	0.84	N	U	P
022704-24-26	GROSS ALPHA	-0.15	DPM/sample	0.76	N	U	P
022704-24-27	GROSS ALPHA	-0.1	DPM/sample	0.77	N	U	P
022704-24-28	GROSS ALPHA	0.18	DPM/sample	0.69	N	U	P
022704-24-29	GROSS ALPHA	0.2	DPM/sample	0.89	N	U	P
022704-24-30	GROSS ALPHA	0.33	DPM/sample	0.73	N	U	P
022704-24-31	GROSS ALPHA	0.28	DPM/sample	0.76	N	U	P
022704-24-31-LR	GROSS ALPHA	0.18	DPM/sample	0.74	N	UNC	P
022704-24-32	GROSS ALPHA	-0.24	DPM/sample	0.74	N	U	P
022704-24-33	GROSS ALPHA	0.12	DPM/sample	0.76	N	U	P
022704-24-34	GROSS ALPHA	-0.07	DPM/sample	0.71	N	U	P
022704-24-35	GROSS ALPHA	-0.25	DPM/sample	0.76	N	U	P
022704-24-36	GROSS ALPHA	-0.15	DPM/sample	0.73	N	U	P
022704-24-37	GROSS ALPHA	-0.03	DPM/sample	0.89	N	U	P
022704-24-38	GROSS ALPHA	-0.02	DPM/sample	0.69	N	U	P
022704-24-39	GROSS ALPHA	-0.22	DPM/sample	0.77	N	U	P
022704-24-40	GROSS ALPHA	-0.26	DPM/sample	0.75	N	U	P
022704-24-8FD	GROSS ALPHA	0.08	DPM/sample	0.76	N	U	P
022704-24-FB	GROSS ALPHA	0.03	DPM/sample	0.74	N	U	P

Laboratory D2205

Final Status Data Summary () Beta and Alpha Scan Data
Survey Unit: Laboratory D2205
Building 53, Denver Federal Center

(1 of 5)

Laboratory ID

Action Criteria Individual Measurements

Beta Scans

<u>D2205</u>	<u>Bkg. Value</u>	<u>MDCR_{Surveyor}</u>								
Floor Tile	401	802.0	350.0	405.0	375.0	340.0	370.0	310.0	No. of meas./locs	10
Wall Board	345	690.0	375.0	375.0	410.0	380.0			Maximum	410.0
									Mean	369.0
									Standard Deviation	29.61
									No. > MDCR _{Surveyor}	0

Alpha Scans

<u>D2205</u>	<u>Bkg. Value</u>									
Floor Tile	3.5	6.0	4.0	4.0	6.0	4.0	7.0		No. of meas./locs	10
Wall Board	3.5	4.0	5.0	4.0	3.0				Maximum	7.0
									Mean	4.7
									Standard Deviation	1.25
									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 D2205
Building 53, Denver Federal Center

(2 of 5)

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements												
<i>Systematic Direct Read Locations</i>															
<u>D2205</u>														No. of meas./locs	31
Wall	1,000 dpm/100cm ²	1,000 dpm/100cm ²	452	385	3	17	378	326	472	456	268			Maximum	472.0
Wall	1,000 dpm/100cm ²	1,000 dpm/100cm ²	211	268	-3	172	120	146	200	405				Mean	-9.1
Floor	1,000 dpm/100cm ²	1,000 dpm/100cm ²	-286	-252	177	153	259	156	65	53	-196			Standard Deviation	466.1
Floor	1,000 dpm/100cm ²	1,000 dpm/100cm ²	-1094	-864	-710	-1334	-684							No. > Administrative Goal	0
														No. > Release Criteria	0
<i>Bias Direct Read Locations</i>															
<u>D2205</u>														No. of meas./locs	10
Wall	1,000 dpm/100cm ²	1,000 dpm/100cm ²	-398											Maximum	616.0
Floor	1,000 dpm/100cm ²	1,000 dpm/100cm ²	537	616	150	411	178	-253	-319	-2	-5			Mean	91.5
														Standard Deviation	354.6
														No. > Administrative Goal	0
														No. > Release Criteria	0
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>															
<u>D2205</u>															
Location D-20		1st	2nd	RPD											
Location D-25		-887	-634	33											
Location BS-2205-10		53	-115	-542											
		-398	-752	-62											

Notes:

Bold values exceed respective criteria.

cm² - 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 Table - Direct Alpha Measurements
Survey Unit: Laboratory D2205
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	(3 of 5)													
			Individual Measurements											No. of meas./locs		
<i>Systematic Direct Read Locations</i>																
<u>D2205</u>															No. of meas./locs	31
Wall	30 ^a dpm/100cm ²	100 dpm/100cm ²	2	9	-12	-5	-2	-2	-6	-2	2	-19		Maximum	19.0	
Wall	30 ^a dpm/100cm ²	100 dpm/100cm ²	-12	-17	-19	-20	-10	-27	-11					Mean	-9.0	
Floor	30 ^a dpm/100cm ²	100 dpm/100cm ²	10	-24	-32	-30	-32	-25	-20	-14	19	1		Standard Deviation	13.9	
Floor	30 ^a dpm/100cm ²	100 dpm/100cm ²	9	5	12	-6								No. > Administrative Goal	0	
														No. > Release Criteria	0	
<i>Bias Direct Read Locations</i>																
<u>D2205</u>														No. of meas./locs	10	
Wall	30 ^a dpm/100cm ²	100 dpm/100cm ²	12											Maximum	13.0	
Floor	30 ^a dpm/100cm ²	100 dpm/100cm ²	10	13	-12	-22	-2	-5	-33	-2	-5			Mean	-4.6	
														Standard Deviation	14.8	
														No. > Administrative Goal	0	
														No. > Release Criteria	0	
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>																
<u>D2205</u>																
Location D-20			1st	2nd	RPD											
Location D-25			-29	-30	-3											
Location BS-2205-10			-14	-19	-30											
			12	-19	-886											

Notes:
Bold values exceed respective criteria.
 cm² - 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 D2205
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	(4 of 5) Individual Measurements						
			Regular	Field Duplicate	Field Splits	RPD	No. of meas./locs		
<i>Systematic Direct Read Locations</i>									
<u>D2205</u>								No. of meas./locs	31
Wall	200 dpm/100cm ²	200 dpm/100cm ²	All other sample results were reported as non-detected at < 1.8 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	
<i>Bias Direct Read Locations</i>									
<u>D2205</u>								No. of meas./locs	10
Wall	200 dpm/100cm ²	200 dpm/100cm ²	All sample results were reported as non-detected at < 1.8 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	
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>									
<u>D2205</u>									
Location D-20			Regular	Field Duplicate	Field Splits	RPD			
Location D-25			nd	nd	nd	nc			
Location BS-2205-10			nd	nd	nd	nc			

Notes:

Bold values exceed respective criteria.
 cm² - 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 D2205
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	(5 of 5) Individual Measurements						
<i>Systematic Direct Read Locations</i>									
<u>D2205</u>							No. of meas./locs	31	
Wall	1.1 dpm/100cm ²	20 dpm/100cm ²	All sample results were reported as non-detected at < 1.0 dpm/100cm ²				Maximum	na	
Wall	1.1 dpm/100cm ²	20 dpm/100cm ²					Mean	na	
Floor	1.1 dpm/100cm ²	20 dpm/100cm ²					Standard Deviation	na	
							No. > Administrative Goal	0	
							No. > Release Criteria	0	
<i>Bias Direct Read Locations</i>									
<u>D2205</u>							No. of meas./locs	10	
Wall	1.1 dpm/100cm ²	20 dpm/100cm ²	All sample results were reported as non-detected at < 1.0 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	
<i>Quality Control; Field Duplicate Performance (Criteria <20%)</i>									
<u>D2205</u>			<i>Regular</i>	<i>Field Duplicate</i>	<i>Field Splits</i>	<i>RPD</i>			
Location D-20			nd	nd	nd	nc			
Location D-25			nd	nd	nd	nc			
Location BS-2205-10			nd	nd	nd	nc			

Notes:

Bold values exceed respective criteria.

cm² - 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

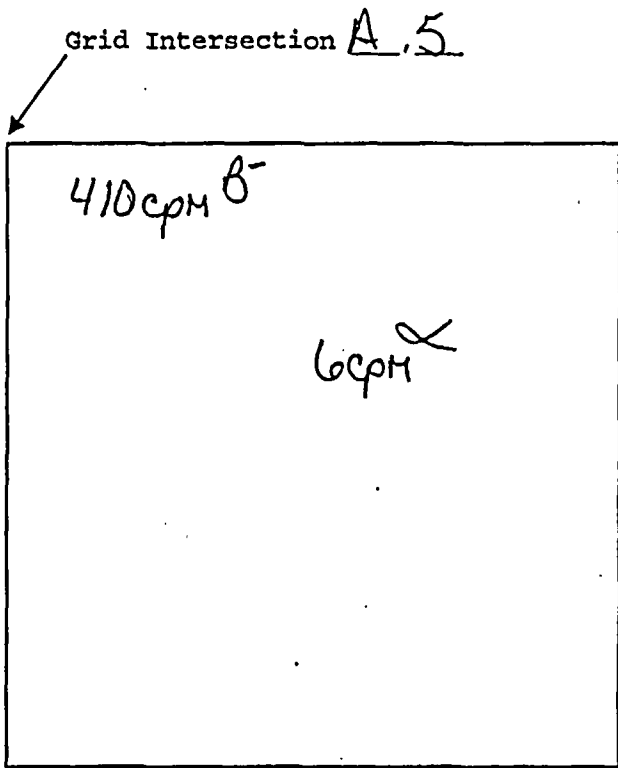
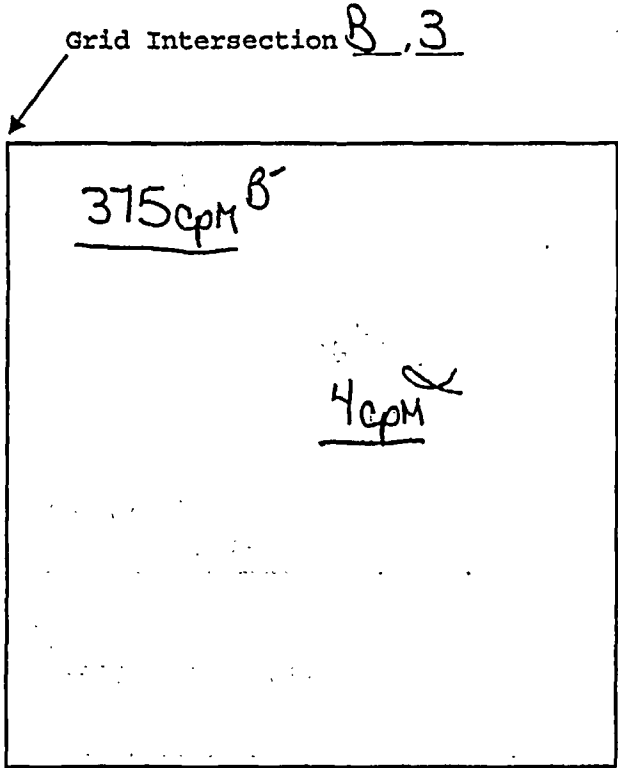
CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER: 101115		DATE: 2/26/04	TIME START: 0900	TIME COMPLETE: 1030	PAGE 1 OF 10																		
LOCATION: EPA NEIC <i>RM 2205</i>		SURVEYOR(S): <i>Wade Trent</i>		<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="2">Alpha</td> <td colspan="2">Beta-Gamma</td> <td>Alpha cpm</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Loose</td> <td>Total</td> <td>Loose</td> <td>Total</td> <td>Beta cpm</td> <td><input type="checkbox"/></td> </tr> <tr> <td colspan="4"></td> <td>Material</td> <td><input type="checkbox"/></td> </tr> </table>		Alpha		Beta-Gamma		Alpha cpm	<input type="checkbox"/>	Loose	Total	Loose	Total	Beta cpm	<input type="checkbox"/>					Material	<input type="checkbox"/>	Item or Location	
Alpha		Beta-Gamma				Alpha cpm	<input type="checkbox"/>																		
Loose	Total	Loose	Total	Beta cpm	<input type="checkbox"/>																				
				Material	<input type="checkbox"/>																				
Denver Federal Center, CO		SURVEY NUMBER: <i>022604-22</i>																							
Denver, CO		MAP ID: LAB D2205		Item #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²																	
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose <u>20</u> dpm/100cm ² Alpha <u>200</u> dpm/100cm ² Beta-Gamma Total <u>100</u> dpm/100cm ² Alpha <u>1,000</u> dpm/100cm ² Beta-Gamma				ACCEPTABLE SCAN LIMITS MDCR _{surveyor} Beta MDCR _{surveyor} Alpha				1					FT	C-3											
Source Check Data		Contamination Surveys				Radiation Surveys		Beta-Gamma		2					WB	A-2									
		α	α	β-γ	β-γ					3					WB	B-3									
		(TOTAL)	(TOTAL)	(TOTAL)	(TOTAL)					4					WB	A-5									
Instrument	184904 / 185774	185774	184904 / 185774	185774	NA						5				WB	B-6									
Source Type and ID	Th-230, 1170/88	Th-230, 1170/88	Cs-137, 92C85000	Cs-137, 92C85000							6				FT	C-5									
Source Strength in dpm	13800	13800	76955	76955							7				FT	F-3									
Efficiency	0.13 / 0.15	0.15	0.18 / 0.17	0.18							8				FT	G-5									
MDC in dpm/100 cm ²	See attached instrument sheets for material specific backgrounds and MDC's.				Set <input type="checkbox"/>	Unset <input type="checkbox"/>					9				FT	H-3									
Background in cpm					✓ <i>in/hr or pmi/hr</i>						10				FT	E-1									
REASON FOR SURVEY	<input checked="" type="checkbox"/> PROCEDURE NO. <u>FINAL STATUS SURVEY PLAN</u> <input type="checkbox"/> SPECIAL _____ <input type="checkbox"/> ROUTINE _____																								
Contamination	<input checked="" type="checkbox"/> By Shift <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>																								
Radiation	<input type="checkbox"/> By Shift <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>																								
COMMENTS:	<i>Judgemental scans</i>																								
BAD'S - See Attached Data Sheet																									
Contamination Survey	ALPHA (TOTAL) <i>2360</i> <i>184904</i>		BETA-GAMMA (TOTAL) <i>2360</i> <i>184904</i>																						
INSTRUMENT / SERIAL #	ALPHA (TOTAL) <i>2360</i> <i>185768</i>		BETA-GAMMA (TOTAL) <i>2360</i> <i>185768</i>																						
	ALPHA (TOTAL) <i>N.I.A.</i>		BETA-GAMMA (TOTAL) <i>N.I.A.</i>																						
THE KNOWN & WILLFUL RECORDING OF FALSE, FETTERIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.								RCS REVIEW <i>[Signature]</i>		DATE <i>3-2-04</i>															

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: RM 2205	/ Laboratory-Room		PAGE 2 OF 10
COMMENTS:	SURVEYOR(S): Wise / Trent	SURVEY NUMBER: 022604-22	DATE: 02-26-04	
RCS REVIEW: <i>[Signature]</i>		DATE: 3-2-04		
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.				
<p>Grid Intersection <u>C,3</u></p> <p><u>350</u> ^BcpM</p> <p><u>6</u> ^XcpM</p> <p>Grid Intersection <u>A,2</u></p> <p><u>375</u> ^BcpM</p> <p><u>4</u> ^XcpM</p>				

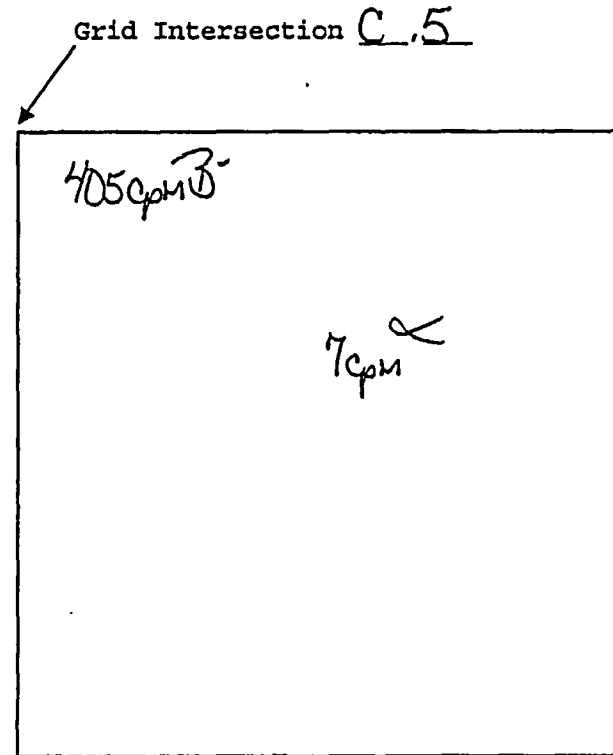
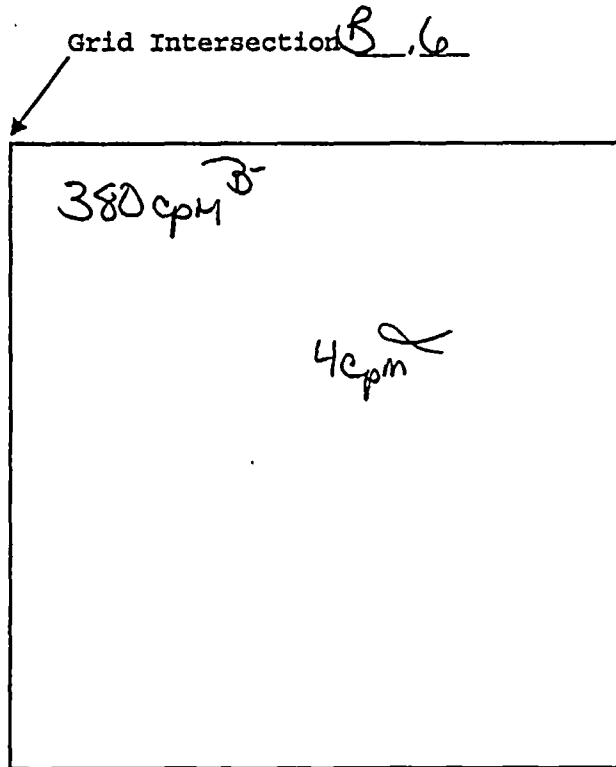
Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: 2205 / Laboratory-Room	PAGE 3 OF 10	
COMMENTS:	SURVEYOR(S): <i>W. Trent</i>	SURVEY NUMBER: 022604-22	DATE: 02-26-04
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: <i>[Signature]</i>	DATE: 3.2.04		



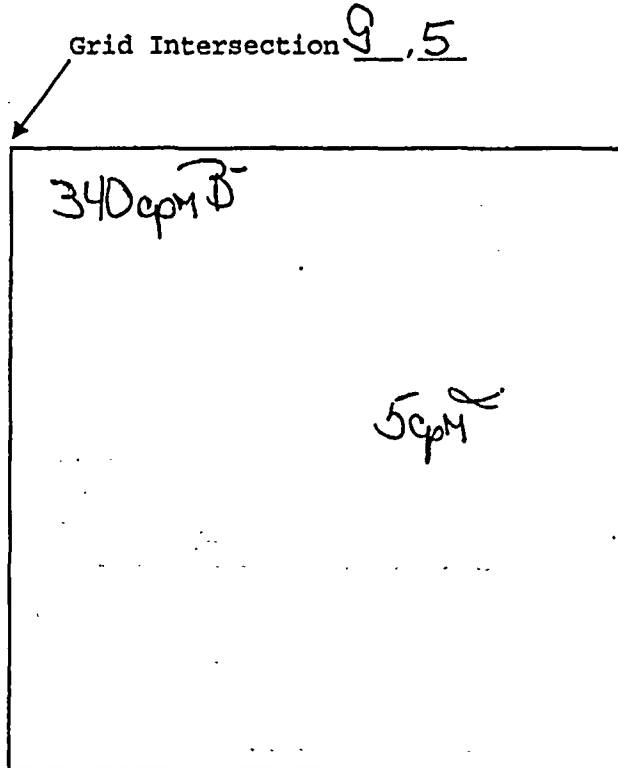
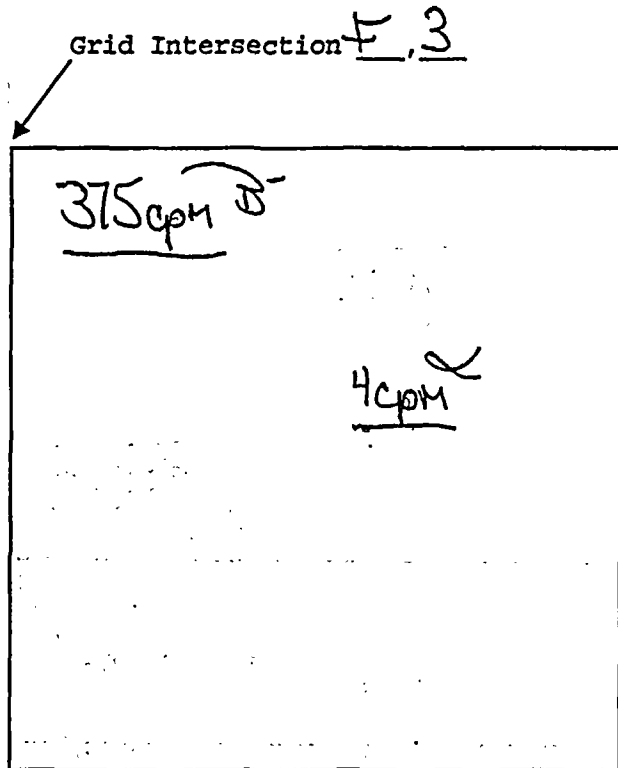
Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: <u>RM 2205</u> / Laboratory-Room	PAGE <u>4</u> OF <u>10</u>	
COMMENTS:	SURVEYOR(S): <u>Wise / Trent</u>	SURVEY NUMBER: <u>022604-22</u>	DATE: <u>02-26-04</u>
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: <u>[Signature]</u>	DATE: <u>3.2.04</u>		



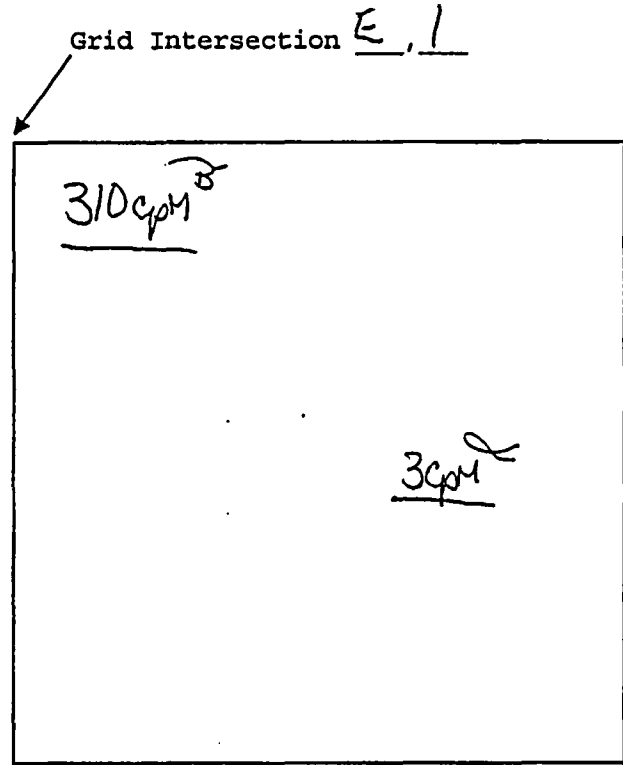
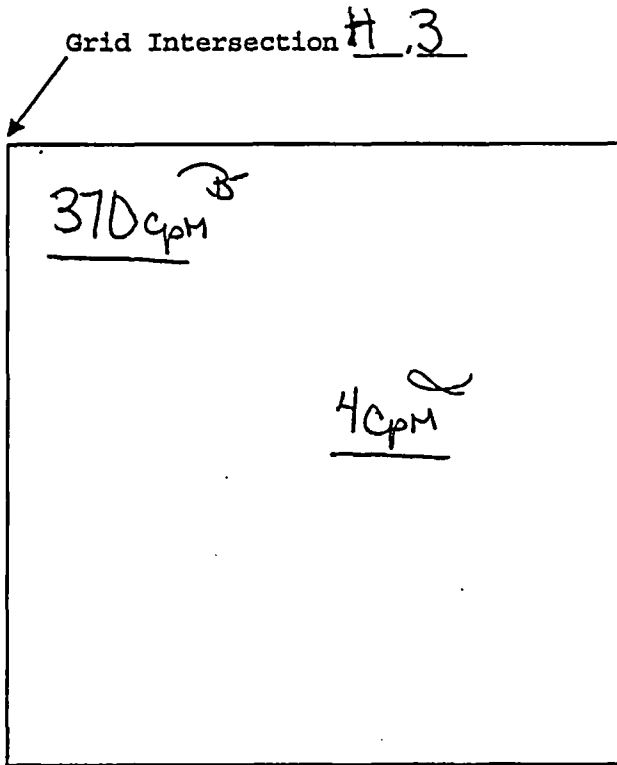
Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: RM 2205 / Laboratory-Room	PAGE 5 OF 10	
COMMENTS:	SURVEYOR(S): Wise Trent	SURVEY NUMBER: 022604-22	DATE: 8226-04
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: <i>[Signature]</i>	DATE: 3.2.04		



Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: RM 2205 / Laboratory-Room	PAGE 6 OF 10	
COMMENTS:	SURVEYOR(S): Wise / Trent	SURVEY NUMBER: 022604-22	DATE: 02-26-04
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: <i>[Signature]</i>	DATE: 3-2-04		



Contamination / Restoration Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: RM 2205	/ Laboratory-Room		PAGE 7 OF 10
COMMENTS:		SURVEYOR(S): <i>Wue Trent</i>	SURVEY NUMBER: 022604-22	DATE: 02-26-04
RCS REVIEW: <i>[Signature]</i>		DATE: 3-2-04		
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
Serial # 2360/184904		
Counts (1)	4/246	0900
(2)	3/242	1415

Grid Intersection __, __

Background Check (cpm)

Serial # 2360 185768		
alpha	Beta	Time
Counts 2	250	0900
4	257	1415

MDCRsurveyor Scanning Levels for Specific Materials

23-60

184904

/

Instr. Eff.

0.16 / Setup MDC

1788

Wall Board (WB)

BKGD CPM 265.14 MDCR surveyor 388 gross cpm

Floor tile (FT)

BKGD CPM 303.36 MDCR surveyor 435 gross cpm

Wood (wo)

BKGD CPM 180.64 MDCR surveyor 282 gross cpm

Concrete Floor (CF)

BKGD CPM 449.28 MDCR surveyor 609 gross cpm

Metal (ME)

BKGD CPM 311.78 MDCR surveyor 445 gross cpm

Concrete Block (CB)

BKGD CPM 475.30 MDCR surveyor 640 gross cpm

Glass (GL)

BKGD CPM 350.32 MDCR surveyor 492 gross cpm

Countertop (CT)

BKGD CPM 292.52 MDCR surveyor 422 gross cpm

Jam Miller
3.2.04
980.F.10
022604-22

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

James Miller
3.2.04

022604-22
Pg 9 of 10

19 JUL 01 19
022604-22

Okluw-3-2-04

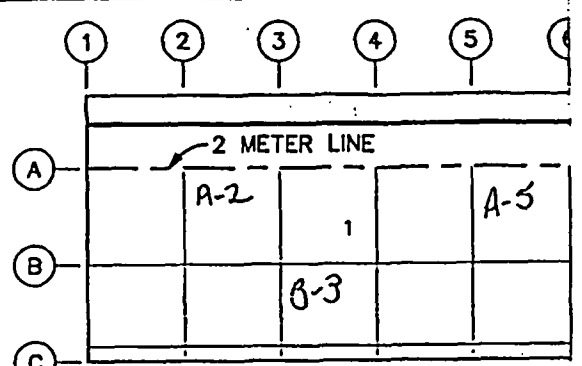
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10115_neic_0013.dgn

STARTING DATE: 01DEC03
DRAWN BY: C.E.TUMLIN

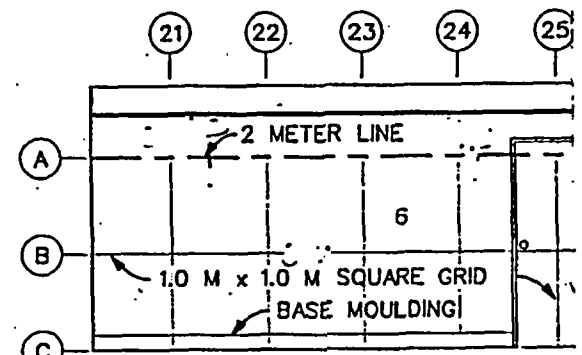
INITIATOR: R.COLLINS
CADD REVIEW: C.BENTLEY

TECH. REVIEW: R.COLLENS
PROJ. MGR.: R.L.ROGERS

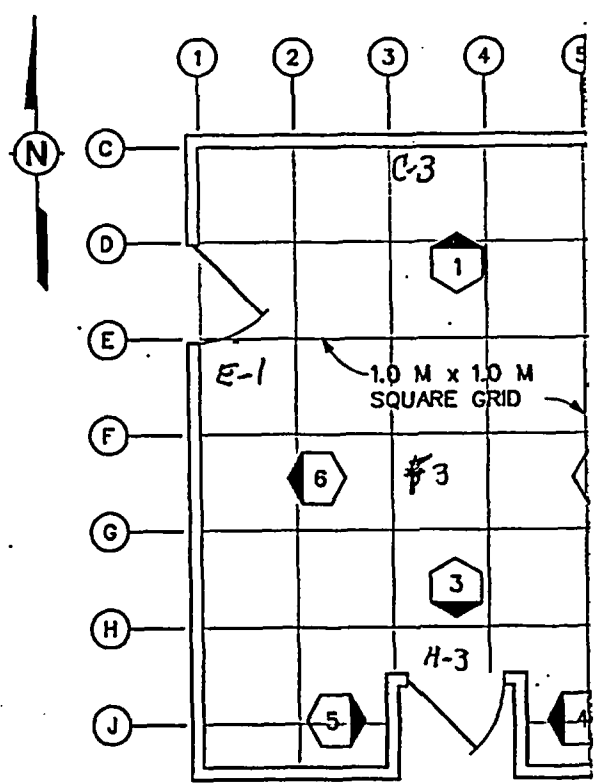
DWG. NO.: 10115_neic_0013.dgn
PROJ. NO.: 101115



ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m



PLAN VIEW
SCALE: 1" = 2.0 m

NOTES

- 1. WALL SURFACE AREA: 51.2572 SQ. M.
- FLOOR SURFACE AREA: 33.4128 SQ. M.
- TOTAL SURFACE AREA: 84.6700 SQ. M.

FIGURE 3-15
REFERENCE GRID FOR
LABORATORY D2205

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO



Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER: 101115		DATE: 02-26-04	TIME START: 0900	TIME COMPLETE: 1415	PAGE 1 OF 10			
LOCATION: EPA NEIC		SURVEYOR(S): K. WISE / T. TRENT		Alpha		Beta-Gamma		Alpha cpm <input type="checkbox"/>		
Denver Federal Center, CO		SURVEY NUMBER: 022604-21							Loose	
Denver, CO		MAP ID: LAB D2205		Rem #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²		
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose 20 dpm/100cm ² Alpha 200 dpm/100cm ² Beta-Gamma Total 100 dpm/100cm ² Alpha 1,000 dpm/100cm ² Beta-Gamma									ACCEPTABLE SCAN LIMITS MDC _{Survey} Beta MDC _{Survey} Alpha	
Source Check Data		Contamination Surveys				Radiation Surveys		Beta-Gamma		
		(TOTAL)		(TOTAL)		(TOTAL)		(TOTAL)		
Instrument	184804 / 185768	185774	184804 / 185768	185774	NA					
Source Type and ID	Th-230, 1170/89	Th-230, 1170/89	Co-137, 82CS5000	Co-137, 82CS5000						
Source Strength in dpm	13800	13800	789565	789565						
Efficiency	0.13 / 0.15	0.15	0.16 / 0.17	0.18						
MDC in dpm/100 cm ²	See attached instrument sheets for material specific backgrounds and MDC's.				Set <input type="checkbox"/>		Unit <input type="checkbox"/>			
Background in cpm										
REASON FOR SURVEY	<input checked="" type="checkbox"/> PROCEDURE NO. FINAL STATUS SURVEY PLAN - DIRECT READINGS									
	<input type="checkbox"/> SPECIAL									
	<input type="checkbox"/> ROUTINE									
Contamination	<input checked="" type="checkbox"/> By SHR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>									
Radiation	<input type="checkbox"/> By SHR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>									
COMMENTS	Item # 1-17 - 2360 # 185768 # 18-33 # 184904 # 34-37 - 2360 # 185768 # 38-44 # 184904									
SADS - See Attached Data Sheet										
Contamination Survey	ALPHA (TOTAL) 2360, 184904		BETA-GAMMA (TOTAL) 2360, 184904							
INSTRUMENT / SERIAL #	ALPHA (TOTAL) 2360, 185768		BETA-GAMMA (TOTAL) 2360, 185768							
	ALPHA (TOTAL) N/A		BETA-GAMMA (TOTAL) N/A							
THE KNOWING & WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.										
RCS REVIEW: <i>[Signature]</i> DATE 3-16-04										

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT (CONTINUATION SHEET)						PROJECT NUMBER: 101115	DATE: 02-26-04	PAGE 2 OF 10
LOCATION: EPANEIC			SURVEYOR(S): K. WISE / T. TRENT			COMMENTS:		
Denver Federal Center, Building 53			SURVEY NUMBER: 022604-21					
Denver, CO			MAP ID: LAB D2205					
RCS REVIEW <i>[Signature]</i>			DATE 3-16-04					

Item #	Alpha		Beta-Gamma		Alpha cpm	Item or Location	Item #	Alpha		Beta-Gamma		Alpha cpm	Item or Location
	LOOSE	TOTAL	LOOSE	TOTAL	Beta cpm			LOOSE	TOTAL	LOOSE	TOTAL	Beta cpm	
	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	Material			dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	Material	
26	NA	19	NA	-196	FT	D-26	N/A						
27		1		-1094		D-27							
28		9		-864		D-28							
29		5		-710		D-29							
30		12		-1334		D-30							
31		-6		-684		D-31							
32		-14		21-56232-01	↓	Replicate D-20							
33		-19		-115	FT	Replicate D-25							
34		10		537		BS-2205-01							
35		13		616		BS-2205-02							
36		-12		150		BS-2205-03							
37		-22		411		BS-2205-04							
38		-2		178		BS-2205-05							
39		-5		-253		BS-2205-06							
40		-33		-319		BS-2205-07							
41		-2		-178	↓	BS-2205-08							
42		-5		-240	FT	BS-2205-09							
43		12		-398	ME	BS-2205-10							
44	↓	-19	↓	-752	ME	Replate BS-2205-10							
45													
46													
47													
48													
49													
50													

THE KNOWING & WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY/LOCATION: / Laboratory-Room LAB D2205	PAGE 3 OF 10
COMMENTS:	SURVEYOR(S): K. WISE / T. TRENT	SURVEY NUMBER: 022604-21
		DATE: 02-26-04
RCS REVIEW: <i>[Signature]</i>	DATE: 3-16-04	

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.

BACKGROUND Check (cpm)

2360 / 184904		
alpha	Beta	Time
4	246	0900
3	242	1415

Background Check (cpm)

2360 / 185768		
alpha	beta	Time
2	250	0900
4	257	1415

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room LAB D2205	PAGE 4 OF 10	
COMMENTS:	SURVEYOR(S): K WISE / T. TRENT	SURVEY NUMBER: 022604-21	DATE: 02-26-04
RCS REVIEW: <i>[Signature]</i> DATE: 3.16.04		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.	

REPLICATE D-20

Gross Total Counts

ORIGINAL
33 / 4818

Replicate
25 / 4582

Replicate D-25

Gross Total Counts

ORIGINAL
25 / 4631

Replicate
22 / 4376

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room LAB D2205	PAGE 5 OF 10	
COMMENTS:	SURVEYOR(S): K. WISE / T. TRENT	SURVEY NUMBER: 022604-21	DATE: 0226-04
RCS REVIEW: <i>[Signature]</i> DATE: 3.16.04		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.	

Replicate BS-2205-10

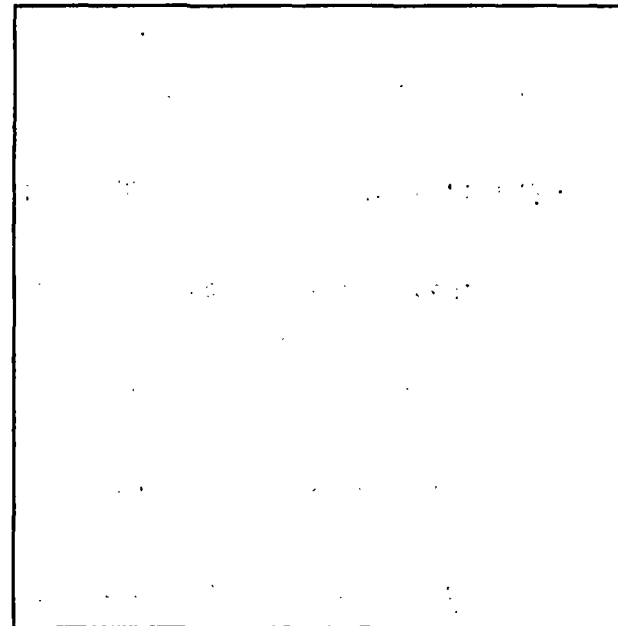
Gross Total Counts

ORIGINAL

32 / 4075

Replicate

22 / 3540



Yg 6 of 10
 022604-21
 J. Blum
 7.16.04

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 Efficiency 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

Material Specific Background and MDC Sheet for Beta Measurements

19 7 of 10
 12604-21
 J. Miller
 3.16.04

Instrument/SN: Ludlum 2360 / 185768

Background Count Time 5.00 minutes

Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Efficiency 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

Material Specific Background and MDC Sheet for Alpha Measurements

Fig 8 of 10
022604-21
Phelan
3.16.04

Instrument/SN:

Ludlum 2360 / 184904

Background count time 5 minutes .

Probe/SN:

Ludlum 43-68 / PR138731

Total Instrument Efficiency 0.0325 dpm/cpm

Wall Board	WB	1.40	cpm	MDC	54	dpm/100cm2	Sample Count Time	15.00	min
Floor Tile	FT	2.24	cpm	MDC	67	dpm/100cm2	Sample Count Time	15.00	min
Wood	WO	2.10	cpm	MDC	65	dpm/100cm2	Sample Count Time	15.00	min
Cement Floor	CF	4.40	cpm	MDC	92	dpm/100cm2	Sample Count Time	15.00	min
Metal	ME	1.66	cpm	MDC	58	dpm/100cm2	Sample Count Time	15.00	min
Concrete Block	CB	1.92	cpm	MDC	62	dpm/100cm2	Sample Count Time	15.00	min
Glass	GL	5.04	cpm	MDC	98	dpm/100cm2	Sample Count Time	15.00	min
Counter Top	CT	2.20	cpm	MDC	66	dpm/100cm2	Sample Count Time	15.00	min
Black&White Floor Tile	(BWFT)	3.36	cpm	MDC	81	dpm/100cm2	Sample Count Time	15.00	min
Wall Board Downstairs	(WBD)	1.22	cpm	MDC	51	dpm/100cm2	Sample Count Time	15.00	min

Material Specific Background and MDC Sheet for Beta Measurements

19 7 0110
12604-21
J. Miller
3-16-04

Instrument/SN:

Ludlum 2360 / 184904

Background Count Time 5.00 minutes

Probe/SN:

Ludlum 43-68 / PR138731

Total Instrument Efficiency 0.0800 dpm/cpm

Wall Board	(WB)	265.14	cpm	MDC	276	dpm/100cm ²	Sample Count Time	15.00	min
Floor Tile	(FT)	303.36	cpm	MDC	296	dpm/100cm ²	Sample Count Time	15.00	min
Wood	(WO)	180.64	cpm	MDC	229	dpm/100cm ²	Sample Count Time	15.00	min
Cement Floor	(CF)	449.28	cpm	MDC	359	dpm/100cm ²	Sample Count Time	15.00	min
Metal	(ME)	311.78	cpm	MDC	300	dpm/100cm ²	Sample Count Time	15.00	min
Concrete Block	(CB)	475.30	cpm	MDC	369	dpm/100cm ²	Sample Count Time	15.00	min
Glass	(GL)	350.32	cpm	MDC	317	dpm/100cm ²	Sample Count Time	15.00	min
Counter Top	(CT)	292.52	cpm	MDC	290	dpm/100cm ²	Sample Count Time	15.00	min
Black&White Floor Tile	(BWFT)	982.02	cpm	MDC	530	dpm/100cm ²	Sample Count Time	15.00	min
Wall Board Downstairs	(WBD)	270.32	cpm	MDC	279	dpm/100cm ²	Sample Count Time	15.00	min

19 10 01 12
 D22604-21
 3.16.04

2:0.0000 m:mm / IN.
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 101115_neic_0014.dgn

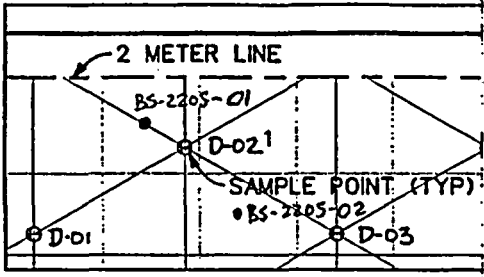
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STARTING DATE: 01DEC03
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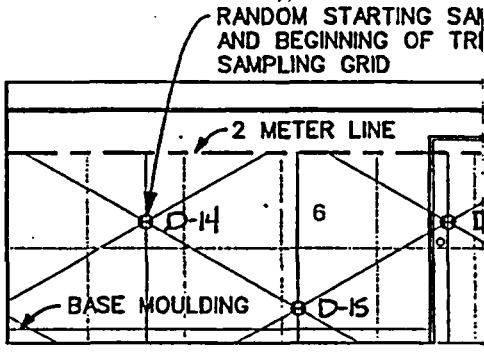
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 CADD REVIEW: C.BENTLEY

TECH. REVIEW: R.COLLINS
 PROJ. MGR.: R.L.ROGERS

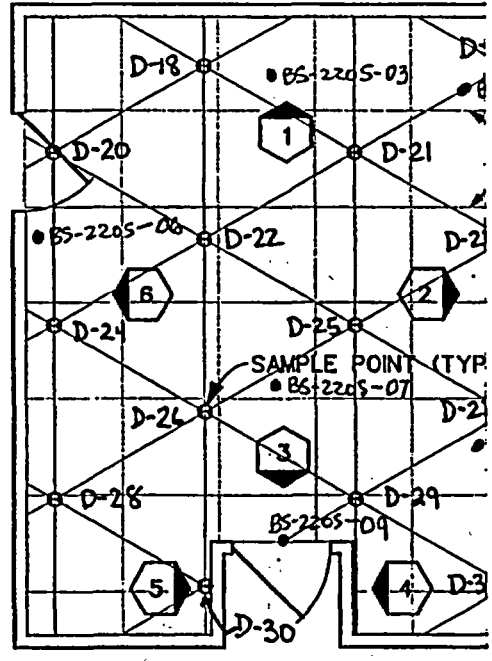
DWG. NO.: 101115_neic_0014.dgn
 PROJ. NO.: 101115



ELEVATION
 SCALE: 1" = 2.0 m



ELEVATION (CONT)
 SCALE: 1" = 2.0 m



PLAN VIEW
 SCALE: 1" = 2.0 m

NOTES

1. WALL SURFACE AREA: 51.2572 SQ. M.
 FLOOR SURFACE AREA: 33.4128 SQ. M.
 TOTAL SURFACE AREA: 84.6700 SQ. M.
2. THE LENGTH OF EACH LEG OF THE TRIANGULAR SAMPLING GRID IS 1.805 METERS

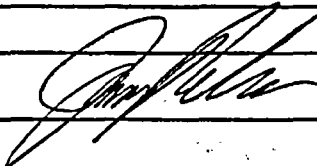
FIGURE 3-16
TRIANGULAR GRID FOR
LABORATORY D2205

EPA NEIC
 DENVER FEDERAL CENTER
 LAKEWOOD, COLORADO

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER: 101115		DATE: 03-05-04	TIME START: 1500	TIME COMPLETE: 1530	PAGE 1 OF 5			
LOCATION: EPA NEIC		SURVEYOR(S): T. TRENT		Alpha		Beta-Gamma		Alpha cpm <input type="checkbox"/>	Rem or Location	
Denver Federal Center, CO		SURVEY NUMBER: 030504-43						Loose		Total
Denver, CO		MAP ID: LAB D2205		Rem #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²		Material <input type="checkbox"/>
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose 20 dpm/100cm ² Alpha 200 dpm/100cm ² Beta-Gamma		ACCEPTABLE SCAN LIMITS MDC _{survey} Beta		1	NA	-29	NA	-887		FT D-20
Total 100 dpm/100cm ² Alpha 1,000 dpm/100cm ² Beta-Gamma		MDC _{survey} Alpha		2		-30		-634	FT D-20	
Source Check Date	Contamination Surveys				Radiation Surveys		Beta-Gamma			
	α	β	β-γ	β-γ						
	(TOTAL)	(TOTAL)	(TOTAL)	(TOTAL)						
Instrument	164904 / 184788	NA	164904 / 184788	NA	NA					
Source Type and ID	Tk-230, 1170/88		Cs-137, 92CS3000							
Source Strength in dpm	13800		789585							
Efficiency	0.13 / 0.15		0.16 / 0.17							
MDC in dpm/100 cm ²	See attached instrument sheets for material specific backgrounds and MDC's.				Sat. <input type="checkbox"/>	Unsat. <input type="checkbox"/>	NA			
Background in cpm					Type or grade:					
REASON FOR SURVEY	<input checked="" type="checkbox"/> PROCEDURE NO. FINAL STATUS SURVEY PLAN <input type="checkbox"/> SPECIAL <input type="checkbox"/> ROUTINE									
Contamination	<input checked="" type="checkbox"/> By SNR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly									
Radiation	<input type="checkbox"/> By Shift <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly									
COMMENTS:	Replicate Survey for data point D-20 in LAB D2205.									
SADS - See Attached Data Sheet										
Contamination Survey	ALPHA (TOTAL) 2360, 184904		BETA-GAMMA (TOTAL) 2360, 184904							
INSTRUMENT / SERIAL #	ALPHA (TOTAL) N/A		BETA-GAMMA (TOTAL) N/A							
	ALPHA (TOTAL) N/A		BETA-GAMMA (TOTAL) N/A							
THE KNOWING & WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.					RCS REVIEW: <i>[Signature]</i> DATE 3-10-04					

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room D-2205	PAGE 2 OF 5	
COMMENTS:	SURVEYOR(S): T. TRENT	SURVEY NUMBER: 030504-43	DATE: 03-05-04
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: 3-10-04		

Grid Intersection ,

Background Checks

1 / 255 cpm

2 / 302 cpm

Grid Intersection D, 20

Replicate Count

16 / 3880

15 / 4071

Material Specific Background and MDC Sheet for Alpha Measurements

B 3 of 5
05 04-43

[Signature]
3-1-04

Instrument/SN: Ludlum 2360 / 184904

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / PR138731

Total Instrument Efficiency 0.0325 dpm/cpm

Wall Board	WB	1.40	cpm	MDC	54	dpm/100cm2	Sample Count Time	15	min
Floor Tile	FT	2.24	cpm	MDC	67	dpm/100cm2	Sample Count Time	15	min
Wood	WO	2.10	cpm	MDC	65	dpm/100cm2	Sample Count Time	15	min
Cement Floor	CF	4.40	cpm	MDC	92	dpm/100cm2	Sample Count Time	15	min
Metal	ME	1.66	cpm	MDC	58	dpm/100cm2	Sample Count Time	15	min
Concrete Block	CB	1.92	cpm	MDC	62	dpm/100cm2	Sample Count Time	15	min
Glass	GL	5.04	cpm	MDC	98	dpm/100cm2	Sample Count Time	15	min
Counter Top	CT	2.20	cpm	MDC	66	dpm/100cm2	Sample Count Time	15	min
Black&White Floor Tile	(BWFT)	3.36	cpm	MDC	81	dpm/100cm2	Sample Count Time	15	min
Wall Board Downstairs	(WBD)	1.22	cpm	MDC	51	dpm/100cm2	Sample Count Time	15	min

John H. Hill
3-10-04

Material Specific Background and MDC Sheet for Beta Measurements

Instrument/SN:

Ludlum 2360 / 184904

Background count time 5 minutes

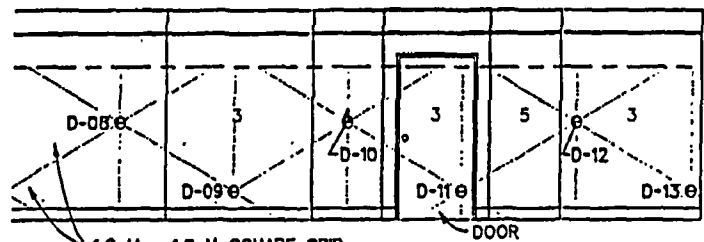
Probe/SN:

Ludlum 43-68 / PR138731

Total Instrument Efficiency 0.0400 dpm/cpm

Wall Board	(WB)	265.14	cpm	MDC	553	dpm/100cm2	Sample Count Time	15	min
Floor Tile	(FT)	303.36	cpm	MDC	591	dpm/100cm2	Sample Count Time	15	min
Wood	(WO)	180.64	cpm	MDC	457	dpm/100cm2	Sample Count Time	15	min
Cement Floor	(CF)	449.28	cpm	MDC	718	dpm/100cm2	Sample Count Time	15	min
Metal	(ME)	311.78	cpm	MDC	599	dpm/100cm2	Sample Count Time	15	min
Concrete Block	(CB)	475.30	cpm	MDC	739	dpm/100cm2	Sample Count Time	15	min
Glass	(GL)	350.32	cpm	MDC	635	dpm/100cm2	Sample Count Time	15	min
Counter Top	(CT)	292.52	cpm	MDC	581	dpm/100cm2	Sample Count Time	15	min
Black&White Floor Tile	(BWFT)	982.02	cpm	MDC	1060	dpm/100cm2	Sample Count Time	15	min
Wall Board Downstairs	(WBD)	270.32	cpm	MDC	558	dpm/100cm2	Sample Count Time	15	min

John Allen 3-10-04



1.0 M x 1.0 M SQUARE GRID
SHOWN FOR REFERENCE ONLY (TYP)

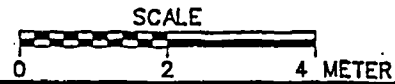
NOTES

1. WALL SURFACE AREA: 51.2572 SQ. M.
 FLOOR SURFACE AREA: 33.4128 SQ. M.
 TOTAL SURFACE AREA: 84.6700 SQ. M.
2. THE LENGTH OF EACH LEG OF THE
 TRIANGULAR SAMPLING GRID IS
 1.805 METERS

(TYP)

FIGURE 3-16
TRIANGULAR SAMPLING GRID FOR
LABORATORY D2205

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO



Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT		PROJECT NUMBER: 101115		DATE: 02/26/04	TIME START: 15:40	TIME COMPLETE: 17:05	PAGE 1 OF 3						
LOCATION: EPA NEIC <i>Rm 2205</i>		SURVEYOR(S): <i>Wise / Hume</i>		Alpha		Beta-Gamma							
Denver Federal Center, CO		SURVEY NUMBER: 022604-20		Loose	Total	Loose	Total						
Denver, CO		MAP ID: LAB D2205				Alpha cpm <input type="checkbox"/>	Item or Location						
						Beta cpm <input type="checkbox"/>							
ACCEPTABLE SURFACE CONTAMINATION LEVELS Loose 20 dpm/100cm ² Alpha 200 dpm/100cm ² Beta-Gamma		ACCEPTABLE SCAN LIMITS		Item #	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²						
Total 100 dpm/100cm ² Alpha 1,000 dpm/100cm ² Beta-Gamma				1	*NOTE	NA	*NOTE						
				2									
Source Check Data		Contamination Surveys		3									
				4									
				5									
				6									
Instrument		Radiation Surveys		7									
				8									
				9									
				10									
				11									
				12									
				13									
				14									
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				22									
				23									
				24									
				25									
REASON FOR SURVEY		PROCEDURE NO. <u>FINAL STATUS SURVEY PLAN</u>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Alpha (LOOSE)</td> <td>Beta-Gamma (LOOSE)</td> </tr> <tr> <td>PERFORMED BY PARAGON ANALYTICS, INC.</td> <td>PERFORMED BY PARAGON ANALYTICS, INC.</td> </tr> <tr> <td>ALPHA (TOTAL) N/A</td> <td>BETA-GAMMA (TOTAL) N/A</td> </tr> </table>				Alpha (LOOSE)	Beta-Gamma (LOOSE)	PERFORMED BY PARAGON ANALYTICS, INC.	PERFORMED BY PARAGON ANALYTICS, INC.	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A
Alpha (LOOSE)	Beta-Gamma (LOOSE)												
PERFORMED BY PARAGON ANALYTICS, INC.	PERFORMED BY PARAGON ANALYTICS, INC.												
ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A												
SURVEY		SPECIAL <u>Smear Survey</u>											
CONTAMINATION		By SHR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>											
RADIATION		By SHR <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/>											
COMMENTS: NOTE: SEE DATA PACKAGE FROM PARAGON ANALYTICS, INC. FOR REMOVABLE ACTIVITY RESULTS AND INSTRUMENT INFORMATION.													
Contamination Survey		ALPHA (LOOSE)		BETA-GAMMA (LOOSE)									
INSTRUMENT / SERIAL #		PERFORMED BY PARAGON ANALYTICS, INC.		PERFORMED BY PARAGON ANALYTICS, INC.									
		ALPHA (TOTAL) N/A		BETA-GAMMA (TOTAL) N/A									
Radiation Survey		BETA-GAMMA Meter		BETA-GAMMA Probe									
INSTRUMENT / SERIAL #		N/A		N/A									
THE KNOWING & WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.				RCS REVIEW: <i>[Signature]</i> DATE: 3-2-04									

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT (CONTINUATION SHEET)						PROJECT NUMBER: 101115	DATE: 022604	PAGE 2 OF 3					
LOCATION: EPANEIC			SURVEYOR(S): Wise/Trent			COMMENTS:							
Denver Federal Center, Building 53			SURVEY NUMBER: 022604-20										
Denver, CO			MAP ID: LAB D2205										
RCS REVIEW <i>[Signature]</i>						DATE: 3-2-04							
Item #	Alpha		Beta-Gamma		Alpha cpm	Item or Location	Item #	Alpha		Beta-Gamma		Alpha cpm	Item or Location
	LOOSE	TOTAL	LOOSE	TOTAL	Beta cpm			LOOSE	TOTAL	LOOSE	TOTAL	Beta cpm	
	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	Material			dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	dpm/100cm ²	Material	
26						D-26	27						
27						D-27	28						
28						D-28	29						
29						D-29	30						
30						D-30	31						
31						D-31	32						
32						35.2205-01	33						
33						-02	34						
34						-03	35						
35						-04	36						
36						-05	37						
37						-06	38						
38						-07	39						
39						-08	40						
40						-09	41						
41						-10	42						
42						35.2205-10-FD	43						
43						D20-FD	44						
44						D-25 FD	45						
45							46						
46							47						
47							48						
48							49						
49							50						
50													

13 > 01-
022604-20
01115

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101115_netc_0013.dgn

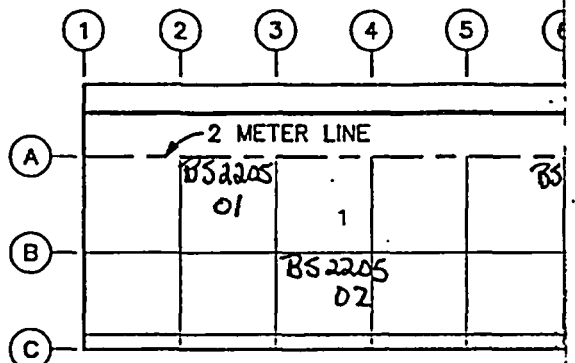
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STARTING DATE: 01DEC03
DRAWN BY: C.E.TUMLIN

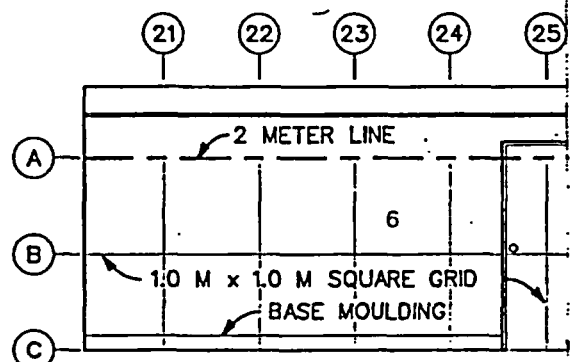
INITIATOR: R.COLLINS
CADD REVIEW: C.BENTLEY

TECH. REVIEW: R.COLLINS
PROJ. MOR.: R.L.ROGERS

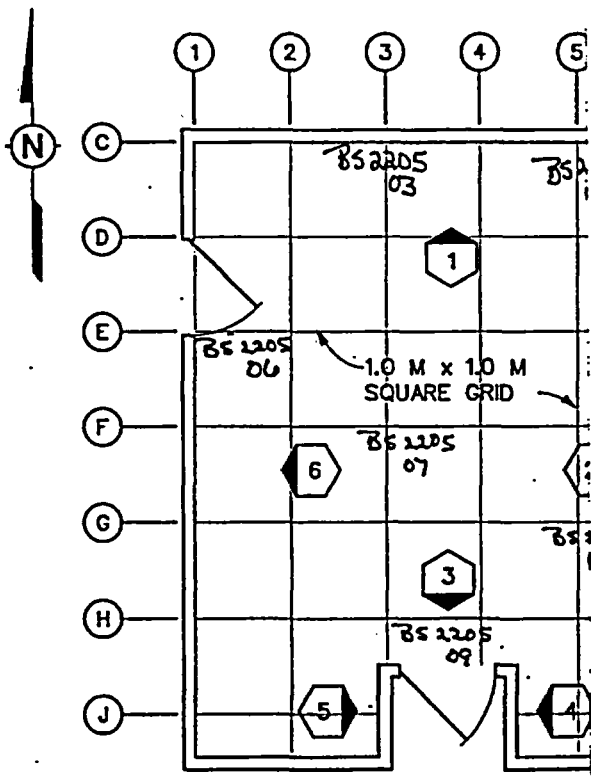
DWG. NO.: 10115_netc_0013.dgn
PROJ. NO.: 101115



ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m



PLAN VIEW
SCALE: 1" = 2.0 m

NOTES

- 1. WALL SURFACE AREA: 51.2572 SQ. M.
- FLOOR SURFACE AREA: 33.4128 SQ. M.
- TOTAL SURFACE AREA: 84.6700 SQ. M.

FIGURE 3-15
REFERENCE GRID FOR
LABORATORY D2205

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO





PARAGON ANALYTICS

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

March 17, 2004

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

Re: Paragon Workorder: 04-03-010
Client Project Name: Denver NEIC
Client Project Number: 101115

Dear Mr. Weaver:

Forty-five wipe samples were received from Shaw E & I on March 1, 2004. The samples were scheduled for Gross Alpha/Beta (pages 1-234) 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,

Paragon Analytics
Debbie Fazio
Project Manager

DJF/ja

Enclosure: Report

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403010

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022604-20-01	0403010-1		WIPE	26-Feb-04	14:25
022604-20-02	0403010-2		WIPE	26-Feb-04	14:25
022604-20-03	0403010-3		WIPE	26-Feb-04	14:25
022604-20-04	0403010-4		WIPE	26-Feb-04	14:25
022604-20-05	0403010-5		WIPE	26-Feb-04	14:25
022604-20-06	0403010-6		WIPE	26-Feb-04	14:25
022604-20-07	0403010-7		WIPE	26-Feb-04	14:25
022604-20-08	0403010-8		WIPE	26-Feb-04	14:25
022604-20-09	0403010-9		WIPE	26-Feb-04	14:25
022604-20-10	0403010-10		WIPE	26-Feb-04	14:25
022604-20-11	0403010-11		WIPE	26-Feb-04	14:25
022604-20-12	0403010-12		WIPE	26-Feb-04	14:25
022604-20-13	0403010-13		WIPE	26-Feb-04	14:25
022604-20-14	0403010-14		WIPE	26-Feb-04	14:25
022604-20-15	0403010-15		WIPE	26-Feb-04	14:25
022604-20-16	0403010-16		WIPE	26-Feb-04	14:25
022604-20-17	0403010-17		WIPE	26-Feb-04	14:25
022604-20-18	0403010-18		WIPE	26-Feb-04	14:25
022604-20-19	0403010-19		WIPE	26-Feb-04	14:25
022604-20-20	0403010-20		WIPE	26-Feb-04	14:25
022604-20-21	0403010-21		WIPE	26-Feb-04	14:25
022604-20-22	0403010-22		WIPE	26-Feb-04	14:26
022604-20-23	0403010-23		WIPE	26-Feb-04	14:26
022604-20-24	0403010-24		WIPE	26-Feb-04	14:26
022604-20-25	0403010-25		WIPE	26-Feb-04	14:26
022604-20-26	0403010-26		WIPE	26-Feb-04	14:26
022604-20-27	0403010-27		WIPE	26-Feb-04	14:26
022604-20-28	0403010-28		WIPE	26-Feb-04	14:26
022604-20-29	0403010-29		WIPE	26-Feb-04	14:26
022604-20-30	0403010-30		WIPE	26-Feb-04	14:26
022604-20-31	0403010-31		WIPE	26-Feb-04	14:26
022604-20-32	0403010-32		WIPE	26-Feb-04	14:26

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403010

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022604-20-33	0403010-33		WIPE	26-Feb-04	14:26
022604-20-34	0403010-34		WIPE	26-Feb-04	14:26
022604-20-35	0403010-35		WIPE	26-Feb-04	14:26
022604-20-36	0403010-36		WIPE	26-Feb-04	14:26
022604-20-37	0403010-37		WIPE	26-Feb-04	14:26
022604-20-38	0403010-38		WIPE	26-Feb-04	14:26
022604-20-39	0403010-39		WIPE	26-Feb-04	14:26
022604-20-40	0403010-40		WIPE	26-Feb-04	14:26
022604-20-41	0403010-41		WIPE	26-Feb-04	14:26
022604-20-41FD	0403010-42		WIPE	26-Feb-04	14:26
022604-20-20FD	0403010-43		WIPE	26-Feb-04	14:26
022604-20-25FD	0403010-44		WIPE	26-Feb-04	14:26
022604-20-FB	0403010-45		WIPE	26-Feb-04	14:26



0403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: 022205 (2604-20)

PAGE 1 of 3

Bill to: _____

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

Project No. 101115 Sample Shipment Date 3-01-04
 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 Dettore / 865-670-2669
 Sample Team Members K. WISE Carrier Waybill No. N/A
T. TRENT

ONE SAMPLE PER LINE

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
1 022604-20-01	Rm 02205 Ess Location D-01	3/26/04 1425	Smear		
2 -02	D-02				
3 -03	D-03				
4 -04	D-04				
5 -05	D-05				
6 -06	D-06				
7 -07	D-07				
8 -08	D-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: <u>3-1-04</u> Time: <u>1040</u>	1. Received by (Signature/Affiliation) SHAWER E	Date: <u>3-1-04</u> Time: <u>1040</u>
2. Relinquished by (Signature/Affiliation)	Date: <u>3-1-04</u> Time: <u>3:40-1422</u>	2. Received by (Signature/Affiliation)	Date: <u>3-1-04</u> Time: <u>1420</u>
3. Relinquished by (Signature/Affiliation)	Date: _____ Time: _____	3. Received by (Signature/Affiliation) Paragon	Date: <u>1300</u> Time: <u>3/2/04</u> ^{Ⓞ Samples received 3/1/04 or 3/2/04}

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



0403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: D2205-022604-20

Pg 2 of 3

Project Name/Project No. EPA NEIC EDDP / 101115 Lab Destination Paragon Analytics, Inc. Sample Shipment Date 03-01-04

ONE SAMPLE PER LINE

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
9	022604-20-09 Rm D2205 ESS Location D-09	2/26/04 1425	Smear		
10	-10				
11	-11				
12	-12				
13	-13				
14	-14				
15	-15				
16	-16				
17	-17				
18	-18				
19	-19				
20	-20				
21	-21				
22	-22	1426			
23	-23				
24	-24				
25	-25				
26	-26				
27	-27				
28	-28				
29	-29				
30	-30				

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403010
 PROJECT MANAGER: Deb Fabrizio INITIALS: DF DATE: 3/2/04

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

Cooler #'s 1
 Temperature Ambient (Read Only) °C
 Project Manager Signature / Date: Deb Fabrizio 3/4/03

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

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

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403010

PROJECT MANAGER: Deb Farn INITIALS: DW DATE: 3/2/04

- Custody seals broken (on outside of shipping container or on sample containers).
- No Chain-of-Custody (COC) present.
- Number of samples on the COC do not match the number of samples received.
- Aqueous samples not preserved correctly (see pH discussion below).
- SVOC samples contained residual chlorine (list sample IDs and affected containers below).
- Samples received at inappropriate temperature.
- Insufficient sample to perform requested analyses.
- Extraction or analytical holding times expired in transit.
- Broken/leaking bottles and intact bottles received in same cooler (list affected sample IDs below).
- No analyses requested.
- Incorrect sample type received.
- VOAs, reactive CN/S, radon not headspace free (list sample IDs and affected vials below).
- Airbills not present and/or removable (record applicable shipper's tracking number below).
- Other (describe below). 3/2/04 Per James Nilson, associate the 2nd 02 with 03 ml chain of custody. Smears arrived stapled in numerical order.

Describe discrepancy:

COC are not properly relinquished by client.
Did not receive a smear labeled 022604-20-03.
Received two smears labeled 022604-20-02.
The two smears received were labeled with Paragon IDs based on
the order of the smears within their stacks. they were stapled to

<u>0403010-1</u>	<u>022604-20-01</u>	
<u>0403010-2</u>		<u>-02 (a) ? letters a and b were added to</u>
<u>0403010-3</u>		<u>-02 (b) smear at Paragon.</u>
<u>0403010-4</u>		<u>-04</u>

Was the client contacted? No; Yes: Name James Nilson Date/Time 3/2/04

Was the pH of any sample adjusted by the laboratory? No; Yes (see Table below):

NOTE: No pH adjustments shall be made without prior consent of Project Manager. After pH adjustment, hold metals and radchem samples ≥ 16 hr before analysis.

Sample ID	Initial pH	Final pH (wait 30 min)	Type of Reagent Used	Lot No. of Reagent Used	Initials / Date / Time

Was the laboratory directed to proceed with the analysis of any samples yielding the presence of residual chlorine? No; Yes (see notes above).

Project Manager Signature / Date: DJ 3/3/04



Paragon Analytics

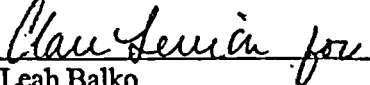
Radiochemistry Case Narrative

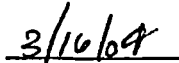
Gross Alpha/Beta

Shaw E & I Inc.
Denver NEIC / 101115
Paragon WO 0403010

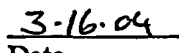
1. This report consists of the analytical results and supporting documentation for 45 filter samples received by Paragon on 03/01/04.
2. These samples were prepared according to Paragon Analytics procedure SOP702R16.
3. The samples submitted by the client were placed in stainless steel counting planchets and were analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics procedure SOP724R8. The analyses were completed on 03/11/04. Calibrations and calculations are defined in Paragon Analytics procedure 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. Sample volumes were insufficient to allow preparation of duplicates. Duplicate analyses of samples 022604-20-01, 022604-20-11, 022604-20-21, 022604-20-31, and 022604-20-41 (Paragon ID 0403010-1, -11, -21, -31 and -41) were performed in lieu of prepared duplicates.
6. 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.


Leah Balko
Radiochemistry Instrument Technician


Date


Radiochemistry Final Data Review


Date

000001

1

PARAGON ANALYTICS
Radiochemistry Data Package

Section 1

**SAMPLE RESULTS
SUMMARY**

000002

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

Page: 1 of 10

Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:25 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-1	022604-20-01	Sample	GROSS ALPHA	0.01 +/- 0.35	0.68	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-1	022604-20-01	Sample	GROSS BETA	0.45 +/- 0.85	1.41	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-2	022604-20-02	Sample	GROSS ALPHA	-0.11 +/- 0.37	0.75	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-2	022604-20-02	Sample	GROSS BETA	-0.12 +/- 0.85	1.48	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-3	022604-20-03	Sample	GROSS ALPHA	-0.21 +/- 0.36	0.77	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-3	022604-20-03	Sample	GROSS BETA	0.30 +/- 0.85	1.44	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-4	022604-20-04	Sample	GROSS ALPHA	-0.01 +/- 0.35	0.69	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-4	022604-20-04	Sample	GROSS BETA	0.17 +/- 0.87	1.48	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-5	022604-20-05	Sample	GROSS ALPHA	-0.27 +/- 0.43	0.88	DPM/sample	WIPE	AB040305-3	3/9/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

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

Abbreviations:

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

000003

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

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Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:25 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-5	022604-20-05	Sample	GROSS BETA	0.30 +/- 0.88	1.48	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-6	022604-20-06	Sample	GROSS ALPHA	0.20 +/- 0.43	0.76	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-6	022604-20-06	Sample	GROSS BETA	0.34 +/- 0.86	1.45	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-7	022604-20-07	Sample	GROSS ALPHA	-0.15 +/- 0.34	0.71	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-7	022604-20-07	Sample	GROSS BETA	-0.19 +/- 0.95	1.65	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-8	022604-20-08	Sample	GROSS ALPHA	-0.08 +/- 0.37	0.73	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-8	022604-20-08	Sample	GROSS BETA	-0.41 +/- 0.89	1.56	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-9	022604-20-09	Sample	GROSS ALPHA	0.01 +/- 0.40	0.76	DPM/sample	WIPE	AB040305-3	3/9/04	U
0403010-9	022604-20-09	Sample	GROSS BETA	0.28 +/- 0.89	1.50	DPM/sample	WIPE	AB040305-3	3/9/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

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

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

000004

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

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Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:25 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-10	022604-20-10	Sample	GROSS ALPHA	-0.10 +/- 0.29	0.63	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-10	022604-20-10	Sample	GROSS BETA	0.57 +/- 0.84	1.38	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-11	022604-20-11	Sample	GROSS ALPHA	0.34 +/- 0.45	0.73	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-11	022604-20-11	Sample	GROSS BETA	0.06 +/- 0.83	1.42	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-12	022604-20-12	Sample	GROSS ALPHA	-0.01 +/- 0.34	0.67	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-12	022604-20-12	Sample	GROSS BETA	0.35 +/- 0.83	1.40	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-13	022604-20-13	Sample	GROSS ALPHA	-0.07 +/- 0.33	0.68	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-13	022604-20-13	Sample	GROSS BETA	0.37 +/- 0.84	1.41	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-14	022604-20-14	Sample	GROSS ALPHA	-0.19 +/- 0.36	0.75	DPM/sample	WIPE	AB040305-3	3/10/04	U

Comments:

Data Package ID: abf0403010-1

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

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

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

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LIMS Version: 4.343C

000005

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

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Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:26 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-14	022604-20-14	Sample	GROSS BETA	-0.02 +/- 0.86	1.47	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-15	022604-20-15	Sample	GROSS ALPHA	-0.06 +/- 0.39	0.77	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-15	022604-20-15	Sample	GROSS BETA	0.38 +/- 0.86	1.44	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-16	022604-20-16	Sample	GROSS ALPHA	0.03 +/- 0.36	0.69	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-16	022604-20-16	Sample	GROSS BETA	0.05 +/- 0.86	1.48	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-17	022604-20-17	Sample	GROSS ALPHA	0.01 +/- 0.47	0.88	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-17	022604-20-17	Sample	GROSS BETA	-0.02 +/- 0.86	1.49	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-18	022604-20-18	Sample	GROSS ALPHA	0.29 +/- 0.44	0.73	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-18	022604-20-18	Sample	GROSS BETA	1.42 +/- 0.93	1.43	DPM/sample	WIPE	AB040305-3	3/10/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

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

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

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90000

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

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Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:26 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-19	022604-20-19	Sample	GROSS ALPHA	0.20 +/- 0.43	0.76	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-19	022604-20-19	Sample	GROSS BETA	0.65 +/- 0.88	1.45	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-20	022604-20-20	Sample	GROSS ALPHA	0.29 +/- 0.43	0.71	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-20	022604-20-20	Sample	GROSS BETA	-0.12 +/- 0.96	1.65	DPM/sample	WIPE	AB040305-3	3/10/04	U
0403010-21	022604-20-21	Sample	GROSS ALPHA	0.06 +/- 0.38	0.72	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-21	022604-20-21	Sample	GROSS BETA	0.49 +/- 0.84	1.39	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-22	022604-20-22	Sample	GROSS ALPHA	0.01 +/- 0.35	0.68	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-22	022604-20-22	Sample	GROSS BETA	0.22 +/- 0.83	1.41	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-23	022604-20-23	Sample	GROSS ALPHA	0.01 +/- 0.40	0.75	DPM/sample	WIPE	AB040305-4	3/10/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

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

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

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LIMS Version: 4.343C

000007

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAJ Work Order: 0403010

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 Reported on: Tuesday, March 16, 2004
 11:47:26 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-23	022604-20-23	Sample	GROSS BETA	0.17 +/- 0.87	1.48	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-24	022604-20-24	Sample	GROSS ALPHA	0.17 +/- 0.44	0.77	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-24	022604-20-24	Sample	GROSS BETA	0.93 +/- 0.90	1.45	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-25	022604-20-25	Sample	GROSS ALPHA	0.30 +/- 0.42	0.69	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-25	022604-20-25	Sample	GROSS BETA	-0.44 +/- 0.84	1.49	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-26	022604-20-26	Sample	GROSS ALPHA	0.01 +/- 0.47	0.88	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-26	022604-20-26	Sample	GROSS BETA	0.22 +/- 0.88	1.49	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-27	022604-20-27	Sample	GROSS ALPHA	0.05 +/- 0.39	0.73	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-27	022604-20-27	Sample	GROSS BETA	0.71 +/- 0.87	1.42	DPM/sample	WIPE	AB040305-4	3/10/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

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

Abbreviations:

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

Date Printed: Tuesday, March 16, 2004

Paragon Analytics
 LIMS Version: 4.343C

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800000

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

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Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:26 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-28	022604-20-28	Sample	GROSS ALPHA	0.35 +/- 0.47	0.76	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-28	022604-20-28	Sample	GROSS BETA	1.21 +/- 0.93	1.45	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-29	022604-20-29	Sample	GROSS ALPHA	-0.11 +/- 0.34	0.71	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-29	022604-20-29	Sample	GROSS BETA	0.18 +/- 0.97	1.65	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-30	022604-20-30	Sample	GROSS ALPHA	0.26 +/- 0.44	0.74	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-30	022604-20-30	Sample	GROSS BETA	0.33 +/- 0.93	1.57	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-31	022604-20-31	Sample	GROSS ALPHA	0.01 +/- 0.40	0.76	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-31	022604-20-31	Sample	GROSS BETA	0.40 +/- 0.90	1.50	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-32	022604-20-32	Sample	GROSS ALPHA	-0.12 +/- 0.38	0.79	DPM/sample	WIPE	AB040305-4	3/10/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

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

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

LIMS Version: 4.343C

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60000

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

Page: 8 of 10

Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:27 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-32	022604-20-32	Sample	GROSS BETA	0.2 +/- 1.0	1.7	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-33	022604-20-33	Sample	GROSS ALPHA	0.15 +/- 0.39	0.69	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-33	022604-20-33	Sample	GROSS BETA	0.34 +/- 0.99	1.66	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-34	022604-20-34	Sample	GROSS ALPHA	0.40 +/- 0.40	0.60	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-34	022604-20-34	Sample	GROSS BETA	0.97 +/- 0.95	1.52	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-35	022604-20-35	Sample	GROSS ALPHA	0.02 +/- 0.31	0.60	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-35	022604-20-35	Sample	GROSS BETA	0.26 +/- 0.85	1.44	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-36	022604-20-36	Sample	GROSS ALPHA	-0.01 +/- 0.33	0.66	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-36	022604-20-36	Sample	GROSS BETA	-0.33 +/- 0.92	1.60	DPM/sample	WIPE	AB040305-4	3/10/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

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

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

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LIMS Version: 4.343C

00010

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

Client Name: Shaw E & I Inc.
 Client Project Name: Denver NEIC
 Client Project Number: 101115

Laboratory Name: Paragon Analytics
 PAI Work Order: 0403010

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 Reported on: Tuesday, March 16, 2004
 11:47:27 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-37	022604-20-37	Sample	GROSS ALPHA	0.21 +/- 0.38	0.65	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-37	022604-20-37	Sample	GROSS BETA	0.09 +/- 0.90	1.53	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-38	022604-20-38	Sample	GROSS ALPHA	0.03 +/- 0.35	0.68	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-38	022604-20-38	Sample	GROSS BETA	0.83 +/- 0.96	1.58	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-39	022604-20-39	Sample	GROSS ALPHA	0.09 +/- 0.38	0.69	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-39	022604-20-39	Sample	GROSS BETA	0.30 +/- 0.93	1.57	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-40	022604-20-40	Sample	GROSS ALPHA	-0.21 +/- 0.32	0.71	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-40	022604-20-40	Sample	GROSS BETA	1.12 +/- 0.95	1.50	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-41	022604-20-41	Sample	GROSS ALPHA	-0.03 +/- 0.39	0.75	DPM/sample	WIPE	AB040305-7	3/11/04	U

Comments:

Data Package ID: abf0403010-1

Qualifiers/Flags:

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

Abbreviations:

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

00011

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

Client Name: Shaw E & I Inc.

Laboratory Name: Paragon Analytics

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Client Project Name: Denver NEIC

PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004

Client Project Number: 101115

11:47:27 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0403010-41	022604-20-41	Sample	GROSS BETA	0.47 +/- 0.89	1.48	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-42	022604-20-41FD	Sample	GROSS ALPHA	-0.02 +/- 0.40	0.77	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-42	022604-20-41FD	Sample	GROSS BETA	0.62 +/- 0.88	1.44	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-43	022604-20-20FD	Sample	GROSS ALPHA	0.26 +/- 0.41	0.69	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-43	022604-20-20FD	Sample	GROSS BETA	0.24 +/- 0.88	1.48	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-44	022604-20-25FD	Sample	GROSS ALPHA	-0.11 +/- 0.45	0.89	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-44	022604-20-25FD	Sample	GROSS BETA	0.62 +/- 0.90	1.49	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-45	022604-20-FB	Sample	GROSS ALPHA	0.09 +/- 0.39	0.73	DPM/sample	WIPE	AB040305-7	3/11/04	U
0403010-45	022604-20-FB	Sample	GROSS BETA	-0.51 +/- 0.80	1.42	DPM/sample	WIPE	AB040305-7	3/11/04	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

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

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

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

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

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Date Printed: Tuesday, March 16, 2004

Paragon Analytics

LIMS Version: 4.343C

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2

PARAGON ANALYTICS
Radiochemistry Data Package

Section 2

**QC RESULTS
SUMMARY**

000013

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Lab ID: AB040305-3MB

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0310a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.26 +/- 0.43	0.73	U
12587-47-2	GROSS BETA	0.38 +/- 0.85	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.

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

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Lab ID: AB040305-4MB

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
Count Time: 100 minutes

Final Allquot: 1.00 sample
Result Units: DPM/sample
File Name: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.29 +/- 0.30	0.72	U
12587-47-2	GROSS BETA	0 +/- 0.93	1.60	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115

Lab ID: AB040305-7MB

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
Count Time: 100 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.03 +/- 0.39	0.76	U
12587-47-2	GROSS BETA	0.68 +/- 0.92	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.

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

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Lab ID: AB040305-3ALCS

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
Count Time: 63.23 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0310

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-48-1	GROSS ALPHA	11000 +/- 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Lab ID: AB040305-3BLCS

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
Count Time: 63.02 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0310

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	40600 +/- 6500	0	41000	98.9	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.
- ** - 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Lab ID: AB040305-4ALCS

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: aba0310a

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-46-1	GROSS ALPHA	11300 +/- 1800	0	9950	114	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

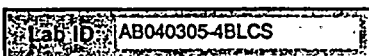
Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Allquot: 1.00 sample
Result Units: DPM/sample
File Name: aba0310a

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	42500 +/- 6800	0	41000	104	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.
- ** - 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Lab ID: AB040305-7ALCS

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 05-Mar-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
Count Time: 10 minutes

Final Aliquot: 1.00 sample
Result Units: DPM/sample
File Name: abb0311e

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-48-1	GROSS ALPHA	11000 +/- 1800	0	9950	110	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Lab ID: AB040305-7BLCS

Sample Matrix: WIPE

Prep Batch: AB040305-7

Final Aliquot: 1.00 sample

Prep SOP: PAI 702 Rev 16

QCBatchID: AB040305-7-1

Result Units: DPM/sample

Date Collected: 05-Mar-04

Run ID: ab040305-3a

File Name: abb0311e

Date Prepared: 05-Mar-04

Count Time: 10 minutes

Date Analyzed: 11-Mar-04

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-47-2	GROSS BETA	41200 +/- 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.

MT - 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)

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID: 022604-20-01
Lab ID: 0403010-1DUP

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QC Batch ID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310a

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.01 +/- 0.35	0.02 +/- 0.32	0.01	2.13	U
12587-47-2	GROSS BETA	0.45 +/- 0.85	1.14 +/- 0.89	0.56	2.13	U

Comments:

Duplicate Qualifiers/Flags:

- J - Result is less than the sample specific MDC.
- *1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- *2 - Chemical Yield outside default limits.
- V - DER is greater than Warning Limit of 1.42
- D - DER is greater than Control Limit of 2.13
- T - Result is less than Request MDC, greater than sample specific MDC
- f - Requested MDC not met.
- f3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- - LCS Recovery below lower control limit.
- l - LCS Recovery above upper control limit.
- * - LCS, Matrix Spike Recovery within control limits.
- l - 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev.8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID: 022804-20-11
Lab ID: 0403010-11DUP

Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 26-Feb-04

Date Prepared: 05-Mar-04

Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3

QCBatchID: AB040305-3-1

Run ID: ab040305-3a

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: abb0310a

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.34 +/- 0.45	0.35 +/- 0.42	0.01	2.13	U
12587-47-2	GROSS BETA	0.06 +/- 0.83	0.41 +/- 0.84	0.30	2.13	U

Comments:

Duplicate Qualifiers/Flags:

- J - Result is less than the sample specific MDC.
- *1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- *2 - Chemical Yield outside default limits.
- N - DER is greater than Warning Limit of 1.42
- D - DER is greater than Control Limit of 2.13
- .T - Result is less than Request MDC, greater than sample specific MDC
- ! - Requested MDC not met.
- !3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- .. - LCS Recovery below lower control limit.
- ! - LCS Recovery above upper control limit.
- * - LCS, Matrix Spike Recovery within control limits.
- ! - Matrix 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID: 022604-20-21
Lab ID: 0403010-21DUP

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QC Batch ID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Analyte	Sample Result +/- 2's TPU	Duplicate Result +/- 2's TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.06 +/- 0.38	0.12 +/- 0.53	0.10	2.13	U
12587-47-2	GROSS BETA	0.49 +/- 0.84	-0.2 +/- 1.0	0.49	2.13	U

Comments:

Duplicate Qualifiers/Flags:

- J - Result is less than the sample specific MDC.
- r1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- r2 - Chemical Yield outside default limits.
- N - DER is greater than Warning Limit of 1.42
- D - DER is greater than Control Limit of 2.13
- T - Result is less than Request MDC, greater than sample specific MDC
- A - Requested MDC not met.
- A3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- - LCS Recovery below lower control limit.
- + - LCS Recovery above upper control limit.
- > - LCS, Matrix Spike Recovery within control limits.
- ! - 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID: 022604-20-31
Lab ID: 0403010-31DUP

Sample Matrix: WIPE

Prep Batch: AB040305-4

Final Aliquot: 1.00 sample

Prep SOP: PAI 702 Rev 16

QC Batch ID: AB040305-4-1

Prep Basis: As Received

Date Collected: 26-Feb-04

Run ID: ab040305-3a

Moisture(%): NA

Date Prepared: 05-Mar-04

Count Time: 100 minutes

Result Units: DPM/sample

Date Analyzed: 10-Mar-04

Report Basis: As Received

File Name: aba0310

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	0.01 +/- 0.40	-0.11 +/- 0.29	0.23	2.13	U
12587-47-2	GROSS BETA	0.40 +/- 0.90	1.1 +/- 1.0	0.51	2.13	U

Comments:

Duplicate Qualifiers/Flags:

- J - Result is less than the sample specific MDC.
- r1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- r2 - Chemical Yield outside default limits.
- N - DER is greater than Warning Limit of 1.42
- D - DER is greater than Control Limit of 2.13
- .T - Result is less than Request MDC, greater than sample specific MDC
- u - Requested MDC not met.
- u3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- .. - LCS Recovery below lower control limit.
- ! - LCS Recovery above upper control limit.
- > - LCS Matrix Spike Recovery within control limits.
- ! - 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Field ID: 022804-20-41
Lab ID: 0403010-41DUP

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
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: abb0311c

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	-0.03 +/- 0.39	0.18 +/- 0.36	0.41	2.13	U
12587-47-2	GROSS BETA	0.47 +/- 0.89	-0.24 +/- 0.79	0.59	2.13	U

Comments:

Duplicate Qualifiers/Flags:

- J - 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.
- N - DER is greater than Warning Limit of 1.42
- D - DER is greater than Control Limit of 2.13
- T - Result is less than Request MDC, greater than sample specific MDC
- A - Requested MDC not met.
- A3 - 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.
- S - LCS, Matrix Spike Recovery within control limits.
- I - 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: ABF0403010-1

PARAGON ANALYTICS
Radiochemistry Data Package

3

Section 3

**INDIVIDUAL
SAMPLE RESULTS**

000028

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

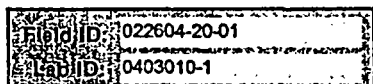
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 09-Mar-04

Prep Batch: AB040305-3
QC Batch ID: AB040305-3-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0309i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.35	0.68	U
12587-47-2	GROSS BETA	0.45 +/- 0.85	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)

DL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

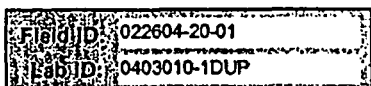
Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.02 +/- 0.32	0.63	U
12587-47-2	GROSS BETA	1.14 +/- 0.89	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:

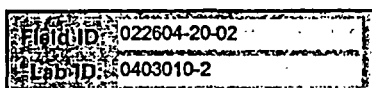
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 09-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0309i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.11 +/- 0.37	0.75	U
12587-47-2	GROSS BETA	-0.12 +/- 0.85	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.

MG - 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)

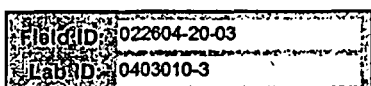
DL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE	Prep Batch: AB040305-3	Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16	QC Batch ID: AB040305-3-1	Prep Basis: As Received
Date Collected: 26-Feb-04	Run ID: ab040305-3a	Moisture(%): NA
Date Prepared: 05-Mar-04	Count Time: 100 minutes	Result Units: DPM/sample
Date Analyzed: 09-Mar-04	Report Basis: As Received	File Name: abb0309I

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.21 +/- 0.36	0.77	U
12587-47-2	GROSS BETA	0.30 +/- 0.85	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)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

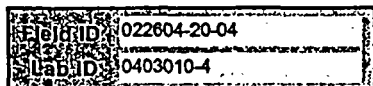
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 09-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0309i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.01 +/- 0.35	0.69	U
12587-47-2	GROSS BETA	0.17 +/- 0.87	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:

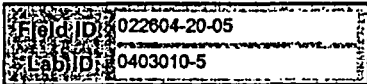
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- DL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 09-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0309i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.27 +/- 0.43	0.88	U
12587-47-2	GROSS BETA	0.30 +/- 0.88	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:

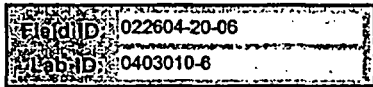
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-3 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-3-1 Prep Basis: As Received
Date Collected: 26-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 09-Mar-04 Report Basis: As Received File Name: abb0309i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.20 +/- 0.43	0.76	U
12587-47-2	GROSS BETA	0.34 +/- 0.86	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:

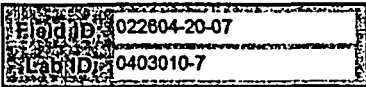
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 09-Mar-04
Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0309I

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.15 +/- 0.34	0.71	U
12587-47-2	GROSS BETA	-0.19 +/- 0.95	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115

Field ID: 022804-20-08
Lab ID: 0403010-8

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 09-Mar-04
Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0309I

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.08 +/- 0.37	0.73	U
12587-47-2	GROSS BETA	-0.41 +/- 0.89	1.56	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)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

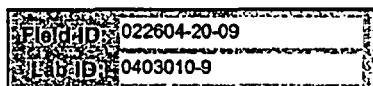
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 09-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0309i

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.40	0.76	U
12587-47-2	GROSS BETA	0.28 +/- 0.89	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:

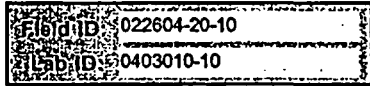
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-3 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-3-1 Prep Basis: As Received
Date Collected: 26-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 10-Mar-04 Report Basis: As Received File Name: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.10 +/- 0.29	0.63	U
12587-47-2	GROSS BETA	0.57 +/- 0.84	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.
- 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:

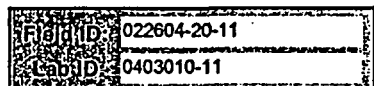
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client/Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.34 +/- 0.45	0.73	U
12587-47-2	GROSS BETA	0.06 +/- 0.83	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

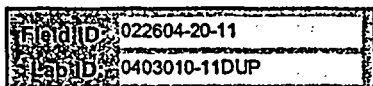
Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 26-Feb-04

Date Prepared: 05-Mar-04

Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3

QCBatchID: AB040305-3-1

Run ID: ab040305-3a

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: abb0310a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.35 +/- 0.42	0.67	U
12587-47-2	GROSS BETA	0.41 +/- 0.84	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.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported 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)

.- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

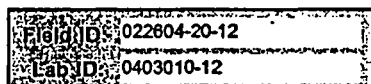
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 26-Feb-04

Date Prepared: 05-Mar-04

Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3

QCBatchID: AB040305-3-1

Run ID: ab040305-3a

Count Time: 100 minutes

Report Basis: As Received

Final Allquot: 1.00 sample

Prep Basis: As Received

Moisture(%): NA

Result Units: DPM/sample

File Name: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.01 +/- 0.34	0.67	U
12587-47-2	GROSS BETA	0.35 +/- 0.83	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

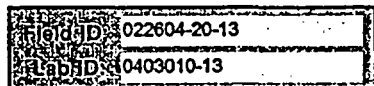
Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-3 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-3-1 Prep Basis: As Received
Date Collected: 26-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 10-Mar-04 Report Basis: As Received File Name: abb0310

CASNO	Target Nuclide	Result +/- 2's TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.07 +/- 0.33	0.68	U
12587-47-2	GROSS BETA	0.37 +/- 0.84	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)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

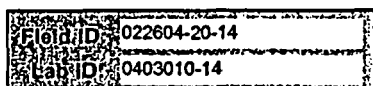
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.19 +/- 0.36	0.75	U
12587-47-2	GROSS BETA	-0.02 +/- 0.86	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115

Field ID	022604-20-15
Lab ID	0403010-15

Sample Matrix: WIPE Prep Batch: AB040305-3
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-3-1
Date Collected: 26-Feb-04 Run ID: ab040305-3a
Date Prepared: 05-Mar-04 Count Time: 100 minutes
Date Analyzed: 10-Mar-04 Report Basis: As Received

Final Aliquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.06 +/- 0.39	0.77	U
12587-47-2	GROSS BETA	0.38 +/- 0.86	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:

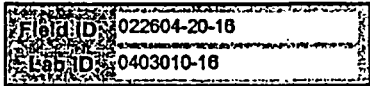
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 28-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.03 +/- 0.36	0.69	U
12587-47-2	GROSS BETA	0.05 +/- 0.86	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115

Field ID	022604-20-17
Lab ID	0403010-17

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.47	0.88	U
12587-47-2	GROSS BETA	-0.02 +/- 0.86	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:

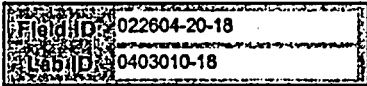
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04
Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.29 +/- 0.44	0.73	U
12587-47-2	GROSS BETA	1.42 +/- 0.93	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Field ID:	022604-20-19
Lab ID:	0403010-19

Sample Matrix: WIPE

Prep Batch: AB040305-3

Final Allquot: 1.00 sample

Prep SOP: PAI 702 Rev 16

QCBatchID: AB040305-3-1

Prep Basis: As Received

Date Collected: 26-Feb-04

Run ID: ab040305-3a

Moisture(%): NA

Date Prepared: 05-Mar-04

Count Time: 100 minutes

Result-Units: DPM/sample

Date Analyzed: 10-Mar-04

Report Basis: As Received

File Name: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.20 +/- 0.43	0.76	U
12587-47-2	GROSS BETA	0.65 +/- 0.88	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)

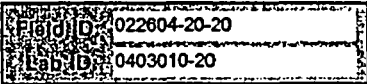
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04
Prep Batch: AB040305-3
QCBatchID: AB040305-3-1
Run ID: ab040305-3a
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: abb0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.29 +/- 0.43	0.71	U
12587-47-2	GROSS BETA	-0.12 +/- 0.96	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Field ID	022604-20-21
Lab ID	0403010-21

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.06 +/- 0.38	0.72	U
12587-47-2	GROSS BETA	0.49 +/- 0.84	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)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115

Fig ID: 022604-20-21
Lab ID: 0403010-21DUP

Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 26-Feb-04

Date Prepared: 05-Mar-04

Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4

QCBatchID: AB040305-4-1

Run ID: ab040305-3a

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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.12 +/- 0.53	0.96	U
12587-47-2	GROSS BETA	-0.2 +/- 1.0	1.8	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

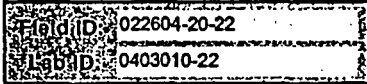
PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.35	0.68	U
12587-47-2	GROSS BETA	0.22 +/- 0.83	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:

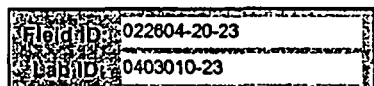
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.40	0.75	U
12587-47-2	GROSS BETA	0.17 +/- 0.87	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

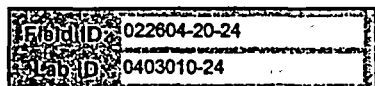
Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-4 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-4-1 Prep Basis: As Received
Date Collected: 26-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 10-Mar-04 Report Basis: As Received File Name: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.17 +/- 0.44	0.77	U
12587-47-2	GROSS BETA	0.93 +/- 0.90	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:

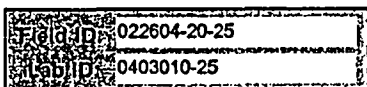
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.30 +/- 0.42	0.69	U
12587-47-2	GROSS BETA	-0.44 +/- 0.84	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

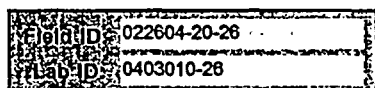
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.47	0.88	U
12587-47-2	GROSS BETA	0.22 +/- 0.88	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)

Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115

Field ID	022604-20-27
Lab ID	0403010-27

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.05 +/- 0.39	0.73	U
12587-47-2	GROSS BETA	0.71 +/- 0.87	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:

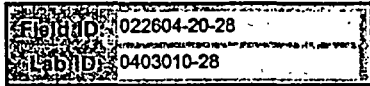
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-4 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-4-1 Prep Basis: As Received
Date Collected: 26-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 10-Mar-04 Report Basis: As Received File Name: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.35 +/- 0.47	0.76	U
12587-47-2	GROSS BETA	1.21 +/- 0.93	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)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

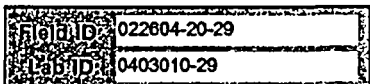
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.11 +/- 0.34	0.71	U
12587-47-2	GROSS BETA	0.18 +/- 0.97	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

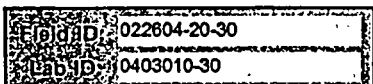
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE

Prep Batch: AB040305-4

Final Allquot: 1.00 sample

Prep SOP: PAI 702 Rev 16

QCBatchID: AB040305-4-1

Prep Basis: As Received

Date Collected: 26-Feb-04

Run ID: ab040305-3a

Moisture(%): NA

Date Prepared: 05-Mar-04

Count Time: 100 minutes

Result Units: DPM/sample

Date Analyzed: 10-Mar-04

Report Basis: As Received

File Name: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.26 +/- 0.44	0.74	U
12587-47-2	GROSS BETA	0.33 +/- 0.93	1.57	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)

- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

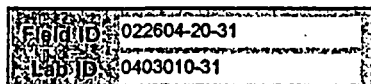
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: abb0310b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.01 +/- 0.40	0.76	U
12587-47-2	GROSS BETA	0.40 +/- 0.90	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:

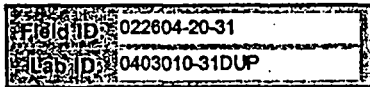
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-4 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-4-1 Prep Basis: As Received
Date Collected: 26-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 10-Mar-04 Report Basis: As Received File Name: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.11 +/- 0.29	0.64	U
12587-47-2	GROSS BETA	1.1 +/- 1.0	1.6	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:

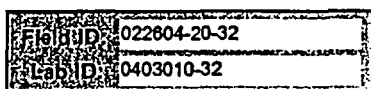
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-4 Final Allquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-4-1 Prep Basis: As Received
Date Collected: 28-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 10-Mar-04 Report Basis: As Received File Name: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.12 +/- 0.38	0.79	U
12587-47-2	GROSS BETA	0.2 +/- 1.0	1.7	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Fiber ID:	022604-20-33
Lab ID:	0403010-33

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.15 +/- 0.39	0.69	U
12587-47-2	GROSS BETA	0.34 +/- 0.99	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)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-34
Lab ID: 0403010-34

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.40 +/- 0.40	0.60	U
12587-47-2	GROSS BETA	0.97 +/- 0.95	1.52	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

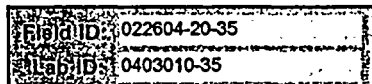
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client/Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QC Batch ID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.02 +/- 0.31	0.60	U
12587-47-2	GROSS BETA	0.26 +/- 0.85	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:

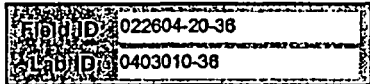
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.01 +/- 0.33	0.66	U
12587-47-2	GROSS BETA	-0.33 +/- 0.92	1.60	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

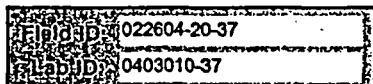
PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE Prep Batch: AB040305-4 Final Aliquot: 1.00 sample
Prep SOP: PAI 702 Rev 16 QCBatchID: AB040305-4-1 Prep Basis: As Received
Date Collected: 26-Feb-04 Run ID: ab040305-3a Moisture(%): NA
Date Prepared: 05-Mar-04 Count Time: 100 minutes Result Units: DPM/sample
Date Analyzed: 10-Mar-04 Report Basis: As Received File Name: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.21 +/- 0.38	0.65	U
12587-47-2	GROSS BETA	0.09 +/- 0.90	1.53	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:

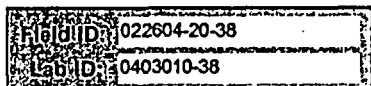
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.03 +/- 0.35	0.66	U
12587-47-2	GROSS BETA	0.83 +/- 0.96	1.56	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:

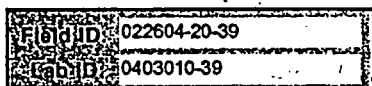
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.09 +/- 0.38	0.69	U
12587-47-2	GROSS BETA	0.30 +/- 0.93	1.57	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:

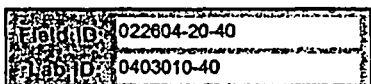
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 10-Mar-04

Prep Batch: AB040305-4
QCBatchID: AB040305-4-1
Run ID: ab040305-3a
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: aba0310

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.21 +/- 0.32	0.71	U
12587-47-2	GROSS BETA	1.12 +/- 0.95	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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client/Project ID: Denver NEIC 101115

Field ID: 022604-20-41
Lab ID: 0403010-41

Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QC Batch ID: AB040305-7-1
Run ID: ab040305-3a
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: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.03 +/- 0.39	0.75	U
12587-47-2	GROSS BETA	0.47 +/- 0.89	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)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

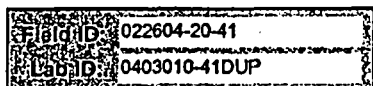
Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client/Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
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: abb0311c

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.18 +/- 0.36	0.62	U
12587-47-2	GROSS BETA	-0.24 +/- 0.79	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.
- M - The requested MDC was not met.
- M3 - The requested MDC was not met, but the reported 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: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

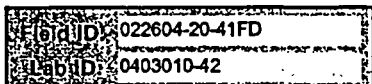
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client/Project ID: Denver NEIC 101115



Sample Matrix: WIPE

Prep SOP: PAI 702 Rev 16

Date Collected: 26-Feb-04

Date Prepared: 05-Mar-04

Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7

QCBatchID: AB040305-7-1

Run ID: ab040305-3a

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: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.02 +/- 0.40	0.77	U
12587-47-2	GROSS BETA	0.62 +/- 0.88	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)

- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

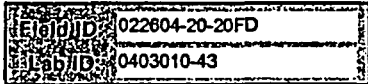
PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
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: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.26 +/- 0.41	0.69	U
12587-47-2	GROSS BETA	0.24 +/- 0.88	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:

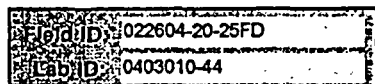
- TPU - Total Propagated Uncertainty (see PAI SOP 743)
- MDC - Minimum Detectable Concentration (see PAI SOP 709)
- BDL - Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
Count Time: 100 minutes
Report Basis: As Received

Final Allquot: 1.00 sample
Prep Basis: As Received
Moisture(%): NA
Result Units: DPM/sample
File Name: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.11 +/- 0.45	0.89	U
12587-47-2	GROSS BETA	0.62 +/- 0.90	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)
- Below Detection Limit

Data Package ID: ABF0403010-1

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

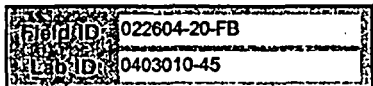
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0403010

Client Name: Shaw E & I Inc.

Client Project ID: Denver NEIC 101115



Sample Matrix: WIPE
Prep SOP: PAI 702 Rev 16
Date Collected: 26-Feb-04
Date Prepared: 05-Mar-04
Date Analyzed: 11-Mar-04

Prep Batch: AB040305-7
QCBatchID: AB040305-7-1
Run ID: ab040305-3a
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: abb0311d

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.09 +/- 0.39	0.73	U
12587-47-2	GROSS BETA	-0.51 +/- 0.80	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: ABF0403010-1

PARAGON ANALYTICS
Radiochemistry Data Package

Section 4

4

RAW DATA

000079

Gross Alpha/Beta Analysis by GFF Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist	Samp Aliq Analy Aliq	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
0403010-1 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B3	ab040305-3a abb0309f	3/9/04 1:25 PM	0.100 0.094	25.71% NA	100 NA	0.01 0.35	0.68 NA	DPM/sample As Received	NA NA	NA U
0403010-1 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B3	ab040305-3a abb0309f	3/9/04 1:25 PM	1.540 1.470	41.60% NA	100 NA	0.45 0.85	1.41 NA	DPM/sample As Received	NA NA	NA U
0403010-1 DUP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0310a	3/10/04 10:03 AM	0.080 0.071	24.75% NA	100 NA	0.02 0.32	0.63 NA	DPM/sample As Received	0.01 NA	NA U
0403010-1 DUP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0310a	3/10/04 10:03 AM	1.820 1.338	40.98% NA	100 NA	1.14 0.89	1.38 NA	DPM/sample As Received	0.58 NA	NA U
0403010-2 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0309f	3/9/04 1:25 PM	0.100 0.125	25.71% NA	100 NA	-0.11 0.37	0.75 NA	DPM/sample As Received	NA NA	NA U
0403010-2 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0309f	3/9/04 1:25 PM	1.540 1.572	41.60% NA	100 NA	-0.12 0.85	1.48 NA	DPM/sample As Received	NA NA	NA U
0403010-3 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0309f	3/9/04 1:25 PM	0.080 0.130	25.68% NA	100 NA	-0.21 0.38	0.77 NA	DPM/sample As Received	NA NA	NA U
0403010-3 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0309f	3/9/04 1:25 PM	1.670 1.528	42.01% NA	100 NA	0.30 0.85	1.44 NA	DPM/sample As Received	NA NA	NA U
0403010-4 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0309f	3/9/04 1:25 PM	0.100 0.099	25.53% NA	100 NA	-0.01 0.35	0.69 NA	DPM/sample As Received	NA NA	NA U
0403010-4 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0309f	3/9/04 1:25 PM	1.700 1.610	41.94% NA	100 NA	0.17 0.87	1.48 NA	DPM/sample As Received	NA NA	NA U
0403010-5 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0309f	3/9/04 1:25 PM	0.110 0.172	25.24% NA	100 NA	-0.27 0.43	0.88 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: abf0403010-1

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

0800

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrwth Date /Time	Quench Factor %Lum	Matrix %Moist	Samp Aliq Analy Aliq	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
0403010-5 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0309f	3/9/04 1:25 PM	1.730 1.583	41.54% NA	100 NA	0.30 0.88	1.48 NA	DPM/sample As Received	NA NA	U
0403010-6 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0309f	3/9/04 1:25 PM	0.170 0.115	24.89% NA	100 NA	0.20 0.43	0.76 NA	DPM/sample As Received	NA NA	U
0403010-6 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0309f	3/9/04 1:25 PM	1.670 1.497	41.57% NA	100 NA	0.34 0.86	1.45 NA	DPM/sample As Received	NA NA	U
0403010-7 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0309f	3/9/04 1:25 PM	0.070 0.102	25.16% NA	100 NA	-0.15 0.34	0.71 NA	DPM/sample As Received	NA NA	U
0403010-7 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0309f	3/9/04 1:25 PM	2.010 2.079	42.47% NA	100 NA	-0.19 0.95	1.65 NA	DPM/sample As Received	NA NA	U
0403010-8 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0309f	3/9/04 1:25 PM	0.100 0.118	25.82% NA	100 NA	-0.08 0.37	0.73 NA	DPM/sample As Received	NA NA	U
0403010-8 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0309f	3/9/04 1:25 PM	1.610 1.762	41.47% NA	100 NA	-0.41 0.89	1.56 NA	DPM/sample As Received	NA NA	U
0403010-9 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a abb0309f	3/9/04 1:25 PM	0.130 0.122	25.54% NA	100 NA	0.01 0.40	0.76 NA	DPM/sample As Received	NA NA	U
0403010-9 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a abb0309f	3/9/04 1:25 PM	1.900 1.756	43.03% NA	100 NA	0.28 0.89	1.50 NA	DPM/sample As Received	NA NA	U
0403010-10 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0310	3/10/04 7:53 AM	0.050 0.071	24.75% NA	100 NA	-0.10 0.29	0.63 NA	DPM/sample As Received	NA NA	U
0403010-10 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0310	3/10/04 7:53 AM	1.580 1.338	40.98% NA	100 NA	0.57 0.84	1.38 NA	DPM/sample As Received	NA NA	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

018081

Gross Alpha/Beta Analysis by GFC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403010-11 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b A2	ab040305-3a abb0310	3/10/04 7:53 AM	0.190 0.101	24.60% NA	100 NA	0.34 0.45	0.73 NA	DPM/sample As Received	NA NA	NA U
0403010-11 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b A2	ab040305-3a abb0310	3/10/04 7:53 AM	1.450 1.394	40.97% NA	100 NA	0.06 0.83	1.42 NA	DPM/sample As Received	NA NA	NA U
0403010-11 DUP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b A3	ab040305-3a abb0310a	3/10/04 10:03 AM	0.180 0.088	25.08% NA	100 NA	0.35 0.42	0.67 NA	DPM/sample As Received	0.01 NA	NA U
0403010-11 DUP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b A3	ab040305-3a abb0310a	3/10/04 10:03 AM	1.600 1.397	41.53% NA	100 NA	0.41 0.84	1.40 NA	DPM/sample As Received	0.30 NA	NA U
0403010-12 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b A3	ab040305-3a abb0310	3/10/04 7:53 AM	0.090 0.088	25.08% NA	100 NA	-0.01 0.34	0.67 NA	DPM/sample As Received	NA NA	NA U
0403010-12 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b A3	ab040305-3a abb0310	3/10/04 7:53 AM	1.560 1.397	41.53% NA	100 NA	0.35 0.83	1.40 NA	DPM/sample As Received	NA NA	NA U
0403010-13 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b B3	ab040305-3a abb0310	3/10/04 7:53 AM	0.080 0.094	25.25% NA	100 NA	-0.07 0.33	0.68 NA	DPM/sample As Received	NA NA	NA U
0403010-13 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b B3	ab040305-3a abb0310	3/10/04 7:53 AM	1.640 1.470	42.08% NA	100 NA	0.37 0.84	1.41 NA	DPM/sample As Received	NA NA	NA U
0403010-14 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b B4	ab040305-3a abb0310	3/10/04 7:53 AM	0.080 0.125	25.71% NA	100 NA	-0.19 0.38	0.75 NA	DPM/sample As Received	NA NA	NA U
0403010-14 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b B4	ab040305-3a abb0310	3/10/04 7:53 AM	1.580 1.572	41.60% NA	100 NA	-0.02 0.86	1.47 NA	DPM/sample As Received	NA NA	NA U
0403010-15 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1# 1#	LB4100-b C1	ab040305-3a abb0310	3/10/04 7:53 AM	0.120 0.130	25.68% NA	100 NA	-0.08 0.39	0.77 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: abf0403010-1

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

010082

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403010-15 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0310	3/10/04 7:53 AM	1.710 1.528	42.01% NA	100 NA	0.38 0.86	1.44 NA	DPM/sample As Received	NA NA	U
0403010-16 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0310	3/10/04 7:53 AM	0.110 0.099	25.53% NA	100 NA	0.03 0.36	0.69 NA	DPM/sample As Received	NA NA	U
0403010-16 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0310	3/10/04 7:53 AM	1.650 1.610	41.94% NA	100 NA	0.05 0.88	1.48 NA	DPM/sample As Received	NA NA	U
0403010-17 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0310	3/10/04 7:53 AM	0.180 0.172	25.24% NA	100 NA	0.01 0.47	0.88 NA	DPM/sample As Received	NA NA	U
0403010-17 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0310	3/10/04 7:53 AM	1.610 1.583	41.54% NA	100 NA	-0.02 0.86	1.49 NA	DPM/sample As Received	NA NA	U
0403010-18 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0310	3/10/04 7:53 AM	0.180 0.106	24.72% NA	100 NA	0.29 0.44	0.73 NA	DPM/sample As Received	NA NA	U
0403010-18 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0310	3/10/04 7:53 AM	2.110 1.482	41.98% NA	100 NA	1.42 0.93	1.43 NA	DPM/sample As Received	NA NA	U
0403010-19 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0310	3/10/04 7:53 AM	0.170 0.115	24.89% NA	100 NA	0.20 0.43	0.76 NA	DPM/sample As Received	NA NA	U
0403010-19 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0310	3/10/04 7:53 AM	1.800 1.497	41.57% NA	100 NA	0.65 0.88	1.45 NA	DPM/sample As Received	NA NA	U
0403010-20 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0310	3/10/04 7:53 AM	0.180 0.102	25.16% NA	100 NA	0.29 0.43	0.71 NA	DPM/sample As Received	NA NA	U
0403010-20 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-3 AB040305-3-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0310	3/10/04 7:53 AM	2.060 2.079	42.47% NA	100 NA	-0.12 0.96	1.65 NA	DPM/sample As Received	NA NA	U

Comments:

Data Package ID: abf0403010-1

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

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- 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

040303

Gross Alpha/Beta Analysis by GF Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %MoistL	Samp Aliq Analy Aliq	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
0403010-21 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b A4	ab040305-3a abb0310b	3/10/04 10:03 AM	0.120 0.101	24.77% NA	100 NA	0.06 0.38	0.72 NA	DPM/sample As Received	NA NA	NA U
0403010-21 SMP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b A4	ab040305-3a abb0310b	3/10/04 10:03 AM	1.590 1.365	41.30% NA	100 NA	0.49 0.84	1.39 NA	DPM/sample As Received	NA NA	NA U
0403010-21 DUP	GROSS ALPHA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-a A1	ab040305-3a aba0310	3/10/04 12:48 PM	0.200 0.171	23.03% NA	100 NA	0.12 0.53	0.98 NA	DPM/sample As Received	0.10 NA	NA U
0403010-21 DUP	GROSS BETA Trg. Analyte	2/26/04 2:25:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-a A1	ab040305-3a aba0310	3/10/04 12:48 PM	2.250 2.280	40.74% NA	100 NA	-0.2 1.0	1.8 NA	DPM/sample As Received	0.49 NA	NA U
0403010-22 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b B3	ab040305-3a abb0310b	3/10/04 10:03 AM	0.100 0.094	25.25% NA	100 NA	0.01 0.35	0.68 NA	DPM/sample As Received	NA NA	NA U
0403010-22 SMP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b B3	ab040305-3a abb0310b	3/10/04 10:03 AM	1.580 1.470	42.08% NA	100 NA	0.22 0.83	1.41 NA	DPM/sample As Received	NA NA	NA U
0403010-23 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b B4	ab040305-3a abb0310b	3/10/04 10:03 AM	0.130 0.125	25.71% NA	100 NA	0.01 0.40	0.75 NA	DPM/sample As Received	NA NA	NA U
0403010-23 SMP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b B4	ab040305-3a abb0310b	3/10/04 10:03 AM	1.670 1.572	41.60% NA	100 NA	0.17 0.87	1.48 NA	DPM/sample As Received	NA NA	NA U
0403010-24 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b C1	ab040305-3a abb0310b	3/10/04 10:03 AM	0.180 0.130	25.68% NA	100 NA	0.17 0.44	0.77 NA	DPM/sample As Received	NA NA	NA U
0403010-24 SMP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b C1	ab040305-3a abb0310b	3/10/04 10:03 AM	1.950 1.528	42.01% NA	100 NA	0.93 0.90	1.45 NA	DPM/sample As Received	NA NA	NA U
0403010-25 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1# 1#	LB4100-b C2	ab040305-3a abb0310b	3/10/04 10:03 AM	0.180 0.099	25.53% NA	100 NA	0.30 0.42	0.69 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: abf0403010-1

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

28080

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics
PAI Work Order: 0403010

Prep SOP: PAI 702
Analytical SOP: PAI 724

Reported on: Monday, March 15, 2004
12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QCBatchID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403010-25 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0310b	3/10/04 10:03 AM	1.460 1.610	41.94% NA	100 NA	-0.44 0.84	1.49 NA	DPM/sample As Received	NA NA	NA U
0403010-26 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0310b	3/10/04 10:03 AM	0.180 0.172	25.24% NA	100 NA	0.01 0.47	0.88 NA	DPM/sample As Received	NA NA	NA U
0403010-26 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0310b	3/10/04 10:03 AM	1.710 1.583	41.54% NA	100 NA	0.22 0.88	1.49 NA	DPM/sample As Received	NA NA	NA U
0403010-27 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0310b	3/10/04 10:03 AM	0.120 0.108	24.72% NA	100 NA	0.05 0.39	0.73 NA	DPM/sample As Received	NA NA	NA U
0403010-27 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0310b	3/10/04 10:03 AM	1.800 1.482	41.98% NA	100 NA	0.71 0.87	1.42 NA	DPM/sample As Received	NA NA	NA U
0403010-28 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0310b	3/10/04 10:03 AM	0.210 0.115	24.89% NA	100 NA	0.35 0.47	0.76 NA	DPM/sample As Received	NA NA	NA U
0403010-28 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D1	ab040305-3a abb0310b	3/10/04 10:03 AM	2.040 1.497	41.57% NA	100 NA	1.21 0.93	1.45 NA	DPM/sample As Received	NA NA	NA U
0403010-29 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0310b	3/10/04 10:03 AM	0.080 0.102	25.16% NA	100 NA	-0.11 0.34	0.71 NA	DPM/sample As Received	NA NA	NA U
0403010-29 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D2	ab040305-3a abb0310b	3/10/04 10:03 AM	2.170 2.079	42.47% NA	100 NA	0.18 0.97	1.65 NA	DPM/sample As Received	NA NA	NA U
0403010-30 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0310b	3/10/04 10:03 AM	0.190 0.118	25.82% NA	100 NA	0.26 0.44	0.74 NA	DPM/sample As Received	NA NA	NA U
0403010-30 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D3	ab040305-3a abb0310b	3/10/04 10:03 AM	1.930 1.762	41.47% NA	100 NA	0.33 0.93	1.57 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: abf0403010-1

Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
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- 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 GFC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403010-31 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a abb0310b	3/10/04 10:03 AM	0.130 0.122	25.54% NA	100 NA	0.01 0.40	0.78 NA	DPM/sample As Received	NA NA	NA U
0403010-31 SMP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a abb0310b	3/10/04 10:03 AM	1.950 1.756	43.03% NA	100 NA	0.40 0.90	1.50 NA	DPM/sample As Received	NA NA	NA U
0403010-31 DUP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A2	ab040305-3a aba0310	3/10/04 12:48 PM	0.050 0.075	24.15% NA	100 NA	-0.11 0.29	0.64 NA	DPM/sample As Received	0.23 NA	NA U
0403010-31 DUP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A2	ab040305-3a aba0310	3/10/04 12:48 PM	2.290 1.842	40.26% NA	100 NA	1.1 1.0	1.6 NA	DPM/sample As Received	0.51 NA	NA U
0403010-32 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A3	ab040305-3a aba0310	3/10/04 12:48 PM	0.090 0.117	23.75% NA	100 NA	-0.12 0.38	0.79 NA	DPM/sample As Received	NA NA	NA U
0403010-32 SMP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A3	ab040305-3a aba0310	3/10/04 12:48 PM	2.130 2.037	40.43% NA	100 NA	0.2 1.0	1.7 NA	DPM/sample As Received	NA NA	NA U
0403010-33 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A4	ab040305-3a aba0310	3/10/04 12:48 PM	0.130 0.091	24.44% NA	100 NA	0.15 0.39	0.69 NA	DPM/sample As Received	NA NA	NA U
0403010-33 SMP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a A4	ab040305-3a aba0310	3/10/04 12:48 PM	2.130 1.972	41.13% NA	100 NA	0.34 0.99	1.66 NA	DPM/sample As Received	NA NA	NA U
0403010-34 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B1	ab040305-3a aba0310	3/10/04 12:48 PM	0.170 0.068	25.10% NA	100 NA	0.40 0.40	0.60 NA	DPM/sample As Received	NA NA	NA U
0403010-34 SMP	GROSS BETA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B1	ab040305-3a aba0310	3/10/04 12:48 PM	2.230 1.786	43.00% NA	100 NA	0.97 0.95	1.52 NA	DPM/sample As Received	NA NA	NA U
0403010-35 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:28:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B2	ab040305-3a aba0310	3/10/04 12:48 PM	0.080 0.073	25.86% NA	100 NA	0.02 0.31	0.60 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

0986

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date / Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403010-35 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B2	ab040305-3a aba0310	3/10/04 12:46 PM	1.710 1.581	42.80% NA	100 NA	0.26 0.85	1.44 NA	DPM/sample As Received	NA NA	NA U
0403010-36 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B3	ab040305-3a aba0310	3/10/04 12:46 PM	0.080 0.082	24.48% NA	100 NA	-0.01 0.33	0.66 NA	DPM/sample As Received	NA NA	NA U
0403010-36 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B3	ab040305-3a aba0310	3/10/04 12:46 PM	1.760 1.883	41.70% NA	100 NA	-0.33 0.92	1.60 NA	DPM/sample As Received	NA NA	NA U
0403010-37 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B4	ab040305-3a aba0310	3/10/04 12:46 PM	0.130 0.076	24.23% NA	100 NA	0.21 0.38	0.65 NA	DPM/sample As Received	NA NA	NA U
0403010-37 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a B4	ab040305-3a aba0310	3/10/04 12:46 PM	1.860 1.798	42.83% NA	100 NA	0.09 0.90	1.53 NA	DPM/sample As Received	NA NA	NA U
0403010-38 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C1	ab040305-3a aba0310	3/10/04 12:46 PM	0.100 0.090	25.48% NA	100 NA	0.03 0.35	0.66 NA	DPM/sample As Received	NA NA	NA U
0403010-38 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C1	ab040305-3a aba0310	3/10/04 12:46 PM	2.090 1.735	41.18% NA	100 NA	0.63 0.96	1.56 NA	DPM/sample As Received	NA NA	NA U
0403010-39 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C2	ab040305-3a aba0310	3/10/04 12:46 PM	0.120 0.094	24.82% NA	100 NA	0.09 0.38	0.69 NA	DPM/sample As Received	NA NA	NA U
0403010-39 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C2	ab040305-3a aba0310	3/10/04 12:46 PM	1.920 1.774	41.32% NA	100 NA	0.30 0.93	1.57 NA	DPM/sample As Received	NA NA	NA U
0403010-40 SMP	GROSS ALPHA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C3	ab040305-3a aba0310	3/10/04 12:46 PM	0.050 0.101	24.96% NA	100 NA	-0.21 0.32	0.71 NA	DPM/sample As Received	NA NA	NA U
0403010-40 SMP	GROSS BETA Trg. Analyte	2/26/04 2:26:00 PM	AB040305-4 AB040305-4-1	NA NA		WIPE NA	1 s 1 s	LB4100-a C3	ab040305-3a aba0310	3/10/04 12:46 PM	2.240 1.751	43.00% NA	100 NA	1.12 0.95	1.50 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: *abf0403010-1*

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
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- + - Duplicate RPD not within limits.
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- # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

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- H - LCS Recovery above upper control limit.
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- 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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- 2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

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

Gross Alpha/Beta Analysis by GFI Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403010-41 SMP	GROSS ALPHA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0311d	3/11/04 12:57 PM	0.120 0.125	25.71% NA	100 NA	-0.03 0.39	0.75 NA	DPM/sample As Received	NA NA	NA U
0403010-41 SMP	GROSS BETA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b B4	ab040305-3a abb0311d	3/11/04 12:57 PM	1.790 1.572	41.60% NA	100 NA	0.47 0.89	1.48 NA	DPM/sample As Received	NA NA	NA U
0403010-41 DUP	GROSS ALPHA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0311c	3/11/04 11:05 AM	0.120 0.071	24.75% NA	100 NA	0.18 0.36	0.82 NA	DPM/sample As Received	0.41 NA	NA U
0403010-41 DUP	GROSS BETA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b A1	ab040305-3a abb0311c	3/11/04 11:05 AM	1.260 1.338	40.98% NA	100 NA	-0.24 0.79	1.39 NA	DPM/sample As Received	0.59 NA	NA U
0403010-42 SMP	GROSS ALPHA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0311d	3/11/04 12:57 PM	0.130 0.130	25.68% NA	100 NA	-0.02 0.40	0.77 NA	DPM/sample As Received	NA NA	NA U
0403010-42 SMP	GROSS BETA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C1	ab040305-3a abb0311d	3/11/04 12:57 PM	1.810 1.528	42.01% NA	100 NA	0.62 0.88	1.44 NA	DPM/sample As Received	NA NA	NA U
0403010-43 SMP	GROSS ALPHA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0311d	3/11/04 12:57 PM	0.170 0.099	25.53% NA	100 NA	0.26 0.41	0.69 NA	DPM/sample As Received	NA NA	NA U
0403010-43 SMP	GROSS BETA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C2	ab040305-3a abb0311d	3/11/04 12:57 PM	1.740 1.610	41.94% NA	100 NA	0.24 0.88	1.48 NA	DPM/sample As Received	NA NA	NA U
0403010-44 SMP	GROSS ALPHA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0311d	3/11/04 12:57 PM	0.150 0.172	25.24% NA	100 NA	-0.11 0.45	0.89 NA	DPM/sample As Received	NA NA	NA U
0403010-44 SMP	GROSS BETA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C3	ab040305-3a abb0311d	3/11/04 12:57 PM	1.870 1.583	41.54% NA	100 NA	0.62 0.90	1.49 NA	DPM/sample As Received	NA NA	NA U
0403010-45 SMP	GROSS ALPHA Trg. Analyte	2/28/04 2:28:00 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b C4	ab040305-3a abb0311d	3/11/04 12:57 PM	0.130 0.108	24.72% NA	100 NA	0.09 0.39	0.73 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: abf0403010-1

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

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- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits
- NC - Not Calculated for duplicate results less than 5 times MDC
- B - Analyte concentration greater than MDC.
- 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

0880

Gross Alpha/Beta Analysis by GFPC Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAI Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date/Time	Quench Factor %Lum	Matrix %Moist.	Samp Alq Analy Alq	Inst ID Det ID	AnRunID File Name	Count Date/Time	GrossCPM BkgCPM	BaseEff ProgEff	CntDur(min) Yield	Activity +/- 2 s TPU	MDC DecLev	ReportUnits ReportBasis	DER RPD	%Spk. Recov Flags
0403010-45	GROSS BETA	2/26/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1,290	41.98%	100	-0.51	1.42	DPM/sample	NA	
SMP	Trg. Analyte	2:28:00 PM	AB040305-7-1	NA		NA	1 s	C4	abb0311d	12:57 PM	1,482	NA	NA	0.80	NA	As Received	NA	U
AB040305-3A	GROSS ALPHA	3/5/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	2852.048	25.82%	63.23	11000	0	DPM/sample	NA	111
LCS	Trg. Analyte	2:17:44 PM	AB040305-3-1	NA		NA	1 s	D3	abb0310	8:02 AM	0.118	NA	NA	1800	NA	As Received	NA	P,M3
AB040305-3B	GROSS BETA	3/5/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	17463.740	43.03%	63.02	40600	0	DPM/sample	NA	98.9
LCS	Trg. Analyte	2:17:44 PM	AB040305-3-1	NA		NA	1 s	D4	abb0310	8:02 AM	1.756	NA	NA	6500	NA	As Received	NA	P
AB040305-3	GROSS ALPHA	3/5/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	0.170	24.60%	100	0.26	0.73	DPM/sample	NA	
MB	Trg. Analyte	2:17:44 PM	AB040305-3-1	NA		NA	1 s	A2	abb0310a	10:03 AM	0.101	NA	NA	0.43	NA	As Received	NA	U
AB040305-3	GROSS BETA	3/5/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	1,580	40.97%	100	0.38	1.42	DPM/sample	NA	
MB	Trg. Analyte	2:17:44 PM	AB040305-3-1	NA		NA	1 s	A2	abb0310a	10:03 AM	1,394	NA	NA	0.85	NA	As Received	NA	U
AB040305-4A	GROSS ALPHA	3/5/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2605.100	23.03%	10	11300	0	DPM/sample	NA	114
LCS	Trg. Analyte	3:21:01 PM	AB040305-4-1	NA		NA	1 s	A1	aba0310a	2:44 PM	0.171	NA	NA	1800	NA	As Received	NA	P,M3
AB040305-4B	GROSS BETA	3/5/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	17102.902	40.26%	10	42500	0	DPM/sample	NA	104
LCS	Trg. Analyte	3:21:01 PM	AB040305-4-1	NA		NA	1 s	A2	aba0310a	2:44 PM	1.842	NA	NA	6800	NA	As Received	NA	P
AB040305-4	GROSS ALPHA	3/5/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.030	23.99%	100	-0.29	0.72	DPM/sample	NA	
MB	Trg. Analyte	3:21:01 PM	AB040305-4-1	NA		NA	1 s	C4	aba0310	12:46 PM	0.098	NA	NA	0.30	NA	As Received	NA	U
AB040305-4	GROSS BETA	3/5/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1,920	42.01%	100	0	1.60	DPM/sample	NA	
MB	Trg. Analyte	3:21:01 PM	AB040305-4-1	NA		NA	1 s	C4	aba0310	12:46 PM	1,914	NA	NA	0.93	NA	As Received	NA	U
AB040305-7A	GROSS ALPHA	3/5/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	2822.500	25.68%	10	11000	0	DPM/sample	NA	110
LCS	Trg. Analyte	2:28:33 PM	AB040305-7-1	NA		NA	1 s	C1	abb0311e	2:44 PM	0.130	NA	NA	1800	NA	As Received	NA	P,M3
AB040305-7B	GROSS BETA	3/5/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	17300.600	41.94%	10	41200	0	DPM/sample	NA	101
LCS	Trg. Analyte	2:28:33 PM	AB040305-7-1	NA		NA	1 s	C2	abb0311e	2:44 PM	1,610	NA	NA	6600	NA	As Received	NA	P

Comments:

Data Package ID: *abf0403010-1*

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

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

Notes:

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

Abbreviations:

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

6889

Gross Alpha/Beta Analysis by GFI Wipe/Filter Raw Data Report

Laboratory Name: Paragon Analytics

Prep SOP: PAI 702

Reported on: Monday, March 15, 2004

PAJ Work Order: 0403010

Analytical SOP: PAI 724

12:00:05 PM

Sample ID QC Type	Nuclide Type	Sample Date/Time	Prep Batch QC Batch ID	Ingrowth Date /Time	Quench Factor %Lum	Matrix %Moist.	Same 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 Decl. Lev	Report Units Report Basis	DER RPD	%Spk. Recov Flags
AB040305-7 MB	GROSS ALPHA Trg. Analyte	3/5/04 2:28:33 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a ab00311d	3/11/04 12:57 PM	0.120 0.122	25.54% NA	100 NA	-0.03 0.39	0.76 NA	DPM/sample As Received	NA NA	NA U
AB040305-7 MB	GROSS BETA Trg. Analyte	3/5/04 2:28:33 PM	AB040305-7 AB040305-7-1	NA NA		WIPE NA	1 s 1 s	LB4100-b D4	ab040305-3a ab00311d	3/11/04 12:57 PM	2.070 1.756	43.03% NA	100 NA	0.68 0.92	1.50 NA	DPM/sample As Received	NA NA	NA U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

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

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

Notes:

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

Abbreviations:

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

06090

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100-B
 Counting Unit ID: Aqua
 High Voltage Mode: Simultaneous
 Application Revision: 2
 Standard
 Rev.12/23/03 JB

Data file name: A880306
 Batch ID: A8040305-3
 Count Preset (m): 100
 Batch Ended: 3/9/04 15:03

Background log file: BK08BW
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency log file: AmWtp-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency log file: SWtp-11/03
 Beta attenuation calibration: n/a

Alpha prog. log file: n/a
 Alpha prog. attenuation: n/a
 Beta prog. log file: n/a
 Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
$y = b \cdot m^a (e^{-(mass-x)})$		$y = m^a (e^{-(mass-x)})$	
Alpha bc	0.0000		0.0000
mc	0.0000		0.0000
ac	0.0000		0.0000
xc	0.0000		0.0000
Alpha to Beta X-talk:		Beta to Alpha X-talk:	
$y = m^a \cdot b \cdot mass$		$y = m^a \cdot mass + b$	
a → b xtalk mc	0.0000	b → a xtalk mc	0.00E+00
a → b xtalk bc	0.0000	b → a xtalk bc	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 xtalk CPM	Base Eff.	Base Cor.Fact.	Progeny Eff.	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a → b xtalk CPM	Base Eff.	Base Cor.Fact.	Progeny Eff.	Progeny Cor.Fact.
B3	0403010-1	3/9/04 15:03	100.00	0.0	0.100	0.130	0.003	0.2525	n/a	n/a	n/a	1.680	1.628	0.0189	0.4208	n/a	n/a	n/a
C1	0403010-3	3/9/04 15:03	100.00	0.0	0.090	0.130	0.005	0.2588	n/a	n/a	n/a	1.670	1.628	0.0144	0.4201	n/a	n/a	n/a
C2	0403010-4	3/9/04 15:03	100.00	0.0	0.100	0.099	0.005	0.2553	n/a	n/a	n/a	1.700	1.610	0.0184	0.4184	n/a	n/a	n/a
B4	0403010-2	3/9/04 15:03	100.00	0.0	0.100	0.125	0.003	0.2571	n/a	n/a	n/a	1.540	1.672	0.0198	0.4180	n/a	n/a	n/a
C3	0403010-5	3/9/04 15:03	100.00	0.0	0.110	0.172	0.008	0.2524	n/a	n/a	n/a	1.730	1.583	0.0208	0.4164	n/a	n/a	n/a
D1	0403010-6	3/9/04 15:03	100.00	0.0	0.170	0.116	0.008	0.2499	n/a	n/a	n/a	1.870	1.497	0.0309	0.4157	n/a	n/a	n/a
D2	0403010-7	3/9/04 15:03	100.00	0.0	0.070	0.102	0.005	0.2616	n/a	n/a	n/a	2.010	2.079	0.0125	0.4247	n/a	n/a	n/a
D3	0403010-8	3/9/04 15:03	100.00	0.0	0.100	0.118	0.004	0.2582	n/a	n/a	n/a	1.810	1.762	0.0165	0.4147	n/a	n/a	n/a
D4	0403010-9	3/9/04 15:03	100.00	0.0	0.130	0.122	0.008	0.2654	n/a	n/a	n/a	1.900	1.758	0.0231	0.4303	n/a	n/a	n/a

LCB 3/15/04

160000

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: ABB0310
 Batch ID: AB040305-3
 Count Preset (n): 100
 Batch Ended: 3/10/04 9:37

Background logfile: BKGABW
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency logfile: AmWpe-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency logfile: SrWpe-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	
$y = b'm^2 + (a'mass - d)$		$y = b'm^2 + (a'mass - d)$	
Alpha b=	0.0000	Beta b=	0.0000
m=	0.0000	m=	0.0000
a=	0.0000	a=	0.0000
d=	0.0000	d=	0.0000
Alpha to Beta X-talk $y = m^2 + mass$		Beta to Alpha X-talk $y = m^2 + mass$	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.0000
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 xlik CPM	Base Eff	Base Cor.Fact	Progeny Eff	Progeny Cor.Fact	Gross CPM	Bkg. CPM	a>b xlik CPM	Base Eff	Base Cor.Fact	Progeny Eff	Progeny Cor.Fact
D3	AB040305-3ALCS	3/10/04 9:00	63.23	0.0	2862.048	0.118	1.378	0.2582	n/a	n/a	n/a	590.247	1.762	471.1512	0.4147	n/a	n/a	n/a
D4	AB040305-3BLCS	3/10/04 9:00	63.02	0.0	30.403	0.122	55.658	0.2534	n/a	n/a	n/a	17463.742	1.768	6.4084	0.4303	n/a	n/a	n/a
A1	0403010-10	3/10/04 9:38	100.00	0.0	0.050	0.071	0.005	0.2476	n/a	n/a	n/a	1.680	1.338	0.0080	0.4098	n/a	n/a	n/a
A2	0403010-11	3/10/04 9:38	100.00	0.0	0.190	0.101	0.005	0.2460	n/a	n/a	n/a	1.450	1.394	0.0327	0.4097	n/a	n/a	n/a
A3	0403010-12	3/10/04 9:38	100.00	0.0	0.090	0.088	0.005	0.2508	n/a	n/a	n/a	1.660	1.397	0.0159	0.4153	n/a	n/a	n/a
C1	0403010-15	3/10/04 9:38	100.00	0.0	0.120	0.130	0.005	0.2588	n/a	n/a	n/a	1.710	1.628	0.0218	0.4201	n/a	n/a	n/a
C2	0403010-16	3/10/04 9:38	100.00	0.0	0.110	0.089	0.005	0.2563	n/a	n/a	n/a	1.650	1.610	0.0202	0.4194	n/a	n/a	n/a
C3	0403010-17	3/10/04 9:38	100.00	0.0	0.190	0.172	0.005	0.2534	n/a	n/a	n/a	1.610	1.683	0.0341	0.4154	n/a	n/a	n/a
C4	0403010-18	3/10/04 9:38	100.00	0.0	0.180	0.106	0.002	0.2472	n/a	n/a	n/a	2.110	1.492	0.0328	0.4198	n/a	n/a	n/a
B3	0403010-13	3/10/04 9:37	100.00	0.0	0.080	0.084	0.003	0.2525	n/a	n/a	n/a	1.640	1.470	0.0151	0.4208	n/a	n/a	n/a
B4	0403010-14	3/10/04 9:37	100.00	0.0	0.080	0.125	0.003	0.2571	n/a	n/a	n/a	1.680	1.672	0.0158	0.4180	n/a	n/a	n/a
D1	0403010-19	3/10/04 9:37	100.00	0.0	0.170	0.115	0.006	0.2489	n/a	n/a	n/a	1.800	1.487	0.0309	0.4167	n/a	n/a	n/a
D2	0403010-20	3/10/04 9:37	100.00	0.0	0.180	0.102	0.006	0.2516	n/a	n/a	n/a	2.060	2.079	0.0322	0.4247	n/a	n/a	n/a

LGR 3/15/04

000092

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. 12/28/03 JE

Date file name: ABB0310A
 Batch ID: ABB0305-3
 Count Preset (m): 100
 Batch Ended: 3/10/04 11:38

Background ID: BKQABW
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency log file: AirWipe-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency log file: AirWipe-11/03
 Beta attenuation calibration: n/a

Alpha prog. log file: n/a
 Alpha prog. attenuation: n/a
 Beta prog. log file: n/a
 Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
$y = b/m^2 + (a/m - c)$		$y = m^2 + (a - c)$	
Alpha b=	0.0000		0.0000
m=	0.0000	a=	0.0000
c=	0.0000	b=	0.0000
x@a	0.0000	x@b	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m^2 + m \cdot mass + b$		$y = m^2 + mass + b$	
a -> b x talk m=	0.0000	b -> a x talk m=	0.00E+00
a -> b x talk b=	0.0000	b -> a x talk 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 x talk CPM	Base Eff	Base Cor.Fact	Progeny Eff	Progeny Cor.Fact	Gross CPM	Bkg. CPM	a>b x talk CPM	Base Eff	Base Cor.Fact	Progeny Eff	Progeny Cor.Fact
A1	0403010-1D	3/10/04 11:38	100.00	0.0	0.080	0.071	0.005	0.2475	n/a	n/a	n/a	1.920	1.338	0.0128	0.4098	n/a	n/a	n/a
A2	AB040305-3MB	3/10/04 11:38	100.00	0.0	0.170	0.101	0.008	0.2480	n/a	n/a	n/a	1.680	1.394	0.0292	0.4087	n/a	n/a	n/a
A3	0403010-11D	3/10/04 11:38	100.00	0.0	0.180	0.088	0.005	0.2508	n/a	n/a	n/a	1.600	1.387	0.0317	0.4163	n/a	n/a	n/a

LAB 3/15/04

000003

PAI - Gas Flow Proportional Sample Analysis LB4100-A

Unit Type: LB4100-A/W
 Counting Unit ID: Orange
 High Voltage Mode: Simultaneous
 Application Revision: C
 Application Version: PAI
 Rev.12/29/93 JE

Data File Name: ARA0318
 Batch ID: AB040304-4
 Count Preset (ns): 100
 Batch Ended: 3/10/04 14:27

Background log file: BKGAS
 Date of Bkg. Calc: 3/7/04
 Alpha efficiency log file: AsnWpe-03/04
 Alpha attenuation calibration: n/a
 Beta efficiency log file: Bt50Wpe-03/04
 Beta attenuation calibration: n/a

Alpha prog. log file: n/a
 Alpha prog. attenuation: n/a
 Beta prog. log file: n/a
 Beta prog. attenuation: n/a

Alpha Attenuation Calibration $y = b \cdot m \cdot (c / (m \cdot a \cdot x))$		Beta Attenuation Calibration $y = b \cdot m \cdot (c / (m \cdot a \cdot x))$	
Alpha bc	0.0000	Beta bc	0.0000
mc	0.0000	mm	0.0000
ac	0.0000	am	0.0000
rcb	0.0000	rcb	0.0000
Alpha to Beta X-talk $y = m \cdot (b \cdot a \cdot m \cdot a \cdot x)$		Beta to Alpha X-talk $y = m \cdot (b \cdot a \cdot m \cdot a \cdot x)$	
a -> b xtalk cm	0.0000	b -> a xtalk cm	0.0000
a -> b xtalk bc	0.0000	b -> a xtalk bc	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 x tik CPM	Base. Eff	Base. Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b x tik CPM	Base. Eff	Base. Cor.Fact.	Progeny Eff	Progeny Cor.Fact.		
A1	0403010-21D	3/10/04 14:27	100.00	0.0	0.200	0.171	0.002	0.2303	n/a	n/a	n/a	2.250	2.280	0.0387	0.4074	n/a	n/a	n/a	n/a	
A2	0403010-31D	3/10/04 14:27	100.00	0.0	0.050	0.075	0.001	0.2415	n/a	n/a	n/a	2.280	1.842	0.0094	0.4028	n/a	n/a	n/a	n/a	
A3	0403010-32	3/10/04 14:27	100.00	0.0	0.090	0.117	0.001	0.2375	n/a	n/a	n/a	2.130	2.037	0.0188	0.4043	n/a	n/a	n/a	n/a	
A4	0403010-33	3/10/04 14:27	100.00	0.0	0.130	0.091	0.002	0.2444	n/a	n/a	n/a	2.130	1.972	0.0189	0.4113	n/a	n/a	n/a	n/a	
B1	0403010-34	3/10/04 14:27	100.00	0.0	0.170	0.088	0.002	0.2510	n/a	n/a	n/a	2.230	1.788	0.0288	0.4300	n/a	n/a	n/a	n/a	
B2	0403010-35	3/10/04 14:27	100.00	0.0	0.080	0.073	0.003	0.2588	n/a	n/a	n/a	1.710	1.581	0.0181	0.4280	n/a	n/a	n/a	n/a	
B3	0403010-36	3/10/04 14:27	100.00	0.0	0.080	0.082	0.001	0.2448	n/a	n/a	n/a	1.780	1.883	0.0183	0.4170	n/a	n/a	n/a	n/a	
B4	0403010-37	3/10/04 14:27	100.00	0.0	0.130	0.078	0.002	0.2423	n/a	n/a	n/a	1.880	1.788	0.0247	0.4283	n/a	n/a	n/a	n/a	
C1	0403010-38	3/10/04 14:27	100.00	0.0	0.100	0.090	0.003	0.2548	n/a	n/a	n/a	2.090	1.735	0.0128	0.4118	n/a	n/a	n/a	n/a	
C2	0403010-39	3/10/04 14:27	100.00	0.0	0.120	0.094	0.003	0.2482	n/a	n/a	n/a	1.920	1.774	0.0204	0.4132	n/a	n/a	n/a	n/a	
C3	0403010-40	3/10/04 14:27	100.00	0.0	0.050	0.101	0.002	0.2498	n/a	n/a	n/a	2.240	1.751	0.0085	0.4300	n/a	n/a	n/a	n/a	
C4	AB040304-4MB	3/10/04 14:27	100.00	0.0	0.030	0.088	0.001	0.2398	n/a	n/a	n/a	1.920	1.914	0.0059	0.4201	n/a	n/a	n/a	n/a	

LGB 3/15/04

360000

PAI - Gas Flow Proportional Sample Analysis LB4100-A

Unit Type: LB4100-A/W
 Counting Unit ID: Orange
 High Voltage Mode: Simultaneous
 Application Revision: C
 Rev. 12/29/03 JE

Data file name: ABA0216A
 Batch ID: AB040305-4
 Count Preset (m): 10
 Batch Ended: 3/10/04 14:49

Background logfile: BKGA
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency logfile: KnWipe-03/04
 Alpha attenuation calibration: n/a
 Beta efficiency logfile: KnWipe-03/04
 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	
$y = b'w/(a'(mass-z))$		$y = b'w/(a'(mass-z))$	
Alpha b'c	0.0000	Beta b'c	0.0000
m	0.0000	m	0.0000
a'	0.0000	a'	0.0000
z'	0.0000	z'	0.0000
Alpha to Beta X-conv		Beta to Alpha X-conv	
$y = m' * b' * mass$		$y = m' / mass * b$	
a -> b stnk m	0.0000	b -> a stnk m	0.0000
a -> b stnk b'	0.0000	b -> a stnk 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 xtk CPM	Base Eff.	Base Cor.Fact.	Progeny Eff.	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtk CPM	Base Eff.	Base Cor.Fact.	Progeny Eff.	Progeny Cor.Fact.		
A1	AB040305-4ALCS	3/10/04 14:49	10.00	0.0	2605.100	0.171	0.437	0.2303	n/a	n/a	n/a	n/a	823.800	2.280	803.8283	0.4074	n/a	n/a	n/a	n/a
A2	AB040305-4BLCS	3/10/04 14:49	10.00	0.0	6.900	0.075	10.262	0.2415	n/a	n/a	n/a	n/a	17102.900	1.842	1.3027	0.4026	n/a	n/a	n/a	n/a

LCB 3/15/04

000095

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.12/28/03 JE

Data file name: ABB03108
 Batch ID: AB040305-4
 Count Preset (n): 100
 Batch Ended: 3/10/04 11:40

Background log file: BKGBW
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency log file: AmWipe-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency log file: SrWipe-11/03
 Beta attenuation calibration: n/a

Alpha prog. log file: n/a
 Alpha prog. attenuation: n/a
 Beta prog. log file: n/a
 Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
$y = b^*m^*(a^*(mass-x))$		$y = b^*m^*(a^*(mass-x))$	
Alpha b*	0.0000	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 $y = m^*b^*mass$		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
A4	0403010-21	3/10/04 11:39	100.00	0.0	0.120	0.101	0.006	0.2477	n/a	n/a	n/a	1.690	1.365	0.0210	0.4130	n/a	n/a	n/a
C1	0403010-24	3/10/04 11:39	100.00	0.0	0.180	0.130	0.006	0.2568	n/a	n/a	n/a	1.950	1.528	0.0324	0.4201	n/a	n/a	n/a
C2	0403010-25	3/10/04 11:40	100.00	0.0	0.190	0.099	0.004	0.2553	n/a	n/a	n/a	1.460	1.610	0.0331	0.4184	n/a	n/a	n/a
C3	0403010-28	3/10/04 11:40	100.00	0.0	0.180	0.172	0.006	0.2524	n/a	n/a	n/a	1.710	1.593	0.0341	0.4154	n/a	n/a	n/a
C4	0403010-27	3/10/04 11:40	100.00	0.0	0.120	0.106	0.002	0.2472	n/a	n/a	n/a	1.900	1.482	0.0217	0.4198	n/a	n/a	n/a
D1	0403010-28	3/10/04 11:40	100.00	0.0	0.210	0.116	0.007	0.2489	n/a	n/a	n/a	2.040	1.497	0.0382	0.4157	n/a	n/a	n/a
B3	0403010-22	3/10/04 11:40	100.00	0.0	0.100	0.094	0.003	0.2525	n/a	n/a	n/a	1.580	1.470	0.0189	0.4208	n/a	n/a	n/a
B4	0403010-23	3/10/04 11:40	100.00	0.0	0.130	0.125	0.003	0.2571	n/a	n/a	n/a	1.670	1.572	0.0258	0.4180	n/a	n/a	n/a
D2	0403010-29	3/10/04 11:40	100.00	0.0	0.080	0.102	0.006	0.2518	n/a	n/a	n/a	2.170	2.079	0.0143	0.4247	n/a	n/a	n/a
D3	0403010-30	3/10/04 11:40	100.00	0.0	0.190	0.118	0.006	0.2582	n/a	n/a	n/a	1.930	1.762	0.0314	0.4147	n/a	n/a	n/a
D4	0403010-31	3/10/04 11:40	100.00	0.0	0.130	0.122	0.006	0.2554	n/a	n/a	n/a	1.950	1.766	0.0231	0.4303	n/a	n/a	n/a

LCB 3/15/04

96000

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. 12/23/03 JE

Data file name: ABB0311C
 Batch ID: AB040305-7
 Count Preset (m): 100
 Batch Ended: 3/11/04 12:47

Background ID: 2ABW
 Date of Bkg.: 1/04
 Alpha efficiency log file: AmWipe-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency log file: SWipe-11/03
 Beta attenuation calibration: n/a

Alpha prog. log file: n/a
 Alpha prog. attenuation: n/a
 Beta prog. log file: n/a
 Beta prog. attenuation: n/a

Alpha Attenuation Calibration		Beta Attenuation Calibration	
$y = b \cdot m^a \cdot (r^{\text{mass}} - x^0)$		$y = b \cdot m^a \cdot (r^{\text{mass}} - x^0)$	
Alpha b:	0.00000	Beta b:	0.0000
m:	0.00000	r:	0.0000
a:	0.0000	x:	0.0000
x0:	0.0000	x0:	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m^a \cdot b^{\text{mass}}$		$y = m^a \cdot b^{\text{mass}} + b$	
a → b x talk m:	0.0000	b → a x talk m:	0.00E+00
a → b x talk b:	0.0000	b → a x talk 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 xlik CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a > b xlik CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A1	0403010-41D	3/11/04 12:47	100.00	0.0	0.120	0.071	0.004	0.2475	n/a	n/a	n/a	1.260	1.338	0.0193	0.4098	n/a	n/a	n/a

LCB 3/15/04

000097

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.12/28/03 JE

Data file name: ABB03110
 Batch ID: AB040305-7
 Count Preset (µ): 100
 Batch Ended: 3/11/04 14:32

Background logfile: BKGABW
 Date of Bkg. Cal: 3/7/04
 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	
$y = b \cdot m^a \cdot (m^b - x^b)$		$y = b \cdot m^a \cdot (m^b - x^b)$	
Alpha b =	0.00000	Beta b =	0.0000
a =	0.00000	m =	0.0000
m =	0.0000	m =	0.0000
x =	0.0000	x =	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m^a \cdot b^{\wedge} - \text{mass}$		$y = m^a \cdot \text{mass} + b$	
a -> b xtalk m =	0.0000	b -> a xtalk m =	0.000E+00
a -> b xtalk b =	0.0000	b -> a xtalk b =	0

Det. ID	Sample ID	Count End: Data & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity								Beta Activity							
					Gross CPM	Bkg. CPM	b>a xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.		
C1	0403010-42	3/11/04 14:32	100.00	0.0	0.130	0.130	0.005	0.2568	n/a	n/a	n/a	1.810	1.628	0.0234	0.4201	n/a	n/a	n/a		
C2	0403010-43	3/11/04 14:32	100.00	0.0	0.170	0.098	0.005	0.2563	n/a	n/a	n/a	1.740	1.610	0.0312	0.4194	n/a	n/a	n/a		
B4	0403010-41	3/11/04 14:32	100.00	0.0	0.120	0.125	0.003	0.2571	n/a	n/a	n/a	1.790	1.572	0.0238	0.4160	n/a	n/a	n/a		
C3	0403010-44	3/11/04 14:32	100.00	0.0	0.150	0.172	0.007	0.2524	n/a	n/a	n/a	1.870	1.583	0.0284	0.4154	n/a	n/a	n/a		
C4	0403010-45	3/11/04 14:32	100.00	0.0	0.130	0.108	0.001	0.2472	n/a	n/a	n/a	1.290	1.482	0.0235	0.4198	n/a	n/a	n/a		
D1	0403011-41	3/11/04 14:32	100.00	0.0	0.140	0.115	0.008	0.2489	n/a	n/a	n/a	1.590	1.497	0.0255	0.4167	n/a	n/a	n/a		
D2	0403011-42	3/11/04 14:32	100.00	0.0	0.089	0.102	0.005	0.2518	n/a	n/a	n/a	1.970	2.079	0.0143	0.4247	n/a	n/a	n/a		
D3	0403011-43	3/11/04 14:32	100.00	0.0	0.130	0.118	0.006	0.2582	n/a	n/a	n/a	2.170	1.762	0.0215	0.4147	n/a	n/a	n/a		
D4	AB040305-7MB	3/11/04 14:32	100.00	0.0	0.120	0.122	0.007	0.2554	n/a	n/a	n/a	2.070	1.756	0.0213	0.4303	n/a	n/a	n/a		

77
3-16-04

000098

PAI - Gas Flow Proportional Sample Analysis LB4100-B:

Unit Type: LB4100-B
 Counting Unit ID: Aqua
 High Voltage Mode: Simultaneous
 Application Revisions: 2
 Rev. 12/28/03 JE

Data file name: ABB0311E
 Batch ID: AB040305-7
 Count Preset (m): 10
 Batch Endcd: 3/11/04 14:53

Background logfil: KGBW
 Date of Bkg. Cal: 3/7/04
 Alpha efficiency logfil: AmWipe-11/03
 Alpha attenuation calibration: n/a
 Beta efficiency logfil: BrWipe-11/03
 Beta attenuation calibration: n/a

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

Alpha Attenuation Calibration		Beta Attenuation Calibration	
$y = b/m^2 (m^2/mass - 0.0)$		$y = b^2 (mass - 0.0)$	
Alpha b0	0.00000	B0	0.0000
m0	0.00000	m0	0.0000
a0	0.0000	a0	0.0000
x0a	0.0000	x0b	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m^2 \cdot mass$		$y = m^2 \cdot mass \cdot b$	
a -> b xtalk m0	0.0000	b -> a xtalk m0	0.00E+00
a -> b xtalk b0	0.0000	b -> a xtalk b0	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 xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
C1	AB040305-7ALCS	3/11/04 14:53	10.00	0.0	2822.600	0.130	1.912	0.2668	n/a	n/a	n/a	866.700	1.529	508.8208	0.4201	n/a	n/a	n/a
C2	AB040305-7BLCS	3/11/04 14:53	10.00	0.0	20.300	0.089	48.014	0.2553	n/a	n/a	n/a	17300.800	1.810	3.7284	0.4184	n/a	n/a	n/a

LCB 3/15/04

660000

Date: 3/9/04

Instrument Background and Response Checklist

P-10 Supply:	P-10 Flow:
1 ⁶⁵⁰ Dr:	A 0.1
2 ¹²⁵⁰	B
	C
	D
Bkg:	Cal. File ID:
Dr.A	BK B0306W
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		LCB	R	P		LCB	R	P	✓	10									✓
3			P				P		✓	11						LCB	R	P	✓
4			↓				↓		✓	12						LCB	R	H	OLD
5			H	LCB 3/9/04			↓		OLCB	13							P		✓
6			LCB 3/9/04				↓		OLCB	14									✓
7			P			LCB	R	P	✓	15									✓
8	↓		↓				P		✓	16	↓								✓

P = passes; R = Recount; H = high; L = low; W = weekly; α = Alpha; β = Beta; DR = Daily Response Check; Stat = Status; Det = Detector; Bkg = Background; OL = Offline; NP = Not Processed. 3/9/04

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Checks	-	-	EFB0309	30	0621	LCB	LCB	3/9/04	N/A
2	DR Recount	-	-	EFB0309A	30	633	LCB	LCB	3/9/04	
1-16	Bkg Checks	-	-	BK B0309	60	0643	LCB	LCB	3/9/04	
2, 3, 12, 13	Bkg Recount	-	-	BK B0309A	60	0800	LCB	g	3/9/04	
1	0402160-34	AB040303-4	α/β	AB0309	90	0926	g	g	3/9/04	
3	0402160-49	AB040303-5	L	AB0309A		0927	g	g		
4	L -62		L	L		L	L	L		
7	AB040303-3AL	AB040303-3	α/β	AB0309B	10	0932	g	g	3/9/04	
8	0403050-11	AB040308-1	L	AB0309C		0933	L	L		
9	L -23		L	L		L	L	L		
10	L -27	AB040308-2	L	AB0309D		0934	L	L		
10	0402167-9	AB040301-5	α/β	AB0309E	180	0954	g	g	3/9/04	
11	L -9D		L	L		L	L	L		
12	0402198-3MS		L	L		L	L	L		
14	0403007-1		L	L		L	L	L		
15	L -10		L	L		L	L	L		

000100

Date 3/9/04

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
16	AB040301-5K	AB040301-5	αβ	AB0309E	180	0954	g	g	3/9/04	N/A
1	6323032-1	23032 ABW-XW	↓	AB0309F	60	1114	g	↓	↓	↓
3	-1D	↓	↓	↓	↓	↓	↓	↓	↓	↓
4	-1MS	↓	↓	↓	↓	↓	↓	↓	↓	↓
7	-1B	↓	↓	↓	↓	↓	↓	↓	↓	↓
8	-1CS	↓	↓	↓	↓	↓	↓	↓	↓	↓
1	0402198-1	AB040301-5	αβ	AB0309G	1000	1313	g	ECB	3/10/04	
3	-3	↓	↓	↓	↓	↓	↓	↓	↓	↓
4	AB040301-5MB	↓	↓	↓	↓	↓	↓	↓	↓	↓
7	0403003-1	AB040302-1	αβ	AB0309H	360	1520				
10	-1MS	↓	↓	↓	↓	↓	↓	↓	↓	↓
11	-2	↓	↓	↓	↓	↓	↓	↓	↓	↓
13	-3	↓	↓	↓	↓	↓	↓	↓	↓	↓
14	-3D	↓	↓	↓	↓	↓	↓	↓	↓	↓
15	AB040302-1MB	↓	↓	↓	↓	↓	↓	↓	↓	↓
16	-1CS	↓	↓	↓	↓	↓	↓	↓	↓	↓
7	0403010-1	AB040305-3	αβ	AB0309I	100	1322	g	g	3/9/04	
8	-2	↓	↓	↓	↓	↓	↓	↓	↓	↓
9	-3	↓	↓	↓	↓	↓	↓	↓	↓	↓
10	-4	↓	↓	↓	↓	↓	↓	↓	↓	↓
11	-5	↓	↓	↓	↓	↓	↓	↓	↓	↓
13	-6	↓	↓	↓	↓	↓	↓	↓	↓	↓
14	-7	↓	↓	↓	↓	↓	↓	↓	↓	↓
15	-8	↓	↓	↓	↓	↓	↓	↓	↓	↓
16	-9	↓	↓	↓	↓	↓	↓	↓	↓	↓

Comments:

000101

Instrument: LB4100A

Date: 3/10/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1650	A o.i
2100	B ↓
	C ↓
	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	RGB		P		LCB		P		✓	9	LCB		P		LCB		P		✓
2	↓				↓				✓	10	↓				↓				✓
3	↓				↓				✓	11	↓				↓				✓
4	↓				↓				✓	12	↓				↓				✓
5	↓				↓				✓	13	NP				NP				OL
6	↓				↓				✓	14	↓				↓				↓
7	↓				↓				✓	15	↓				↓				↓
8	↓				↓				✓	16	↓				↓				↓

Bkg. Cal. File ID.

Dr A BKA0306W
Dr B ↓
Dr C ↓
Dr D NP

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	Comnt Below
1-12	DR Checks	N/A	N/A	EFA0310	30632	0632	LCB	LCB	3/10/04	N/A
1-12	Bkg Checks	N/A	N/A	BKA0310	60	0639	LCB	LCB	3/10/04	
1	041508-51	NP	PPB210	PBA0310	60	0917	g	g	3/10/04	
1	0403012-21D	AB040305-4	LCB	ABA0310	100	12348	g	g	3/10/04	
2	-31D									
3	-32									
4	-33									
5	-34									
6	-35									
7	-36									
8	-37									
9	-38									
10	-39									
11	-40									
12	AB040305-4MB									
1	AB040305-4ALS	AB040305-4	LCB	ABA0310A	10	1438	g	g	3/10/04	
2	L-ABLOS									

Comments: -

000100

Date: 3/10/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 650	A a,1
2 1160	B ↓
	C ↓
	D ↓
Bkg.	Cal. File ID
DrA	BLB0306W
DrB	↓
DrC	↓
DrD	↓

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	↓		↓		LCB		P		✓	12	↓		↓		↓		↓		✓
5	↓		↓		↓		P		DLB	13	↓		↓		↓		↓		✓
6	↓		↓		↓		↓		✓	14	↓		↓		↓		↓		✓
7	↓		↓		↓		↓		✓	15	↓		↓		↓		↓		✓
8	↓		↓		↓		↓		✓	16	↓		↓		↓		↓		✓

P = passes; R = Re-count; 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	EFB0310	30	0621	LCB	LCB	3/10/04	N/A
1-16	Bkg Checks	N/A	N/A	BLB0310	60	0641	LCB	LCB	3/10/04	
4	Bkg Re-count	AB040305-3	2/13 N/A	AB0310	100	0756	LCB	g	3/10/04	
1	0403010-10	AB040305-3	2/13	AB0310	100			g	3/10/04	
2	-11									
3	-12									
7	-13									
8	-14									
9	-15									
10	-16									
11	-17									
12	-18									
13	-19									
14	↓ -20									
15	31040305-3ALCS									
16	↓ -3BLCS									

Comments:

1000

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1	0403010-1D	AB040305-3	2/B	AB00370A	100	0957	g	g	3/10/04	N/A
2	AB040305-3MB	L	L	L	L	L	L	L	L	L
3	0403010-11D	L	L	L	L	L	L	L	L	L
4	0403010-21	AB040305-4	L	AB00370B	L	0959	g	L	L	L
7	-22	L	L	L	L	L	L	L	L	L
8	-23	L	L	L	L	L	L	L	L	L
9	-24	L	L	L	L	L	L	L	L	L
10	-25	L	L	L	L	L	L	L	L	L
11	-26	L	L	L	L	L	L	L	L	L
12	-27	L	L	L	L	L	L	L	L	L
13	-28	L	L	L	L	L	L	L	L	L
14	-29	L	L	L	L	L	L	L	L	L
15	-30	L	L	L	L	L	L	L	L	L
16	-31	L	L	L	L	L	L	L	L	L
7	0308LCS1	0308B.LCS	2/B	5311A* AB00370C-10	L	1256	g	g	3/10/04	L
8	LCS2	L	L	L	L	L	L	L	L	L
9	LCS3	L	L	L	L	L	L	L	L	L
10	LCS4	L	L	L	L	L	L	L	L	L
11	LCS5	L	L	L	L	L	L	L	L	L
12	LCS6	L	L	L	L	L	L	L	L	L
13	LCS7	L	L	L	L	L	L	L	L	L
14	LCS8	L	L	L	L	L	L	L	L	L
15	LCS9	L	L	L	L	L	L	L	L	L
16	LCS10	L	L	L	L	L	L	L	L	L
1	0402199-11	RA040303-1	Ra 228	RA004310	250	1319	g	g	3/11/04	L
2	-12	L	L	L	L	L	L	L	L	L
3	-13	L	L	L	L	L	L	L	L	L
4	-14	L	L	L	L	L	L	L	L	L
7	-14D	L	L	L	L	L	L	L	L	L
8	-15	L	L	L	L	L	L	L	L	L

Comments:

000104

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow	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
1 650	A 0.1	1	LCB		P		LCB		P		✓	9	LCB		P		LCB		P		✓
2 900	B	2						LCB	R	P	✓	10									✓
	C	3						LCB	↓	P	✓	11									✓
	D	4							P		✓	12									✓
		5			LB				↓		OLB	13									✓
		6			LB			CB	R	P	OLB	14					LCB		R	P	✓
		7			P				P		✓	15							P		✓
		8	↓		↓		↓		↓		✓	16	↓				↓		↓		✓

Bkg.	Cal. File ID
Dr A	BKB0306W
Dr B	↓
Dr C	↓
Dr D	↓

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	EFB0311	30	0609	LCB	LCB	3/11/04	N/A
1-16	Bkg Checks	N/A	N/A	BKB0311	60	0621	LCB	LCB	3/11/04	
2364	Bkg Recount	N/A	N/A	BKB0311A	60	0726	LCB	LCB	3/11/04	
14	Bkg Recount	N/A	N/A	BKB0311B	60	0842	LCB	G		
1	0403011-21	AB040305-C	L/B	A.B.B0311	100	0850	LCB			
2	-22									
3	-23									
4	-24									
7	-25									
8	-26									
9	-27									
10	-28									
11	-29									
12	-30									
13	-31									
15	↓ -32									

000105

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date 3/11/04

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Comt Below
16	0403011-33	AB040305-6	21B	AB00311	100	0850	LCB	5	3/11/04	N/A
14	1403011-21D	AB040305-6		AB00311A		1044	5	5	3/11/04	
15	-31D									
14	-3A									
13	-35									
12	-36									
11	-37									
10	-38									
9	-39									
8	-40									
7	AB040305-6MB									
1	AB040305-6ALIS	AB040305-6	21B	AB00311B	10	1040	9	9	3/11/04	
2	66LS									
1	0403010-11D	AB040305-7	21B	AB00311C	100	1107	8	8	3/11/04	
1	1402175-4	RA040305-1	R228	RA00311	250	1248	8	LCB	3/12/04	
8	-4D									
3	4RD2									
4	RA040308-1MB									
7	-11LS									
8	0403010-41	AB040305-7	21B	AB00311D	100	1251	8	LCB	3/11/04	
9	42									
10	-43									
11	-44									
12	-45									
13	0403011-41									
14	42									
15	-43									
16	AB040305-7MB									
8	Carby 106	N/A	21B	AB00311E	1000	1441	LCB	LCB	3/12/04	
9	AB040305-7ALIS	AB040305-7	21B	AB00311E	10			LCB	3/11/04	
10	-76LS									

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

Reviewed

LCB

Date 3/12/04

Comments:

000106

5/11/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 5

QUALITY ASSURANCE
SUMMARY REPORTS

5

000107

No *NON-CONFORMANCE REPORTS* or
QUALITY ASSURANCE SUMMARY SHEETS
are included in this data package.

PARAGON ANALYTICS
Radiochemistry Data Package

Section 6

LABORATORY
BENCH SHEETS

6

000109

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-3

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 Ins/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Ins/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Ins/Det	Cnt 3 Pos Chk By	Notes		
1	0403010-1	SMP	1	1	sample												<u>Lab 3/16/04</u>	
1	0403010-1	DUP	1	1	sample													
1	0403010-2	SMP	1	1	sample													
1	0403010-3	SMP	1	1	sample													
1	0403010-4	SMP	1	1	sample													
1	0403010-5	SMP	1	1	sample													
1	0403010-6	SMP	1	1	sample													
1	0403010-7	SMP	1	1	sample													
1	0403010-8	SMP	1	1	sample													
1	0403010-9	SMP	1	1	sample													
1	0403010-10	SMP	1	1	sample													
1	0403010-11	SMP	1	1	sample													
1	0403010-11	DUP	1	1	sample													
1	0403010-12	SMP	1	1	sample													
1	0403010-13	SMP	1	1	sample													
1	0403010-14	SMP	1	1	sample													
1	0403010-15	SMP	1	1	sample													
1	0403010-16	SMP	1	1	sample													
1	0403010-17	SMP	1	1	sample													
1	0403010-18	SMP	1	1	sample													
1	0403010-19	SMP	1	1	sample													
1	0403010-20	SMP	1	1	sample													
1	AB040305-3A	LCS	1	1	sample													
1	AB040305-3B	LCS	1	1	sample													
1	AB040305-3	MB	1	1	sample													

See previous sheet

Lab 3/16/04

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Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-3

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	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.387	DPM/sample	03/05/04	1	sample	

1000

Radiochemistry Instrument Worksheet

Paragon Analytix

Prep Batch: AB040305-3

Prep Procedure: **GAB**

DRAFT

Analytical QASS / NCR? Y / N

Prep Num	LabID	QC Type	Init/Alq	Fin/Alq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Ins/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Ins/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Ins/Det	Cnt 3 Pos Chk By	Notes	
1	0403010-1	SMP	1	1	sample		AB0021E	7	g								
1	0403010-1	DUP	1	1	sample		AB00210A	1	g								Count Dup
1	0403010-2	SMP	1	1	sample		AB00209F	8	g								
1	0403010-3	SMP	1	1	sample			9									
1	0403010-4	SMP	1	1	sample			10									
1	0403010-5	SMP	1	1	sample			11									
1	0403010-6	SMP	1	1	sample			13									
1	0403010-7	SMP	1	1	sample			14									
1	0403010-8	SMP	1	1	sample			15									
1	0403010-9	SMP	1	1	sample			16									
1	0403010-10	SMP	1	1	sample		AB00310	1	g								
1	0403010-11	SMP	1	1	sample			2									
1	0403010-11	DUP	1	1	sample		AB00310A	23	g								Count Dup
1	0403010-12	SMP	1	1	sample		AB00310	3	g								
1	0403010-13	SMP	1	1	sample			7									
1	0403010-14	SMP	1	1	sample			8									
1	0403010-15	SMP	1	1	sample			9									
1	0403010-16	SMP	1	1	sample			10									
1	0403010-17	SMP	1	1	sample			11									
1	0403010-18	SMP	1	1	sample			12									
1	0403010-19	SMP	1	1	sample			13									
1	0403010-20	SMP	1	1	sample			14									
1	AB040305-3A	LCS	1	1	sample			15									
1	AB040305-3B	LCS	1	1	sample			16									
1	AB040305-3	MB	1	1	sample		AB00310A	22	g								

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00005

Prep Procedure: GAB

Analytical QASS / NCR? Y / N

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
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Spike Solution Information							
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample
S2	Sr-90	729	20,514.387	DPM/sample	03/05/04	1	sample

00003

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB0403054

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	0403010-21	SMP	1	1	sample											
1	0403010-21	DUP	1	1	sample											
1	0403010-22	SMP	1	1	sample											
1	0403010-23	SMP	1	1	sample											
1	0403010-24	SMP	1	1	sample											
1	0403010-25	SMP	1	1	sample											
1	0403010-26	SMP	1	1	sample											
1	0403010-27	SMP	1	1	sample											
1	0403010-28	SMP	1	1	sample											
1	0403010-29	SMP	1	1	sample											
1	0403010-30	SMP	1	1	sample											
1	0403010-31	SMP	1	1	sample											
1	0403010-31	DUP	1	1	sample											
1	0403010-32	SMP	1	1	sample											
1	0403010-33	SMP	1	1	sample											
1	0403010-34	SMP	1	1	sample											
1	0403010-35	SMP	1	1	sample											
1	0403010-36	SMP	1	1	sample											
1	0403010-37	SMP	1	1	sample											
1	0403010-38	SMP	1	1	sample											
1	0403010-39	SMP	1	1	sample											
1	0403010-40	SMP	1	1	sample											
1	AB040305-4A	LCS	1	1	sample											
1	AB040305-4B	LCS	1	1	sample											
1	AB040305-4	MB	1	1	sample											

See previous sheet

CCB 3/16/04

CCB 3/16/04

000112

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-4

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	9,947.870 DPM/sample		03/05/04	1	sample	
S2	Sr-90	729	20,514.327 DPM/sample		03/05/04	1	sample	

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Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305.4

Prep Procedure: **GAB**

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Analytical QASS / NCR? Y / N

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	0403010-21	SMP	1	1	sample		10									
1	0403010-21	DUP	1	1	sample		10	4	g							
1	0403010-22	SMP	1	1	sample		10	1	g							
1	0403010-23	SMP	1	1	sample		10	7	g							
1	0403010-24	SMP	1	1	sample		8									
1	0403010-25	SMP	1	1	sample		9									
1	0403010-26	SMP	1	1	sample		10									
1	0403010-27	SMP	1	1	sample		11									
1	0403010-28	SMP	1	1	sample		12									
1	0403010-29	SMP	1	1	sample		13									
1	0403010-30	SMP	1	1	sample		14									
1	0403010-31	SMP	1	1	sample		15									
1	0403010-31	DUP	1	1	sample		16									
1	0403010-32	SMP	1	1	sample		16	2	g							
1	0403010-33	SMP	1	1	sample		3									
1	0403010-34	SMP	1	1	sample		4									
1	0403010-35	SMP	1	1	sample		5									
1	0403010-36	SMP	1	1	sample		6									
1	0403010-37	SMP	1	1	sample		7									
1	0403010-38	SMP	1	1	sample		8									
1	0403010-39	SMP	1	1	sample		9									
1	0403010-40	SMP	1	1	sample		10									
1	0403010-40	SMP	1	1	sample		11									
1	AB040305-4A	LCS	1	1	sample		11									
1	AB040305-4B	LCS	1	1	sample		11	1	g							
1	AB040305-4	MB	1	1	sample		11	2	g							
1	AB040305-4	MB	1	1	sample		12	12	g							

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000155

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: **AB070303**

Prep Procedure: **GAB**

Analytical QASS / NCR? Y / N _____

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
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Sink Solution Information							
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Pipet ID
S1	Am-241	601	9,947.870	DPM/sample	03/05/04	1	sample
S2	Sr-90	729	20,514.327	DPM/sample	03/05/04	1	sample

1000

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	0403010-41	SMP	1	1	sample												
1	0403010-41	DUP	1	1	sample												
1	0403010-42	SMP	1	1	sample												
1	0403010-43	SMP	1	1	sample												
1	0403010-44	SMP	1	1	sample												
1	0403010-45	SMP	1	1	sample												
1	0403011-41	SMP	1	1	sample												
1	0403011-42	SMP	1	1	sample												
1	0403011-43	SMP	1	1	sample												
1	AB040305-7A	LCS	1	1	sample												
1	AB040305-7B	LCS	1	1	sample												
1	AB040305-7	MB	1	1	sample												

see previous sheet

LCS 3/14/04

LCS 3/16/04

Spike Solution Information							
Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample
S2	Sr-90	729	20,514.377	DPM/sample	03/05/04	1	sample

Radiochemistry Instrument Worksheet

Prep Batch: AB040305-7

Paragon Analytics

DRAFT

Prep Procedure: **GAB**

Analytical QASS / NCR? Y / N

Prep. Num.	LabID	QC Type	Init Alq.	Flt 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	0403010-41	SMP	1	1	sample		ABB0311D	8	LCB								
1	0403010-41	DUP	1	1	sample		ABB0311C	1	LCB								
1	0403010-42	SMP	1	1	sample		ABB0311D	9	LCB								
1	0403010-43	SMP	1	1	sample			10									
1	0403010-44	SMP	1	1	sample			11									
1	0403010-45	SMP	1	1	sample			12									
1	0403011-41	SMP	1	1	sample			13									
1	0403011-42	SMP	1	1	sample			14									
1	0403011-43	SMP	1	1	sample			15									
1	AB040305-7A	LCS	1	1	sample		ABB0311E	9	LCB								
1	AB040305-7B	LCS	1	1	sample			10									
1	AB040305-7	MB	1	1	sample		ABB0311D	16	LCB								

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Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.377	DPM/sample	03/05/04	1	sample	

0001

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: ABC40305-3

Prep Procedure: GAB_No_Att

Reviewed By: ATF *[Signature]* Review Date: 3/15/04

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

Prep SOP: PAI.702 Rev: 16 Prep Analyst: Adrienne Freda *[Signature]* Balance: _____
 Prep SOP: NONE Prep Date: 3/5/04 Balance: _____
 Matrix Class: solid Prep Dept: RS

Samp. Num.	Prep. Num.	LabID	QC Type	Dish No.	Init Aliq. sample	Fin Aliq. sample	Prep Basis	Standards	Prep Notes
1	1	0403010-1	SMP		1	1	As Received		<u>LAB 3/15/04</u>
2	1	0403010-1	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403010-2	SMP		1	1	As Received		
4	1	0403010-3	SMP		1	1	As Received		
5	1	0403010-4	SMP		1	1	As Received		
6	1	0403010-5	SMP		1	1	As Received		
7	1	0403010-6	SMP		1	1	As Received		<u>LAB 3/15/04</u>
8	1	0403010-7	SMP		1	1	As Received		
9	1	0403010-8	SMP		1	1	As Received		
10	1	0403010-9	SMP		1	1	As Received		
11	1	0403010-10	SMP		1	1	As Received		
12	1	0403010-11	SMP		1	1	As Received		
13	1	0403010-11	DUP		1	1	As Received		COUNT DUPLICATE
14	1	0403010-12	SMP		1	1	As Received		
15	1	0403010-13	SMP		1	1	As Received		
16	1	0403010-14	SMP		1	1	As Received		
17	1	0403010-15	SMP		1	1	As Received		<u>LAB 3/15/04</u>
18	1	0403010-16	SMP		1	1	As Received		
19	1	0403010-17	SMP		1	1	As Received		
20	1	0403010-18	SMP		1	1	As Received		
21	1	0403010-19	SMP		1	1	As Received		
22	1	0403010-20	SMP		1	1	As Received		
23	1	AB040305-3A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-3B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-3	MB		1	1	As Received		<u>LAB 3/15/04</u>

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

Relinquished By: See
 Date: 3/15/04
 Received By: West
 Date: _____

Soln #	Nuclide	SolnID	Prep Conc.	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.387	DPM/sample	03/05/04	1	sample	

000120

Comments

Prep Procedure: **GAB**

Reviewed By: ATF *Q* Review Date: 3/9/04

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: Adrienne Freda *Q*
 Prep Date: 3/5/04
 Prep Dept: RS

Balance:
 Balance:

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-1	SMP		1	1	As Received		<i>Q 03/05/04</i>
2	1	0403010-1	DUP		1	1	As Received		COUNT, DUPLICATE
3	1	0403010-2	SMP		1	1	As Received		
4	1	0403010-3	SMP		1	1	As Received		
5	1	0403010-4	SMP		1	1	As Received		
6	1	0403010-5	SMP		1	1	As Received		
7	1	0403010-6	SMP		1	1	As Received		
8	1	0403010-7	SMP		1	1	As Received		<i>Q 03/05/04</i>
9	1	0403010-8	SMP		1	1	As Received		
10	1	0403010-9	SMP		1	1	As Received		
11	1	0403010-10	SMP		1	1	As Received		
12	1	0403010-11	SMP		1	1	As Received		
13	1	0403010-11	DUP		1	1	As Received		COUNT, DUPLICATE
14	1	0403010-12	SMP		1	1	As Received		
15	1	0403010-13	SMP		1	1	As Received		
16	1	0403010-14	SMP		1	1	As Received		
17	1	0403010-15	SMP		1	1	As Received		
18	1	0403010-16	SMP		1	1	As Received		<i>Q 03/05/04</i>
19	1	0403010-17	SMP		1	1	As Received		
20	1	0403010-18	SMP		1	1	As Received		
21	1	0403010-19	SMP		1	1	As Received		
22	1	0403010-20	SMP		1	1	As Received		
23	1	AB040305-3A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-3B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-3	MB		1	1	As Received		<i>Q 03/05/04</i>

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

Relinquished By: *Seb*
 Date: *previous sheet*
 Received By: _____
 Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947,872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514,387	DPM/sample	03/05/04	1	sample	

Comments

Prep Procedure: GAB

Reviewed By: ATF

Review Date: 3/5/04

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

Prep SOP: PAI 702 Rev: 16

Prep Analyst: Adrienne Freda

Balance: **DRAFT**
Balance: **DRAFT**

Prep SOP: NONE

Prep Date: 3/5/04

Matrix Class: solid

Prep Dept: RS

Samp Num	Prep Num	LabID	QC Type	Distr No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-1	SMP		1	1	As Received		
2	1	0403010-2	SMP		1	1	As Received		
3	1	0403010-3	SMP		1	1	As Received		
4	1	0403010-4	SMP		1	1	As Received		
5	1	0403010-5	SMP		1	1	As Received		
6	1	0403010-6	SMP		1	1	As Received		
7	1	0403010-7	SMP		1	1	As Received		
8	1	0403010-8	SMP		1	1	As Received		
9	1	0403010-9	SMP		1	1	As Received		
10	1	0403010-10	SMP		1	1	As Received		
11	1	0403010-11	SMP		1	1	As Received		
12	1	0403010-12	SMP		1	1	As Received		
13	1	0403010-13	SMP		1	1	As Received		
14	1	0403010-14	SMP		1	1	As Received		
15	1	0403010-15	SMP		1	1	As Received		
16	1	0403010-16	SMP		1	1	As Received		
17	1	0403010-17	SMP		1	1	As Received		
18	1	0403010-18	SMP		1	1	As Received		
19	1	0403010-19	SMP		1	1	As Received		
20	1	0403010-20	SMP		1	1	As Received		
21	1	AB040305-3A	LCS		1	1	As Received	S1	ALPHA SOURCE
22	1	AB040305-3B	LCS		1	1	As Received	S2	BETA SOURCE
23	1	AB040305-3	MB		1	1	As Received		

DRAFT

03/05/04

03/05/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: NT

Date: 3/5/04

Received By: NT

Date: 3/6/04

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.387	DPM/sample	03/05/04	1	sample	

Comments

00012

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-4

Prep Procedure: GAB_No_Att

Reviewed By: ATF *[Signature]* Review Date: 3/15/04

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

Prep SOP: PAI 702 Rev: 16 Prep Analyst: Adrienne Freda *[Signature]* Balance: _____
 Prep SOP: NONE Prep Date: 3/5/04 Balance: _____
 Matrix Class: solid Prep Dept: RS

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq. sample	Fin Alq. sample	Prep Basis	Standards	Prep Notes
1	1	0403010-21	SMP		1	1	As Received		CCB 3/15/04
2	1	0403010-21	DUP		1	1	As Received		COUNT, DUPLICATE
3	1	0403010-22	SMP		1	1	As Received		
4	1	0403010-23	SMP		1	1	As Received		
5	1	0403010-24	SMP		1	1	As Received		
6	1	0403010-25	SMP		1	1	As Received		
7	1	0403010-26	SMP		1	1	As Received		
8	1	0403010-27	SMP		1	1	As Received		CCB 3/15/04
9	1	0403010-28	SMP		1	1	As Received		
10	1	0403010-29	SMP		1	1	As Received		
11	1	0403010-30	SMP		1	1	As Received		
12	1	0403010-31	SMP		1	1	As Received		
13	1	0403010-31	DUP		1	1	As Received		COUNT, DUPLICATE
14	1	0403010-32	SMP		1	1	As Received		
15	1	0403010-33	SMP		1	1	As Received		
16	1	0403010-34	SMP		1	1	As Received		
17	1	0403010-35	SMP		1	1	As Received		
18	1	0403010-36	SMP		1	1	As Received		
19	1	0403010-37	SMP		1	1	As Received		CCB 3/15/04
20	1	0403010-38	SMP		1	1	As Received		
21	1	0403010-39	SMP		1	1	As Received		
22	1	0403010-40	SMP		1	1	As Received		
23	1	AB040305-4A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-4B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-4	MB		1	1	As Received		CCB 3/15/04

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

Relinquished By: See
 Date: previous sheet
 Received By: _____
 Date: _____

Soln #	Nuclide	Soln ID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.870	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.327	DPM/sample	03/05/04	1	sample	

000123

Comments _____

Radiochemistry Prep Worksheet

Prep Batch: AB040305-4

Paragon Analytics

Prep Procedure: **GAB**

Reviewed By: ATF *[Signature]* Review Date: 3/9/04

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

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

Prep Analyst: Adrienne Freda *[Signature]*
 Prep Date: 3/5/04
 Prep Dept: RS

Balance: _____
 Balance: _____

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-21	SMP		1	1	As Received		<i>[Signature]</i> 03/05/04
2	1	0403010-21	DUP		1	1	As Received		COUNT, DUPLICATE
3	1	0403010-22	SMP		1	1	As Received		
4	1	0403010-23	SMP		1	1	As Received		
5	1	0403010-24	SMP		1	1	As Received		
6	1	0403010-25	SMP		1	1	As Received		
7	1	0403010-26	SMP		1	1	As Received		<i>[Signature]</i> 03/05/04
8	1	0403010-27	SMP		1	1	As Received		
9	1	0403010-28	SMP		1	1	As Received		
10	1	0403010-29	SMP		1	1	As Received		
11	1	0403010-30	SMP		1	1	As Received		
12	1	0403010-31	SMP		1	1	As Received		
13	1	0403010-31	DUP		1	1	As Received		COUNT, DUPLICATE
14	1	0403010-32	SMP		1	1	As Received		
15	1	0403010-33	SMP		1	1	As Received		
16	1	0403010-34	SMP		1	1	As Received		
17	1	0403010-35	SMP		1	1	As Received		
18	1	0403010-36	SMP		1	1	As Received		<i>[Signature]</i> 03/05/04
19	1	0403010-37	SMP		1	1	As Received		
20	1	0403010-38	SMP		1	1	As Received		
21	1	0403010-39	SMP		1	1	As Received		
22	1	0403010-40	SMP		1	1	As Received		
23	1	AB040305-4A	LCS		1	1	As Received	S1	ALPHA SOURCE
24	1	AB040305-4B	LCS		1	1	As Received	S2	BETA SOURCE
25	1	AB040305-4	MB		1	1	As Received		<i>[Signature]</i> 03/05/04

DRAFT

Spliked By: N/A Date: N/A
 Witnessed By: N/A Date: N/A

Relinquished By: *[Signature]*
 Date: 03/05/04
 Received By: *[Signature]*
 Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	8,947.870	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.327	DPM/sample	03/05/04	1	sample	

00012

Comments: _____

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305

Prep Procedure: **GAB**

Reviewed By: ATF *[Signature]*

Review Date: 3/5/04

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

Prep SOP: PAI 702 Rev: 16 Prep Analyst: Adrienne Freda *[Signature]* Balance: **DRAFT**
 Prep SOP: NONE Prep Date: 3/5/04 Balance: **DRAFT**
 Matrix Class: solid Prep Dept: RS

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Alq sample	Fin Alq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-21	SMP		1	1	As Received		
2	1	0403010-22	SMP		1	1	As Received		
3	1	0403010-23	SMP		1	1	As Received		
4	1	0403010-24	SMP		1	1	As Received		
5	1	0403010-25	SMP		1	1	As Received		
6	1	0403010-26	SMP		1	1	As Received		
7	1	0403010-27	SMP		1	1	As Received		
8	1	0403010-28	SMP		1	1	As Received		
9	1	0403010-29	SMP		1	1	As Received		
10	1	0403010-30	SMP		1	1	As Received		
11	1	0403010-31	SMP		1	1	As Received		
12	1	0403010-32	SMP		1	1	As Received		
13	1	0403010-33	SMP		1	1	As Received		
14	1	0403010-34	SMP		1	1	As Received		
15	1	0403010-35	SMP		1	1	As Received		
16	1	0403010-36	SMP		1	1	As Received		
17	1	0403010-37	SMP		1	1	As Received		
18	1	0403010-38	SMP		1	1	As Received		
19	1	0403010-39	SMP		1	1	As Received		
20	1	0403010-40	SMP		1	1	As Received		
21	1	AB040305-4A	LCS		1	1	As Received	S1	ALPHA SOURCE
22	1	AB040305-4B	LCS		1	1	As Received	S2	BETA SOURCE
23	1	AB040305-4	MB		1	1	As Received		

DRAFT

03/05/04

03/05/04

03/05/04

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

Relinquished By: *[Signature]*
 Date: 3/5/04
 Received By: *[Signature]*
 Date: 3/6/04

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.870	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.327	DPM/sample	03/05/04	1	sample	

Comments: _____

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: **AB040305-7**

Prep Procedure: **GAB_No_Att**

Reviewed By: **ATF** *g* 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 Analyst: **Adrienne Freda** *g* Balance: _____
 Prep SOP: NONE Prep Date: **3/5/04** Balance: _____
 Matrix Class: solid Prep Dept: **RS**

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-41	SMP		1	1	As Received		<u>WBS 3/15/04</u>
2	1	0403010-41	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403010-42	SMP		1	1	As Received		
4	1	0403010-43	SMP		1	1	As Received		
5	1	0403010-44	SMP		1	1	As Received		
6	1	0403010-45	SMP		1	1	As Received		<u>WBS 3/15/04</u>
7	1	0403011-41	SMP		1	1	As Received		
8	1	0403011-42	SMP		1	1	As Received		
9	1	0403011-43	SMP		1	1	As Received		
10	1	AB040305-7A	LCS		1	1	As Received	S1	ALPHA SOURCE
11	1	AB040305-7B	LCS		1	1	As Received	S2	BETA SOURCE
12	1	AB040305-7	MB		1	1	As Received		<u>WBS 3/15/04</u>

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

Relinquished By: See
 Date: previous sheet
 Received By: _____
 Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872 DPM/sample		03/05/04	1	sample	
S2	Sr-90	729	20,514.377 DPM/sample		03/05/04	1	sample	

Comments

000126

Radiochemistry Prep Worksheet

Prep Batch: **BC40305**

Paragon Analytics

Prep Procedure: **GAB**

Reviewed By: ATF *[Signature]* Review Date: 3/9/04

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: Adrienne Freda *[Signature]*
 Prep Date: 3/5/04
 Prep Dept: RS

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-41	SMP		1	1	As Received		<i>[Signature]</i>
2	1	0403010-41	DUP		1	1	As Received		COUNT DUPLICATE
3	1	0403010-42	SMP		1	1	As Received		
4	1	0403010-43	SMP		1	1	As Received		
5	1	0403010-44	SMP		1	1	As Received		<i>[Signature]</i> 03/09/04
6	1	0403010-45	SMP		1	1	As Received		
7	1	0403011-41	SMP		1	1	As Received		
8	1	0403011-42	SMP		1	1	As Received		
9	1	0403011-43	SMP		1	1	As Received		
10	1	AB040305-7A	LCS		1	1	As Received	S1	ALPHA SOURCE
11	1	AB040305-7B	LCS		1	1	As Received	S2	BETA SOURCE
12	1	AB040305-7	MB		1	1	As Received		<i>[Signature]</i> 03/09/04

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

Relinquished By: see
 Date: previous
 Received By: sheet
 Date: _____

Soln #	Nuclide	SolnID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872 DPM/sample		03/05/04	1	sample	
S2	Sr-90	729	20,514.377 DPM/sample		03/05/04	1	sample	

Comments

000127

Prep Procedure: **GAB**

Reviewed By: ATF

Review Date: 3/5/04

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: Adrienne Freda
 Prep Date: 3/5/04
 Prep Dept: RS

Balance:
 Balance: **DRAFT**

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-41	SMP		1	1	As Received		
2	1	0403010-42	SMP		1	1	As Received		
3	1	0403010-43	SMP		1	1	As Received		
4	1	0403010-44	SMP		1	1	As Received		
5	1	0403010-45	SMP		1	1	As Received		
6	1	0403011-41	SMP		1	1	As Received		
7	1	0403011-42	SMP		1	1	As Received		
8	1	0403011-43	SMP		1	1	As Received		
9	1	AB040305-7A	LCS		1	1	As Received	S1	ALPHA SOURCE
10	1	AB040305-7B	LCS		1	1	As Received	S2	BETA SOURCE
11	1	AB040305-7	MB		1	1	As Received		

DRAFT

03/05/04

03/05/04

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

Relinquished By: ATF
 Date: 3/5/04
 Received By: S
 Date: 3/10/04

Soln #	Nuclide	Soln ID	Prep Conc	Units	Prep Date	Aliquot	Units	Pipet ID
S1	Am-241	601	9,947.872	DPM/sample	03/05/04	1	sample	
S2	Sr-90	729	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

000128

PARAGON ANALYTICS
Radiochemistry Data Package

Section 7

STANDARDS
TRACEABILITY
DOCUMENTS

7

000130

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

PAT-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/cm² 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: MM. [Signature] 12-4-01

000131

CERTIFICATE OF CALIBRATION
Standard Radionuclide SourcePAT 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/cm² 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, RadiochemistQ A APPROVED: DM [Signature] 10-27-03

PARAGON ANALYTICS
Radiochemistry Data Package

Section 8

CHAIN OF CUSTODY.

8

000133

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403010

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022604-20-01	0403010-1		WIPE	26-Feb-04	14:25
022604-20-02	0403010-2		WIPE	26-Feb-04	14:25
022604-20-03	0403010-3		WIPE	26-Feb-04	14:25
022604-20-04	0403010-4		WIPE	26-Feb-04	14:25
022604-20-05	0403010-5		WIPE	26-Feb-04	14:25
022604-20-06	0403010-6		WIPE	26-Feb-04	14:25
022604-20-07	0403010-7		WIPE	26-Feb-04	14:25
022604-20-08	0403010-8		WIPE	26-Feb-04	14:25
022604-20-09	0403010-9		WIPE	26-Feb-04	14:25
022604-20-10	0403010-10		WIPE	26-Feb-04	14:25
022604-20-11	0403010-11		WIPE	26-Feb-04	14:25
022604-20-12	0403010-12		WIPE	26-Feb-04	14:25
022604-20-13	0403010-13		WIPE	26-Feb-04	14:25
022604-20-14	0403010-14		WIPE	26-Feb-04	14:25
022604-20-15	0403010-15		WIPE	26-Feb-04	14:25
022604-20-16	0403010-16		WIPE	26-Feb-04	14:25
022604-20-17	0403010-17		WIPE	26-Feb-04	14:25
022604-20-18	0403010-18		WIPE	26-Feb-04	14:25
022604-20-19	0403010-19		WIPE	26-Feb-04	14:25
022604-20-20	0403010-20		WIPE	26-Feb-04	14:25
022604-20-21	0403010-21		WIPE	26-Feb-04	14:25
022604-20-22	0403010-22		WIPE	26-Feb-04	14:26
022604-20-23	0403010-23		WIPE	26-Feb-04	14:26
022604-20-24	0403010-24		WIPE	26-Feb-04	14:26
022604-20-25	0403010-25		WIPE	26-Feb-04	14:26
022604-20-26	0403010-26		WIPE	26-Feb-04	14:26
022604-20-27	0403010-27		WIPE	26-Feb-04	14:26
022604-20-28	0403010-28		WIPE	26-Feb-04	14:26
022604-20-29	0403010-29		WIPE	26-Feb-04	14:26
022604-20-30	0403010-30		WIPE	26-Feb-04	14:26
022604-20-31	0403010-31		WIPE	26-Feb-04	14:26
022604-20-32	0403010-32		WIPE	26-Feb-04	14:26

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0403010

Client Name: Shaw E & I Inc.

Client Project Name: Denver NEIC

Client Project Number: 101115

Client PO Number: 14144

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
022604-20-33	0403010-33		WIPE	26-Feb-04	14:26
022604-20-34	0403010-34		WIPE	26-Feb-04	14:26
022604-20-35	0403010-35		WIPE	26-Feb-04	14:26
022604-20-36	0403010-36		WIPE	26-Feb-04	14:26
022604-20-37	0403010-37		WIPE	26-Feb-04	14:26
022604-20-38	0403010-38		WIPE	26-Feb-04	14:26
022604-20-39	0403010-39		WIPE	26-Feb-04	14:26
022604-20-40	0403010-40		WIPE	26-Feb-04	14:26
022604-20-41	0403010-41		WIPE	26-Feb-04	14:26
022604-20-41FD	0403010-42		WIPE	26-Feb-04	14:26
022604-20-20FD	0403010-43		WIPE	26-Feb-04	14:26
022604-20-25FD	0403010-44		WIPE	26-Feb-04	14:26
022604-20-FB	0403010-45		WIPE	26-Feb-04	14:26



2403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: 02205 (2604-20)

PAGE 1 of 3

Bill to: _____

Project No. 101115 Sample Shipment Date 3-01-04
 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 K. WISE Carrier Waybill No. N/A
T. TRENT

Report to: Ben Dettorre
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 022604-20-01	Rm 02205 Ess Location D-01	2/26/04 1425	Smear		
2 -02	D-02				
3 -03	D-03				
4 -04	D-04				
5 -05	D-05				
6 -06	D-06				
7 -07	D-07				
8 -08	D-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: _____ Date: 3-1-04
 (Signature/Affiliation) _____ Time: 1040

1. Received by: _____ Date: 3-1-04
 (Signature/Affiliation) _____ SHAW ERI Time: 1040

2. Relinquished by: _____ Date: 3-1-04
 (Signature/Affiliation) _____ Time: 3:40-1422

2. Received by: _____ Date: 3-1-04
 (Signature/Affiliation) _____ Time: 1420

3. Relinquished by: _____ Date: _____
 (Signature/Affiliation) _____ Time: _____

3. Received by: _____ Date: 1300
 (Signature/Affiliation) _____ Paragon on 3/1/04 Time: 3/2/04

Comments:

ANALYSIS: GROSS Alpha/Beta - MDC (reporting limits) of <1.1 dpm/smear for alpha
 <100 dpm/smear for Beta

000136



Shaw Environmental & Infrastructure, Inc.

0403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: D2205-022604-20

Pg 2 of 3

Project Name/Project No. EPA NEIC EDDP / 101115

Lab Destination Paragon Analytics, Inc.

Sample Shipment Date

03-01-04

ONE SAMPLE PER LINE

Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
9	022604-20-09 Rm D2205 ESS Location D-09	2/26/04 1425	Smear		
10	-10				
11	-11				
12	-12				
13	-13				
14	-14				
15	-15				
16	-16				
17	-17				
18	-18				
19	-19				
20	-20				
21	-21				
22	-22				
23	-23				
24	-24				
25	-25				
26	-26				
27	-27				
28	-28				
29	-29				
30	-30				

000137

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403010

PROJECT MANAGER: Deb Fazio INITIALS: DF DATE: 3/2/04

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

Cooler #'s 1
Temperature Ambient (Rad Only) °C

Project Manager Signature / Date: Deb Fazio 3/4/03

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

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

Paragon Analytics, Inc. -- Fort Collins, Colorado
CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw-Knox WORKORDER NO: 0403010
 PROJECT MANAGER: Deb Farn INITIALS: DF DATE: 3/2/04

- Custody seals broken (on outside of shipping container or on sample containers).
- No Chain-of-Custody (COC) present.
- Number of samples on the COC do not match the number of samples received.
- Aqueous samples not preserved correctly (see pH discussion below).
- SVOC samples contained residual chlorine (list sample IDs and affected containers below).
- Samples received at inappropriate temperature.
- Insufficient sample to perform requested analyses.
- Extraction or analytical holding times expired in transit.
- Broken/leaking bottles and intact bottles received in same cooler (list affected sample IDs below).
- No analyses requested.
- Incorrect sample type received.
- VOAs, reactive CN/S, radon not headspace free (list sample IDs and affected vials below).
- Airbills not present and/or removable (record applicable shipper's tracking number below).

Other (describe below). 3/2/04 Per James Nelson, associate the 2nd 02 with 03 on chain of custody. Smears arrived stapled in numerical order.

Describe discrepancy:

COC are not properly relinquished by client.
Did not receive a smear labeled 022604-20-03.
Received two smears labeled 022604-20-02.
The two smears received were labeled with Paragon IDs based on the order of the smears within the stacks they were stapled to

<u>0403010-1</u>	<u>022604-20-01</u>		
<u>0403010-2</u>		<u>-02 (a)</u>	} letters a and b were added to smear at Paragon.
<u>0403010-3</u>		<u>-02 (b)</u>	
<u>0403010-4</u>		<u>-04</u>	

Was the client contacted? No; Yes: Name James Nelson Date/Time 3/2/04
 Was the pH of any sample adjusted by the laboratory? No; Yes (see Table below):

NOTE: No pH adjustments shall be made without prior consent of Project Manager. After pH adjustment, hold metals and radchem samples ≥ 16 hr before analysis.

Sample ID	Initial pH	Final pH (wait 30 min)	Type of Reagent Used	Lot No. of Reagent Used	Initials / Date / Time

Was the laboratory directed to proceed with the analysis of any samples yielding the presence of residual chlorine? No; Yes (see notes above).

Project Manager Signature / Date: DF 3/3/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 9

**ADDITIONAL
SUPPORTING
DOCUMENTATION**

9

000141

Gas Proportional Counter

Instrument Calibration

Background Calibration.

000142

**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)	0.171	0.000	0.500	PASS	2.280	0.000	3.000	PASS	A1 (01)
A2 (02)	0.075	0.000	0.500	PASS	1.842	0.000	3.000	PASS	A2 (02)
A3 (03)	0.117	0.000	0.500	PASS	2.037	0.000	3.000	PASS	A3 (03)
A4 (04)	0.091	0.000	0.500	PASS	1.972	0.000	3.000	PASS	A4 (04)
B1 (05)	0.068	0.000	0.500	PASS	1.786	0.000	3.000	PASS	B1 (05)
B2 (06)	0.073	0.000	0.500	PASS	1.581	0.000	3.000	PASS	B2 (06)
B3 (07)	0.082	0.000	0.500	PASS	1.883	0.000	3.000	PASS	B3 (07)
B4 (08)	0.076	0.000	0.500	PASS	1.798	0.000	3.000	PASS	B4 (08)
C1 (09)	0.090	0.000	0.500	PASS	1.735	0.000	3.000	PASS	C1 (09)
C2 (10)	0.094	0.000	0.500	PASS	1.774	0.000	3.000	PASS	C2 (10)
C3 (11)	0.101	0.000	0.500	PASS	1.751	0.000	3.000	PASS	C3 (11)
C4 (12)	0.098	0.000	0.500	PASS	1.914	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: LCW

Date: 3/8/04

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

000143

BKA0306W.XLD

Printed 3/8/04 6:49 AM

**LB4100-B Weekly Instrument Calibration and Check
Background Determinations**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.071	0.044	0.150	PASS	1.338	1.244	1.486	PASS	A1 (01)
A2 (02)	0.101	0.050	0.235	PASS	1.394	1.255	1.493	PASS	A2 (02)
A3 (03)	0.088	0.037	0.173	PASS	1.397	1.251	1.518	PASS	A3 (03)
A4 (04)	0.101	0.001	0.193	PASS	1.365	1.225	1.540	PASS	A4 (04)
B1 (05)	0.136	-0.008	0.283	PASS	1.638	1.428	1.981	PASS	B1 (05)
B2 (06)	0.106	0.008	0.247	PASS	1.376	1.339	1.770	PASS	B2 (06)
B3 (07)	████████	0.039	0.259	PASS	████████	1.421	1.747	PASS	B3 (07)
B4 (08)	0.125	-0.027	0.316	PASS	1.572	1.498	1.741	PASS	B4 (08)
C1 (09)	0.130	0.046	0.174	PASS	1.528	1.324	1.754	PASS	C1 (09)
C2 (10)	0.099	0.042	0.205	PASS	1.610	1.327	1.733	PASS	C2 (10)
C3 (11)	0.172	0.067	0.219	PASS	1.583	1.344	1.766	PASS	C3 (11)
C4 (12)	0.106	-0.012	0.216	PASS	1.482	1.338	1.726	PASS	C4 (12)
D1 (13)	0.115	0.028	0.206	PASS	1.497	1.302	1.759	PASS	D1 (13)
D2 (14)	0.102	0.017	0.207	PASS	2.079	1.730	2.319	PASS	D2 (14)
D3 (15)	0.118	0.044	0.147	PASS	1.762	1.566	2.045	PASS	D3 (15)
D4 (16)	0.122	0.022	0.206	PASS	1.756	1.405	2.033	PASS	D4 (16)

Reviewed by: LCB

Date: ████████

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

000144

BKF SW.XLD

Printed 3/8/04 6:38 AM

Gas Proportional Counter

Quality Control Data

Daily Background Checks

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.167	-0.011	0.331	PASS	2.317	1.695	2.865	PASS	A1 (01)
A2 (02)	0.133	-0.031	0.181	PASS	2.083	1.316	2.368	PASS	A2 (02)
A3 (03)	0.150	-0.015	0.249	PASS	2.000	1.484	2.590	PASS	A3 (03)
A4 (04)	0.117	-0.026	0.208	PASS	2.000	1.428	2.516	PASS	A4 (04)
B1 (05)	0.100	-0.033	0.169	PASS	1.983	1.268	2.304	PASS	B1 (05)
B2 (06)	0.067	-0.032	0.178	PASS	1.683	1.094	2.068	PASS	B2 (06)
B3 (07)	0.133	-0.029	0.193	PASS	1.817	1.352	2.414	PASS	B3 (07)
B4 (08)	0.133	-0.031	0.183	PASS	1.967	1.279	2.317	PASS	B4 (08)
C1 (09)	0.100	-0.026	0.206	PASS	1.883	1.225	2.245	PASS	C1 (09)
C2 (10)	0.083	-0.025	0.213	PASS	1.983	1.258	2.290	PASS	C2 (10)
C3 (11)	0.067	-0.022	0.224	PASS	2.017	1.239	2.263	PASS	C3 (11)
C4 (12)	0.083	-0.023	0.219	PASS	2.317	1.378	2.450	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: 3/10/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

000146

**LB4100-A Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.200	0.011	0.331	PASS	2.233	1.695	2.865	PASS	A1 (01)
A2 (02)	0.167	-0.031	0.181	PASS	1.483	1.316	2.368	PASS	A2 (02)
A3 (03)	0.150	-0.015	0.249	PASS	2.367	1.484	2.590	PASS	A3 (03)
A4 (04)	0.050	-0.026	0.208	PASS	2.117	1.428	2.516	PASS	A4 (04)
B1 (05)	0.050	-0.033	0.169	PASS	1.850	1.268	2.304	PASS	B1 (05)
B2 (06)	0.067	-0.032	0.178	PASS	1.567	1.094	2.068	PASS	B2 (06)
B3 (07)	0.100	-0.029	0.193	PASS	1.533	1.352	2.414	PASS	B3 (07)
B4 (08)	0.100	-0.031	0.183	PASS	1.850	1.279	2.317	PASS	B4 (08)
C1 (09)	0.067	-0.026	0.206	PASS	1.883	1.225	2.245	PASS	C1 (09)
C2 (10)	0.183	-0.025	0.213	PASS	1.767	1.258	2.290	PASS	C2 (10)
C3 (11)	0.167	-0.022	0.224	PASS	1.717	1.239	2.263	PASS	C3 (11)
C4 (12)	0.117	-0.023	0.219	PASS	1.767	1.378	2.450	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: CCB

Date: 3/11/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

000147

BKA.XLD

Printed 3/11/04 7:31 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	GPM	LCL	UCL	Flag	GPM	LCL	UCL	Flag	
A1 (01)	0.133	-0.032	0.174	PASS	1.667	0.890	1.786	PASS	A1 (01)
A2 (02)	0.233	-0.022	0.224	FLAG-HIGH	1.500	0.937	1.851	PASS	A2 (02)
A3 (03)	0.167	-0.027	0.203	PASS	1.633	0.939	1.855	PASS	A3 (03)
A4 (04)	0.167	-0.022	0.224	PASS	1.717	0.913	1.817	PASS	A4 (04)
B1 (05)	0.183	-0.007	0.279	PASS	1.533	1.142	2.134	PASS	B1 (05)
B2 (06)	0.150	-0.020	0.232	PASS	1.633	0.922	1.830	PASS	B2 (06)
B3 (07)	0.300	-0.025	0.213	FLAG-HIGH	1.483	1.000	1.940	PASS	B3 (07)
B4 (08)	0.250	-0.012	0.262	PASS	1.950	1.086	2.058	PASS	B4 (08)
C1 (09)	0.167	-0.010	0.270	PASS	1.783	1.049	2.007	PASS	C1 (09)
C2 (10)	0.133	-0.023	0.221	PASS	1.733	1.119	2.101	PASS	C2 (10)
C3 (11)	0.133	0.011	0.333	PASS	1.617	1.096	2.070	PASS	C3 (11)
C4 (12)	0.250	-0.020	0.232	FLAG-HIGH	2.033	1.011	1.953	FLAG-HIGH	C4 (12)
D1 (13)	0.500	-0.016	0.246	FLAG-HIGH	2.350	1.023	1.971	FLAG-HIGH	D1 (13)
D2 (14)	0.167	-0.022	0.226	PASS	2.300	1.521	2.637	PASS	D2 (14)
D3 (15)	0.150	-0.015	0.251	PASS	1.600	1.248	2.276	PASS	D3 (15)
D4 (16)	0.133	-0.013	0.257	PASS	1.933	1.243	2.269	PASS	D4 (16)

- detectors 2, 7, 12, 13 will be recounted in file BKB0309A

Reviewed by: LLS

Date: 3/9/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000148

BKB0309.XLD

Printed 3/9/04 7:58 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	0.117	-0.022	0.224	PASS	1.367	0.937	1.851	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!	#REF!	B1 (05)
B2 (06)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	B2 (06)
B3 (07)	0.167	-0.025	0.213	PASS	1.833	1.000	1.940	PASS	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)	0.233	-0.020	0.232	FLAG-HIGH	1.817	1.011	1.953	PASS	C4 (12)
D1 (13)	0.233	-0.016	0.246	PASS	1.800	1.023	1.971	PASS	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 12 is offline & for today.

Reviewed by: _____ *S* _____

Date: 3/9/07

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000129

BKB0306W.XLD

Printed 3/9/07 9:16 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.033	-0.032	0.174	PASS	1.750	0.890	1.786	PASS	A1 (01)
A2 (02)	0.083	-0.022	0.224	PASS	1.700	0.937	1.851	PASS	A2 (02)
A3 (03)	0.100	-0.027	0.203	PASS	1.350	0.939	1.855	PASS	A3 (03)
A4 (04)	0.317	-0.022	0.224	FLAG-HIGH	1.567	0.913	1.817	PASS	A4 (04)
B1 (05)	0.200	-0.007	0.279	PASS	1.683	1.142	2.134	PASS	B1 (05)
B2 (06)	0.100	-0.020	0.232	PASS	1.383	0.922	1.830	PASS	B2 (06)
B3 (07)	0.183	-0.025	0.213	PASS	1.867	1.000	1.940	PASS	B3 (07)
B4 (08)	0.083	-0.012	0.262	PASS	1.617	1.086	2.058	PASS	B4 (08)
C1 (09)	0.083	-0.010	0.270	PASS	1.450	1.049	2.007	PASS	C1 (09)
C2 (10)	0.200	-0.023	0.221	PASS	1.700	1.119	2.101	PASS	C2 (10)
C3 (11)	0.100	0.011	0.333	PASS	1.567	1.096	2.070	PASS	C3 (11)
C4 (12)	0.133	-0.020	0.232	PASS	1.467	1.011	1.953	PASS	C4 (12)
D1 (13)	0.200	-0.016	0.246	PASS	1.350	1.023	1.971	PASS	D1 (13)
D2 (14)	0.100	-0.022	0.226	PASS	1.950	1.521	2.637	PASS	D2 (14)
D3 (15)	0.167	-0.015	0.251	PASS	1.650	1.248	2.276	PASS	D3 (15)
D4 (16)	0.117	-0.013	0.257	PASS	1.967	1.243	2.269	PASS	D4 (16)

-detector 4 will be recounted in file BKB0310A

Reviewed by: LCB

Date: 3/10/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
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)	0.183	-0.022	0.224	PASS	1.633	0.913	1.817	PASS	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)	#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: 3/10/09

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

Printed 3/10/09 9:27 AM

000151

BKB0306W.XLD

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.067	-0.032	0.174	PASS	1.333	0.890	1.786	PASS	A1 (01)
A2 (02)	0.283	-0.022	0.224	FLAG-HIGH	1.400	0.937	1.851	PASS	A2 (02)
A3 (03)	0.250	-0.027	0.203	FLAG-HIGH	1.483	0.939	1.855	PASS	A3 (03)
A4 (04)	0.150	-0.022	0.224	PASS	1.367	0.913	1.817	PASS	A4 (04)
B1 (05)	0.233	-0.007	0.279	PASS	1.600	1.142	2.134	PASS	B1 (05)
B2 (06)	0.250	-0.020	0.232	FLAG-HIGH	1.700	0.922	1.830	PASS	B2 (06)
B3 (07)	0.200	-0.025	0.213	PASS	1.583	1.000	1.940	PASS	B3 (07)
B4 (08)	0.133	-0.012	0.262	PASS	1.667	1.086	2.058	PASS	B4 (08)
C1 (09)	0.100	-0.010	0.270	PASS	1.800	1.049	2.007	PASS	C1 (09)
C2 (10)	0.150	-0.023	0.221	PASS	1.483	1.119	2.101	PASS	C2 (10)
C3 (11)	0.217	0.011	0.333	PASS	1.583	1.096	2.070	PASS	C3 (11)
C4 (12)	0.117	-0.020	0.232	PASS	1.367	1.011	1.953	PASS	C4 (12)
D1 (13)	0.133	-0.016	0.246	PASS	1.750	1.023	1.971	PASS	D1 (13)
D2 (14)	0.233	-0.022	0.226	FLAG-HIGH	1.983	1.521	2.637	PASS	D2 (14)
D3 (15)	0.150	-0.015	0.251	PASS	1.450	1.248	2.276	PASS	D3 (15)
D4 (16)	0.233	-0.013	0.257	PASS	1.867	1.243	2.269	PASS	D4 (16)

- detectors 2, 3, 6, 14^{2/11} will be recounted in file BKB0311A
 + detector 14 will be recounted in file BKB0311B

Reviewed by: LLB

Date: 3/11/04

Control limits established from previous weekly background determinations.
 Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	0.183	-0.022	0.224	PASS	1.350	0.937	1.851	PASS	A2 (02)
A3 (03)	0.067	-0.027	0.203	PASS	1.367	0.939	1.855	PASS	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)	0.117	-0.020	0.232	PASS	1.500	0.922	1.830	PASS	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)	0.083	-0.023	0.221	PASS	1.633	1.119	2.101	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)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	D4 (16)

Reviewed by: LCB

Date: 3/11/04

Control limits established from previous weekly background determinations.
Weekly Background File: BK0306W Date: 3/6/04 Analyst: CJ

000153

BKBC \XLD

Printed 3/11/04 8:41 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
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)	#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)	0.117	-0.022	0.226	PASS	2.150	1.521	2.637	PASS	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: _____ *J*

Date: 3/11/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000154

BKB0311B.XLD

Printed 3/11/04 10:35 AM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.217	-0.032	0.174	FLAG-HIGH	1.350	0.890	1.786	PASS	A1 (01)
A2 (02)	0.217	-0.022	0.224	PASS	1.667	0.937	1.851	PASS	A2 (02)
A3 (03)	0.133	-0.027	0.203	PASS	1.467	0.939	1.855	PASS	A3 (03)
A4 (04)	0.050	-0.022	0.224	PASS	1.367	0.913	1.817	PASS	A4 (04)
B1 (05)	0.267	-0.007	0.279	PASS	1.717	1.142	2.134	PASS	B1 (05)
B2 (06)	0.267	-0.020	0.232	FLAG-HIGH	1.350	0.922	1.830	PASS	B2 (06)
B3 (07)	0.300	-0.025	0.213	FLAG-HIGH	1.583	1.000	1.940	PASS	B3 (07)
B4 (08)	0.133	-0.012	0.262	PASS	1.783	1.086	2.058	PASS	B4 (08)
C1 (09)	0.083	-0.010	0.270	PASS	1.433	1.049	2.007	PASS	C1 (09)
C2 (10)	0.150	-0.023	0.221	PASS	1.417	1.119	2.101	PASS	C2 (10)
C3 (11)	0.183	0.011	0.333	PASS	1.700	1.096	2.070	PASS	C3 (11)
C4 (12)	0.100	-0.020	0.232	PASS	1.767	1.011	1.953	PASS	C4 (12)
D1 (13)	0.083	-0.016	0.246	PASS	1.550	1.023	1.971	PASS	D1 (13)
D2 (14)	0.300	-0.022	0.226	FLAG-HIGH	2.000	1.521	2.637	PASS	D2 (14)
D3 (15)	0.200	-0.015	0.251	PASS	1.967	1.248	2.276	PASS	D3 (15)
D4 (16)	0.167	-0.013	0.257	PASS	2.050	1.243	2.269	PASS	D4 (16)

- Det 1, 6, 7, 14 will be re-counted in file BK00312A.

Reviewed by: _____

Date: 3/12/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000155

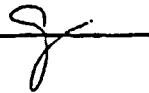
BKE 2.XLD

Printed 3/12/04 9:06 AM

**LB4100-B Daily Instrument Performance Checks
Background Checks**

Detector ID	Alpha				Beta				Detector ID
	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	
A1 (01)	0.017	-0.032	0.174	PASS	1.683	0.890	1.786	PASS	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)	0.100	-0.020	0.232	PASS	1.517	0.922	1.830	PASS	B2 (06)
B3 (07)	0.183	-0.025	0.213	PASS	1.567	1.000	1.940	PASS	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)	0.117	-0.022	0.226	PASS	2.000	1.521	2.637	PASS	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: 3/12/04

Control limits established from previous weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000156

BKB0312A.XLD

Printed 3/12/04 11:21 AM

Gas Proportional Counter

Quality Control Data

Daily Instrument Performance
Checks

000157

**LB4100-A Daily Instrument Performance Check
Efficiency Determinations**

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2325	0.2085	0.2546	PASS	0.8578	0.7959	0.9352	PASS	A1 (01)
A2 (02)	0.2282	0.2062	0.2574	PASS	0.8609	0.7892	0.9828	PASS	A2 (02)
A3 (03)	0.2236	0.2062	0.2690	PASS	0.8506	0.7715	0.9888	PASS	A3 (03)
A4 (04)	0.2137	0.1880	0.2528	PASS	0.8233	0.7382	0.9417	PASS	A4 (04)
B1 (05)	0.2379	0.2257	0.2534	PASS	0.8898	0.8564	0.9214	PASS	B1 (05)
B2 (06)	0.2507	0.2387	0.2630	PASS	0.9235	0.9020	0.9548	PASS	B2 (06)
B3 (07)	0.2248	0.2186	0.2492	PASS	0.8866	0.8665	0.9156	PASS	B3 (07)
B4 (08)	0.2597	0.2435	0.2799	PASS	0.9359	0.9071	0.9634	PASS	B4 (08)
C1 (09)	0.2551	0.2476	0.2862	PASS	0.9002	0.8520	0.9638	PASS	C1 (09)
C2 (10)	0.2253	0.2133	0.2394	PASS	0.8514	0.8366	0.8885	PASS	C2 (10)
C3 (11)	0.2348	0.2148	0.2570	PASS	0.9063	0.8661	0.9334	PASS	C3 (11)
C4 (12)	0.2575	0.2402	0.2658	PASS	0.9296	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: 3/10/04

Historical Control Limits established 03/03/04. CJ

000158

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2276	0.2085	0.2546	PASS	0.8599	0.7959	0.9352	PASS	A1 (01)
A2 (02)	0.2246	0.2062	0.2574	PASS	0.8725	0.7892	0.9828	PASS	A2 (02)
A3 (03)	0.2353	0.2062	0.2690	PASS	0.8716	0.7715	0.9888	PASS	A3 (03)
A4 (04)	0.2272	0.1880	0.2528	PASS	0.8435	0.7382	0.9417	PASS	A4 (04)
B1 (05)	0.2396	0.2257	0.2534	PASS	0.8915	0.8564	0.9214	PASS	B1 (05)
B2 (06)	0.2593	0.2387	0.2630	PASS	0.9413	0.9020	0.9548	PASS	B2 (06)
B3 (07)	0.2233	0.2186	0.2492	PASS	0.8756	0.8665	0.9156	PASS	B3 (07)
B4 (08)	0.2612	0.2435	0.2799	PASS	0.9332	0.9071	0.9634	PASS	B4 (08)
C1 (09)	0.2670	0.2476	0.2862	PASS	0.8863	0.8520	0.9638	PASS	C1 (09)
C2 (10)	0.2339	0.2133	0.2394	PASS	0.8527	0.8366	0.8885	PASS	C2 (10)
C3 (11)	0.2359	0.2148	0.2570	PASS	0.9213	0.8661	0.9334	PASS	C3 (11)
C4 (12)	0.2507	0.2402	0.2658	PASS	0.9288	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: 3/11/04

Historical Control Limits established 03/03/04. CJ

691000

EFA .XLD

Printed 3/11/04 4 6:24 AM

Printed 3/11/04 4 6:24 AM

LB4100 - B
Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2459	0.2277	0.2583	PASS	0.8762	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2395	0.2314	0.2605	PASS	0.9006	0.8428	0.8989	FLAG-HIGH	A2 (02)
A3 (03)	0.2507	0.2291	0.2588	PASS	0.8907	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2382	0.2302	0.2602	PASS	0.8802	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2418	0.2342	0.2646	PASS	0.8764	0.9050	0.9663	FLAG-LOW	B1 (05)
B2 (06)	0.2321	0.2219	0.2484	PASS	0.8442	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2554	0.2343	0.2656	PASS	0.9252	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2379	0.2236	0.2616	PASS	0.8910	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2562	0.2453	0.2752	PASS	0.9394	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2402	0.2311	0.2644	PASS	0.9197	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2442	0.2362	0.2674	PASS	0.8974	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2401	0.2241	0.2531	PASS	0.8736	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2408	0.2332	0.2660	PASS	0.9137	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2559	0.2375	0.2664	PASS	0.9137	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2522	0.2387	0.2733	PASS	0.9024	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2510	0.2381	0.2666	PASS	0.9043	0.8823	0.9367	PASS	D4 (16)

- detector 2 will be recounted in file EFB0309A
+ detectors 5, 6 are offline β

Reviewed by: LCB

Date: 3/9/04

Control Limits established 12/21/03. JME

000160

LB4100 - B
Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	#VALUE!	0.2277	0.2583	#VALUE!	#VALUE!	0.8448	0.8995	#VALUE!	A1 (01)
A2 (02)	0.2414	0.2314	0.2605	PASS	0.8620	0.8428	0.8989	PASS	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	#VALUE!	B1 (05)
B2 (06)	#VALUE!	0.2219	0.2484	#VALUE!	#VALUE!	0.8585	0.9286	#VALUE!	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!	0.8523	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)	#VALUE!	0.2387	0.2733	#VALUE!	#VALUE!	0.8858	0.9433	#VALUE!	D3 (15)
D4 (16)	#VALUE!	0.2381	0.2666	#VALUE!	#VALUE!	0.8823	0.9367	#VALUE!	D4 (16)

Reviewed by: LCB

Date: 3/9/04

Control Limits established 12/21/03. JME

000161

EFBC 4.XLD

Printed 3/9/04 6:40 AM

LB4100 - B
Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2434	0.2277	0.2583	PASS	0.8555	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2367	0.2314	0.2605	PASS	0.8709	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2416	0.2291	0.2588	PASS	0.9085	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2484	0.2302	0.2602	PASS	0.8710	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2501	0.2342	0.2646	PASS	0.9257	0.9050	0.9663	PASS	B1 (05)
B2 (06)	0.2310	0.2219	0.2484	PASS	0.8618	0.8585	0.9286	PASS	B2 (06)
B3 (07)	0.2575	0.2343	0.2656	PASS	0.9263	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2341	0.2236	0.2616	PASS	0.8837	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2579	0.2453	0.2752	PASS	0.9348	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2431	0.2311	0.2644	PASS	0.8984	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2460	0.2362	0.2674	PASS	0.9121	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2438	0.2241	0.2531	PASS	0.8721	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2516	0.2332	0.2660	PASS	0.9245	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2559	0.2375	0.2664	PASS	0.9055	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2429	0.2387	0.2733	PASS	0.9070	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2594	0.2381	0.2666	PASS	0.9204	0.8823	0.9367	PASS	D4 (16)

Reviewed by: LWB

Date: 3/16/04

Control Limits established 12/21/03. JME

000162

LB4100 - B
Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2437	0.2277	0.2583	PASS	0.8558	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2463	0.2314	0.2605	PASS	0.8696	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2453	0.2291	0.2588	PASS	0.8933	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2384	0.2302	0.2602	PASS	0.8767	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2468	0.2342	0.2646	PASS	0.8886	0.9050	0.9663	FLAG-LOW	B1 (05)
B2 (06)	0.2248	0.2219	0.2484	PASS	0.8531	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2466	0.2343	0.2656	PASS	0.9167	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2340	0.2236	0.2616	PASS	0.8812	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2551	0.2453	0.2752	PASS	0.9231	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2537	0.2311	0.2644	PASS	0.8985	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2507	0.2362	0.2674	PASS	0.8933	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2390	0.2241	0.2531	PASS	0.8890	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2588	0.2332	0.2660	PASS	0.9014	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2512	0.2375	0.2664	PASS	0.9001	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2572	0.2387	0.2733	PASS	0.8928	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2555	0.2381	0.2666	PASS	0.9180	0.8823	0.9367	PASS	D4 (16)

- detectors 5, 6 are offline β

Reviewed by: LLB

Date: 3/11/04

Control Limits established 12/21/03. JME

000163

EFB07 LD

Printed 3/11/04 6:17 AM

LB4100 - B
Daily Instrument Performance Check
Efficiency Determinations

Detector ID	Alpha				Beta				Detector ID
	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	
A1 (01)	0.2416	0.2277	0.2583	PASS	0.8690	0.8448	0.8995	PASS	A1 (01)
A2 (02)	0.2535	0.2314	0.2605	PASS	0.8779	0.8428	0.8989	PASS	A2 (02)
A3 (03)	0.2370	0.2291	0.2588	PASS	0.8807	0.8661	0.9191	PASS	A3 (03)
A4 (04)	0.2525	0.2302	0.2602	PASS	0.8797	0.8514	0.9123	PASS	A4 (04)
B1 (05)	0.2452	0.2342	0.2646	PASS	0.9076	0.9050	0.9663	PASS	B1 (05)
B2 (06)	0.2298	0.2219	0.2484	PASS	0.8471	0.8585	0.9286	FLAG-LOW	B2 (06)
B3 (07)	0.2449	0.2343	0.2656	PASS	0.9161	0.8782	0.9579	PASS	B3 (07)
B4 (08)	0.2409	0.2236	0.2616	PASS	0.8624	0.8623	0.9360	PASS	B4 (08)
C1 (09)	0.2651	0.2453	0.2752	PASS	0.9280	0.8863	0.9595	PASS	C1 (09)
C2 (10)	0.2480	0.2311	0.2644	PASS	0.9027	0.8750	0.9478	PASS	C2 (10)
C3 (11)	0.2516	0.2362	0.2674	PASS	0.8960	0.8588	0.9345	PASS	C3 (11)
C4 (12)	0.2432	0.2241	0.2531	PASS	0.8804	0.8415	0.9081	PASS	C4 (12)
D1 (13)	0.2563	0.2332	0.2660	PASS	0.9180	0.8681	0.9355	PASS	D1 (13)
D2 (14)	0.2540	0.2375	0.2664	PASS	0.8999	0.8713	0.9377	PASS	D2 (14)
D3 (15)	0.2614	0.2387	0.2733	PASS	0.8985	0.8858	0.9433	PASS	D3 (15)
D4 (16)	0.2614	0.2381	0.2666	PASS	0.8941	0.8823	0.9367	PASS	D4 (16)

- detector 6 is offline/B

Reviewed by: LCB

Date: 3/12/04

Control Limits established 12/21/03. JME

00016

EFB0312.XLD

Printed 3/12/04 7:56 AM

Gas Proportional Counter

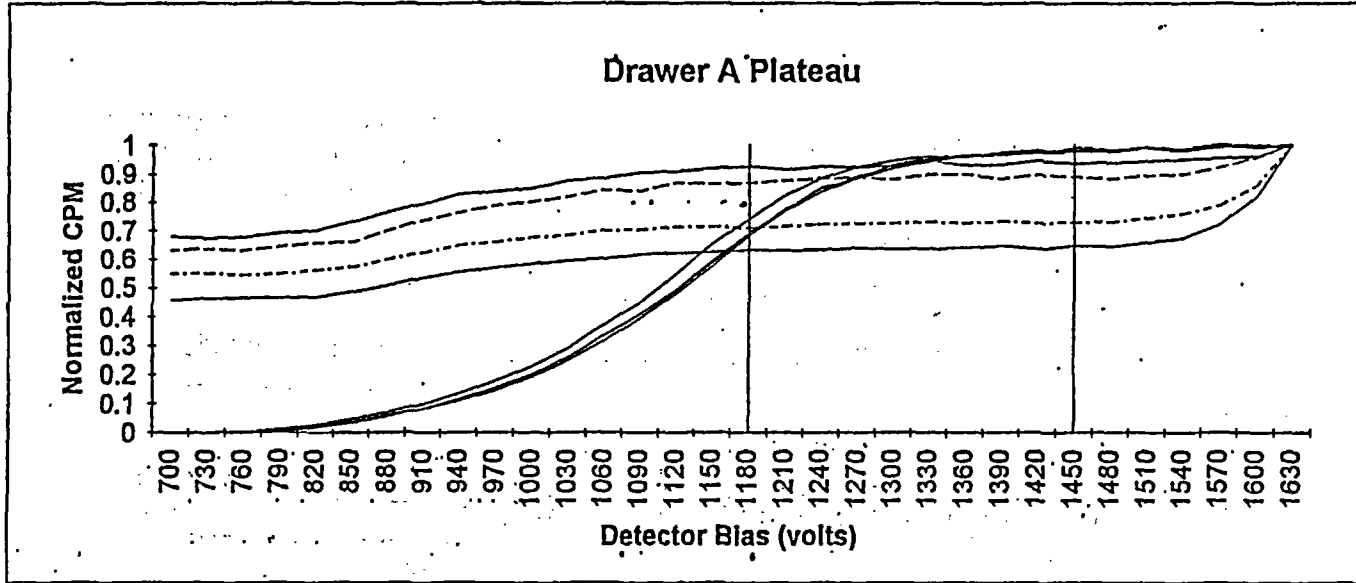
Instrument Calibration

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:

Optimum alpha only operating voltage:

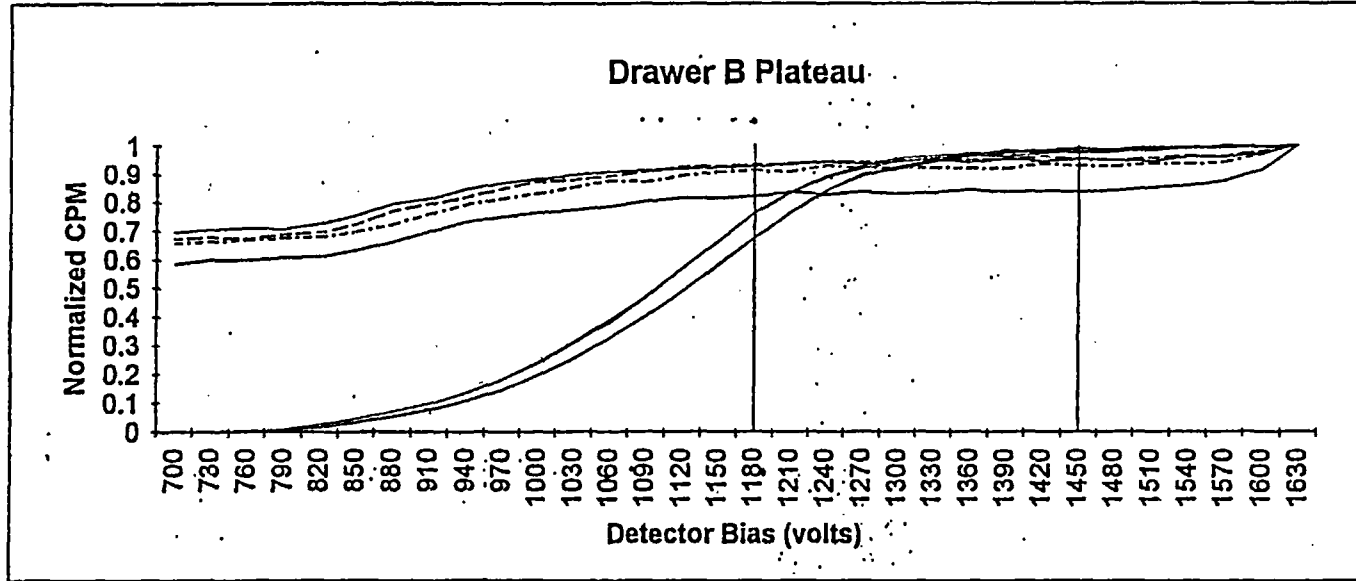
	A1	A2	A3	A4
Beta slope at beta voltage	0.92%	1.77%	1.88%	2.16%
Alpha slope at beta voltage	0.56%	0.28%	1.54%	1.11%
Alpha slope at alpha voltage	1.02%	1.74%	1.52%	0.95%

991000

g a/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**

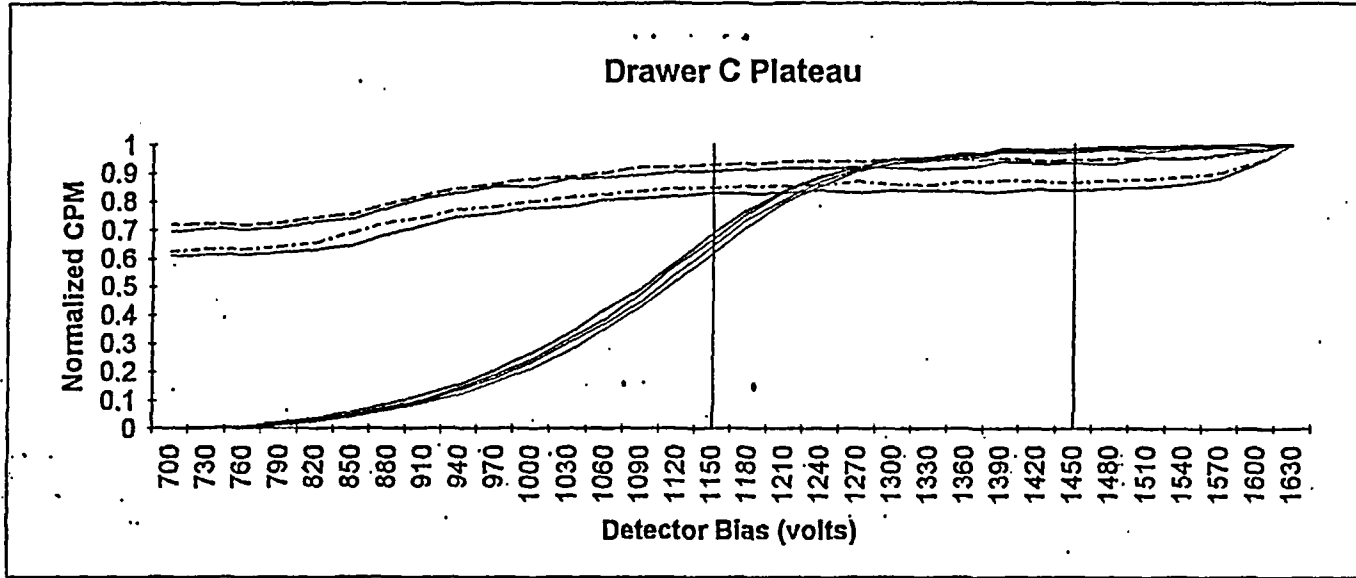
	B1	B2	B3	B4
Beta slope at beta voltage	1.14%	0.11%	0.85%	2.10%
Alpha slope at beta voltage	-0.54%	-0.10%	1.37%	0.88%
Alpha slope at alpha voltage	2.29%	1.61%	1.63%	2.40%

291000

gale

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%

891000

9/2/04

11/28/04 Plateaus are performed on Drawers A, B, C

Plateau parameters are:

Starting volts: 700

Ending volts: 1650

Volts per step: 30

Counttime per step: 5 min

Time between steps: .10 min

Count preset = 40,000

Weak count time: 10 min

Weak count limit: 10

File names: ~~PTD128A~~ ^(Data from 11/28/04) PTD128A (Actual) PTD128C
~~PTD128B~~ PTD128B PTD128A

Source Used:

Det

Am 241 - 410

1 3 9

41

2 4 10

412

5 7 9 11

413

6 8 10 12

Sr 90 - 406

3 1 11

407

4 2 12

408

7 5 11 9

409

8 6 12 10

Operating voltage:

Drawer A: ~~1447.5~~ 1447.5

Drawer B: 1447.5

Drawer C: 1447.5

11/20/04 Set ROI'S on Drawers A, B, C

Source Used

Det

Sr 90/4.90 - 406

1 5 9

407

2 6 10

408

3 7 11

409

4 8 12

Continued on Page _____

Read and Understood By

Clare Jensen

2/10/04

Leah Balho

2/10/04

Signed

Date

Signed

Date

000169

[REDACTED]								
Detector ID	A.1 (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				

$$\alpha \text{ (cpm)} = \left(\frac{\alpha \text{ counts}}{4.59} \right) - \alpha \text{ Bkg (cpm)} =$$

$$\left(\frac{10004}{4.59} \right) - 0.156 \text{ (cpm)} = 2179.3647$$

OK
2/23
3/6/04

Sources

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

000171

PROJECT LB4100-A

Continued From Page

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

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

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

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

$\alpha \rightarrow \beta$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \beta \text{ channels}}{\text{counts in } \alpha \text{ channels}}$$

3/2/04 Sr-90 wipe Calibration - Sr-90 on filter
 Source: 602 Source ID: 1127 log file: Srwipe-03/04

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

$\beta \rightarrow \alpha$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \alpha \text{ channels}}{\text{counts in } \beta \text{ channels}}$$

Continued on Page

Read and Understood By

Claire Terina
 Signed

3/2/04
 Date

Terina
 Signed

3.3.04
000172

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	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 6.5	A 0.1	1	LCB		P		PB	g	R	P	✓	9	LCB		P		LCB		P		✓
2 8.0	B ↓	2							P		✓	10									✓
	C ↓	3									✓	11									✓
	D NP	4									✓	12			↓						✓
		5									✓	13	MP				MP				✓
		6									✓	14									✓
		7									✓	15									✓
		8									✓	16									✓

Bkg. Cal. File ID

Dr A	BKA0228W
Dr B	↓
Dr C	↓
Dr D	NP

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	MP
1-12	Bkg checks	N/A	N/A	BKA0302	60	0710	g	g	3/2/04	
9	0215044-S1	15044210.XLS	Pb 210 1CV	PBA0302	30	0836	g	g	3/2/04	
10	-S2									
11	-S3									
12	-S5									
5	0216044-S1	15044210.XLS		PBA0302A	30	1050	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	0413052-S10	13050 Pb	Pb 210	PBA0302C	30	1313	g	g	3/2/04	

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

Comments:

Reviewed by

Date

3/2/04
 3/3/04

00017

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	Au241 wipe cal.	EAU0302A	30	1320	g	g	3/2/04	NA
2				EAU0302B		1326				
3				EAU0302C		1330				
4				EAU0302D		1341				
5				EAU0302E		1346				
6				EAU0302F		1351				
7				EAU0302G		1413				
8				EAU0302H		1421				
9				EAU0302I		1429				
10				EAU0302J		1434				
11				EAU0302K		1439				
12				EAU0302L		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	Pb1 CV	PBA0302D	30	1446	g	g	3/2/04	
2				PBA0302E		1519				
3				PBA0302F		1557				

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

5/2/04
 Reviewed

Date 3/2/04

Comments:

000174

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

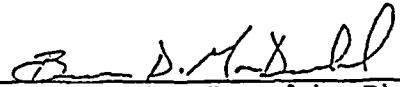
47007-307

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, Physicist

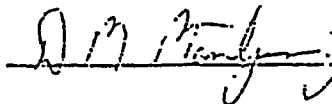
ISOTOPE:	Am-241
ACTIVITY (dps):	160.4
HALF-LIFE:	432.2 years
CALIBRATION DATE:	September 1, 1993 12:00 EST
TOTAL ERROR:	4.0%
SYSTEMATIC ERROR:	2.6%
RANDOM ERROR:	1.4%

43 mm active area. Low smooth bottom planchet. Source covering 0.85 mg/cm² 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 J

Q A APPROVED


9-20-93

000175

Standard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:					Ave Rec w/in	Ave w/in 2 Std	2 Std Dev w/in
					5% (PAI)	Dev (ICPT)	10% Ave (ICPT)
	Del	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery		
		160.4	dps	4335.1	pCi/s		
Count 1	2	4290			99.0%	100.7%	
Count 2	8	4430			102.2%	Pass	Pass
Count 3	3	4370	4363.33	114.70	100.8%	Pass	Pass

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

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

000176

10

 SEEKER G A M M A A N A L Y S I S R E S U L T S P S 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 BACKGROUND SUBTRACT RESULTS 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

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 E (keV)	Concentration (pCi/sample)	MDA	Critical Level	Half-life (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

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

Table with 9 columns: PK.#, ENERGY (keV), ADDRESS CHANNEL, NET/MDA COUNTS, UN-CERTAINTY, C.L. COUNTS, BKG COUNTS, FWHM (keV), FLAG. Contains 2 rows of peak data.

031863D08.SPC Analyzed by

SEEKER BACKGROUND SUBTRACT RESULTS 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

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 E (keV)	Concentration (pCi/sample)	MDA	Critical Level	Half-life (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

 SEEKER G A M M A A N A L Y S I S R E S U L T S P S 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 BACKGROUND SUBTRACT RESULTS 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

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 E (keV)	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

LB4100-A Raw Counts for Source: [REDACTED] Efficiency Calibration (Central IR 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				

000187

5/3/06

Sources

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

DPM = Disintegrations per minutes

$$\text{Am-241} = 432.2 \text{ yr} \times 365.24 \text{ days} = 157856.78$$

000188

PROJECT LB4700-A

Continued From Page

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

Sources:	0414009-S1	Det: A1 B1 C1	File names:	EPB0023A
	-S2	A2 B2 C2		EPB0023B
	-S3	A3 B3 C3		EPB0023C
	-S5	A4 B4 C4		EPB0023D

3/2/04 Am-241 Wipe Calibration - Am-241 on Filter
 Source: 73 Source ID: 1126 log file: AmWipe-03/04

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

$\alpha \rightarrow \beta$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \beta \text{ channels}}{\text{counts in } \alpha \text{ channels}}$$

3/2/04 Sr-90 Wipe Calibration - Sr-90 on filter
 Source: 602 Source ID: 1127 log file: SrWipe-03/04

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

$\beta \rightarrow \alpha$ crosstalk is calculated for each detector using the following equation:

$$\frac{\text{counts in } \alpha \text{ channels}}{\text{counts in } \beta \text{ channels}}$$

Continued on Page

Read and Understood By

Clare Series
 Signed

3/2/04
 Date

[Signature]
 Signed

3-304
 000189

269550 a
t. 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	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
1650	A 0.1	-1	LCB		P		LCB	g	R	P	✓	9	LCB		P		LCB		P		✓
2807	B ↓	2	↓				↓	g	P		✓	10	↓				↓		L		✓
	C ↓	3	↓				↓				✓	11	↓				↓		L		✓
	D NP	4	↓				↓				✓	12	↓		↓		↓		L		✓
		5	↓				↓				✓	13	NP				NP				✓
		6	↓				↓				✓	14	↓				↓				✓
		7	↓				↓				✓	15	↓				↓				✓
		8	↓				↓				✓	16	↓				↓				✓

Bkg. Cal. File ID
Dr A BKA0.228W
Dr B ↓
Dr C ↓
Dr D NP

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	
9	0215044-S1	15044210.XLS	Pb 210 1CV	PBA0302	30	0836	g	g	3/2/04	
10	-S2									
11	-S3									
12	-S5									
5	0215044-S1	15044210.XLS		PBA0302A	30	1050	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	0413057-S16	13050 Pb	Pb 210	PBA0302C	30	1313	g	g	3/2/04	

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

Reviewed by g Date 3/2/04

000100

269550

pg _____ b

Paragon Analytcs, 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	Au241 Wipe Cal.	EAW0302A	30	1320	g	g	3/2/04	NR
2				EAW0302B		1326				
3				EAW0302C		1330				
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	Pb1 CV	PBA0302D	30	1446	g	g	3/2/04	
2				PBA0302E		1519				
3				PBA0302F		1557				

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

5/2/04
Reviewed

Date 3/2/04

Comments:

161000
000191

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

62753A-307

FAT ID. 0602
 rec'd to 12-11-01
 EW 12-14-01

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/cm² 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: UM, mty 12-10-01

000192

New Standard Verification

WON

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	41848.06					
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

instral wipe

Detector efficiency

$$E_i = \frac{C_m}{AC} = \frac{cpm}{dpm}$$

$$E_i = \frac{14797.06}{35277.50} = 0.4194$$

Ave Gross Count = 85 counts

$$NCPM = GCPM - BCPM = 14797.06$$

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

000193

Unit Type: LB4100-B
 Counting Unit ID: Aqua
 High Voltage Mode: Simultaneous
 Application Revision: 2
 Application Version: Standard
 Rev. 07/28/03 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

Alpha b _a	1.24530	Beta b _a	1.0000
m _a	0.89400	m _b	0.8999
b _a	1.0000	a _b	1.0000
x _{0a}	0.0000	x _{0b}	0.0000
Alpha to Beta X-talk y = m * b * mass		Beta to Alpha X-talk y = m * mass + b	
a → b xtalk m _a	0.2740	b → a xtalk m _b	-2.00E-08
a → b xtalk b _a	1.0010	b → a xtalk b _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 xTalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xTalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	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	1.843	7.608	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

76
 12/23/03

000194

Unit Type: LB4100-B
 Coating 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: BKGBYW
 Date of: 12/21/03
 Alpha efficiency: 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

Alpha b ₀	1.24550	Beta b ₀	1.0000
m ₀	0.99400	m ₀	0.9999
u ₀	1.0000	u ₀	1.0000
z ₀	0.0000	z ₀	0.0000
Alpha to Beta X-talk y = m * b ₀ - mass		Beta to Alpha X-talk y = m * mass + b	
a → b xtalk m ₀	0.2740	b → a xtalk m ₀	-2.00E-06
a → b xtalk b ₀	1.0010	b → a xtalk b ₀	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	1.248	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	1.246	n/a	n/a	17515.200	1.908	8.604	0.4195	1.000	n/a	n/a

000195

SG
12/23/03

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: SR81221B
 Batch ID: VER
 Count Preset (n): 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: S190R-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

Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	a=	1.0000
x=	0.0000	x=	0.0000
Alpha to Beta X-talk y = m * b * mass		Beta to Alpha X-talk y = m * mass * b	
a -> b xtalk m=	8.2740	b -> a xtalk m=	-2.00E-09
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 xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
D1	729	12/21/03 12:09	8.00	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	8.00	0.0	25,200	0.138	10.368	0.2103	1.246	n/a	n/a	14812.000	1.906	8.905	0.4195	1.000	n/a	n/a

46
12/23/03

961000

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
1 700	A 0.1
2 800	B
	C
	D

Bkg. Cal. File ID

Dr A	3KB1221
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.	SmplD	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Comt 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	SE	12/21/03	
1	12312072-1	AB 631215-3	2/P	4081221	1000	1132	JE	JE	12/22/03	7/1/03
2	-1D									
3	.2									
4	2MS									
5	AB031215-314R									
6	-3LCS									
13	602	-	51-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14	729	-	t							
15	73	-	Am-241 wipe Ver	HA1221	5	1151	JE			
10	601	-	t							
17	602	-	51-90 wipe Ver	SRB1221A	5	1154	JE	SE	12/21/03	
15	729	-	t							
13	73	-	Am-241 wipe Ver	HA1221A	5	1158	JE			
14	601	-	t							
15	602	-	51-90 wipe Ver	SRB1221B	5	1204	SE	JE	12/21/03	

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

Comments: * Since weekly bkg just finished, daily bkg were not done. 7/6 12/21/03.

Reviewed by 7/4

Date 12/22/03

000197

Low Background Gas Flow Proportional Counter Run Log

Instrument: LB4100B

Date: 12/21/03

Det	SupID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
13	729	-	Si-90 w/pc Ver	SRB1221B	5	1209	JE	JE	12/21/03	NA
11	730 73	-	Ant 2-11 w/pc Ver	AMB1221B	5	1205	JE	↓	↓	↓
9	601	-	↓	↓	↓	↓	↓	↓	↓	↓
 12/22/03 [Signature] 										

Form 730r6.fm (4/6/2001)

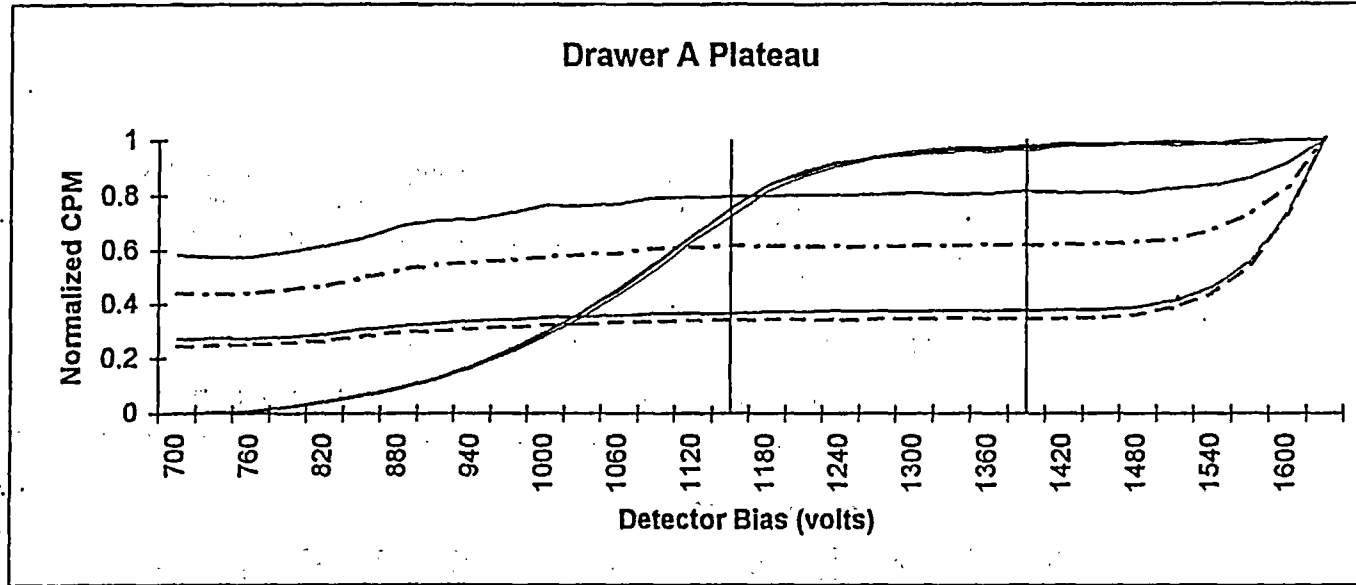
Reviewed JE Date 12/22/03

Comments:

000108

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**

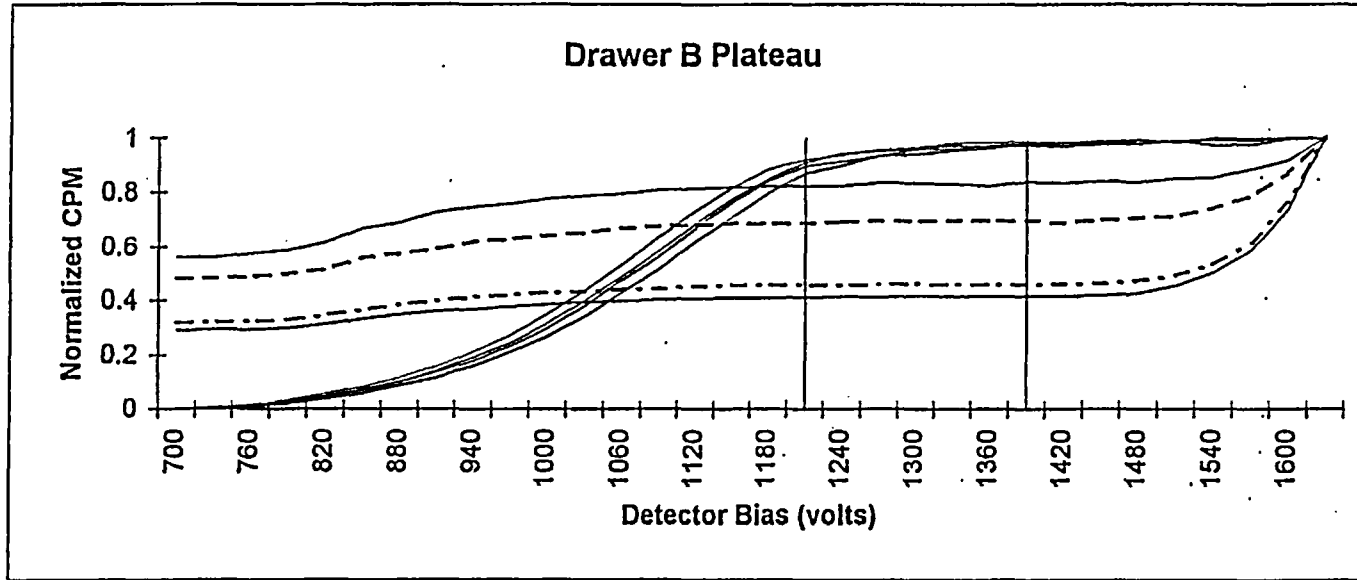
Optimum alpha only operating voltage: **1147.5**

	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%

Handwritten signature
 11/13/03

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:

Optimum alpha only operating voltage:

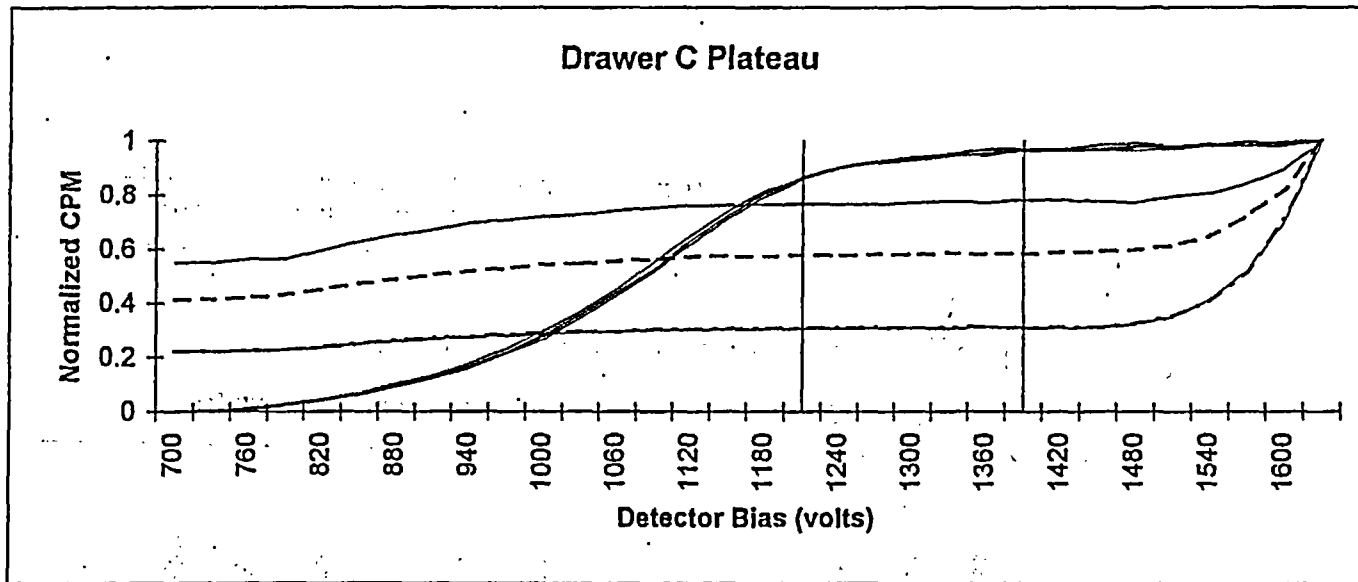
	B1	B2	B3	B4
Beta slope at beta voltage	0.25%	1.73%	1.96%	1.01%
Alpha slope at beta voltage	1.26%	0.14%	0.86%	0.88%
Alpha slope at alpha voltage	1.42%	0.92%	0.63%	0.59%

AE
 11/13/03

000200

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:

Optimum alpha only operating voltage:

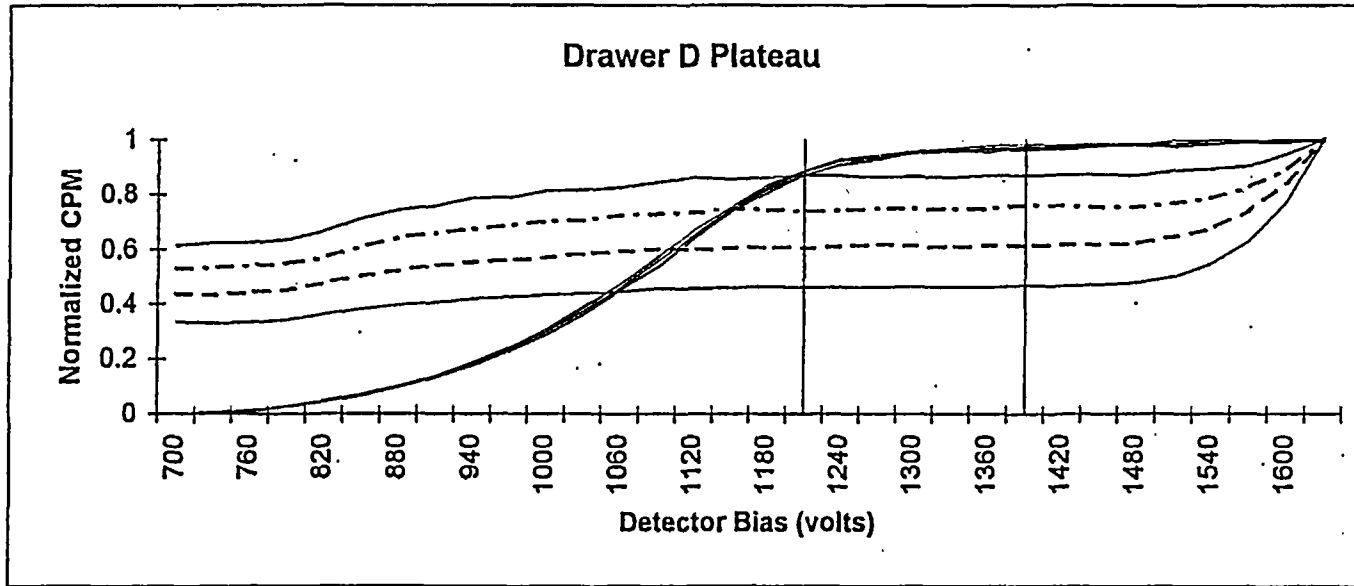
	C1	C2	C3	C4
Beta slope at beta voltage	1.97%	2.08%	1.59%	2.05%
Alpha slope at beta voltage	0.49%	0.66%	0.69%	-0.24%
Alpha slope at alpha voltage	0.44%	1.15%	1.08%	1.14%

Handwritten: 11/13/03

000201

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%

000202

GE
 11/13/03

LB4100-B Raw counts for ~~41 Wine Efficiency Calibration~~ #1125

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

000203

EAW1226.XLD

Printed 1/5/04 10:28 AM

AK
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

12/11/03 Complete computer back-up was performed.
 JE Scan disk was done and the computer's C:\
 drive was defragmented.
 File name ^{12/11/03} 12/11/03 LB4100-B

Pg. 12/16/03

12/24/03 Am-241 wipe Calibration
 JE Am-241 on filter

Source: F3 Source ID: 1123 log file: Am Wipe-11/03

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

2.7B x-talk is calculated for each detector using
 the following equation:

counts in Beta channels / counts in Alpha channels

12/26/03 Sr-90 wipe Calibration
 JE Sr-90 on filter

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

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

6.72 x-talk is calculated for each detector using
 the following equation:

counts in ^{2.7B} ^{12/26/03} Beta channels / counts in Beta channels
 Alpha

Continued on Page

Read and Understood By

Clare Brink

Signed

1/2/04

Date

Patricia Johnson

Signed

1/2/04

000205

pg 265878 a
 (cont. from pg NA b)

Paragon Analytics, Inc.
 Low Background Gas Flow Proportional Counter Log
 Instrument: **LB4100B**

SOP 724 v 8

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow	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
1 700	A 0.1	1	JE		P		JE		P		✓	9	JE		P		JE		P		✓
2 2000	B	2									✓	10									✓
	C	3									✓	11									✓
	D	4									✓	12									✓
		5									✓	13									✓
		6									✓	14									✓
		7									✓	15									✓
		8	✓				✓		✓		✓	16	✓								✓

Bkg. Cal. File ID

Dr A	Bk B1220W
Dr B	
Dr C	
Dr D	

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
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	
	0312081-1	AB031222-1	2/B	ABB1226	60	102642	JE	JE	12/20/03	
2	-1D									
3	-1A3									
4	-1A5D									
5	-2									
6	-3									
7	AB031222-1A3									
8	-1L65									
9	0312082-1	SR031222-2	5r-9a	SRB1226	60	102040	JE			
10	-2									
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

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

Comments:

Reviewed by CJ

Date 12/29/03

000206

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	SR031222-2.4B									
5	↓ -2105									
6	SR031222-3105	SR031222-3	S1-9.0	SRB1226B	60	1223	JE			
7	0312118-1	AB031222-2	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	AB031222-2	2/B	ABB1226B	60	1339	JE	JE	12/26/03	
2	↓ -10A5									
3	↓ -11									
4	↓ -12									
5	↓ -13									
6	↓ -13D									
7	AB031222-2.4B									
8	↓ -2105									
1	73	NA	AN-24 1/2 Cc/b.	EAW1226	10	1459	JE	JE	12/26/03	
2	↓	↓	↓	↓ A	↓	1505	JE	↓	↓	↓

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

Reviewed g Date 12/29/03

Comments:

000207

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

Paragon Analytics, Inc.
 Low Background Gas Flow Proportional Counter Log
 Instrument: **LB4100B**

SOP 724 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. Cat. File ID

Dr A	BK B1220L
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

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cntnt Below
3	73	VA	Am-241 wipe Cat b	E561226B	10	1511	JE	SE	12/26/03	NA
4						1516				
5						1522				
6						1527				
7						1533				
8						1540				
9						1545				
10						1552				
11						1556				
12						1603				
13						1607				
14						1616				
15						1621				
16						1626				
1	602	VA	St-70 wipe Cat b	E561226L	2	1523	JE	JE	12/26/03	
2						1524				
3						1526				

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

Reviewed by Gy

Date 12/29/03

Comments:

000208

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

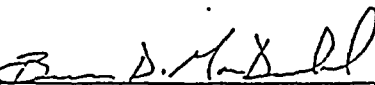
47007-307

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, Physicist

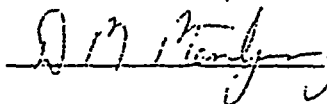
ISOTOPE:	Am-241
ACTIVITY (dps):	160.4
HALF-LIFE:	432.2 years
CALIBRATION DATE:	September 1, 1993 12:00 EST
TOTAL ERROR:	4.0%
SYSTEMATIC ERROR:	2.6%
RANDOM ERROR:	1.4%

43 mm active area. Low smooth bottom planchet. Source covering 0.85 mg/cm² 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

 9-20-93

~~Am-241 Standard~~ for Gas Flow Use

Std: 73
 Date: 12/23/03

Known Act.:		160.4	dps	4335.1	pCi/s			
						Ave Rec w/in 5% (PAI)	Ave w/in 2 Std Dev (ICPT)	2 Std Dev w/in 10% Ave (ICPT)
	Det	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery			
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)

000210

031983D02.SPC Analyzed by 72

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

Table with 9 columns: PK.#, ENERGY (keV), ADDRESS CHANNEL, NET/MDA COUNTS, UN-CERTAINTY, C.L. COUNTS, BKG COUNTS, FWHM (keV), FLAG. Contains 3 rows of peak data.

031983D02.SPC Analyzed by

SEEKER BACKGROUND SUBTRACT RESULTS 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

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 E (keV)	N T	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

 SEEKER G A M M A A N A L Y S I S R E S U L T S P S 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 BACKGROUND SUBTRACT RESULTS 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 FINAL ACTIVITY REPORT 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

Table with columns: Nuclide, ENERGY (keV), N T, Concentration (pCi/sample), MDA, Critical Level, Halflife (hrs). Rows include Am-241, Cd-109, Co-57, Ce-139, Hg-203, Sn-113, Cs-137, Y-88, Co-60.

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

UNKNOWN, SUM or ESCAPE PEAKS

Table with columns: PK.#, ENERGY (keV), ADDRESS CHANNEL, NET COUNTS, UN-CERTAINTY, C.L. COUNTS, BKG COUNTS, FWHM (keV), FLAG. Row 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 BACKGROUND SUBTRACT RESULTS 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

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 E (keV)	N T Concentration (pCi/sample)	MDA	Critical Level	Half-life (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

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

000221

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

12/11/03

JE

Complete computer back-up was performed.
Scandisk was done and the computer's C:/
drive was defragged.

File name: ~~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

File names: 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:
 $\text{counts in Beta channels} / \text{counts in Alpha channels}$

12/26/03

JE

Sr-90 wipe Calibration

Sr-90 on filter

Source: 602

Source ID: 1124

log file: Sr90

Sr Wipe - 11/03

File names: 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:
 $\text{counts in } \begin{matrix} \text{Beta} \\ \text{Alpha} \end{matrix} \text{ channels} / \text{counts in Beta channels}$

Continued on page

Read and Understood By

Clare Smith

Signed

1/2/04

Date

Salin Ellingson

Signed

1/2/04

000223

Py 265878 a
 (cont. from pg A b)

Paragon Analytics, Inc.
 Low Background Gas Flow Proportional Counter Log
 Instrument: **LB4100B**

SOP 72 v 8

Date: 12/26/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1700	A 0.1
2200	B
	C
	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									✓

Bkg. Cal. File ID

Dr A	BK B1220V
Dr B	
Dr C	
Dr D	

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	BK B1226	60	0908	JE	JE	12/26/03	
1	0312081.1	AB031222-1	2/B	ABB1224	60	102042	JE	JE	12/26/03	
2	-1D									
3	-1A5									
4	-1A5D									
5	-2									
6	-3									
7	AD031222-1A8									
8	-1L65									
9	0312082.1	SR031222-2	Sr-9a	SRB1226	60	102040	JE			
10	-2									
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

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

Comments:

Reviewed by CJ Date 12/29/03

000224

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	S1-9.0	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-10			SRB1226A	60	1230	JE	JE	12/26/03	
2	031228-4									
3	↓ -4D									
4	SR031222-24B									
5	↓ -2105									
6	SR031222-3105	SR031222-3	S1-9.0	SRB1226B	60	1223	JE	JE	12/26/03	
7	0312118-1	ABB031222-2	2/B	ABB1226A	60	1223	JE	JE	12/26/03	
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	ABB031222-2	2/B	ABB1226B	60	1339	JE	JE	12/26/03	
2	-1015									
3	-11									
4	-12									
5	-13									
6	-13D									
7	ABB031222-24B									
8	↓ 2105									
1	73	NA	10-24 1/2 Cc/lb.	ETW1226	10	1459	JE	JE	12/26/03	
2	↓	↓	↓	↓ A	↓	1505	JE	↓	↓	↓

Comments:

000225

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

Paragon Analytics, Inc.
 Low Background Gas Flow Proportional Counter Log
 Instrument: **LB4100B**

SOP 724 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 2.000	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										

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	Comnt Below
3	73	NA	Am-241 4.75 Cal b	EA31226B	10	1511	JE	SE	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		1621				
16				O		1626				
1	602	NA	Si-30 10.75 Cal b	ES61226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

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

Reviewed by G Date 12/29/03

000226

Paragon Analytics, Inc.
Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test <small>Sp. 70 min. Cell</small>	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
4	CO2	NA	<small>Sp. 30 min. Cell</small>	ESW12260	12	1529	JE	JE	12/24/03	NA
5			<small>Sp. 90 min. Cell</small>	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				
1.15	BKG Check	NA	NA	BKB1226A	60	1633	JE	JE	12/26/03	
1	0310215-16	SR031210-2	Si-90	SRB1226C	1700	1748	JE	JE	12/27/03	
2										
3										
4										
5										
6										
7										
8										
9	SR031210-2.48									
10										
11	0312081-1	SR031222-1	Si-90	SRB1226D	200	1751	JE			
12										
13										
14										
15	SR031222-1.21									
16	Comments:									

Reviewed JE Date 12/29/03
1751 JE JE 12/29/03 NA

000227

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

62753A-307

*FAT ID 0602
rec'd 12-11-01
EJW 12-14-01*

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/cm² 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: *UM, mty* 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.	41233.8	dpm

Standards	Pos.	GCPM	BCPM	NCPM	% Yield	DPM Added	E/E	Ave. Eff.	Calibrated Efficiency	Calc DPM	Avg. DPM	2 StdDev	Obs w/in 5% of Cert.	Cert. Value w/in 2sig	2sig < 10% of mean
602	D1	14798.60	1.54	14797.06	100%	35277.50	0.4194		0.4195				(PAI Req.)	(ICPT Req.)	(ICPT Req.)
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	17398.20	1.54	17394.66	100%	41233.81	0.4219		0.4195	41487.32					
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

instr:ipswipe

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

000229

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. 07/28/03 JE

Date file name: SR81221
 Batch ID: VER
 Count Preset (mj): 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:	1.21550	Beta b:	1.0000
m:	0.89498	m:	0.8999
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	
b -> b x talk m:	0.2740	b -> a x talk m:	-2.80E-08
a -> b x talk b:	1.0010	b -> a x talk 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 x talk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b x talk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	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	1.643	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

000230

PAI - Gas Flow Proportional Sample Analysis LB4100-B

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

Data file name: SR81221A
 Batch ID: VER
 Count Preset (m): 5
 Batch Ended: 12/21/03 12:02

Background: (GABY)
 Date of Bkg.: 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

$y = b/m^2(m^2(mass-x0))$		$y = b/m^2(m^2(mass-x0))$	
Alpha bc	1.24350	Bz/c	1.0000
m	0.99409		0.9999
a	1.0000		1.0000
x	0.0000		0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
$y = m^2b^2mass$		$y = m^2b^2mass + b$	
a -> b xtalk m	0.2748	b -> a xtalk m	-2.00E-08
a -> b xtalk b	1.0019	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	1.248	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

0 .

5 .

000231

AG
12/23/03

PAI - Gas Flow Proportional Sample Analysis LB4100-B

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

Data file name: SRS12218
 Batch ID: VER
 Count Preset (m): 3
 Batch Ended: 12/21/03 12:09

Background logfile: BKQABW
 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*(e/(mass-x0))		y = b*m*(e/(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.99800
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							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtalk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	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	6.330	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	1.806	6.905	0.4195	1.000	n/a	n/a

000232

AG
12/23/03

py 265874 a
(cont. from pg NA b)

Paragon Analytics, Inc.
Low Background Gas Flow Proportional Counter Log
Instrument: LB4100B

SOP 72 Rev 9

Date: 12/21/03

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow	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
1700	A 0.1	1	JE		P		NP		*		✓	9	JE		P		NP		*		✓
2800	B	2									✓	10		JE	R	P					✓
	C	3									✓	11			P						✓
	D	4									✓	12									✓
		5									✓	13									✓
		6									✓	14									✓
		7									✓	15									✓
		8									✓	16									✓

Bkg. Cal. File ID

Dr A	BKB1221
Dr B	
Dr C	
Dr D	

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
1-16	DR Check	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	E.FB1221A	36	1125	JE	SE	12/21/03	
1	0312072-1	A B 631215-3	2/P	4081221	1000	1132	JE	JE	12/22/03	7/1/03
2	-1D									
3	.2									
4	.2MS									
5	A 0031215-314B									
6	.3LCS									
13	602	-	50-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14	729	-								
15	73	-	Am-241 wipe Ver	AMB1221	5	1151	JE			
10	601	-								
14	602	-	50-90 wipe Ver	SRB1221A	5	1157	JE	SE	12/21/03	
15	729	-								
13	73	-	Am-241 wipe Ver	AMB1221A	5	1158	JE			
14	601	-								
15	602	-	50-90 wipe Ver	SRB1221B	5	1204	SE	JE	12/21/03	

Form 7806.frm (4/6/2001)

Reviewed by 7/6 Date 12/22/03

Comments: * Since weekly bkg just finished, daily bkg were not done. 7/6 12/21/03.

000233

Low Background Gas Flow Proportional Counter Run Log

Instrument: LB4100B

Date: 12/21/03

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmpt Below
13	729	-	SI-90 u.p.c. Ver	SRB1221B	5	1209	SE	JE	12/21/03	NA
11	729 73	-	AM-241 u.p.c. Ver	AMB1221B	5	1205	JE	↓	↓	↓
9	601	-	↓	↓	↓	↓	N	↓	↓	↓
12/22/03										

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

Reviewed AE Date 12/22/03

Comments:

000234

022604-20-01	GROSS BETA	0.45	DPM/sample	1.41	N	U	P
022604-20-01-LR	GROSS BETA	1.14	DPM/sample	1.38	N	UNC	P
022604-20-02	GROSS BETA	-0.12	DPM/sample	1.48	N	U	P
022604-20-03	GROSS BETA	0.3	DPM/sample	1.44	N	U	P
022604-20-04	GROSS BETA	0.17	DPM/sample	1.48	N	U	P
022604-20-05	GROSS BETA	0.3	DPM/sample	1.48	N	U	P
022604-20-06	GROSS BETA	0.34	DPM/sample	1.45	N	U	P
022604-20-07	GROSS BETA	-0.19	DPM/sample	1.65	N	U	P
022604-20-08	GROSS BETA	-0.41	DPM/sample	1.56	N	U	P
022604-20-09	GROSS BETA	0.28	DPM/sample	1.5	N	U	P
022604-20-10	GROSS BETA	0.57	DPM/sample	1.38	N	U	P
022604-20-11	GROSS BETA	-0.06	DPM/sample	1.42	N	U	P
022604-20-11-LR	GROSS BETA	0.41	DPM/sample	1.4	N	UNC	P
022604-20-12	GROSS BETA	0.35	DPM/sample	1.4	N	U	P
022604-20-13	GROSS BETA	0.37	DPM/sample	1.41	N	U	P
022604-20-14	GROSS BETA	-0.02	DPM/sample	1.47	N	U	P
022604-20-15	GROSS BETA	0.38	DPM/sample	1.44	N	U	P
022604-20-16	GROSS BETA	0.05	DPM/sample	1.48	N	U	P
022604-20-17	GROSS BETA	-0.02	DPM/sample	1.49	N	U	P
022604-20-18	GROSS BETA	1.42	DPM/sample	1.43	N	U	P
022604-20-19	GROSS BETA	0.65	DPM/sample	1.45	N	U	P
022604-20-20	GROSS BETA	-0.12	DPM/sample	1.65	N	U	P
022604-20-20FD	GROSS BETA	0.24	DPM/sample	1.48	N	U	P
022604-20-21	GROSS BETA	0.49	DPM/sample	1.39	N	U	P
022604-20-21-LR	GROSS BETA	-0.2	DPM/sample	1.8	N	UNC	P
022604-20-22	GROSS BETA	0.22	DPM/sample	1.41	N	U	P
022604-20-23	GROSS BETA	0.17	DPM/sample	1.48	N	U	P
022604-20-24	GROSS BETA	0.93	DPM/sample	1.45	N	U	P
022604-20-25	GROSS BETA	-0.44	DPM/sample	1.49	N	U	P
022604-20-25FD	GROSS BETA	0.62	DPM/sample	1.49	N	U	P
022604-20-26	GROSS BETA	0.22	DPM/sample	1.49	N	U	P
022604-20-27	GROSS BETA	0.71	DPM/sample	1.42	N	U	P
022604-20-28	GROSS BETA	1.21	DPM/sample	1.45	N	U	P
022604-20-29	GROSS BETA	0.18	DPM/sample	1.65	N	U	P
022604-20-30	GROSS BETA	0.33	DPM/sample	1.57	N	U	P
022604-20-31	GROSS BETA	0.4	DPM/sample	1.5	N	U	P
022604-20-31-LR	GROSS BETA	1.1	DPM/sample	1.6	N	UNC	P
022604-20-32	GROSS BETA	0.2	DPM/sample	1.7	N	U	P
022604-20-33	GROSS BETA	0.34	DPM/sample	1.66	N	U	P
022604-20-34	GROSS BETA	0.97	DPM/sample	1.52	N	U	P
022604-20-35	GROSS BETA	0.26	DPM/sample	1.44	N	U	P
022604-20-36	GROSS BETA	-0.33	DPM/sample	1.6	N	U	P
022604-20-37	GROSS BETA	0.09	DPM/sample	1.53	N	U	P
022604-20-38	GROSS BETA	0.83	DPM/sample	1.56	N	U	P
022604-20-39	GROSS BETA	0.3	DPM/sample	1.57	N	U	P
022604-20-40	GROSS BETA	1.12	DPM/sample	1.5	N	U	P
022604-20-41	GROSS BETA	0.47	DPM/sample	1.48	N	U	P
022604-20-41FD	GROSS BETA	0.62	DPM/sample	1.44	N	U	P
022604-20-41-LR	GROSS BETA	-0.24	DPM/sample	1.39	N	UNC	P
022604-20-FB	GROSS BETA	-0.51	DPM/sample	1.42	N	U	P

022604-20-01	GROSS ALPHA	0.01	DPM/sample	0.68	N	U	P
022604-20-01-LR	GROSS ALPHA	0.02	DPM/sample	0.63	N	UNC	P
022604-20-02	GROSS ALPHA	-0.11	DPM/sample	0.75	N	U	P
022604-20-03	GROSS ALPHA	-0.21	DPM/sample	0.77	N	U	P
022604-20-04	GROSS ALPHA	-0.01	DPM/sample	0.69	N	U	P
022604-20-05	GROSS ALPHA	-0.27	DPM/sample	0.88	N	U	P
022604-20-06	GROSS ALPHA	0.2	DPM/sample	0.76	N	U	P
022604-20-07	GROSS ALPHA	-0.15	DPM/sample	0.71	N	U	P
022604-20-08	GROSS ALPHA	-0.08	DPM/sample	0.73	N	U	P
022604-20-09	GROSS ALPHA	0.01	DPM/sample	0.76	N	U	P
022604-20-10	GROSS ALPHA	-0.1	DPM/sample	0.63	N	U	P
022604-20-11	GROSS ALPHA	0.34	DPM/sample	0.73	N	U	P
022604-20-11-LR	GROSS ALPHA	0.35	DPM/sample	0.67	N	UNC	P
022604-20-12	GROSS ALPHA	-0.01	DPM/sample	0.67	N	U	P
022604-20-13	GROSS ALPHA	-0.07	DPM/sample	0.68	N	U	P
022604-20-14	GROSS ALPHA	-0.19	DPM/sample	0.75	N	U	P
022604-20-15	GROSS ALPHA	-0.06	DPM/sample	0.77	N	U	P
022604-20-16	GROSS ALPHA	0.03	DPM/sample	0.69	N	U	P
022604-20-17	GROSS ALPHA	0.01	DPM/sample	0.88	N	U	P
022604-20-18	GROSS ALPHA	0.29	DPM/sample	0.73	N	U	P
022604-20-19	GROSS ALPHA	0.2	DPM/sample	0.76	N	U	P
022604-20-20	GROSS ALPHA	0.29	DPM/sample	0.71	N	U	P
022604-20-20FD	GROSS ALPHA	0.26	DPM/sample	0.69	N	U	P
022604-20-21	GROSS ALPHA	0.06	DPM/sample	0.72	N	U	P
022604-20-21-LR	GROSS ALPHA	0.12	DPM/sample	0.96	N	UNC	P
022604-20-22	GROSS ALPHA	0.01	DPM/sample	0.68	N	U	P
022604-20-23	GROSS ALPHA	0.01	DPM/sample	0.75	N	U	P
022604-20-24	GROSS ALPHA	0.17	DPM/sample	0.77	N	U	P
022604-20-25	GROSS ALPHA	0.3	DPM/sample	0.69	N	U	P
022604-20-25FD	GROSS ALPHA	-0.11	DPM/sample	0.89	N	U	P
022604-20-26	GROSS ALPHA	0.01	DPM/sample	0.88	N	U	P
022604-20-27	GROSS ALPHA	0.05	DPM/sample	0.73	N	U	P
022604-20-28	GROSS ALPHA	0.35	DPM/sample	0.76	N	U	P
022604-20-29	GROSS ALPHA	-0.11	DPM/sample	0.71	N	U	P
022604-20-30	GROSS ALPHA	0.26	DPM/sample	0.74	N	U	P
022604-20-31	GROSS ALPHA	0.01	DPM/sample	0.76	N	U	P
022604-20-31-LR	GROSS ALPHA	-0.11	DPM/sample	0.64	N	UNC	P
022604-20-32	GROSS ALPHA	-0.12	DPM/sample	0.79	N	U	P
022604-20-33	GROSS ALPHA	0.15	DPM/sample	0.69	N	U	P
022604-20-34	GROSS ALPHA	0.4	DPM/sample	0.6	N	U	P
022604-20-35	GROSS ALPHA	0.02	DPM/sample	0.6	N	U	P
022604-20-36	GROSS ALPHA	-0.01	DPM/sample	0.66	N	U	P
022604-20-37	GROSS ALPHA	0.21	DPM/sample	0.65	N	U	P
022604-20-38	GROSS ALPHA	0.03	DPM/sample	0.66	N	U	P
022604-20-39	GROSS ALPHA	0.09	DPM/sample	0.69	N	U	P
022604-20-40	GROSS ALPHA	-0.21	DPM/sample	0.71	N	U	P
022604-20-41	GROSS ALPHA	-0.03	DPM/sample	0.75	N	U	P
022604-20-41FD	GROSS ALPHA	-0.02	DPM/sample	0.77	N	U	P
022604-20-41-LR	GROSS ALPHA	0.18	DPM/sample	0.62	N	UNC	P
022604-20-FB	GROSS ALPHA	0.09	DPM/sample	0.73	N	U	P