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 T[illegible]: Beta and Alpha Scan Data
Survey Unit: Laboratory B2109
Building 53, Denver Federal Center

Laboratory ID		Action Criteria	Individual Measurements											
Beta Scans														
B2109	Bkg. Value	$MDCR_{Surveyor}$												
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	No. of meas./locs	10
Wall Board	345	690.0											Maximum	444.0
													Mean	398.8
													Standard Deviation	27.28
													No. > $MDCR_{Surveyor}$	0
Alpha Scans														
B2109		Bkg. Value												
Floor Tile		5.8	4.0	2.0	5.0	1.0	4.0	4.0	2.0	3.0	1.0	3.0	No. of meas./locs	10
Wall Board													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.

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

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements										
Systematic Direct Read Locations													
B2109												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
Bias Direct Read Locations													
B2109												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

Quality Control; Field Duplicate Performance (Criteria <20%)	*1st*	*2nd*	*RPD*
B2109			
Location E-08	464	489	-5
Location E-11	326	400	-20

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

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

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements										
Systematic Direct Read Locations													
B2109												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
Bias Direct Read Locations													
B2109												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

Quality Control; Field Duplicate Performance (Criteria <20%)	*1st*	*2nd*	*RPD*
B2109			
Location E-08	5	-2	467
Location E-11	12	19	-45

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

Final Status Data Summary Table: Beta Wipe Sample Results
Survey Unit: Laboratory B2109
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements		
Systematic Direct Read Locations					
B2109				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,	Maximum	80.0
Wall	200 dpm/100cm^2	200 dpm/100cm^2	exceeding it's respecive MDC of 1.0 dpm/100cm2	Mean	na
Floor	200 dpm/100cm^2	200 dpm/100cm^2	All other sample results were reported as non-detected at < 1.8 dpm/100cm^2	Standard Deviation	na
				No. > Administrative Goal	0
				No. > Release Criteria	0
Bias Direct Read Locations					
B2109				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

Quality Control; Field Duplicate Performance (Criteria <20%)	*Regular*	*Field Duplicate*	*Field Splits*	*RPD*
B2109				
Location E-08	nd	nd	nd	nc
Location E-11	nd	nd	nd	nc

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

Final Status Data Summary Table: Alpha Wipe Sample Results
Survey Unit: Laboratory B2109
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements		
Systematic Direct Read Locations					
B2109				No. of meas./locs	30
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
Bias Direct Read Locations					
B2109				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

Quality Control; Field Duplicate Performance (Criteria <20%)	*Regular*	*Field Duplicate*	*Field Splits*	*RPD*
B2109				
Location B-01	nd	nd	nd	nc
Location B-08	nd	nd	nd	nc
Location B-10	nd	nd	nd	nc

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

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115	DATE: 02-27-04	TIME START: 0915	TIME COMPLETE: 0930
LOCATION: EPA NEIC RM 2109	SURVEYOR(S): Wise / Trent			PAGE 1 OF 10
Denver Federal Center, CO	SURVEY NUMBER: 022704-23			
Denver, CO	MAP ID: LAB B2109			

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

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

Source Check Date	Contamination Surveys				Radiation Surveys
[redacted]	α (TOTAL)	α (TOTAL)	β-γ (TOTAL)	β-γ (TOTAL)	Beta-Gamma
Instrument	184904 / 185768	185774	184904 / 185768	185774	NA
Source Type and I.D.	Th-230, 1170/89	Th-230, 1170/89	Cs-137, 92CS5000	Cs-137, 92CS5000	
Source Strength in dpm	13800	13800	769565	769565	Cs
Efficiency	0.13 / 0.15	0.15	0.16 / 0.17	0.18	[redacted]
MDC in dpm/100 cm²	See attached instrument sheets for material specific backgrounds and MDC's.				Set. ☐ Unset. ☐
Background in cpm					mrad/hr or µrem/hr

REASON FOR SURVEY
☒ PROCEDURE NO. FINAL STATUS SURVEY PLAN
☑ SPECIAL Judgmental SCAN
☐ ROUTINE

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

COMMENTS:

1-5 # 185768 6-10 # 184904

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #		
	ALPHA (TOTAL) 2360 , 184904	BETA-GAMMA (TOTAL) 2360 , 185768
	ALPHA (TOTAL) , N/A	BETA-GAMMA (TOTAL) , N/A
	ALPHA (TOTAL) ,	BETA-GAMMA (TOTAL) ,

[redacted]	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☑ Beta cpm ☑ Material ☑	Item or Location
1					FT	C-6
2					FT	D-5
3					FT	C-3
4					FT	C-1
5					FT	E-2
6					FT	H-1
7					FT	E-5
8	ND				FT	I-4
9					FT	F-2
10					FT	E-1
11						
12						
13			A			
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

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

RCS REVIEW [signature] DATE 3.2.04

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room RM 2109	PAGE 2 OF 10
COMMENTS:	SURVEYOR(S): Wade Henck	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:	DATE: 3-2-04		

Grid Intersection C, 6

4 cpm

349 cpm

Grid Intersection D, 5

2 cpm

377 cpm

Contamination / Irradiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room RM 2109		PAGE 3 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:	DATE: 3.2.04		

Grid Intersection C.3

5 cpm

404 cpm

Grid Intersection C.1

1 cpm

381 cpm

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: / Laboratory-Room RM 2109		PAGE 4 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: [signature]	DATE: 3.2.04		

Grid Intersection E, 2

4 cpm

444 cpm

Grid Intersection H, 1

4 cpm

417 cpm

Contamination / Irradiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room RM 2109	PAGE 5 OF 10
COMMENTS:	SURVEYOR(S): Will / Frank	SURVEY NUMBER: 022707-23	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: [signature]	DATE: 3-2-04		

Grid Intersection H, 5

2cpm

420cpm

Grid Intersection I, 4

3cpm

380cpm

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
RCS REVIEW: [signature]	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 F, 2

1cpm

403 cpm

Grid Intersection G, 1

3cpm

413cpm

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION:	/ Laboratory-Room RM 2109	PAGE 7 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:	DATE: 3-2-04		

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

3.2.04

Pa-8 of
022704-23

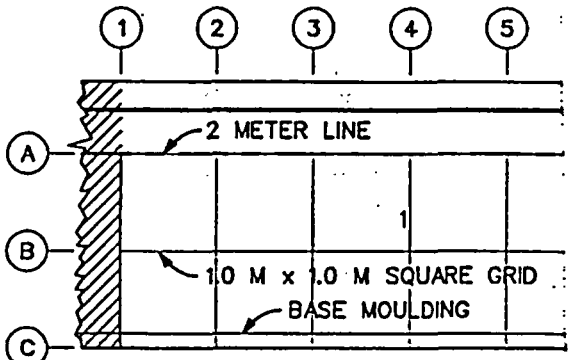
MDCRsurveyor Scanning Levels for Specific Materials

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

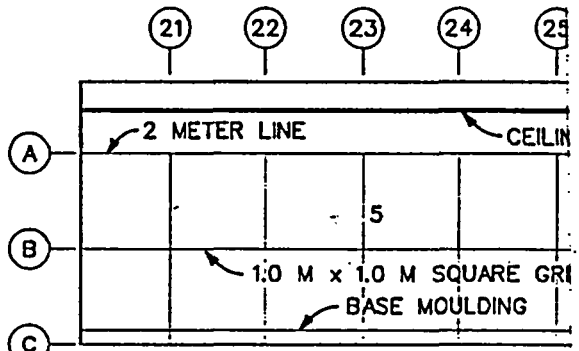
Wall Board	**(WB)**	BKGD CPM	230.00	MDCR surveyor	345	gross cpm
Floor tile	**(FT)**	BKGD CPM	275.22	MDCR surveyor	401	gross cpm
Wood	**(wo)**	BKGD CPM	210.12	MDCR surveyor	320	gross cpm
Concrete Floor	**(CF)**	BKGD CPM	357.50	MDCR surveyor	500	gross cpm
Metal	**(ME)**	BKGD CPM	256.10	MDCR surveyor	377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

3-2-04

Pg 9 of
022704-23



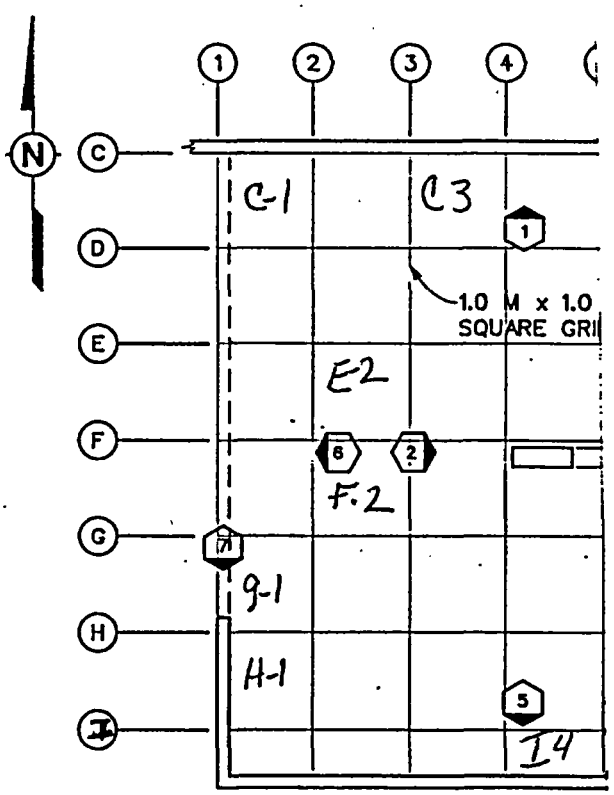
ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
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.



PLAN VIEW
SCALE: 1" = 2.0 m

FIGURE 3-12
REFERENCE GRID FOR LABORATORY B2109

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Shaw Shaw Environmental, Inc.

STARTING DATE: 25NOV03 | INITIATOR: R.COLLINS | TECH. REVIEW: R.COLLINS | DWG. NO.: 101115_neic_0010.dgn
DRAWN BY: C.E.TUMLIN | CADD REVIEW: C.BENTLEY | PROJ. MGR.: R.L.ROGERS | PROJ. NO.: 101115

r2d2-b&w-tabloid.pit
Standard_Color_Mod.tbl
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ctumlin
101115_neic_0010.dgn

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115
LOCATION: EPA NEIC	SURVEYOR(S): K. WISE / T. TRENT
Denver Federal Center, CO	SURVEY NUMBER: D22704 -24
Denver, CO	MAP ID: LAB B2109

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

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

Source Check Data	Contamination Surveys				Radiation Surveys
	α (TOTAL)	α (TOTAL)	β-γ (TOTAL)	β-γ (TOTAL)	Beta-Gamma
Instrument	184904 / 185768	185774	184904 / 185768	185774	NA
Source Type and I.D.	Th-230, 1170/89	Th-230, 1170/89	Cs-137, 92CS5000	Cs-137, 92CS5000	
Source Strength in dpm	13800	13800	769565	769565	Ok
Efficiency	0.13 / 0.15	0.15	0.16 / 0.17	0.18	
MDC in dpm/100 cm²	See attached instrument sheets for material specific backgrounds and MDC's.				Set. ☐ Unset. ☐
Background in cpm					mR/hr or µrem/hr

REASON FOR SURVEY ☒ PROCEDURE NO. FINAL STATUS SURVEY PLAN - DIRECT READINGS
☐ SPECIAL
☐ ROUTINE
Contamination ☒ By Shift ☐ Daily ☐ Weekly ☐ Monthly ☐
Radiation ☐ By Shift ☐ Daily ☐ Weekly ☐ Monthly ☐

COMMENTS: Item # 1-16 - 2360 185768 # 17-32 - 2360 184904
33-35 - 2360 185768 # 36-42 - 2360 184904

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #		
	ALPHA (TOTAL) 2360 , 184904	BETA-GAMMA (TOTAL) 2360 , 184904
	ALPHA (TOTAL) 2360 , 185768	BETA-GAMMA (TOTAL) 2360 , 185768
	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A

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

DATE: 02-27-04 TIME START: 0940 TIME COMPLETE: 1500 PAGE 1 OF 9

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☒	Item or Location
1	NA	-12	NA	643	WB	E-01
2		8		331		E-02
3		-2		444		E-03
4		-7		381		E-04
5		-10		482		E-05
6		-12		454		E-06
7		-3		751		E-07
8		-5		617		E-08 See Resurvey
9		-23		44		E-09
10		-22		515		E-10
11		-23		4		E-11 See Resurvey
12		-27		-128		E-12
13		-20		381		E-13
14		-23		-105		E-14
15		-26		7		E-15
16		-27		421	WB	E-16
17		12		-5937	BWFT	E-17
18		-6		-6053		E-18
19		9		-5808		E-19
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

RCS REVIEW [signature] 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
Denver Federal Center, Building 53
Denver, CO

SURVEYOR(S): K WISE / T. TRENT
SURVEY NUMBER: 022704-24
MAP ID: LAB B2109

COMMENTS:

RCS REVIEW [signature] DATE 3.16.04

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☑	Item or Location
26	NA	-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
32		-5		-6553	WB	Replicate E-11
33		-24		-896	FT	BS-2109-01
34		-12		619	WB	BS-2109-02
35		-30		-976	BWFT	BS-2109-03
36		-15		58		BS-2109-04
37		-19		-5859		BS-2109-05
38		-16		-6027		BS-2109-06
39		-24		-6504		BS-2109-07
40		-29		-6557		BS-2109-08
41		-35		-6461		BS-2109-09
42		-34		-6565	BWFT	BS-2109-10
43						
44						
45						
46			NA			
47						
48						
49						
50						

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
51						
52						
53						
54						
55						
56	See resurvey					
57	See resurvey					
58				NA		
59						
60						
61						
62						
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74						
75						

Contamination / R[illegible]ation 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: [signature]	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
RCS REVIEW: [signature] 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 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

Pg 5 of 7
1704-24
3.16.04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 185768

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Effciency 0.0375 dpm/cpm

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

Pg 6 of 7
022704-24
3.16.04

Material Specific Background and MDC Sheet for Beta Measurements

Instrument/SN: Ludlum 2360 / 185768 Background Count Time 5.00 minutes

Probe/SN: Ludlum 43-68 / RN012714 Total Instrument Effciency 0.0850 dpm/cpm

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

22704-24

3-16-04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 184904

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / PR138731

Total Instrument Effciency 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

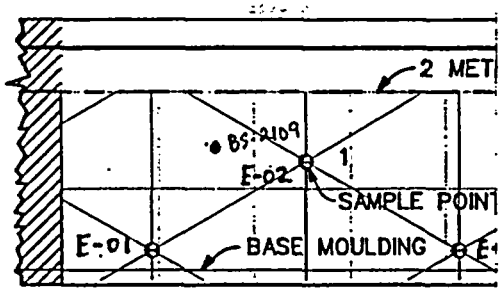
D22704-24
3-16-04

Material Specific Background and MDC Sheet for Beta Measurements

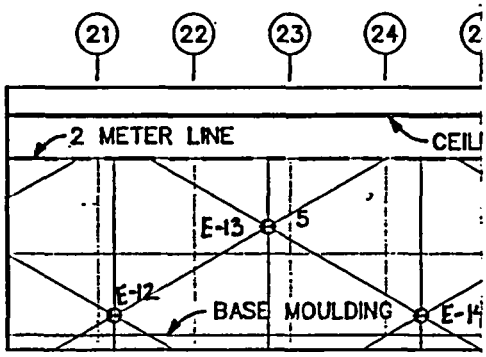
Instrument/SN: Ludlum 2360 / 184904 Background Count Time 5.00 minutes

Probe/SN: Ludlum 43-68 / PR138731 Total Instrument Effciency 0.0800 dpm/cpm

Wall Board	**(WB)**	265.14	cpm	**MDC**	276	dpm/100cm2	**Sample Count Time**	15.00	min
Floor Tile	**(FT)**	303.36	cpm	**MDC**	296	dpm/100cm2	**Sample Count Time**	15.00	min
Wood	**(WO)**	180.64	cpm	**MDC**	229	dpm/100cm2	**Sample Count Time**	15.00	min
Cement Floor	**(CF)**	449.28	cpm	**MDC**	359	dpm/100cm2	**Sample Count Time**	15.00	min
Metal	**(ME)**	311.78	cpm	**MDC**	300	dpm/100cm2	**Sample Count Time**	15.00	min
Concrete Block	**(CB)**	475.30	cpm	**MDC**	369	dpm/100cm2	**Sample Count Time**	15.00	min
Glass	**(GL)**	350.32	cpm	**MDC**	317	dpm/100cm2	**Sample Count Time**	15.00	min
Counter Top	**(CT)**	292.52	cpm	**MDC**	290	dpm/100cm2	**Sample Count Time**	15.00	min
Black&White Floor Tile	**(BWFT)**	982.02	cpm	**MDC**	530	dpm/100cm2	**Sample Count Time**	15.00	min
Wall Board Downstairs	**(WBD)**	270.32	cpm	**MDC**	279	dpm/100cm2	**Sample Count Time**	15.00	min



ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
SCALE: 1" = 2.0 m

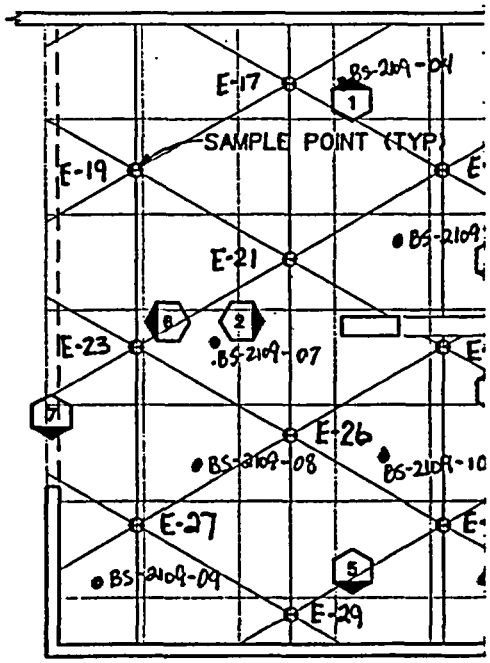
NOTES

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



PLAN VIEW
SCALE: 1" = 2.0 m

FIGURE 3-13
TRIANGULAR GRID FOR LABORATORY B2109

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Shaw Shaw Environmental, Inc.

DWG. NO.: 101115_neic_0011.dgn
PROJ. NO.: 101115
TECH. REVIEW: R.COLLINS
PROJ. MGR.: R.L.ROGERS
INITIATOR: R.COLLINS
CADD REVIEW: C.BENTLEY
STARTING DATE: 25NOV03
DRAWN BY: C.E.TUMLIN
r2d2-b&w-tabloid.plt
Standard_Color_Mod.tbl
12/2/2003
1:36:40 PM
2:0.0000 m:mm / IN.
ctumlin
101115_neic_0011.dgn

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				
Denver Federal Center, CO	SURVEY NUMBER: 030504-44				
Denver, CO	MAP ID: LAB B2109				

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

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

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

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

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

COMMENTS: Replicate Survey for data points E-08 and E-11 in LAB B2109

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #

ALPHA (TOTAL) 2360 / 185768	BETA-GAMMA (TOTAL) 2360 / 185768
ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A
ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A

[redacted]	Alpha Loose	Alpha Total	Beta-Gamma Loose	Beta-Gamma Total	Alpha cpm ☐ Beta cpm ☐ Material ☑	Item or Location
Item #	dpm/100cm²	dpm/100cm²	dpm/100cm²	dpm/100cm²		
1	NA	5	NA	464	WB	E-8
2	↓	-2	↓	489	WB	E-8
3	↓	12	↓	326	WB	E-11
4	↓	19	↓	400	WB	E-11
5						
6						
7						
8						
9						
10						
11						
12			N/A			
13						
14						
15						
16						
17						
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23						
24						
25						

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

RCS REVIEW [signature] 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
RCS REVIEW: [signature]	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.	

Background Checks (cpm)

alpha	beta
7	329
5	322

Contamination / I ation 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: [signature]	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

31 / 4196

26 / 4235

Replicate Counts E-11

36 / 3974

41 / 4092

030504-44

3-07-04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 185768

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Effciency 0.0375 dpm/cpm

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

0504-44

3-17-04

Material Specific Background and MDC Sheet for Beta Measurements

Instrument/SN: Ludlum 2360 / 185768

Probe/SN: Ludlum 43-68 / RN012714

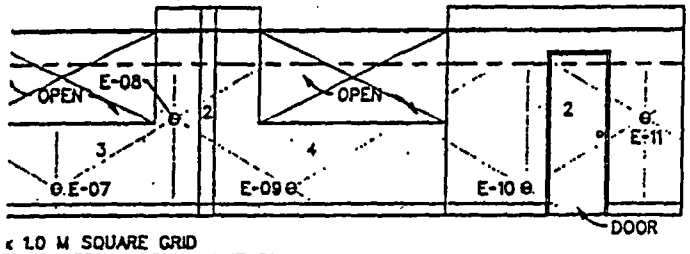
Background Count Time 5.00 minutes

Total Instrument Effciency 0.0850 dpm/cpm

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

030504-44

3-17-04



« 1.0 M SQUARE GRID
FOR REFERENCE ONLY (TYP)

UID
ONLY (TYP)

E POINT
ULAR

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

SCALE
0 2 4 METER

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 RM 2109	SURVEYOR(S): Trent				
Denver Federal Center, CO	SURVEY NUMBER: 022704-25				
Denver, CO	MAP ID: LAB B2109				

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

ACCEPTABLE SCAN LIMITS

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

REASON FOR SURVEY
☑ PROCEDURE NO. FINAL STATUS SURVEY PLAN
☐ SPECIAL Smear Survey
☐ ROUTINE

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

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

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

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
1	*NOTE	NA	*NOTE	NA	NA	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, FETITIOUS, OR FRAUDULENT STATEMENTS OR ENTRES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.

RCS REVIEW [signature] 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
Denver Federal Center, Building 53
Denver, CO

SURVEYOR(S): Wise / Hunt
SURVEY NUMBER: 022704-25
MAP ID: LAB B2109

COMMENTS:

RCS REVIEW _____ DATE _____

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
26						E-26
27						E-27
28						E-28
29						E-29
30						E-30
31						BS 2109 01
32						02
33		N				03
34						04
35						05
36						06
37						07
38					A	08
39						09
40						10
41						Duplicate E08FD
42						E-11 FD
43						
44						
45						
46						
47						
48						
49						
50						

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
51						
52						
53						
54						
55						
56						
57						
58						
59						
60		N				
61						
62						
63						
64					A	
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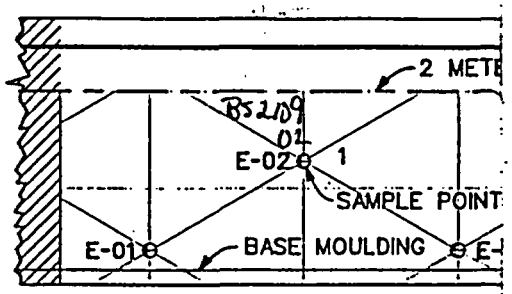
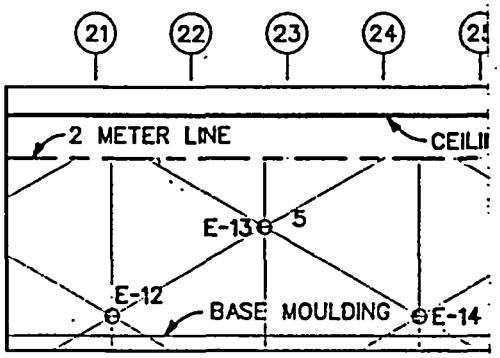
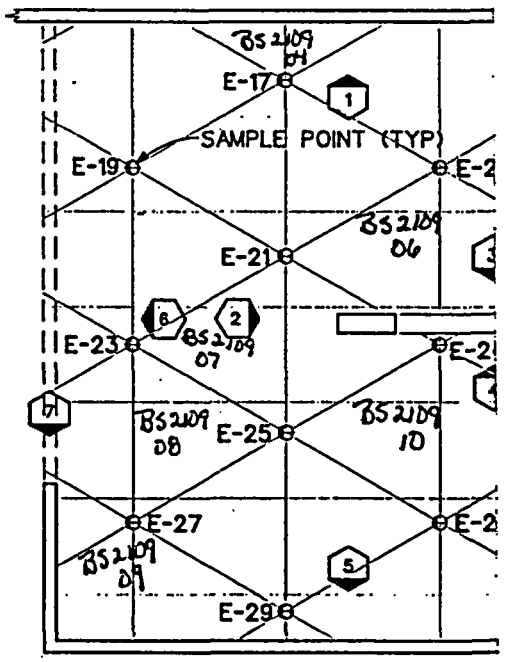


ELEVATION
SCALE: 1" = 2.0 m



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

Shaw Shaw Environmental, Inc.

STARTING DATE: 25NOV03	INITIATOR: R.COLLINS	TECH. REVIEW: R.COLLINS	DWG. NO.: 101115_neic_0011.dgn
DRAWN BY: C.E.TUMLIN	CADD REVIEW: C.BENTLEY	PROJ. MGR.: R.L.ROGERS	PROJ. NO.: 101115

r2d2-b&w-tabloid.plt
Standard_Color_Mod.tbl
12/17/03
01:35:47 PM

2:0.0000 mmm / IN.
Istout
101115_neic_0011.dgn

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,

Debbie Fazio

Paragon Analytics
Debbie Fazio
Project Manager

DJF/ja
Enclosure: Report

Shaw
Shaw Environmental & Infrastructure, Inc.

0403011

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: B216 022704-24
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	Report to:	Ben Dettore
Sample Team Members	K WISE	Carrier Waybill No.	NA		312 Directors Drive
	T TRENT				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 FSS Location E B-01	2/27/04 1500	Smear		
2	2	E B-02				
3	3	E B-03				
4	4	E B-04				
5	5	E B-05				
6	6	E B-06				
7	7	E B-07				
8	8	E 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 (Signature/Affiliation)	Date: 3-1-04 Time: 1042	1. Received by (Signature/Affiliation) SHAW SEI	Date: 3-1-04 Time: 1042
2. Relinquished by (Signature/Affiliation)	Date: 3-1-04 Time: ~~1400~~ 1421	2. Received by (Signature/Affiliation)	Date: 3-1-04 Time: 1420
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation) Paragon (*) Samples received 3/1/04. Processed on 3/2/04.	Date: 3-2-04 (8) Time: 1300

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

Shaw
Shaw Environmental & Infrastructure, Inc.

040301

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: B2109-022704-24

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 FSS Location E B-09	2/27/04 1500	Smear		
10	10	E B-10				
11	11	E B-11				
12	12	E B-12				
13	13	E B-13				
14	14	E B-14				
15	15	E B-15				
16	16	E B-16				
17	17	E B-17				
18	18	E B-18				
19	19	E B-19				
20	20	E B-20				
21	21	E B-21				
22	22	E B-22				
23	23	E B-23				
24	24	E B-24				
25	25	E B-25	1502			
26	26	E B-26				
27	27	E B-27				
28	28	E B-28				
29	29	E B-29				
30	30	E B-30				

Shaw
Shaw Environmental & Infrastructure, Inc.

0403011

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: B2109-02-04-24
Pg 3 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
31	022704-24-31	BS-2109-01	2/27/04 1502	Smear		
32	32	-02				
33	33	-03				
34	34	-04				
35	35	-05				
36	36	-06				
37	37	-07				
38	38	-08				
39	39	-09				
40	40	-10				
41	-8FD	Rm2109 FSSLoc -08 Field Dup.				
42	-11FD	Rm2109 FSSLoc -11 Field Dup.				
43	-FB	Field Blank				
		N				
		A				

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw - Knox WORKORDER NO: 0403011

PROJECT MANAGER: Deb Fazio INITIALS: [illegible] DATE: 3/2/04

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

Cooler #'s 1

Temperature Ambient (Red Only) °C

Project Manager Signature / Date: Debbie 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: 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: Debbie 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.

Clare Senica for — 3/16/04

Leah Balko — Date

Radiochemistry Instrument Technician

K. [illegible] — 3-16-04

Radiochemistry Final Data Review — Date

000001

1

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

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

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

BDL - Below Detection Limit

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 0403011

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
0403011-6	022704-24-06	Sample	GROSS ALPHA	-0.18 +/- 0.25	0.60	DPM/sample	WIPE	AB040305-5	3/10/04	U
0403011-6	022704-24-06	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	1.56	DPM/sample	WIPE	AB040305-5	3/10/04	U

Comments:

Data Package ID: *abf0403011-1*

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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

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
0403011-10	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*

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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

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:

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MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 0403011

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

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
PAI Work Order: 0403011

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

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

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

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

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

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

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
0403011-37	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

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

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

PARAGON ANALYTICS

Radiochemistry Data Package

2

Section 2

QC RESULTS SUMMARY

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Method Blank Results

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

Lab ID: AB040305-5MB

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: 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.
ClientProject ID: Denver NEIC 101115

Lab ID: AB040305-6MB

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.
ClientProject 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.
ClientProject ID: Denver NEIC 101115

Lab ID: 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
QCBatchID: 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
12587-46-1	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 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

Lab ID: AB040305-5BLCS

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.
ClientProject ID: Denver NEIC 101115

LabID: AB040305-6ALCS

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

Lab ID: AB040305-6BLCS

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.
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
12587-46-1	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 ID: AB040305-7BLCS

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

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

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.
ClientProject 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
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*

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

Field ID: 022704-24-21
Lab ID: 0403011-21DUP

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
12587-46-1	GROSS ALPHA	0.14 +/- 0.35	-0.19 +/- 0.36	0.66	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*

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

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 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
12587-46-1	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*

PARAGON ANALYTICS
Radiochemistry Data Package

3

Section 3

INDIVIDUAL SAMPLE RESULTS

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 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
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 +/- 0.51	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

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

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.
ClientProject ID: Denver NEIC 101115

FieldID: 022704-24-02
LabID: 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

Field ID: 022704-24-03
LabID: 0403011-3

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

Field ID:	022704-24-04
Lab ID:	0403011-4

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	-0.22 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID	022704-24-05
Lab ID	0403011-5

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	0.12 +/- 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	**Sample Matrix:** WIPE	**Prep Batch:** AB040305-5	**Final Aliquot:** 1.00 sample
Lab ID: 0403011-6	**Prep SOP:** PAI 702 Rev 16	**QCBatchID:** AB040305-5-1	**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: 10-Mar-04	**Report Basis:** As Received	**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
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	0.19 +/- 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

Field ID:	022704-24-08
Lab ID:	0403011-8

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	0.34 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID:	022704-24-09
Lab ID:	0403011-9

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 +/- 0.33	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.
ClientProject ID: Denver NEIC 101115

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

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.
ClientProject 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
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	-0.06 +/- 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 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

FieldID	022704-24-12
LabID	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.
ClientProject 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.
ClientProject 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 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 +/- 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

Field ID:	022704-24-16
Lab ID:	0403011-16

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

Field ID: 022704-24-17
Lab ID: 0403011-17

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	0.03 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID	022704-24-18
Lab ID	0403011-18

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	0.01 +/- 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

Field ID	022704-24-19
Lab ID	0403011-19

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.
ClientProject ID: Denver NEIC 101115

Field ID	022704-24-20
Lab ID	0403011-20

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	0.09 +/- 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

Field ID: 022704-24-21
Lab ID: 0403011-21

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.
ClientProject ID: Denver NEIC 101115

FieldID: 022704-24-21
LabID: 0403011-21DUP

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	-0.19 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022704-24-23
Lab ID: 0403011-23

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.
ClientProject 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
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	0.30 +/- 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.
ClientProject 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 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 +/- 0.42	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:	022704-24-26
Lab ID:	0403011-26

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022704-24-27
Lab ID: 0403011-27

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

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	0.18 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022704-24-29
Lab ID: 0403011-29

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.
ClientProject 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

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

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	0.28 +/- 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

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 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

Field ID: 022704-24-32
Lab ID: 0403011-32

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022704-24-34
Lab ID: 0403011-34

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	-0.07 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022704-24-35
Lab ID: 0403011-35

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.
ClientProject ID: Denver NEIC 101115

Field ID	022704-24-36
Lab ID	0403011-36

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

FieldID: 022704-24-37	**Sample Matrix:** WIPE	**Prep Batch:** AB040305-6	**Final Aliquot:** 1.00 sample
LabID: 0403011-37	**Prep SOP:** PAI 702 Rev 16	**QCBatchID:** 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	-0.03 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022704-24-38
Lab ID: 0403011-38

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	-0.02 +/- 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

Field ID: 022704-24-39	**Sample Matrix:** WIPE	**Prep Batch:** AB040305-6	**Final Aliquot:** 1.00 sample
Lab ID: 0403011-39	**Prep SOP:** PAI 702 Rev 16	**QCBatchID:** 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022704-24-40
Lab ID: 0403011-40

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	-0.26 +/- 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

Field ID: 022704-24-11FD
Lab ID: 0403011-42

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

Field ID:	022704-24-FB
Lab ID:	0403011-43

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	0.03 +/- 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

4

Section 4

RAW DATA

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 / 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
[illegible]	[illegible]	[illegible]	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100	-0.01	0.96	DPM/sample	[illegible]	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A1	aba0301b	3:06 PM	0.171	NA	NA	0.54	NA	As Received	NA	U
[illegible]	[illegible]	[illegible]	AB040305-5	NA		[illegible]	[illegible]	[illegible]	[illegible]	3/10/04	2.370	40.74%	100	0.1	1.8	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A1	aba0301b	3:06 PM	2.280	NA	NA	1.1	NA	As Received	[illegible]	U
0403011-1	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.080	24.15%	100	0.02	0.64	DPM/sample	0.05	
DUP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A2	aba0310d	5:16 PM	0.075	NA	NA	0.33	NA	As Received	NA	U
0403011-1	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.990	40.26%	100	0.33	1.64	DPM/sample	0.13	
DUP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A2	aba0310d	5:16 PM	1.842	NA	NA	0.98	NA	As Received	NA	U
0403011-2	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.090	24.15%	100	0.06	0.64	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A2	aba0301b	3:06 PM	0.075	NA	NA	0.34	NA	As Received	NA	U
0403011-2	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	2.100	40.26%	100	0.60	1.64	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A2	aba0301b	3:06 PM	1.842	NA	NA	0.99	NA	As Received	NA	U
0403011-3	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.120	23.75%	100	0.01	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A3	aba0301b	3:06 PM	0.117	NA	NA	0.41	NA	As Received	NA	U
0403011-3	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	2.010	40.43%	100	-0.1	1.7	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A3	aba0301b	3:06 PM	2.037	NA	NA	1.0	NA	As Received	NA	U
0403011-4	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.040	24.44%	100	-0.22	0.69	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A4	aba0301b	3:06 PM	0.091	NA	NA	0.30	NA	As Received	NA	U
0403011-4	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	2.190	41.13%	100	0.5	1.7	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*A4	aba0301b	3:06 PM	1.972	NA	NA	1.0	NA	As Received	NA	U
0403011-5	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.100	25.10%	100	0.12	0.60	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B1	aba0301b	3:06 PM	0.068	NA	NA	0.33	NA	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 Recieved' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

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

Notes:

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

Abbreviations:

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 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 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
0403011-5	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.750	43.00%	100	-0.12	1.52	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B1	aba0301b	3:06 PM	1.786	NA	NA	0.88	NA	As Received	NA	U
0403011-6	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.030	25.86%	100	-0.18	0.60	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B2	aba0301b	3:06 PM	0.073	NA	NA	0.25	NA	As Received	NA	U
0403011-6	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.870	42.80%	100	0.66	1.43	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B2	aba0301b	3:06 PM	1.581	NA	NA	0.88	NA	As Received	NA	U
0403011-7	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.130	24.48%	100	0.19	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B3	aba0301b	3:06 PM	0.082	NA	NA	0.38	NA	As Received	NA	U
0403011-7	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.810	41.70%	100	-0.24	1.61	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B3	aba0301b	3:06 PM	1.883	NA	NA	0.93	NA	As Received	NA	U
0403011-8	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.160	24.23%	100	0.34	0.65	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B4	aba0301b	3:06 PM	0.076	NA	NA	0.41	NA	As Received	NA	U
0403011-8	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.790	42.83%	100	-0.09	1.53	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*B4	aba0301b	3:06 PM	1.798	NA	NA	0.89	NA	As Received	NA	U
0403011-9	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.080	25.48%	100	-0.05	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*C1	aba0301b	3:06 PM	0.090	NA	NA	0.33	NA	As Received	NA	U
0403011-9	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.860	41.18%	100	0.28	1.56	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*C1	aba0301b	3:06 PM	1.735	NA	NA	0.92	NA	As Received	NA	U
0403011-10	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.100	24.82%	100	0.01	0.69	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*C2	aba0301b	3:06 PM	0.094	NA	NA	0.36	NA	As Received	NA	U
0403011-10	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.980	41.32%	100	0.46	1.57	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	*C2	aba0301b	3:06 PM	1.774	NA	NA	0.94	NA	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 Recieved' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

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

Notes:

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

Abbreviations:

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 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 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
0403011-11	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.050	24.96%	100	-0.21	0.70	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	°C3	aba0301b	3:06 PM	0.101	NA	NA	0.31	NA	As Received	NA	U
0403011-11	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.560	43.00%	100	-0.47	1.50	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	°C3	aba0301b	3:06 PM	1.751	NA	NA	0.85	NA	As Received	NA	U
0403011-11	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.160	23.03%	100	-0.06	0.96	DPM/sample	0.26	
DUP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A1	aba0310d	5:16 PM	0.171	NA	NA	0.50	NA	As Received	NA	U
0403011-11	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	2.570	40.74%	100	0.6	1.8	DPM/sample	0.80	
DUP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A1	aba0310d	5:16 PM	2.280	NA	NA	1.1	NA	As Received	NA	U
0403011-12	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.110	23.99%	100	0.05	0.72	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	°C4	aba0301b	3:06 PM	0.098	NA	NA	0.38	NA	As Received	NA	U
0403011-12	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.670	42.01%	100	-0.63	1.60	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	°C4	aba0301b	3:06 PM	1.914	NA	NA	0.91	NA	As Received	NA	U
0403011-13	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.050	23.75%	100	-0.29	0.79	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A3	aba0310d	5:16 PM	0.117	NA	NA	0.35	NA	As Received	NA	U
0403011-13	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	1.990	40.43%	100	-0.14	1.71	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A3	aba0310d	5:16 PM	2.037	NA	NA	0.99	NA	As Received	NA	U
0403011-14	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.160	24.44%	100	0.27	0.69	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A4	aba0310d	5:16 PM	0.091	NA	NA	0.41	NA	As Received	NA	U
0403011-14	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	2.120	41.13%	100	0.30	1.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	A4	aba0310d	5:16 PM	1.972	NA	NA	0.99	NA	As Received	NA	U
0403011-15	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.070	25.10%	100	0	0.60	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 #	B1	aba0310d	5:05 PM	0.068	NA	NA	0.30	NA	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 Recieved' while the Report Basis is 'Dry Weight'.
\# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

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

Notes:

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

Abbreviations:

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 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 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
0403011-15	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.830	43.00%	100	0.07	1.51	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	B1	aba0310d	5:05 PM	1.786	NA	NA	0.89	NA	As Received	NA	U
0403011-16	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.070	25.86%	100	-0.02	0.60	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	B2	aba0310d	5:05 PM	0.073	NA	NA	0.30	NA	As Received	NA	U
0403011-16	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.810	42.60%	100	0.50	1.44	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	B2	aba0310d	5:05 PM	1.581	NA	NA	0.87	NA	As Received	NA	U
0403011-17	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.090	24.48%	100	0.03	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	B3	aba0310d	5:05 PM	0.082	NA	NA	0.34	NA	As Received	NA	U
0403011-17	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.160	41.70%	100	0.62	1.60	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	B3	aba0310d	5:05 PM	1.883	NA	NA	0.97	NA	As Received	NA	U
0403011-18	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.080	24.23%	100	0.01	0.65	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	B4	aba0310d	5:05 PM	0.076	NA	NA	0.33	NA	As Received	NA	U
0403011-18	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.100	42.83%	100	0.67	1.53	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	B4	aba0310d	5:05 PM	1.798	NA	NA	0.93	NA	As Received	NA	U
0403011-19	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.160	25.48%	100	0.26	0.66	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	C1	aba0310d	5:16 PM	0.090	NA	NA	0.40	NA	As Received	NA	U
0403011-19	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.790	41.18%	100	0.08	1.56	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	C1	aba0310d	5:16 PM	1.735	NA	NA	0.91	NA	As Received	NA	U
0403011-20	GROSS ALPHA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.120	24.82%	100	0.09	0.69	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	C2	aba0310d	5:16 PM	0.094	NA	NA	0.38	NA	As Received	NA	U
0403011-20	GROSS BETA	2/27/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.720	41.32%	100	-0.18	1.57	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-5-1	NA		NA	1 s	C2	aba0310d	5:16 PM	1.774	NA	NA	0.91	NA	As Received	NA	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
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W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
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LT - Result is less than Request MDC, greater than sample specific MDC
* - Aliquot Basis is 'As Recieved' while the Report Basis is 'Dry Weight'.
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M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
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 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
0403011-21	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.110	24.75%	100	0.14	0.63	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A1	abb0311	8:55 AM	0.071	NA	NA	0.35	NA	As Received	NA	U
0403011-21	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.530	40.98%	100	0.43	1.39	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A1	abb0311	8:55 AM	1.338	NA	NA	0.83	NA	As Received	NA	U
0403011-21	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.080	25.54%	100	-0.19	0.76	DPM/sample	0.66	
DUP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	D4	abb0311a	10:48 AM	0.122	NA	NA	0.36	NA	As Received	NA	U
0403011-21	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.900	43.03%	100	0.30	1.50	DPM/sample	0.10	
DUP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	D4	abb0311a	10:48 AM	1.756	NA	NA	0.89	NA	As Received	NA	U
0403011-22	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.170	24.60%	100	0.28	0.73	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A2	abb0311	8:55 AM	0.101	NA	NA	0.43	NA	As Received	NA	U
0403011-22	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.720	40.97%	100	0.72	1.42	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A2	abb0311	8:55 AM	1.394	NA	NA	0.87	NA	As Received	NA	U
0403011-23	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.210	25.08%	100	0.46	0.67	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A3	abb0311	8:55 AM	0.088	NA	NA	0.45	NA	As Received	NA	U
0403011-23	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.620	41.53%	100	0.45	1.41	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A3	abb0311	8:55 AM	1.397	NA	NA	0.84	NA	As Received	NA	U
0403011-24	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.180	24.77%	100	0.30	0.72	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A4	abb0311	8:55 AM	0.101	NA	NA	0.43	NA	As Received	NA	U
0403011-24	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.500	41.30%	100	0.25	1.40	DPM/sample	NA	
SMP	Trg. Analyte	3:00:00 PM	AB040305-6-1	NA		NA	1 #	A4	abb0311	8:55 AM	1.365	NA	NA	0.83	NA	As Received	NA	U
0403011-25	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.130	25.25%	100	-0.10	0.84	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	B3	abb0311	8:55 AM	0.094	NA	NA	0.42	NA	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 Recieved' while the Report Basis is 'Dry Weight'.
\# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
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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 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
0403011-25	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	35.180	42.08%	100	80	1	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	B3	abb0311	8:55 AM	1.470	NA	NA	13	NA	As Received	NA	LT
0403011-26	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.090	25.71%	100	-0.15	0.76	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	B4	abb0311	8:55 AM	0.125	NA	NA	0.36	NA	As Received	NA	U
0403011-26	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	2.190	41.60%	100	1.44	1.47	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	B4	abb0311	8:55 AM	1.572	NA	NA	0.96	NA	As Received	NA	U
0403011-27	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.110	25.68%	100	-0.10	0.77	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C1	abb0311	8:55 AM	0.130	NA	NA	0.39	NA	As Received	NA	U
0403011-27	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.710	42.01%	100	0.39	1.44	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C1	abb0311	8:55 AM	1.528	NA	NA	0.88	NA	As Received	NA	U
0403011-28	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.150	25.53%	100	0.18	0.69	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C2	abb0311	8:55 AM	0.099	NA	NA	0.40	NA	As Received	NA	U
0403011-28	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.920	41.94%	100	0.67	1.48	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C2	abb0311	8:55 AM	1.610	NA	NA	0.91	NA	As Received	NA	U
0403011-29	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.230	25.24%	100	0.20	0.89	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C3	abb0311	8:55 AM	0.172	NA	NA	0.51	NA	As Received	NA	U
0403011-29	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.770	41.54%	100	0.35	1.49	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C3	abb0311	8:55 AM	1.583	NA	NA	0.89	NA	As Received	NA	U
0403011-30	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.190	24.72%	100	0.33	0.73	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C4	abb0311	8:55 AM	0.106	NA	NA	0.44	NA	As Received	NA	U
0403011-30	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.580	41.98%	100	0.15	1.43	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C4	abb0311	8:55 AM	1.482	NA	NA	0.84	NA	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
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M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
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NC - Not Calculated for duplicate results less than 5 times MDC
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Notes:

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DER - Duplicate Error Ratio
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Gross Alpha/Beta Analysis by GPC 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 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
0403011-31	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.190	24.89%	100	0.28	0.76	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D1	abb0311	8:55 AM	0.115	NA	NA	0.45	NA	As Received	NA	U
0403011-31	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.700	41.57%	100	0.41	1.45	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D1	abb0311	8:55 AM	1.497	NA	NA	0.87	NA	As Received	NA	U
0403011-31	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.170	25.82%	100	0.18	0.74	DPM/sample	0.15	
DUP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D3	abb0311a	10:48 AM	0.118	NA	NA	0.42	NA	As Received	NA	U
0403011-31	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.880	41.47%	100	0.22	1.57	DPM/sample	0.15	
DUP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D3	abb0311a	10:48 AM	1.762	NA	NA	0.92	NA	As Received	NA	U
0403011-32	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.060	25.82%	100	-0.24	0.74	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D3	abb0311	8:55 AM	0.118	NA	NA	0.33	NA	As Received	NA	U
0403011-32	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.950	41.47%	100	0.43	1.56	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D3	abb0311	8:55 AM	1.762	NA	NA	0.93	NA	As Received	NA	U
0403011-33	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.160	25.54%	100	0.12	0.76	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D4	abb0311	8:55 AM	0.122	NA	NA	0.42	NA	As Received	NA	U
0403011-33	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	2.160	43.03%	100	0.87	1.51	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D4	abb0311	8:55 AM	1.756	NA	NA	0.93	NA	As Received	NA	U
0403011-34	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.090	25.16%	100	-0.07	0.71	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D2	abb0311a	10:48 AM	0.102	NA	NA	0.35	NA	As Received	NA	U
0403011-34	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	2.060	42.47%	100	-0.08	1.65	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D2	abb0311a	10:48 AM	2.079	NA	NA	0.96	NA	As Received	NA	U
0403011-35	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.060	24.89%	100	-0.25	0.76	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 #	D1	abb0311a	10:48 AM	0.115	NA	NA	0.34	NA	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 Recieved' while the Report Basis is 'Dry Weight'.
\# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

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

Notes:

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

Abbreviations:

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 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 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	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.820	41.57%	100	0.75	1.44	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	D1	abb0311a	10:48 AM	1.497	NA	NA	0.89	NA	As Received	NA	U
0403011-36	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.070	24.72%	100	-0.15	0.73	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C4	abb0311a	10:48 AM	0.106	NA	NA	0.34	NA	As Received	NA	U
0403011-36	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.510	41.98%	100	0.04	1.42	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C4	abb0311a	10:48 AM	1.482	NA	NA	0.83	NA	As Received	NA	U
0403011-37	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.170	25.24%	100	-0.03	0.89	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C3	abb0311a	10:48 AM	0.172	NA	NA	0.47	NA	As Received	NA	U
0403011-37	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.760	41.54%	100	0.35	1.49	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C3	abb0311a	10:48 AM	1.583	NA	NA	0.89	NA	As Received	NA	U
0403011-38	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.100	25.53%	100	-0.02	0.69	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C2	abb0311a	10:48 AM	0.099	NA	NA	0.35	NA	As Received	NA	U
0403011-38	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.880	41.94%	100	0.60	1.48	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C2	abb0311a	10:48 AM	1.610	NA	NA	0.90	NA	As Received	NA	U
0403011-39	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.080	25.68%	100	-0.22	0.77	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C1	abb0311a	10:48 AM	0.130	NA	NA	0.36	NA	As Received	NA	U
0403011-39	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.880	42.01%	100	0.80	1.44	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	C1	abb0311a	10:48 AM	1.528	NA	NA	0.89	NA	As Received	NA	U
0403011-40	GROSS ALPHA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.060	25.71%	100	-0.26	0.75	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	B4	abb0311a	10:48 AM	0.125	NA	NA	0.34	NA	As Received	NA	U
0403011-40	GROSS BETA	2/27/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.640	41.60%	100	0.13	1.47	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-6-1	NA		NA	1 s	B4	abb0311a	10:48 AM	1.572	NA	NA	0.86	NA	As Received	NA	U

Comments:

Data Package ID: *abf0403011-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
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Gross Alpha/Beta Analysis by GPC Wipe/Filter Raw Data Report

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PAI Work Order: 0403011

Prep SOP: PAI 702
Analytical SOP: PAI 724

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0403011-41	GROSS ALPHA	2/27/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.140	24.89%	100	0.08	0.76	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-7-1	NA		NA	1 s	D1	abb0311d	12:57 PM	0.115	NA	NA	0.41	NA	As Received	NA	U
0403011-41	GROSS BETA	2/27/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.590	41.57%	100	0.16	1.45	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-7-1	NA		NA	1 s	D1	abb0311d	12:57 PM	1.497	NA	NA	0.85	NA	As Received	NA	U
0403011-42	GROSS ALPHA	2/27/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.080	25.16%	100	-0.11	0.71	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-7-1	NA		NA	1 s	D2	abb0311d	12:57 PM	0.102	NA	NA	0.34	NA	As Received	NA	U
0403011-42	GROSS BETA	2/27/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	1.970	42.47%	100	-0.29	1.65	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-7-1	NA		NA	1 s	D2	abb0311d	12:57 PM	2.079	NA	NA	0.95	NA	As Received	NA	U
0403011-43	GROSS ALPHA	2/27/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	0.130	25.82%	100	0.03	0.74	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-7-1	NA		NA	1 s	D3	abb0311d	12:57 PM	0.118	NA	NA	0.39	NA	As Received	NA	U
0403011-43	GROSS BETA	2/27/04	AB040305-7	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	2.170	41.47%	100	0.93	1.56	DPM/sample	NA	
SMP	Trg. Analyte	3:02:00 PM	AB040305-7-1	NA		NA	1 s	D3	abb0311d	12:57 PM	1.762	NA	NA	0.97	NA	As Received	NA	U
AB040305-5A	GROSS ALPHA	3/5/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2704.200	23.99%	10	11300	0	DPM/sample	NA	113
LCS	Trg. Analyte	2:22:57 PM	AB040305-5-1	NA		NA	1 s	C4	aba0310c	5:05 PM	0.098	NA	NA	1800	NA	As Received	NA	P,M3
AB040305-5B	GROSS BETA	3/5/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	17327.801	42.01%	10	41200	0	DPM/sample	NA	101
LCS	Trg. Analyte	2:22:57 PM	AB040305-5-1	NA		NA	1 s	C4	aba0310e	5:21 PM	1.914	NA	NA	6600	NA	As Received	NA	P
AB040305-5	GROSS ALPHA	3/5/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.120	24.96%	100	0.07	0.71	DPM/sample	NA	
MB	Trg. Analyte	2:22:57 PM	AB040305-5-1	NA		NA	1 s	C3	aba0310d	5:16 PM	0.101	NA	NA	0.38	NA	As Received	NA	U
AB040305-5	GROSS BETA	3/5/04	AB040305-5	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.130	43.00%	100	0.83	1.50	DPM/sample	NA	
MB	Trg. Analyte	2:22:57 PM	AB040305-5-1	NA		NA	1 s	C3	aba0310d	5:16 PM	1.751	NA	NA	0.93	NA	As Received	NA	U
AB040305-6A	GROSS ALPHA	3/5/04	AB040305-6	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/11/04	2743.200	24.75%	10	11100	0	DPM/sample	NA	111
LCS	Trg. Analyte	2:26:05 PM	AB040305-6-1	NA		NA	1 s	A1	abb0311b	10:53 AM	0.071	NA	NA	1800	NA	As Received	NA	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.
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Notes:

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

Laboratory Name: Paragon Analytics
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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	6600	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*

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

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: ABA0301B
Batch ID: AB040305-5
Count Preset (m): 100
Batch Ended: 3/10/04 16:42

Background logfile: Br...
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^(e^(mass-x0))		Beta Attenuation Calibration y = b*m^(e^(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
e=	0.0000	e=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		**Beta to Alpha X-talk y = m*mass + b**	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
B1	0403011-5	3/10/04 16:42	100.00	0.0	0.100	0.068	0.002	0.2510	n/a	n/a	n/a	1.750	1.785	0.0158	0.4300	n/a	n/a	n/a
B2	0403011-6	3/10/04 16:42	100.00	0.0	0.030	0.073	0.003	0.2586	n/a	n/a	n/a	1.870	1.581	0.0060	0.4280	n/a	n/a	n/a
B3	0403011-7	3/10/04 16:42	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 16:42	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 16:42	100.00	0.0	0.160	0.078	0.002	0.2423	n/a	n/a	n/a	1.790	1.799	0.0304	0.4283	n/a	n/a	n/a
C2	0403011-10	3/10/04 16:42	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 16:42	100.00	0.0	0.050	0.101	0.001	0.2496	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 16:42	100.00	0.0	0.110	0.098	0.001	0.2398	n/a	n/a	n/a	1.670	1.914	0.0215	0.4201	n/a	n/a	n/a
A1	0403011-1	3/10/04 16:42	100.00	0.0	0.170	0.171	0.007	0.2303	n/a	n/a	n/a	[illegible]	[illegible]	[illegible]	[illegible]	n/a	n/a	n/a
A2	0403011-2	3/10/04 16:42	100.00	0.0	0.060	0.075	0.001	0.2415	n/a	n/a	n/a	2.100	1.842	0.0170	0.4026	n/a	n/a	n/a
A3	0403011-3	3/10/04 16:42	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 16:42	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

000086

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.12/23/03 JE

Data file name: ABA0310C
Batch ID: AB040305-5
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^(e^(mass-x0))		Beta Attenuation Calibration y = b*m^(e^(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		Beta to Alpha X-talk y = m*mass + b	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.00E+00
a -> b xtalk b=	0.0000	b -> a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
C4	AB040305-5ALCS	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 (m): 100
Batch Ended: 3/10/04 18:53

Background logfile:
Date of Bkg. Cal: 3/[illegible]
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^(x^(mass-x0))		Beta Attenuation Calibration y = b*m^(x^(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
x=	0.0000	x=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m *b^-mass		**Beta to Alpha X-talk y = m*mass + b**	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
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	0.2496	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

LWB 3/15/04

000088

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: ABA0310E
Batch ID: AB040305-5
Count Preset (m): 10
Batch Ended: 3/10/04 17:27

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*(mass-x0))		Beta Attenuation Calibration y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		Beta to Alpha X-talk y = m*mass + b	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
C4	AB040305-5BLCS	3/10/04 17:27	10.00	0.0	8.700	0.098	8.664	0.2398	n/a	n/a	n/a	17327.800	1.914	1.3072	0.4201	n/a	n/a	n/a

LWB 3/15/04

000089

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: ABB0311
Batch ID: AB040305-6
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*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b*mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A1	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	1.530	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	0.098	0.005	0.2509	n/a	n/a	n/a	1.620	1.397	0.0370	0.4153	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	0.0316	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	0.099	0.005	0.2563	n/a	n/a	n/a	1.920	1.610	0.0276	0.4194	n/a	n/a	n/a
C3	0403011-29	3/11/04 10:31	100.00	0.0	0.230	0.172	0.006	0.2524	n/a	n/a	n/a	1.770	1.583	0.0436	0.4164	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	1.680	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	0.002	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	0.0179	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	0.4157	n/a	n/a	n/a
D3	0403011-32	3/11/04 10:31	100.00	0.0	0.060	0.118	0.006	0.2582	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	1.756	0.0285	0.4303	n/a	n/a	n/a

LCB 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: 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^(x*(mass-x0))		(x*(mass-x0))	
Alpha b=	0.00000	b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
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	0.4209	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	1.640	1.572	0.0119	0.4160	n/a	n/a	n/a
C1	0403011-39	3/11/04 12:25	100.00	0.0	0.080	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
C2	0403011-38	3/11/04 12:25	100.00	0.0	0.100	0.099	0.005	0.2553	n/a	n/a	n/a	1.880	1.610	0.0184	0.4184	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	1.593	0.0322	0.4154	n/a	n/a	n/a
C4	0403011-36	3/11/04 12:25	100.00	0.0	0.070	0.106	0.002	0.2472	n/a	n/a	n/a	1.510	1.482	0.0127	0.4199	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	1.920	1.497	0.0109	0.4167	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
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	0.0291	0.4147	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	1.756	0.0142	0.4303	n/a	n/a	n/a

LGB 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
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80311B
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^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
A1	AB040305-6ALCS	3/11/04 10:56	10.00	0.0	2743.200	0.071	1.628	0.2475	n/a	n/a	n/a	588.300	1.338	440.2787	0.4098	n/a	n/a	n/a
A2	AB040305-6BLCS	3/11/04 10:56	10.00	0.0	19.400	0.101	60.502	0.2460	n/a	n/a	n/a	17046.300	1.394	3.3356	0.4097	n/a	n/a	n/a

TV 3-16-04

000092

PAI - C Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: 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: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

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

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
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	1.528	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	1.572	0.0239	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	0.106	0.001	0.2472	n/a	n/a	n/a	1.290	1.492	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	0.006	0.2489	n/a	n/a	n/a	1.690	1.497	0.0255	0.4157	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

KT
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.12/29/03 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*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m *b^-mass		y = m*mass + b	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.00E+00
a -> b xtalk b=	0.0000	b -> a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
C1	AB040305-7ALCS	3/11/04 14:53	10.00	0.0	2922.500	0.130	1.912	0.2568	n/a	n/a	n/a	665.700	1.528	508.8206	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	17300.600	1.610	3.7294	0.4194	n/a	n/a	n/a

LCB 3/15/04.

000094

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(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100A**

SOP 724 Rev 8

Date: 3/10/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1650	A 0.1
2 1100	B ↓
	C ↓
	D NP

Bkg.	Cal. File ID
Dr A	BKA0306W
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		LGB		P		✓	9	LGB		P		LGB		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 53/10/04	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-12	DRChecks	N/A	N/A	EFA0310	30 ~~0632~~	0632	LGB	LGB	3/10/04	N/A
1-12	Bkg Checks	N/A	N/A	BKA0310	60	0639	LGB	LGB	3/10/04	
1	0415008-51	NP	~~PB~~ PB210	PBA0310	60	0917	g	g	3/10/04	
1	0K0 3010-21D	AB040305-4	α/B	AB A0310	100	1238	g	g	3/10/04	
2	-31D					53/10/04				
3	-32									
4	-33									
5	-34									
6	-35									
7	-36									
8	-37									
9	-38									
10	-39									
11	-40									
12	AB040305-4MB									
1	AB040305-4LCS	AB040305-4	α/B	AB A0310A	10	1438	g	g	3/10/04	
2	-4BLCS									

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Reviewed by 7/7 Date 3.10.04

Comments:

000095

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Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 3/10/04

Instrument: **LB4100A**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
1	0403011-1	AB040305-5	α/β	~~AB040310B~~ AB0310B	100	1501	S	77	3-10-04	NA
2	-2			AB0301B						
3	-3									
4	-4									
5	-5									
6	-6									
7	-7									
8	-8									
9	-9									
10	-10									
11	-11									
12	-12									
12	AB040305-5ALCS			AB0310C	10	1703	77	77	3-10-04	
1	0403011-11D			AB0310D	100	1708	77	LB	3/11/04	
2	-1D									
3	-13									
4	-14									
5	-15									
6	-16									
7	-17									
8	-18									
9	-19									
10	-20									
11	AB040305-5MB									
12	AB040305-5BLCS			AB0310E	10	1717	77	77	3-10-04	
									77 3-10-04	

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Reviewed LCB Date 3/11/04

Comments:

000096

273577

pg _____ a

(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 724 Rev 8

Date: 3/11/04

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	BKB0306W
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						OL B	13									✓
6			LB			LB	R	P	OL B	14						LB	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	
LCB 3/11/04 2,3,6,14	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			
1	040311-21	AB040305-6	α/β	ABB0311	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									

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

Reviewed by LCB Date 3/11/04

Comments:

000097

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Paraq Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

Date 3/11/04

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
16	0403011-33	AB040305-6	α/β	ABB0311	100	0850	LGB	[illegible]	3/11/04	N/A
16	0403011-21D	AB040305-6		ABB0311A		1044	[illegible]	[illegible]	3/11/04	
15	-31D									
14	-34									
13	-35									
12	-36									
11	-37									
10	-38									
9	-39									
8	-40									
7	AB040305-6MB									
1	AB040305-6ALCS	AB040305-6	α/β	ABB0311B	10	1046	[illegible]	[illegible]	3/11/04	
2	-6BLCS									
1	0403010-41D	AB040305-7	α/β	ABB0311C	100	1107	[illegible]	[illegible]	3/11/04	
1	0402175-4	RA040308-1	Ra226	RAB0311	250	1248	[illegible]	LGB	3/12/04	
8	-4D									
3	-4RD2									
4	RA040308-1MB									
7	-1LCS									
8	0403010-41	AB040305-7	α/β	ABB0311D	100	1251	[illegible]	LGB	3/11/04	
9	-42									
10	-43									
11	-44									
12	-45									
13	0403011-41									
14	-42									
15	-43									
16	AB040305-7MB									
8	Cavity, 1GG	N/A	α/β	ABB0311F	1000	1441	LGB	LGB	3/12/04	
9	AB040305-7ALCS	AB040305-7	α/β	ABB0311E	10			LGB	3/11/04	
10	-7BLCS									

3/10/04

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

Reviewed LGB Date 3/12/04

Comments:

860000

PARAGON ANALYTICS
Radiochemistry Data Package

Section 5

QUALITY ASSURANCE SUMMARY REPORTS

5

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

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB040305-5 Att

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		see									
1	0403011-3	SMP	1	1	sample		previous									
1	0403011-4	SMP	1	1	sample		sheet									
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	AB040305-5A	LCS	1	1	sample											
1	AB040305-5B	LCS	1	1	sample											
1	AB040305-5	MB	1	1	sample											

000102

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-6

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	20,514.382	DPM/sample	03/05/04	1	sample	

00010

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB040307

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	0403011-1	SMP	1	1	sample		~~ABA0310B~~	1	XZ							
1	0403011-1	DUP	1	1	sample		ABA0310D	2	LGB							Count Dup
1	0403011-2	SMP	1	1	sample		~~ABA0310B~~	2	XZ							
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		ABA0310D	1	LGB							Count Dup
1	0403011-12	SMP	1	1	sample		~~ABA0310B~~	12	XZ							
1	0403011-13	SMP	1	1	sample		ABA0310D	3	LGB							
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	AB040305-5A	LCS	1	1	sample		ABA0310C	12	XZ							
1	AB040305-5B	LCS	1	1	sample		ABA0310E	12	XZ							
1	AB040305-5	MB	1	1	sample		ABA0310D	11	LGB							

DRAFT

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB041305-1

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

DRAFT

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	

000105

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB040305

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	0403011-21	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											
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	0403011-36	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											

see previous sheet

000109

Supersedes: 3/9/04 13:47

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB0403046

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	20,514.379	DPM/sample	03/05/04	1	sample	

000107

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: ABC4

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	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 ~~10~~	LG 3/11							
1	0403011-28	SMP	1	1	sample			10								
1	0403011-29	SMP	1	1	sample			11								
1	0403011-30	SMP	1	1	sample			12								
1	0403011-31	SMP	1	1	sample			13								
1	0403011-31	DUP	1	1	sample		ABB0311A	~~15~~ 15	G	LG 3/15/04						
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		ABB0311B	1	g							
1	AB040305-6B	LCS	1	1	sample			2								
1	AB040305-6	MB	1	1	sample		ABB0311A	7	g							

DRAFT

000100

Supersedes: N/A

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: [illegible]

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

DRAFT

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	20,514.379	DPM/sample	03/05/04	1	sample	

0001

Paragon Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB040305

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / (N) NA

Prep Num	LabID	QC Type	Init Aiq	Fin Aiq	Units	Residual Mass (mg)	Cnt 1 File	Cnt 1 Inst/Det	Cnt 1 Pos Chk By	Cnt 2 File	Cnt 2 Inst/Det	Cnt 2 Pos Chk By	Cnt 3 File	Cnt 3 Inst/Det	Cnt 3 Pos Chk By	Notes
1	0403010-41	SMP	1	1	sample											
1	0403010-41	DUP	1	1	sample											
1	0403010-42	SMP	1	1	sample		see									
1	0403010-43	SMP	1	1	sample		previous									
1	0403010-44	SMP	1	1	sample		sheet									
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											

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	20,514.377	DPM/sample	03/05/04	1	sample	

00011

Supersedes: 3/9/04 13:48

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-7A

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		AB0311D	8	LCB							
1	0403010-41	DUP	1	1	sample		AB0311C	1	~~8~~							
1	0403010-42	SMP	1	1	sample		AB0311D	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		AB0311E	9	[illegible]							
1	AB040305-7B	LCS	1	1	sample			10	[illegible]							
1	AB040305-7	MB	1	1	sample		AB0311D	16	LCB							

Spike Solution Number: [illegible]

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	

000111

Paragon Analytics

Radiochemistry Prep Worksheet

Prep Batch: AB040

Prep Procedure: GAB_No_Att

Reviewed By: ATF

Review Date: 3/15/04

Non-Routine Pre-Treatment? Y / N Batch: NA

Re-Prep? Y / N Batch: NA

Prep QASS / NCR? Y / N NA

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

Prep Analyst: Adrienne Freda
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	0403011-1	SMP		1	1	As Received		LWB 3/15/04
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		LWB 3/15/04
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	0403011-16	SMP		1	1	As Received		LWB 3/15/04
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		LWB 3/15/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: See
Date: previous
Received By: sheet
Date:

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	

Comments

Radiochemistry Prep Worksheet

Paragon Analytics

PrepBatch: AB040305-5

Prep Procedure: GAB

Reviewed By: ATF 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
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	0403011-1	SMP		1	1	As Received		03/09/04
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		03/09/04
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		03/09/04
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		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:

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	

Comments

Date Printed: 3/9/04 13:45 LIMS Version: 4.

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: B040

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 Aiq sample	Fin Aiq 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

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	

Comments

00114

Paragon Analytics

Supersedes: NA

Date Printed: 3/5/04 14:25

LIMS Version: 4.332C

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-6

Prep Procedure: GAB_No_Att

Reviewed By: ATF Review Date: 3/15/04

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

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

Prep Analyst: Adrienne Freda
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		LCB 3/15/04
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		LCB 3/15/04
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		LCB 3/15/04
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		LCB 3/15/04

LCB 3/15/04

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

Relinquished By: See
Date: previous
Received By: sheet
Date:

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	20,514.379	DPM/sample	03/05/04	1	sample	

Comments

00115

Paragon Analytics

Radiochemistry Prep Worksheet

Prep Batch: AB040305

Prep Procedure: GAB

Reviewed By: ATF 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
Prep Date: 3/5/04
Prep Dept: RS

Balance:
Balance:

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aiq sample	Fin Aiq sample	Prep Basis	Standards	Prep Notes
1	1	0403011-21	SMP		1	1	As Received		
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		
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		
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		

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

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

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	20,514.379	DPM/sample	03/05/04	1	sample	

Comments

Radiochemistry Prep Worksheet

Paragon Analytics

Prepbatch: AB040305-6

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	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		

03/05/04

03/05/04

DRAFT

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

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	20,514.379	DPM/sample	03/05/04	1	sample	

Comments

Paragon Analytics

Radiochemistry Prep Worksheet

Prep Batch: AB040

Prep Procedure: GAB_No_Att

Reviewed By: ATF Review Date: 3/15/04

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

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

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

Balance:
Balance:

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		LWB 3/15/04
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		LWB 3/15/04
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		LWB 3/15/04

LWB 3/15/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: See
Date: previous
Received By: sheet
Date:

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	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

000118

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-7

Prep Procedure: GAB

Reviewed By: ATF 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
Prep Date: 3/5/04
Prep Dept: RS

Balance:
Balance:

DRAFT

Samp Num	Prep Num	LabID	QC Type	Dish No.	Init Aiq sample	Fin Aiq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-41	SMP		1	1	As Received		
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	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		

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

00011

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305

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		

03/05/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: NT
Date: 4/3/04
Received By: S
Date: 3/10/04

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	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

0001 20

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: [illegible]

ANALYSIS DATE: 03/05/04 METHOD: GROSS α β

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403010	1-45	DRY(AIR)	SWIPE	None
0403011	1-43	↓	↓	↓

[illegible] 03/05/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 7

STANDARDS TRACEABILITY DOCUMENTS

7

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 - U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

PAI-00601
rec'd 12-05-01

62752A-307

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

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

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

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

*99% Confidence Level

Impurities: γ-impurities <0.1%

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

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

P O NUMBER 001703, Item 2

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

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

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

PAI ID 0729
rec'd 10-30-03

66949-307

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

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

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

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

Impurities: γ-impurities <0.1%

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

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

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

P O NUMBER EW091503, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 10-27-03

PARAGON ANALYTICS
Radiochemistry Data Package

Section 8

CHAIN OF CUSTODY

8

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
Shaw Environmental & Infrastructure, Inc.

04030111

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: 132105 022704-24
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 Dettore
312 Directors Drive
Knoxville, TN 37923

ONE SAMPLE PER LINE

	Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
1	022704-24-1	Rm B2109 FSS Location B-01	2/27/04 1500	Smear		
2	2	B-02				
3	3	B-03				
4	4	B-04				
5	5	B-05				
6	6	B-06				
7	7	B-07				
8	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 (Signature/Affiliation)	Date: 3-1-04 Time: 1042	1. Received by (Signature/Affiliation)	Date: 3-1-04 Time: 1042
2. Relinquished by (Signature/Affiliation)	Date: 3-1-04 Time: ~~2400~~ 1421	2. Received by (Signature/Affiliation)	Date: 3-1-04 Time: 1420
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation) Paragon	(*) Samples received 3/1/04. Processed on 3/4/04. Date: 3-2-04 Time: 1300

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

000128

Shaw
Shaw Environmental & Infrastructure, Inc.

040301

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: B2109-022704-24

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	10	B-10				
11	11	B-11				
12	12	B-12				
13	13	B-13				
14	14	B-14				
15	15	B-15				
16	16	B-16				
17	17	B-17				
18	18	B-18				
19	19	B-19				
20	20	B-20				
21	21	B-21				
22	22	B-22				
23	23	B-23				
24	24	B-24				
25	25	B-25	1502			
26	26	B-26				
27	27	B-27				
28	28	B-28				
29	29	B-29				
30	30	B-30				

Shaw
Shaw Environmental & Infrastructure, Inc.

0403011

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: B2109-022 -24
Pg 3 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
31	022704-24-31	BS-2109-01	3/27/04 1502	Smear		
32	32	-02				
33	33	-03				
34	34	-04				
35	35	-05				
36	36	-06				
37	37	-07				
38	38	-08				
39	39	-09				
40	40	-10				
41	-8FD	Rm2109 FSS Loc -08 Field Dup.				
42	-11FD	Rm2109 FSS Loc -11 Field Dup.				
43	-FB	Field Blank				

N

A

000130

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw - Knox WORKORDER NO: 0403011

PROJECT MANAGER: Deb Fazio INITIALS: [illegible] DATE: 3/2/04

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

Cooler #'s 1

Temperature Ambient (Red Only) °C

Project Manager Signature / Date: Debbie 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: 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).
- [x] 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: Debbie Fazio 3/4/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 9

ADDITIONAL SUPPORTING DOCUMENTATION

9

Gas Proportional Counter

Instrument Calibration

Background Calibration

LB4100-A Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.171	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.

BKA0306W.XLD

Printed 3/8/04 6:49 AM

LB4100-B Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.071	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: LCB Date: 3/8/04

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

Gas Proportional Counter

Quality Control Data

Daily Instrument Performance Checks

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.167	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 prevolus weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.200	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 prevolus weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

000139

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.067	-0.032	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 LCB 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 prevolus weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	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 prevolus weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#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: _____ Date: 3/11/04

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

000142

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.217	-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

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.017	-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 prevolus weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000144

Gas Proportional Counter

Quality Control Data

Daily Instrument Performance Checks

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2325	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

000146

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2276	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

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2437	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 /B

Reviewed by: LWB Date: 3/11/04

Control Limits established 12/21/03. JME

000148

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2416	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

000149

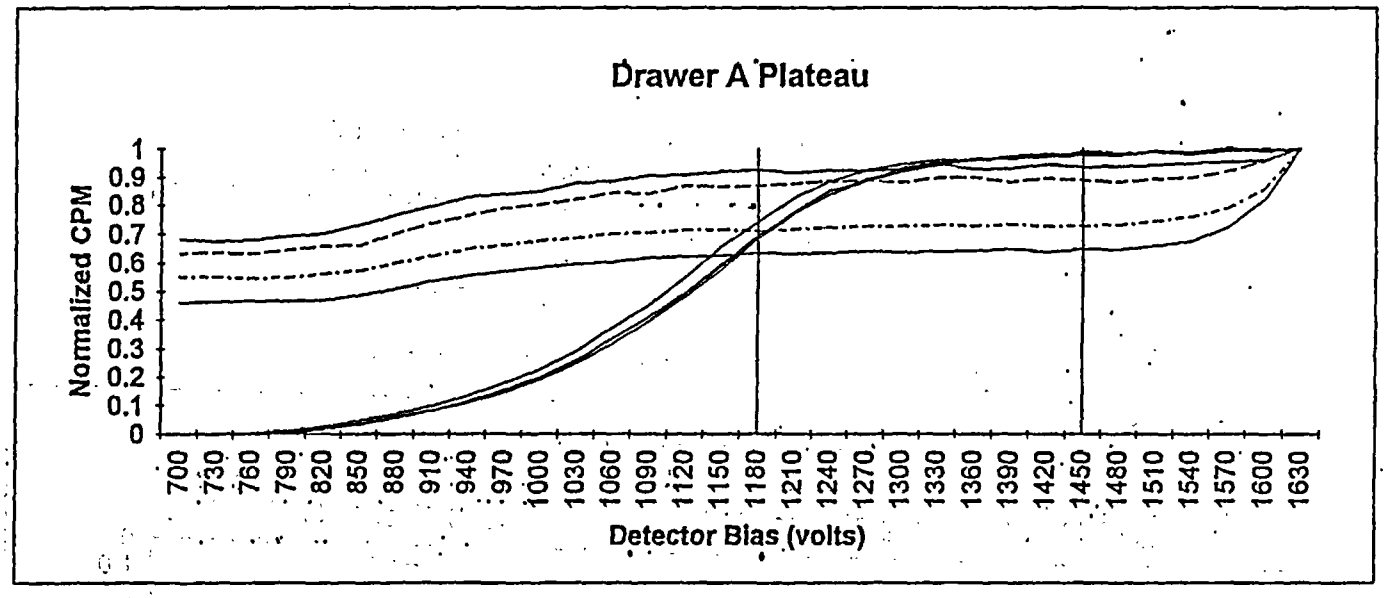
Gas Proportional Counter

Instrument Calibration

Initial Efficiency Calibration Standards Traceability

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

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



Optimum alpha beta simultaneous operating voltage: 1447.5

Optimum alpha only operating voltage: 1180

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

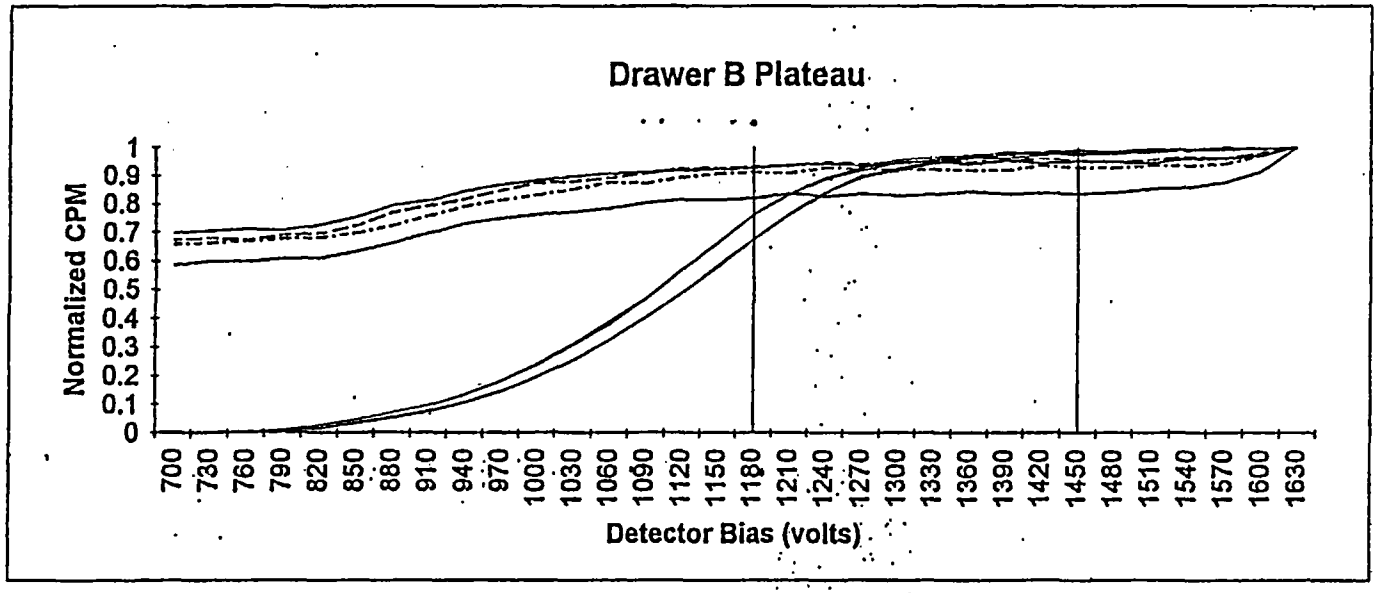
000151

Printed 1/29/04 3:23 PM

g 2/6/04

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

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



Optimum alpha beta simultaneous operating voltage: 1447.5

Optimum alpha only operating voltage: 1180

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

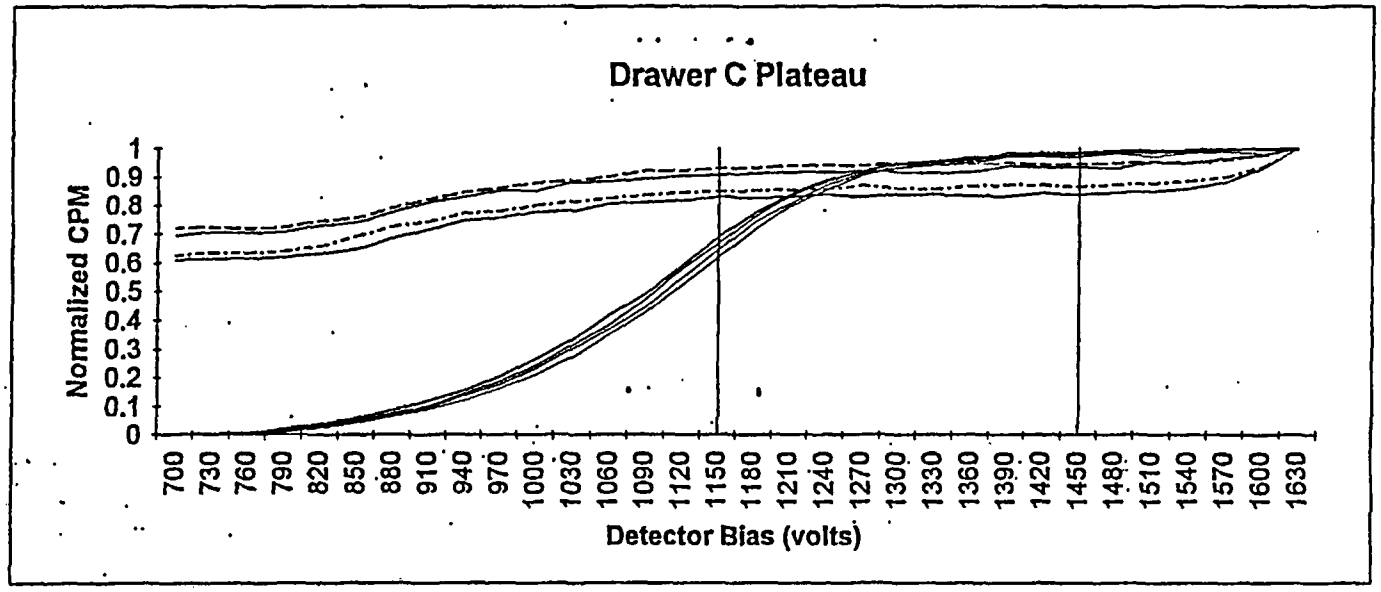
000152

Printed 1/7 1 9:05 AM

9 2/4/(

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%

000153

Printed 1/29/04 3:25 PM

92/6/04

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

Filenames: PT0128A A (data from my mistake) PT0129C
~~PT0128B~~ PT0128B PT0129A

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

8/19/04

Operating voltage:

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

5/12/04

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

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

Continued on Page

Read and Understood By

Clare Lemieux — 2/10/04 — Leah Balko — 2/10/04
Signed — Date — Signed

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
SJS
3/8/04

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

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

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

3/2/04

3/2/04 Am241 wipe Calibration - Am241 on filter
Source: 73 Source ID: 1126 log file: Amwipe-03/04

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

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

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

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

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

Continued on Page

Read and Understood By

Claire Jenicek 3/2/04 3.3.04
Signed Date Signed Date

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

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100A

SOP 724 Rev 8

Date: 3/2/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 1650	A 0.1
2 800	B ↓
	C
	D NP

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

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-12	DR checks	N/A	N/A	EFA0302	30	0700	LCB	S	3/2/04	NA
1-12	Bkg Checks	N/A	N/A	BKA0302	60	0710	S	S	3/2/04	
3/2/04 1-12	BKG Recount	NA	NA	BXA0302A	60	0836	S	S	3/2/04	
9	0215044-S1	150442 10 XLS	Pb210 ICV	PBA0302	30	0933	S	S	3/2/04	
10	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
11	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
12	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
5	0215044-S1	150442 10 XLS	↓	PBA0302A	30	1056	S	S	3/2/04	
6	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
7	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
8	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
1	0215044-S1		↓	PBA0302B	30	1205	S	S	3/2/04	
2	-S2		↓	↓	↓	↓	↓	↓	↓	
3	-S3		↓	↓	↓	↓	↓	↓	↓	
4	-S5		↓	↓	↓	↓	↓	↓	↓	
9	0413050-S10	13090 PB	Pb210	PBA0302C	30	1313	S	S	3/2/04	
									S 3/2/04	

Reviewed by S Date 3/3/04

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

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	Am241 Wipe Cal.	EAW0302A	30	1320	g	g	3/2/04	NA
2				EAW0302B		1326				
3				EAW0302C		1336				
4				EAW0302D		1341				
5				EAW0302E		1346				
6				EAW0302F		1351				
7				EAW0302G		1413				
8				EAW0302H		1421				
9				EAW0302I		1429				
10				EAW0302J		1434				
11				EAW0302K		1439				
12				EAW0302L		1443				
1	602	NA	Sr90 Wipe Cal	ESW0302A	30	1431	g	g	3/2/04	
2				ESW0302B		1435				
3				ESW0302C		1436				
4				ESW0302D		1438				
5				ESW0302E		1439				
6				ESW0302F		1440				
7				ESW0302G		1442				
8				ESW0302H		1443				
9				ESW0302I		1449				
10				ESW0302J		1503				
11				ESW0302K		1505				
12				ESW0302L		1506				
1	0413050-56	NA	Pb1 CV	PBA0302D	30	1446	g	g	3/2/04	
2				PBA0302E		1519				
3				PBA0302F		1557				

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

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

Comments:

000159

ANALYTICS

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

73

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

47007-307

Am-241 47 mm Membrane Filter in Stainless Steel Planchet

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

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

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

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

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

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

P O NUMBER 35829, Item 1

Q A APPROVED 9-30-93

Am-241 Standard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:		160.4	dps	4335.1	pCi/s			
	Det	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery	Ave Rec w/in 5% (PAI)	Ave w/in 2 Std Dev (ICPT)	2 Std Dev w/in 10% Ave (ICPT)
Count 1	2	4290			99.0%	100.7%		
Count 2	8	4430			102.2%	Pass	Pass	Pass
Count 3	3	4370	4363.33	114.70	100.8%			

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

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

000161

031983D02.SPC Analyzed by AT

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #1

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

Detector #: 2 (Detector 2)

Energy(keV)= -0.74 + 0.500*Ch + 0.00E+00*Ch^2 + 0.00E+00*Ch^3 12/23/2003
FWHM(keV) = 0.57 + 0.018*En + 4.33E-04*En^2 + 0.00E+00*En^3 01/03/2003
Where En = Sqrt(Energy in keV)

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

PEAK SEARCH RESULTS

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

031983D02.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

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

Bkg.File Detector #: 2

==========

BACKGROUND SUBTRACT RESULTS

==========

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

031983D02.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

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Geo.7 / Filter

Sample ID: Std #73 Verif #1

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

Detector #: 2 (Detector 2)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031863D08.SPC Analyzed by 77

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

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

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

PEAK SEARCH RESULTS

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

031863D08.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

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

Bkg.File Detector #: 8

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BACKGROUND SUBTRACT RESULTS

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

031863D08.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031552D03.SPC Analyzed by 77

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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

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

Paragon Analytics, Inc.
GammaScan

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

Bkg.File Detector #: 3

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BACKGROUND SUBTRACT RESULTS

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

031552D03.SPC Analyzed by

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

Paragon Analytics, Inc.
GammaScan

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Geo.7 / Filter

Sample ID: Std #73 Verif #3

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

Detector #: 3 (Detector 3)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN, SUM or ESCAPE PEAKS

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

Paragon Analytics, Inc.

Gamma Spectrometer Run Log

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

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

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

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

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

267683 B

Form 754r9.frm 9/19/2003

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

53/51.*

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

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

Sources:		Det			Filenames:
0414009-S1		A1	B1	C1	EPB0223A
-S2		A2	B2	C2	EPB0223B
-S3		A3	B3	C3	EPB0223C
-S5		A4	B4	C4	~~EPB0223D~~ 2/22/0

Re 2/23/04 [illegible]

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

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

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

3/2/04 Sr-90 wipe Calibration - Sr-90 on filter
Source: 602 Source ID: 1127 log file: Srwipe-03/04

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

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

Continued on Page

Read and Understood By

Claire Senica 3/2/04 [illegible] 3-3-04
Signed Date Signed Date

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

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100A

SOP 724 Rev 8

Date: 3/2/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 650	A 0.1
2 801	B ↓
	C
	D NP

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

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-12	DR checks	N/A	N/A	EFA0302	30	0700	LCB	S	3/2/04	NA
1-12	Bkg checks	N/A	N/A	BKA0302	60	0710	S	S	3/2/04	
3/2/04 ~~1-12~~ 1	BKG Recount	N/A	N/A	BXA0302A	60	0836	S	S	3/2/04	
9	0215044-S1	150442 10.XLS	Pb210 ICV	PBA0302	30	0933	S	S	3/2/04	
10	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
11	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
12	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
5	0215044-S1	150442 10.XLS	↓	PBA0302A	30	1056	S	S	3/2/04	
6	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
7	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
8	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
1	0215044-S1	↓	↓	PBA0302B	30	1205	S	S	3/2/04	
2	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
3	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
4	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
9	0213050-S10	13050 PB	Pb210	PBA0302C	30	1313	S	S	3/2/04	✓
									S 3/2/04	

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

Reviewed by S Date 3/3/04

Comments:

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	Am241 Wipe Cal.	EAW0302A	30	1320	g	g	3/2/04	NA
2				EAW0302B		1326				
3				EAW0302C		1336				
4				EAW0302D		1341				
5				EAW0302E		1346				
6				EAW0302F		1351				
7				EAW0302G		1413				
8				EAW0302H		1421				
9				EAW0302I		1429				
10				EAW0302J		1434				
11				EAW0302K		1439				
12				EAW0302L		1443				
1	602	NA	Sr90 Wipe Cal	ESW0302A	30	1431	g	g	3/2/04	
2				ESW0302B		1435				
3				ESW0302C		1436				
4				ESW0302D		1438				
5				ESW0302E		1439				
6				ESW0302F		1440				
7				ESW0302G		1442				
8				ESW0302H		1443				
9				ESW0302I		1449				
10				ESW0302J		1503				
11				ESW0302K		1505				
12				ESW0302L		1506				
1	0413050-56	NA	Pb1CV	PBA0302D	30	1446	g	g	3/2/04	
2				PBA0302E		1519				
3				PBA0302F		1557				

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

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

Comments:

000176

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

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

62753A-307

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

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

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

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

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

*99% Confidence Level

Impurities: γ-impurities <0.1%

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

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

P O NUMBER 001703, Item 3

PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: VM Moty 12-10-01

New Standard Verification

WO#

Date 12/21/03

Previously Verified Standard

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

Standard to be Verified

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

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

r:instrgl\swipe

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

000178

PAI - Gas Flow Proportional Sample Counter

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

y = b*m^(x*mass+x0)		y = a* to power (x*mass+x0)	
Alpha b=	1.24350	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b*-mass		Beta to Alpha X-talk y = m*mass + b	
a ->b xtalk m=	0.2740	b ->a xtalk m=	-2.00E-06
a ->b xtalk b=	1.0010	b ->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	602	12/21/03 11:56	5.00	0.0	27.400	0.140	10.359	0.2111	1.246	n/a	n/a	14798.600	1.543	7.508	0.4115	1.000	n/a	n/a
D2	729	12/21/03 11:56	5.00	0.0	28.200	0.105	12.289	0.2101	1.246	n/a	n/a	17555.800	2.070	7.727	0.4102	1.000	n/a	n/a

JE
12/23/03

000179

PAI - Gas Flow Proportional Counter

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

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

Background: BKGABW
Date of B: 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^(a*(mass-a0))		y = b*m^(b*(mass-b0))	
Alpha b=	1.24550	Beta b=	1.0008
m=	0.89400		0.9999
a=	1.0000		1.0000
a0=	0.0000		0.0000
Alpha to Beta X-talk y = m*b^-mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.2749	b->a xtalk m=	-2.00E-05
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
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	1.906	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: SRB1221B
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:09

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

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

y = b*m^(x*(mass-x0))		y = b*m^(x*(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
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=	0.2749	b ->a xtalk m=	-2.00E-06
a ->b xtalk b=	1.0010	b ->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	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

AG 12/23/03

000181

Pg 265874 a
(cont. from pg NA b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

SOP (Rev 8

Date: 12/21/03

Instrument Background and Response Checklist

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

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

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

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

Runlog

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	EFB1221A	30	1125	JE	JE	12/21/03	
1	D312072-1	AB 631215-3	210	4BB1221	1000	1132	JE	JE	12/22/03	
2	-1D									
3	-2									
4	-2MS									
5	AD031215-3MB									
6	-3LCS									
13 13	602	–	Sr-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14 14	729	–								
15 9	73	–	Am-241 wipe Ver	AMB1221	5	1151	JE			
10	601	–								
14 10	602	–	Sr-90 wipe Ver	SRB1221A	5	1157	JE	JE	12/21/03	
15 11	729	–								
13 10	73	–	Am-241 wipe Ver	AMB1221A	5	1158	JE			
14 11	601	–								
15 15	602	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	

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

Reviewed by JE Date 12/22/03

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

000182

Low Background Gas Flow Proportional Counter Run Log

Date: 12/21/03

Instrument: LB4100B

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
13	729	–	Sr-90 wipe Ver	SRD1221B	5	1204	JE	JE	12/21/03	NA
11	~~[illegible]~~ 73	–	Am241 wipe Ver	AMB1221B	5	1205	JE	↓	↓	↓
9	601	–	↓	↓	↓	↓	↓	↓	↓	↓

12/22/03

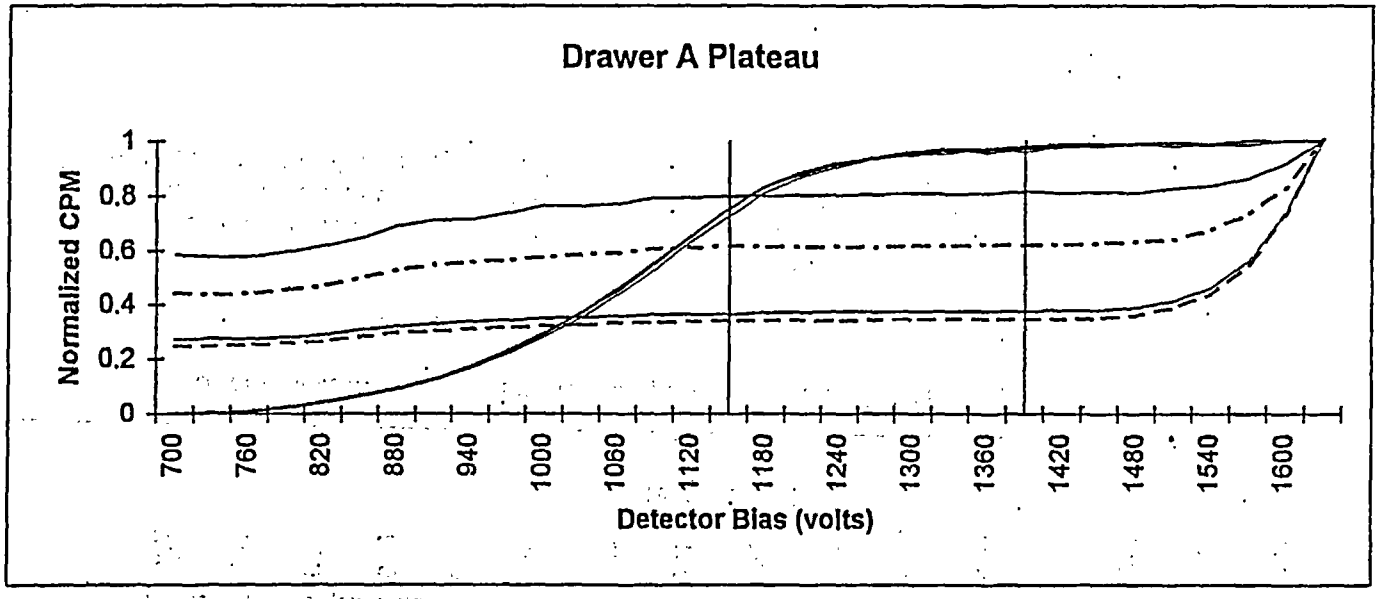
Form 780r6.frm (4/6/2001)

Reviewed [illegible] Date 12/22/03

Comments:

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

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



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1147.5

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

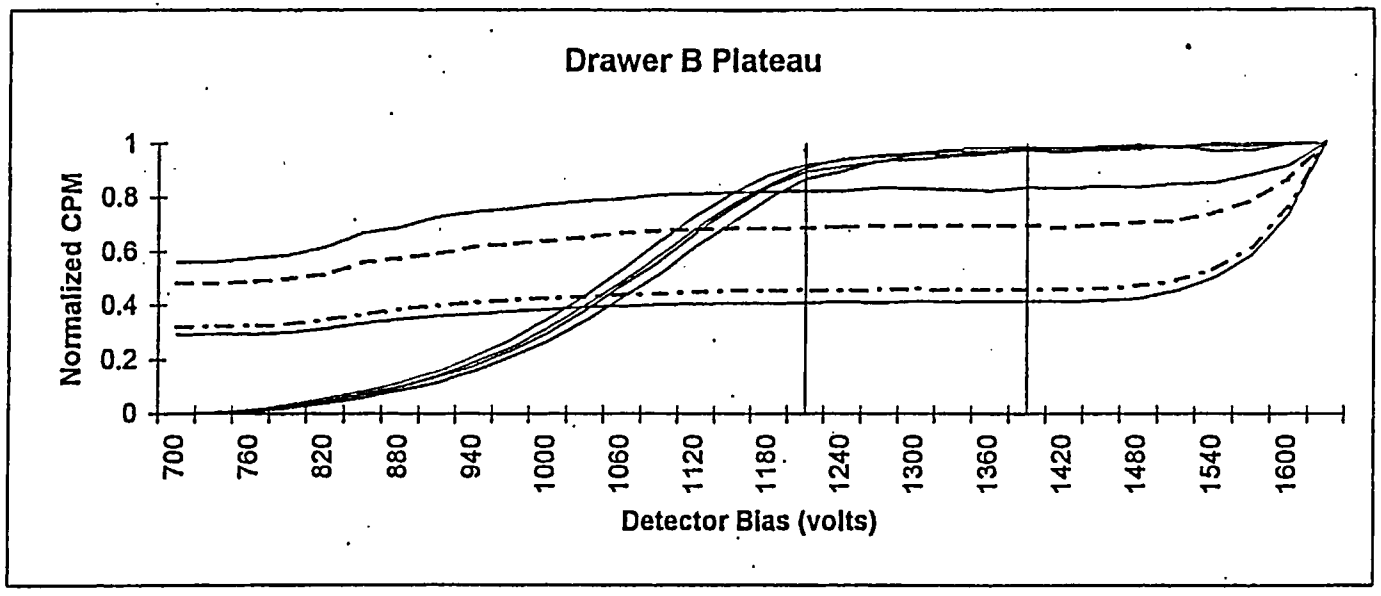
11/13/03

Printed 11/11/03 3:38 PM

000184

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

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



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1200

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

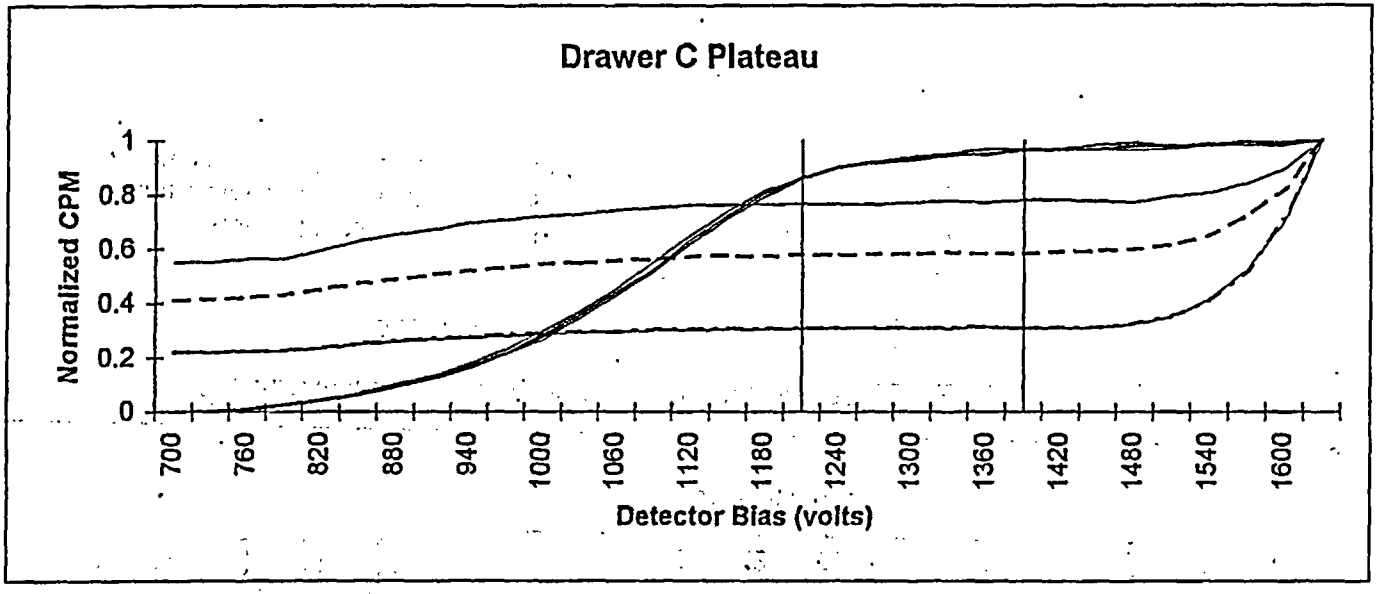
AE 11/13/03

Printed 11/ 03 3:39 PM

000185

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

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



Optimum alpha beta simultaneous operating voltage: 1380

Optimum alpha only operating voltage: 1200

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

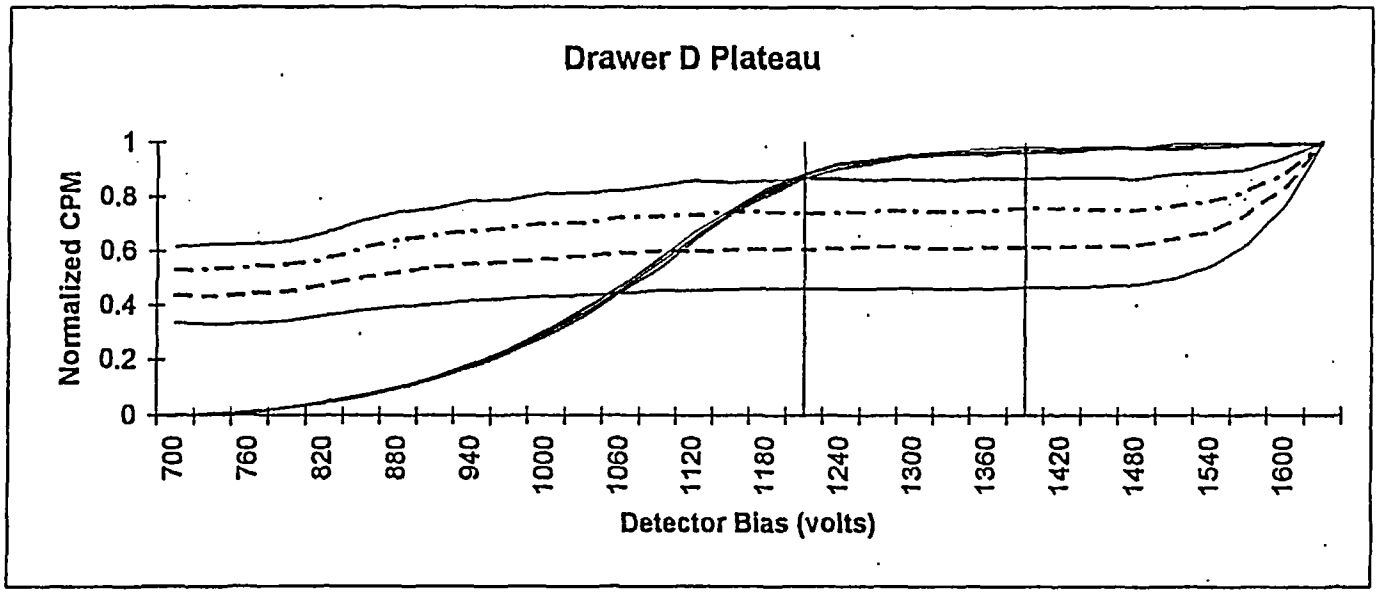
11/13/03

Printed 11/12/03 11:16 AM

000186

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

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



Optimum alpha beta simultaneous operating voltage: 1380

Optimum alpha only operating voltage: 1200

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

Printed 11/[illegible]3 11:17 AM

JE 11/13/03

000187

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

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

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

1/5/04

Source Database for OSUM for LB4100-B

Number of sources in table: 45

Application Revision: A

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

12/11/03 JE Complete computer back-up was performed. Scandisk was done and the computer's C:/ drive was defraged.
Filename ~~12/1~~ JE 12/11/03 12/11/03 LB4100-B
RG 12/16/03

12/24/03 JE **Am-241 wipe Calibration**
Am-241 on filter

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

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

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

12/26/03 JE **Sr-90 wipe Calibration**
Sr-90 on filter

Source: 602 Source ID: 1124 log file: ~~Sr-90~~ 6-12/26/00 Sr Wipe-11/03

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

6→2 x-talk is calculated for each detector using the following equation:
counts in ~~Beta~~ Alpha channels / counts in Beta channels
1/2/04

Continued on Page

Read and Understood By

Clare Lewis 1/2/04 Signed Date
Julie Fellingson 1/2/04 Signed Date

pg 265878 a
(cont. from pg N/A 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

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

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

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	0312081-1	ABO31222-1	α/β	ABB1226	60	10 ~~26~~ 42 JE 12/26/03	JE	JE	12/26/03	
2	-1D									
3	-1AS									
4	-1MSD									
5	-2									
6	-3									
7	ABO31222-1AB									
8	-1LCS									
9	0312082-1	SRO31222-2	Sr-90	SRB1226	60	10 ~~30~~ 40 JE 12/26/03	JE			
10	-2									
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

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

Reviewed by CJ Date 12/29/03

Comments:

000191

pg 265878 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: LB4100B

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
16	0312082-9	SR031222-2	Sr-90	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-10			SRB1226A	60	1230	JE	JE	12/26/03	
2	0312128-4									
3	-4D									
4	SR031222-2LB									
5	-2LCS									
6	SR031222-3LCS	SR031222-3	Sr-90	SRB1226B	60	~~1223~~ 1230	JE			
7	0312118-1	ABO31222-2	α/β	ABB1226A	60	1223	JE			
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	ABO31222-2	α/β	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10MS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	ABO31222-2LB									
8	-2LCS									
1	73	N/A	Am-241 Wire 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 ~~44~~ b)
265878
JE 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. JE 12/26/03

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

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

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

JE 12/26/03

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
3	73	NA	Am241 wipe Calib	EAM1226B	18	1511	JE	JE	12/26/03	NA
4				C		1516				
5				D		1522				
6				E		1527				
7				F		1533				
8				G		1540				
9				H		1545				
10				I		1552				
11				J		1556				
12				K		1603				
13				L		1607				
14				M		1616				
15				N	JE 12/26/03	1621				
16				O		1626				
1	602	NA	Sr-90 wipe Calib	ESW1226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

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

Reviewed by CJ Date 12/29/03

Comments:

000193

ANALYTICS

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

73

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

47007-307

Am-241 47 mm Membrane Filter in Stainless Steel Planchet

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

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

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

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

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

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

P O NUMBER 35829, Item 1

Q A APPROVED 9-30-93

Am-241 Standard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:		160.4	dps	4335.1	pCi/s
	Det	Act. (pCi/s)	Ave Act	2 Std Dev*	% Recovery
Count 1	2	4290			99.0%
Count 2	8	4430			102.2%
Count 3	3	4370	4363.33	114.70	100.8%

Ave Rec w/in 5% (PAI)	Ave w/in 2 Std Dev (ICPT)	2 Std Dev w/in 10% Ave (ICPT)
100.7% Pass	Pass	Pass

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

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

031983D02.SPC Analyzed by 73

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #1

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

Detector #: 2 (Detector 2)

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

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

Where En = Sqrt(Energy in keV)

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

PEAK SEARCH RESULTS

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

031983D02.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

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

Bkg.File Detector #: 2

==========

BACKGROUND SUBTRACT RESULTS

==========

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

031983D02.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif

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

Detector #: 2 (Detector 2)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031863D08.SPC Analyzed by YF

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

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

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

PEAK SEARCH RESULTS

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

031863D08.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

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

Bkg.File Detector #: 8

==========

BACKGROUND SUBTRACT RESULTS

==========

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

031863D08.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031552D03.SPC Analyzed by 77

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

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

Detector #: 3 (Detector 3)

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

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

Where En = Sqrt(Energy in keV)

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

PEAK SEARCH RESULTS

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

031552D03.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

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

Bkg.File Detector #: 3

==========

BACKGROUND SUBTRACT RESULTS

==========

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

031552D03.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

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

Detector #: 3 (Detector 3)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

Paragon Analytics, Inc.

Gamma Spectrometer Run Log

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

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

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

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

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

267683 B

Form 754rev.frm 9/19/2001

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

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

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

FE
1/5/04

Source Database for OSUM for LB4100-B

Number of sources in table: 45

Application Revision: A

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

12/11/03 JE Complete computer back-up was performed. Scandisk was done and the computer's C/ drive was defragged
Filename ~~12/1~~ 12/11/03 LB4100 B
RG 12/16/03

12/24/03 JE

Am-241 wipe Calibration
Am-241 on filter

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

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

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

12/26/03 JE

Sr-90 wipe Calibration
Sr-90 on filter

Source: 602 Source ID: 1124 log file: ~~Sr90~~ ~~6-12/26/00~~ Sr Wipe - 11/03

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

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

Continued on Page

Read and Understood By

Clare Smith 1/2/04 Signed Date
Julie Fellingson 1/2/04 Signed Date

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

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 724 v 8

Date: 12/26/03

Instrument Background and Response Checklist

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

Bkg.	Cal. File ID
Dr A	BKB1220 ✓
Dr B	
Dr C	
Dr D	✓

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	0312081-1	AB031222-1	210	ABB1226	60	10~~26~~48	JE	JE	12/26/03	
2	-1D					12/26/03				
3	-1AS									
4	-1MSD									
5	-2									
6	-3									
7	AD031222-1AB									
8	-1LCS									
9	0312082-1	SR031222-2	S1-90	SRB1226	60	10~~30~~40	JE			
10	-2					12/26/03				
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									✓

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

Reviewed by CG Date 12/29/03

Comments:

000209

pg 265878 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

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

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

Reviewed _____ Date 12/29/03

Comments:

000210

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

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 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

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

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

12/26/03

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
3	73	NA	Am241 Wipe Calib	EAM1226B	10	1511	JE	JE	12/26/03	NA
4				G		1516				
5				D		1522				
6				E		1527				
7				F		1533				
8				G		1540				
9				H		1545				
10				I		1552				
11				J		1556				
12				K		1603				
13				L		1607				
14				M		1616				
15				N	7,24/03	14621				
16				O		1626				
1	602	NA	Sr-90 Wipe Calib	ESW1226L	2	1523	JE	JE	12/26/03	
2				M		1524				
3				N		1526				

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

Reviewed by _____ Date 12/29/03

Comments:

0002211

pg 265879 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
4	C02	NA	~~Sr-90 w/ Gel~~	ESW1226O	2	1529	JE	JE	12/26/03	NA
5			Sr-90 w/ Gel	H		1515				
6				I		1517				
7				J		1519				
8				K		1520				
9				ESW1226		1500				
10				A		1501				
11				B		1503				
12				C		1506				
13				D		1508				
14				E		1509				
15				F		1512				
16				G		1513				
1.15	BKG Check	NA	NA	BKB1226A	60	1633	JE	JE	12/26/03	
1	0310215-16	SR031210-2	Sr-90	SRB1226C	1000	1748	JE	JE	12/27/03	
2	-17									
3	-18									
4	-19									
5	-20									
6	-21									
7	-21D									
8	-22									
9	SR031210-2.4B									
10	-2LCS									
11	0312081-1	SR031222-1	Sr-90	SRB1226D	200	1751	JE			
12	-1D									
13	-2									
14	-3									
15	SR031222-1.4B					1751	JE	JE	12/27/03	NA
16	-1LCS									

Reviewed ~~JE~~ Date 12/27/03

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

Comments:

000212

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

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

62753A-307

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

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

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

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

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

*99% Confidence Level

Impurities: γ-impurities <0.1%

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

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

P O NUMBER 001703, Item 3

PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: VM Moty 12-10-01

New Standard Verification

WO#

Date 12/21/03

Previously Verified Standard

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

Standard to be Verified

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

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

r:\ins\gip\swipe

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

PAI - Gas Flow Proportional Sample Analysis LB4100-B

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

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

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

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

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m*(e^(mass-x0))		y = b*m*(e^(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a->b xtalk m=	8.2749	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 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.
D1	602	12/21/03 11:56	5.00	0.0	27.400	0.140	10.359	0.2111	1.246	n/a	n/a	14798.600	1.543	7.508	0.4115	1.000	n/a	n/a
D2	729	12/21/03 11:56	5.00	0.0	28.200	0.105	12.289	0.2101	1.246	n/a	n/a	17555.600	2.070	7.727	0.4102	1.000	n/a	n/a

JE
12/23/03

000215

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

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

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

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

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D2	602	12/21/03 12:02	5.00	0.0	25.600	0.105	10.353	0.2101	1.246	n/a	n/a	14789.400	2.070	7.014	0.4102	1.000	n/a	n/a
D3	729	12/21/03 12:02	5.00	0.0	31.400	0.138	12.261	0.2103	1.246	n/a	n/a	17515.200	1.906	8.604	0.4195	1.000	n/a	n/a

SG 12/23/03

000216

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

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

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

Alpha [illegible]		Beta [illegible]	
y = b*m^(e^(mass-x0))		y = b*m^(e^(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9888
e=	1.0000	e=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.00E-06
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	729	12/21/03 12:09	5.00	0.0	30.400	0.140	12.177	0.2111	1.248	n/a	n/a	17396.200	1.543	8.330	0.4115	1.000	n/a	n/a
D3	602	12/21/03 12:09	5.00	0.0	25.200	0.138	10.368	0.2103	1.248	n/a	n/a	14812.000	1.908	8.905	0.4195	1.000	n/a	n/a

000217

JG
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
1 700	A 0.1
2 800	B
	C
	D

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

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

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

Runlog

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	EFB1221A	30	1125	JE	JE	12/21/03	
1	B312072-1	AB 031215-3	210	4BB1221	1000	1132	JE	JE	12/22/03	
2	-1D									
3	-2									
4	-2MS									
5	AB031215-3MB									
6	-3LCS									
13 13	602	–	Sr-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14 14	729	–								
159	73	–	Am-241 wipe Ver	AMB1221	5	1151	JE			
10	601	–								
14 10	602	–	Sr-90 wipe Ver	SRB1221A	5	1157	JE	JE	12/21/03	
15 11	729	–								
13 10	73	–	Am-241 wipe Ver	AMB1221A	5	1158	JE			
14 11	601	–								
15 15	602	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	

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

Reviewed by JE Date 12/22/03

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

000218

pg 000074 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/21/03

Instrument: **LB4100B**

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

12/22/03

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

Reviewed JE Date 12/22/03

Comments:

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	Y	LT	P
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 T( ) Beta and Alpha Scan Data
Survey Unit: Laboratory D2205
Building 53, Denver Federal Center

Laboratory ID		Action Criteria	Individual Measurements							
Beta Scans										
D2205	Bkg. Value	$MDCR_{Surveyor}$								
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										
D2205		Bkg. Value								
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

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements										
Systematic Direct Read Locations													
D2205													
Wall	1,000 dpm/100cm^2	1,000 dpm/100cm^2	452	385	3	17	378	326	472	456	268		
Wall	1,000 dpm/100cm^2	1,000 dpm/100cm^2	211	266	-3	172	120	146	200	405			
Floor	1,000 dpm/100cm^2	1,000 dpm/100cm^2	-286	-252	177	153	259	156	65	53	-196		
Floor	1,000 dpm/100cm^2	1,000 dpm/100cm^2	-1094	-864	-710	-1334	-684						

No. of meas./locs	31
Maximum	472.0
Mean	-9.1
Standard Deviation	466.1
No. > Administrative Goal	0
No. > Release Criteria	0

Bias Direct Read Locations													
D2205													
Wall	1,000 dpm/100cm^2	1,000 dpm/100cm^2	-398										
Floor	1,000 dpm/100cm^2	1,000 dpm/100cm^2	537	616	150	411	178	-253	-319	-2	-5		

No. of meas./locs	10
Maximum	616.0
Mean	91.5
Standard Deviation	354.6
No. > Administrative Goal	0
No. > Release Criteria	0

Quality Control; Field Duplicate Performance (Criteria <20%)	*1st*	*2nd*	*RPD*
D2205			
Location D-20	-887	-634	33
Location D-25	53	-115	-542
Location BS-2205-10	-398	-752	-62

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

Final Status Data Summary Ta... Direct Alpha Measurements
Survey Unit: Laboratory D2205
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements											
Systematic Direct Read Locations														
D2205													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
Bias Direct Read Locations														
D2205													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

Quality Control; Field Duplicate Performance (Criteria <20%)	*1st*	*2nd*	*RPD*
D2205			
Location D-20	-29	-30	-3
Location D-25	-14	-19	-30
Location BS-2205-10	12	-19	-886

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

Final Status Data Summary Table: Beta Wipe Sample Results
Survey Unit: Laboratory D2205
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements		
Systematic Direct Read Locations					
D2205				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
Bias Direct Read Locations					
D2205				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

Quality Control; Field Duplicate Performance (Criteria <20%)	*Regular*	*Field Duplicate*	*Field Splits*	*RPD*
D2205				
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.
cm^2 - Square centimeters.
DCGL - Derived concentration value representing the upper limit criteria.
RPD - Relative percent difference.
dpm - Disintegrations per minute.
ALARA - As low as reasonably achievable.
nd - non-detected
nc - not calculated

Final Status Data Summary Tab... Alpha Wipe Sample Results
Survey Unit: Laboratory D2205
Building 53, Denver Federal Center

Laboratory ID	Administrative Goal	Release Criteria	Individual Measurements		
Systematic Direct Read Locations					
D2205				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
Bias Direct Read Locations					
D2205				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

Quality Control; Field Duplicate Performance (Criteria <20%)	*Regular*	*Field Duplicate*	*Field Splits*	*RPD*
D2205				
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.
cm^2 - Square centimeters.
DCGL - Derived concentration value representing the upper limit criteria.
RPD - Relative percent difference.
dpm - Disintegrations per minute.
ALARA - As low as reasonably achievable.
nd - non-detected
nc - not calculated

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115	DATE: 2 26 04	TIME START: 0900	TIME COMPLETE: 1030	PAGE 1 OF 10
LOCATION: EPA NEIC RM 2205	SURVEYOR(S): Will Trent				
Denver Federal Center, CO	SURVEY NUMBER: 022604-22				
Denver, CO	MAP ID: LAB D2205				

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

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

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

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

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

COMMENTS: Judgemental Scans

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #		
	ALPHA (TOTAL) 2360 , 184904	BETA-GAMMA (TOTAL) 2360 , 184904
	ALPHA (TOTAL) 2360 , 185768	BETA-GAMMA (TOTAL) 2360 , 185768
	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☑	Item or Location
1					FT	C-3
2					WB	A-2
3					WB	B-3
4					WB	A-5
5					WB	B-6
6					FT	C-5
7					FT	F-3
8					FT	G-5
9		N			FT	H-3
10					FT	E 1
11						
12						
13						
14						
15						
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22						
23						
24						
25						

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

RCS REVIEW [signature] DATE 3-2-04

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
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW: [signature]	DATE: 3-2-04		

Grid Intersection C, 3

350 β cpm

6 α cpm

Grid Intersection A, 2

375 β cpm

4 α cpm

Contamination / R[illegible]tion Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: 2205 / Laboratory-Room		PAGE 3 OF 10
COMMENTS:	SURVEYOR(S): Wiley Trent	SURVEY NUMBER: 022604-22	DATE: 02-26-04
RCS REVIEW: [signature]	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 B, 3

375 cpm β⁻

4 cpm α

Grid Intersection A, 5

410 cpm β⁻

6 cpm α

Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: RM 2205 / Laboratory-Room		PAGE 4 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: [signature]	DATE: 3.2.04		

Grid Intersection B .6

380 cpm β-

4 cpm α

Grid Intersection C .5

405 cpm β-

7 cpm α

Contamination / R[illegible]ation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: RM 2205 / Laboratory-Room		PAGE 5 OF 10
COMMENTS:	SURVEYOR(S): Wise / Trent	SURVEY NUMBER: 020204-22	DATE: 8-26-04
RCS REVIEW: [signature] 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 F, 3

375cpm β⁻

4cpm α

Grid Intersection 9, 5

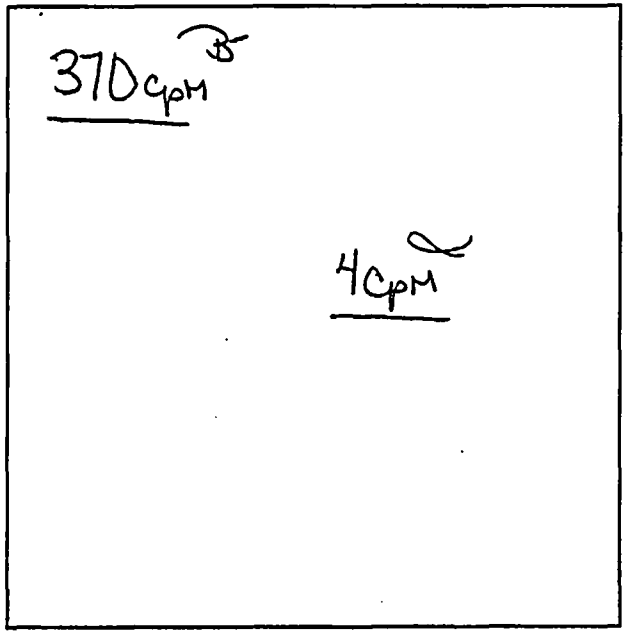
340cpm β⁻

5cpm α

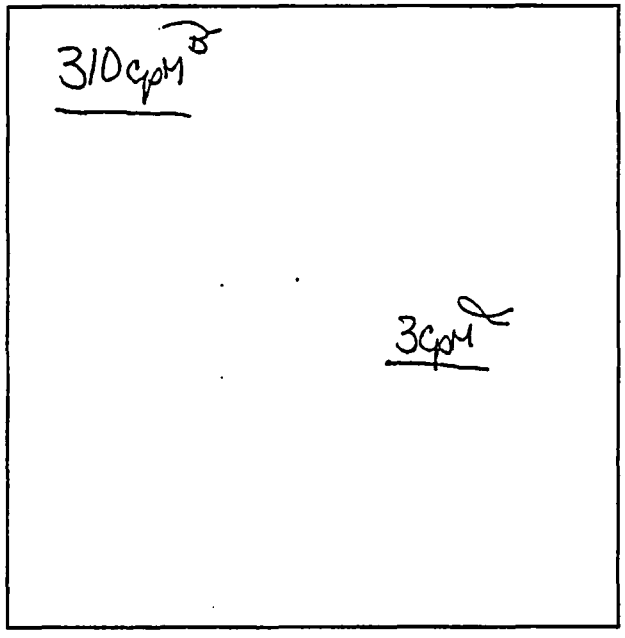
Contamination / Radiation Survey Report

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: [signature] DATE: 3.2.04			

Grid Intersection H, 3



Grid Intersection E, 1



Contamination / Radiation Survey Report

PROJECT NUMBER: 101115	ACTIVITY / LOCATION: RM 2205	/ Laboratory-Room	PAGE 7 OF 10
COMMENTS:	SURVEYOR(S): Wm Trent	SURVEY NUMBER: 022604-22	DATE: 02-26-04
RCS REVIEW: [signature]	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

9.2.04

8 of 10

032604-22

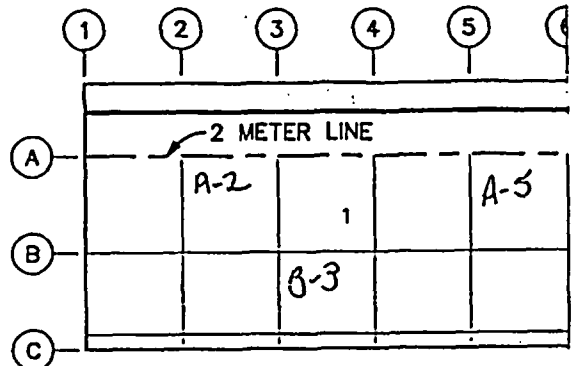
MDCRsurveyor Scanning Levels for Specific Materials

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

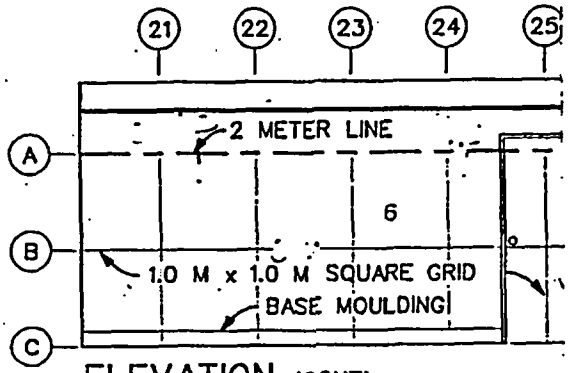
Wall Board	**(WB)**	BKGD CPM	230.00	MDCR surveyor	345	gross cpm
Floor tile	**(FT)**	BKGD CPM	275.22	MDCR surveyor	401	gross cpm
Wood	**(wo)**	BKGD CPM	210.12	MDCR surveyor	320	gross cpm
Concrete Floor	**(CF)**	BKGD CPM	357.50	MDCR surveyor	500	gross cpm
Metal	**(ME)**	BKGD CPM	256.10	MDCR surveyor	377	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

3.2.04

Pg 9 of 10
022604-22



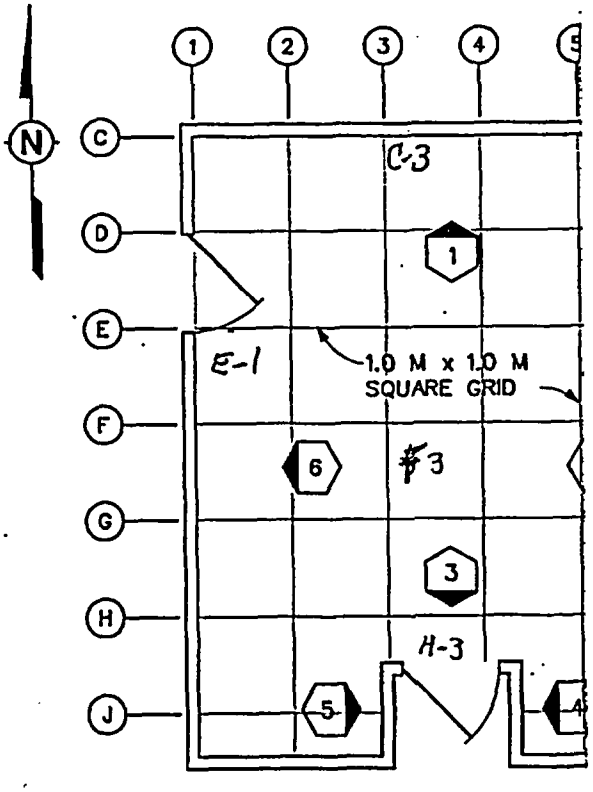
ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
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.



PLAN VIEW
SCALE: 1" = 2.0 m

FIGURE 3-15
REFERENCE GRID FOR
LABORATORY D2205

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Shaw Shaw Environmental, Inc.

DWG. NO.: 101115_neic_0013.dgn	PROJ. NO.: 101115
TECH. REVIEW: R.COLLINS	PROJ. MGR.: R.L.ROGERS
INITIATOR: R.COLLINS	CADD REVIEW: C.BENTLEY
STARTING DATE: 01DEC03	DRAWN BY: C.E.TUMLIN

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101115_neic_0013.dgn

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115
LOCATION: EPA NEIC	SURVEYOR(S): K. WISE / T. TRENT
Denver Federal Center, CO	SURVEY NUMBER: 022604-21
Denver, CO	MAP ID: LAB D2205

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

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

Source Check Data	Contamination Surveys				Radiation Surveys
[redacted]	α (TOTAL)	α (TOTAL)	β-γ (TOTAL)	β-γ (TOTAL)	Beta-Gamma
Instrument	184904 / 185768	185774	184904 / 185768	185774	NA
Source Type and I.D.	Th-230, 1170/89	Th-230, 1170/89	Cs-137, 92CS5000	Cs-137, 92CS5000	
Source Strength in dpm	13800	13800	789565	789565	Cs
Efficiency	0.13 / 0.15	0.15	0.16 / 0.17	0.18	[redacted]
MDC in dpm/100 cm²	See attached instrument sheets for material specific backgrounds and MDC's.				Sat. ☐ Unsat. ☐
Background in cpm					mrem/hr or μrem/hr

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

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

COMMENTS: Item # 1-17 - 2360 # 185768 # 18-33 # 184904
34-37 - 2360 # 185768 # 38-44 # 184904

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #		
	ALPHA (TOTAL) 2360 , 184904	BETA-GAMMA (TOTAL) 2360 , 184904
	ALPHA (TOTAL) 2360 , 185768	BETA-GAMMA (TOTAL) 2360 , 185768
	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A

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

DATE: 02-26-04 TIME START: 0900 TIME COMPLETE: 1415 PAGE 1 OF 10

[redacted]	Alpha Loose	Alpha Total	Beta-Gamma Loose	Beta-Gamma Total	Alpha cpm ☐ Beta cpm ☐ Material ☒	Item or Location
Item #	dpm/100cm²	dpm/100cm²	dpm/100cm²	dpm/100cm²		
1	NA	2	NA	452	WB	D-01
2		9		385		D-02
3		-12		3		D-03
4		-5		17		D-04
5		-2		378		D-05
6		-2		326		D-06
7		-6		472		D-07
8		-2		456		D-08
9		2		268		D-09
10		-19		211		D-10
11		-12		266		D-11
12		-17		-3		D-12
13		-19		172		D-13
14		-20		120		D-14
15		-10		146		D-15
16		-27		200		D-16
17		-11		405	WB	D-17
18		10		-286	FT	D-18
19		-24		-252		D-19
20		-32		177		D-20
21		-30		153		D-21
22		-32		259		D-22
23		-25		156		D-23
24		-20		65		D-24
25		-14		53	FT	D-25

RCS REVIEW: [signature] 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: EPA NEIC
Denver Federal Center, Building 53
Denver, CO

SURVEYOR(S): K. WISE / T. TRENT
SURVEY NUMBER: 022604-21
MAP ID: LAB D2205

COMMENTS:

RCS REVIEW [signature] DATE 3-16-04

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☒	Item or Location
26	NA	19	NA	-196	FT	D-26
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		211 ~~-568~~ 3-16-04		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	Repliate BS-2205-10
45						
46						
47				NA		
48						
49						
50						

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
51						
52						
53						
54						
55						
56						
57						
58						
59				NA		
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75						

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
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW:	DATE: 3-16-04		

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
	NOTE: THE KNOWING AND WILLFUL RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES.		
RCS REVIEW: [signature]	DATE: 3.16.04		

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: [signature]	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

Pg 6 of 10

022604-21

3.16.04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 185768

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / RN012714

Total Instrument Effciency 0.0375 dpm/cpm

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

Pg 7 of 10
12604-21
3.16.04

Material Specific Backgr[illegible] and MDC Sheet for Beta Measurements

Instrument/SN: Ludlum 2360 / 185768

Probe/SN: Ludlum 43-68 / RN012714

Background Count Time 5.00 minutes

Total Instrument Effciency 0.0850 dpm/cpm

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

Pg 8 of 10
022604-21
3-16-04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 184904

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / PR138731

Total Instrument Effciency 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

Pg 1 of 10
12604-21
3-16-04

Material Specific Backgr[illegible] and MDC Sheet for Beta Measurements

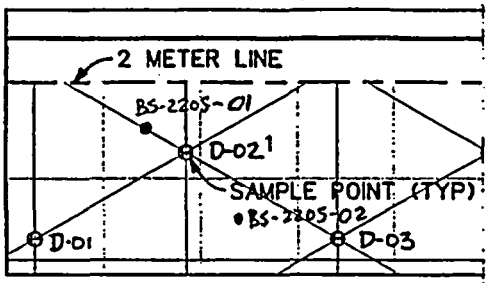
Instrument/SN: Ludlum 2360 / 184904

Probe/SN: Ludlum 43-68 / PR138731

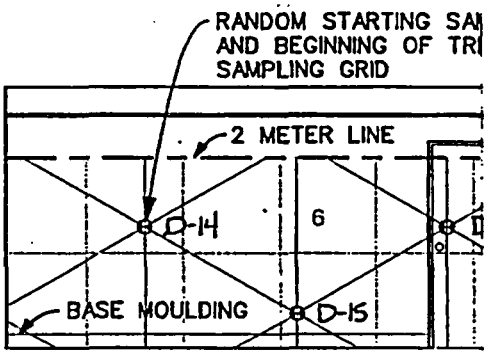
Background Count Time 5.00 minutes

Total Instrument Effciency 0.0800 dpm/cpm

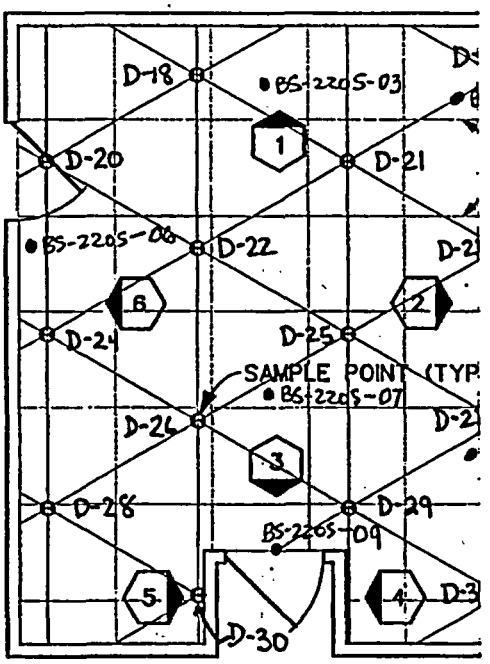
Wall Board	**(WB)**	265.14	cpm	**MDC**	276	dpm/100cm2	**Sample Count Time**	15.00	min
Floor Tile	**(FT)**	303.36	cpm	**MDC**	296	dpm/100cm2	**Sample Count Time**	15.00	min
Wood	**(WO)**	180.64	cpm	**MDC**	229	dpm/100cm2	**Sample Count Time**	15.00	min
Cement Floor	**(CF)**	449.28	cpm	**MDC**	359	dpm/100cm2	**Sample Count Time**	15.00	min
Metal	**(ME)**	311.78	cpm	**MDC**	300	dpm/100cm2	**Sample Count Time**	15.00	min
Concrete Block	**(CB)**	475.30	cpm	**MDC**	369	dpm/100cm2	**Sample Count Time**	15.00	min
Glass	**(GL)**	350.32	cpm	**MDC**	317	dpm/100cm2	**Sample Count Time**	15.00	min
Counter Top	**(CT)**	292.52	cpm	**MDC**	290	dpm/100cm2	**Sample Count Time**	15.00	min
Black&White Floor Tile	**(BWFT)**	982.02	cpm	**MDC**	530	dpm/100cm2	**Sample Count Time**	15.00	min
Wall Board Downstairs	**(WBD)**	270.32	cpm	**MDC**	279	dpm/100cm2	**Sample Count Time**	15.00	min



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

Shaw Shaw Environmental, Inc.

STARTING DATE: 01DEC03 | INITIATOR: R.COLLINS | TECH. REVIEW: R.COLLINS | DWG. NO.: 101115_neic_0014.dgn
DRAWN BY: C.E.TUMLIN | CADD REVIEW: C.BENTLEY | PROJ. MGR.: R.L.ROGERS | PROJ. NO.: 101115

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ctumlin
101115_neic_0014.dgn

D226004-21
3.16.04

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				
Denver Federal Center, CO	SURVEY NUMBER: 030504-43				
Denver, CO	MAP ID: LAB D2205				

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

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

Source Check Data	Contamination Surveys				Radiation Surveys
	α (TOTAL)	α (TOTAL)	β-γ (TOTAL)	β-γ (TOTAL)	Beta-Gamma
Instrument	184904 / 185768	NA	184904 / 185768	NA	NA
Source Type and I.D.	Th-230, 1170/99	↓	Cs-137, 92CS3000	↓	
Source Strength in dpm	13800		789565		Cpm
Efficiency	0.13 / 0.15	↓	0.16 / 0.17	↓	
MDC in dpm/100 cm²	See attached instrument sheets for material specific backgrounds and MDC's.				Sat. ☐ Unsat. ☐
Background in cpm					R/hr or μrem/hr

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

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

COMMENTS: Replicate Survey for data point D-20 in LAB D2205.

SADS – See Attached Data Sheet

Contamination Survey INSTRUMENT / SERIAL #		
	ALPHA (TOTAL) 2360 , 184904	BETA-GAMMA (TOTAL) 2360 , 184904
	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A
	ALPHA (TOTAL) N/A	BETA-GAMMA (TOTAL) N/A

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☑	Item or Location
1	NA	-29	NA	-887	FT	D-20
2		-30		-634	FT	D-20
3						
4						
5						
6						
7						
8						
9						
10						
11				NA		
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
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 [signature] 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
RCS REVIEW: DATE: 3-10-04	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 Checks

1 / 255 cpm

2 / 302 cpm

Grid Intersection D, 20

Replicate Count

16 / 3880

15 / 4071

03 04-43

3-1-04

Material Specific Background and MDC Sheet for Alpha Measurements

Instrument/SN: Ludlum 2360 / 184904

Background count time 5 minutes

Probe/SN: Ludlum 43-68 / PR138731

Total Instrument Effciency 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

030504-43

3-10-04

Material Specific Background and MDC Sheet for Beta Measurements

Instrument/SN: Ludlum 2360 / 184904

Background count time 5 minutes

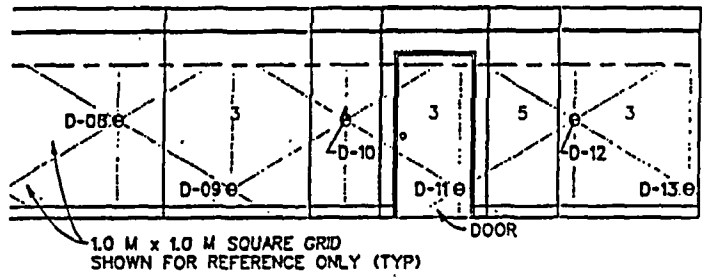
Probe/SN: Ludlum 43-68 / PR138731

Total Instrument Effciency 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

Pg 5 of 5

03050 13



(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

FIGURE 3-16

TRIANGULAR SAMPLING GRID FOR LABORATORY D2205

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

SCALE

0 2 4 METER

Shaw Shaw Environmental, Inc.

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT	PROJECT NUMBER: 101115
LOCATION: EPA NEIC RM 2205	SURVEYOR(S): Weie / Trent
Denver Federal Center, CO	SURVEY NUMBER: 022604-20
Denver, CO	MAP ID: LAB D2205

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

ACCEPTABLE SCAN LIMITS

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

REASON FOR SURVEY
☑ PROCEDURE NO. FINAL STATUS SURVEY PLAN
☐ SPECIAL Smear Survey
☐ ROUTINE

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

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

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

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

DATE: 02/26/04 TIME START: 1540 TIME COMPLETE: 1705 PAGE 1 OF 3

Item #	Alpha Loose dpm/100cm²	Alpha Total dpm/100cm²	Beta-Gamma Loose dpm/100cm²	Beta-Gamma Total dpm/100cm²	Alpha cpm ☐ Beta cpm ☐ Material ☐	Item or Location
1	*NOTE	NA	*NOTE	NA	NA	D-01
2						D-02
3						D-03
4						D-04
5						D-05
6						D-06
7						D-07
8						D-08
9						D-09
10						D-10
11						D-11
12						D-12
13						D-13
14						D-14
15						D-15
16						D-16
17						D-17
18						D-18
19						D-19
20						D-20
21						D-21
22						D-22
23						D-23
24						D-24
25						D-25

RCS REVIEW [signature] DATE 3-2-04

Contamination / Radiation Survey Report

CONTAMINATION / RADIATION SURVEY REPORT (CONTINUATION SHEET)

PROJECT NUMBER: 101115 | DATE: 022604 | PAGE 2 OF 3

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

SURVEYOR(S): Wise / Trent
SURVEY NUMBER: 022604-20
MAP ID: LAB D2205

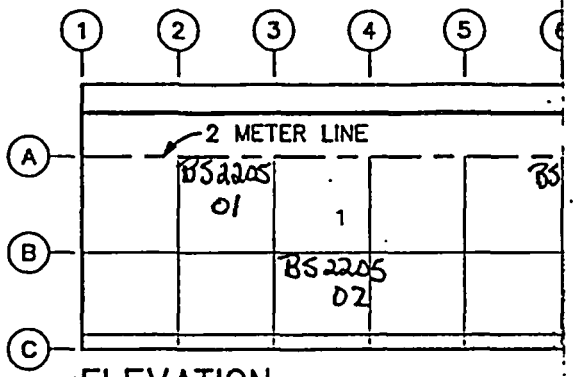
COMMENTS:

RCS REVIEW [signature] DATE 3·2·04

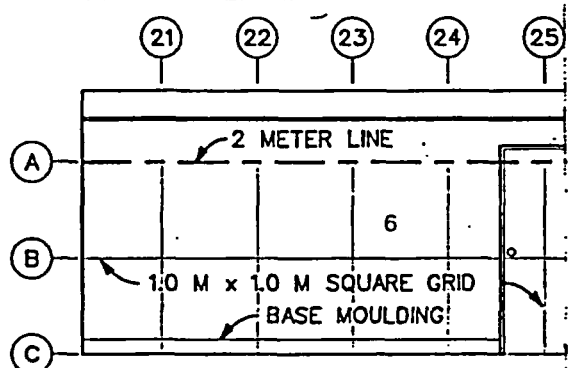
Alpha cpm ☐ Beta cpm ☐ Material ☐

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Item or Location
26					D·26
27					D·27
28					D·28
29					D·29
30					D·30
31					D·31
32					35 2205-01
33					-02
34		N			-03
35					-04
36					-05
37					-06
38					-07
39				A	-08
40					-09
41					-10
42					35.2205-10-FD
43					D20-FD
44					D·25 FD
45					
46					
47					
48					
49					
50					

Item #	Alpha LOOSE dpm/100cm²	Alpha TOTAL dpm/100cm²	Beta-Gamma LOOSE dpm/100cm²	Beta-Gamma TOTAL dpm/100cm²	Item or Location
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63			N		
64					
65					
66				A	
67					
68					
69					
70					
71					
72					
73					
74					
75					



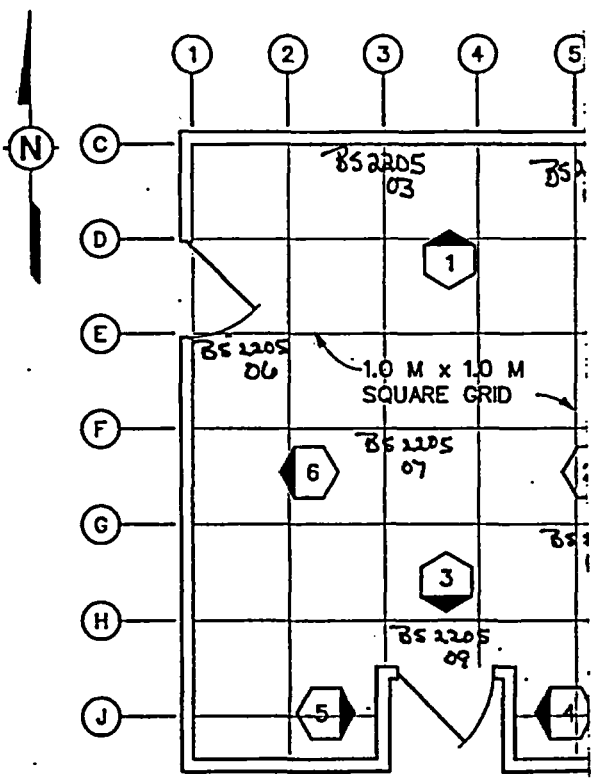
ELEVATION
SCALE: 1" = 2.0 m



ELEVATION (CONT)
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.



PLAN VIEW
SCALE: 1" = 2.0 m

FIGURE 3-15
REFERENCE GRID FOR LABORATORY D2205

EPA NEIC
DENVER FEDERAL CENTER
LAKEWOOD, COLORADO

Shaw Environmental, Inc.

DWG. NO.: 101115_neic_0013.dgn	PROJ. NO.: 101115
TECH. REVIEW: R.COLLINS	PROJ. MGR.: R.L.ROGERS
INITIATOR: R.COLLINS	CADD REVIEW: C.BENTLEY
STARTING DATE: 01DEC03	DRAWN BY: C.E.TUMLIN

r2d2-b&w-tabloid.plt
Standard_Color_Mod.tbl
12/2/2003
1:37:20 PM

2:0.0000 m:mm / IN.
ctumlin
101115_neic_0013.dgn

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,

Debbie Fazio

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

Shaw
Shaw Environmental & Infrastructure, Inc.

0403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: D2205 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	Report to:	Ben Dettore
Sample Team Members	K. WISE	Carrier Waybill No.	N/A		312 Directors Drive
	T. TRENT				Knoxville, TN 37923

ONE SAMPLE PER LINE

	Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
1	0226 04-20- 01	Rm D2205 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 (Signature/Affiliation)	Date: 3-1-04 Time: 1040	1. Received by (Signature/Affiliation) SHAW E&I	Date: 3-1-04 Time: 1040
2. Relinquished by (Signature/Affiliation)	Date: 3-1-04 Time: ~~1400~~ 1422	2. Received by (Signature/Affiliation)	Date: 3-1-04 Time: 1420
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation) Paragon (Samples received 3/1/04 on 3/3/04)	Date: 1300 Time: 3/2/04

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

Shaw
Shaw Environmental & Infrastructure, Inc.

0403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: D2205-022604-20

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 FSS Location D-09	2/26/04 1425	Smear		
10	-10	D-10				
11	-11	D-11				
12	-12	D-12				
13	-13	D-13				
14	-14	D-14				
15	-15	D-15				
16	-16	D-16				
17	-17	D-17				
18	-18	D-18				
19	-19	D-19				
20	-20	D-20				
21	-21	D-21				
22	-22	D-22	1426			
23	-23	D-23				
24	-24	D-24				
25	-25	D-25				
26	-26	D-26				
27	-27	D-27				
28	-28	D-28				
29	-29	D-29				
30	-30	D-30				

Shaw
Shaw Environmental & Infrastructure, Inc.

0403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: D2205-0226 -20
Pg 3 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
31	022604-20- 31	Rm D2205 FSS Location D-31	2/26/04 1426	Smear		
32	-32	BS-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	-41FD	BS-2205 - 10 Field Duplicate				
43	-20FD	Rm D2205 FSS Loc. -20 Field Dup.				
44	-25FD	Rm D2205 FSS Loc. -25 Field Dup.				
45	022604-20-FB	Field Blank				
		N				
		A				

Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw- Knox WORKORDER NO: 0403010

PROJECT MANAGER: Deb Fazio INITIALS: [illegible] DATE: 3/2/04

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

Cooler #'s 1

Temperature Ambient (Red Only) °C

Project Manager Signature / Date: Debbie 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 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). 3/2/04 Per Janus Nilsen, associate the 2nd -02 with -03 on chain of custody. Smears arrived stapled in numerical order. DJ

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 stack. they were stapled to

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

Was the client contacted? ___ No; ✓ Yes: Name Janus Nilsen 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.

Clau Lemin for — 3/16/04
Leah Balko — Date
Radiochemistry Instrument Technician

[illegible] — 3-16-04
Radiochemistry Final Data Review — Date

1

PARAGON ANALYTICS
Radiochemistry Data Package

Section 1

SAMPLE RESULTS SUMMARY

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004 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.
Client Project Name: Denver NEIC
Client Project Number: 101115

Laboratory Name: Paragon Analytics
PAI Work Order: 0403010

Reported on: Tuesday, March 16, 2004
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

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: 0403010

Reported on: Tuesday, March 16, 2004 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

000005

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: 0403010

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
0403010-14	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

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: 0403010

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
0403010-19	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

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
PAI Work Order: 0403010

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 PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

00008

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: 0403010

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
0403010-28	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

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: 0403010

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
0403010-32	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

000010

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

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	0.66	DPM/sample	WIPE	AB040305-4	3/10/04	U
0403010-38	022604-20-38	Sample	GROSS BETA	0.83 +/- 0.96	1.56	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

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: 0403010

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
0403010-41	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

000012

PARAGON ANALYTICS

Radiochemistry Data Package

2

Section 2

QC RESULTS SUMMARY

Gross Alpha/Beta Analysis by GFPC Wipe/Filter

PAI 724 Rev 8

Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 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 Aliquot: 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.
ClientProject 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.
ClientProject 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
12587-46-1	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.
ClientProject 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

Lab ID: AB040305-4BLCS

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
12587-47-2	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
12587-46-1	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 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.
[illegible] - 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

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics
Work Order Number: 0403010
Client Name: Shaw E & I Inc.
ClientProject 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
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	0.01 +/- 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
I - Requested MDC not met.
43 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
. - LCS Recovery below lower control limit.
I - LCS Recovery above upper control limit.
- 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*

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-11
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.
W - 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
I - Requested MDC not met.
83 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
.- LCS Recovery below lower control limit.
I - LCS Recovery above upper control limit.
- LCS, Matrix Spike Recovery within control limits.
I - Ma e 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.
ClientProject 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
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	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s 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.
/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
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.
1 - LCS Recovery above upper control limit.
2 - LCS, Matrix Spike Recovery within control limits.
3 - 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-31
Lab ID: 0403010-31DUP

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	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.
/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
d - Requested MDC not met.
d3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
. - LCS Recovery below lower control limit.
1 - LCS Recovery above upper control limit.
2 - LCS Matrix Spike Recovery within control limits.
4 - M[illegible]te 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-41
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.
/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
4 - Requested MDC not met.
43 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
. - LCS Recovery below lower control limit.
I - LCS Recovery above upper control limit.
) - 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

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: 022604-20-01
Lab ID: 0403010-1

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	0.68	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.
ClientProject 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
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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-02
Lab ID: 0403010-2

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.

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

Field ID: 022604-20-03
Lab ID: 0403010-3

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: abb0309l

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

Field ID	022604-20-04
Lab ID	0403010-4

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

Field ID: 022604-20-05
Lab ID: 0403010-5

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: abb0309l

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.
ClientProject ID: Denver NEIC 101115

FieldID: 022604-20-06
LabID: 0403010-6

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	0.20 +/- 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

Field ID: 022604-20-07
Lab ID: 0403010-7

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: abb0309l

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-08
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

Field ID: 022604-20-09
Lab ID: 0403010-9

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.
ClientProject ID: Denver NEIC 101115

FieldID: 022604-20-10
Lab ID: 0403010-10

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	-0.10 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-11
Lab ID: 0403010-11

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

Field ID: 022604-20-11
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	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 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)
U - 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: 022604-20-12
Lab ID: 0403010-12

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 +/- 0.34	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

Field ID: 022604-20-13
Lab ID: 0403010-13

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	-0.07 +/- 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

Field ID: 022604-20-14
Lab ID: 0403010-14

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.
ClientProject ID: Denver NEIC 101115

Field ID	022604-20-15
Lab ID	0403010-15

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	-0.06 +/- 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

Field ID: 022604-20-16
Lab ID: 0403010-16

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	0.03 +/- 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)

U - 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:	022604-20-18
Lab ID:	0403010-18

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

FieldID:	022604-20-19
LabID:	0403010-19

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	0.20 +/- 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)

L - 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:	022604-20-20
Lab ID:	0403010-20

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.
ClientProject ID: Denver NEIC 101115

FieldID: 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

Field ID: 022604-20-22
Lab ID: 0403010-22

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-23
Lab ID: 0403010-23

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-24
Lab ID: 0403010-24

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	0.17 +/- 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

Field ID:	022604-20-25
Lab ID:	0403010-25

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

FieldID:	022604-20-26
Lab ID:	0403010-26

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.
ClientProject 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 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	0.05 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID: 1022604-20-28
Lab ID: 0403010-28

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	0.35 +/- 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

Field ID:	022604-20-29
Lab ID:	0403010-29

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

Field ID:	022604-20-30
Lab ID:	0403010-30

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	0.26 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID	022604-20-31
Lab ID	0403010-31

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-31
Lab ID: 0403010-31DUP

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	-0.11 +/- 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

Field ID: 022604-20-32
Lab ID: 0403010-32

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 +/- 0.38	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

FieldID	022604-20-33
LabID	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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-35
Lab ID: 0403010-35

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	0.02 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID:	022604-20-36
Lab ID:	0403010-36

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.
ClientProject ID: Denver NEIC 101115

FieldID: 022604-20-37
LabID: 0403010-37

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 +/- 0.38	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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-38
Lab ID: 0403010-38

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-39
Lab ID: 0403010-39

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.
ClientProject ID: Denver NEIC 101115

Field ID:	022604-20-40
Lab ID:	0403010-40

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.
ClientProject 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
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	-0.03 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID:	022604-20-41
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	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 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

FieldID: 022604-20-41FD
LabID: 0403010-42

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.
ClientProject ID: Denver NEIC 101115

FieldID: 022604-20-20FD
LabID: 0403010-43

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.
ClientProject ID: Denver NEIC 101115

Field ID: 022604-20-25FD
Lab ID: 0403010-44

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	-0.11 +/- 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.
ClientProject ID: Denver NEIC 101115

Field ID:	022604-20-FB
Lab ID:	0403010-45

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

RAW DATA

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
0403010-1	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	[redacted]		100	0.01	0.68	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	B3	abb0309l	1:25 PM	0.094	NA	NA	0.35	NA	As Received	NA	U
0403010-1	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	[redacted]		100	0.45	1.41	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	B3	abb0309l	1:25 PM	1.470	NA	NA	0.85	NA	As Received	NA	U
0403010-1	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	0.080	24.75%	100	0.02	0.63	DPM/sample	0.01	
DUP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	A1	abb0310a	10:03 AM	0.071	NA	NA	0.32	NA	As Received	NA	U
0403010-1	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	1.820	40.98%	100	1.14	1.38	DPM/sample	0.56	
DUP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	A1	abb0310a	10:03 AM	1.338	NA	NA	0.89	NA	As Received	NA	U
0403010-2	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.100	25.71%	100	-0.11	0.75	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	B4	abb0309l	1:25 PM	0.125	NA	NA	0.37	NA	As Received	NA	U
0403010-2	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	1.540	41.60%	100	-0.12	1.48	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	B4	abb0309l	1:25 PM	1.572	NA	NA	0.85	NA	As Received	NA	U
0403010-3	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.080	25.68%	100	-0.21	0.77	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	C1	abb0309l	1:25 PM	0.130	NA	NA	0.36	NA	As Received	NA	U
0403010-3	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	1.670	42.01%	100	0.30	1.44	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	C1	abb0309l	1:25 PM	1.528	NA	NA	0.85	NA	As Received	NA	U
0403010-4	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.100	25.53%	100	-0.01	0.69	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	C2	abb0309l	1:25 PM	0.099	NA	NA	0.35	NA	As Received	NA	U
0403010-4	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	1.700	41.94%	100	0.17	1.48	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	C2	abb0309l	1:25 PM	1.610	NA	NA	0.87	NA	As Received	NA	U
0403010-5	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.110	25.24%	100	-0.27	0.88	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	C3	abb0309l	1:25 PM	0.172	NA	NA	0.43	NA	As Received	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 Recieved' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

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

Notes:

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

Abbreviations:

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 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
0403010-5	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	1.730	41.54%	100	0.30	1.48	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	C3	abb0309l	1:25 PM	1.583	NA	NA	0.88	NA	As Received	NA	U
0403010-6	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.170	24.89%	100	0.20	0.76	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D1	abb0309l	1:25 PM	0.115	NA	NA	0.43	NA	As Received	NA	U
0403010-6	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	1.670	41.57%	100	0.34	1.45	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D1	abb0309l	1:25 PM	1.497	NA	NA	0.86	NA	As Received	NA	U
0403010-7	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.070	25.16%	100	-0.15	0.71	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D2	abb0309l	1:25 PM	0.102	NA	NA	0.34	NA	As Received	NA	U
0403010-7	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	2.010	42.47%	100	-0.19	1.65	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D2	abb0309l	1:25 PM	2.079	NA	NA	0.95	NA	As Received	NA	U
0403010-8	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.100	25.82%	100	-0.08	0.73	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D3	abb0309l	1:25 PM	0.118	NA	NA	0.37	NA	As Received	NA	U
0403010-8	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	1.610	41.47%	100	-0.41	1.56	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D3	abb0309l	1:25 PM	1.762	NA	NA	0.89	NA	As Received	NA	U
0403010-9	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	0.130	25.54%	100	0.01	0.76	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D4	abb0309l	1:25 PM	0.122	NA	NA	0.40	NA	As Received	NA	U
0403010-9	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/9/04	1.900	43.03%	100	0.28	1.50	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	D4	abb0309l	1:25 PM	1.756	NA	NA	0.89	NA	As Received	NA	U
0403010-10	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	0.050	24.75%	100	-0.10	0.63	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	A1	abb0310	7:53 AM	0.071	NA	NA	0.29	NA	As Received	NA	U
0403010-10	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	1.580	40.98%	100	0.57	1.38	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 s	A1	abb0310	7:53 AM	1.338	NA	NA	0.84	NA	As Received	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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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
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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.

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MDC - Minimum Detectable Concentration (see PAI SOP 709)
DER - Duplicate Error Ratio
BDL - Below Detection Limit

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

Laboratory Name: Paragon Analytics
PAI Work Order: 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
0403010-11	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.190	24.60%	100	0.34	0.73	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	A2	abb0310	7:53 AM	0.101	NA	NA	0.45	NA	As Received	NA	U
0403010-11	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.450	40.97%	100	0.06	1.42	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	A2	abb0310	7:53 AM	1.394	NA	NA	0.83	NA	As Received	NA	U
0403010-11	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.180	25.08%	100	0.35	0.67	DPM/sample	0.01	
DUP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	A3	abb0310a	10:03 AM	0.088	NA	NA	0.42	NA	As Received	NA	U
0403010-11	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.600	41.53%	100	0.41	1.40	DPM/sample	0.30	
DUP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	A3	abb0310a	10:03 AM	1.397	NA	NA	0.84	NA	As Received	NA	U
0403010-12	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.090	25.08%	100	-0.01	0.67	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	A3	abb0310	7:53 AM	0.088	NA	NA	0.34	NA	As Received	NA	U
0403010-12	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.560	41.53%	100	0.35	1.40	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	A3	abb0310	7:53 AM	1.397	NA	NA	0.83	NA	As Received	NA	U
0403010-13	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.080	25.25%	100	-0.07	0.68	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	B3	abb0310	7:53 AM	0.094	NA	NA	0.33	NA	As Received	NA	U
0403010-13	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.640	42.08%	100	0.37	1.41	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	B3	abb0310	7:53 AM	1.470	NA	NA	0.84	NA	As Received	NA	U
0403010-14	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.080	25.71%	100	-0.19	0.75	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	B4	abb0310	7:53 AM	0.125	NA	NA	0.36	NA	As Received	NA	U
0403010-14	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.580	41.60%	100	-0.02	1.47	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	B4	abb0310	7:53 AM	1.572	NA	NA	0.86	NA	As Received	NA	U
0403010-15	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.120	25.68%	100	-0.06	0.77	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C1	abb0310	7:53 AM	0.130	NA	NA	0.39	NA	As Received	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
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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).
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Abbreviations:

TR- Tracer TA - Target Analyte
TPU - Total Propagated Uncertainty (see PAI SOP 743)
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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
0403010-15	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.710	42.01%	100	0.38	1.44	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C1	abb0310	7:53 AM	1.528	NA	NA	0.86	NA	As Received	NA	U
0403010-16	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.110	25.53%	100	0.03	0.69	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C2	abb0310	7:53 AM	0.099	NA	NA	0.36	NA	As Received	NA	U
0403010-16	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.650	41.94%	100	0.05	1.48	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C2	abb0310	7:53 AM	1.610	NA	NA	0.86	NA	As Received	NA	U
0403010-17	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.180	25.24%	100	0.01	0.88	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C3	abb0310	7:53 AM	0.172	NA	NA	0.47	NA	As Received	NA	U
0403010-17	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.610	41.54%	100	-0.02	1.49	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C3	abb0310	7:53 AM	1.583	NA	NA	0.86	NA	As Received	NA	U
0403010-18	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.180	24.72%	100	0.29	0.73	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C4	abb0310	7:53 AM	0.106	NA	NA	0.44	NA	As Received	NA	U
0403010-18	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	2.110	41.98%	100	1.42	1.43	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	C4	abb0310	7:53 AM	1.482	NA	NA	0.93	NA	As Received	NA	U
0403010-19	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.170	24.89%	100 *	0.20	0.76	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	D1	abb0310	7:53 AM	0.115	NA	NA	0.43	NA	As Received	NA	U
0403010-19	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.800	41.57%	100	0.65	1.45	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	D1	abb0310	7:53 AM	1.497	NA	NA	0.88	NA	As Received	NA	U
0403010-20	GROSS ALPHA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.180	25.16%	100	0.29	0.71	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	D2	abb0310	7:53 AM	0.102	NA	NA	0.43	NA	As Received	NA	U
0403010-20	GROSS BETA	2/26/04	AB040305-3	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	2.060	42.47%	100	-0.12	1.65	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-3-1	NA		NA	1 #	D2	abb0310	7:53 AM	2.079	NA	NA	0.96	NA	As Received	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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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: 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
0403010-21	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.120	24.77%	100	0.06	0.72	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-4-1	NA		NA	1 #	A4	abb0310b	10:03 AM	0.101	NA	NA	0.38	NA	As Received	NA	U
0403010-21	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.590	41.30%	100	0.49	1.39	DPM/sample	NA	
SMP	Trg. Analyte	2:25:00 PM	AB040305-4-1	NA		NA	1 #	A4	abb0310b	10:03 AM	1.365	NA	NA	0.84	NA	As Received	NA	U
0403010-21	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	0.200	23.03%	100	0.12	0.96	DPM/sample	0.10	
DUP	Trg. Analyte	2:25:00 PM	AB040305-4-1	NA		NA	1 #	A1	aba0310	12:46 PM	0.171	NA	NA	0.53	NA	As Received	NA	U
0403010-21	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-a	ab040305-3a	3/10/04	2.250	40.74%	100	-0.2	1.8	DPM/sample	0.49	
DUP	Trg. Analyte	2:25:00 PM	AB040305-4-1	NA		NA	1 #	A1	aba0310	12:46 PM	2.280	NA	NA	1.0	NA	As Received	NA	U
0403010-22	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.100	25.25%	100	0.01	0.68	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	B3	abb0310b	10:03 AM	0.094	NA	NA	0.35	NA	As Received	NA	U
0403010-22	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.580	42.08%	100	0.22	1.41	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	B3	abb0310b	10:03 AM	1.470	NA	NA	0.83	NA	As Received	NA	U
0403010-23	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.130	25.71%	100	0.01	0.75	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	B4	abb0310b	10:03 AM	0.125	NA	NA	0.40	NA	As Received	NA	U
0403010-23	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.670	41.60%	100	0.17	1.48	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	B4	abb0310b	10:03 AM	1.572	NA	NA	0.87	NA	As Received	NA	U
0403010-24	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.180	25.68%	100	0.17	0.77	DPM/sample.	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C1	abb0310b	10:03 AM	0.130	NA	NA	0.44	NA	As Received	NA	U
0403010-24	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.950	42.01%	100	0.93	1.45	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C1	abb0310b	10:03 AM	1.528	NA	NA	0.90	NA	As Received	NA	U
0403010-25	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.180	25.53%	100	0.30	0.69	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C2	abb0310b	10:03 AM	0.099	NA	NA	0.42	NA	As Received	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 Recieved' while the Report Basis is 'Dry Weight'.
\# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
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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: 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	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.460	41.94%	100	-0.44	1.49	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C2	abb0310b	10:03 AM	1.610	NA	NA	0.84	NA	As Received	NA	U
0403010-26	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.180	25.24%	100	0.01	0.88	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C3	abb0310b	10:03 AM	0.172	NA	NA	0.47	NA	As Received	NA	U
0403010-26	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.710	41.54%	100	0.22	1.49	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C3	abb0310b	10:03 AM	1.583	NA	NA	0.88	NA	As Received	NA	U
0403010-27	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.120	24.72%	100	0.05	0.73	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C4	abb0310b	10:03 AM	0.106	NA	NA	0.39	NA	As Received	NA	U
0403010-27	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.800	41.98%	100	0.71	1.42	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	C4	abb0310b	10:03 AM	1.482	NA	NA	0.87	NA	As Received	NA	U
0403010-28	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.210	24.89%	100	0.35	0.76	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	D1	abb0310b	10:03 AM	0.115	NA	NA	0.47	NA	As Received	NA	U
0403010-28	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	2.040	41.57%	100	1.21	1.45	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	D1	abb0310b	10:03 AM	1.497	NA	NA	0.93	NA	As Received	NA	U
0403010-29	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.080	25.16%	100	-0.11	0.71	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	D2	abb0310b	10:03 AM	0.102	NA	NA	0.34	NA	As Received	NA	U
0403010-29	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	2.170	42.47%	100	0.18	1.65	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	D2	abb0310b	10:03 AM	2.079	NA	NA	0.97	NA	As Received	NA	U
0403010-30	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	0.190	25.82%	100	0.26	0.74	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	D3	abb0310b	10:03 AM	0.118	NA	NA	0.44	NA	As Received	NA	U
0403010-30	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/10/04	1.930	41.47%	100	0.33	1.57	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 #	D3	abb0310b	10:03 AM	1.762	NA	NA	0.93	NA	As Received	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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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
0403010-31	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	0.130	25.54%	100	0.01	0.76	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	D4	abb0310b	10:03 AM	0.122	NA	NA	0.40	NA	As Received	NA	U
0403010-31	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-b	ab040305-3a	3/10/04	1.950	43.03%	100	0.40	1.50	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	D4	abb0310b	10:03 AM	1.756	NA	NA	0.90	NA	As Received	NA	U
0403010-31	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.050	24.15%	100	-0.11	0.64	DPM/sample	0.23	
DUP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	A2	aba0310	12:46 PM	0.075	NA	NA	0.29	NA	As Received	NA	U
0403010-31	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.290	40.26%	100	1.1	1.6	DPM/sample	0.51	
DUP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	A2	aba0310	12:46 PM	1.842	NA	NA	1.0	NA	As Received	NA	U
0403010-32	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.090	23.75%	100	-0.12	0.79	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	A3	aba0310	12:46 PM	0.117	NA	NA	0.38	NA	As Received	NA	U
0403010-32	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.130	40.43%	100	0.2	1.7	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	A3	aba0310	12:46 PM	2.037	NA	NA	1.0	NA	As Received	NA	U
0403010-33	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.130	24.44%	100	0.15	0.69	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	A4	aba0310	12:46 PM	0.091	NA	NA	0.39	NA	As Received	NA	U
0403010-33	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.130	41.13%	100	0.34	1.66	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	A4	aba0310	12:46 PM	1.972	NA	NA	0.99	NA	As Received	NA	U
0403010-34	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.170	25.10%	100	0.40	0.60	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B1	aba0310	12:46 PM	0.068	NA	NA	0.40	NA	As Received	NA	U
0403010-34	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.230	43.00%	100	0.97	1.52	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B1	aba0310	12:46 PM	1.786	NA	NA	0.95	NA	As Received	NA	U
0403010-35	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.080	25.86%	100	0.02	0.60	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B2	aba0310	12:46 PM	0.073	NA	NA	0.31	NA	As Received	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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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
0403010-35	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.710	42.80%	100	0.26	1.44	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B2	aba0310	12:46 PM	1.581	NA	NA	0.85	NA	As Received	NA	U
0403010-36	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.080	24.48%	100	-0.01	0.66	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B3	aba0310	12:46 PM	0.082	NA	NA	0.33	NA	As Received	NA	U
0403010-36	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.760	41.70%	100	-0.33	1.60	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B3	aba0310	12:46 PM	1.883	NA	NA	0.92	NA	As Received	NA	U
0403010-37	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.130	24.23%	100	0.21	0.65	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B4	aba0310	12:46 PM	0.076	NA	NA	0.38	NA	As Received	NA	U
0403010-37	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.860	42.83%	100	0.09	1.53	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	B4	aba0310	12:46 PM	1.798	NA	NA	0.90	NA	As Received	NA	U
0403010-38	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.100	25.48%	100	0.03	0.66	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	C1	aba0310	12:46 PM	0.090	NA	NA	0.35	NA	As Received	NA	U
0403010-38	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.090	41.18%	100	0.83	1.56	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	C1	aba0310	12:46 PM	1.735	NA	NA	0.96	NA	As Received	NA	U
0403010-39	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.120	24.82%	100	0.09	0.69	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	C2	aba0310	12:46 PM	0.094	NA	NA	0.38	NA	As Received	NA	U.
0403010-39	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	1.920	41.32%	100	0.30	1.57	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	C2	aba0310	12:46 PM	1.774	NA	NA	0.93	NA	As Received	NA	U
0403010-40	GROSS ALPHA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	0.050	24.96%	100	-0.21	0.71	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	C3	aba0310	12:46 PM	0.101	NA	NA	0.32	NA	As Received	NA	U
0403010-40	GROSS BETA	2/26/04	AB040305-4	NA		WIPE	1 s	LB4100-a	ab040305-3a	3/10/04	2.240	43.00%	100	1.12	1.50	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-4-1	NA		NA	1 s	C3	aba0310	12:46 PM	1.751	NA	NA	0.95	NA	As Received	NA	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
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Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
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LT - Result is less than Request MDC, greater than sample specific MDC
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M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
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: 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
0403010-41	GROSS ALPHA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.120	25.71%	100	-0.03	0.75	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	B4	abb0311d	12:57 PM	0.125	NA	NA	0.39	NA	As Received	NA	U
0403010-41	GROSS BETA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.790	41.60%	100	0.47	1.48	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	B4	abb0311d	12:57 PM	1.572	NA	NA	0.89	NA	As Received	NA	U
0403010-41	GROSS ALPHA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.120	24.75%	100	0.18	0.62	DPM/sample	0.41	
DUP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	A1	abb0311c	11:05 AM	0.071	NA	NA	0.36	NA	As Received	NA	U
0403010-41	GROSS BETA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.260	40.98%	100	-0.24	1.39	DPM/sample	0.59	
DUP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	A1	abb0311c	11:05 AM	1.338	NA	NA	0.79	NA	As Received	NA	U
0403010-42	GROSS ALPHA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.130	25.68%	100	-0.02	0.77	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	C1	abb0311d	12:57 PM	0.130	NA	NA	0.40	NA	As Received	NA	U
0403010-42	GROSS BETA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.810	42.01%	100	0.62	1.44	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	C1	abb0311d	12:57 PM	1.528	NA	NA	0.88	NA	As Received	NA	U
0403010-43	GROSS ALPHA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.170	25.53%	100	0.26	0.69	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	C2	abb0311d	12:57 PM	0.099	NA	NA	0.41	NA	As Received	NA	U
0403010-43	GROSS BETA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.740	41.94%	100	0.24	1.48	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	C2	abb0311d	12:57 PM	1.610	NA	NA	0.88	NA	As Received	NA	U
0403010-44	GROSS ALPHA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.150	25.24%	100	-0.11	0.89	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	C3	abb0311d	12:57 PM	0.172	NA	NA	0.45	NA	As Received	NA	U
0403010-44	GROSS BETA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	1.870	41.54%	100	0.62	1.49	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	C3	abb0311d	12:57 PM	1.583	NA	NA	0.90	NA	As Received	NA	U
0403010-45	GROSS ALPHA	2/26/04	AB040305-7	NA		WIPE	1 #	LB4100-b	ab040305-3a	3/11/04	0.130	24.72%	100	0.09	0.73	DPM/sample	NA	
SMP	Trg. Analyte	2:26:00 PM	AB040305-7-1	NA		NA	1 #	C4	abb0311d	12:57 PM	0.108	NA	NA	0.39	NA	As Received	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 Recieved' while the Report Basis is 'Dry Weight'.
\# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Recieved'.

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

Notes:

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

Abbreviations:

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

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

Laboratory Name: Paragon Analytics
PAI Work Order: 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
0403010-45	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	2:26:00 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.
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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
AB040305-7	GROSS ALPHA	3/5/04	AB040305-7	NA		WIPE	1 s	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 s	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 s	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 s	D4	abb0311d	12:57 PM	1.756	NA	NA	0.92	NA	As Received	NA	U

Comments:

Data Package ID: *abf0403010-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
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BDL - Below Detection Limit

00090

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: AB030301
Batch ID: AB040305-3
Count Preset (m): 100
Batch Ended: 3/9/04 15:03

Background logfile: BKGABW
Date of Bkg. Cal: 3/7/04
Alpha efficiency logfile: AlnWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

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

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(x*(mass-x0))		y = [illegible] (mass-x0))	
Alpha b=	0.00000	[illegible]	0.0000
m=	0.00000	[illegible]	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.00E+00
a -> b xtalk b=	0.0000	b -> a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count. Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff.	Base Cor.Fact.	Progeny Eff.	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff.	Base Cor.Fact.	Progeny Eff.	Progeny Cor.Fact.
B3	0403010-1	3/9/04 15:03	100.00	0.0	0.100	[redacted]	0.003	0.2526	n/a	n/a	n/a	1.680	[redacted]	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	0.2569	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	0.4194	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	1.640	1.672	0.0198	0.4160	n/a	n/a	n/a
C3	0403010-5	3/9/04 15:03	100.00	0.0	0.110	0.172	0.006	0.2524	n/a	n/a	n/a	1.730	1.583	0.0208	0.4154	n/a	n/a	n/a
D1	0403010-6	3/9/04 15:03	100.00	0.0	0.170	0.115	0.006	0.2489	n/a	n/a	n/a	1.670	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	0.2516	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	1.610	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	0.009	0.2554	n/a	n/a	n/a	1.900	1.756	0.0231	0.4303	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
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0310
Batch ID: AB040305-3
Count Preset (m): 100
Batch Ended: 3/10/04 9:37

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^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^-mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D3	AB040305-3ALCS	3/10/04 9:00	63.23	0.0	2852.048	0.118	1.375	0.2582	n/a	n/a	n/a	590.247	1.762	471.1612	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	0.2554	n/a	n/a	n/a	17463.742	1.756	5.4064	0.4303	n/a	n/a	n/a
A1	0403010-10	3/10/04 9:36	100.00	0.0	0.050	0.071	0.005	0.2476	n/a	n/a	n/a	1.580	1.338	0.0080	0.4098	n/a	n/a	n/a
A2	0403010-11	3/10/04 9:36	100.00	0.0	0.190	0.101	0.005	0.2460	n/a	n/a	n/a	1.450	1.384	0.0327	0.4097	n/a	n/a	n/a
A3	0403010-12	3/10/04 9:36	100.00	0.0	0.090	0.088	0.005	0.2508	n/a	n/a	n/a	1.560	1.397	0.0159	0.4153	n/a	n/a	n/a
C1	0403010-15	3/10/04 9:36	100.00	0.0	0.120	0.130	0.006	0.2588	n/a	n/a	n/a	1.710	1.628	0.0216	0.4201	n/a	n/a	n/a
C2	0403010-16	3/10/04 9:36	100.00	0.0	0.110	0.089	0.005	0.2553	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 9:36	100.00	0.0	0.190	0.172	0.006	0.2524	n/a	n/a	n/a	1.610	1.583	0.0341	0.4154	n/a	n/a	n/a
C4	0403010-18	3/10/04 9:36	100.00	0.0	0.180	0.106	0.002	0.2472	n/a	n/a	n/a	2.110	1.482	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	0.2528	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	1.580	1.572	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	1.600	1.497	0.0309	0.4157	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	2.078	0.0322	0.4247	n/a	n/a	n/a

LGB 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.12/29/03 JE

Data file name: ABB0310A
Batch ID: ABB040305-3
Count Preset (m): 100
Batch Ended: 3/10/04 11:38

Background ID: BKGABW
Date of Bkg. Calc: 3/7/04
Alpha efficiency logfile: AlnWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: BrWipe-11/03
Beta attenuation calibration: n/a

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

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
A1	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	1.820	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	0.006	0.2460	n/a	n/a	n/a	1.580	1.394	0.0292	0.4097	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	0.4153	n/a	n/a	n/a

LCB 3/15/04

000093

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: ABA0318
Batch ID: AB040305-4
Count Preset (m): 100
Batch Ended: 3/10/04 14:27

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^(x*(mass-x0))		Beta Attenuation Calibration y = b*m^(x*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
x=	0.0000	x=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		**Beta to Alpha X-talk** y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End. Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
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
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	2.290	1.842	0.0094	0.4028	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	0.0158	0.4043	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	0.0199	0.4113	n/a	n/a	n/a
B1	0403010-34	3/10/04 14:27	100.00	0.0	0.170	0.068	0.002	0.2510	n/a	n/a	n/a	2.230	1.786	0.0288	0.4300	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
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	1.760	1.893	0.0183	0.4170	n/a	n/a	n/a
B4	0403010-37	3/10/04 14:27	100.00	0.0	0.130	0.076	0.002	0.2423	n/a	n/a	n/a	1.880	1.768	0.0247	0.4283	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
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
C3	0403010-40	3/10/04 14:27	100.00	0.0	0.050	0.101	0.002	0.2496	n/a	n/a	n/a	2.240	1.751	0.0085	0.4300	n/a	n/a	n/a
C4	AB040305-4MB	3/10/04 14:27	100.00	0.0	0.030	0.098	0.001	0.2398	n/a	n/a	n/a	1.920	1.914	0.0059	0.4201	n/a	n/a	n/a

LCB 3/15/04

000094

PAI - Ga- 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: ABA0310A
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: XeWipe-03/04
Alpha attenuation calibration: n/a
Beta efficiency logfile: XeWipe-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^(e*(mass-x0))		Beta Attenuation Calibration y = b*m^(e*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.0000	m=	0.0000
e=	0.0000	e=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		**Beta to Alpha X-talk** y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
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	623.800	2.280	503.8263	0.4074	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	17102.900	1.842	1.3027	0.4026	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: ABB0310B
Batch ID: AB040305-4
Count Preset (m): 100
Batch Ended: 3/10/04 11:40

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^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m *b^-mass		y = m*mass + b	
a ->b xtalk m=	0.0000	b ->a xtalk m=	0.00E+00
a ->b xtalk b=	0.0000	b ->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff.	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
A4	0403010-21	3/10/04 11:39	100.00	0.0	0.120	0.101	0.005	0.2477	n/a	n/a	n/a	1.590	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	0.180	0.099	0.004	0.2553	n/a	n/a	n/a	1.460	1.610	0.0331	0.4194	n/a	n/a	n/a
C3	0403010-26	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	1.683	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	1.800	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	1.487	0.0382	0.4167	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	0.4160	n/a	n/a	n/a
D2	0403010-29	3/10/04 11:40	100.00	0.0	0.080	0.102	0.006	0.2516	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	0.2564	n/a	n/a	n/a	1.950	1.756	0.0231	0.4303	n/a	n/a	n/a

LWB. 3/15/04

000096

PAI - Gas Flow Proportional Sample Analysis LB4100-B

Unit Type: LB4100 -B
Counting Unit ID: Aqua
High Voltage Mode: Simultaneous
Application Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: ABB0311C
Batch ID: AB040305-7
Count Preset (m): 100
Batch Ended: 3/11/04 12:47

Background lo 3ABW
Date of Bkg. //04
Alpha efficiency logfile: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

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

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(e*(mass-x0))		y = b*m^(e*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.00000		0.0000
e=	0.0000		0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.00E+00
a -> b xtalk b=	0.0000	b -> a xtalk b=	0

Det. ID	Sample ID	Count End. Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity: Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff.	Base Cor.Fact.	Progeny Eff.	Progeny Cor.Fact.	Beta Activity: Gross CPM	Bkg. CPM	a>b xtlk 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: AB80311D
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: AmWipe-11/03
Alpha attenuation calibration: n/a
Beta efficiency logfile: SrWipe-11/03
Beta attenuation calibration: n/a

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

Alpha Attenuation Calibration		Beta Attenuation Calibration	
y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	0.00000	Beta b=	0.0000
m=	0.0000	m=	0.0000
a=	0.0000	a=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a -> b xtalk m=	0.0000	b -> a xtalk m=	0.00E+00
a -> b xtalk b=	0.0000	b -> a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff.	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
C1	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	1.528	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	1.572	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	0.106	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	0.4157	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	0.006	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

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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 Revision: 2
Application Version: Standard
Rev.12/29/03 JE

Data file name: AB80311E
Batch ID: AB040305-7
Count Preset (m): 10
Batch Ended: 3/11/04 14:53

Background logfile: KGABW
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^(x^(mass-x0))		y = b*[illegible]	ass-x0))
Alpha b=	0.00000	B=	0.0000
m=	0.00000		0.0000
x=	0.0000	m=	0.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a->b xtalk m=	0.0000	b->a xtalk m=	0.00E+00
a->b xtalk b=	0.0000	b->a xtalk b=	0

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity							Beta Activity						
					Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Gross CPM	Bkg. CPM	a>b xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.
C1	AB040305-7ALCS	3/11/04 14:53	10.00	0.0	2822.600	0.130	1.912	0.2569	n/a	n/a	n/a	666.700	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	0.099	48.014	0.2553	n/a	n/a	n/a	17300.800	1.610	3.7294	0.4194	n/a	n/a	n/a

LWB 3/15/04.

000099

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(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

SOP 724 Rev

Instrument: LB4100B

Date: 3/9/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1 650	A 0,1
2 1250	B
	C
	D

LCB 3/9/04

Bkg.	Cal. File ID
Dr A	BKB0306W
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	OL
5			H LCB	LCB 3/9/04					OL β	13							P		✓
6			LB						OL β	14									✓
7			P			LCB	R	P	✓	15									✓
8	↓		↓		↓		P		✓	16	↓		↓		↓		↓		✓

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

SJ 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	–	–	BKB0309	60	0643	LCB	LCB	3/9/04	
2,3,12,13	Bkg Recount	–	–	BKB0309A	60	0800	LCB	SJ	3/9/04	
1 "	0402160-34	AB040303-4	α/β	ABB0309	90	0926	SJ	SJ	3/9/04	
3	0402160-49	AB040303-5	↓	ABB0309A		0927	SJ	↓	↓	
4	↓ -62		↓	↓	↓	↓	↓	↓	↓	
7	AB040303-3ALL	AB040303-3	α/β	ABB0309B	10	0932	SJ	SJ	3/9/04	
8	0403050-11	AB040308-1	↓	ABB0309C	↓	0933	↓	↓	↓	
9	↓ -23	↓	↓	↓	↓	↓	↓	↓	↓	
10	↓ -27	AB040308-2	↓	ABB0309D	↓	0934	↓	↓	↓	
10	0402167-9	AB040301-5	α/β	ABB0309E	180	0954	SJ	SJ	3/9/04	
11	↓ -9D	↓	↓	↓	↓	↓	↓	↓	↓	
12	0402198-3MS	↓	↓	↓	↓	↓	↓	↓	↓	
14	0403607-1	↓	↓	↓	↓	↓	↓	↓	↓	
15	↓ -10	↓	↓	↓	↓	↓	↓	↓	↓	↓

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

Reviewed by LCB Date 3/10/04

Comments:

000100

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Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date 3/9/04

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
16	AB040301-5LCS	AB040301-5	α/β	ABB0309E	180	0954	CG	CG	3/9/04	NA
1	6323032-1	23032 ABW-XLS		ABB0309F	60	1114	CG			
3	-1D									
4	-1MS									
7	-MB									
8	-LCS									
1	0402195-1	AB040301-5	α/β	ABB0309G	1000	1313	CG	LCB	3/10/04	
3	-3									
4	AB040301-5MB									
7	0403003-1	AB040302-1	α/β	ABB0309H	360	1520				
10	-1MS									
11	-2									
13	-3									
14	-3D									
15	AB040302-1MB									
16	-1LCS									
7	0403010-1	AB040305-3	α/β	ABB0309I	100	1322	CG	CG	3/9/04	
8	-2									
9	-3									
10	-4									
11	-5									
13	-6									
14	-7									
15	-8									
16	-9									

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Reviewed LCB Date 3/10/04

Comments:

000101

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(from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

SOP 724 Rev 8

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	BKA0306W
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		LGB		P		✓	9	LGB		P		LGB		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 53/04	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1-12	DR Checks	N/A	N/A	EFA0310	30 ~~632~~ LGB 3/10/04	0632	LGB	LGB	3/10/04	N/A
1-12	Bkg Checks	N/A	N/A	BKA0310	60	0639	LGB	LGB	3/10/04	
1	0415008-51	NP	~~MB~~ PB210	PBA0310	60	0917	g	g	3/10/04	
1	0403012-21D	AB040305-4	2/B	AB A0310	100	1248	g	g	3/10/04	
2	-31D					53/04				
3	-32									
4	-33									
5	-34									
6	-35									
7	-36									
8	-37									
9	-38									
10	-39									
11	-40									
12	AB040305-4MB									
1	AB040305-4LCS	AB040305-4	2/B	AB A0310A	10	1438	g	g	3/10/04	
2	-4BLCS									

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Reviewed by 7/7 Date 3-10-04

Comments:

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pg _____ a

(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

SOP 724 Rev 8

Date: 3/10/04

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
Dr A	BKB0306W
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	LGB		P		LGB		P		✓	9	LGB		P		LGB		P		✓
2									✓	10									✓
3									✓	11									✓
4						LGB	P	P	✓	12									✓
5							P		OLB	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	N/A	N/A	EFB0310	30	0621	LGB	LGB	3/10/04	N/A
1-16	Bkg Checks	N/A	N/A	BKB0310	60	0641	LGB	LGB	3/10/04	
LGB 3/10/04 → 4	Bkg Recount	~~AB0410305-3~~ N/A	~~2/B~~ N/A	~~ABB0310~~ BKB0310A	~~100~~ 60	0756	LGB		3/10/04	
1	0403010-10	AB0410305-3	α/B	ABB0310	100				3/10/04	
2	-11									
3	-12									
7	-13									
8	-14									
9	-15									
10	-16									
11	-17									
12	-18									
13	-19									
14	-20									
15	3/10/04 0305-3ALCS									
16	-3BLCS									

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Reviewed by LGB Date 3/11/04

Comments:

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Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
1	0403010-1D	ABO 40305-3	2/B	ABB0310A	100	0957	S	S	3/10/04	N/A
2	ABO40305-3MB									
3	0403010-11D									
4	0403010-21	ABO40305-4		ABB0310B		0959	S			
7	-22									
8	-23									
9	-24									
10	-25									
11	-26									
12	-27									
13	-28									
14	-29									
15	-30									
16	-31									
7	0308LCS1	0308B.XLS	2/B	3/10 ABB0310C	10	1256	S	S	3/10/04	
8	LCS2									
9	LCS3									
10	LCS4									
11	LCS5									
12	LCS6									
13	LCS7									
14	LCS8									
15	LCS9									
16	LCS10									
1	0402199-11	RA040303-1	Ra 228	RAB0310	250	1319	S	LCB	3/11/04	
2	-12									
3	-13									
4	-14									
7	-14D									
8	-15									

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Reviewed LCB Date 3/11/04

Comments:

000104

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(cont. from pg N/A b)

Paragon Analytics, Inc.

SOP 724 Rev 8

Low Background Gas Flow Proportional Counter Log

Instrument: LB4100B

Date: 3/11/04

Instrument Background and Response Checklist

P-10 Supply	P-10 Flow
1650	A 0.1
2 900	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB0306W
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			LCB						OL LCB	13									✓
6			LCB			LCB	R	P	OL LCB	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	
2,3,6,14	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			
1	040311-21	AB040305-6	α/β	ABB0311	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									

LCB 3/11/04

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Reviewed by LCB Date 3/11/04

Comments:

000105

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Paragon Analytics, Inc.

Low Background Gas/Low Proportional Counter Log

Instrument: LB4100B

Date 3/11/04

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
16	0403011-33	AB040305-6	α/β	ABB0311	100	0850	LGB	[illegible]	3/11/04	N/A
16	0403011-21D	AB040305-6		ABB0311A		1044	[illegible]	[illegible]	3/11/04	
15	-31D									
14	-34									
13	-35									
12	-36									
11	-37									
10	-38									
9	-39									
8	-40									
7	AB040305-6MB									
1	AB040305-6ALCS	AB040305-6	α/β	ABB0311B	10	1046	[illegible]	[illegible]	3/11/04	
2	-6BLCS									
1	0403010-41D	AB040305-7	α/β	ABB0311C	100	1107	[illegible]	[illegible]	3/11/04	
1	0402175-4	RA040308-1	Ra226	RAB0311	250	1248	[illegible]	LGB	3/12/04	
8	-4D									
3	-4RD2									
4	RA040308-1MB									
7	-1LCS									
8	0402010-41	AB040305-7	α/β	ABB0311D	100	1251	[illegible]	LGB	3/11/04	
9	-42									
10	-43									
11	-44									
12	-45									
13	0403011-41									
14	-42									
15	-43									
16	AB040305-7MB									
8	Carbon 106	N/A	α/β	ABB0311F	1000	1441	LGB	LGB	3/12/04	
9	AB040305-7ALCS	AB040305-7	α/β	ABB0311E	10			LGB	3/11/04	
10	-7BLCS									

3/11/04

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

Reviewed LGB Date 3/12/04

Comments:

000106

PARAGON ANALYTICS
Radiochemistry Data Package

Section 5

QUALITY ASSURANCE SUMMARY REPORTS

5

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

Parag Analytics

Radiochemistry Instrument Worksheet

Prep Batch: AB0 05-3

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y (N) NA

Prep Num	LabID	QC Type	Init Aliq	Fin Aliq	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	0403010-1	SMP	1	1	sample										LCB 3/16/04	
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

LCB 3/16/04

LCB 3/16/04

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 Aliq	Fin Aliq	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	

Paragon Analytics

Radiochemistry Instrument Worksheet

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 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	0403010-1	SMP	1	1	sample		ABB0309I	7	9							
1	0403010-1	DUP	1	1	sample		ABB0310A	1	8							Count Dup
1	0403010-2	SMP	1	1	sample		ABB0309I	8	9							
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		ABB0310	1	9							
1	0403010-11	SMP	1	1	sample			2								
1	0403010-11	DUP	1	1	sample		ABB0310A	23	8							Count Dup
1	0403010-12	SMP	1	1	sample		ABB0310	3	8							
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		ABB0310A	22	8							

DRAFT

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-3

Prep Procedure: GAB

Analytical QASS / NCR? Y / N _____

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

DRAFT

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	

00013

Paragon Analytics

Radiochemistry Instrument Worksheet

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
1	0403010-21	SMP	1	1	sample											
1	0403010-21	DUP	1	1	sample											LLB 3/16/04
1	0403010-22	SMP	1	1	sample											
1	0403010-23	SMP	1	1	sample		See previous sheet									
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											

LLB 3/16/04

000117

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	

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-4

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	0403010-21	SMP	1	1	sample		AB00301B 10	4	g							
1	0403010-21	DUP	1	1	sample		AB0310	1	g							
1	0403010-22	SMP	1	1	sample		AB00301B 10	7	g							
1	0403010-23	SMP	1	1	sample			8								
1	0403010-24	SMP	1	1	sample			9								
1	0403010-25	SMP	1	1	sample			10								
1	0403010-26	SMP	1	1	sample			11								
1	0403010-27	SMP	1	1	sample			12								
1	0403010-28	SMP	1	1	sample			13								
1	0403010-29	SMP			sample			14								
1	0403010-30	SMP	1	1	sample			15								
1	0403010-31	SMP	1	1	sample			16								
1	0403010-31	DUP	1	1	sample		AB0310	2	g							
1	0403010-32	SMP	1	1	sample			3								
1	0403010-33	SMP	1	1	sample			4								
1	0403010-34	SMP	1	1	sample			5								
1	0403010-35	SMP	1	1	sample			6								
1	0403010-36	SMP	1	1	sample			7								
1	0403010-37	SMP	1	1	sample			8								
1	0403010-38	SMP	1	1	sample			9								
1	0403010-39	SMP	1	1	sample			10								
1	0403010-40	SMP	1	1	sample			11								
1	AB040305-4A	LCS	1	1	sample		AB0310A	1	g							
1	AB040305-4B	LCS	1	1	sample			2								
1	AB040305-4	MB	1	1	sample		AB0310	12	g							

DRAFT

0001 of 1000

Date Printed: 3/9/04 13:50

Paragon Analytics

LIMS Version: 4.3380

Supersedes: N/A

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-1-1-1-1

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

DRAFT

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	

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-7

Prep Procedure: GAB_No_Att

Analytical QASS / NCR? Y / (N) NA

Prep Num	LabID	QC Type	Init Aliq	Fin Aliq	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											LCB 3/16/04
1	0403010-42	SMP	1	1	sample		see									
1	0403010-43	SMP	1	1	sample		previous									
1	0403010-44	SMP	1	1	sample		sheet									
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											LCB 3/16/04
1	AB040305-7A	LCS	1	1	sample											
1	AB040305-7B	LCS	1	1	sample											
1	AB040305-7	MB	1	1	sample											

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	20,514.377	DPM/sample	03/05/04	1	sample	

000118

Radiochemistry Instrument Worksheet

Paragon Analytics

Prep Batch: AB040305-7

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	~~8~~							
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	[illegible]							
1	AB040305-7B	LCS	1	1	sample			10								
1	AB040305-7	MB	1	1	sample		ABB0311D	16	LCB							

DRAFT

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	20,514.377	DPM/sample	03/05/04	1	sample	

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch AB040305-3

Prep Procedure: GAB_No_Att

Reviewed By: ATF

Review Date: 3/15/04

Non-Routine Pre-Treatment? Y / (N) Batch: NA

Re-Prep? Y / (N) Batch: NA

Prep QASS / NCR? Y / (N) NA

Prep SOP: PAI.702 Rev: 16

Prep SOP: NONE

Matrix Class: solid

Prep Analyst: Adrienne Freda

Prep Date: 3/5/04

Prep Dept: RS

Balance:

Balance:

Samp Num	Prep Num	LabID	QC Type	Distr No.	Init Aliq sample	Fin Aliq sample	Prep Basis	Standards	Prep Notes
1	1	0403010-1	SMP		1	1	As Received		LCB 3/15/04
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		LCB 3/15/04
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		
18	1	0403010-16	SMP		1	1	As Received		LCB 3/15/04
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		LCB 3/15/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: See

Date: previous

Received By: sheet

Date:

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	

Comments

000120

Date Printed: 3/15/04 9:33

Paragon Analytics

LIMS Version: 4.342C

Supersedes: 3/9/04 13:40 LCB 3/15/04

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-3

Prep Procedure: GAB

Reviewed By: ATF 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
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		
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		
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		
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		

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: See
Date: previous
Received By: sheet
Date:

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	

Comments

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-3

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	Distr No.	Init Aliq sample	Fin Aliq 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:
Date: 3/6/04

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	

Comments

000122

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-4

Prep Procedure: GAB_No_Att

Reviewed By: ATF Review Date: 3/15/04

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

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

Prep Analyst: Adrienne Freda
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	0403010-21	SMP		1	1	As Received		LCB 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		LCB 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	LCB 3/15/04	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		LCB 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		LCB 3/15/04

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

Relinquished By: See
Date: previous
Received By: sheet
Date:

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	

Comments

Supersedes: 3/9/04 13:54

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Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-4

Prep Procedure: GAB

Reviewed By: ATF

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
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	0403010-21	SMP		1	1	As Received		
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		
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		
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		

03/09/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: See
Date: previous sheet
Received By:
Date:

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	

Comments

Supersedes: 03/05/04 5:24

00012

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305

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 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: [illegible]
Date: 3/5/04

Received By: [illegible]
Date: 3/6/04

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	

Comments

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-7

Prep Procedure: GAB_No_Att

Reviewed By: ATF Review Date: 3/15/04

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

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

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

Balance:
Balance:

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		LB 3/15/04
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		LB 3/15/04
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		LB 3/15/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: See
Date: previous
Received By: sheet
Date:

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	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

000129

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-7

Prep Procedure: GAB

Reviewed By: ATF 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
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	0403010-41	SMP		1	1	As Received		03/09/04
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		03/09/04
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		03/09/04

DRAFT

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

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

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	20,514.377	DPM/sample	03/05/04	1	sample	

Comments

000127

Radiochemistry Prep Worksheet

Paragon Analytics

Prep Batch: AB040305-7

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 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		

03/05/04

Spiked By: N/A Date: N/A

Witnessed By: N/A Date: N/A

Relinquished By: DT
Date: 3/3/04
Received By: S
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

0001128

SAMPLE CONDITION FORM (SOLIDS)

ANALYST: [illegible]

ANALYSIS DATE: 03/05/04 METHOD: Gross α β

WORK ORDER	SAMPLE ID	SAMPLE CONDITION		
		Dry/Wet	TEXTURE	Remarks
0403010	1-45	DRY(AE)	SWIPE	None
0403011	1-43	↓	↓	↓

[illegible] 03/05/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 7

STANDARDS TRACEABILITY DOCUMENTS

7

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

PAI-00601
rec'd 12-05-01

62752A-307

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

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

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

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

*99% Confidence Level

Impurities: γ-impurities <0.1%

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

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

P O NUMBER 001703, Item 2

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

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

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 • U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

PAI ID 0729
rec'd 10-30-03

66949-307

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

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

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

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

Impurities: γ-impurities <0.1%

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

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

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

P O NUMBER EW091503, Item 1

SOURCE PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 10-27-03

PARAGON ANALYTICS
Radiochemistry Data Package

Section 8

CHAIN OF CUSTODY

8

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

Shaw
Shaw Environmental & Infrastructure, Inc.

04403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: D2205 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	Report to:	Ben Dettore
Sample Team Members	K. WISE	Carrier Waybill No.	NA		312 Directors Drive
	T. TRENT				Knoxville, TN 37923

ONE SAMPLE PER LINE

	Sample Number (Client ID)	Sample Description	Date/Time Collected	Sample Type	Condition on Receipt	Disposal Record
1	0226 04-20- 01	Rm D2205 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 (Signature/Affiliation)	Date: 3-1-04 Time: 1040	1. Received by (Signature/Affiliation) SHAW EST I	Date: 3-1-04 Time: 1040
2. Relinquished by (Signature/Affiliation)	Date: 3-1-04 Time: ~~1400~~ 1422	2. Received by (Signature/Affiliation)	Date: 3-1-04 Time: 1420
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation) Samples received 3/1/04. Paragon [illegible] on 3/1/04.	Date: 1300 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
Shaw Environmental & Infrastructure, Inc.

04030 10

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 FSS Location D-09	2/26/04 1425	Smear		
10	-10	D-10				
11	-11	D-11				
12	-12	D-12				
13	-13	D-13				
14	-14	D-14				
15	-15	D-15				
16	-16	D-16				
17	-17	D-17				
18	-18	D-18				
19	-19	D-19				
20	-20	D-20				
21	-21	D-21				
22	-22	D-22	1426			
23	-23	D-23				
24	-24	D-24				
25	-25	D-25				
26	-26	D-26				
27	-27	D-27				
28	-28	D-28				
29	-29	D-29				
30	-30	D-30				

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Shaw
Shaw Environmental & Infrastructure, Inc.

0403010

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORD

Reference Document No: D2205-02 1-20
Pg 3 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
31	022604-20- 31	Rm D2205 FSS Location D-31	2/26/04 1426	Smear		
32	-32	BS-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	-41FD	BS-2205 - 10 Field Duplicate				
43	-20FD	Rm D2205 FSS Loc. -20 Field Dup.				
44	-25FD	Rm D2205 FSS Loc. -25 Field Dup.				
45	022604-20-FB	Field Blank				
		N				
		A				

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Paragon Analytics, Inc. -- Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: Shaw- Knox WORKORDER NO: 04C03010

PROJECT MANAGER: Deb Fazio INITIALS: [illegible] DATE: 3/2/04

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

Cooler #'s 1

Temperature Ambient (Rad Only) °C

Project Manager Signature / Date: Debbie 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 Fazio INITIALS: Qw 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 Janus Nilson, associate the 2nd 02 with 03 on chain of custody. Smears arrived stapled in numerical order. (D)

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 stack they were stapled in.

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

Was the client contacted? ___ No; ✓ Yes: Name Janus 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: D 3/3/04

PARAGON ANALYTICS
Radiochemistry Data Package

Section 9

ADDITIONAL SUPPORTING DOCUMENTATION

9

Gas Proportional Counter

Instrument Calibration

Background Calibration.

LB4100-A Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.171	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: LWB Date: 3/8/04

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

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BKA0306W.XLD

Printed 3/8/04 6:49 AM

LB4100-B Weekly Instrument Calibration and Check
Background Determinations

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.071	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)	[redacted]	0.039	0.259	PASS	[redacted]	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: [redacted]

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

Gas Proportional Counter

Quality Control Data

Daily Background Checks

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.167	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 prevoius weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

LB4100-A Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	0.200	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 prevolus weekly background determinations.
Weekly Background File: BKA0306W Date: 3/6/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	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: LWB Date: 3/9/04

Control limits established from prevolus 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	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	0.117	-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: _____ Date: 3/9/07

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

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	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: LGB Date: 3/10/04

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

Printed 3/10/04 7:45 AM

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#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: 3/10/04

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	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
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~~ 2/13 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: 3/6/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	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 prevoius weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A1 (01)
A2 (02)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A2 (02)
A3 (03)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A3 (03)
A4 (04)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	A4 (04)
B1 (05)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#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: _____ Date: 3/11/04

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

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	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 prevolus weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

LB4100-B Daily Instrument Performance Checks
Background Checks

Detector	Alpha				Beta				Detector
ID	CPM	LCL	UCL	Flag	CPM	LCL	UCL	Flag	ID
A1 (01)	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 prevoius weekly background determinations.
Weekly Background File: BKB0306W Date: 3/6/04 Analyst: CJ

000156

Gas Proportional Counter

Quality Control Data

Daily Instrument Performance Checks

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2325	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

LB4100-A Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2276	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

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2459	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

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	#VALUE!	0.2277	0.2583	#VALUE!	#VALUE!	0.8448	0.8995	#VALUE!	A1 (01)
A2 (02)	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!	0.8623	0.9360	#VALUE!	B4 (08)
C1 (09)	#VALUE!	0.2453	0.2752	#VALUE!	#VALUE!	0.8863	0.9595	#VALUE!	C1 (09)
C2 (10)	#VALUE!	0.2311	0.2644	#VALUE!	#VALUE!	0.8750	0.9478	#VALUE!	C2 (10)
C3 (11)	#VALUE!	0.2362	0.2674	#VALUE!	#VALUE!	0.8588	0.9345	#VALUE!	C3 (11)
C4 (12)	#VALUE!	0.2241	0.2531	#VALUE!	#VALUE!	0.8415	0.9081	#VALUE!	C4 (12)
D1 (13)	#VALUE!	0.2332	0.2660	#VALUE!	#VALUE!	0.8681	0.9355	#VALUE!	D1 (13)
D2 (14)	#VALUE!	0.2375	0.2664	#VALUE!	#VALUE!	0.8713	0.9377	#VALUE!	D2 (14)
D3 (15)	#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: LGB Date: 3/9/04

Control Limits established 12/21/03. JME

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2434	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: LGB Date: 3/16/04

Control Limits established 12/21/03. JME

000162

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2437	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

LB4100 - B

Daily Instrument Performance Check
Efficiency Determinations

Detector	Alpha				Beta				Detector
ID	Eff.	LCL	UCL	Flag	Eff.	LCL	UCL	Flag	ID
A1 (01)	0.2416	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

000164

EFB0312.XLD

Printed 3/12/04 7:56 AM

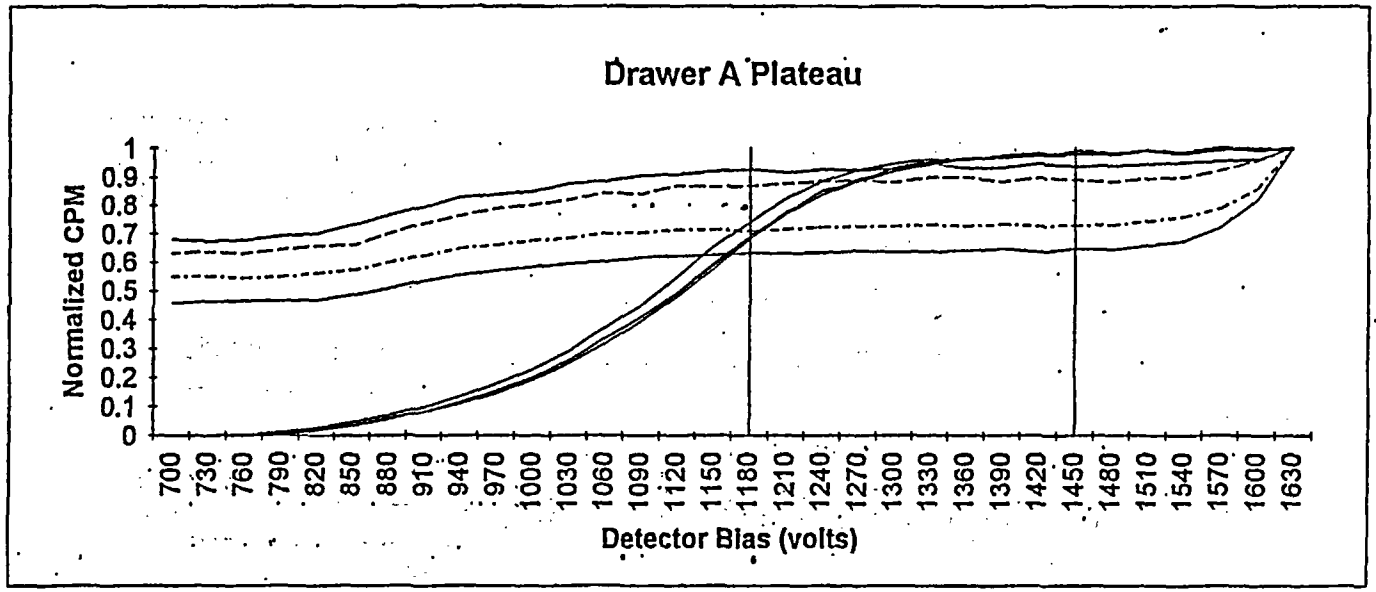
Gas Proportional Counter

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: 1447.5

Optimum alpha only operating voltage: 1180

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

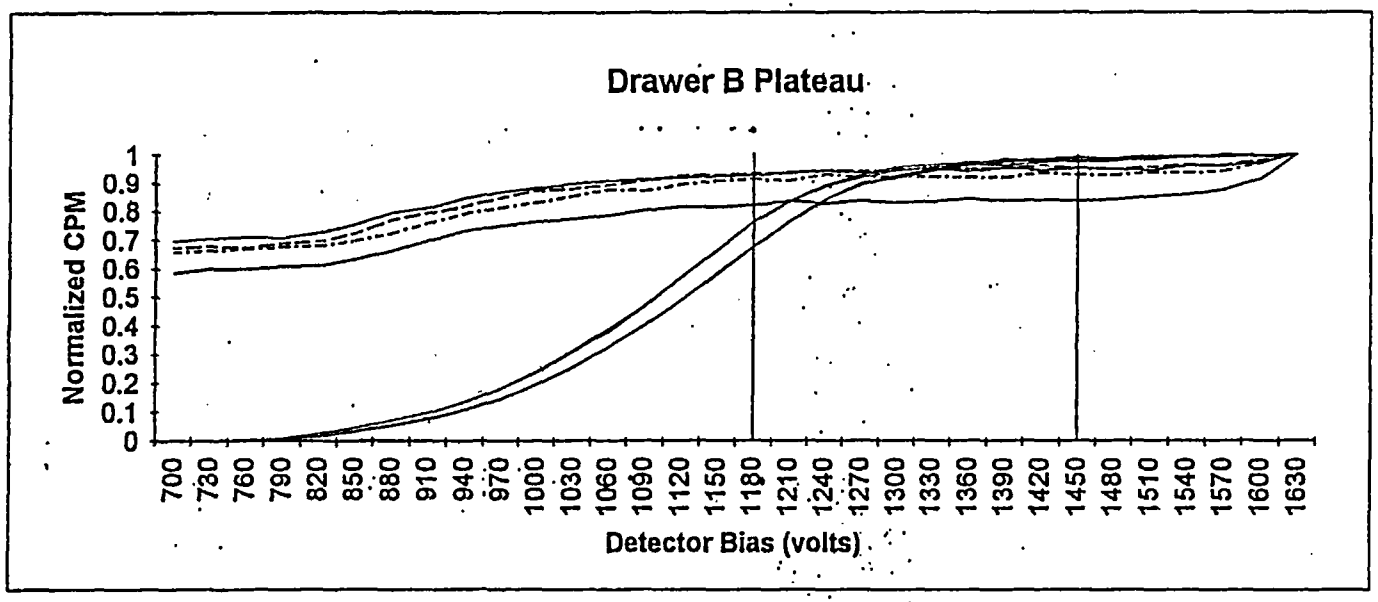
Printed 1/29/04 3:23 PM

g 2/6/04

000166

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%

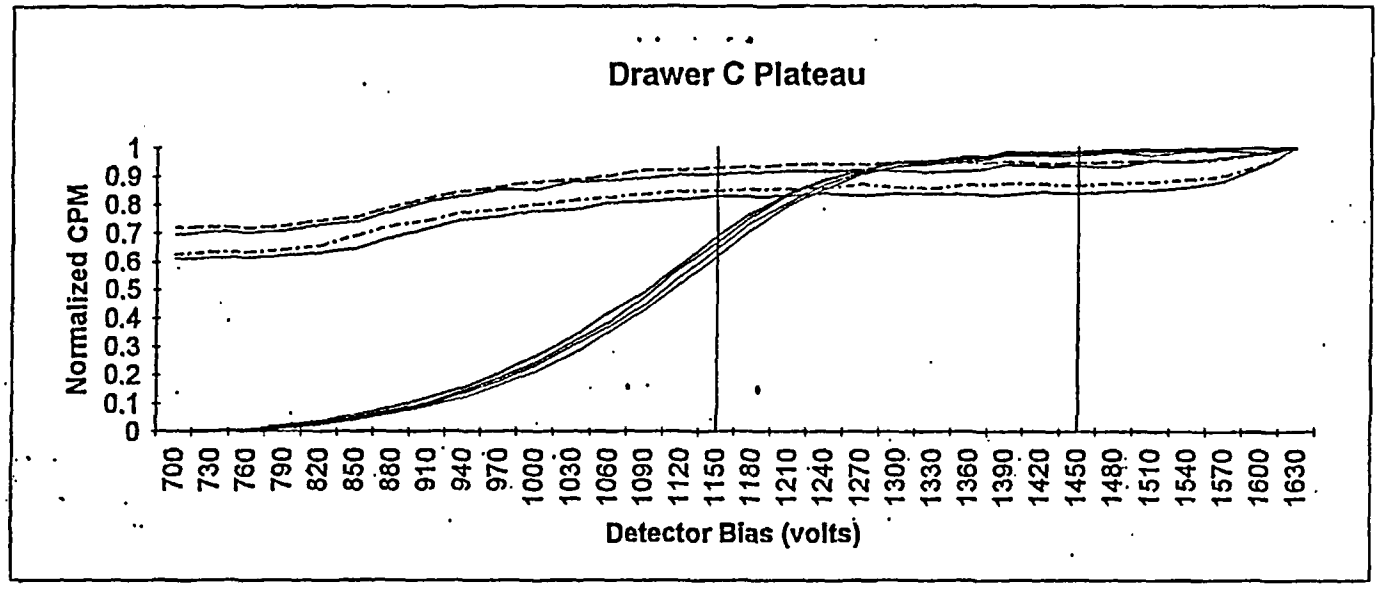
000167

Printed 1/1(9:05 AM

9 2/6/(

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

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



Optimum alpha beta simultaneous operating voltage: 1447.5

Optimum alpha only operating voltage: 1150

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

Printed 1/29/04 3:25 PM

92/6/04

000168

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

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

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

Filenames: PT0128 A A (Data from MCS file not saved) PT0129C
~~PT0128 B~~ PT0128B PT0129A

Sources Used:	Det			
Am241 - 410	1	3	~~13~~	
411	2	4	~~14~~	
412	5	7	9	11
413	6	8	10	12
Sr90 - 406	3	1	~~14~~	
407	4	2	~~12~~	
408	7	5	11	9
409	8	6	12	10

8/29/04

Operating voltage:
Drawer A: ~~1447.5~~ 1447.5
Drawer B: 1447.5
Drawer C: 1447.5

5/12/04

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

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

Continued on Page

Read and Understood By

Claire Tessier 2/10/04 Leah Balko 2/10/04
Signed Date Signed Date

[redacted]

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

$$\alpha\ (\text{CPM}) = \left(\frac{\alpha\ \text{Counts}}{4.59}\right) - \alpha\ \text{Bkg}\ (\text{CPM}) =$$

$$\left(\frac{10004}{4.59}\right) - 0.156\ (\text{CPM}) = 2179.3647$$

OK
JSB
3/8/04

000170

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

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

Sources:		Det			Filenames:
04 14009-S1		A1	B1	C1	EPB0223A
	-S2	A2	B2	C2	EPB0223B
	-S3	A3	B3	C3	EPB0223C
	-S5	A4	B4	C4	~~EPB0223D~~

2/23/04
Re 2/23/04

3/2/04 Am-241 Wipe Calibration - Am241 on filter
Source: 73 Source ID: 1126 log file: Amwipe-03/04

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

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

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

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

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

Continued on Page

Read and Understood By

Claire Tenice 3/2/04 3.3.04
Signed Date Signed Date

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

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100A**

SOP 724 Rev 8

Date: 3/2/04

Instrument Background and Response Checklist

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

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

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
1-12	DR checks	N/A	N/A	EFA0302	30	0700	LCB	S	3/2/04	NA
1-12	Bkg checks	N/A	N/A	BKA0302	60	0710	S	S	3/2/04	
3/2/04 ~~1-12~~	BKG Recount	NA	NA	BXA0302A	60	0836	S	S	3/2/04	
9	0215044-S1	15044210.XLS	Pb210 1CV	PBA0302	30	0933	S	S	3/2/04	
10	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
11	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
12	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
5	0216044-S1	15044210.XLS	↓	PBA0302A	30	1056	S	S	3/2/04	
6	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
7	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
8	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
1	0215044-S1	↓	↓	PBA0302B	30	1205	S	S	3/2/04	
2	-S2	↓	↓	↓	↓	↓	↓	↓	↓	
3	-S3	↓	↓	↓	↓	↓	↓	↓	↓	
4	-S5	↓	↓	↓	↓	↓	↓	↓	↓	
9	0413050-S10	13050 PB	Pb210	PBA0302C	30	1323	S	S	3/2/04	↓

Reviewed by S Date S 3/2/04 3/3/04

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

Comments:

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	Am241 Wipe Cal.	EAW0302A	30	1320	g	g	3/2/04	NA
2				EAW0302B		1326				
3				EAW0302C		1336				
4				EAW0302D		1341				
5				EAW0302E		1346				
6				EAW0302F		1351				
7				EAW0302G		1413				
8				EAW0302H		1421				
9				EAW0302I		1429				
10				EAW0302J		1434				
11				EAW0302K		1439				
12				EAW0302L		1443				
1	602	NA	Sr90 Wipe Cal	ESW0302A	30	1431	g	g	3/2/04	
2				ESW0302B		1435				
3				ESW0302C		1436				
4				ESW0302D		1438				
5				ESW0302E		1439				
6				ESW0302F		1440				
7				ESW0302G		1442				
8				ESW0302H		1443				
9				ESW0302I		1449				
10				ESW0302J		1503				
11				ESW0302K		1505				
12				ESW0302L		1506				
1	0413050-56	NA	Pb 1CV	PBA0302D	30	1446	g	g	3/2/04	
2				PBA0302E		1519				
3				PBA0302F		1557				

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

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

Comments:

000174

ANALYTICS

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

73

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

47007-307

Am-241 47 mm Membrane Filter in Stainless Steel Planchet

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

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

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

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

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

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

P O NUMBER 35829, Item 1

Q A APPROVED 9-30-93

[redacted]tandard Verification: For Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:	160.4	dps	4335.1	pCi/s

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

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

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

000176

031983D02.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 #1

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

Detector #: 2 (Detector 2)

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

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

Where En = Sqrt(Energy in keV)

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

PEAK SEARCH RESULTS

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

031983D02.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

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

Bkg.File Detector #: 2

==========

BACKGROUND SUBTRACT RESULTS

==========

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

031983D02.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #1

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

Detector #: 2 (Detector 2)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031863D08.SPC Analyzed by 77

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

Energy(keV) = -0.30 + 0.500*Ch +-2.15E-08*Ch^2 + 5.68E-11*Ch^3 12/23/2003

FWHM(keV) = 0.72 + 0.014*En + 5.05E-04*En^2 + 0.00E+00*En^3 01/02/2003

Where En = Sqrt(Energy in keV)

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

PEAK SEARCH RESULTS

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

031863D08.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

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

Bkg.File Detector #: 8

==========

BACKGROUND SUBTRACT RESULTS

==========

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

031863D08.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031552D03.SPC Analyzed by 77

****

SEEKER 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

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

031552D03.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

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

Bkg.File Detector #: 3

==========

BACKGROUND SUBTRACT RESULTS

==========

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

031552D03.SPC Analyzed by

****

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #3

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

Detector #: 3 (Detector 3)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN, SUM or ESCAPE PEAKS

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

Paragon Analytics, Inc.

Gamma Spectrometer Run Log

Date: 12-23-03

Reviewed By/Date: 77 12-23-03

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

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

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

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

267683

B

Form 754rev.frm 9/19/2001

000186

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

53/51.*

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

Am-241 = 432.2 yr X 365.24 days
157856.78

000188

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

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

2/23/04

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

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

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

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

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

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

Continued on Page

Read and Understood By

Claire Senica 3/2/04 3-3-04
Signed Date Signed Date

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
1 65	A 0.1
2 80	B ↓
	C
	D NP

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

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
1-12	DR checks	N/A	N/A	EFA0302	30	0700	LCB	g	3/2/04	NA
1-12	Bkg checks	N/A	N/A	BKA0302	60	0710	g	g	3/2/04	
53/2/04 ~~1-12~~	BKG Recount	NA	NA	BKA0302A	60	0836	g	g	3/2/04	
9	0215044-S1	150442/a.XLS	Pb210 ICV	PBA0302	30	0933	g	g	3/2/04	
10	-S2									
11	-S3									
12	-S5									
5	0215044-S1	150442/10.XLS		PBA0302A	30	1056	g	g	3/2/04	
6	-S2									
7	-S3									
8	-S5									
1	0215044-S1			PBA0302B	30	1205	g	g	3/2/04	
2	-S2									
3	-S3									
4	-S5									
9	0413050-S10	13050 Pb	Pb210	PBA0302C	30	1313	g	g	3/2/04	
									g 3/2/04	

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

Reviewed by g Date 3/3/04

Comments:

000196

269550

pg _____ b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 3/2/04

Instrument: **LB4100A**

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

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

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

Comments:

000191

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

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

62753A-307

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

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

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

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

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

*99% Confidence Level

Impurities: γ-impurities <0.1%

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

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

P O NUMBER 001703, Item 3

PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

Q A APPROVED: 12-10-01

New Standard Verification

WO#

Date 12/21/03

Previously Verified Standard

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

Standard to be Verified

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

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

crlistglpswipe

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

detector efficiency

$\varepsilon_i = \frac{C_n}{A_c} = \frac{cpm}{dpm}$

$\varepsilon_i = \frac{14797.06}{35277.50} = 0.4194$

NCPM = GCPM − BCPM = 14797.06

one gross count

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=	1.24330	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b*mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.00E-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 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.
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	7.508	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

000194

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: #RB1221A
Batch ID: VER
Count Preset (m): 5
Batch Ended: 12/21/03 12:02

Backgrou[illegible]: BKGABW
Date o[illegible]: 12/21/03
Alpha efficienc[illegible]: 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=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9999
a=	1.0000	t	1.0000
x0=	0.0000	a	0.0000
Alpha to Beta X-talk y = m*b^a-mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.2749	b->a xtalk m=	-2.00E-06
a->b xtalk b=	1.0016	b->a xtalk b=	0.0087

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Bkg. CPM	b>a xtlk CPM	Base Eff	Base Cor.Fact.	Progeny Eff	Progeny Cor.Fact.	Beta Activity 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	1.906	8.604	0.4195	1.000	n/a	n/a

SG 12/23/03

000195

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

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

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

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

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

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	729	12/21/03 12:09	5.00	0.0	30.400	0.140	12.177	0.2111	1.246	n/a	n/a	17396.200	1.543	8.330	0.4115	1.000	n/a	n/a
D3	602	12/21/03 12:09	5.00	0.0	25.200	0.138	10.368	0.2103	1.246	n/a	n/a	14812.000	1.906	8.905	0.4195	1.000	n/a	n/a

AG
12/23/03

000196

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	BKB1221
Dr B	
Dr C	
Dr D	

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

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

Runlog

Det.	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	EFB1221A	30	1125	JE	JE	12/21/03	
1	03120072-1	AB 031215-3	210	ABB1221	1000	1132	JE	JE	12/22/03	JE 12/22/03
2	-1D									
3	-2									
4	-2MS									
5	A003121S-3MB									
6	-3LCS									
13 13	602	–	Sr-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14 14	729	–								
159	73	–	Am-241 wipe Ver	AMB1221	5	1151	JE			
10 9	601	–								
14 10	602	–	Sr-90 wipe Ver	SRB1221A	5	1157	JE	JE	12/21/03	
15 11	729	–								
13 10	73	–	Am-241 wipe Ver	AMB1221A	5	1158	JE			
14 11	601	–								
15 15	602	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	

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

Reviewed by JE Date 12/22/03

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

000197

Low Background Gas Flow Proportional Counter Run Log

Date: 12/21/03

Instrument: LB4100B

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
13	729	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	NA
11	~~[illegible]~~ 73	–	Am-241 wipe Ver	AMB1221B	5	1205	JE	↓	↓	↓
9	601	–	↓	↓	↓	↓	↓	↓	↓	↓

12/22/03

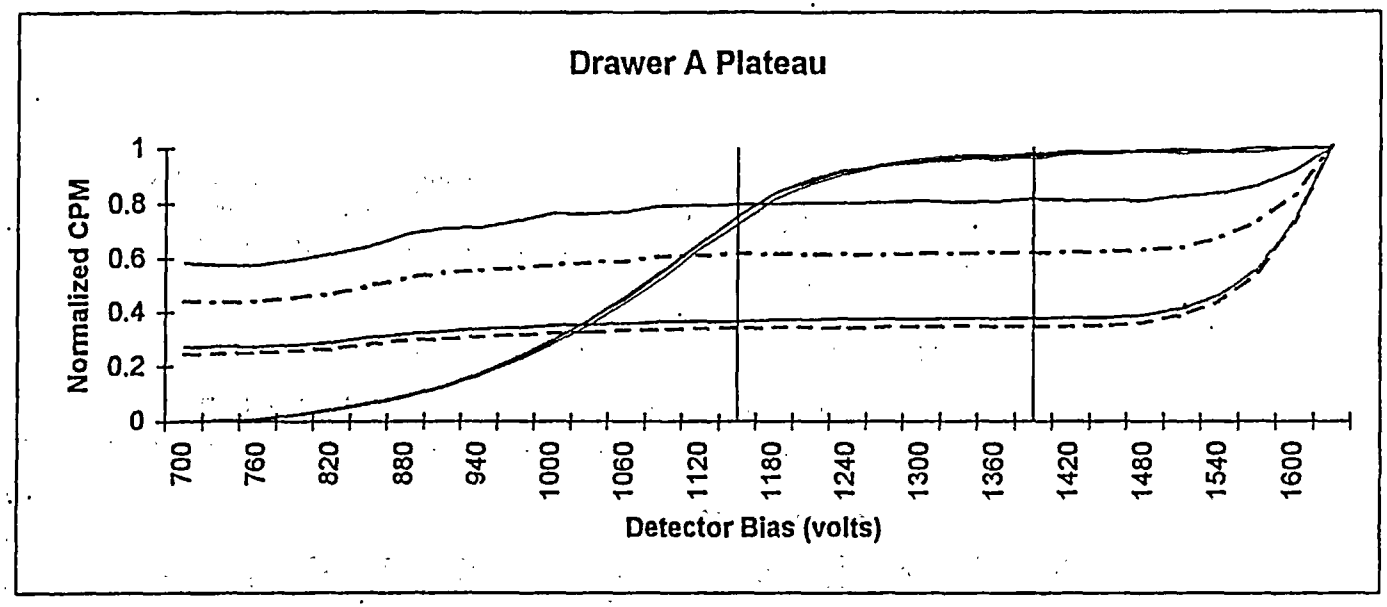
Form 780r6.frm (4/6/2001)

Reviewed JE Date 12/22/03

Comments:

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

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



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1147.5

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

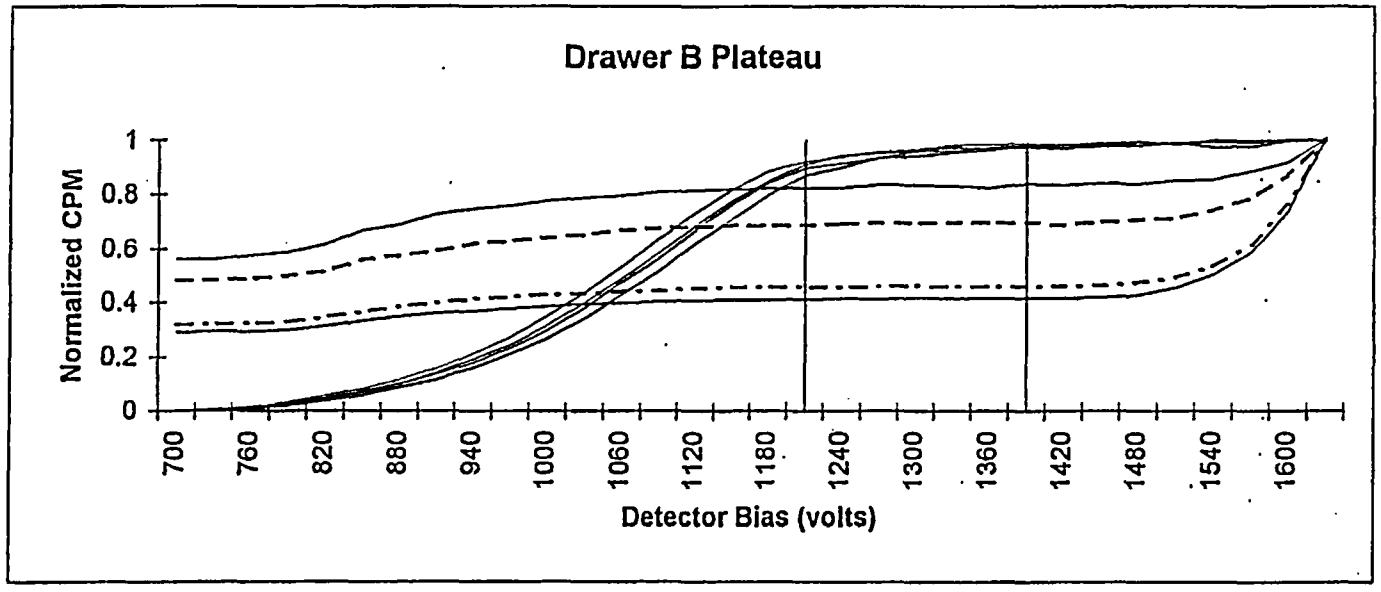
11/13/03

Printed 11/11/03 3:38 PM

000199

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

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



Optimum alpha beta simultaneous operating voltage: 1402.5

Optimum alpha only operating voltage: 1200

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

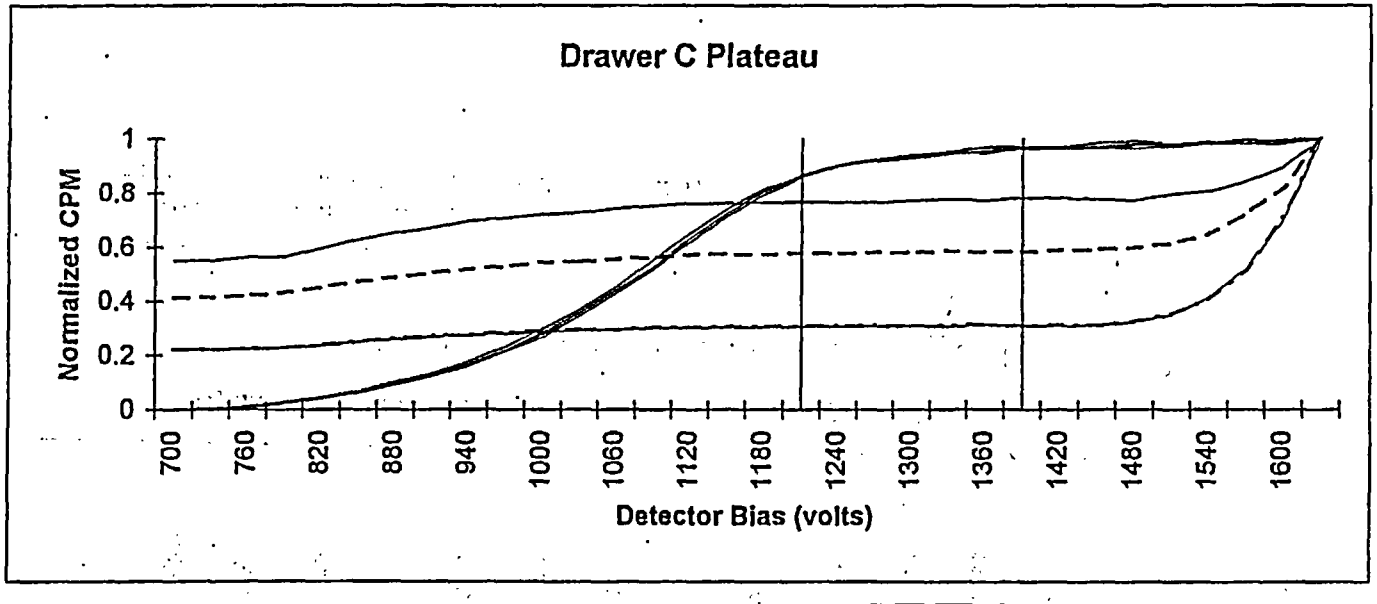
AE 11/13/03

Printed 11/1 '03 3:39 PM

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: 1380

Optimum alpha only operating voltage: 1200

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

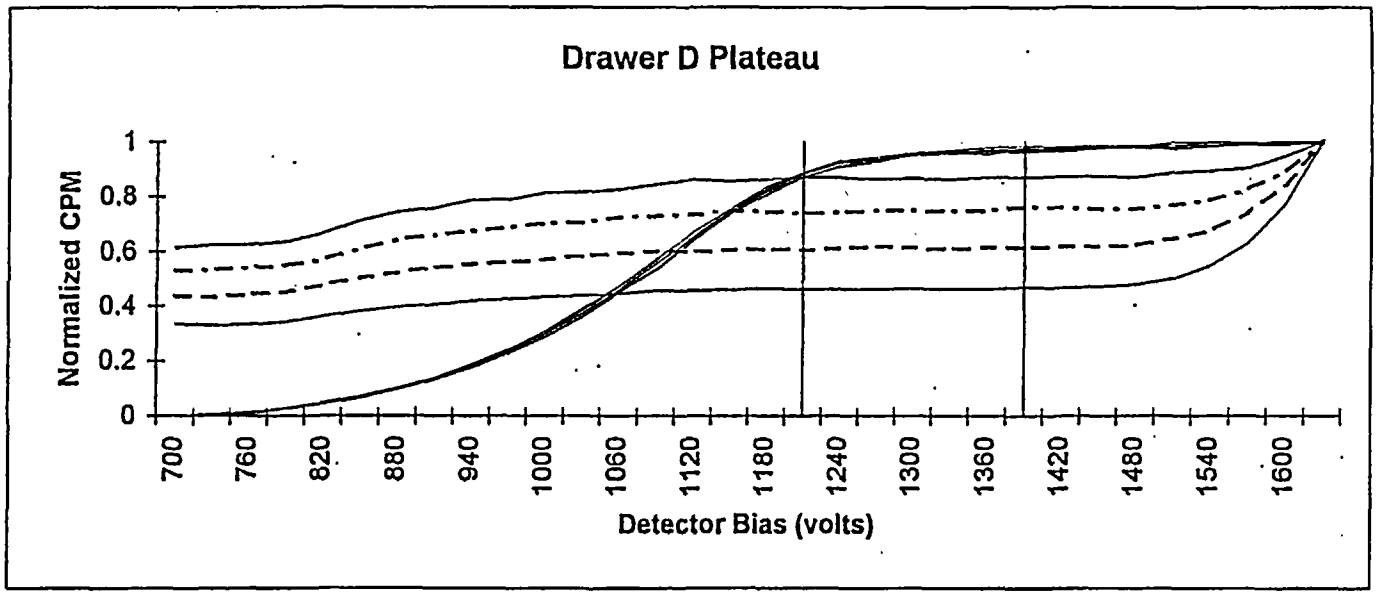
11/13/03

Printed 11/12/03 11:16 AM

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%

Printed 11/[illegible]3 11:17 AM

JE 11/13/03

000202

LB4100-B Raw counts for [redacted]

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

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

1/5/04

Source Database for OSUM for LB4100-B

Number of sources in table: 45

Application Revision: A

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

12/11/03 Complete computer back-up was performed.
JE Scandisk was done and the computer's C:/ drive was defragged.
File name ~~12/1~~ 12/11/03 LB4100 B
PG 12/16/03

12/24/03 Am 241 wipe Calibration
JE Am-241 on filter

Source: 73 Source ID: 1123 log file: Am Wipe 1/03

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

2→B 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~~ ~~E 12/26/03~~ Sr Wipe - 1/03

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

b→2 x-talk is calculated for each detector using the following equation:
counts in ~~Beta~~ Alpha channels / counts in Beta channels
~~JE 1/2/04~~

Continued on Page

Read and Understood By

Clare Brick 1/2/04 Signed Date
Julie Fellingson 1/2/04 Signed Date

pg 265878 a
(cont. from pg N/A b)

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

SOP 724 v 8

Instrument: **LB4100B**

Date: 12/26/03

Instrument Background and Response Checklist

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

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

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	0312081-1	ABO31222-1	218	ABB1226	60	10~~26~~42	JE	JE	12/20/03	
2	-1D					12/26/03				
3	-1AS									
4	-1MSD									
5	-2									
6	-3									
7	ABO31222-1AB									
8	-1LCS									
9	0312082-1	SRO31222-2	Sr-90	SRB1226	60	1030~~40~~	JE			
10	-2					12/26/03				
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

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

Reviewed by CJ Date 12/29/03

Comments:

000206

pg 265878 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmplID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
16	0312082-9	SR031222-2	Sr-90	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-10			SRB1226A	60	1230	JE	JE	12/26/03	
2	0312128-4									
3	-4D									
4	SR031222-24B									
5	-21CS									
6	SR031222-3LCS	SR031222-3	Sr-90	SRB1226B	60	~~1223~~ 1230	JE			
7	0312118-1	AB031222-2	α/β	ABB1226A	60	1223	JE			
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	AB031222-2	α/β	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10MS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	AB031222-24B									
8	-21CS									
1	73	N/A	Am-241 Wipe Calib.	E+W1226	10	1459	JE	JE	12/26/03	
2				A		1505	JE			✓

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

Reviewed _____ Date 12/29/03

Comments:

000207

pg 265879 a
(cont. from pg ~~264~~ 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

Bkg.	Cal. File ID
Dr A	BKBi220
Dr B	
Dr C	
Dr D	

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

12/26/03

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp. Init.	Outp. Date	Cmnt Below
3	73	NA	Am241 wipe Calib	EA01226B	10	1511	JE	JE	12/26/03	NA
4				C		1516				
5				D		1522				
6				E		1527				
7				F		1533				
8				G		1540				
9				H		1545				
10				I		1552				
11				J		1556				
12				K		1603				
13				L		1607				
14				M		1616				
15				N	7:24:03	14621				
16				O		1626				
1	602	NA	Sr90 wipe Calib	ES01226L	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:

000208

ANALYTICS

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

73

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

47007-307

Am-241 47 mm Membrane Filter in Stainless Steel Planchet

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

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

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

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

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

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

P O NUMBER 35829, Item 1

Q A APPROVED 9-30-93

[redacted]r Gas Flow Use

Std: 73
Date 12/23/03

Known Act.:	160.4	dps	4335.1	pCi/s

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

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

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

000210

031983D02.SPC Analyzed by

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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

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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

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

Paragon Analytics, Inc.
GammaScan

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

Bkg.File Detector #: 2

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BACKGROUND SUBTRACT RESULTS

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

031983D02.SPC Analyzed by

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

Paragon Analytics, Inc.
GammaScan

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Geo.7 / Filter

Sample ID: Std #73 Verif

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

Detector #: 2 (Detector 2)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031863D08.SPC Analyzed by 77

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

Paragon Analytics, Inc.
GammaScan

****

Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

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

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

PEAK SEARCH RESULTS

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

031863D08.SPC Analyzed by

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

Paragon Analytics, Inc.
GammaScan

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

Bkg.File Detector #: 8

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BACKGROUND SUBTRACT RESULTS

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

031863D08.SPC Analyzed by

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

Paragon Analytics, Inc.
GammaScan

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Geo.7 / Filter

Sample ID: Std #73 Verif #2

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

Detector #: 8 (Detector 8)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

031552D03.SPC Analyzed by 77

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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

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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

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

Paragon Analytics, Inc.
GammaScan

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

Bkg.File Detector #: 3

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BACKGROUND SUBTRACT RESULTS

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

031552D03.SPC Analyzed by

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

Paragon Analytics, Inc.
GammaScan

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Geo.7 / Filter

Sample ID: Std #73 Verif #3

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

Detector #: 3 (Detector 3)

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

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

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

MEASURED or MDA CONCENTRATIONS

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

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

UNKNOWN,SUM or ESCAPE PEAKS

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

[redacted]

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

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

FE
1/5/04

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.
Filename ~~12/11~~ 12/11/03 LB4100 B
~~JE 12/11/03~~

RG 12/16/03

12/26/03 JE

Am 241 wipe Calibration
Am-241 on filter

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

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

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

12/26/03 JE

Sr-90 wipe Calibration
Sr-90 on filter

Source: 602 Source ID: 1124 log file: ~~Sr 90~~ ~~6-12/20/00~~ Sr Wipe-11/03

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

β→α x-talk is calculated for each detector using the following equation:
counts in ~~Beta~~ Alpha channels / counts in Beta channels
~~JE 1/2/04~~

Continued on Page

Read and Understood By

Clare Lewis 1/2/04 Signed Date
Julie Fellingson 1/2/04 Signed

Py 265878 a
(cont. from pg 1A 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
1 700	A 0.1
2 2000	B
	C
	D

Bkg.	Cal. File ID
Dr A	BKB1220 ✓
Dr B	
Dr C	
Dr D	

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
1-16	DR Checks	NA	NA	EFB1226	30	0856	JE	JE	12/26/03	NA
1-16	BKG Checks	NA	NA	BKB1226	60	0908	JE	JE	12/26/03	
1	03120811	ABO31222-1	2/B	ABB1226	60	10~~36~~42	JE	JE	12/26/03	
2	-1D									
3	-1AS									
4	-1MSD									
5	-2									
6	-3									
7	ADO31222-1AB									
8	-1LCS									
9	03120821	SRO31222-2	Sr-90	SRB1226	60	10~~34~~40	JE			
10	-2									
11	-3									
12	-4									
13	-5									
14	-6									
15	-8									

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

Reviewed by CJ Date 12/29/03

Comments:

000224

pg 265878 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
16	0312082-9	SR031222-2	Sr-90	SRB1226	60	1030	JE	JE	12/26/03	NA
1	0312082-10			SRB1226A	60	1230	JE	JE	12/26/03	
2	0312128-4									
3	-4D									
4	SR031222-2MB									
5	-2LCS									
6	SR031222-3LCS	SR031222-3	Sr-90	SRB1226B	60	~~12/26/03 1223~~ 1230	JE			
7	0312118-1	ABO31222-2	2/B	ABB1226A	60	1223	JE			
8	-2									
9	-3									
10	-4									
11	-5									
12	-5D									
13	-6									
14	-7									
15	-8									
16	-9									
1	0312118-10	ABO31222-2	2/B	ABB1226B	60	1339	JE	JE	12/26/03	
2	-10MS									
3	-11									
4	-12									
5	-13									
6	-13D									
7	ABO31222-2MB									
8	-2LCS									
1	73	NA	Am-241 Wire Calib.	EtW1226	10	1459	JE	JE	12/26/03	
2				A		1505	JE			

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

Reviewed _____ Date 12/29/03

Comments:

000225

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

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Log

Instrument: **LB4100B**

SOP 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

Bkg.	Cal. File ID
Dr A	BkB1226
Dr B	
Dr C	
Dr D	

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

12/26/03

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp Init.	Outp. Date	Cmnt Below
3	73	NA	Am241 Wipe Calib	EA121226B	10	1511	JE	JE	12/26/03	NA
4				F		1516				
5				G		1522				
6				H		1527				
7				I		1533				
8				J		1540				
9				K		1545				
10				L		1552				
11				M		1556				
12				N		1603				
13				O		1607				
14						1616				
15					7/24/03	14621				
16						1626				
1	602	NA	Sr90 Wipe Calib	ESb1226L	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:

000226

pg 265879 b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/26/03

Instrument: **LB4100B**

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnt Below
			Sr-90 w/p Cell							
4	CO2	NA	~~Sr-90 w/p Cell~~	ESW1226O	12	1529	JE	JE	12/26/03	NA
5			Sr-90 w/p 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				
1.1	BKG Check	NA	NA	BKB1226A	60	1633	JE	JE	12/26/03	
1	0310215-16	SR031210-2	Sr-90	SRB1226C	1000	1748	JE	JE	12/27/03	
2	-17									
3	-18									
4	-19									
5	-20									
6	-21									
7	-21D									
8	-22									
9	SR031210-2.4B									
10	-2LCS									
11	0312081-1	SR031222-1	Sr-90	SRB1226D	200	1751	JE			
12	-1D									
13	-2									
14	-3									
15	SR031222-1.4B					1751	JE	JE	12/27/03	NA
16	-1LCS									

Reviewed [illegible] Date 12/29/03

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

Comments:

000227

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

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

62753A-307

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

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

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

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

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

*99% Confidence Level

Impurities: γ-impurities <0.1%

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

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

P O NUMBER 001703, Item 3

PREPARED BY: M Taskaeva
M. Taskaeva, Radiochemist

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

r:\instr\gtpswipe

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

PAI - Gas Flow Proportional Sample Analysis LB4100-B

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

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

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

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

y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99408	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk y = m*b^-mass		Beta to Alpha X-talk y = m*mass + b	
a->b xtalk m=	0.2740	b->a xtalk m=	-2.80E-06
a->b xtalk b=	1.0010	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D1	602	12/21/03 11:56	5.00	0.0	27.400	0.140	10.359	0.2111	1.246	n/a	n/a	14798.600	1.643	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 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 R... (GABW
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^a(a*(mass-x0))		y = b*m^a(a*(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99409	m=	0.9999
a=	1.0000	a=	1.0000
x0=	0.0000	x0=	0.0000
Alpha to Beta X-talk		Beta to Alpha X-talk	
y = m*b^mass		y = m*mass + b	
a->b xtalk m=	0.2748	b->a xtalk m=	-2.00E-06
a->b xtalk b=	1.0919	b->a xtalk b=	0.0007

Det. ID	Sample ID	Count End Date & Time	Count Dur. (min)	Resid. Mass (mg)	Alpha Activity Gross CPM	Alpha Bkg. CPM	Alpha b>a xtlk CPM	Alpha Base Eff	Alpha Base Cor.Fact.	Alpha Progeny Eff	Alpha Progeny Cor.Fact.	Beta Activity Gross CPM	Beta Bkg. CPM	Beta a>b xtlk CPM	Beta Base Eff	Beta Base Cor.Fact.	Beta Progeny Eff	Beta Progeny Cor.Fact.
D2	602	12/21/03 12:02	5.00	0.0	25.600	0.105	10.353	0.2101	1.246	n/a	n/a	14789.400	2.070	7.014	0.4102	1.000	n/a	n/a
D3	729	12/21/03 12:02	5.00	0.0	31.400	0.138	12.261	0.2103	1.248	n/a	n/a	17515.200	1.906	8.604	0.4195	1.000	n/a	n/a

SG 12/23/03

000231

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

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

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

y = b*m^(a*(mass-x0))		y = b*m^(a*(mass-x0))	
Alpha b=	1.24550	Beta b=	1.0000
m=	0.99400	m=	0.9989
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-05
a->b xtalk b=	1.0610	b->a xtalk b=	0.0007

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

AG 12/23/03

000232

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
1 700	A 0.1
2 800	B
	C
	D

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

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

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

Runlog

Det	SmpID	Batch	Test	File ID	Cnt Dur. (minutes)	Start Time	Anal. Init.	Outp .Init.	Outp. Date	Cmnts Below
1-16	DR Checks	NA	NA	EFB1221	30	1112	JE	JE	12/21/03	NA
16	DR Recount	NA	NA	EFB1221A	30	1125	JE	JE	12/21/03	
1	03120672-1	AB 63 1215-3	2 P	ABB1221	1000	1132	JE	JE	12/22/03	
2	-1D									
3	-2									
4	-2MS									
5	ABD31215-3MB									
6	-3LCS									
13 13	602	–	Sr-90 wipe Ver	SRB1221	5	1151	JE	JE	12/21/03	
14 14	729	–								
159	73	–	Am-241 wipe Ver	AMB1221	5	1151	JE			
10	601	–								
19 10	602	–	Sr-90 wipe Ver	SRB1221A	5	1157	JE	JE	12/21/03	
15 11	729	–								
13 10	73	–	Am-241 wipe Ver	AMB1221A	5	1158	JE			
14 11	601	–								
15 15	602	–	Sr-90 wipe Ver	SRB1221B	5	1204	JE	JE	12/21/03	

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

Reviewed by JE Date 12/22/03

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

000233

pg _____ b

Paragon Analytics, Inc.

Low Background Gas Flow Proportional Counter Run Log

Date: 12/21/03

Instrument: LB4100B

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

12/22/03

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

Reviewed _____ 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