Packages B0100 to E0200

Duratek Inc.
Survey Package Worksheet for Package B0100
Bristol-Myers Squibb Tank Vaults Building 124

Package Identification No.: B0100	Prepared by: Douglas R. Kjos
Location: Building 124 Tank Vaults	Date prepared: 10/2/2002
Area Classification: Class 2	

Area Description

The survey is for the Tank Vaults in the Building 124 south yard.

Historical Information

There is no history of spills to the soil around the Building 124 buried tank area. The Building 124 tanks did have leaks into the tank vault when the inlet pipe to one of the tanks broke. The wastewater was cleaned up and sent to another waste tank. The vault completely surrounds the tanks and contained all spilled liquids. The vault is not totally water tight however as there is in leakage from groundwater that is removed via a sump and sump pump. The characterization report indicates that the soils up to 20 feet deep around the tank vault were not contaminated.

General Survey Instructions

The COMPASS program was utilized to generate a minimum sample requirement for this area, 24 samples (see attached). 24 random sample locations in the vault area were determined and laid out as indicated on the attached survey map.
(Class 2):

1) Perform a minimum of 30-50% scan of accessible surfaces. The surfaces scanned should be biased towards surfaces with a higher potential of being contaminated, (i.e. floors, walls)
2) Denote on map location of all readings.
3) Obtain 1 smear at each measurement location for gross alpha/beta analysis.

Use only the Package ID, L2, L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taken fixed beta readings.

Survey Package Completion.

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1. Note any problems, comments, or other information pertinent to the data or sample collection under the "FIELD NOTES" section.

Use all location codes provided below when taking measurements.

Survey Package: B0100 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Source check meters to Th-230 for alpha measurements. Source Check meters to Cs-137 for gamma. Use gas flow proportional detector model numbers 43-68 or 43-106 for surveys. The direct alpha and beta measurements and smears should be taken equidistant (where possible) and at the same measurement locations throughout the survey area. Perform a minimum of three 1 minute field backgrounds (prior to taking field readings)

Survey performance (Initial and date as each survey is complete)											
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	Gamma Scan	Direct Gamma	Smear Gross ∀/∃
L1	L2	L6	L7	L8							
Pittsburgh Instrument Shop Office and Reception Area Floors											
B0100	01F01	ZZZZZ	ZZZZZ	1-2	Floor Vault 1	30-50% NRL 10-3-02	2 NRL 10-7-02	10% NRL 10-7-02	30-50% NRL 10-7-02	2 NRL 10-7-02	2 NRL 10-7-02
B0100	01W01	ZZZZZ	ZZZZZ	1-4	Wall Vault 1	30-50% NRL 10-3-02	4 NRL 10-7-02	10% NRL 10-7-02	N/A	N/A	4 NRL 10-7-02
B0100	01F02	ZZZZZ	ZZZZZ	1-2	Floor Vault 2	30-50% NRL 10-3-02	2 NRL 10-7-02	10% NRL 10-7-02	30-50% NRL 10-7-02	2 NRL 10-7-02	2 NRL 10-7-02
B0100	01W02	ZZZZZ	ZZZZZ	1-4	Wall Vault 2	30-50% NRL 10-3-02	4 NRL 10-7-02	10% NRL 10-7-02	N/A	N/A	4 NRL 10-7-02
B0100	01F03	ZZZZZ	ZZZZZ	1-2	Floor Vault 3	30-50% NRL 10-3-02	2 NRL 10-7-02	10% NRL 10-7-02	30-50% NRL 10-7-02	2 NRL 10-7-02	2 NRL 10-7-02
B0100	01W03	ZZZZZ	ZZZZZ	1-4	Wall Vault 3	30-50% NRL 10-3-02	4 NRL 10-7-02	10% NRL - 10-7-02	N/A	N/A	4 NRL 10-7-02
B0100	01F04	ZZZZZ	ZZZZZ	1-2	Floor Vault 4	30-50% NRL - 10-3-02	2 NRL 10-7-02	10% NRL - 10-7-02	30-50% NRL 10-7-02	2 NRL 10-7-02	2 NRL 10-7-02
B0100	01W04	ZZZZZ	ZZZZZ	1-4	Wall Vault 4	30-50% NRL 10-3-02	4 NRL 10-7-02	10% NRL - 10-7-02	N/A	N/A	4 NRL - 10-7-02

Survey performance (Initial and date as each survey is complete)											
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	Gamma Scan	Direct Gamma	Smear Gross ∀/∃
L1	L2	L6	L7	L8							
Package Complete Paul C Eg 4/30/03											

Survey Comments

Survey Package No. B0100
B-124 Tank Vaults
Survey Point Coordinates

Below is given the coordinates in feet for the survey points in each cell of the B-124 Tank Vault. The cells are numbered 1-4 going from west to east. The cell number given here is the same as the BMS-designated number for the tank in each of the cells. The reference point for the floor in each cell, 0, 0, is the southwest corner. The reference point for each wall is the lower left corner. The COMPASS program set the minimum number of survey points at 13. This survey provides for 24 survey points established such that there are two on every cell floor and one on each cell wall. The coordinates provided below are the truncated results using the random number generator function of Excel.

Cell 1

	Floor		North Wall		South Wall	
	x	y	x	y	x	y
1	5	26	1	11	6	15
2	3	28				

East Wall		West Wall	
x	y	x	y
27	5	6	1

Cell 2

	Floor		North Wall		South Wall	
	x	y	x	y	x	y
1	4	0	8	15	2	4
2	3	27				

East Wall		West Wall	
x	y	x	y
9	9	21	~~18~~ 12'

ON WEST WALL "y" WAS CHANGED TO 12' DUE TO WALL ONLY BEING 12'8.5"
OK [illegible]

Cell 3

	Floor		North Wall		South Wall	
	x	y	x	y	x	y
1	3	9	8	0	5	12
2	5	9				

East Wall		West Wall	
x	y	x	y
26	5	18	6

Survey Point Coordinates
B0100

Cell 4

	Floor		North Wall		South Wall	
	x	y	x	y	x	y
1	5	21	0	1	2	4
2	0	8				

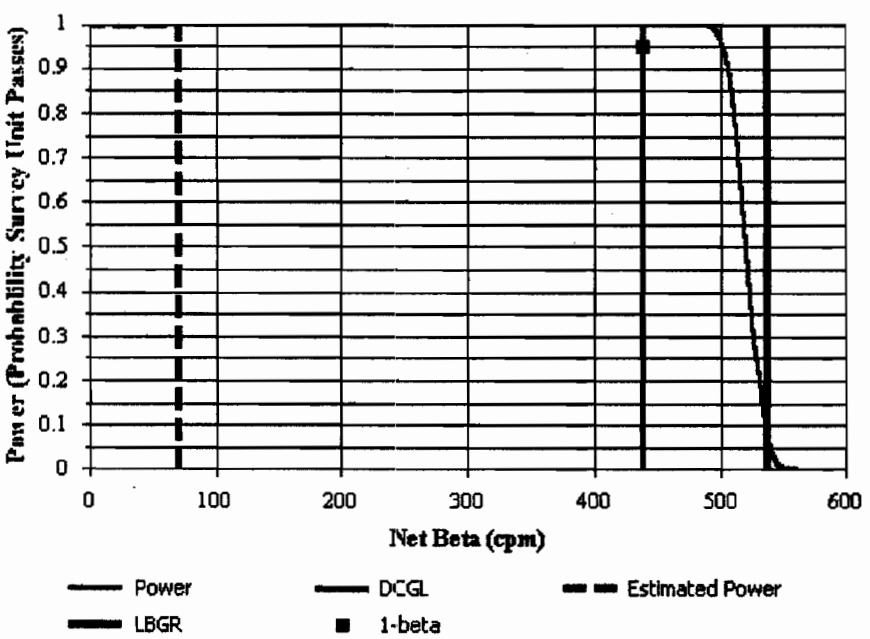
East Wall		West Wall	
x	y	x	y
27	9	4	2

Building Surface Survey Plan

Survey Plan Summary

Site:	Bristol-Meyers Squibb Decommissioning		
Planner(s):	William R. Hoey		
Survey Unit Name:	BMS B-124 Tank Vault		
Comments:	Survey Package B-100		
Area (m²):	582	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	32.5
DCGL (cpm):	537	Sample Size (N):	13
LBGR (cpm):	439	Estimated Conc. (cpm):	70.8
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.06
Gross Beta DCGLw (cpm): 537

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 & Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.24	0.25	0.0600

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 368 ± 23 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	13	297.2	23	1,100

COMPASS INPUT DATA from Characterization

Duratek Download Survey Report

Technician Name:	Douglas R. Kjos	***Download File Name:***	00000027	***User ID***	***Det Type (L4)***
M2350 SN	95358	***Detector Area:***	126	DRK2986	02200
Detector SN	092522	***Efficiency***	0.146	***File #***	27
Survey Start Date:	1/22/02	***MeasurementType:***	Beta	***Det Setup***	4

	Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd*	*Net DPM/100cm2*
1	A0300	01W01	0	324.0	60	FLDBK	B0002	TANK4	1	324	0.0
2	A0300	01W01	1	362.0	60	FLDCT	B0002	TANK4	1	324	206.6
1	A0300	01EQ1	2	274.0	60	FLDBK	B9999	TANK4	1	274	0.0
2	A0300	01EQ1	3	307.0	60	FLDCT	B9999	TANK4	1	274	179.4
	A0300	01EQ1	4	298.0	60	FLDBK	B9999	TANK4	2	298	0.0
	A0300	01EQ1	5	294.0	60	FLDCT	B9999	TANK4	2	298	-21.7
	A0300	01EQ1	6	292.0	60	FLDBK	B9999	TANK4	3	292	0.0
	A0300	01EQ1	7	274.0	60	FLDCT	B9999	TANK4	3	292	-97.8
1	A0300	01W01	8	291.0	60	FLDBK	B0002	TANK4	2	291	0.0
2	A0300	01W01	9	379.0	60	FLDCT	B0002	TANK4	2	291	478.4
1	A0300	01W01	10	294.0	60	FLDBK	B0002	TANK4	3	294	0.0
2	A0300	01W01	11	386.0	60	FLDCT	B0002	TANK4	3	294	500.1
1	A0300	01W01	12	337.0	60	FLDBK	B0002	TANK4	4	337	0.0
2	A0300	01W01	13	402.0	60	FLDCT	B0002	TANK4	4	337	353.3
	A0300	01S01	14	326.0	60	FLDBK	B9999	TANK4	1	326	0.0
	A0300	01S01	15	294.0	60	FLDCT	B9999	TANK4	1	326	-174.0
	A0300	01EQ1	16	253.0	60	FLDBK	B9999	TANK3	4	253	0.0
	A0300	01EQ1	17	292.0	60	FLDCT	B9999	TANK3	4	253	212.0
	A0300	01EQ1	18	298.0	60	FLDBK	B9999	TANK3	5	298	0.0
	A0300	01EQ1	19	309.0	60	FLDCT	B9999	TANK3	5	298	59.8
	A0300	01EQ1	20	254.0	60	FLDBK	B9999	TANK3	6	254	0.0
	A0300	01EQ1	21	289.0	60	FLDCT	B9999	TANK3	6	254	190.3
1	A0300	01W01	22	297.0	60	FLDBK	B0002	TANK3	5	297	0.0
2	A0300	01W01	23	368.0	60	FLDCT	B0002	TANK3	5	297	386.0
1	A0300	01W01	24	262.0	60	FLDBK	B0002	TANK3	6	262	0.0
2	A0300	01W01	25	362.0	60	FLDCT	B0002	TANK3	6	262	543.6
1	A0300	01W01	26	299.0	60	FLDBK	B0002	TANK3	7	299	0.0
2	A0300	01W01	27	362.0	60	FLDCT	B0002	TANK3	7	299	342.5
1	A0300	01W01	28	306.0	60	FLDBK	B0002	TANK3	8	306	0.0
2	A0300	01W01	29	380.0	60	FLDCT	B0002	TANK3	8	306	402.3
	A0300	01S01	30	277.0	60	FLDBK	B9999	TANK3	2	277	0.0
	A0300	01S01	31	284.0	60	FLDCT	B9999	TANK3	2	277	38.1
	A0300	01EQ1	32	254.0	60	FLDBK	B9999	TANK2	7	254	0.0
	A0300	01EQ1	33	278.0	60	FLDCT	B9999	TANK2	7	254	130.5

Beta Flag -

Beta Max Flag 5000

Tuesday, March 05, 2002

Page _____ *of* _____

	Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd	Net DPM/100cm2
	A0300	01EQ1	34	267.0	60	FLDBK	B9999	TANK2	8	267	0.0
	A0300	01EQ1	35	293.0	60	FLDCT	B9999	TANK2	8	267	141.3
	A0300	01EQ1	36	268.0	60	FLDBK	B9999	TANK2	9	268	0.0
	A0300	01EQ1	37	303.0	60	FLDCT	B9999	TANK2	9	268	190.3
1	A0300	01W01	38	276.0	60	FLDBK	B0002	TANK2	9	276	0.0
2	A0300	01W01	39	361.0	60	FLDCT	B0002	TANK2	9	276	462.1
1	A0300	01W01	40	277.0	60	FLDBK	B0002	TANK2	10	277	0.0
2	A0300	01W01	41	369.0	60	FLDCT	B0002	TANK2	10	277	500.1
1	A0300	01W01	42	333.0	60	FLDBK	B0002	TANK2	11	333	0.0
2	A0300	01W01	43	373.0	60	FLDCT	B0002	TANK2	11	333	217.4
	A0300	01S01	44	267.0	60	FLDBK	B9999	TANK2	3	267	0.0
	A0300	01S01	45	301.0	60	FLDCT	B9999	TANK2	3	267	184.8
	ZZZZZ	ZZZZZ	46	3,600.0	600	PTBBK	ZZZZZ	ZZZZZ	0		
	ZZZZZ	10002	47	36,657.0	60	PTB00	ZZZZZ	ZZZZZ	0	360	197,309.2
	ZZZZZ	10002	48	40,590.0	60	PTB00	ZZZZZ	ZZZZZ	0	360	218,688.8
	ZZZZZ	10002	49	37,597.0	60	PTB00	ZZZZZ	ZZZZZ	0	360	202,419.0
	ZZZZZ	99608	50	5,549.0	60	PTB00	ZZZZZ	ZZZZZ	0	360	28,207.2
	ZZZZZ	99608	51	5,826.0	60	PTB00	ZZZZZ	ZZZZZ	0	360	29,713.0
	ZZZZZ	99608	52	5,547.0	60	PTB00	ZZZZZ	ZZZZZ	0	360	28,196.3

1 – Bkgd msmts used as input to COMPASS for concrete
2 – Gross survey Unit Mean (cpm) calculated from these values for survey packages A1400 & B0100, including σ calculation.

Background counts input to COMPASS included
1 count performed on 10/2/02 – 293 cpm
MRK

Beta Flag	-
Beta Max Flag	5000

Tuesday, March 05, 2002

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SURVEY PACKAGE B0100
B-124 TANK VAULT

Compass Inputs For MDC Scan Determination

Compass Input Request	Input Value
Select True Positive Proportion:	0.95
Select False Positive Proportion	0.60
Observation Interval (sec)	2
Surveyor Efficiency:	0.5

See MARSSIM 6.7.2.1.

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller that the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3.

Given:

$\Delta/\sigma = (DCGL_W - LBGR)/\sigma = 3$

$\sigma = 32.5$ cpm

$DCGL_W = 537$ cpm (Calculated by COMPASS)

Then:

$LBGR = DCGL_W - 3\sigma$

$= 537 - (3 * 32.5)$

$= 439$ cpm

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kiss **Signature:** [signature] **Date:** 10-7-02

Download Station #: 1 Download File #: 0
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kiss **User ID** NRK2986 **Signature:** [signature] **Date:** 10-7-02

Print Name: N/A **User ID** **Signature:** **Date:**

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B0100
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 2-13-03 Detector Calibration Due Date: 2-13-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.229			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 347	2 228	3 225	4 n/a	5 n/a	6 n/a	266
α Alpha	1	2	3	4	5	6	

COMMENTS: Delete samples 34-49, Package A1400 ✓

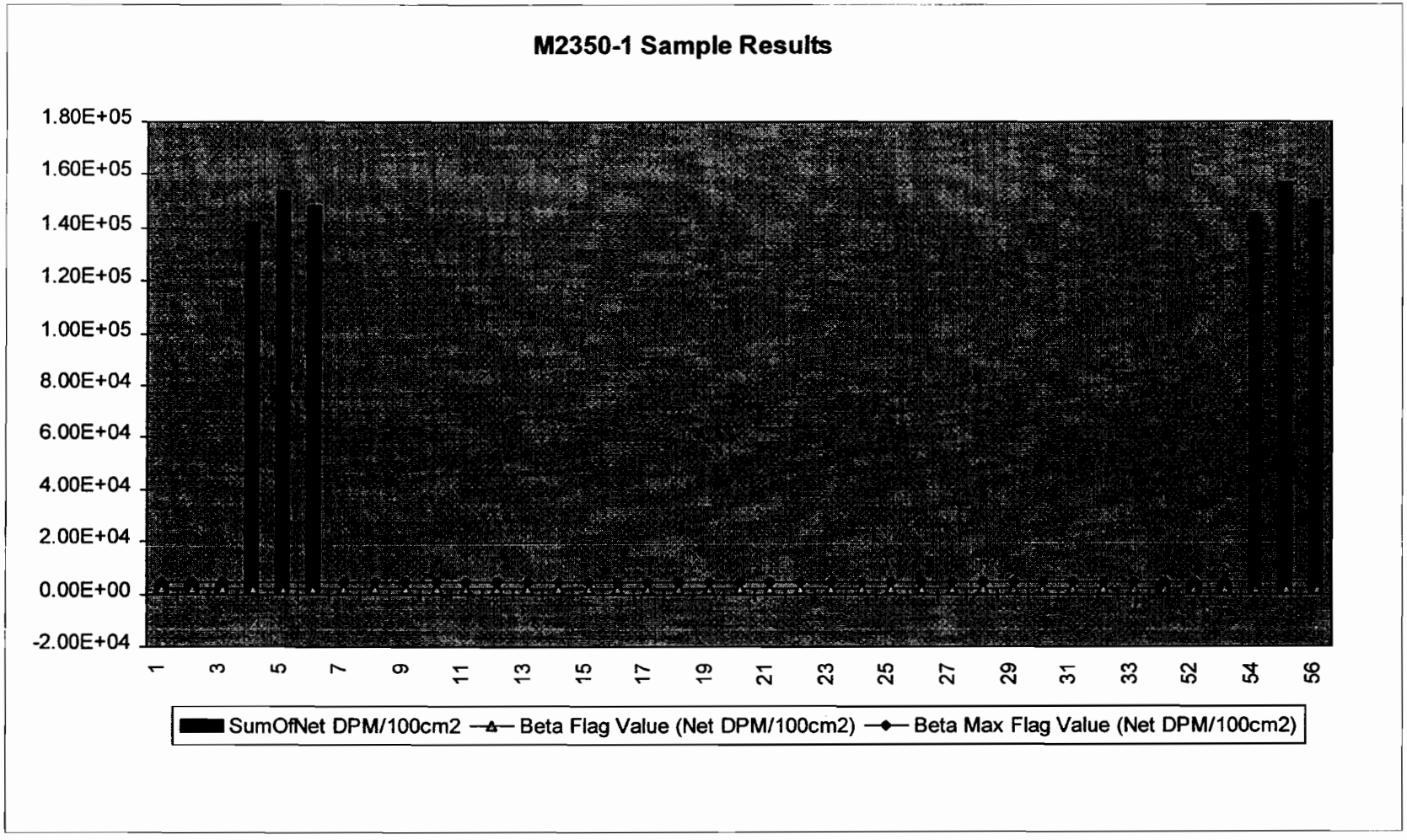
M2350-1 Download BETA Report

File Name : 00000000	Survey Description :Package B0100 (Tank Vaults 1-4)	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 2/13/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 2/13/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 100	Efficiency : 0.229	Survey Date : 10/7/02

Print Name	Signature	Date
Doug Kjos		10/8/02

Comments:

Sign-Off Paul C. Ely (Print Name) Paul C Ely (Signature) 1/23/03 (Date)


M2350-1 Sample Results
1.80E+05
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
-2.00E+04
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
52
54
56
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000000

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,962.0	600	PRBBK	ZZZZZ	ZZZZZ	0		
ZZZZZ	FD184	1	1,224.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	4,052
ZZZZZ	FD184	2	1,239.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	4,118
ZZZZZ	FD184	3	1,308.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	4,419
ZZZZZ	10002	4	32,935.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	[redacted]
ZZZZZ	10002	5	35,648.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	[redacted]
ZZZZZ	10002	6	34,323.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	[redacted]
B0100	01F01	7	347.0	60	FLDBK	B0003	ZZZZZ	1	347	0
B0100	01W01	8	228.0	60	FLDBK	B0003	ZZZZZ	2	228	0
B0100	01W01	9	225.0	60	FLDBK	B0003	ZZZZZ	3	225	0
B0100	01F01	10	275.0	60	FLDCT	B0003	ZZZZZ	1	266	39
B0100	01F01	11	324.0	60	FLDCT	B0003	ZZZZZ	2	266	253
B0100	01W01	12	339.0	60	FLDCT	B0003	ZZZZZ	1	266	319
B0100	01W01	13	302.0	60	FLDCT	B0003	ZZZZZ	2	266	157
B0100	01W01	14	255.0	60	FLDCT	B0003	ZZZZZ	3	266	-48
B0100	01W01	15	314.0	60	FLDCT	B0003	ZZZZZ	4	266	210
B0100	01F02	16	292.0	60	FLDCT	B0003	ZZZZZ	1	266	114
B0100	01F02	17	327.0	60	FLDCT	B0003	ZZZZZ	2	266	266
B0100	01W02	18	274.0	60	FLDCT	B0003	ZZZZZ	1	266	35
B0100	01W02	19	305.0	60	FLDCT	B0003	ZZZZZ	2	266	170
B0100	01W02	20	358.0	60	FLDCT	B0003	ZZZZZ	3	266	402
B0100	01W02	21	274.0	60	FLDCT	B0003	ZZZZZ	4	266	35
B0100	01F03	22	329.0	60	FLDCT	B0003	ZZZZZ	1	266	275
B0100	01F03	23	378.0	60	FLDCT	B0003	ZZZZZ	2	266	489
B0100	01W03	24	333.0	60	FLDCT	B0003	ZZZZZ	1	266	293
B0100	01W03	25	303.0	60	FLDCT	B0003	ZZZZZ	2	266	162
B0100	01W03	26	324.0	60	FLDCT	B0003	ZZZZZ	3	266	253
B0100	01W03	27	298.0	60	FLDCT	B0003	ZZZZZ	4	266	140
B0100	01F04	28	326.0	60	FLDCT	B0003	ZZZZZ	1	266	262
B0100	01F04	29	364.0	60	FLDCT	B0003	ZZZZZ	2	266	428
B0100	01W04	30	325.0	60	FLDCT	B0003	ZZZZZ	1	266	258
B0100	01W04	31	285.0	60	FLDCT	B0003	ZZZZZ	2	266	83
B0100	01W04	32	338.0	60	FLDCT	B0003	ZZZZZ	3	266	314
B0100	01W04	33	329.0	60	FLDCT	B0003	ZZZZZ	4	266	275
ZZZZZ	ZZZZZ	50	2,981.0	600	PTBBK	ZZZZZ	ZZZZZ	0		
ZZZZZ	FD184	51	1,285.0	60	PTB00	ZZZZZ	ZZZZZ	0	298	4,310
ZZZZZ	FD184	52	1,323.0	60	PTB00	ZZZZZ	ZZZZZ	0	298	4,476
ZZZZZ	FD184	53	1,228.0	60	PTB00	ZZZZZ	ZZZZZ	0	298	4,061
ZZZZZ	10002	54	33,544.0	60	PTB00	ZZZZZ	ZZZZZ	0	298	[redacted]

Beta Flag	2500 -	_____
Beta Max Flag	5000	[redacted]

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	10002	55	36,351.0	60	PTB00	ZZZZZ	ZZZZZ	0	298	[redacted]
ZZZZZ	10002	56	34,684.0	60	PTB00	ZZZZZ	ZZZZZ	0	298	[redacted]

Beta Flag	2500	- _____
Beta Max Flag	5000	[redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 10-7-02 NRL 10-7-02

Download Station #: 1 Download File #: 2
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kjos **User ID** NRL2986 **Signature:** [signature] **Date:** 10-7-02

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: Package B0100
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 2-15-03 Detector Calibration Due Date: 2-13-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
■ Alpha α	PR092524	43-68A	.190			
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1 1.4	2 .6	3 1.4	4 n/a	5 n/a	6 n/a	1.2

COMMENTS: Delete samples 0-3, 8-20, 33-2874, Packages A1400, B0100 & Gamma S/L. ✓
Delete sample #27g. Change L4 to 01200 21-26 ✓
Bad reading

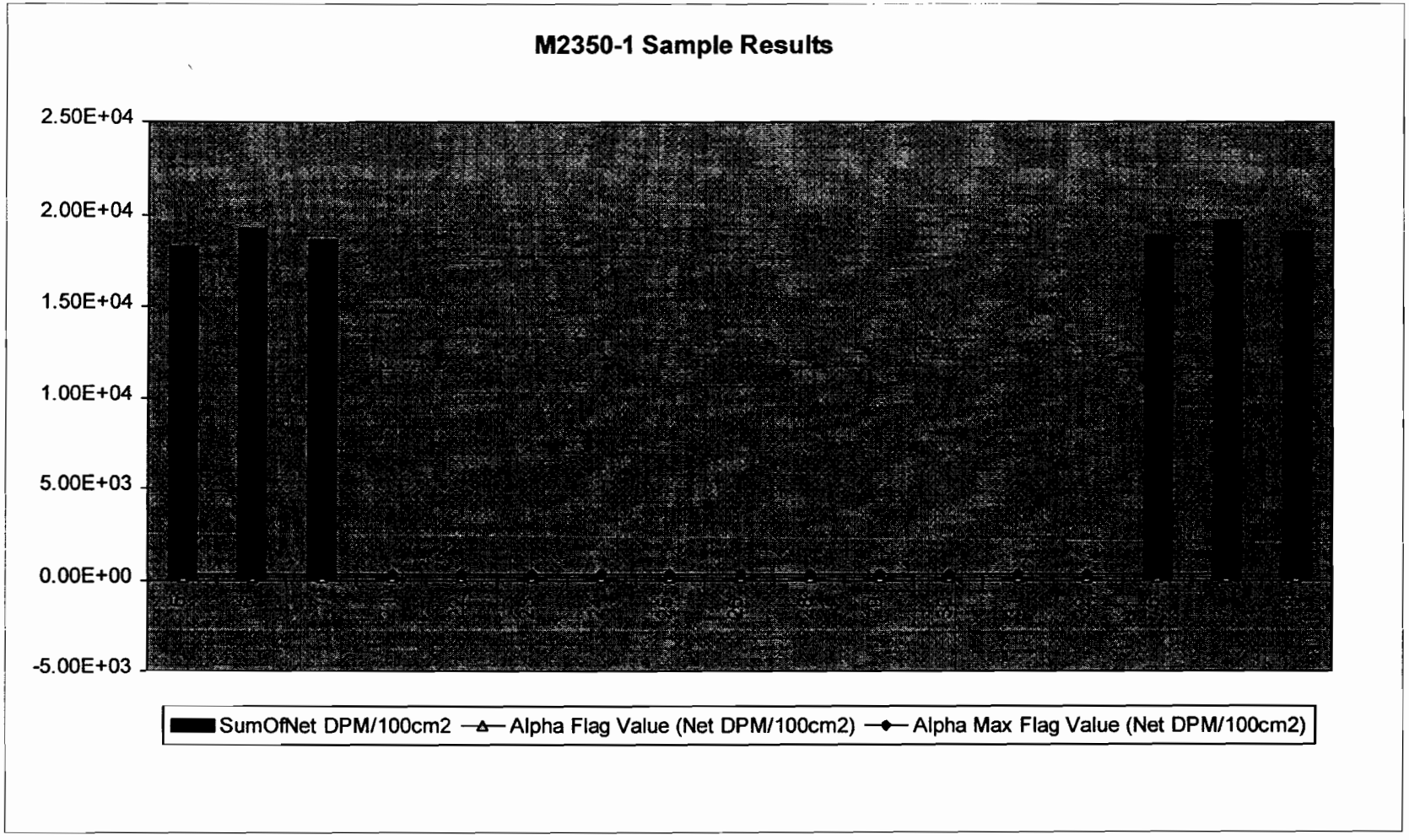
M2350-1 Download ALPHA Report

File Name : 00000002	Survey Description :Package B0100 (Tank Vaults 1-4)	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : 43-68A	Detector S/N : 092524	Detector Cal. Due : 2/12/03
Measurement Type : ALPHA	Detector Type : 01200 : 126 cm2 Gas Proportional Detector, Alpha Window	
Detector Area : 100	Efficiency : 0.19	Survey Date : 10/7/02

Print Name	Signature	Date
Doug Kjos		10/8/02

Comments:

Sign-Off Paul C. Ely (Print Name) Paul C. Ely (Signature) 1/23/03 (Date)


M2350-1 Sample Results
2.50E+04
2.00E+04
1.50E+04
1.00E+04
5.00E+03
0.00E+00
-5.00E+03
SumOfNet DPM/100cm2
Alpha Flag Value (Net DPM/100cm2)
Alpha Max Flag Value (Net DPM/100cm2)

Duratek Alpha Survey Report

Download File Name: 00000002

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type (L5)*	*Material Type (L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd*	*Net DPM/100cm2*
ZZZZZ	ZZZZZ	4	11.0	600	PRABK	ZZZZZ	ZZZZZ	0		
ZZZZZ	FS627	5	3,473.0	60	PRA00	ZZZZZ	ZZZZZ	0	1.1	[redacted]
ZZZZZ	FS627	6	3,657.0	60	PRA00	ZZZZZ	ZZZZZ	0	1.1	[redacted]
ZZZZZ	FS627	7	3,544.0	60	PRA00	ZZZZZ	ZZZZZ	0	1.1	[redacted]
B0100	01F04	21	7.0	300	FLDBK	B0003	ZZZZZ	1	1.4	0
B0100	01W04	22	3.0	300	FLDBK	B0003	ZZZZZ	2	0.6	0
B0100	01W04	23	8.0	300	FLDBK	B0003	ZZZZZ	3	1.6	0
B0100	01W04	24	6.0	120	FLDCT	B0003	ZZZZZ	3	1.2	9
B0100	01F04	25	4.0	120	FLDCT	B0003	ZZZZZ	1	1.2	4
B0100	01F03	26	8.0	120	FLDCT	B0003	ZZZZZ	2	1.2	15
B0100	01F02	28	4.0	120	FLDCT	B0003	ZZZZZ	1	1.2	4
B0100	01W02	29	5.0	120	FLDCT	B0003	ZZZZZ	4	1.2	7
B0100	01W03	30	5.0	120	FLDCT	B0003	ZZZZZ	2	1.2	7
B0100	01W01	31	5.0	120	FLDCT	B0003	ZZZZZ	1	1.2	7
B0100	01F01	32	7.0	120	FLDCT	B0003	ZZZZZ	1	1.2	12
ZZZZZ	ZZZZZ	75	9.0	600	PTABK	ZZZZZ	ZZZZZ	0		
ZZZZZ	FS627	76	3,589.0	60	PTA00	ZZZZZ	ZZZZZ	0	0.9	[redacted]
ZZZZZ	FS627	77	3,740.0	60	PTA00	ZZZZZ	ZZZZZ	0	0.9	[redacted]
ZZZZZ	FS627	78	3,616.0	60	PTA00	ZZZZZ	ZZZZZ	0	0.9	[redacted]

Alpha Flag	100	- _____
Alpha Max Flag	300	[redacted]

Tuesday, October 08, 2002

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 10-7-02

Download Station #: 1 Download File #: 4

Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** DRK3986 **Signature:** [signature] **Date:** 10-7-02

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: Package B0100

(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 2-15-03 Detector Calibration Due Date: 2-13-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR095085	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: Delete Points 4-32, 41-70 & 75-78, Packages A1400, B0100 & Alpha S/c. ✓

M2350-1 Download Gamma Report

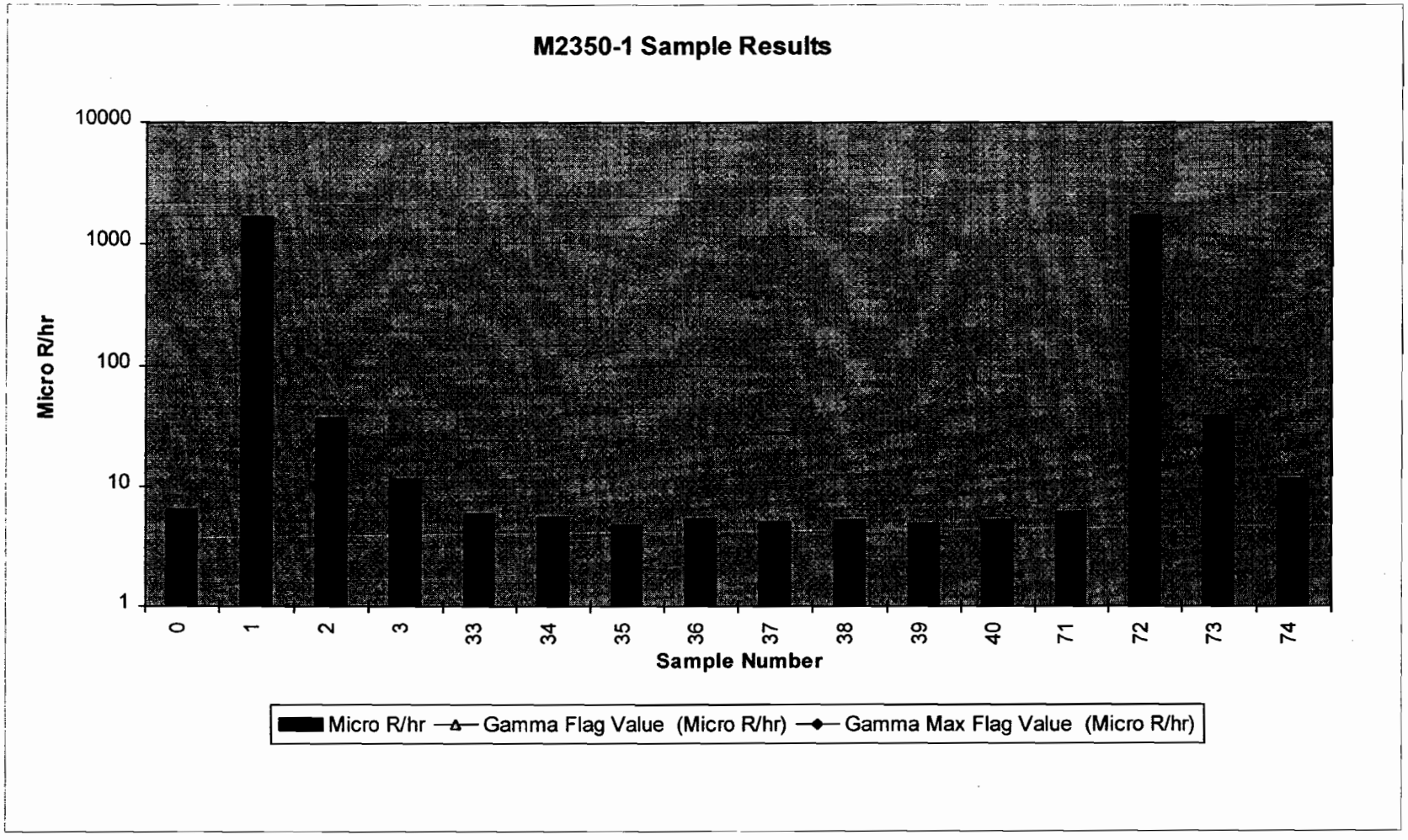
File Name : 00000004	Survey Description :Package B0100 (Tank Vaults 1-4)	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : Gamma	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 1		Survey Date : 10/7/02

Print Name	Signature	Date
Doug Kjos		10/8/02

Comments:

Sign-Off

Print Name	Signature	Date
Paul C. Ely		1/23/03


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
33
34
35
36
37
38
39
40
71
72
73
74
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	9,261.0	300	PRGBK	ZZZZZ	ZZZZZ	0		6.47E+00
ZZZZZ	19453	1	476,873.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.67E+03
ZZZZZ	19453	2	10,809.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.78E+01
ZZZZZ	19453	3	3,321.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.16E+01
B0100	01F01	33	850.0	30	FLDCT	B0003	ZZZZZ	1		5.94E+00
B0100	01F01	34	810.0	30	FLDCT	B0003	ZZZZZ	2		5.66E+00
B0100	01F02	35	687.0	30	FLDCT	B0003	ZZZZZ	1		4.80E+00
B0100	01F02	36	770.0	30	FLDCT	B0003	ZZZZZ	2		5.38E+00
B0100	01F03	37	731.0	30	FLDCT	B0003	ZZZZZ	1		5.11E+00
B0100	01F03	38	741.0	30	FLDCT	B0003	ZZZZZ	2		5.18E+00
B0100	01F04	39	709.0	30	FLDCT	B0003	ZZZZZ	1		4.96E+00
B0100	01F04	40	754.0	30	FLDCT	B0003	ZZZZZ	2		5.27E+00
ZZZZZ	ZZZZZ	71	8,761.0	300	PTGBK	ZZZZZ	ZZZZZ	0		6.12E+00
ZZZZZ	19453	72	489,973.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.71E+03
ZZZZZ	19453	73	10,995.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.84E+01
ZZZZZ	19453	74	3,376.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.18E+01

Gamma Flag - _____

Gamma Max Flag [redacted]

Tuesday, October 15, 2002

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- _____
Package B0100

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by (Print) DRIGOS Signature [signature] Date 10-07-02 Time 1400

Counted by (Print) VCMiles Signature [signature] Date 10-07-02 Time 1700

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 52 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .2 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm / 100 cm²
			01F01
1	58	6	<MDA
2	62	10	<MDA
			01F02
1	57	5	<MDA
2	66	14	<MDA
			01F03
1	60	8	<MDA
2	51	0	<MDA
			01F04
1	52	0	<MDA
2	58	6	<MDA
			01W01
1	61	9	<MDA
2	45	0	<MDA
3	61	9	<MDA
4	49	0	<MDA

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm / 100cm²
			01F01
1	1	.8	<MDA
2	1	.8	<MDA
			01F02
1	0	0	<MDA
2	1	.8	<MDA
			01F03
1	0	0	<MDA
2	1	.8	<MDA
			01F04
1	0	0	<MDA
2	0	0	<MDA
			01W01
1	1	.8	<MDA
2	0	0	<MDA
3	0	0	<MDA
4	1	.8	<MDA

Remarks- β-γ MDA = 27 dpm/100cm²
α MDA = 4.2 dpm/100cm²

Signature- VCMiles **Reviewed by-** [signature]

of

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #-_____

Package #B01B8

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by DRKjos (Print) Signature [signature] Date 10-07-02 Time ____

Counted by VCMiles (Print) Signature [signature] Date 10-07-02 Time 1700

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 52 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .2 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
			01W02
1	59	7	<MDA
2	60	8	<MDA
3	58	6	<MDA
4	61	9	<MDA
			01W03
1	61	9	<MDA
2	56	4	<MDA
3	47	0	<MDA
4	56	4	<MDA
			01W04
1	50	0	<MDA
2	60	8	<MDA
3	46	0	<MDA
4	59	7	<MDA

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
			01W02
1	1	.8	<MDA
2	0	0	<MDA
3	1	.8	<MDA
4	0	0	<MDA
			01W03
1	0	0	<MDA
2	0	0	<MDA
3	0	0	<MDA
4	0	0	<MDA
			01W04
1	0	0	<MDA
2	1	.8	<MDA
3	1	.8	<MDA
4	0	0	<MDA

Remarks- β-γ MDA = 27 dpm/100cm² α MDA = 42 dpm/100 cm²

Signature- VCMiles Reviewed by- [signature]

of

Duratek, Inc.
Survey Package Worksheet for Package B0200
Bristol-Myers Squibb Building 124 Rooms 144 & 145

Package Identification No.: B0200	Prepared by: Paul C. Ely
Location: Building 124 Rooms 144 & 145	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in Rooms 144 & 145.

Historical Information

Room 144 is an Electrical Room and radioactive materials have never been in this area. Room 145 is a mechanical room and radioactive materials have never been processed in this area. A building vacuum system was located in this room that had a special HEPA filtration system on its inlet. There was an I-131 spill in the Cave 172 area that resulted in I-131 entering the vacuum system. The vacuum tank and HEPA filters were surveyed during the demolition and no activity above background was found. All areas had contamination levels <5,000 dpm/100 cm^2 as identified during the characterization survey.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.
5. In the Electrical Room **DO NOT OPEN** any cabinets to perform surveys. Survey easily accessible building surfaces only.

Survey Package: B0200 continued

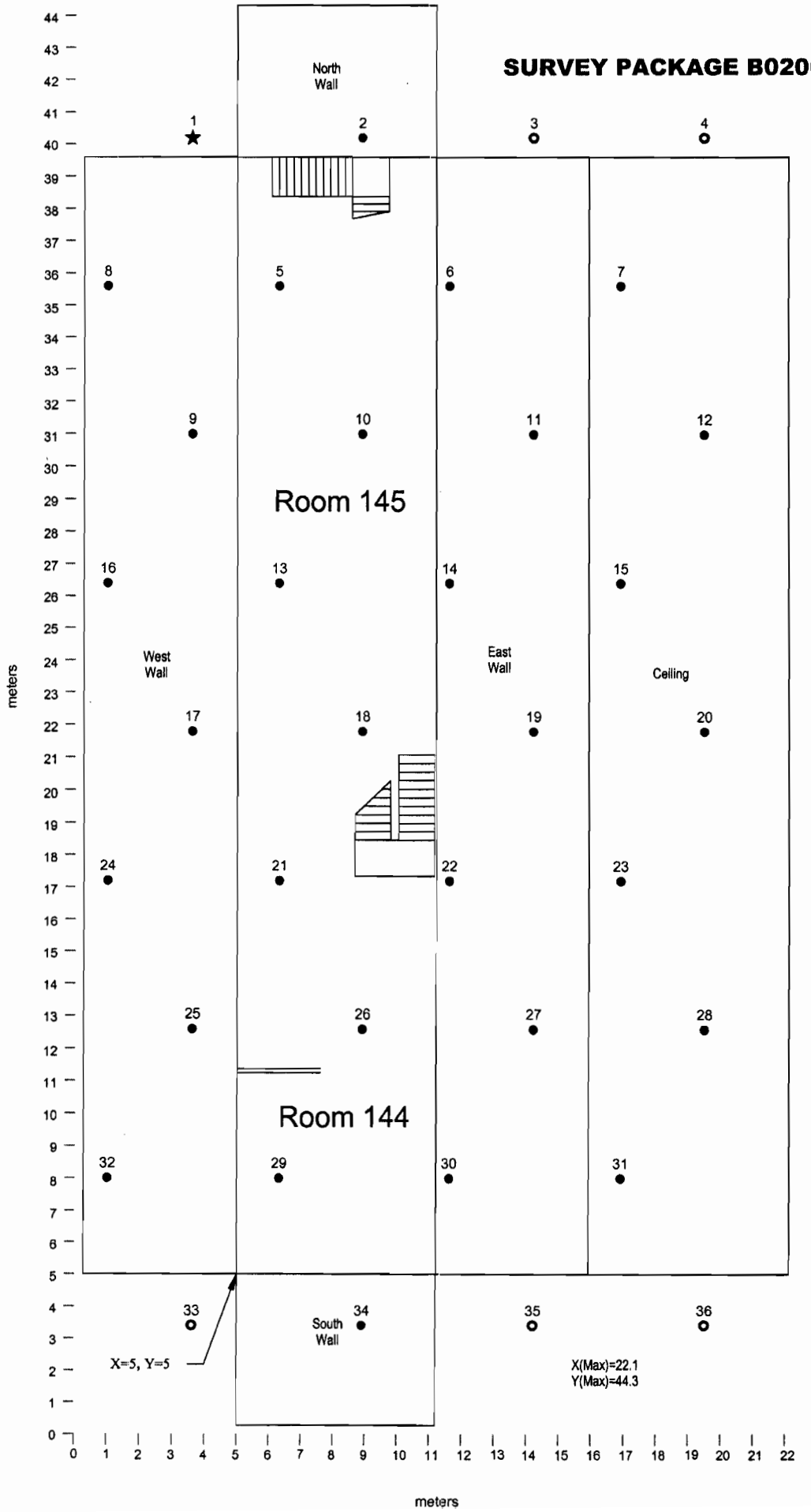
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 144 & 145												
B0200	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	[illegible] 4-28-03	NRK 4·28·03	N/A	N/A	NRK 5 4-28-03	N/A	N/A
B0200	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	[illegible] 4-28-03	NRK 4·28·03	N/A	N/A	N/A	N/A	N/A
B0200	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	[illegible] 4-28-03	NRK 4·28·03	N/A	N/A	N/A	N/A	N/A
B0200	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	[illegible] 4-28-03	NRK 4·28·03	N/A	N/A	N/A	N/A	N/A
B0200	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	[illegible] 4-28-03	NRK 4·28·03	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments
Point's 13 & 21 were not taken due to large puddles of water on floor. Point 16 was not accessible.

SURVEY PACKAGE B0200



Survey Package B0200
B-124 Rooms 144 &145 Walls & Ceiling

X (Max):	22.1	meters	
Y (Max):	44.3	meters	
A (Area):	979	m^2	
Actual Survey Area:	667	m^2	
COMPASS Survey Points:	14	32%	percent void area
N (Points):	40	21	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	5.3	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	4.6	meters	(distance between rows)
L/2=	2.7	meters	(row offset value)
X (Random):	6.4		random number generator
Y (Random):	27.2		random number generator
X (Origin):	3.6		initially generated random number
Y (Origin):	40.2		initially generated random number
Number of rows:	10		
Number of columns:	4		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	3.6	40.2	10
2	8.9	40.2	
3	14.2	40.2	
4	19.5	40.2	
5	6.3	35.6	9
6	11.6	35.6	
7	16.9	35.6	
8	1.0	35.6	
9	3.6	31.0	8
10	8.9	31.0	
11	14.2	31.0	
12	19.5	31.0	
13	6.3	26.4	7
14	11.6	26.4	
15	16.9	26.4	
16	1.0	26.4	
17	3.6	21.8	6
18	8.9	21.8	
19	14.2	21.8	
20	19.5	21.8	
21	6.3	17.2	5
22	11.6	17.2	
23	16.9	17.2	
24	1.0	17.2	
25	3.6	12.6	4
26	8.9	12.6	
27	14.2	12.6	
28	19.5	12.6	
29	6.3	8.0	3
30	11.6	8.0	
31	16.9	8.0	
32	1.0	8.0	
33	3.6	3.4	2
34	8.9	3.4	
35	14.2	3.4	
36	19.5	3.4	

LBGR Determination
Package B0200

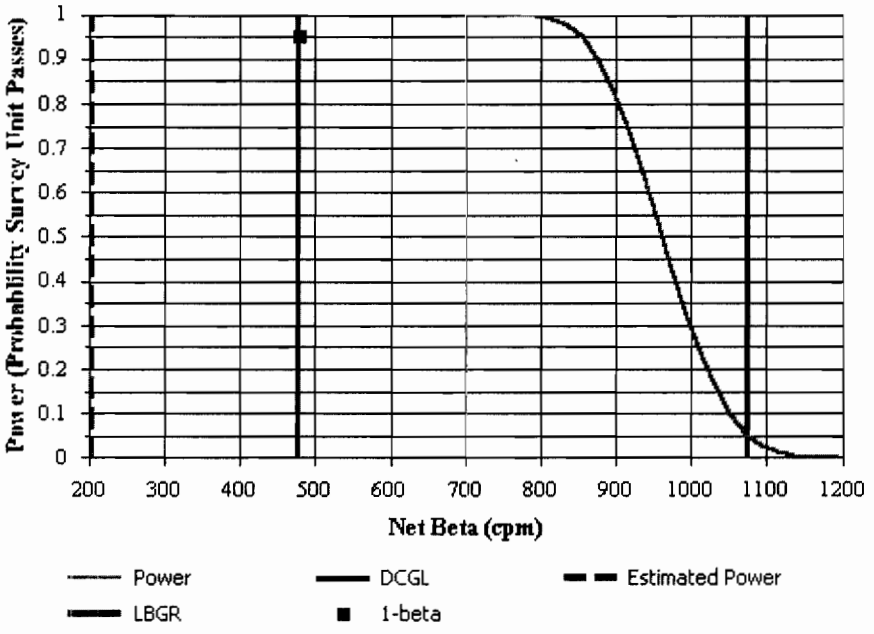
σ =	198.8	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	5.4	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**478**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0200 FSS Package		
Comments:	B-124 Rooms 144 &145		
Area (m²):	667	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	198.8
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	478	Estimated Conc. (cpm):	203
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 341 ± 195 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	35	270.6	36.7	526
Concrete Block	45	370.2	39.8	612
Steel Panel	28	137.9	18.4	381

BMS Download Survey Report Data Summary
Characterization Package A0700
B-124 South-central Lab Areas (Rooms 142-145, 154, 156 – 160, 162A, 163, 163B, 163C, 164, 165, 167, 168, & 170).
FSS Packages:A1200, A1300, B0200, B0400, B0500, B0600,B0700, B0800

Floor		Wall		Ceiling		Structure		Above False Ceiling (Not Used in Average)	
Background	Gross	Background	Gross	Background	Gross	Background	Gross	Background	Gross
Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
277	315	322	374	288	366	279	252	232	272
265	275	305	403	393	358	299	293	267	259
228	302	325	389	304	382	243	260	321	335
273	302	338	336	322	364	276	243	307	332
257	269	320	331	283	350	274	259	334	309
283	478	310	409	297	300	246	276	305	335
253	258	269	382	303	312	195	317	307	346
286	393	358	520	303	343	222	220	311	317
329	387	289	323	324	355	205	189	357	361
301	1,261	258	266	333	337	191	213	335	336
395	2,169	274	283	260	350	238	252		
259	350	258	281	249	322	235	224		
243	267	325	335	331	354	225	263		
327	285	311	337	319	318	261	252		
280	276	333	354	326	339	231	244		
271	242	323	379	339	343	227	224		
241	245	321	337	323	343	229	243		
206	218	279	342	364	364	188	180		
253	264	256	381	371	352	180	156		
253	252	309	333	335	366	254	230		
252	281	303	367	328	346	223	277		
270	240	273	375			241	227		
253	260	288	402			246	235		
304	321	231	269			232	254		
283	419	329	397			292	291		
288	481	290	393			244	263		
275	334	355	357			266	267		
335	433	352	403			250	265		
275	265	333	419			231	237		
270	240	334	477			263	249		
253	277	331	377			216	222		
259	247	371	350						
214	249	325	356						
221	324	309	405						
240	260	292	355						
		367	634						
		342	418						
		344	400						
		292	376						
		269	298						
		332	365						
		344	373						
		265	333						
		334	351						
Average	**270.6**	**384.0**	**311.1**	**371.5**	**318.8**	**345.9**	**238.8**	**244.4**	**307.6**	**320.2**
Standard Deviation	**36.7**	**356.7**	**33.2**	**63.3**	**34.1**	**19.9**	**29.5**	**33.1**	**35.7**	**32.3**
No of Measurements	**35**	**35**	**44**	**44**	**21**	**21**	**31**	**31**	**10**	**10**

All Measurement			**Walls & Ceiling Measurement**		
Average	**284.4**	**340.6**	**Average**	**363.2**	
Standard Deviation	**45.6**	**194.8**	**Standard Deviation**	**54.4**	
No of Measurements	**131**	**131**	**No of Measurements**	**65**	

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyos **Signature:** [signature] **Date:** 4-28-03

Download Station #: 1 Download File #: 99
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyos **User ID** NRK2986 **Signature:** [signature] **Date:** 4-28-03

Print Name:_____ **User ID**_____ **Signature:**_____ **Date:**_____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B0200, B-124, Rooms 144 & 145
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.223			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm 1

β Beta	1 309	2 276	3 270	4 N/A	5 N/A	6 N/A	285
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .130

Duratek™

M2350-1 Download BETA Report

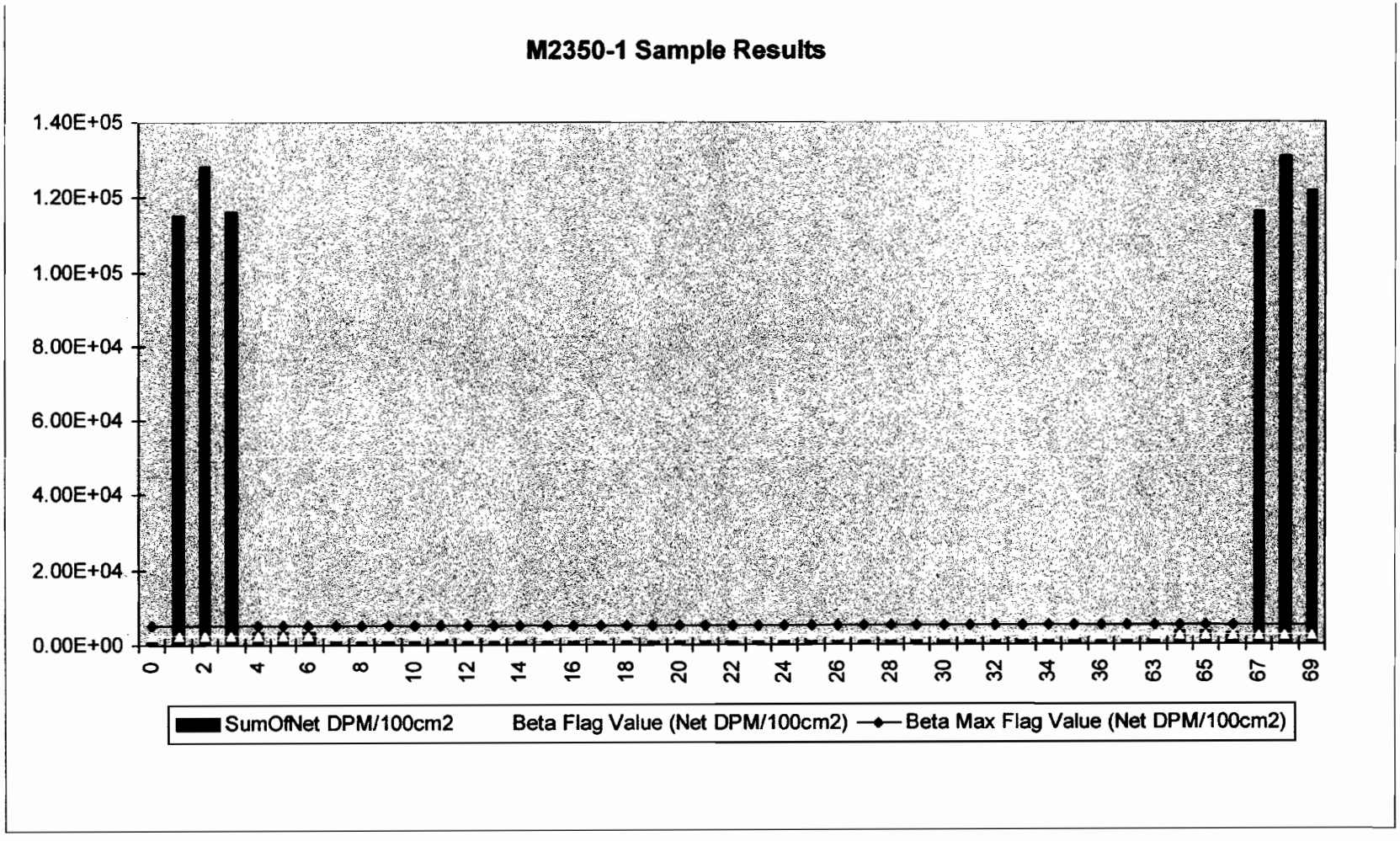
File Name : 00000099	Survey Description :Package B0200, B-124, Rooms 144 and 145	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.223	Survey Date : 4/28/03

Print Name	Signature	Date
Doug Kjos	DRK	9/8/03

Comments:

Sign-Off

Print Name	Signature	Date
Paul C. Ely	Paul C Ely	9.8.03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
63
65
67
69
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000099

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,962.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,054
ZZZZZ	10002	1	32,762.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	115,546
ZZZZZ	10002	2	36,400.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	128,493
ZZZZZ	10002	3	32,907.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	116,062
ZZZZZ	FD184	4	1,280.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	3,502
ZZZZZ	FD184	5	1,281.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	3,506
ZZZZZ	FD184	6	1,273.0	60	PRB00	ZZZZZ	ZZZZZ	0	296	3,477
B0200	ZZZZZ	7	309.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	1,100
B0200	ZZZZZ	8	276.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	982
B0200	ZZZZZ	9	270.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	961
B0200	01W01	10	401.0	60	FLDCT	B0001	ZZZZZ	2	0.0001	1,427
B0200	01W01	11	338.0	60	FLDCT	B0001	ZZZZZ	8	0.0001	1,203
B0200	01C01	12	337.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	1,199
B0200	01EQ1	13	232.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	826
B0200	01F01	14	329.0	60	FLDCT	B0003	ZZZZZ	5	0.0001	1,171
B0200	01EQ1	15	272.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	968
B0200	01C01	16	322.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	1,146
B0200	01C01	17	298.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	1,061
B0200	01C01	18	276.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	982
B0200	01C01	19	261.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	929
B0200	01C01	20	377.0	60	FLDCT	B9999	ZZZZZ	31	0.0001	1,342
B0200	01W01	21	351.0	60	FLDCT	B0001	ZZZZZ	30	0.0001	1,249
B0200	01W01	22	266.0	60	FLDCT	B0001	ZZZZZ	34	0.0001	947
B0200	01F01	23	372.0	60	FLDCT	B0003	ZZZZZ	31	0.0001	1,324
B0200	01S01	24	367.0	60	FLDCT	B0003	ZZZZZ	26	0.0001	1,306
B0200	01W01	25	330.0	60	FLDCT	B0001	ZZZZZ	27	0.0001	1,174
B0200	01W01	26	322.0	60	FLDCT	B0001	ZZZZZ	25	0.0001	1,146
B0200	01EQ1	27	258.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	918
B0200	01W01	28	316.0	60	FLDCT	B0001	ZZZZZ	24	0.0001	1,125
B0200	01W01	29	328.0	60	FLDCT	B0001	ZZZZZ	17	0.0001	1,167
B0200	01W01	30	344.0	60	FLDCT	B0001	ZZZZZ	19	0.0001	1,224
B0200	01F01	31	366.0	60	FLDCT	B0003	ZZZZZ	18	0.0001	1,303
B0200	01W01	32	308.0	60	FLDCT	B0001	ZZZZZ	14	0.0001	1,096
B0200	01W01	33	330.0	60	FLDCT	B0001	ZZZZZ	11	0.0001	1,174
B0200	01W01	34	376.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	1,338
B0200	01F01	35	336.0	60	FLDCT	B0003	ZZZZZ	10	0.0001	1,196
B0200	01EQ1	36	250.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	890
B0200	01W01	37	310.0	60	FLDCT	B0001	ZZZZZ	32	0.0001	1,103
ZZZZZ	ZZZZZ	63	3,256.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	1,159

Beta Flag	2500	-
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	FD184	64	1,252.0	60	PTB00	ZZZZZ	ZZZZZ	0	326	3,296
ZZZZZ	FD184	65	1,314.0	60	PTB00	ZZZZZ	ZZZZZ	0	326	3,516
ZZZZZ	FD184	66	1,220.0	60	PTB00	ZZZZZ	ZZZZZ	0	326	3,182
ZZZZZ	10002	67	33,035.0	60	PTB00	ZZZZZ	ZZZZZ	0	326	116,410
ZZZZZ	10002	68	37,158.0	60	PTB00	ZZZZZ	ZZZZZ	0	326	131,084
ZZZZZ	10002	69	34,539.0	60	PTB00	ZZZZZ	ZZZZZ	0	326	121,763

Beta Flag	2500	- _____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- 8062.00

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D.R. Kjos (Print) Signature _____ Date 4-28-03 Time _____

Counted by Betty S. Kjos (Print) Signature BS Kj Date 4-29-03 Time 0840

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 51 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle: MDA = 105 dpm/100 cm² β-γ			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
5	55	4	< MDA
10	57	6	
14	54	3	
18	57	6	
31	42	0	< MDA

N A

Circle: MDA = 14 dpm/100 cm² α			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
5	1	.70	< MDA
10	0	0	
14	0	0	
18	0	0	
31	0	0	< MDA

N A

Remarks- _____

Signature- BS Kj Reviewed by- Paul C Ely 4/30/03

of

Duratek, Inc.
Survey Package Worksheet for Package B0300
Bristol-Myers Squibb Building 124 Rooms 146 to 153

Package Identification No.: B0300	Prepared by: Paul C. Ely
Location: Building 124 Rooms 146 to 153	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising walls and ceilings (No Floors) in Rooms 146 to 153.

Historical Information

Room 146 was used for Rubratope (Co-57) manufacturing, other capsule manufacturing and filling, and R&D. Isotopes used were Co-57, Ir-192, P-32 and I-125. Room 147 was used for Rubratope (Co-60) manufacturing and QC testing (Co-60, I-131, Sr-82 & 85). At one time, it was a sample prep room. Room 148 was used for Albumotope (I-131) injection manufacturing, diagnostic capsule manufacturing. & Filling, and R&D. 72 Cap was an I-131 therapeutic capsule that was manufactured. Isotopes used included I-131. Room 149 was used as a Quality Control Chemists Lab. It was also used for stability work, special projects, assays and for eluting generators. Isotopes used included all radionuclides used used in Building 124. Room 150 was used for Sethotope (Se-75) manufacturing. The bottom of a sink that was located in the northeast corner of the room fell out due to HCL corrosion when manufacturing selenium. Room 150 was also used for manufacturing Phosphotope (P-32). Mercury products (Hg-97, Hg-203) were also manufactured here. Room 151 was used for Reference standard Manufacturing & Filling. Radionuclides included Co-57, Se-75 and Hg-203. Room 152 was used for Albumotope (I-131). More recently, I-125 and I-131 products were made in this room. Auretope (Au-198) was also made in this room. Room 153 was used for Albumotope LS, lung scanning products and Hipputope I-131 manufacturing. Radionuclides used included I-131.

As part of the D&D effort, the process drain lines were removed from all of these rooms.

All wall and ceiling areas had contamination levels <5,000 dpm/100 cm2 except on equipment that was removed during the decommissioning.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

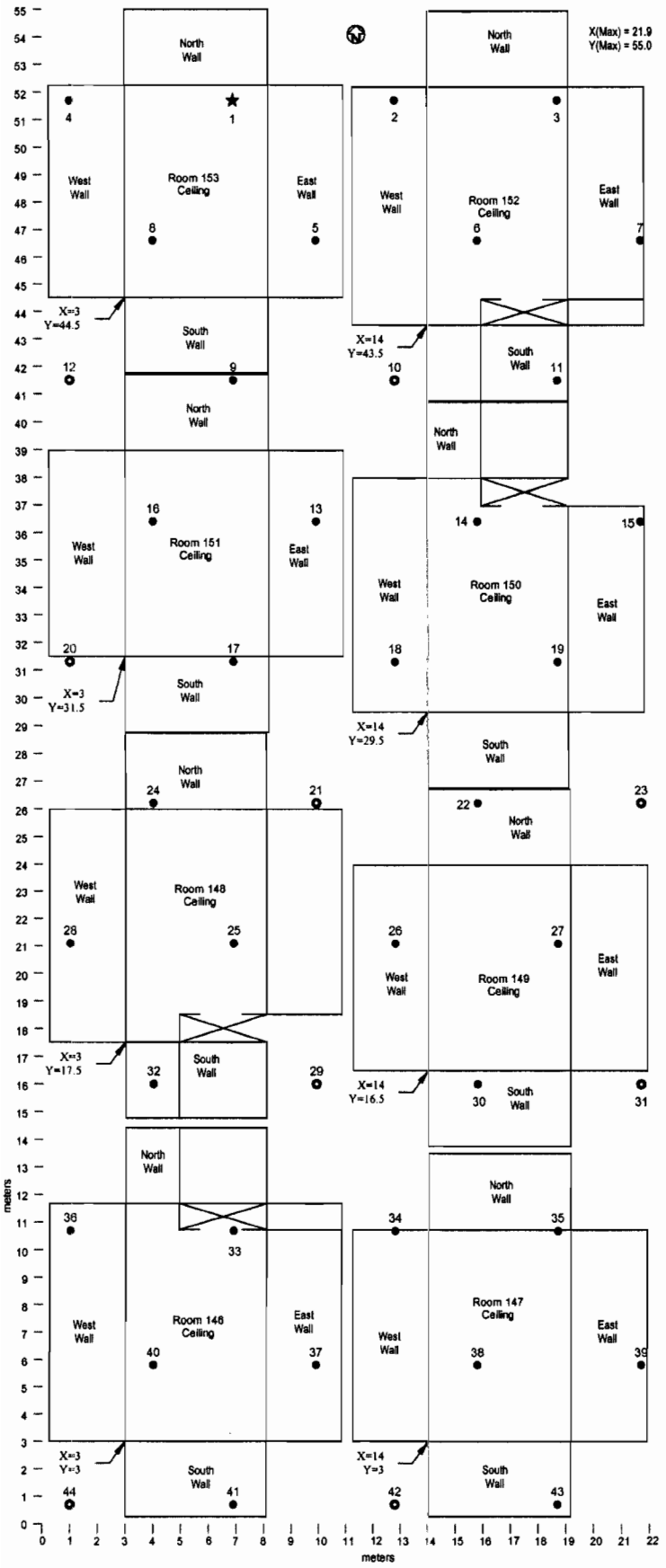
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 146 to 153												
B0300	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	4/22/03	4-28-03	N/A	N/A	N/A 4-28-03	N/A	N/A
B0300	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	4/22/03	4-28-03	N/A	N/A	N/A	N/A	N/A
B0300	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	4/23/03	n/a	N/A	N/A	N/A	N/A	N/A
B0300	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	4/23/03	n/a	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C. Ely 4/30/03

Survey Comments

SURVEY PACKAGE B0300



Survey Package B0300
B-124 Rooms 146-153 Walls & Ceiling

X (Max):	21.9	meters	
Y (Max):	55.0	meters	
A (Area):	1,205	m^2	
Actual Survey Area:	990	m^2	
COMPASS Survey Points:	14	18%	percent void area
N (Points):	40	17	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	5.9	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	5.1	meters	(distance between rows)
L/2=	3.0	meters	(row offset value)
X (Random):	1.2		random number generator
Y (Random):	32.1		random number generator
X (Origin):	6.9		initially generated random number
Y (Origin):	51.7		initially generated random number
Number of rows:	11		
Number of columns:	4		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	6.9	51.7	11
2	12.8	51.7	
3	18.7	51.7	
4	1.0	51.7	
5	9.9	46.6	10
6	15.8	46.6	
7	21.7	46.6	
8	4.0	46.6	
9	6.9	41.5	9
10	12.8	41.5	
11	18.7	41.5	
12	1.0	41.5	
13	9.9	36.4	8
14	15.8	36.4	
15	21.7	36.4	
16	4.0	36.4	
17	6.9	31.3	7
18	12.8	31.3	
19	18.7	31.3	
20	1.0	31.3	
21	9.9	26.2	6
22	15.8	26.2	
23	21.7	26.2	
24	4.0	26.2	
25	6.9	21.1	5
26	12.8	21.1	
27	18.7	21.1	
28	1.0	21.1	
29	9.9	16	4
30	15.8	16	
31	21.7	16	
32	4.0	16	
33	6.9	10.9	3
34	12.8	10.9	
35	18.7	10.9	
36	1.0	10.9	
37	9.9	5.8	2
38	15.8	5.8	
39	21.7	5.8	
40	4.0	5.8	
41	6.9	0.7	1
42	12.8	0.7	
43	18.7	0.7	
44	1.0	0.7	

LBGR Determination

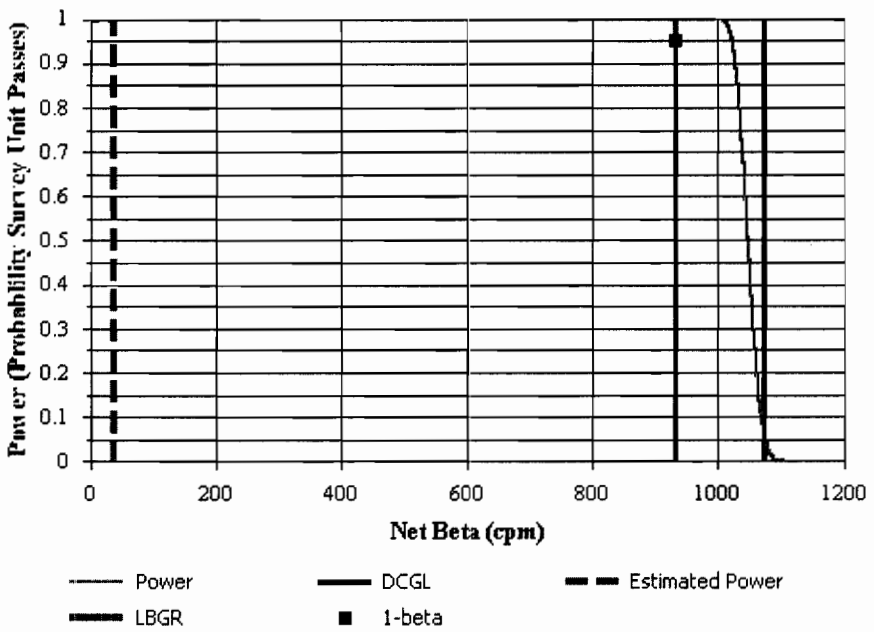
σ =	47.1	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	22.8	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	**3**
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**933**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0300 FSS Package		
Comments:	B-124 Rooms 146 to 153 Walls & Ceilings		
Area (m²):	990	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	47.1
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	933	Estimated Conc. (cpm):	36.6
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 268 ± 30 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	10	230.9	16.8	487
Concrete	35	270.6	36.7	526
Concrete Block	24	265.2	29	521

BMS Download Survey Report Data Summary
Characterization Package A0500
Building 124 Southwest Lab Areas (Rooms 146-153)

FSS Packages: A0200, A0200, A0310, A0400, B0300

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
1	221	256	234	276	222	236	243	271
2	194	229	227	243	209	300	257	266
3	224	226	278	266	266	257	265	265
4	244	276	274	264	234	239	265	259
5	243	250	270	291	215	222	294	253
6	205	241	296	308	219	237	313	294
7	276	292	257	288	233	260	234	265
8	262	280	310	297	248	237	397	452
9	236	270	304	316	237	233	278	242
10	250	270	271	294	226	277	217	257
11	230	250	294	286			261	258
12	237	236	272	234			216	232
13	239	229	257	316			290	273
14	197	220	254	249			253	291
15	224	247	249	281			279	302
16	224	266	215	251			265	269
17	226	262	239	245				
18	244	231	276	298				
19	236	265	285	258				
20	249	275	210	240				
21	190	228	267	241				
22	254	255	291	310				
23	252	247	309	317				
24	241	267	227	228				
25	228	271						
26	261	305						
Average	**234.1**	**255.5**	**265.3**	**274.9**	**230.9**	**249.8**	**270.4**	**278.1**
Standard Deviation	**21.2**	**21.8**	**29.0**	**29.0**	**16.8**	**23.8**	**42.8**	**49.8**
No of Measurements	**26**	**26**	**24**	**24**	**10**	**10**	**16**	**16**

All Measurement			**Walls & Ceiling Measurement**	
Average	**246.0**	**262.3**	**Average**	**267.5**
Standard Deviation	**28.5**	**27.0**	**Standard Deviation**	**29.6**
No of Measurements	**60**	**60**	**No of Measurements**	**34**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kos **Signature:** [signature] **Date:** 4-28-03

Download Station #: 1 Download File #: 96
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kos **User ID** NRK2986 **Signature:** [signature] **Date:** 4-26-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package BD300, B-124, Rooms 146-153 Walls and Ceilings
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR 119337	43-68B	.234			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1 308	2 316	3 303	4 N/A	5 N/A	6 N/A	309
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff: .133

Duratek™

M2350-1 Download BETA Report

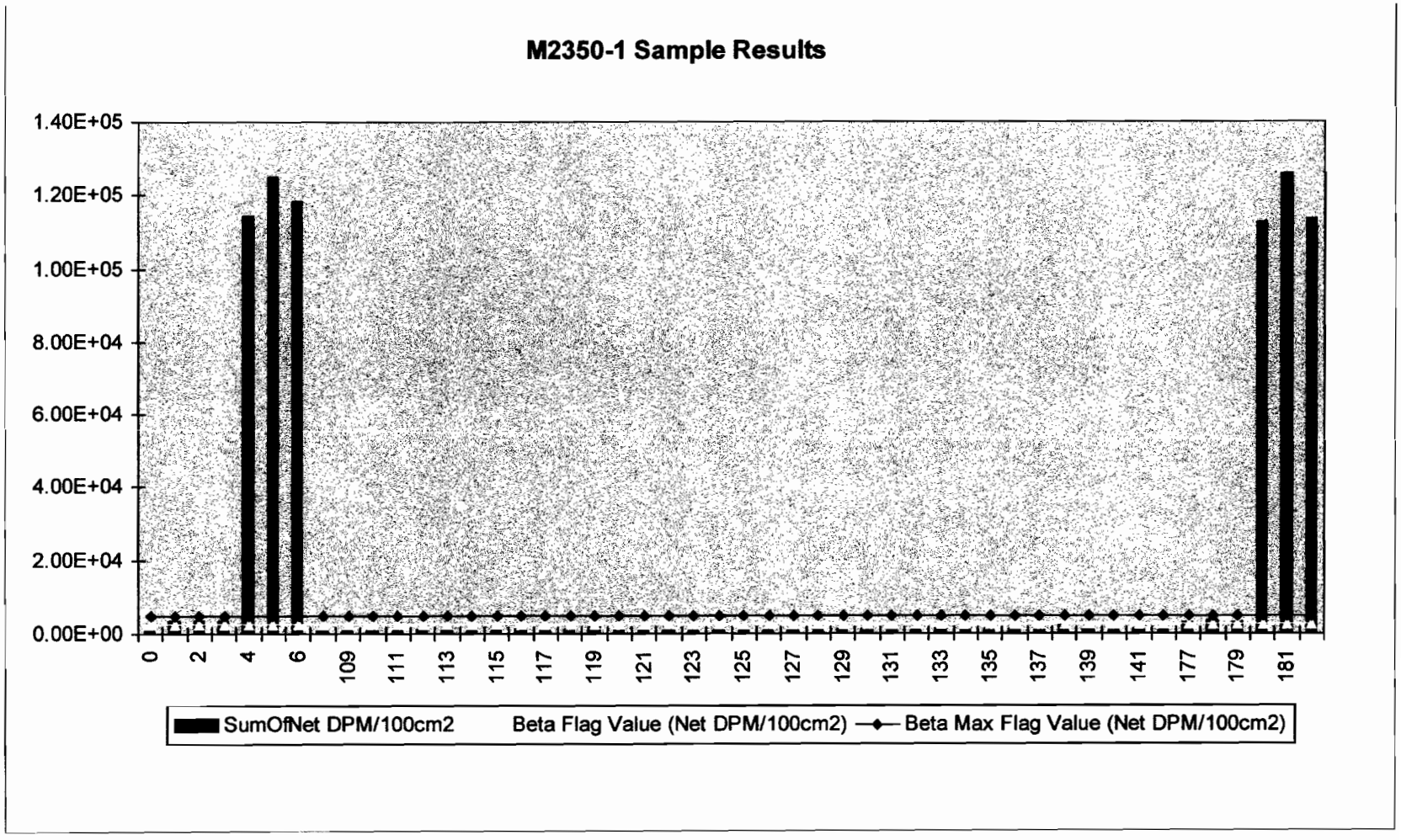
File Name : 00000096	Survey Description :Package B0300, B-124, Rooms 146-153 (walls and c	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.234	Survey Date : 4/26/03

Print Name	Signature	Date
Doug Kjos	DRK	9/8/03

Comments:

Sign-Off PAUL E. ELY Paul E Ely 9-8-03

Print Name Signature Date


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
109
111
113
115
117
119
121
123
125
127
129
131
133
135
137
139
141
177
179
181
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000096

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,980.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,011
ZZZZZ	FD184	1	1,386.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	3,690
ZZZZZ	FD184	2	1,331.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	3,504
ZZZZZ	FD184	3	1,319.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	3,463
ZZZZZ	10002	4	34,049.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	114,472
ZZZZZ	10002	5	37,162.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	125,031
ZZZZZ	10002	6	35,181.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	118,312
B0300	ZZZZZ	108	308.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	1,045
B0300	ZZZZZ	109	316.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	1,072
B0300	ZZZZZ	110	303.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	1,028
B0300	01C01	111	291.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	987
B0300	01C01	112	331.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	1,123
B0300	01W01	113	247.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	838
B0300	01W01	114	259.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	878
B0300	01W01	115	318.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	1,079
B0300	01W01	116	338.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	1,146
B0300	01C01	117	333.0	60	FLDCT	B9999	ZZZZZ	19	0.0001	1,129
B0300	01C01	118	338.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	1,146
B0300	01C01	119	511.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	1,733
B0300	01C01	120	401.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,360
B0300	01W01	121	320.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	1,085
B0300	01W01	122	277.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	939
B0300	01W01	123	305.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	1,034
B0300	01W01	124	316.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	1,072
B0300	01C01	125	362.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	1,228
B0300	01W01	126	294.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	997
B0300	01W01	127	321.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	1,089
B0300	01C01	128	380.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	1,289
B0300	01C01	129	403.0	60	FLDCT	B9999	ZZZZZ	38	0.0001	1,367
B0300	01W01	130	337.0	60	FLDCT	B9999	ZZZZZ	39	0.0001	1,143
B0300	01W01	131	357.0	60	FLDCT	B9999	ZZZZZ	43	0.0001	1,211
B0300	01W01	132	305.0	60	FLDCT	B9999	ZZZZZ	35	0.0001	1,034
B0300	01W01	133	326.0	60	FLDCT	B9999	ZZZZZ	36	0.0001	1,106
B0300	01W01	134	379.0	60	FLDCT	B9999	ZZZZZ	37	0.0001	1,285
B0300	01W01	135	376.0	60	FLDCT	B9999	ZZZZZ	41	0.0001	1,275
B0300	01C01	136	375.0	60	FLDCT	B9999	ZZZZZ	40	0.0001	1,272
B0300	01C01	137	378.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	1,282
B0300	01C01	138	604.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	2,049
B0300	01W01	139	298.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	1,011

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B0300	01W01	140	327.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	1,109
B0300	01W01	141	350.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	1,187
ZZZZZ	ZZZZZ	176	3,122.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	1,059
ZZZZZ	FD184	177	1,268.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	3,242
ZZZZZ	FD184	178	1,339.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	3,483
ZZZZZ	FD184	179	1,276.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	3,270
ZZZZZ	10002	180	33,499.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	112,559
ZZZZZ	10002	181	37,359.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	125,651
ZZZZZ	10002	182	33,817.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	113,638

Beta Flag	2500	- _____
Beta Max Flag	5000	

Survey #- 00300

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by (Print) _____ Signature _____ Date _____ Time _____

Counted by (Print) BS Kjos Signature BSKj Date 4-28-03 Time 0725

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
26	56	2	< MDA
28	45	0	
30	56	2	
35	52	0	
37	51	0	< MDA
		N/A	

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
26	0	0	< MDA
28	0	0	
30	0	0	
35	0	0	
37	1	.85	< MDA
		N/A	

Remarks- _____

Signature- BSKj Reviewed by- Paul C Ely 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B0310
Bristol-Myers Squibb Building 124 Corridors 146C and 150C

Package Identification No.: B0310	Prepared by: Paul C. Ely
Location: Building 124 Corridors 146C and 150C	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising walls and ceilings (No Floors) in Corridors 146C and 150C. Corridor 146C is between Rooms 146 to 149. Corridor 150C is between Rooms 150 to 153.

Historical Information

Room 146 was used for Rubratope (Co-57) manufacturing, other capsule manufacturing and filling, and R&D. Isotopes used were Co-57, Ir-192, P-32 and I-125. Room 147 was used for Rubratope (Co-60) manufacturing and QC testing (Co-60, I-131, Sr-82 & 85). At one time, it was a sample prep room. Room 148 was used for Albumotope (I-131) injection manufacturing, diagnostic capsule manufacturing. & Filling, and R&D. 72 Cap was an I-131 therapeutic capsule that was manufactured. Isotopes used included I-131. Room 149 was used as a Quality Control Chemists Lab. It was also used for stability work, special projects, assays and for eluting generators. Isotopes used included all radionuclides used used in Building 124. Room 150 was used for Sethotope (Se-75) manufacturing. The bottom of a sink that was located in the northeast corner of the room fell out due to HCL corrosion when manufacturing selenium. Room 150 was also used for manufacturing Phosphotope (P-32). Mercury products (Hg-97, Hg-203) were also manufactured here. Room 151 was used for Reference standard Manufacturing & Filling. Radionuclides included Co-57, Se-75 and Hg-203. Room 152 was used for Albumotope (I-131). More recently, I-125 and I-131 products were made in this room. Auretope (Au-198) was also made in this room. Room 153 was used for Albumotope LS, lung scanning products and Hipputope I-131 manufacturing. Radionuclides used included I-131.

All wall and ceiling areas had contamination levels <5,000 dpm/100 cm2 except on equipment that was removed during the decommissioning.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Survey Package: B0310 continued

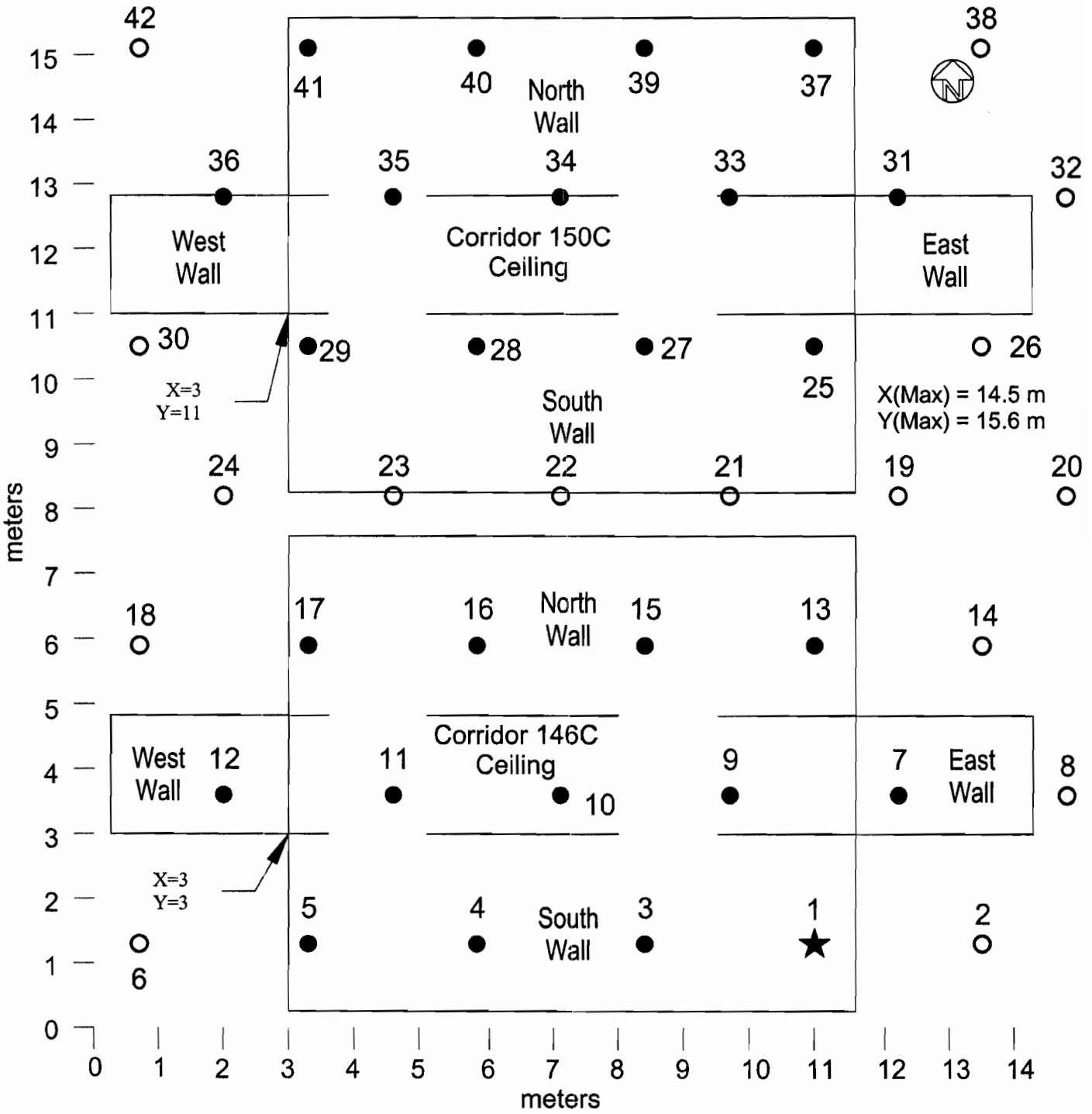
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8						5		
Bristol Myers Squibb Building 124 Rooms 146 to 153												
B0310	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	4-23-03	4-26-03	N/A	N/A	N/A 4-26-03	N/A	N/A
B0310	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	4-23-03	4-26-03	N/A	N/A	N/A	N/A	N/A
B0310	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	4-23-03	N/A	N/A	N/A	N/A	N/A	N/A
B0310	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	4-23-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/29/03
Package Reviewed by and Date:	Paul C Ely 4/29/03

Survey Comments

SURVEY PACKAGE B0310



Survey Package B0310
B-124 Corridors 146C and 150C

X (Max):	14.5	meters	
Y (Max):	15.6	meters	
A (Area):	226	m^2	
Actual Survey Area:	148	m^2	
COMPASS Survey Points:	14	35%	percent void area
N (Points):	40	21	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	2.6	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	2.3	meters	(distance between rows)
L/2=	1.3	meters	(row offset value)
X (Random):	2.5		random number generator
Y (Random):	15		random number generator
X (Origin):	11.1		initially generated random number
Y (Origin):	1.3		initially generated random number
Number of rows:	7		
Number of columns:	6		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	11.1	1.3	1
2	13.7	1.3	
3	8.5	1.3	
4	5.9	1.3	
5	3.3	1.3	
6	0.7	1.3	
7	12.4	3.6	2
8	15.0	3.6	
9	9.8	3.6	
10	7.2	3.6	
11	4.6	3.6	
12	2.0	3.6	
13	11.1	5.9	3
14	13.7	5.9	
15	8.5	5.9	
16	5.9	5.9	
17	3.3	5.9	
18	0.7	5.9	
19	12.4	8.2	4
20	15.0	8.2	
21	9.8	8.2	
22	7.2	8.2	
23	4.6	8.2	
24	2.0	8.2	
25	11.1	10.5	5
26	13.7	10.5	
27	8.5	10.5	
28	5.9	10.5	
29	3.3	10.5	
30	0.7	10.5	
31	12.4	12.8	6
32	15.0	12.8	
33	9.8	12.8	
34	7.2	12.8	
35	4.6	12.8	
36	2.0	12.8	
37	11.1	15.1	7
38	13.7	15.1	
39	8.5	15.1	
40	5.9	15.1	
41	3.3	15.1	
42	0.7	15.1	

LBGR Determination

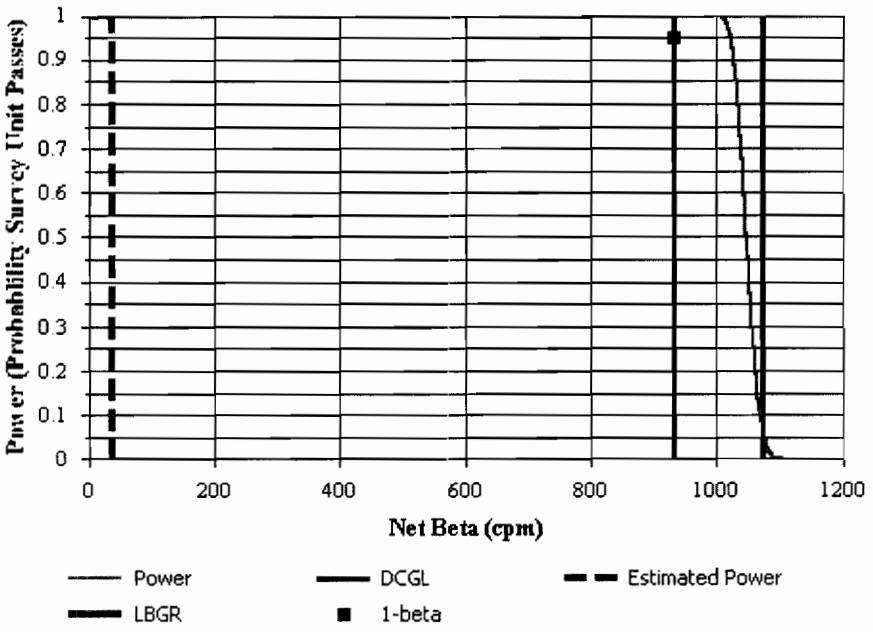
σ =	47.1	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	22.8	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**933**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0310 FSS Package		
Comments:	B-124 Corridors 146C & 150C Walls & Ceilings		
Area (m²):	148	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	47.1
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	933	Estimated Conc. (cpm):	36.6
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 268 ± 30 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	10	230.9	16.8	487
Concrete	35	270.6	36.7	526
Concrete Block	24	265.2	29	521

BMS Download Survey Report Data Summary
Characterization Package A0500
Building 124 Southwest Lab Areas (Rooms 146-153)

FSS Packages: A0200, A0200, A0310, A0400, B0300

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
1	221	256	234	276	222	236	243	271
2	194	229	227	243	209	300	257	266
3	224	226	278	266	266	257	265	265
4	244	276	274	264	234	239	265	259
5	243	250	270	291	215	222	294	253
6	205	241	296	308	219	237	313	294
7	276	292	257	288	233	260	234	265
8	262	280	310	297	248	237	397	452
9	236	270	304	316	237	233	278	242
10	250	270	271	294	226	277	217	257
11	230	250	294	286			261	258
12	237	236	272	234			216	232
13	239	229	257	316			290	273
14	197	220	254	249			253	291
15	224	247	249	281			279	302
16	224	266	215	251			265	269
17	226	262	239	245				
18	244	231	276	298				
19	236	265	285	258				
20	249	275	210	240				
21	190	228	267	241				
22	254	255	291	310				
23	252	247	309	317				
24	241	267	227	228				
25	228	271						
26	261	305						
Average	**234.1**	**255.5**	**265.3**	**274.9**	**230.9**	**249.8**	**270.4**	**278.1**
Standard Deviation	**21.2**	**21.8**	**29.0**	**29.0**	**16.8**	**23.8**	**42.8**	**49.8**
No of Measurements	**26**	**26**	**24**	**24**	**10**	**10**	**16**	**16**

All Measurement			**Walls & Ceiling Measurement**	
Average	**246.0**	**262.3**	**Average**	**267.5**
Standard Deviation	**28.5**	**27.0**	**Standard Deviation**	**29.6**
No of Measurements	**60**	**60**	**No of Measurements**	**34**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 4-26-03

Download Station #: 1 Download File #: 87
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos **User ID** BSK0490 **Signature:** [signature] **Date:** 4-26-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B0310, Bldg 124, Corridor 146C & 150C, Walls & Ceiling
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092524	43-68B	.229			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1 359	2 322	3 357	4 n/a	5 n/a	6 n/a	346
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff: .143 PRBBK-254 PT BK-287 (26-51)
* On SUL# 32, change L2 code to 01W01.
* On SUL# 47, change L8 code to 31.

Duratek™

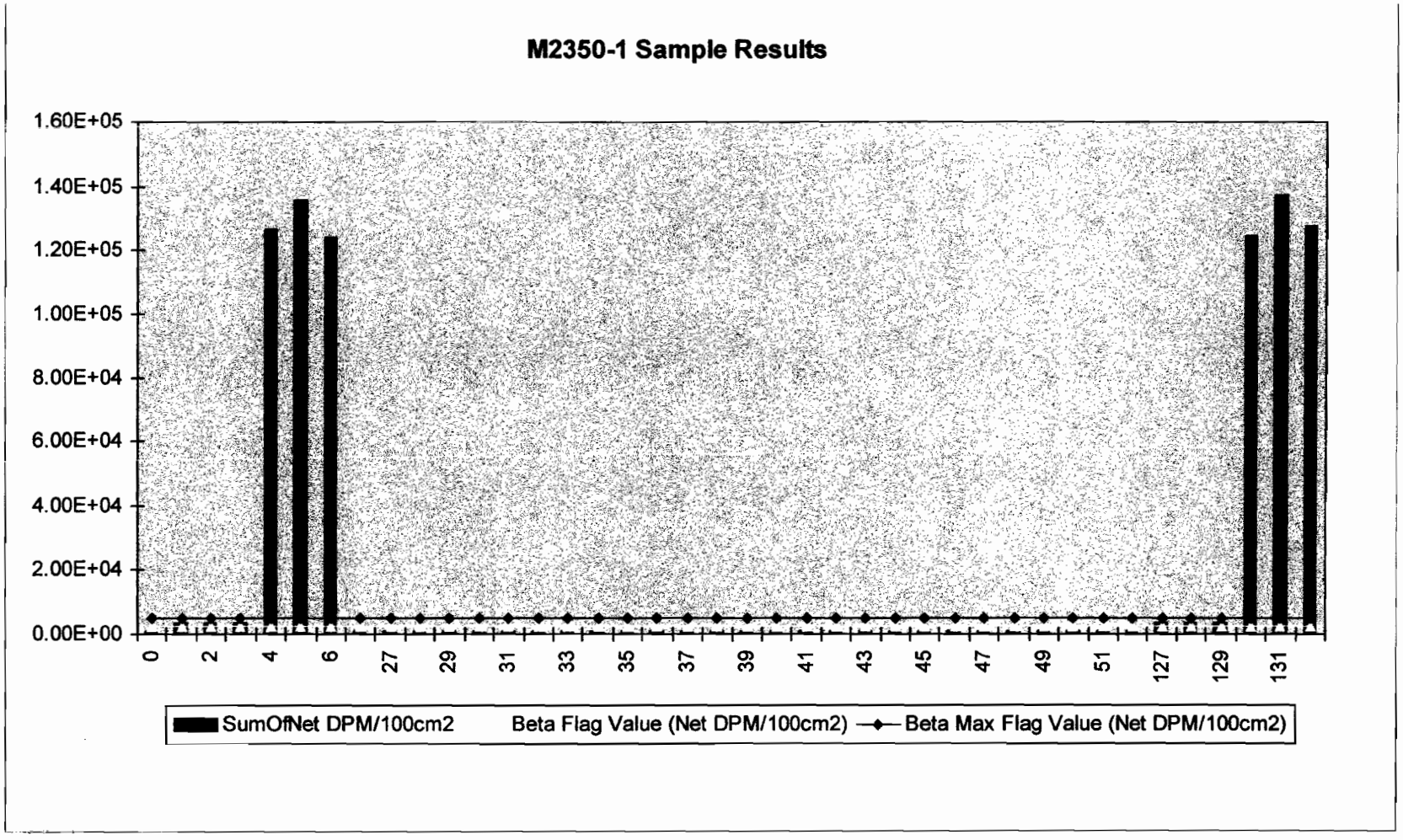
M2350-1 Download BETA Report

File Name : 00000087	Survey Description :Package B0310, B124, Corridor 146c and 150c, walls	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.229	Survey Date : 4/26/03

Print Name	Signature	Date
Betty Kjos	BSKjos	9/8/03

Comments:

Sign-Off PAUL C. ELY (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
27
29
31
33
35
37
39
41
43
45
47
49
51
127
129
131
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000087

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,543.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	881
ZZZZZ	19655	1	1,207.0	60	PRB00	ZZZZZ	ZZZZZ	0	254	3,303
ZZZZZ	19655	2	1,214.0	60	PRB00	ZZZZZ	ZZZZZ	0	254	3,327
ZZZZZ	19655	3	1,224.0	60	PRB00	ZZZZZ	ZZZZZ	0	254	3,362
ZZZZZ	10002	4	36,815.0	60	PRB00	ZZZZZ	ZZZZZ	0	254	126,710
ZZZZZ	10002	5	39,391.0	60	PRB00	ZZZZZ	ZZZZZ	0	254	135,638
ZZZZZ	10002	6	36,085.0	60	PRB00	ZZZZZ	ZZZZZ	0	254	124,180
B0310	ZZZZZ	26	359.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,244
B0310	ZZZZZ	27	322.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,116
B0310	ZZZZZ	28	357.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,237
B0310	01C01	29	344.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	1,192
B0310	01C01	30	357.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	1,237
B0310	01C01	31	325.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	1,126
B0310	01W01	32	245.0	60	FLDCT	B0001	ZZZZZ	5	0.0001	849
B0310	01W01	33	249.0	60	FLDCT	B0001	ZZZZZ	17	0.0001	863
B0310	01W01	34	307.0	60	FLDCT	B0001	ZZZZZ	4	0.0001	1,064
B0310	01W01	35	298.0	60	FLDCT	B0001	ZZZZZ	16	0.0001	1,033
B0310	01W01	36	322.0	60	FLDCT	B0001	ZZZZZ	15	0.0001	1,116
B0310	01W01	37	283.0	60	FLDCT	B0001	ZZZZZ	3	0.0001	981
B0310	01W01	38	292.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	1,012
B0310	01W01	39	307.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,064
B0310	01W01	40	311.0	60	FLDCT	B0004	ZZZZZ	7	0.0001	1,078
B0310	01W01	41	275.0	60	FLDCT	B0001	ZZZZZ	29	0.0001	953
B0310	01W01	42	266.0	60	FLDCT	B0001	ZZZZZ	41	0.0001	922
B0310	01W01	43	278.0	60	FLDCT	B0001	ZZZZZ	40	0.0001	963
B0310	01W01	44	289.0	60	FLDCT	B0001	ZZZZZ	28	0.0001	1,002
B0310	01W01	45	305.0	60	FLDCT	B0001	ZZZZZ	39	0.0001	1,057
B0310	01W01	46	360.0	60	FLDCT	B0001	ZZZZZ	27	0.0001	1,248
B0310	01W01	47	352.0	60	FLDCT	B0001	ZZZZZ	31	0.0001	1,220
B0310	01W01	48	319.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,106
B0310	01C01	49	319.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	1,106
B0310	01C01	50	337.0	60	FLDCT	B9999	ZZZZZ	34	0.0001	1,168
B0310	01C01	51	348.0	60	FLDCT	B9999	ZZZZZ	35	0.0001	1,206
ZZZZZ	ZZZZZ	126	2,867.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	994
ZZZZZ	19655	127	1,293.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	3,487
ZZZZZ	19655	128	1,255.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	3,355
ZZZZZ	19655	129	1,266.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	3,393
ZZZZZ	10002	130	36,191.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	124,433
ZZZZZ	10002	131	39,959.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	137,492

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	10002	132	37,123.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	127,663

Beta Flag	2500	- _____
Beta Max Flag	5000	

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyos **Signature:** [signature] **Date:** 4-30-03

Download Station #: 1 Download File #: 111
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyos **User ID** DRK2986 **Signature:** [signature] **Date:** 4-30-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B0310, B-124, Point 37
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.226			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4 N/A	5 N/A	6 N/A	
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .130

Duratek™

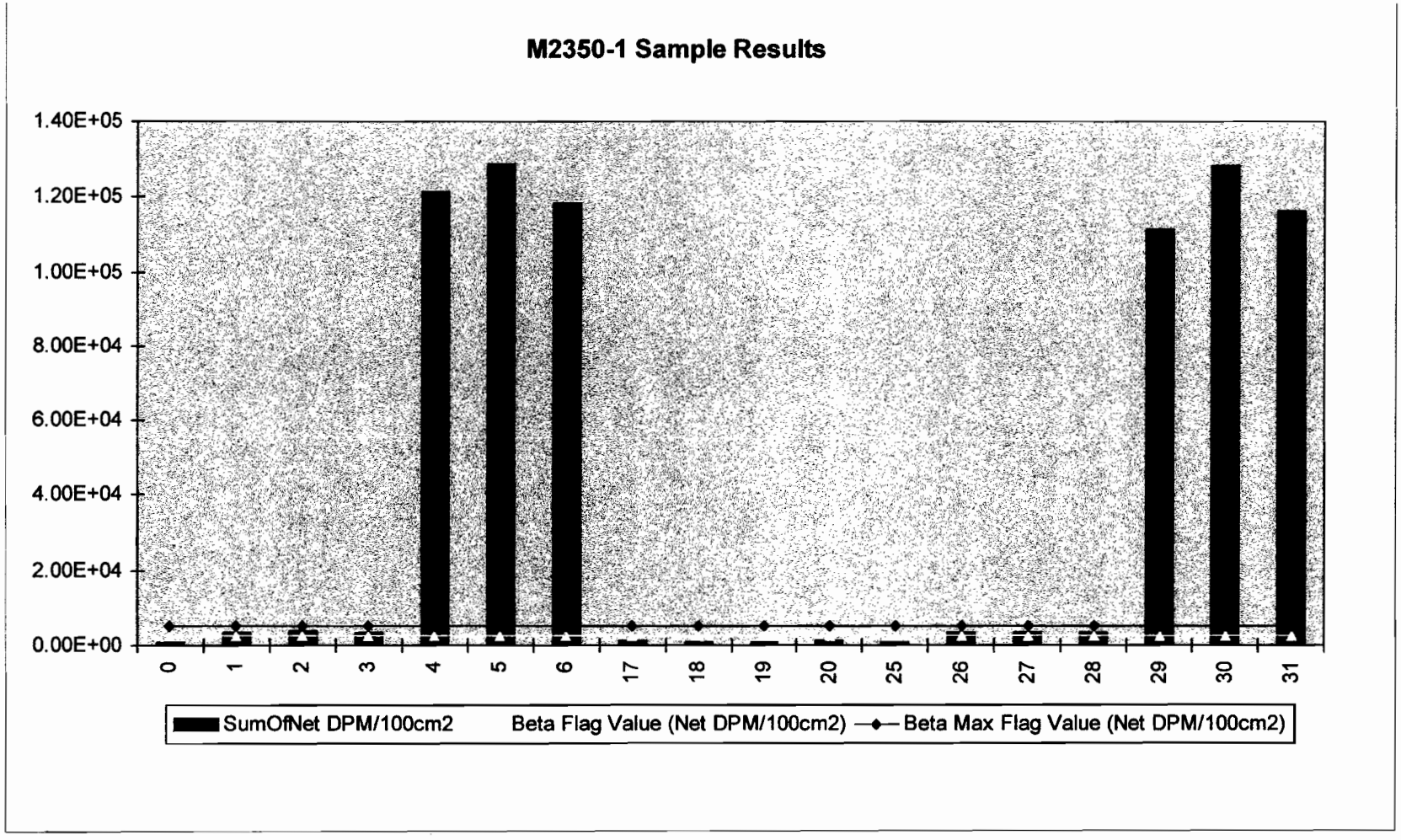
M2350-1 Download Beta Report

File Name : 00000111	Survey Description :Package B0310, B-124, Point #37	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.226	Survey Date : 4/30/03

Print Name	Signature	Date
Doug Kjos	DRK	9/8/03

Comments:

Sign-Off PAUL E. ELY (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
1
2
3
4
5
6
17
18
19
20
25
26
27
28
29
30
31
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000111

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,454.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	1	1,252.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,536
ZZZZZ	FD184	2	1,299.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,701
ZZZZZ	FD184	3	1,248.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,522
ZZZZZ	10002	4	34,775.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	121,260
ZZZZZ	10002	5	36,935.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	128,845
ZZZZZ	10002	6	33,946.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	118,349
B0310	ZZZZZ	17	308.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	1,082
B0310	ZZZZZ	18	274.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	962
B0310	ZZZZZ	19	267.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	938
B0310	01W01	20	344.0	60	FLDCT	B9999	ZZZZZ	37	0.0001	1,208
ZZZZZ	ZZZZZ	25	2,586.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	908
ZZZZZ	FD184	26	1,182.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	3,241
ZZZZZ	FD184	27	1,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	3,413
ZZZZZ	FD184	28	1,202.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	3,312
ZZZZZ	10002	29	32,008.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	111,494
ZZZZZ	10002	30	36,813.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	128,368
ZZZZZ	10002	31	33,314.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	116,080

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B0310

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Betty S. Kios (Print) Signature BSKjos Date 4-28-03 Time 1500

Counted by Betty S. Kjos (Print) Signature BSKjos Date 4-29-03 Time 0750

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 51 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle: MDA = 105 dpm/100cm² β-γ			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
5	61	10	<MDA
7	49	0	
10	59	8	
28	49	0	
41	54	2	<MDA

N A

Circle: MDA = 14 dpm/100 cm² α			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
5	0	0	<MDA
7	2	1.70	
10	0	0	
28	0	0	
41	0	0	<MDA

N A

Remarks-

Signature- BSKjos Reviewed by- Paul C Ely 4/29/03

of

Duratek, Inc.
Survey Package Worksheet for Package B0400
Bristol-Myers Squibb Building 124 Rooms 142 & 143

Package Identification No.: B0400	Prepared by: Paul C. Ely
Location: Building 124 Rooms 142 & 143	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising walls and ceilings (No Floors) in Rooms 142 & 143.

Historical Information

Room 142 is the south Warehouse area. Used manipulators were stored in this area and sampling of the water in the holdup tanks was performed remotely form this location. Room 143 is the maintenance room where maintenance on manipulators was performed. All radionuclides used in the caves had the potential to be present.

All wall and ceiling areas had contamination levels <5,000 dpm/100 cm^2. Some spots on floors had contamination levels >5,000 dpm/100 cm^2.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Survey Package: B0400 continued

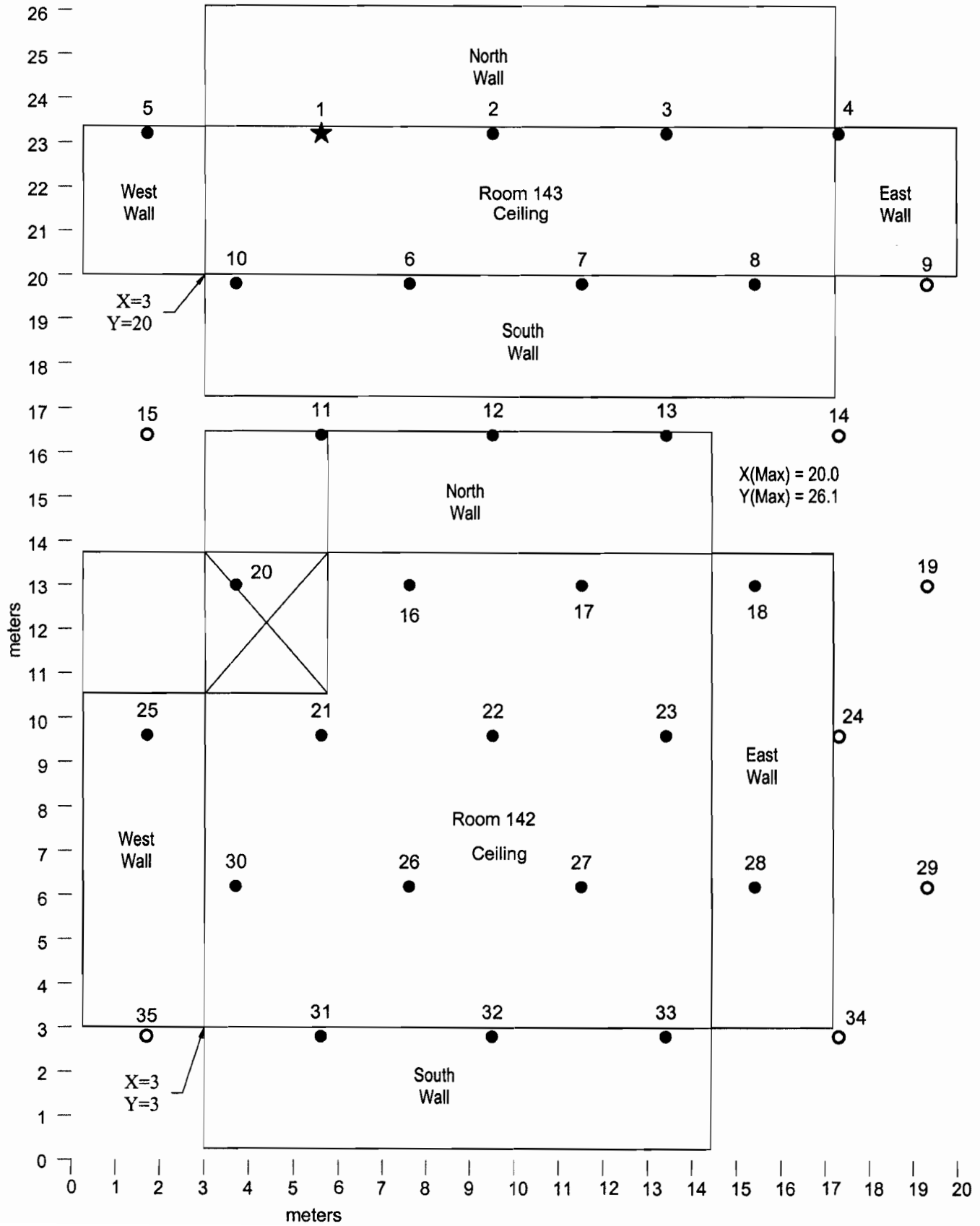
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 142 & 143												
B0400	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	4-18-03	NRK 4-26-03	N/A	N/A	5 ~~N/A~~ 4-26-03	N/A	N/A
B0400	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	4-18-03	NRK 4-26-03	N/A	N/A	N/A	N/A	N/A
B0400	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	4-18-03	NRK ~~4-26-03~~	N/A	N/A	N/A	N/A	N/A
B0400	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	4-18-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments

SURVEY PACKAGE B0400



Survey Package B0400
B-124 Rooms 142 & 143 Walls & Ceiling

X (Max):	20.0	meters	
Y (Max):	26.1	meters	
A (Area):	522	m^2	
Actual Survey Area:	402	m^2	
COMPASS Survey Points:	14	23%	percent void area
N (Points):	40	18	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	3.9	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.4	meters	(distance between rows)
L/2=	2.0	meters	(row offset value)
X (Random):	14.3		random number generator
Y (Random):	7.8		random number generator
X (Origin):	5.6		initially generated random number
Y (Origin):	23.2		initially generated random number
Number of rows:	8		
Number of columns:	5		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	5.6	23.2	8
2	9.5	23.2	
3	13.4	23.2	
4	17.3	23.2	
5	1.7	23.2	
6	7.6	19.8	7
7	11.5	19.8	
8	15.4	19.8	
9	19.3	19.8	
10	3.7	19.8	
11	5.6	16.4	6
12	9.5	16.4	
13	13.4	16.4	
14	17.3	16.4	
15	1.7	16.4	
16	7.6	13.0	5
17	11.5	13.0	
18	15.4	13.0	
19	19.3	13.0	
20	3.7	13.0	
21	5.6	9.6	4
22	9.5	9.6	
23	13.4	9.6	
24	17.3	9.6	
25	1.7	9.6	
26	7.6	6.2	3
27	11.5	6.2	
28	15.4	6.2	
29	19.3	6.2	
30	3.7	6.2	
31	5.6	2.8	2
32	9.5	2.8	
33	13.4	2.8	
34	17.3	2.8	
35	1.7	2.8	

LBGR Determination

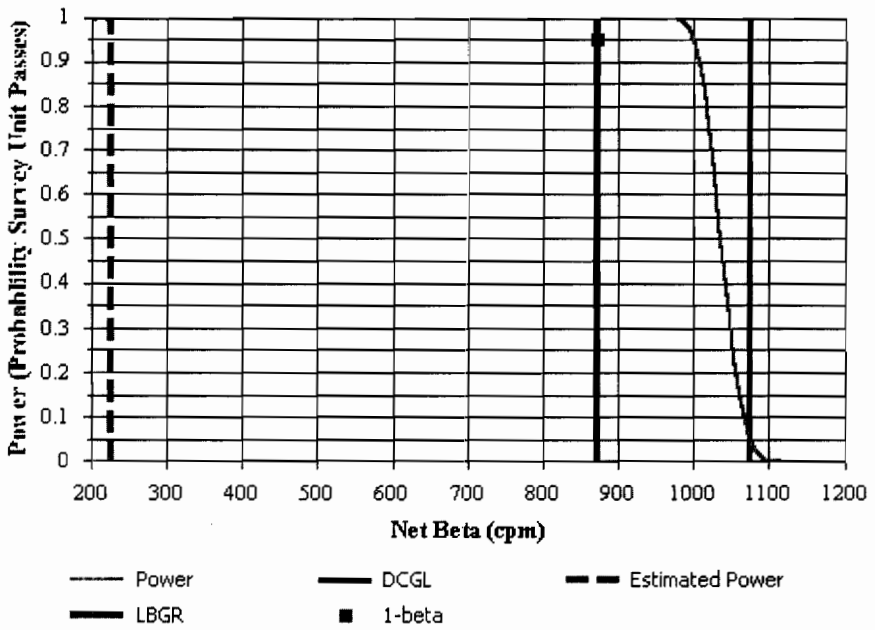
σ =	67.4	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	15.9	**>3**
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	**3**
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**872**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0400 FSS Package		
Comments:	B-124 Rooms 142 & 143 Walls & Ceilings		
Area (m²):	402	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	67.4
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	872	Estimated Conc. (cpm):	225
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 363 ± 54 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete Block	45	370.2	39.8	612
Steel Panel	28	137.9	18.4	381

BMS Download Survey Report Data Summary
Characterization Package A0700
B-124 South-central Lab Areas (Rooms 142-145, 154, 156 – 160, 162A, 163, 163B, 163C, 164, 165, 167, 168, & 170).
FSS Packages:A1200, A1300, B0200, B0400, B0500, B0600,B0700, B0800

Floor		Wall		Ceiling		Structure		Above False Ceiling (Not Used in Average)	
Background	Gross	Background	Gross	Background	Gross	Background	Gross	Background	Gross
Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
277	315	322	374	288	366	279	252	232	272
265	275	305	403	393	358	299	293	267	259
228	302	325	389	304	382	243	260	321	335
273	302	338	336	322	364	276	243	307	332
257	269	320	331	283	350	274	259	334	309
283	478	310	409	297	300	246	276	305	335
253	258	269	382	303	312	195	317	307	346
286	393	358	520	303	343	222	220	311	317
329	387	289	323	324	355	205	189	357	361
301	1,261	258	266	333	337	191	213	335	336
395	2,169	274	283	260	350	238	252		
259	350	258	281	249	322	235	224		
243	267	325	335	331	354	225	263		
327	285	311	337	319	318	261	252		
280	276	333	354	326	339	231	244		
271	242	323	379	339	343	227	224		
241	245	321	337	323	343	229	243		
206	218	279	342	364	364	188	180		
253	264	256	381	371	352	180	156		
253	252	309	333	335	366	254	230		
252	281	303	367	328	346	223	277		
270	240	273	375			241	227		
253	260	288	402			246	235		
304	321	231	269			232	254		
283	419	329	397			292	291		
288	481	290	393			244	263		
275	334	355	357			266	267		
335	433	352	403			250	265		
275	265	333	419			231	237		
270	240	334	477			263	249		
253	277	331	377			216	222		
259	247	371	350						
214	249	325	356						
221	324	309	405						
240	260	292	355						
		367	634						
		342	418						
		344	400						
		292	376						
		269	298						
		332	365						
		344	373						
		265	333						
		334	351						
Average	**270.6**	**384.0**	**311.1**	**371.5**	**318.8**	**345.9**	**238.8**	**244.4**	**307.6**	**320.2**
Standard Deviation	**36.7**	**356.7**	**33.2**	**63.3**	**34.1**	**19.9**	**29.5**	**33.1**	**35.7**	**32.3**
No of Measurements	**35**	**35**	**44**	**44**	**21**	**21**	**31**	**31**	**10**	**10**

All Measurement			**Walls & Ceiling Measurement**	
Average	**284.4**	**340.6**	**Average**	**363.2**
Standard Deviation	**45.6**	**194.8**	**Standard Deviation**	**54.4**
No of Measurements	**131**	**131**	**No of Measurements**	**65**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 4-26-03

Download Station #: 1 Download File #: 84
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** NRK2986 **Signature:** [signature] **Date:** 4-26-03

Print Name:_____ **User ID**_____ **Signature:**_____ **Date:**_____

Instrument Serial #(s): Model 2350: 95359

Survey Unit Description: Package B0400, B124, Rooms 142 & 143 walls & ceilings
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-12-03 Detector Calibration Due Date: 10-15-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR088917	43-68B	.233			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 294	2 255	3 250	4 N/A	5 N/A	6 N/A	243
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .134

Duratek™

M2350-1 Download BETA Report

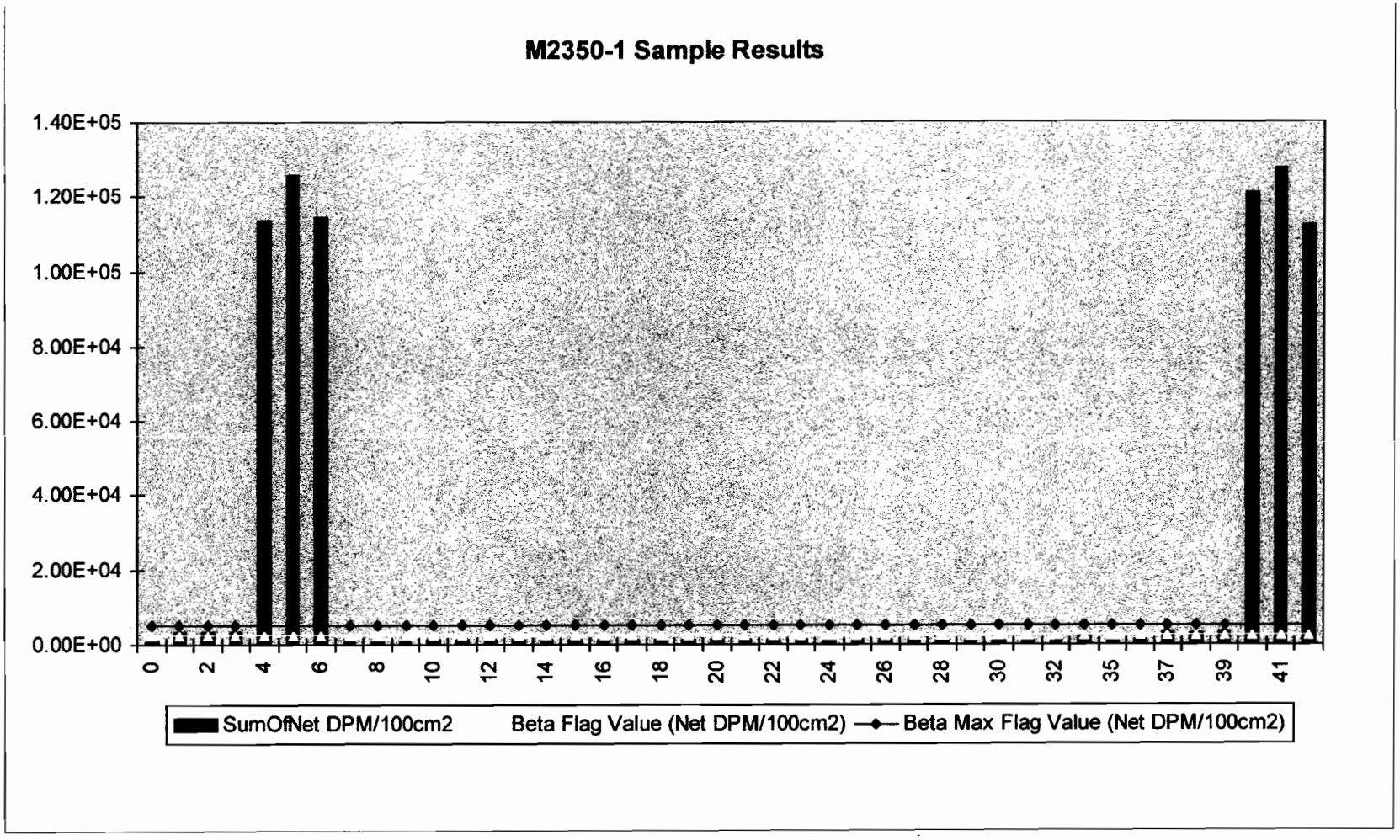
File Name : 00000084	Survey Description :Package B0400, B-124, Rooms 142 and 143 walls and	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 95359	Instrument Cal. Due : 6/12/03
Detector Model : 43-68B	Detector S/N : 088917	Detector Cal. Due : 10/15/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.233	Survey Date : 4/26/03

Print Name	Signature	Date
Doug Kjos		9/8/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C. ELY	Paul C Ely	9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
35
37
39
41
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000084

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,925.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	996
ZZZZZ	FD184	1	1,279.0	60	PRB00	ZZZZZ	ZZZZZ	0	293	3,359
ZZZZZ	FD184	2	1,313.0	60	PRB00	ZZZZZ	ZZZZZ	0	293	3,474
ZZZZZ	FD184	3	1,318.0	60	PRB00	ZZZZZ	ZZZZZ	0	293	3,491
ZZZZZ	10002	4	33,702.0	60	PRB00	ZZZZZ	ZZZZZ	0	293	113,799
ZZZZZ	10002	5	37,260.0	60	PRB00	ZZZZZ	ZZZZZ	0	293	125,918
ZZZZZ	10002	6	33,941.0	60	PRB00	ZZZZZ	ZZZZZ	0	293	114,613
B0400	ZZZZZ	7	224.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	763
B0400	ZZZZZ	8	255.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	869
B0400	ZZZZZ	9	250.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	852
B0400	01C01	10	359.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	1,223
B0400	01C01	11	350.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	1,192
B0400	01C01	12	342.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	1,165
B0400	01C01	13	327.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,114
B0400	01C01	14	341.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	1,162
B0400	01C01	15	390.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	1,328
B0400	01C01	16	327.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	1,114
B0400	01C01	17	339.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	1,155
B0400	01W01	18	429.0	60	FLDCT	B0004	ZZZZZ	28	0.0001	1,461
B0400	01W01	19	407.0	60	FLDCT	B0004	ZZZZZ	18	0.0001	1,386
B0400	01W01	20	375.0	60	FLDCT	B0004	ZZZZZ	13	0.0001	1,277
B0400	01W01	21	401.0	60	FLDCT	B0004	ZZZZZ	12	0.0001	1,366
B0400	01W01	22	357.0	60	FLDCT	B0001	ZZZZZ	25	0.0001	1,216
B0400	01W01	23	329.0	60	FLDCT	B0001	ZZZZZ	31	0.0001	1,121
B0400	01W01	24	245.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	835
B0400	01C01	25	370.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	1,260
B0400	01C01	26	369.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	1,257
B0400	01C01	27	404.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,376
B0400	01W01	28	247.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	841
B0400	01W01	29	261.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	889
B0400	01W01	30	241.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	821
B0400	01W01	31	221.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	753
B0400	01W01	32	259.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	882
B0400	01W01	33	584.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	1,989
B0400	01W01	35	285.0	60	FLDCT	B0001	ZZZZZ	33	0.0001	971
ZZZZZ	ZZZZZ	36	3,585.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	1,221
ZZZZZ	FD184	37	1,374.0	60	PTB00	ZZZZZ	ZZZZZ	0	359	3,457
ZZZZZ	FD184	38	1,293.0	60	PTB00	ZZZZZ	ZZZZZ	0	359	3,181
ZZZZZ	FD184	39	1,340.0	60	PTB00	ZZZZZ	ZZZZZ	0	359	3,342

Beta Flag	2500 -	
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	FD184	40	35,939.0	60	PTB00	ZZZZZ	ZZZZZ	0	359	121,194
ZZZZZ	FD184	41	37,769.0	60	PTB00	ZZZZZ	ZZZZZ	0	359	127,427
ZZZZZ	FD184	42	33,404.0	60	PTB00	ZZZZZ	ZZZZZ	0	359	112,559

Beta Flag	2500	-
Beta Max Flag	5000	

Survey #- 80400

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D. Kjos (Print) Signature D. Kjos | BSK Date 4-26-03 Time 1540

Counted by BS Kjos (Print) Signature BS Kjos Date 4-28-03 Time 0615

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .252

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .37

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100 cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
4	71	17	<MDA
7	50	0	
13	38	0	
18	62	8	
25	49	0	<MDA
		N/A	

Circle:	MDA = 12.5 dpm/100 cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
4	1	.85	<MDA
7	0	0	
13	1	.85	
18	0	0	
25	0	0	<MDA
		N/A	

Remarks-

Signature- BS Kjos Reviewed by- Paul C Ely 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B0500
Bristol-Myers Squibb Building 124 Room 143A

Package Identification No.: B0500	Prepared by: Paul C. Ely
Location: Building 124 Room 143A	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in Room 143A.

Historical Information

Room 143A is the former Emergency Generator Room and radioactive materials have never been in this area. All areas had contamination levels <5,000 dpm/100 cm^2 as identified during the characterization survey.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

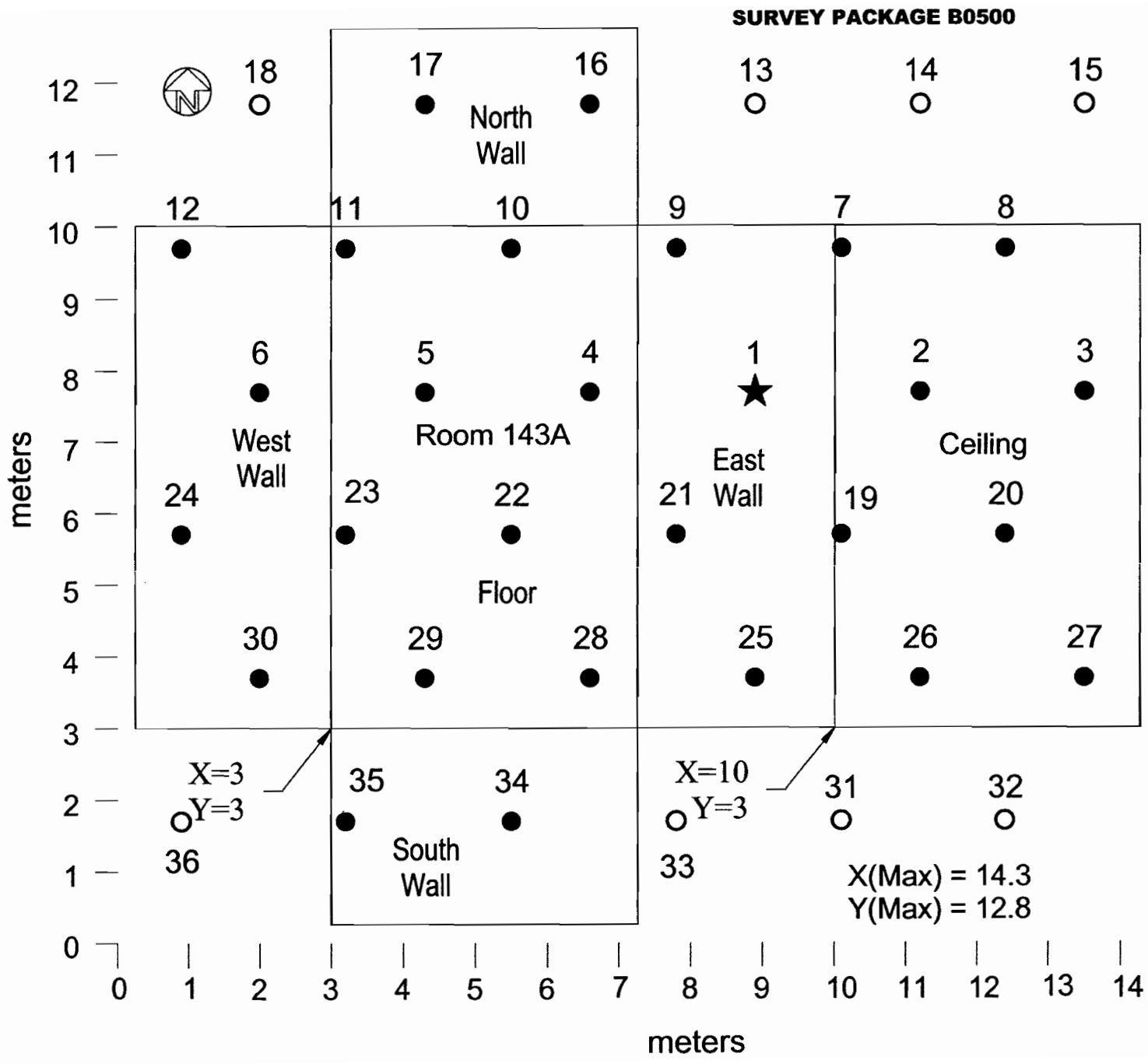
Survey Package: B0500 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Room 143A												
B0500	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	DB 4-18-03	BSK 4-25-03	N/A	N/A	BSK 5 4-28-03	N/A	N/A
B0500	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	DB 4-18-03	BSK 4-25-03	N/A	N/A	N/A	N/A	N/A
B0500	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	DB 4-18-03	BSK 4-25-03	N/A	N/A	N/A	N/A	N/A
B0500	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	DB 4-18-03	N/A	N/A	N/A	N/A	N/A	N/A
B0500	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	DB 4-18-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/29/03
Package Reviewed by and Date: Paul C Ely 4/29/03

Survey Comments


SURVEY PACKAGE B0500
North Wall
West Wall
Room 143A
East Wall
Ceiling
Floor
South Wall
X=3
Y=3
X=10
Y=3
X(Max) = 14.3
Y(Max) = 12.8
meters
meters

Survey Package B0500
B-124 Room 143A

X (Max):	14.3	meters	
Y (Max):	12.8	meters	
A (Area):	183	m^2	
Actual Survey Area:	122	m^2	
COMPASS Survey Points:	14	34%	percent void area
N (Points):	40	21	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	2.3	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	2	meters	(distance between rows)
L/2=	1.2	meters	(row offset value)
X (Random):	8.6		random number generator
Y (Random):	5.3		random number generator
X (Origin):	8.9		initially generated random number
Y (Origin):	7.7		initially generated random number
Number of rows:	6		
Number of columns:	6		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	8.9	7.7	4
2	11.2	7.7	
3	13.5	7.7	
4	6.6	7.7	
5	4.3	7.7	
6	2.0	7.7	
7	10.1	9.7	5
8	12.4	9.7	
9	7.8	9.7	
10	5.5	9.7	
11	3.2	9.7	
12	0.9	9.7	
13	8.9	11.7	6
14	11.2	11.7	
15	13.5	11.7	
16	6.6	11.7	
17	4.3	11.7	
18	2.0	11.7	
19	10.1	5.7	3
20	12.4	5.7	
21	7.8	5.7	
22	5.5	5.7	
23	3.2	5.7	
24	0.9	5.7	
25	8.9	3.7	2
26	11.2	3.7	
27	13.5	3.7	
28	6.6	3.7	
29	4.3	3.7	
30	2.0	3.7	
31	10.1	1.7	1
32	12.4	1.7	
33	7.8	1.7	
34	5.5	1.7	
35	3.2	1.7	
36	0.9	1.7	

LBGR Determination

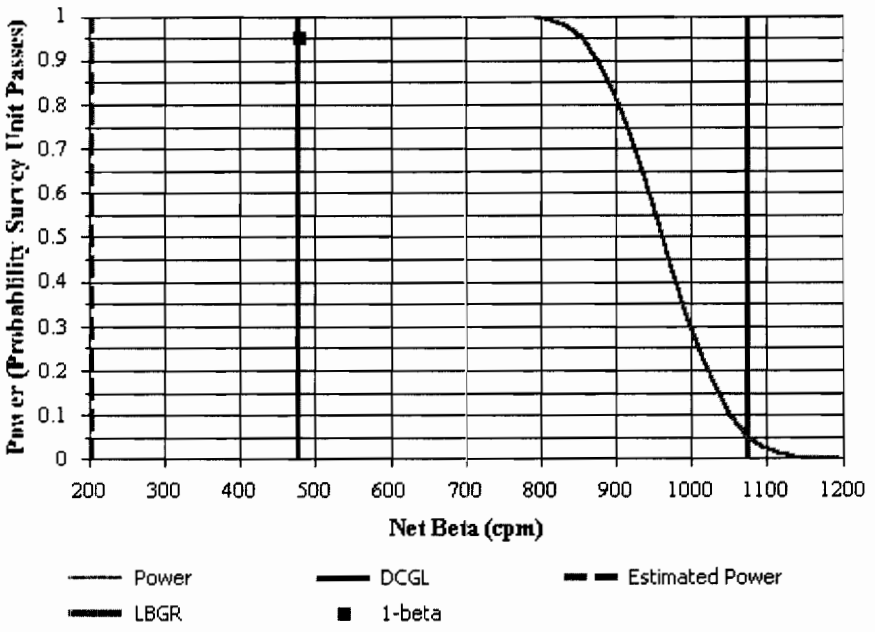
σ =	198.8	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	5.4	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**478**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0500 FSS Package		
Comments:	B-124 Room 143A Walls & Ceiling		
Area (m²):	190	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	198.8
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	478	Estimated Conc. (cpm):	203
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 341 ± 195 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete Block	45	370.2	39.8	612
Steel Panel	28	137.9	18.4	381

BMS Download Survey Report Data Summary
Characterization Package A0700
B-124 South-central Lab Areas (Rooms 142-145, 154, 156 – 160, 162A, 163, 163B, 163C, 164, 165, 167, 168, & 170).
FSS Packages:A1200, A1300, B0200, B0400, B0500, B0600,B0700, B0800

Floor		Wall		Ceiling		Structure		Above False Ceiling (Not Used in Average)	
Background	Gross	Background	Gross	Background	Gross	Background	Gross	Background	Gross
Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
277	315	322	374	288	366	279	252	232	272
265	275	305	403	393	358	299	293	267	259
228	302	325	389	304	382	243	260	321	335
273	302	338	336	322	364	276	243	307	332
257	269	320	331	283	350	274	259	334	309
283	478	310	409	297	300	246	276	305	335
253	258	269	382	303	312	195	317	307	346
286	393	358	520	303	343	222	220	311	317
329	387	289	323	324	355	205	189	357	361
301	1,261	258	266	333	337	191	213	335	336
395	2,169	274	283	260	350	238	252		
259	350	258	281	249	322	235	224		
243	267	325	335	331	354	225	263		
327	285	311	337	319	318	261	252		
280	276	333	354	326	339	231	244		
271	242	323	379	339	343	227	224		
241	245	321	337	323	343	229	243		
206	218	279	342	364	364	188	180		
253	264	256	381	371	352	180	156		
253	252	309	333	335	366	254	230		
252	281	303	367	328	346	223	277		
270	240	273	375			241	227		
253	260	288	402			246	235		
304	321	231	269			232	254		
283	419	329	397			292	291		
288	481	290	393			244	263		
275	334	355	357			266	267		
335	433	352	403			250	265		
275	265	333	419			231	237		
270	240	334	477			263	249		
253	277	331	377			216	222		
259	247	371	350						
214	249	325	356						
221	324	309	405						
240	260	292	355						
		367	634						
		342	418						
		344	400						
		292	376						
		269	298						
		332	365						
		344	373						
		265	333						
		334	351						
Average	270.6	384.0	311.1	371.5	318.8	345.9	238.8	244.4	307.6	320.2
Standard Deviation	36.7	356.7	33.2	63.3	34.1	19.9	29.5	33.1	35.7	32.3
No of Measurements	35	35	44	44	21	21	31	31	10	10

All Measurement			**Walls & Ceiling Measurement**	
Average	284.4	340.6	**Average**	363.2
Standard Deviation	45.6	194.8	**Standard Deviation**	54.4
No of Measurements	131	131	**No of Measurements**	65

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-26-03

Download Station #: 1 Download File #: 83
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 4-25-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B0500, Bldg 124, Room 143A
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092524	43-68B	.224			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 261	2 242	3 296	4 n/a	5 n/a	6 n/a	266
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 EFF = .139 (128-156)
PRBBK - 281 FTBBK - 278

Duratek™

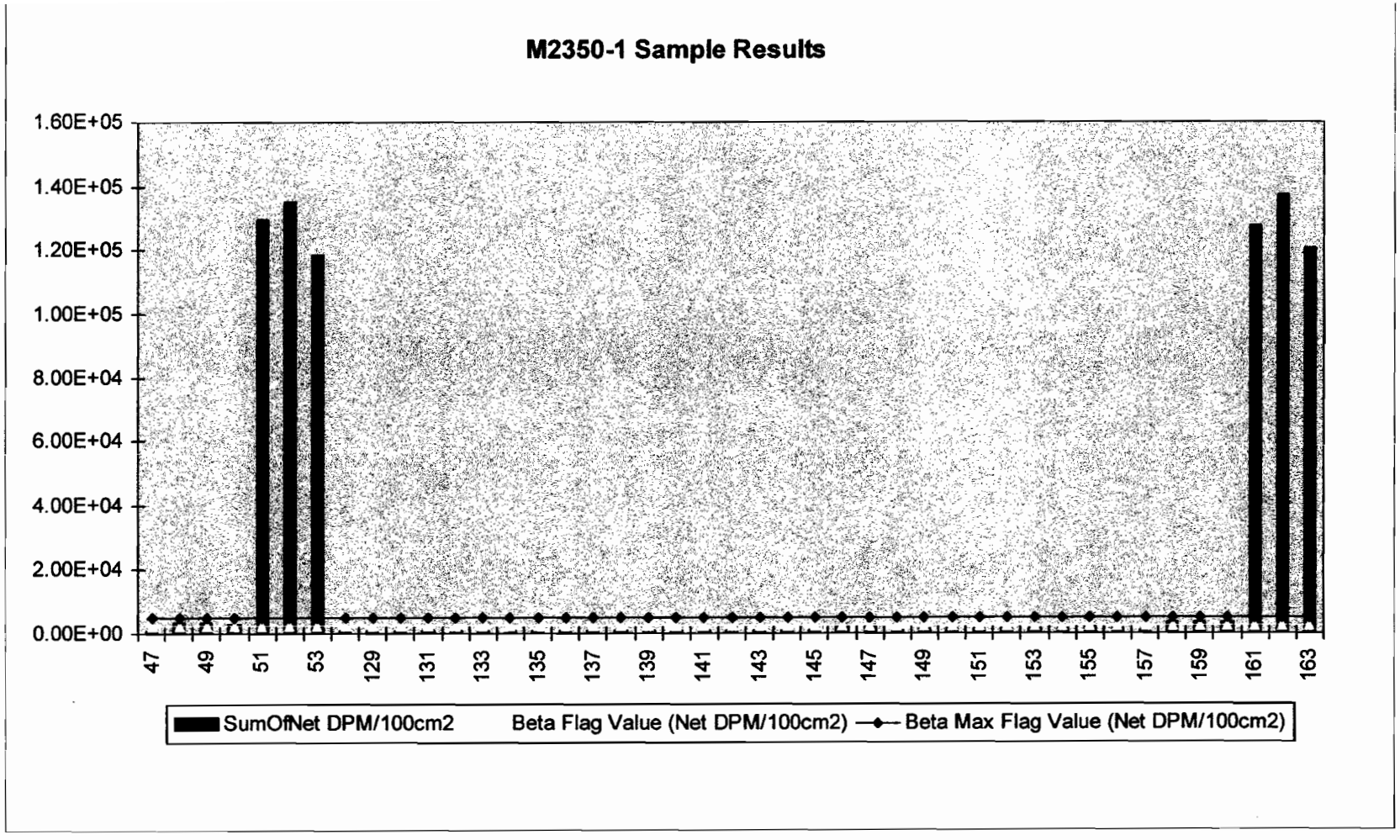
M2350-1 Download BETA Report

File Name : 00000083	Survey Description :Package B0500, B-124, Room 143A	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.224	Survey Date : 4/25/03

Print Name	Signature	Date
Betty Kjos		9/8/03

Comments:

Sign-Off PAUL C. ELY (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
47
49
51
53
129
131
133
135
137
139
141
143
145
147
149
151
153
155
157
159
161
163
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000083

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	47	2,811.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	996
ZZZZZ	19655	48	1,210.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	3,292
ZZZZZ	19655	49	1,257.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	3,458
ZZZZZ	19655	50	1,190.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	3,221
ZZZZZ	10002	51	36,864.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	129,617
ZZZZZ	10002	52	38,458.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	135,264
ZZZZZ	10002	53	33,802.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	118,768
B0500	ZZZZZ	128	261.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	925
B0500	ZZZZZ	129	242.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	857
B0500	ZZZZZ	130	296.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,049
B0500	01C01	131	289.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	1,024
B0500	01C01	132	283.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	1,003
B0500	01C01	133	343.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	1,215
B0500	01W01	134	262.0	60	FLDCT	B0019	ZZZZZ	6	0.0001	928
B0500	01W01	135	290.0	60	FLDCT	B0019	ZZZZZ	12	0.0001	1,027
B0500	01W01	136	271.0	60	FLDCT	B0019	ZZZZZ	24	0.0001	960
B0500	01W01	137	245.0	60	FLDCT	B0019	ZZZZZ	30	0.0001	868
B0500	01W01	138	221.0	60	FLDCT	B0019	ZZZZZ	35	0.0001	783
B0500	01W01	139	300.0	60	FLDCT	B0019	ZZZZZ	34	0.0001	1,063
B0500	01W01	140	239.0	60	FLDCT	B0019	ZZZZZ	21	0.0001	847
B0500	01W01	141	256.0	60	FLDCT	B0019	ZZZZZ	25	0.0001	907
B0500	01W01	142	240.0	60	FLDCT	B0019	ZZZZZ	26	0.0001	850
B0500	01W01	143	234.0	60	FLDCT	B0019	ZZZZZ	19	0.0001	829
B0500	01W01	144	276.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	978
B0500	01W01	145	244.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	865
B0500	01W01	146	694.0	60	FLDCT	B0009	ZZZZZ	16	0.0001	2,459
B0500	01W01	147	642.0	60	FLDCT	B0009	ZZZZZ	17	0.0001	2,275
B0500	01F01	148	350.0	60	FLDCT	B0003	ZZZZZ	9	0.0001	1,240
B0500	01F01	149	409.0	60	FLDCT	B0003	ZZZZZ	10	0.0001	1,449
B0500	01F01	150	422.0	60	FLDCT	B0003	ZZZZZ	11	0.0001	1,495
B0500	01F01	151	418.0	60	FLDCT	B0003	ZZZZZ	5	0.0001	1,481
B0500	01F01	152	372.0	60	FLDCT	B0003	ZZZZZ	4	0.0001	1,318
B0500	01F01	153	388.0	60	FLDCT	B0003	ZZZZZ	28	0.0001	1,375
B0500	01F01	154	366.0	60	FLDCT	B0003	ZZZZZ	22	0.0001	1,297
B0500	01F01	155	540.0	60	FLDCT	B0003	ZZZZZ	29	0.0001	1,913
B0500	01F01	156	380.0	60	FLDCT	B0003	ZZZZZ	23	0.0001	1,346
ZZZZZ	ZZZZZ	157	2,780.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	985
ZZZZZ	19655	158	1,211.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	3,306
ZZZZZ	19655	159	1,248.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	3,437

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	19655	160	1,238.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	3,401
ZZZZZ	10002	161	36,268.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	127,516
ZZZZZ	10002	162	39,095.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	137,532
ZZZZZ	10002	163	34,387.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	120,851

Beta Flag	2500	-
Beta Max Flag	5000	

Survey #- BB500

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Betty S. Kjos (Print) Signature BS Kj Date 4-28-03 Time 1550

Counted by Betty S. Kjos (Print) Signature BS Kj Date 4-29-03 Time 0700

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 51 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle: MDA = 105 dpm/100cm² β-γ

Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
6	56	5	< MDA
11	60	9	
16	57	6	
28	49	0	
34	49	0	< MDA

NA

Circle: MDA = 14 dpm/100 cm² α

Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
6	0	0	< MDA
11	0	0	
16	0	0	
28	0	0	
34	1	.78	< MDA

NA

Remarks-

Signature- BS Kj Reviewed by- Paul C Ely 4/29/03

Duratek, Inc.
Survey Package Worksheet for Package B0600
Bristol-Myers Squibb Building 124 Room 154

Package Identification No.: B0600	Prepared by: Paul C. Ely
Location: Building 124 Room 154	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in Room 154.

Historical Information

Room 154 is the long hallway running North-South through the production area in the old section of Building 124.

As part of the D&D effort, the process drain lines were removed from this hallway.

All areas had contamination levels <5,000 dpm/100 cm^2 as identified during the characterization survey.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

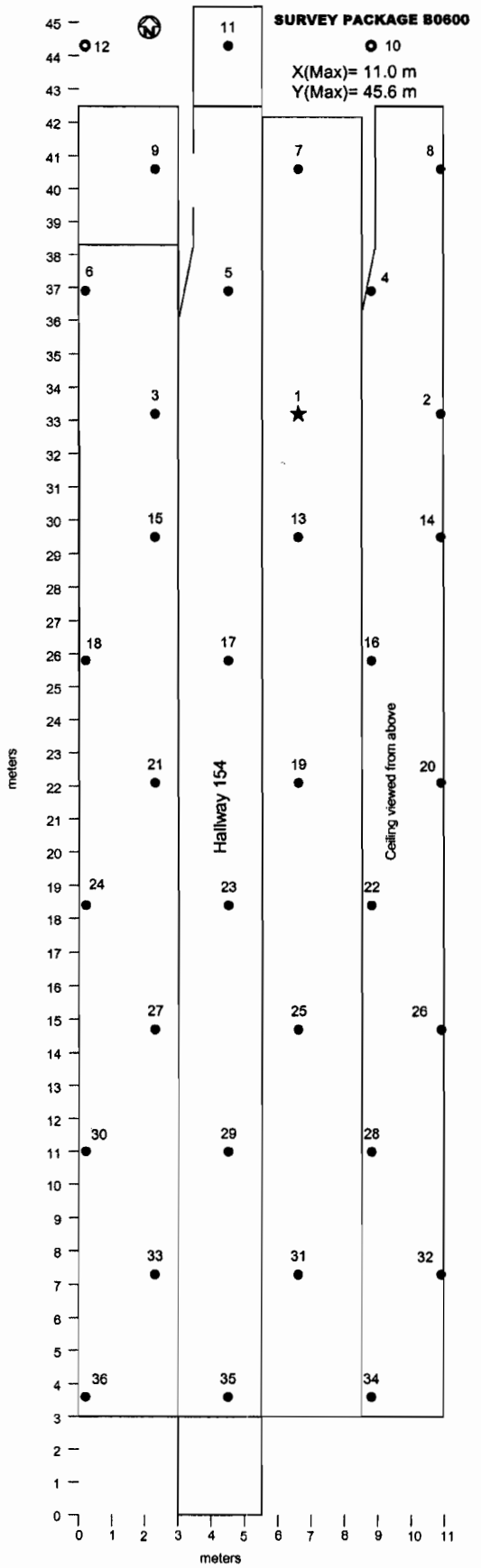
Survey Package: B0600 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Room 154												
B0600	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSK 4-23-03	BSK 4-26-03	N/A	N/A	BSK 4-28-03	N/A	N/A
B0600	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4-23-03	BSK 4-26-03	N/A	N/A	N/A	N/A	N/A
B0600	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4-23-03	BSK 4-26-03	N/A	N/A	N/A	N/A	N/A
B0600	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B0600	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/29/03
Package Reviewed by and Date: Paul C Ely 4/29/03

Survey Comments


SURVEY PACKAGE B0600
X(Max)= 11.0 m
Y(Max)= 45.6 m
Hallway 154
Ceiling viewed from above
meters
meters

Survey Package B0600
B-124 Room 154

X (Max):	11.0	meters	
Y (Max):	45.6	meters	
A (Area):	502	m^2	
Actual Survey Area:	441.6	m^2	
COMPASS Survey Points:	14	12%	percent void area
N (Points):	32	16	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	4.3	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.7	meters	(distance between rows)
L/2=	2.2	meters	(row offset value)
X (Random):	7.2		random number generator
Y (Random):	25.8		random number generator
X (Origin):	6.6		initially generated random number
Y (Origin):	33.2		initially generated random number
Number of rows:	12		
Number of columns:	3		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	6.6	33.2	9
2	10.9	33.2	
3	2.3	33.2	
4	8.8	36.9	10
5	4.5	36.9	
6	0.2	36.9	
7	6.6	40.6	11
8	10.9	40.6	
9	2.3	40.6	
10	8.8	44.3	12
11	4.5	44.3	
12	0.2	44.3	
13	6.6	29.5	8
14	10.9	29.5	
15	2.3	29.5	
16	8.8	25.8	7
17	4.5	25.8	
18	0.2	25.8	
19	6.6	22.1	6
20	10.9	22.1	
21	2.3	22.1	
22	8.8	18.4	5
23	4.5	18.4	
24	0.2	18.4	
25	6.6	14.7	4
26	10.9	14.7	
27	2.3	14.7	
28	8.8	11.0	3
29	4.5	11.0	
30	0.2	11.0	
31	6.6	7.3	2
32	10.9	7.3	
33	2.3	7.3	
34	8.8	3.6	1
35	4.5	3.6	
36	0.2	3.6	

LBGR Determination
Package B0600

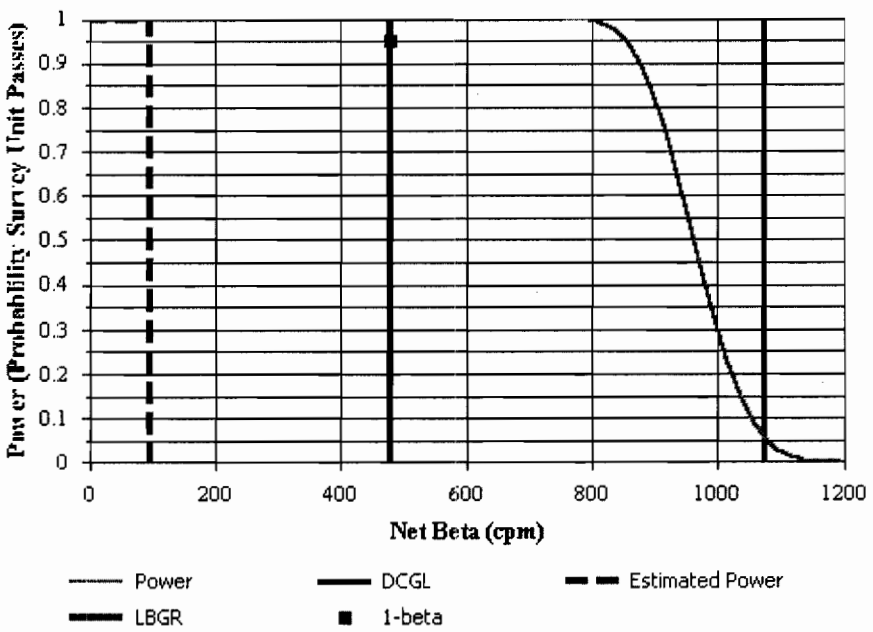
σ =	198.8	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	5.4	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	**3**
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**478**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0600 FSS Package		
Comments:	B-124 Room 154		
Area (m²):	442	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	198.8
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	478	Estimated Conc. (cpm):	95.7
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 341 ± 195 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete	35	270.6	36.7	526
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0700
B-124 South-central Lab Areas (Rooms 142-145, 154, 156 – 160, 162A, 163, 163B, 163C, 164, 165, 167, 168, & 170).
FSS Packages:A1200, A1300, B0200, B0400, B0500, B0600,B0700, B0800

Floor		Wall		Ceiling		Structure		Above False Ceiling (Not Used in Average)	
Background	Gross	Background	Gross	Background	Gross	Background	Gross	Background	Gross
Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
277	315	322	374	288	366	279	252	232	272
265	275	305	403	393	358	299	293	267	259
228	302	325	389	304	382	243	260	321	335
273	302	338	336	322	364	276	243	307	332
257	269	320	331	283	350	274	259	334	309
283	478	310	409	297	300	246	276	305	335
253	258	269	382	303	312	195	317	307	346
286	393	358	520	303	343	222	220	311	317
329	387	289	323	324	355	205	189	357	361
301	1,261	258	266	333	337	191	213	335	336
395	2,169	274	283	260	350	238	252		
259	350	258	281	249	322	235	224		
243	267	325	335	331	354	225	263		
327	285	311	337	319	318	261	252		
280	276	333	354	326	339	231	244		
271	242	323	379	339	343	227	224		
241	245	321	337	323	343	229	243		
206	218	279	342	364	364	188	180		
253	264	256	381	371	352	180	156		
253	252	309	333	335	366	254	230		
252	281	303	367	328	346	223	277		
270	240	273	375			241	227		
253	260	288	402			246	235		
304	321	231	269			232	254		
283	419	329	397			292	291		
288	481	290	393			244	263		
275	334	355	357			266	267		
335	433	352	403			250	265		
275	265	333	419			231	237		
270	240	334	477			263	249		
253	277	331	377			216	222		
259	247	371	350						
214	249	325	356						
221	324	309	405						
240	260	292	355						
		367	634						
		342	418						
		344	400						
		292	376						
		269	298						
		332	365						
		344	373						
		265	333						
		334	351						
Average	270.6	384.0	311.1	371.5	318.8	345.9	238.8	244.4	307.6	320.2
Standard Deviation	36.7	356.7	33.2	63.3	34.1	19.9	29.5	33.1	35.7	32.3
No of Measurements	35	35	44	44	21	21	31	31	10	10

All Measurement			Walls & Ceiling Measurement	
Average	284.4	340.6	Average	363.2
Standard Deviation	45.6	194.8	Standard Deviation	54.4
No of Measurements	131	131	No of Measurements	65

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-28-03

Download Station #: 1 Download File #: 89
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 4-26-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B0600, Bldg 134, Hallway 154
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092224	43-68B	.229			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 304	2 329	3 315	4 n/a	5 n/a	6 n/a	316
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 EFF = .143 PRBK-254 PTBK-287 (73-105)

* Starting with SUL#73, change L1 code to B0600.

Duratek™

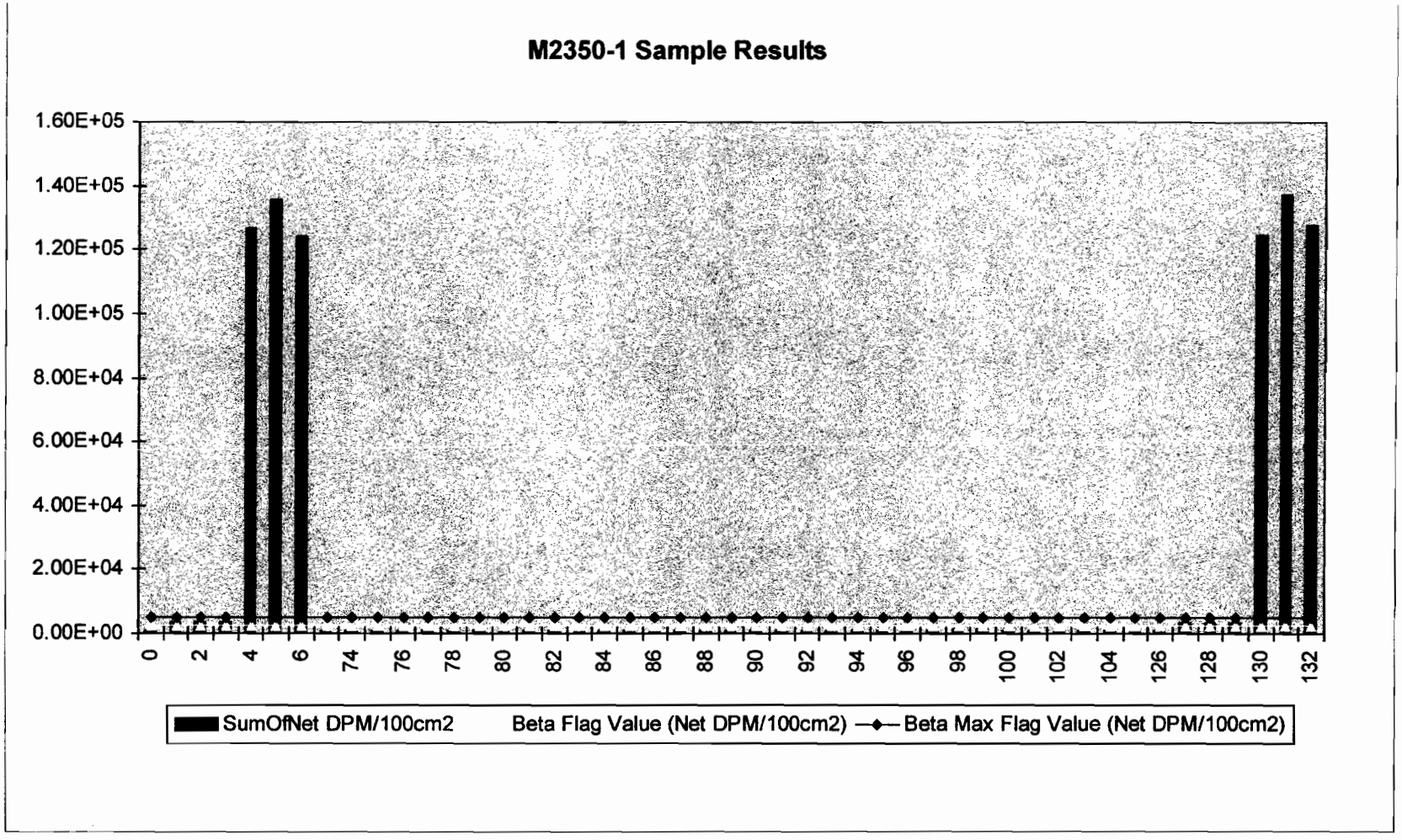
M2350-1 Download BETA Report

File Name : 00000089	Survey Description :Package B0600, B-124, Hallway 154	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.229	Survey Date : 4/26/03

Print Name	Signature	Date
Betty Kjos	BS Kjos	9/8/03

Comments:

Sign-Off PAUL E. ELY (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
74
76
78
80
82
84
86
88
90
92
94
96
98
100
102
104
126
128
130
132
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Blank Page

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B0600	01W01	105	257.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	891
ZZZZZ	ZZZZZ	126	2,867.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	994
ZZZZZ	19655	127	1,293.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	3,487
ZZZZZ	19655	128	1,255.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	3,355
ZZZZZ	19655	129	1,266.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	3,393
ZZZZZ	10002	130	36,191.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	124,433
ZZZZZ	10002	131	39,959.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	137,492
ZZZZZ	10002	132	37,123.0	60	PTB00	ZZZZZ	ZZZZZ	0	287	127,663

Beta Flag	2500	-
Beta Max Flag	5000	

Survey #- B0600

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Betty S. Kjos (Print) Signature BSKj Date 4-28-03 Time 1450

Counted by Betty S. Kjos (Print) Signature BSKj Date 4-29-03 Time 0800

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 51 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle: MDA = 105 dpm/100cm² β-γ			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
5	55	4	<MDA
9	41	0	
15	56	5	
22	50	1	
29	43	0	<MDA
		N/A	

Circle: MDA = 14 dpm/100 cm² α			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
5	1	.70	<MDA
9	0	0	
15	0	0	
22	0	0	
29	1	.70	<MDA
		N/A	

Remarks-

Signature- BSKj Reviewed by- Paul C Eby 4/29/03

Duratek, Inc.
Survey Package Worksheet for Package B0700
Bristol-Myers Squibb Building 124 Rooms 155-168, Electrical Room & Phone Room

Package Identification No.: B0700	Prepared by: Paul C. Ely
Location: Building 124 Rooms 155-168, Electrical Room & Phone Room	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in Rooms 155-168, Electrical Room & Phone Room.

Historical Information

The rooms are currently in the non-production areas of Building 124. Prior to the renovations in 1968, Room 163 (Now the Locker Room) was used a prep room and final packaging for final product for the above manufacturing rooms. There may have been 4 autoclaves located in the locker about where the black light is located in the hallway. Radionuclides most likely included I-131. Room 164 (Now the Laundry Room) was the entrance to the production area of the building prior to the 1968 renovations. The entrance to Room 164 was formerly Station 1, 15' further south was Station 2 and another 15' south was Station 3. Radionuclides most likely included most any radionuclides used at the facility.

As part of the D&D effort, the process drain lines were removed from many of these rooms.

All areas had contamination levels <5,000 dpm/100 cm^2 except for the Room 164 Laundry Room janitors slop sink that had a contamination level of 24,776 dpm/100 cm^2. The sink was removed during the decommissioning.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Survey Package: B0700 continued

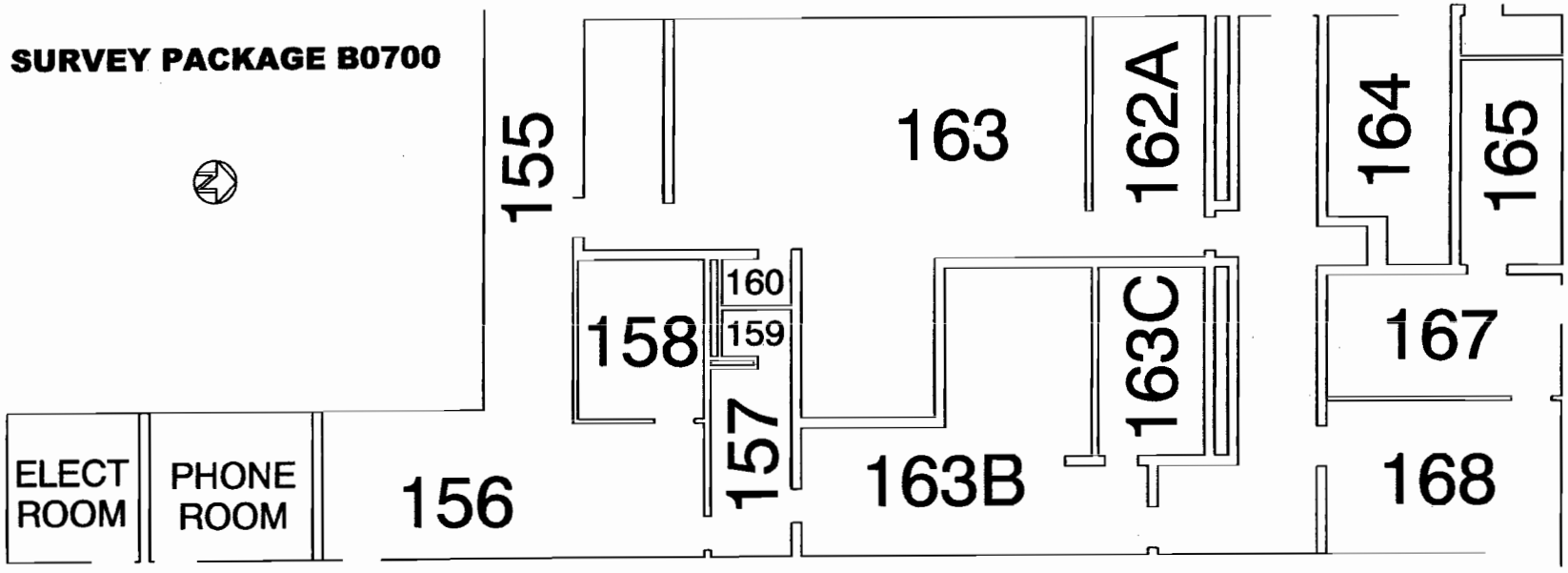
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

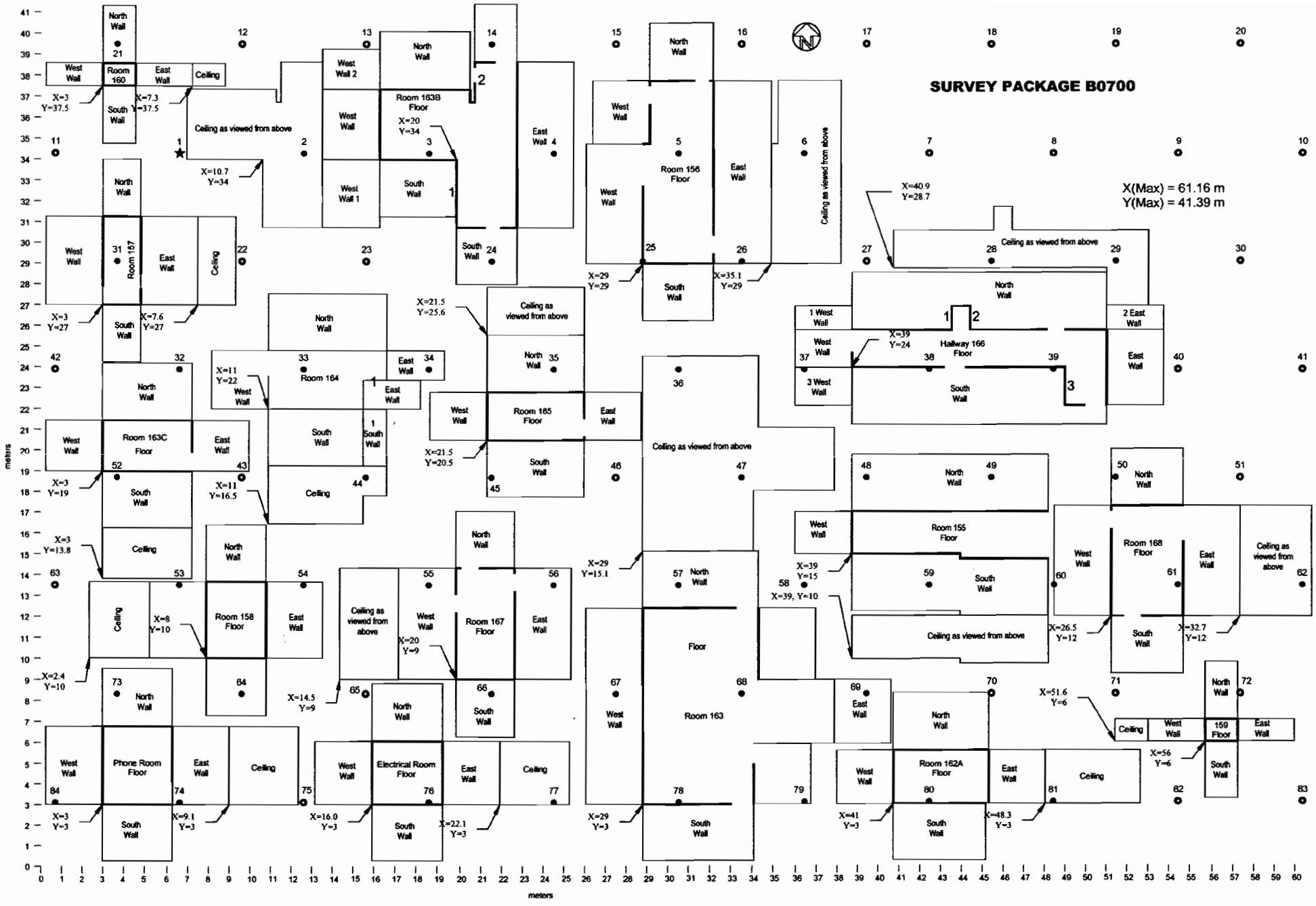
Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 155-168, Electrical Room & Phone Room												
B0700	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NRK/4-24-03	NRK 4-25-03	N/A	N/A	5 NRK/4-25-03	N/A	N/A
B0700	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NRK/4-24-03	NRK/4-25-03	N/A	N/A	N/A	N/A	N/A
B0700	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NRK/4-24-03	NRK/4-25-03	N/A	N/A	N/A	N/A	N/A
B0700	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NRK/4-24-03	n/a	N/A	N/A	N/A	N/A	N/A
B0700	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	NRK/4-24-03	n/a	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments

SURVEY PACKAGE B0700




SURVEY PACKAGE B0700
X(Max) = 61.16 m
Y(Max) = 41.39 m
Room 160
Room 157
Room 163C Floor
Room 164
Room 163B Floor
Room 156 Floor
Room 165 Floor
Hallway 166 Floor
Room 155 Floor
Room 168 Floor
Room 158 Floor
Room 167 Floor
Floor
Room 163
Phone Room Floor
Electrical Room Floor
Room 162A Floor
159 Floor
Ceiling as viewed from above
North Wall
South Wall
West Wall
East Wall
Ceiling
meters

Survey Package B0700
B-124 Room 155-168, Elecrical Room, Phone Room

X (Max):	61.2	meters	
Y (Max):	41.4	meters	
A (Area):	2,534	m^2	
Actual Survey Area:	908.0	m^2	
COMPASS Survey Points:	14	64%	percent void area
N (Points):	80	39	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	6	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	5.2	meters	(distance between rows)
L/2=	3.0	meters	(row offset value)
X (Random):	27.5		random number generator
Y (Random):	18.4		random number generator
X (Origin):	6.7		initially generated random number
Y (Origin):	34.3		initially generated random number
Number of rows:	8		
Number of columns:	10		

Survey Point	**Survey Location X**	**Y**	**Row**	**Survey Point**	**Survey Location X**	**Y**	**Row**
Starting Point (1)	6.7	34.3	7	43	9.7	18.7	4
2	12.7	34.3		44	15.7	18.7	
3	18.7	34.3		45	21.7	18.7	
4	24.7	34.3		46	27.7	18.7	
5	30.7	34.3		47	33.7	18.7	
6	36.7	34.3		48	39.7	18.7	
7	42.7	34.3		49	45.7	18.7	
8	48.7	34.3		50	51.7	18.7	
9	54.7	34.3		51	57.7	18.7	
10	60.7	34.3		52	3.7	18.7	
11	0.7	34.3		53	6.7	13.5	3
12	9.7	39.5	8	54	12.7	13.5	
13	15.7	39.5		55	18.7	13.5	
14	21.7	39.5		56	24.7	13.5	
15	27.7	39.5		57	30.7	13.5	
16	33.7	39.5		58	36.7	13.5	
17	39.7	39.5		59	42.7	13.5	
18	45.7	39.5		60	48.7	13.5	
19	51.7	39.5		61	54.7	13.5	
20	57.7	39.5		62	60.7	13.5	
21	3.7	39.5		63	0.7	13.5	
22	9.7	29.1	6	64	9.7	8.3	2
23	15.7	29.1		65	15.7	8.3	
24	21.7	29.1		66	21.7	8.3	
25	27.7	29.1		67	27.7	8.3	
26	33.7	29.1		68	33.7	8.3	
27	39.7	29.1		69	39.7	8.3	
28	45.7	29.1		70	45.7	8.3	
29	51.7	29.1		71	51.7	8.3	
30	57.7	29.1		72	57.7	8.3	
31	3.7	29.1		73	3.7	8.3	
32	6.7	23.9	5	74	6.7	3.1	1
33	12.7	23.9		75	12.7	3.1	
34	18.7	23.9		76	18.7	3.1	
35	24.7	23.9		77	24.7	3.1	
36	30.7	23.9		78	30.7	3.1	
37	36.7	23.9		79	36.7	3.1	
38	42.7	23.9		80	42.7	3.1	
39	48.7	23.9		81	48.7	3.1	
40	54.7	23.9		82	54.7	3.1	
41	60.7	23.9		83	60.7	3.1	
42	0.7	23.9		84	0.7	3.1	

LBGR Determination
Package B0700

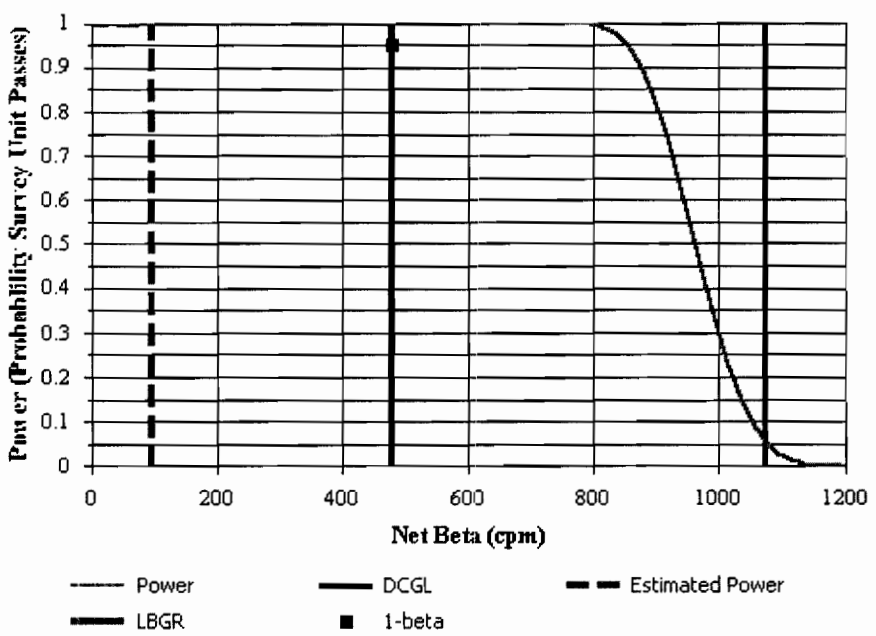
σ =	198.8	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	5.4	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**478**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0700 FSS Package		
Comments:	B-124 Rooms 155-168 + Elect. + Phone Rooms		
Area (m²):	908	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	198.8
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	478	Estimated Conc. (cpm):	95.7
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 341 ± 195 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete	35	270.6	36.7	526
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0700
B-124 South-central Lab Areas (Rooms 142-145, 154, 156 – 160, 162A, 163, 163B, 163C, 164, 165, 167, 168, & 170).
FSS Packages:A1200, A1300, B0200, B0400, B0500, B0600,B0700, B0800

Floor		Wall		Ceiling		Structure		Above False Ceiling (Not Used in Average)	
Background	Gross	Background	Gross	Background	Gross	Background	Gross	Background	Gross
Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
277	315	322	374	288	366	279	252	232	272
265	275	305	403	393	358	299	293	267	259
228	302	325	389	304	382	243	260	321	335
273	302	338	336	322	364	276	243	307	332
257	269	320	331	283	350	274	259	334	309
283	478	310	409	297	300	246	276	305	335
253	258	269	382	303	312	195	317	307	346
286	393	358	520	303	343	222	220	311	317
329	387	289	323	324	355	205	189	357	361
301	1,261	258	266	333	337	191	213	335	336
395	2,169	274	283	260	350	238	252		
259	350	258	281	249	322	235	224		
243	267	325	335	331	354	225	263		
327	285	311	337	319	318	261	252		
280	276	333	354	326	339	231	244		
271	242	323	379	339	343	227	224		
241	245	321	337	323	343	229	243		
206	218	279	342	364	364	188	180		
253	264	256	381	371	352	180	156		
253	252	309	333	335	366	254	230		
252	281	303	367	328	346	223	277		
270	240	273	375			241	227		
253	260	288	402			246	235		
304	321	231	269			232	254		
283	419	329	397			292	291		
288	481	290	393			244	263		
275	334	355	357			266	267		
335	433	352	403			250	265		
275	265	333	419			231	237		
270	240	334	477			263	249		
253	277	331	377			216	222		
259	247	371	350						
214	249	325	356						
221	324	309	405						
240	260	292	355						
		367	634						
		342	418						
		344	400						
		292	376						
		269	298						
		332	365						
		344	373						
		265	333						
		334	351						
Average	270.6	384.0	311.1	371.5	318.8	345.9	238.8	244.4	307.6	320.2
Standard Deviation	36.7	356.7	33.2	63.3	34.1	19.9	29.5	33.1	35.7	32.3
No of Measurements	35	35	44	44	21	21	31	31	10	10

All Measurement			Walls & Ceiling Measurement	
Average	284.4	340.6	Average	363.2
Standard Deviation	45.6	194.8	Standard Deviation	54.4
No of Measurements	131	131	No of Measurements	65

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas RKyos **Signature:** [signature] **Date:** 4-25-03

Download Station #: 1 Download File #: 76
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas RKyos **User ID** 1002986 **Signature:** [signature] **Date:** 4-25-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 95359

Survey Unit Description: Package B0700 Bldg-124 Rooms 155-168, Electrical & Phone Rooms
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-12-03 Detector Calibration Due Date: 10-15-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR088917	43-68B	.235			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 226	2 251	3 225	4 N/A	5 N/A	6 N/A	234
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .137

Duratek™

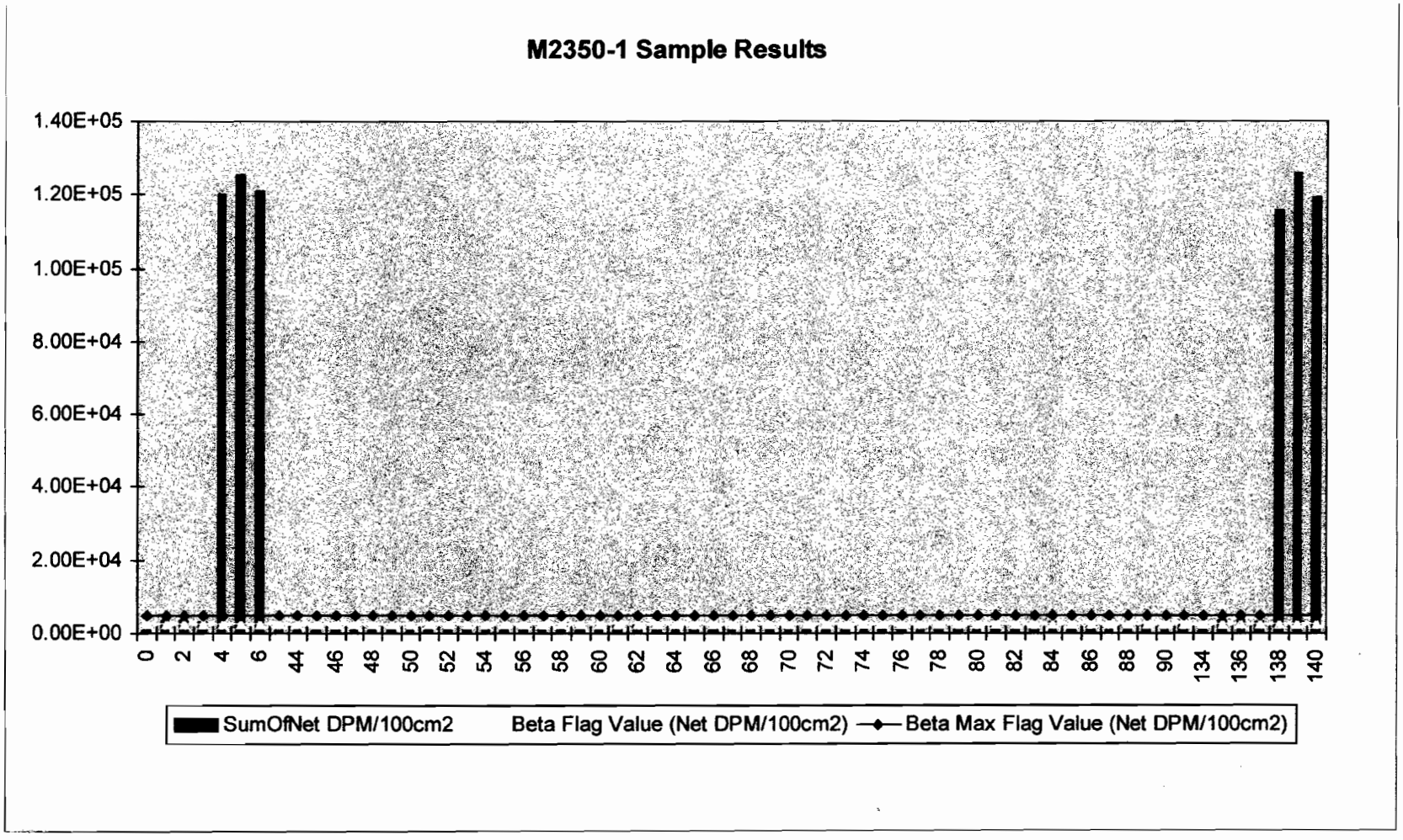
M2350-1 Download BETA Report

File Name : 00000076	Survey Description :Package B0700 B-124 Rooms 155-168, Electrical and	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 95359	Instrument Cal. Due : 6/12/03
Detector Model : 43-68B	Detector S/N : 088917	Detector Cal. Due : 10/15/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.235	Survey Date : 4/25/03

Print Name	Signature	Date
Doug Kjos	DRK	9/8/03

Comments:

Sign-Off PAUL C. ELY (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84
86
88
90
134
136
138
140
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000076

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	3,256.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,100
ZZZZZ	FD184	1	1,377.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	3,549
ZZZZZ	FD184	2	1,351.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	3,462
ZZZZZ	FD184	3	1,295.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	3,273
ZZZZZ	10002	4	35,903.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	120,152
ZZZZZ	10002	5	37,511.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	125,583
ZZZZZ	10002	6	36,190.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	121,121
B0700	ZZZZZ	43	226.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	763
B0700	ZZZZZ	44	251.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	848
B0700	ZZZZZ	45	225.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	760
B0700	01W01	46	326.0	60	FLDCT	B0004	ZZZZZ	35	0.0001	1,101
B0700	01W01	47	320.0	60	FLDCT	B0004	ZZZZZ	66	0.0001	1,081
B0700	01W01	48	293.0	60	FLDCT	B9999	ZZZZZ	55	0.0001	990
B0700	01W01	49	224.0	60	FLDCT	B9999	ZZZZZ	56	0.0001	757
B0700	01W01	50	307.0	60	FLDCT	B0004	ZZZZZ	50	0.0001	1,037
B0700	01F01	51	326.0	60	FLDCT	B9999	ZZZZZ	61	0.0001	1,101
B0700	01C01	52	293.0	60	FLDCT	B9999	ZZZZZ	62	0.0001	990
B0700	01W01	53	350.0	60	FLDCT	B9999	ZZZZZ	60	0.0001	1,182
B0700	01W01	54	373.0	60	FLDCT	B0003	ZZZZZ	34	0.0001	1,260
B0700	01F01	55	326.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	1,101
B0700	01W01	56	336.0	60	FLDCT	B0004	ZZZZZ	27	0.0001	1,135
B0700	01W01	57	365.0	60	FLDCT	B0004	ZZZZZ	28	0.0001	1,233
B0700	01W01	58	286.0	60	FLDCT	B9999	ZZZZZ	38	0.0001	966
B0700	01C01	59	295.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	996
B0700	01F01	60	284.0	60	FLDCT	B9999	ZZZZZ	39	0.0001	959
B0700	01W01	61	604.0	60	FLDCT	B0018	ZZZZZ	52	0.0001	2,040
B0700	01W01	62	695.0	60	FLDCT	B0018	ZZZZZ	32	0.0001	2,347
B0700	01W01	63	360.0	60	FLDCT	B0004	ZZZZZ	14	0.0001	1,216
B0700	01W01	64	277.0	60	FLDCT	B0004	ZZZZZ	4	0.0001	935
B0700	01W01	65	393.0	60	FLDCT	B0004	ZZZZZ	24	0.0001	1,327
B0700	01W01	66	365.0	60	FLDCT	B0004	ZZZZZ	31	0.0001	1,233
B0700	01F01	67	369.0	60	FLDCT	B0003	ZZZZZ	3	0.0001	1,246
B0700	01F01	68	374.0	60	FLDCT	B0003	ZZZZZ	5	0.0001	1,263
B0700	01C01	69	320.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	1,081
B0700	01W01	70	366.0	60	FLDCT	B0004	ZZZZZ	53	0.0001	1,236
B0700	01W01	71	227.0	60	FLDCT	B9999	ZZZZZ	64	0.0001	767
B0700	01W01	72	257.0	60	FLDCT	B9999	ZZZZZ	54	0.0001	868
B0700	01W01	73	332.0	60	FLDCT	B0004	ZZZZZ	49	0.0001	1,121
B0700	01W01	74	348.0	60	FLDCT	B0004	ZZZZZ	59	0.0001	1,175

Beta Flag	2500 -	
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B0700	01W01	75	324.0	60	FLDCT	B0004	ZZZZZ	48	0.0001	1,094
B0700	01W01	76	347.0	60	FLDCT	B0004	ZZZZZ	67	0.0001	1,172
B0700	01W01	77	365.0	60	FLDCT	B0006	ZZZZZ	57	0.0001	1,233
B0700	01W01	78	331.0	60	FLDCT	B0004	ZZZZZ	69	0.0001	1,118
B0700	01W01	79	344.0	60	FLDCT	B0004	ZZZZZ	79	0.0001	1,162
B0700	01F01	80	362.0	60	FLDCT	B0003	ZZZZZ	78	0.0001	1,223
B0700	01F01	81	492.0	60	FLDCT	B0017	ZZZZZ	68	0.0001	1,662
B0700	01C01	82	319.0	60	FLDCT	B9999	ZZZZZ	47	0.0001	1,077
B0700	01C01	83	329.0	60	FLDCT	B9999	ZZZZZ	36	0.0001	1,111
B0700	01W01	84	857.0	60	FLDCT	B0018	ZZZZZ	21	0.0001	2,894
B0700	01C01	85	313.0	60	FLDCT	B9999	ZZZZZ	81	0.0001	1,057
B0700	01F01	86	508.0	60	FLDCT	B0017	ZZZZZ	80	0.0001	1,716
B0700	01C01	87	446.0	60	FLDCT	B9999	ZZZZZ	77	0.0001	1,506
B0700	01F01	88	414.0	60	FLDCT	B0003	ZZZZZ	76	0.0001	1,398
B0700	01W01	89	689.0	60	FLDCT	B0004	ZZZZZ	73	0.0001	2,327
B0700	01W01	90	256.0	60	FLDCT	B9999	ZZZZZ	74	0.0001	865
B0700	01W01	91	626.0	60	FLDCT	B0004	ZZZZZ	84	0.0001	2,114
ZZZZZ	ZZZZZ	134	2,788.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	942
ZZZZZ	FD184	135	1,293.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	3,425
ZZZZZ	FD184	136	1,274.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	3,360
ZZZZZ	FD184	137	1,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	3,215
ZZZZZ	10002	138	34,598.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	115,903
ZZZZZ	10002	139	37,494.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	125,684
ZZZZZ	10002	140	35,562.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	119,159

Beta Flag	2500 -	
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B0700

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D.R. Kyos (Print) Signature D.K. Date 4-25-03 Time 16:30

Counted by B.S. Kyos (Print) Signature B.S. Kyos Date 4-28-03 Time 0720

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
5	53	~~54~~ 0	< MDA
39	52	~~52~~ 0	
61	54	0	
68	39	0	
80	60	6	< MDA

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
5	1	.85	< MDA
39	0	0	
61	1	.85	
68	0	0	
80	0	0	< MDA

Remarks-

Signature- B.S. Kyos Reviewed by- Paul C. Ely 4/30/03

of

Duratek, Inc.
Survey Package Worksheet for Package B0800
Bristol-Myers Squibb Building 124 Room 170

Package Identification No.: B0800	Prepared by: Paul C. Ely
Location: Building 124 Room 170	Date prepared: 4/18/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in Room 170.

Historical Information

Room 170 was the Quality Control Wet Lab where product was tested for radiochemical purity, assays were performed as well as chromatographic analyses. A counting lab was also in this area. Radionuclides most likely included most any radionuclides used at the facility.

As part of the D&D effort, the process drain lines were removed from this room.

All areas had contamination levels <5,000 dpm/100 cm^2 as identified during the characterization survey, except for equipment and furniture removed during the decommissioning.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

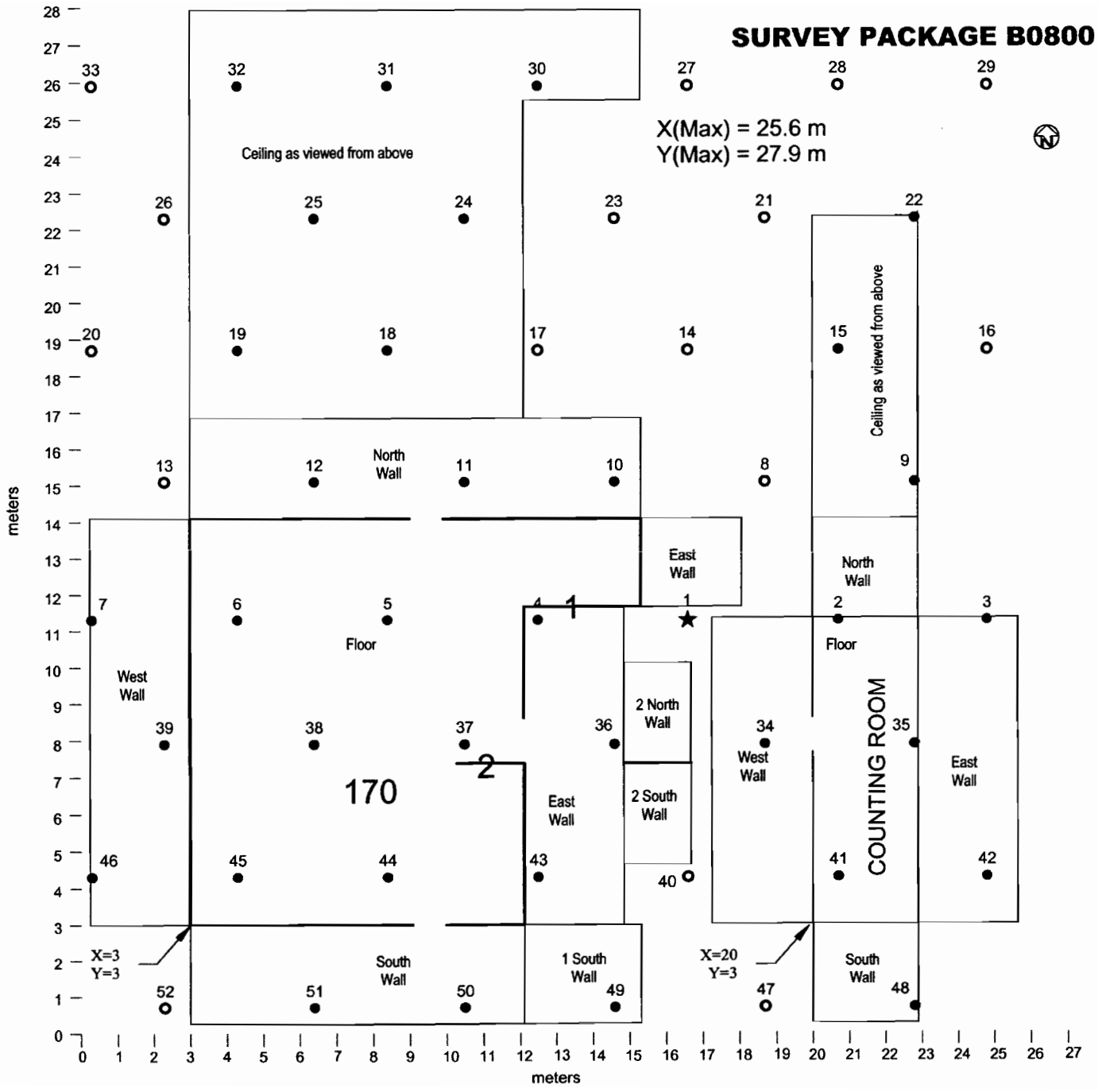
Survey Package: B0800 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Room 170												
B0800	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSL 4-10-03	BSL 4-25-03	N/A	N/A	BSL 5 4-28-03	N/A	N/A
B0800	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSL 4-10-03	BSL 4-25-03	N/A	N/A	N/A	N/A	N/A
B0800	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSL 4-10-03	BSL 4-25-03	N/A	N/A	N/A	N/A	N/A
B0800	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B0800	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/29/03
Package Reviewed by and Date:	Paul C Ely 4/29/03

Survey Comments
Ceiling tile in room 170 was almost all removed. There were no fixed survey points in the ceiling area.


SURVEY PACKAGE B0800
X(Max) = 25.6 m
Y(Max) = 27.9 m
Ceiling as viewed from above
North Wall
East Wall
West Wall
Floor
South Wall
170
1
2
2 North Wall
2 South Wall
1 South Wall
COUNTING ROOM
X=3
Y=3
X=20
Y=3
meters
meters

Survey Package B0800
B-124 Room 170

X (Max):	25.6	meters	
Y (Max):	27.9	meters	
A (Area):	714	m^2	
Actual Survey Area:	345.0	m^2	
COMPASS Survey Points:	14	52%	percent void area
N (Points):	49	29	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	4.1	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.6	meters	(distance between rows)
L/2=	2.1	meters	(row offset value)
X (Random):	1.5		random number generator
Y (Random):	2.8		random number generator
X (Origin):	16.6		initially generated random number
Y (Origin):	11.5		initially generated random number
Number of rows:	8		
Number of columns:	6		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	16.6	11.5	4
2	20.7	11.5	
3	24.8	11.5	
4	12.5	11.5	
5	8.4	11.5	
6	4.3	11.5	
7	0.2	11.5	
8	18.7	15.1	5
9	22.8	15.1	
10	14.6	15.1	
11	10.5	15.1	
12	6.4	15.1	
13	2.3	15.1	
14	16.6	18.7	6
15	20.7	18.7	
16	24.8	18.7	
17	12.5	18.7	
18	8.4	18.7	
19	4.3	18.7	
20	0.2	18.7	
21	18.7	22.3	7
22	22.8	22.3	
23	14.6	22.3	
24	10.5	22.3	
25	6.4	22.3	
26	2.3	22.3	
27	16.6	25.9	8
28	20.7	25.9	
29	24.8	25.9	
30	12.5	25.9	
31	8.4	25.9	
32	4.3	25.9	
33	0.2	25.9	
34	18.7	7.9	3
35	22.8	7.9	
36	14.6	7.9	
37	10.5	7.9	
38	6.4	7.9	
39	2.3	7.9	
40	16.6	4.3	2
41	20.7	4.3	
42	24.8	4.3	
43	12.5	4.3	
44	8.4	4.3	
45	4.3	4.3	
46	0.2	4.3	
47	18.7	0.7	1
48	22.8	0.7	
49	14.6	0.7	
50	10.5	0.7	
51	6.4	0.7	
52	2.3	0.7	

LBGR Determination
Package B0800

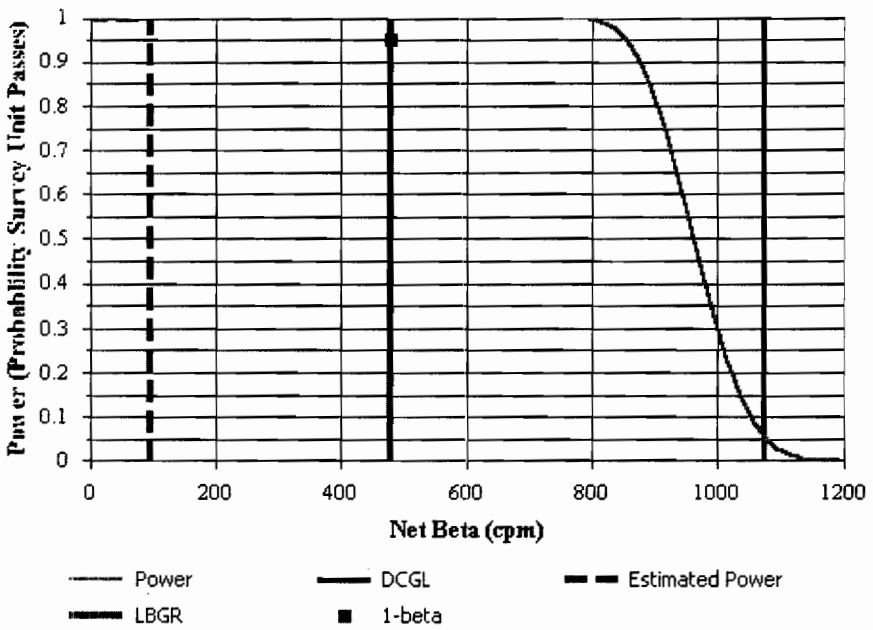
σ =	198.8	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	5.4	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**478**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0800 FSS Package		
Comments:	B-124 Room 170		
Area (m²):	345	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	198.8
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	478	Estimated Conc. (cpm):	95.7
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 341 ± 195 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	35	270.6	36.7	526
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0700
B-124 South-central Lab Areas (Rooms 142-145, 154, 156 – 160, 162A, 163, 163B, 163C, 164, 165, 167, 168, & 170).
FSS Packages:A1200, A1300, B0200, B0400, B0500, B0600,B0700, B0800

Floor		Wall		Ceiling		Structure		Above False Ceiling (Not Used in Average)	
Background	Gross	Background	Gross	Background	Gross	Background	Gross	Background	Gross
Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
277	315	322	374	288	366	279	252	232	272
265	275	305	403	393	358	299	293	267	259
228	302	325	389	304	382	243	260	321	335
273	302	338	336	322	364	276	243	307	332
257	269	320	331	283	350	274	259	334	309
283	478	310	409	297	300	246	276	305	335
253	258	269	382	303	312	195	317	307	346
286	393	358	520	303	343	222	220	311	317
329	387	289	323	324	355	205	189	357	361
301	1,261	258	266	333	337	191	213	335	336
395	2,169	274	283	260	350	238	252		
259	350	258	281	249	322	235	224		
243	267	325	335	331	354	225	263		
327	285	311	337	319	318	261	252		
280	276	333	354	326	339	231	244		
271	242	323	379	339	343	227	224		
241	245	321	337	323	343	229	243		
206	218	279	342	364	364	188	180		
253	264	256	381	371	352	180	156		
253	252	309	333	335	366	254	230		
252	281	303	367	328	346	223	277		
270	240	273	375			241	227		
253	260	288	402			246	235		
304	321	231	269			232	254		
283	419	329	397			292	291		
288	481	290	393			244	263		
275	334	355	357			266	267		
335	433	352	403			250	265		
275	265	333	419			231	237		
270	240	334	477			263	249		
253	277	331	377			216	222		
259	247	371	350						
214	249	325	356						
221	324	309	405						
240	260	292	355						
		367	634						
		342	418						
		344	400						
		292	376						
		269	298						
		332	365						
		344	373						
		265	333						
		334	351						
Average	**270.6**	**384.0**	**311.1**	**371.5**	**318.8**	**345.9**	**238.8**	**244.4**	**307.6**	**320.2**
Standard Deviation	**36.7**	**356.7**	**33.2**	**63.3**	**34.1**	**19.9**	**29.5**	**33.1**	**35.7**	**32.3**
No of Measurements	**35**	**35**	**44**	**44**	**21**	**21**	**31**	**31**	**10**	**10**

All Measurement			**Walls & Ceiling Measurement**	
Average	**284.4**	**340.6**	**Average**	**363.2**
Standard Deviation	**45.6**	**194.8**	**Standard Deviation**	**54.4**
No of Measurements	**131**	**131**	**No of Measurements**	**65**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 4-26-03

Download Station #: 1 Download File #: 79
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos **User ID** BSK0490 **Signature:** [signature] **Date:** 4-25-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B0800, Bldg 124, Room 170, Counting Room
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	093524	43-68B	.224			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm 1

β Beta	1 282	2 265	3 296	4 n/a	5 n/a	6 n/a	281
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .139 (47-76)
PRBGK - 281 PT BGK - 278

Duratek™

M2350-1 Download BETA Report

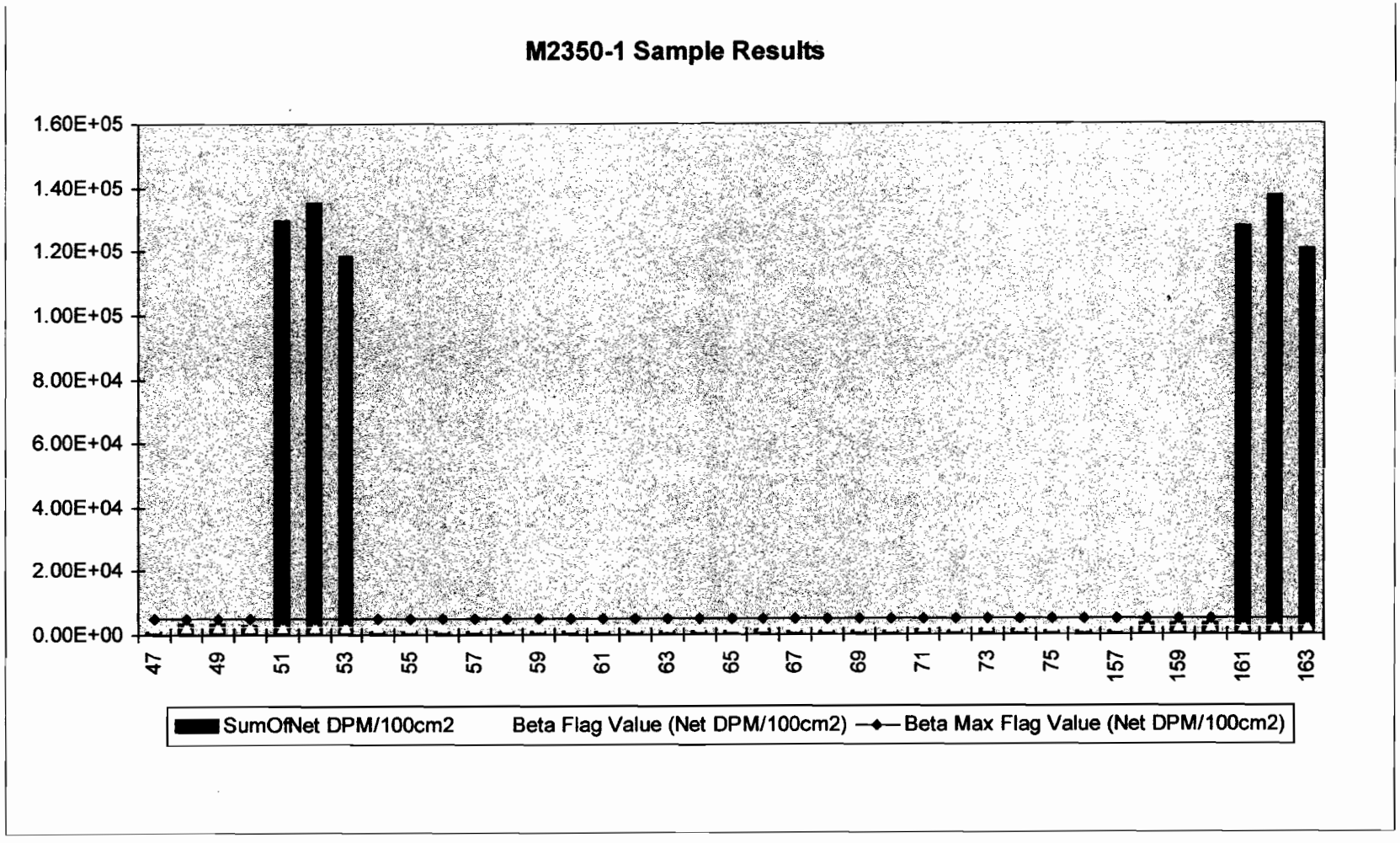
File Name : 00000079	Survey Description :Package B0800, B-124, Room 170 and Counting Room	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.224	Survey Date : 4/25/03

Print Name	Signature	Date
Betty Kjos	BSKjos	9/8/03

Comments:

Sign-Off

Print Name	Signature	Date
Paul E. Ely	Paul C Ely	9-8-03


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
47
49
51
53
55
57
59
61
63
65
67
69
71
73
75
157
159
161
163
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000079

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	47	2,811.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	996
ZZZZZ	19655	48	1,210.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	3,292
ZZZZZ	19655	49	1,257.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	3,458
ZZZZZ	19655	50	1,190.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	3,221
ZZZZZ	10002	51	36,864.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	129,617
ZZZZZ	10002	52	38,458.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	135,264
ZZZZZ	10002	53	33,802.0	60	PRB00	ZZZZZ	ZZZZZ	0	281	118,768
B0800	ZZZZZ	54	282.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	999
B0800	ZZZZZ	55	265.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	939
B0800	ZZZZZ	56	296.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,049
B0800	01F01	57	298.0	60	FLDCT	B0021	ZZZZZ	44	0.0001	1,056
B0800	01F01	58	340.0	60	FLDCT	B0021	ZZZZZ	45	0.0001	1,205
B0800	01F01	59	285.0	60	FLDCT	B0021	ZZZZZ	6	0.0001	1,010
B0800	01F01	60	319.0	60	FLDCT	B0021	ZZZZZ	5	0.0001	1,130
B0800	01F01	61	302.0	60	FLDCT	B0021	ZZZZZ	4	0.0001	1,070
B0800	01F01	62	285.0	60	FLDCT	B0021	ZZZZZ	37	0.0001	1,010
B0800	01F01	63	294.0	60	FLDCT	B0021	ZZZZZ	41	0.0001	1,042
B0800	01F01	64	344.0	60	FLDCT	B0021	ZZZZZ	2	0.0001	1,219
B0800	01W01	65	355.0	60	FLDCT	B0004	ZZZZZ	3	0.0001	1,258
B0800	01W01	66	366.0	60	FLDCT	B0004	ZZZZZ	34	0.0001	1,297
B0800	01W01	67	279.0	60	FLDCT	B0004	ZZZZZ	35	0.0001	989
B0800	01W01	68	325.0	60	FLDCT	B0004	ZZZZZ	42	0.0001	1,152
B0800	01W01	69	308.0	60	FLDCT	B0004	ZZZZZ	43	0.0001	1,091
B0800	01W01	70	354.0	60	FLDCT	B0004	ZZZZZ	50	0.0001	1,254
B0800	01W01	71	373.0	60	FLDCT	B0004	ZZZZZ	51	0.0001	1,322
B0800	01W01	72	349.0	60	FLDCT	B0004	ZZZZZ	46	0.0001	1,237
B0800	01W01	73	382.0	60	FLDCT	B0004	ZZZZZ	39	0.0001	1,353
B0800	01W01	74	371.0	60	FLDCT	B0004	ZZZZZ	7	0.0001	1,314
B0800	01W01	75	218.0	60	FLDCT	B0001	ZZZZZ	12	0.0001	772
B0800	01W01	76	218.0	60	FLDCT	B0001	ZZZZZ	11	0.0001	772
ZZZZZ	ZZZZZ	157	2,780.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	985
ZZZZZ	19655	158	1,211.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	3,306
ZZZZZ	19655	159	1,248.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	3,437
ZZZZZ	19655	160	1,238.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	3,401
ZZZZZ	10002	161	36,268.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	127,516
ZZZZZ	10002	162	39,095.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	137,532
ZZZZZ	10002	163	34,387.0	60	PTB00	ZZZZZ	ZZZZZ	0	278	120,851

Beta Flag 2500 - _____

Beta Max Flag 5000 [ ]

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B0800

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Betty S. Kyes (Print) Signature BS Kyes Date 4-28-03 Time 1600

Counted by Betty S. Kyes (Print) Signature BS Kyes Date 4-29-03 Time 0645

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 51 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle: MDA = 105 dpm/100cm² β-γ			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
5	58	7	< MDA
11	53	2	
34	55	4	
44	54	3	
51	39	0	< MDA
		N/A	

Circle: MDA = 14 dpm/100 cm² α			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
5	0	0	< MDA
11	1	.70	
34	0	0	
44	1	.70	
51	0	0	< MDA
		N/A	

Remarks-

Signature- BS Kyes Reviewed by- Paul C Ely 4/29/03

of

Duratek, Inc.
Survey Package Worksheet for Package B0900
Bristol-Myers Squibb Building 124, Rooms 171 to 178

Package Identification No.: B0900	Prepared by: Paul C. Ely
Location: Building 124 Rooms 171 to 178 Walls & Ceiling	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising walls and ceilings in rooms 171 to 178.

Historical Information

Room 171 is the corridor behind the Iodine caves and 173 is the corridor south of the Iodine cave rooms. Rooms 172, 174 and 175 are the rooms that serviced the Iodine Caves. The caves use the same numbering but are not included in this survey package. Rooms 176 and 177 are refrigerator rooms used for storage for prefills prior to packaging. The radionuclides used in the Iodine Cave area included I-131, Au-198, Mo-99, and Sr-82/85.

No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B0900 continued

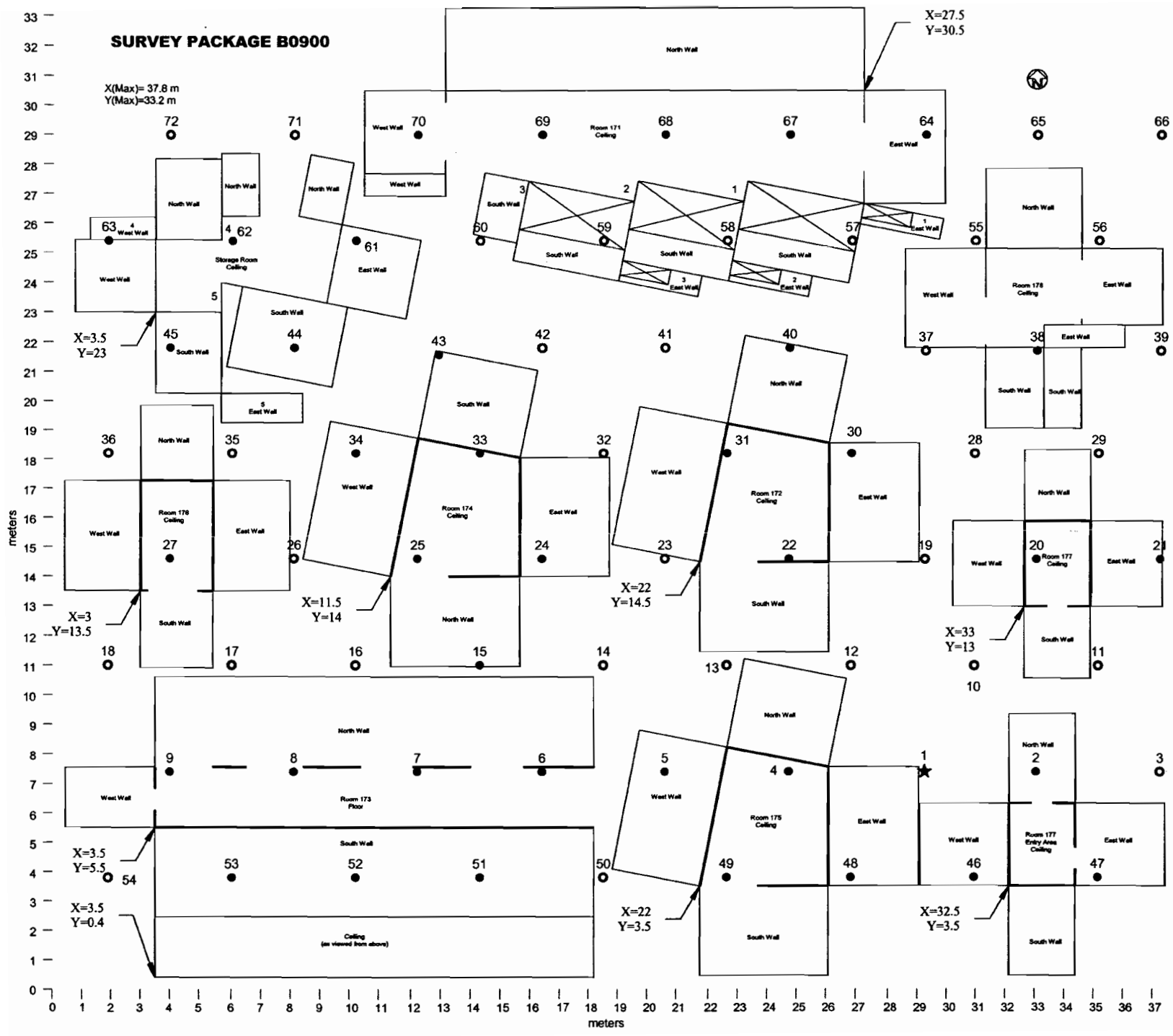
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8						5		
Bristol Myers Squibb Building 124 Rooms 171 to 178												
B0900	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	DB 4-22-03	NDK 4-26-03	N/A	N/A	N/A NDK / 9-24-03	N/A	N/A
B0900	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	DB 4-22-03	NDK 4-26-03	N/A	N/A	N/A	N/A	N/A
B0900	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	DB 4-22-03	N/A	N/A	N/A	N/A	N/A	N/A
B0900	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	DB 4-22-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments


SURVEY PACKAGE B0900
X(Max)= 37.8 m
Y(Max)=33.2 m
X=27.5
Y=30.5
X=3.5
Y=23
X=3
Y=13.5
X=11.5
Y=14
X=22
Y=14.5
X=33
Y=13
X=3.5
Y=5.5
X=3.5
Y=0.4
X=22
Y=3.5
X=32.5
Y=3.5
North Wall
West Wall
East Wall
South Wall
Room 171 Ceiling
Storage Room Ceiling
Room 176 Ceiling
Room 174 Ceiling
Room 172 Ceiling
Room 177 Ceiling
Room 173 Floor
Room 175 Ceiling
Room 177 Entry Area Ceiling
Ceiling (as viewed from above)
meters
meters

Survey Package B0900
B-124 Rooms 171-178

X (Max):	37.8	meters	
Y (Max):	22.2	meters	Modified (33.2)
A (Area):	839	m^2	
Actual Survey Area:	473.3	m^2	
COMPASS Survey Points:	14	44%	percent void area
N (Points):	54	25	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	4.2	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.6	meters	(distance between rows)
L/2=	2.1	meters	(row offset value)
X (Random):	36.1		random number generator
Y (Random):	10.9		random number generator
X (Origin):	29.2		initially generated random number
Y (Origin):	7.4		initially generated random number
Number of rows:	6		
Number of columns:	9		

Survey Point	Survey Location X	Y	Row	Survey Point	Survey Location X	Y	Row
Starting Point (1)	29.2	7.4	2	37	29.2	21.8	6
2	33.4	7.4		38	33.4	21.8	
3	37.6	7.4		39	37.6	21.8	
4	25.0	7.4		40	25.0	21.8	
5	20.8	7.4		41	20.8	21.8	
6	16.6	7.4		42	16.6	21.8	
7	12.4	7.4		43	12.4	21.8	
8	8.2	7.4		44	8.2	21.8	
9	4.0	7.4		45	4.0	21.8	
10	31.3	11.0	3	46	31.3	3.8	1
11	35.5	11.0		47	35.5	3.8	
12	27.1	11.0		48	27.1	3.8	
13	22.9	11.0		49	22.9	3.8	
14	18.7	11.0		50	18.7	3.8	
15	14.5	11.0		51	14.5	3.8	
16	10.3	11.0		52	10.3	3.8	
17	6.1	11.0		53	6.1	3.8	
18	1.9	11.0		54	1.9	3.8	
19	29.2	14.6	4	55	31.3	25.4	7
20	33.4	14.6		56	35.5	25.4	
21	37.6	14.6		57	27.1	25.4	
22	25.0	14.6		58	22.9	25.4	
23	20.8	14.6		59	18.7	25.4	
24	16.6	14.6		60	14.5	25.4	
25	12.4	14.6		61	10.3	25.4	
26	8.2	14.6		62	6.1	25.4	
27	4.0	14.6		63	1.9	25.4	
28	31.3	18.2	5	64	29.2	29.0	8
29	35.5	18.2		65	33.4	29	
30	27.1	18.2		66	37.6	29	
31	22.9	18.2		67	25.0	29	
32	18.7	18.2		68	20.8	29	
33	14.5	18.2		69	16.6	29	
34	10.3	18.2		70	12.4	29	
35	6.1	18.2		71	8.2	29	
36	1.9	18.2		72	4.0	29	

LBGR Determination
Package B0900

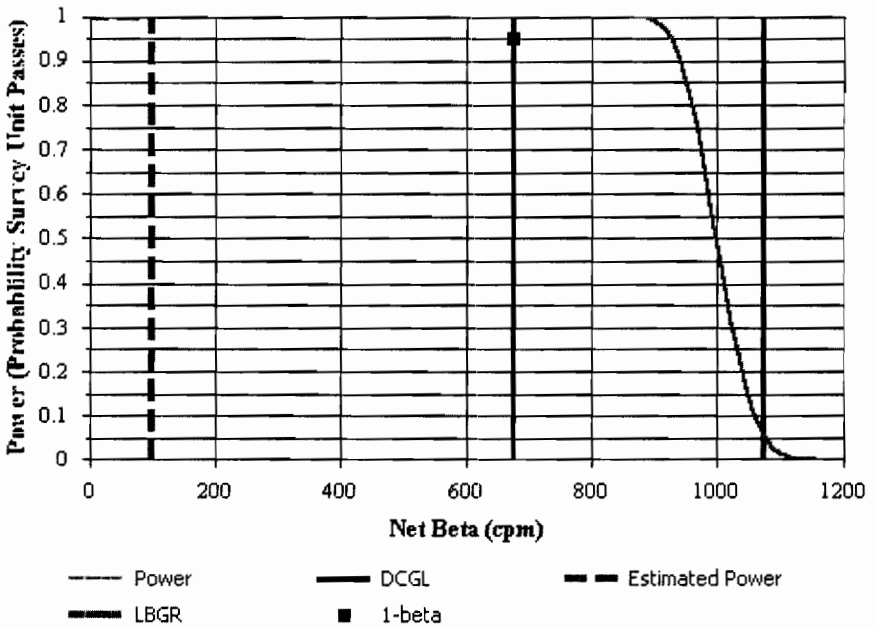
σ =	132.8	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	8.1	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**676**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0900		
Comments:	B-124 Rooms 171-178 Walls & Ceilings + 173 Floor		
Area (m²):	654	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	132.8
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	676	Estimated Conc. (cpm):	99.7
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 341 ± 99 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete	30	240.9	88.2	497
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 4-28-03

Download Station #: 1 Download File #: 98
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** NRK2986 **Signature:** [signature] **Date:** 4-28-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B0900, B-124, Rooms 171-178
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.234			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1 294	2 315	3 252	4 N/A	5 N/A	6 N/A	287
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 EFF=.133

Duratek™

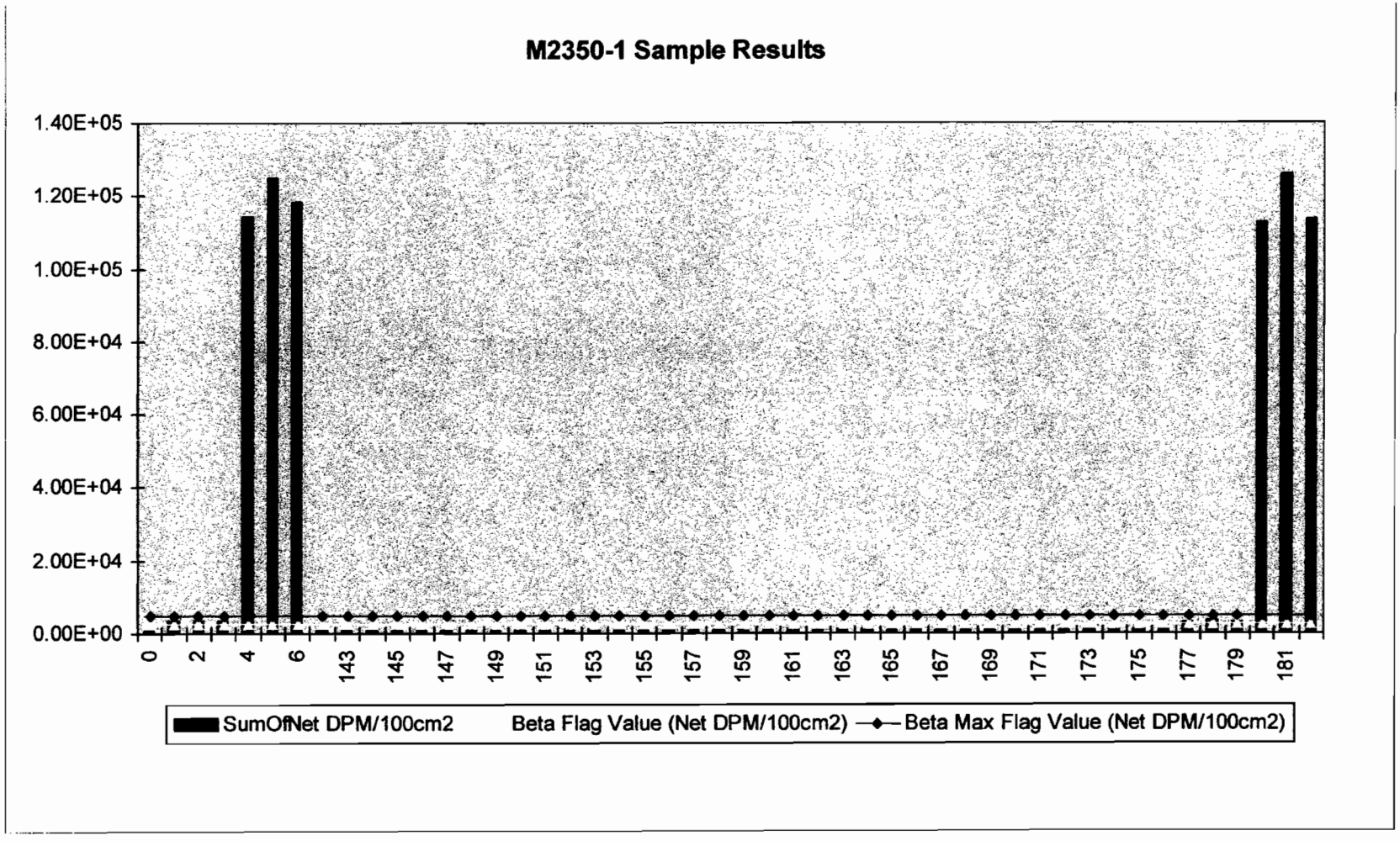
M2350-1 Download BETA Report

File Name : 00000098	Survey Description :Package B0900, B-124, Rooms 171-178	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.234	Survey Date : 4/26/03

Print Name	Signature	Date
Doug Kjos	DRK	9/8/03

Comments:

Sign-Off Paul E. Ely (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
143
145
147
149
151
153
155
157
159
161
163
165
167
169
171
173
175
177
179
181
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000098

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,980.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,011
ZZZZZ	FD184	1	1,386.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	3,690
ZZZZZ	FD184	2	1,331.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	3,504
ZZZZZ	FD184	3	1,319.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	3,463
ZZZZZ	10002	4	34,049.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	114,472
ZZZZZ	10002	5	37,162.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	125,031
ZZZZZ	10002	6	35,181.0	60	PRB00	ZZZZZ	ZZZZZ	0	298	118,312
B0900	ZZZZZ	142	294.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	997
B0900	ZZZZZ	143	315.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	1,068
B0900	ZZZZZ	144	252.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	855
B0900	01W01	145	287.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	973
B0900	01W01	146	317.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,075
B0900	01W01	147	234.0	60	FLDCT	B0003	ZZZZZ	40	0.0001	794
B0900	01W01	148	293.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	994
B0900	01W01	149	213.0	60	FLDCT	B0003	ZZZZZ	34	0.0001	722
B0900	01C01	150	285.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	967
B0900	01C01	151	376.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,275
B0900	01C01	152	379.0	60	FLDCT	B9999	ZZZZZ	49	0.0001	1,285
B0900	01C01	153	360.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	1,221
B0900	01W01	154	266.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	902
B0900	01W01	155	301.0	60	FLDCT	B9999	ZZZZZ	48	0.0001	1,021
B0900	01C01	156	309.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	1,048
B0900	01C01	157	291.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	987
B0900	01W01	158	220.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	746
B0900	01W01	159	339.0	60	FLDCT	B0001	ZZZZZ	46	0.0001	1,150
B0900	01W01	160	251.0	60	FLDCT	B9999	ZZZZZ	47	0.0001	851
B0900	01W01	161	329.0	60	FLDCT	B0001	ZZZZZ	53	0.0001	1,116
B0900	01W01	162	289.0	60	FLDCT	B0001	ZZZZZ	52	0.0001	980
B0900	01W01	163	342.0	60	FLDCT	B0001	ZZZZZ	51	0.0001	1,160
B0900	01W01	164	330.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	1,119
B0900	01W01	165	286.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	970
B0900	01F01	166	305.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	1,034
B0900	01F01	167	288.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	977
B0900	01W01	168	225.0	60	FLDCT	B0003	ZZZZZ	43	0.0001	763
B0900	01W01	169	210.0	60	FLDCT	B9999	ZZZZZ	64	0.0001	712
B0900	01C01	170	268.0	60	FLDCT	B9999	ZZZZZ	67	0.0001	909
B0900	01C01	171	258.0	60	FLDCT	B9999	ZZZZZ	68	0.0001	875
B0900	01C01	172	307.0	60	FLDCT	B9999	ZZZZZ	69	0.0001	1,041
B0900	01C01	173	288.0	60	FLDCT	B9999	ZZZZZ	70	0.0001	977

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B0900	01W01	174	350.0	60	FLDCT	B0004	ZZZZZ	62	0.0001	1,187
B0900	01W01	175	404.0	60	FLDCT	B0001	ZZZZZ	63	0.0001	1,370
ZZZZZ	ZZZZZ	176	3,122.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	1,059
ZZZZZ	FD184	177	1,268.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	3,242
ZZZZZ	FD184	178	1,339.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	3,483
ZZZZZ	FD184	179	1,276.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	3,270
ZZZZZ	10002	180	33,499.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	112,559
ZZZZZ	10002	181	37,359.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	125,651
ZZZZZ	10002	182	33,817.0	60	PTB00	ZZZZZ	ZZZZZ	0	312	113,638

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Survey #- B0900

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by (Print) _____ Signature _____ Date _____ Time _____

Counted by (Print) BS Kjos Signature BS Kjos Date 4-28-03 Time 0734

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
5	38	0	<MDA
7	50	0	
30	49	0	
34	40	0	
46	63	9	<MDA
		N/A	

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
5	1	.85	<MDA
7	0	0	
30	1	.85	
34	0	0	
46	0	0	<MDA
		N/A	

Remarks- _____

Signature- BS Kjos Reviewed by- Paul C Ely 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B0910
Bristol-Myers Squibb Building 124, Rooms 180 &181

Package Identification No.: B0910	Prepared by: Paul C. Ely
Location: Building 124 Rooms 180 &181 Walls & Ceiling	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising walls and ceilings in rooms 180 &181. This package does not include the MINITEC Cave or the pits located in these rooms.

Historical Information

Rooms 180 and 181 are the MINITEC Cave operating Rooms. The MINITEC Cave was built to accommodate increased Molybdenum production. When Molybdenum production declined in the late 1980's, the cave was then used for strontium production. The radionuclides used in the MINITEC Cave area included Mo-99 and Sr-82/85.

No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B0910 continued

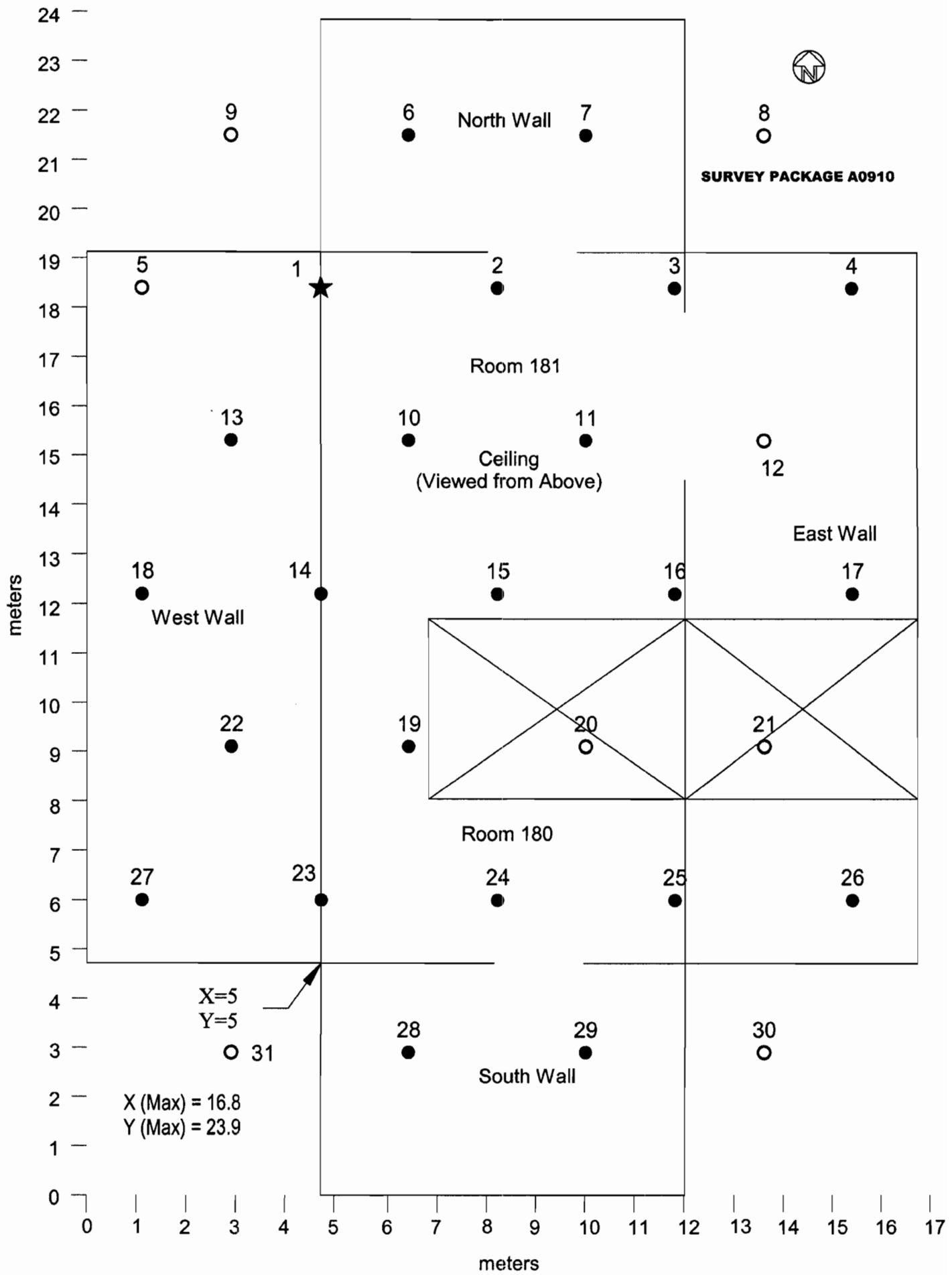
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8						5		
Bristol Myers Squibb Building 124 Rooms 180 &181												
B0910	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4·11-03	4·15·03	N/A	N/A	BSK 4·15·03 N/A	N/A	N/A
B0910	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4·11-03	4·15·03	N/A	N/A	N/A	N/A	N/A
B0910	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSK 4·11·03	N/A	N/A	N/A	N/A	N/A	N/A
B0910	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	BSK 4·11-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments


SURVEY PACKAGE A0910
North Wall
Room 181
Ceiling
(Viewed from Above)
East Wall
West Wall
Room 180
South Wall
X=5
Y=5
X (Max) = 16.8
Y (Max) = 23.9
meters
meters

Survey Package B0910
B-124 Rooms 180 & 181

X (Max):	16.8	meters	
Y (Max):	23.9	meters	
A (Area):	402	m^2	
Actual Survey Area:	357	m^2	
COMPASS Survey Points:	14	11%	percent void area
N (Points):	36	16	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	3.6	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.1	meters	(distance between rows)
L/2=	1.8	meters	(row offset value)
X (Random):	3.8		random number generator
Y (Random):	6.5		random number generator
X (Origin):	4.7		initially generated random number
Y (Origin):	18.4		initially generated random number
Number of rows:	8		
Number of columns:	5		

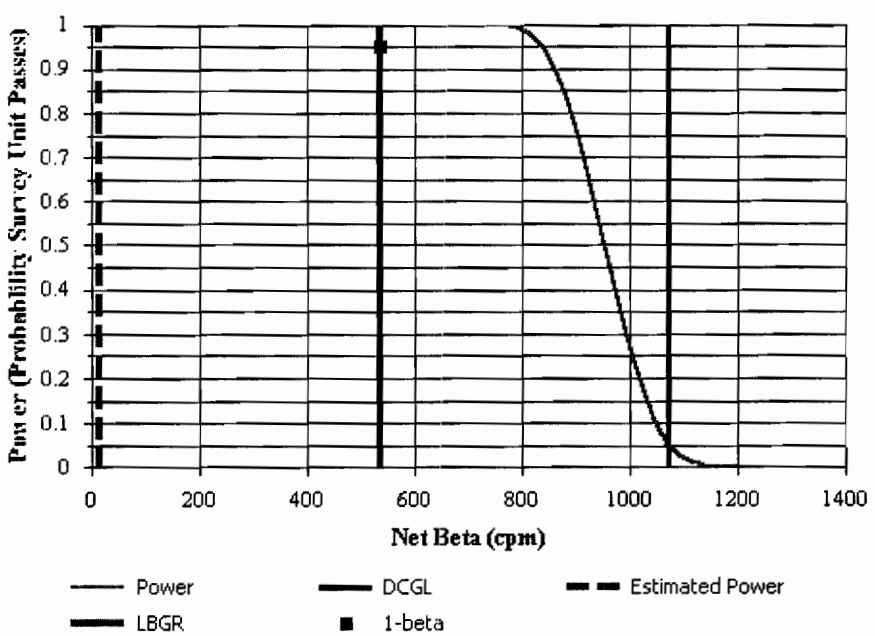
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	4.7	18.4	7
2	8.3	18.4	
3	11.9	18.4	
4	15.5	18.4	
5	1.1	18.4	
6	6.5	21.5	8
7	10.1	21.5	
8	13.7	21.5	
9	2.9	21.5	
10	6.5	15.3	6
11	10.1	15.3	
12	13.7	15.3	
13	2.9	15.3	
14	4.7	12.2	5
15	8.3	12.2	
16	11.9	12.2	
17	15.5	12.2	
18	1.1	12.2	
19	6.5	9.1	4
20	10.1	9.1	
21	13.7	9.1	
22	2.9	9.1	
23	4.7	6.0	3
24	8.3	6.0	
25	11.9	6.0	
26	15.5	6.0	
27	1.1	6.0	
28	6.5	2.9	2
29	10.1	2.9	
30	13.7	2.9	
31	2.9	2.9	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B0910 FSS Package		
Comments:	B-124 Room 180 & 181 Walls & Ceilings		
Area (m²):	357	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	16.3
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 387 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 180, 181, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement								
Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kes **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 52 53

Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D S Kyes **User ID** DSK0490 **Signature:** [signature] **Date:** 4-15-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B0910, Rooms 180 + 181, Walls + Ceiling
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, ~~Floor~~ - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092224	43-68B	.241			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 313	2 304	3 295	4	5	6	304
α Alpha	1	2	3	4	5	6	

COMMENTS: (0 thru 31 + #58 thru 65) sample #7, 8, 9, 10, 11 change L1 code to B0910. On sample #59 change L5 code to ~~PR~~ PTBBK. C-14 Eff - .139

Duratek™

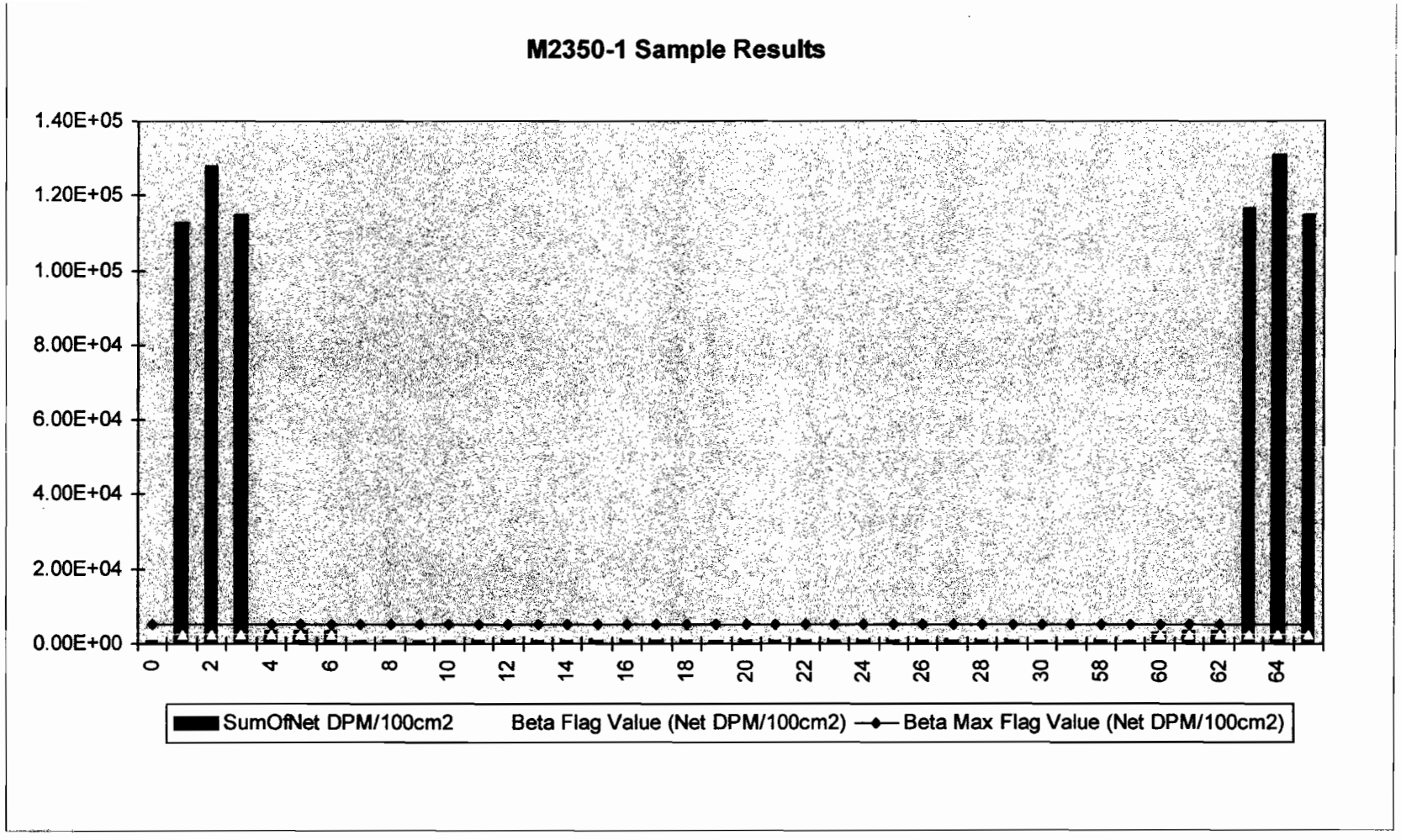
M2350-1 Download BETA Report

File Name : 00000053	Survey Description :Package B0910, Rooms 180 and 181, Walls and Ceilin	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.241	Survey Date : 4/15/03

Print Name	Signature	Date
Betty Kjos	BS Kjos	9/8/03

Comments:

Sign-Off PAUL C. ELY (Print Name) — Paul C Ely (Signature) — 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
58
60
62
64
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000053

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,751.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	906
ZZZZZ	10002	1	34,502.0	60	PRB00	ZZZZZ	ZZZZZ	0	275	112,715
ZZZZZ	10002	2	39,172.0	60	PRB00	ZZZZZ	ZZZZZ	0	275	128,094
ZZZZZ	10002	3	35,160.0	60	PRB00	ZZZZZ	ZZZZZ	0	275	114,882
ZZZZZ	19655	4	1,288.0	60	PRB00	ZZZZZ	ZZZZZ	0	275	3,336
ZZZZZ	19655	5	1,383.0	60	PRB00	ZZZZZ	ZZZZZ	0	275	3,649
ZZZZZ	19655	6	1,272.0	60	PRB00	ZZZZZ	ZZZZZ	0	275	3,283
B0910	ZZZZZ	7	311.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,024
B0910	ZZZZZ	8	304.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,001
B0910	ZZZZZ	9	295.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	971
B0910	01C01	10	320.0	60	FLDCT	B0001	ZZZZZ	24	0.0001	1,054
B0910	01C01	11	398.0	60	FLDCT	B0001	ZZZZZ	25	0.0001	1,311
B0910	01C01	12	329.0	60	FLDCT	B0001	ZZZZZ	19	0.0001	1,083
B0910	01C01	13	373.0	60	FLDCT	B0001	ZZZZZ	15	0.0001	1,228
B0910	01C01	14	401.0	60	FLDCT	B0001	ZZZZZ	16	0.0001	1,321
B0910	01C01	15	410.0	60	FLDCT	B0001	ZZZZZ	10	0.0001	1,350
B0910	01C01	16	331.0	60	FLDCT	B0001	ZZZZZ	11	0.0001	1,090
B0910	01C01	17	416.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	1,370
B0910	01C01	18	406.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	1,337
B0910	01W01	19	327.0	60	FLDCT	B0004	ZZZZZ	1	0.0001	1,077
B0910	01W01	20	384.0	60	FLDCT	B0004	ZZZZZ	4	0.0001	1,265
B0910	01W01	21	393.0	60	FLDCT	B0004	ZZZZZ	6	0.0001	1,294
B0910	01W01	22	345.0	60	FLDCT	B0004	ZZZZZ	7	0.0001	1,136
B0910	01W01	23	448.0	60	FLDCT	B0004	ZZZZZ	13	0.0001	1,475
B0910	01W01	24	382.0	60	FLDCT	B0004	ZZZZZ	14	0.0001	1,258
B0910	01W01	25	362.0	60	FLDCT	B0004	ZZZZZ	18	0.0001	1,192
B0910	01W01	26	348.0	60	FLDCT	B0004	ZZZZZ	22	0.0001	1,146
B0910	01W01	27	374.0	60	FLDCT	B0004	ZZZZZ	27	0.0001	1,232
B0910	01W01	28	366.0	60	FLDCT	B0004	ZZZZZ	23	0.0001	1,205
B0910	01W01	29	376.0	60	FLDCT	B0004	ZZZZZ	26	0.0001	1,238
B0910	01W01	30	282.0	60	FLDCT	B0004	ZZZZZ	28	0.0001	929
B0910	01W01	31	283.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	932
B0910	01W01	58	371.0	60	FLDCT	B0004	ZZZZZ	17	0.0001	1,222
ZZZZZ	ZZZZZ	59	2,810.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	925
ZZZZZ	19655	60	1,260.0	60	PTB00	ZZZZZ	ZZZZZ	0	281	3,224
ZZZZZ	19655	61	1,338.0	60	PTB00	ZZZZZ	ZZZZZ	0	281	3,481
ZZZZZ	19655	62	1,280.0	60	PTB00	ZZZZZ	ZZZZZ	0	281	3,290
ZZZZZ	10002	63	35,741.0	60	PTB00	ZZZZZ	ZZZZZ	0	281	116,775
ZZZZZ	10002	64	40,074.0	60	PTB00	ZZZZZ	ZZZZZ	0	281	131,045

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	10002	65	35,215.0	60	PTB00	ZZZZZ	ZZZZZ	0	281	115,043

Beta Flag	2500	-
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B0910

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by B. Kjos (Print) Signature BSKjos Date 4-15-03 Time 1500

Counted by B. Kjos. (Print) Signature BSKjos Date 4-15-03 Time 1615

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 51 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .20 Count Time = 1 CPM Eff. Factor = .335

Serial #- 118419 Cal Due Date—5-29-03

Circle: MDA=115 dpm/100cm² β-γ			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
14	41	0	<MDA
23	56	5	
24	54	3	
29	51	0	
28	49	0	<MDA

Circle: MDA=13 dpm/100cm² α			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
14	0	0	<MDA
23	0	0	
24	1	.80	
29	0	0	
28	0	0	<MDA

Remarks-

Signature- BSKjos **Reviewed by-** Paul C Ely 4/30/03

of

Duratek Inc.
Survey Package Worksheet for Package B1000
Bristol-Myers Squibb Building 124, Hallways 179 and 212

Package Identification No.: B1000	Prepared by: Paul C. Ely
Location: Building 124 Hallways 179 and 212	Date prepared: 1/15/2003
Area Classification: Class 2	

Area Description

The survey areas in Building 124 consisting floors, walls and ceiling in Hallways 179 and 212 in the new section of the building.

Historical Information

The halls were used as passageways and there were cabinets along Hallway 179. No contamination levels >5,000 dpm/100 cm^2 were identified except for one hot spot at the juncture of Hallways 179 and 212.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Perform a 100% scan of the last three meters of Hallway 179 and Hallway 212 where they meet.
3. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
4. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B1000 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Hallways 179 and 212												
B1000	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NRK/4-11-03	NRK 4-15-03	N/A	N/A	NRK/4-15-03	N/A	N/A
B1000	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NRK/4-11-03	NRK/4-15-03	N/A	N/A	N/A	N/A	N/A
B1000	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NRK/4-11-03	NRK/4-15-03	N/A	N/A	N/A	N/A	N/A
B1000	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B1000	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Eg 4/30/03

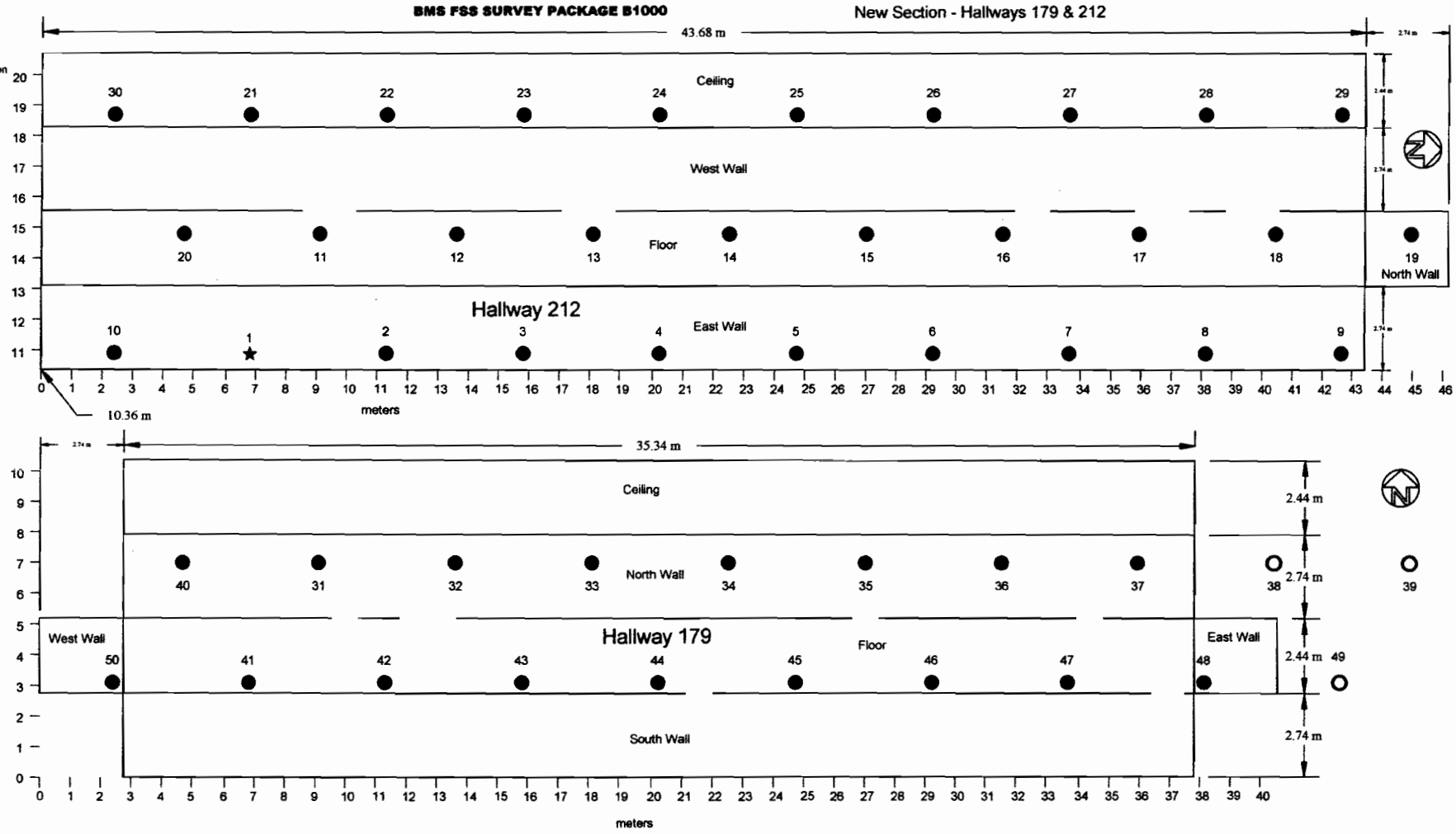
Survey Comments

BMS FSS SURVEY PACKAGE B1000

New Section - Hallways 179 & 212

★ Starting Point

Survey Point	Survey Location X	Survey Location Y
1	6.9	10.9
2	11.4	10.9
3	15.9	10.9
4	20.4	10.9
5	24.9	10.9
6	29.4	10.9
7	33.9	10.9
8	38.4	10.9
9	42.9	10.9
10	2.4	10.9
11	9.2	14.8
12	13.7	14.8
13	18.2	14.8
14	22.7	14.8
15	27.2	14.8
16	31.7	14.8
17	36.2	14.8
18	40.7	14.8
19	45.2	14.8
20	4.7	14.8
21	6.9	18.7
22	11.4	18.7
23	15.9	18.7
24	20.4	18.7
25	24.9	18.7
26	29.4	18.7
27	33.9	18.7
28	38.4	18.7
29	42.9	18.7
30	2.4	18.7
31	9.2	7.0
32	13.7	7.0
33	18.2	7.0
34	22.7	7.0
35	27.2	7.0
36	31.7	7.0
37	36.2	7.0
38	40.7	7.0
39	45.2	7.0
40	4.7	7.0
41	6.9	3.1
42	11.4	3.1
43	15.9	3.1
44	20.4	3.1
45	24.9	3.1
46	29.4	3.1
47	33.9	3.1
48	38.4	3.1
49	42.9	3.1
50	2.4	3.1



Survey Package B1000
B-124 Hallways 179 and 212

X (Max):	46.4	meters
Y (Max):	20.7	meters
A (Area):	859	m^2
N (Points):	50	

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	4.5	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.9	meters	(distance between rows)
L/2=	2.3	meters	(row offset value)
X (Random):	18.6		random number generator
Y (Random):	4.1		random number generator
X (Origin):	6.9		initially generated random number
Y (Origin):	10.9		initially generated random number
Number of rows:	5		
Number of columns:	10		

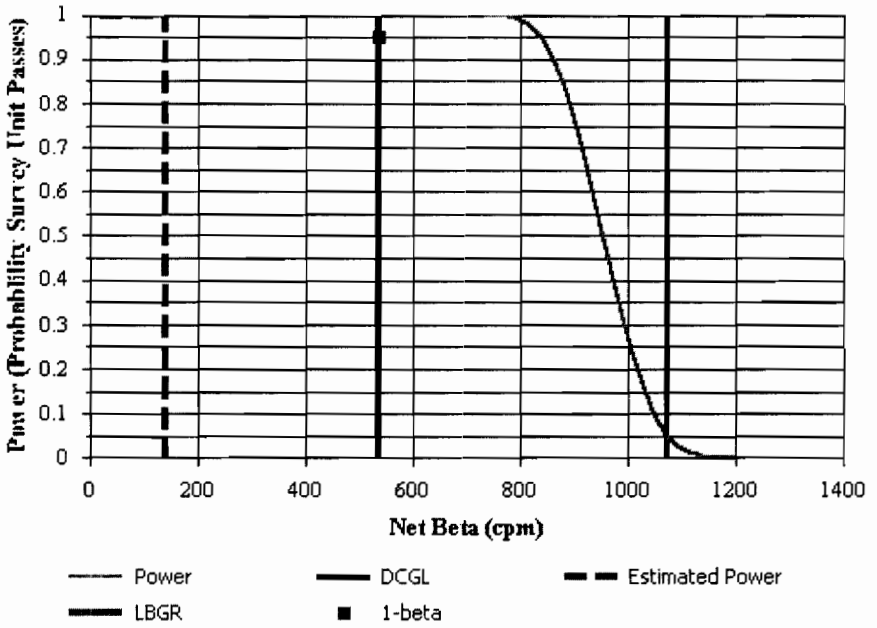
Survey Point	Survey Location X	Survey Location Y	Row
Starting Point (1)	6.9	10.9	3
2	11.4	10.9	
3	15.9	10.9	
4	20.4	10.9	
5	24.9	10.9	
6	29.4	10.9	
7	33.9	10.9	
8	38.4	10.9	
9	42.9	10.9	
10	2.4	10.9	
11	9.2	14.8	4
12	13.7	14.8	
13	18.2	14.8	
14	22.7	14.8	
15	27.2	14.8	
16	31.7	14.8	
17	36.2	14.8	
18	40.7	14.8	
19	45.2	14.8	
20	4.7	14.8	
21	6.9	18.7	5
22	11.4	18.7	
23	15.9	18.7	
24	20.4	18.7	
25	24.9	18.7	
26	29.4	18.7	
27	33.9	18.7	
28	38.4	18.7	
29	42.9	18.7	
30	2.4	18.7	
31	9.2	7.0	2
32	13.7	7.0	
33	18.2	7.0	
34	22.7	7.0	
35	27.2	7.0	
36	31.7	7.0	
37	36.2	7.0	
38	40.7	7.0	
39	45.2	7.0	
40	4.7	7.0	
41	6.9	3.1	1
42	11.4	3.1	
43	15.9	3.1	
44	20.4	3.1	
45	24.9	3.1	
46	29.4	3.1	
47	33.9	3.1	
48	38.4	3.1	
49	42.9	3.1	
50	2.4	3.1	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1000 FSS Package Rev. 1		
Comments:	Hallways 179 and 212		
Area (m²):	859	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	142
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.48	0.25	0.1200

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 386 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas Riggs **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 50
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas Riggs **User ID** NOL 2086 **Signature:** [signature] **Date:** 4-15-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B1000 B-124 Hallway 179 And 212
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.230			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 221	2 210	3 214	4 N/A	5 N/A	6 N/A	215
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .124

Duratek™

M2350-1 Download BETA Report

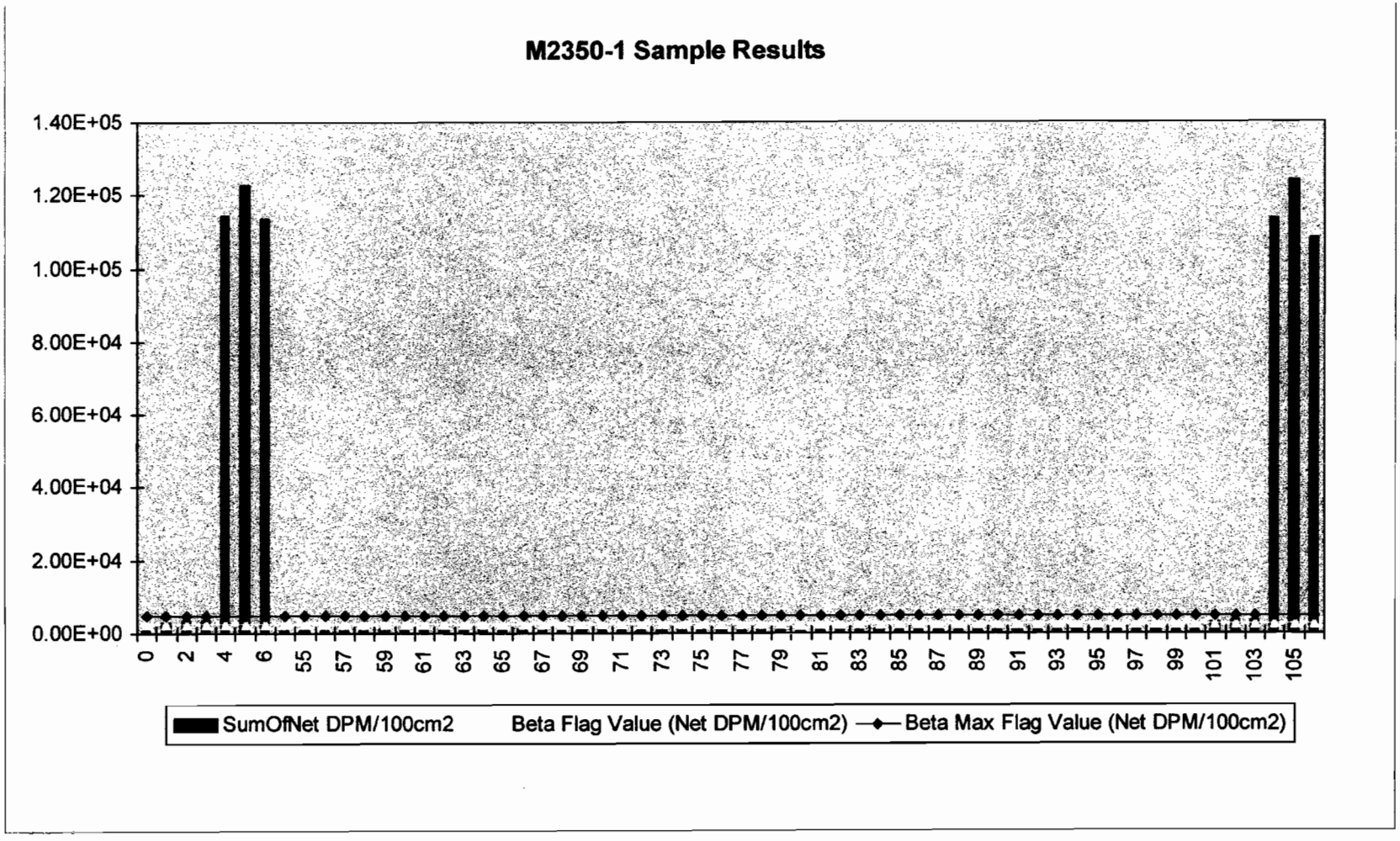
File Name : 00000050	Survey Description :Package B1000 B-124 Hallways 179 and 212	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.23	Survey Date : 4/15/03

Print Name	Signature	Date
Doug Kjos	DRK	9/8/03

Comments:

Sign-Off

Print Name	Signature	Date
Paul E. Ely	Paul E Ely	9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
55
57
59
61
63
65
67
69
71
73
75
77
79
81
83
85
87
89
91
93
95
97
99
101
103
105
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000050

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,453.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	846
ZZZZZ	FD184	1	1,119.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,016
ZZZZZ	FD184	2	1,222.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,371
ZZZZZ	FD184	3	1,289.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,602
ZZZZZ	10002	4	33,342.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	114,206
ZZZZZ	10002	5	35,781.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	122,622
ZZZZZ	10002	6	33,167.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	113,602
B1000	ZZZZZ	54	221.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	763
B1000	ZZZZZ	55	210.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	725
B1000	ZZZZZ	56	214.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	738
B1000	01C01	57	335.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	1,156
B1000	01C01	58	348.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	1,201
B1000	01C01	59	322.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	1,111
B1000	01C01	60	356.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	1,228
B1000	01C01	61	338.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,166
B1000	01C01	62	336.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	1,159
B1000	01C01	63	328.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	1,132
B1000	01C01	64	323.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,115
B1000	01C01	65	351.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	1,211
B1000	01C01	66	374.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	1,291
B1000	01W01	67	350.0	60	FLDCT	B0004	ZZZZZ	9	0.0001	1,208
B1000	01W01	68	336.0	60	FLDCT	B0004	ZZZZZ	8	0.0001	1,159
B1000	01W01	69	230.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	794
B1000	01W01	70	310.0	60	FLDCT	B0004	ZZZZZ	6	0.0001	1,070
B1000	01W01	71	316.0	60	FLDCT	B0004	ZZZZZ	5	0.0001	1,090
B1000	01W01	72	301.0	60	FLDCT	B0004	ZZZZZ	4	0.0001	1,039
B1000	01W01	73	301.0	60	FLDCT	B0004	ZZZZZ	3	0.0001	1,039
B1000	01W01	74	381.0	60	FLDCT	B0004	ZZZZZ	2	0.0001	1,315
B1000	01W01	75	346.0	60	FLDCT	B0004	ZZZZZ	1	0.0001	1,194
B1000	01W01	76	359.0	60	FLDCT	B0004	ZZZZZ	10	0.0001	1,239
B1000	01W01	77	275.0	60	FLDCT	B9999	ZZZZZ	48	0.0001	949
B1000	01W01	78	342.0	60	FLDCT	B0004	ZZZZZ	36	0.0001	1,180
B1000	01W01	79	206.0	60	FLDCT	B9999	ZZZZZ	35	0.0001	711
B1000	01W01	80	182.0	60	FLDCT	B9999	ZZZZZ	34	0.0001	628
B1000	01W01	81	301.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	1,039
B1000	01W01	82	226.0	60	FLDCT	B9999	ZZZZZ	31	0.0001	780
B1000	01W01	83	289.0	60	FLDCT	B0004	ZZZZZ	50	0.0001	997
B1000	01F01	84	343.0	60	FLDCT	B0003	ZZZZZ	41	0.0001	1,184
B1000	01F01	85	269.0	60	FLDCT	B9999	ZZZZZ	42	0.0001	928

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B1000	01F01	86	259.0	60	FLDCT	B9999	ZZZZZ	43	0.0001	894
B1000	01F01	87	239.0	60	FLDCT	B9999	ZZZZZ	44	0.0001	825
B1000	01F01	88	227.0	60	FLDCT	B9999	ZZZZZ	45	0.0001	783
B1000	01F01	89	280.0	60	FLDCT	B9999	ZZZZZ	46	0.0001	966
B1000	01F01	90	294.0	60	FLDCT	B9999	ZZZZZ	47	0.0001	1,014
B1000	01F01	91	296.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	1,021
B1000	01F01	92	369.0	60	FLDCT	B0003	ZZZZZ	11	0.0001	1,273
B1000	01F01	93	291.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	1,004
B1000	01F01	94	285.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	983
B1000	01F01	95	271.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	935
B1000	01F01	96	273.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	942
B1000	01F01	97	264.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	911
B1000	01F01	98	278.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	959
B1000	01F01	99	262.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	904
ZZZZZ	ZZZZZ	100	2,498.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	101	1,198.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,271
ZZZZZ	FD184	102	1,254.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,464
ZZZZZ	FD184	103	1,245.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,433
ZZZZZ	10002	104	33,191.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	113,668
ZZZZZ	10002	105	36,154.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	123,892
ZZZZZ	10002	106	31,632.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	108,288

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B1000

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kjos (Print) Signature R. Kjos /BSK Date ~~4.29.03~~ 4.15.13 BSK Time 1430

Counted by D. Schumaker (Print) Signature [illegible] Date 4/16/03 Time 1350

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
11	54	0	<MDA
14	51	0	
18	55	0	
42	46	0	
46	47	0	
	N	A	

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
11	0	0	<MDA
14	1	.7	
18	0	0	
42	0	0	
46	0	0	
	N	A	

Remarks- MDA: β γ = 110 dpm/100 cm², α 4.6 dpm/100 cm² BSC 4.29.03

Signature- [illegible] Reviewed by- Paul C Ely 4/30/03

of

Duratek, Inc.
Survey Package Worksheet for Package B1100
Bristol-Myers Squibb Building 124, Rooms 182 to 184

Package Identification No.: B1100	Prepared by: Paul C. Ely
Location: Building 124 Rooms 182 to 184	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in rooms 182 to 184.

Historical Information

Room 182 was used for packaging of generators and it contained a conveyor system to distribution. Room 183 was the men's room. Room 184 used to have capsule machine for iodotope diagnostic capsules. The radionuclides included Mo-99, Sr-82/85 and I-131.

No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Special Instructions

Source check meters to Tc-99 and C-14 for beta measurements.

Use gas proportional detector model numbers 43-68 or 43-106 for surveys.

Perform a minimum of three one minute field backgrounds in air prior to survey.

Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 182 to 184												
B1100	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSK 4-14-03	BSK 4-17-03	N/A	N/A	BSK 5 4-17-03	N/A	N/A
B1100	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4-14-03	BSK 4-17-03	N/A	N/A	N/A	N/A	N/A
B1100	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4-14-03	BSK 4-17-03	N/A	N/A	N/A	N/A	N/A
B1100	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSK 4-14-03	N/A BSK 4-17-03	N/A	N/A	N/A	N/A	N/A
B1100	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/29/03
Package Reviewed by and Date: Paul C Ely 4/29/03

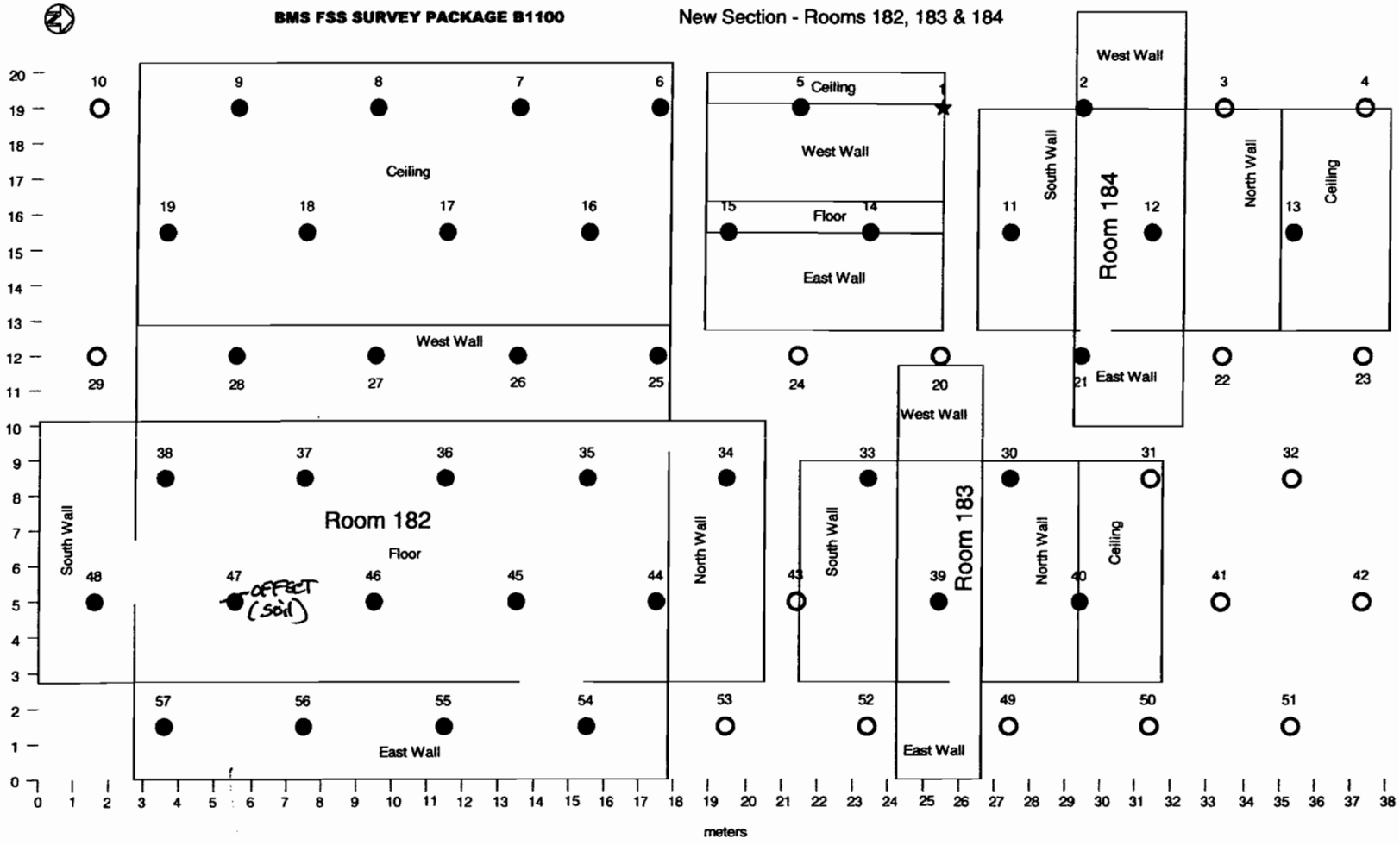
Survey Comments

★ Starting Point

Survey Point	Survey Location X	Survey Location Y
1	25.6	19.0
2	29.6	19.0
3	33.6	19.0
4	37.6	19.0
5	21.6	19.0
6	17.6	19.0
7	13.6	19.0
8	9.6	19.0
9	5.6	19.0
10	1.6	19.0
11	27.6	15.5
12	31.6	15.5
13	35.6	15.5
14	23.6	15.5
15	19.6	15.5
16	15.6	15.5
17	11.6	15.5
18	7.6	15.5
19	3.6	15.5
20	25.6	12.0
21	29.6	12.0
22	33.6	12.0
23	37.6	12.0
24	21.6	12.0
25	17.6	12.0
26	13.6	12.0
27	9.6	12.0
28	5.6	12.0
29	1.6	12.0
30	27.6	8.5
31	31.6	8.5
32	35.6	8.5
33	23.6	8.5
34	19.6	8.5
35	15.6	8.5
36	11.6	8.5
37	7.6	8.5
38	3.6	8.5
39	25.6	5.0
40	29.6	5.0
41	33.6	5.0
42	37.6	5.0
43	21.6	5.0
44	17.6	5.0
45	13.6	5.0
46	9.6	5.0
47	5.6	5.0
48	1.6	5.0
49	27.6	1.5
50	31.6	1.5
51	35.6	1.5
52	23.6	1.5
53	19.6	1.5
54	15.6	1.5
55	11.6	1.5
56	7.6	1.5
57	3.6	1.5

BMS FSS SURVEY PACKAGE B1100

New Section - Rooms 182, 183 & 184



Survey Package B1100
B-124 Rooms 182, 183 & 184

X (Max):	38.3	meters
Y (Max):	21.7	meters
A (Area):	543	m^2
COMPASS Survey Points:	28	
N (Points):	40	

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	4	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.5	meters	(distance between rows)
L/2=	2.0	meters	(row offset value)
X (Random):	31.8		random number generator
Y (Random):	10		random number generator
X (Origin):	25.6		initially generated random number
Y (Origin):	19.0		initially generated random number
Number of rows:	6		
Number of columns:	10		

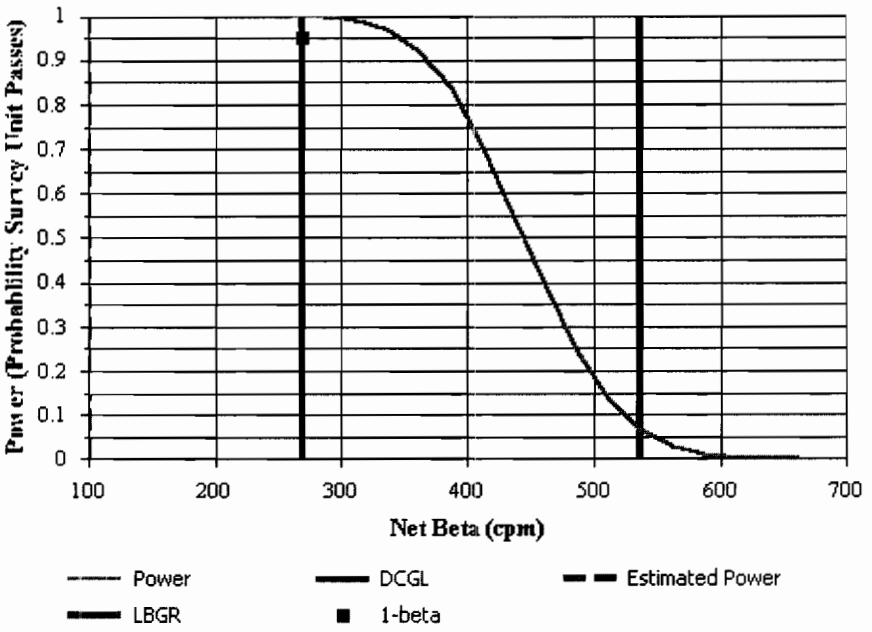
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	25.6	19.0	6
2	29.6	19.0	
3	33.6	19.0	
4	37.6	19.0	
5	21.6	19.0	
6	17.6	19.0	
7	13.6	19.0	
8	9.6	19.0	
9	5.6	19.0	
10	1.6	19.0	
11	27.6	15.5	5
12	31.6	15.5	
13	35.6	15.5	
14	23.6	15.5	
15	19.6	15.5	
16	15.6	15.5	
17	11.6	15.5	
18	7.6	15.5	
19	3.6	15.5	
20	25.6	12.0	4
21	29.6	12.0	
22	33.6	12.0	
23	37.6	12.0	
24	21.6	12.0	
25	17.6	12.0	
26	13.6	12.0	
27	9.6	12.0	
28	5.6	12.0	
29	1.6	12.0	
30	27.6	8.5	3
31	31.6	8.5	
32	35.6	8.5	
33	23.6	8.5	
34	19.6	8.5	
35	15.6	8.5	
36	11.6	8.5	
37	7.6	8.5	
38	3.6	8.5	
39	25.6	5.0	2
40	29.6	5.0	
41	33.6	5.0	
42	37.6	5.0	
43	21.6	5.0	
44	17.6	5.0	
45	13.6	5.0	
46	9.6	5.0	
47	5.6	5.0	
48	1.6	5.0	
49	27.6	1.5	1
50	31.6	1.5	
51	35.6	1.5	
52	23.6	1.5	
53	19.6	1.5	
54	15.6	1.5	
55	11.6	1.5	
56	7.6	1.5	
57	3.6	1.5	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1100 FSS Package		
Comments:	B-124 Rooms 182 to 184		
Area (m²):	543	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	249.5
DCGL (cpm):	537	Sample Size (N):	28
LBGR (cpm):	269	Estimated Conc. (cpm):	101
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.06
Gross Beta DCGLw (cpm): 537

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.24	0.25	0.0600

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 346 ± 246 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	1,245
Concrete Block	45	370.2	39.8	1,223
Linoleum	46	244.9	21.7	1,002

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement								
Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-17-03

Download Station #: 1 Download File #: 70
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 4-17-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B1100, Bldg 124, Rooms 182 to 184
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR092524	43-68B	.230			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 287	2 294	3 237	4 N/A	5 N/A	6 N/A	273
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .138 PRBBK-257 PTBBK 255

* No. 7,8,9 change L5 to FLDBK 7-49
* Delete #18 + #19
* No. 43 - change L2 to 01W01

Duratek™

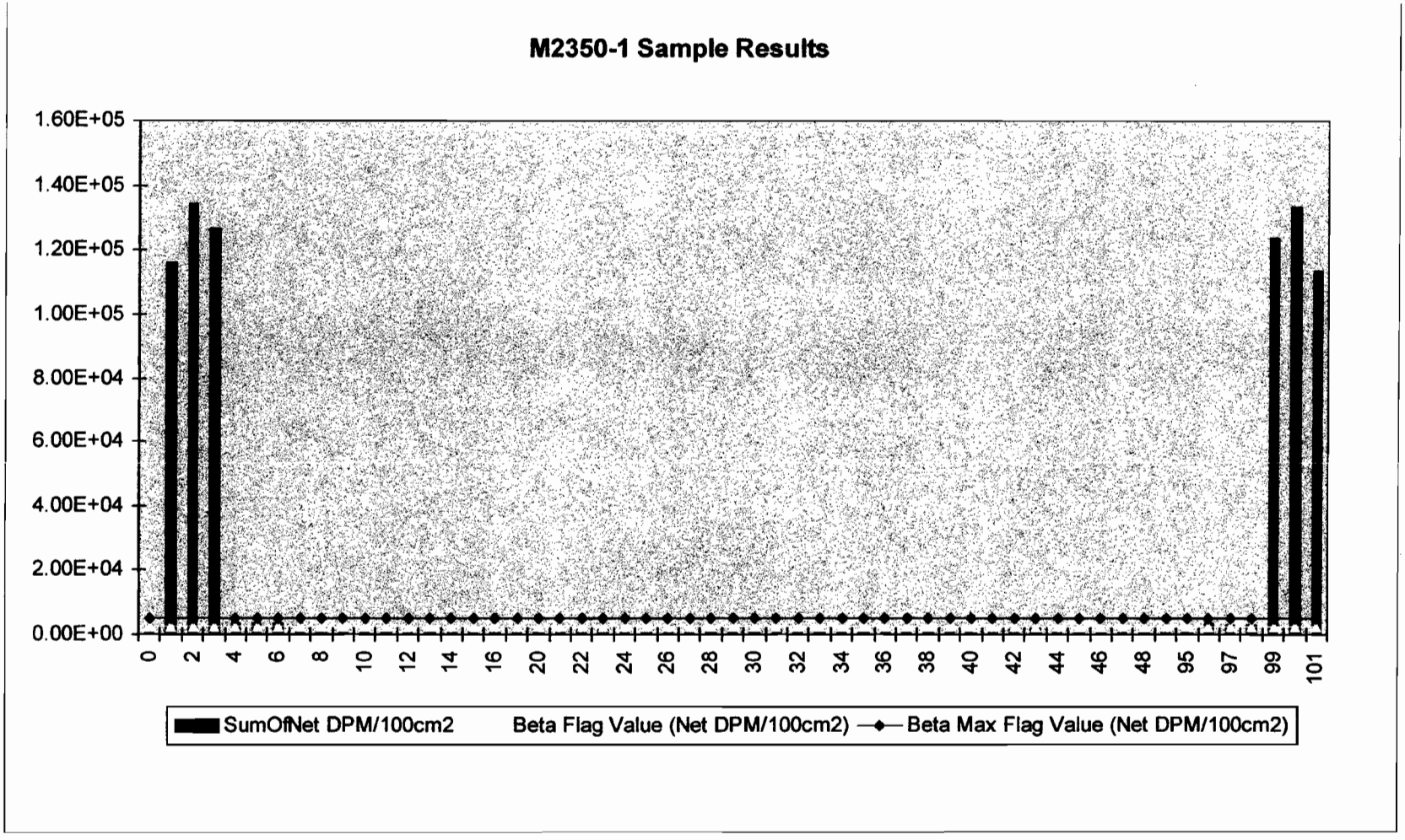
M2350-1 Download Beta Report

File Name : 00000070	Survey Description :Package B1100 B-124 Rooms 182-184	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.23	Survey Date : 4/17/03

Print Name	Signature	Date
Betty Kjos	BSKj	9/7/03

Comments:

Sign-Off PAUL E. ELY (Print Name) — Paul C Ely (Signature) — 9-8-03 (Date)


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
95
97
99
101
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000070

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,566.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	885
ZZZZZ	10002	1	33,922.0	60	PRB00	ZZZZZ	ZZZZZ	0	257	116,166
ZZZZZ	10002	2	39,141.0	60	PRB00	ZZZZZ	ZZZZZ	0	257	134,175
ZZZZZ	10002	3	37,036.0	60	PRB00	ZZZZZ	ZZZZZ	0	257	126,912
ZZZZZ	19655	4	1,283.0	60	PRB00	ZZZZZ	ZZZZZ	0	257	3,540
ZZZZZ	19655	5	1,272.0	60	PRB00	ZZZZZ	ZZZZZ	0	257	3,502
ZZZZZ	19655	6	1,273.0	60	PRB00	ZZZZZ	ZZZZZ	0	257	3,506
B1100	ZZZZZ	7	287.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	990
B1100	ZZZZZ	8	294.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,014
B1100	ZZZZZ	9	237.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	818
B1100	01C01	10	313.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	1,080
B1100	01C01	11	291.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	1,004
B1100	01C01	12	316.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	1,090
B1100	01C01	13	283.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	977
B1100	01C01	14	272.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	939
B1100	01C01	15	294.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	1,014
B1100	01C01	16	281.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	970
B1100	01C01	17	293.0	60	FLDCT	B9999	ZZZZZ	19	0.0001	1,011
B1100	01F01	20	353.0	60	FLDCT	B0002	ZZZZZ	14	0.0001	1,218
B1100	01F01	21	356.0	60	FLDCT	B0002	ZZZZZ	15	0.0001	1,228
B1100	01W01	22	376.0	60	FLDCT	B0004	ZZZZZ	1	0.0001	1,297
B1100	01W01	23	385.0	60	FLDCT	B0004	ZZZZZ	5	0.0001	1,329
B1100	01W01	24	322.0	60	FLDCT	B0004	ZZZZZ	34	0.0001	1,111
B1100	01W01	25	351.0	60	FLDCT	B0004	ZZZZZ	25	0.0001	1,211
B1100	01W01	26	333.0	60	FLDCT	B0004	ZZZZZ	26	0.0001	1,149
B1100	01W01	27	336.0	60	FLDCT	B0004	ZZZZZ	27	0.0001	1,159
B1100	01W01	28	340.0	60	FLDCT	B0004	ZZZZZ	28	0.0001	1,173
B1100	01W01	29	323.0	60	FLDCT	B0004	ZZZZZ	55	0.0001	1,115
B1100	01W01	30	324.0	60	FLDCT	B0004	ZZZZZ	56	0.0001	1,118
B1100	01W01	31	370.0	60	FLDCT	B0004	ZZZZZ	57	0.0001	1,277
B1100	01W01	32	300.0	60	FLDCT	B0004	ZZZZZ	48	0.0001	1,035
B1100	01W01	33	223.0	60	FLDCT	B9999	ZZZZZ	54	0.0001	769
B1100	01F01	34	269.0	60	FLDCT	B9999	ZZZZZ	35	0.0001	928
B1100	01F01	35	273.0	60	FLDCT	B9999	ZZZZZ	36	0.0001	942
B1100	01F01	36	277.0	60	FLDCT	B9999	ZZZZZ	37	0.0001	956
B1100	01F01	37	282.0	60	FLDCT	B9999	ZZZZZ	38	0.0001	973
B1100	01F01	38	303.0	60	FLDCT	B9999	ZZZZZ	44	0.0001	1,046
B1100	01F01	39	294.0	60	FLDCT	B9999	ZZZZZ	45	0.0001	1,014
B1100	01F01	40	287.0	60	FLDCT	B9999	ZZZZZ	46	0.0001	990

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B1100	01F01	41	260.0	60	FLDCT	B9999	ZZZZZ	47	0.0001	897
B1100	01F01	42	466.0	60	FLDCT	B0017	ZZZZZ	39	0.0001	1,608
B1100	01W01	43	743.0	60	FLDCT	B0018	ZZZZZ	33	0.0001	2,564
B1100	01W01	44	296.0	60	FLDCT	B0001	ZZZZZ	30	0.0001	1,021
B1100	01W01	45	278.0	60	FLDCT	B0001	ZZZZZ	40	0.0001	959
B1100	01C01	46	290.0	60	FLDCT	B0001	ZZZZZ	13	0.0001	1,001
B1100	01W01	47	331.0	60	FLDCT	B0004	ZZZZZ	11	0.0001	1,142
B1100	01W01	48	237.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	818
B1100	01F01	49	316.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	1,090
ZZZZZ	ZZZZZ	95	2,548.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	879
ZZZZZ	19655	96	1,304.0	60	PTB00	ZZZZZ	ZZZZZ	0	255	3,620
ZZZZZ	19655	97	1,201.0	60	PTB00	ZZZZZ	ZZZZZ	0	255	3,264
ZZZZZ	19655	98	1,158.0	60	PTB00	ZZZZZ	ZZZZZ	0	255	3,116
ZZZZZ	10002	99	36,051.0	60	PTB00	ZZZZZ	ZZZZZ	0	255	123,520
ZZZZZ	10002	100	38,825.0	60	PTB00	ZZZZZ	ZZZZZ	0	255	133,092
ZZZZZ	10002	101	33,184.0	60	PTB00	ZZZZZ	ZZZZZ	0	255	113,627

Beta Flag	2500	-
Beta Max Flag	5000	

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-18-03

Download Station #: 1 Download File #: 23
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** BSKios **Date:** 4-18-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B1100, Room 184, Point #12
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092224	43-68B	.225			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 269	2 263	3 265	4 n/a	5 n/a	6 n/a	266
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .155 PRBBK - 253 PT BBK - 229
(30-33)

Duratek™

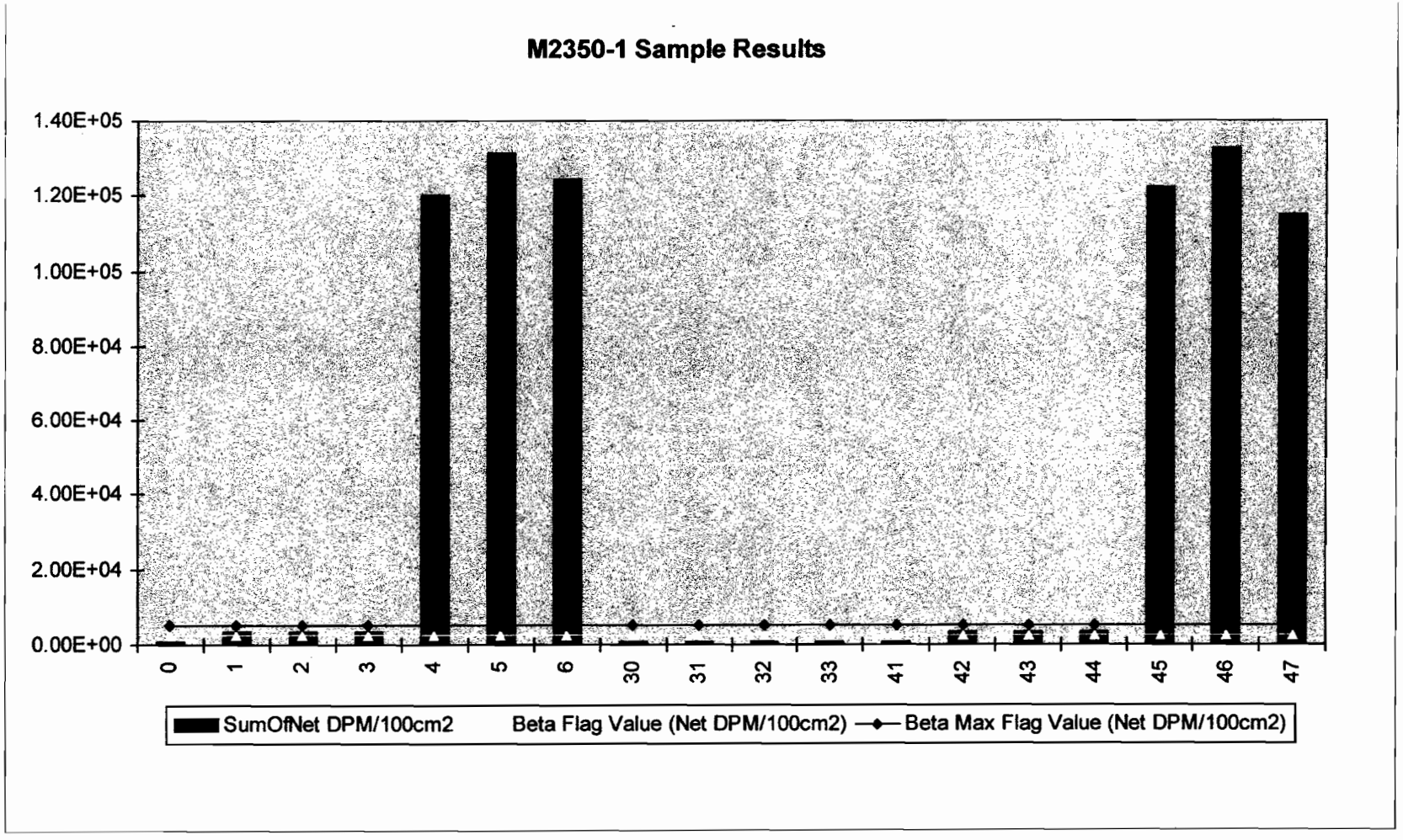
M2350-1 Download BETA Report

File Name : 00000073	Survey Description :Package B1100 B-124, Room 184 Point #12	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.225	Survey Date : 4/18/03

Print Name	Signature	Date
Betty Kjos	BSKjos	9/7/03

Comments:

Sign-Off PAUL L. ELY (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
1
2
3
4
5
6
30
31
32
33
41
42
43
44
45
46
47
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000073

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,527.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	891
ZZZZZ	19655	1	1,237.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	3,471
ZZZZZ	19655	2	1,254.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	3,531
ZZZZZ	19655	3	1,242.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	3,489
ZZZZZ	10002	4	34,266.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	119,975
ZZZZZ	10002	5	37,531.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	131,492
ZZZZZ	10002	6	35,523.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	124,409
B1100	ZZZZZ	30	269.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	949
B1100	ZZZZZ	31	263.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	928
B1100	ZZZZZ	32	265.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	935
B1100	01F01	33	297.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	1,048
ZZZZZ	ZZZZZ	41	2,293.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	809
ZZZZZ	19655	42	1,148.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	3,242
ZZZZZ	19655	43	1,210.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	3,460
ZZZZZ	19655	44	1,165.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	3,302
ZZZZZ	10002	45	34,897.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	122,286
ZZZZZ	10002	46	37,801.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	132,529
ZZZZZ	10002	47	32,841.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	115,034

Beta Flag	2500 -	
Beta Max Flag	5000	

Survey #- 81100

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by BS Kos (Print) Signature Date ~~4-28-03~~ 4.17.03 Time 1600

Counted by BS Kos (Print) Signature Date 4-28-03 Time 1840

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.:2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .253

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.:2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA=108 dpm/100cm²β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
11	50	0	<MDA
17	47	0	
37	56	2	
39	54	0	
56	58	4	<MDA
		N/A	

Circle:	MDA=12.5 dpm/100cm²α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
11	0	0	<MDA
17	0	0	
37	0	0	
39	0	0	
56	0	0	<MDA
		N/A	

Remarks-

Signature-

Reviewed by- 4/29/03

Duratek, Inc.
Survey Package Worksheet for Package B1200
Bristol-Myers Squibb Building 124, Rooms 190

Package Identification No.: B1200	Prepared by: Paul C. Ely
Location: Building 124 Room 190 Walls & Ceiling	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising walls and ceilings in room 190.

Historical Information

In Room 190 there were four fume hoods and one glove box. The operations in the room included custom filled gold (moved here from Room #174) and custom filling iodotope therapeutic capsules. The radionuclides included Au-198 and I-131.

Contamination levels >5,000 dpm/100 cm^2 were identified on equipment that was removed during the D&D phase and on floor areas under the fume hoods. All other areas surveyed during the characterization had contamination levels <5,000 dpm/100 cm^2.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B1200 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8						5		
Bristol Myers Squibb Building 124 Rooms 190												
B1200	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	HOX/4-10-03	HOX 4-16-03	N/A	N/A	~~N/A~~ 4-16-03	N/A	N/A
B1200	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	HOX/4-10-03	HOX/4-16-03	N/A	N/A	N/A	N/A	N/A
B1200	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	HOX/4-10-03	n/a	N/A	N/A	N/A	N/A	N/A
B1200	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	HOX/4-10-03	n/a	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

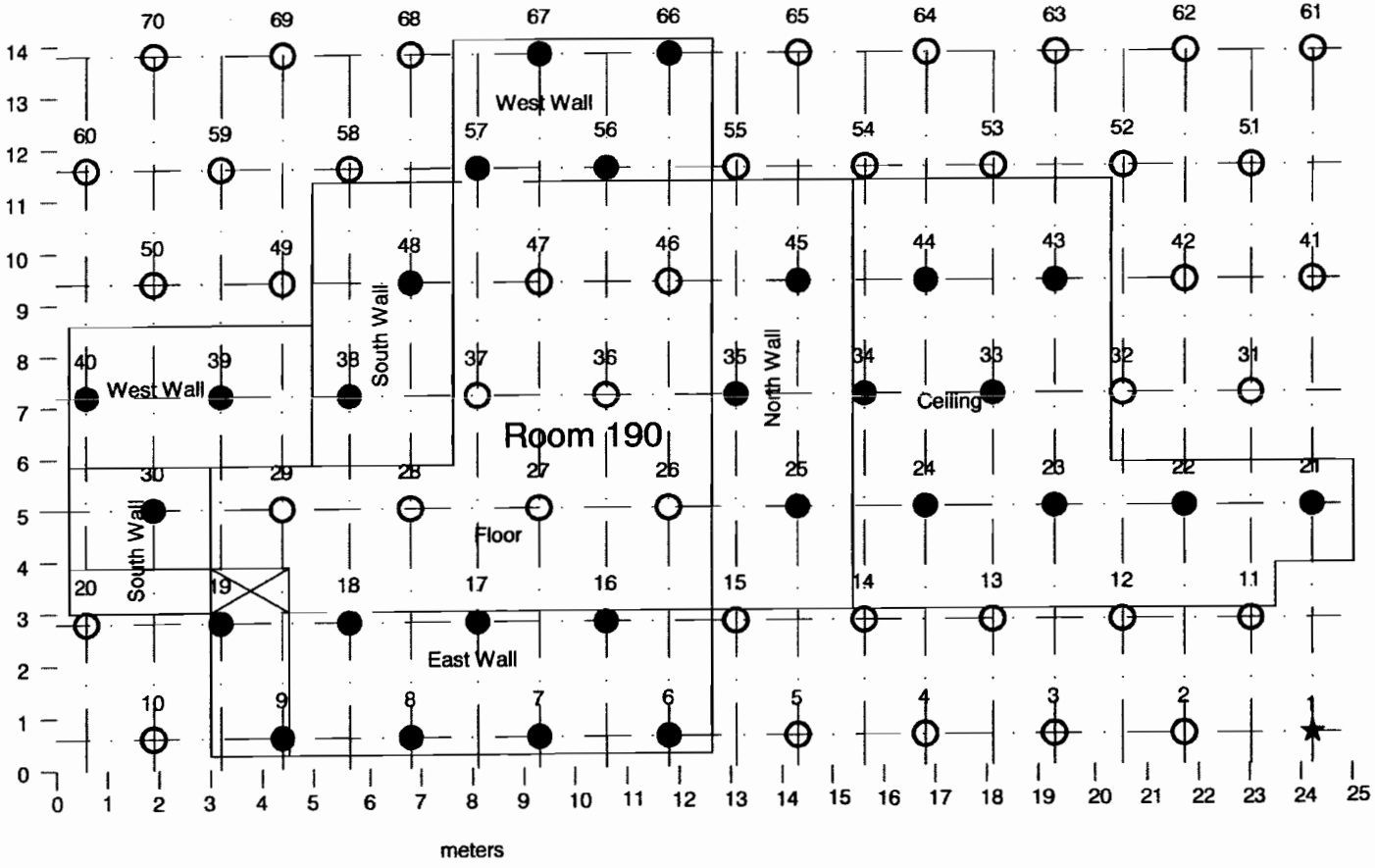
Survey Comments

★ Starting Point

Survey Point	Survey Location X	Survey Location Y	Survey Point	Survey Location X	Survey Location Y
1	24.4	0.6	41	24.4	9.4
2	21.9	0.6	42	21.9	9.4
3	19.4	0.6	43	19.4	9.4
4	16.9	0.6	44	16.9	9.4
5	14.4	0.6	45	14.4	9.4
6	11.9	0.6	46	11.9	9.4
7	9.4	0.6	47	9.4	9.4
8	6.9	0.6	48	6.9	9.4
9	4.4	0.6	49	4.4	9.4
10	1.9	0.6	50	1.9	9.4
11	23.2	2.8	51	23.2	11.6
12	20.7	2.8	52	20.7	11.6
13	18.2	2.8	53	18.2	11.6
14	15.7	2.8	54	15.7	11.6
15	13.2	2.8	55	13.2	11.6
16	10.7	2.8	56	10.7	11.6
17	8.2	2.8	57	8.2	11.6
18	5.7	2.8	58	5.7	11.6
19	3.2	2.8	59	3.2	11.6
20	0.6	2.8	60	0.6	11.6
21	24.4	5.0	61	24.4	13.8
22	21.9	5.0	62	21.9	13.8
23	19.4	5.0	63	19.4	13.8
24	16.9	5.0	64	16.9	13.8
25	14.4	5.0	65	14.4	13.8
26	11.9	5.0	66	11.9	13.8
27	9.4	5.0	67	9.4	13.8
28	6.9	5.0	68	6.9	13.8
29	4.4	5.0	69	4.4	13.8
30	1.9	5.0	70	1.9	13.8
31	23.2	7.2			
32	20.7	7.2			
33	18.2	7.2			
34	15.7	7.2			
35	13.2	7.2			
36	10.7	7.2			
37	8.2	7.2			
38	5.7	7.2			
39	3.2	7.2			
40	0.6	7.2			

BMS FSS SURVEY PACKAGE B1200

New Section - Room 190



Survey Package B1200
B-124 Room 190

X (Max):	24.9	meters
Y (Max):	13.8	meters
A (Area):	132	m^2
COMPASS Survey Points:	28	
N (Points):	24	

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	2.5	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	2.2	meters	(distance between rows)
L/2=	1.3	meters	(row offset value)
X (Random):	16.9		random number generator
Y (Random):	13.1		random number generator
X (Origin):	24.4		initially generated random number
Y (Origin):	0.6		initially generated random number
Number of rows:	7		
Number of columns:	10		

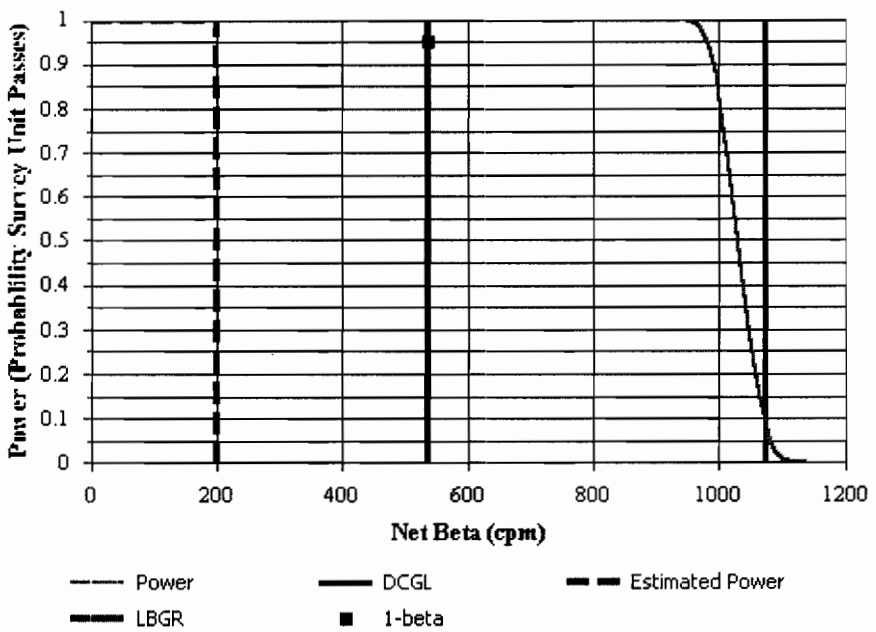
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	24.4	0.6	1
2	21.9	0.6	
3	19.4	0.6	
4	16.9	0.6	
5	14.4	0.6	
6	11.9	0.6	
7	9.4	0.6	
8	6.9	0.6	
9	4.4	0.6	
10	1.9	0.6	
11	23.2	2.8	2
12	20.7	2.8	
13	18.2	2.8	
14	15.7	2.8	
15	13.2	2.8	
16	10.7	2.8	
17	8.2	2.8	
18	5.7	2.8	
19	3.2	2.8	
20	0.6	2.8	
21	24.4	5.0	3
22	21.9	5.0	
23	19.4	5.0	
24	16.9	5.0	
25	14.4	5.0	
26	11.9	5.0	
27	9.4	5.0	
28	6.9	5.0	
29	4.4	5.0	
30	1.9	5.0	
31	23.2	7.2	4
32	20.7	7.2	
33	18.2	7.2	
34	15.7	7.2	
35	13.2	7.2	
36	10.7	7.2	
37	8.2	7.2	
38	5.7	7.2	
39	3.2	7.2	
40	0.6	7.2	
41	24.4	9.4	5
42	21.9	9.4	
43	19.4	9.4	
44	16.9	9.4	
45	14.4	9.4	
46	11.9	9.4	
47	9.4	9.4	
48	6.9	9.4	
49	4.4	9.4	
50	1.9	9.4	
51	23.2	11.6	6
52	20.7	11.6	
53	18.2	11.6	
54	15.7	11.6	
55	13.2	11.6	
56	10.7	11.6	
57	8.2	11.6	
58	5.7	11.6	
59	3.2	11.6	
60	0.6	11.6	
61	24.4	13.8	7
62	21.9	13.8	
63	19.4	13.8	
64	16.9	13.8	
65	14.4	13.8	
66	11.9	13.8	
67	9.4	13.8	
68	6.9	13.8	
69	4.4	13.8	
70	1.9	13.8	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1200 FSS Package		
Comments:	B-124 Room 190 Walls & Ceiling		
Area (m²):	132	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	88.2
DCGL (cpm):	1,074	Sample Size (N):	13
LBGR (cpm):	537	Estimated Conc. (cpm):	199
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 444 ± 79 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement								
Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 6061

Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** DRK2986 **Signature:** [signature] **Date:** 4-16-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B1200 B-124 Room 190 (walls & ceiling)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.228			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 232	2 208	3 231	4 n/a	5 n/a	6 n/a	224
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .129

M2350-1 Download BETA Report

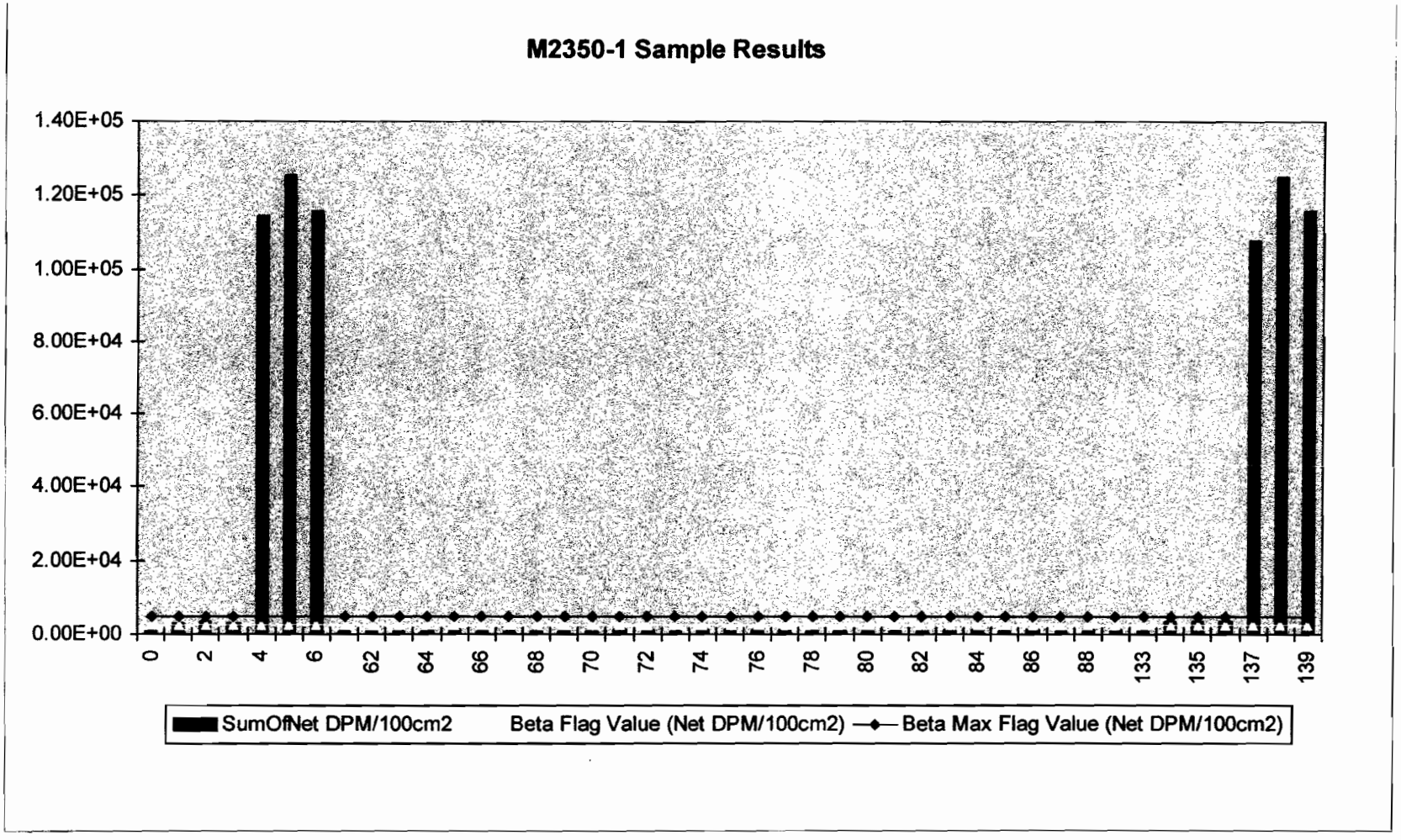
File Name : 00000061	Survey Description :Package B1200 B-124 Room 190 (walls and ceiling)	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 4/16/03

Print Name	Signature	Date
Doug Kjos		9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY		9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
62
64
66
68
70
72
74
76
78
80
82
84
86
88
133
135
137
139
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000061

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,579.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	898
ZZZZZ	FD184	1	1,195.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,262
ZZZZZ	FD184	2	1,256.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,474
ZZZZZ	FD184	3	1,188.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,237
ZZZZZ	10002	4	33,119.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	114,387
ZZZZZ	10002	5	36,265.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	125,338
ZZZZZ	10002	6	33,523.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	115,793
B1200	ZZZZZ	61	232.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	808
B1200	ZZZZZ	62	208.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	724
B1200	ZZZZZ	63	231.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	804
B1200	01C01	64	317.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	1,103
B1200	01C01	65	331.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,152
B1200	01C01	66	272.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	947
B1200	01C01	67	301.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	1,048
B1200	01C01	68	310.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	1,079
B1200	01C01	69	265.0	60	FLDCT	B9999	ZZZZZ	43	0.0001	922
B1200	01C01	70	281.0	60	FLDCT	B9999	ZZZZZ	44	0.0001	978
B1200	01W01	71	365.0	60	FLDCT	B0004	ZZZZZ	45	0.0001	1,271
B1200	01W01	72	367.0	60	FLDCT	B0004	ZZZZZ	48	0.0001	1,277
B1200	01W01	73	223.0	60	FLDCT	B9999	ZZZZZ	57	0.0001	776
B1200	01W01	74	344.0	60	FLDCT	B0004	ZZZZZ	56	0.0001	1,197
B1200	01W01	75	354.0	60	FLDCT	B0004	ZZZZZ	66	0.0001	1,232
B1200	01W01	76	327.0	60	FLDCT	B0004	ZZZZZ	67	0.0001	1,138
B1200	01W01	77	357.0	60	FLDCT	B0004	ZZZZZ	35	0.0001	1,243
B1200	01W01	78	315.0	60	FLDCT	B0004	ZZZZZ	25	0.0001	1,096
B1200	01W01	79	311.0	60	FLDCT	B0004	ZZZZZ	16	0.0001	1,083
B1200	01W01	80	295.0	60	FLDCT	B0004	ZZZZZ	17	0.0001	1,027
B1200	01W01	81	206.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	717
B1200	01W01	82	314.0	60	FLDCT	B0004	ZZZZZ	19	0.0001	1,093
B1200	01W01	83	324.0	60	FLDCT	B0004	ZZZZZ	30	0.0001	1,128
B1200	01W01	84	339.0	60	FLDCT	B0004	ZZZZZ	39	0.0001	1,180
B1200	01W01	85	317.0	60	FLDCT	B0004	ZZZZZ	38	0.0001	1,103
B1200	01W01	86	339.0	60	FLDCT	B0004	ZZZZZ	9	0.0001	1,180
B1200	01W01	87	289.0	60	FLDCT	B0004	ZZZZZ	8	0.0001	1,006
B1200	01W01	88	332.0	60	FLDCT	B0004	ZZZZZ	7	0.0001	1,156
B1200	01W01	89	329.0	60	FLDCT	B0004	ZZZZZ	6	0.0001	1,145
ZZZZZ	ZZZZZ	133	2,476.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	134	1,220.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,383
ZZZZZ	FD184	135	1,233.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,429

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	FD184	136	1,241.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,457
ZZZZZ	10002	137	31,244.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	107,895
ZZZZZ	10002	138	36,200.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	125,148
ZZZZZ	10002	139	33,447.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	115,563

Beta Flag	2500	- _____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B1200

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kjos (Print) Signature _____ Date 4/16/03 Time 1420

Counted by D. Schumacher (Print) Signature [signature] Date 4/16/03 Time 1555

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
17	39	0	< MDA
30	54	0	
25	46	0	
48	49	0	
56	48	0	
		A	
	N		

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
17	1	.7	< MDA
30	1	.7	
25	0	0	
48	1	.7	
56	1	.7	
		A	
	N		

Remarks- MDA: β-γ = 110 dpm/100cm², α = 4.6 dpm/100cm²

Signature- [signature] Reviewed by- Paul C. Elg 4/30/03

of

Duratek, Inc.
Survey Package Worksheet for Package B1300
Bristol-Myers Squibb Building 124, Rooms 191 to 199

Package Identification No.: B1300	Prepared by: Paul C. Ely
Location: Building 124 Second Floor, New Section North	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in rooms 191 to 199.

Historical Information

In rooms 191 there were two glove boxes that handled I-131 capsules. The other rooms were used as QC source and capsule sorting and counting, the radionuclides included Cr-51, Co-57, I-131, Se-75 & Tl-201.

No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B1300 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

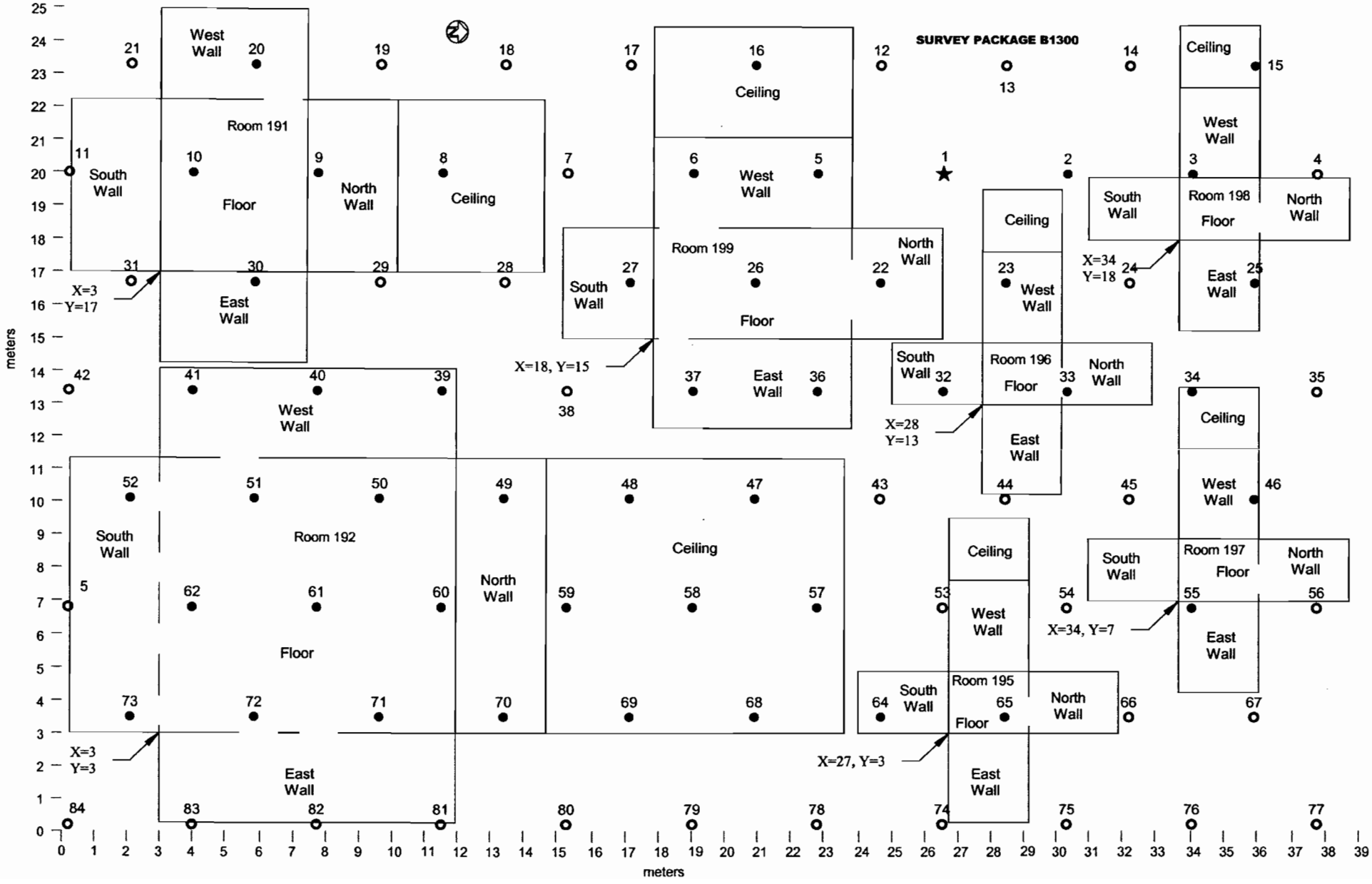
Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 191 to 199												
B1300	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSK 4-11-03	BSK 4-16-03	N/A	N/A	BSK 5 4-16-03	N/A	N/A
B1300	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4-11-03	BSK 4-16-03	N/A	N/A	N/A	N/A	N/A
B1300	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4-11-03	BSK 4-16-03	N/A	N/A	N/A	N/A	N/A
B1300	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSK 4-11-03	N/A	N/A	N/A	N/A	N/A	N/A
B1300	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	BSK 4-11-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/29/03
Package Reviewed by and Date:	Paul C Ely 4/29/03

Survey Comments

Revised

New Points



Revised

Survey Package B1300
B-124 Rooms 191 to 199

X (Max):	39.0	meters
Y (Max):	25.0	meters
A (Area):	570	m^2
COMPASS Survey Points:	14	
N (Points):	45	

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

Columns	10.3
Rows	7.6

L=	3.8	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.3	meters	(distance between rows)
L/2=	1.9	meters	(row offset value)

X (Random):	37.3	random number generator
Y (Random):	21.9	random number generator
X (Origin):	26.8	initially generated random number
Y (Origin):	20.0	initially generated random number

Number of rows:	8
Number of columns:	10

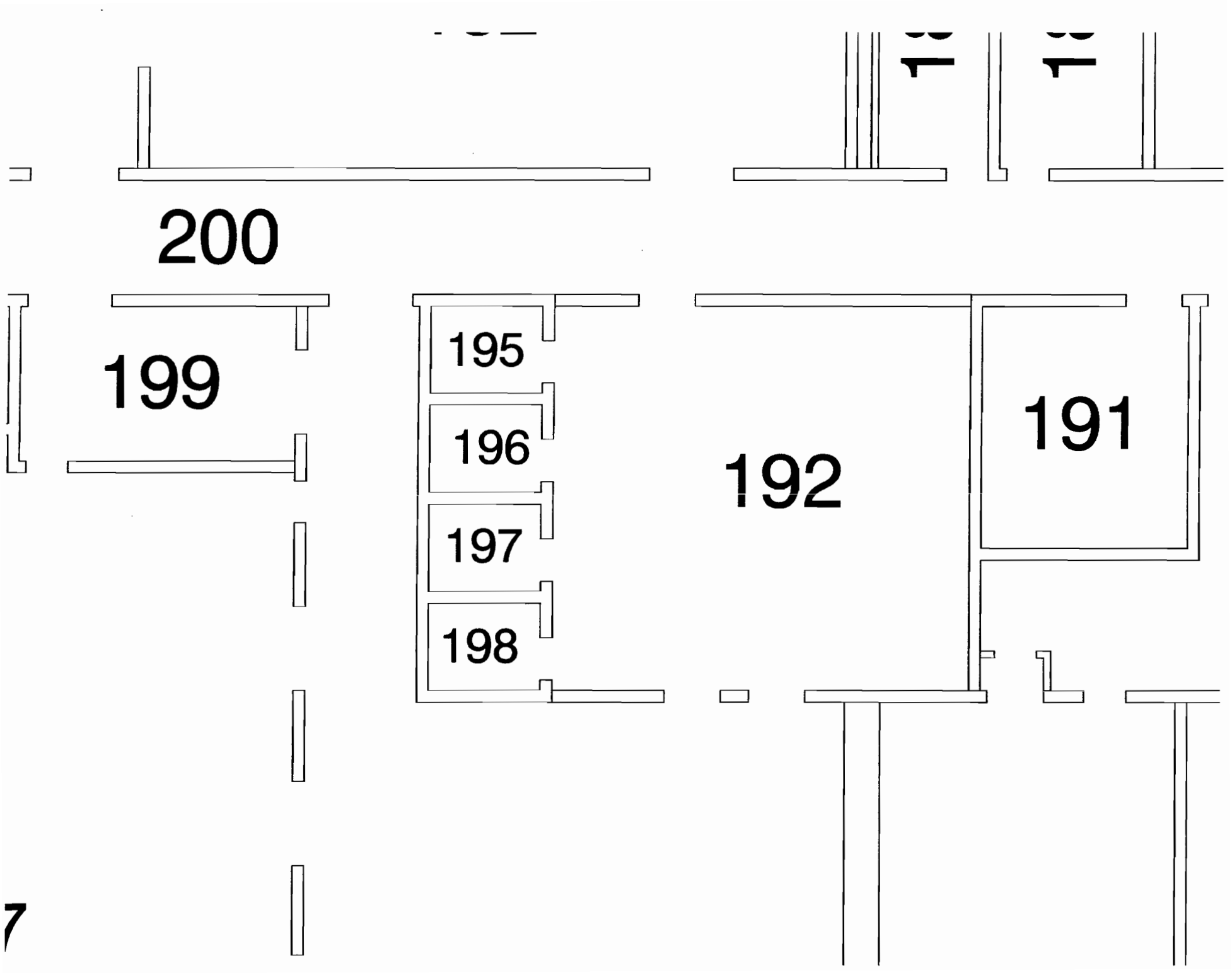
Survey Point	Survey Location X	Y	Row	Survey Point	Survey Location X	Y	Row
Starting Point (1)	26.8	20.0	7	43	24.9	10.1	4
2	30.6	20.0		44	28.7	10.1	
3	34.4	20.0		45	32.5	10.1	
4	38.2	20.0		46	36.3	10.1	
5	23.0	20.0		47	21.1	10.1	
6	19.2	20.0		48	17.3	10.1	
7	15.4	20.0		49	13.5	10.1	
8	11.6	20.0		50	9.7	10.1	
9	7.8	20.0		51	5.9	10.1	
10	4.0	20.0		52	2.1	10.1	
11	0.2	20.0		53	26.8	6.8	3
12	24.9	23.3	8	54	30.6	6.8	
13	28.7	23.3		55	34.4	6.8	
14	32.5	23.3		56	38.2	6.8	
15	36.3	23.3		57	23.0	6.8	
16	21.1	23.3		58	19.2	6.8	
17	17.3	23.3		59	15.4	6.8	
18	13.5	23.3		60	11.6	6.8	
19	9.7	23.3		61	7.8	6.8	
20	5.9	23.3		62	4.0	6.8	
21	2.1	23.3		63	0.2	6.8	
22	24.9	16.7	6	64	24.9	3.5	2
23	28.7	16.7		65	28.7	3.5	
24	32.5	16.7		66	32.5	3.5	
25	36.3	16.7		67	36.3	3.5	
26	21.1	16.7		68	21.1	3.5	
27	17.3	16.7		69	17.3	3.5	
28	13.5	16.7		70	13.5	3.5	
29	9.7	16.7		71	9.7	3.5	
30	5.9	16.7		72	5.9	3.5	
31	2.1	16.7		73	2.1	3.5	
32	26.8	13.4	5	74	26.8	0.2	1
33	30.6	13.4		75	30.6	0.2	
34	34.4	13.4		76	34.4	0.2	
35	38.2	13.4		77	38.2	0.2	
36	23.0	13.4		78	23.0	0.2	
37	19.2	13.4		79	19.2	0.2	
38	15.4	13.4		80	15.4	0.2	
39	11.6	13.4		81	11.6	0.2	
40	7.8	13.4		82	7.8	0.2	
41	4.0	13.4		83	4.0	0.2	
42	0.2	13.4		84	0.2	0.2	

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3. For this survey unit σ is about 1/4 of the $DCGL_W$

The LBGR for this survey unit is set to be 50% of the $DCGL_W$.

σ =	211.3	cpm (Calculated by COMPASS)
$DCGL_W$ =	1,074	cpm (Calculated by COMPASS)
LBGR =	**537**	**cpm**

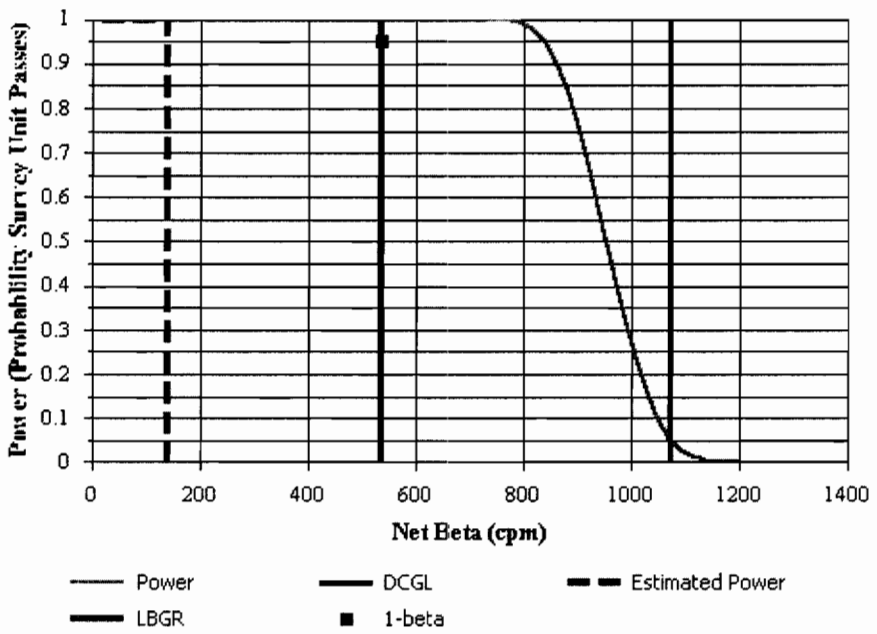

200
199
195
196
197
198
192
191

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1300 FSS Package		
Comments:	B-124 Rooms 191 to 199		
Area (m²):	570	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	142
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 387 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement								
Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 55
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 4-16-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B1300, Bldg. 124, Rooms 191, 192, 195, 196, 197, 198, 199
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092524	43-68B	.225			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1 306	2 262	3 283	4 n/a	5 n/a	6 n/a	284
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .143
*On sample #'s 15-20 change L2 code to OLWOL.

Duratek™

M2350-1 Download BETA Report

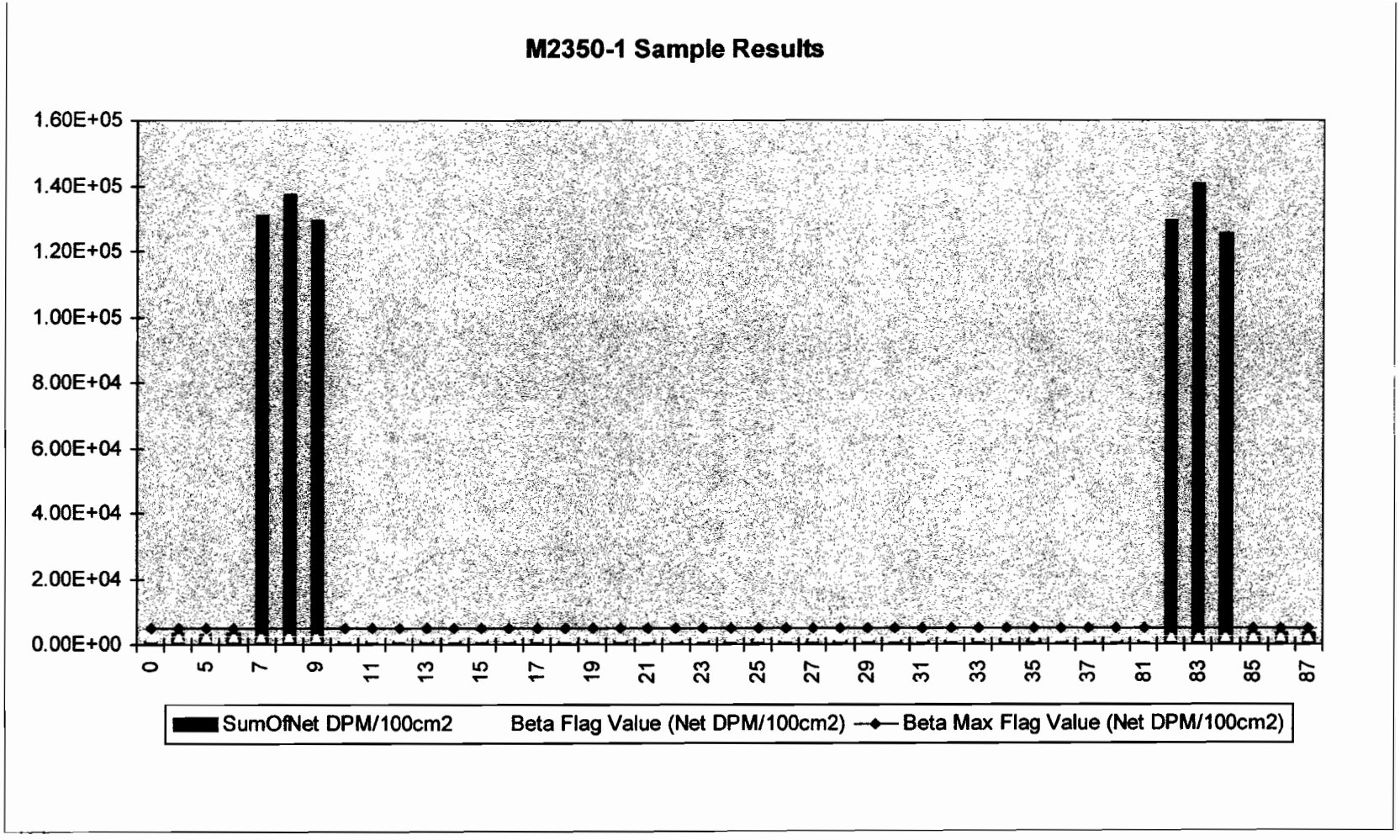
File Name : 00000055	Survey Description :Package B1300 B-124 Rooms 191,192,195,196,197,198	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.225	Survey Date : 4/16/03

Print Name	Signature	Date
Betty Kjos	BSK	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C. ELY	Paul C Ely	9-8-03


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
81
83
85
87
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000055

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,658.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	938
ZZZZZ	19655	4	1,283.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,587
ZZZZZ	19655	5	1,139.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,079
ZZZZZ	19655	6	1,232.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,407
ZZZZZ	10002	7	37,431.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	131,094
ZZZZZ	10002	8	39,209.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	137,385
ZZZZZ	10002	9	36,966.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	129,453
B1300	ZZZZZ	10	306.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,079
B1300	ZZZZZ	11	262.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	924
B1300	ZZZZZ	12	283.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	998
B1300	01C01	13	319.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	1,125
B1300	01F01	14	275.0	60	FLDCT	B9999	ZZZZZ	19	0.0001	970
B1300	01W01	15	330.0	60	FLDCT	B0004	ZZZZZ	4	0.0001	1,164
B1300	01W01	16	325.0	60	FLDCT	B0004	ZZZZZ	16	0.0001	1,146
B1300	01W01	17	355.0	60	FLDCT	B0004	ZZZZZ	26	0.0001	1,252
B1300	01W01	18	346.0	60	FLDCT	B0004	ZZZZZ	27	0.0001	1,220
B1300	01W01	19	335.0	60	FLDCT	B0004	ZZZZZ	20	0.0001	1,182
B1300	01W01	20	243.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	857
B1300	01C01	21	250.0	60	FLDCT	B9999	ZZZZZ	34	0.0001	882
B1300	01C01	22	302.0	60	FLDCT	B9999	ZZZZZ	35	0.0001	1,065
B1300	01C01	23	278.0	60	FLDCT	B9999	ZZZZZ	41	0.0001	981
B1300	01C01	24	267.0	60	FLDCT	B9999	ZZZZZ	42	0.0001	942
B1300	01C01	25	354.0	60	FLDCT	B9999	ZZZZZ	43	0.0001	1,249
B1300	01W01	26	285.0	60	FLDCT	B0004	ZZZZZ	36	0.0001	1,005
B1300	01W01	27	364.0	60	FLDCT	B0004	ZZZZZ	29	0.0001	1,284
B1300	01W01	28	314.0	60	FLDCT	B0004	ZZZZZ	30	0.0001	1,108
B1300	01F01	29	296.0	60	FLDCT	B9999	ZZZZZ	37	0.0001	1,044
B1300	01F01	30	304.0	60	FLDCT	B9999	ZZZZZ	44	0.0001	1,072
B1300	01F01	31	276.0	60	FLDCT	B9999	ZZZZZ	45	0.0001	974
B1300	01W01	32	229.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	808
B1300	01W01	33	402.0	60	FLDCT	B0004	ZZZZZ	17	0.0001	1,418
B1300	01W01	34	394.0	60	FLDCT	B0004	ZZZZZ	23	0.0001	1,390
B1300	01W01	35	384.0	60	FLDCT	B0004	ZZZZZ	32	0.0001	1,354
B1300	01C01	36	306.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,079
B1300	01C01	37	273.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	963
B1300	01W01	38	310.0	60	FLDCT	B0004	ZZZZZ	8	0.0001	1,093
ZZZZZ	ZZZZZ	81	2,751.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	970
ZZZZZ	10002	82	36,901.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	129,192
ZZZZZ	10002	83	40,189.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	140,790

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	10002	84	35,870.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	125,556
ZZZZZ	19655	85	1,187.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,217
ZZZZZ	19655	86	1,296.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,601
ZZZZZ	19655	87	1,264.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,489

Beta Flag	2500	-
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B1300

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kjos (Print) Signature [illegible] BSK Date 4/16/03 Time 1012

Counted by D. Schumaker (Print) Signature [illegible] Date 4/16/03 Time 1320

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
8	57	0	<MDA
19	48	0	
23	56	0	
41	37	0	
45	61	4	
		A	
N			

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
8	1	0.7	<MDA
19	0	0	
23	0	0	
41	1	0.7	
45	0	0	
		A	
N			

Remarks- MDA: β'γ = 110 dpm/100 cm², α 4.6 dpm/100 cm² 1A BSK 4.29.03

Signature- [illegible] Reviewed by- Paul C Ely 4/29/03

of

Duratek, Inc.
Survey Package Worksheet for Package B1400
Bristol-Myers Squibb Building 124, Hallway 200

Package Identification No.: B1400	Prepared by: Paul C. Ely
Location: Building 124 Hallway 200	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in hallway 200.

Historical Information

Hallway 200 had an area of slightly elevated activity at the southernmost end of the hallway. All other areas had contamination levels <5,000 dpm/100 cm^2 as identified during the characterization survey.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids. The last 3 meters at the south end of the hallway will be 100% scanned. This area had elevated readings.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

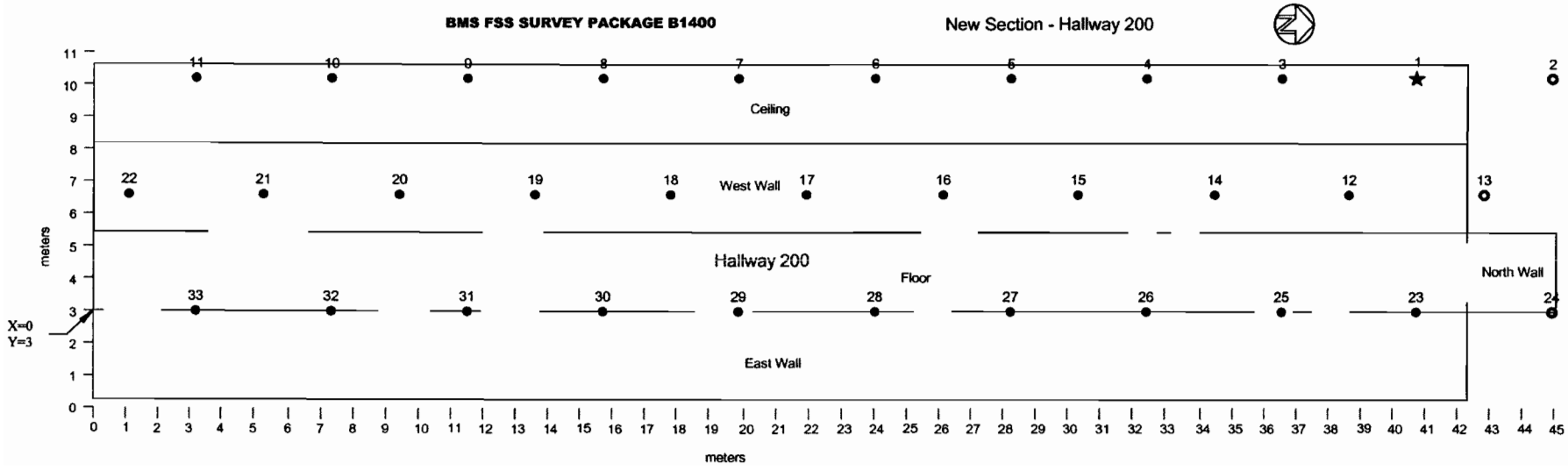
Survey Package: B1400 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Halfway 200												
B1400	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NDL/4-11-03	NDL 4-16-03	N/A	N/A	NDL 5 4-16-03	N/A	N/A
B1400	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NDL/4-11-03	NDL/4-16-03	N/A	N/A	N/A	N/A	N/A
B1400	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NDL/4-11-03	NDL/4-16-03	N/A	N/A	N/A	N/A	N/A
B1400	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NDL/4-11-03	N/A	N/A	N/A	N/A	N/A	N/A
B1400	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	NDL/4-11-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments


BMS FSS SURVEY PACKAGE B1400
New Section - Hallway 200
Ceiling
West Wall
Hallway 200
Floor
North Wall
East Wall
X=0
Y=3
meters
meters

Survey Package B1400
B-124 Hallway 200

X (Max):	45.0	meters	
Y (Max):	10.6	meters	
A (Area):	433	m^2	
COMPASS Survey Points:	14		
N (Points):	28		

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

Columns	10.7
Rows	2.9

L=	4.2	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.6	meters	(distance between rows)
L/2=	2.1	meters	(row offset value)
X (Random):	26.5		random number generator
Y (Random):	9.4		random number generator
X (Origin):	41		initially generated random number
Y (Origin):	10.2		initially generated random number
Number of rows:	3		
Number of columns:	11		

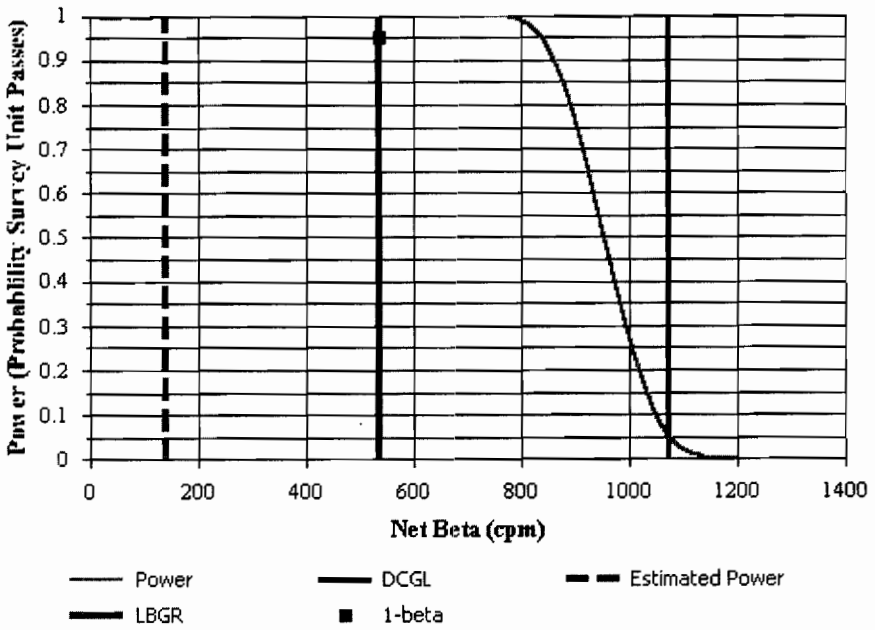
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	41.0	10.2	3
2	45.2	10.2	
3	36.8	10.2	
4	32.6	10.2	
5	28.4	10.2	
6	24.2	10.2	
7	20.0	10.2	
8	15.8	10.2	
9	11.6	10.2	
10	7.4	10.2	
11	3.2	10.2	
12	38.9	6.6	2
13	43.1	6.6	
14	34.7	6.6	
15	30.5	6.6	
16	26.3	6.6	
17	22.1	6.6	
18	17.9	6.6	
19	13.7	6.6	
20	9.5	6.6	
21	5.3	6.6	
22	1.1	6.6	
23	41.0	3.0	1
24	45.2	3.0	
25	36.8	3.0	
26	32.6	3.0	
27	28.4	3.0	
28	24.2	3.0	
29	20.0	3.0	
30	15.8	3.0	
31	11.6	3.0	
32	7.4	3.0	
33	3.2	3.0	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1400 FSS Package		
Comments:	B-124 Hallway 200		
Area (m²):	433	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	142
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 387 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyx **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 58
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyx **User ID** DRK2986 **Signature:** [signature] **Date:** 4-16-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B1400 B-124 Hallway 200
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.228			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 221	2 229	3 210	4 N/A	5 N/A	6 N/A	220
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .129

Duratek™

M2350-1 Download BETA Report

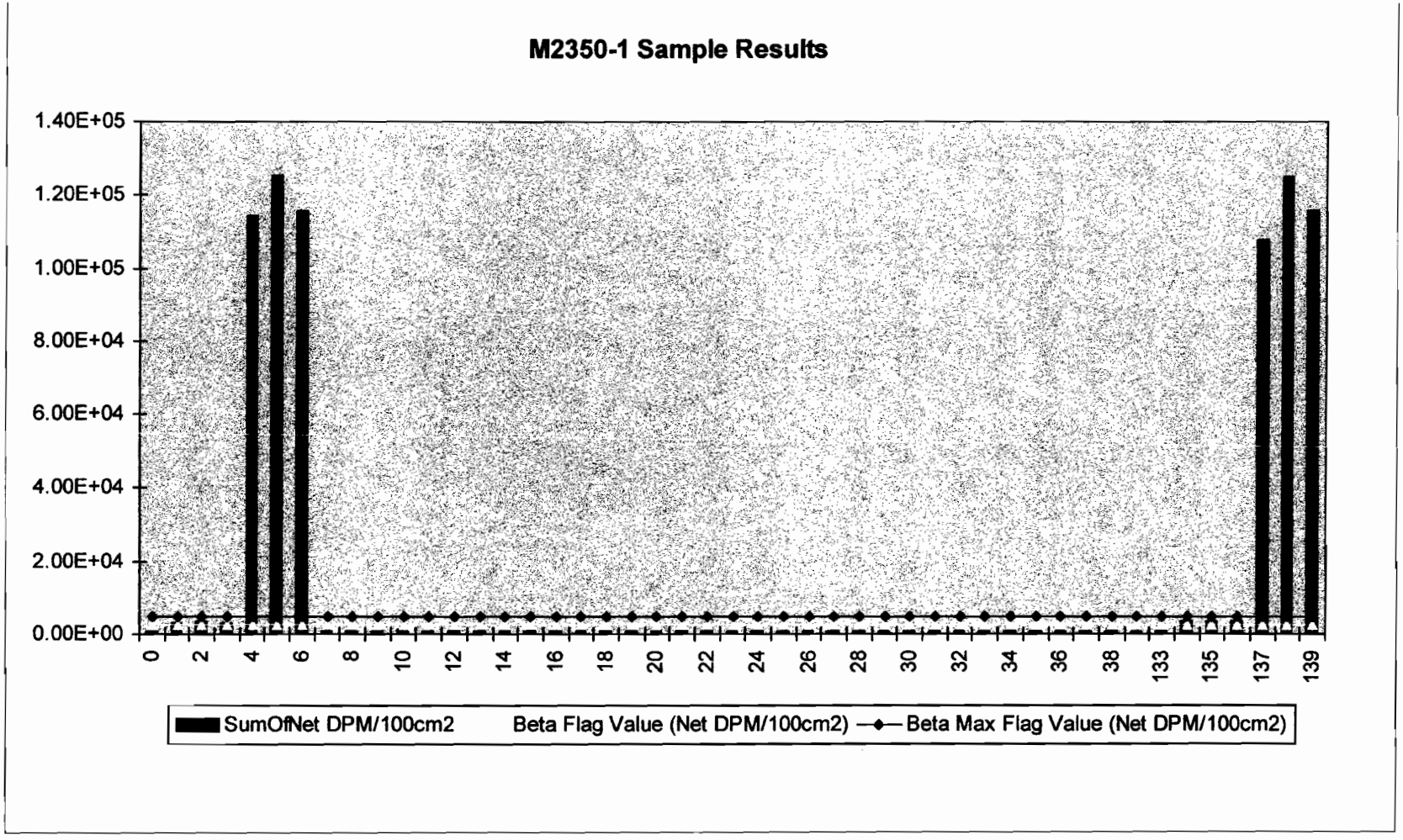
File Name : 00000058	Survey Description :Package B1400 B-124 Hallway 200	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 4/16/03

Print Name	Signature	Date
Doug Kjos		9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY	Paul C Ely	9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
133
135
137
139
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000058

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,579.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	898
ZZZZZ	FD184	1	1,195.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,262
ZZZZZ	FD184	2	1,256.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,474
ZZZZZ	FD184	3	1,188.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,237
ZZZZZ	10002	4	33,119.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	114,387
ZZZZZ	10002	5	36,265.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	125,338
ZZZZZ	10002	6	33,523.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	115,793
B1400	ZZZZZ	7	221.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	769
B1400	ZZZZZ	8	229.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	797
B1400	ZZZZZ	9	210.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	731
B1400	01C01	10	328.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	1,142
B1400	01C01	11	289.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	1,006
B1400	01C01	12	288.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	1,003
B1400	01C01	13	273.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	950
B1400	01C01	14	267.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	929
B1400	01C01	15	258.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	898
B1400	01C01	16	297.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	1,034
B1400	01C01	17	286.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	996
B1400	01C01	18	297.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	1,034
B1400	01C01	19	297.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,034
B1400	01W01	20	257.0	60	FLDCT	B0004	ZZZZZ	12	0.0001	895
B1400	01W01	21	207.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	721
B1400	01W01	22	243.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	846
B1400	01W01	23	217.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	755
B1400	01W01	24	212.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	738
B1400	01W01	25	249.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	867
B1400	01W01	26	226.0	60	FLDCT	B9999	ZZZZZ	19	0.0001	787
B1400	01W01	27	239.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	832
B1400	01W01	28	284.0	60	FLDCT	B0004	ZZZZZ	21	0.0001	989
B1400	01W01	29	315.0	60	FLDCT	B0004	ZZZZZ	22	0.0001	1,096
B1400	01F01	30	264.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	919
B1400	01F01	31	250.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	870
B1400	01F01	32	250.0	60	FLDCT	B9999	ZZZZZ	31	0.0001	870
B1400	01F01	33	263.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	915
B1400	01F01	34	309.0	60	FLDCT	B0003	ZZZZZ	29	0.0001	1,076
B1400	01F01	35	246.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	856
B1400	01F01	36	262.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	912
B1400	01F01	37	248.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	863
B1400	01F01	38	288.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,003

Beta Flag	2500 -	
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B1400	01F01	39	291.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	1,013
ZZZZZ	ZZZZZ	133	2,476.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	134	1,220.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,383
ZZZZZ	FD184	135	1,233.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,429
ZZZZZ	FD184	136	1,241.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,457
ZZZZZ	10002	137	31,244.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	107,895
ZZZZZ	10002	138	36,200.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	125,146
ZZZZZ	10002	139	33,447.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	115,563

Beta Flag	2500	- _____
Beta Max Flag	5000	

Survey #- B1400

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kyos (Print) Signature [illegible] Date 4/16/03 Time 1100

Counted by D. Schumaker (Print) Signature [illegible] Date 4/16/03 Time 1340

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
25	58	1	<MDA
27	61	4	
29	57	0	
31	59	2	
33	60	3	
		A	
	N		

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
25	0	0	<MDA
27	0	0	
29	0	0	
31	0	0	
33	0	0	
		A	
	N		

Remarks- MDA: β-γ - 110 dpm/100cm², α - 14 ~~4.6~~ dpm/100cm² ASC 4.29.03

Signature- [illegible] Reviewed by- Paul C Ely 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B1500
Bristol-Myers Squibb Building 124 Rooms 201-204 & 204A

Package Identification No.: B1500	Prepared by: Paul C. Ely
Location: Building 124 Rooms 201-204 & 204A	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in Rooms 201, 202, 203, 204 & 204A.

Historical Information

Room 201 was a storage area, room 202 an office, room 204 was the vial labeling and equipment prep room and room 204A was the entrance to room 204. Cr-51 and Tl-201 were in room 204. Perform a 100% scan of the floor in Room 202, it was used for waste staging during the D&D. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B1500 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

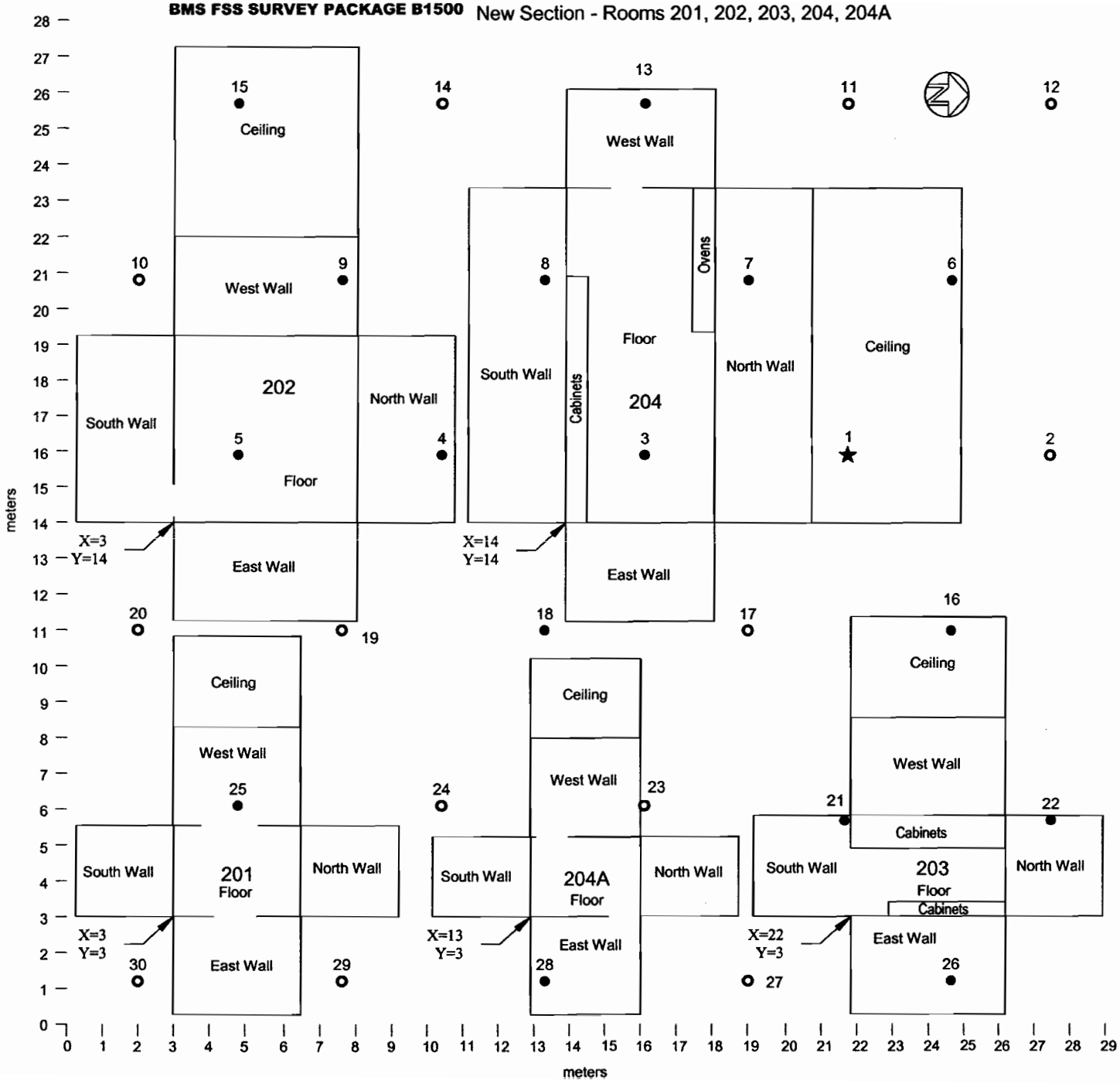
Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8							5	
Bristol Myers Squibb Building 124 Rooms 201-204 & 204A												
B1500	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSK 4·10·03	BSK 4·16·03	N/A	N/A	5	BSK ~~N/A~~ 4·16·03	N/A
B1500	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4·10·03	BSK 4·16·03	N/A	N/A	N/A	N/A	N/A
B1500	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4·10·03	BSK 4·16·03	N/A	N/A	N/A	N/A	N/A
B1500	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSK 4·10·03	N/A	N/A	N/A	N/A	N/A	N/A
B1500	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	BSK 4·10·03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/29/03
Package Reviewed by and Date: Paul C Ely 4/29/03

Survey Comments

BMS FSS SURVEY PACKAGE B1500 New Section - Rooms 201, 202, 203, 204, 204A



Survey Package B1500
B-124 Rooms 201, 202, 203, 204 & 204A

X (Max):	29.1	meters	
Y (Max):	27.3	meters	
A (Area):	794	m^2	actual survey area 422 square meters
COMPASS Survey Points:	14		
N (Points):	28		

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	5.7	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	4.9	meters	(distance between rows)
L/2=	2.9	meters	(row offset value)
X (Random):	15.9		random number generator
Y (Random):	4.7		random number generator
X (Origin):	21.9		initially generated random number
Y (Origin):	15.9		initially generated random number
Number of rows:	6		
Number of columns:	5		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	21.9	15.9	4
2	27.6	15.9	
3	16.2	15.9	
4	10.5	15.9	
5	4.8	15.9	
6	24.8	20.8	5
7	19.1	20.8	
8	13.4	20.8	
9	7.7	20.8	
10	2.0	20.8	
11	21.9	25.7	6
12	27.6	25.7	
13	16.2	25.7	
14	10.5	25.7	
15	4.8	25.7	
16	24.8	11.0	3
17	19.1	11.0	
18	13.4	11.0	
19	7.7	11.0	
20	2.0	11.0	
21	21.9	6.1	2
22	27.6	6.1	
23	16.2	6.1	
24	10.5	6.1	
25	4.8	6.1	
26	24.8	1.2	1
27	19.1	1.2	
28	13.4	1.2	
29	7.7	1.2	
30	2.0	1.2	

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3. For this survey unit σ is about 1/4 of the $DCGL_W$

The LBGR for this survey unit is set to be 50% of the $DCGL_W$.

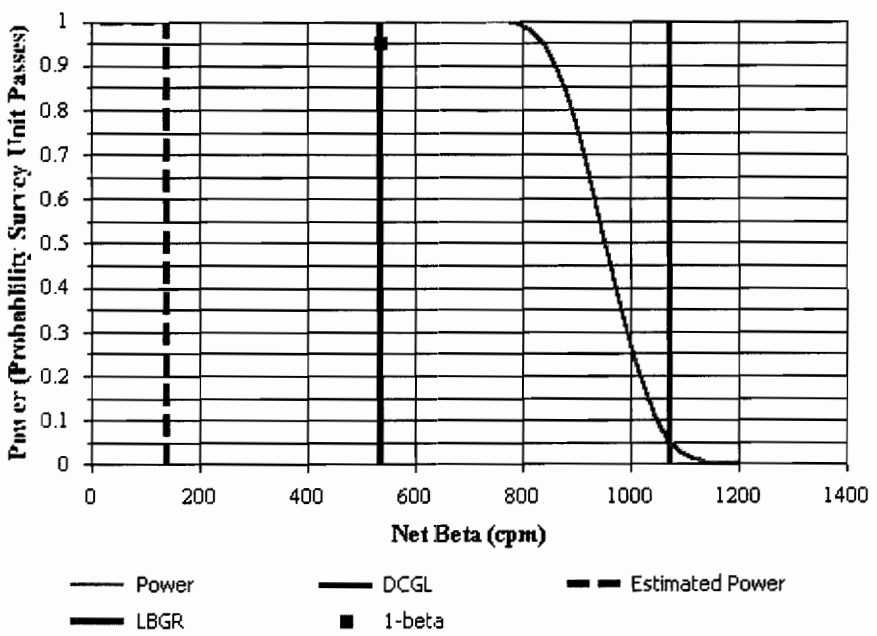
σ =	211.3	cpm (Calculated by COMPASS)
$DCGL_W$ =	1,074	cpm (Calculated by COMPASS)
LBGR =	**537**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1500 FSS Package		
Comments:	B-124 Rooms 201 to 204 and 204A		
Area (m²):	422	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	142
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 387 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement								
Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 56
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 4-16-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B1500, Rooms 201 - 204 + 204A Bldg. 124

(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092524	43-68B	.225			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm

β Beta	1 248	2 260	3 232	4 n/a	5 n/a	6 n/a	247
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .143

Duratek™

M2350-1 Download BETA Report

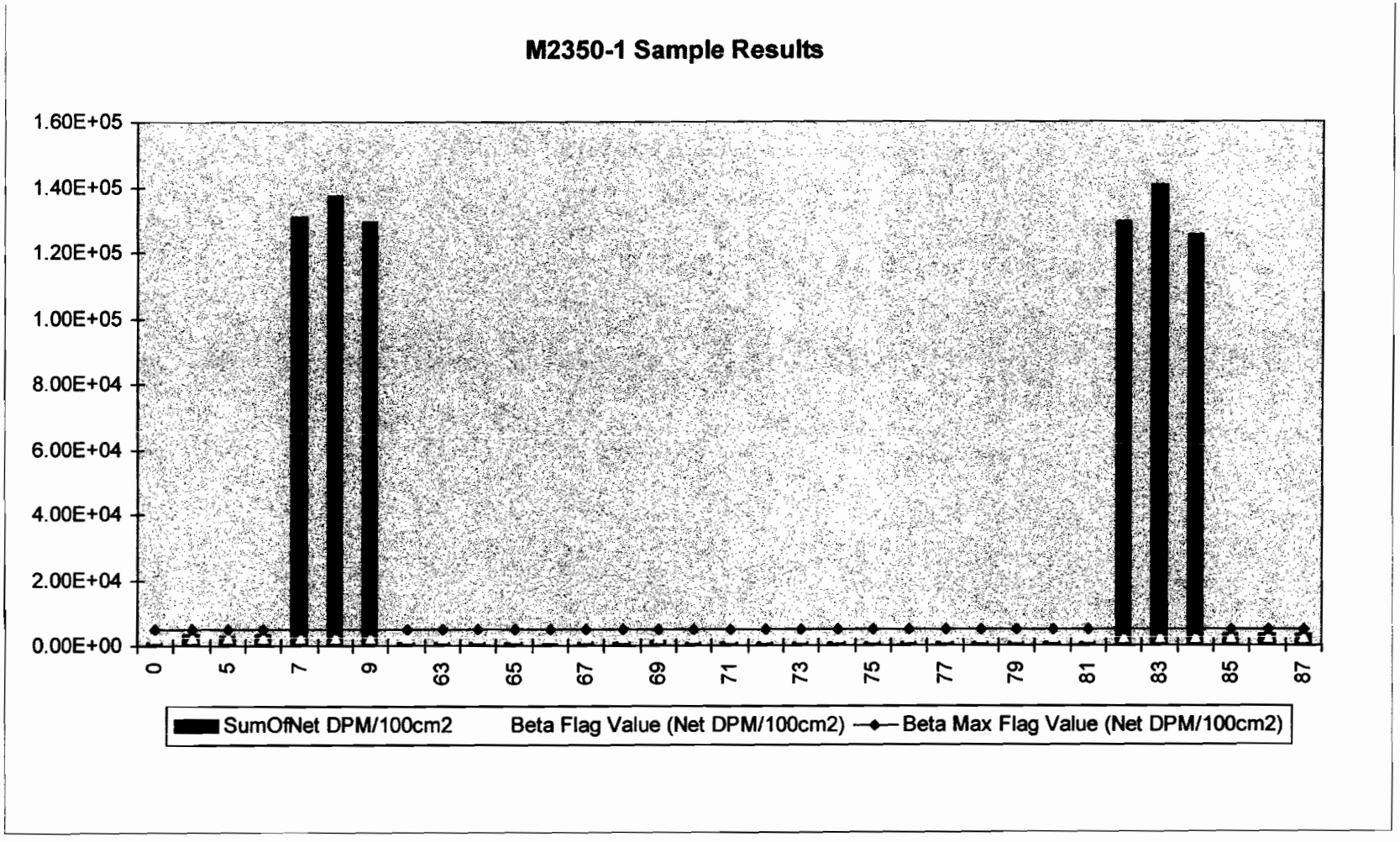
File Name : 00000056	Survey Description :Package B1500 B-124 Rooms 201-204 and 204A	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.225	Survey Date : 4/16/03

Print Name	Signature	Date
Betty Kjos	BSKjos	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY	Paul C Ely	9-8-03


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
5
7
9
63
65
67
69
71
73
75
77
79
81
83
85
87
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000056

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,658.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	938
ZZZZZ	19655	4	1,283.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,587
ZZZZZ	19655	5	1,139.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,079
ZZZZZ	19655	6	1,232.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,407
ZZZZZ	10002	7	37,431.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	131,094
ZZZZZ	10002	8	39,209.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	137,365
ZZZZZ	10002	9	36,966.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	129,453
B1500	ZZZZZ	62	248.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	875
B1500	ZZZZZ	63	260.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	917
B1500	ZZZZZ	64	232.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	818
B1500	01C01	65	235.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	829
B1500	01W01	66	209.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	737
B1500	01W01	67	346.0	60	FLDCT	B0004	ZZZZZ	22	0.0001	1,220
B1500	01C01	68	346.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	1,220
B1500	01W01	69	393.0	60	FLDCT	B0004	ZZZZZ	28	0.0001	1,386
B1500	01W01	70	277.0	60	FLDCT	B0004	ZZZZZ	13	0.0001	977
B1500	01C01	71	311.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,097
B1500	01C01	72	280.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	988
B1500	01W01	73	220.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	776
B1500	01W01	74	211.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	744
B1500	01F01	75	278.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	981
B1500	01C01	76	313.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	1,104
B1500	01F01	77	289.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	1,019
B1500	01W01	78	334.0	60	FLDCT	B0004	ZZZZZ	4	0.0001	1,178
B1500	01W01	79	349.0	60	FLDCT	B0004	ZZZZZ	9	0.0001	1,231
B1500	01W01	80	343.0	60	FLDCT	B0004	ZZZZZ	25	0.0001	1,210
ZZZZZ	ZZZZZ	81	2,751.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	970
ZZZZZ	10002	82	36,901.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	129,192
ZZZZZ	10002	83	40,189.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	140,790
ZZZZZ	10002	84	35,870.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	125,556
ZZZZZ	19655	85	1,187.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,217
ZZZZZ	19655	86	1,296.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,601
ZZZZZ	19655	87	1,264.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,489

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- 81580

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by BS Kjos (Print) Signature BS Kjos Date 4-16-03 Time 1520

Counted by BS Kjos (Print) Signature BS Kjos Date 4-28-03 Time 0829

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
3	58	4	<MDA
9	54	0	
15	45	0	
21	45	0	
25	59	5	<MDA

N A

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
3	0	0	<MDA
9	1	.85	
15	0	0	
21	0	0	
25	1	.85	<MDA

N A

Remarks-

Signature- BS Kjos Reviewed by- Paul C Ely 4/29/03

of

Duratek, Inc.
Survey Package Worksheet for Package B1600
Bristol-Myers Squibb Building 124 Rooms 205 to 207

Package Identification No.: B1600	Prepared by: Paul C. Ely
Location: Building 124 Rooms 205 to 207	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description
The survey area in Building 124 comprising floors walls and ceilings in Rooms 205 to 207.

Historical Information
Rooms 205 and 205A were used for pass through to the clean room/filling room 207. Room 206 was a wash room, 206A was a gown change room and room 206B was the exit from room 207. In room 207 there were many filling hoods/glove boxes. Radionuclides used included Cr-51, Se-75, I-125, I-131, Hg-197, Au-198, Tl-201 and Hg-203. All other areas had contamination levels <5,000 dpm/100 cm^2 as identified during the characterization survey.

General Survey Instructions
(Class 2): 1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids. 2. Immediately notify the Project Manager if any reading greater than the equivalent of 7,100 dpm/100 cm2. 3. Perform direct beta measurements at the points given on the survey map that is part of this package.

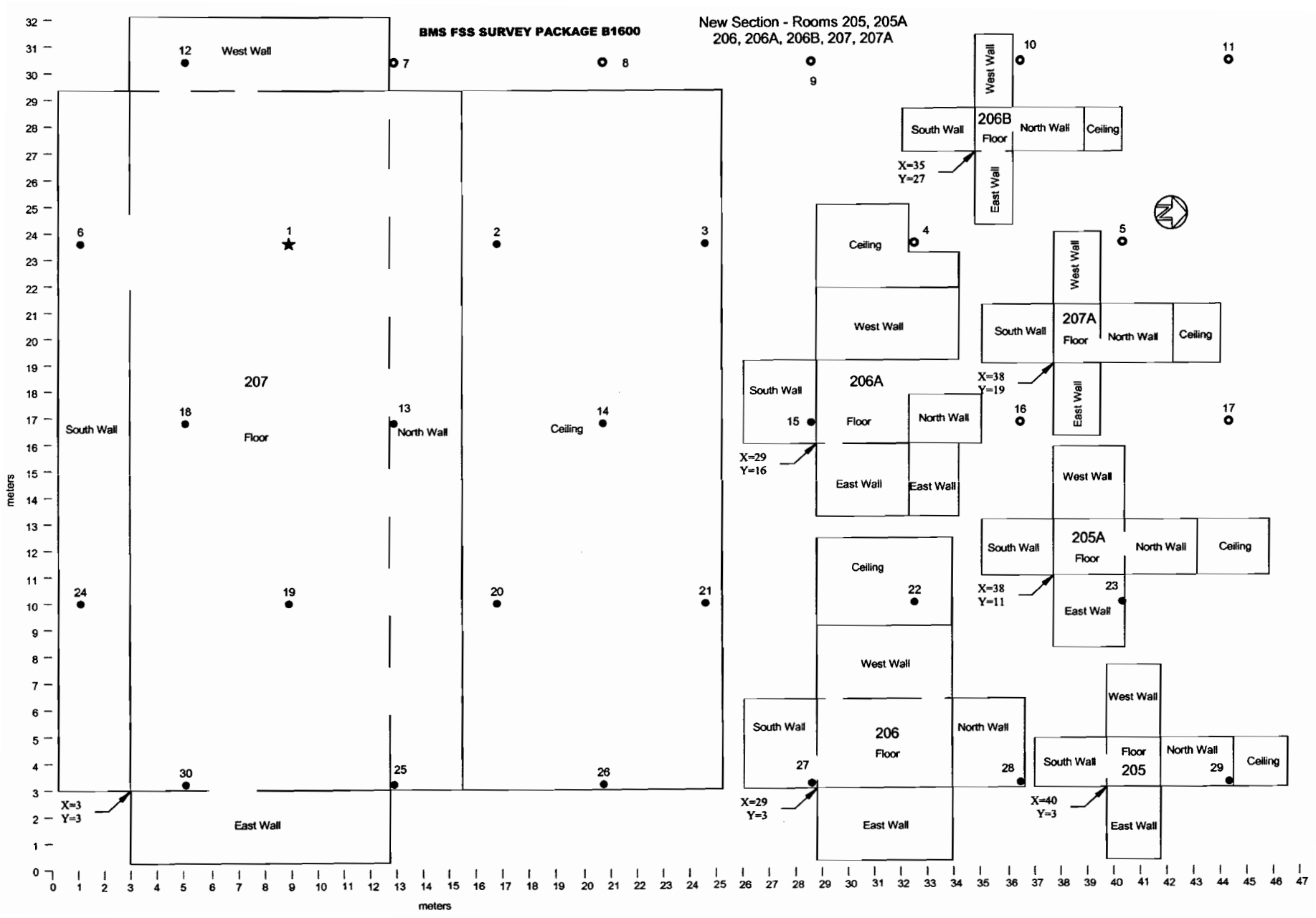
Survey Package: B1600 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 205 to 207												
B1600	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NRC/4-11-03	NRC 4-16-03	N/A	N/A	5 4-16-03	N/A	N/A
B1600	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NRC/4-11-03	NRC/4-16-03	N/A	N/A	N/A	N/A	N/A
B1600	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NRC/4-11-03	NRC/4-16-03	N/A	N/A	N/A	N/A	N/A
B1600	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NRC/4-11-03	N/A	N/A	N/A	N/A	N/A	N/A
B1600	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	NRC/4-11-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments


BMS FSS SURVEY PACKAGE B1600
New Section - Rooms 205, 205A
206, 206A, 206B, 207, 207A
207
Floor
West Wall
South Wall
North Wall
Ceiling
East Wall
X=3
Y=3
206A
X=29
Y=16
206B
X=35
Y=27
207A
X=38
Y=19
205A
X=38
Y=11
206
X=29
Y=3
205
X=40
Y=3
meters
meters

Survey Package B1600
B-124 Rooms 205, 205A, 206, 206A, 206B, 207, 207A

X (Max):	46.8	meters	
Y (Max):	32.0	meters	
A (Area):	1498	m^2	actual survey area 734 square meters
COMPASS Survey Points:	14		
N (Points):	28		

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	7.9	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	6.8	meters	(distance between rows)
L/2=	4.0	meters	(row offset value)
X (Random):	19.7		random number generator
Y (Random):	24.2		random number generator
X (Origin):	9		initially generated random number
Y (Origin):	23.6		initially generated random number
Number of rows:	5		
Number of columns:	6		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	9.0	23.6	4
2	16.9	23.6	
3	24.8	23.6	
4	32.7	23.6	
5	40.6	23.6	
6	1.1	23.6	
7	13.0	30.4	5
8	20.9	30.4	
9	28.8	30.4	
10	36.7	30.4	
11	44.6	30.4	
12	5.1	30.4	
13	13.0	16.8	3
14	20.9	16.8	
15	28.8	16.8	
16	36.7	16.8	
17	44.6	16.8	
18	5.1	16.8	
19	9.0	10.0	2
20	16.9	10.0	
21	24.8	10.0	
22	32.7	10.0	
23	40.6	10.0	
24	1.1	10.0	
25	13.0	3.2	1
26	20.9	3.2	
27	28.8	3.2	
28	36.7	3.2	
29	44.6	3.2	
30	5.1	3.2	

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3. For this survey unit σ is about 1/4 of the $DCGL_W$

The LBGR for this survey unit is set to be 50% of the $DCGL_W$.

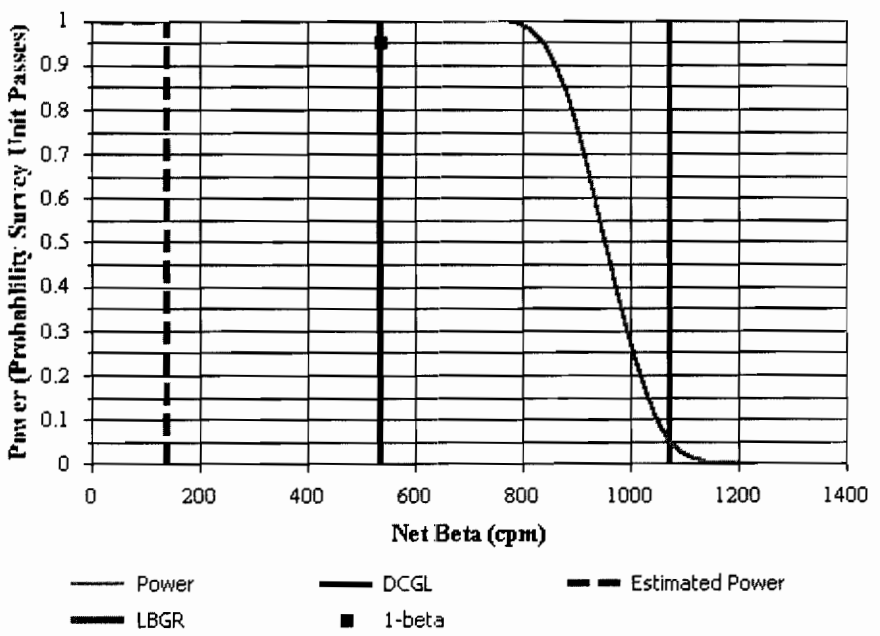
σ =	211.3	cpm (Calculated by COMPASS)
$DCGL_W$ =	1,074	cpm (Calculated by COMPASS)
LBGR =	**537**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1600 FSS Package		
Comments:	B-124 Rooms 205 to 207		
Area (m²):	734	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	142
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 387 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement								
Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 59
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** NRL2986 **Signature:** [signature] **Date:** 4-16-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B1600 B-124, Rooms 205-207
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.228			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1 194	2 205	3 169	4 N/A	5 N/A	6 N/A	189
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .129

Duratek™

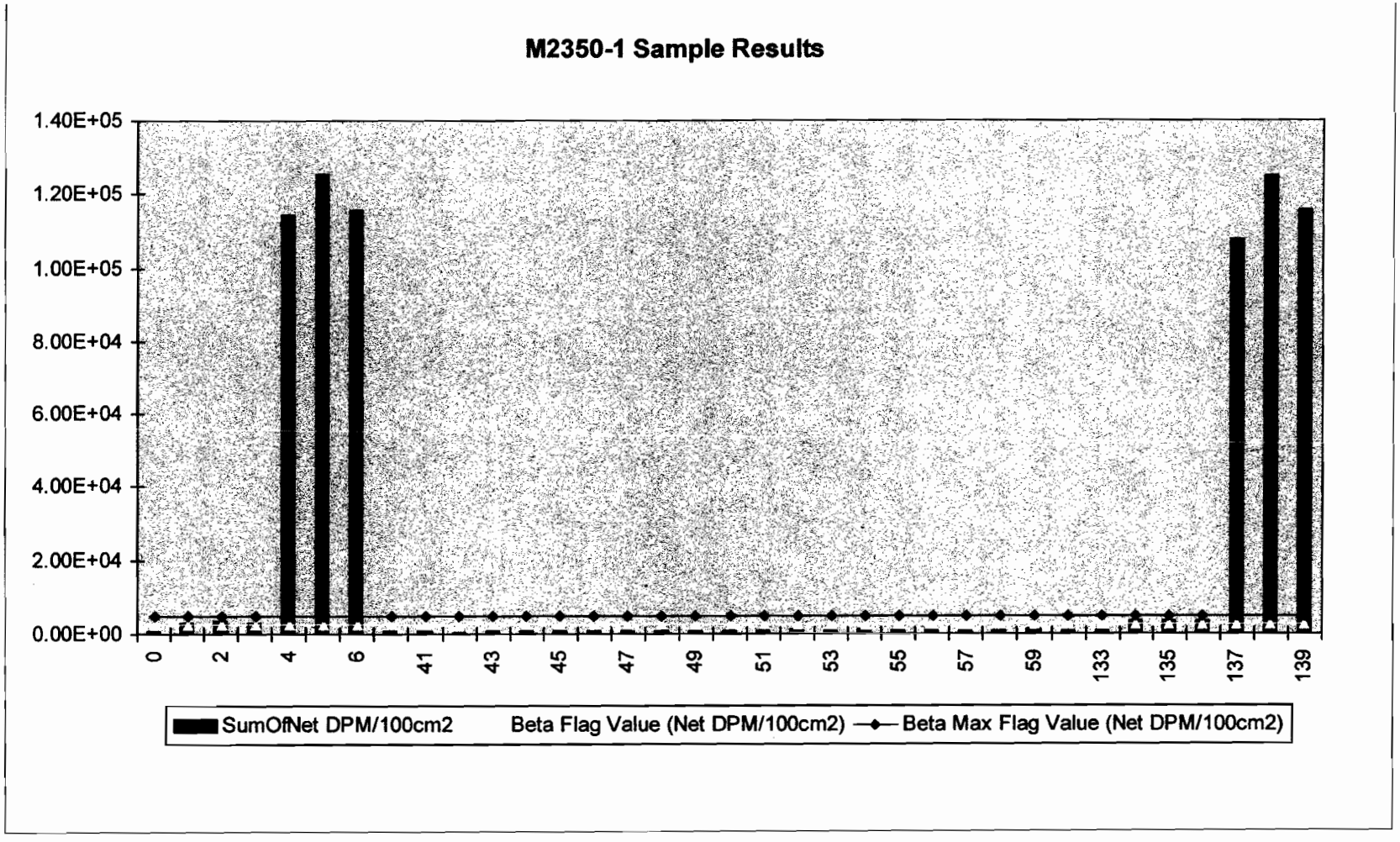
M2350-1 Download BETA Report

File Name : 00000059	Survey Description :Package B1600 B-124 Rooms 205-207	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 4/16/03

Print Name	Signature	Date
Doug Kjos	Doug Kjos	9/7/03

Comments:

Sign-Off Paul C. Ely (Print Name) Paul C Ely (Signature) 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
41
43
45
47
49
51
53
55
57
59
133
135
137
139
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000059

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,579.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	898
ZZZZZ	FD184	1	1,195.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,262
ZZZZZ	FD184	2	1,256.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,474
ZZZZZ	FD184	3	1,188.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,237
ZZZZZ	10002	4	33,119.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	114,387
ZZZZZ	10002	5	36,265.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	125,338
ZZZZZ	10002	6	33,523.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	115,793
B1600	ZZZZZ	40	194.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	675
B1600	ZZZZZ	41	205.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	714
B1600	ZZZZZ	42	169.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	588
B1600	01C01	43	250.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	870
B1600	01C01	44	252.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	877
B1600	01C01	45	226.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	787
B1600	01C01	46	275.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	957
B1600	01C01	47	271.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	943
B1600	01C01	48	300.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	1,044
B1600	01C01	49	290.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,009
B1600	01C01	50	307.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,069
B1600	01W01	51	285.0	60	FLDCT	B0004	ZZZZZ	7	0.0001	992
B1600	01W01	52	331.0	60	FLDCT	B0004	ZZZZZ	15	0.0001	1,152
B1600	01W01	53	277.0	60	FLDCT	B0004	ZZZZZ	24	0.0001	964
B1600	01F01	54	326.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,135
B1600	01F01	55	262.0	60	FLDCT	B9999	ZZZZZ	19	0.0001	912
B1600	01F01	56	246.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	856
B1600	01F01	57	259.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	902
B1600	01F01	58	291.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,013
B1600	01W01	59	336.0	60	FLDCT	B0004	ZZZZZ	6	0.0001	1,170
B1600	01W01	60	297.0	60	FLDCT	B0004	ZZZZZ	12	0.0001	1,034
ZZZZZ	ZZZZZ	133	2,476.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	134	1,220.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,383
ZZZZZ	FD184	135	1,233.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,429
ZZZZZ	FD184	136	1,241.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,457
ZZZZZ	10002	137	31,244.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	107,895
ZZZZZ	10002	138	36,200.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	125,146
ZZZZZ	10002	139	33,447.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	115,563

Beta Flag	2500	- _____
Beta Max Flag	5000	

Survey #- B1600

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kjos (Print) Signature D. Kjos BSK Date 4-16-03 Time 1530

Counted by D. Schumacher (Print) Signature [illegible] Date 4/16/03 Time 1330

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
1	50	0	<MDA
13	53	0	
18	50	0	
19	60	3	
25	62	5	
		A	
	N		

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
1	0	0	<MDA
13	0	0	
18	0	0	
19	0	0	
25	0	0	
		A	
	N		

BSK 4-28-03

Remarks- MDA: β-γ = 110 dpm/100 cm², α ~~4.6~~ 14 dpm/100 cm²

Signature- [illegible] Reviewed by- [illegible] 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B1700
Bristol-Myers Squibb Building 124 Rooms 208 to 210

Package Identification No.: B1700	Prepared by: Paul C. Ely
Location: Building 124 Rooms 208 to 210	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors, walls and ceilings in Rooms 208 to 210.

Historical Information

In Room 208 there were three packaging lines where the final packaging for most radionuclides took place. Room 209 was the Order Selection Room. Room 210 was the Order Packaging Room. Radionuclides used included Cr-51, Co-57, Co-60, Se-75, I-125, I-131, Cs-137, Hg-197, and Hg-203. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 7,100 dpm/100 cm2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Survey Package: B1700 continued

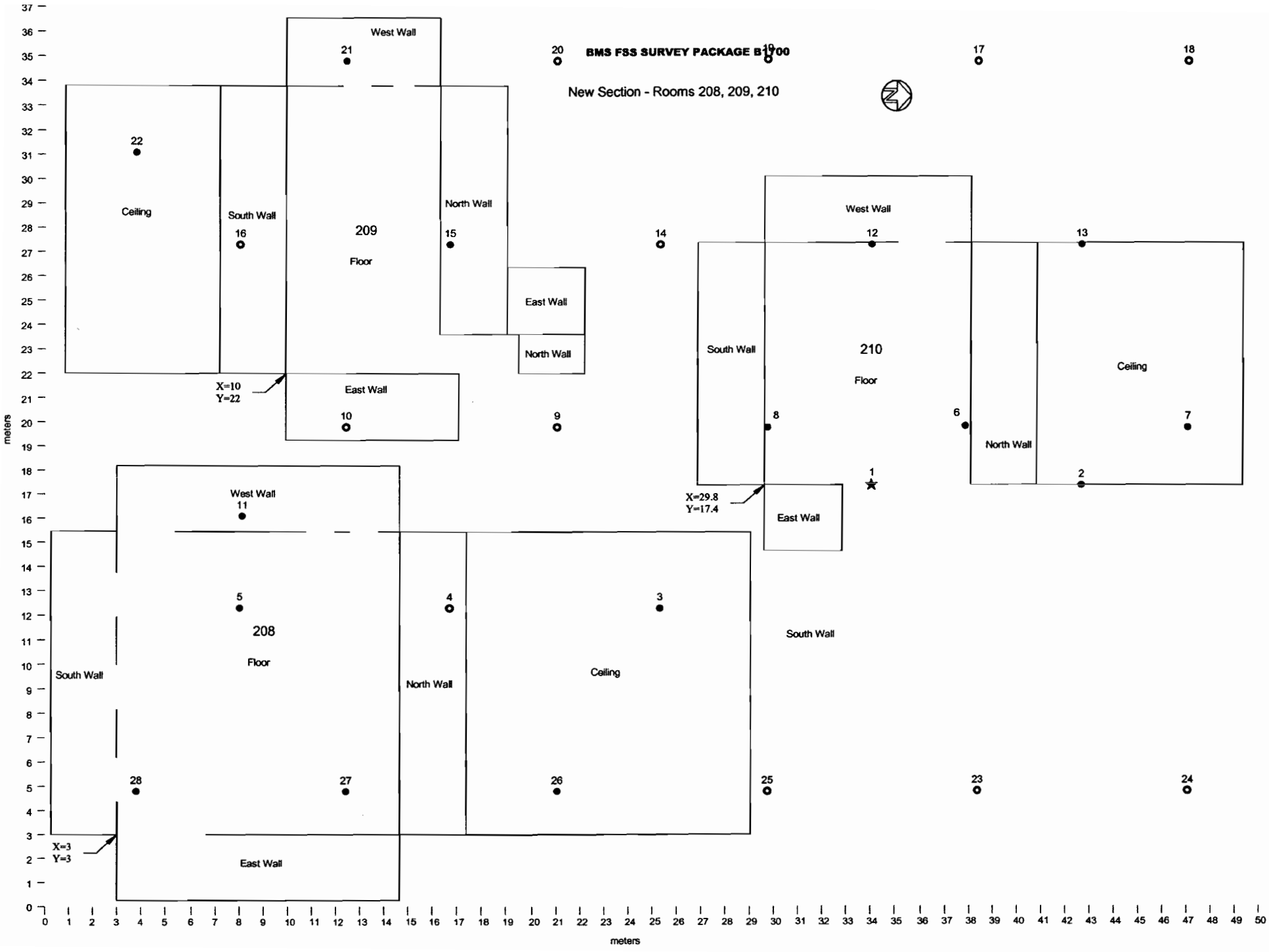
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8							5	
Bristol Myers Squibb Building 124 Rooms 208 to 210												
B1700	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NRL/4-10-03	NRL 4-15-03	N/A	N/A	NRL 5 4-15-03	~~N/A~~ 4-15-03	N/A
B1700	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NRL/4-10-03	NRL/4-15-03	N/A	N/A	N/A	N/A	N/A
B1700	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NRL/4-10-03	NRL/4-15-03	N/A	N/A	N/A	N/A	N/A
B1700	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B1700	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments


BMS FSS SURVEY PACKAGE B1700
New Section - Rooms 208, 209, 210
Ceiling
South Wall
West Wall
North Wall
East Wall
209
Floor
X=10
Y=22
210
Floor
X=29.8
Y=17.4
208
Floor
X=3
Y=3
meters
meters

Survey Package B1700
B-124 Rooms 208, 209, 210

X (Max):	49.6	meters	
Y (Max):	36.6	meters	
A (Area):	1815	m^2	actual survey area 1,001 square
COMPASS Survey Points:	14		
N (Points):	28		

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	8.7	meters	(distance between measurement

$$D = 0.866 * L$$

D=	7.5	meters	(distance between rows)
L/2=	4.4	meters	(row offset value)
X (Random):	26.2		random number generator
Y (Random):	15.2		random number generator
X (Origin):	34.2		initially generated random numbe
Y (Origin):	12.3		initially generated random numbe
Number of rows:	5		
Number of columns:	6		

Survey Point	**Survey Location X**	**Y**	**Points Moved to Place on Nearest Surveyable Surface**
Starting Point (1)	34.2	12.3	moved to X=34.2, Y=17.4
2	42.9	12.3	moved to X=42.9, Y=17.4
3	25.5	12.3	
4	16.8	12.3	
5	8.1	12.3	
6	38.6	19.8	
7	47.3	19.8	
8	29.9	19.8	
9	21.2	19.8	
10	12.5	19.8	
11	3.8	19.8	moved to X=8.2, Y=16.1
12	34.2	27.3	
13	42.9	27.3	
14	25.5	27.3	
15	16.8	27.3	
16	8.1	27.3	
17	38.6	34.8	
18	47.3	34.8	
19	29.9	34.8	
20	21.2	34.8	
21	12.5	34.8	
22	3.8	34.8	moved to X=3.8, Y=31.1
23	38.6	4.8	
24	47.3	4.8	
25	29.9	4.8	
26	21.2	4.8	
27	12.5	4.8	
28	3.8	4.8	

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3. For this survey unit σ is about 1/4 of the $DCGL_W$

The LBGR for this survey unit is set to be 50% of the $DCGL_W$.

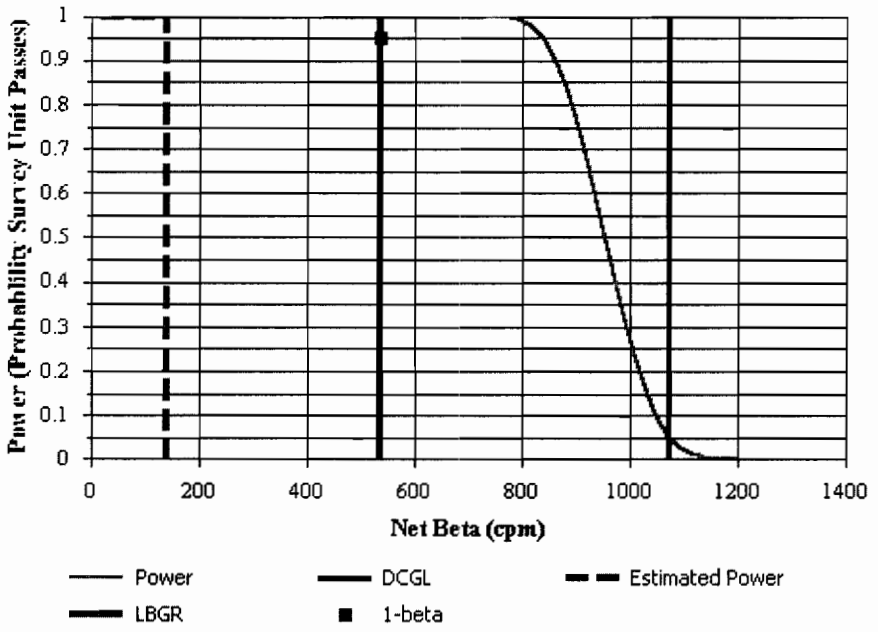
σ =	211.3	cpm (Calculated by COMPASS)
$DCGL_W$ =	1,074	cpm (Calculated by COMPASS)
LBGR =	**537**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1700 FSS Package		
Comments:	B-124 Rooms 208 to 210		
Area (m²):	1,000	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	142
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 387 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement								
Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Ryos **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 49
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Ryos **User ID** NOL 2986 **Signature:** [signature] **Date:** 4-15-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: PACKAGE B1700 B-124 ROOMS 208-210
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.230			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 163	2 193	3 195	4 N/A	5 N/A	6 N/A	184
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 EFF = .129

Duratek™

M2350-1 Download BETA Report

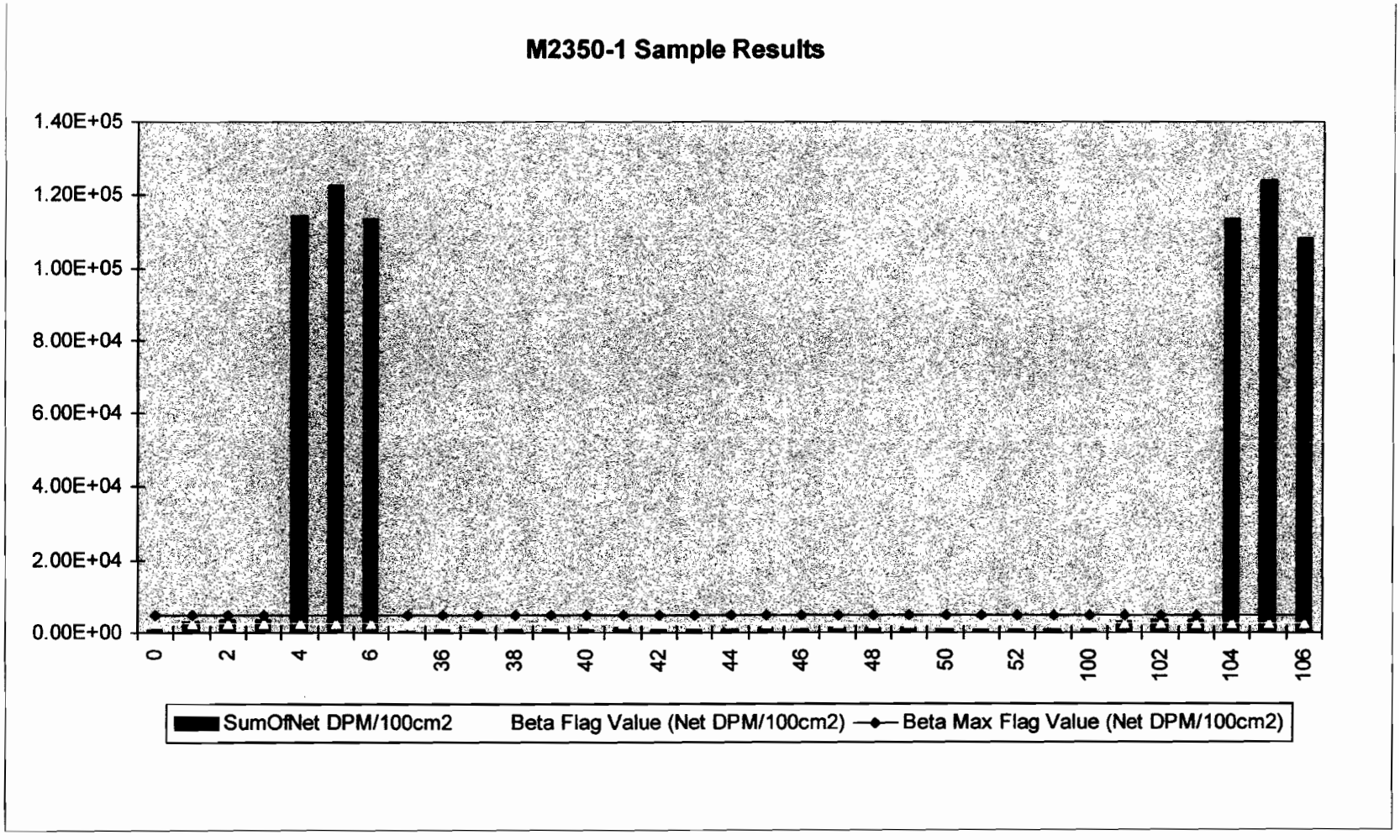
File Name : 00000049	Survey Description :Package B1700 B-124 Rooms 208-210	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.23	Survey Date : 4/15/03

Print Name	Signature	Date
Doug Kjos	DRK	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
Paul L. Ely	Paul C Ely	9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
36
38
40
42
44
46
48
50
52
100
102
104
106
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000049

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,453.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	846
ZZZZZ	FD184	1	1,119.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,016
ZZZZZ	FD184	2	1,222.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,371
ZZZZZ	FD184	3	1,289.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,602
ZZZZZ	10002	4	33,342.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	114,206
ZZZZZ	10002	5	35,781.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	122,622
ZZZZZ	10002	6	33,167.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	113,602
B1700	ZZZZZ	35	163.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	562
B1700	ZZZZZ	36	193.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	666
B1700	ZZZZZ	37	195.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	673
B1700	01W01	38	281.0	60	FLDCT	B0004	ZZZZZ	11	0.0001	970
B1700	01C01	39	254.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	876
B1700	01C01	40	268.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	925
B1700	01F01	41	336.0	60	FLDCT	B0003	ZZZZZ	28	0.0001	1,159
B1700	01F01	42	264.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	911
B1700	01F01	43	235.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	811
B1700	01C01	44	318.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,097
B1700	01W01	45	335.0	60	FLDCT	B0004	ZZZZZ	21	0.0001	1,156
B1700	01W01	46	286.0	60	FLDCT	B0004	ZZZZZ	15	0.0001	987
B1700	01C01	47	331.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	1,142
B1700	01C01	48	368.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	1,270
B1700	01C01	49	433.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	1,494
B1700	01F01	50	284.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	980
B1700	01F01	51	278.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	959
B1700	01F01	52	252.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	870
B1700	01F01	53	260.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	897
ZZZZZ	ZZZZZ	100	2,498.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	101	1,198.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,271
ZZZZZ	FD184	102	1,254.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,464
ZZZZZ	FD184	103	1,245.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,433
ZZZZZ	10002	104	33,191.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	113,668
ZZZZZ	10002	105	36,154.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	123,892
ZZZZZ	10002	106	31,632.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	108,288

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B1700

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kyos (Print) Signature [signature] Date 4/15/03 Time 1545

Counted by D. Schummer (Print) Signature [signature] Date 4/16/03 Time 1400

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β·γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
1	51	0	< MDA
5	54	0	
8	56	0	
27	63	6	
28	52	0	
		A	
	N		

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
1	0	0	< MDA
5	0	0	
8	1	.7	
27	0	0	
28	0	0	
		A	
	N		

Remarks- MDA: β·γ = 110 dpm/100cm², α = 4.6 dpm/100cm²

Signature- [signature] Reviewed by- Paul C. Ely 4/30/03

of

Duratek, Inc.
Survey Package Worksheet for Package B1800
Bristol-Myers Squibb Building 124 Rooms 211, 212A & 213

Package Identification No.: B1800	Prepared by: Paul C. Ely
Location: Building 124 Rooms 211, 212A & 213	Date prepared: 4/4/2003
Area Classification: Class 2	

Area Description

The survey area in Building 124 comprising floors walls and ceilings in Rooms 211, 212A & 213.

Historical Information

Room 211 was the Kit Packaging Room where radionuclides I-125 and Co-57 were handled. Room 212A was a pass through hall with refrigerated cabinets. Room 213 contained a conveyor to distribution. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B1800 continued

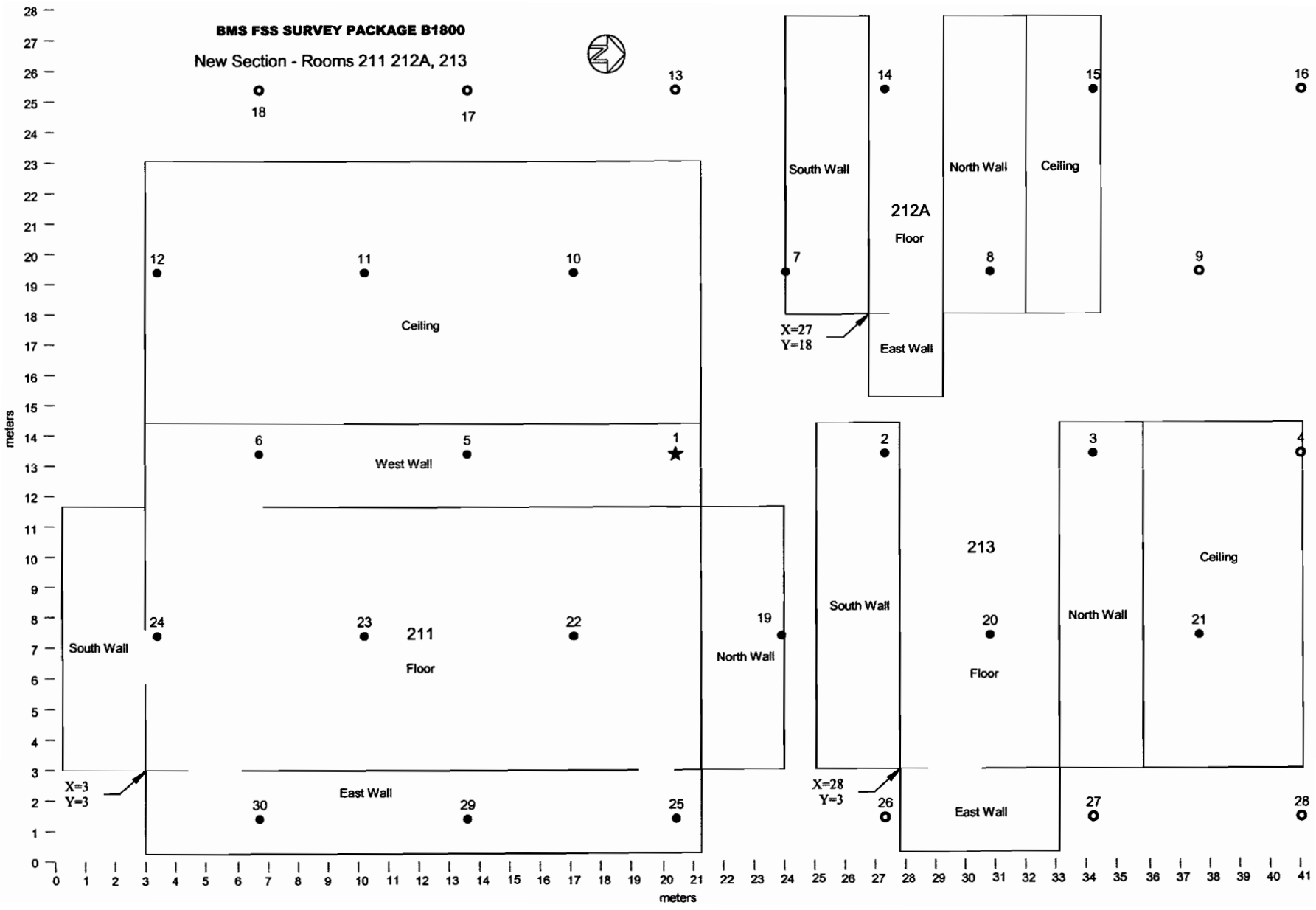
Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8						5		
Bristol Myers Squibb Building 124 Rooms 211, 212A & 213												
B1800	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSK 4-11-03	BSK 4-16-03	N/A	N/A	BSK 5 4-16-03	N/A	N/A
B1800	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4-11-03	BSK 4-16-03	N/A	N/A	N/A	N/A	N/A
B1800	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4-11-03	BSK 4-16-03	N/A	N/A	N/A	N/A	N/A
B1800	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSK 4-11-03	N/A	N/A	N/A	N/A	N/A	N/A
B1800	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	BSK 4-11-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/29/03
Package Reviewed by and Date: Paul C Ely 4/29/03

Survey Comments


BMS FSS SURVEY PACKAGE B1800
New Section - Rooms 211 212A, 213
N
211
Floor
Ceiling
West Wall
East Wall
South Wall
North Wall
X=3
Y=3
212A
Floor
Ceiling
South Wall
North Wall
East Wall
X=27
Y=18
213
Floor
Ceiling
South Wall
North Wall
East Wall
X=28
Y=3
meters
meters

Survey Package B1800
B-124 Rooms 211, 212A, 213

X (Max):	41.4	meters	
Y (Max):	27.8	meters	
A (Area):	1151	m^2	actual survey area 608 square meters
COMPASS Survey Points:	14		
N (Points):	28		

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	6.9	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	6	meters	(distance between rows)
L/2=	3.5	meters	(row offset value)
X (Random):	15.1		random number generator
Y (Random):	16.9		random number generator
X (Origin):	20.6		initially generated random number
Y (Origin):	13.4		initially generated random number
Number of rows:	5		
Number of columns:	6		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	20.6	13.4	3
2	27.5	13.4	
3	34.4	13.4	
4	41.3	13.4	
5	13.7	13.4	
6	6.8	13.4	
7	24.1	19.4	4
8	31.0	19.4	
9	37.9	19.4	
10	17.2	19.4	
11	10.3	19.4	
12	3.4	19.4	
13	20.6	25.4	5
14	27.5	25.4	
15	34.4	25.4	
16	41.3	25.4	
17	13.7	25.4	
18	6.8	25.4	
19	24.1	7.4	2
20	31.0	7.4	
21	37.9	7.4	
22	17.2	7.4	
23	10.3	7.4	
24	3.4	7.4	
25	20.6	1.4	1
26	27.5	1.4	
27	34.4	1.4	
28	41.3	1.4	
29	13.7	1.4	
30	6.8	1.4	

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3. For this survey unit σ is about 1/4 of the $DCGL_W$

The LBGR for this survey unit is set to be 50% of the $DCGL_W$.

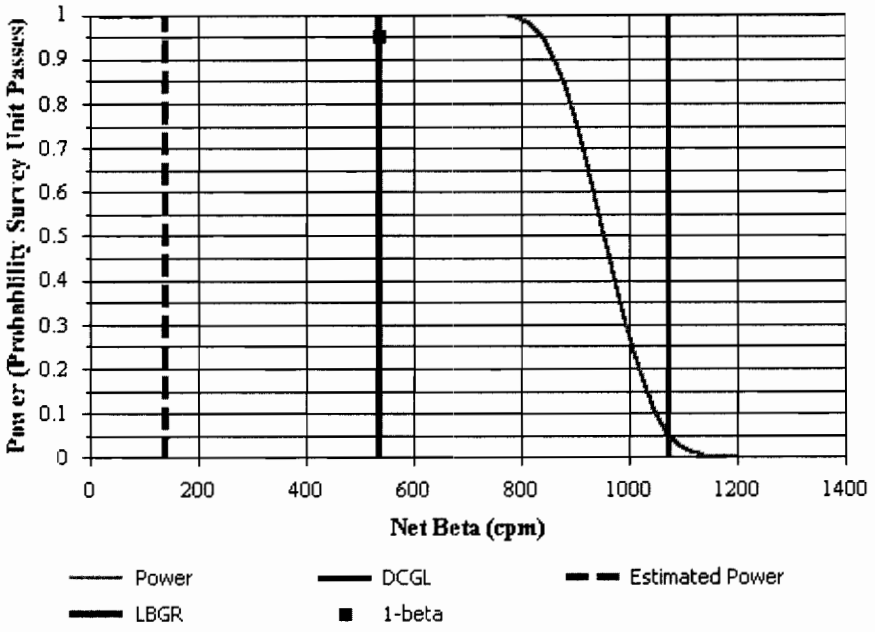
σ =	211.3	cpm (Calculated by COMPASS)
$DCGL_W$ =	1,074	cpm (Calculated by COMPASS)
LBGR =	**537**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1800 FSS Package		
Comments:	B-124 Rooms 211, 212A & 213		
Area (m²):	608	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	211.3
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	537	Estimated Conc. (cpm):	142
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 387 ± 208 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A0800,Rooms 179, 182, 183, 184, 190-213 and 217
Building 124

	Floor		Wall		Ceiling		Above False Ceiling (Not Used in Average)	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	253	242	340	388	350	442	300	341
	214	220	358	421	386	359	331	360
	199	223	360	450	455	451	299	365
	237	271	364	420	380	409	359	372
	292	290	362	456	371	453	349	346
	258	241	438	442	410	462	372	368
	249	258	339	449	384	424	341	372
	242	257	382	440	352	424	350	368
	243	209	365	436	369	410	342	340
	209	223	353	426	414	508	346	438
	211	244	341	392	409	429	385	421
	238	217	371	470	458	498	411	426
	216	236	309	420	407	463	328	336
	241	267	354	494	419	474	330	357
	273	305	331	391	322	367	311	353
	288	296	377	449	333	369	365	366
	260	285	390	376	393	381	369	368
	287	273	388	458	405	574	294	338
	257	257	403	481	393	400	362	412
	233	242	414	487	390	559	333	386
	224	198	379	474	343	448	368	383
	217	235	340	430	393	414	329	357
	252	220	324	415	336	402	354	395
	243	248	365	481	414	410	347	377
	224	198	340	408	417	412	364	385
	238	248	358	397	349	412		
	235	257	383	437	359	397		
	246	246	384	438	376	415		
	256	254	315	346	339	372		
	274	272	388	341	392	411		
	255	222	356	444				
	222	225	315	426				
	248	246	500	662				
	275	279	414	460				
	256	241	346	448				
	248	258	375	426				
	229	236	485	962				
	228	221	373	491				
	239	228	330	424				
	239	254	407	497				
	232	210	427	475				
	252	418	354	415				
	231	212	369	479				
	267	263	366	405				
	261	255	327	423				
	276	2271						
Average	**244.9**	**292.8**	**370.2**	**452.2**	**383.9**	**431.6**	**345.6**	**373.2**
Standard Deviation	**21.7**	**300.3**	**39.8**	**92.1**	**34.3**	**51.7**	**27.5**	**27.7**
No of Measurements	**46**	**46**	**45**	**45**	**30**	**30**	**25**	**25**
All Measurement Average	**326.0**	**386.5**						
Standard Deviation	**71.6**	**207.5**						
No of Measurements	**121**	**121**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 57
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos **User ID** BSK0490 **Signature:** [signature] **Date:** 4-16-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B1800, Bldg 124, Rooms 211, 212A, 213
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092224	43-68B	.225			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm 1

β Beta	1 246	2 246	3 262	4 n/a	5 n/a	6 n/a	251
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .143

Duratek™

M2350-1 Download BETA Report

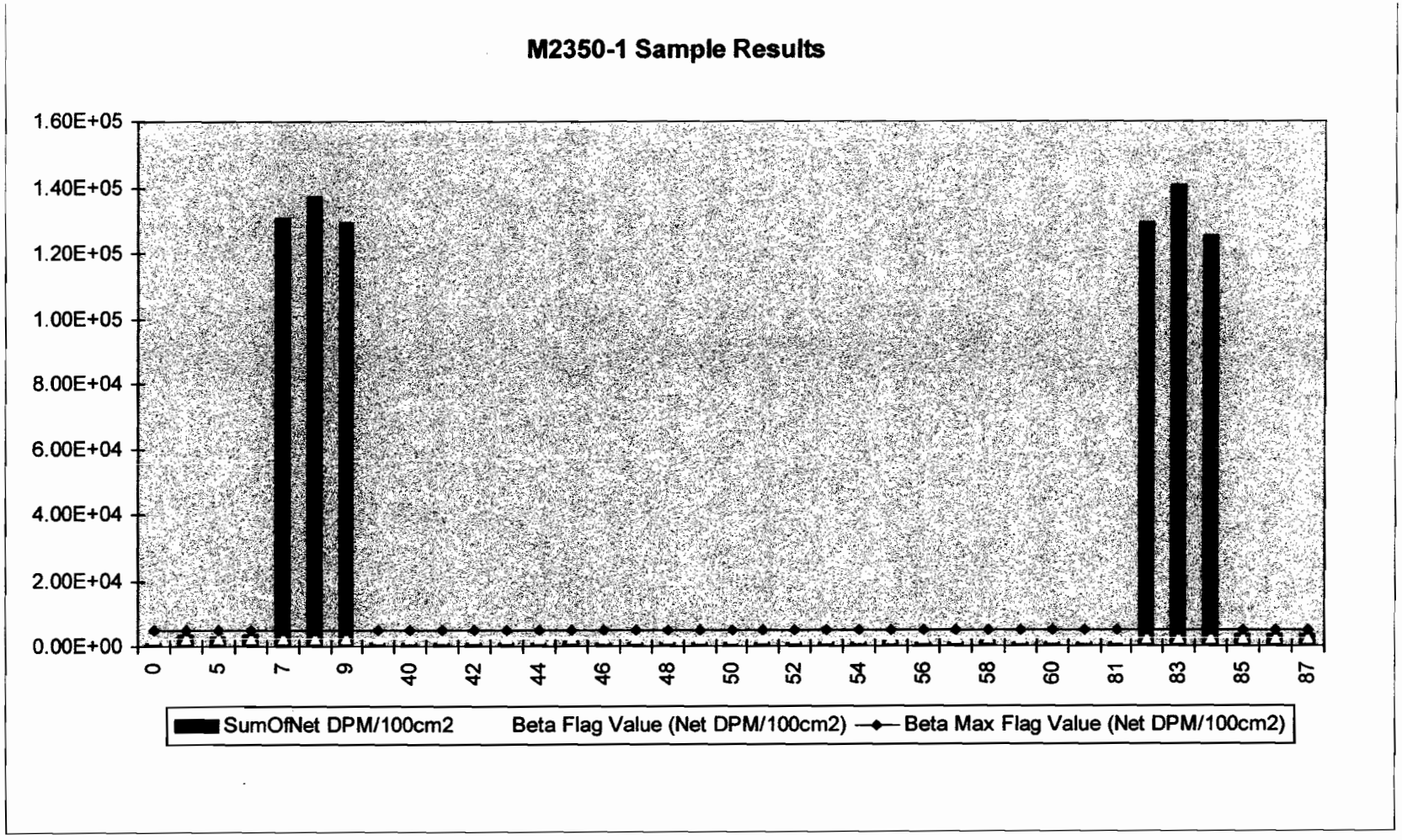
File Name : 00000057	Survey Description :Package B1800, B124, Rooms 211, 212A and 213	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.225	Survey Date : 4/16/03

Print Name	Signature	Date
Betty Kjos	BSKjos	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY	Paul E Ely	9-8-03


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
5
7
9
40
42
44
46
48
50
52
54
56
58
60
81
83
85
87
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000057

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,658.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	938
ZZZZZ	19655	4	1,283.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,587
ZZZZZ	19655	5	1,139.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,079
ZZZZZ	19655	6	1,232.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	3,407
ZZZZZ	10002	7	37,431.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	131,094
ZZZZZ	10002	8	39,209.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	137,385
ZZZZZ	10002	9	36,966.0	60	PRB00	ZZZZZ	ZZZZZ	0	266	129,453
B1800	ZZZZZ	39	246.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	868
B1800	ZZZZZ	40	246.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	868
B1800	ZZZZZ	41	262.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	924
B1800	01C01	42	311.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	1,097
B1800	01F01	43	244.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	861
B1800	01W01	44	213.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	751
B1800	01W01	45	382.0	60	FLDCT	B0004	ZZZZZ	3	0.0001	1,347
B1800	01W01	46	241.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	850
B1800	01W01	47	217.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	765
B1800	01F01	48	262.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	924
B1800	01C01	49	277.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	977
B1800	01C01	50	258.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	910
B1800	01C01	51	291.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	1,026
B1800	01C01	52	284.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	1,002
B1800	01F01	53	266.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	938
B1800	01F01	54	294.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	1,037
B1800	01F01	55	356.0	60	FLDCT	B0002	ZZZZZ	24	0.0001	1,256
B1800	01W01	56	309.0	60	FLDCT	B0004	ZZZZZ	5	0.0001	1,090
B1800	01W01	57	342.0	60	FLDCT	B0004	ZZZZZ	29	0.0001	1,206
B1800	01W01	58	359.0	60	FLDCT	B0004	ZZZZZ	30	0.0001	1,266
B1800	01W01	59	245.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	864
B1800	01W01	60	268.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	945
B1800	01W01	61	224.0	60	FLDCT	B9999	ZZZZZ	19	0.0001	790
ZZZZZ	ZZZZZ	81	2,751.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	970
ZZZZZ	10002	82	36,901.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	129,192
ZZZZZ	10002	83	40,189.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	140,790
ZZZZZ	10002	84	35,870.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	125,556
ZZZZZ	19655	85	1,187.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,217
ZZZZZ	19655	86	1,296.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,601
ZZZZZ	19655	87	1,264.0	60	PTB00	ZZZZZ	ZZZZZ	0	275	3,489

Beta Flag	2500	- _____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- B1800

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by BS Kjos (Print) Signature BS Kjos Date 4-16-03 Time 1430

Counted by BS Kjos (Print) Signature BS Kjos Date 4-28-03 Time 0900

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .253

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
8	49	0	<MDA
15	57	3	↓
20	48	0	↓
23	52	0	↓
25	56	2	<MDA

N A

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
8	1	.85	<MDA
15	1	.85	↓
20	0	0	↓
23	0	0	↓
25	0	0	<MDA

N A

Remarks-

Signature- BS Kjos **Reviewed by-** Paul C Ely 4/29/03

of

Duratek Inc.
Survey Package Worksheet for Package B1900
Bristol-Myers Squibb Building 124, Second Floor, Old Section South

Package Identification No.: B1900	Prepared by: Paul C. Ely
Location: Building 124 Second Floor, Old Section South	Date prepared: 1/15/2003
Area Classification: Class 2	

Area Description

The survey areas in Building 124 consisting floors, walls and ceiling in the former ventilation system area on the second floor.

Historical Information

Several independent and redundant ventilation systems were used to exhaust the caves, glove boxes and hoods to the stack. These systems were contaminated to various levels at one time or another with short-lived radionuclides. However contamination was restricted to the process vent systems in this part of the building. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B1900 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Second Floor, New Section North												
B1900	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NEK/3-24-03	NEK/3-24-03	N/A	N/A	NEK/5 3-25-03	N/A	N/A
B1900	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NEK/3-24-03	NEK/3-24-03	N/A	N/A	N/A	N/A	N/A
B1900	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NEK/3-24-03	NEK/3-24-03	N/A	N/A	N/A	N/A	N/A
B1900	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NEK/3-24-03	NEK/3-24-03	N/A	N/A	N/A	N/A	N/A
B1900	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

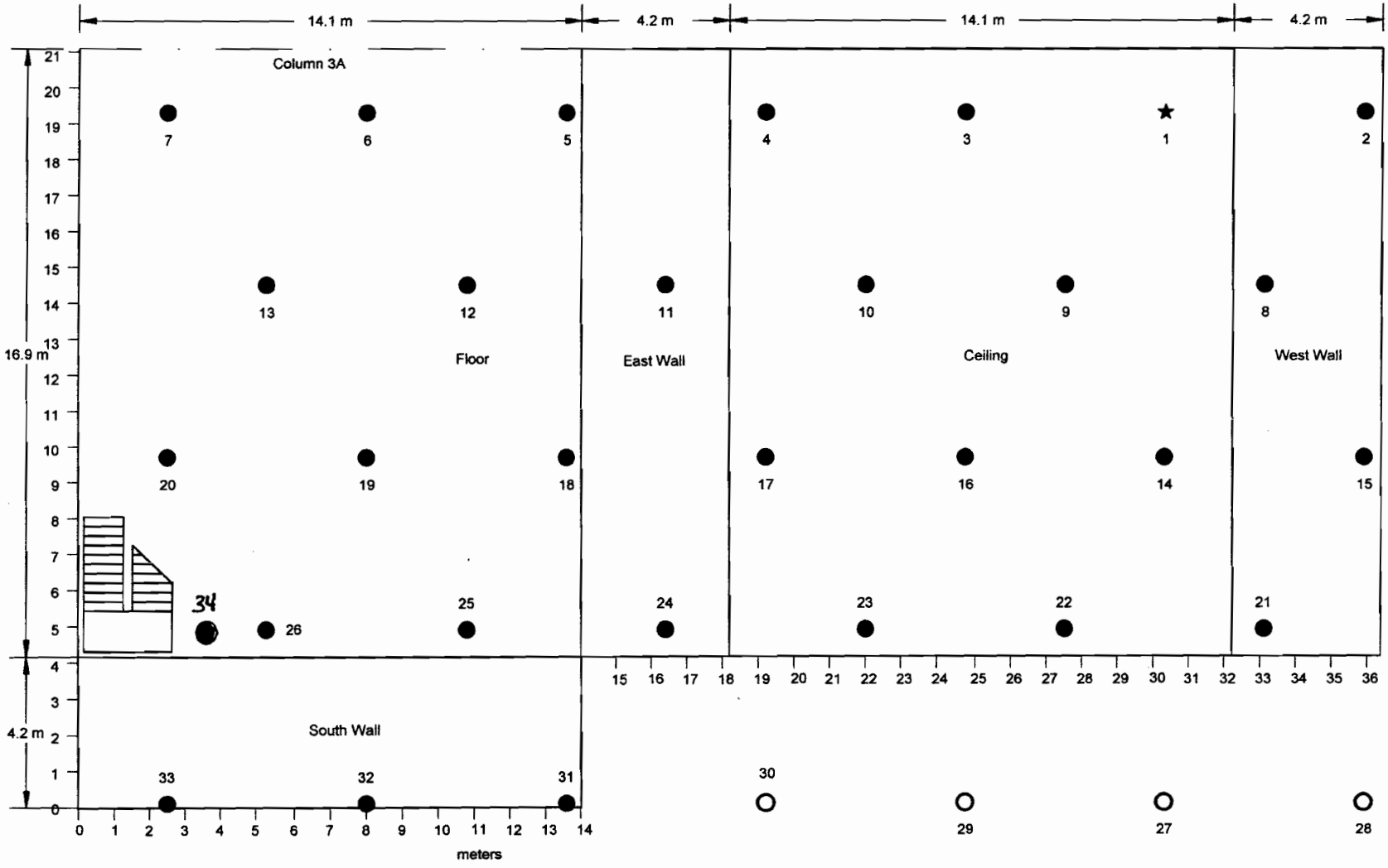
Package Review	
Date Package Completed:	3-25-03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments
Points 1, 22, 23 & 34 taken on structures. Point 34 added to survey unit. (point taken in ventilation)
Point #34 was highest activity found during scan of area; surveyed 100% of ventilation where point #34 was taken; no other elevated readings were detected.

SURVEY PACKAGE B1900 2nd Floor Old Section - South

★ Starting Point

Survey Point	Survey Location X	Y
1	30.5	19.3
2	36.1	19.3
3	24.9	19.3
4	19.3	19.3
5	13.7	19.3
6	8.1	19.3
7	2.5	19.3
8	33.3	14.5
9	27.7	14.5
10	22.1	14.5
11	16.5	14.5
12	10.9	14.5
13	5.3	14.5
14	30.5	9.7
15	36.1	9.7
16	24.9	9.7
17	19.3	9.7
18	13.7	9.7
19	8.1	9.7
20	2.5	9.7
21	33.3	4.9
22	27.7	4.9
23	22.1	4.9
24	16.5	4.9
25	10.9	4.9
26	5.3	4.9
27	30.5	0.1
28	36.1	0.1
29	24.9	0.1
30	19.3	0.1
31	13.7	0.1
32	8.1	0.1
33	2.5	0.1



Survey Package B1900
Second Floor Old Section - South

X (Max):	36.6	meters
Y (Max):	21.1	meters
A (Area):	690	m^2
N (Points):	25	

$$L = \left[\frac{A}{0.866 * N} \right]^{1/2}$$

L=	5.6	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	4.8	meters	(distance between rows)
L/2=	2.8	meters	(row offset value)
X (Random):	30		random number generator
Y (Random):	3.5		random number generator
X (Origin):	30.5		initially generated random number
Y (Origin):	19.3		initially generated random number

Number of rows:	5
Number of columns:	7

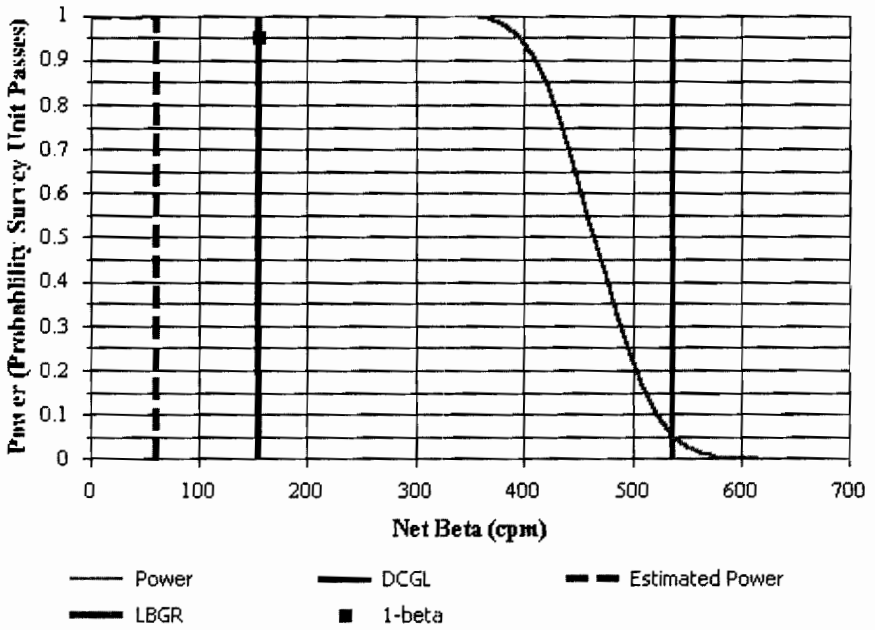
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	30.5	19.3	5
2	36.1	19.3	
3	24.9	19.3	
4	19.3	19.3	
5	13.7	19.3	
6	8.1	19.3	
7	2.5	19.3	
8	33.3	14.5	4
9	27.7	14.5	
10	22.1	14.5	
11	16.5	14.5	
12	10.9	14.5	
13	5.3	14.5	
14	30.5	9.7	3
15	36.1	9.7	
16	24.9	9.7	
17	19.3	9.7	
18	13.7	9.7	
19	8.1	9.7	
20	2.5	9.7	
21	33.3	4.9	2
22	27.7	4.9	
23	22.1	4.9	
24	16.5	4.9	
25	10.9	4.9	
26	5.3	4.9	
27	30.5	0.1	1
28	36.1	0.1	
29	24.9	0.1	
30	19.3	0.1	
31	13.7	0.1	
32	8.1	0.1	
33	2.5	0.1	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B1900 FSS Package Rev. 1		
Comments:	2nd Floor - Old Section - South		
Area (m²):	690	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	127.4
DCGL (cpm):	537	Sample Size (N):	14
LBGR (cpm):	155	Estimated Conc. (cpm):	60
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.06
Gross Beta DCGLw (cpm): 537

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.24	0.25	0.0600

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 198 ± 92 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	994
Steel Panel	28	137.9	18.4	762

BMS Download Survey Report Data Summary
Characterization Package A0810
Building 124 Second Floor Vent Systems Area
FSS Packages:B0810, B2000

	Floor		Wall		Ceiling		Structure	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	178	229	149	145	147	162	163	146
	128	194	150	146	134	145	141	140
	152	223	157	160	156	122	132	132
	124	168	129	156	137	136	183	173
	139	200	132	155	133	141	133	132
	149	185	123	142	141	133	111	136
	151	148	158	154	162	194	132	113
	125	161	140	165	173	223	135	127
	150	130	158	151	101	111	115	115
	147	220	144	137	91	144	129	127
	153	181	143	138			122	119
	135	180	143	166			133	108
	139	165	123	146			128	130
	337	359	124	132			126	125
	308	433	134	118			131	126
	297	345	143	128				
	329	385	107	105				
	338	377	130	141				
	315	325						
	300	330						
	322	340						
	316	330						
	293	324						
	310	363						
	302	283						
	298	376						
	370	336						
	317	376						
	323	398						
	283	336						
Average	**240.9**	**280.0**	**138.2**	**143.6**	**137.5**	**151.1**	**134.3**	**129.9**
Standard Deviation	**88.2**	**91.8**	**14.0**	**15.9**	**25.5**	**33.9**	**17.9**	**15.6**
No of Measurements	**30**	**30**	**18**	**18**	**10**	**10**	**15**	**15**
All Measurement Average	**179.5**	**197.9**						
Standard Deviation	**77.4**	**92.0**						
No of Measurements	**73**	**73**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 3-24-03

Download Station #: 1 Download File #: 42
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** 1RR2986 **Signature:** [signature] **Date:** 3-24-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: Package B1900
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-27-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
■ Beta β	PR092522	43-106B	.228			
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1 176	2 204	3 206	4 n/p	5 n/p	6 n/p	195
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .134

Duratek™

M2350-1 Download BETA Report

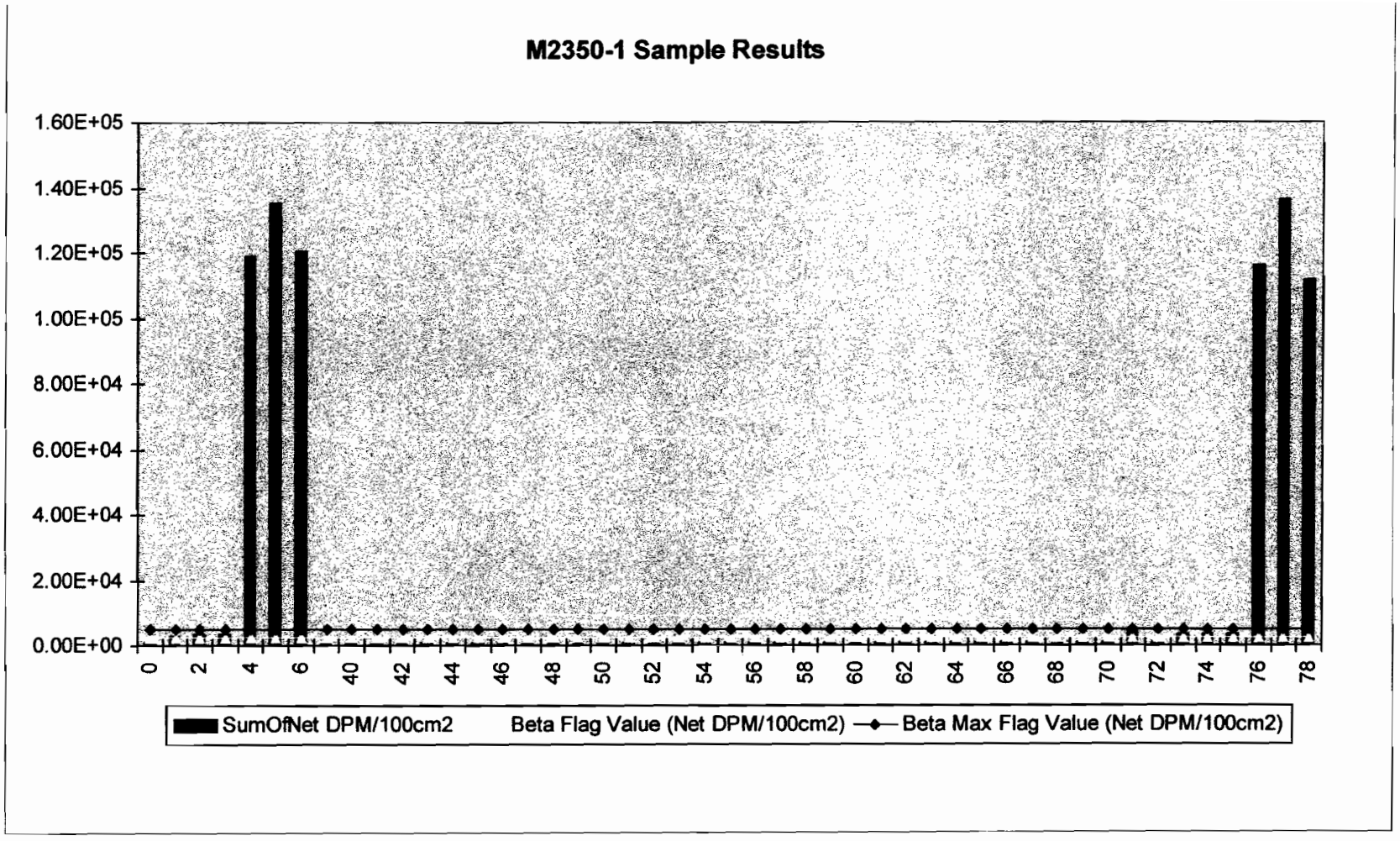
File Name : 00000042	Survey Description :Package B1900 Bldg.124 2nd Floor	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : 43-68B	Detector S/N : 092522	Detector Cal. Due : 6/27/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 3/24/03

Print Name	Signature	Date
Doug Kjos		9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY		9-8-03


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000042

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,194.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	764
ZZZZZ	FD184	1	1,115.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	3,119
ZZZZZ	FD184	2	1,232.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	3,526
ZZZZZ	FD184	3	1,184.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	3,359
ZZZZZ	10002	4	34,477.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	119,250
ZZZZZ	10002	5	39,032.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	135,105
ZZZZZ	10002	6	34,840.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	120,513
B1900	01W01	39	176.0	60	FLDBK	B9999	ZZZZZ	1	0.0001	613
B1900	01W01	40	204.0	60	FLDBK	B0004	ZZZZZ	2	0.0001	710
B1900	01F01	41	206.0	60	FLDBK	B0003	ZZZZZ	3	0.0001	717
B1900	01W01	42	179.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	623
B1900	01W01	43	237.0	60	FLDCT	B0004	ZZZZZ	2	0.0001	825
B1900	01W01	44	222.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	773
B1900	01W01	45	268.0	60	FLDCT	B0004	ZZZZZ	15	0.0001	933
B1900	01W01	46	190.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	661
B1900	01W01	47	188.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	654
B1900	01W01	48	176.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	613
B1900	01W01	49	189.0	60	FLDCT	B9999	ZZZZZ	31	0.0001	658
B1900	01W01	50	199.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	693
B1900	01S01	51	231.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	804
B1900	01S01	52	212.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	738
B1900	01C01	53	202.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	703
B1900	01C01	54	236.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	821
B1900	01C01	55	219.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	762
B1900	01C01	56	255.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	888
B1900	01C01	57	227.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	790
B1900	01C01	58	235.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	818
B1900	01C01	59	226.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	787
B1900	01S01	60	212.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	738
B1900	01F01	61	218.0	60	FLDCT	B0003	ZZZZZ	7	0.0001	759
B1900	01F01	62	247.0	60	FLDCT	B0003	ZZZZZ	6	0.0001	860
B1900	01F01	63	274.0	60	FLDCT	B0003	ZZZZZ	5	0.0001	954
B1900	01F01	64	257.0	60	FLDCT	B0003	ZZZZZ	12	0.0001	895
B1900	01F01	65	276.0	60	FLDCT	B0003	ZZZZZ	13	0.0001	961
B1900	01F01	66	279.0	60	FLDCT	B0003	ZZZZZ	20	0.0001	971
B1900	01F01	67	268.0	60	FLDCT	B0003	ZZZZZ	19	0.0001	933
B1900	01F01	68	288.0	60	FLDCT	B0003	ZZZZZ	18	0.0001	1,003
B1900	01F01	69	263.0	60	FLDCT	B0003	ZZZZZ	26	0.0001	915
B1900	01F01	70	289.0	60	FLDCT	B0003	ZZZZZ	25	0.0001	1,006

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B1900	01S01	71	1,224.0	60	FLDCT	B9999	ZZZZZ	34	0.0001	4,261
ZZZZZ	ZZZZZ	72	2,152.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	749
ZZZZZ	FD184	73	1,170.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	3,324
ZZZZZ	FD184	74	1,250.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	3,603
ZZZZZ	FD184	75	1,250.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	3,603
ZZZZZ	10002	76	33,502.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	115,870
ZZZZZ	10002	77	39,335.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	136,174
ZZZZZ	10002	78	32,320.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	111,755

Beta Flag	2500 -	
Beta Max Flag	5000	

Blank Page

Duratek, Inc.
Survey Package Worksheet for Package B2000
Bristol-Myers Squibb Building 124, Second Floor, Old Section North

Package Identification No.: B2000	Prepared by: Paul C. Ely
Location: Building 124 Second Floor, Old Section North	Date prepared: 1/16/2003
Area Classification: Class 2	

Area Description

The survey areas in Building 124 consisting floors, walls and ceiling in the former ventilation system area on the second floor.

Historical Information

Several independent and redundant ventilation systems were used to exhaust the caves, glove boxes and hoods to the stack. These systems were contaminated to various levels at one time or another with short-lived radionuclides. However contamination was restricted to the process vent systems in this part of the building. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B20000 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

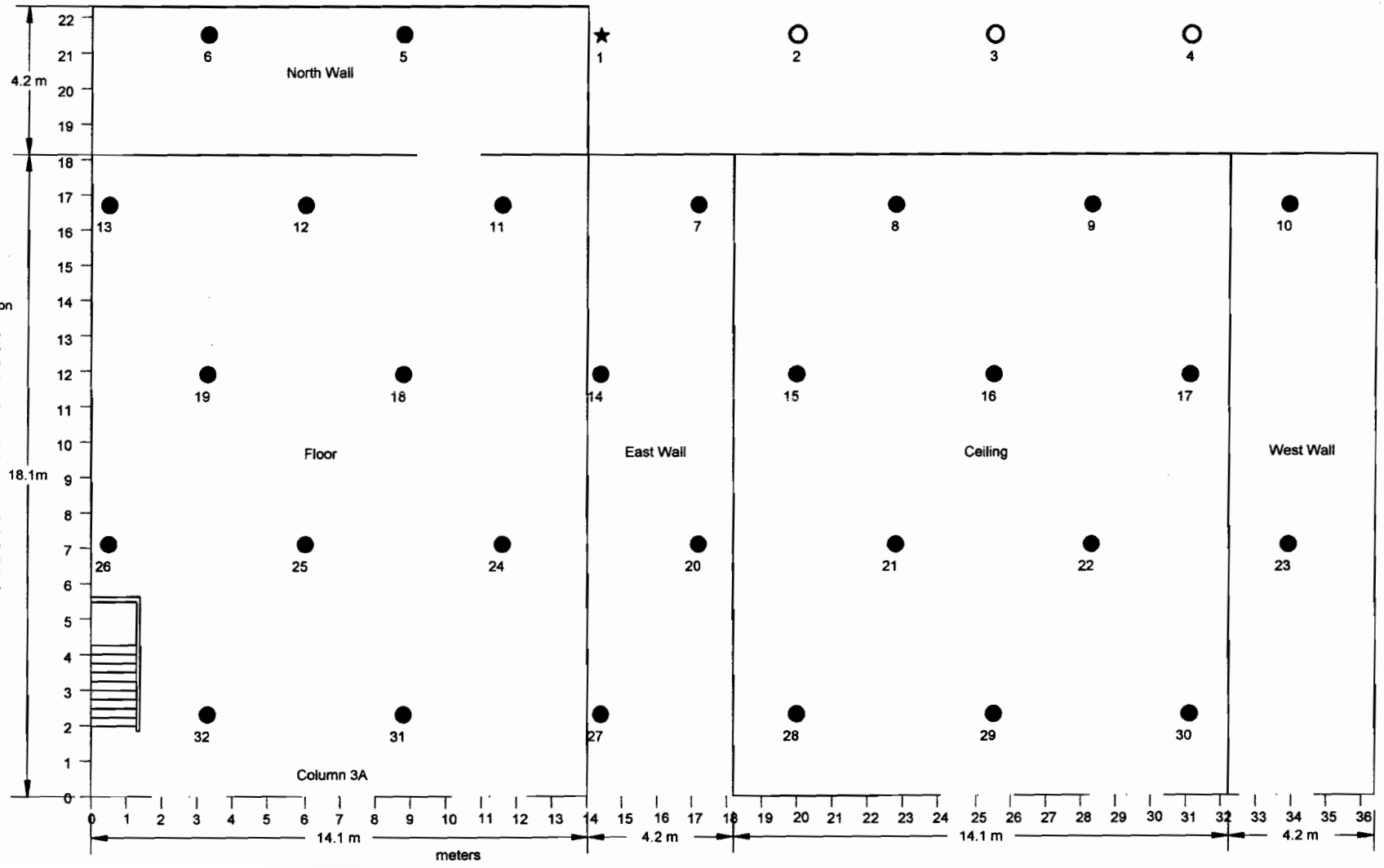
Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Second Floor, New Section North												
B20000	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NOK/3-21-03	NOK/3-24-03	N/A	N/A	NOK/5 3-25-03	N/A	N/A
B20000	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NOK/3-21-03	NOK/3-24-03	N/A	N/A	N/A	N/A	N/A
B20000	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NOK/3-21-03	NOK/3-24-03	N/A	N/A	N/A	N/A	N/A
B20000	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NOK/3-21-03	NOK/3-24-03	N/A	N/A	N/A	N/A	N/A
B20000	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 3-25-03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments
Point 21 taken on structure

SURVEY PACKAGE B2000

2nd Floor Old Section - North



★ Starting Point

Survey Point	Survey Location X	Y
1	14.5	21.5
2	20.1	21.5
3	25.7	21.5
4	31.3	21.5
5	8.9	21.5
6	3.3	21.5
7	17.3	16.7
8	22.9	16.7
9	28.5	16.7
10	34.1	16.7
11	11.7	16.7
12	6.1	16.7
13	0.5	16.7
14	14.5	11.9
15	20.1	11.9
16	25.7	11.9
17	31.3	11.9
18	8.9	11.9
19	3.3	11.9
20	17.3	7.1
21	22.9	7.1
22	28.5	7.1
23	34.1	7.1
24	11.7	7.1
25	6.1	7.1
26	0.5	7.1
27	14.5	2.3
28	20.1	2.3
29	25.7	2.3
30	31.3	2.3
31	8.9	2.3
32	3.3	2.3

Survey Package B2000
Second Floor Old Section - North

X (Max):	36.6	meters
Y (Max):	22.3	meters
A (Area):	690	m^2
N (Points):	25	

$$L = \left[\frac{A}{0.866 * N} \right]^{1/2}$$

L=	5.6	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	4.8	meters	(distance between rows)
L/2=	2.8	meters	(row offset value)
X (Random):	5.1		random number generator
Y (Random):	3.8		random number generator
X (Origin):	14.5		initially generated random number
Y (Origin):	21.5		initially generated random number
Number of rows:	4.6	**5**	
Number of columns:	6.5	**7**	6 and 7 columns used based on offset

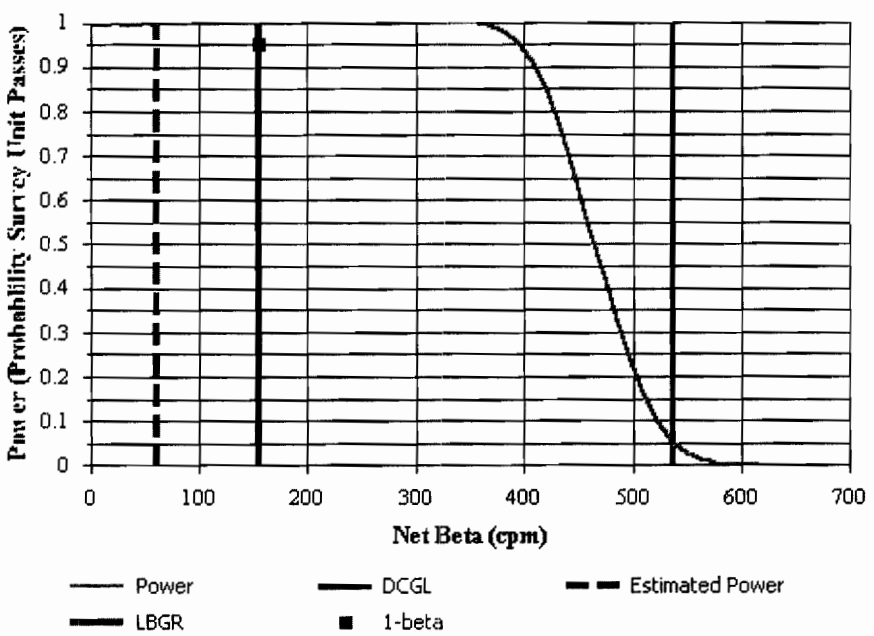
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	14.5	21.5	5
2	20.1	21.5	
3	25.7	21.5	
4	31.3	21.5	
5	8.9	21.5	
6	3.3	21.5	
7	17.3	16.7	4
8	22.9	16.7	
9	28.5	16.7	
10	34.1	16.7	
11	11.7	16.7	
12	6.1	16.7	
13	0.5	16.7	
14	14.5	11.9	3
15	20.1	11.9	
16	25.7	11.9	
17	31.3	11.9	
18	8.9	11.9	
19	3.3	11.9	
20	17.3	7.1	2
21	22.9	7.1	
22	28.5	7.1	
23	34.1	7.1	
24	11.7	7.1	
25	6.1	7.1	
26	0.5	7.1	
27	14.5	2.3	1
28	20.1	2.3	
29	25.7	2.3	
30	31.3	2.3	
31	8.9	2.3	
32	3.3	2.3	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2000 FSS Package Rev. 1		
Comments:	B-124 2nd Floor Old Section North		
Area (m²):	690	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	127.4
DCGL (cpm):	537	Sample Size (N):	14
LBGR (cpm):	155	Estimated Conc. (cpm):	60
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.06
Gross Beta DCGLw (cpm): 537

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.24	0.25	0.0600

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 198 ± 92 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	994
Steel Panel	28	137.9	18.4	762

BMS Download Survey Report Data Summary
Characterization Package A0810
Building 124 Second Floor Vent Systems Area
FSS Packages:B0810, B2000

	Floor		Wall		Ceiling		Structure	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	178	229	149	145	147	162	163	146
	128	194	150	146	134	145	141	140
	152	223	157	160	156	122	132	132
	124	168	129	156	137	136	183	173
	139	200	132	155	133	141	133	132
	149	185	123	142	141	133	111	136
	151	148	158	154	162	194	132	113
	125	161	140	165	173	223	135	127
	150	130	158	151	101	111	115	115
	147	220	144	137	91	144	129	127
	153	181	143	138			122	119
	135	180	143	166			133	108
	139	165	123	146			128	130
	337	359	124	132			126	125
	308	433	134	118			131	126
	297	345	143	128				
	329	385	107	105				
	338	377	130	141				
	315	325						
	300	330						
	322	340						
	316	330						
	293	324						
	310	363						
	302	283						
	298	376						
	370	336						
	317	376						
	323	398						
	283	336						
Average	**240.9**	**280.0**	**138.2**	**143.6**	**137.5**	**151.1**	**134.3**	**129.9**
Standard Deviation	**88.2**	**91.8**	**14.0**	**15.9**	**25.5**	**33.9**	**17.9**	**15.6**
No of Measurements	**30**	**30**	**18**	**18**	**10**	**10**	**15**	**15**
All Measurement Average	**179.5**	**197.9**						
Standard Deviation	**77.4**	**92.0**						
No of Measurements	**73**	**73**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyos **Signature:** [signature] **Date:** 3-24-03

Download Station #: 1 Download File #: 41
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyos **User ID** SRL2986 **Signature:** [signature] **Date:** 3-24-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: Package B2000
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-27-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
■ Beta β	PR092522	43-106B	.228			
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 175	2 212	3 192	4 n/a	5 n/a	6 n/a	193
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .134

Duratek™

M2350-1 Download BETA Report

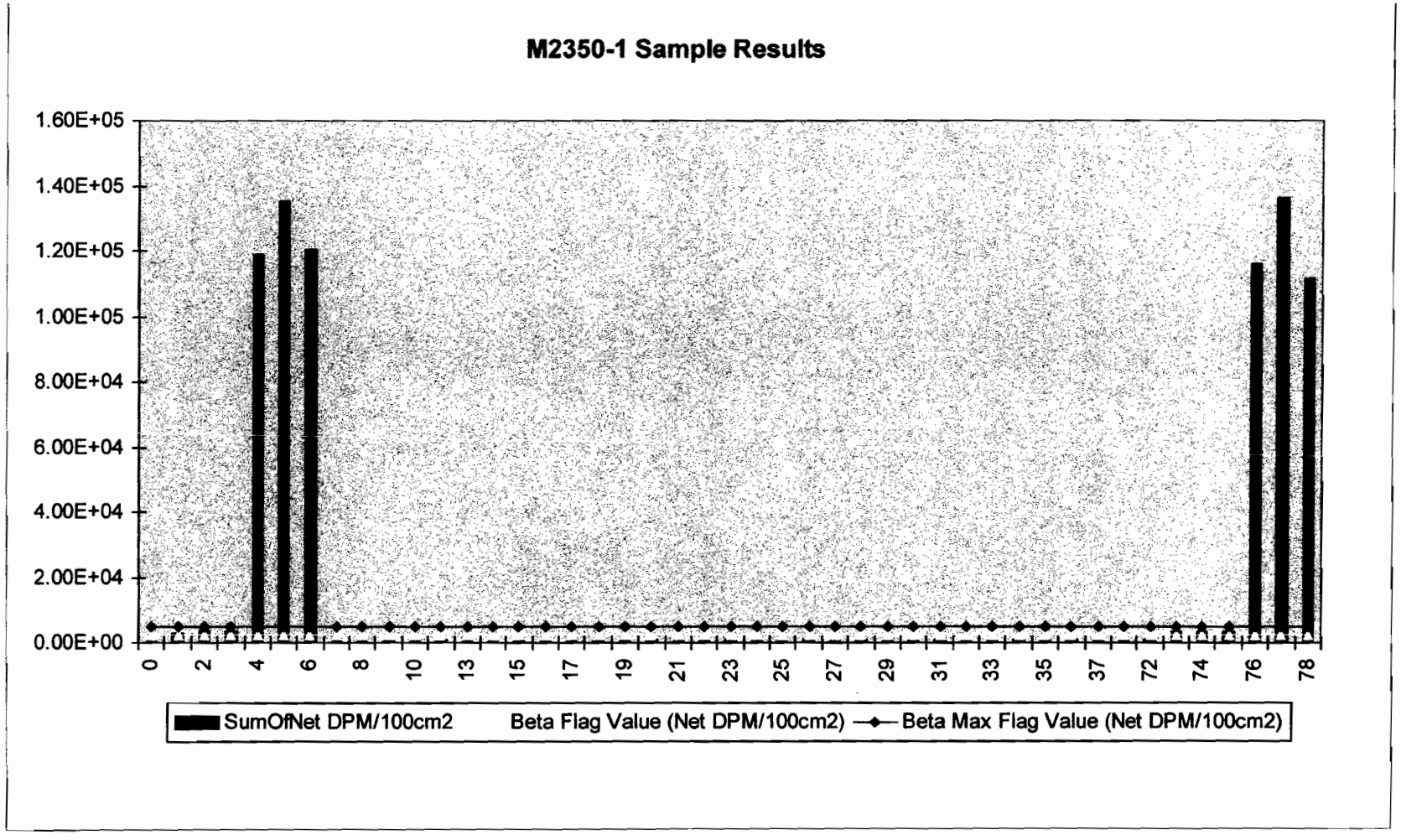
File Name : 00000041	Survey Description :Package B2000 Bldg.124 2nd floor	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : 43-68B	Detector S/N : 092522	Detector Cal. Due : 6/27/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 3/24/03

Print Name	Signature	Date
Doug Kjos	DRK	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C. ELY	Paul C Ely	9-8-03


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
13
15
17
19
21
23
25
27
29
31
33
35
37
72
74
76
78
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000041

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,194.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	764
ZZZZZ	FD184	1	1,115.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	3,119
ZZZZZ	FD184	2	1,232.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	3,526
ZZZZZ	FD184	3	1,184.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	3,359
ZZZZZ	10002	4	34,477.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	119,250
ZZZZZ	10002	5	39,032.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	135,105
ZZZZZ	10002	6	34,840.0	60	PRB00	ZZZZZ	ZZZZZ	0	219	120,513
B2000	01W01	7	175.0	60	FLDBK	B9999	ZZZZZ	1	0.0001	609
B2000	01W01	8	212.0	60	FLDBK	B0004	ZZZZZ	2	0.0001	738
B2000	01F01	9	192.0	60	FLDBK	B0003	ZZZZZ	3	0.0001	668
B2000	01W01	10	190.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	661
B2000	01W01	12	247.0	60	FLDCT	B0004	ZZZZZ	27	0.0001	860
B2000	01W01	13	197.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	686
B2000	01W01	14	206.0	60	FLDCT	B0004	ZZZZZ	14	0.0001	717
B2000	01W01	15	180.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	627
B2000	01W01	16	156.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	543
B2000	01W01	17	172.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	599
B2000	01W01	18	175.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	609
B2000	01C01	19	208.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	724
B2000	01C01	20	214.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	745
B2000	01C01	21	239.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	832
B2000	01C01	22	217.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	755
B2000	01C01	23	223.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	776
B2000	01C01	24	238.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	828
B2000	01S01	25	221.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	769
B2000	01C01	26	234.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	815
B2000	01C01	27	217.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	755
B2000	01C01	28	251.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	874
B2000	01F01	29	271.0	60	FLDCT	B0003	ZZZZZ	32	0.0001	943
B2000	01F01	30	249.0	60	FLDCT	B0003	ZZZZZ	31	0.0001	867
B2000	01F01	31	271.0	60	FLDCT	B0003	ZZZZZ	24	0.0001	943
B2000	01F01	32	277.0	60	FLDCT	B0003	ZZZZZ	25	0.0001	964
B2000	01F01	33	271.0	60	FLDCT	B0003	ZZZZZ	26	0.0001	943
B2000	01F01	34	255.0	60	FLDCT	B0003	ZZZZZ	19	0.0001	888
B2000	01F01	35	243.0	60	FLDCT	B0003	ZZZZZ	18	0.0001	846
B2000	01F01	36	280.0	60	FLDCT	B0003	ZZZZZ	11	0.0001	975
B2000	01F01	37	241.0	60	FLDCT	B0003	ZZZZZ	12	0.0001	839
B2000	01F01	38	292.0	60	FLDCT	B0003	ZZZZZ	13	0.0001	1,016
ZZZZZ	ZZZZZ	72	2,152.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	749

Beta Flag	2500 -	
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	FD184	73	1,170.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	3,324
ZZZZZ	FD184	74	1,250.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	3,603
ZZZZZ	FD184	75	1,250.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	3,603
ZZZZZ	10002	76	33,502.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	115,870
ZZZZZ	10002	77	39,335.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	136,174
ZZZZZ	10002	78	32,320.0	60	PTB00	ZZZZZ	ZZZZZ	0	215	111,755

Beta Flag	2500	-
Beta Max Flag	5000	

Survey #- B2000

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Douglas R Kyos (Print) Signature [signature] Date 3-25-03 Time 1315

Counted by Douglas R Kyos (Print) Signature [signature] Date 3-25-03 Time 1419

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 53 Count Time = 1 min CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = 0.25 Count Time = 1 min CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
11	46	0	<MDA
24	42	0	<MDA
31	47	0	<MDA
26	47	0	<MDA
18	49	0	<MDA

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
11	1	.75	<MDA
24	0	0	<MDA
31	0	0	<MDA
26	0	0	<MDA
18	0	0	<MDA

Remarks- β MDA = cpm - 27.2, dpm - 107; α MDA = cpm - 4.4, dpm - 13.5

Signature- [signature] Reviewed by- Paul C Ely 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B2100
Bristol-Myers Squibb Building 124, Second Floor, New Section South

Package Identification No.: B2100	Prepared by: Paul C. Ely
Location: Building 124 Second Floor, New Section South	Date prepared: 1/16/2003
Area Classification: Class 2	

Area Description

The survey areas in Building 124 consisting floors, walls and ceiling in the former ventilation system area on the second floor.

Historical Information

Several independent and redundant ventilation systems were used to exhaust the caves, glove boxes and hoods to the stack. These systems were contaminated to various levels at one time or another with short-lived radionuclides. However contamination was restricted to the process vent systems in this part of the building. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B21000 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Second Floor, New Section North												
B21000	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NOX / 3-10-03	NOX / 3-10-03	N/A	N/A	NOX / 3-25-03	N/A	N/A
B21000	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NOX / 3-10-03	NOX / 3-10-03	N/A	N/A	N/A	N/A	N/A
B21000	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NOX / 3-10-03	NOX / 3-10-03	N/A	N/A	N/A	N/A	N/A
B21000	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B21000	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

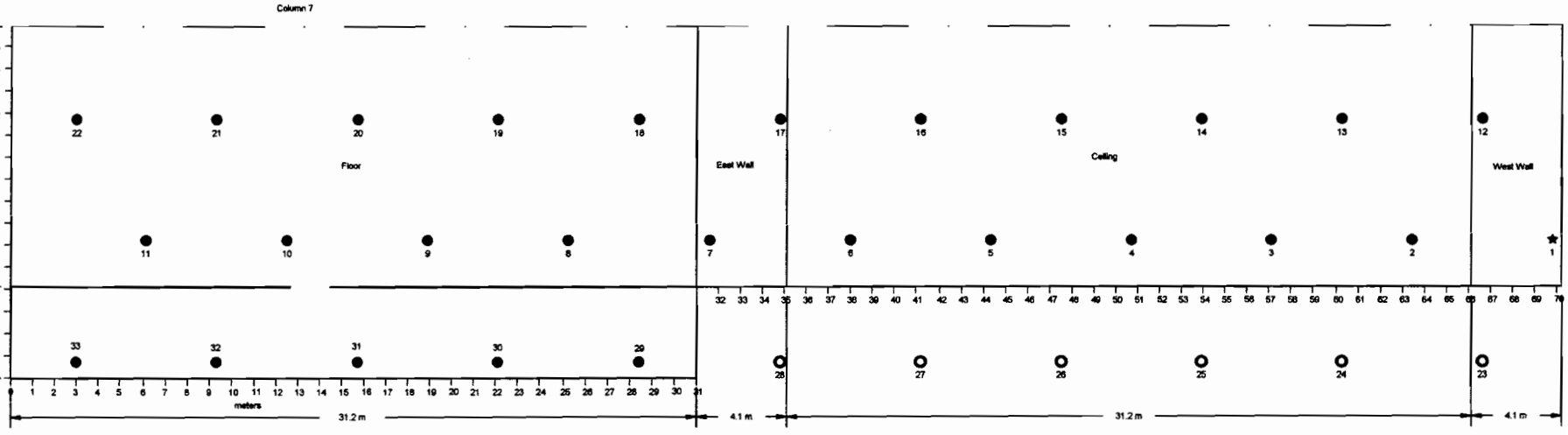
Package Review
Date Package Completed: 3-25-03
Package Reviewed by and Date: Paul C Elg 4/30/03

Survey Comments

SURVEY PACKAGE B2100 2nd Floor New Section - South

Starting Point

Survey Point	Survey Location X	Survey Location Y
1	70.2	6.2
2	63.8	6.2
3	57.4	6.2
4	51.0	6.2
5	44.6	6.2
6	38.2	6.2
7	31.8	6.2
8	25.4	6.2
9	19.0	6.2
10	12.6	6.2
11	6.2	6.2
12	67.0	11.7
13	60.6	11.7
14	54.2	11.7
15	47.8	11.7
16	41.4	11.7
17	35.0	11.7
18	28.6	11.7
19	22.2	11.7
20	15.8	11.7
21	9.4	11.7
22	3.0	11.7
23	70.2	0.7
24	63.8	0.7
25	57.4	0.7
26	51.0	0.7
27	44.6	0.7
28	38.2	0.7
29	31.8	0.7
30	25.4	0.7
31	19.0	0.7
32	12.6	0.7
33	6.2	0.7



Survey Package B2100
Second Floor New Section - South

X (Max):	70.6	meters
Y (Max):	15.8	meters
A (Area):	875	m^2
N (Points):	25	

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	6.4	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	5.5	meters	(distance between rows)
L/2=	3.2	meters	(row offset value)
X (Random):	21		random number generator
Y (Random):	14.6		random number generator
X (Origin):	70.2		initially generated random number
Y (Origin):	6.2		initially generated random number
Number of rows:	2.9	**3**	
Number of columns:	11.0	**11**	

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	70.2	6.2	2
2	63.8	6.2	
3	57.4	6.2	
4	51.0	6.2	
5	44.6	6.2	
6	38.2	6.2	
7	31.8	6.2	
8	25.4	6.2	
9	19.0	6.2	
10	12.6	6.2	
11	6.2	6.2	
12	67.0	11.7	3
13	60.6	11.7	
14	54.2	11.7	
15	47.8	11.7	
16	41.4	11.7	
17	35.0	11.7	
18	28.6	11.7	
19	22.2	11.7	
20	15.8	11.7	
21	9.4	11.7	
22	3.0	11.7	
23	67.0	0.7	1
24	60.6	0.7	
25	54.2	0.7	
26	47.8	0.7	
27	41.4	0.7	
28	35.0	0.7	
29	28.6	0.7	
30	22.2	0.7	
31	15.8	0.7	
32	9.4	0.7	
33	3.0	0.7	

LBGR Determination

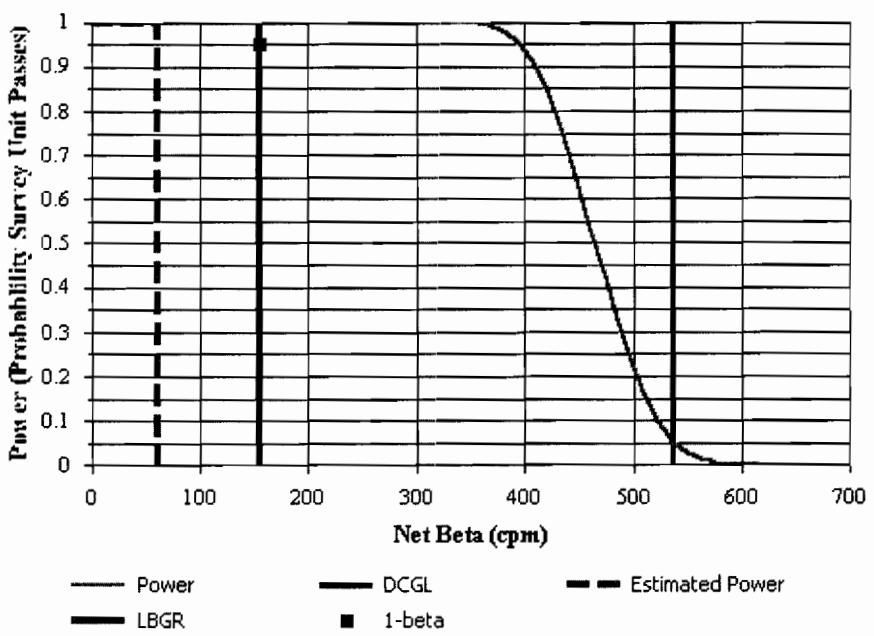
σ =	127.4	cpm (Calculated by COMPASS)
DCGLW =	537	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	4.2	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	**3**
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**155**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2100 FSS Package Rev. 1		
Comments:	B-124 2nd Floor New Section South		
Area (m²):	875	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	127.4
DCGL (cpm):	537	Sample Size (N):	14
LBGR (cpm):	155	Estimated Conc. (cpm):	60
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.06
Gross Beta DCGLw (cpm): 537

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.24	0.25	0.0600

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 198 ± 92 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	994
Steel Panel	28	137.9	18.4	762

BMS Download Survey Report Data Summary
Characterization Package A0810
Building 124 Second Floor Vent Systems Area

	Floor		Wall		Ceiling		Structure	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	178	229	149	145	147	162	163	146
	128	194	150	146	134	145	141	140
	152	223	157	160	156	122	132	132
	124	168	129	156	137	136	183	173
	139	200	132	155	133	141	133	132
	149	185	123	142	141	133	111	136
	151	148	158	154	162	194	132	113
	125	161	140	165	173	223	135	127
	150	130	158	151	101	111	115	115
	147	220	144	137	91	144	129	127
	153	181	143	138			122	119
	135	180	143	166			133	108
	139	165	123	146			128	130
	337	359	124	132			126	125
	308	433	134	118			131	126
	297	345	143	128				
	329	385	107	105				
	338	377	130	141				
	315	325						
	300	330						
	322	340						
	316	330						
	293	324						
	310	363						
	302	283						
	298	376						
	370	336						
	317	376						
	323	398						
	283	336						
Average	**240.9**	**280.0**	**138.2**	**143.6**	**137.5**	**151.1**	**134.3**	**129.9**
Standard Deviation	**88.2**	**91.8**	**14.0**	**15.9**	**25.5**	**33.9**	**17.9**	**15.6**
No of Measurements	**30**	**30**	**18**	**18**	**10**	**10**	**15**	**15**
All Measurement Average	**179.5**	**197.9**						
Standard Deviation	**77.4**	**92.0**						
No of Measurements	**73**	**73**						

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 3-10-03

Download Station #: 1 Download File #: 38
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kjos **User ID** NRK2986 **Signature:** [signature] **Date:** 3-10-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: Package B2100 Bldg 124 2nd Floor
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-27-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
■ Beta β	PR092522	43-106B	.228			
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 173	2 166	3 177	4 n/a	5 n/a	6 n/a	172
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

Duratek™

M2350-1 Download BETA Report

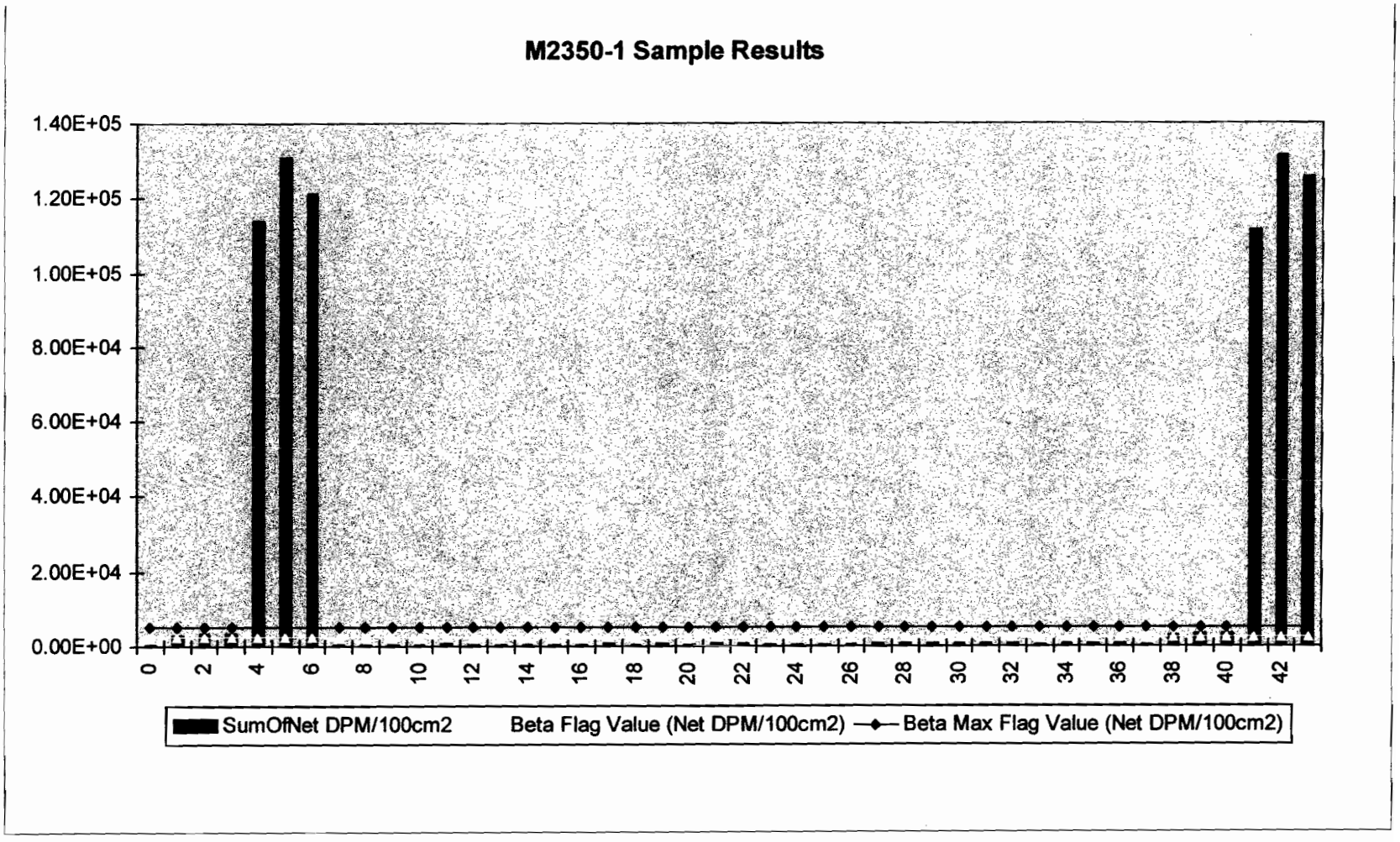
File Name : 00000038	Survey Description :Package B2100 Bldg.124 2nd Floor	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : 43-68B	Detector S/N : 092522	Detector Cal. Due : 6/27/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 3/10/03

Print Name	Signature	Date
Doug Kjos	DRK	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY	Paul E. Ely	9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000038

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	1,816.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	632
ZZZZZ	FD184	1	1,098.0	60	PRB00	ZZZZZ	ZZZZZ	0	182	3,189
ZZZZZ	FD184	2	1,202.0	60	PRB00	ZZZZZ	ZZZZZ	0	182	3,551
ZZZZZ	FD184	3	1,184.0	60	PRB00	ZZZZZ	ZZZZZ	0	182	3,488
ZZZZZ	10002	4	32,899.0	60	PRB00	ZZZZZ	ZZZZZ	0	182	113,885
ZZZZZ	10002	5	37,847.0	60	PRB00	ZZZZZ	ZZZZZ	0	182	131,109
ZZZZZ	10002	6	35,051.0	60	PRB00	ZZZZZ	ZZZZZ	0	182	121,376
B2100	01W01	7	173.0	60	FLDBK	B9999	ZZZZZ	1	0.0001	602
B2100	01W01	8	166.0	60	FLDBK	B0004	ZZZZZ	2	0.0001	578
B2100	01F01	9	177.0	60	FLDBK	B0003	ZZZZZ	3	0.0001	616
B2100	01W01	10	153.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	533
B2100	01W01	11	243.0	60	FLDCT	B0004	ZZZZZ	7	0.0001	846
B2100	01W01	12	170.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	592
B2100	01W01	13	152.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	529
B2100	01W01	14	158.0	60	FLDCT	B9999	ZZZZZ	31	0.0001	550
B2100	01W01	15	142.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	494
B2100	01W01	16	133.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	463
B2100	01W01	17	282.0	60	FLDCT	B0004	ZZZZZ	1	0.0001	982
B2100	01W01	18	168.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	585
B2100	01C01	19	192.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	668
B2100	01C01	20	174.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	606
B2100	01C01	21	189.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	658
B2100	01C01	22	195.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	679
B2100	01C01	23	180.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	627
B2100	01C01	24	171.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	595
B2100	01C01	25	169.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	588
B2100	01C01	26	183.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	637
B2100	01C01	27	195.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	679
B2100	01F01	28	225.0	60	FLDCT	B0003	ZZZZZ	11	0.0001	783
B2100	01F01	29	255.0	60	FLDCT	B0003	ZZZZZ	10	0.0001	888
B2100	01F01	30	237.0	60	FLDCT	B0003	ZZZZZ	9	0.0001	825
B2100	01F01	31	242.0	60	FLDCT	B0003	ZZZZZ	8	0.0001	842
B2100	01F01	32	207.0	60	FLDCT	B0003	ZZZZZ	18	0.0001	721
B2100	01F01	33	173.0	60	FLDCT	B0003	ZZZZZ	19	0.0001	602
B2100	01F01	34	210.0	60	FLDCT	B0003	ZZZZZ	20	0.0001	731
B2100	01F01	35	250.0	60	FLDCT	B0003	ZZZZZ	21	0.0001	870
B2100	01F01	36	213.0	60	FLDCT	B0003	ZZZZZ	22	0.0001	741
ZZZZZ	ZZZZZ	37	1,740.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	606
ZZZZZ	FD184	38	1,102.0	60	PTB00	ZZZZZ	ZZZZZ	0	174	3,230

Beta Flag	2500	- _____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	FD184	39	1,135.0	60	PTB00	ZZZZZ	ZZZZZ	0	174	3,345
ZZZZZ	FD184	40	1,164.0	60	PTB00	ZZZZZ	ZZZZZ	0	174	3,446
ZZZZZ	10002	41	32,157.0	60	PTB00	ZZZZZ	ZZZZZ	0	174	111,330
ZZZZZ	10002	42	37,930.0	60	PTB00	ZZZZZ	ZZZZZ	0	174	131,426
ZZZZZ	10002	43	36,327.0	60	PTB00	ZZZZZ	ZZZZZ	0	174	125,846

Beta Flag	2500	- _____
Beta Max Flag	5000	

Survey #- B2100

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Douglas R Kjos (Print) Signature [signature] Date 3-25-03 Time 1315

Counted by Douglas R Kjos (Print) Signature [signature] Date 3-25-03 Time 1413

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 53 Count Time = 1 min CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = 0.25 Count Time = 1 min CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
10	55	2	<MDA
20	54	1	<MDA
21	57	4	<MDA
18	44	0	<MDA
9	51	0	<MDA

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
10	1	.75	<MDA
20	0	0	<MDA
21	0	0	<MDA
18	0	0	<MDA
9	0	0	<MDA

Remarks- βγ MDA = cpm - 27.2, dpm - 107 ; α MDA = cpm 4.4, dpm 13.5

Signature- [signature] Reviewed by- Paul C Eg 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B2200
Bristol-Myers Squibb Building 124, Second Floor, New Section Center

Package Identification No.: B2200	Prepared by: Paul C. Ely
Location: Building 124 Second Floor, New Section Center	Date prepared: 1/16/2003
Area Classification: Class 2	

Area Description

The survey areas in Building 124 consisting floors, walls and ceiling in the former ventilation system area on the second floor.

Historical Information

Several independent and redundant ventilation systems were used to exhaust the caves, glove boxes and hoods to the stack. These systems were contaminated to various levels at one time or another with short-lived radionuclides. However contamination was restricted to the process vent systems in this part of the building. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B22000 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Second Floor, New Section North												
B22000	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	3-6-03 ASK	3-6-03 ASK	N/A	N/A	NSK/ 5 3-25-03	N/A	N/A
B22000	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	3-6-03 ASK	3-6-03 ASK	N/A	N/A	N/A	N/A	N/A
B22000	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	3-6-03 ASK	3-6-03 ASK	N/A	N/A	N/A	N/A	N/A
B22000	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	N/A	3-6-03 ASK N/A	N/A	N/A	N/A	N/A	N/A
B22000	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	3-6-03 ASK	3-6-03 ASK	N/A	N/A	N/A	N/A	N/A

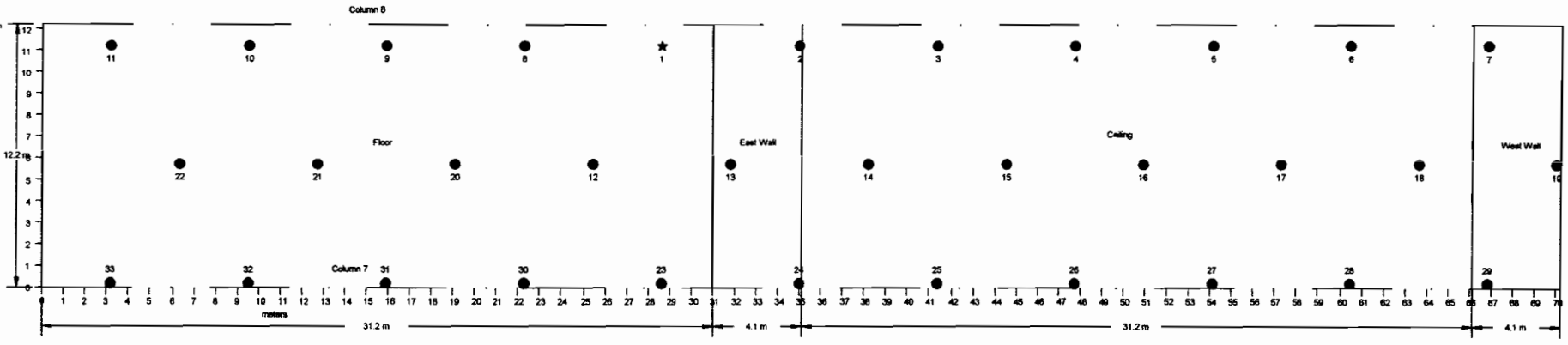
Package Review
Date Package Completed: 3-25-03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments
Point 32 taken on Equipment

SURVEY PACKAGE S2200 2nd Floor New Section - Center

★ Starting Point

Survey Point	Survey Location X	Survey Location Y
1	28.8	11.2
2	35.2	11.2
3	41.6	11.2
4	48.0	11.2
5	54.4	11.2
6	60.8	11.2
7	67.2	11.2
8	22.4	11.2
9	16.0	11.2
10	9.6	11.2
11	3.2	11.2
12	25.6	5.7
13	32.0	5.7
14	38.4	5.7
15	44.8	5.7
16	51.2	5.7
17	57.6	5.7
18	64.0	5.7
19	70.4	5.7
20	19.2	5.7
21	12.8	5.7
22	6.4	5.7
23	28.8	0.2
24	35.2	0.2
25	41.6	0.2
26	48.0	0.2
27	54.4	0.2
28	60.8	0.2
29	67.2	0.2
30	22.4	0.2
31	16.0	0.2
32	9.6	0.2
33	3.2	0.2



Survey Package B2200
Second Floor New Section - Center

X (Max):	70.6	meters
Y (Max):	12.2	meters
A (Area):	875	m^2
N (Points):	25	

$$L = \left[\frac{A}{0.866 * N} \right]^{1/2}$$

L=	6.4	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	5.5	meters	(distance between rows)
L/2=	3.2	meters	(row offset value)
X (Random):	27.1		random number generator
Y (Random):	3.4		random number generator
X (Origin):	28.8		initially generated random number
Y (Origin):	11.2		initially generated random number
Number of rows:	2.2	**3**	
Number of columns:	11.0	**11**	

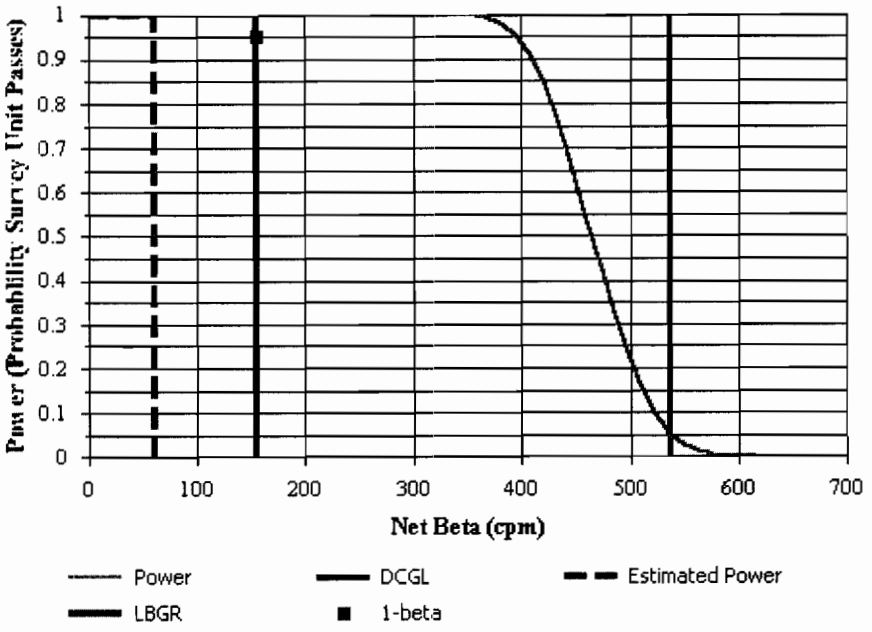
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	28.8	11.2	3
2	35.2	11.2	
3	41.6	11.2	
4	48.0	11.2	
5	54.4	11.2	
6	60.8	11.2	
7	67.2	11.2	
8	22.4	11.2	
9	16.0	11.2	
10	9.6	11.2	
11	3.2	11.2	
12	25.6	5.7	2
13	32.0	5.7	
14	38.4	5.7	
15	44.8	5.7	
16	51.2	5.7	
17	57.6	5.7	
18	64.0	5.7	
19	70.4	5.7	
20	19.2	5.7	
21	12.8	5.7	
22	6.4	5.7	
23	28.8	0.2	1
24	35.2	0.2	
25	41.6	0.2	
26	48.0	0.2	
27	54.4	0.2	
28	60.8	0.2	
29	67.2	0.2	
30	22.4	0.2	
31	16.0	0.2	
32	9.6	0.2	
33	3.2	0.2	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2200 FSS Package Rev. 1		
Comments:	B-124 2nd Floor New Section Center		
Area (m²):	875	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	127.4
DCGL (cpm):	537	Sample Size (N):	14
LBGR (cpm):	155	Estimated Conc. (cpm):	60
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.06
Gross Beta DCGLw (cpm): 537

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.24	0.25	0.0600

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 198 ± 92 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	994
Steel Panel	28	137.9	18.4	762

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** Douglas R Kjos **Date:** 3-2-03

Download Station #: 1 Download File #: 35
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: BSKjos **User ID** BSK0490 **Signature:** BSKjos **Date:** 3-6-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2200, Bldg. 124, 2nd Floor, New Section
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☑ Beta β	092524	43-106B	.243			
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 246	2 206	3 242	4	5	6	231
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

Duratek™

M2350-1 Download Beta Report

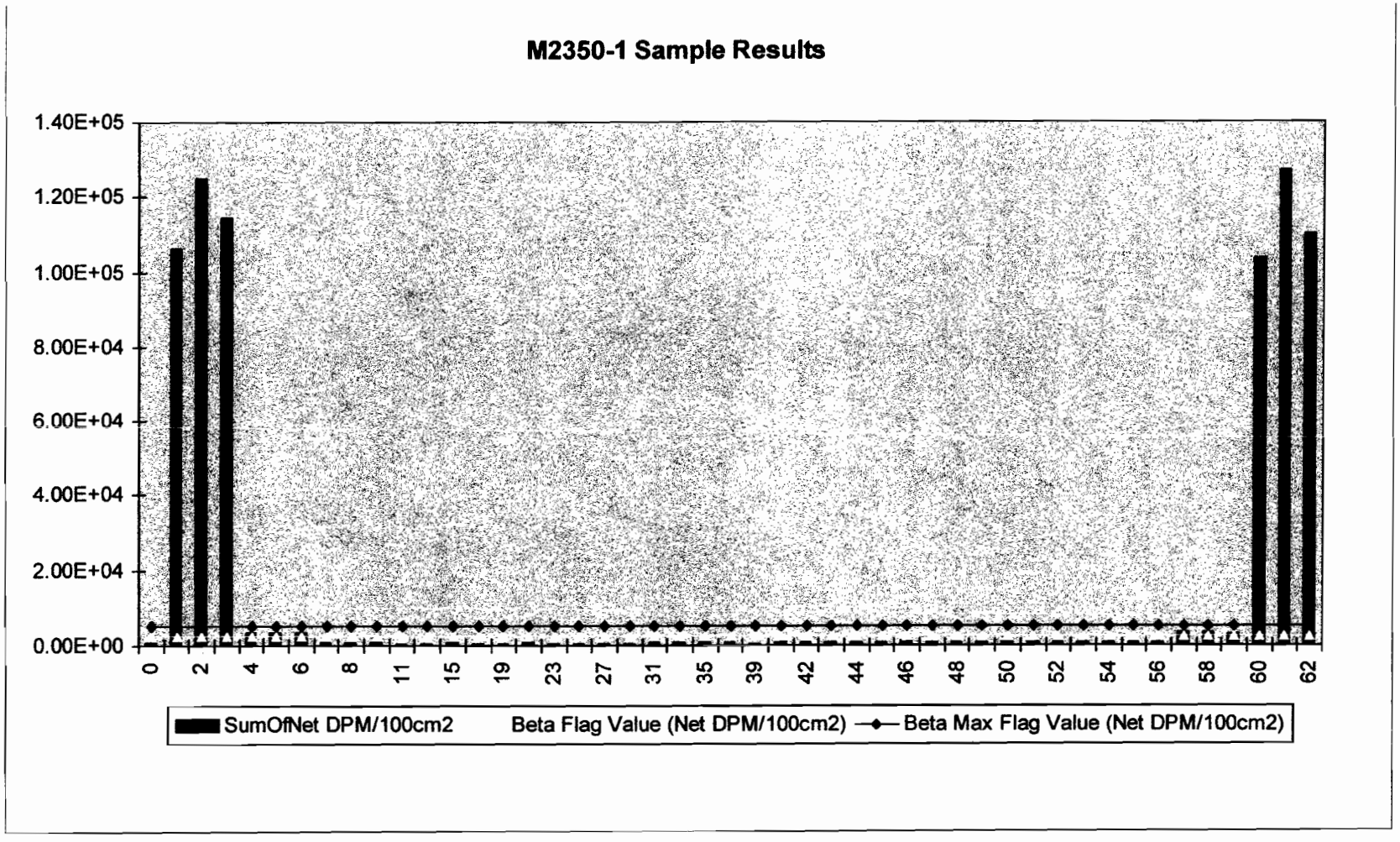
File Name : 00000035	Survey Description :Package B2200 Bldg. 124 2nd Floor	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : LMI 44-2	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Detector Area : 126	Efficiency : 0.243	Survey Date : 3/6/03

Print Name	Signature	Date
Betty Kjos	BSKjos	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY	Paul C Ely	9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
11
15
19
23
27
31
35
39
42
44
46
48
50
52
54
56
58
60
62
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000035

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,220.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	725
ZZZZZ	10002	1	32,786.0	60	PRB00	ZZZZZ	ZZZZZ	1	222	106,356
ZZZZZ	10002	2	38,460.0	60	PRB00	ZZZZZ	ZZZZZ	2	222	124,867
ZZZZZ	10002	3	35,252.0	60	PRB00	ZZZZZ	ZZZZZ	3	222	114,410
ZZZZZ	19655	4	1,254.0	60	PRB00	ZZZZZ	ZZZZZ	4	222	3,371
ZZZZZ	19655	5	1,267.0	60	PRB00	ZZZZZ	ZZZZZ	5	222	3,413
ZZZZZ	19655	6	1,217.0	60	PRB00	ZZZZZ	ZZZZZ	6	222	3,250
B2200	01W01	7	246.0	60	FLDBK	B0004	ZZZZZ	1	0.0001	803
B2200	01EQ1	8	206.0	60	FLDBK	B9999	ZZZZZ	2	0.0001	673
B2200	01F01	9	242.0	60	FLDBK	B0003	ZZZZZ	3	0.0001	790
B2200	01C01	11	193.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	630
B2200	01C01	13	177.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	578
B2200	01C01	15	224.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	732
B2200	01C01	17	180.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	588
B2200	01C01	19	184.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	601
B2200	01C01	21	202.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	660
B2200	01C01	23	182.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	594
B2200	01C01	25	190.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	621
B2200	01C01	27	183.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	598
B2200	01C01	29	166.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	542
B2200	01C01	31	211.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	689
B2200	01W01	33	216.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	705
B2200	01W01	35	243.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	794
B2200	01W01	37	220.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	719
B2200	01W01	39	198.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	647
B2200	01W01	41	272.0	60	FLDCT	B0004	ZZZZZ	13	0.0001	888
B2200	01F01	42	278.0	60	FLDCT	B0003	ZZZZZ	23	0.0001	908
B2200	01F01	43	216.0	60	FLDCT	B0003	ZZZZZ	30	0.0001	705
B2200	01F01	44	237.0	60	FLDCT	B0003	ZZZZZ	31	0.0001	774
B2200	01F01	45	303.0	60	FLDCT	B0003	ZZZZZ	3	0.0001	990
B2200	01F01	46	339.0	60	FLDCT	B0003	ZZZZZ	22	0.0001	1,107
B2200	01F01	47	271.0	60	FLDCT	B0003	ZZZZZ	21	0.0001	885
B2200	01F01	48	244.0	60	FLDCT	B0003	ZZZZZ	20	0.0001	797
B2200	01F01	49	287.0	60	FLDCT	B0003	ZZZZZ	12	0.0001	937
B2200	01F01	50	291.0	60	FLDCT	B0003	ZZZZZ	8	0.0001	950
B2200	01F01	51	295.0	60	FLDCT	B0003	ZZZZZ	9	0.0001	963
B2200	01F01	52	278.0	60	FLDCT	B0003	ZZZZZ	10	0.0001	908
B2200	01F01	53	287.0	60	FLDCT	B0003	ZZZZZ	11	0.0001	937
B2200	01EQ1	54	216.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	705

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
B2200	01S01	55	235.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	768
ZZZZZ	ZZZZZ	56	2,396.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	783
ZZZZZ	19655	57	1,259.0	60	PRB00	ZZZZZ	ZZZZZ	0	240	3,328
ZZZZZ	19655	58	1,300.0	60	PRB00	ZZZZZ	ZZZZZ	0	240	3,462
ZZZZZ	19655	59	1,220.0	60	PRB00	ZZZZZ	ZZZZZ	0	240	3,201
ZZZZZ	10002	60	31,987.0	60	PRB00	ZZZZZ	ZZZZZ	0	240	103,687
ZZZZZ	10002	61	39,098.0	60	PRB00	ZZZZZ	ZZZZZ	0	240	126,912
ZZZZZ	10002	62	34,012.0	60	PRB00	ZZZZZ	ZZZZZ	0	240	110,301

Beta Flag	2500	- _____
Beta Max Flag	5000	

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 4-30-03

Download Station #: 1 Download File #: 109
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kjos **User ID** RRK2986 **Signature:** [signature] **Date:** 4-30-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package B2200 Points 17, 19 and 27
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.226			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4 u/a	5 u/a	6 u/a	
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .130

Duratek™

M2350-1 Download Beta Report

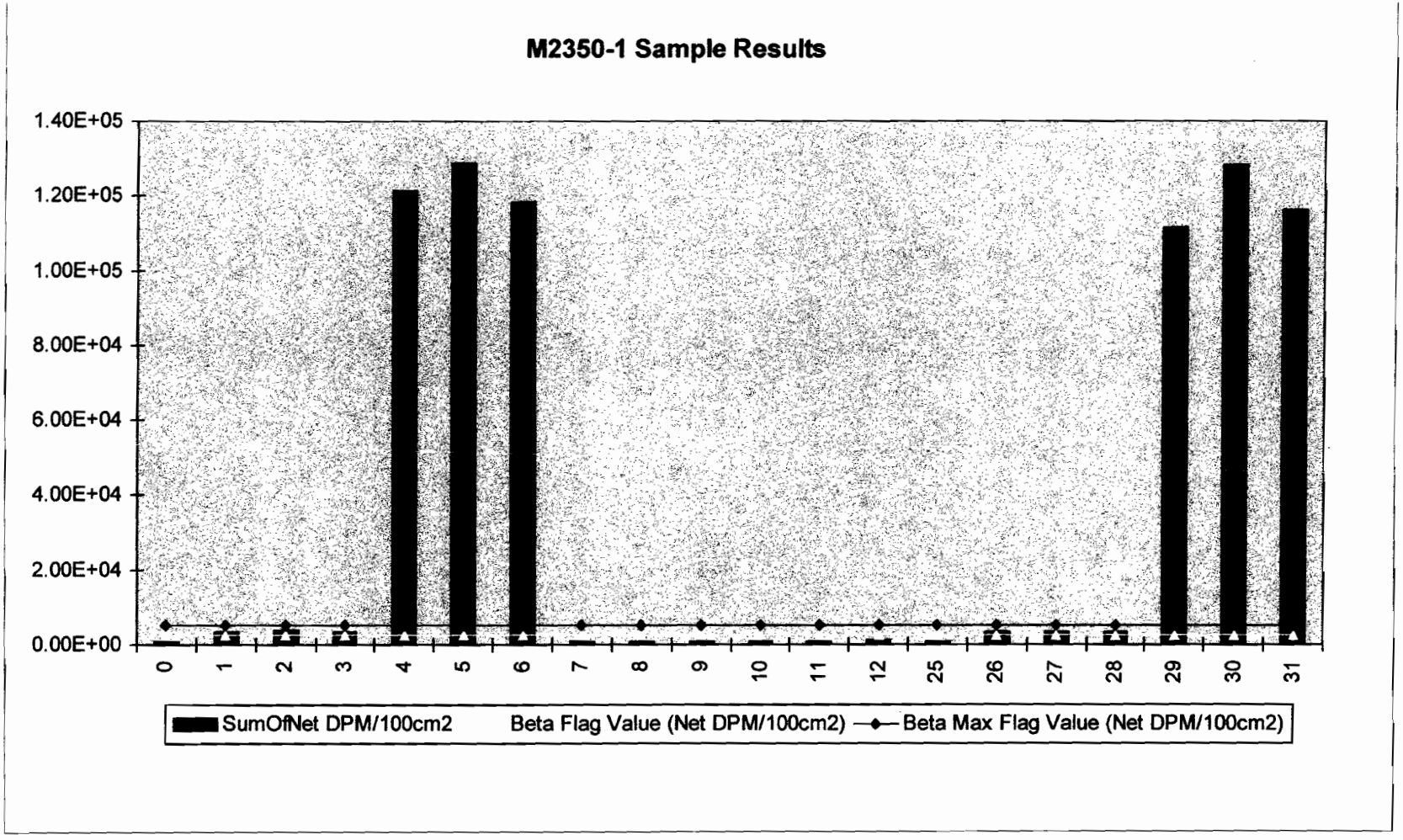
File Name : 00000109	Survey Description :Package B2200, B124 2nd Floor points 17, 19,and 27	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.226	Survey Date : 4/30/03

Print Name	Signature	Date
Doug Kjos	Doug RK	9/7/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL E. ELY	Paul C Ely	9-8-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
1
2
3
4
5
6
7
8
9
10
11
12
25
26
27
28
29
30
31
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000109

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,454.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	1	1,252.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,536
ZZZZZ	FD184	2	1,299.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,701
ZZZZZ	FD184	3	1,248.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,522
ZZZZZ	10002	4	34,775.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	121,260
ZZZZZ	10002	5	36,935.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	128,845
ZZZZZ	10002	6	33,946.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	118,349
B2200	ZZZZZ	7	246.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	864
B2200	ZZZZZ	8	232.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	815
B2200	ZZZZZ	9	220.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	773
B2200	01C01	10	278.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	976
B2200	01C01	11	258.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	906
B2200	01W01	12	370.0	60	FLDCT	B0004	ZZZZZ	19	0.0001	1,299
ZZZZZ	ZZZZZ	25	2,586.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	908
ZZZZZ	FD184	26	1,182.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	3,241
ZZZZZ	FD184	27	1,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	3,413
ZZZZZ	FD184	28	1,202.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	3,312
ZZZZZ	10002	29	32,008.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	111,494
ZZZZZ	10002	30	36,813.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	128,368
ZZZZZ	10002	31	33,314.0	60	PTB00	ZZZZZ	ZZZZZ	0	259	116,080

Beta Flag 2500 - _____

Beta Max Flag 5000 [redacted]

Survey #- B2200

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Douglas R Kios (Print) Signature [signature] Date 3-25-03 Time 1315

Counted by Douglas R Kios (Print) Signature [signature] Date 3-25-03 Time 1407

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 53 Count Time = 1 min CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = 0.25 Count Time = 1 min CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
12	51	0	<MDA
23	58	5	<MDA
33	66	13	<MDA
11	65	12	<MDA
21	52	0	<MDA

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
12	0	0	<MDA
23	0	0	<MDA
33	0	0	<MDA
11	0	0	<MDA
21	0	0	<MDA

Remarks- β/γ: MDA = cpm 27.2, dpm - 107 ; α MDA: cpm 4.4, dpm - 13.5

Signature- [signature] Reviewed by- [signature] 4/30/03

Duratek, Inc.
Survey Package Worksheet for Package B2300
Bristol-Myers Squibb Building 124, Second Floor, New Section North

Package Identification No.: B2300	Prepared by: Paul C. Ely
Location: Building 124 Second Floor, New Section North	`Date prepared: 1/16/2003
Area Classification: Class 2	

Area Description

The survey areas in Building 124 consisting floors, walls and ceiling in the former ventilation system area on the second floor.

Historical Information

Several independent and redundant ventilation systems were used to exhaust the caves, glove boxes and hoods to the stack. These systems were contaminated to various levels at one time or another with short-lived radionuclides. However contamination was restricted to the process vent systems in this part of the building. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey except on equipment that was removed during the D&D phase.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: B2300 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Second Floor, New Section North												
B23000	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	NRK/3-6-03	NRK/3-6-03	N/A	N/A	NRK/3-25-03	N/A	N/A
B23000	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NRK/3-6-03	NRK/3-6-03	N/A	N/A	N/A	N/A	N/A
B23000	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NRK/3-6-03	NRK/3-6-03	N/A	N/A	N/A	N/A	N/A
B23000	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NRK/3-6-03	NRK/3-6-03	N/A	N/A	N/A	N/A	N/A
B23000	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 3-25-03
Package Reviewed by and Date: Paul C Ely 4/30/03

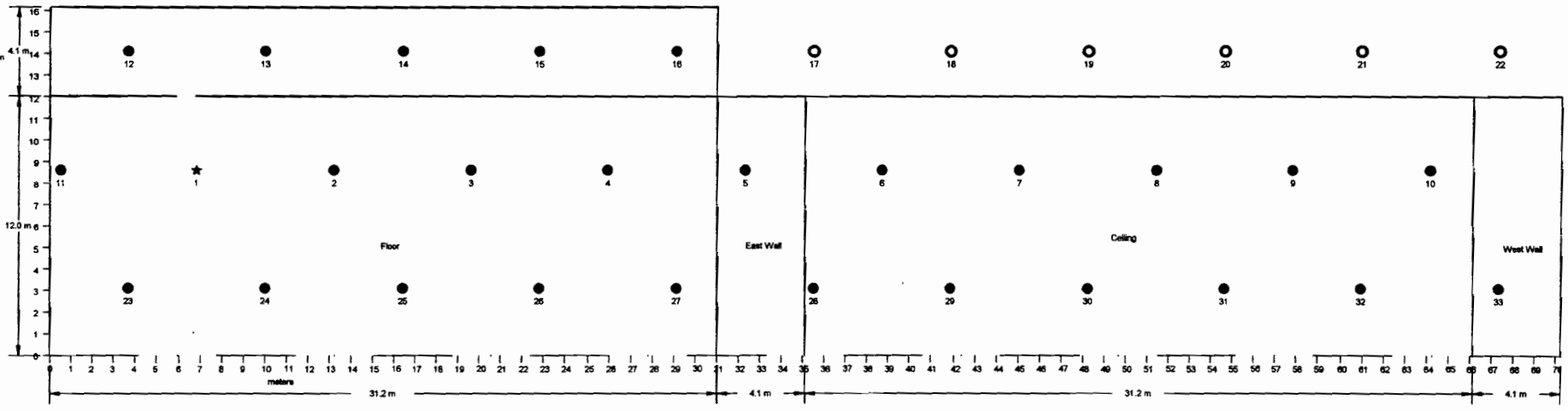
Survey Comments
Point 13 taken on structure

SURVEY PACKAGE B2300

2nd Floor New Section - North

★ Starting Point

Survey Point	Survey Location X	Y
1	6.8	8.6
2	13.3	8.6
3	19.7	8.6
4	26.1	8.6
5	32.5	8.6
6	38.9	8.6
7	45.3	8.6
8	51.7	8.6
9	58.1	8.6
10	64.5	8.6
11	0.5	8.6
12	3.7	14.1
13	10.1	14.1
14	16.5	14.1
15	22.9	14.1
16	29.3	14.1
17	35.7	14.1
18	42.1	14.1
19	48.5	14.1
20	54.9	14.1
21	61.3	14.1
22	67.7	14.1
23	3.7	3.1
24	10.1	3.1
25	16.5	3.1
26	22.9	3.1
27	29.3	3.1
28	35.7	3.1
29	42.1	3.1
30	48.5	3.1
31	54.9	3.1
32	61.3	3.1
33	67.7	3.1



Survey Package B2300
Second Floor New Section - North

X (Max):	70.6	meters
Y (Max):	16.2	meters
A (Area):	875	m^2
N (Points):	25	

$$L = \left[\frac{A}{0.866 * N} \right]^{1/2}$$

L=	6.4	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	5.5	meters	(distance between rows)
L/2=	3.2	meters	(row offset value)
X (Random):	10.1		random number generator
Y (Random):	9.6		random number generator
X (Origin):	6.9		initially generated random number
Y (Origin):	8.6		initially generated random number
Number of rows:	2.9	**3**	
Number of columns:	11.0	**11**	

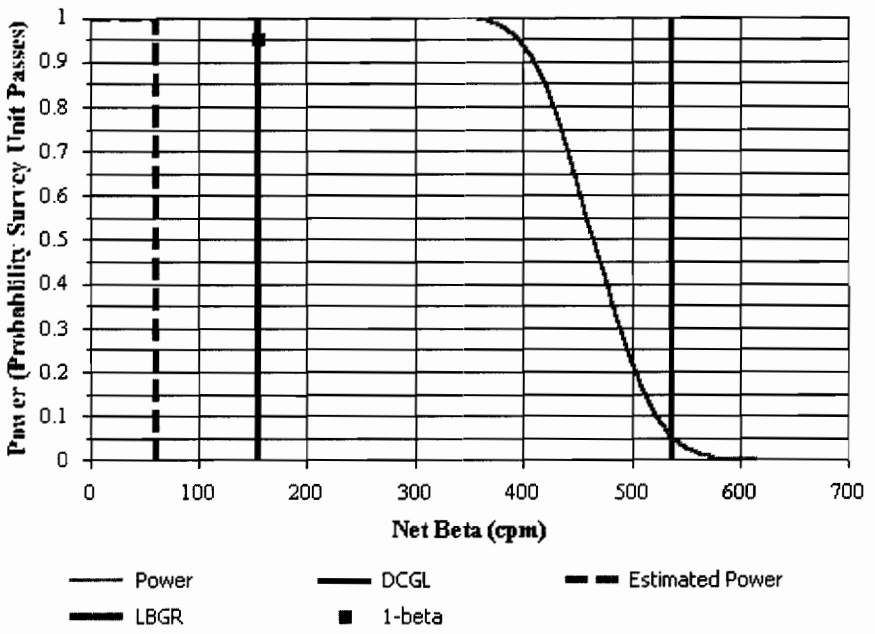
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	6.9	8.6	2
2	13.3	8.6	
3	19.7	8.6	
4	26.1	8.6	
5	32.5	8.6	
6	38.9	8.6	
7	45.3	8.6	
8	51.7	8.6	
9	58.1	8.6	
10	64.5	8.6	
11	0.5	8.6	
12	3.7	14.1	3
13	10.1	14.1	
14	16.5	14.1	
15	22.9	14.1	
16	29.3	14.1	
17	35.7	14.1	
18	42.1	14.1	
19	48.5	14.1	
20	54.9	14.1	
21	61.3	14.1	
22	67.7	14.1	
23	3.7	3.1	1
24	10.1	3.1	
25	16.5	3.1	
26	22.9	3.1	
27	29.3	3.1	
28	35.7	3.1	
29	42.1	3.1	
30	48.5	3.1	
31	54.9	3.1	
32	61.3	3.1	
33	67.7	3.1	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2300 FSS Package Rev. 1		
Comments:	B-124 2nd Floor New Section North		
Area (m²):	875	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	127.4
DCGL (cpm):	537	Sample Size (N):	14
LBGR (cpm):	155	Estimated Conc. (cpm):	60
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.06
Gross Beta DCGLw (cpm): 537

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.24	0.25	0.0600

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 198 ± 92 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	994
Steel Panel	28	137.9	18.4	762

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyos **Signature:** [signature] **Date:** 3-7-03

Download Station #: 1 Download File #: 37
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyos **User ID** DRK9986 **Signature:** [signature] **Date:** 3-7-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: Package B2300, Bldg 124 2nd Floor
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-27-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
■ Beta β	PRD92522	43-106B	.231			
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1 194	2 190	3 212	4 n/a	5 n/a	6 n/a	199
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

Duratek™

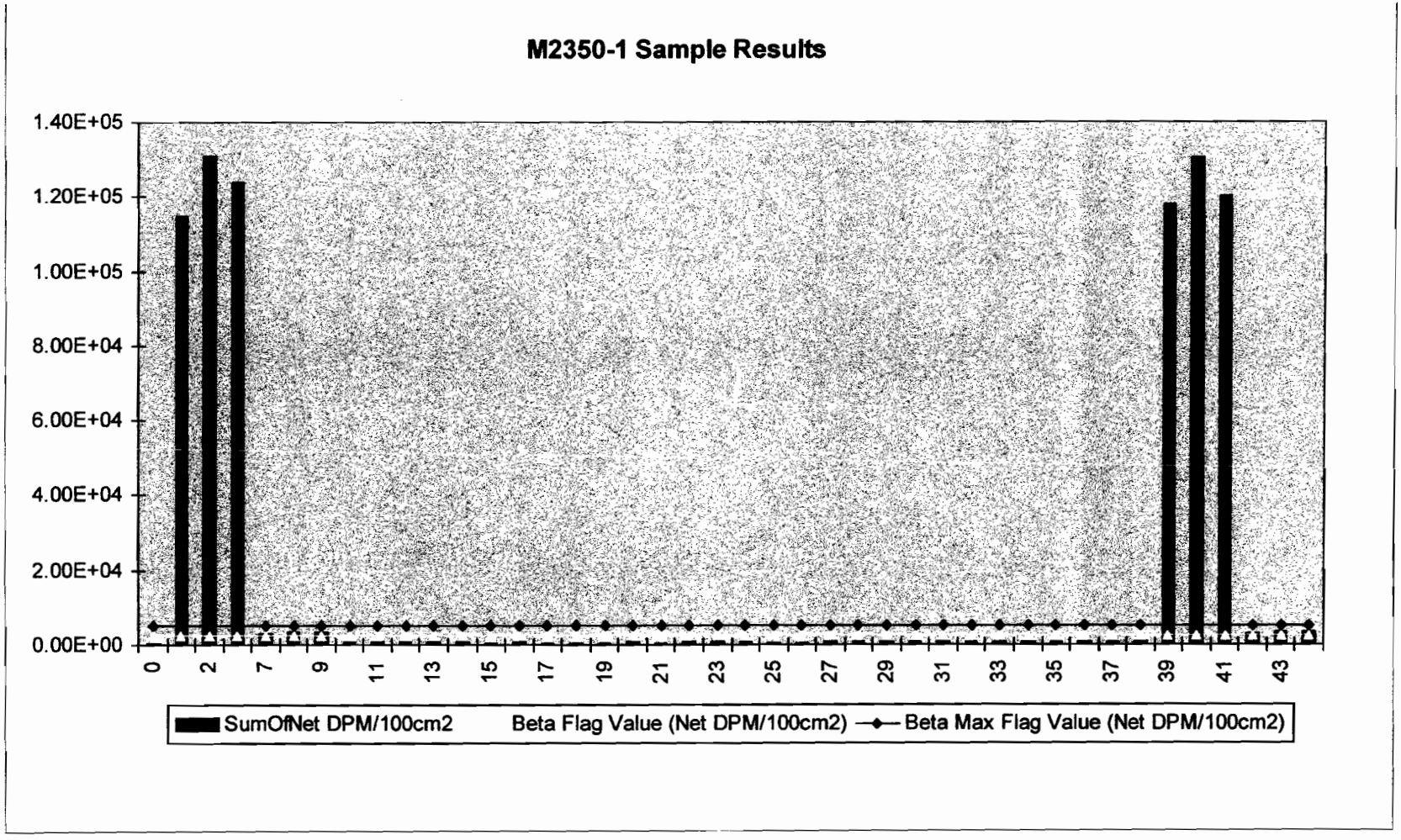
M2350-1 Download BETA Report

File Name : 00000037	Survey Description :Package B2300, Bldg. 124 2nd Floor	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : 43-68B	Detector S/N : 092522	Detector Cal. Due : 6/27/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.231	Survey Date : 3/6/03

Print Name	Signature	Date
Doug Kjos	Doug RK	9/8/03

Comments:

Sign-Off Paul E. Ely (Print Name) — Paul C Ely (Signature) — 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000037

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	1,845.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	634
ZZZZZ	10002	1	33,588.0	60	PRB00	ZZZZZ	ZZZZZ	0	185	114,763
ZZZZZ	10002	2	38,274.0	60	PRB00	ZZZZZ	ZZZZZ	0	185	130,863
ZZZZZ	10002	3	36,252.0	60	PRB00	ZZZZZ	ZZZZZ	0	185	123,916
ZZZZZ	FD184	7	1,054.0	60	PRB00	ZZZZZ	ZZZZZ	0	185	2,986
ZZZZZ	FD184	8	1,214.0	60	PRB00	ZZZZZ	ZZZZZ	0	185	3,535
ZZZZZ	FD184	9	1,195.0	60	PRB00	ZZZZZ	ZZZZZ	0	185	3,470
B2300	01W01	10	194.0	60	FLDBK	B9999	ZZZZZ	1	0.0001	667
B2300	01W01	11	190.0	60	FLDBK	B0004	ZZZZZ	2	0.0001	653
B2300	01F01	12	212.0	60	FLDBK	B0003	ZZZZZ	3	0.0001	728
B2300	01C01	13	199.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	684
B2300	01C01	14	198.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	680
B2300	01C01	15	170.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	584
B2300	01C01	16	215.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	739
B2300	01C01	17	180.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	618
B2300	01C01	18	187.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	642
B2300	01C01	19	178.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	612
B2300	01C01	20	198.0	60	FLDCT	B9999	ZZZZZ	31	0.0001	680
B2300	01C01	21	180.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	618
B2300	01W01	22	190.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	653
B2300	01W01	23	197.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	677
B2300	01S01	24	202.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	694
B2300	01W01	25	171.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	588
B2300	01W01	26	174.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	598
B2300	01W01	27	192.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	660
B2300	01F01	28	252.0	60	FLDCT	B0003	ZZZZZ	27	0.0001	866
B2300	01F01	29	218.0	60	FLDCT	B0003	ZZZZZ	26	0.0001	749
B2300	01F01	30	242.0	60	FLDCT	B0003	ZZZZZ	25	0.0001	831
B2300	01F01	31	209.0	60	FLDCT	B0003	ZZZZZ	24	0.0001	718
B2300	01F01	32	235.0	60	FLDCT	B0003	ZZZZZ	23	0.0001	807
B2300	01F01	33	249.0	60	FLDCT	B0003	ZZZZZ	11	0.0001	855
B2300	01F01	34	216.0	60	FLDCT	B0003	ZZZZZ	1	0.0001	742
B2300	01F01	35	230.0	60	FLDCT	B0003	ZZZZZ	2	0.0001	790
B2300	01F01	36	223.0	60	FLDCT	B0003	ZZZZZ	3	0.0001	766
B2300	01F01	37	196.0	60	FLDCT	B0003	ZZZZZ	4	0.0001	673
ZZZZZ	ZZZZZ	38	1,951.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	670
ZZZZZ	10002	39	34,535.0	60	PTB00	ZZZZZ	ZZZZZ	0	195	117,983
ZZZZZ	10002	40	38,221.0	60	PTB00	ZZZZZ	ZZZZZ	0	195	130,647
ZZZZZ	10002	41	35,146.0	60	PTB00	ZZZZZ	ZZZZZ	0	195	120,082

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	FD184	42	1,104.0	60	PTB00	ZZZZZ	ZZZZZ	0	195	3,123
ZZZZZ	FD184	43	1,189.0	60	PTB00	ZZZZZ	ZZZZZ	0	195	3,415
ZZZZZ	FD184	44	1,219.0	60	PTB00	ZZZZZ	ZZZZZ	0	195	3,518

Beta Flag	2500	- _____
Beta Max Flag	5000	

Survey #- B2360

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Douglas R Kyes (Print) Signature Date 3-25-03 Time 1315

Counted by Douglas R Kyes (Print) Signature Date 3-25-03 Time 1400

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 53 Count Time = 1 min CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = 0.25 Count Time = 1 min CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β·γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
11	54	1	<MDA
23	55	2	<MDA
1	54	1	<MDA
26	44	0	<MDA
4	71	18	<MDA
		N/A	

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
11	1	.75	<MDA
23	0	0	<MDA
1	1	.75	<MDA
26	1	.75	<MDA
4	0	0	<MDA
		N/A	

Remarks- βγ MDA= cpm-27.2, dpm-107 α= MDA: cpm 4.4, dpm-13.5

Signature-

Reviewed by- Paul C Ely 4/30/03

of

Duratek, Inc.
Survey Package Worksheet for Package B2400
Bristol-Myers Squibb Building 122 Rooms 219 & 220

Package Identification No.: B2400	Prepared by: Paul C. Ely
Location: Building 122, Rooms 219 & 220	Date prepared: 4/9/2003
Area Classification: Class 2	

Area Description

The survey area in Building 122 comprising floors walls and ceilings in Rooms 219 & 220.

Historical Information

Building 122 was a radiopharmaceutical storage facility. Radioactive waste from R&D and manufacturing was stored and processed by compaction in Building 122. Waste was also held for decay. The compactor was in room 222. The floors in the Hot Barn and Rooms 221 and 222 had activity levels >5,000 dpm/100 cm^2. One elevated Tritium measurement of about 17,000 dpm was obtained from the Hot Barn floor. All other areas had contamination levels <5,000 dpm/100 cm^2 as identified during the characterization survey.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm2 (50% of the DCGL).
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Survey Package: B2400 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 122 Rooms 219 & 220												
B2400	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	BSK 5 4-18-03	N/A	N/A
B2400	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A
B2400	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A
B2400	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A
B2400	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A

Survey Package: B2400 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 122 Rooms 219 & 220												
B2400	01F01	ZZZZZ	ZZZZZ	See map	Floors 25%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	BSK 5 4-18-03	N/A	N/A
B2400	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A
B2400	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A
B2400	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A
B2400	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	BSK 4-7-03	BSK 4-18-03	N/A	N/A	N/A	N/A	N/A

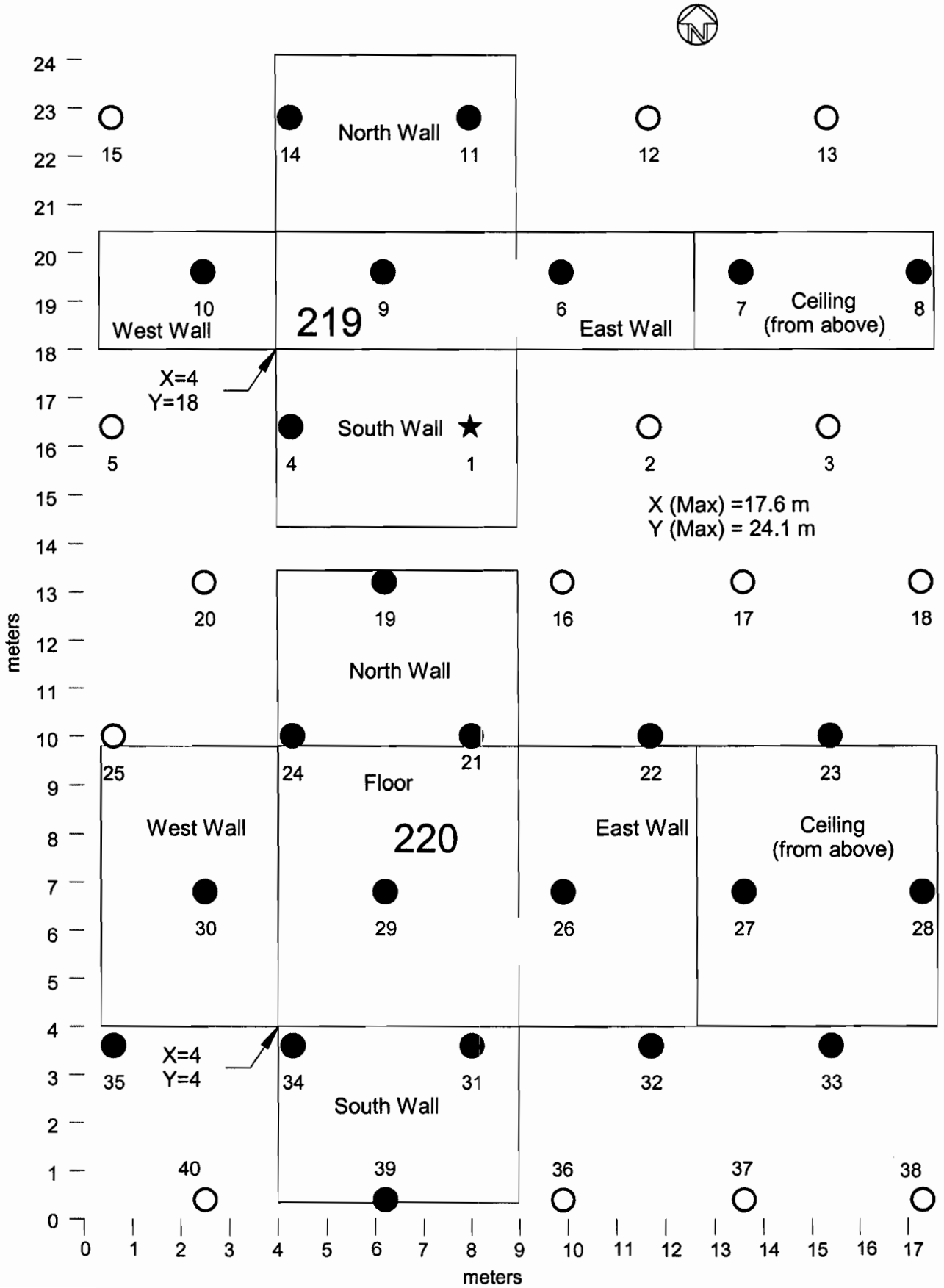
Package Review	
Date Package Completed:	4/29/03
Package Reviewed by and Date:	Paul C Ely 4/29/03

Survey Comments

Package Review	
Date Package Completed:	4/29/03
Package Reviewed by and Date:	Paul C Ely 4/29/03

Survey Comments

SURVEY PACKAGE B2400



Survey Package B2400
Building 122 Rooms 219 & 220

X (Max):	17.6	meters	
Y (Max):	24.1	meters	
A (Area):	424	m^2	actual survey area 231 square meters
COMPASS Survey Points:	14	46%	percent void area
N (Points):	36	25.7	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	3.7	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	3.2	meters	(distance between rows)
L/2=	1.9	meters	(row offset value)
X (Random):	10.4		random number generator
Y (Random):	16.7		random number generator
X (Origin):	8		initially generated random number
Y (Origin):	16.4		initially generated random number
Number of rows:	8		
Number of columns:	5		

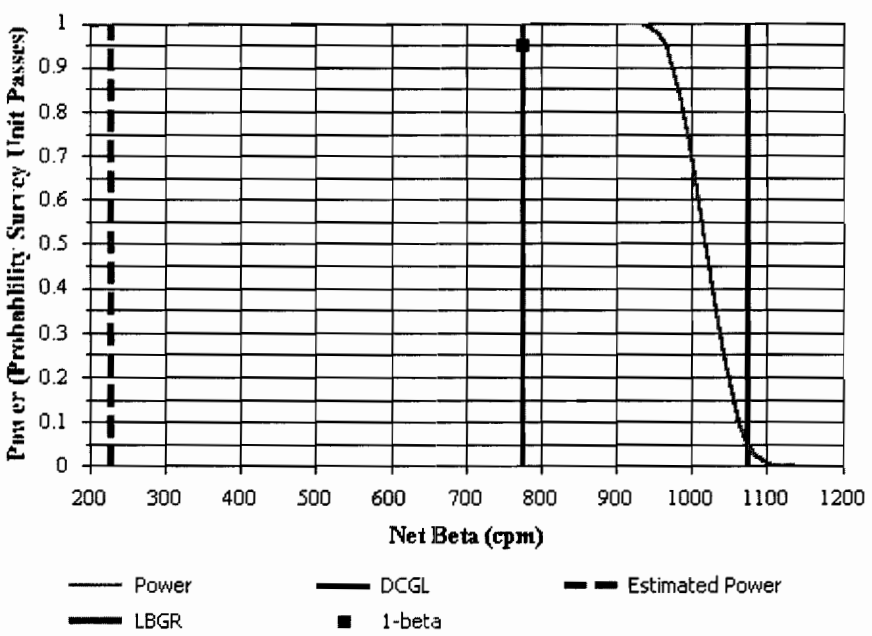
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	8.0	16.4	6
2	11.7	16.4	
3	15.4	16.4	
4	4.3	16.4	
5	0.6	16.4	
6	9.9	19.6	7
7	13.6	19.6	
8	17.3	19.6	
9	6.2	19.6	
10	2.5	19.6	
11	8.0	22.8	8
12	11.7	22.8	
13	15.4	22.8	
14	4.3	22.8	
15	0.6	22.8	
16	9.9	13.2	5
17	13.6	13.2	
18	17.3	13.2	
19	6.2	13.2	
20	2.5	13.2	
21	8.0	10.0	4
22	11.7	10.0	
23	15.4	10.0	
24	4.3	10.0	
25	0.6	10.0	
26	9.9	6.8	3
27	13.6	6.8	
28	17.3	6.8	
29	6.2	6.8	
30	2.5	6.8	
31	8.0	3.6	2
32	11.7	3.6	
33	15.4	3.6	
34	4.3	3.6	
35	0.6	3.6	
36	9.9	0.4	1
37	13.6	0.4	
38	17.3	0.4	
39	6.2	0.4	
40	2.5	0.4	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2400 FSS Package		
Comments:	B-122 Rooms 219 & 220		
Area (m²):	231	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	99.2
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	776	Estimated Conc. (cpm):	230
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 368 ± 46 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	497
Concrete Block	45	370.2	39.8	612
Steel Panel	28	137.9	18.4	381

BMS Download Survey Report Data Summary
Characterization Package A0900 Rooms 219 to 222
Building 122

	Floor		Wall		Ceiling	
	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	320	380	312	429	295	278
	294	372	316	388	333	277
	320	360	315	324	260	293
	327	389	323	388		
	301	358	283	373		
	291	361	313	386		
	284	420	288	373		
	283	380	325	361		
	345	399	321	344		
	307	463	345	365		
			324	323		
			349	387		
			257	291		
			342	419		
			357	411		
Average	**307.2**	**388.2**	**318.0**	**370.8**	**296.0**	**282.7**
Standard Deviation	**20.4**	**32.6**	**26.5**	**37.9**	**36.5**	**9.0**
No of Measurements	**10**	**10**	**15**	**15**	**3**	**3**

All Measurement			**Walls & Ceiling Measurement**	
Average	**311.8**	**367.6**	**Average**	**356.1**
Standard Deviation	**25.7**	**45.5**	**Standard Deviation**	**48.3**
No of Measurements	**28**	**28**	**No of Measurements**	**18**

LBGR Determination

Per MARSSIM, section 5.5.2.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3.

Package B2400

σ =	99.2	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	10.8	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**776**	**cpm**

Package B2500

σ =	100.6	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	10.7	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**772**	**cpm**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-18-03

Download Station #: 1 Download File #: 72
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 4-18-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2400, Bldg. 122, Rooms 219 & 220
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092524	43-68B	.225			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 294	2 279	3 300	4 n/a	5 n/a	6 n/a	291
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .135 PLBBK 253 PTBBK - 229
(0-29)

Duratek™

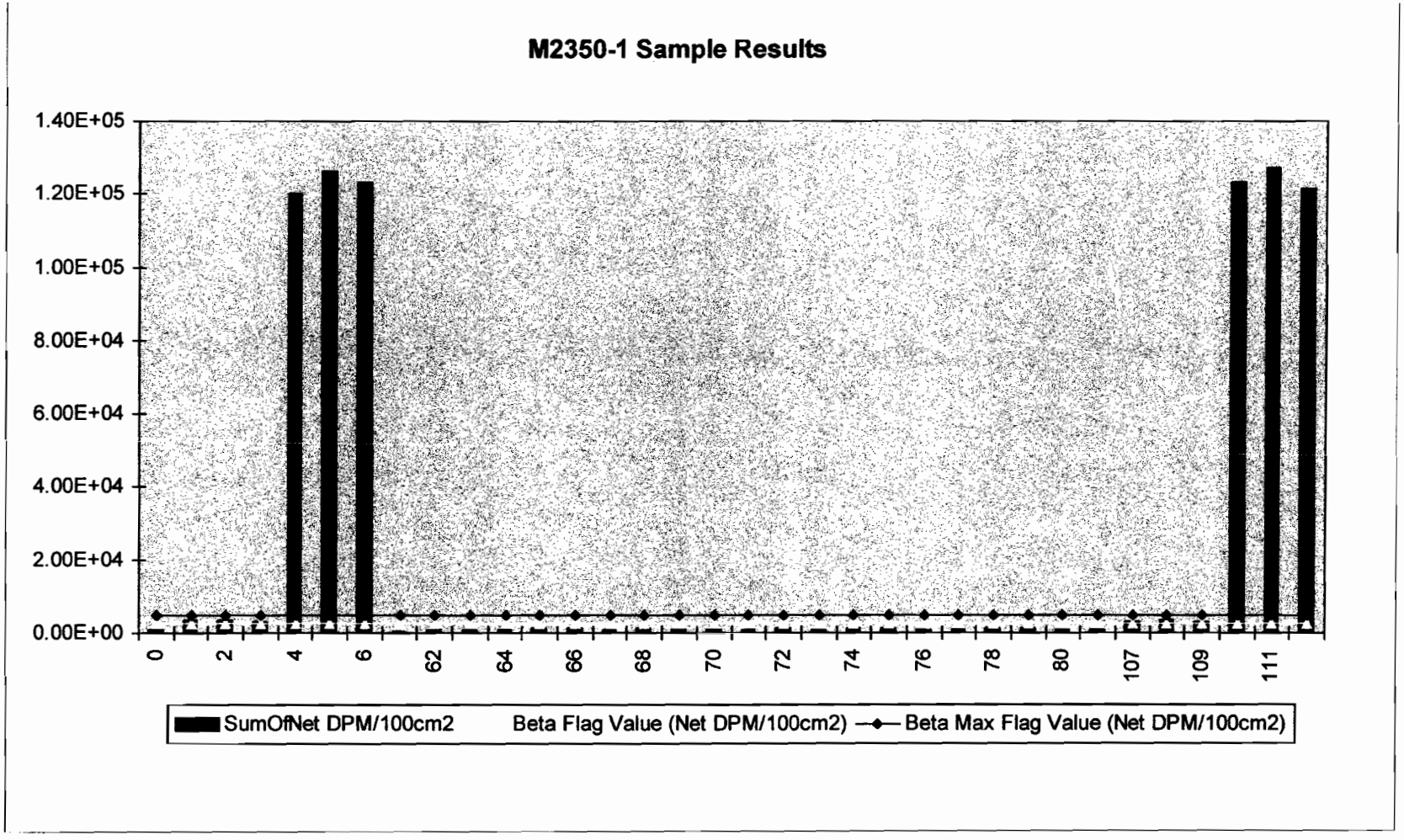
M2350-1 Download BETA Report

File Name : 00000072	Survey Description :Package B2400 B-122, Rooms 219 and 220	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.225	Survey Date : 4/18/03

Print Name	Signature	Date
Betty Kjos	BS Kjos	9/8/03

Comments:

Sign-Off PAUL C. ELY (Print Name) — Paul C Ely (Signature) — 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
62
64
66
68
70
72
74
76
78
80
107
109
111
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000072

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,527.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	891
ZZZZZ	19655	1	1,237.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	3,471
ZZZZZ	19655	2	1,254.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	3,531
ZZZZZ	19655	3	1,242.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	3,489
ZZZZZ	10002	4	34,266.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	119,975
ZZZZZ	10002	5	37,531.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	131,492
ZZZZZ	10002	6	35,523.0	60	PRB00	ZZZZZ	ZZZZZ	0	253	124,409
B2400	ZZZZZ	7	294.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,037
B2400	ZZZZZ	8	279.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	984
B2400	ZZZZZ	9	300.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	1,058
B2400	01C01	10	320.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	1,129
B2400	01C01	11	365.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	1,287
B2400	01F01	12	343.0	60	FLDCT	B0003	ZZZZZ	29	0.0001	1,210
B2400	01W01	13	348.0	60	FLDCT	B0004	ZZZZZ	19	0.0001	1,228
B2400	01W01	14	337.0	60	FLDCT	B0004	ZZZZZ	30	0.0001	1,189
B2400	01W01	15	372.0	60	FLDCT	B0004	ZZZZZ	39	0.0001	1,312
B2400	01W01	16	355.0	60	FLDCT	B0004	ZZZZZ	34	0.0001	1,252
B2400	01W01	17	343.0	60	FLDCT	B0004	ZZZZZ	31	0.0001	1,210
B2400	01W01	18	331.0	60	FLDCT	B0004	ZZZZZ	26	0.0001	1,168
B2400	01W01	19	356.0	60	FLDCT	B0004	ZZZZZ	21	0.0001	1,256
B2400	01W01	20	285.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	1,005
B2400	01C01	21	332.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	1,171
B2400	01C01	22	368.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	1,298
B2400	01F01	23	334.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	1,178
B2400	01W01	24	341.0	60	FLDCT	B0004	ZZZZZ	4	0.0001	1,203
B2400	01W01	25	329.0	60	FLDCT	B0004	ZZZZZ	10	0.0001	1,160
B2400	01W01	26	374.0	60	FLDCT	B0004	ZZZZZ	14	0.0001	1,319
B2400	01W01	27	370.0	60	FLDCT	B0004	ZZZZZ	11	0.0001	1,305
B2400	01W01	28	369.0	60	FLDCT	B0004	ZZZZZ	1	0.0001	1,302
B2400	01W01	29	264.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	931
ZZZZZ	ZZZZZ	41	2,293.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	809
ZZZZZ	19655	42	1,148.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	3,242
ZZZZZ	19655	43	1,210.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	3,460
ZZZZZ	19655	44	1,165.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	3,302
ZZZZZ	10002	45	34,897.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	122,288
ZZZZZ	10002	46	37,801.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	132,529
ZZZZZ	10002	47	32,841.0	60	PTB00	ZZZZZ	ZZZZZ	0	229	115,034

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- 82700

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by BS Kyos (Print) Signature BS Kyos Date 4-18-03 Time 1430

Counted by BS Kyos (Print) Signature BS Kyos Date 4-28-03 Time 0810

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
9	45	0	<MDA
11	62	8	
29	56	2	
30	44	0	
31	59	5	<MDA

N/A

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
9	0	0	<MDA
11	1	.85	
29	0	0	
30	1	.85	
31	0	0	<MDA

N/A

Remarks-

Signature- BS Kyos Reviewed by- Paul C Ely 4/29/03

of

Duratek, Inc.
Survey Package Worksheet for Package B2500
Bristol-Myers Squibb Building 122, Hot Barn & Rooms 221 & 222

Package Identification No.: B2500	Prepared by: Paul C. Ely
Location: Building 122, Hot Barn & Rooms 221 & 222	Date prepared: 4/9/2003
Area Classification: Class 2	

Area Description

The survey area in Building 122 comprising walls and ceilings in Hot Barn & Rooms 221 & 222.

Historical Information

Building 122 was a radiopharmaceutical storage facility. Radioactive waste from R&D and manufacturing was stored and processed by compaction in Building 122. Waste was also held for decay. The compactor was in room 222. The floors in the Hot Barn and Rooms 221 and 222 had activity levels >5,000 dpm/100 cm^2. One elevated Tritium measurement of about 17,000 dpm was obtained from the Hot Barn floor. All other areas had contamination levels <5,000 dpm/100 cm^2 except on equipment removed during the D&D of this area.

General Survey Instructions

(Class 2):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids. The shelves in the Hot Barn will be 100% scanned. Some shelves were found to be contaminated during the D&D of this area.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 3,550 dpm/100 cm2 (50% of the DCGL).
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Special Instructions

Source check meters to Tc-99 and C-14 for beta measurements.

Use gas proportional detector model numbers 43-68 or 43-106 for surveys.

Perform a minimum of three one minute field backgrounds in air prior to survey.

Take five smears on floor in survey unit at five unspecified survey locations.

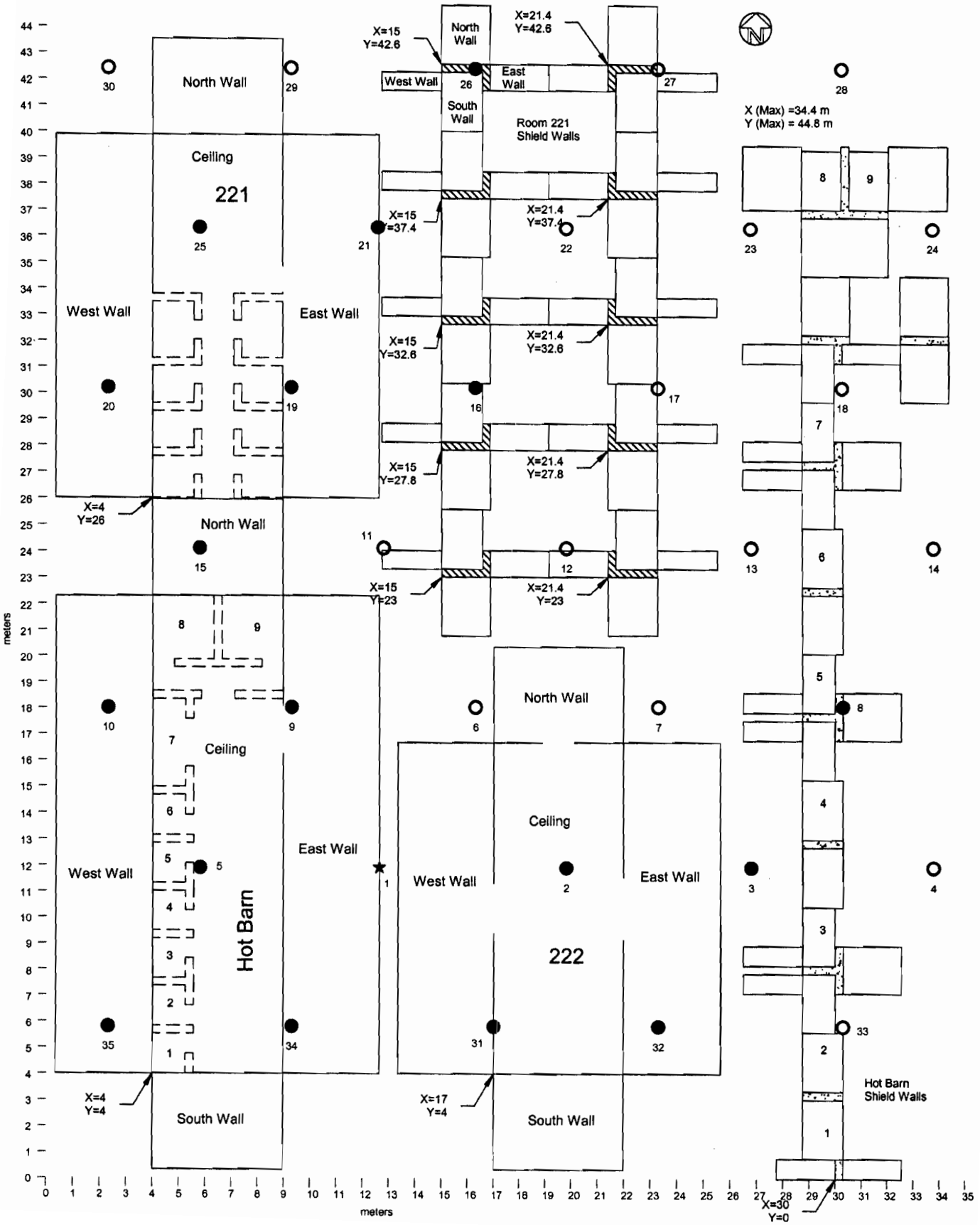
Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample*
L1	L2	L6	L7	L8						5		
Bristol Myers Squibb Building 122 Hot Barn & Rooms 221 & 222												
B2500	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NOL/4-15-03	NOL 4-17-03	N/A	N/A	NOL ~~N/A~~ 4-17-03	N/A	N/A
B2500	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NOL/4-15-03	NOL/4-17-03	N/A	N/A	N/A	N/A	N/A
B2500	01EQ1	ZZZZZ	ZZZZZ	If needed	Hot Barn Shelves 100%	NOL/4-15-03	NOL N/A	N/A	N/A	N/A	N/A	N/A
B2500	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NOL/4-15-03	N/A	N/A	N/A	N/A	N/A	N/A
B2500	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	NOL/4-15-03	NOL/4-17-03	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Eg 4/30/03

Survey Comments

SURVEY PACKAGE B2500



Survey Package B2500
Building 122 Hot Barn & Rooms 221 & 222

X (Max):	34.4	meters	
Y (Max):	44.8	meters	
A (Area):	1,541	m^2	actual survey area 686 square meters
COMPASS Survey Points:	14	55%	percent void area
N (Points):	36	31.5	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	7	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	6.1	meters	(distance between rows)
L/2=	3.5	meters	(row offset value)
X (Random):	5.5		random number generator
Y (Random):	7.2		random number generator
X (Origin):	12.8		initially generated random number
Y (Origin):	11.9		initially generated random number
Number of rows:	7		
Number of columns:	5		

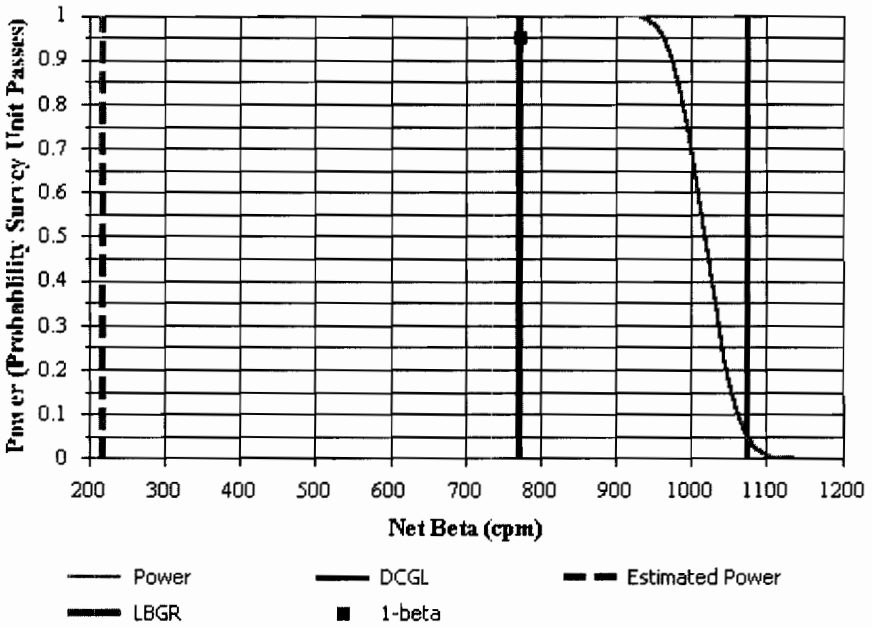
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	12.8	11.9	2
2	19.8	11.9	
3	26.8	11.9	
4	33.8	11.9	
5	5.8	11.9	
6	16.3	18.0	3
7	23.3	18.0	
8	30.3	18.0	
9	9.3	18.0	
10	2.3	18.0	
11	12.8	24.1	4
12	19.8	24.1	
13	26.8	24.1	
14	33.8	24.1	
15	5.8	24.1	
16	16.3	30.2	5
17	23.3	30.2	
18	30.3	30.2	
19	9.3	30.2	
20	2.3	30.2	
21	12.8	36.3	6
22	19.8	36.3	
23	26.8	36.3	
24	33.8	36.3	
25	5.8	36.3	
26	16.3	42.4	7
27	23.3	42.4	
28	30.3	42.4	
29	9.3	42.4	
30	2.3	42.4	
31	16.3	5.8	1
32	23.3	5.8	
33	30.3	5.8	
34	9.3	5.8	
35	2.3	5.8	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2500 FSS Package		
Comments:	B-122 Hot Barn, Rooms 221 & 222 Walls & Ceilings		
Area (m²):	686	Classification:	2
Selected Test:	Sign	Estimated Sigma (cpm):	100.6
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	772	Estimated Conc. (cpm):	218
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 356 ± 48 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	497
Concrete Block	45	370.2	39.8	612
Steel Panel	28	137.9	18.4	381

BMS Download Survey Report Data Summary
Characterization Package A0900 Rooms 219 to 222
Building 122

	Floor		Wall		Ceiling	
	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	320	380	312	429	295	278
	294	372	316	388	333	277
	320	360	315	324	260	293
	327	389	323	388		
	301	358	283	373		
	291	361	313	386		
	284	420	288	373		
	283	380	325	361		
	345	399	321	344		
	307	463	345	365		
			324	323		
			349	387		
			257	291		
			342	419		
			357	411		
Average	**307.2**	**388.2**	**318.0**	**370.8**	**296.0**	**282.7**
Standard Deviation	**20.4**	**32.6**	**26.5**	**37.9**	**36.5**	**9.0**
No of Measurements	**10**	**10**	**15**	**15**	**3**	**3**

All Measurement			**Walls & Ceiling Measurement**	
Average	**311.8**	**367.6**	**Average**	**356.1**
Standard Deviation	**25.7**	**45.5**	**Standard Deviation**	**48.3**
No of Measurements	**28**	**28**	**No of Measurements**	**18**

LBGR Determination

Per MARSSIM, section 5.5.2.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3.

Package B2400

σ =	99.2	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	10.8	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**776**	**cpm**

Package B2500

σ =	100.6	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	10.7	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**772**	**cpm**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kos Signature: [signature] Date: 4-17-03

Download Station #: 1 Download File #: 67
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kos User ID DRK2986 Signature: [signature] Date: 4-17-03

Print Name: _____ User ID _____ Signature: _____ Date: _____

Instrument Serial #(s): Model 2350: 95359

Survey Unit Description: Package B2500 B-122 Rooms 221 and 222 (walls & ceilings)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-12-03 Detector Calibration Due Date: 10-15-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR086917	43-68B	.228			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 176	2 203	3 211	4 N/A	5 N/A	6 N/A	197
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .136

Duratek™

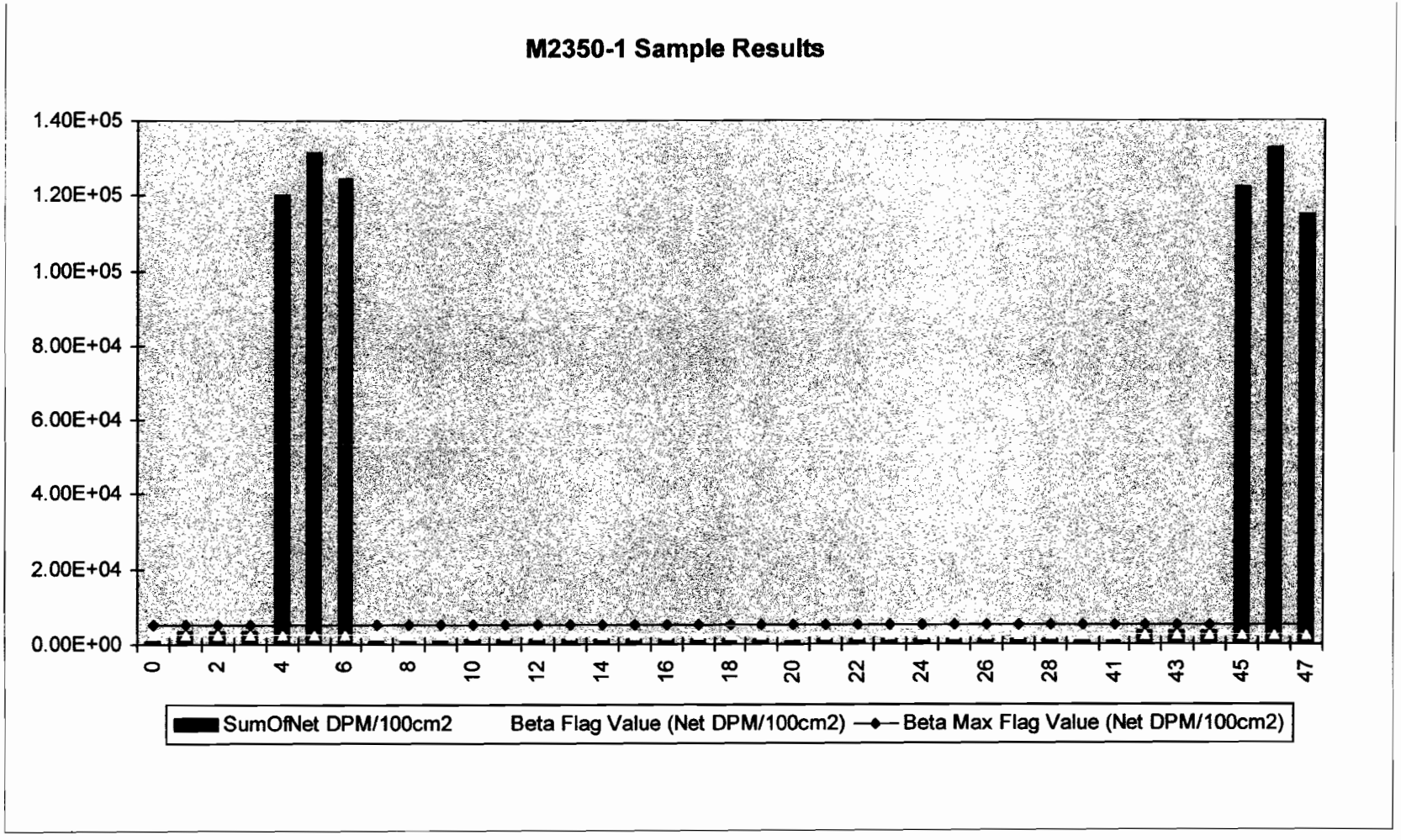
M2350-1 Download BETA Report

File Name : 00000067	Survey Description :Paackage B2500 B-122 Rooms 221 and 222 (walls and	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 95359	Instrument Cal. Due : 6/12/03
Detector Model : 43-68B	Detector S/N : 088917	Detector Cal. Due : 10/15/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 4/17/03

Print Name	Signature	Date
Doug Kjos	DRK	9/8/03

Comments:

Sign-Off PAUL E. ELY (Print Name) — Paul E Ely (Signature) — 9-8-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
41
43
45
47
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000067

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,328.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	810
ZZZZZ	FD184	1	1,190.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	3,331
ZZZZZ	FD184	2	1,257.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	3,564
ZZZZZ	FD184	3	1,141.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	3,161
ZZZZZ	10002	4	34,710.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	120,012
ZZZZZ	10002	5	36,464.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	126,117
ZZZZZ	10002	6	35,640.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	123,249
B2500	ZZZZZ	61	176.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	613
B2500	ZZZZZ	62	203.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	707
B2500	ZZZZZ	63	211.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	734
B2500	01C01	64	245.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	853
B2500	01W01	65	353.0	60	FLDCT	B0004	ZZZZZ	31	0.0001	1,229
B2500	01W01	66	318.0	60	FLDCT	B0004	ZZZZZ	32	0.0001	1,107
B2500	01W01	67	280.0	60	FLDCT	B0004	ZZZZZ	19	0.0001	975
B2500	01W01	68	331.0	60	FLDCT	B0004	ZZZZZ	20	0.0001	1,152
B2500	01W01	69	287.0	60	FLDCT	B0004	ZZZZZ	21	0.0001	999
B2500	01C01	70	235.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	818
B2500	01C01	71	251.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	874
B2500	01W01	72	337.0	60	FLDCT	B0004	ZZZZZ	9	0.0001	1,173
B2500	01EQ1	73	252.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	877
B2500	01W01	74	433.0	60	FLDCT	B0004	ZZZZZ	15	0.0001	1,507
B2500	01W01	75	336.0	60	FLDCT	B0004	ZZZZZ	1	0.0001	1,170
B2500	01W01	76	317.0	60	FLDCT	B0004	ZZZZZ	34	0.0001	1,103
B2500	01W01	77	314.0	60	FLDCT	B0004	ZZZZZ	35	0.0001	1,093
B2500	01W01	78	374.0	60	FLDCT	B0004	ZZZZZ	8	0.0001	1,302
B2500	01W01	79	340.0	60	FLDCT	B0004	ZZZZZ	16	0.0001	1,184
B2500	01W01	80	294.0	60	FLDCT	B0004	ZZZZZ	26	0.0001	1,023
ZZZZZ	ZZZZZ	106	2,391.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	832
ZZZZZ	FD184	107	1,189.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	3,307
ZZZZZ	FD184	108	1,207.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	3,370
ZZZZZ	FD184	109	1,186.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	3,296
ZZZZZ	10002	110	35,672.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	123,340
ZZZZZ	10002	111	36,738.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	127,050
ZZZZZ	10002	112	35,114.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	121,397

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Survey #- B2500

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D. Kjos (Print) Signature D Kjos | BSK Date 4-17-03 Time 1540

Counted by BS Kjos (Print) Signature BS Kjos Date 4-18-03 Time 0925

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .253

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
8	51	0	<MDA
9	62	8	
15	50	0	
31	42	0	
34	48	0	<MDA

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
8	0	0	<MDA
9	1	.85	
15	0	0	
31	0	0	
34	0	0	<MDA

Remarks-

Signature- BS Kjos Reviewed by- Paul C Ely 4/30/03

Duratek Inc.
Survey Package Worksheet for Package B2600
Bristol-Myers Squibb Soils In Pipe Trenches Building 124 Old Section

Package Identification No.: B2600	Prepared by: Paul C. Ely
Location: Pipe Trenches Building 124 Old Section	Date prepared: 1/28/2003
Area Classification: Class 2	

Area Description
The survey is for the soils in Building 124 Old Section Pipe Trenches.

Historical Information
There is a history of leaks to the soil from the pipes in Rooms 150 and 152 of the Old Section of Building 124. Rooms 150 and 152 are not included in this sampling. Only rooms without a prior history of leaks are included in this survey package.

General Survey Instructions

The COMPASS program was utilized to generate a minimum sample requirement for this area of 14 samples (see attached). Three hundred forty potential numbered sample locations were designated based on a one-meter distance between sample locations as shown on the attached survey map. Sixteen of these sample locations were randomly selected as indicated on the attached spreadsheet printout.

1. Perform a 100% scan of the pipe trench bottoms at a maximum scan rate of 2-inches per second.
2. Obtain fixed-point exposure rate measurements on contact with the bottom surface of the trenches with the M2350-1 with at least one measurement point in small rooms and at least three measurement points in larger rooms.
3. Mark the location of the samples in the pipe trenches as indicated on the survey map using survey flags or some other method.
4. Obtain 1 exposure rate measurement on contact with the surface and another at 1 meter above the surface at each survey measurement location with the M2350-1.
5. Obtain approximately one-half gallon of soil from each sample location at a depth of 0 to 6-inches.
6. Use only the L1 and L8 codes when labeling samples for analysis.

Survey Package Completion.

1. When all measurements, samples or scans are collected, initial and date the "MEASUREMENT TYPE" block on the survey package to indicate the measurements or samples were collected.
2. Note any problems, comments, or other information pertinent to the data or sample collection under the "FIELD NOTES" section.

Use all location codes provided below when taking measurements.

Survey Package: B2600 continued

Special Instructions
Use the sodium iodide detector model number 44-2 for gamma survey measurements.

Survey performance (Initial and date as each survey is complete)

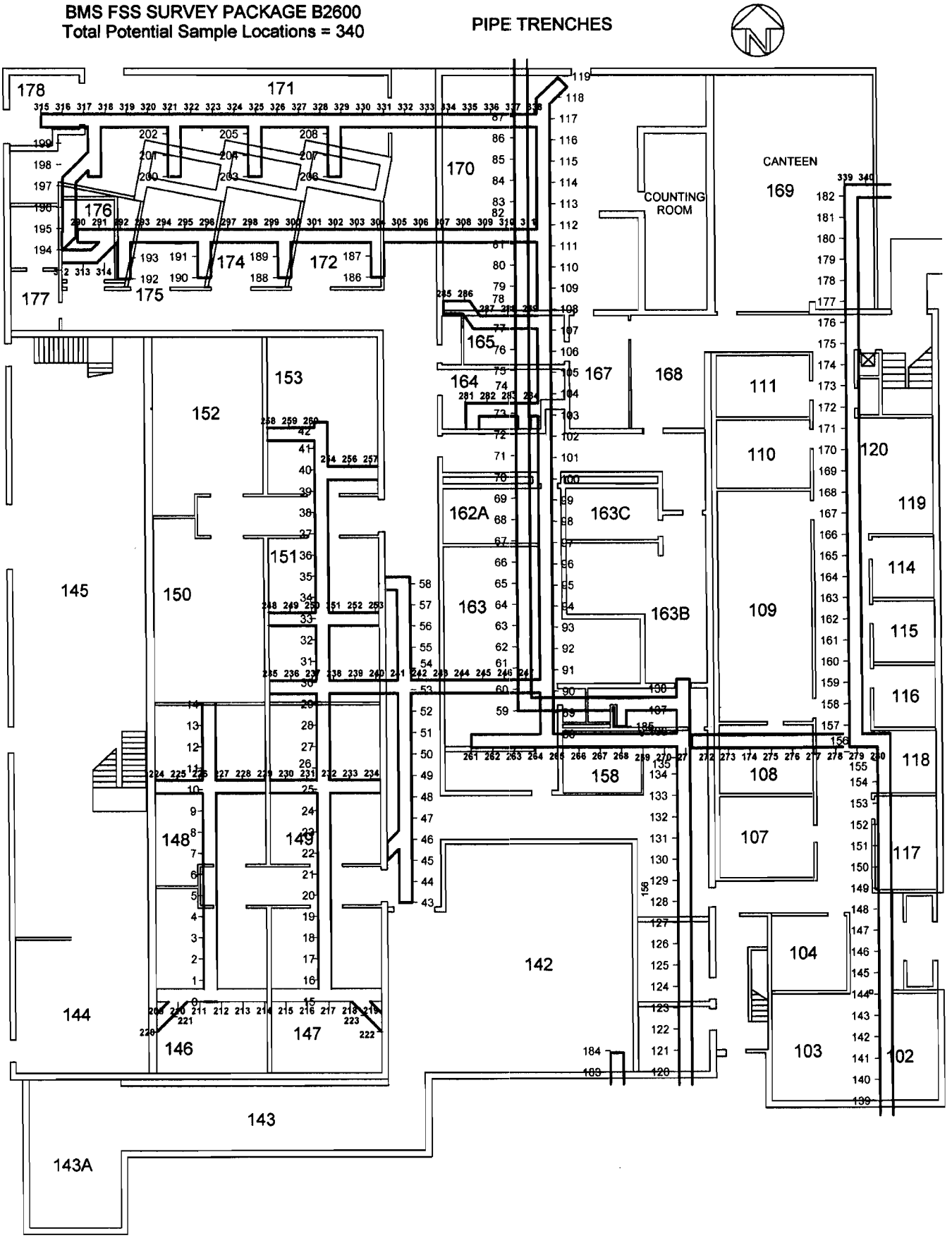
Location Code					General Description	Direct Gamma Small Room	Direct Gamma Larger Room	Gamma Scan	Contact Gamma	1 meter Gamma	Smear Gross	Media Sample
L1	L2	L6	L7	L8								
Bristol-Myers Squibb Soils In Pipe Trenches Building 124 Old Section												
B2600	NA	NA	NA	1 thru 16	**Soil In Trenches**	1 to per room Minimum	3 per room Minimum	100%	(16)	(16)	NA	16
								[illegible] 3-6-03	[illegible] 3-6-03	[illegible] 3-6-03		[illegible] 3-6-03

Package Review	
Date Package Completed:	4/26/03
Package Reviewed by and Date:	4/26/03 Paul C Eg

Survey Comments

BMS FSS SURVEY PACKAGE B2600
Total Potential Sample Locations = 340

PIPE TRENCHES



Survey Package B2600
Building 124 Pipe Trenches Old Section

Number of Potential Survey Points:	340
Potential Survey Points are 1-meter Apart	
Survey Area (based total building area):	2,059
COMPASS Number of Survey Points:	14
Planned Number of Survey Points:	16

Survey Point	Random Location Generator	Initial Random Locations
1	312	~~101~~ 95 PCE
2	230	40
3	72	241
4	292	34
5	35	24
6	226	18
7	267	~~70~~ 69 PCE
8	258	35
9	141	107
10	120	170
11	317	259
12	110	164
13	87	278
14	89	67
15	109	338
16	49	99

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3.

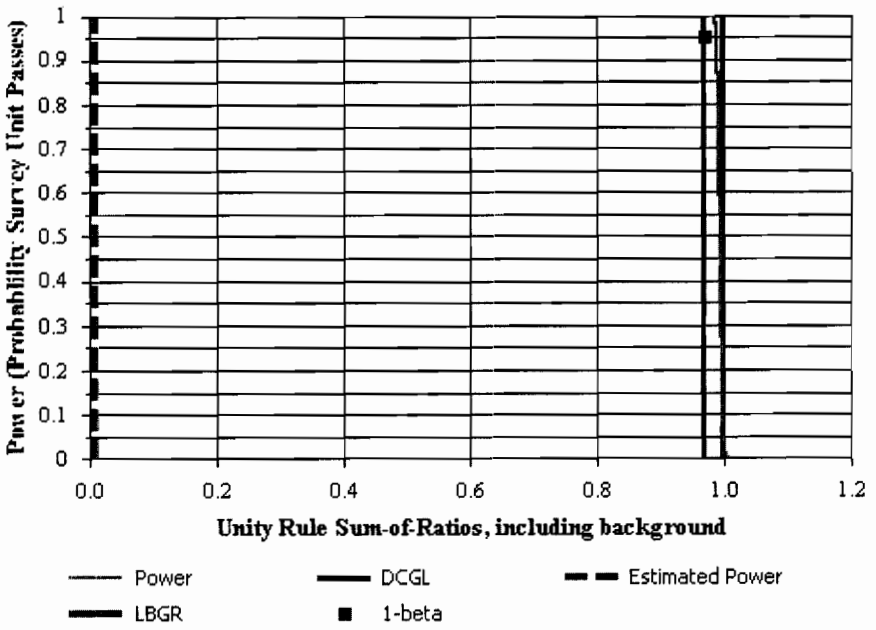
Δ/σ =	$(DCGL_W - LBGR) / \sigma = 3$	
σ =	0.010	Sum of Fractions
DCGLW =	1	Sum of Fractions (By Definition)
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**0.97**	**Sum of Fractions**

Surface Soil Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2600 FSS Package		
Comments:	Pipe Trenches in Old Section of Building		
Area (m²):	2,059	Classification:	2
Selected Test:	Sign	Estimated Sigma (SOR):	0.01
DCGL (SOR):	1	Sample Size (N):	14
LBGR (SOR):	0.97	Estimated Conc. (SOR):	0.01
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Cs-137	11.00	N/A	N/A	N/A	N/A
Mn-54	9.00	N/A	N/A	N/A	N/A

Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Cs-137	0.0904 ± 0.0791	N/A
Mn-54	0.00228 ± 0.0118	N/A

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 2-14-03

Download Station #: 1 Download File #: 30
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** NRK2986 **Signature:** [signature] **Date:** 2-14-03

Print Name:_____ **User ID**_____ **Signature:**_____ **Date:**_____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: B2600 Scan of Trenches in Hallways 154 & 120
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-29-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR121806	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS:

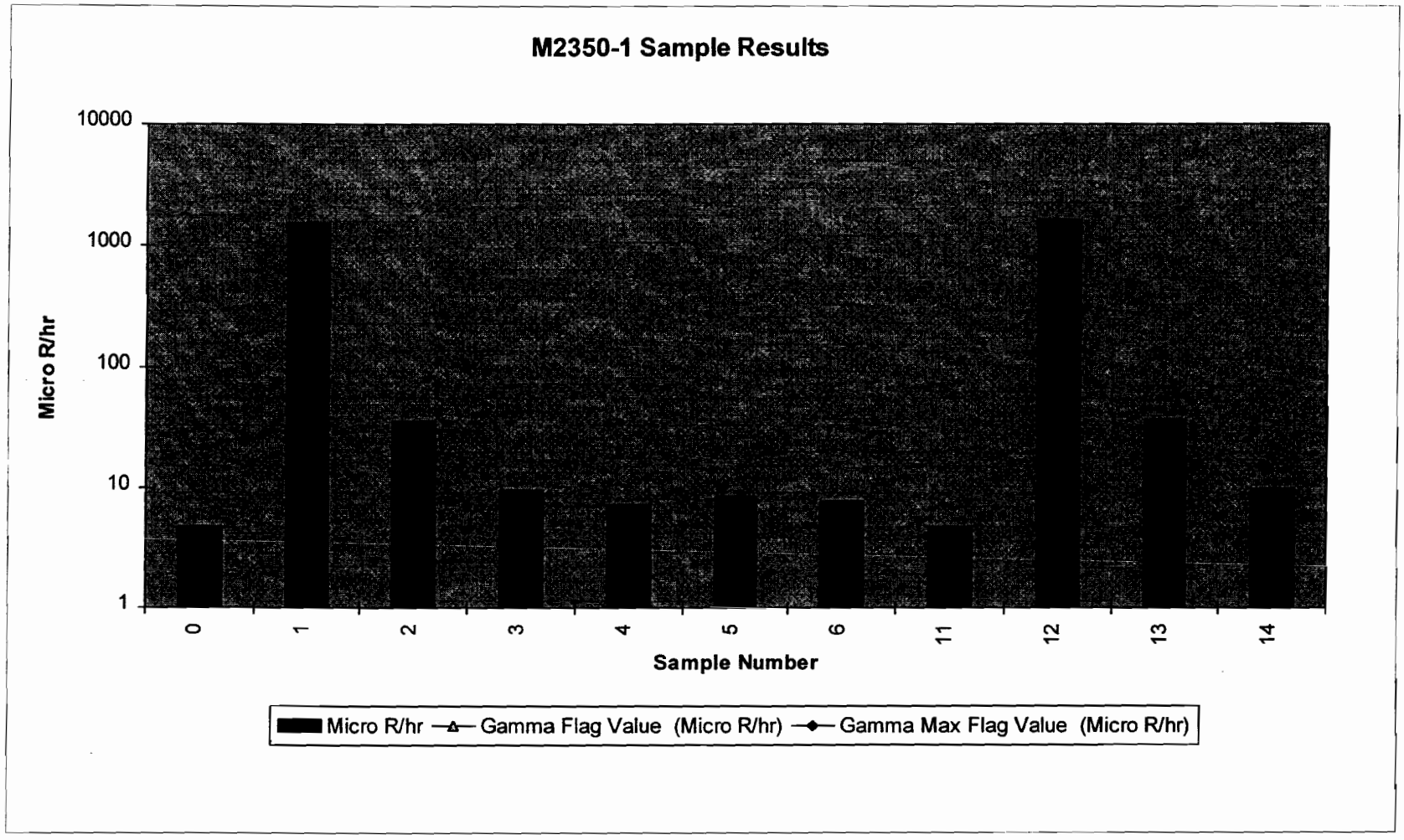
M2350-1 Download GAMMA Report

File Name : 00000030	Survey Description :Package B2600 Scan of Trenches in Hallways 154 &12	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : LMI 44-2	Detector S/N : 121806	Detector Cal. Due : 6/27/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17338370000		Survey Date : 2/13/03

Print Name	Signature	Date
Doug Kjos	DRK	2/14/03

Comments:

Sign-Off PAUL C ELY (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
11
12
13
14
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	19453	0	6,986.0	300	PTG00	ZZZZZ	ZZZZZ	0		4.84E+00
ZZZZZ	19453	1	444,904.1	60	PRG00	ZZZZZ	ZZZZZ	0		1.54E+03
ZZZZZ	19453	2	10,569.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.66E+01
ZZZZZ	19453	3	2,826.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.78E+00
B2600	01T01	4	531.0	15	FLDCT	B0016	HA154	1		7.35E+00
B2600	01T01	5	612.0	15	FLDCT	B0016	HA154	2		8.47E+00
B2600	01T01	6	573.0	15	FLDCT	B0016	HA154	3		7.93E+00
ZZZZZ	19453	11	6,865.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.75E+00
ZZZZZ	19453	12	478,817.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.66E+03
ZZZZZ	19453	13	10,721.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.71E+01
ZZZZZ	19453	14	2,863.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.91E+00

Gamma Flag	- _____
Gamma Max Flag	[redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 2-10-03

Download Station #: 1 Download File #: 28
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 2-10-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: Package B2600 Trench Scans
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-27-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR121806	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

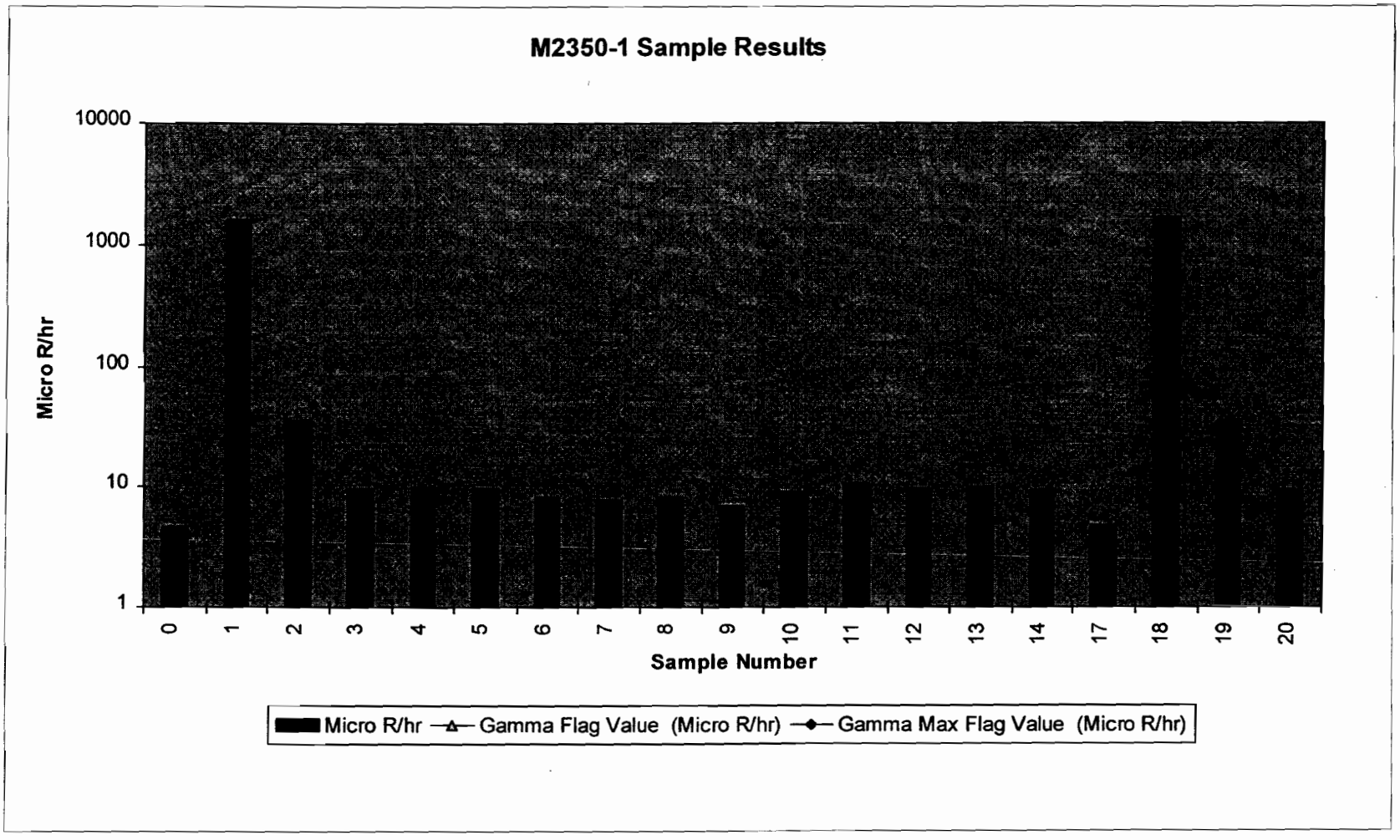
M2350-1 Download GAMMA Report

File Name : 00000028	Survey Description :Package B2600 Trench Scans	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : LMI 44-2	Detector S/N : 121806	Detector Cal. Due : 6/27/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17338370000		Survey Date : 2/10/03

Print Name	Signature	Date
Betty Kjos	BSKjos	2/10/03

Comments:

Sign-Off PAUL C ELY (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
17
18
19
20
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	19453	0	6,783.0	300	PRGBK	ZZZZZ	ZZZZZ	0		4.69E+00
ZZZZZ	19453	1	479,030.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.66E+03
ZZZZZ	19453	2	10,508.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.64E+01
ZZZZZ	19453	3	2,823.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.77E+00
B2600	01T01	4	712.0	15	FLDCT	B0016	HALL	306		9.86E+00
B2600	01T01	5	692.0	15	FLDCT	B0016	HALL	333		9.58E+00
B2600	01T01	6	603.0	15	FLDCT	B0016	RM169	1		8.35E+00
B2600	01T01	7	565.0	15	FLDCT	B0016	RM169	2		7.82E+00
B2600	01T01	8	607.0	15	FLDCT	B0016	RM169	3		8.40E+00
B2600	01T01	9	505.0	15	FLDCT	B0016	RM108	1		6.99E+00
B2600	01T01	10	658.0	15	FLDCT	B0016	RM108	2		9.11E+00
B2600	01T01	11	767.0	15	FLDCT	B0016	RM108	3		1.06E+01
B2600	01T01	12	696.0	15	FLDCT	B0016	RM120	1		9.63E+00
B2600	01T01	13	733.0	15	FLDCT	B0016	RM120	2		1.01E+01
B2600	01T01	14	672.0	15	FLDCT	B0016	RM120	3		9.30E+00
ZZZZZ	ZZZZZ	17	6,948.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.81E+00
ZZZZZ	19453	18	484,870.1	60	PTG00	ZZZZZ	ZZZZZ	0		1.68E+03
ZZZZZ	19453	19	10,269.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.55E+01
ZZZZZ	19453	20	2,751.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.52E+00

Gamma Flag - _____

Gamma Max Flag [redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Klos **Signature:** [signature] **Date:** 3-4-03

Download Station #: 1 Download File #: 34
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Louie Schumaker **User ID** NPS 4133 **Signature:** [signature] **Date:** 3-4-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: Package B2600 Trench Scans Rooms 172, 204 & 207
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR09508S	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

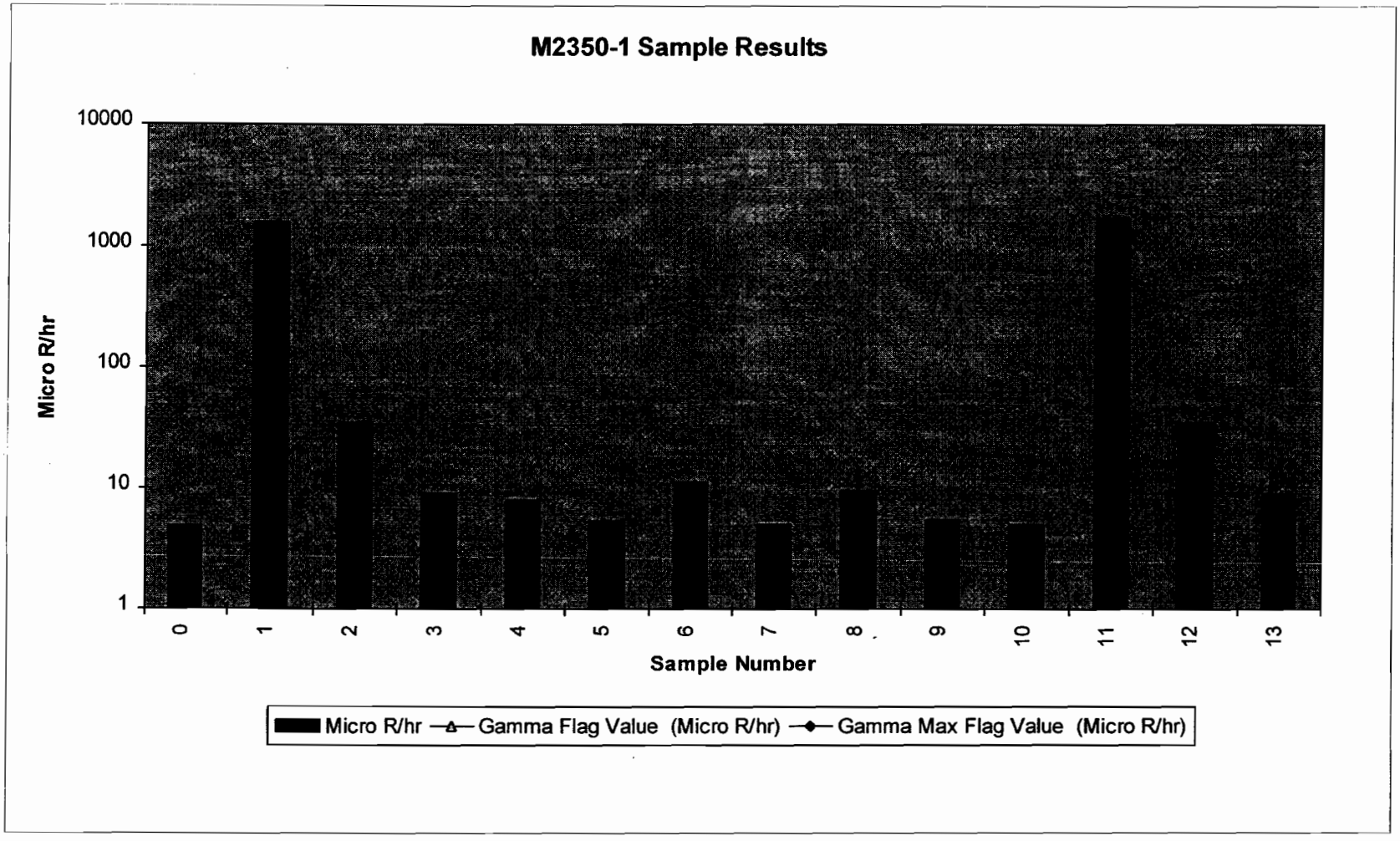
M2350-1 Download GAMMA Report

File Name : 00000034	Survey Description :Package B2600 Trench Scans Rooms 172, 204 & 207	
Survey Reason : Termination		
User ID : DPS4133	Technician Name : Donnie Schumaker	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 6/30/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 3/4/03

Print Name	Signature	Date
Donnie Schumaker		3/4/03

Comments:

Sign-Off Paul C Ely (Print Name) Paul C Ely (Signature) (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

2 of 3

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	ZZZZZ	0	7,219.0	300	PRGBK	ZZZZZ	ZZZZZ	0		4.99E+00
ZZZZZ	19453	1	454,844.0	60	FLDCT	ZZZZZ	ZZZZZ	0		1.57E+03
ZZZZZ	19453	2	10,170.0	60	FLDCT	ZZZZZ	ZZZZZ	0		3.52E+01
ZZZZZ	19453	3	2,635.0	60	FLDCT	ZZZZZ	ZZZZZ	0		9.11E+00
B2600	01T01	4	576.0	15	FLDCT	B0016	RM172	1		7.96E+00
B2600	01T01	5	391.0	15	FLDCT	B0016	RM172	1		5.41E+00
B2600	01T01	6	814.0	15	FLDCT	B0016	RM207	1		1.13E+01
B2600	01T01	7	372.0	15	FLDCT	B0016	RM207	1		5.14E+00
B2600	01T01	8	691.0	15	FLDCT	B0016	RM204	1		9.56E+00
B2600	01T01	9	399.0	15	FLDCT	B0016	RM204	1		5.52E+00
ZZZZZ	ZZZZZ	10	7,345.0	300	PTGBK	ZZZZZ	ZZZZZ	0		5.08E+00
ZZZZZ	19453	11	500,353.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.73E+03
ZZZZZ	19453	12	10,166.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.51E+01
ZZZZZ	19453	13	2,669.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.23E+00

Gamma Flag - _____

Gamma Max Flag [redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 3-3-03

Download Station #: 1 Download File #: 33
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher **User ID** DPS4153 **Signature:** [signature] **Date:** 3-03-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2600, Trenches, 174, 175 + 176
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	095085	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

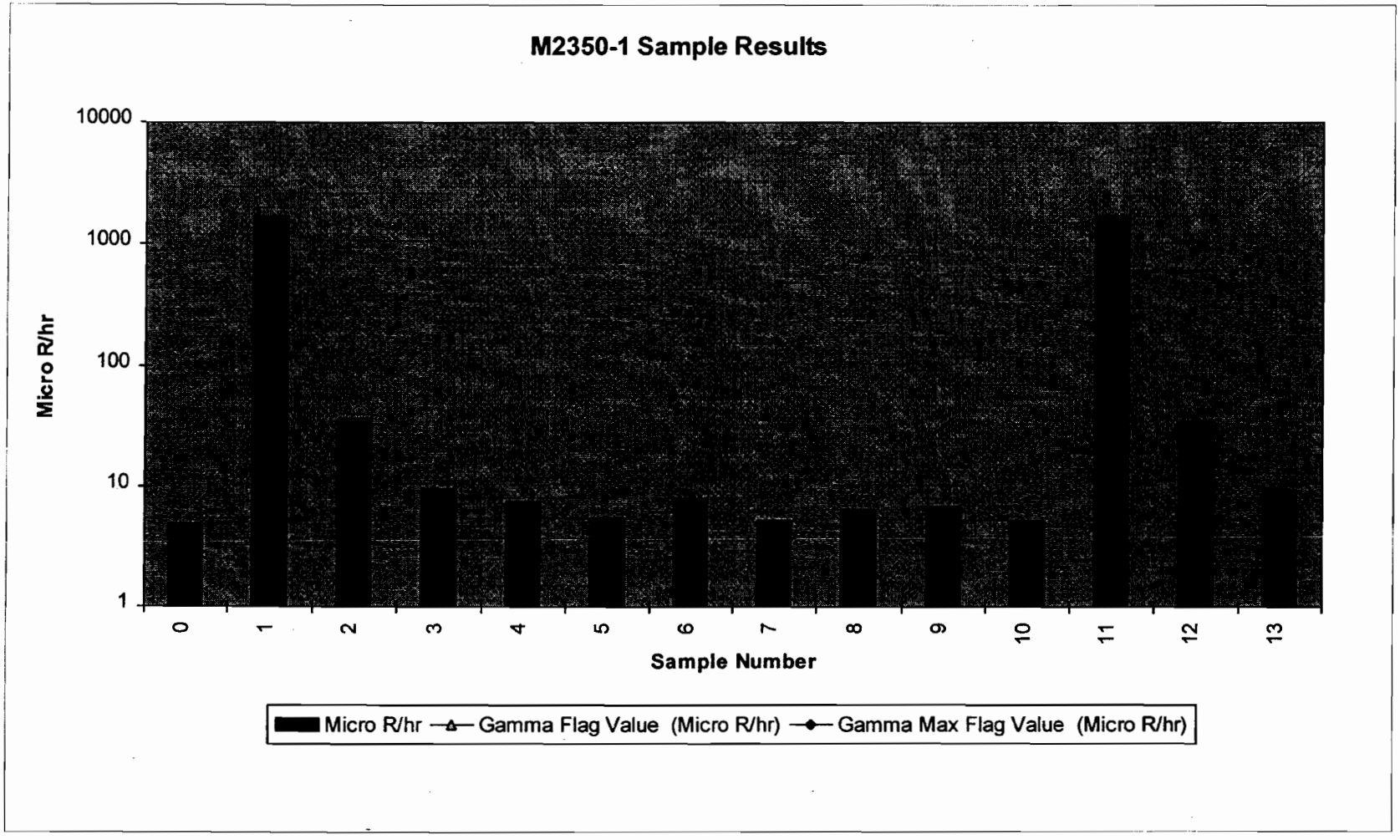
M2350-1 Download GAMMA Report

File Name : 00000033	Survey Description :Package B2600 Trench Scans Rooms 174, 175 & 176	
Survey Reason : Termination		
User ID : DPS4133	Technician Name : Donnie Schumaker	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 6/30/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 3/3/03

Print Name	Signature	Date
Donnie Schumaker		3/3/03

Comments:

Sign-Off Paul C. Ely (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

2 of 3

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	ZZZZZ	0	7,049.0	300	PRGBK	ZZZZZ	ZZZZZ	0		4.87E+00
ZZZZZ	19453	1	487,918.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.69E+03
ZZZZZ	19453	2	10,670.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.69E+01
ZZZZZ	19453	3	2,783.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.62E+00
B2600	01T01	4	552.0	15	FLDCT	B0016	RM174	1		7.63E+00
B2600	01T01	5	398.0	15	FLDCT	B0016	RM174	1		5.50E+00
B2600	01T01	6	575.0	15	FLDCT	B0016	RM175	1		7.95E+00
B2600	01T01	7	374.0	15	FLDCT	B0016	RM175	1		5.17E+00
B2600	01T01	8	469.0	15	FLDCT	B0016	RM176	1		6.49E+00
B2600	01T01	9	500.0	15	FLDCT	B0016	RM176	1		6.91E+00
ZZZZZ	ZZZZZ	10	7,485.0	300	PTGBK	ZZZZZ	ZZZZZ	0		5.18E+00
ZZZZZ	19453	11	500,179.1	60	PTG00	ZZZZZ	ZZZZZ	0		1.73E+03
ZZZZZ	19453	12	10,219.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.53E+01
ZZZZZ	19453	13	2,753.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.52E+00

Gamma Flag	- _____
Gamma Max Flag	

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kips **Signature:** [signature] **Date:** 3-7-03

Download Station #: 1 Download File #: 36
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumaker **User ID** DPS 4133 **Signature:** [signature] **Date:** 3-6-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: B2600 Rm 201, 197
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☒ Gamma γ	088920	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

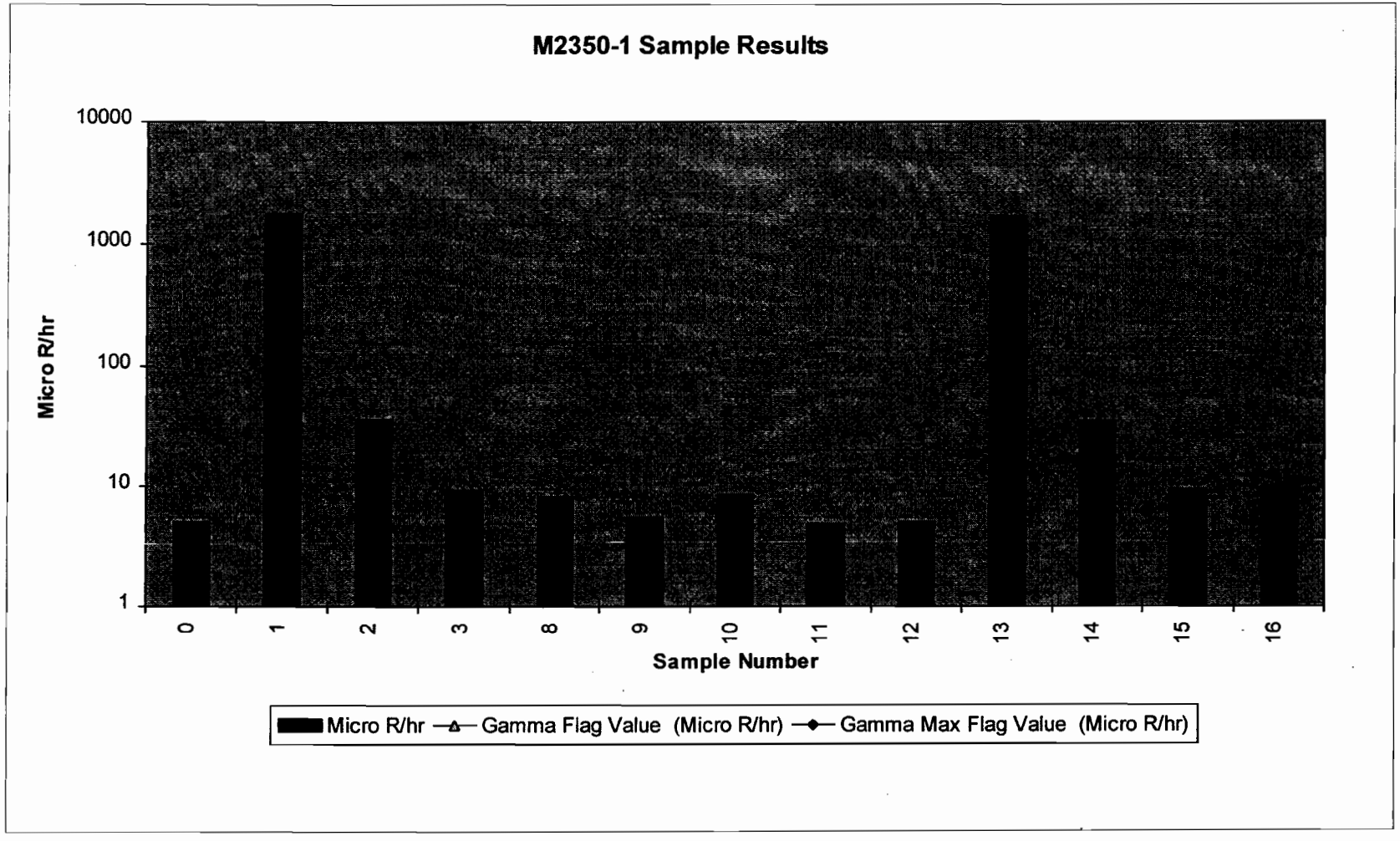
M2350-1 Download Gamma Report

File Name : 00000036	Survey Description :Package B2200 Rooms 201, 197	
Survey Reason : Termination		
User ID : DPS4133	Technician Name : Donnie Schumaker	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : LMI 44-2	Detector S/N : 088920	Detector Cal. Due : 6/30/03
Measurement Type : Gamma	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 16954100000		Survey Date : 3/6/03

Print Name	Signature	Date
Donnie Schumaker		3/7/03

Comments:

Sign-Off PAUL C ELY (Print Name) (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
8
9
10
11
12
13
14
15
16
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

2 of 3

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	7,097.0	300	PRGBK	ZZZZZ	ZZZZZ	0		5.02E+00
ZZZZZ	ZZZZZ	1	510,592.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.81E+03
ZZZZZ	ZZZZZ	2	10,104.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.58E+01
ZZZZZ	ZZZZZ	3	2,649.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.37E+00
B2600	01T01	8	580.0	15	FLDCT	B0016	RM197	1		8.21E+00
B2600	01T01	9	394.0	15	FLDCT	B0016	RM197	1		5.58E+00
B2600	01T01	10	603.0	15	FLDCT	B0016	RM201	1		8.54E+00
B2600	01T01	11	348.0	15	FLDCT	B0016	RM201	1		4.93E+00
ZZZZZ	ZZZZZ	12	7,262.0	300	PTGBK	ZZZZZ	ZZZZZ	0		5.14E+00
ZZZZZ	ZZZZZ	13	480,957.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.70E+03
ZZZZZ	ZZZZZ	14	10,062.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.56E+01
ZZZZZ	ZZZZZ	15	2,617.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.26E+00
ZZZZZ	ZZZZZ	16	2,784.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.85E+00

Gamma Flag	- _____
Gamma Max Flag	[redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 2-4-03

Download Station #: 1 Download File #: 21
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: B.S. Kjos **User ID** BSK0490 **Signature:** [signature] **Date:** 2-4-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2600 Pipe Trenches
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☐ Term Survey ☐ Characterization ☐ Information Only
☑ Other (explain): Final Survey

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	095085	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: On SVL # 24, 25, 26 Change L7 code to RM153 jmk
change L8 code to 1, 2, 3 consecutively. mk

M2350-1 Download GAMMA Report

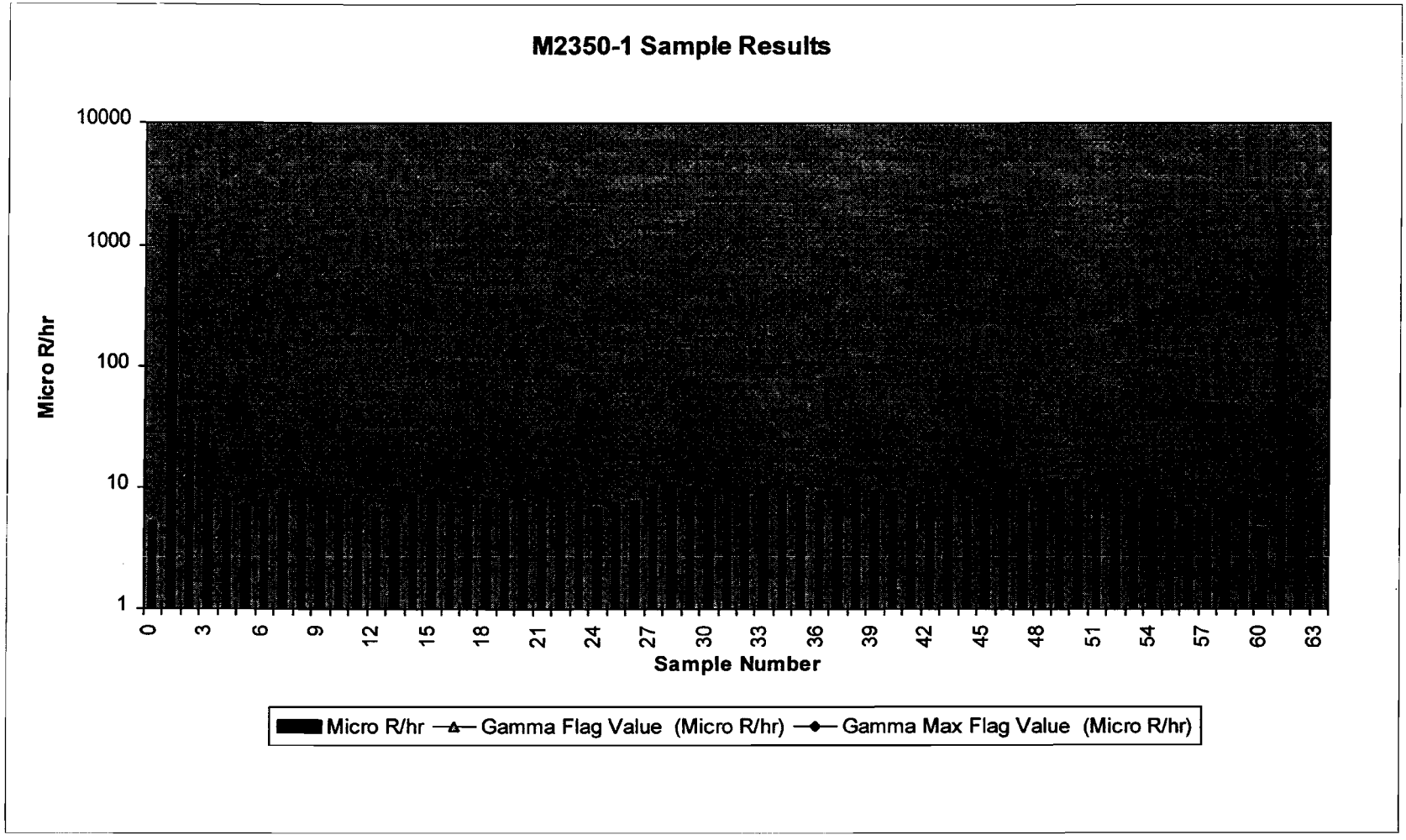
File Name : 00000021	Survey Description :Package B2600 Pipe Trenches	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 2/4/03

Print Name	Signature	Date
Betty Kjos	BS Kjos	2/4/03

Comments:

Sign-Off

Print Name	Signature	Date
Paul C Ely	Paul C Ely	4/26/03


M2350-1 Sample Results
Micro R/hr
10000
1000
100
10
1
0
3
6
9
12
15
18
21
24
27
30
33
36
39
42
45
48
51
54
57
60
63
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

2 of 4

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	7,628.0	300	PRGBK	ZZZZZ	ZZZZZ	0		5.27E+00
ZZZZZ	19453	1	523,389.1	60	PRG00	ZZZZZ	ZZZZZ	0		1.81E+03
ZZZZZ	19453	2	10,287.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.56E+01
ZZZZZ	19453	3	2,873.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.93E+00
B2600	01T01	4	602.0	15	FLDCT	B0016	RM102	1		8.32E+00
B2600	01T01	5	536.0	15	FLDCT	B0016	RM102	2		7.41E+00
B2600	01T01	6	606.0	15	FLDCT	B0016	RM102	3		8.38E+00
B2600	01T01	7	667.0	15	FLDCT	B0016	RM146	1		9.22E+00
B2600	01T01	8	625.0	15	FLDCT	B0016	RM146	2		8.64E+00
B2600	01T01	9	663.0	15	FLDCT	B0016	RM146	3		9.17E+00
B2600	01T01	10	616.0	15	FLDCT	B0016	RM147	1		8.52E+00
B2600	01T01	11	619.0	15	FLDCT	B0016	RM147	2		8.56E+00
B2600	01T01	12	493.0	15	FLDCT	B0016	RM147	3		6.82E+00
B2600	01T01	13	751.0	15	FLDCT	B0016	RM148	1		1.04E+01
B2600	01T01	14	667.0	15	FLDCT	B0016	RM148	2		9.22E+00
B2600	01T01	15	700.0	15	FLDCT	B0016	RM148	3		9.68E+00
B2600	01T01	16	540.0	15	FLDCT	B0016	RM149	1		7.47E+00
B2600	01T01	17	705.0	15	FLDCT	B0016	RM149	2		9.75E+00
B2600	01T01	18	606.0	15	FLDCT	B0016	RM149	3		8.38E+00
B2600	01T01	19	672.0	15	FLDCT	B0016	HALL1	1		9.29E+00
B2600	01T01	20	573.0	15	FLDCT	B0016	HALL2	1		7.92E+00
B2600	01T01	21	591.0	15	FLDCT	B0016	RM151	1		8.17E+00
B2600	01T01	22	587.0	15	FLDCT	B0016	RM151	2		8.12E+00
B2600	01T01	23	763.0	15	FLDCT	B0016	RM151	3		1.06E+01
B2600	01T01	24	501.0	15	FLDCT	B0016	RM153	1		6.93E+00
B2600	01T01	25	545.0	15	FLDCT	B0016	RM153	2		7.54E+00
B2600	01T01	26	562.0	15	FLDCT	B0016	RM153	3		7.77E+00
B2600	01T01	27	764.0	15	FLDCT	B0016	RM172	1		1.06E+01
B2600	01T01	28	791.0	15	FLDCT	B0016	RM172	2		1.09E+01
B2600	01T01	29	744.0	15	FLDCT	B0016	RM172	3		1.03E+01
B2600	01T01	30	723.0	15	FLDCT	B0016	RM174	1		1.00E+01
B2600	01T01	31	861.0	15	FLDCT	B0016	RM174	2		1.19E+01
B2600	01T01	32	812.0	15	FLDCT	B0016	RM174	3		1.12E+01

Gamma Flag	- _____
Gamma Max Flag	[redacted]

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	µ R/hr:
B2600	01T01	33	759.0	15	FLDCT	B0016	RM175	1		1.05E+01
B2600	01T01	34	710.0	15	FLDCT	B0016	RM175	2		9.82E+00
B2600	01T01	35	752.0	15	FLDCT	B0016	RM175	3		1.04E+01
B2600	01T01	36	690.0	15	FLDCT	B0016	FRIDG	1		9.54E+00
B2600	01T01	37	754.0	15	FLDCT	B0016	FRIDG	2		1.04E+01
B2600	01T01	38	792.0	15	FLDCT	B0016	FRIDG	3		1.10E+01
B2600	01T01	39	672.0	15	FLDCT	B0016	RM164	1		9.29E+00
B2600	01T01	40	683.0	15	FLDCT	B0016	RM164	2		9.44E+00
B2600	01T01	41	714.0	15	FLDCT	B0016	RM164	3		9.87E+00
B2600	01T01	42	702.0	15	FLDCT	B0016	RM170	1		9.71E+00
B2600	01T01	43	690.0	15	FLDCT	B0016	RM170	2		9.54E+00
B2600	01T01	44	577.0	15	FLDCT	B0016	RM170	3		7.98E+00
B2600	01T01	45	734.0	15	FLDCT	B0016	RM165	1		1.01E+01
B2600	01T01	46	706.0	15	FLDCT	B0016	RM165	2		9.76E+00
B2600	01T01	47	749.0	15	FLDCT	B0016	RM165	3		1.04E+01
B2600	01T01	48	792.0	15	FLDCT	B0016	162A	1		1.10E+01
B2600	01T01	49	792.0	15	FLDCT	B0016	RM163	1		1.10E+01
B2600	01T01	50	849.0	15	FLDCT	B0016	RM163	2		1.17E+01
B2600	01T01	51	658.0	15	FLDCT	B0016	RM163	3		9.10E+00
B2600	01T01	52	699.0	15	FLDCT	B0016	RM157	1		9.67E+00
B2600	01T01	53	749.0	15	FLDCT	B0016	RM159	1		1.04E+01
B2600	01T01	54	758.0	15	FLDCT	B0016	RM158	1		1.05E+01
B2600	01T01	55	595.0	15	FLDCT	B0016	RM156	1		8.23E+00
B2600	01T01	56	500.0	15	FLDCT	B0016	RM156	2		6.91E+00
B2600	01T01	57	470.0	15	FLDCT	B0016	RM156	3		6.50E+00
B2600	01T01	58	553.0	15	FLDCT	B0016	PHONE	1		7.65E+00
B2600	01T01	59	634.0	15	FLDCT	B0016	ELEC	1		8.77E+00
ZZZZZ	ZZZZZ	60	6,677.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.62E+00
ZZZZZ	19453	61	485,889.1	60	PTG00	ZZZZZ	ZZZZZ	0		1.68E+03
ZZZZZ	19453	62	10,226.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.54E+01
ZZZZZ	19453	63	2,697.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.32E+00

Gamma Flag - _____

Gamma Max Flag [redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos Signature: [signature] Date: 2-6-03

Download Station #: 1 Download File #: 26
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos User ID BSK 0490 Signature: [signature] Date: 2-6-03

Print Name: _____ User ID _____ Signature: _____ Date: _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2600 Pipe Trenches (Soil Samples)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	095085	44-2	N/A	N/A	24	

Local Area Background Measurements MEAN Value in cpm

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

M2350-1 Download GAMMA Report

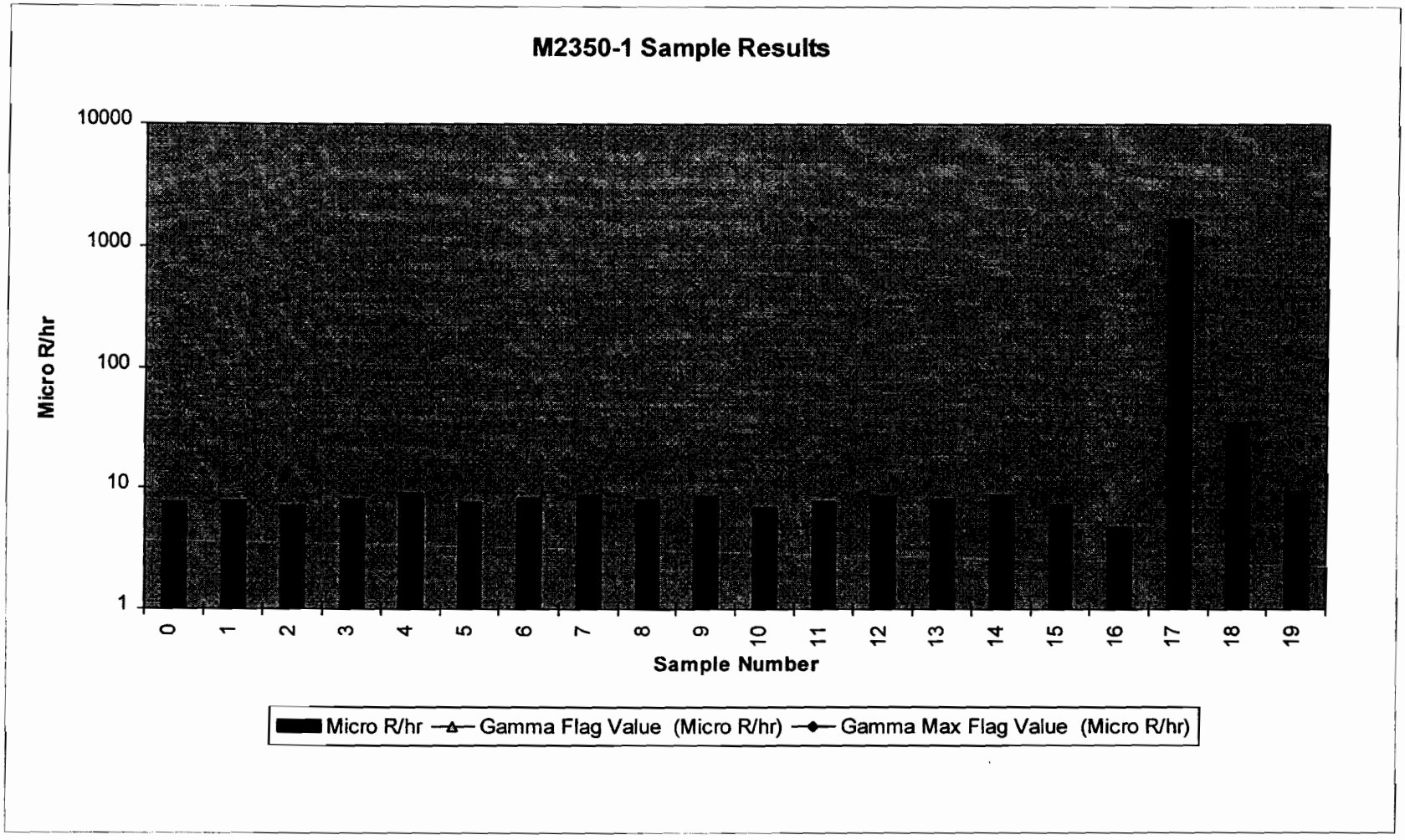
File Name : 00000026	Survey Description :B2600 Pipe Trenches (soil samples)	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 2/6/03

Print Name	Signature	Date
Betty Kjos	BSKjos	2/6/03

Comments:
Soil Sample #101 inaccessible; #95 TAKEN in place of #101.

Sign-Off

Print Name	Signature	Date
Paul C Ely	Paul C Ely	4/26/03


M2350-1 Sample Results
Micro R/hr
10000
1000
100
10
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
B2600	01T01	0	544.0	15	FLDCT	B0016	RM153	259		7.52E+00
B2600	01T01	1	573.0	15	FLDCT	B0016	RM153	259		7.92E+00
B2600	01T01	2	518.0	15	FLDCT	B0016	RM153	40		7.16E+00
B2600	01T01	3	585.0	15	FLDCT	B0016	RM153	40		8.09E+00
B2600	01T01	4	654.0	15	FLDCT	B0016	RM151	35		9.04E+00
B2600	01T01	5	545.0	15	FLDCT	B0016	RM151	35		7.54E+00
B2600	01T01	6	597.0	15	FLDCT	B0016	RM151	34		8.26E+00
B2600	01T01	7	637.0	15	FLDCT	B0016	RM151	34		8.81E+00
B2600	01T01	8	583.0	15	FLDCT	B0016	RM149	24		8.06E+00
B2600	01T01	9	615.0	15	FLDCT	B0016	RM149	24		8.50E+00
B2600	01T01	10	503.0	15	FLDCT	B0016	RM147	18		6.96E+00
B2600	01T01	11	559.0	15	FLDCT	B0016	RM147	18		7.73E+00
B2600	01T01	12	618.0	15	FLDCT	B0016	163C	99		8.55E+00
B2600	01T01	13	576.0	15	FLDCT	B0016	163C	99		7.96E+00
B2600	01T01	14	634.0	15	FLDCT	B0016	RM163	95		8.77E+00
B2600	01T01	15	539.0	15	FLDCT	B0016	RM163	95		7.45E+00
ZZZZZ	ZZZZZ	16	6,943.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.80E+00
ZZZZZ	19453	17	483,325.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.67E+03
ZZZZZ	19453	18	10,294.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.56E+01
ZZZZZ	19453	19	2,703.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.34E+00

Gamma Flag	- _____
Gamma Max Flag	[redacted]

Thursday, February 06, 2003

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: **Print Name:** Douglas R Kjos **Signature:** [signature] **Date:** 2-7-03

Download Station #: 1 Download File #: 27
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos **User ID** 850490 **Signature:** [signature] **Date:** 2-7-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: Package B2600 Sample Points 67, 69 and 164
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR095085	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm !

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

M2350-1 Download GAMMA Report

File Name : 00000027	Survey Description :Package B2600 Sample Points 67,69 and 164	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 2/7/03

Print Name	Signature	Date
Betty Kjos	BSKjos	2/7/03

Comments: Point 70 inaccessible, moved to Point 69. [illegible]

Sign-Off Paul C Ely (Print Name) Paul C Ely (Signature) _____ (Date)

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Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	ZZZZZ	0	6,925.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.79E+00
ZZZZZ	19453	1	489,631.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.69E+03
ZZZZZ	19453	2	10,241.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.54E+01
ZZZZZ	19453	3	2,805.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.70E+00
B2600	01T01	4	590.0	15	FLDCT	B0016	162A	67		8.16E+00
B2600	01T01	5	567.0	15	FLDCT	B0016	162A	67		7.84E+00
B2600	01T01	6	580.0	15	FLDCT	B0016	162A	69		8.02E+00
B2600	01T01	7	540.0	15	FLDCT	B0016	162A	69		7.47E+00
B2600	01T01	8	732.0	15	FLDCT	B0016	114	164		1.01E+01
B2600	01T01	9	546.0	15	FLDCT	B0016	114	164		7.55E+00
ZZZZZ	19453	10	6,541.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.52E+00
ZZZZZ	19453	11	488,554.1	60	PTG00	ZZZZZ	ZZZZZ	0		1.69E+03
ZZZZZ	19453	12	10,176.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.52E+01
ZZZZZ	19453	13	2,610.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.02E+00

Gamma Flag	-
Gamma Max Flag	[redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kips **Signature:** [signature] **Date:** 2-10-03

Download Station #: 1 Download File #: 29
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kips **User ID** BSK0490 **Signature:** [signature] **Date:** 2-10-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: ~~Package B2600 Sample Point 170~~ NOC 2-10-03 120633

Survey Unit Description: Package B2600 Sample Point #170
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-27-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☒ Gamma γ	PR121806	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

M2350-1 Download GAMMA Report

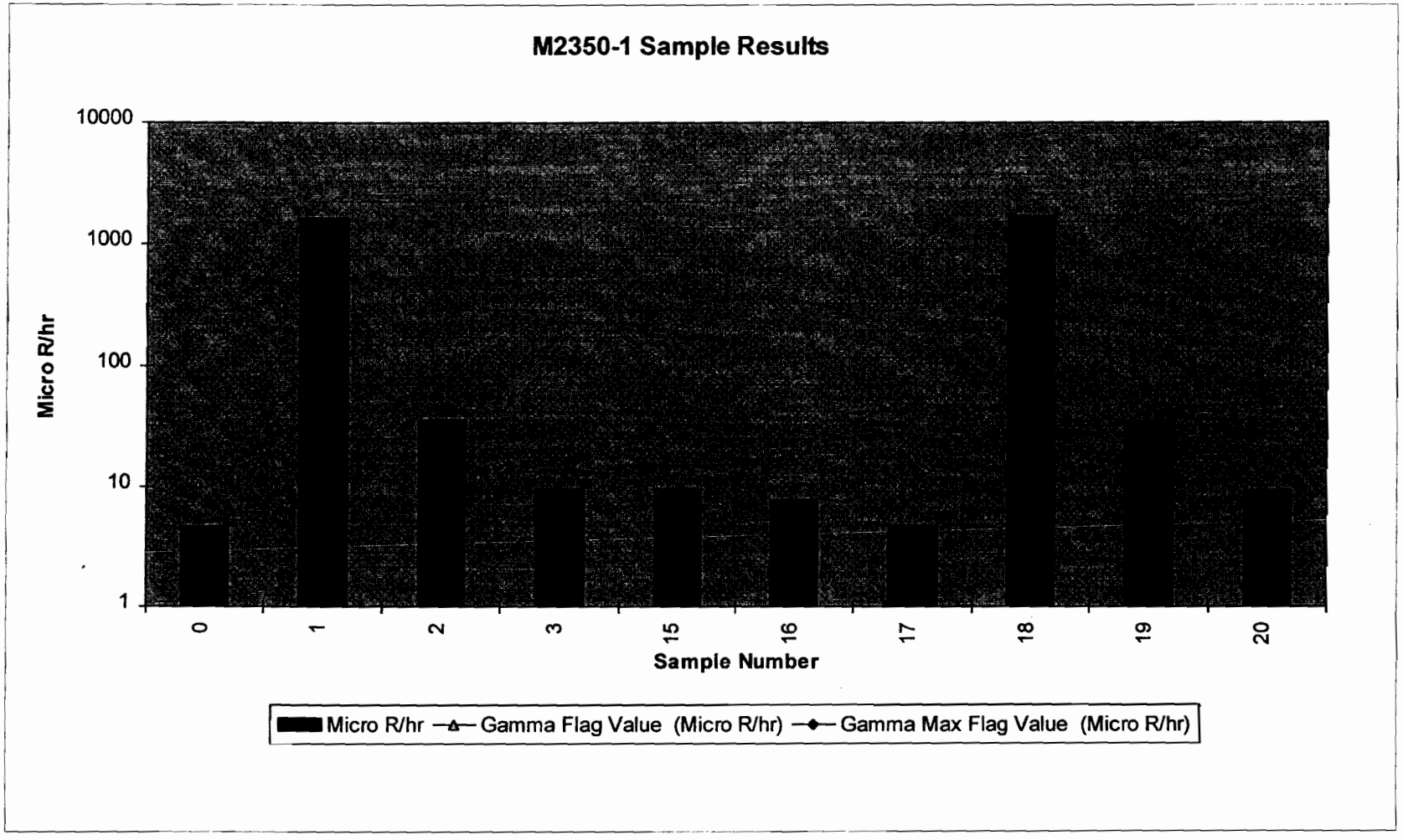
File Name : 00000029	Survey Description :Package B2600 Sample Point #170	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : LMI 44-2	Detector S/N : 121806	Detector Cal. Due : 6/27/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17338370000		Survey Date : 2/10/03

Print Name	Signature	Date
Betty Kjos	BSKjos	2/10/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C ELY	Paul C Ely	4/26/03


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
15
16
17
18
19
20
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

2 of 3

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	19453	0	6,783.0	300	PRGBK	ZZZZZ	ZZZZZ	0		4.69E+00
ZZZZZ	19453	1	479,030.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.66E+03
ZZZZZ	19453	2	10,508.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.64E+01
ZZZZZ	19453	3	2,823.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.77E+00
B2600	01T01	15	709.0	15	FLDCT	B0016	RM120	170		9.81E+00
B2600	01T01	16	566.0	15	FLDCT	B0016	RM120	170		7.83E+00
ZZZZZ	ZZZZZ	17	6,948.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.81E+00
ZZZZZ	19453	18	484,870.1	60	PTG00	ZZZZZ	ZZZZZ	0		1.68E+03
ZZZZZ	19453	19	10,269.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.55E+01
ZZZZZ	19453	20	2,751.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.52E+00

Gamma Flag	-
Gamma Max Flag	[redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 2-14-03

Download Station #: 1 Download File #: 31
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** RRK2986 **Signature:** [signature] **Date:** 2-14-03

Print Name:_____ **User ID**_____ **Signature:**_____ **Date:**_____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: B2600 Sample Points ~~254~~ 241 & 278 RRK 2-14-03
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date:_____ Detector Calibration Due Date:_____

Type Of Survey: ☐ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR121806	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS:

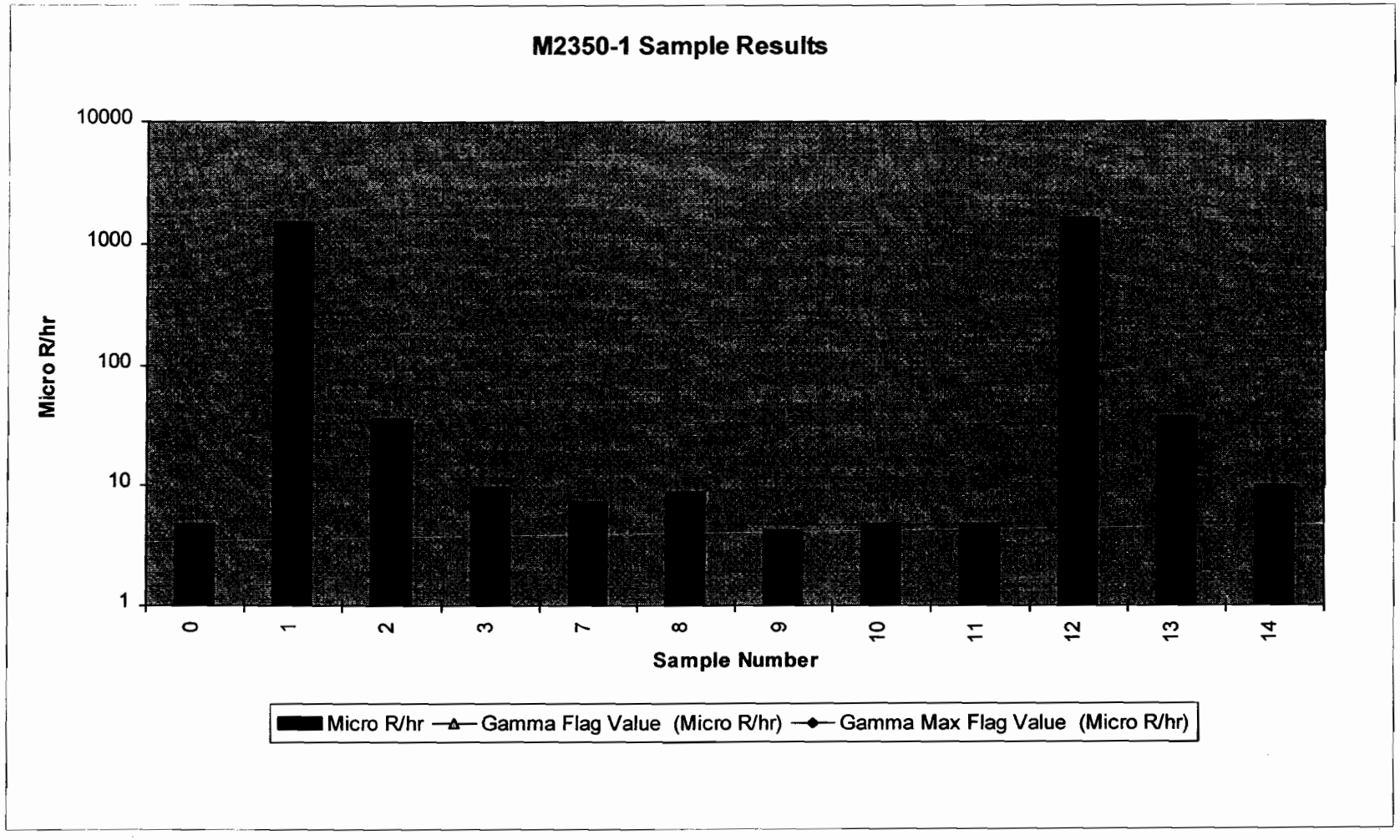
M2350-1 Download GAMMA Report

File Name : 00000031	Survey Description :Package B2600 Sample Points 241 & 278	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : LMI 44-2	Detector S/N : 121806	Detector Cal. Due : 6/27/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17338370000		Survey Date : 2/13/03

Print Name	Signature	Date
Doug Kjos	DRK	2/14/03

Comments:

Sign-Off Paul C Ely (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
7
8
9
10
11
12
13
14
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	19453	0	6,986.0	300	PTG00	ZZZZZ	ZZZZZ	0		4.84E+00
ZZZZZ	19453	1	444,904.1	60	PRG00	ZZZZZ	ZZZZZ	0		1.54E+03
ZZZZZ	19453	2	10,569.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.66E+01
ZZZZZ	19453	3	2,826.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.78E+00
B2600	01T01	7	525.0	15	FLDCT	B0016	HA154	241		7.27E+00
B2600	01T01	8	634.0	15	FLDCT	B0016	HA154	241		8.78E+00
B2600	01T01	9	309.0	15	FLDCT	B0016	HA120	278		4.28E+00
B2600	01T01	10	341.0	15	FLDCT	B0016	HA120	278		4.72E+00
ZZZZZ	19453	11	6,865.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.75E+00
ZZZZZ	19453	12	478,817.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.66E+03
ZZZZZ	19453	13	10,721.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.71E+01
ZZZZZ	19453	14	2,863.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.91E+00

Gamma Flag	-
Gamma Max Flag	[redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyos **Signature:** [signature] **Date:** 2-5-03

Download Station #: 1 Download File #: 22
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: R.S. Kyos **User ID** RSK0490 **Signature:** RS Kyos **Date:** 2-5-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2600 Pipe Trenches (Soil Samples)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☐ Term Survey ☐ Characterization ☐ Information Only
☑ Other (explain): Final Survey

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	095085	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

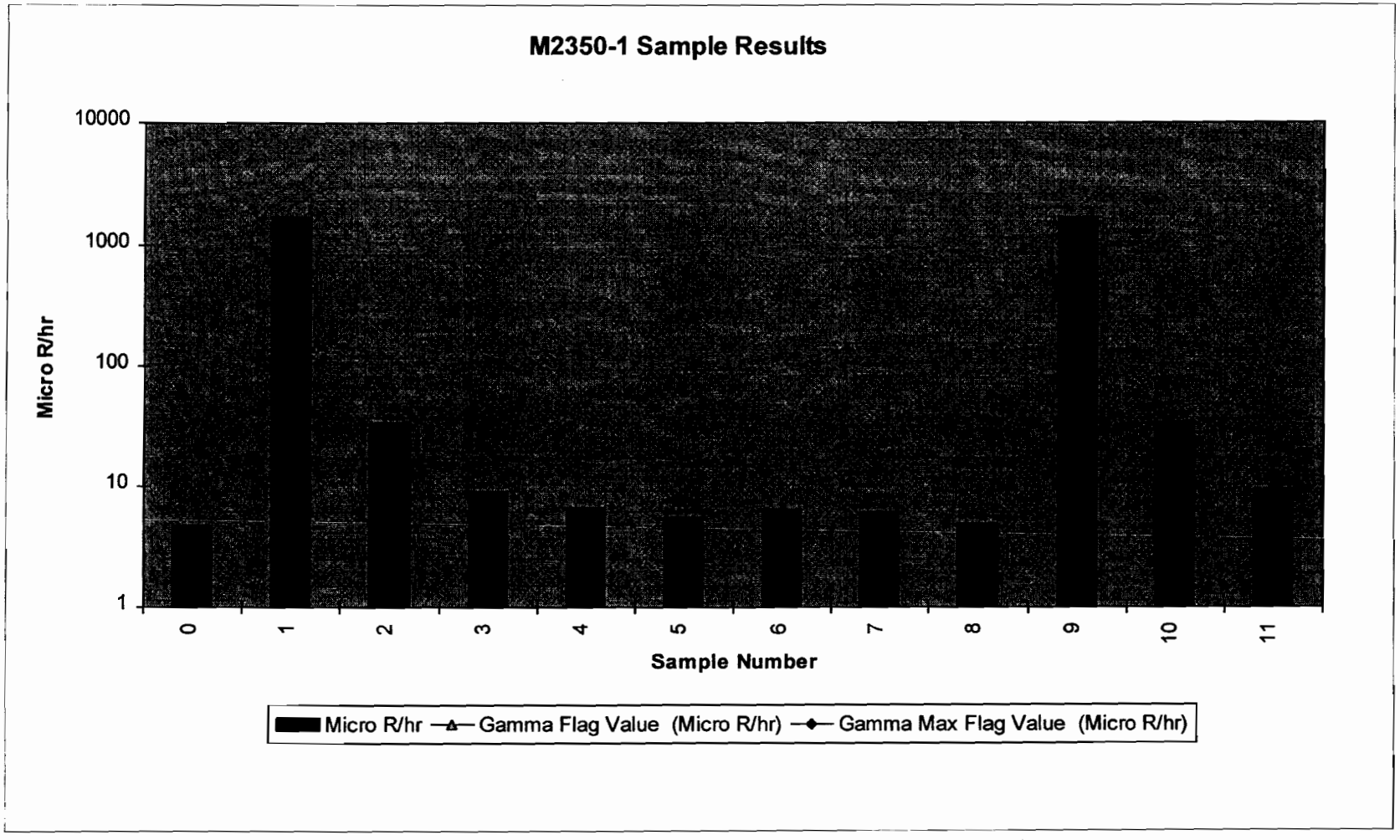
M2350-1 Download GAMMA Report

File Name : 00000022	Survey Description :B2600 Pipe Trenches (soil samples)	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 2/5/03

Print Name	Signature	Date
Betty Kjos	BSKjos	2/5/03

Comments:

Sign-Off Paul C Ely (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
7
8
9
10
11
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	6,867.0	300	PRGBK	ZZZZZ	ZZZZZ	0		4.75E+00
ZZZZZ	19453	1	509,548.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.76E+03
ZZZZZ	19453	2	9,884.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.42E+01
ZZZZZ	19453	3	2,664.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.21E+00
B2600	01T01	4	492.0	15	FLDCT	B0016	ENTRY	146		6.80E+00
B2600	01T01	5	405.0	15	FLDCT	B0016	ENTRY	146		5.60E+00
B2600	01T01	6	475.0	15	FLDCT	B0016	RM170	338		6.57E+00
B2600	01T01	7	438.0	15	FLDCT	B0016	RM170	338		6.06E+00
ZZZZZ	ZZZZZ	8	7,052.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.88E+00
ZZZZZ	19453	9	489,282.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.69E+03
ZZZZZ	19453	10	9,903.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.42E+01
ZZZZZ	19453	11	2,727.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.43E+00

Gamma Flag	-
Gamma Max Flag	[redacted]

Bristol-Myers Squibb Production Facility Final Status Survey
New Brunswick New Jersey

Framatome ANP Environmental Laboratory Analysis Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-2600-018	Room 147 Sample Location #18	2/6/03	4/11/03	Ac/Th-228	0.274	2.74E-01	3.60E-02	1.30E-01
				Co-60	<MDA	-1.09E-02	9.40E-03	3.70E-02
				Cs-137	<MDA	2.66E-02	9.90E-03	3.10E-02
				K-40	9.7	9.70E+00	3.80E-01	3.30E-01
BMS-2600-024	Room 149 Sample Location #24	2/6/03	4/11/03	Ac/Th-228	0.712	7.12E-01	3.70E-02	1.30E-01
				Co-60	<MDA	8.60E-03	9.50E-03	3.20E-02
				Cs-137	<MDA	1.95E-02	9.90E-03	3.20E-02
				K-40	12.93	1.29E+01	3.40E-01	2.90E-01
BMS-2600-034	Room 151 Sample Location #34	2/6/03	4/11/03	Ac/Th-228	0.496	4.96E-01	3.10E-02	1.10E-01
				Co-60	<MDA	-9.60E-03	8.10E-03	3.10E-02
				Cs-137	<MDA	2.20E-02	1.00E-02	3.30E-02
				K-40	12.43	1.24E+01	3.30E-01	2.40E-01
BMS-2600-035	Room 151 Sample Location #35	2/6/03	4/11/03	Ac/Th-228	0.359	3.59E-01	1.60E-02	5.40E-02
				Co-60	<MDA	1.00E-03	4.60E-03	1.60E-02
				Cs-137	<MDA	1.55E-02	5.90E-03	1.90E-02
				K-40	9.87	9.87E+00	1.80E-01	1.60E-01
BMS-2600-040	Room 153 Sample Location #40	2/6/03	4/11/03	Ac/Th-228	0.395	3.95E-01	3.90E-02	1.40E-01
				Co-60	<MDA	-4.30E-03	8.60E-03	3.40E-02
				Cs-137	<MDA	1.60E-02	1.00E-02	3.40E-02
				K-40	9.07	9.07E+00	3.80E-01	3.40E-01
BMS-2600-067	Room 162A Sample Location #67	2/7/03	4/14/03	Ac/Th-228	0.414	4.14E-01	2.50E-02	1.00E-01
				Co-60	<MDA	2.00E-04	7.10E-03	2.50E-02
				Cs-137	<MDA	8.90E-03	7.50E-03	2.50E-02
				K-40	10.74	1.07E+01	2.70E-01	2.40E-01
BMS-2600-069	Room 162A Sample Location #69	2/7/03	4/11/03	Ac/Th-228	0.472	4.72E-01	3.10E-02	9.90E-02
				Co-60	<MDA	-7.40E-03	7.00E-03	2.60E-02
				Cs-137	<MDA	5.40E-03	8.10E-03	2.80E-02
				K-40	10.56	1.06E+01	2.80E-01	2.50E-01
BMS-2600-095	Room 163 Sample Location #95	2/6/03	4/11/03	Ac/Th-228	0.509	5.09E-01	3.20E-02	1.10E-01
				Co-60	<MDA	-1.17E-02	7.30E-03	2.80E-02
				Cs-137	<MDA	1.35E-02	7.60E-03	2.50E-02
				K-40	11.3	1.13E+01	3.00E-01	3.00E-01
BMS-2600-099	Room 162A Sample Location #99	2/6/03	4/11/03	Ac/Th-228	0.307	3.07E-01	3.00E-02	1.10E-01
				Co-60	<MDA	-9.00E-03	7.30E-03	2.80E-02
				Cs-137	<MDA	1.00E-04	7.80E-03	2.70E-02
				K-40	13.68	1.37E+01	3.30E-01	2.50E-01
BMS-2600-107	Room 165 Sample Location #107	2/6/03	4/11/03	Ac/Th-228	0.633	6.33E-01	1.90E-02	8.90E-02
				Co-60	<MDA	8.00E-04	5.00E-03	1.70E-02
				Cs-137	0.0244	2.44E-02	6.10E-03	2.00E-02
				K-40	11.83	1.18E+01	1.60E-01	2.70E-01
BMS-2600-164	Hallway 120 Sample Location #164	2/7/03	4/11/03	Ac/Th-228	0.631	6.31E-01	3.20E-03	1.20E-01
				Co-60	<MDA	-2.40E-03	7.80E-03	2.80E-02
				Cs-137	<MDA	7.40E-03	8.70E-03	2.90E-02
				K-40	10.58	1.06E+01	3.00E-01	2.80E-01
BMS-2600-170	Hallway 120 Sample Location #170	2/10/03	4/11/03	Ac/Th-228	0.89	8.90E-01	3.70E-02	1.30E-01
				Co-60	<MDA	-2.50E-03	8.80E-03	3.20E-02
				Cs-137	0.04	4.00E-02	1.10E-02	3.50E-02
				K-40	13.24	1.32E+01	3.40E-01	3.20E-01
BMS-2600-241	Hallway 154 Sample Location #241	2/13/03	4/11/03	Ac/Th-228	0.469	4.69E-01	2.00E-02	7.50E-02
				Co-60	0.0301	3.01E-02	4.70E-02	1.70E-02
				Cs-137	0.0677	6.77E-02	7.40E-03	2.10E-02
				K-40	10.25	1.03E+01	2.00E-01	1.70E-01
BMS-2600-259	Room 153 Sample Location #259	2/6/03	4/11/03	Ac/Th-228	0.183	1.83E-01	2.90E-02	1.20E-01
				Co-60	<MDA	-3.50E-03	8.10E-03	3.00E-02
				Cs-137	<MDA	2.35E-02	7.90E-03	2.40E-02
				K-40	10.41	1.04E+01	3.40E-01	2.70E-01
BMS-2600-278	Hallway 120 Sample Location #278	2/13/03	4/11/03	Ac/Th-228	0.277	2.77E-01	4.50E-02	1.40E-01
				Co-60	<MDA	1.13E-02	9.30E-03	3.20E-02
				Cs-137	0.363	3.63E-01	2.30E-02	4.00E-02
				K-40	3.06	3.06E+00	2.50E-01	4.00E-01
BMS-2600-338	Room 170 Sample Location #338	2/5/03	4/11/03	Ac/Th-228	0.785	7.85E-01	1.50E-02	5.30E-02
				Co-60	<MDA	2.00E-03	4.00E-03	1.30E-02
				Cs-137	<MDA	1.00E-04	6.00E-03	2.00E-02
				K-40	2.676	2.68E+00	8.80E-02	2.00E-01

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	Report Date	04/14/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903	
Attention	Paul Ely	Receipt Date	03/13/03		

Lab. Sample No.	L5186-01	Client ID	BMS-2600-018	Product	GAMMA SPECTROMETRY
Reference Date	02/06/03	Analysis Date	04/11/03	Matrix	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)	TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.74E-01 +/- 3.6E-02	3.8E-02	1.3E-01		bc
Ag-108m	-3.7E-03 +/- 6.8E-03	6.8E-03	2.5E-02		
Ag-110m	-1E-02 +/- 1.4E-02	1.4E-02	5.3E-02		
Ba-140	-4.3E-01 +/- 8.5E-01	8.5E-01	3.1E+00		
Be-7	-1.5E-01 +/- 1.4E-01	1.4E-01	5.2E-01		
Ce-141	5.2E-02 +/- 4.3E-02	4.3E-02	1.4E-01		
Ce-144	-2E-03 +/- 5.4E-02	5.4E-02	1.9E-01		
Co-57	-5E-04 +/- 6.8E-03	6.8E-03	2.3E-02		
Co-58	-3.3E-02 +/- 1.3E-02	1.3E-02	5.5E-02		
Co-60	-1.09E-02 +/- 9.4E-03	9.5E-03	3.7E-02	3.8E-02	
Cr-51	1.4E-01 +/- 3.1E-01	3.1E-01	1.1E+00		
Cs-134	-8.3E-03 +/- 8.0E-03	8.1E-03	3.0E-02		
Cs-137	2.66E-02 +/- 9.9E-03	1.0E-02	3.1E-02	1.1E+00	
Fe-59	1.7E-02 +/- 5.0E-02	5.0E-02	1.8E-01		
I-131	2.1E+00 +/- 1.9E+00	1.9E+00	6.3E+00		
K-40	9.7E+00 +/- 3.8E-01	6.2E-01	3.3E-01		bc
La-140	-1.8E-01 +/- 4.3E-01	4.3E-01	1.6E+00		
Mn-54	-4E-03 +/- 9.0E-03	9.0E-03	3.3E-02		
Nb-95	-1.8E-02 +/- 2.8E-02	2.8E-02	1.0E-01		
Ru-103	-1.5E-02 +/- 2.3E-02	2.3E-02	8.4E-02		
Ru-106	-8.1E-02 +/- 8.8E-02	8.8E-02	3.2E-01		
Sb-124	-1.4E-02 +/- 2.7E-02	2.7E-02	1.1E-01		
Sb-125	-4.6E-02 +/- 2.1E-02	2.1E-02	8.2E-02		
Se-75	0E+00 +/- 1.3E-02	1.3E-02	4.7E-02		
Zn-65	-6E-03 +/- 2.3E-02	2.3E-02	8.5E-02		
Zr-95	-3E-02 +/- 3.8E-02	3.8E-02	1.4E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-02	**Client ID**	BMS-2600-024	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	7.12E-01	+/-	3.7E-02	5.1E-02	1.3E-01		bc
Ag-108m	-2.6E-03	+/-	8.1E-03	8.1E-03	2.8E-02		
Ag-110m	1E-02	+/-	1.2E-02	1.2E-02	4.3E-02		
Ba-140	1.32E+00	+/-	8.9E-01	8.9E-01	2.9E+00		
Be-7	-1.4E-01	+/-	1.6E-01	1.6E-01	5.6E-01		
Ce-141	2.5E-02	+/-	5.6E-02	5.6E-02	1.9E-01		
Ce-144	-9E-02	+/-	7.3E-02	7.3E-02	2.5E-01		
Co-57	9E-04	+/-	9.2E-03	9.2E-03	3.1E-02		
Co-58	-3E-03	+/-	1.5E-02	1.5E-02	5.4E-02		
Co-60	8.6E-03	+/-	9.5E-03	9.5E-03	3.2E-02	3.8E-02	
Cr-51	-2.1E-01	+/-	3.7E-01	3.7E-01	1.3E+00		
Cs-134	1.3E-02	+/-	3.6E-02	3.6E-02	1.2E-01		
Cs-137	1.95E-02	+/-	9.9E-03	9.9E-03	3.2E-02	1.1E+00	
Fe-59	5.5E-02	+/-	4.5E-02	4.5E-02	1.5E-01		
I-131	2.2E+00	+/-	2.1E+00	2.1E+00	7.1E+00		
K-40	1.293E+01	+/-	3.4E-01	7.3E-01	2.9E-01		bc
La-140	-1E-02	+/-	5.2E-01	5.2E-01	1.8E+00		
Mn-54	-1.4E-03	+/-	9.6E-03	9.6E-03	3.4E-02		
Nb-95	1.9E-02	+/-	3.2E-02	3.2E-02	1.1E-01		
Ru-103	-4.7E-02	+/-	2.3E-02	2.3E-02	8.4E-02		
Ru-106	8.2E-02	+/-	9.1E-02	9.2E-02	3.1E-01		
Sb-124	-5E-03	+/-	3.0E-02	3.0E-02	1.1E-01		
Sb-125	-1E-03	+/-	2.7E-02	2.7E-02	9.3E-02		
Se-75	-2E-03	+/-	1.6E-02	1.6E-02	5.4E-02		
Zn-65	6E-03	+/-	4.6E-02	4.6E-02	1.5E-01		
Zr-95	-1.5E-01	+/-	3.8E-01	3.8E-01	1.3E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/15/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-03	**Client ID**	BMS-2600-034	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	4.96E-01	+/-	3.1E-02	4.0E-02	1.1E-01		bc
Ag-108m	-1.13E-02	+/-	6.1E-03	6.1E-03	2.2E-02		
Ag-110m	5E-03	+/-	1.1E-02	1.1E-02	3.7E-02		
Ba-140	1.27E+00	+/-	7.9E-01	7.9E-01	2.6E+00		
Be-7	1E-02	+/-	1.2E-01	1.2E-01	4.1E-01		
Ce-141	5E-03	+/-	3.7E-02	3.7E-02	1.2E-01		
Ce-144	-2.3E-02	+/-	4.1E-02	4.1E-02	1.4E-01		
Co-57	3.9E-03	+/-	5.3E-03	5.3E-03	1.8E-02		
Co-58	-1.9E-02	+/-	1.3E-02	1.3E-02	4.7E-02		
Co-60	-9.6E-03	+/-	8.1E-03	8.1E-03	3.1E-02	3.8E-02	
Cr-51	-9E-02	+/-	2.3E-01	2.3E-01	8.0E-01		
Cs-134	-6.5E-03	+/-	6.5E-03	6.5E-03	2.3E-02		
Cs-137	2.2E-02	+/-	1.0E-02	1.0E-02	3.3E-02	1.1E+00	c
Fe-59	-6.4E-02	+/-	4.2E-02	4.2E-02	1.6E-01		
I-131	1E+00	+/-	1.4E+00	1.4E+00	4.8E+00		
K-40	1.243E+01	+/-	3.3E-01	7.0E-01	2.4E-01		bc
La-140	-3E-02	+/-	3.8E-01	3.8E-01	1.3E+00		
Mn-54	3.1E-03	+/-	8.9E-03	8.9E-03	3.1E-02		
Nb-95	-1.5E-02	+/-	2.9E-02	2.9E-02	1.0E-01		
Ru-103	-8E-03	+/-	1.9E-02	1.9E-02	6.6E-02		
Ru-106	4.1E-02	+/-	6.9E-02	6.9E-02	2.4E-01		
Sb-124	0E+00	+/-	2.3E-02	2.3E-02	8.7E-02		
Sb-125	-7E-03	+/-	2.0E-02	2.0E-02	6.8E-02		
Se-75	-3.4E-02	+/-	1.1E-02	1.1E-02	4.0E-02		
Zn-65	-2.2E-02	+/-	3.9E-02	3.9E-02	1.4E-01		
Zr-95	-2.97E+00	+/-	9.2E-01	9.3E-01	3.1E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
JM Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/15/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5186-04	**Client ID**	BMS-2600-035	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.59E-01	+/-	1.6E-02	2.4E-02	5.4E-02		bc
Ag-108m	-1.9E-03	+/-	3.9E-03	3.9E-03	1.3E-02		
Ag-110m	-1.6E-03	+/-	6.5E-03	6.5E-03	2.3E-02		
Ba-140	2.6E-01	+/-	2.0E-01	2.0E-01	6.6E-01		
Be-7	5E-03	+/-	7.8E-02	7.8E-02	2.6E-01		
Ce-141	1.8E-02	+/-	2.7E-02	2.7E-02	8.9E-02		
Ce-144	-6.5E-02	+/-	3.7E-02	3.7E-02	1.3E-01		
Co-57	7.24E-02	+/-	5.3E-03	6.5E-03	1.6E-02		bc
Co-58	-9E-04	+/-	7.1E-03	7.1E-03	2.5E-02		
Co-60	1E-03	+/-	4.6E-03	4.6E-03	1.6E-02	3.8E-02	
Cr-51	-1.8E-01	+/-	1.9E-01	1.9E-01	6.5E-01		
Cs-134	-5.5E-03	+/-	6.1E-03	6.1E-03	2.1E-02		
Cs-137	1.55E-02	+/-	5.9E-03	6.0E-03	1.9E-02	1.1E+00	c
Fe-59	3.4E-02	+/-	2.5E-02	2.5E-02	8.1E-02		
I-131	-1.4E+00	+/-	1.1E+00	1.1E+00	3.9E+00		
K-40	9.87E+00	+/-	1.8E-01	5.3E-01	1.6E-01		bc
La-140	3E-01	+/-	2.3E-01	2.3E-01	7.5E-01		
Mn-54	2.4E-03	+/-	5.0E-03	5.0E-03	1.7E-02		
Nb-95	1.5E-02	+/-	1.6E-02	1.6E-02	5.3E-02		
Ru-103	-9E-03	+/-	1.1E-02	1.1E-02	3.9E-02		
Ru-106	5.1E-02	+/-	4.5E-02	4.5E-02	1.5E-01		
Sb-124	-1E-02	+/-	1.4E-02	1.4E-02	5.1E-02		
Sb-125	1.6E-02	+/-	1.2E-02	1.2E-02	4.0E-02		
Se-75	2.7E-03	+/-	7.5E-03	7.5E-03	2.5E-02		
Zn-65	-1.2E-02	+/-	2.4E-02	2.4E-02	8.3E-02		
Zr-95	1.6E-02	+/-	1.4E-02	1.4E-02	4.7E-02		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-05	**Client ID**	BMS-2600-040	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.95E-01	+/-	3.9E-02	4.4E-02	1.4E-01		bc
Ag-108m	-1.24E-02	+/-	7.6E-03	7.6E-03	2.9E-02		
Ag-110m	7E-03	+/-	1.6E-02	1.6E-02	5.5E-02		
Ba-140	1.52E+00	+/-	9.1E-01	9.1E-01	3.0E+00		
Be-7	-9E-02	+/-	1.5E-01	1.5E-01	5.5E-01		
Ce-141	-1.7E-02	+/-	4.6E-02	4.6E-02	1.6E-01		
Ce-144	-5.6E-02	+/-	6.1E-02	6.1E-02	2.1E-01		
Co-57	2.23E-02	+/-	8.3E-03	8.3E-03	2.6E-02		
Co-58	-1.6E-02	+/-	1.4E-02	1.4E-02	5.5E-02		
Co-60	-4.3E-03	+/-	8.6E-03	8.6E-03	3.4E-02	3.8E-02	
Cr-51	-1E-01	+/-	3.3E-01	3.3E-01	1.2E+00		
Cs-134	-9.6E-03	+/-	8.5E-03	8.5E-03	3.2E-02		
Cs-137	1.6E-02	+/-	1.0E-02	1.0E-02	3.4E-02	1.1E+00	
Fe-59	0E+00	+/-	4.9E-02	4.9E-02	1.8E-01		
I-131	5E-01	+/-	2.1E+00	2.1E+00	7.3E+00		
K-40	9.07E+00	+/-	3.8E-01	5.9E-01	3.4E-01		bc
La-140	7.7E-01	+/-	4.9E-01	4.9E-01	1.6E+00		
Mn-54	-1.95E-02	+/-	9.4E-03	9.5E-03	3.8E-02		
Nb-95	-1.2E-02	+/-	2.9E-02	2.9E-02	1.1E-01		
Ru-103	-7E-03	+/-	2.4E-02	2.4E-02	8.7E-02		
Ru-106	-1.35E-01	+/-	9.3E-02	9.3E-02	3.5E-01		
Sb-124	0E+00	+/-	2.2E-02	2.2E-02	9.4E-02		
Sb-125	-2.2E-02	+/-	2.5E-02	2.5E-02	9.0E-02		
Se-75	1E-03	+/-	1.3E-02	1.3E-02	4.5E-02		
Zn-65	-6.9E-02	+/-	2.6E-02	2.7E-02	1.1E-01		
Zr-95	-3.4E-02	+/-	6.2E-02	6.2E-02	2.2E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/16/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5186-06	**Client ID**	BMS-2600-067	**Product**	GAMMA SPECTROMETRY
Reference Date	02/07/03	**Analysis Date**	04/14/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	4.14E-01	+/-	2.5E-02	3.2E-02	1.0E-01		bc
Ag-108m	-1.08E-02	+/-	5.0E-03	5.0E-03	1.8E-02		
Ag-110m	1.55E-02	+/-	9.9E-03	9.9E-03	3.2E-02		
Ba-140	-3.9E-01	+/-	6.8E-01	6.8E-01	2.4E+00		
Be-7	-4E-02	+/-	1.1E-01	1.1E-01	3.7E-01		
Ce-141	2.5E-02	+/-	3.4E-02	3.4E-02	1.1E-01		
Ce-144	-5.8E-02	+/-	4.1E-02	4.1E-02	1.4E-01		
Co-57	6.4E-03	+/-	5.4E-03	5.4E-03	1.8E-02		
Co-58	-1.3E-02	+/-	1.0E-02	1.0E-02	3.7E-02		
Co-60	2E-04	+/-	7.1E-03	7.1E-03	2.5E-02	3.8E-02	
Cr-51	2.8E-01	+/-	2.4E-01	2.4E-01	7.9E-01		
Cs-134	0E+00	+/-	2.6E-02	2.6E-02	8.5E-02		
Cs-137	8.9E-03	+/-	7.5E-03	7.5E-03	2.5E-02	1.1E+00	
Fe-59	1.3E-02	+/-	3.5E-02	3.5E-02	1.2E-01		
I-131	-7E-01	+/-	1.8E+00	1.8E+00	6.1E+00		
K-40	1.074E+01	+/-	2.7E-01	6.0E-01	2.4E-01		bc
La-140	0E+00	+/-	3.8E-01	3.8E-01	1.3E+00		
Mn-54	8.7E-03	+/-	6.4E-03	6.4E-03	2.1E-02		
Nb-95	9E-03	+/-	2.4E-02	2.4E-02	8.1E-02		
Ru-103	2E-02	+/-	1.7E-02	1.7E-02	5.8E-02		
Ru-106	-2.2E-02	+/-	6.5E-02	6.5E-02	2.3E-01		
Sb-124	1.6E-02	+/-	2.0E-02	2.0E-02	6.9E-02		
Sb-125	-4E-03	+/-	1.7E-02	1.7E-02	5.7E-02		
Se-75	1.2E-02	+/-	1.0E-02	1.0E-02	3.3E-02		
Zn-65	4E-03	+/-	3.6E-02	3.6E-02	1.2E-01		
Zr-95	-7.2E+00	+/-	2.5E+00	2.5E+00	8.1E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 29 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
4/24/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	**Receipt Date**	03/13/03	

Lab. Sample No.	L5186-07	**Client ID**	BMS-2600-069	**Product**	GAMMA SPECTROMETRY
Reference Date	02/07/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	4.72E-01	+/-	3.1E-02	3.9E-02	9.9E-02		bc
Ag-108m	-1.1E-02	+/-	6.8E-03	6.8E-03	2.4E-02		
Ag-110m	1E-03	+/-	1.0E-02	1.0E-02	3.6E-02		
Ba-140	5.3E-01	+/-	7.2E-01	7.2E-01	2.4E+00		
Be-7	-9E-02	+/-	1.4E-01	1.4E-01	4.8E-01		
Ce-141	-1.9E-02	+/-	4.4E-02	4.4E-02	1.5E-01		
Ce-144	-5.1E-02	+/-	6.0E-02	6.0E-02	2.0E-01		
Co-57	8.3E-03	+/-	7.5E-03	7.6E-03	2.5E-02		
Co-58	-1.7E-02	+/-	1.2E-02	1.2E-02	4.4E-02		
Co-60	-7.4E-03	+/-	7.0E-03	7.0E-03	2.6E-02	3.8E-02	
Cr-51	3E-02	+/-	2.9E-01	2.9E-01	9.8E-01		
Cs-134	4.7E-02	+/-	2.9E-02	2.9E-02	9.5E-02		
Cs-137	5.4E-03	+/-	8.1E-03	8.1E-03	2.8E-02	1.1E+00	
Fe-59	1.5E-02	+/-	3.5E-02	3.5E-02	1.2E-01		
I-131	-2E-01	+/-	1.6E+00	1.6E+00	5.5E+00		
K-40	1.056E+01	+/-	2.8E-01	6.0E-01	2.5E-01		bc
La-140	-2E-02	+/-	3.9E-01	3.9E-01	1.3E+00		
Mn-54	9.2E-03	+/-	8.6E-03	8.6E-03	2.9E-02		
Nb-95	4.7E-02	+/-	3.7E-02	3.7E-02	1.2E-01		
Ru-103	-1E-03	+/-	1.8E-02	1.8E-02	6.2E-02		
Ru-106	2.5E-02	+/-	7.7E-02	7.7E-02	2.6E-01		
Sb-124	1.4E-02	+/-	2.5E-02	2.5E-02	9.0E-02		
Sb-125	-1E-03	+/-	2.3E-02	2.3E-02	7.8E-02		
Se-75	-2.2E-02	+/-	1.3E-02	1.3E-02	4.5E-02		
Zn-65	-6E-02	+/-	3.8E-02	3.8E-02	1.3E-01		
Zr-95	-6.9E+00	+/-	3.0E+00	3.0E+00	9.9E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/15/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-08	**Client ID**	BMS-2600-095	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	5.09E-01	+/-	3.2E-02	4.1E-02	1.1E-01		bc
Ag-108m	0E+00	+/-	6.0E-03	6.0E-03	2.1E-02		
Ag-110m	-1.9E-03	+/-	9.9E-03	9.9E-03	3.5E-02		
Ba-140	4.2E-01	+/-	8.0E-01	8.0E-01	2.7E+00		
Be-7	7E-02	+/-	1.2E-01	1.2E-01	4.0E-01		
Ce-141	7.5E-02	+/-	4.2E-02	4.2E-02	1.4E-01		
Ce-144	-8.9E-02	+/-	5.4E-02	5.4E-02	1.9E-01		
Co-57	-2E-04	+/-	7.0E-03	7.0E-03	2.4E-02		
Co-58	8E-03	+/-	1.3E-02	1.3E-02	4.5E-02		
Co-60	-1.17E-02	+/-	7.3E-03	7.4E-03	2.8E-02	3.8E-02	
Cr-51	-4E-01	+/-	2.9E-01	2.9E-01	1.0E+00		
Cs-134	3.1E-03	+/-	7.6E-03	7.6E-03	2.6E-02		
Cs-137	1.35E-02	+/-	7.6E-03	7.6E-03	2.5E-02	1.1E+00	
Fe-59	1.9E-02	+/-	4.1E-02	4.1E-02	1.4E-01		
I-131	8E-01	+/-	1.7E+00	1.7E+00	5.8E+00		
K-40	1.13E+01	+/-	3.0E-01	6.4E-01	3.0E-01		bc
La-140	-1.1E-01	+/-	4.0E-01	4.0E-01	1.4E+00		
Mn-54	-1.15E-02	+/-	8.6E-03	8.7E-03	3.2E-02		
Nb-95	-1.1E-02	+/-	2.5E-02	2.5E-02	9.0E-02		
Ru-103	-1.2E-02	+/-	2.1E-02	2.1E-02	7.4E-02		
Ru-106	5E-03	+/-	7.4E-02	7.4E-02	2.6E-01		
Sb-124	-4E-03	+/-	2.2E-02	2.2E-02	8.3E-02		
Sb-125	-1E-02	+/-	1.9E-02	1.9E-02	6.8E-02		
Se-75	-8E-03	+/-	1.4E-02	1.4E-02	4.7E-02		
Zn-65	3.9E-02	+/-	3.9E-02	3.9E-02	1.3E-01		
Zr-95	-1.09E-01	+/-	4.5E-02	4.6E-02	1.7E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-09	**Client ID**	BMS-2600-099	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.07E-01	+/-	3.0E-02	3.4E-02	1.1E-01		bc
Ag-108m	5.4E-03	+/-	6.9E-03	6.9E-03	2.3E-02		
Ag-110m	1.5E-02	+/-	1.2E-02	1.2E-02	3.9E-02		
Ba-140	9.2E-01	+/-	8.0E-01	8.1E-01	2.7E+00		
Be-7	-9E-02	+/-	1.3E-01	1.3E-01	4.6E-01		
Ce-141	5.6E-02	+/-	4.5E-02	4.5E-02	1.5E-01		
Ce-144	-3E-02	+/-	5.2E-02	5.2E-02	1.8E-01		
Co-57	-5.6E-03	+/-	6.6E-03	6.6E-03	2.3E-02		
Co-58	1.5E-02	+/-	1.2E-02	1.2E-02	3.9E-02		
Co-60	-9E-03	+/-	7.3E-03	7.3E-03	2.8E-02	3.8E-02	
Cr-51	-6E-02	+/-	2.7E-01	2.7E-01	9.3E-01		
Cs-134	1.1E-03	+/-	7.5E-03	7.5E-03	2.6E-02		
Cs-137	1E-04	+/-	7.8E-03	7.8E-03	2.7E-02	1.1E+00	
Fe-59	6E-03	+/-	4.3E-02	4.3E-02	1.5E-01		
I-131	1E+00	+/-	1.6E+00	1.6E+00	5.5E+00		
K-40	1.368E+01	+/-	3.3E-01	7.6E-01	2.5E-01		bc
La-140	2.2E-01	+/-	4.2E-01	4.2E-01	1.4E+00		
Mn-54	1.11E-02	+/-	8.3E-03	8.3E-03	2.8E-02		
Nb-95	2.4E-02	+/-	4.0E-02	4.0E-02	1.3E-01		
Ru-103	5E-03	+/-	2.2E-02	2.2E-02	7.4E-02		
Ru-106	2E-02	+/-	7.1E-02	7.1E-02	2.5E-01		
Sb-124	1.5E-02	+/-	2.0E-02	2.0E-02	7.3E-02		
Sb-125	-3.1E-02	+/-	2.0E-02	2.0E-02	7.1E-02		
Se-75	1E-03	+/-	1.3E-02	1.3E-02	4.5E-02		
Zn-65	1.1E-02	+/-	4.4E-02	4.4E-02	1.5E-01		
Zr-95	-9.2E-02	+/-	4.3E-02	4.3E-02	1.6E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	Report Date	04/15/03	Duratek Inc	
Attention	Paul Ely	Receipt Date	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-10	Client ID	BMS-2600-107	Product	GAMMA SPECTROMETRY
Reference Date	02/06/03	Analysis Date	04/11/03	Matrix	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	6.33E-01	+/-	1.9E-02	3.7E-02	8.9E-02		bc
Ag-108m	-3.1E-03	+/-	3.7E-03	3.7E-03	1.2E-02		
Ag-110m	1.17E-02	+/-	7.2E-03	7.2E-03	2.4E-02		
Ba-140	-5E-01	+/-	2.0E-01	2.0E-01	7.2E-01		
Be-7	-3E-03	+/-	7.4E-02	7.4E-02	2.5E-01		
Ce-141	8.5E-02	+/-	3.9E-02	3.9E-02	1.3E-01		
Ce-144	4.7E-02	+/-	2.5E-02	2.6E-02	8.3E-02		
Co-57	1E-03	+/-	3.2E-03	3.2E-03	1.1E-02		
Co-58	1.8E-03	+/-	7.4E-03	7.4E-03	2.5E-02		
Co-60	8E-04	+/-	5.0E-03	5.0E-03	1.7E-02	3.8E-02	
Cr-51	-1E-01	+/-	1.7E-01	1.7E-01	5.6E-01		
Cs-134	1E-03	+/-	5.8E-03	5.8E-03	1.9E-02		
Cs-137	2.44E-02	+/-	6.1E-03	6.3E-03	2.0E-02	1.1E+00	bc
Fe-59	1.4E-02	+/-	2.3E-02	2.3E-02	7.8E-02		
I-131	5E-01	+/-	1.1E+00	1.1E+00	3.7E+00		
K-40	1.183E+01	+/-	1.6E-01	6.1E-01	2.7E-01		bc
La-140	-5.8E-01	+/-	2.3E-01	2.3E-01	8.3E-01		
Mn-54	2.8E-03	+/-	5.3E-03	5.3E-03	1.8E-02		
Nb-95	-5.2E-02	+/-	2.4E-02	2.4E-02	8.1E-02		
Ru-103	-2E-03	+/-	1.2E-02	1.2E-02	4.0E-02		
Ru-106	-4.9E-02	+/-	4.7E-02	4.8E-02	1.6E-01		
Sb-124	4E-03	+/-	1.8E-02	1.8E-02	6.2E-02		
Sb-125	1.6E-02	+/-	1.2E-02	1.2E-02	3.9E-02		
Se-75	-4.9E-03	+/-	7.4E-03	7.4E-03	2.5E-02		
Zn-65	7E-03	+/-	1.2E-02	1.2E-02	4.1E-02		
Zr-95	1.4E-02	+/-	1.5E-02	1.5E-02	4.8E-02		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-11	**Client ID**	BMS-2600-164	**Product**	GAMMA SPECTROMETRY
Reference Date	02/07/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	6.31E-01	+/-	3.2E-02	4.5E-02	1.2E-01		bc
Ag-108m	1E-04	+/-	7.0E-03	7.0E-03	2.4E-02		
Ag-110m	1.2E-02	+/-	1.1E-02	1.1E-02	3.9E-02		
Ba-140	-3E-02	+/-	7.9E-01	7.9E-01	2.7E+00		
Be-7	-1.1E-01	+/-	1.5E-01	1.5E-01	5.2E-01		
Ce-141	1.45E-01	+/-	5.1E-02	5.1E-02	1.6E-01		
Ce-144	5.6E-02	+/-	6.2E-02	6.2E-02	2.1E-01		
Co-57	-7E-04	+/-	7.7E-03	7.7E-03	2.6E-02		
Co-58	-1.9E-02	+/-	1.4E-02	1.4E-02	5.1E-02		
Co-60	-2.4E-03	+/-	7.8E-03	7.8E-03	2.8E-02	3.8E-02	
Cr-51	4E-02	+/-	2.9E-01	2.9E-01	9.9E-01		
Cs-134	2E-03	+/-	8.0E-03	8.0E-03	2.7E-02		
Cs-137	7.4E-03	+/-	8.7E-03	8.7E-03	2.9E-02	1.1E+00	
Fe-59	-2.2E-02	+/-	4.3E-02	4.3E-02	1.5E-01		
I-131	1E-01	+/-	1.7E+00	1.7E+00	5.9E+00		
K-40	1.058E+01	+/-	3.0E-01	6.1E-01	2.8E-01		bc
La-140	-4.9E-01	+/-	4.6E-01	4.6E-01	1.6E+00		
Mn-54	5.2E-03	+/-	9.1E-03	9.1E-03	3.1E-02		
Nb-95	-1E-03	+/-	4.0E-02	4.0E-02	1.4E-01		
Ru-103	-1.9E-02	+/-	2.4E-02	2.4E-02	8.3E-02		
Ru-106	1.35E-01	+/-	7.2E-02	7.3E-02	2.3E-01		
Sb-124	-2.3E-02	+/-	2.3E-02	2.3E-02	9.3E-02		
Sb-125	4E-03	+/-	2.1E-02	2.1E-02	7.3E-02		
Se-75	-1.5E-02	+/-	1.6E-02	1.6E-02	5.4E-02		
Zn-65	3.7E-02	+/-	4.4E-02	4.4E-02	1.5E-01		
Zr-95	-6.2E+00	+/-	3.1E+00	3.1E+00	1.0E+01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-12	**Client ID**	BMS-2600-170	**Product**	GAMMA SPECTROMETRY
Reference Date	02/10/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	8.9E-01	+/-	3.7E-02	5.8E-02	1.3E-01		bc
Ag-108m	-1.03E-02	+/-	7.1E-03	7.1E-03	2.5E-02		
Ag-110m	-2E-03	+/-	1.3E-02	1.3E-02	4.7E-02		
Ba-140	1E-02	+/-	7.4E-01	7.4E-01	2.5E+00		
Be-7	7E-02	+/-	1.4E-01	1.4E-01	4.8E-01		
Ce-141	7.6E-02	+/-	4.8E-02	4.8E-02	1.6E-01		
Ce-144	-6.6E-02	+/-	6.7E-02	6.8E-02	2.3E-01		
Co-57	1.14E-02	+/-	8.3E-03	8.3E-03	2.7E-02		
Co-58	-2E-02	+/-	1.5E-02	1.5E-02	5.4E-02		
Co-60	-2.5E-03	+/-	8.8E-03	8.8E-03	3.2E-02	3.8E-02	
Cr-51	-1.9E-01	+/-	3.2E-01	3.2E-01	1.1E+00		
Cs-134	-7.2E-03	+/-	8.8E-03	8.8E-03	3.1E-02		
Cs-137	4E-02	+/-	1.1E-02	1.2E-02	3.5E-02	1.1E+00	bc
Fe-59	0E+00	+/-	4.3E-02	4.3E-02	1.5E-01		
I-131	-1.4E+00	+/-	1.4E+00	1.4E+00	5.0E+00		
K-40	1.324E+01	+/-	3.4E-01	7.4E-01	3.2E-01		bc
La-140	2.4E-01	+/-	3.8E-01	3.8E-01	1.3E+00		
Mn-54	8.9E-03	+/-	9.8E-03	9.8E-03	3.3E-02		
Nb-95	-2.9E-02	+/-	4.5E-02	4.5E-02	1.6E-01		
Ru-103	-3.1E-02	+/-	2.4E-02	2.4E-02	8.5E-02		
Ru-106	-4E-02	+/-	8.6E-02	8.7E-02	3.0E-01		
Sb-124	0E+00	+/-	2.6E-02	2.6E-02	9.6E-02		
Sb-125	1.2E-02	+/-	2.4E-02	2.4E-02	8.1E-02		
Se-75	4E-03	+/-	1.6E-02	1.6E-02	5.5E-02		
Zn-65	-2.6E-02	+/-	4.9E-02	4.9E-02	1.7E-01		
Zr-95	-1.13E+01	+/-	3.7E+00	3.7E+00	1.2E+01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/15/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5186-13	**Client ID**	BMS-2600-241	**Product**	GAMMA SPECTROMETRY
Reference Date	02/13/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	4.69E-01	+/-	2.0E-02	3.1E-02	7.5E-02		bc
Ag-108m	-9E-04	+/-	4.6E-03	4.6E-03	1.6E-02		
Ag-110m	-3.9E-03	+/-	7.6E-03	7.6E-03	2.7E-02		
Ba-140	-2.4E-01	+/-	3.9E-01	3.9E-01	1.3E+00		
Be-7	-1.59E-01	+/-	8.8E-02	8.8E-02	3.1E-01		
Ce-141	5.5E-02	+/-	2.8E-02	2.8E-02	9.0E-02		
Ce-144	7E-03	+/-	6.0E-02	6.0E-02	2.0E-01		
Co-57	1.139E-01	+/-	7.8E-03	9.7E-03	2.3E-02		bc
Co-58	1.8E-03	+/-	8.1E-03	8.1E-03	2.8E-02		
Co-60	3.01E-02	+/-	4.7E-03	4.9E-03	1.7E-02	3.8E-02	bc
Cr-51	-1E-02	+/-	1.6E-01	1.6E-01	5.4E-01		
Cs-134	-5.4E-03	+/-	5.2E-03	5.2E-03	1.8E-02		
Cs-137	6.77E-02	+/-	7.4E-03	8.1E-03	2.1E-02	1.1E+00	bc
Fe-59	-8E-03	+/-	2.3E-02	2.3E-02	8.1E-02		
I-131	8E-02	+/-	6.4E-01	6.4E-01	2.2E+00		
K-40	1.025E+01	+/-	2.0E-01	5.5E-01	1.7E-01		bc
La-140	3.3E-01	+/-	2.0E-01	2.0E-01	6.6E-01		
Mn-54	1.2E-03	+/-	5.6E-03	5.6E-03	1.9E-02		
Nb-95	-2.2E-02	+/-	2.4E-02	2.4E-02	8.1E-02		
Ru-103	-5E-03	+/-	1.3E-02	1.3E-02	4.5E-02		
Ru-106	2.5E-02	+/-	4.6E-02	4.6E-02	1.5E-01		
Sb-124	-7E-03	+/-	1.3E-02	1.3E-02	4.8E-02		
Sb-125	-4E-03	+/-	1.3E-02	1.3E-02	4.5E-02		
Se-75	-2E-03	+/-	8.8E-03	8.8E-03	3.0E-02		
Zn-65	-1E-03	+/-	2.0E-02	2.0E-02	6.7E-02		
Zr-95	-5E+00	+/-	1.9E+00	1.9E+00	6.3E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

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ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-14	**Client ID**	BMS-2600-259	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.83E-01	+/-	2.9E-02	3.1E-02	1.2E-01		bc
Ag-108m	-5.4E-03	+/-	5.5E-03	5.5E-03	2.0E-02		
Ag-110m	2E-03	+/-	1.1E-02	1.1E-02	3.9E-02		
Ba-140	6E-02	+/-	6.5E-01	6.5E-01	2.3E+00		
Be-7	-5E-02	+/-	1.2E-01	1.2E-01	4.1E-01		
Ce-141	-3.1E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
Ce-144	1.5E-02	+/-	3.7E-02	3.7E-02	1.3E-01		
Co-57	-6E-03	+/-	4.5E-03	4.5E-03	1.6E-02		
Co-58	-5E-03	+/-	1.2E-02	1.2E-02	4.4E-02		
Co-60	-3.5E-03	+/-	8.1E-03	8.1E-03	3.0E-02	3.8E-02	
Cr-51	2E-02	+/-	2.0E-01	2.0E-01	7.1E-01		
Cs-134	-3.1E-02	+/-	3.4E-02	3.4E-02	1.2E-01		
Cs-137	2.35E-02	+/-	7.9E-03	7.9E-03	2.4E-02	1.1E+00	
Fe-59	7.9E-02	+/-	3.9E-02	3.9E-02	1.3E-01		
I-131	1.6E+00	+/-	1.4E+00	1.4E+00	4.7E+00		
K-40	1.041E+01	+/-	3.4E-01	6.2E-01	2.7E-01		bc
La-140	6E-02	+/-	3.7E-01	3.7E-01	1.3E+00		
Mn-54	3.3E-03	+/-	7.7E-03	7.7E-03	2.7E-02		
Nb-95	-7E-03	+/-	2.8E-02	2.8E-02	9.9E-02		
Ru-103	5E-03	+/-	1.9E-02	1.9E-02	6.7E-02		
Ru-106	1.9E-02	+/-	5.9E-02	5.9E-02	2.1E-01		
Sb-124	-2.1E-02	+/-	2.4E-02	2.4E-02	9.9E-02		
Sb-125	-3E-03	+/-	1.9E-02	1.9E-02	6.8E-02		
Se-75	6.2E-03	+/-	9.8E-03	9.8E-03	3.3E-02		
Zn-65	-6.6E-02	+/-	2.2E-02	2.3E-02	8.9E-02		
Zr-95	-7.5E-02	+/-	3.5E-02	3.5E-02	1.3E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/14/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-15	**Client ID**	BMS-2600-278	**Product**	GAMMA SPECTROMETRY
Reference Date	02/13/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.77E-01	+/-	4.5E-02	4.7E-02	1.4E-01		bc
Ag-108m	4.9E-03	+/-	8.3E-03	8.3E-03	2.9E-02		
Ag-110m	4E-03	+/-	1.2E-02	1.2E-02	4.5E-02		
Ba-140	-1.39E+00	+/-	6.1E-01	6.1E-01	2.5E+00		
Be-7	6E-02	+/-	1.5E-01	1.5E-01	5.4E-01		
Ce-141	-6E-03	+/-	4.2E-02	4.2E-02	1.5E-01		
Ce-144	-2E-02	+/-	6.1E-02	6.1E-02	2.1E-01		
Co-57	1.12E-02	+/-	8.2E-03	8.2E-03	2.7E-02		
Co-58	2E-03	+/-	1.2E-02	1.2E-02	4.5E-02		
Co-60	1.13E-02	+/-	9.3E-03	9.3E-03	3.2E-02	3.8E-02	
Cr-51	-5E-02	+/-	2.9E-01	2.9E-01	1.0E+00		
Cs-134	-7E-03	+/-	4.7E-02	4.7E-02	1.6E-01		
Cs-137	3.63E-01	+/-	2.3E-02	3.0E-02	4.0E-02	1.1E+00	bc
Fe-59	3.1E-02	+/-	3.5E-02	3.5E-02	1.2E-01		
I-131	-3E-01	+/-	1.3E+00	1.3E+00	4.6E+00		
K-40	3.06E+00	+/-	2.5E-01	2.9E-01	4.0E-01		bc
La-140	3.8E-01	+/-	3.4E-01	3.4E-01	1.2E+00		
Mn-54	-1.06E-02	+/-	9.8E-03	9.8E-03	3.8E-02		
Nb-95	-3.6E-02	+/-	2.3E-02	2.3E-02	9.4E-02		
Ru-103	7E-03	+/-	2.2E-02	2.2E-02	7.9E-02		
Ru-106	-3E-02	+/-	9.0E-02	9.0E-02	3.3E-01		
Sb-124	1.5E-02	+/-	2.4E-02	2.4E-02	9.2E-02		
Sb-125	-4.1E-02	+/-	2.4E-02	2.4E-02	9.3E-02		
Se-75	1.2E-02	+/-	1.6E-02	1.6E-02	5.4E-02		
Zn-65	-1E-02	+/-	2.4E-02	2.4E-02	9.1E-02		
Zr-95	-4.6E-02	+/-	3.6E-02	3.6E-02	1.4E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/15/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5186-16	**Client ID**	BMS-2600-338	**Product**	GAMMA SPECTROMETRY
Reference Date	02/05/03	**Analysis Date**	04/11/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	7.85E-01	+/-	1.5E-02	4.2E-02	5.3E-02		bc
Ag-108m	-2.8E-03	+/-	2.9E-03	2.9E-03	9.9E-03		
Ag-110m	5E-03	+/-	5.5E-03	5.5E-03	1.8E-02		
Ba-140	-4.7E-01	+/-	3.9E-01	3.9E-01	1.3E+00		
Be-7	2.1E-02	+/-	6.0E-02	6.0E-02	2.0E-01		
Ce-141	-5.3E-02	+/-	2.7E-02	2.7E-02	9.1E-02		
Ce-144	1.6E-02	+/-	2.1E-02	2.1E-02	6.8E-02		
Co-57	1.8E-03	+/-	2.6E-03	2.6E-03	8.5E-03		
Co-58	5.3E-03	+/-	5.6E-03	5.6E-03	1.9E-02		
Co-60	2E-03	+/-	4.0E-03	4.0E-03	1.3E-02	3.8E-02	
Cr-51	-7E-02	+/-	1.3E-01	1.3E-01	4.5E-01		
Cs-134	3.2E-03	+/-	3.7E-03	3.7E-03	1.3E-02		
Cs-137	1E-04	+/-	6.0E-03	6.0E-03	2.0E-02	1.1E+00	
Fe-59	-3.3E-02	+/-	1.7E-02	1.7E-02	6.1E-02		
I-131	-3.7E-01	+/-	9.6E-01	9.6E-01	3.2E+00		
K-40	2.676E+00	+/-	8.8E-02	1.6E-01	2.0E-01		bc
La-140	5E-02	+/-	2.1E-01	2.1E-01	7.2E-01		
Mn-54	-2.5E-03	+/-	4.2E-03	4.2E-03	1.4E-02		
Nb-95	4E-02	+/-	1.7E-02	1.7E-02	5.4E-02		
Ru-103	1.2E-03	+/-	9.6E-03	9.6E-03	3.2E-02		
Ru-106	-1.8E-02	+/-	3.7E-02	3.7E-02	1.3E-01		
Sb-124	2.6E-02	+/-	1.6E-02	1.6E-02	5.2E-02		
Sb-125	4E-04	+/-	9.4E-03	9.4E-03	3.1E-02		
Se-75	3.8E-03	+/-	5.2E-03	5.2E-03	1.7E-02		
Zn-65	4.5E-02	+/-	1.8E-02	1.8E-02	5.9E-02		
Zr-95	-5.9E-02	+/-	6.6E-02	6.6E-02	2.2E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

MAILED
APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Duratek Inc.
Survey Package Worksheet for Package B2700
Bristol-Myers Squibb Soils In Pipe Trenches Building 124 New Section

Package Identification No.: B2700	Prepared by: Paul C. Ely
Location: Pipe Trenches Building 124 New Section	Date prepared: 1/27/2003
Area Classification: Class 2	

Area Description
The survey is for the soils in Building 124 New Section Pipe Trenches.

Historical Information
There is no history of leaks to the soil from the pipes in the New Section of Building 124.

General Survey Instructions

The COMPASS program was utilized to generate a minimum sample requirement for this area of 14 samples (see attached). One hundred sixty-six potential numbered sample locations were designated based on a one-meter distance between sample locations as shown on the attached survey map. Sixteen of these sample locations were randomly selected as indicated on the attached spreadsheet printout.

1. Perform a 100% scan of the pipe trench bottoms at a maximum scan rate of 2-inches per second.
2. Obtain fixed-point exposure rate measurements on contact with the bottom surface of the trenches with the M2350-1 with at least one measurement point in small rooms and at least three measurement points in larger rooms.
3. Mark the location of the samples in the pipe trenches as indicated on the survey map using survey flags or some other method.
4. Obtain 1 exposure rate measurement on contact with the surface and another at 1 meter above the surface at each survey measurement location with the M2350-1.
5. Obtain approximately one-half gallon of soil from each sample location at a depth of 0 to 6-inches.
6. Use only the L1 and L8 codes when labeling samples for analysis.

Survey Package Completion.

1. When all measurements, samples or scans are collected, initial and date the "MEASUREMENT TYPE" block on the survey package to indicate the measurements or samples were collected.
2. Note any problems, comments, or other information pertinent to the data or sample collection under the "FIELD NOTES" section.

Use all location codes provided below when taking measurements.

Survey Package: B2700 continued

Special Instructions
Use the sodium iodide detector model number 44-2 for gamma survey measurements.

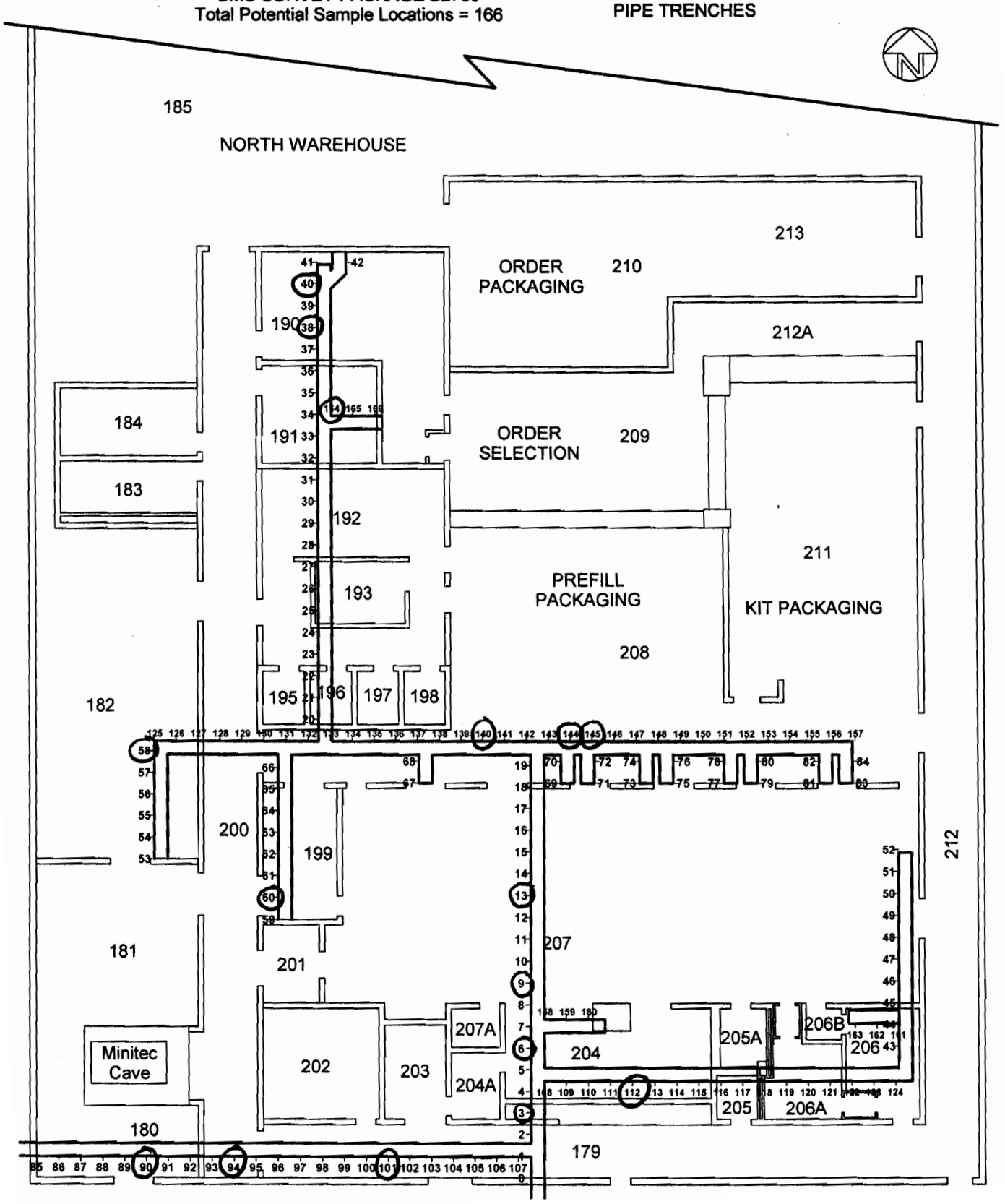
Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Direct Gamma Small Room	Direct Gamma Larger Room	Gamma Scan	Contact Gamma	1 meter Gamma	Smear Gross	Media Sample
L1	L2	L6	L7	L8								
Bristol-Myers Squibb Soils In Pipe Trenches Building 124 New Section												
B2700	NA	NA	NA	1 thru 16	**Soil In Trenches**	1 to per room Minimum	3 per room Minimum	100%	(16)	(16)	NA	16
								BSK 2-26-03	BSK 2-26-03	BSK 2-26-03		BSK 2-26-03

Package Review
Date Package Completed: 4/29/03
Package Reviewed by and Date: Paul C Ely 4/29/03

Survey Comments

BMS SURVEY PACKAGE B2700
Total Potential Sample Locations = 166



Survey Package B2700
Building 124 Pipe Trenches New Section

Number of Potential Survey Points:	166
Potential Survey Points are 1-meter Apart	
Survey Area (based total building area):	3,141
COMPASS Number of Survey Points:	14
Planned Number of Survey Points:	16

Survey Point	Random Location Generator	Random Locations to be Sampled
1	148	3
2	92	60
3	74	164
4	12	140
5	112	9
6	118	13
7	159	144
8	79	6 → this point was under a cabinet. Location 5 was sampled instead PCE 1/31/03
9	97	40
10	110	58
11	155	90
12	4	94
13	114	101
14	57	145
15	94	38
16	13	~~40~~ duplicate use 112 PCE 1/27/03

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3.

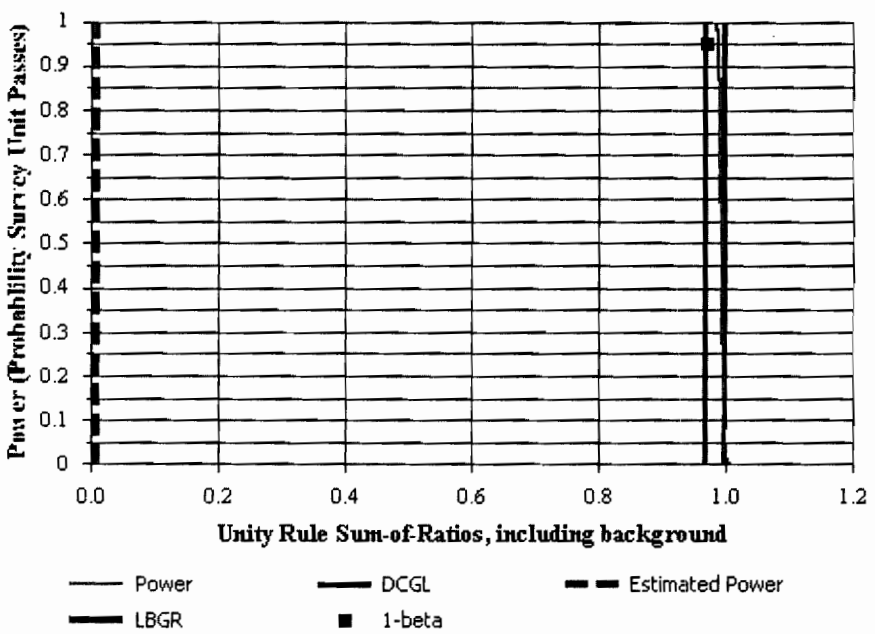
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
σ =	0.008	Sum of Fractions
DCGLW =	1	Sum of Fractions (By Definition)

Surface Soil Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	B2700 FSS Package		
Comments:	Building 124 Pipe Trenches - New Section		
Area (m²):	3,141	Classification:	2
Selected Test:	Sign	Estimated Sigma (SOR):	0.01
DCGL (SOR):	1	Sample Size (N):	14
LBGR (SOR):	0.97	Estimated Conc. (SOR):	0.01
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Cs-137	11.00	N/A	N/A	N/A	N/A
Mn-54	9.00	N/A	N/A	N/A	N/A

Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Cs-137	0.0904 ± 0.0791	N/A
Mn-54	0.00228 ± 0.0118	N/A

E0200 Soil Results

SAMPLE ID	K-40	MN-54	CO-57	CO-60	CS-134	CS-137	TL-208	PB-212	BI-212	AC-228
BMS-SML-001B	8.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.75E-02	3.71E-01	8.69E-01	1.66E+00	2.20E+00
BMS-SML-002A	5.44E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-01	4.53E-01	6.97E-01	2.50E+00	1.45E+00
BMS-SML-002B	7.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-01	4.95E-01	9.39E-01	4.40E+00	1.55E+00
BMS-SML-003A	1.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.96E-01	9.76E-01	2.71E+00	1.11E+00
BMS-SML-003B	1.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E-01	4.47E-01	9.03E-01	1.33E+00	1.58E+00
BMS-SML-004A	9.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-01	6.90E-01	1.20E+00	3.23E+00	2.19E+00
BMS-SML-004B	1.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.71E-01	1.31E+00	2.95E+00	2.16E+00
BMS-SML-005A	8.97E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-01	4.15E-01	8.10E-01	2.77E+00	1.57E+00
BMS-SML-005B	1.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.99E-02	4.81E-01	7.80E-01	2.97E+00	1.60E+00
BMS-SML-006A	9.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-01	4.16E-01	1.06E+00	2.71E+00	1.69E+00
BMS-SML-006B	1.20E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.88E-01	1.43E+00	2.44E+00	2.09E+00
BMS-SML-007A	5.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-01	3.14E-01	6.80E-01	2.51E+00	1.36E+00
BMS-SML-007B	8.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-01	4.32E-01	6.74E-01	1.86E+00	1.04E+00
BMS-SML-008A	5.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.71E-02	3.47E-01	6.39E-01	2.29E+00	1.16E+00
BMS-SML-008B	6.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.26E-02	2.45E-01	5.26E-01	1.42E+00	7.51E-01
BMS-SML-009A	9.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-01	3.62E-01	9.12E-01	1.47E+00	1.33E+00
BMS-SML-009B	9.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.52E-02	4.43E-01	7.80E-01	1.49E+00	1.04E+00
BMS-SML-010A	7.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.27E-02	2.95E-01	5.75E-01	7.61E-01	1.07E+00
BMS-SML-010B	6.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-01	4.50E-01	1.72E+00	8.79E-01
BMS-SML-011A*	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-01	4.63E-01	9.50E-01	2.99E+00	1.52E+00
BMS-SML-011B	8.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-02	2.80E-01	7.16E-01	1.32E+00	1.01E+00
BMS-SML-012A	1.14E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.73E-01	4.66E-01	7.21E-01	2.47E+00	1.51E+00
BMS-SML-012B	9.51E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-01	2.93E-01	6.52E-01	1.66E+00	1.26E+00
BMS-SML-013A	8.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-01	2.89E-01	6.70E-01	1.10E+00	1.13E+00
BMS-SML-013B	8.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.32E-02	2.25E-01	5.23E-01	1.79E+00	1.43E+00
BMS-SML-014A	1.31E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.68E-02	3.12E-01	6.46E-01	1.87E+00	1.22E+00
BMS-SML-014B	1.70E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.73E-02	3.64E-01	7.81E-01	0.00E+00	7.09E-01
BMS-SML-015A	1.78E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.06E-02	2.40E-01	5.01E-01	7.21E-01	7.12E-01
BMS-SML-015B	7.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-01	3.26E-01	1.74E+00	4.67E-01
BMS-SML-016A	1.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-02	1.78E-01	3.94E-01	1.40E+00	1.03E+00
BMS-SML-016B	1.80E+01	6.65E-02	0.00E+00	0.00E+00	0.00E+00	1.31E-01	3.61E-01	7.53E-01	0.00E+00	9.68E-01
BMS-SML-017A	1.26E+01	5.69E-02	0.00E+00	0.00E+00	0.00E+00	1.64E-01	3.55E-01	7.83E-01	1.26E+00	1.09E+00
BMS-SML-017B***	1.23E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E-01	1.30E-01	5.81E-01	0.00E+00	1.13E+00
BMS-SML-018A	7.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-01	1.58E-01	4.60E-01	1.36E+00	9.65E-01
BMS-SML-018B	6.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.42E-02	1.68E-01	3.85E-01	0.00E+00	6.68E-01
BMS-SML-019A	7.53E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E-02	3.83E-01	6.83E-01	2.09E+00	7.59E-01
BMS-SML-019B*	5.46E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E-01	3.08E-01	6.88E-01	1.13E+00
BMS-SML-020A	2.04E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E-01	2.88E-01	0.00E+00	7.00E-01
BMS-SML-020B	1.74E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.25E-02	1.88E-01	2.63E-01	8.80E-01	4.98E-01
BMS-SML-021A	1.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-01	1.13E-01	3.28E-01	0.00E+00	4.50E-01
BMS-SML-021B	1.38E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.11E-02	1.56E-01	4.10E-01	0.00E+00	8.26E-01
BMS-SML-022A	1.63E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.18E-02	2.19E-01	4.61E-01	0.00E+00	1.02E+00
BMS-SML-022B	1.42E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.62E-02	2.93E-01	6.13E-01	1.59E+00	1.13E+00
BMS-SML-023A	1.36E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-01	4.05E-01	7.99E-01	1.47E+00	1.54E+00
BMS-SML-023B	1.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.62E-02	5.20E-01	9.75E-01	0.00E+00	1.64E+00
BMS-SML-025A	2.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-01	2.47E-01	2.60E-01	1.88E+00	8.00E-01
BMS-SML-025B	4.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-01	2.29E-01	4.27E-01	9.47E-01	7.22E-01
BMS-SML-026A**	9.36E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.21E-02	2.78E-01	5.44E-01	1.73E+00	1.21E+00
BMS-SML-026B	1.18E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-01	1.05E+00	1.49E+00	1.28E+00
BMS-SML-028A	1.22E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-01	2.68E-01	8.48E-01	2.12E+00	9.59E-01
BMS-SML-028B	1.53E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-01	3.65E-01	1.00E+00	1.72E+00	1.24E+00
BMS-SML-030A	1.51E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.35E-01	4.59E-01	1.76E+00	1.00E+00
BMS-SML-030B	1.48E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-02	1.66E-01	4.95E-01	1.23E+00	4.85E-01
BMS-SML-031B	8.98E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.87E-02	2.49E-01	6.39E-01	9.11E-01	9.77E-01
Average	**1.09E+01**	**2.28E-03**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**9.04E-02**	**3.22E-01**	**6.83E-01**	**1.54E+00**	**1.17E+00**
Standard Deviation	**4.09E+00**	**1.18E-02**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**7.91E-02**	**1.25E-01**	**2.66E-01**	**9.90E-01**	**4.28E-01**
	K-40	**MN-54**	**CO-57**	**CO-60**	**CS-134**	**CS-137**	**TL-208**	**PB-212**	**BI-212**	**AC-228**
Limit		**9.0**		**3.8**		**11**				

* The initial sample report indicated the presence of Co-57 at an activity level slightly above the MDA. A reiew of the data indicated that there was actually no Co-57 peak at either 122.06 keV (86% yield) or 136.48 keV (11% yield).

** The initial sample report indicated the presence of Cs-134 at an activity level slightly above the MDA. A reiew of the data indicated that there was actually no Cs-134 peak at either 604.70 keV (98% yield) or 796 keV (86% yield).

*** The initial sample report indicated the presence of Co-57 at an activity level slightly above the MDA. The sample was recounted for a longer time and Co-57 was not present.

LBGR Determination

Per MARSSIM, section 8.3.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3.

$\Delta/\sigma =$ $(DCGL_W - LBGR) / \sigma =$ 3

$\sigma =$ 0.008 Sum of Fractions

DCGLW = 1 Sum of Fractions (By Definition)

LBGR = $DCGL_W - 3\sigma$

LBGR = 0.97 Sum of Fractions

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 2-26-03

Download Station #: 1 Download File #: 32
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kyes **User ID** BSK0490 **Signature:** [signature] **Date:** 2-26-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2700, Trenches #90 (Soil Sample)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	095085	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

M2350-1 Download GAMMA Report

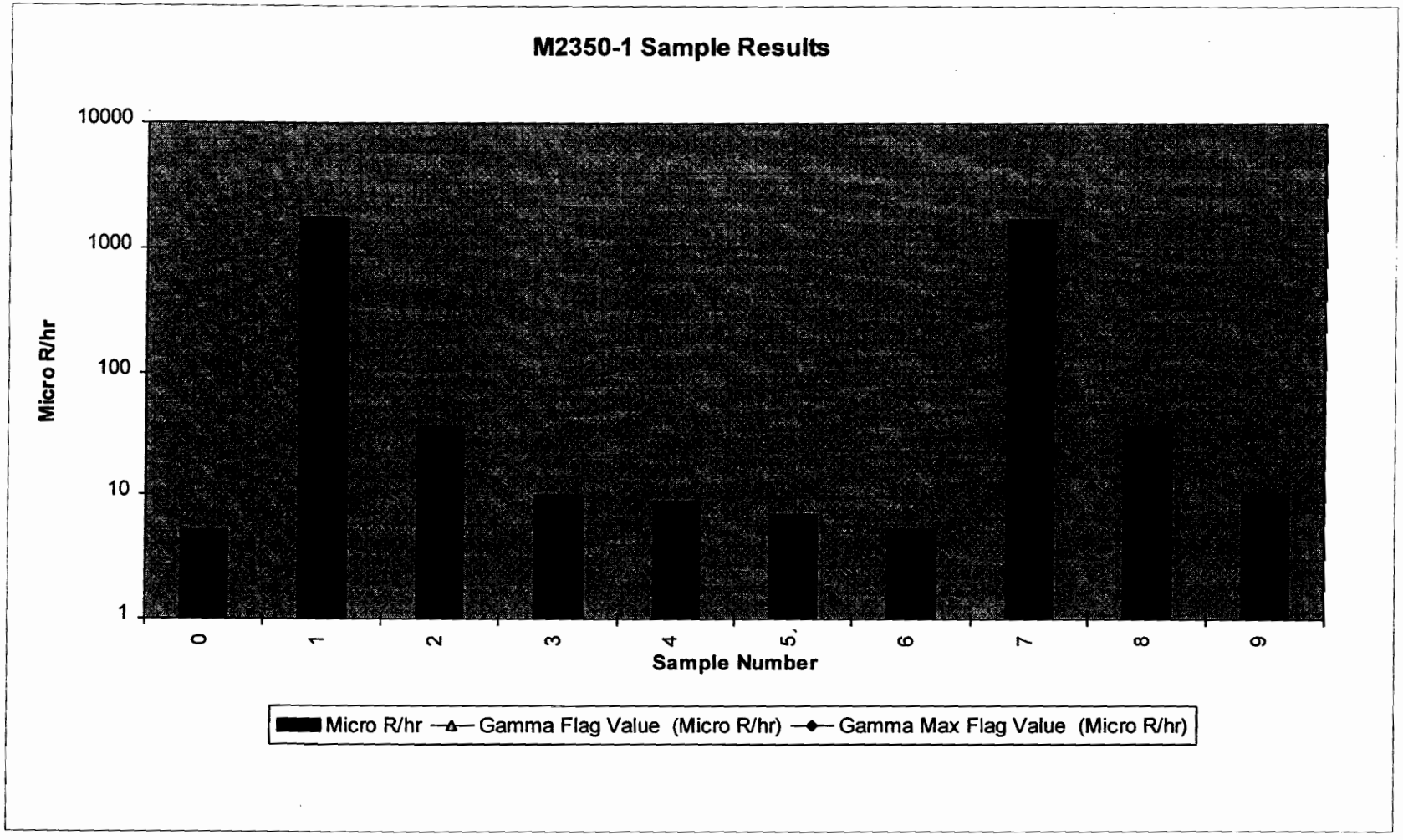
File Name : 00000032	Survey Description :Package B2700 Trenches #90 (soil sample)	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 6/30/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 2/26/03

Print Name	Signature	Date
Betty Kjos	BSKj	2/26/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C ELY	Paul C Ely	4/26/03


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
7
8
9
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	ZZZZZ	0	7,446.0	300	PRGBK	ZZZZZ	ZZZZZ	0		5.15E+00
ZZZZZ	19453	1	511,564.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.77E+03
ZZZZZ	19453	2	10,514.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.63E+01
ZZZZZ	19453	3	2,905.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.00E+01
B2700	01T01	4	643.0	15	FLDCT	B0016	RM180	90		8.89E+00
B2700	01T01	5	506.0	15	FLDCT	B0016	RM180	90		7.00E+00
ZZZZZ	ZZZZZ	6	7,764.0	300	PRGBK	ZZZZZ	ZZZZZ	0		5.37E+00
ZZZZZ	19453	7	493,762.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.71E+03
ZZZZZ	19453	8	10,638.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.68E+01
ZZZZZ	19453	9	3,003.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.04E+01

Gamma Flag	-
Gamma Max Flag	[redacted]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R. Kjos Signature: DRK Date: 2-6-03

Download Station #: 1 Download File #: 24
Serial # Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos User ID BSK0490 Signature: BSK Date: 2-6-03

Print Name: _____ User ID _____ Signature: _____ Date: _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: B2700 Pipe Trenches (Soil Samples)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	095085	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm !

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

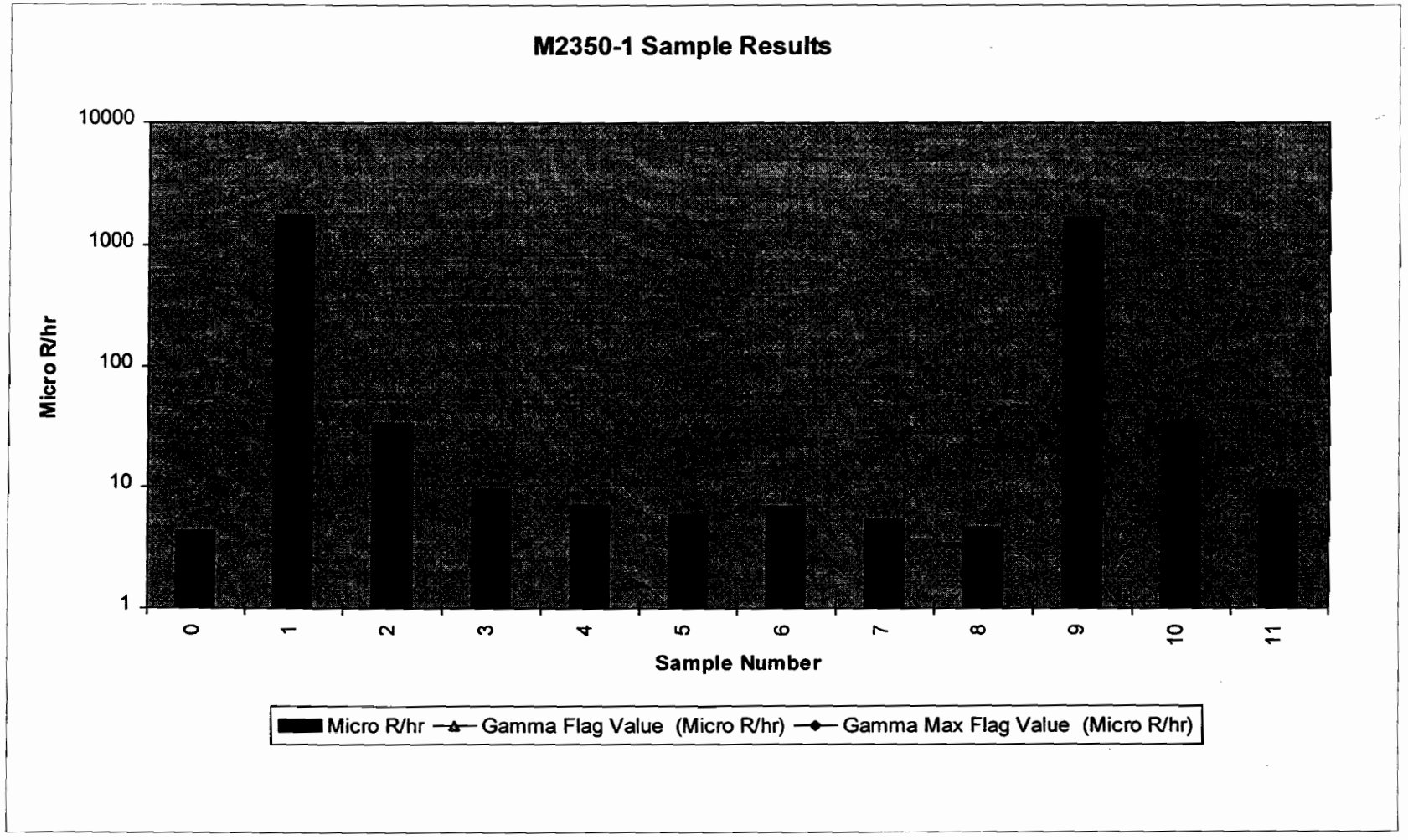
M2350-1 Download GAMMA Report

File Name : 00000024	Survey Description :B2700 Pipe Trenches (soil samples)	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 2/6/03

Print Name	Signature	Date
Betty Kjos	BSKjos	2/6/03

Comments:

Sign-Off Paul C Ely (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
7
8
9
10
11
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	6,383.0	300	PRGBK	ZZZZZ	ZZZZZ	0		4.41E+00
ZZZZZ	19453	1	513,420.1	60	PRG00	ZZZZZ	ZZZZZ	0		1.77E+03
ZZZZZ	19453	2	9,920.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.43E+01
ZZZZZ	19453	3	2,766.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.56E+00
B2700	01T01	4	523.0	15	FLDCT	B0016	RM179	94		7.23E+00
B2700	01T01	5	429.0	15	FLDCT	B0016	RM179	94		5.93E+00
B2700	01T01	6	498.0	15	FLDCT	B0016	RM179	101		6.89E+00
B2700	01T01	7	395.0	15	FLDCT	B0016	RM179	101		5.46E+00
ZZZZZ	ZZZZZ	8	6,697.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.63E+00
ZZZZZ	19453	9	491,446.1	60	PTG00	ZZZZZ	ZZZZZ	0		1.70E+03
ZZZZZ	19453	10	10,047.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.47E+01
ZZZZZ	19453	11	2,735.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.45E+00

Gamma Flag - _____

Gamma Max Flag [redacted]

Thursday, February 06, 2003

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kips **Signature:** Douglas R Kips **Date:** 1-29-03

Download Station #: 1 Download File #: 15
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kips **User ID** BSK 0490 **Signature:** [signature] **Date:** 1-28-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: Package B2700 - Pipe Trenches (Soil Samples)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ☐ Term Survey ☐ Characterization ☐ Information Only
☑ Other (explain): Final Survey

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	095085	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: Change survey location (L8) for #6 to #5

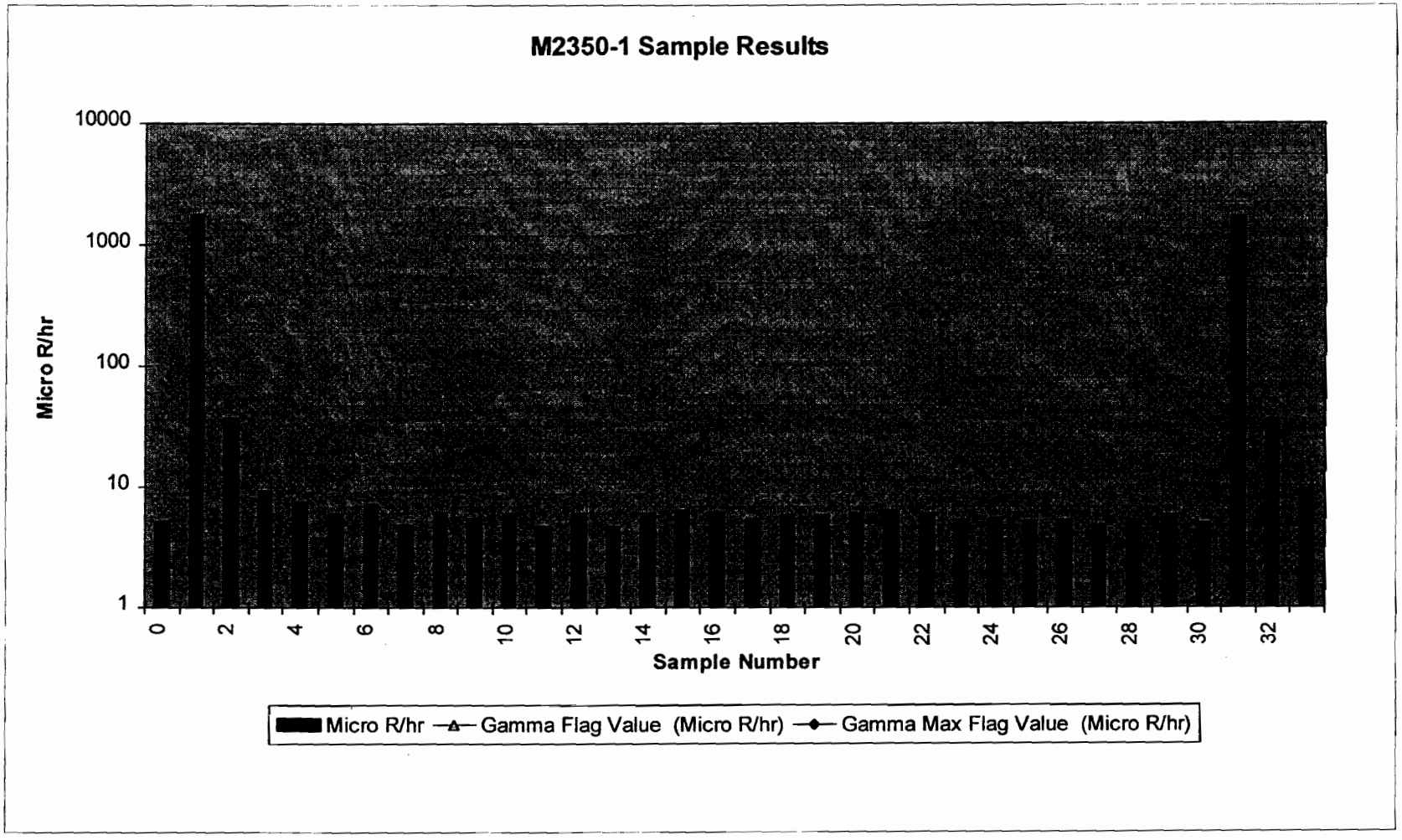
M2350-1 Download GAMMA Report

File Name : 00000015	Survey Description :Paackage B2700- Pipe Trenches (Soil Samples)	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 1/28/03

Print Name	Signature	Date
Betty Kjos	Betty Kjos	1/29/03

Comments:

Sign-Off Paul C Ely (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	ZZZZZ	0	7,659.0	300	PRGBK	ZZZZZ	ZZZZZ	0		5.30E+00
ZZZZZ	19453	1	511,893.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.77E+03
ZZZZZ	19453	2	10,933.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.78E+01
ZZZZZ	19453	3	2,747.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.50E+00
B2700	01T01	4	545.0	15	FLDCT	B0016	RM204	3		7.54E+00
B2700	01T01	5	436.0	15	FLDCT	B0016	RM204	3		6.03E+00
B2700	01T01	6	534.0	15	FLDCT	B0016	RM204	5		7.38E+00
B2700	01T01	7	362.0	15	FLDCT	B0016	RM204	5		5.01E+00
B2700	01T01	8	460.0	15	FLDCT	B0016	RM207	9		6.36E+00
B2700	01T01	9	407.0	15	FLDCT	B0016	RM207	9		5.63E+00
B2700	01T01	10	445.0	15	FLDCT	B0016	RM207	13		6.15E+00
B2700	01T01	11	351.0	15	FLDCT	B0016	RM207	13		4.85E+00
B2700	01T01	12	440.0	15	FLDCT	B0016	RM204	112		6.08E+00
B2700	01T01	13	343.0	15	FLDCT	B0016	RM204	112		4.74E+00
B2700	01T01	14	442.0	15	FLDCT	B0016	RM190	40		6.11E+00
B2700	01T01	15	476.0	15	FLDCT	B0016	RM190	40		6.58E+00
B2700	01T01	16	457.0	15	FLDCT	B0016	RM190	38		6.32E+00
B2700	01T01	17	403.0	15	FLDCT	B0016	RM190	38		5.57E+00
B2700	01T01	18	424.0	15	FLDCT	B0016	RM191	164		5.86E+00
B2700	01T01	19	433.0	15	FLDCT	B0016	RM191	164		5.99E+00
B2700	01T01	20	441.0	15	FLDCT	B0016	RM182	58		6.10E+00
B2700	01T01	21	470.0	15	FLDCT	B0016	RM182	58		6.50E+00
B2700	01T01	22	440.0	15	FLDCT	B0016	RM208	140		6.08E+00
B2700	01T01	23	392.0	15	FLDCT	B0016	RM208	140		5.42E+00
B2700	01T01	24	408.0	15	FLDCT	B0016	RM208	144		5.64E+00
B2700	01T01	25	384.0	15	FLDCT	B0016	RM208	144		5.31E+00
B2700	01T01	26	392.0	15	FLDCT	B0016	RM208	145		5.42E+00
B2700	01T01	27	353.0	15	FLDCT	B0016	RM208	145		4.88E+00
B2700	01T01	28	397.0	15	FLDCT	B0016	RM199	~~160~~ → 60 PCE		5.49E+00
B2700	01T01	29	434.0	15	FLDCT	B0016	RM199	~~160~~ → 60 PCE		6.00E+00
ZZZZZ	ZZZZZ	30	7,371.0	300	PTGBK	ZZZZZ	ZZZZZ	0		5.10E+00
ZZZZZ	19453	31	499,312.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.73E+03
ZZZZZ	19453	32	10,416.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.60E+01

Gamma Flag	- _____
Gamma Max Flag	[redacted]

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	19453	33	2,827.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.77E+00

Gamma Flag	-
Gamma Max Flag	[redacted]

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	Report Date	04/10/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	Receipt Date	03/13/03	

Lab. Sample No.	L5185-01	Client ID	BMS-2700-003	Product	GAMMA SPECTROMETRY
Reference Date	01/28/03	Analysis Date	04/08/03	Matrix	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	4.21E-01	+/-	4.0E-02	4.5E-02	1.3E-01		bc
Ag-108m	2.8E-03	+/-	7.9E-03	7.9E-03	2.7E-02		
Ag-110m	-9E-03	+/-	1.4E-02	1.4E-02	5.4E-02		
Ba-140	6E-01	+/-	1.5E+00	1.5E+00	5.1E+00		
Be-7	-2.9E-01	+/-	1.7E-01	1.7E-01	6.3E-01		
Ce-141	5.8E-02	+/-	5.7E-02	5.7E-02	1.9E-01		
Ce-144	-3.3E-02	+/-	6.6E-02	6.6E-02	2.3E-01		
Co-57	1.08E-02	+/-	8.5E-03	8.5E-03	2.8E-02		
Co-58	-4E-03	+/-	1.6E-02	1.6E-02	5.9E-02		
Co-60	0E+00	+/-	9.1E-03	9.1E-03	3.4E-02	3.8E-02	
Cr-51	-1.5E-01	+/-	4.1E-01	4.1E-01	1.5E+00		
Cs-134	4E-03	+/-	9.0E-03	9.0E-03	3.1E-02		
Cs-137	-9E-03	+/-	1.0E-02	1.0E-02	3.8E-02	1.1E+00	
Fe-59	7.2E-02	+/-	5.1E-02	5.1E-02	1.7E-01		
I-131	-3E-01	+/-	3.6E+00	3.6E+00	1.3E+01		
K-40	1.027E+01	+/-	4.0E-01	6.5E-01	3.8E-01		bc
La-140	1.08E+00	+/-	6.7E-01	6.7E-01	2.2E+00		
Mn-54	8E-03	+/-	1.1E-02	1.1E-02	3.8E-02		
Nb-95	-7.9E-02	+/-	3.7E-02	3.7E-02	1.4E-01		
Ru-103	-8E-03	+/-	2.5E-02	2.5E-02	9.1E-02		
Ru-106	-6.2E-02	+/-	9.9E-02	9.9E-02	3.6E-01		
Sb-124	1.6E-02	+/-	3.1E-02	3.1E-02	1.2E-01		
Sb-125	-4E-03	+/-	2.4E-02	2.4E-02	8.6E-02		
Se-75	-1.2E-02	+/-	1.6E-02	1.6E-02	5.8E-02		
Zn-65	-3.6E-02	+/-	2.8E-02	2.9E-02	1.1E-01		
Zr-95	-5.9E-02	+/-	6.3E-02	6.3E-02	2.3E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/09/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	**Receipt Date**	03/13/03	

Lab. Sample No.	L5185-04	**Client ID**	BMS-2700-013	**Product**	GAMMA SPECTROMETRY
Reference Date	01/28/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.32E-01	+/-	3.4E-02	3.6E-02	1.1E-01		bc
Ag-108m	-4.9E-03	+/-	7.0E-03	7.1E-03	2.6E-02		
Ag-110m	-6E-03	+/-	1.4E-02	1.4E-02	5.1E-02		
Ba-140	-4E-01	+/-	1.2E+00	1.2E+00	4.4E+00		
Be-7	2.3E-01	+/-	1.6E-01	1.6E-01	5.2E-01		
Ce-141	-4.7E-02	+/-	6.0E-02	6.0E-02	2.1E-01		
Ce-144	8.2E-02	+/-	6.0E-02	6.0E-02	2.0E-01		
Co-57	-3.5E-03	+/-	8.2E-03	8.2E-03	2.9E-02		
Co-58	-1.3E-02	+/-	1.3E-02	1.3E-02	5.2E-02		
Co-60	-4.5E-03	+/-	6.7E-03	6.7E-03	2.8E-02	3.8E-02	
Cr-51	1.8E-01	+/-	3.1E-01	3.1E-01	1.1E+00		
Cs-134	-7.7E-03	+/-	8.9E-03	8.9E-03	3.3E-02		
Cs-137	6.5E-03	+/-	8.4E-03	8.4E-03	2.9E-02	1.1E+00	
Fe-59	3.8E-02	+/-	4.5E-02	4.5E-02	1.6E-01		
I-131	2E+00	+/-	3.2E+00	3.2E+00	1.1E+01		
K-40	2.13E+00	+/-	2.1E-01	2.3E-01	3.6E-01		bc
La-140	7.7E-01	+/-	6.6E-01	6.7E-01	2.2E+00		
Mn-54	-1.3E-02	+/-	1.0E-02	1.0E-02	4.0E-02		
Nb-95	-6.1E-02	+/-	3.4E-02	3.4E-02	1.3E-01		
Ru-103	-4.1E-02	+/-	2.6E-02	2.6E-02	1.0E-01		
Ru-106	-7.4E-02	+/-	8.9E-02	8.9E-02	3.4E-01		
Sb-124	0E+00	+/-	3.1E-02	3.1E-02	1.2E-01		
Sb-125	1.8E-02	+/-	2.3E-02	2.3E-02	8.0E-02		
Se-75	1.9E-02	+/-	1.6E-02	1.6E-02	5.4E-02		
Zn-65	4.2E-02	+/-	4.1E-02	4.1E-02	1.4E-01		
Zr-95	5.6E-02	+/-	5.8E-02	5.8E-02	1.9E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

MAILED
APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/09/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-06	**Client ID**	BMS-2700-040	**Product**	GAMMA SPECTROMETRY
Reference Date	01/28/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.73E-01	+/-	3.8E-02	4.1E-02	8.4E-02		bc
Ag-108m	-3E-04	+/-	8.0E-03	8.0E-03	2.9E-02		
Ag-110m	-2E-03	+/-	1.2E-02	1.2E-02	4.8E-02		
Ba-140	1.2E+00	+/-	1.1E+00	1.1E+00	3.9E+00		
Be-7	0E+00	+/-	1.7E-01	1.7E-01	6.2E-01		
Ce-141	-3.6E-02	+/-	6.0E-02	6.0E-02	2.1E-01		
Ce-144	-6.2E-02	+/-	6.8E-02	6.8E-02	2.5E-01		
Co-57	1.77E-02	+/-	9.0E-03	9.0E-03	2.9E-02		
Co-58	-3.2E-02	+/-	1.4E-02	1.4E-02	6.3E-02		
Co-60	-5.7E-03	+/-	7.4E-03	7.4E-03	3.2E-02	3.8E-02	
Cr-51	-1.6E-01	+/-	3.5E-01	3.5E-01	1.3E+00		
Cs-134	-8E-03	+/-	4.1E-02	4.1E-02	1.4E-01		
Cs-137	-4.1E-03	+/-	8.4E-03	8.4E-03	3.2E-02	1.1E+00	
Fe-59	1.3E-02	+/-	4.7E-02	4.7E-02	1.7E-01		
I-131	-6E-01	+/-	3.3E+00	3.3E+00	1.2E+01		
K-40	1.41E+00	+/-	1.9E-01	2.1E-01	4.1E-01		bc
La-140	-1.6E-01	+/-	6.9E-01	6.9E-01	2.5E+00		
Mn-54	-1.6E-03	+/-	7.3E-03	7.3E-03	2.9E-02		
Nb-95	2.3E-02	+/-	3.3E-02	3.3E-02	1.2E-01		
Ru-103	-9E-03	+/-	2.5E-02	2.5E-02	9.5E-02		
Ru-106	9.1E-02	+/-	8.8E-02	8.8E-02	3.0E-01		
Sb-124	3.6E-02	+/-	3.6E-02	3.6E-02	1.3E-01		
Sb-125	-1.4E-02	+/-	2.5E-02	2.5E-02	9.2E-02		
Se-75	2.6E-02	+/-	1.5E-02	1.5E-02	5.0E-02		
Zn-65	-3.4E-02	+/-	2.5E-02	2.5E-02	1.0E-01		
Zr-95	1.2E-02	+/-	4.6E-02	4.6E-02	1.7E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	Report Date	04/10/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	Receipt Date	03/13/03	

Lab. Sample No.	L5185-07	Client ID	BMS-2700-058	Product	GAMMA SPECTROMETRY
Reference Date	01/28/03	Analysis Date	04/08/03	Matrix	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.98E-01	+/-	3.9E-02	4.1E-02	1.2E-01		bc
Ag-108m	-1.58E-02	+/-	7.2E-03	7.2E-03	2.9E-02		
Ag-110m	-1E-02	+/-	1.3E-02	1.3E-02	5.0E-02		
Ba-140	5E-01	+/-	1.1E+00	1.1E+00	4.1E+00		
Be-7	3E-02	+/-	1.5E-01	1.5E-01	5.5E-01		
Ce-141	-6.3E-02	+/-	6.2E-02	6.2E-02	2.2E-01		
Ce-144	-5.1E-02	+/-	7.4E-02	7.4E-02	2.6E-01		
Co-57	-3.3E-03	+/-	9.4E-03	9.4E-03	3.3E-02		
Co-58	2E-02	+/-	1.6E-02	1.6E-02	5.4E-02		
Co-60	-9.5E-03	+/-	7.7E-03	7.7E-03	3.3E-02	3.8E-02	
Cr-51	-6.7E-01	+/-	4.3E-01	4.3E-01	1.6E+00		
Cs-134	-2.9E-02	+/-	3.5E-02	3.5E-02	1.2E-01		
Cs-137	-1.14E-02	+/-	9.4E-03	9.4E-03	3.6E-02	1.1E+00	
Fe-59	0E+00	+/-	5.4E-02	5.4E-02	2.0E-01		
I-131	-4.3E+00	+/-	3.7E+00	3.7E+00	1.4E+01		
K-40	5.88E+00	+/-	3.2E-01	4.3E-01	3.7E-01		bc
La-140	-4.3E-01	+/-	7.5E-01	7.5E-01	2.8E+00		
Mn-54	-1.3E-03	+/-	8.9E-03	8.9E-03	3.3E-02		
Nb-95	3.1E-02	+/-	3.3E-02	3.3E-02	1.2E-01		
Ru-103	2.2E-02	+/-	2.4E-02	2.4E-02	8.4E-02		
Ru-106	5.4E-02	+/-	8.5E-02	8.5E-02	3.0E-01		
Sb-124	-2E-03	+/-	2.1E-02	2.1E-02	9.4E-02		
Sb-125	-1E-02	+/-	2.6E-02	2.6E-02	9.4E-02		
Se-75	1.6E-02	+/-	1.7E-02	1.7E-02	5.7E-02		
Zn-65	4.5E-02	+/-	4.0E-02	4.0E-02	1.3E-01		
Zr-95	-4.5E-02	+/-	4.8E-02	4.8E-02	1.8E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-08	**Client ID**	BMS-2700-060	**Product**	GAMMA SPECTROMETRY
Reference Date	01/28/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.94E-01	+/-	3.0E-02	3.1E-02	1.2E-01		bc
Ag-108m	-2.3E-03	+/-	6.3E-03	6.3E-03	2.3E-02		
Ag-110m	-1.8E-02	+/-	1.0E-02	1.0E-02	4.1E-02		
Ba-140	1E-01	+/-	1.2E+00	1.2E+00	4.3E+00		
Be-7	-3E-02	+/-	1.3E-01	1.3E-01	4.6E-01		
Ce-141	2.2E-02	+/-	4.7E-02	4.7E-02	1.6E-01		
Ce-144	8.3E-02	+/-	5.5E-02	5.5E-02	1.8E-01		
Co-57	-1.75E-02	+/-	6.3E-03	6.4E-03	2.3E-02		
Co-58	-2.2E-02	+/-	1.1E-02	1.1E-02	4.6E-02		
Co-60	1.26E-02	+/-	7.8E-03	7.9E-03	2.6E-02	3.8E-02	
Cr-51	2E-02	+/-	3.2E-01	3.2E-01	1.1E+00		
Cs-134	6.3E-03	+/-	7.5E-03	7.5E-03	2.6E-02		
Cs-137	1.51E-02	+/-	8.1E-03	8.2E-03	2.6E-02	1.1E+00	
Fe-59	-5E-03	+/-	4.0E-02	4.0E-02	1.5E-01		
I-131	-2.2E+00	+/-	3.0E+00	3.0E+00	1.1E+01		
K-40	5.78E+00	+/-	2.7E-01	4.0E-01	2.9E-01		bc
La-140	-5.6E-01	+/-	4.8E-01	4.8E-01	7.0E+00		
Mn-54	-1.09E-02	+/-	8.9E-03	8.9E-03	3.4E-02		
Nb-95	-2.8E-02	+/-	2.6E-02	2.6E-02	9.9E-02		
Ru-103	-3.4E-02	+/-	2.2E-02	2.2E-02	8.3E-02		
Ru-106	-1.3E-02	+/-	7.9E-02	7.9E-02	2.8E-01		
Sb-124	2.6E-02	+/-	2.2E-02	2.2E-02	7.8E-02		
Sb-125	1.8E-02	+/-	1.8E-02	1.8E-02	6.8E-02		
Se-75	0E+00	+/-	1.3E-02	1.3E-02	4.6E-02		
Zn-65	1.3E-02	+/-	3.7E-02	3.7E-02	1.3E-01		
Zr-95	-7.5E-02	+/-	3.4E-02	3.4E-02	1.3E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-09	**Client ID**	BMS-2700-090	**Product**	GAMMA SPECTROMETRY
Reference Date	02/25/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.6E-01	+/-	3.1E-02	3.4E-02	1.2E-01		bc
Ag-108m	-2.6E-03	+/-	6.7E-03	6.7E-03	2.4E-02		
Ag-110m	-1.51E-02	+/-	9.9E-03	1.0E-02	3.9E-02		
Ba-140	-9E-02	+/-	2.2E-01	2.2E-01	7.9E-01		
Be-7	-1.9E-01	+/-	1.0E-01	1.0E-01	3.8E-01		
Ce-141	3.4E-02	+/-	2.4E-02	2.4E-02	7.9E-02		
Ce-144	2.1E-02	+/-	4.0E-02	4.0E-02	1.4E-01		
Co-57	1.8E-03	+/-	5.2E-03	5.2E-03	1.8E-02		
Co-58	-1.6E-02	+/-	1.2E-02	1.2E-02	4.4E-02		
Co-60	-4E-03	+/-	7.7E-03	7.7E-03	3.0E-02	3.8E-02	
Cr-51	-1.3E-01	+/-	1.4E-01	1.4E-01	5.2E-01		
Cs-134	-1.69E-02	+/-	6.7E-03	6.7E-03	2.6E-02		
Cs-137	2.54E-01	+/-	1.7E-02	2.1E-02	3.3E-02	1.1E+00	bc
Fe-59	3.4E-02	+/-	3.4E-02	3.4E-02	1.2E-01		
I-131	3.2E-01	+/-	2.1E-01	2.1E-01	7.1E-01		
K-40	1.115E+01	+/-	3.7E-01	6.7E-01	3.0E-01		bc
La-140	1E-02	+/-	1.2E-01	1.2E-01	4.4E-01		
Mn-54	-5.1E-03	+/-	8.0E-03	8.0E-03	2.9E-02		
Nb-95	-3.2E-02	+/-	1.8E-02	1.8E-02	7.0E-02		
Ru-103	-4E-03	+/-	1.3E-02	1.3E-02	4.6E-02		
Ru-106	9E-02	+/-	7.0E-02	7.0E-02	2.3E-01		
Sb-124	-9E-03	+/-	1.8E-02	1.8E-02	7.5E-02		
Sb-125	-6E-03	+/-	2.0E-02	2.0E-02	7.3E-02		
Se-75	-4E-03	+/-	1.1E-02	1.1E-02	3.8E-02		
Zn-65	3.8E-02	+/-	4.0E-02	4.0E-02	1.3E-01		
Zr-95	-4.1E-02	+/-	4.0E-02	4.0E-02	1.5E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-10	**Client ID**	BMS-2700-094	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.62E-01	+/-	4.2E-02	4.4E-02	1.3E-01		bc
Ag-108m	2.2E-03	+/-	7.5E-03	7.5E-03	2.6E-02		
Ag-110m	7E-03	+/-	1.5E-02	1.5E-02	5.2E-02		
Ba-140	2.8E-01	+/-	7.2E-01	7.2E-01	2.6E+00		
Be-7	3E-02	+/-	1.6E-01	1.6E-01	5.5E-01		
Ce-141	6.4E-02	+/-	5.0E-02	5.0E-02	1.7E-01		
Ce-144	-4.3E-02	+/-	6.3E-02	6.3E-02	2.2E-01		
Co-57	9.9E-03	+/-	8.2E-03	8.2E-03	2.7E-02		
Co-58	-7E-03	+/-	1.5E-02	1.5E-02	5.5E-02		
Co-60	9E-04	+/-	9.6E-03	9.6E-03	3.5E-02	3.8E-02	
Cr-51	-2.8E-01	+/-	3.1E-01	3.1E-01	1.1E+00		
Cs-134	-4.3E-03	+/-	8.9E-03	8.9E-03	3.2E-02		
Cs-137	2.32E-02	+/-	8.5E-03	8.5E-03	2.5E-02	1.1E+00	
Fe-59	-4.7E-02	+/-	4.9E-02	4.9E-02	1.8E-01		
I-131	-1.1E+00	+/-	1.4E+00	1.4E+00	5.3E+00		
K-40	9.22E+00	+/-	3.7E-01	5.9E-01	3.1E-01		bc
La-140	-2.8E-01	+/-	4.8E-01	4.8E-01	1.7E+00		
Mn-54	-1.41E-02	+/-	9.4E-03	9.4E-03	3.7E-02		
Nb-95	-3E-03	+/-	3.2E-02	3.2E-02	1.1E-01		
Ru-103	2E-02	+/-	2.5E-02	2.5E-02	8.5E-02		
Ru-106	8.4E-02	+/-	8.3E-02	8.3E-02	2.8E-01		
Sb-124	-2.7E-02	+/-	2.5E-02	2.5E-02	1.1E-01		
Sb-125	-1.4E-02	+/-	2.1E-02	2.1E-02	7.8E-02		
Se-75	1.3E-02	+/-	1.6E-02	1.6E-02	5.3E-02		
Zn-65	5.7E-02	+/-	4.7E-02	4.7E-02	1.6E-01		
Zr-95	-3.2E-02	+/-	3.6E-02	3.6E-02	1.3E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-11	**Client ID**	BMS-2700-101	**Product**	GAMMA SPECTROMETRY
Reference Date	02/06/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	2.41E-01	+/-	3.7E-02	3.9E-02	1.4E-01		bc
Ag-108m	8.9E-03	+/-	7.8E-03	7.8E-03	2.6E-02		
Ag-110m	4E-02	+/-	1.6E-02	1.6E-02	5.1E-02		
Ba-140	-8.1E-01	+/-	8.4E-01	8.4E-01	3.1E+00		
Be-7	6E-02	+/-	1.5E-01	1.5E-01	5.2E-01		
Ce-141	3.6E-02	+/-	4.7E-02	4.7E-02	1.6E-01		
Ce-144	1.12E-01	+/-	6.4E-02	6.4E-02	2.1E-01		
Co-57	7E-03	+/-	8.3E-03	8.3E-03	2.8E-02		
Co-58	-2.4E-02	+/-	1.6E-02	1.6E-02	6.0E-02		
Co-60	-7.9E-03	+/-	9.9E-03	9.9E-03	3.8E-02	3.8E-02	
Cr-51	-7E-02	+/-	3.2E-01	3.2E-01	1.1E+00		
Cs-134	1.24E-02	+/-	9.1E-03	9.1E-03	3.0E-02		
Cs-137	-3.8E-03	+/-	9.6E-03	9.6E-03	3.5E-02	1.1E+00	
Fe-59	3.7E-02	+/-	5.7E-02	5.7E-02	2.0E-01		
I-131	3E-01	+/-	1.5E+00	1.5E+00	5.4E+00		
K-40	1.615E+01	+/-	4.7E-01	9.3E-01	3.5E-01		bc
La-140	-3.2E-01	+/-	3.9E-01	3.9E-01	1.5E+00		
Mn-54	-1.7E-02	+/-	1.1E-02	1.1E-02	4.1E-02		
Nb-95	-1.7E-02	+/-	3.3E-02	3.3E-02	1.2E-01		
Ru-103	1.2E-02	+/-	2.4E-02	2.4E-02	8.3E-02		
Ru-106	6.2E-02	+/-	9.5E-02	9.5E-02	3.3E-01		
Sb-124	6E-03	+/-	2.7E-02	2.7E-02	1.0E-01		
Sb-125	-1.1E-02	+/-	2.3E-02	2.3E-02	8.5E-02		
Se-75	7E-03	+/-	1.7E-02	1.7E-02	5.7E-02		
Zn-65	-4.1E-02	+/-	3.2E-02	3.2E-02	1.2E-01		
Zr-95	-4.1E-02	+/-	3.8E-02	3.8E-02	1.4E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-12	**Client ID**	BMS-2700-112	**Product**	GAMMA SPECTROMETRY
Reference Date	01/28/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.5E-01	+/-	3.4E-02	3.8E-02	1.1E-01		bc
Ag-108m	-4E-03	+/-	6.4E-03	6.4E-03	2.3E-02		
Ag-110m	1.1E-02	+/-	1.2E-02	1.2E-02	4.1E-02		
Ba-140	8E-01	+/-	1.2E+00	1.2E+00	4.2E+00		
Be-7	-1E-01	+/-	1.6E-01	1.6E-01	5.6E-01		
Ce-141	8.7E-02	+/-	5.6E-02	5.7E-02	1.9E-01		
Ce-144	-1.54E-01	+/-	6.0E-02	6.1E-02	2.2E-01		
Co-57	-2.8E-03	+/-	7.6E-03	7.6E-03	2.6E-02		
Co-58	-4E-03	+/-	1.4E-02	1.4E-02	5.0E-02		
Co-60	-1.45E-02	+/-	8.4E-03	8.4E-03	3.3E-02	3.8E-02	
Cr-51	7E-02	+/-	3.6E-01	3.6E-01	1.2E+00		
Cs-134	-4E-03	+/-	7.6E-03	7.6E-03	2.9E-02		
Cs-137	2.4E-03	+/-	7.5E-03	7.5E-03	2.6E-02	1.1E+00	
Fe-59	-3E-02	+/-	4.5E-02	4.5E-02	1.7E-01		
I-131	2E-01	+/-	2.9E+00	2.9E+00	1.0E+01		
K-40	1.176E+01	+/-	3.4E-01	6.8E-01	2.7E-01		bc
La-140	-3.5E-01	+/-	6.5E-01	6.5E-01	2.3E+00		
Mn-54	-1.06E-02	+/-	8.7E-03	8.7E-03	3.2E-02		
Nb-95	-2.2E-02	+/-	3.1E-02	3.1E-02	1.1E-01		
Ru-103	4E-02	+/-	2.5E-02	2.5E-02	8.3E-02		
Ru-106	-8E-03	+/-	7.8E-02	7.8E-02	2.8E-01		
Sb-124	2E-02	+/-	2.2E-02	2.2E-02	7.7E-02		
Sb-125	-1.1E-02	+/-	1.9E-02	1.9E-02	7.0E-02		
Se-75	2.5E-02	+/-	1.5E-02	1.5E-02	4.9E-02		
Zn-65	-1.3E-02	+/-	4.4E-02	4.4E-02	1.5E-01		
Zr-95	-5.9E-02	+/-	4.7E-02	4.7E-02	1.8E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-13	**Client ID**	BMS-2700-140	**Product**	GAMMA SPECTROMETRY
Reference Date	01/28/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	4.43E-01	+/-	3.0E-02	3.7E-02	9.7E-02		bc
Ag-108m	9E-04	+/-	5.5E-03	5.5E-03	1.9E-02		
Ag-110m	1.99E-02	+/-	9.9E-03	9.9E-03	3.2E-02		
Ba-140	2E-01	+/-	1.0E+00	1.0E+00	3.5E+00		
Be-7	-1E-01	+/-	1.1E-01	1.1E-01	4.0E-01		
Ce-141	2.3E-02	+/-	3.4E-02	3.4E-02	1.1E-01		
Ce-144	-5E-03	+/-	5.3E-02	5.3E-02	1.8E-01		
Co-57	-1.6E-02	+/-	7.1E-03	7.2E-03	2.5E-02		
Co-58	-3.2E-02	+/-	1.2E-02	1.2E-02	4.8E-02		
Co-60	9E-04	+/-	5.7E-03	5.7E-03	2.1E-02	3.8E-02	
Cr-51	2.2E-01	+/-	3.1E-01	3.1E-01	1.1E+00		
Cs-134	3.3E-03	+/-	7.1E-03	7.1E-03	2.4E-02		
Cs-137	3.7E-03	+/-	7.0E-03	7.0E-03	2.4E-02	1.1E+00	
Fe-59	-3.4E-02	+/-	3.5E-02	3.5E-02	1.3E-01		
I-131	8E-01	+/-	2.7E+00	2.7E+00	9.3E+00		
K-40	4.8E+00	+/-	2.1E-01	3.2E-01	2.4E-01		bc
La-140	-5.7E-01	+/-	4.7E-01	4.7E-01	1.8E+00		
Mn-54	4.5E-03	+/-	7.2E-03	7.2E-03	2.5E-02		
Nb-95	-2.9E-02	+/-	2.9E-02	2.9E-02	1.1E-01		
Ru-103	-1E-03	+/-	2.2E-02	2.2E-02	7.6E-02		
Ru-106	2.7E-02	+/-	7.4E-02	7.4E-02	2.6E-01		
Sb-124	5E-03	+/-	2.2E-02	2.2E-02	8.5E-02		
Sb-125	1E-03	+/-	1.8E-02	1.8E-02	6.2E-02		
Se-75	-2E-02	+/-	1.3E-02	1.3E-02	4.7E-02		
Zn-65	1.2E-02	+/-	3.5E-02	3.5E-02	1.2E-01		
Zr-95	-6.1E+00	+/-	2.7E+00	2.7E+00	8.9E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-14	**Client ID**	BMS-2700-144	**Product**	GAMMA SPECTROMETRY
Reference Date	01/28/03	**Analysis Date**	04/08/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	5.26E-01	+/-	2.8E-02	3.8E-02	9.2E-02		bc
Ag-108m	1.21E-02	+/-	5.9E-03	6.0E-03	1.9E-02		
Ag-110m	-7.3E-03	+/-	8.4E-03	8.5E-03	3.2E-02		
Ba-140	-5E-01	+/-	9.9E-01	9.9E-01	3.6E+00		
Be-7	-1.7E-01	+/-	1.4E-01	1.4E-01	5.0E-01		
Ce-141	3.7E-02	+/-	5.2E-02	5.2E-02	1.7E-01		
Ce-144	5.2E-02	+/-	6.0E-02	6.0E-02	2.0E-01		
Co-57	-8E-03	+/-	1.1E-02	1.1E-02	3.7E-02		
Co-58	8E-03	+/-	1.2E-02	1.2E-02	4.0E-02		
Co-60	-1.35E-02	+/-	6.1E-03	6.1E-03	2.5E-02	3.8E-02	
Cr-51	-1.9E-01	+/-	3.5E-01	3.5E-01	1.2E+00		
Cs-134	3.2E-02	+/-	2.6E-02	2.6E-02	8.5E-02		
Cs-137	6.1E-03	+/-	7.5E-03	7.5E-03	2.6E-02	1.1E+00	
Fe-59	0E+00	+/-	3.3E-02	3.3E-02	1.2E-01		
I-131	7E-01	+/-	3.0E+00	3.0E+00	1.0E+01		
K-40	3.08E+00	+/-	1.7E-01	2.3E-01	2.4E-01		bc
La-140	-1.9E-01	+/-	5.7E-01	5.7E-01	2.0E+00		
Mn-54	-3.5E-03	+/-	7.4E-03	7.4E-03	2.7E-02		
Nb-95	-7E-03	+/-	4.3E-02	4.3E-02	1.5E-01		
Ru-103	-6E-02	+/-	2.2E-02	2.2E-02	8.3E-02		
Ru-106	5.2E-02	+/-	6.6E-02	6.6E-02	2.2E-01		
Sb-124	-3.8E-02	+/-	2.3E-02	2.3E-02	1.0E-01		
Sb-125	1.7E-02	+/-	2.0E-02	2.0E-02	6.8E-02		
Se-75	3.1E-02	+/-	1.3E-02	1.3E-02	4.3E-02		
Zn-65	-4.4E-02	+/-	3.1E-02	3.1E-02	1.1E-01		
Zr-95	-5E-02	+/-	1.5E-01	1.5E-01	5.0E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/10/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	03/13/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5185-15	**Client ID**	BMS-2700-145	**Product**	GAMMA SPECTROMETRY
Reference Date	01/28/03	**Analysis Date**	04/09/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.6E-01	+/-	3.9E-02	4.3E-02	1.4E-01		bc
Ag-108m	3.4E-03	+/-	7.7E-03	7.7E-03	2.7E-02		
Ag-110m	2E-03	+/-	1.4E-02	1.4E-02	5.2E-02		
Ba-140	-2E-01	+/-	1.5E+00	1.5E+00	5.4E+00		
Be-7	1E-01	+/-	1.7E-01	1.7E-01	5.8E-01		
Ce-141	0E+00	+/-	6.7E-02	6.7E-02	2.3E-01		
Ce-144	-1.03E-01	+/-	7.6E-02	7.7E-02	2.7E-01		
Co-57	1.07E-02	+/-	9.7E-03	9.7E-03	3.2E-02		
Co-58	-7E-03	+/-	1.7E-02	1.7E-02	6.3E-02		
Co-60	1.7E-03	+/-	8.4E-03	8.4E-03	3.1E-02	3.8E-02	
Cr-51	-3E-01	+/-	4.3E-01	4.3E-01	1.6E+00		
Cs-134	-1E-02	+/-	4.0E-02	4.0E-02	1.4E-01		
Cs-137	2.7E-03	+/-	9.2E-03	9.2E-03	3.3E-02	1.1E+00	
Fe-59	-1.8E-02	+/-	5.0E-02	5.0E-02	1.9E-01		
I-131	-3.4E+00	+/-	4.1E+00	4.1E+00	1.5E+01		
K-40	3.69E+00	+/-	2.6E-01	3.2E-01	3.5E-01		bc
La-140	-4.3E-01	+/-	7.5E-01	7.5E-01	2.8E+00		
Mn-54	-1.82E-02	+/-	9.6E-03	9.6E-03	3.9E-02		
Nb-95	3.2E-02	+/-	4.2E-02	4.2E-02	1.4E-01		
Ru-103	-7.5E-02	+/-	3.2E-02	3.2E-02	1.3E-01		
Ru-106	-3.4E-02	+/-	9.7E-02	9.7E-02	3.6E-01		
Sb-124	-1.8E-02	+/-	2.8E-02	2.8E-02	1.2E-01		
Sb-125	5E-03	+/-	2.6E-02	2.6E-02	9.1E-02		
Se-75	2.4E-02	+/-	1.8E-02	1.8E-02	5.9E-02		
Zn-65	-5.2E-02	+/-	5.3E-02	5.3E-02	1.9E-01		
Zr-95	-7.5E-02	+/-	7.0E-02	7.0E-02	2.6E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
JM Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	Report Date	04/10/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	Receipt Date	03/13/03	

Lab. Sample No.	L5185-16	Client ID	BMS-2700-164	Product	GAMMA SPECTROMETRY
Reference Date	01/28/03	Analysis Date	04/09/03	Matrix	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.01E-01	+/-	3.7E-02	4.0E-02	1.1E-01		bc
Ag-108m	-4E-04	+/-	8.0E-03	8.0E-03	2.9E-02		
Ag-110m	-2.9E-02	+/-	1.4E-02	1.4E-02	5.7E-02		
Ba-140	-1.9E+00	+/-	1.1E+00	1.1E+00	4.5E+00		
Be-7	1.3E-01	+/-	1.8E-01	1.9E-01	6.4E-01		
Ce-141	-3.1E-02	+/-	6.1E-02	6.1E-02	2.1E-01		
Ce-144	-8.5E-02	+/-	7.1E-02	7.1E-02	2.5E-01		
Co-57	-2.48E-02	+/-	8.8E-03	8.9E-03	3.3E-02		
Co-58	2E-03	+/-	1.6E-02	1.6E-02	5.7E-02		
Co-60	-4.7E-03	+/-	8.7E-03	8.7E-03	3.4E-02	3.8E-02	
Cr-51	2.6E-01	+/-	4.5E-01	4.5E-01	1.5E+00		
Cs-134	-1.1E-02	+/-	3.4E-02	3.4E-02	1.2E-01		
Cs-137	7.9E-03	+/-	9.6E-03	9.6E-03	3.3E-02	1.1E+00	
Fe-59	4.1E-02	+/-	5.0E-02	5.0E-02	1.7E-01		
I-131	2.3E+00	+/-	3.5E+00	3.5E+00	1.2E+01		
K-40	6.97E+00	+/-	3.3E-01	4.8E-01	3.0E-01		bc
La-140	1.1E-01	+/-	7.5E-01	7.5E-01	2.7E+00		
Mn-54	-1.3E-03	+/-	8.8E-03	8.8E-03	3.3E-02		
Nb-95	-4E-03	+/-	3.5E-02	3.5E-02	1.3E-01		
Ru-103	1.2E-02	+/-	2.5E-02	2.5E-02	9.0E-02		
Ru-106	0E+00	+/-	9.6E-02	9.6E-02	3.5E-01		
Sb-124	-2.2E-02	+/-	3.0E-02	3.0E-02	1.3E-01		
Sb-125	3.7E-02	+/-	2.6E-02	2.6E-02	8.6E-02		
Se-75	-1.6E-02	+/-	1.6E-02	1.6E-02	5.7E-02		
Zn-65	2E-03	+/-	4.7E-02	4.7E-02	1.6E-01		
Zr-95	2E-02	+/-	6.0E-02	6.0E-02	2.1E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 4/15/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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APR 16 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Duratek Inc.
Survey Package Worksheet for Package D0100
Bristol-Myers Squibb Soils Below Tank Vaults Building 124

Package Identification No.: D0100	Prepared by: Paul C. Ely
Location: Soil Below the Building 124 Tank Vaults	Date prepared: 10/21/2002
Area Classification: Class 3	

Area Description
The survey is for the soils below the Tank Vaults and Valve Pit in the Building 124 south yard.

Historical Information
There is no history of spills to the soil around the Building 124 buried tank area. The Building 124 tanks did have leaks into the tank vault when the inlet pipe to one of the tanks broke. The wastewater was cleaned up and sent to another waste tank. The vault completely surrounds the tanks and contained all spilled liquids. The vault is not totally water tight however as there is in-leakage from groundwater that is removed via a sump and sump pump. (Concrete core samples recently removed from several locations on the vault floor resulted in a significant in-leakage of water.) The characterization report indicates that the soils up to 20 feet deep around the tank vault were not contaminated. However, a sediment sample from the valve pit gave results >DCGL during the characterization survey.

General Survey Instructions

Initial plans were to collect 15 soil samples from the area beneath the B-124 tank vault using MARSSIM sampling protocols. Due to the high water table in this area, the plan was to core through the vault's concrete floor at the 15 designated locations and at each location to use an auger to collect a sample. However, the first two concrete cores removed resulted in significant water intrusion into the vault. In fact, two other concrete cores removed from the adjacent valve pit also resulted in water intrusion and the valve pit floor is 8-10 feet higher than the vault floor. Due to the water intrusion, it was determined that usable soil samples could not be collected at the 15 sample points. Instead, the concrete vault floor and valve pit floor will be broken up and removed. A backhoe will then be used to collect a shovelful of soil from the vault and place it on the ground adjacent to the vault. The same will be performed with the dirt below the valve pit and the two piles kept separate. From each shovelful of dirt, a separate sample will be collected and analyzed. These two samples will constitute the soil sampling from the ground below the B-124 tank vault and valve pit.

1. Obtain 1 exposure rate measurement on contact with the concrete surface and another at 1 meter above the surface at each survey measurement location with M2350-1.
2. Download each M2350-1 at completion of the survey, shift and/or prior to performing surveys in another survey area (before changing L1 codes).
3. Give approval for the concrete vault floor and valve pit floor to be broken up and removed.
4. Direct the backhoe operator to dig a shovelful of dirt from the center of the vault and to dump the dirt on the ground adjacent to the vault.
5. Obtain approximately one gallon of soil from the removed soil. Attempt to collect as little gravel as possible.
6. Use only the Package ID, L2, L8 codes and sample depth when labeling samples for analysis. Consider the sample depth to be 0-2 feet.
7. Repeat steps 4-6 for the valve pit.
8. Keep the dirt removed from the vault and valve pit separate.

Survey Package Completion.

1. When all measurements, samples or scans are collected, initial and date the "MEASUREMENT TYPE" block on the survey package to indicate the measurements or samples were collected.
2. Note any problems, comments, or other information pertinent to the data or sample collection under the "FIELD NOTES" section.

Use all location codes provided below when taking measurements.

Survey Package: D0100 continued

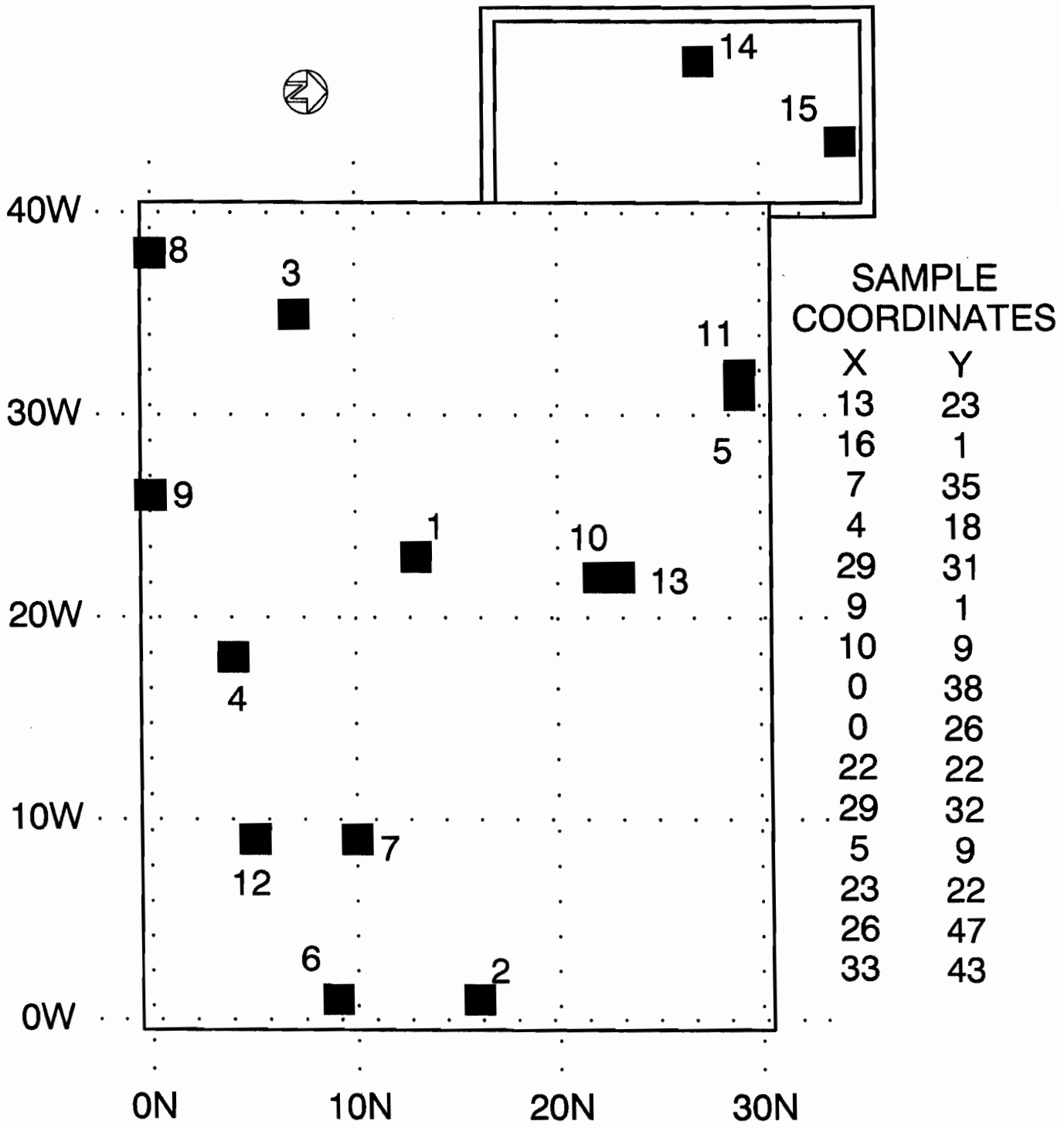
Special Instructions
Use the sodium iodide detector model number 44-2 for gamma survey measurements.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	Contact Gamma	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Soils Under Tank Vault												
D0100	01L01	B0016	NA	15	**Soil Under Vaults**	NA	NA	NA	15	NA	15	2
									SDK 10-7-02		SDK 10-7-02	SDK 10-7-02

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments



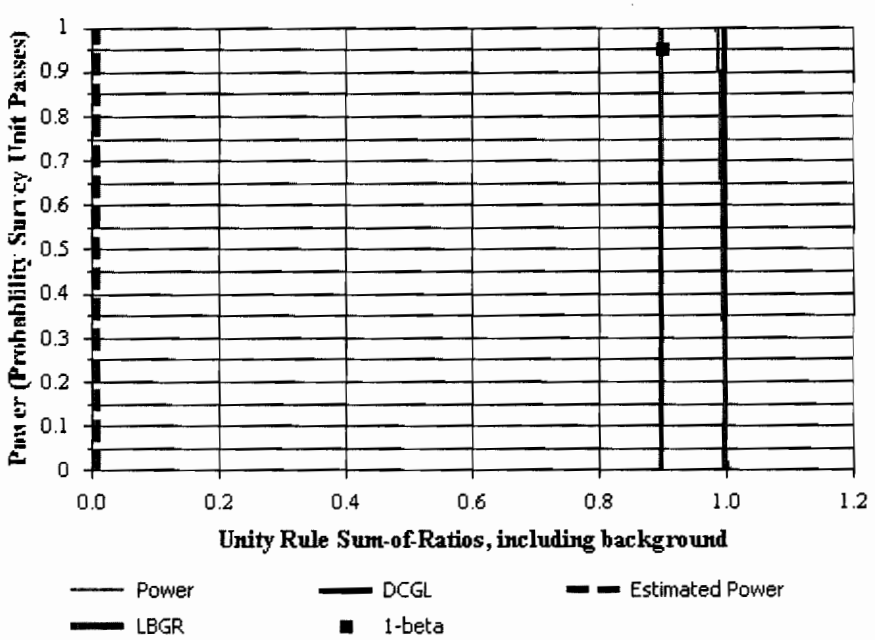
BUILDING 124 TANK VAULT SURVEY

Surface Soil Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	D0100 FSS Package		
Comments:	Building 124 Vault Area Soils		
Area (m²):	279	Classification:	2
Selected Test:	Sign	Estimated Sigma (SOR):	0.01
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.9	Estimated Conc. (SOR):	0.01
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Cs-137	11.00	N/A	N/A	N/A	N/A
Mn-54	9.00	N/A	N/A	N/A	N/A

Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Cs-137	0.0122 ± 0.0211	N/A
Mn-54	0.0672 ± 0.1	N/A

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes Signature: [signature] Date: 10-7-02

Download Station #: 1 Download File #: 6
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes User ID DRK2986 Signature: [signature] Date: 10-7-02

Print Name: Vicki C. Miles User ID VCM6298 Signature: VCMiles Date: 10-7-02

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: Package B0100
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 2-15-03 Detector Calibration Due Date: 2-13-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR095085	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: Delete Points 4-40, 75-78, Packages B0100, A1400 & Alpha S/C ✓

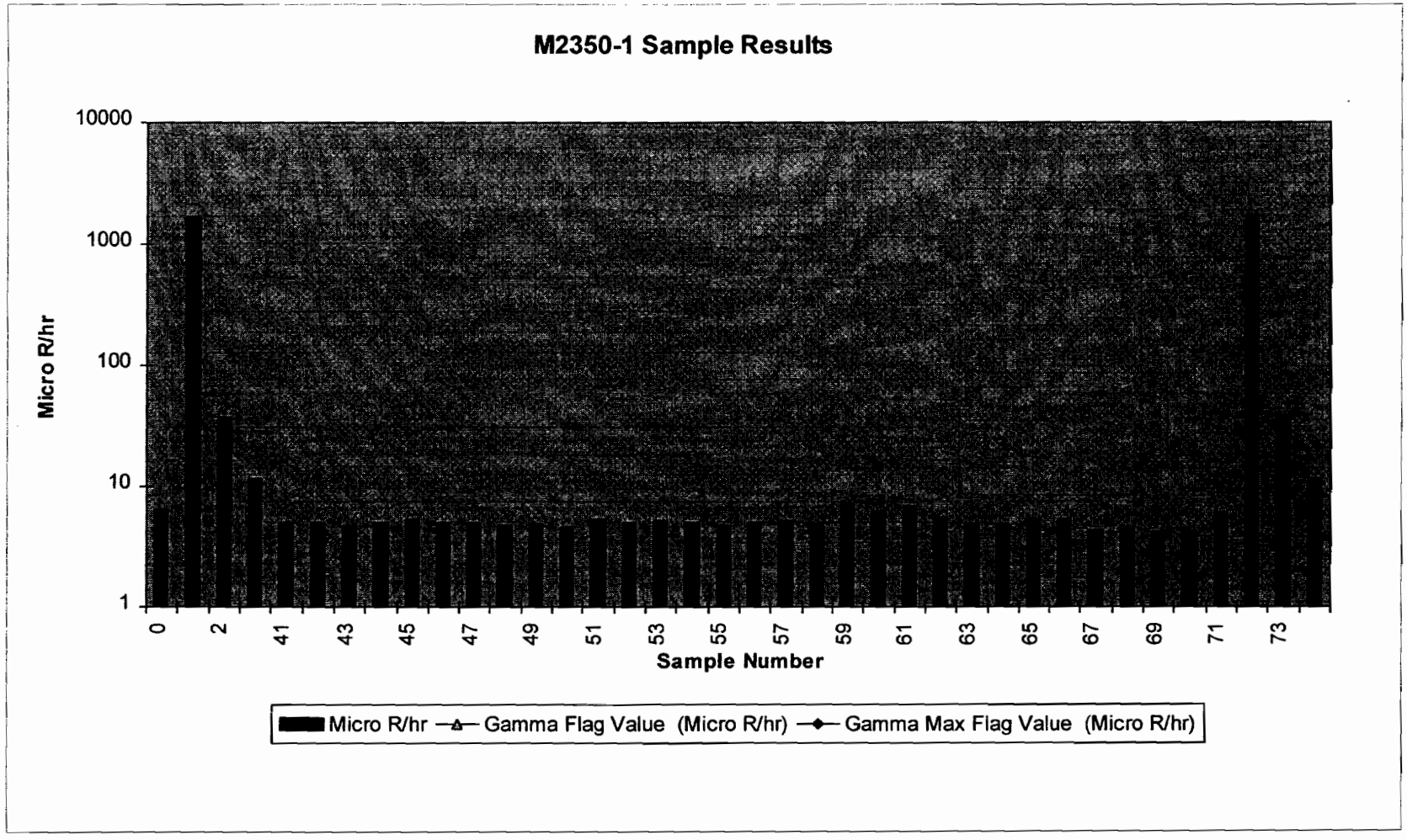
M2350-1 Download Gamma Report

File Name : 00000006	Survey Description :Package D0100 (Tank Vaults 1-4 and Valve Pit)	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : Gamma	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 1		Survey Date : 10/7/02

Print Name	Signature	Date
Doug Kjos		10/8/02

Comments:

Sign-Off PAUL C ELY (Print Name) (Signature) 4/30/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
2
41
43
45
47
49
51
53
55
57
59
61
63
65
67
69
71
73
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	9,261.0	300	PRGBK	ZZZZZ	ZZZZZ	0		6.47E+00
ZZZZZ	19453	1	476,873.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.67E+03
ZZZZZ	19453	2	10,809.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.78E+01
ZZZZZ	19453	3	3,321.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.16E+01
D0100	01F01	41	719.0	30	FLDCT	B0003	ZZZZZ	2		5.03E+00
D0100	01F01	42	721.0	30	FLDCT	B0003	ZZZZZ	2		5.04E+00
D0100	01F01	43	693.0	30	FLDCT	B0003	ZZZZZ	6		4.84E+00
D0100	01F01	44	722.0	30	FLDCT	B0003	ZZZZZ	6		5.05E+00
D0100	01F01	45	780.0	30	FLDCT	B0003	ZZZZZ	7		5.45E+00
D0100	01F01	46	719.0	30	FLDCT	B0003	ZZZZZ	7		5.03E+00
D0100	01F01	47	739.0	30	FLDCT	B0003	ZZZZZ	12		5.16E+00
D0100	01F01	48	683.0	30	FLDCT	B0003	ZZZZZ	12		4.77E+00
D0100	01F01	49	713.0	30	FLDCT	B0003	ZZZZZ	4		4.98E+00
D0100	01F01	50	673.0	30	FLDCT	B0003	ZZZZZ	4		4.70E+00
D0100	01F01	51	771.0	30	FLDCT	B0003	ZZZZZ	13		5.39E+00
D0100	01F01	52	721.0	30	FLDCT	B0003	ZZZZZ	13		5.04E+00
D0100	01F01	53	747.0	30	FLDCT	B0003	ZZZZZ	10		5.22E+00
D0100	01F01	54	720.0	30	FLDCT	B0003	ZZZZZ	10		5.03E+00
D0100	01F01	55	680.0	30	FLDCT	B0003	ZZZZZ	1		4.75E+00
D0100	01F01	56	727.0	30	FLDCT	B0003	ZZZZZ	1		5.08E+00
D0100	01F01	57	751.0	30	FLDCT	B0003	ZZZZZ	9		5.25E+00
D0100	01F01	58	709.0	30	FLDCT	B0003	ZZZZZ	9		4.96E+00
D0100	01F01	59	1,050.0	30	FLDCT	B0003	ZZZZZ	5		7.34E+00
D0100	01F01	60	905.0	30	FLDCT	B0003	ZZZZZ	5		6.32E+00
D0100	01F01	61	993.0	30	FLDCT	B0003	ZZZZZ	11		6.94E+00
D0100	01F01	62	810.0	30	FLDCT	B0003	ZZZZZ	11		5.66E+00
D0100	01F01	63	713.0	30	FLDCT	B0003	ZZZZZ	3		4.98E+00
D0100	01F01	64	716.0	30	FLDCT	B0003	ZZZZZ	3		5.00E+00
D0100	01F01	65	778.0	30	FLDCT	B0003	ZZZZZ	8		5.44E+00
D0100	01F01	66	764.0	30	FLDCT	B0003	ZZZZZ	8		5.34E+00
D0100	01F01	67	630.0	30	FLDCT	B0003	ZZZZZ	14		4.40E+00
D0100	01F01	68	666.0	30	FLDCT	B0003	ZZZZZ	14		4.65E+00
D0100	01F01	69	610.0	30	FLDCT	B0003	ZZZZZ	15		4.26E+00

Gamma Flag	- _____
Gamma Max Flag	[redacted]

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
D0100	01F01	70	611.0	30	FLDCT	B0003	ZZZZZ	15		4.27E+00
ZZZZZ	ZZZZZ	71	8,761.0	300	PTGBK	ZZZZZ	ZZZZZ	0		6.12E+00
ZZZZZ	19453	72	489,973.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.71E+03
ZZZZZ	19453	73	10,995.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.84E+01
ZZZZZ	19453	74	3,376.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.18E+01

Gamma Flag - _____

Gamma Max Flag [redacted]

Bristol-Myers Squibb Production Facility Final Status Survey
New Brunswick New Jersey

Framatome ANP Environmental Laboratory Analysis Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-D0100-001	B-124 Valve Pit #1	10/31/02	4/21/03	Ac/Th-228	0.851	8.51E-01	2.50E-02	9.40E-02
L5188-04				Co-60	<MDA	1.80E-03	6.70E-03	2.30E-02
				Cs-137	<MDA	-5.40E-03	6.40E-03	2.20E-02
				K-40	11.2	1.12E+01	2.20E-01	3.00E-01
BMS-D0100-002	B-124 Valve Pit #2	10/31/02	4/22/03	Ac/Th-228	0.196	1.96E-01	2.30E-02	9.60E-02
L5188-05				Co-60	<MDA	7.50E-03	6.50E-03	2.20E-02
				Cs-137	<MDA	-2.00E-04	5.90E-03	2.00E-02
				K-40	21.26	2.13E+01	2.80E-01	2.50E-01
BMS-D0100-003	B-124 Tank Vault #3	12/17/02	4/28/03	Ac/Th-228	0.371	3.71E-01	2.90E-02	1.00E-01
L5188-02				Co-60	<MDA	-2.00E-03	6.90E-03	2.50E-02
				Cs-137	<MDA	7.70E-03	7.70E-03	2.60E-02
				K-40	14.39	1.44E+01	3.10E-01	2.30E-01
BMS-D0100-004	B-124 Tank Vault #4	12/19/02	4/21/03	Ac/Th-228	0.35	3.50E-01	2.10E-02	8.70E-02
L5188-03				Co-60	<MDA	-3.10E-03	6.10E-03	2.10E-02
				Cs-137	<MDA	-1.60E-03	5.90E-03	2.00E-02
				K-40	20.55	2.06E+01	2.60E-01	2.40E-01
	Tank Vault West Side #1	12/12/02	4/21/03	Ac/Th-228	1.598	1.60E+00	3.70E-02	1.50E-01
L5188-01				Co-60	<MDA	4.60E-03	9.60E-03	3.20E-02
				Cs-137	<MDA	-6.70E-03	9.20E-03	3.10E-02
				K-40	31.99	3.20E+01	3.90E-01	3.80E-01

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer Duratek Inc
Attention Paul Ely

Report Date 04/29/03
Receipt Date 02/21/03

Duratek Inc
c/o Bristol Meyers Squibb
Bldg 115, One Squibb Drive
New Brunswick, NJ 08903

Lab. Sample No. L5188-01 **Client ID** TANK VAULT WEST SIDE #1 **Product** GAMMA SPECTROMETRY
Reference Date 12/12/02 **Analysis Date** 04/21/03 **Matrix** Soil

Nuclide	Activity Concentration (pCi/g)	+/- 1 - Sigma	TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.598E+00	+/- 3.7E-02	8.8E-02	1.5E-01		bc
Ag-108m	-8.5E-03	+/- 7.9E-03	7.9E-03	2.7E-02		
Ag-110m	-1.2E-02	+/- 1.7E-02	1.7E-02	6.0E-02		
Ba-140	-2.7E+01	+/- 3.6E+01	3.6E+01	1.2E+02		
Be-7	-4.2E-01	+/- 4.1E-01	4.1E-01	1.4E+00		
Ce-141	2.8E-01	+/- 2.2E-01	2.2E-01	7.1E-01		
Ce-144	8E-03	+/- 6.6E-02	6.6E-02	2.2E-01		
Co-57	1.12E-02	+/- 9.0E-03	9.0E-03	3.0E-02		
Co-58	-2.5E-02	+/- 3.1E-02	3.1E-02	1.1E-01		
Co-60	4.6E-03	+/- 9.6E-03	9.6E-03	3.2E-02	3.8E-02	
Cr-51	2.1E+00	+/- 1.7E+00	1.7E+00	5.5E+00		
Cs-134	-3E-03	+/- 1.0E-02	1.0E-02	3.5E-02		
Cs-137	-6.7E-03	+/- 9.2E-03	9.2E-03	3.1E-02	1.1E+00	
Fe-59	-1.3E-01	+/- 1.4E-01	1.4E-01	4.9E-01		
I-131	-7.9E+02	+/- 6.3E+02	6.3E+02	2.1E+03		
K-40	3.199E+01	+/- 3.9E-01	1.6E+00	3.8E-01		bc
La-140	0E+00	+/- 1.9E+01	1.9E+01	6.5E+01		
Mn-54	2.9E-02	+/- 1.0E-02	1.0E-02	3.3E-02		
Nb-95	2.4E-01	+/- 1.6E-01	1.6E-01	5.2E-01		
Ru-103	-9.5E-02	+/- 8.3E-02	8.4E-02	2.9E-01		
Ru-106	-3E-02	+/- 1.1E-01	1.1E-01	3.6E-01		
Sb-124	0E+00	+/- 6.4E-02	6.4E-02	2.2E-01		
Sb-125	1.9E-02	+/- 2.5E-02	2.5E-02	8.3E-02		
Se-75	-1.9E-02	+/- 2.3E-02	2.3E-02	7.6E-02		
Zn-65	8.9E-02	+/- 6.2E-02	6.2E-02	2.0E-01		
Zr-95	5.6E-01	+/- 3.2E-01	3.2E-01	1.0E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

Approved by
5/2/03
J.M. Raimondi
Sample Control Manager

MAILED
MAY 2 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/30/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	02/21/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5188-02	**Client ID**	BLDG124 UNDER TANK VAULT D0100#3	**Product**	GAMMA SPECTROMETRY
Reference Date	12/17/02	**Analysis Date**	04/28/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.71E-01	+/-	2.9E-02	3.5E-02	1.0E-01		bc
Ag-108m	-5.2E-03	+/-	6.2E-03	6.2E-03	2.2E-02		
Ag-110m	-2.1E-02	+/-	1.2E-02	1.2E-02	4.5E-02		
Ba-140	3E+00	+/-	2.7E+01	2.7E+01	9.5E+01		
Be-7	-5.2E-01	+/-	3.0E-01	3.0E-01	1.1E+00		
Ce-141	-1.9E-01	+/-	1.8E-01	1.8E-01	6.2E-01		
Ce-144	-6.5E-02	+/-	6.4E-02	6.4E-02	2.2E-01		
Co-57	2.22E-02	+/-	8.2E-03	8.3E-03	2.7E-02		
Co-58	-9E-03	+/-	2.2E-02	2.2E-02	7.9E-02		
Co-60	-2E-03	+/-	6.9E-03	6.9E-03	2.5E-02	3.8E-02	
Cr-51	-1.4E+00	+/-	1.5E+00	1.5E+00	5.2E+00		
Cs-134	4.6E-02	+/-	2.6E-02	2.6E-02	8.6E-02		
Cs-137	7.7E-03	+/-	7.7E-03	7.7E-03	2.6E-02	1.1E+00	
Fe-59	-8E-02	+/-	1.1E-01	1.1E-01	4.0E-01		
I-131	-3.7E+02	+/-	5.8E+02	5.8E+02	2.0E+03		
K-40	1.439E+01	+/-	3.1E-01	7.8E-01	2.3E-01		bc
La-140	-2E+00	+/-	1.6E+01	1.6E+01	5.4E+01		
Mn-54	-1.15E-02	+/-	9.0E-03	9.0E-03	3.3E-02		
Nb-95	3.7E-02	+/-	9.0E-02	9.0E-02	3.1E-01		
Ru-103	1.01E-01	+/-	5.8E-02	5.8E-02	1.9E-01		
Ru-106	-8.7E-02	+/-	7.8E-02	7.8E-02	2.8E-01		
Sb-124	4E-03	+/-	4.1E-02	4.1E-02	1.5E-01		
Sb-125	-1.8E-02	+/-	2.1E-02	2.1E-02	7.4E-02		
Se-75	-2.6E-02	+/-	1.7E-02	1.7E-02	6.1E-02		
Zn-65	-2.6E-02	+/-	4.1E-02	4.1E-02	1.4E-01		
Zr-95	3.7E-02	+/-	8.3E-02	8.3E-02	2.8E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
MAY 2 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 5/2/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/29/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	02/21/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5188-03	**Client ID**	BLDG124 UNDER TANK VAULT D0100#4	**Product**	GAMMA SPECTROMETRY
Reference Date	12/19/02	**Analysis Date**	04/21/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.5E-01	+/-	2.1E-02	2.7E-02	8.7E-02		bc
Ag-108m	-2.5E-03	+/-	4.6E-03	4.6E-03	1.6E-02		
Ag-110m	-2.5E-02	+/-	1.0E-02	1.0E-02	3.7E-02		
Ba-140	7E+00	+/-	1.3E+01	1.3E+01	4.4E+01		
Be-7	0E+00	+/-	2.1E-01	2.1E-01	7.0E-01		
Ce-141	-1.7E-01	+/-	1.3E-01	1.3E-01	4.4E-01		
Ce-144	-2.3E-02	+/-	4.0E-02	4.0E-02	1.3E-01		
Co-57	5.2E-03	+/-	5.0E-03	5.0E-03	1.7E-02		
Co-58	-2E-03	+/-	1.7E-02	1.7E-02	5.9E-02		
Co-60	-3.1E-03	+/-	6.1E-03	6.1E-03	2.1E-02	3.8E-02	
Cr-51	4.2E-01	+/-	9.1E-01	9.1E-01	3.1E+00		
Cs-134	-1.7E-02	+/-	2.1E-02	2.1E-02	7.1E-02		
Cs-137	-1.6E-03	+/-	5.9E-03	5.9E-03	2.0E-02	1.1E+00	
Fe-59	1.4E-02	+/-	8.1E-02	8.1E-02	2.7E-01		
I-131	6E+01	+/-	2.1E+02	2.1E+02	7.0E+02		
K-40	2.055E+01	+/-	2.6E-01	1.1E+00	2.4E-01		bc
La-140	-2.9E+00	+/-	7.6E+00	7.6E+00	2.6E+01		
Mn-54	7.4E-03	+/-	7.1E-03	7.2E-03	2.4E-02		
Nb-95	5.1E-02	+/-	8.9E-02	8.9E-02	3.0E-01		
Ru-103	-1.26E-01	+/-	3.9E-02	4.0E-02	1.4E-01		
Ru-106	-4.1E-02	+/-	6.3E-02	6.3E-02	2.1E-01		
Sb-124	-4.7E-02	+/-	4.1E-02	4.1E-02	1.5E-01		
Sb-125	3E-02	+/-	1.6E-02	1.6E-02	5.2E-02		
Se-75	1E-03	+/-	1.2E-02	1.2E-02	3.9E-02		
Zn-65	9.4E-02	+/-	3.3E-02	3.4E-02	1.1E-01		
Zr-95	-1.6E-01	+/-	4.9E-01	4.9E-01	1.6E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
MAY 2 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 5/2/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer Duratek Inc
Attention Paul Ely

Report Date 04/29/03
Receipt Date 02/21/03

Duratek Inc
c/o Bristol Meyers Squibb
Bldg 115, One Squibb Drive
New Brunswick, NJ 08903

Lab. Sample No. L5188-04 **Client ID** BLDG124 VALVE PIT #1 D0100 **Product** GAMMA SPECTROMETRY
Reference Date 10/31/02 **Analysis Date** 04/21/03 **Matrix** Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	8.51E-01	+/-	2.5E-02	4.9E-02	9.4E-02		bc
Ag-108m	2.3E-03	+/-	5.0E-03	5.0E-03	1.7E-02		
Ag-110m	-5E-03	+/-	1.3E-02	1.3E-02	4.4E-02		
Ba-140	0E+00	+/-	2.6E+02	2.6E+02	8.7E+02		
Be-7	-3E-02	+/-	4.2E-01	4.2E-01	1.4E+00		
Ce-141	-1.04E+00	+/-	4.9E-01	5.0E-01	1.7E+00		
Ce-144	1.48E-01	+/-	5.1E-02	5.1E-02	1.6E-01		
Co-57	6E-03	+/-	6.6E-03	6.6E-03	2.2E-02		
Co-58	-3.1E-02	+/-	3.0E-02	3.1E-02	1.1E-01		
Co-60	1.8E-03	+/-	6.7E-03	6.7E-03	2.3E-02	3.8E-02	
Cr-51	1.6E+00	+/-	3.5E+00	3.5E+00	1.2E+01		
Cs-134	-9.6E-03	+/-	7.5E-03	7.5E-03	2.6E-02		
Cs-137	-5.4E-03	+/-	6.4E-03	6.4E-03	2.2E-02	1.1E+00	
Fe-59	-2.2E-01	+/-	1.7E-01	1.7E-01	6.1E-01		
I-131	-8E+03	+/-	1.6E+04	1.6E+04	5.4E+04		
K-40	1.12E+01	+/-	2.2E-01	6.0E-01	3.0E-01		bc
La-140	1.2E+02	+/-	1.2E+02	1.2E+02	3.9E+02		
Mn-54	-7E-04	+/-	9.7E-03	9.7E-03	3.3E-02		
Nb-95	-3.1E-01	+/-	2.8E-01	2.8E-01	9.6E-01		
Ru-103	3E-02	+/-	1.2E-01	1.2E-01	4.1E-01		
Ru-106	3.7E-02	+/-	8.3E-02	8.3E-02	2.8E-01		
Sb-124	-8.5E-02	+/-	7.7E-02	7.7E-02	2.8E-01		
Sb-125	-1.9E-02	+/-	1.8E-02	1.8E-02	6.0E-02		
Se-75	-2.6E-02	+/-	2.0E-02	2.0E-02	6.8E-02		
Zn-65	2.3E-02	+/-	4.5E-02	4.5E-02	1.5E-01		
Zr-95	1.4E-01	+/-	4.0E-01	4.0E-01	1.3E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
MAY 2 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
J.M. Raimondi 5/2/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	Report Date	04/23/03	Duratek Inc	
Attention	Paul Ely	Receipt Date	02/21/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903	

Lab. Sample No.	L5188-05	Client ID	BLDG124 VALVE PIT #2 D0100	Product	GAMMA SPECTROMETRY
Reference Date	10/31/02	Analysis Date	04/22/03	Matrix	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.96E-01	+/-	2.3E-02	2.5E-02	9.6E-02		bc
Ag-108m	-4.3E-03	+/-	4.9E-03	4.9E-03	1.7E-02		
Ag-110m	-2E-03	+/-	1.2E-02	1.2E-02	4.2E-02		
Ba-140	1.1E+02	+/-	2.0E+02	2.0E+02	6.9E+02		
Be-7	8E-02	+/-	4.0E-01	4.0E-01	1.3E+00		
Ce-141	4E-01	+/-	2.7E-01	2.7E-01	8.8E-01		
Ce-144	8.9E-02	+/-	4.6E-02	4.6E-02	1.5E-01		
Co-57	7.7E-03	+/-	5.9E-03	5.9E-03	1.9E-02		
Co-58	4E-03	+/-	2.9E-02	2.9E-02	9.9E-02		
Co-60	7.5E-03	+/-	6.5E-03	6.5E-03	2.2E-02	3.8E-02	
Cr-51	-2.3E+00	+/-	3.2E+00	3.2E+00	1.1E+01		
Cs-134	3.4E-02	+/-	3.0E-02	3.0E-02	9.9E-02		
Cs-137	-2E-04	+/-	5.9E-03	5.9E-03	2.0E-02	1.1E+00	
Fe-59	-2.5E-01	+/-	1.8E-01	1.9E-01	6.4E-01		
I-131	9E+03	+/-	1.6E+04	1.6E+04	5.4E+04		
K-40	2.126E+01	+/-	2.8E-01	1.1E+00	2.5E-01		bc
La-140	1E+01	+/-	1.1E+02	1.1E+02	3.8E+02		
Mn-54	-8.6E-03	+/-	8.5E-03	8.5E-03	3.0E-02		
Nb-95	-4E-02	+/-	1.7E-01	1.7E-01	5.9E-01		
Ru-103	-3.5E-02	+/-	9.6E-02	9.6E-02	3.3E-01		
Ru-106	-2.7E-02	+/-	7.4E-02	7.4E-02	2.5E-01		
Sb-124	-2.7E-02	+/-	6.6E-02	6.6E-02	2.4E-01		
Sb-125	1E-02	+/-	1.7E-02	1.7E-02	5.6E-02		
Se-75	1.5E-02	+/-	1.6E-02	1.6E-02	5.2E-02		
Zn-65	3.1E-02	+/-	3.8E-02	3.8E-02	1.2E-01		
Zr-95	-7E-02	+/-	1.1E-01	1.1E-01	3.9E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
APR 29 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
4/24/03
J.M. Raimondi
Sample Control Manager

Bristol-Myers Squibb Production Facility Characterization Survey
New Brunswick New Jersey

Duratek, Inc. Laboratory Analysis Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-SML-032-1	Soil Sample (0 - 2 ft Deep)	1/9/02	2/9/02	AC-228	0.9145	9.15E-01	3.16E-01	1.14E-01
				CO-57	<MDA	0.00E+00	0.00E+00	5.31E-01
				CO-60	<MDA	0.00E+00	0.00E+00	6.86E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.87E-02
				CS-137	<MDA	0.00E+00	0.00E+00	9.11E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.62E-02
BMS-SML-032-4	Soil Sample (6 - 8 ft Deep)	1/9/02	2/9/02	AC-228	0.5550	5.55E-01	2.32E-01	9.25E-02
				CO-57	<MDA	0.00E+00	0.00E+00	4.83E-01
				CO-60	<MDA	0.00E+00	0.00E+00	9.75E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.95E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.88E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.36E-02
BMS-SML-032-7	Soil Sample (12 - 14 ft Deep)	1/9/02	2/9/02	AC-228	0.5210	5.21E-01	2.36E-01	1.31E-01
				CO-57	<MDA	0.00E+00	0.00E+00	4.19E-01
				CO-60	<MDA	0.00E+00	0.00E+00	5.06E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.72E-02
				CS-137	0.0485	4.85E-02	4.30E-02	4.13E-02
				MN-54	<MDA	0.00E+00	0.00E+00	5.56E-02
BMS-SML-032-9	Soil Sample (16 - 18 ft Deep)	1/9/02	2/9/02	AC-228	0.7242	7.24E-01	2.80E-01	1.05E-01
				CO-57	<MDA	0.00E+00	0.00E+00	5.29E-01
				CO-60	<MDA	0.00E+00	0.00E+00	5.97E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.74E-02
				CS-137	0.0526	5.26E-02	5.04E-02	4.96E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.01E-02
BMS-SML-032-10	Soil Sample (18 - 20 ft Deep)	1/9/02	2/9/02	AC-228	0.5994	5.99E-01	2.12E-01	1.71E-01
				CO-57	0.4297	4.30E-01	4.08E-01	2.81E-01
				CO-60	<MDA	0.00E+00	0.00E+00	5.58E-02
				CS-134	<MDA	0.00E+00	0.00E+00	2.85E-02
				CS-137	<MDA	0.00E+00	0.00E+00	3.22E-02
				MN-54	<MDA	0.00E+00	0.00E+00	2.70E-02
BMS-SML-033-6	Soil Sample (10 - 12 ft Deep)	1/9/02	2/11/02	AC-228	1.0432	1.04E+00	3.10E-01	9.07E-02
				CO-57	<MDA	0.00E+00	0.00E+00	5.61E-01
				CO-60	<MDA	0.00E+00	0.00E+00	2.99E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.83E-02
				CS-137	<MDA	0.00E+00	0.00E+00	4.87E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.31E-02
BMS-SML-033-9	Soil Sample (16 - 18 ft Deep)	1/9/02	2/11/02	AC-228	0.4080	4.08E-01	1.20E-01	1.08E-01
				CO-57	<MDA	0.00E+00	0.00E+00	2.58E-01
				CO-60	<MDA	0.00E+00	0.00E+00	5.09E-02
				CS-134	<MDA	0.00E+00	0.00E+00	2.28E-02
				CS-137	<MDA	0.00E+00	0.00E+00	3.31E-02
				MN-54	<MDA	0.00E+00	0.00E+00	3.40E-02
BMS-SML-034-2	Soil Sample (2 - 4 ft Deep)	1/9/02	2/11/02	AC-228	1.2925	1.29E+00	4.62E-01	2.24E-01
				CO-57	<MDA	0.00E+00	0.00E+00	4.40E-01
				CO-60	<MDA	0.00E+00	0.00E+00	3.81E-02
				CS-134	0.1136	1.14E-01	7.45E-02	5.26E-02
				CS-137	<MDA	0.00E+00	0.00E+00	8.12E-02
				MN-54	0.0672	6.72E-02	6.05E-02	5.40E-02
BMS-SML-034-5	Soil Sample (8 - 10 ft Deep)	1/9/02	2/11/02	AC-228	0.8186	8.19E-01	2.64E-01	8.45E-02
				CO-57	<MDA	0.00E+00	0.00E+00	5.73E-01
				CO-60	<MDA	0.00E+00	0.00E+00	3.81E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.85E-02
				CS-137	<MDA	0.00E+00	0.00E+00	4.77E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.10E-02
BMS-SML-034-6	Soil Sample (10 - 12 ft Deep)	1/9/02	2/11/02	AC-228	0.6642	6.64E-01	3.38E-01	2.16E-01
				CO-57	<MDA	0.00E+00	0.00E+00	4.54E-01
				CO-60	<MDA	0.00E+00	0.00E+00	1.15E-01
				CS-134	<MDA	0.00E+00	0.00E+00	5.00E-02
				CS-137	<MDA	0.00E+00	0.00E+00	4.57E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.50E-02

Bristol-Myers Squibb Production Facility Characterization Survey
New Brunswick New Jersey

Duratek, Inc. Laboratory Analysis Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-SML-034-7	Soil Sample (12 - 14 ft Deep)	1/9/02	2/11/02	AC-228	0.9073	9.07E-01	2.48E-01	1.37E-01
				CO-57	<MDA	0.00E+00	0.00E+00	2.57E-01
				CO-60	<MDA	0.00E+00	0.00E+00	8.57E-02
				CS-134	0.0301	3.01E-02	2.32E-02	2.14E-02
				CS-137	<MDA	0.00E+00	0.00E+00	3.63E-02
				MN-54	<MDA	0.00E+00	0.00E+00	3.86E-02
BMS-SML-034-8	Soil Sample (14 - 16 ft Deep)	1/9/02	2/11/02	AC-228	1.3493	1.35E+00	4.06E-01	1.12E-01
				CO-57	<MDA	0.00E+00	0.00E+00	3.39E-01
				CO-60	<MDA	0.00E+00	0.00E+00	9.48E-02
				CS-134	0.0916	9.16E-02	5.58E-02	3.71E-02
				CS-137	<MDA	0.00E+00	0.00E+00	8.54E-02
				MN-54	<MDA	0.00E+00	0.00E+00	5.59E-02
BMS-SML-034-9	Soil Sample (16 - 18 ft Deep)	1/9/02	2/11/02	AC-228	1.2106	1.21E+00	3.52E-01	2.39E-01
				CO-57	<MDA	0.00E+00	0.00E+00	6.23E-01
				CO-60	<MDA	0.00E+00	0.00E+00	7.76E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.32E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.91E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.82E-02
BMS-SML-035-3	Soil Sample (4 - 6 ft Deep)	1/9/02	2/11/02	AC-228	0.7920	7.92E-01	2.66E-01	1.12E-01
				CO-57	<MDA	0.00E+00	0.00E+00	3.95E-01
				CO-60	<MDA	0.00E+00	0.00E+00	6.49E-02
				CS-134	<MDA	0.00E+00	0.00E+00	2.45E-02
				CS-137	0.0403	4.03E-02	3.31E-02	3.20E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.33E-02
BMS-SML-035-5	Soil Sample (8 - 10 ft Deep)	1/9/02	2/11/02	AC-228	0.5073	5.07E-01	2.05E-01	1.47E-01
				CO-57	<MDA	0.00E+00	0.00E+00	1.63E-01
				CO-60	<MDA	0.00E+00	0.00E+00	5.69E-02
				CS-134	<MDA	0.00E+00	0.00E+00	2.26E-02
				CS-137	<MDA	0.00E+00	0.00E+00	3.65E-02
				MN-54	<MDA	0.00E+00	0.00E+00	3.48E-02
BMS-SML-035-6	Soil Sample (10 - 12 ft Deep)	1/9/02	2/13/02	AC-228	0.7177	7.18E-01	2.98E-01	1.90E-01
				CO-57	<MDA	0.00E+00	0.00E+00	2.87E-01
				CO-60	<MDA	0.00E+00	0.00E+00	2.91E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.26E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.71E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.39E-02
BMS-SML-035-7	Soil Sample (12 - 14 ft Deep)	1/9/02	2/13/02	AC-228	0.5909	5.91E-01	2.50E-01	1.56E-01
				CO-57	<MDA	0.00E+00	0.00E+00	2.56E-01
				CO-60	<MDA	0.00E+00	0.00E+00	5.69E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.06E-02
				CS-137	0.0399	3.99E-02	2.89E-02	2.74E-02
				MN-54	<MDA	0.00E+00	0.00E+00	3.53E-02
BMS-SML-035-8	Soil Sample (14 - 16 ft Deep)	1/9/02	2/14/02	AC-228	0.9646	9.65E-01	3.04E-01	8.90E-02
				CO-57	<MDA	0.00E+00	0.00E+00	5.24E-01
				CO-60	<MDA	0.00E+00	0.00E+00	2.94E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.56E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.44E-02
				MN-54	<MDA	0.00E+00	0.00E+00	5.68E-02
BMS-SML-035-9	Soil Sample (16 - 18 ft Deep)	1/9/02	2/14/02	AC-228	1.0303	1.03E+00	2.95E-01	1.76E-01
				CO-57	<MDA	0.00E+00	0.00E+00	2.35E-01
				CO-60	<MDA	0.00E+00	0.00E+00	5.46E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.56E-02
				CS-137	0.0500	5.00E-02	4.76E-02	4.20E-02
				MN-54	<MDA	0.00E+00	0.00E+00	3.70E-02

Duratek, Inc.
Survey Package Worksheet for Package C0100
Bristol-Myers Squibb Building 124, Old Section Duct Space

Package Identification No.: C0100	Prepared by: Paul C. Ely
Location: Building 124 Old Section Duct Space	Date prepared: 4/23/2003
Area Classification: Class 3	

Area Description

The survey area in Building 124 old section duct space comprising bottom surface, walls and ceiling.

Historical Information

The ducts passing through this space were used to exhaust rooms, hoods and gloveboxes. Exhausts from hoods and gloveboxes were filtered and radionuclides present would have included all those present in Building 124.

No contamination levels >5,000 dpm/100 cm^2 were identified except on ducts that were removed during the D&D phase.

General Survey Instructions

(Class 3):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2 on building surfaces and if any reading greater than the equivalent of 5,000 dpm/100 cm^2 on duct ends.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

Survey Package: C0100 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations. Survey 100% of the open ends of any abandoned ducts found.

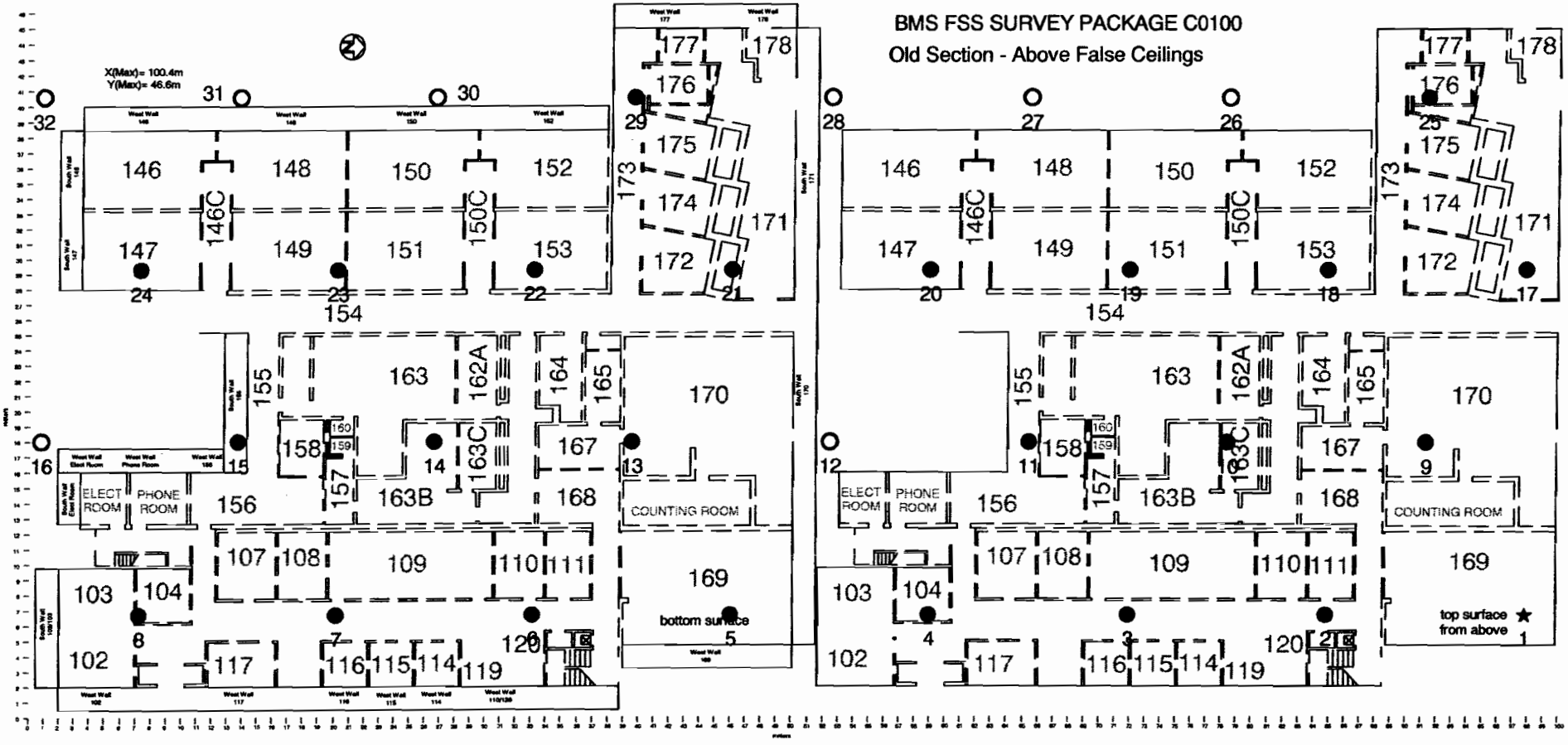
Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Old Section Duct Space												
C0100	01F01	ZZZZZ	ZZZZZ	See map	Bottom 10%	NDK - 4-29-03	NDK 4-29-03	N/A	N/A	5 NDK - 4-29-03	N/A	N/A
C0100	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NDK/4-29-03	NDK/4-29-03	N/A	N/A	N/A	N/A	N/A
C0100	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NDK/4-29-03	NDK/4-29-03	N/A	N/A	N/A	N/A	N/A
C0100	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NDK/4-29-03	N/A	N/A	N/A	N/A	N/A	N/A
C0100	01EQ1	ZZZZZ	ZZZZZ	If needed	Open Duct Ends 100%	NDK/4-29-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments

BMS FSS SURVEY PACKAGE C0100

Old Section - Above False Ceilings



Survey Package C0100
B-124 Old Section Above False Ceiling

X (Max):	100.4	meters	
Y (Max):	46.6	meters	
A (Area):	4,679	m^2	
Actual Survey Area:	3,561	m^2	
COMPASS Survey Points:	13	24%	percent void area
N (Points):	32	17	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	13	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	11.3	meters	(distance between rows)
L/2=	6.5	meters	(row offset value)
X (Random):	44.1		random number generator
Y (Random):	41.2		random number generator
X (Origin):	98.3		initially generated random number
Y (Origin):	6.7		initially generated random number
Number of rows:	4		
Number of columns:	8		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	98.3	6.7	1
2	85.3	6.7	
3	72.3	6.7	
4	59.3	6.7	
5	46.3	6.7	
6	33.3	6.7	
7	20.3	6.7	
8	7.3	6.7	
9	91.8	18.0	2
10	78.8	18.0	
11	65.8	18.0	
12	52.8	18.0	
13	39.8	18.0	
14	26.8	18.0	
15	13.8	18.0	
16	0.8	18.0	
17	98.3	29.3	3
18	85.3	29.3	
19	72.3	29.3	
20	59.3	29.3	
21	46.3	29.3	
22	33.3	29.3	
23	20.3	29.3	
24	7.3	29.3	
25	91.8	40.6	4
26	78.8	40.6	
27	65.8	40.6	
28	52.8	40.6	
29	39.8	40.6	
30	26.8	40.6	
31	13.8	40.6	
32	0.8	40.6	

LBGR Determination

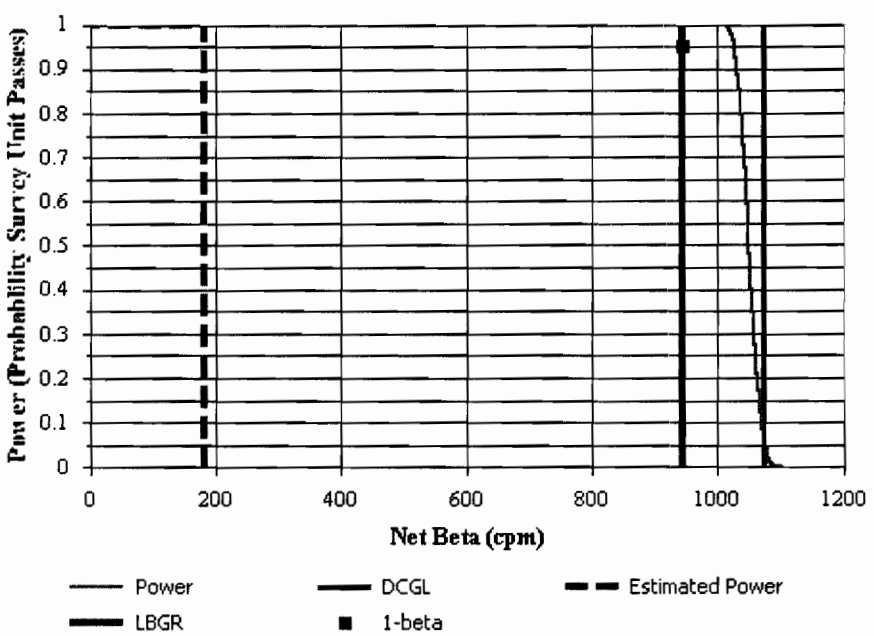
σ =	43.4	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	24.7	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**944**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0100 FSS Package		
Comments:	Space Above False Ceiling in Old Section of B-124		
Area (m²):	3,561	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	43.4
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	944	Estimated Conc. (cpm):	182
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 320 ± 32 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	10	230.9	16.8	487
Concrete Block	24	265.2	29	521
Steel Panel	28	137.9	18.4	381

BMS Download Survey Report Data Summary
Characterization Package A0700
B-124 South-central Lab Areas (Rooms 142-145, 154, 156 – 160, 162A, 163, 163B, 163C, 164, 165, 167, 168, & 170).
FSS Packages:A1200, A1300, B0200, B0400, B0500, B0600,B0700, B0800

Floor		Wall		Ceiling		Structure		Above False Ceiling (Not Used In Average)	
Background	Gross	Background	Gross	Background	Gross	Background	Gross	Background	Gross
Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
277	315	322	374	288	366	279	252	232	272
265	275	305	403	393	358	299	293	267	259
228	302	325	389	304	382	243	260	321	335
273	302	338	336	322	364	276	243	307	332
257	269	320	331	283	350	274	259	334	309
283	478	310	409	297	300	246	276	305	335
253	258	269	382	303	312	195	317	307	346
286	393	358	520	303	343	222	220	311	317
329	387	289	323	324	355	205	189	357	361
301	1,261	258	266	333	337	191	213	335	336
395	2,169	274	283	260	350	238	252		
259	350	258	281	249	322	235	224		
243	267	325	335	331	354	225	263		
327	285	311	337	319	318	261	252		
280	276	333	354	326	339	231	244		
271	242	323	379	339	343	227	224		
241	245	321	337	323	343	229	243		
206	218	279	342	364	364	188	180		
253	264	256	381	371	352	180	156		
253	252	309	333	335	366	254	230		
252	281	303	367	328	346	223	277		
270	240	273	375			241	227		
253	260	288	402			246	235		
304	321	231	269			232	254		
283	419	329	397			292	291		
288	481	290	393			244	263		
275	334	355	357			266	267		
335	433	352	403			250	265		
275	265	333	419			231	237		
270	240	334	477			263	249		
253	277	331	377			216	222		
259	247	371	350						
214	249	325	356						
221	324	309	405						
240	260	292	355						
		367	634						
		342	418						
		344	400						
		292	376						
		269	298						
		332	365						
		344	373						
		265	333						
		334	351						
Average	270.6	384.0	311.1	371.5	318.8	345.9	238.8	244.4	307.6	320.2
Standard Deviation	36.7	356.7	33.2	63.3	34.1	19.9	29.5	33.1	35.7	32.3
No of Measurements	35	35	44	44	21	21	31	31	10	10

All Measurement			**Walls & Ceiling Measurement**	
Average	284.4	340.6	**Average**	363.2
Standard Deviation	45.6	194.8	**Standard Deviation**	54.4
No of Measurements	131	131	**No of Measurements**	65

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kiss **Signature:** [signature] **Date:** 4-30-03

Download Station #: 1 Download File #: 104
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kiss **User ID** HRK2986 **Signature:** [signature] **Date:** 4-29-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package C0100, B-124 Old Section Above False Ceiling
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.237			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm 1

β Beta	1 276	2 318	3 267	4 N/A	5 N/A	6 N/A	287
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .135

Duratek™

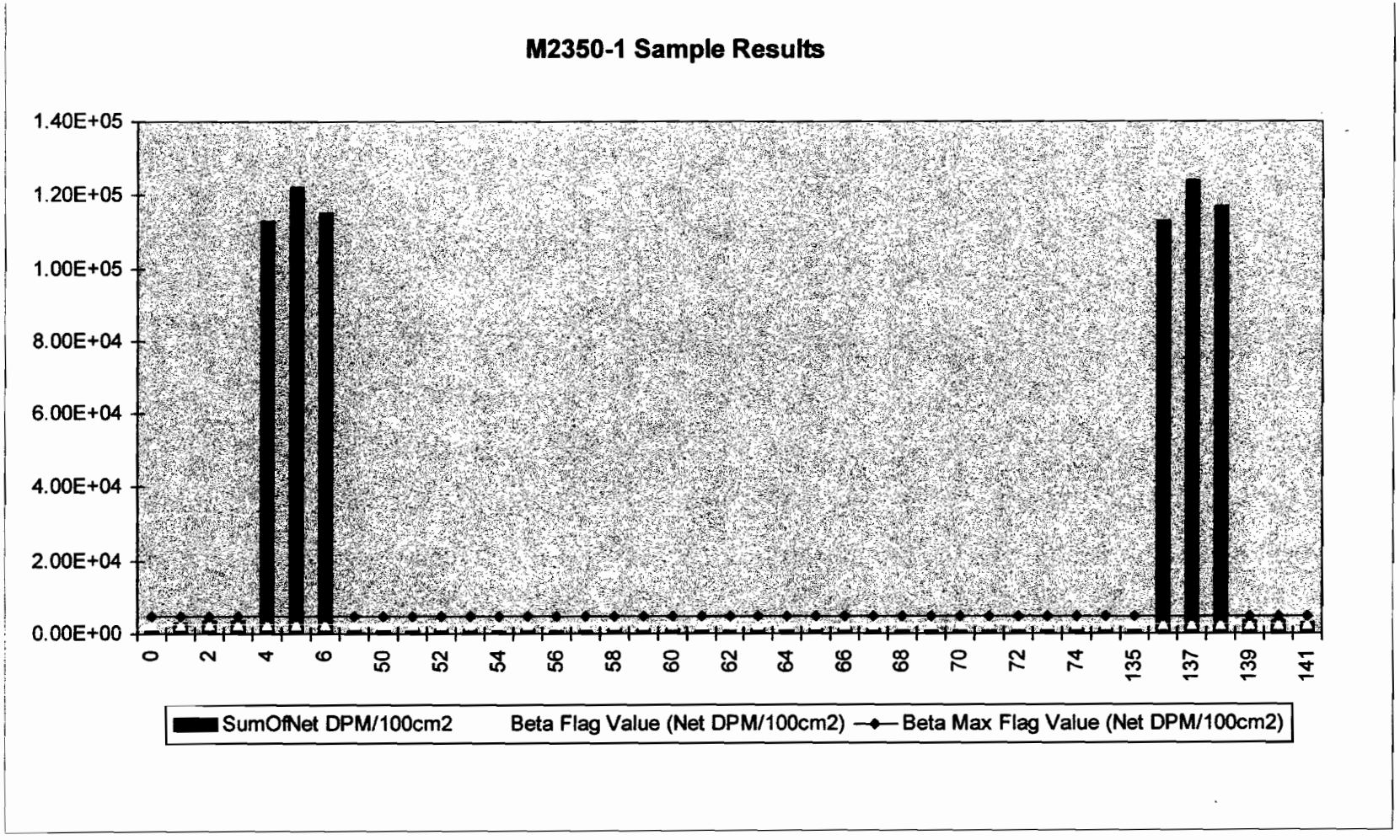
M2350-1 Download Beta Report

File Name : 00000104	Survey Description :Package C0100, B-124, Old Section Above False Cei	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.237	Survey Date : 4/29/03

Print Name	Signature	Date
Doug Kjos	Doug Kjos	9/9/03

Comments:

Sign-Off PAUL C. ELY (Print Name) Paul C Ely (Signature) 9-9-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
50
52
54
56
58
60
62
64
66
68
70
72
74
135
137
139
141
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000104

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	3,012.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,009
ZZZZZ	FD184	1	1,213.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,054
ZZZZZ	FD184	2	1,394.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,660
ZZZZZ	FD184	3	1,315.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,396
ZZZZZ	10002	4	34,115.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	113,234
ZZZZZ	10002	5	36,847.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	122,383
ZZZZZ	10002	6	34,722.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	115,267
C0100	ZZZZZ	49	276.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	924
C0100	ZZZZZ	50	318.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	1,065
C0100	ZZZZZ	51	267.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	894
C0100	01F01	52	353.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	1,182
C0100	01C01	53	366.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	1,226
C0100	01F01	54	311.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	1,041
C0100	01C01	55	335.0	60	FLDCT	B9999	ZZZZZ	19	0.0001	1,122
C0100	01F01	56	325.0	60	FLDCT	B9999	ZZZZZ	22	0.0001	1,088
C0100	01C01	57	314.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	1,052
C0100	01F01	58	383.0	60	FLDCT	B9999	ZZZZZ	29	0.0001	1,283
C0100	01C01	59	350.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,172
C0100	01F01	60	333.0	60	FLDCT	B9999	ZZZZZ	21	0.0001	1,115
C0100	01C01	61	279.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	934
C0100	01F01	62	266.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	891
C0100	01C01	63	335.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	1,122
C0100	01F01	64	323.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	1,082
C0100	01F01	65	355.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	1,189
C0100	01F01	66	358.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	1,199
C0100	01C01	67	335.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,122
C0100	01F01	68	299.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	1,001
C0100	01C01	69	253.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	847
C0100	01F01	70	287.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	961
C0100	01C01	71	275.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	921
C0100	01F01	72	290.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	971
C0100	01C01	73	261.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	874
C0100	01W01	74	340.0	60	FLDCT	B0004	ZZZZZ	15	0.0001	1,139
C0100	01C01	75	348.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	1,165
ZZZZZ	ZZZZZ	135	2,651.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	888
ZZZZZ	10002	136	34,059.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	113,167
ZZZZZ	10002	137	37,364.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	124,235
ZZZZZ	10002	138	35,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	117,092
ZZZZZ	FD184	139	1,260.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,332

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	FD184	140	1,284.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,412
ZZZZZ	FD184	141	1,234.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,245

Beta Flag	2500	-
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- C0100

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by R. Kjos (Print) Signature D Kj / BSK Date 4-29-03 Time 1700

Counted by Betty S. Kjos (Print) Signature BSKj Date 4-30-03 Time 0930

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 52 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .20 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 106 dpm/100 cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
8	46	0	<MDA
14	52	0	
15	43	0	
24	47	0	
29	42	0	<MDA

Circle:	MDA = 13 dpm/100 cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
8	0	0	<MDA
14	0	0	
15	0	0	
24	1	.80	
29	0	0	<MDA

Remarks-

Signature- BSKj Reviewed by- Paul C Ely 4/30/03

of

Duratek, Inc.
Survey Package Worksheet for Package C0200
Bristol-Myers Squibb Building 124, New Section Duct Space

Package Identification No.: C0200	Prepared by: Paul C. Ely
Location: Building 124 New Section Duct Space	Date prepared: 4/14/2003
Area Classification: Class 3	

Area Description

The survey area in Building 124 new section duct space comprising bottom surface, walls and ceiling.

Historical Information

The ducts passing through this space were used to exhaust rooms, hoods and gloveboxes. Exhausts from hoods and gloveboxes were filtered and radionuclides present would have included all those present in Building 124.

No contamination levels >5,000 dpm/100 cm^2 were identified except on ducts that were removed during the D&D phase.

General Survey Instructions

(Class 3):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2 on building surfaces and if any reading greater than the equivalent of 5,000 dpm/100 cm^2 on duct ends.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.

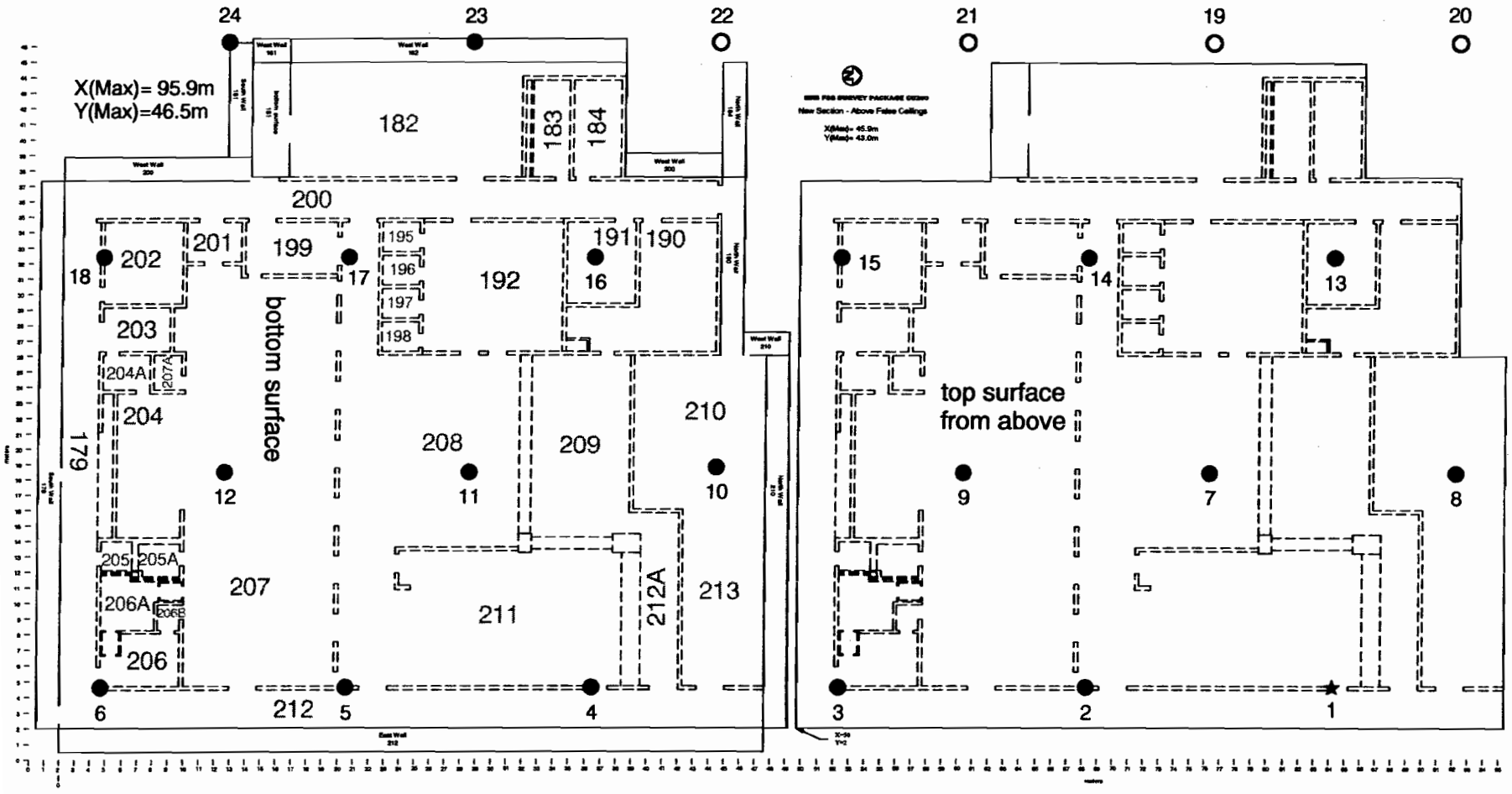
Survey Package: C0200 continued

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears on floor in survey unit at five unspecified survey locations. Survey 100% of the open ends of any abandoned ducts found.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 New Section Duct Space												
C0200	01F01	ZZZZZ	ZZZZZ	See map	Bottom 10%	MDL/4-16-03	MDL/4-16-03	N/A	N/A	5 MDL/4-16-03	N/A	N/A
C0200	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	MDL/4-16-03	MDL/4-16-03	N/A	N/A	N/A	N/A	N/A
C0200	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	MDL/4-16-03	MDL/4-16-03	N/A	N/A	N/A	N/A	N/A
C0200	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	MDL/4-16-03	N/A	N/A	N/A	N/A	N/A	N/A
C0200	01EQ1	ZZZZZ	ZZZZZ	If needed	Open Duct Ends 100%	MDL/4-16-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments


X(Max)= 95.9m
Y(Max)=46.5m
bottom surface
top surface
from above
24
23
22
21
19
20
182
183
184
200
201
199
202
203
204A
207A
204
179
195
196
197
198
192
191
190
18
17
16
15
14
13
12
11
10
9
7
8
208
209
210
205
205A
206A
206B
206
207
211
212A
213
212
6
5
4
3
2
1

Survey Package C0200
B-124 New Section Above False Ceiling

X (Max):	95.9	meters	
Y (Max):	46.5	meters	
A (Area):	4,459	m^2	
Actual Survey Area:	3,819	m^2	
COMPASS Survey Points:	13	14%	percent void area
N (Points):	20	15	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N} \right]^{1/2}$$

L=	16	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	13.9	meters	(distance between rows)
L/2=	8.0	meters	(row offset value)
X (Random):	80.2		random number generator
Y (Random):	41.9		random number generator
X (Origin):	84.7		initially generated random number
Y (Origin):	4.6		initially generated random number
Number of rows:	3		
Number of columns:	6		

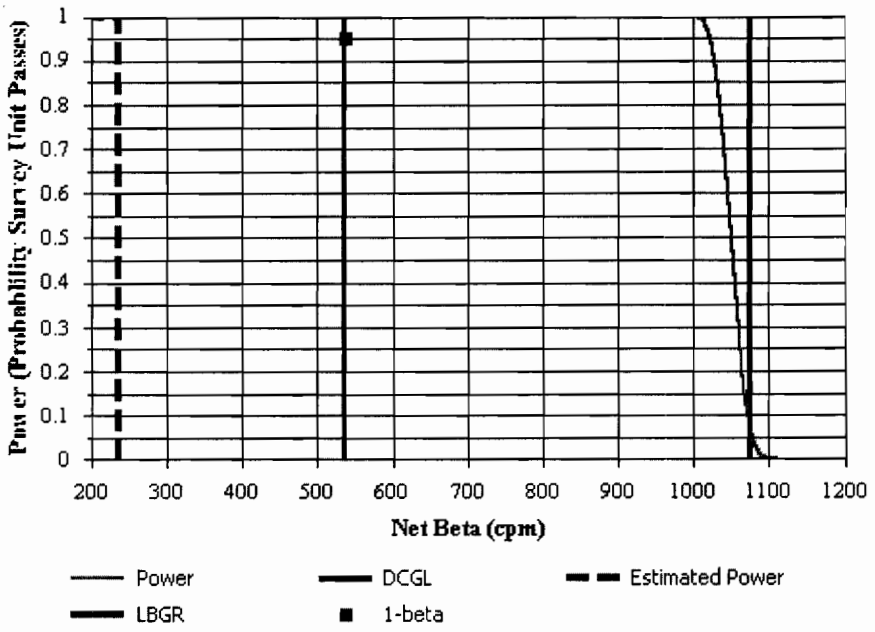
Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	84.7	4.6	1
2	68.7	4.6	
3	52.7	4.6	
4	36.7	4.6	
5	20.7	4.6	
6	4.7	4.6	
7	76.7	18.5	2
8	92.7	18.5	
9	60.7	18.5	
10	44.7	18.5	
11	28.7	18.5	
12	12.7	18.5	
13	84.7	32.4	3
14	68.7	32.4	
15	52.7	32.4	
16	36.7	32.4	
17	20.7	32.4	
18	4.7	32.4	
19	76.7	46.3	4
20	92.7	46.3	
21	60.7	46.3	
22	44.7	46.3	
23	28.7	46.3	
24	12.7	46.3	

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0200 FSS Package		
Comments:	B-124 Newer Section Inside Dropped Ceiling Area		
Area (m²):	3,819	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	48.5
DCGL (cpm):	1,074	Sample Size (N):	13
LBGR (cpm):	537	Estimated Conc. (cpm):	235
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.48	0.25	0.1200

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 373 ± 28 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Steel Panel	28	137.9	18.4	381

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas Riggs **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: 48
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas Riggs **User ID** NOL 2486 **Signature:** [signature] **Date:** 4-15-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package C0200 B-124 Men Section Above False Ceiling
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.230			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 205	2 230	3 194	4 N/A	5 N/A	6 N/A	210
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .129

Duratek™

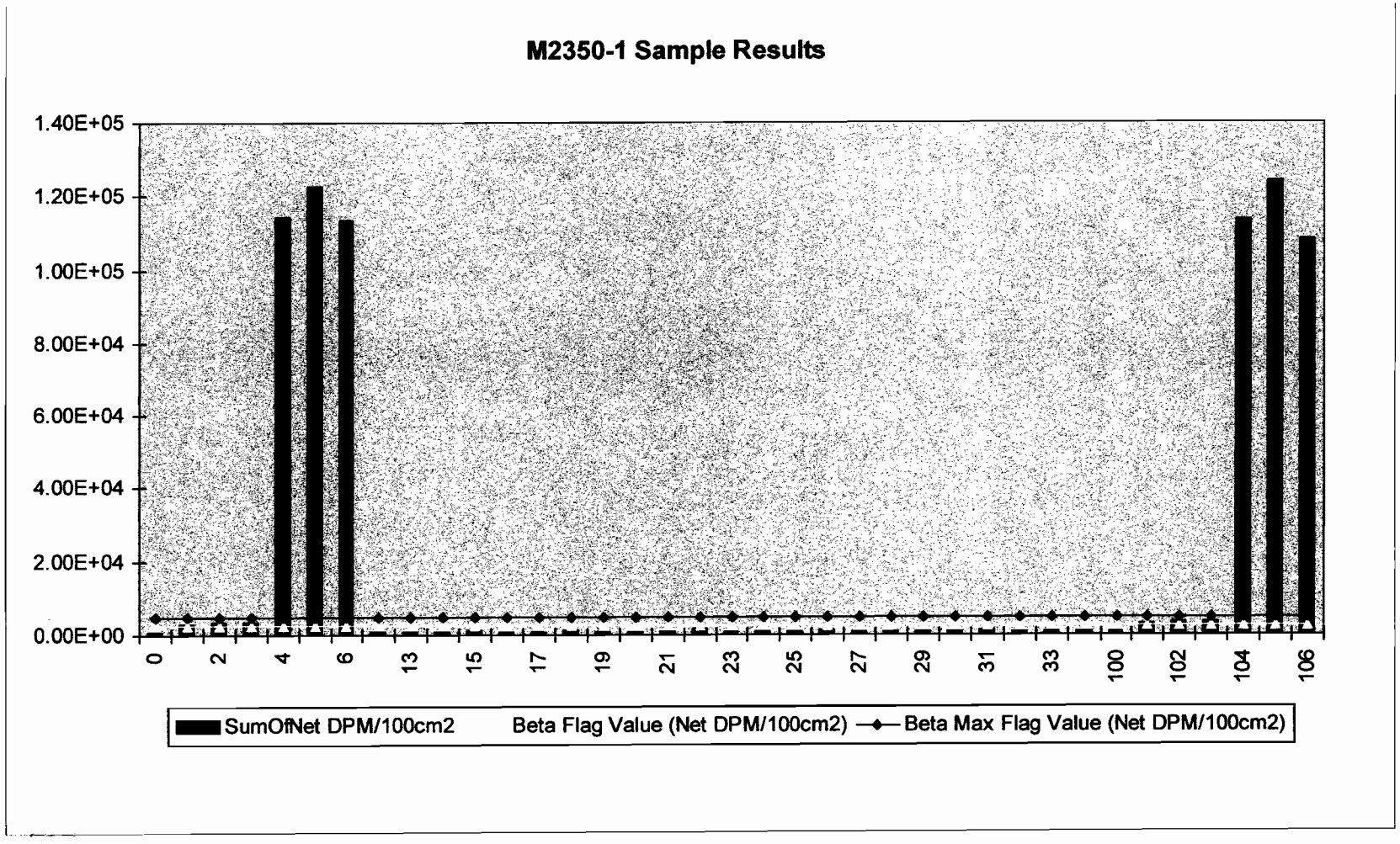
M2350-1 Download BETA Report

File Name : 00000048	Survey Description :Package C0200 B-124 New Section Above False Ceilin	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.23	Survey Date : 4/15/03

Print Name	Signature	Date
Doug Kjos	Doug Kjos	9/9/03

Comments:

Sign-Off PAUL E. ELY (Print Name) Paul E Ely (Signature) 9-9-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
13
15
17
19
21
23
25
27
29
31
33
100
102
104
106
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000048

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,453.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	846
ZZZZZ	FD184	1	1,119.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,016
ZZZZZ	FD184	2	1,222.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,371
ZZZZZ	FD184	3	1,289.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	3,602
ZZZZZ	10002	4	33,342.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	114,206
ZZZZZ	10002	5	35,781.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	122,622
ZZZZZ	10002	6	33,167.0	60	PRB00	ZZZZZ	ZZZZZ	0	245	113,602
C0200	ZZZZZ	12	205.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	707
C0200	ZZZZZ	13	230.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	794
C0200	ZZZZZ	14	194.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	669
C0200	01W01	15	344.0	60	FLDCT	B0004	ZZZZZ	24	0.0001	1,187
C0200	01W01	16	311.0	60	FLDCT	B0004	ZZZZZ	23	0.0001	1,073
C0200	01W01	17	219.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	756
C0200	01F01	18	323.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	1,115
C0200	01F01	19	277.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	956
C0200	01C01	20	249.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	859
C0200	01C01	21	225.0	60	FLDCT	B9999	ZZZZZ	10	0.0001	776
C0200	01F01	22	472.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	1,629
C0200	01F01	23	298.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	1,028
C0200	01C01	24	277.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	956
C0200	01C01	25	247.0	60	FLDCT	B9999	ZZZZZ	5	0.0001	852
C0200	01F01	26	332.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	1,146
C0200	01F01	27	231.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	797
C0200	01C01	28	199.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	687
C0200	01C01	29	234.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	807
C0200	01F01	30	256.0	60	FLDCT	B9999	ZZZZZ	9	0.0001	883
C0200	01F01	31	331.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	1,142
C0200	01C01	32	317.0	60	FLDCT	B9999	ZZZZZ	6	0.0001	1,094
C0200	01C01	33	254.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	876
C0200	01F01	34	288.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	994
ZZZZZ	ZZZZZ	100	2,498.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	101	1,198.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,271
ZZZZZ	FD184	102	1,254.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,464
ZZZZZ	FD184	103	1,245.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	3,433
ZZZZZ	10002	104	33,191.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	113,668
ZZZZZ	10002	105	36,154.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	123,892
ZZZZZ	10002	106	31,632.0	60	PTB00	ZZZZZ	ZZZZZ	0	250	108,288

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- C0200

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kjos (Print) Signature _____ Date _____ Time _____

Counted by D. Schumaker (Print) Signature [signature] Date 4/16/03 Time 1410

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .25

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .36 Count Time = 1 CPM Eff. Factor = .32

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
1	52	0	<MDA
3	49	0	
11	60	3	
13	53	0	
24	48	0	
	N	A	

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
1	1	.7	<MDA
3	0	0	
11	0	0	
13	0	0	
24	1	.7	
	N	A	

Remarks- MDA: β γ = 110 dpm/100cm², α : 4.6 dpm/100cm²

Signature- [signature] Reviewed by- Ron C Ely 4/30/03

of

Duratek Inc.
Final Status Survey Package Worksheet for Package C0300
Bristol-Myers Squibb Building 124, 1st Floor Offices, Canteen, etc.

Package Identification No.: C0300	Prepared by: Paul C. Ely
Location: Building 124, 1st Floor Offices, Canteen, etc.	Date prepared: 4/19/2003
Area Classification: 3	

Area Description

The survey area in Building 124 comprising floors, walls and ceilings in 1st Floor Offices, Canteen, etc.

Historical Information

This area includes a conference room, men's restroom, a canteen and offices. This area has not been used for the processing of radioactive materials. Most rooms in this area were added to the building after the initial building construction and operation. Under the floor slab in the area of office rooms 107, 108, 117 and 118 is the location of the former underground waste hold-up tanks that were removed prior to this building addition. The survey of the floors in the former tank area are covered in a separate class 1 survey package.

All floor wall and ceiling areas had contamination levels <5,000 dpm/100 cm^2.

General Survey Instructions

(Class 3):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Special Instructions

Source check meters to Tc-99 and C-14 for beta measurements.

Use gas proportional detector model numbers 43-68 or 43-106 for surveys.

Perform a minimum of three one minute field backgrounds in air prior to survey.

Take five smears on floor in survey unit at five unspecified survey locations.

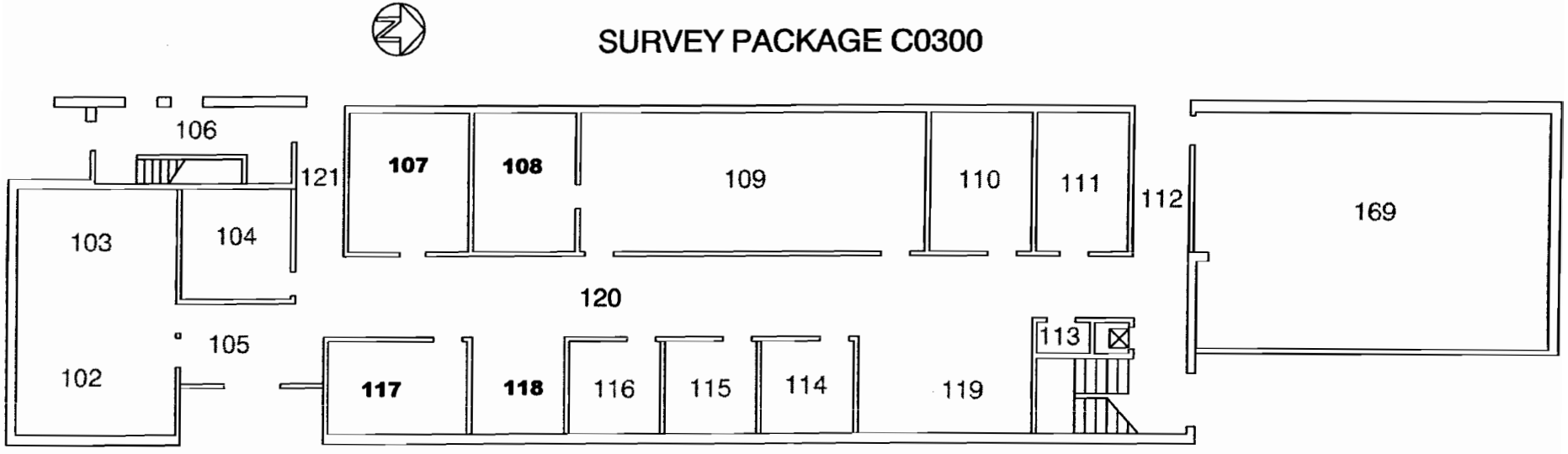
Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8						5		
Bristol Myers Squibb Building 124 1st Floor Offices, Canteen, etc.												
C0300	01F01	ZZZZZ	ZZZZZ	See map	Floors25%	NOL/ 4-23-03	NOL 4-25-03	N/A	N/A	~~N/A~~ 4-25-03	N/A	N/A
C0300	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NOL/ 4-23-03	NOL/4-25-03	N/A	N/A	N/A	N/A	N/A
C0300	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NOL/ 4-23-03	NOL/4-25-03	N/A	N/A	N/A	N/A	N/A
C0300	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NOL/4-23-03	N/A	N/A	N/A	N/A	N/A	N/A
C0300	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	NOL/4-23-03	N/A	N/A	N/A	N/A	N/A	N/A

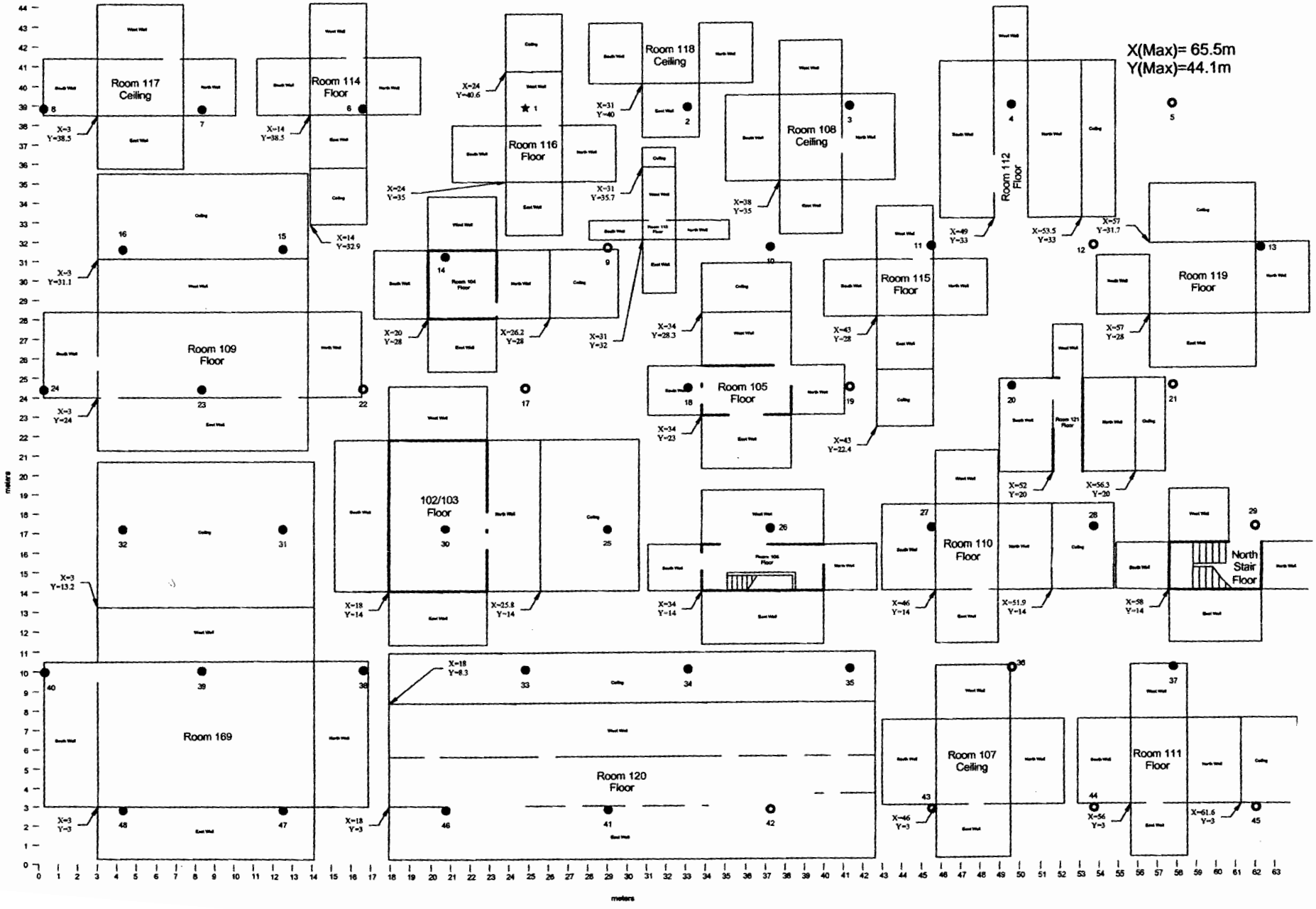
Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments
Survey point # 14 was taken on Large Ceramic tile which has elevated naturally occurring activity levels. The characterization background study indicated this tile averaged 693 cpm/100cm² which is higher than the activity at survey point #14.

SURVEY PACKAGE C0300



SURVEY PACKAGE C0300



Survey Package C0300
B-124 1st Floor Offices, Conference Room, Canteen

X (Max):	65.5	meters	
Y (Max):	44.1	meters	
A (Area):	2,889	m^2	
Actual Survey Area:	1,787	m^2	
COMPASS Survey Points:	14	38%	percent void area
N (Points):	48	23	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	8.3	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	7.2	meters	(distance between rows)
L/2=	4.2	meters	(row offset value)
X (Random):	23.1		random number generator
Y (Random):	31.5		random number generator
X (Origin):	25		initially generated random number
Y (Origin):	38.8		initially generated random number
Number of rows:	6		
Number of columns:	8		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	25.0	38.8	6
2	33.3	38.8	
3	41.6	38.8	
4	49.9	38.8	
5	58.2	38.8	
6	16.7	38.8	
7	8.4	38.8	
8	0.1	38.8	
9	29.2	31.6	5
10	37.5	31.6	
11	45.8	31.6	
12	54.1	31.6	
13	62.4	31.6	
14	20.9	31.6	
15	12.6	31.6	
16	4.3	31.6	
17	25.0	24.4	4
18	33.3	24.4	
19	41.6	24.4	
20	49.9	24.4	
21	58.2	24.4	
22	16.7	24.4	
23	8.4	24.4	
24	0.1	24.4	
25	29.2	17.2	3
26	37.5	17.2	
27	45.8	17.2	
28	54.1	17.2	
29	62.4	17.2	
30	20.9	17.2	
31	12.6	17.2	
32	4.3	17.2	
33	25.0	10.0	2
34	33.3	10	
35	41.6	10	
36	49.9	10	
37	58.2	10	
38	16.7	10	
39	8.4	10	
40	0.1	10	
41	29.2	2.8	1
42	37.5	2.8	
43	45.8	2.8	
44	54.1	2.8	
45	62.4	2.8	
46	20.9	2.8	
47	12.6	2.8	
48	4.3	2.8	

LBGR Determination
Package C0300

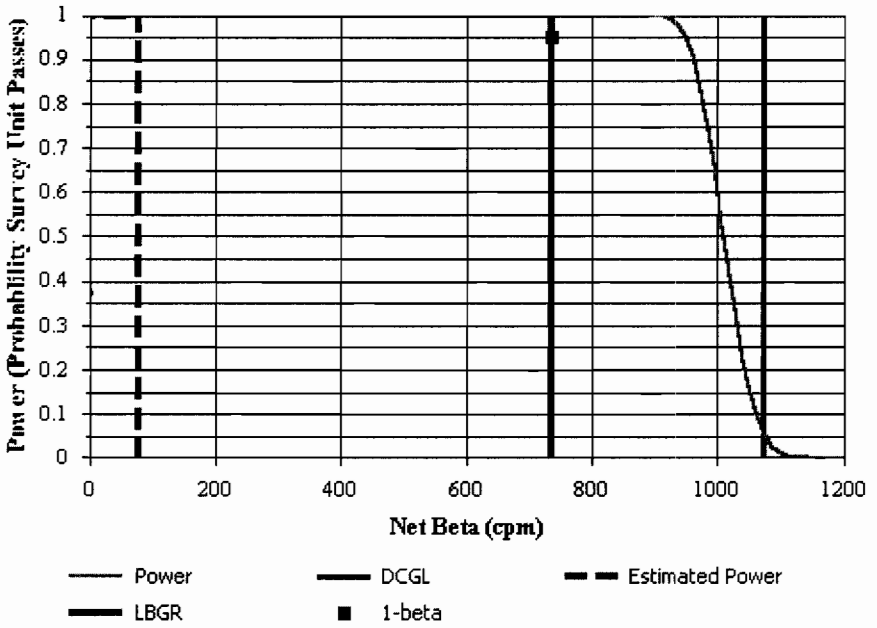
σ =	112.8	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	9.5	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**736**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0300 FSS Package		
Comments:	1st Floor Offices, Canteen, etc.		
Area (m^2):	1,787	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	112.8
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	736	Estimated Conc. (cpm):	77.2
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 322 ± 106 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	30	384	34.3	622
Concrete Block	45	370.2	39.8	612
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A1100
Building 124 South Office Areas (except for former tank area)
FSS Packages: B0600, B0700, C0300, C0310

	Floor		Wall		Ceiling		Above Ceiling	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	177	206	277	315	395	465	329	341
	162	219	276	331	422	447	325	379
	152	166	320	296	353	381	322	339
	173	184	303	356	314	320	342	308
	173	175	404	383	311	340	342	352
	238	323	394	528	374	368	385	348
	213	283	407	634	344	363	370	348
	159	216	345	709	356	336		
	162	158	310	295	307	325		
	173	166	267	304	352	382		
	212	395	332	337	320	390		
	152	152	323	337	357	369		
	167	204	270	290	352	400		
	178	184	276	355	339	360		
	153	168	257	278	330	383		
	169	167	289	345	356	331		
	178	199	293	290	325	404		
	168	171	295	289	345	395		
	170	188	277	328	385	417		
	185	205	268	316	390	424		
	233	420	391	508	383	394		
	197	197	308	361	390	430		
	176	193	370	369	387	377		
	172	183	368	376				
	197	215	369	406				
	163	197	329	330				
Average	**178.9**	**212.8**	**319.9**	**371.8**	**356.0**	**382.7**	**345.0**	**345.0**
Standard Deviation	**23.1**	**68.1**	**47.2**	**107.2**	**30.7**	**38.4**	**23.9**	**21.0**
No of Measurements	**26**	**26**	**26**	**26**	**23**	**23**	**7**	**7**

All Measurement			**Walls & Ceiling Measurement**	
Average	**287.5**	**322.1**	**Average**	**376.9**
Standard Deviation	**83.0**	**105.5**	**Standard Deviation**	**81.8**
No of Measurements	**82**	**82**	**No of Measurements**	**49**

LBGR Determination

Per MARSSIM, section 5.5.2.3, if the estimated standard deviation, σ, is much smaller than the $DCGL_W$, the lower bound of the gray region (LBGR) should be set so that the relative shift, Δ/σ, is about 3.

Package B0600

σ =	99.2	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	10.8	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**776**	**cpm**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyos **Signature:** [signature] **Date:** 4-25-03

Download Station #: 1 Download File #: 75
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyos **User ID** NRX2986 **Signature:** [signature] **Date:** 4-25-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 95359

Survey Unit Description: Package C0320 Bldg-124 1st Floor Offices, Conference Room & Canteen
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-12-03 Detector Calibration Due Date: 10-15-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR088917	43-68B	.235			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm ↓

β Beta	1	2	3	4 N/A	5 N/A	6 N/A	
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .137

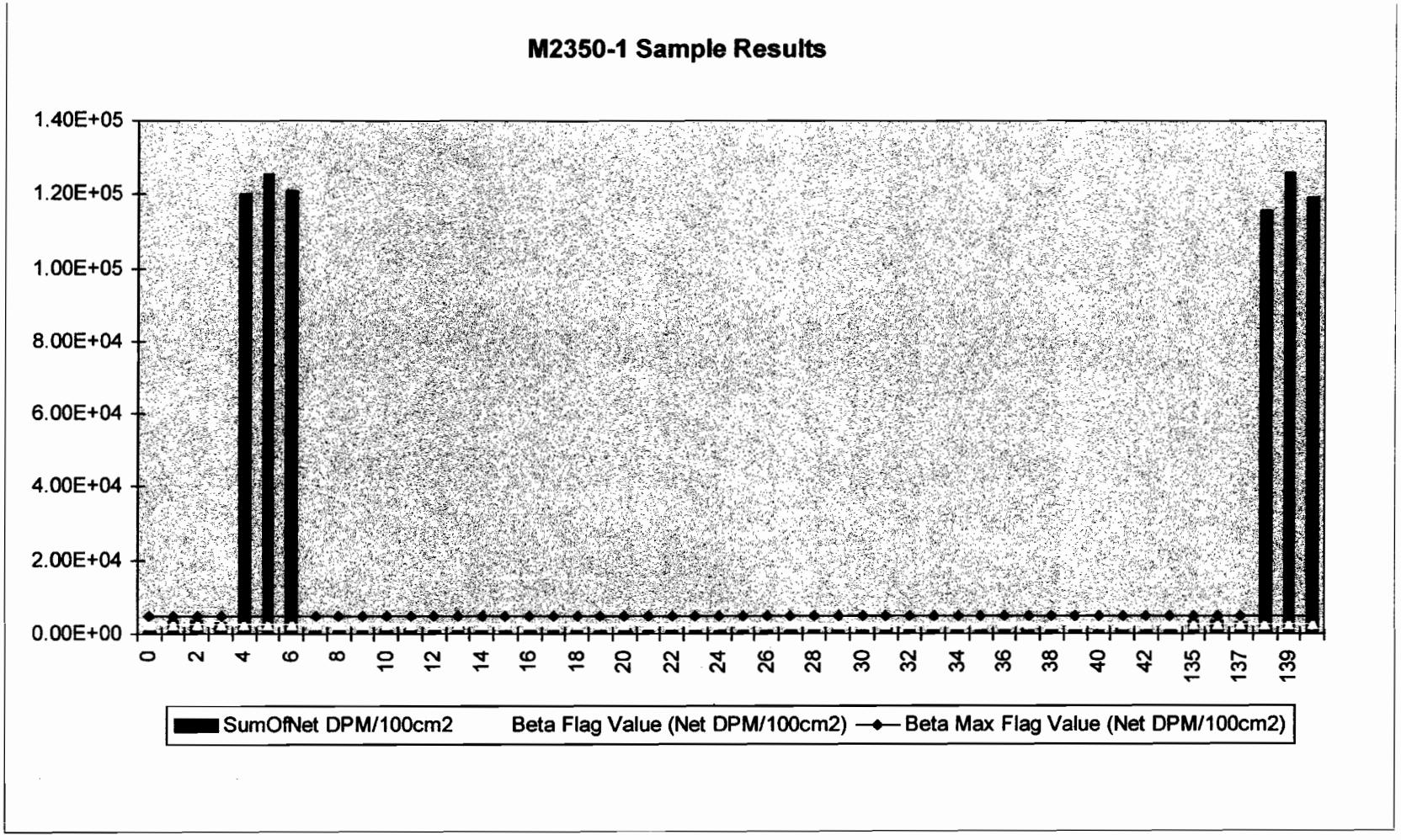
M2350-1 Download BETA Report

File Name : 00000075	Survey Description :Paackaage C0300 B-124 1st Floor Offices, Conferenc	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 95359	Instrument Cal. Due : 6/12/03
Detector Model : 43-68B	Detector S/N : 088917	Detector Cal. Due : 10/15/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.235	Survey Date : 4/25/03

Print Name	Signature	Date
Doug Kjos		9/9/03

Comments:

Sign-Off PAUL E. ELY (Print Name) — Paul C Ely (Signature) — 9-9-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
135
137
139
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000075

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	3,256.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,100
ZZZZZ	FD184	1	1,377.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	3,549
ZZZZZ	FD184	2	1,351.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	3,462
ZZZZZ	FD184	3	1,295.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	3,273
ZZZZZ	10002	4	35,903.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	120,152
ZZZZZ	10002	5	37,511.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	125,583
ZZZZZ	10002	6	36,190.0	60	PRB00	ZZZZZ	ZZZZZ	0	326	121,121
C0300	ZZZZZ	7	243.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	821
C0300	ZZZZZ	8	246.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	831
C0300	ZZZZZ	9	252.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	851
C0300	01C01	10	341.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	1,152
C0300	01F01	11	352.0	60	FLDCT	B0003	ZZZZZ	30	0.0001	1,189
C0300	01W01	12	209.0	60	FLDCT	B9999	ZZZZZ	18	0.0001	706
C0300	01W01	13	574.0	60	FLDCT	B0018	ZZZZZ	14	0.0001	1,939
C0300	01W01	14	311.0	60	FLDCT	B9999	ZZZZZ	20	0.0001	1,050
C0300	01W01	15	285.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	963
C0300	01W01	16	237.0	60	FLDCT	B9999	ZZZZZ	7	0.0001	800
C0300	01W01	17	251.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	848
C0300	01W01	18	224.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	757
C0300	01W01	19	297.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	1,003
C0300	01C01	20	336.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	1,135
C0300	01C01	21	290.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	979
C0300	01W01	22	236.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	797
C0300	01F01	23	260.0	60	FLDCT	B9999	ZZZZZ	23	0.0001	878
C0300	01W01	24	274.0	60	FLDCT	B9999	ZZZZZ	1	0.0001	925
C0300	01W01	25	267.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	902
C0300	01F01	26	325.0	60	FLDCT	B0003	ZZZZZ	6	0.0001	1,098
C0300	01W01	27	221.0	60	FLDCT	B9999	ZZZZZ	41	0.0001	746
C0300	01W01	28	225.0	60	FLDCT	B9999	ZZZZZ	46	0.0001	760
C0300	01C01	29	288.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	973
C0300	01C01	30	268.0	60	FLDCT	B9999	ZZZZZ	34	0.0001	905
C0300	01C01	31	354.0	60	FLDCT	B9999	ZZZZZ	35	0.0001	1,196
C0300	01W01	32	224.0	60	FLDCT	B9999	ZZZZZ	37	0.0001	757
C0300	01C01	33	278.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	939
C0300	01W01	34	202.0	60	FLDCT	B9999	ZZZZZ	27	0.0001	682
C0300	01F01	35	284.0	60	FLDCT	B9999	ZZZZZ	4	0.0001	959
C0300	01C01	36	309.0	60	FLDCT	B9999	ZZZZZ	31	0.0001	1,044
C0300	01C01	37	340.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	1,148
C0300	01W01	38	266.0	60	FLDCT	B9999	ZZZZZ	48	0.0001	898

Beta Flag	2500 -	
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
C0300	01W01	39	234.0	60	FLDCT	B9999	ZZZZZ	47	0.0001	790
C0300	01W01	40	256.0	60	FLDCT	B9999	ZZZZZ	38	0.0001	865
C0300	01F01	41	379.0	60	FLDCT	B0003	ZZZZZ	39	0.0001	1,280
C0300	01W01	42	270.0	60	FLDCT	B9999	ZZZZZ	40	0.0001	912
ZZZZZ	ZZZZZ	134	2,788.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	942
ZZZZZ	FD184	135	1,293.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	3,425
ZZZZZ	FD184	136	1,274.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	3,360
ZZZZZ	FD184	137	1,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	3,215
ZZZZZ	10002	138	34,598.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	115,903
ZZZZZ	10002	139	37,494.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	125,684
ZZZZZ	10002	140	35,562.0	60	PTB00	ZZZZZ	ZZZZZ	0	279	119,159

Beta Flag	2500	-
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- C0300

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D. Kjos (Print) Signature D Kjos | BSK Date 4-25-03 Time 1600

Counted by BS Kjos (Print) Signature BS Kjos Date 4-28-03 Time 0800

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 54 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .15 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 108 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
4	47	0	<MDA
6	52	0	
23	63	9	
30	57	3	
39	43	0	<MDA
		N/A	

Circle:	MDA = 12.5 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
4	0	0	<MDA
6	0	0	
23	0	0	
30	0	0	
39	1	.85	<MDA
		N/A	

Remarks-

Signature- BS Kjos Reviewed by- Paul C Ely 4/30/03

of

Duratek Inc.
Final Status Survey Package Worksheet for Package C0310
Bristol-Myers Squibb Building 124 2nd Floor Offices

Package Identification No.: C0310	Prepared by: Paul C. Ely
Location: Building 124 2nd Floor Offices	Date prepared: 4/23/2003
Area Classification: 3	

Area Description

The survey area in Building 124 comprising floors, walls and ceilings in 2nd Floor Offices

Historical Information

This area includes offices and a women's restroom. This area has not been used for the processing of radioactive materials. Most rooms in this area were added to the building after the initial building construction and operation.

All floor wall and ceiling areas had contamination levels <5,000 dpm/100 cm^2.

General Survey Instructions

(Class 3):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Special Instructions

Source check meters to Tc-99 and C-14 for beta measurements.

Use gas proportional detector model numbers 43-68 or 43-106 for surveys.

Perform a minimum of three one minute field backgrounds in air prior to survey.

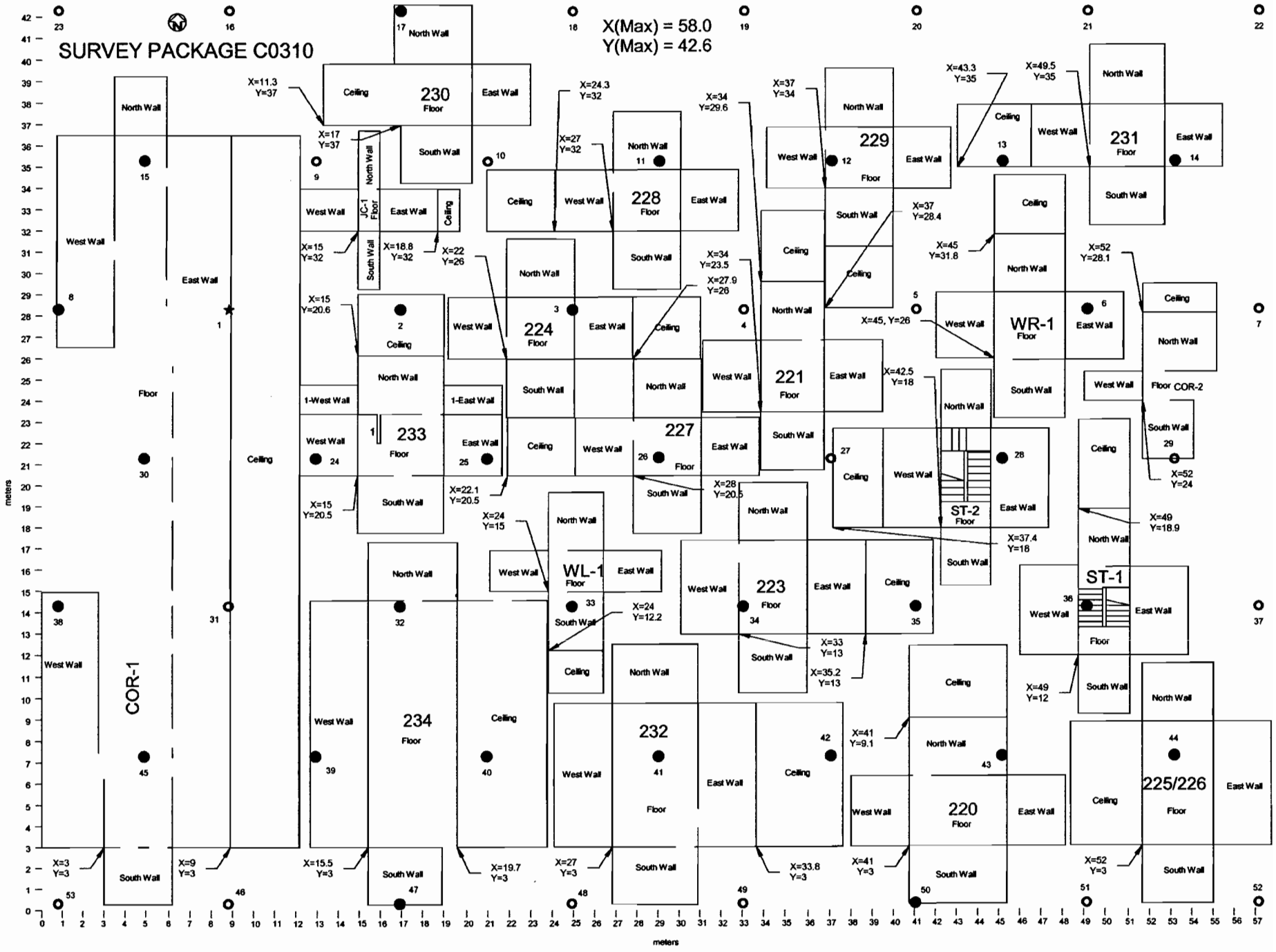
Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross 5	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 2nd Floor Offices												
C0310	01F01	ZZZZZ	ZZZZZ	See map	Floors25%	BSL 4-24-03	BSL 4-24-03	N/A	N/A	BSL N/A 4-24-03	N/A	N/A
C0310	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	BSL 4-24-03	BSL 4-24-03	N/A	N/A	N/A	N/A	N/A
C0310	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	BSL 4-24-03	BSL 4-24-03	N/A	N/A	N/A	N/A	N/A
C0310	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	BSL 4-24-03	N/A	N/A	N/A	N/A	N/A	N/A
C0310	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	BSL 4-24-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/29/03
Package Reviewed by and Date:	Paul C Ely 4/29/03

Survey Comments
Sample # 36, location #6 is elevated due to tile wall having higher background & bkgd. has not been subtracted. BSK


SURVEY PACKAGE C0310
X(Max) = 58.0
Y(Max) = 42.6
230
229
231
228
224
233
227
221
WR-1
ST-2
ST-1
WL-1
223
COR-1
234
232
220
225/226
COR-2
meters
meters

Survey Package C0310
B-124 2nd Floor Offices

X (Max):	58.0	meters	
Y (Max):	42.6	meters	
A (Area):	2,471	m^2	
Actual Survey Area:	1,559	m^2	
COMPASS Survey Points:	13	37%	percent void area
N (Points):	44	21	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	8.1	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	7	meters	(distance between rows)
L/2=	4.1	meters	(row offset value)
X (Random):	8.3		random number generator
Y (Random):	28.1		random number generator
X (Origin):	8.9		initially generated random number
Y (Origin):	28.3		initially generated random number
Number of rows:	6		
Number of columns:	7		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	8.9	28.3	4
2	17.0	28.3	
3	25.1	28.3	
4	33.2	28.3	
5	41.3	28.3	
6	49.4	28.3	
7	57.5	28.3	
8	0.8	28.3	
9	13.0	35.3	5
10	21.1	35.3	
11	29.2	35.3	
12	37.3	35.3	
13	45.4	35.3	
14	53.5	35.3	
15	4.9	35.3	
16	8.9	42.3	6
17	17.0	42.3	
18	25.1	42.3	
19	33.2	42.3	
20	41.3	42.3	
21	49.4	42.3	
22	57.5	42.3	
23	0.8	42.3	
24	13.0	21.3	3
25	21.1	21.3	
26	29.2	21.3	
27	37.3	21.3	
28	45.4	21.3	
29	53.5	21.3	
30	4.9	21.3	
31	8.9	14.3	2
32	17.0	14.3	
33	25.1	14.3	
34	33.2	14.3	
35	41.3	14.3	
36	49.4	14.3	
37	57.5	14.3	
38	0.8	14.3	
39	13.0	7.3	1
40	21.1	7.3	
41	29.2	7.3	
42	37.3	7.3	
43	45.4	7.3	
44	53.5	7.3	
45	4.9	7.3	
46	8.9	0.3	0
47	17.0	0.3	
48	25.1	0.3	
49	33.2	0.3	
50	41.3	0.3	
51	49.4	0.3	
52	57.5	0.3	
53	0.8	0.3	

LBGR Determination

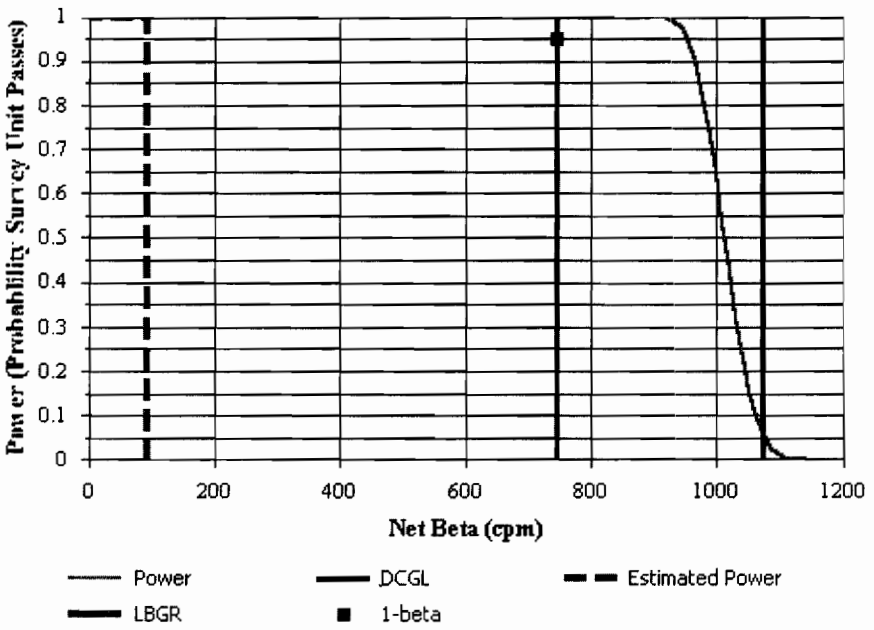
σ =	109.4	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	9.8	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**746**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0310 FSS Package		
Comments:	B-124 2nd Floor Offices		
Area (m²):	1,559	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	109.4
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	746	Estimated Conc. (cpm):	91.2
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 322 ± 106 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Ceiling Tile	10	230.9	16.8	487
Concrete Block	24	265.2	29	521
Linoleum	46	244.9	21.7	501

BMS Download Survey Report Data Summary
Characterization Package A1100
Building 124 South Office Areas (except for former tank area)
FSS Packages: B0600, B0700, C0300, C0310

	Floor		Wall		Ceiling		Above Ceiling	
	Background	Gross	Background	Gross	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min	Counts/min	counts/min
	177	206	277	315	395	465	329	341
	162	219	276	331	422	447	325	379
	152	166	320	296	353	381	322	339
	173	184	303	356	314	320	342	308
	173	175	404	383	311	340	342	352
	238	323	394	528	374	368	385	348
	213	283	407	634	344	363	370	348
	159	216	345	709	356	336		
	162	158	310	295	307	325		
	173	166	267	304	352	382		
	212	395	332	337	320	390		
	152	152	323	337	357	369		
	167	204	270	290	352	400		
	178	184	276	355	339	360		
	153	168	257	278	330	383		
	169	167	289	345	356	331		
	178	199	293	290	325	404		
	168	171	295	289	345	395		
	170	188	277	328	385	417		
	185	205	268	316	390	424		
	233	420	391	508	383	394		
	197	197	308	361	390	430		
	176	193	370	369	387	377		
	172	183	368	376				
	197	215	369	406				
	163	197	329	330				
Average	**178.9**	**212.8**	**319.9**	**371.8**	**356.0**	**382.7**	**345.0**	**345.0**
Standard Deviation	**23.1**	**68.1**	**47.2**	**107.2**	**30.7**	**38.4**	**23.9**	**21.0**
No of Measurements	**26**	**26**	**26**	**26**	**23**	**23**	**7**	**7**

All Measurement			**Walls & Ceiling Measurement**	
Average	**287.5**	**322.1**	**Average**	**376.9**
Standard Deviation	**83.0**	**105.5**	**Standard Deviation**	**81.8**
No of Measurements	**82**	**82**	**No of Measurements**	**49**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-26-03

Download Station #: 1 Download File #: 78
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kios **User ID** BSK0490 **Signature:** [signature] **Date:** 4-24-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: C0310, Bldg 124, 2nd Floor
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ■ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☑ Beta β	092524	43-68B	.224			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1 281	2 280	3 263	4 n/a	5 n/a	6 n/a	275
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .138 (0-46)
PRBBK - 300 PTBBK - 274

Duratek™

M2350-1 Download BETA Report

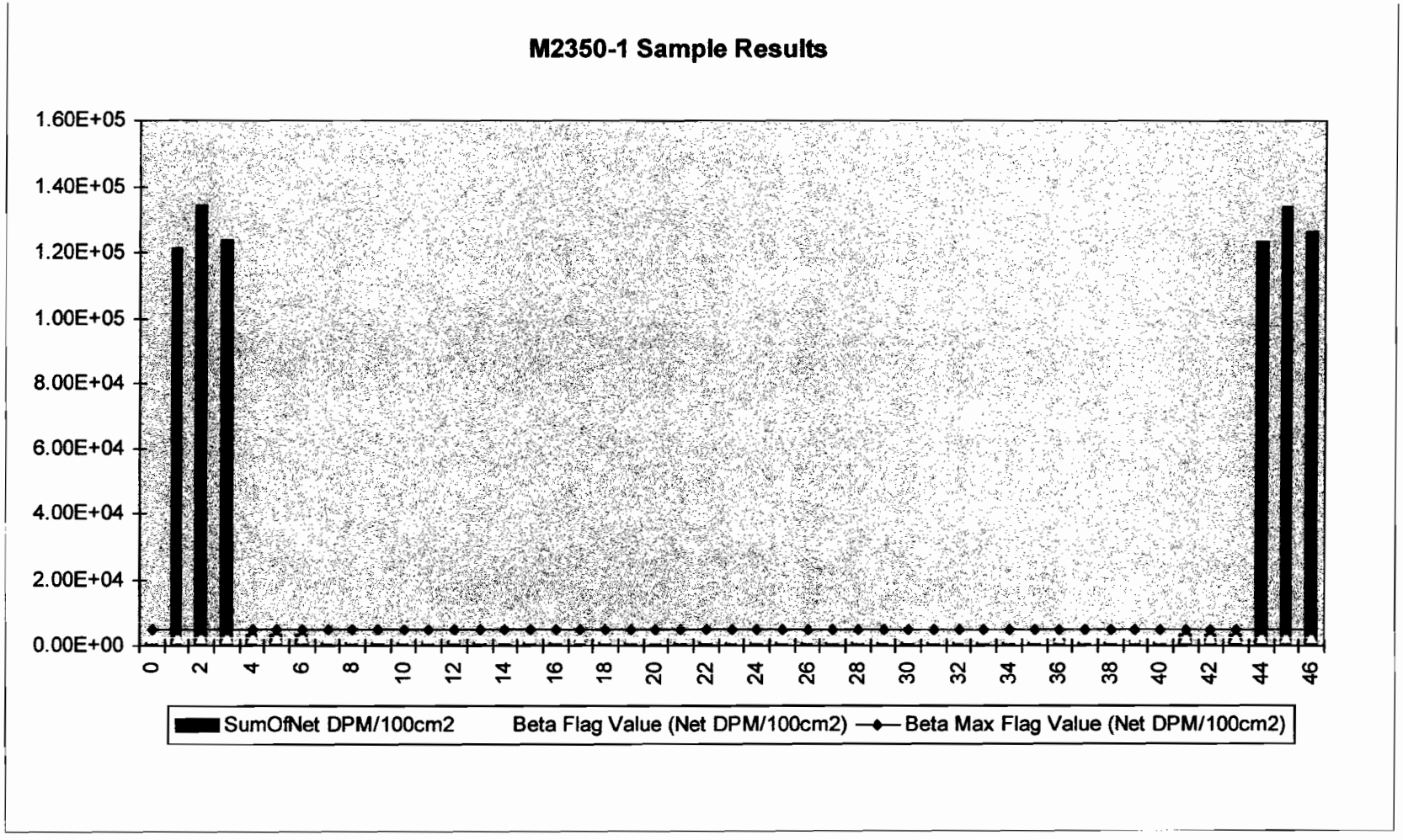
File Name : 00000078	Survey Description :Package C0310, B-124, 2nd Floor	
Survey Reason : Termination		
User ID : BSK0490	Technician Name : Betty Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 092524	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.224	Survey Date : 4/24/03

Print Name	Signature	Date
Betty Kjos	BSKjos	9/9/03

Comments:

Sign-Off

Print Name	Signature	Date
Paul E. Ely	Paul E Ely	9-9-03


M2350-1 Sample Results
1.60E+05
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000078

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	2,998.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,062
ZZZZZ	10002	1	34,583.0	60	PRB00	ZZZZZ	ZZZZZ	0	300	121,468
ZZZZZ	10002	2	38,208.0	60	PRB00	ZZZZZ	ZZZZZ	0	300	134,311
ZZZZZ	10002	3	35,352.0	60	PRB00	ZZZZZ	ZZZZZ	0	300	124,192
ZZZZZ	19655	4	1,251.0	60	PRB00	ZZZZZ	ZZZZZ	0	300	3,369
ZZZZZ	19655	5	1,296.0	60	PRB00	ZZZZZ	ZZZZZ	0	300	3,529
ZZZZZ	19655	6	1,254.0	60	PRB00	ZZZZZ	ZZZZZ	0	300	3,380
C0310	ZZZZZ	7	281.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	996
C0310	ZZZZZ	8	280.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	992
C0310	ZZZZZ	9	263.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	932
C0310	01F01	10	334.0	60	FLDCT	B9999	ZZZZZ	45	0.0001	1,183
C0310	01F01	11	273.0	60	FLDCT	B9999	ZZZZZ	34	0.0001	967
C0310	01C01	12	359.0	60	FLDCT	B9999	ZZZZZ	35	0.0001	1,272
C0310	01F01	13	263.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	932
C0310	01F01	14	305.0	60	FLDCT	B9999	ZZZZZ	44	0.0001	1,081
C0310	01W01	15	266.0	60	FLDCT	B9999	ZZZZZ	38	0.0001	942
C0310	01W01	16	314.0	60	FLDCT	B9999	ZZZZZ	47	0.0001	1,113
C0310	01W01	17	383.0	60	FLDCT	B9999	ZZZZZ	39	0.0001	1,357
C0310	01C01	18	347.0	60	FLDCT	B9999	ZZZZZ	40	0.0001	1,229
C0310	01C01	19	332.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	1,176
C0310	01W01	20	332.0	60	FLDCT	B9999	ZZZZZ	24	0.0001	1,176
C0310	01W01	21	234.0	60	FLDCT	B9999	ZZZZZ	25	0.0001	829
C0310	01F01	22	312.0	60	FLDCT	B9999	ZZZZZ	32	0.0001	1,105
C0310	01F01	23	333.0	60	FLDCT	B9999	ZZZZZ	30	0.0001	1,180
C0310	01F01	24	267.0	60	FLDCT	B9999	ZZZZZ	26	0.0001	946
C0310	01W01	25	244.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	865
C0310	01W01	26	302.0	60	FLDCT	B9999	ZZZZZ	17	0.0001	1,070
C0310	01W01	27	271.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	960
C0310	01F01	28	279.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	989
C0310	01F01	29	259.0	60	FLDCT	B9999	ZZZZZ	14	0.0001	918
C0310	01C01	30	289.0	60	FLDCT	B9999	ZZZZZ	13	0.0001	1,024
C0310	01C01	31	324.0	60	FLDCT	B9999	ZZZZZ	42	0.0001	1,148
C0310	01F01	32	281.0	60	FLDCT	B0021	ZZZZZ	41	0.0001	996
C0310	01W01	33	321.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	1,137
C0310	01W01	34	278.0	60	FLDCT	B9999	ZZZZZ	28	0.0001	985
C0310	01W01	35	316.0	60	FLDCT	B9999	ZZZZZ	33	0.0001	1,120
C0310	01W01	36	699.0	60	FLDCT	B0018	ZZZZZ	6	0.0001	2,477
C0310	01W01	37	274.0	60	FLDCT	B9999	ZZZZZ	43	0.0001	971
C0310	01W01	38	258.0	60	FLDCT	B9999	ZZZZZ	50	0.0001	914

Beta Flag	2500 -	
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
C0310	01F01	39	374.0	60	FLDCT	B0021	ZZZZZ	36	0.0001	1,325
ZZZZZ	ZZZZZ	40	2,744.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	972
ZZZZZ	19655	41	1,222.0	60	PRB00	ZZZZZ	ZZZZZ	0	274	3,359
ZZZZZ	19655	42	1,225.0	60	PRB00	ZZZZZ	ZZZZZ	0	274	3,369
ZZZZZ	19655	43	1,195.0	60	PRB00	ZZZZZ	ZZZZZ	0	274	3,263
ZZZZZ	10002	44	35,169.0	60	PRB00	ZZZZZ	ZZZZZ	0	274	123,636
ZZZZZ	10002	45	38,102.0	60	PRB00	ZZZZZ	ZZZZZ	0	274	134,028
ZZZZZ	10002	46	35,911.0	60	PRB00	ZZZZZ	ZZZZZ	0	274	126,265

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- C0310

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by BS Kjos (Print) Signature BS Kjos Date 4-29-03 Time 1600

Counted by Betty S. Kjos (Print) Signature BS Kjos Date 4-29-03 Time 1700

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 51 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .375

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 105 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
30	51	0	<MDA
38	48	0	
36	52	1	
40	54	3	
45	40	0	<MDA

Circle:	MDA = 14 dpm/100 cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
30	1	.70	<MDA
38	0	0	
36	0	0	
40	1	.70	
45	0	0	<MDA

Remarks-

Signature- BS Kjos Reviewed by- Paul C Ely 4/29/03

of

Duratek Inc.
Final Status Survey Package Worksheet for Package C0400
Bristol-Myers Squibb Building 124, Rooms 185-189, 214, and 216

Package Identification No.: C0400	Prepared by: William R. Hoey
Location: Building 124, Rooms 185-189, 214, 216	Date prepared: March 11, 2003
Area Classification: 3	

Area Description

This survey unit consists of the following rooms in the Building 124 north warehouse area: 185-189, 214, and 216. The floors, walls and ceilings for each of these rooms are part of the unit.

Historical Information

This area was used as a warehouse and shipping area. There is no history of contamination in this area. No elevated contamination was found in this area during the Characterization Survey.

General Survey Instructions

1) Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2.
2) Scan at least 25% of the floor in 185, 214, and 216 and at least 10% of all walls and ceilings and remaining floors.
3) Perform direct beta measurements at the 20 points given on the survey map that is part of this survey package.

Special Instructions

Source check meters to Tc-99 and C-14 for beta measurements.

Use gas proportional detector model numbers 43-68 or 43-106 for surveys.

Perform a minimum of three one minute field backgrounds in air prior to survey.

Take five smears on floor in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

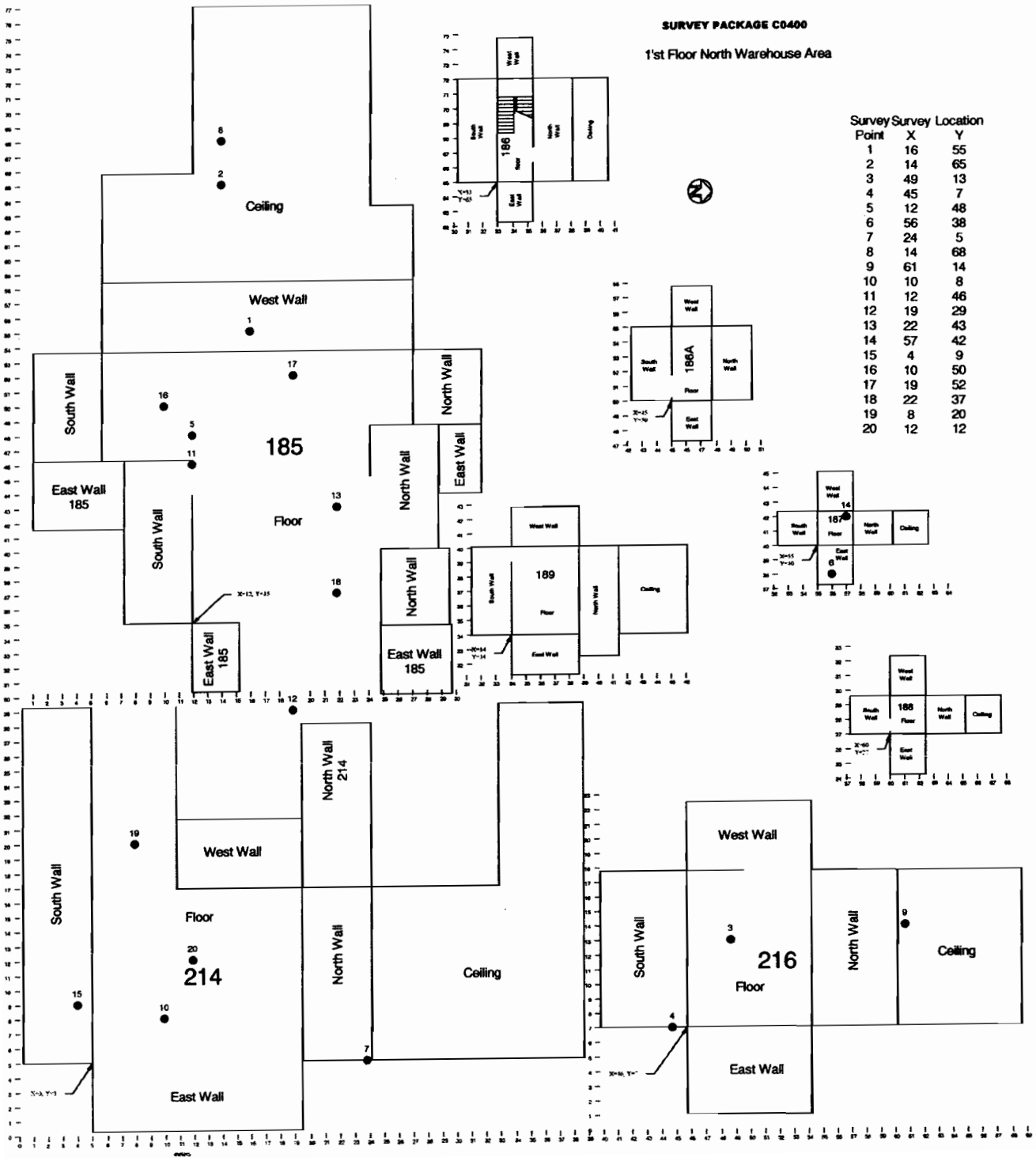
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross 5	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 124 Rooms 146 & 147 Floors												
C0400	01F01	ZZZZZ	ZZZZZ	See map	Floors25%-185, 214, 216; 10% remainder	NBK/4-15-03	NBK/4-16-03	N/A	N/A	~~N/A~~ 4-16-03	N/A	N/A
C0400	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NBK/4-15-03	NBK 4-16-03	N/A	N/A	N/A	N/A	N/A
C0400	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NBK/4-15-03	NBK/4-16-03	N/A	N/A	N/A	N/A	N/A
C0400	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	NBK/4-15-03	N/A	N/A	N/A	N/A	N/A	N/A
C0400	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	NBK/4-15-03	N/A	N/A	N/A	N/A	N/A	N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Eg 4/30/03

Survey Comments

SURVEY PACKAGE C0400

1'st Floor North Warehouse Area



Survey Point	Survey Location X	Survey Location Y
1	16	55
2	14	65
3	49	13
4	45	7
5	12	48
6	56	38
7	24	5
8	14	68
9	61	14
10	10	8
11	12	46
12	19	29
13	22	43
14	57	42
15	4	9
16	10	50
17	19	52
18	22	37
19	8	20
20	12	12

FINAL STATUS SURVEY
PACKAGE No. C0400
Bldg. 124, Rooms 185-189 & 214-216
North Warehouse Area

Compass Input Information

Survey unit contamination estimate and standard deviation calculated based on results Characterization Survey package number A1100.

LBGR – The estimated standard deviation, σ, is very small compared to the $DCGL_W$. Therefore, per MARSSIM, section 8.3.3, the LBGR set so the relative shift, Δ/σ, is about 3.

Survey Grid Worksheet

Table 1 below provides 40 sets of coordinates that were generated using the random number function of Excel such that x is >0, ≤69 and y is >0, ≤77 . Each number was truncated. The points were then plotted on the attached survey unit map until 15 survey points actually fell on one of the survey unit surfaces. An asterisk is placed next to each pair of coordinates that is a survey point. The actual survey points are summarized in Table 2 below.

Table 1. Random Coordinates

Point #	X	Y	
1	44	45	
2	29	18	
3	44	19	
4	16	55	*
5	14	65	*
6	49	13	*
7	4	73	
8	45	7	*
9	55	18	
10	34	54	
11	12	48	*
12	30	1	
13	56	38	*
14	2	54	
15	24	5	*

Point #	X	Y	
16	5	25	
17	14	68	*
18	68	40	
19	48	65	
20	9	68	
21	27	66	
22	35	57	
23	9	75	
24	33	41	
25	41	55	
26	61	14	*
27	10	8	*
28	12	46	*
29	34	57	
30	61	19	
31	19	29	*
32	22	43	*
33	50	23	
34	57	42	*
35	4	9	*
36	68	15	
37	62	11	
38	64	74	
39	37	13	
40	63	3	

Table 2. Survey Point Coordinates

Survey Point No.	X	Y	General Location
1	16	55	185, West Wall
2	14	65	185, Ceiling
3	49	13	216, Floor
4	45	7	216, South Wall
5	12	48	185, Floor
6	56	38	187, East Wall
7	24	5	214, North Wall
8	14	68	185, Ceiling
9	61	14	216, North Wall
10	10	8	214, Floor
11	12	46	185, Floor/South Wall
12	19	29	214, Floor
13	22	43	185, Floor
14	57	42	187, Floor

15	4	9	214, South Wall
16*	10	50	185, Floor
17*	19	52	185, Floor
18*	22	37	185, Floor
19*	8	20	214, Floor
20*	12	12	214, Floor

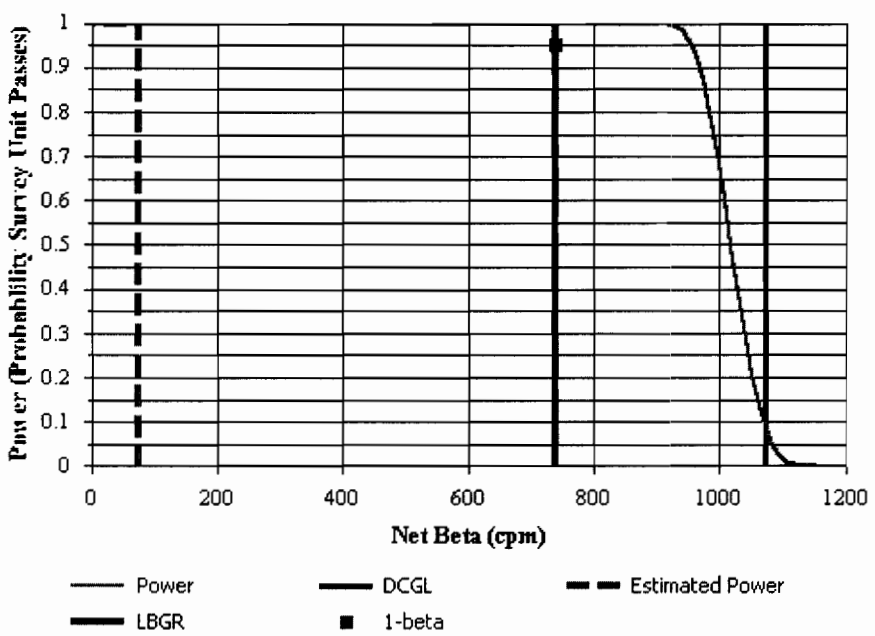
* Points 16-20 were added to the 15 randomly selected points. The location of these 5 points were selected based on high traffic during the D&D project.

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0400 FSS Package		
Comments:	North Warehouse Area		
Area (m²):	2,245	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	111.4
DCGL (cpm):	1,074	Sample Size (N):	13
LBGR (cpm):	739	Estimated Conc. (cpm):	75.1
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 213 ± 68 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	30	240.9	88.2	497
Concrete Block	45	370.2	39.8	612
Steel Panel	28	137.9	18.4	381

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: D. KJOS **Signature:** [signature] **Date:** 3-18-03

Download Station #: 1 Download File #: 40
Serial # Verification: Model 2350: ■ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher **User ID** DPS 4133 **Signature:** [signature] **Date:** 3/18/03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: C 0400: Rm 216 Pts. 3,4,9
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 12-30-02 Detector Calibration Due Date: 12-30-02

Type Of Survey: ☐ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☒ Beta β	119337	43-68B	.223			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 216	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14: off .123

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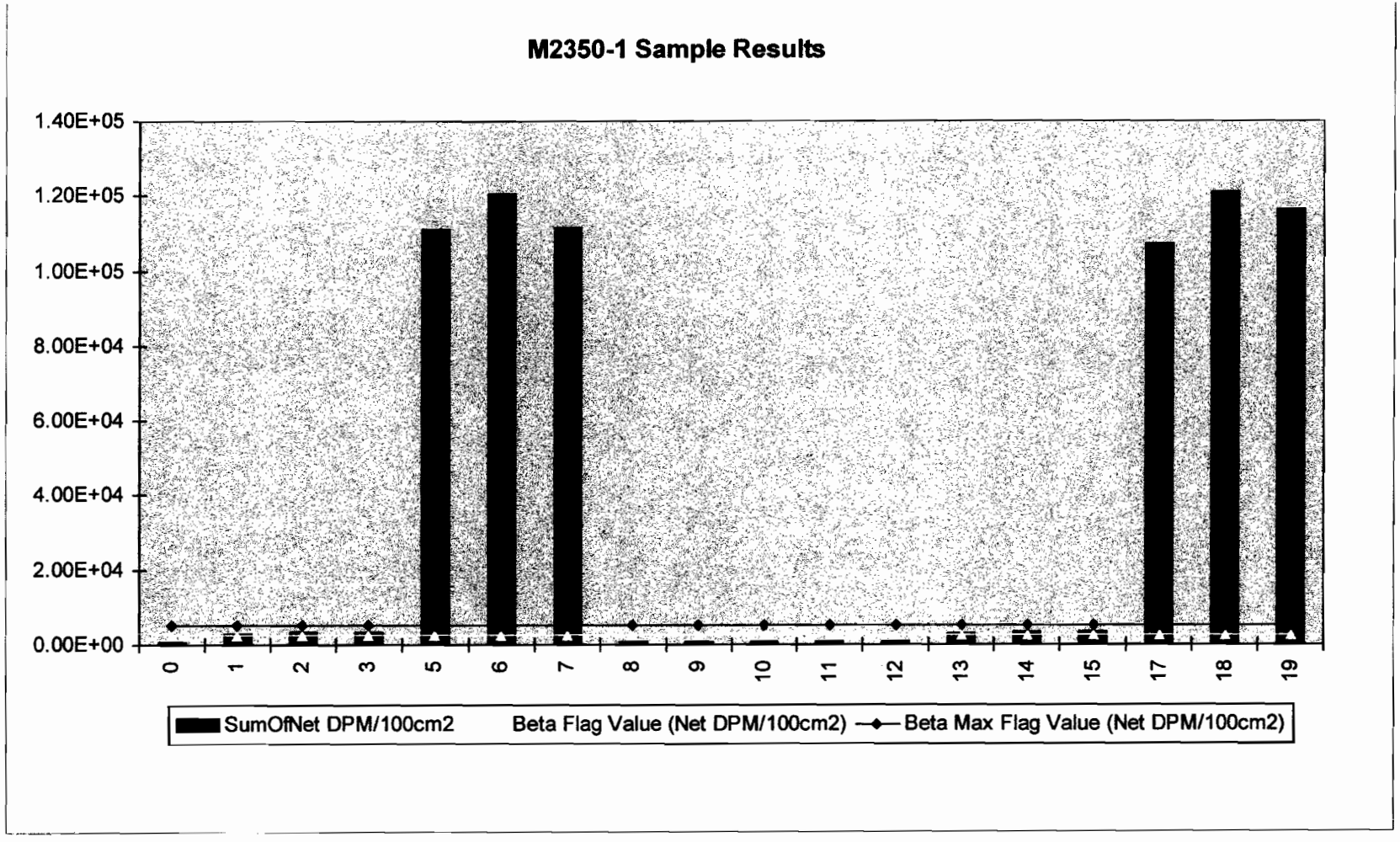
M2350-1 Download BETA Report

File Name : 00000040	Survey Description :Pckaage C0400; Room 216 points 3,4 and 9	
Survey Reason : Termination		
User ID : DPS4133	Technician Name : Donnie Schumaker	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.223	Survey Date : 3/18/03

Print Name	Signature	Date
Donnie Schumaker	D Schumaker / DSK	9/9/03

Comments:

Sign-Off PAUL E. ELY (Print Name) Paul C Ely (Signature) 9-9-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
1
2
3
5
6
7
8
9
10
11
12
13
14
15
17
18
19
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000040

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,679.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	953
ZZZZZ	FD184	1	1,170.0	60	PRB00	ZZZZZ	ZZZZZ	0	268	3,210
ZZZZZ	FD184	2	1,257.0	60	PRB00	ZZZZZ	ZZZZZ	0	268	3,520
ZZZZZ	FD184	3	1,221.0	60	PRB00	ZZZZZ	ZZZZZ	0	268	3,392
ZZZZZ	10002	5	31,511.0	60	PRB00	ZZZZZ	ZZZZZ	0	268	111,193
ZZZZZ	10002	6	34,176.0	60	PRB00	ZZZZZ	ZZZZZ	0	268	120,678
ZZZZZ	10002	7	31,620.0	60	PRB00	ZZZZZ	ZZZZZ	0	268	111,581
C0400	ZZZZZ	8	216.0	60	FLDBK	ZZZZZ	ZZZZZ	0	0.0001	769
C0400	01F01	9	234.0	60	FLDCT	ZZZZZ	ZZZZZ	9	0.0001	833
C0400	01F01	10	262.0	60	FLDCT	ZZZZZ	ZZZZZ	3	0.0001	932
C0400	01F01	11	202.0	60	FLDCT	ZZZZZ	ZZZZZ	4	0.0001	719
ZZZZZ	ZZZZZ	12	2,625.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	934
ZZZZZ	FD184	13	1,158.0	60	PTB00	ZZZZZ	ZZZZZ	0	263	3,185
ZZZZZ	FD184	14	1,213.0	60	PTB00	ZZZZZ	ZZZZZ	0	263	3,381
ZZZZZ	FD184	15	1,228.0	60	PTB00	ZZZZZ	ZZZZZ	0	263	3,434
ZZZZZ	10002	17	30,424.0	60	PTB00	ZZZZZ	ZZZZZ	0	263	107,342
ZZZZZ	10002	18	34,284.0	60	PTB00	ZZZZZ	ZZZZZ	0	263	121,080
ZZZZZ	10002	19	32,901.0	60	PTB00	ZZZZZ	ZZZZZ	0	263	116,158

Beta Flag	2500 -	_____
Beta Max Flag	5000	

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kox **Signature:** [signature] **Date:** 4-16-03

Download Station #: 1 Download File #: _____
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kox **User ID** NRL2986 **Signature:** [signature] **Date:** 4-16-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package CD400 B-124 Rooms 185-189, 214 and 216
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.228			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 203	2 206	3 215	4 N/A	5 N/A	6 N/A	208
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .129

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M2350-1 Download BETA Report

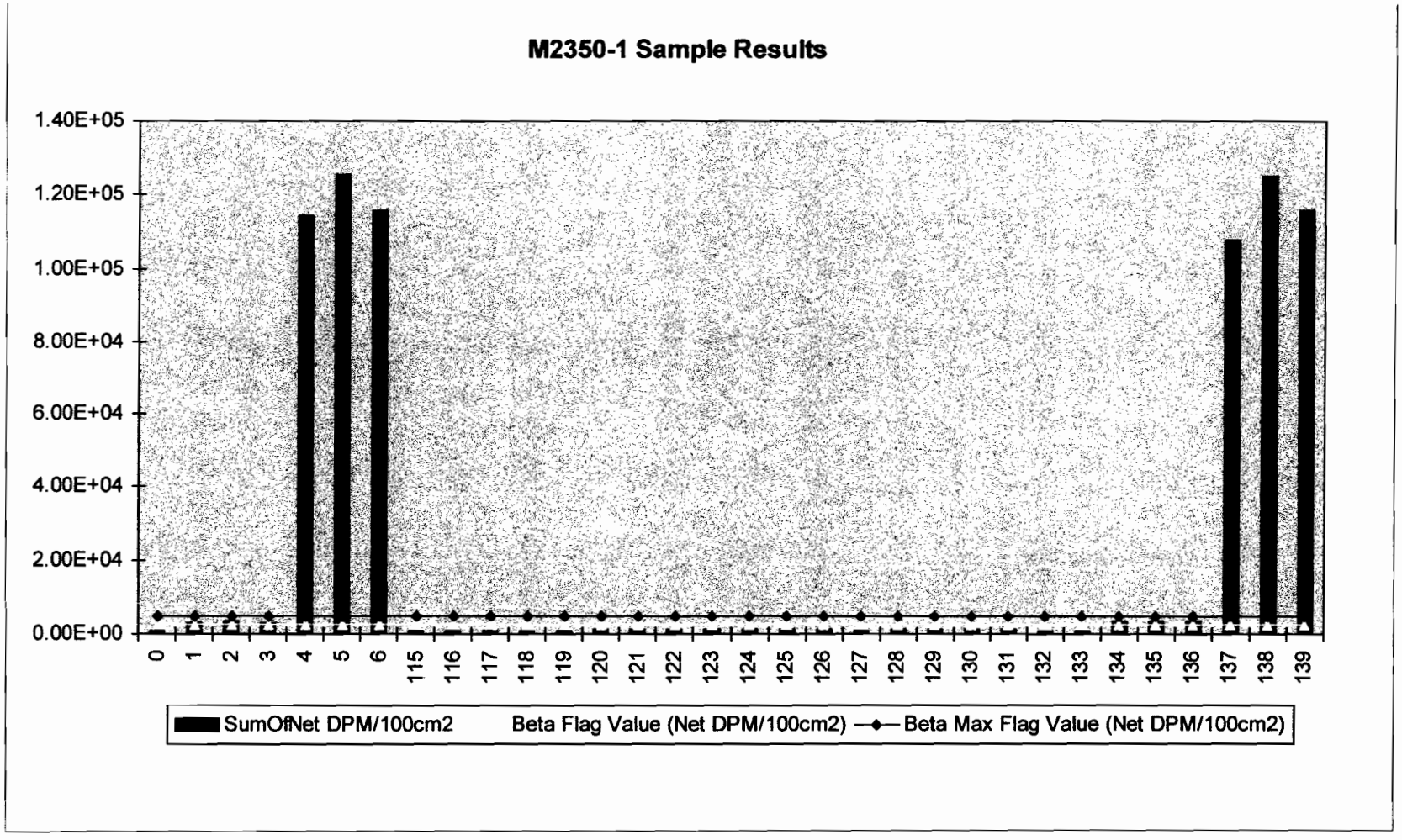
File Name : 00000063	Survey Description :Package C0400 B-124 Rooms 185-189,214 and 216	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 4/16/03

Print Name	Signature	Date
Doug Kjos	Doug RK	9/9/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C. ELY	Paul C Ely	9-9-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
1
2
3
4
5
6
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000063

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,579.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	898
ZZZZZ	FD184	1	1,195.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,262
ZZZZZ	FD184	2	1,256.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,474
ZZZZZ	FD184	3	1,188.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	3,237
ZZZZZ	10002	4	33,119.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	114,387
ZZZZZ	10002	5	36,265.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	125,338
ZZZZZ	10002	6	33,523.0	60	PRB00	ZZZZZ	ZZZZZ	0	258	115,793
C0400	ZZZZZ	115	203.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	707
C0400	ZZZZZ	116	206.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	717
C0400	ZZZZZ	117	215.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	748
C0400	01C01	118	291.0	60	FLDCT	B9999	ZZZZZ	8	0.0001	1,013
C0400	01C01	119	298.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	1,037
C0400	01W01	120	348.0	60	FLDCT	B0004	ZZZZZ	1	0.0001	1,211
C0400	01F01	121	346.0	60	FLDCT	B0003	ZZZZZ	17	0.0001	1,204
C0400	01F01	122	353.0	60	FLDCT	B0003	ZZZZZ	5	0.0001	1,229
C0400	01F01	123	332.0	60	FLDCT	B0003	ZZZZZ	16	0.0001	1,156
C0400	01F01	124	362.0	60	FLDCT	B0003	ZZZZZ	11	0.0001	1,260
C0400	01F01	125	323.0	60	FLDCT	B0003	ZZZZZ	13	0.0001	1,124
C0400	01F01	126	349.0	60	FLDCT	B0003	ZZZZZ	18	0.0001	1,215
C0400	01F01	127	296.0	60	FLDCT	B0003	ZZZZZ	12	0.0001	1,030
C0400	01F01	128	325.0	60	FLDCT	B0003	ZZZZZ	19	0.0001	1,131
C0400	01F01	129	322.0	60	FLDCT	B0003	ZZZZZ	20	0.0001	1,121
C0400	01F01	130	318.0	60	FLDCT	B0003	ZZZZZ	10	0.0001	1,107
C0400	01W01	131	319.0	60	FLDCT	B0004	ZZZZZ	7	0.0001	1,110
C0400	01W01	132	296.0	60	FLDCT	B0004	ZZZZZ	15	0.0001	1,030
ZZZZZ	ZZZZZ	133	2,476.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	862
ZZZZZ	FD184	134	1,220.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,383
ZZZZZ	FD184	135	1,233.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,429
ZZZZZ	FD184	136	1,241.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	3,457
ZZZZZ	10002	137	31,244.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	107,895
ZZZZZ	10002	138	36,200.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	125,146
ZZZZZ	10002	139	33,447.0	60	PTB00	ZZZZZ	ZZZZZ	0	248	115,563

Beta Flag 2500 - _____

Beta Max Flag 5000 [ ]

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kjos **Signature:** [signature] **Date:** 4-17-03

Download Station #: 1 Download File #: 65
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kjos **User ID** NRK2986 **Signature:** [signature] **Date:** 4-17-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 95359

Survey Unit Description: Package CD400 B-124 Room 187
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-12-03 Detector Calibration Due Date: 10-15-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR086917	43-68B	.228			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 208	2 219	3 214	4 N/A	5 N/A	6 N/A	214
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .136

Duratek™

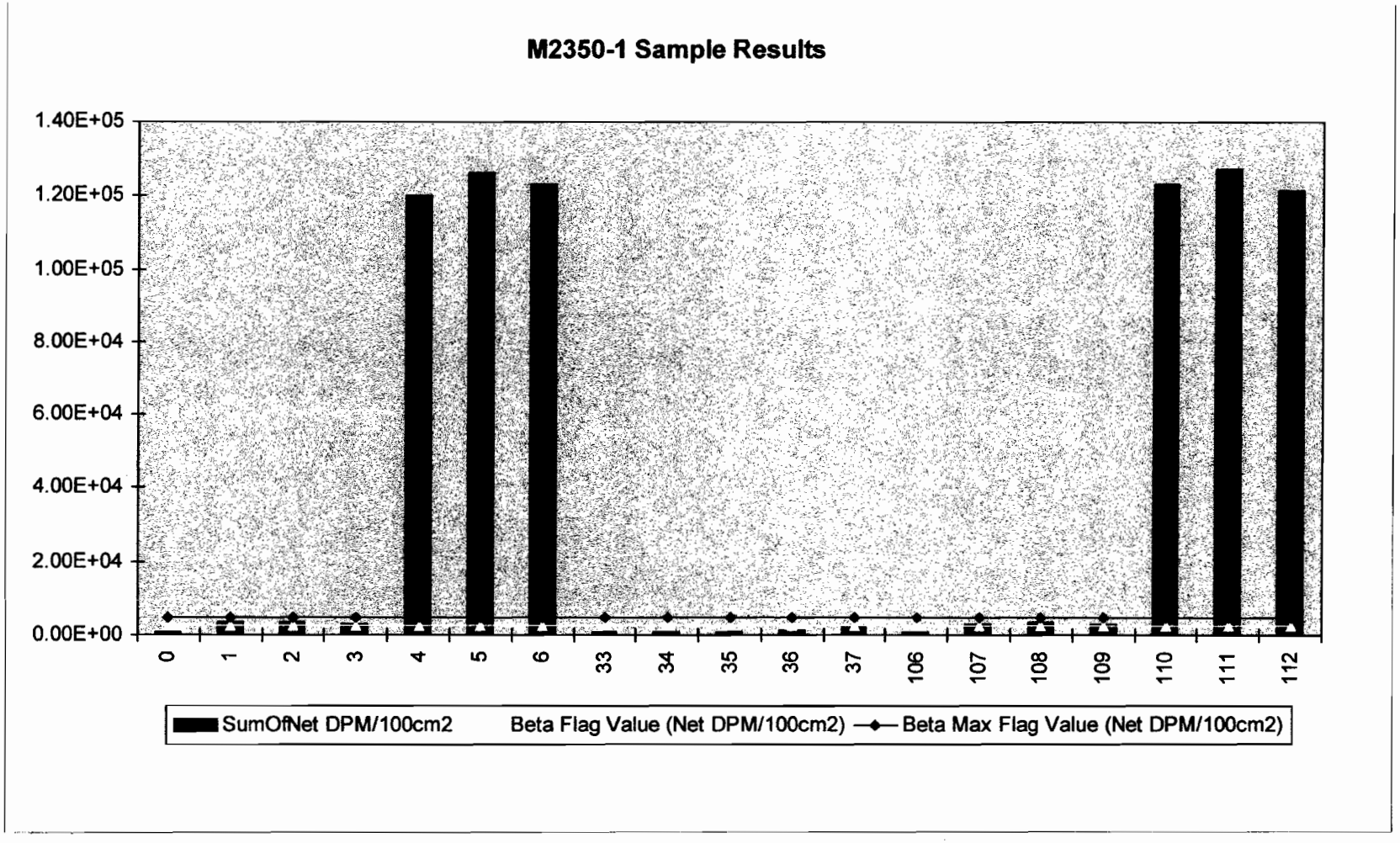
M2350-1 Download BETA Report

File Name : 00000065	Survey Description :Package C0400 B-124 Room 187	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 95359	Instrument Cal. Due : 6/12/03
Detector Model : 43-68B	Detector S/N : 088917	Detector Cal. Due : 10/15/03
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.228	Survey Date : 4/17/03

Print Name	Signature	Date
Doug Kjos	DRK	9/9/03

Comments:

Sign-Off PAUL E. ELY (Print Name) Paul E Ely (Signature) 9-9-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
1
2
3
4
5
6
33
34
35
36
37
106
107
108
109
110
111
112
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000065

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	2,328.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	810
ZZZZZ	FD184	1	1,190.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	3,331
ZZZZZ	FD184	2	1,257.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	3,564
ZZZZZ	FD184	3	1,141.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	3,161
ZZZZZ	10002	4	34,710.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	120,012
ZZZZZ	10002	5	36,464.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	126,117
ZZZZZ	10002	6	35,640.0	60	PRB00	ZZZZZ	ZZZZZ	0	233	123,249
C0400	ZZZZZ	33	208.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	724
C0400	ZZZZZ	34	219.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	762
C0400	ZZZZZ	35	214.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	745
C0400	01F01	36	433.0	60	FLDCT	B0017	ZZZZZ	14	0.0001	1,507
C0400	01W01	37	751.0	60	FLDCT	B0018	ZZZZZ	6	0.0001	2,614
ZZZZZ	ZZZZZ	106	2,391.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	832
ZZZZZ	FD184	107	1,189.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	3,307
ZZZZZ	FD184	108	1,207.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	3,370
ZZZZZ	FD184	109	1,186.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	3,296
ZZZZZ	10002	110	35,672.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	123,340
ZZZZZ	10002	111	36,738.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	127,050
ZZZZZ	10002	112	35,114.0	60	PTB00	ZZZZZ	ZZZZZ	0	239	121,397

Beta Flag	2500	- _____
Beta Max Flag	5000	

Survey #- C0400

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by Doug Kjos (Print) Signature DK BSK Date 4/16/03 Time 1440

Counted by D. Schumaker (Print) Signature [illegible] Date 4/16/03 Time 1600

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 57 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .30 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
10	62	5	< MDA
12	63	6	
13	59	2	
17	52	0	
19	46	0	
		A	
	N		

Circle:	α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
10	0	0	< MDA
12	0	0	
13	0	0	
17	0	0	
19	0	0	
		A	
	N		

14 BSK 4-29-03

Remarks- MDA: β'γ - 110 dpm/100 cm², α - 4.6 dpm/100cm²

Signature- [illegible] Reviewed by- Paul C Ely 4/30/03

Duratek Inc.
Final Status Survey Package Worksheet for Package C0500
Bristol-Myers Squibb Building 122 & 124 Exteriors

Package Identification No.: C0500	Prepared by: Paul C. Ely
Location: Building 122 & 124 Exteriors	Date prepared: 4/23/2003
Area Classification: 3	

Area Description

The Building 122 & 124 survey area comprising exterior walls and roofs

Historical Information

This area includes all exterior surfaces of Buildings 122 and 124. The roof area originally had a roof ventilation discharge. Recently all ventilation discharges were through the stack located just west of Building 124.

All floor wall and roof areas had contamination levels <5,000 dpm/100 cm^2.

General Survey Instructions

(Class 3):

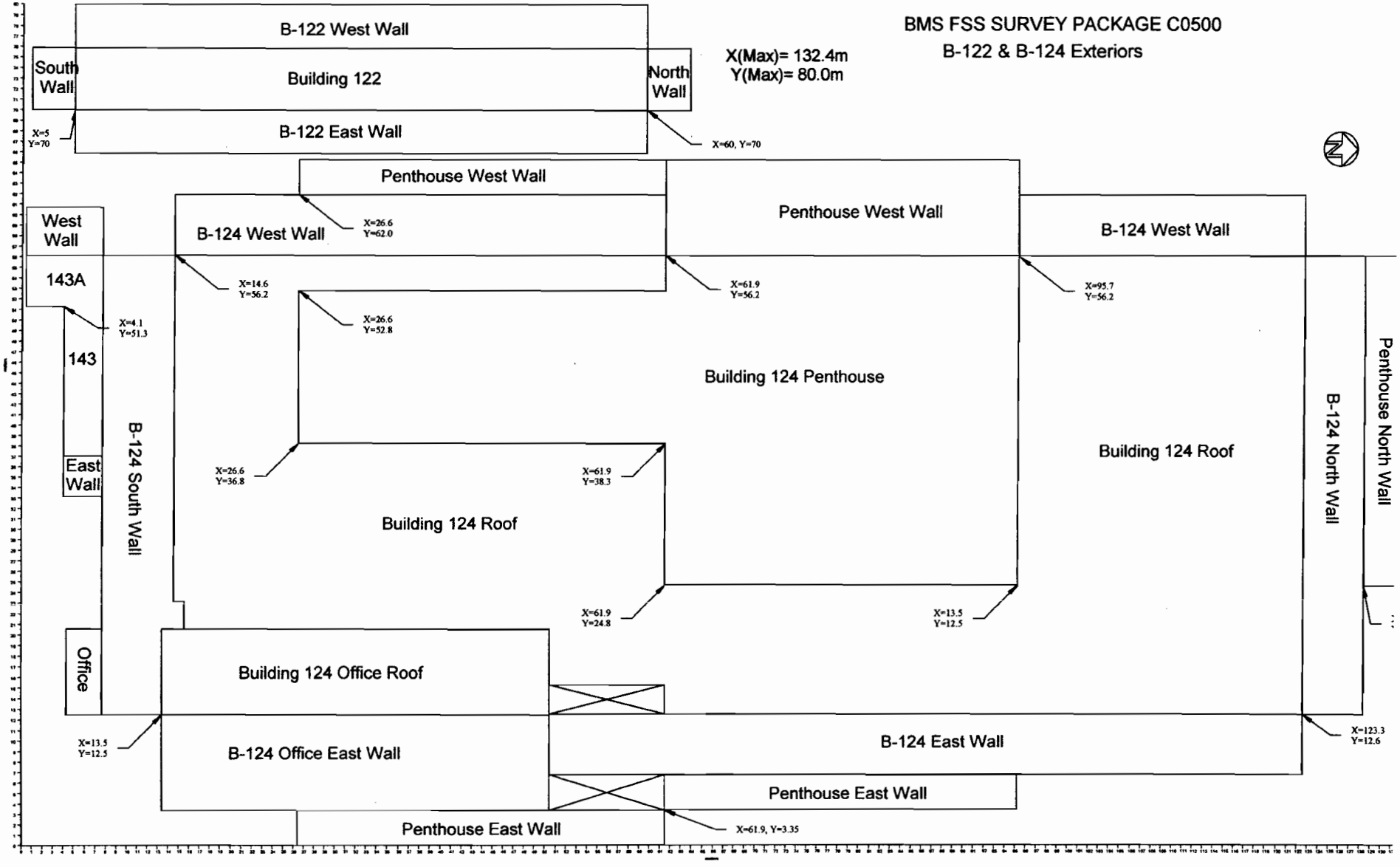
1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Special Instructions
Source check meters to Tc-99 and C-14 for beta measurements. Use gas proportional detector model numbers 43-68 or 43-106 for surveys. Perform a minimum of three one minute field backgrounds in air prior to survey. Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)												
Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross 5	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 122 & 124 Exteriors												
C0500	01R01	ZZZZZ	ZZZZZ	See map	Roofs 10%	DB/NOL/4-24-03	DB/NOL/4-24-03	N/A	N/A	DB/~~N/A~~ NOL/4-24-03	N/A	N/A
C0500	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	DB/NOL/4-24-03	DB/NOL/4-24-03	N/A	N/A	N/A	N/A	N/A
C0500	01S01	ZZZZZ	ZZZZZ	If needed	Structure 10%	DB/NOL/4-24-03	DB/N/A	N/A	N/A	N/A	N/A	N/A
C0500	01EQ1	ZZZZZ	ZZZZZ	If needed	Equipment 10%	DB/NOL/4-24-03	DB/N/A	N/A	N/A	N/A	N/A	N/A
												N/A

Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments


BMS FSS SURVEY PACKAGE C0500
B-122 & B-124 Exteriors
X(Max)= 132.4m
Y(Max)= 80.0m
B-122 West Wall
South Wall
Building 122
North Wall
B-122 East Wall
X=5
Y=70
X=60, Y=70
Penthouse West Wall
Penthouse West Wall
B-124 West Wall
B-124 West Wall
West Wall
143A
143
East Wall
B-124 South Wall
X=26.6
Y=62.0
X=14.6
Y=56.2
X=61.9
Y=56.2
X=95.7
Y=56.2
X=4.1
Y=51.3
X=26.6
Y=52.8
Building 124 Penthouse
Building 124 Roof
Building 124 Roof
B-124 North Wall
Penthouse North Wall
X=26.6
Y=36.8
X=61.9
Y=38.3
X=61.9
Y=24.8
X=13.5
Y=12.5
Office
Building 124 Office Roof
X=13.5
Y=12.5
B-124 Office East Wall
B-124 East Wall
X=123.3
Y=12.6
Penthouse East Wall
Penthouse East Wall
X=61.9, Y=3.35

Survey Package C0500
B-122 & B-124 Exterior Surfaces

X (Max):	132.4	meters	
Y (Max):	80.0	meters	
A (Area):	10,592	m^2	
Actual Survey Area:	8,277	m^2	
COMPASS Survey Points:	14	22%	percent void area
N (Points):	36	18	Estimated Minimum Points

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	18.4	meters	(distance between measurement points)

$$D = 0.866 * L$$

D=	15.9	meters	(distance between rows)
L/2=	9.2	meters	(row offset value)
X (Random):	113.7		random number generator
Y (Random):	4.5		random number generator
X (Origin):	36.7		initially generated random number
Y (Origin):	76.4		initially generated random number
Number of rows:	5		
Number of columns:	7		

Survey Point	**Survey Location X**	**Y**	**Row**
Starting Point (1)	36.7	76.4	5
2	55.1	76.4	
3	73.5	76.4	
4	91.9	76.4	
5	110.3	76.4	
6	128.7	76.4	
7	18.3	76.4	
8	27.5	60.5	4
9	45.9	60.5	
10	64.3	60.5	
11	82.7	60.5	
12	101.1	60.5	
13	119.5	60.5	
14	9.1	60.5	
15	36.7	44.6	3
16	55.1	44.6	
17	73.5	44.6	
18	91.9	44.6	
19	110.3	44.6	
20	128.7	44.6	
21	18.3	44.6	
22	27.5	28.7	2
23	45.9	28.7	
24	64.3	28.7	
25	82.7	28.7	
26	101.1	28.7	
27	119.5	28.7	
28	9.1	28.7	
29	36.7	12.8	1
30	55.1	12.8	
31	73.5	12.8	
32	91.9	12.8	
33	110.3	12.8	
34	128.7	12.8	
35	18.3	12.8	

LBGR Determination

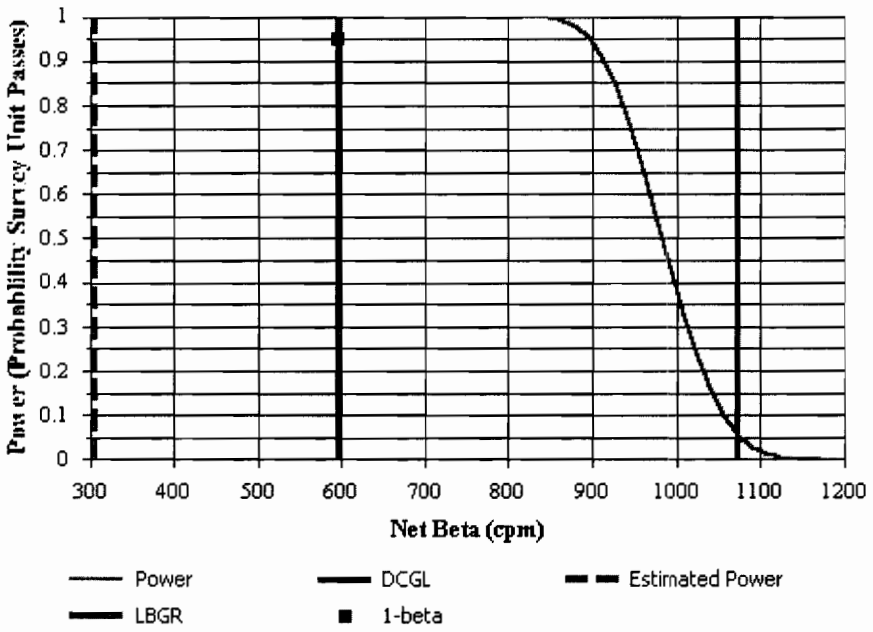
σ =	159.7	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	6.7	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**595**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0500 FSS Package		
Comments:	Building 122 and 124 Exterior Surfaces		
Area (m²):	7,373	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	159.7
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	595	Estimated Conc. (cpm):	306
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 444 ± 157 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	27	178.5	22.7	431
Concrete Block	24	265.2	29	521
Steel Panel	28	137.9	18.4	381

BMS Download Survey Report Data Summary
Characterization Package A1200
Building 122 & 124 Exterior Surfaces
FSS Package: C0500

	Roof		Wall	
	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min
	435	566	442	726
	317	541	404	375
	332	460	298	272
	311	553	311	305
	296	573	327	337
	310	457	406	599
	339	495	449	673
	321	453	390	647
	336	509	396	628
	350	587	271	264
	350	508	287	304
	304	572	295	580
	321	381	197	220
	365	394	204	247
	323	563	300	576
	339	404	214	223
	341	529	210	253
	295	498	226	234
	301	351	294	505
	309	336	279	507
	383	480	279	541
	338	532	306	571
	333	548	195	221
	364	492	325	558
	377	521	314	603
	372	641	327	541
	310	575	311	612
			341	582
			184	248
			154	198
			195	186
			166	189
			308	643
			296	572
			271	251
			187	219
			175	200
			137	160
			178	180
Average	**336.0**	**500.7**	**278.2**	**403.8**
Standard Deviation	**31.8**	**76.2**	**82.0**	**185.1**
No of Measurements	**27**	**27**	**39**	**39**
All Measurement				
Average	**301.8**	**443.5**		
Standard Deviation	**71.8**	**157.0**		
No of Measurements	**66**	**66**		

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 4-30-03

Download Station #: 1 Download File #: 105
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** HRK2986 **Signature:** [signature] **Date:** 4-29-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package CD500, B-122 & 124 Exteriors
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.237			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 366	2 391	3 372	4 N/A	5 N/A	6 N/A	376
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .135

Duratek™

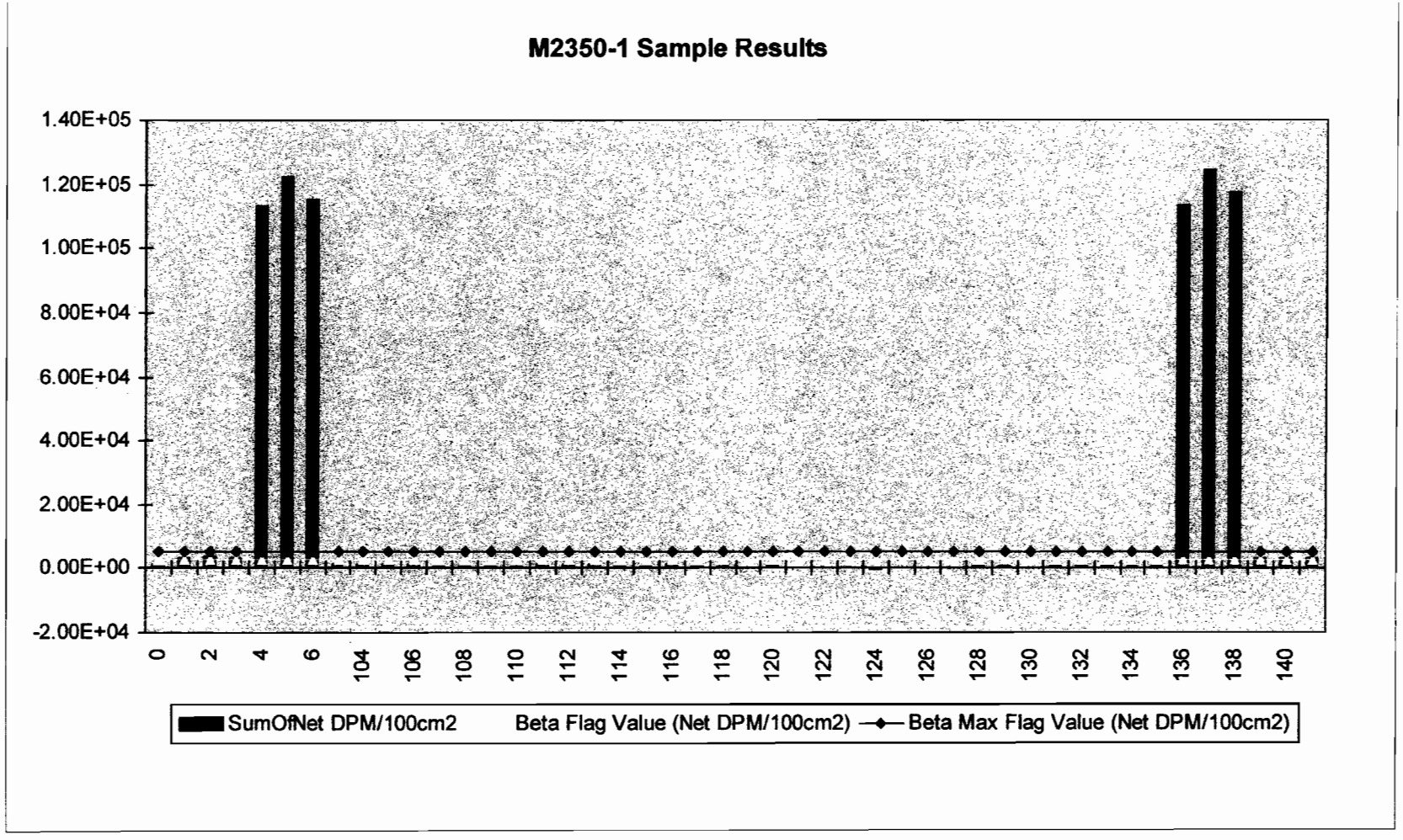
M2350-1 Download Beta Report

File Name : 00000105	Survey Description :Package C0500, B-122 and 124 Exteriors	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.237	Survey Date : 4/29/03

Print Name	Signature	Date
Doug Kjos	Doug RK	9/9/03

Comments:

Sign-Off PAUL E. ELY (Print Name) Paul C Ely (Signature) 9-9-03 (Date)


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
-2.00E+04
0
2
4
6
104
106
108
110
112
114
116
118
120
122
124
126
128
130
132
134
136
138
140
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000105

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	3,012.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,009
ZZZZZ	FD184	1	1,213.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,054
ZZZZZ	FD184	2	1,394.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,660
ZZZZZ	FD184	3	1,315.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,396
ZZZZZ	10002	4	34,115.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	113,234
ZZZZZ	10002	5	36,847.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	122,383
ZZZZZ	10002	6	34,722.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	115,267
C0500	ZZZZZ	103	366.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	1,226
C0500	ZZZZZ	104	391.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	1,309
C0500	ZZZZZ	105	372.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	1,246
C0500	01W01	106	681.0	60	FLDCT	B0010	ZZZZZ	34	371	1,038
C0500	01W01	107	674.0	60	FLDCT	B0009	ZZZZZ	28	466	697
C0500	01W01	108	748.0	60	FLDCT	B0009	ZZZZZ	8	466	944
C0500	01W01	109	700.0	60	FLDCT	B0009	ZZZZZ	9	466	784
C0500	01W01	110	643.0	60	FLDCT	B0010	ZZZZZ	2	371	911
C0500	01W01	111	658.0	60	FLDCT	B0010	ZZZZZ	1	371	961
C0500	01W01	112	786.0	60	FLDCT	B0009	ZZZZZ	7	466	1,072
C0500	01W01	113	698.0	60	FLDCT	B0010	ZZZZZ	10	371	1,095
C0500	01W01	114	634.0	60	FLDCT	B0010	ZZZZZ	11	371	881
C0500	01W01	115	634.0	60	FLDCT	B0010	ZZZZZ	12	371	881
C0500	01W01	116	663.0	60	FLDCT	B0010	ZZZZZ	13	371	978
C0500	01R01	117	583.0	60	FLDCT	B9999	ZZZZZ	15	355	764
C0500	01R01	118	497.0	60	FLDCT	B9999	ZZZZZ	16	355	476
C0500	01R01	119	441.0	60	FLDCT	B9999	ZZZZZ	17	355	288
C0500	01R01	120	512.0	60	FLDCT	B9999	ZZZZZ	24	355	526
C0500	01R01	121	463.0	60	FLDCT	B9999	ZZZZZ	35	355	362
C0500	01R01	122	337.0	60	FLDCT	B9999	ZZZZZ	29	355	-60
C0500	01R01	123	480.0	60	FLDCT	B9999	ZZZZZ	21	355	419
C0500	01R01	124	326.0	60	FLDCT	B9999	ZZZZZ	22	355	-97
C0500	01R01	125	422.0	60	FLDCT	B9999	ZZZZZ	23	355	224
C0500	01R01	126	432.0	60	FLDCT	B9999	ZZZZZ	31	355	258
C0500	01R01	127	368.0	60	FLDCT	B9999	ZZZZZ	32	355	44
C0500	01R01	128	490.0	60	FLDCT	B9999	ZZZZZ	33	355	452
C0500	01R01	129	526.0	60	FLDCT	B9999	ZZZZZ	27	355	573
C0500	01R01	130	395.0	60	FLDCT	B9999	ZZZZZ	26	355	134
C0500	01R01	131	528.0	60	FLDCT	B9999	ZZZZZ	19	355	579
C0500	01R01	132	541.0	60	FLDCT	B9999	ZZZZZ	18	355	623
C0500	01R01	133	564.0	60	FLDCT	B9999	ZZZZZ	25	355	700
C0500	01W01	134	582.0	60	FLDCT	B0010	ZZZZZ	20	355	760

Beta Flag 2500 - _____

Beta Max Flag 5000 [ ]

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	135	2,651.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	888
ZZZZZ	10002	136	34,059.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	113,167
ZZZZZ	10002	137	37,364.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	124,235
ZZZZZ	10002	138	35,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	117,092
ZZZZZ	FD184	139	1,260.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,332
ZZZZZ	FD184	140	1,284.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,412
ZZZZZ	FD184	141	1,234.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,245

Beta Flag	2500 -	_____
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- 60500

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D. Kjos (Print) Signature DS DKjos /PSL Date 4-29-03 Time 1600

Counted by Betty S. Kjos (Print) Signature BS Kjos Date 4-30-03 Time 1010

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 52 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .20 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 106 dpm/100cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
19	49	0	<MDA
21	65	13	
23	59	7	
27	56	4	
32	62	10	<MDA

N A

Circle:	MDA = 13 dpm/100cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
19	2	1.80	<MDA
21	1	.80	
23	2	1.80	
27	1	.80	
32	1	.80	<MDA

N A

Remarks-

Signature- BS Kjos Reviewed by- Paul C Eby 4/30/03

of

Duratek Inc.
Final Status Survey Package Worksheet for Package C0600
Bristol-Myers Squibb Building 122 & 124 Exterior Paved Areas

Package Identification No.: C0600	Prepared by: Paul C. Ely
Location: Building 122 & 124 Exterior Paved Areas	Date prepared: 4/23/2003
Area Classification: 3	

Area Description

The Building 122 & 124 survey area comprising exterior paved areas

Historical Information

This area includes all exterior paved surfaces of Buildings 122 and 124. I-131 was spilled in front of the Hot Barn Door (B-122) many years ago. P-32 was spilled in the old west entrance to B-122 in 1964. Manipulators were occasionally steam-cleaned at the live steam outlet on the south side of B-124 near Rooms 143 and 143A.

All exterior paved areas had contamination levels <5,000 dpm/100 cm^2.

General Survey Instructions

(Class 3):

1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids.
2. Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2.
3. Perform direct beta measurements at the points given on the survey map that is part of this package.
4. Take a 1-minute count at each survey location.

Special Instructions

Source check meters to Tc-99 and C-14 for beta measurements.

Use gas proportional detector model numbers 43-68 or 43-106 for surveys.

Perform a minimum of three one minute field backgrounds in air prior to survey.

Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Direct Alpha	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 122 & 124 Exterior Paved Areas												
C0600	01F01	ZZZZZ	ZZZZZ	See map	Floors 10%	DB/DBX/4-28-03	DB/DBX/4-28-03	N/A	N/A	DB/DBX/4-28-03	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Ely 4/30/03

Survey Comments

Survey Package C0600
B-122/B-124 Outdoor Paved Areas

COMPASS Survey Points: 14
N (Points): 24

Paved Area	Size (m^2)	Fraction	Survey Points
1	2,187	69%	16
2	900	28%	7
3	17	1%	1
4	19	1%	1
5	9	0%	1
6	47	1%	1
7	5	0%	1
Total	3,184		28

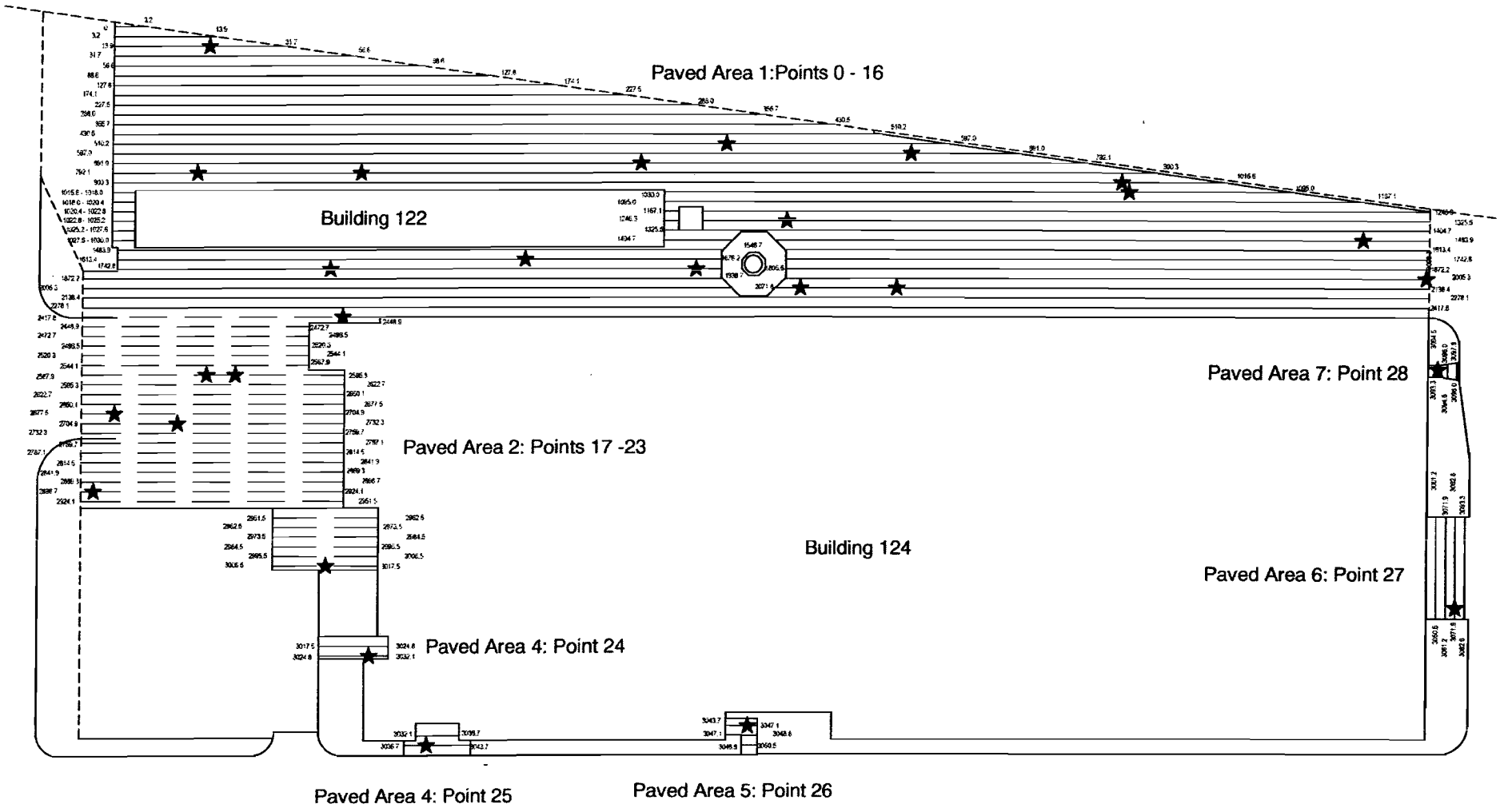
Survey Points Located Randomly within a Survey Area and Located on a Map

Survey Point	Random Survey Location Generator	Random Survey Location		Point	Survey Locations in Order
1	108	1,259	Survey Area 1	1	24
2	1,769	801		2	574
3	410	24		3	680
4	540	680		4	746
5	156	1,477		5	801
6	548	1,005		6	818
7	1,963	818		7	1,005
8	1,698	2,005		8	1,078
9	1,822	1,656		9	1,259
10	585	1,765		10	1,477
11	1,742	574		11	1,656
12	312	1,803		12	1,765
13	1,023	2,080		13	1,803
14	449	1,078		14	2,005
15	895	2,090		15	2,080
16	1,334	746		16	2,090
17	2,423	2,715	Survey Area 2	17	2,445
18	2,424	2,584		18	2,581
19	2,554	2,898		19	2,584
20	3,034	2,681		20	2,681
21	2,842	2,445		21	2,715
22	2,486	2,581		22	2,898
23	2,882	3,012		23	3,012
24	3,032	3,030	SA-3	24	3,030
25	3,046	3,039	SA-4	25	3,039
26	3,049	3,046	SA-5	26	3,046
27	3,054	3,073	SA-6	27	3,073
28	3,094	3,094	SA-7	28	3,094

LBGR Determination

σ =	158.6	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	6.8	>3
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	3
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**598**	**cpm**

SURVEY PACKAGE C0600



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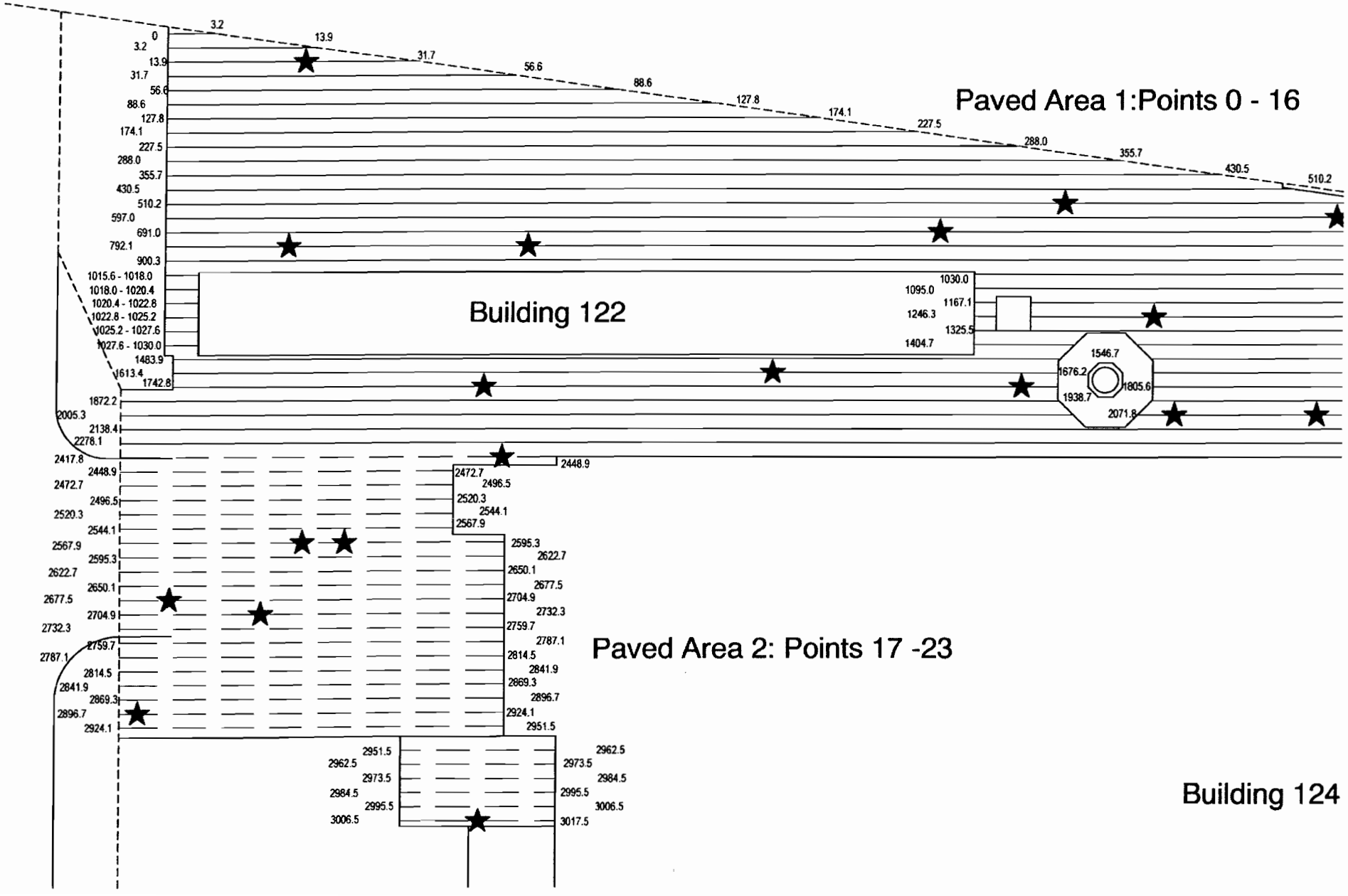

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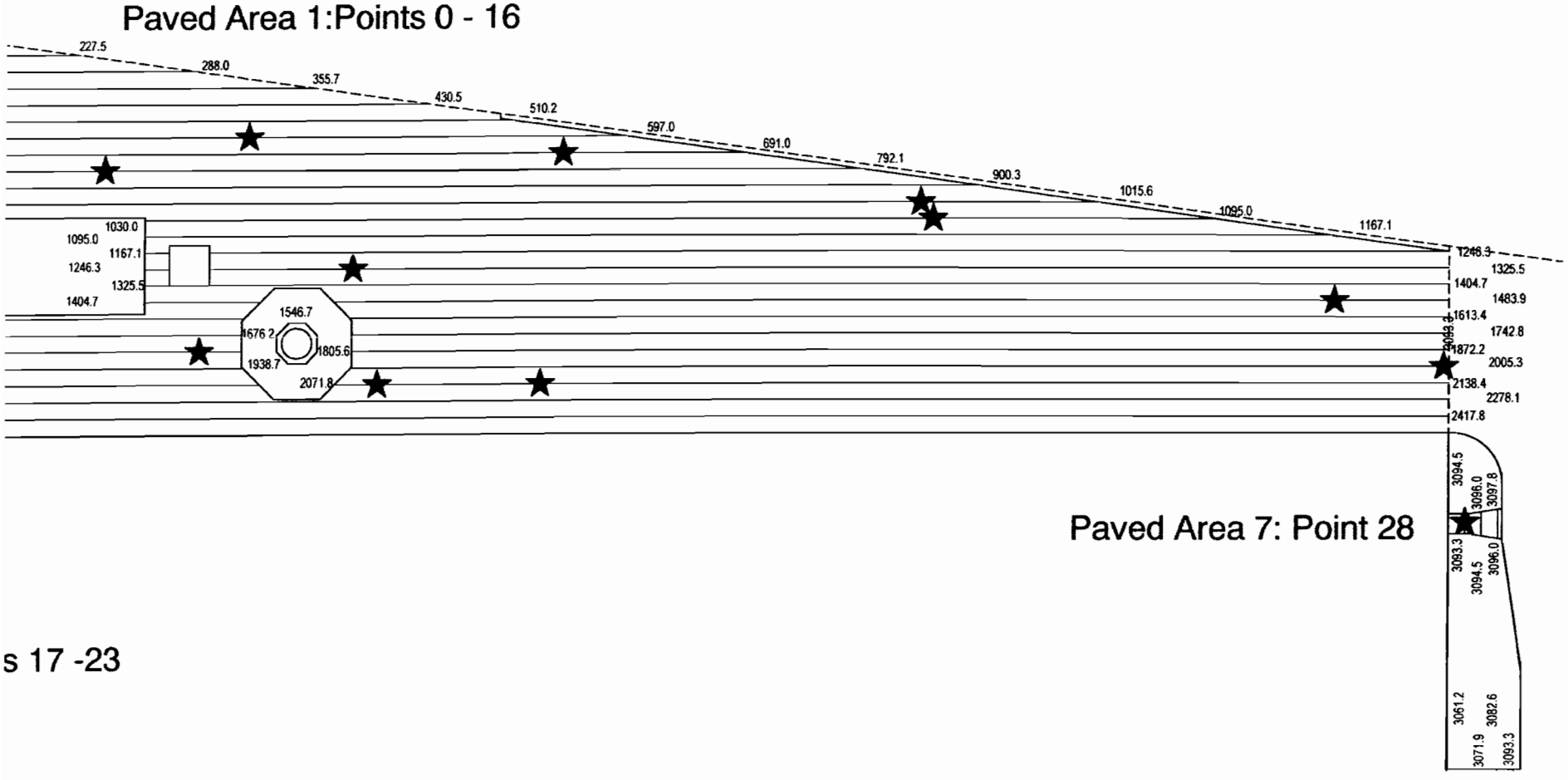
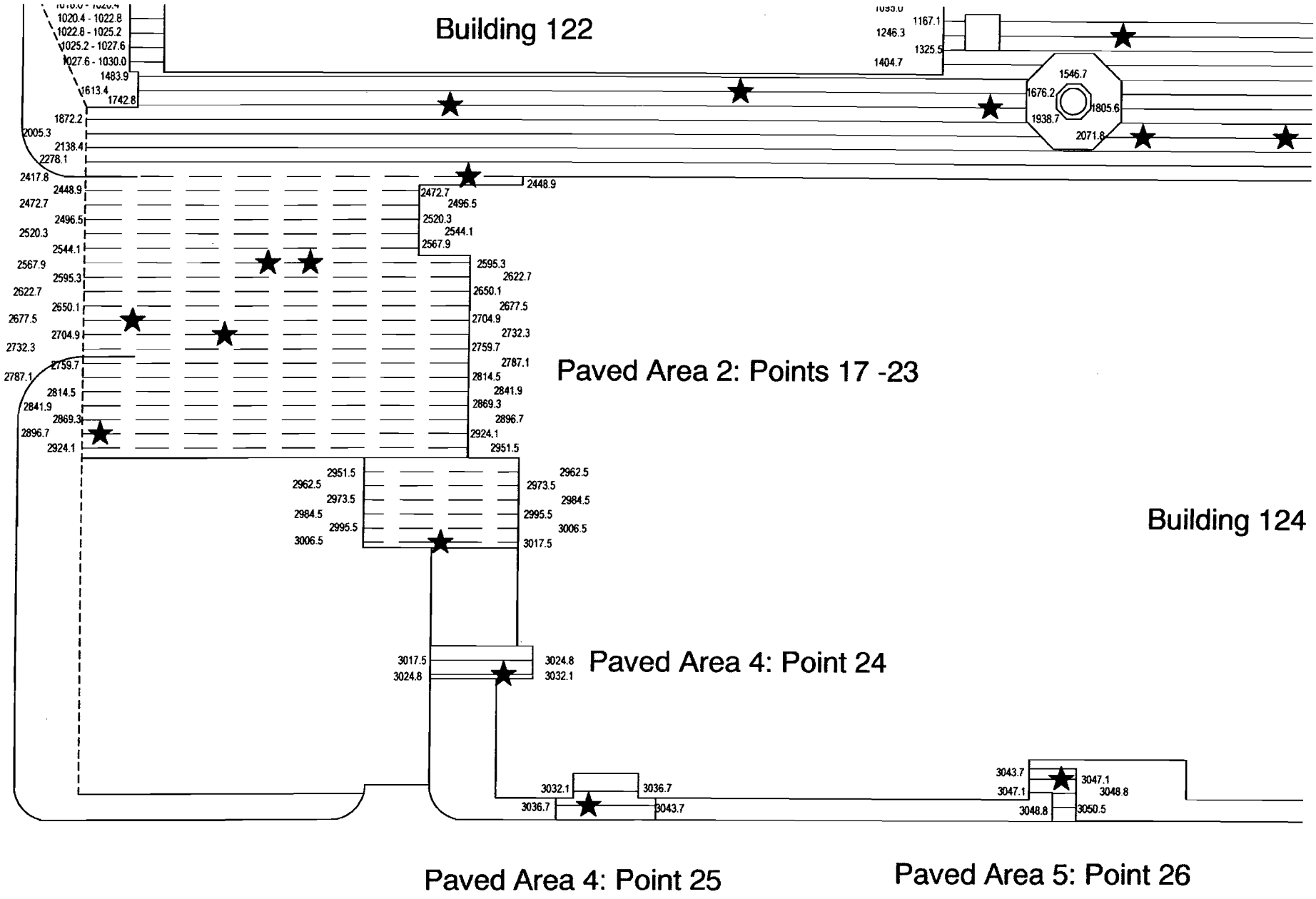
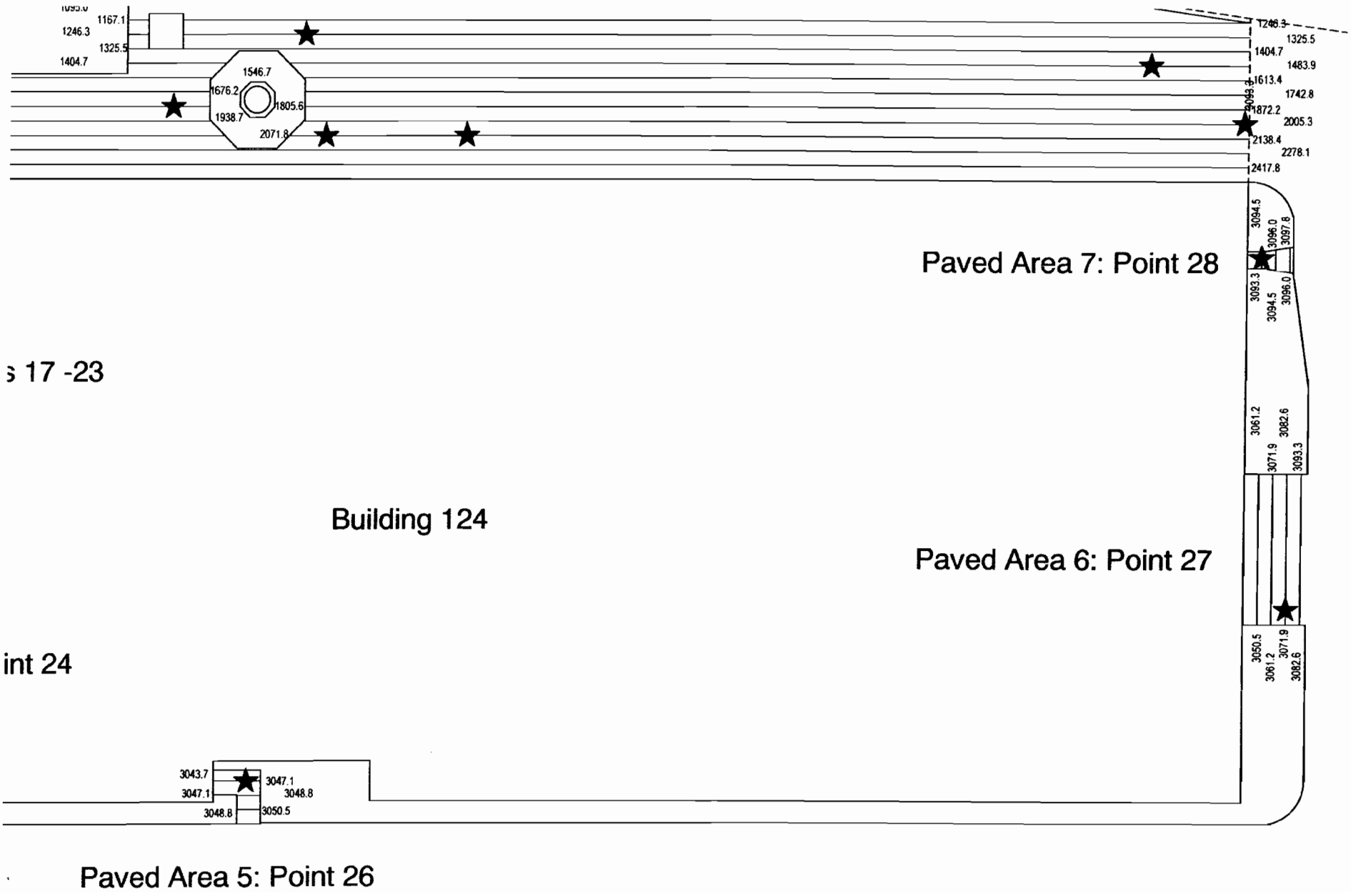


s 17 -23


Building 122
1020.4 - 1022.8
1022.8 - 1025.2
1025.2 - 1027.6
1027.6 - 1030.0
1483.9
1613.4
1742.8
1872.2
2005.3
2138.4
2278.1
2417.8
2448.9
2472.7
2496.5
2520.3
2544.1
2567.9
2595.3
2622.7
2650.1
2677.5
2704.9
2732.3
2759.7
2787.1
2814.5
2841.9
2869.3
2896.7
2924.1
2951.5
2962.5
2973.5
2984.5
2995.5
3006.5
3017.5
3024.8
3032.1
3036.7
3043.7
3047.1
3048.8
3050.5
1167.1
1246.3
1325.5
1404.7
1546.7
1676.2
1805.6
1938.7
2071.8
Paved Area 2: Points 17 -23
Building 124
Paved Area 4: Point 24
Paved Area 4: Point 25
Paved Area 5: Point 26

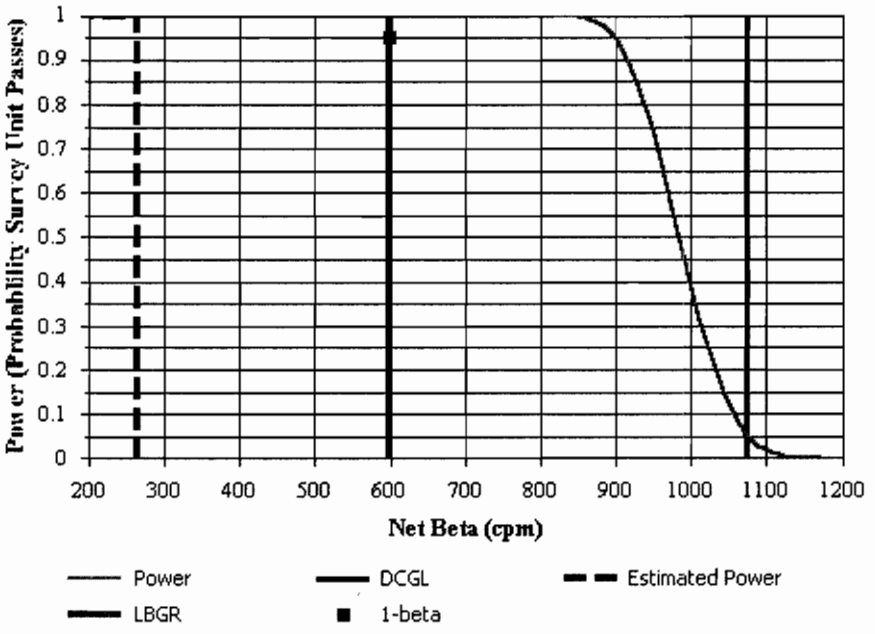

1167.1
1246.3
1325.5
1404.7
1546.7
1676.2
1805.6
1938.7
2071.8
1246.3
1325.5
1404.7
1483.9
1613.4
1742.8
1872.2
2005.3
2138.4
2278.1
2417.8
3094.5
3096.0
3097.8
3093.3
3094.5
3096.0
3061.2
3082.6
3071.9
3093.3
3050.5
3061.2
3071.9
3082.6
3043.7
3047.1
3047.1
3048.8
3048.8
3050.5
Paved Area 7: Point 28
s 17 -23
Building 124
Paved Area 6: Point 27
int 24
Paved Area 5: Point 26

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0600 FSS Package		
Comments:	B-122 & B-124 Paved Exterior Areas		
Area (m²):	3,174	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	158.6
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	598	Estimated Conc. (cpm):	265
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 444 ± 157 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	27	178.5	22.7	431

BMS Download Survey Report Data Summary
Characterization Package A1200
Building 122 & 124 Exterior Surfaces
FSS Package: C0500

	Roof		Wall	
	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min
	435	566	442	726
	317	541	404	375
	332	460	298	272
	311	553	311	305
	296	573	327	337
	310	457	406	599
	339	495	449	673
	321	453	390	647
	336	509	396	628
	350	587	271	264
	350	508	287	304
	304	572	295	580
	321	381	197	220
	365	394	204	247
	323	563	300	576
	339	404	214	223
	341	529	210	253
	295	498	226	234
	301	351	294	505
	309	336	279	507
	383	480	279	541
	338	532	306	571
	333	548	195	221
	364	492	325	558
	377	521	314	603
	372	641	327	541
	310	575	311	612
			341	582
			184	248
			154	198
			195	186
			166	189
			308	643
			296	572
			271	251
			187	219
			175	200
			137	160
			178	180
Average	**336.0**	**500.7**	**278.2**	**403.8**
Standard Deviation	**31.8**	**76.2**	**82.0**	**185.1**
No of Measurements	**27**	**27**	**39**	**39**
All Measurement Average	**301.8**	**443.5**		
Standard Deviation	**71.8**	**157.0**		
No of Measurements	**66**	**66**		

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 4-30-03

Download Station #: 1 Download File #: 103
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** SRK2986 **Signature:** [signature] **Date:** 4-29-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package CD620, B-122&124, Exterior Paved Areas
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.237			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1 350	2 316	3 347	4 N/A	5 N/A	6 N/A	314
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff = .135

Duratek™

M2350-1 Download Beta Report

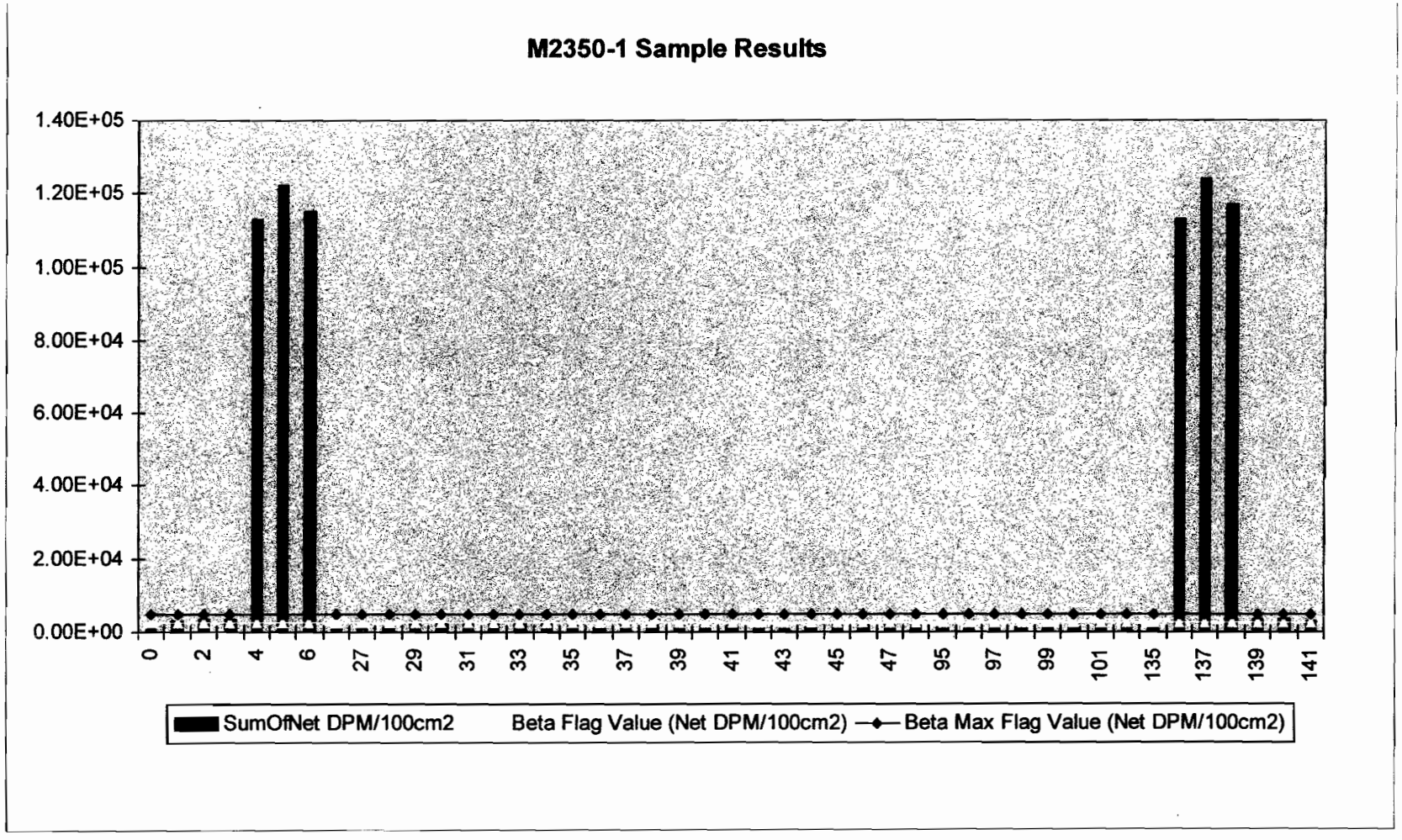
File Name : 00000103	Survey Description :Package C0600, B122 and 124, Exterior Paved Areas	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.237	Survey Date : 4/29/03

Print Name	Signature	Date
Doug Kjos	DRK	9/9/03

Comments:

Sign-Off PAUL E. ELY — Paul C Ely — 9-9-03

Print Name — Signature — Date


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
27
29
31
33
35
37
39
41
43
45
47
95
97
99
101
135
137
139
141
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000103

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	ZZZZZ	0	3,012.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,009
ZZZZZ	FD184	1	1,213.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,054
ZZZZZ	FD184	2	1,394.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,660
ZZZZZ	FD184	3	1,315.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,396
ZZZZZ	10002	4	34,115.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	113,234
ZZZZZ	10002	5	36,847.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	122,383
ZZZZZ	10002	6	34,722.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	115,267
C0600	ZZZZZ	26	350.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	1,172
C0600	ZZZZZ	27	316.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	1,058
C0600	ZZZZZ	28	347.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	1,162
C0600	01F01	29	676.0	60	FLDCT	B0005	ZZZZZ	14	0.0001	2,264
C0600	01F01	30	708.0	60	FLDCT	B0005	ZZZZZ	10	0.0001	2,371
C0600	01F01	31	658.0	60	FLDCT	B0005	ZZZZZ	8	0.0001	2,203
C0600	01F01	32	652.0	60	FLDCT	B0005	ZZZZZ	7	0.0001	2,183
C0600	01F01	33	786.0	60	FLDCT	B0005	ZZZZZ	16	0.0001	2,632
C0600	01F01	34	678.0	60	FLDCT	B0005	ZZZZZ	3	0.0001	2,270
C0600	01F01	35	487.0	60	FLDCT	B0002	ZZZZZ	15	0.0001	1,631
C0600	01F01	36	454.0	60	FLDCT	B0002	ZZZZZ	13	0.0001	1,520
C0600	01F01	37	572.0	60	FLDCT	B0005	ZZZZZ	9	0.0001	1,915
C0600	01F01	38	474.0	60	FLDCT	B0005	ZZZZZ	2	0.0001	1,587
C0600	01F01	39	522.0	60	FLDCT	B0005	ZZZZZ	4	0.0001	1,748
C0600	01F01	40	462.0	60	FLDCT	B0005	ZZZZZ	6	0.0001	1,547
C0600	01F01	41	472.0	60	FLDCT	B0005	ZZZZZ	5	0.0001	1,581
C0600	01F01	42	453.0	60	FLDCT	B0005	ZZZZZ	1	0.0001	1,517
C0600	01F01	43	461.0	60	FLDCT	B0002	ZZZZZ	12	0.0001	1,544
C0600	01F01	44	439.0	60	FLDCT	B0002	ZZZZZ	17	0.0001	1,470
C0600	01F01	45	587.0	60	FLDCT	B0002	ZZZZZ	11	0.0001	1,966
C0600	01F01	46	483.0	60	FLDCT	B0005	ZZZZZ	19	0.0001	1,617
C0600	01F01	47	530.0	60	FLDCT	B0005	ZZZZZ	18	0.0001	1,775
C0600	01F01	48	564.0	60	FLDCT	B0005	ZZZZZ	23	0.0001	1,889
C0600	01F01	95	416.0	60	FLDCT	B0005	ZZZZZ	21	0.0001	1,393
C0600	01F01	96	377.0	60	FLDCT	B0005	ZZZZZ	22	0.0001	1,262
C0600	01F01	97	406.0	60	FLDCT	B0005	ZZZZZ	20	0.0001	1,360
C0600	01F01	98	417.0	60	FLDCT	B0002	ZZZZZ	24	0.0001	1,396
C0600	01F01	99	318.0	60	FLDCT	B0002	ZZZZZ	25	0.0001	1,065
C0600	01F01	100	413.0	60	FLDCT	B0002	ZZZZZ	26	0.0001	1,383
C0600	01F01	101	539.0	60	FLDCT	B0002	ZZZZZ	27	0.0001	1,805
C0600	01F01	102	564.0	60	FLDCT	B0002	ZZZZZ	28	0.0001	1,889
ZZZZZ	ZZZZZ	135	2,651.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	888

Beta Flag	2500 -	_____
Beta Max Flag	5000	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
ZZZZZ	10002	136	34,059.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	113,167
ZZZZZ	10002	137	37,364.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	124,235
ZZZZZ	10002	138	35,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	117,092
ZZZZZ	FD184	139	1,260.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,332
ZZZZZ	FD184	140	1,284.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,412
ZZZZZ	FD184	141	1,234.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,245

Beta Flag	2500 -	
Beta Max Flag	5000	

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- C0600

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D. Kjos (Print) Signature [signature] Date 4-29-03 Time 1430

Counted by Betty S. Kjos (Print) Signature [signature] Date 4-30-03 Time 1000

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 52 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .20 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle:	MDA = 106 dpm/100 cm² β-γ		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
6	45	0	< MDA
8	47	0	
13	51	0	
14	47	0	
28	47	0	< MDA
		N	
		A	

Circle:	MDA = 13 dpm/100 cm² α		
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
6	0	0	< MDA
8	0	0	
13	0	0	
14	0	0	
28	0	0	< MDA
		N	
		A	

Remarks-

Signature- [signature] Reviewed by- Paul C Ely 4/30/03

of

Duratek Inc.
Final Status Survey Package Worksheet for Package C0700
Bristol-Myers Squibb Building 122 & 124 Storm Water Vault

Package Identification No.: C0700	Prepared by: Paul C. Ely
Location: Building 122 & 124 Storm Water Vault	Date prepared: 4/26/2003
Area Classification: 3	

Area Description
The Building 122 & 124 Storm Water Vault

Historical Information
This area includes the Storm Water Vault interior floor, walls and ceiling. The vault is currently in use and the floors are always wet and are covered with mud. The floors will be surveyed to obtain micro-R data only. No contamination levels >5,000 dpm/100 cm^2 were identified during the characterization survey.

General Survey Instructions
(Class 3): 1. Perform a minimum of 10% scan of accessible surfaces. Scan speed should not exceed 2" per second. Judgmental; systematic along transects or of randomly selected grids. 2. Immediately notify the Project Manager if any reading greater than the equivalent of 1,775 dpm/100 cm^2. 3. Perform direct beta measurements at the points given on the survey map that is part of this package. 4. Take a 1-minute count at each survey location.

Special Instructions

Source check meters to Tc-99 and C-14 for beta measurements.

Use gas proportional detector model numbers 43-68 or 43-106 for beta measurements.

Perform a minimum of three one minute field backgrounds in air prior to survey for beta measurements.

Use the sodium iodide detector model number 44-2 for gamma survey measurements.

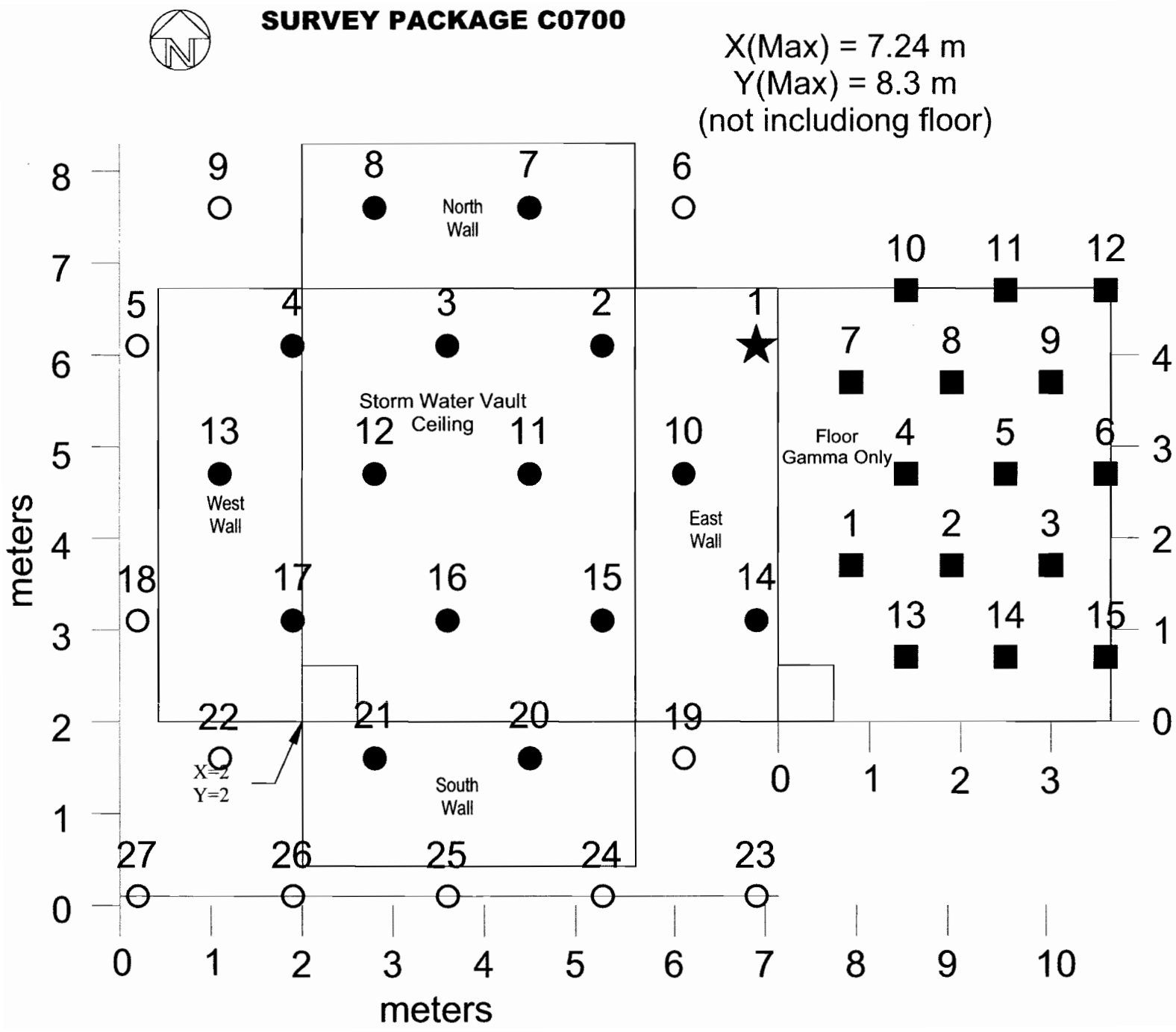
Take five smears in survey unit at five unspecified survey locations.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	Gamma Scan	1 meter Gamma	Smear Gross	LS Smear	Media Sample
L1	L2	L6	L7	L8					(15)	(5)		
Bristol Myers Squibb Building 122 & 124 Storm Water Vault												
C0700	01F01	ZZZZZ	ZZZZZ	See map	Floor 25%	N/A	N/A		NDK-4-29-03	N/A	N/A	N/A
C0700	01W01	ZZZZZ	ZZZZZ	See map	Walls 10%	NDK / 4-29-03	NDK/4-29-03	N/A	N/A	NDK/4-29-03	N/A	N/A
C0700	01C01	ZZZZZ	ZZZZZ	See map	Ceilings 10%	NDK/ 4-29-03	NDK/4-29-03	N/A	N/A	N/A	N/A	N/A

Package Review
Date Package Completed: 4/30/03
Package Reviewed by and Date: Paul C Eg 4/30/03

Survey Comments


SURVEY PACKAGE C0700
X(Max) = 7.24 m
Y(Max) = 8.3 m
(not includiong floor)
North Wall
Storm Water Vault Ceiling
West Wall
East Wall
South Wall
Floor Gamma Only
X=2
Y=2
meters
meters

Survey Package C0700
Storm Water Vault

X (Max):	7.2	m	Walls & Ceiling	3.7	Floors
Y (Max):	8.3	m	Walls & Ceiling	4.7	Floors
A (Area):	60	m^2	Walls & Ceiling	17	Floors
Actual Survey Area:	44	m^2	Walls & Ceiling	17	Floors
COMPASS Survey Points:	14	27%	percent void area		
N (Points):	24	19	Estimated Minimum Points	16	Floors

$$L = \left[\frac{A}{0.866 * N}\right]^{1/2}$$

L=	1.7	meters	(distance between measurement points)	1.1

$$D = 0.866 * L$$

D=	1.5	meters	(distance between rows)	1
L/2=	0.9	meters	(row offset value)	0.6
X (Random):	1.5		random number generator	2.6
Y (Random):	8.1		random number generator	2.4
X (Origin):	7		initially generated random number	0.8
Y (Origin):	6.1		initially generated random number	1.7
Number of rows:	6			5
Number of columns:	4			3

Survey Point	**Survey Location (walls & ceiling) X**	**Y**	**Row**
Starting Point (1)	7.0	6.1	5
2	5.3	6.1	
3	3.6	6.1	
4	1.9	6.1	
5	0.2	6.1	
6	6.2	7.6	6
7	4.5	7.6	
8	2.8	7.6	
9	1.1	7.6	
10	6.2	4.6	4
11	4.5	4.6	
12	2.8	4.6	
13	1.1	4.6	
14	7.0	3.1	3
15	5.3	3.1	
16	3.6	3.1	
17	1.9	3.1	
18	0.2	3.1	
19	6.2	1.6	2
20	4.5	1.6	
21	2.8	1.6	
22	1.1	1.6	
23	7.0	0.1	1
24	5.3	0.1	
25	3.6	0.1	
26	1.9	0.1	
27	0.2	0.1	

Survey Point	**Survey Location (Floor) X**	**Y**	**Row**
1	0.8	1.7	2
2	1.9	1.7	
3	3.0	1.7	
4	1.4	2.7	3
5	2.5	2.7	
6	3.6	2.7	
7	0.8	3.7	4
8	1.9	3.7	
9	3.0	3.7	
10	1.4	4.7	5
11	2.5	4.7	
12	3.6	4.7	
13	0.8	0.7	1
14	1.9	0.7	
15	3.0	0.7	

LBGR Determination

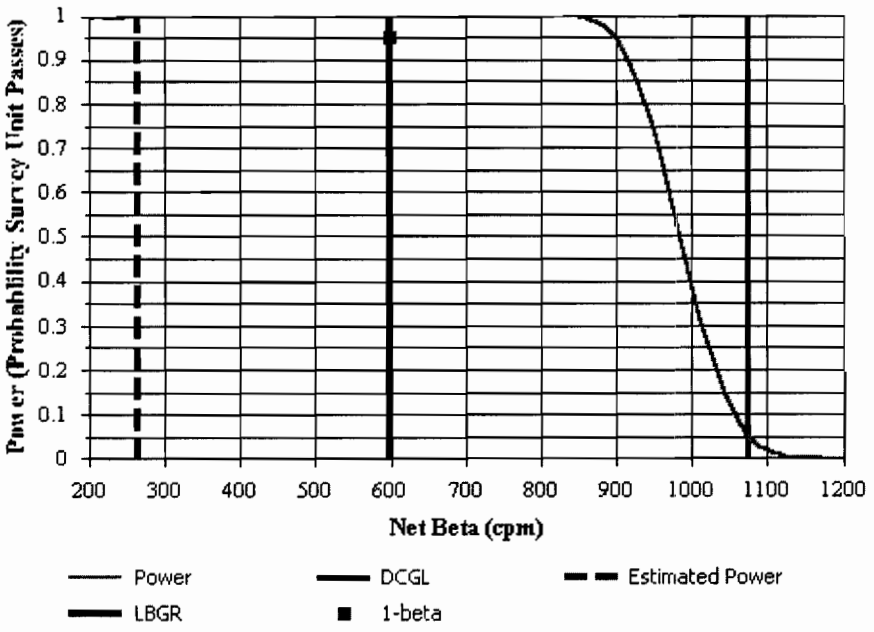
σ =	158.6	cpm (Calculated by COMPASS)
DCGLW =	1,074	cpm (Calculated by COMPASS)
$DCGL_W/\sigma$ =	6.8	**>3**
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	**3**
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**598**	**cpm**

Building Surface Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	C0700 FSS Packager		
Comments:	B-124 Storm Water Vault		
Area (m²):	43	Classification:	3
Selected Test:	Sign	Estimated Sigma (cpm):	158.6
DCGL (cpm):	1,074	Sample Size (N):	14
LBGR (cpm):	598	Estimated Conc. (cpm):	265
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.050		

Prospective Power Curve



Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Co-60	7,100

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 7,100
Total Efficiency: 0.12
Gross Beta DCGLw (cpm): 1,074

ID	Type	Mode	Area (cm²)
1	Ludlum Model 2350 with Model 43-68 Detector	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Co-60	96.09	1.0000	0.47	0.25	0.1175

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 444 ± 157 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
Concrete	27	178.5	22.7	431

BMS Download Survey Report Data Summary
Characterization Package A1200
Building 122 & 124 Exterior Surfaces
FSS Package: C0500, C0600, C0700

	Roof		Wall	
	Background	Gross	Background	Gross
	Counts/min	counts/min	Counts/min	counts/min
	435	566	442	726
	317	541	404	375
	332	460	298	272
	311	553	311	305
	296	573	327	337
	310	457	406	599
	339	495	449	673
	321	453	390	647
	336	509	396	628
	350	587	271	264
	350	508	287	304
	304	572	295	580
	321	381	197	220
	365	394	204	247
	323	563	300	576
	339	404	214	223
	341	529	210	253
	295	498	226	234
	301	351	294	505
	309	336	279	507
	383	480	279	541
	338	532	306	571
	333	548	195	221
	364	492	325	558
	377	521	314	603
	372	641	327	541
	310	575	311	612
			341	582
			184	248
			154	198
			195	186
			166	189
			308	643
			296	572
			271	251
			187	219
			175	200
			137	160
			178	180
Average	**336.0**	**500.7**	**278.2**	**403.8**
Standard Deviation	**31.8**	**76.2**	**82.0**	**185.1**
No of Measurements	**27**	**27**	**39**	**39**
All Measurement Average	**301.8**	**443.5**		
Standard Deviation	**71.8**	**157.0**		
No of Measurements	**66**	**66**		

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kios **Signature:** [signature] **Date:** 4-30-03

Download Station #: 1 Download File #: 108
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kios **User ID** DRK2986 **Signature:** [signature] **Date:** 4-29-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: Package CO700, B-122 & 124 Storm Water Vault
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR095085	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

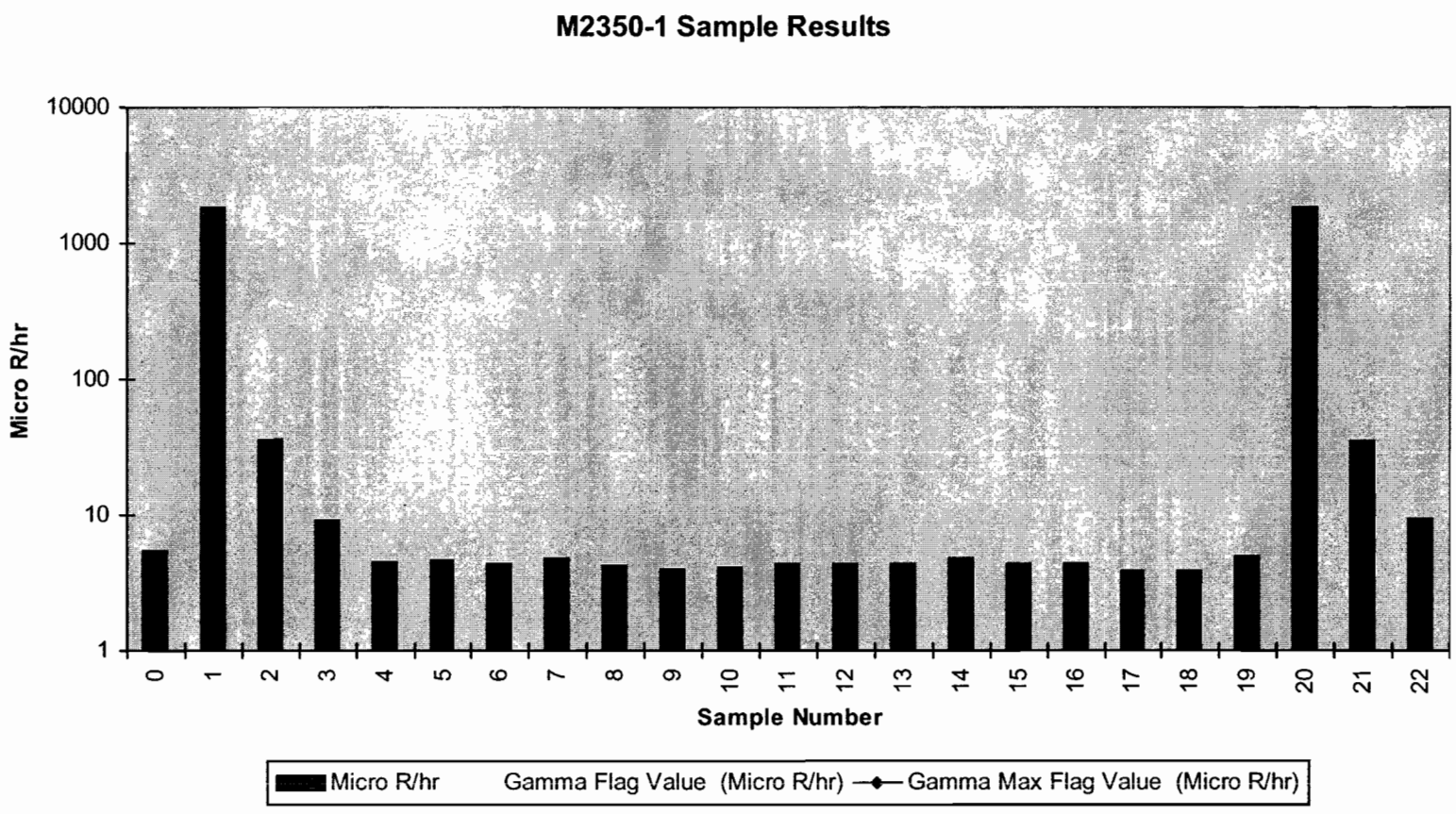
M2350-1 Download GAMMA Report

File Name : 00000108	Survey Description :Pckage C0700, B-122 and 124 Storm Water Vault	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 6/30/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 6/30/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17356190000		Survey Date : 4/29/03

Print Name	Signature	Date
Doug Kjos	Doug RK	4/30/03

Comments:

Sign-Off PAUL C ELY (Print Name) Paul C Ely (Signature) 4/30/03 (Date)


M2350-1 Sample Results
10000
1000
100
10
1
Micro R/hr
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*μ R/hr:*
ZZZZZ	ZZZZZ	0	7,748.0	300	PRGBK	ZZZZZ	ZZZZZ	0		5.36E+00
ZZZZZ	19453	1	539,464.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.86E+03
ZZZZZ	19453	2	10,453.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.61E+01
ZZZZZ	19453	3	2,668.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.22E+00
C0700	01F01	4	325.0	15	FLDCT	B0003	ZZZZZ	1		4.49E+00
C0700	01F01	5	333.0	15	FLDCT	B0003	ZZZZZ	2		4.60E+00
C0700	01F01	6	318.0	15	FLDCT	B0003	ZZZZZ	3		4.40E+00
C0700	01F01	7	343.0	15	FLDCT	B0003	ZZZZZ	4		4.74E+00
C0700	01F01	8	308.0	15	FLDCT	B0003	ZZZZZ	5		4.26E+00
C0700	01F01	9	292.0	15	FLDCT	B0003	ZZZZZ	6		4.04E+00
C0700	01F01	10	299.0	15	FLDCT	B0003	ZZZZZ	7		4.13E+00
C0700	01F01	11	316.0	15	FLDCT	B0003	ZZZZZ	8		4.37E+00
C0700	01F01	12	316.0	15	FLDCT	B0003	ZZZZZ	9		4.37E+00
C0700	01F01	13	314.0	15	FLDCT	B0003	ZZZZZ	10		4.34E+00
C0700	01F01	14	351.0	15	FLDCT	B0003	ZZZZZ	11		4.85E+00
C0700	01F01	15	319.0	15	FLDCT	B0003	ZZZZZ	12		4.41E+00
C0700	01F01	16	315.0	15	FLDCT	B0003	ZZZZZ	13		4.36E+00
C0700	01F01	17	279.0	15	FLDCT	B0003	ZZZZZ	14		3.86E+00
C0700	01F01	18	279.0	15	FLDCT	B0003	ZZZZZ	15		3.86E+00
ZZZZZ	ZZZZZ	19	7,092.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.90E+00
ZZZZZ	19453	20	533,185.1	60	PTG00	ZZZZZ	ZZZZZ	0		1.84E+03
ZZZZZ	19453	21	10,162.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.51E+01
ZZZZZ	19453	22	2,721.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.41E+00

Gamma Flag - _____

Gamma Max Flag

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyes **Signature:** [signature] **Date:** 4-30-03

Download Station #: 1 Download File #: 107
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyes **User ID** HRK2986 **Signature:** [signature] **Date:** 4-29-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 129401

Survey Unit Description: Package C0700, B-122 & 124, Steam Water Vault
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-30-03 Detector Calibration Due Date: 6-30-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
■ Beta β	PR119337	43-68B	.237			
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1 278	2 277	3 300	4 N/A	5 N/A	6 N/A	285
α Alpha	1	2	3	4	5	6	

COMMENTS: C-14 Eff: .135

Duratek™

M2350-1 Download Beta Report

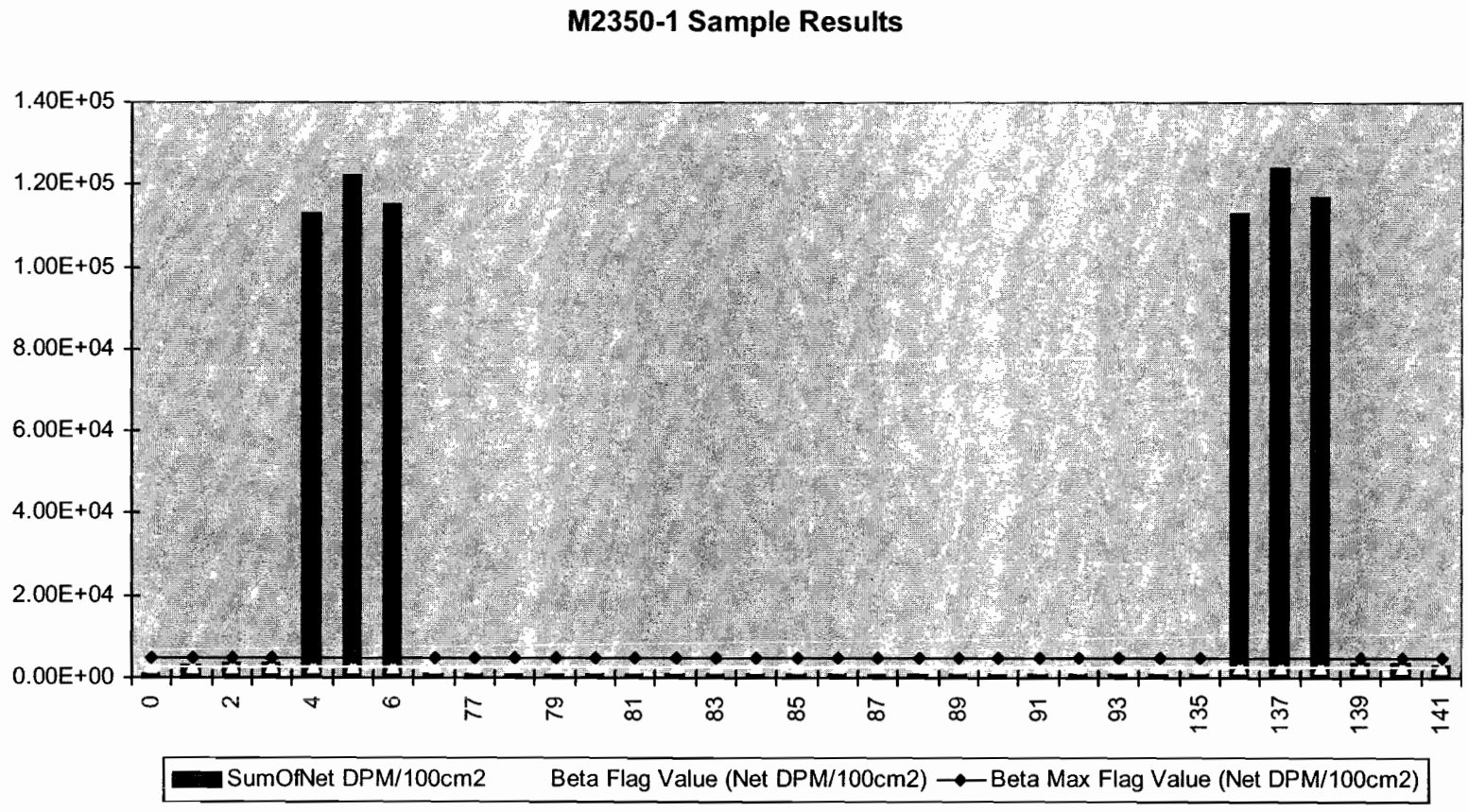
File Name : 00000107	Survey Description :Pckage C0700, B-122 and 124 Storm Water Vault	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 129401	Instrument Cal. Due : 6/30/03
Detector Model : 43-68B	Detector S/N : 119337	Detector Cal. Due : 6/30/03
Measurement Type : Beta	Detector Type : 02200 : 126 cm2 Gas Proportional Detector	
Detector Area : 126	Efficiency : 0.237	Survey Date : 4/29/03

Print Name	Signature	Date
Doug Kjos		9/9/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C. ELY	Paul C Ely	9-9-03


M2350-1 Sample Results
1.40E+05
1.20E+05
1.00E+05
8.00E+04
6.00E+04
4.00E+04
2.00E+04
0.00E+00
0
2
4
6
77
79
81
83
85
87
89
91
93
135
137
139
141
SumOfNet DPM/100cm2
Beta Flag Value (Net DPM/100cm2)
Beta Max Flag Value (Net DPM/100cm2)

Duratek Beta Survey Report

Download File Name: 00000107

Package ID(L1)	*Surface (L2)*	*Sample #*	*Counts*	*Time (sec)*	*Count Type(L5)*	*Material Type(L6)*	*Grid ID(L7)*	*Location # (L8)*	*Bkgd (cpm)*	*Net (DPM/100cm2)*
ZZZZZ	ZZZZZ	0	3,012.0	600	PRBBK	ZZZZZ	ZZZZZ	0	0.0001	1,009
ZZZZZ	FD184	1	1,213.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,054
ZZZZZ	FD184	2	1,394.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,660
ZZZZZ	FD184	3	1,315.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	3,396
ZZZZZ	10002	4	34,115.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	113,234
ZZZZZ	10002	5	36,847.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	122,383
ZZZZZ	10002	6	34,722.0	60	PRB00	ZZZZZ	ZZZZZ	0	301	115,267
C0700	ZZZZZ	76	278.0	60	FLDBK	ZZZZZ	ZZZZZ	1	0.0001	931
C0700	ZZZZZ	77	277.0	60	FLDBK	ZZZZZ	ZZZZZ	2	0.0001	928
C0700	ZZZZZ	78	300.0	60	FLDBK	ZZZZZ	ZZZZZ	3	0.0001	1,005
C0700	01C01	79	292.0	60	FLDCT	B9999	ZZZZZ	2	0.0001	978
C0700	01C01	80	287.0	60	FLDCT	B9999	ZZZZZ	15	0.0001	961
C0700	01C01	81	270.0	60	FLDCT	B9999	ZZZZZ	16	0.0001	904
C0700	01C01	82	294.0	60	FLDCT	B9999	ZZZZZ	3	0.0001	985
C0700	01C01	83	291.0	60	FLDCT	B9999	ZZZZZ	11	0.0001	974
C0700	01C01	84	286.0	60	FLDCT	B9999	ZZZZZ	12	0.0001	958
C0700	01W01	85	320.0	60	FLDCT	B0003	ZZZZZ	17	0.0001	1,072
C0700	01W01	86	319.0	60	FLDCT	B0003	ZZZZZ	13	0.0001	1,068
C0700	01W01	87	303.0	60	FLDCT	B0003	ZZZZZ	4	0.0001	1,015
C0700	01W01	88	243.0	60	FLDCT	B0003	ZZZZZ	8	0.0001	814
C0700	01W01	89	287.0	60	FLDCT	B0003	ZZZZZ	7	0.0001	961
C0700	01W01	90	272.0	60	FLDCT	B0003	ZZZZZ	1	0.0001	911
C0700	01W01	91	295.0	60	FLDCT	B0003	ZZZZZ	10	0.0001	988
C0700	01W01	92	252.0	60	FLDCT	B0003	ZZZZZ	14	0.0001	844
C0700	01W01	93	303.0	60	FLDCT	B0003	ZZZZZ	20	0.0001	1,015
C0700	01W01	94	279.0	60	FLDCT	B0003	ZZZZZ	21	0.0001	934
ZZZZZ	ZZZZZ	135	2,651.0	600	PTBBK	ZZZZZ	ZZZZZ	0	0.0001	888
ZZZZZ	10002	136	34,059.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	113,167
ZZZZZ	10002	137	37,364.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	124,235
ZZZZZ	10002	138	35,231.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	117,092
ZZZZZ	FD184	139	1,260.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,332
ZZZZZ	FD184	140	1,284.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,412
ZZZZZ	FD184	141	1,234.0	60	PTB00	ZZZZZ	ZZZZZ	0	265	3,245

Beta Flag 2500 - _____

Beta Max Flag 5000

SURVEY DOCUMENTATION AND REVIEW REDS-OPS-302

REVISION 4

Survey #- C0700

ATTACHMENT 6.2
SMEAR SURVEY RESULTS FORM
(example)

Performed by D. Kjos (Print) Signature D Kjos / BSK Date 4-29-03 Time 1400

Counted by Betty S. Kjos (Print) Signature BSK Date 4-30-03 Time 0945

All smears are 100 cm² unless otherwise noted.

β-γ Counter Type/Model No.: 2929 Bkg = 52 Count Time = 1 CPM Eff. Factor = .255

Serial #- 118419 Cal Due Date—5-29-03

α-Counter Type/Model No.: 2929 Bkg = .20 Count Time = 1 CPM Eff. Factor = .325

Serial #- 118419 Cal Due Date—5-29-03

Circle: MDA = 106 dpm/100 cm² β-γ			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100 cm²
1	44	0	<MDA
8	52	0	
13	65	13	
14	49	0	
20	45	0	<MDA

Circle: MDA = 13 dpm/100 cm² α			
Smear Number	CPM (gross)	nCPM (CPM-BKG)	dpm 100cm²
1	0	0	<MDA
8	2	1.80	
13	0	0	
14	0	0	
20	0	0	<MDA

Remarks-

Signature- BSK Reviewed by- Paul C Eg 4/30/03

of

Duratek Inc.
Survey Package Worksheet for Package E0100
Bristol-Myers Squibb B-122 & B-124 Undisturbed Soils

Package Identification No.: E0100	Prepared by: Paul C. Ely
Location: Building 122 & Building 124 Undisturbed Soils	Date prepared: 4/24/2003
Area Classification: Class 3	

Area Description

The survey is for the B-122 & B-124 Undisturbed Soils.

Historical Information

The characterization data for the Building 122 and Building 124 undisturbed soils were not contaminated and that the soils up to 20 feet deep around the tank vault were not contaminated.

General Survey Instructions

The COMPASS program was utilized to generate a minimum sample requirement for this area of 14 samples (see attached). Sixteen random sample locations in the B-122 & B-124 undisturbed soil area were determined and laid out as indicated on the attached survey map.

1. Mark the location of the sample location with a survey flag in the soil at the locations indicated on the survey map.
2. Obtain 1 exposure rate measurement on contact with the surface and another at 1 meter above the surface at each survey measurement location with M2350-1.
3. Obtain approximately one gallon of soil from each sample location at a depth of 0 to 6-inches.
4. Use only the L1 and L8 codes and sample depth when labeling samples for analysis.

Survey Package Completion.

1. When all measurements, samples or scans are collected, initial and date the "MEASUREMENT TYPE" block on the survey package to indicate the measurements or samples were collected.
2. Note any problems, comments, or other information pertinent to the data or sample collection under the "FIELD NOTES" section.

Use all location codes provided below when taking measurements.

Survey Package: E0100 continued

Special Instructions
Use the sodium iodide detector model number 44-2 for gamma survey measurements.

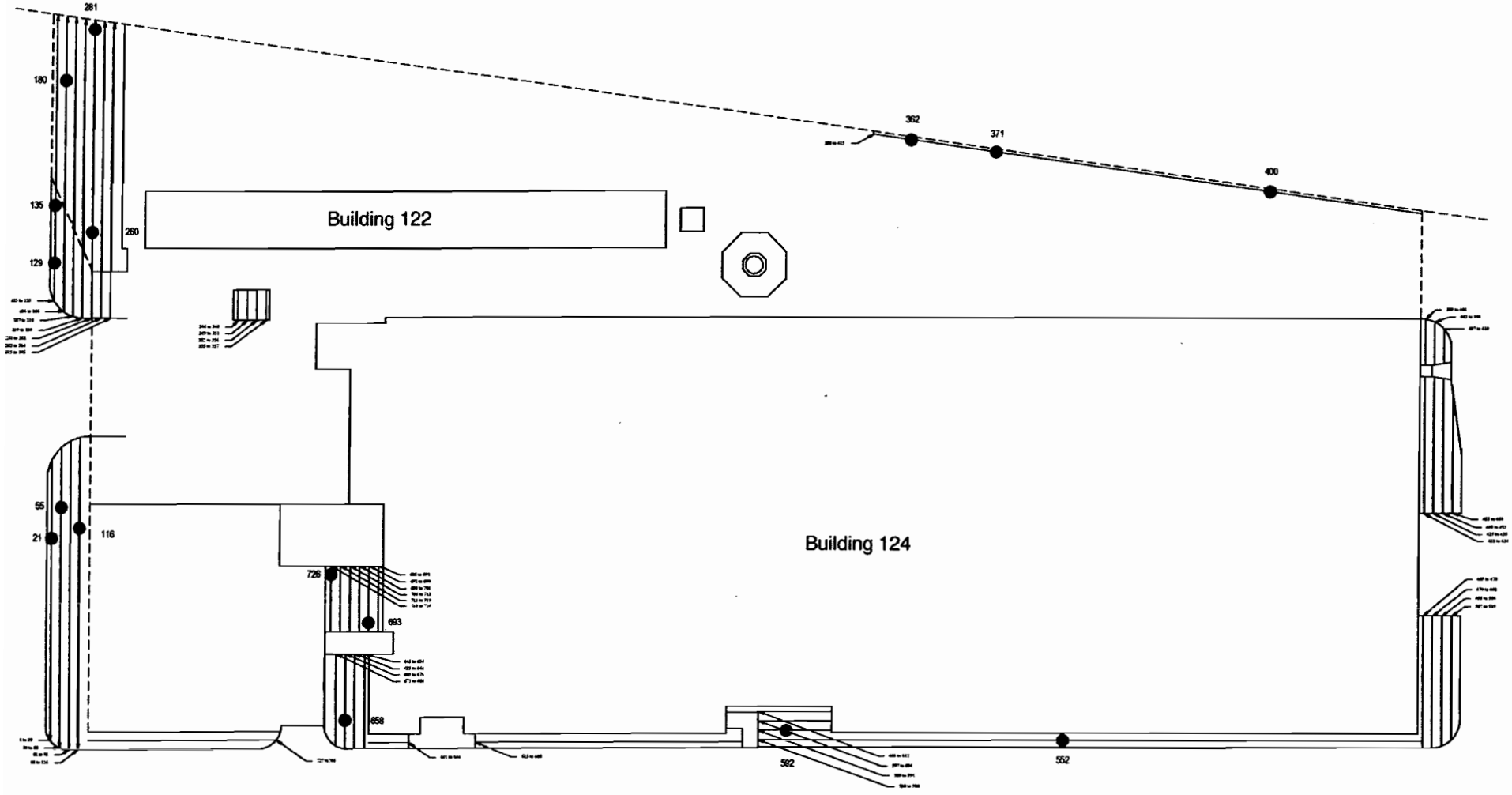
Survey performance (Initial and date as each survey is complete)

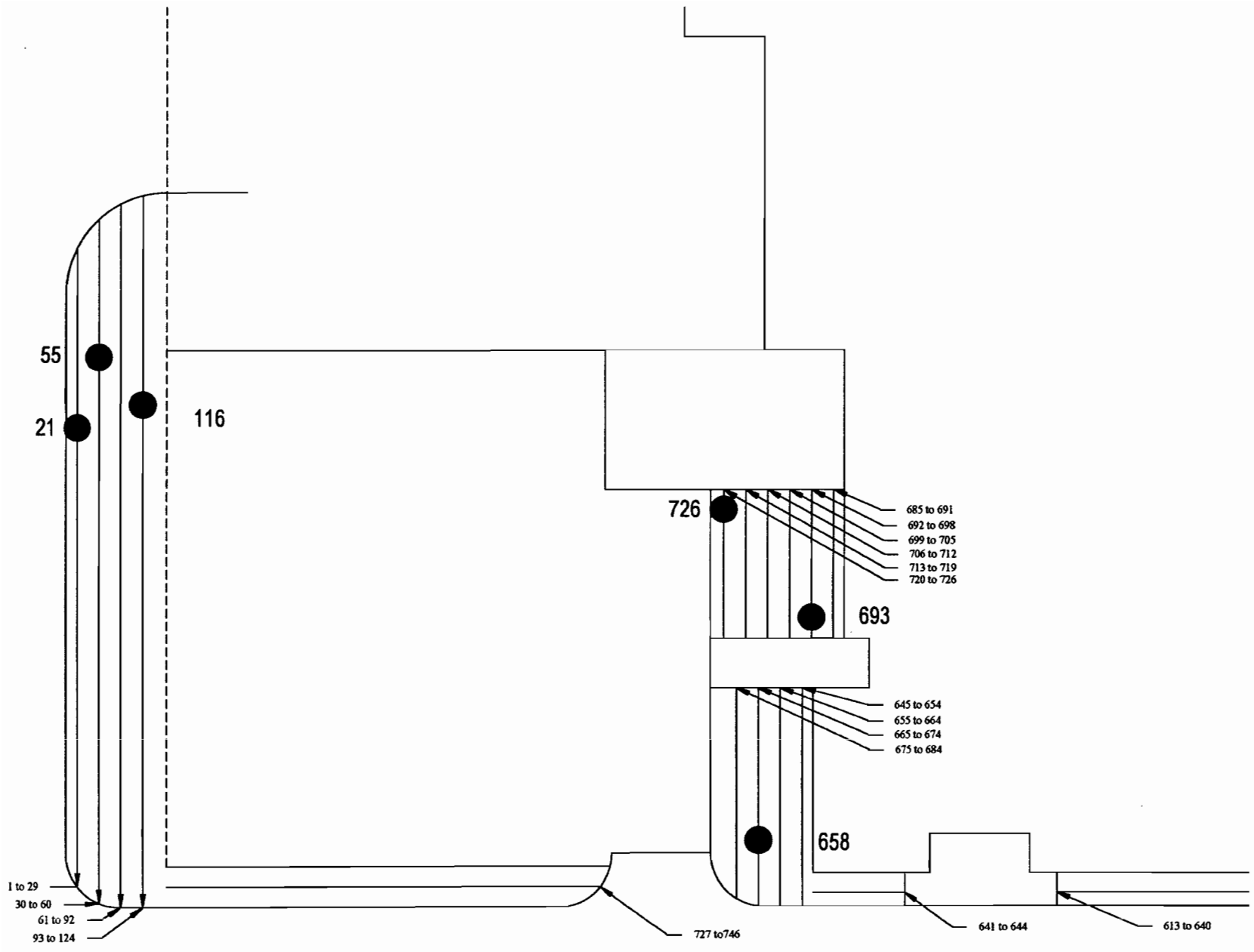
Location Code					General Description	Beta Scan	Direct Beta	Contact Gamma (16)	1 meter Gamma (16)	Smear Gross	LS Water Sampler	Media Sample (16)
L1	L2	L6	L7	L8								
Bristol Myers Squibb B-122 & B-124 Undisturbed Soils												
E0100	ZZZZZ	ZZZZZ	ZZZZZ	1 thru 16	**Outdoor Soils B-122 & B-124**	NA	NA	NEK/4-3-03	NEK/4-3-03	NA	NA	NEK/4-3-03

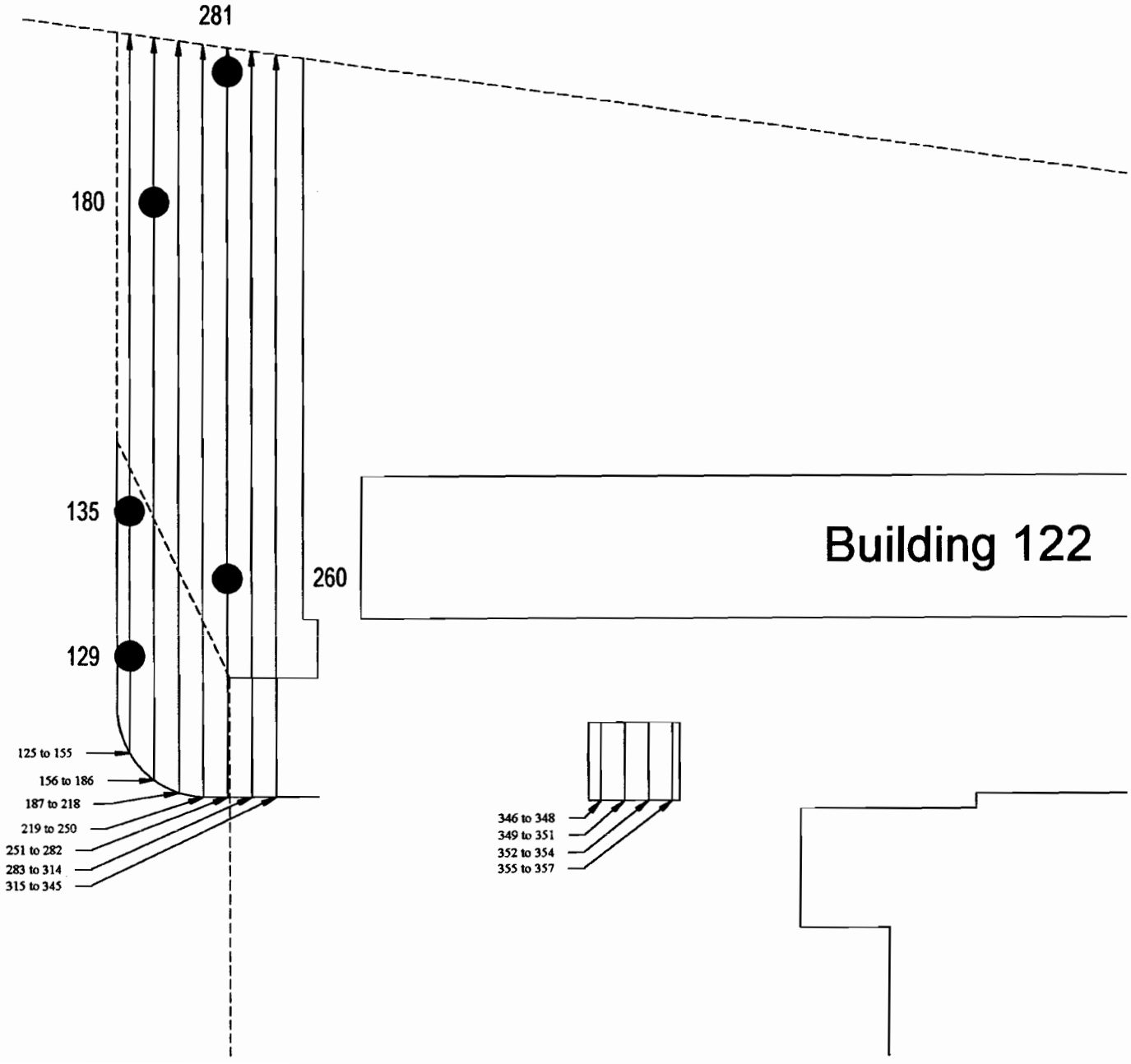
Package Review	
Date Package Completed:	4/30/03
Package Reviewed by and Date:	Paul C Ely 4/30/03

Survey Comments

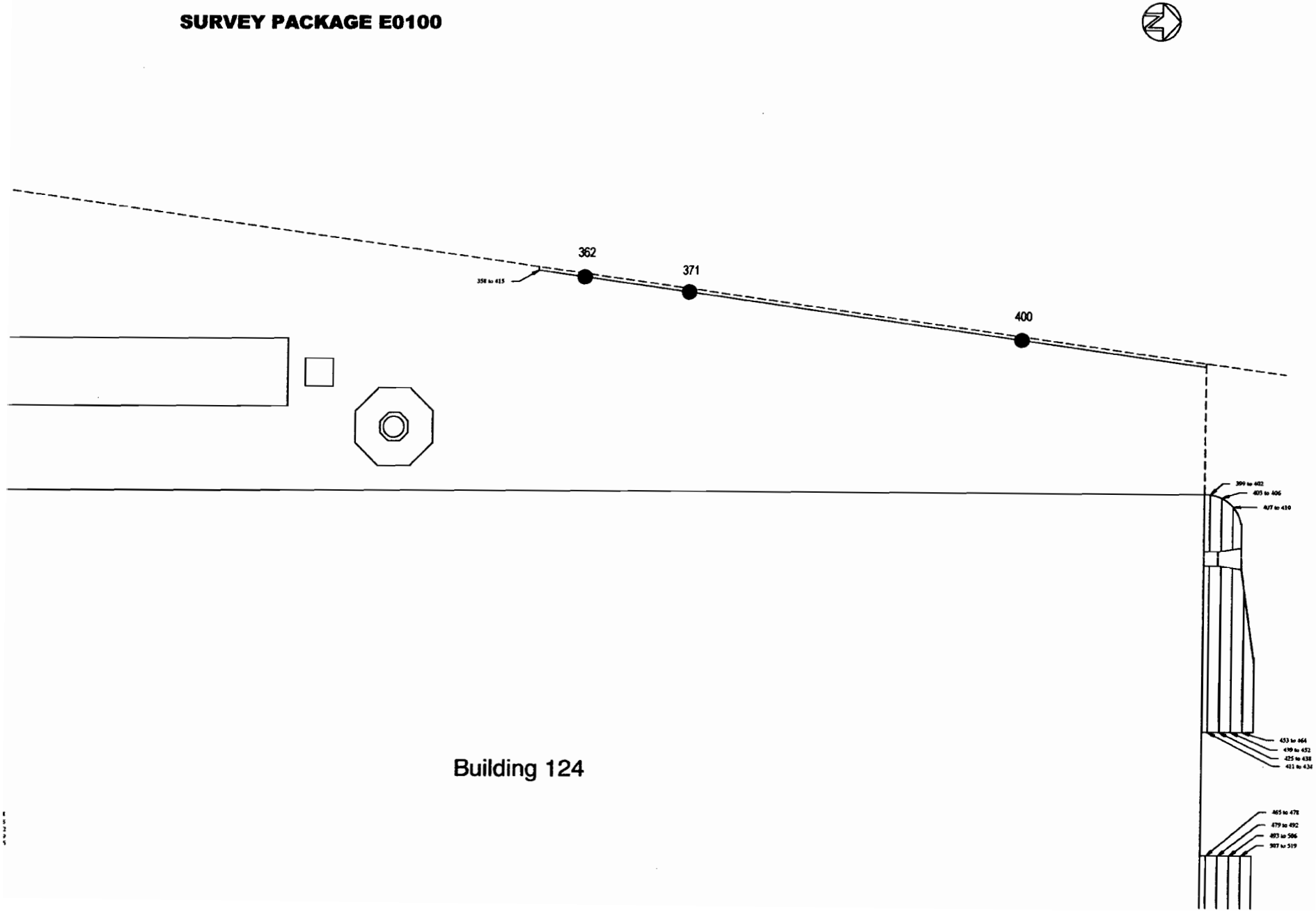
SURVEY PACKAGE E0100



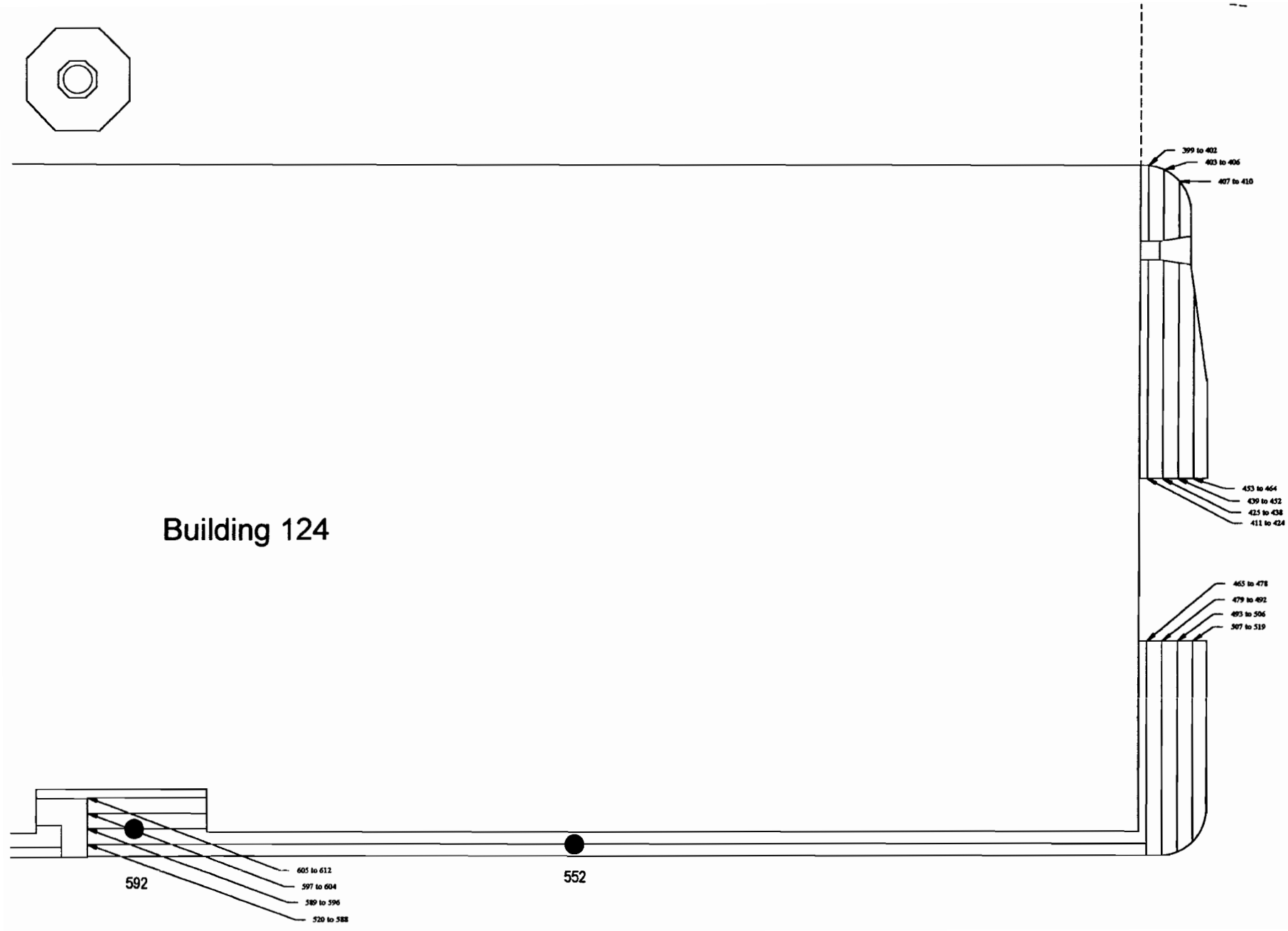

55
21
116
726
685 to 691
692 to 698
699 to 705
706 to 712
713 to 719
720 to 726
693
645 to 654
655 to 664
665 to 674
675 to 684
658
1 to 29
30 to 60
61 to 92
93 to 124
727 to746
641 to 644
613 to 640


281
180
135
129
260
Building 122
125 to 155
156 to 186
187 to 218
219 to 250
251 to 282
283 to 314
315 to 345
346 to 348
349 to 351
352 to 354
355 to 357

SURVEY PACKAGE E0100



Building 124


Building 124
399 to 402
403 to 406
407 to 410
453 to 464
439 to 452
425 to 438
411 to 424
465 to 478
479 to 492
493 to 506
507 to 519
605 to 612
597 to 604
589 to 596
520 to 588
592
552

— 720 to 726

93

— 645 to 654
— 655 to 664
— 665 to 674
— 675 to 684

Survey Package E0100
Building 124 Exterior Environemntal Areas

Number of Potential Survey Points: 746
Potential Survey Points are 1-meter Apart

The undistrubed outdoor soil areas are narrow bands of soil. These areas were divided into one meter wide strips and assigned potential sample locations one meter apart. There were a total of 747 potentail locations, a drawings is provided indicating tese locations.

Survey Area (based total undisturbed soil area):	830
COMPASS Number of Survey Points:	14
Planned Number of Survey Points:	16

Survey Point	Random Location Generator	Random Locations to be Sampled
1	276	693
2	366	21
3	51	260
4	696	400
5	81	371
6	46	726
7	262	552
8	353	55
9	738	116
10	551	135
11	357	658
12	174	129
13	302	362
14	416	180
15	693	592
16	124	281

LBGR Determination

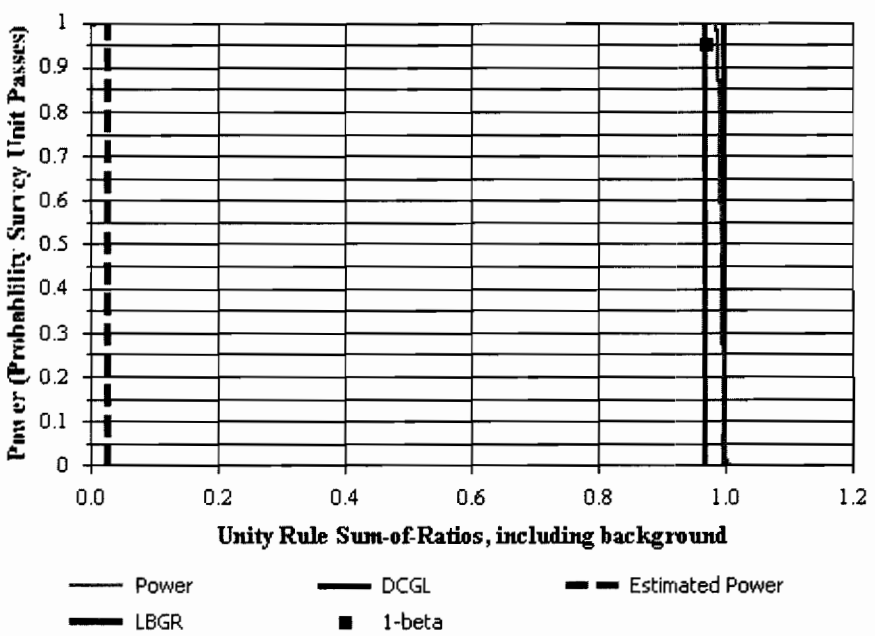
σ =	0.010	SUM OF FRACTIONS (Calculated
DCGLW =	1	SUM OF FRACTIONS (Calculated
$DCGL_W/\sigma$ =	100.0	**>3**
Δ/σ =	$(DCGL_W - LBGR) / \sigma$ =	**3**
LBGR =	$DCGL_W - 3\sigma$	
LBGR =	**0.970**	**SUM OF FRACTIONS**

Surface Soil Survey Plan

Survey Plan Summary

Site:	E.R. Squibb & Sons Decommissioning		
Planner(s):	Paul Ely & Bill Hoey		
Survey Unit Name:	E0100 FSS Package		
Comments:	Undisturbed B-122 & B-124 Soils		
Area (m²):	830	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.01
DCGL (SOR):	1	Sample Size (N):	14
LBGR (SOR):	0.97	Estimated Conc. (SOR):	0.03
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Co-60	3.80	N/A	N/A	N/A	N/A
Cs-137	11.00	N/A	N/A	N/A	N/A
Mn-54	9.00	N/A	N/A	N/A	N/A

Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Co-60	0.0535 ± 0.0254	N/A
Cs-137	0.0904 ± 0.0791	N/A
Mn-54	0.0612 ± 0.0214	N/A

E0100 Soil Results

SAMPLE ID	K-40	MN-54	CO-57	CO-60	CS-134	CS-137	TL-208	PB-212	BI-212	AC-228
BMS-SML-001B	8.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.75E-02	3.71E-01	8.69E-01	1.66E+00	2.20E+00
BMS-SML-002A	5.44E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-01	4.53E-01	6.97E-01	2.50E+00	1.45E+00
BMS-SML-002B	7.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-01	4.95E-01	9.39E-01	4.40E+00	1.55E+00
BMS-SML-003A	1.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.96E-01	9.76E-01	2.71E+00	1.11E+00
BMS-SML-003B	1.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E-01	4.47E-01	9.03E-01	1.33E+00	1.58E+00
BMS-SML-004A	9.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-01	6.90E-01	1.20E+00	3.23E+00	2.19E+00
BMS-SML-004B	1.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.71E-01	1.31E+00	2.95E+00	2.16E+00
BMS-SML-005A	8.97E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-01	4.15E-01	8.10E-01	2.77E+00	1.57E+00
BMS-SML-005B	1.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.99E-02	4.81E-01	7.80E-01	2.97E+00	1.60E+00
BMS-SML-006A	9.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-01	4.16E-01	1.06E+00	2.71E+00	1.69E+00
BMS-SML-006B	1.20E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.88E-01	1.43E+00	2.44E+00	2.09E+00
BMS-SML-007A	5.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-01	3.14E-01	6.80E-01	2.51E+00	1.36E+00
BMS-SML-007B	8.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-01	4.32E-01	6.74E-01	1.86E+00	1.04E+00
BMS-SML-008A	5.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.71E-02	3.47E-01	6.39E-01	2.29E+00	1.16E+00
BMS-SML-008B	6.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.26E-02	2.45E-01	5.28E-01	1.42E+00	7.51E-01
BMS-SML-009A	9.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-01	3.62E-01	9.12E-01	1.47E+00	1.33E+00
BMS-SML-009B	9.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.52E-02	4.43E-01	7.80E-01	1.49E+00	1.04E+00
BMS-SML-010A	7.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.27E-02	2.95E-01	5.75E-01	7.61E-01	1.07E+00
BMS-SML-010B	6.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-01	4.50E-01	1.72E+00	8.79E-01
BMS-SML-011A	1.07E+01	0.00E+00	6.86E-01	0.00E+00	0.00E+00	1.31E-01	4.63E-01	9.50E-01	2.99E+00	1.52E+00
BMS-SML-011B	8.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-02	2.80E-01	7.16E-01	1.32E+00	1.01E+00
BMS-SML-012A	1.14E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.73E-01	4.66E-01	7.21E-01	2.47E+00	1.51E+00
BMS-SML-012B	9.51E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-01	2.93E-01	6.52E-01	1.66E+00	1.26E+00
BMS-SML-013A	8.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-01	2.89E-01	6.70E-01	1.10E+00	1.13E+00
BMS-SML-013B	8.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.32E-02	2.25E-01	5.23E-01	1.79E+00	1.43E+00
BMS-SML-014A	1.31E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.68E-02	3.12E-01	6.46E-01	1.87E+00	1.22E+00
BMS-SML-014B	1.70E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.73E-02	3.64E-01	7.81E-01	0.00E+00	7.09E-01
BMS-SML-015A	1.78E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.06E-02	2.40E-01	5.01E-01	7.21E-01	7.12E-01
BMS-SML-015B	7.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-01	3.26E-01	1.74E+00	4.67E-01
BMS-SML-016A	1.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-02	1.78E-01	3.94E-01	1.40E+00	1.03E+00
BMS-SML-016B	1.80E+01	6.65E-02	0.00E+00	0.00E+00	0.00E+00	1.31E-01	3.61E-01	7.53E-01	0.00E+00	9.68E-01
BMS-SML-017A	1.26E+01	5.69E-02	0.00E+00	0.00E+00	0.00E+00	1.64E-01	3.55E-01	7.83E-01	1.26E+00	1.09E+00
BMS-SML-017B	1.23E+01	0.00E+00	9.49E-01	0.00E+00	0.00E+00	1.17E-01	1.30E-01	5.81E-01	0.00E+00	1.13E+00
BMS-SML-018A	7.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-01	1.58E-01	4.60E-01	1.36E+00	9.65E-01
BMS-SML-018B	6.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.42E-02	1.68E-01	3.85E-01	0.00E+00	6.68E-01
BMS-SML-019A	7.53E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E-02	3.83E-01	6.83E-01	2.09E+00	7.59E-01
BMS-SML-019B	5.46E+00	0.00E+00	7.91E-01	0.00E+00	0.00E+00	0.00E+00	1.71E-01	3.08E-01	6.88E-01	1.13E+00
BMS-SML-020A	2.04E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E-01	2.88E-01	0.00E+00	7.00E-01
BMS-SML-020B	1.74E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.25E-02	1.88E-01	2.63E-01	8.80E-01	4.98E-01
BMS-SML-021A	1.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-01	1.13E-01	3.28E-01	0.00E+00	4.50E-01
BMS-SML-021B	1.38E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.11E-02	1.56E-01	4.10E-01	0.00E+00	8.26E-01
BMS-SML-022A	1.63E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.18E-02	2.19E-01	4.61E-01	0.00E+00	1.02E+00
BMS-SML-022B	1.42E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.62E-02	2.93E-01	6.13E-01	1.59E+00	1.13E+00
BMS-SML-023A	1.36E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-01	4.05E-01	7.99E-01	1.47E+00	1.54E+00
BMS-SML-023B	1.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.62E-02	5.20E-01	9.75E-01	0.00E+00	1.64E+00
BMS-SML-025A	2.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-01	2.47E-01	2.60E-01	1.88E+00	8.00E-01
BMS-SML-025B	4.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-01	2.29E-01	4.27E-01	9.47E-01	7.22E-01
BMS-SML-026A	9.36E+00	0.00E+00	0.00E+00	0.00E+00	2.83E-02	7.21E-02	2.78E-01	5.44E-01	1.73E+00	1.21E+00
BMS-SML-026B	1.18E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-01	1.05E+00	1.49E+00	1.28E+00
BMS-SML-028A	1.22E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-01	2.68E-01	8.48E-01	2.12E+00	9.59E-01
BMS-SML-028B	1.53E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-01	3.65E-01	1.00E+00	1.72E+00	1.24E+00
BMS-SML-030A	1.51E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.35E-01	4.59E-01	1.76E+00	1.00E+00
BMS-SML-030B	1.48E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-02	1.66E-01	4.95E-01	1.23E+00	4.85E-01
BMS-SML-031B	8.98E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.87E-02	2.49E-01	6.39E-01	9.11E-01	9.77E-01
BMS-SML-032-1 (0-2 FT)	1.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-01	4.55E-01	1.13E+00	9.15E-01
BMS-SML-032-10 (18-20 FT)	1.98E+01	0.00E+00	4.30E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	3.28E-01	0.00E+00	5.99E-01
BMS-SML-032-4 (6-8 FT)	8.98E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.21E-01	2.76E-01	1.15E+00	5.55E-01
BMS-SML-032-7 (12-14 FT)	6.74E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.85E-02	2.26E-01	2.04E-01	0.00E+00	5.21E-01
BMS-SML-032-9 (16-18 FT)	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.26E-02	1.74E-01	3.28E-01	1.30E+00	7.24E-01
BMS-SML-033-6 (10-12 FT)	1.16E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.66E-01	4.33E-01	6.12E-01	1.04E+00
BMS-SML-033-9 (16-18 FT)	1.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-01	2.01E-01	1.05E+00	4.08E-01
BMS-SML-034-2 (2-4 FT)	2.60E+01	6.72E-02	0.00E+00	0.00E+00	1.14E-01	0.00E+00	4.34E-01	4.40E-01	2.06E+00	1.29E+00
BMS-SML-034-5 (8-10 FT)	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E-01	2.53E-01	0.00E+00	8.19E-01
BMS-SML-034-6 (10-12 FT)	1.93E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E-01	1.89E-01	1.79E+00	6.64E-01
BMS-SML-034-7 (12-14 FT)	2.00E+01	0.00E+00	0.00E+00	0.00E+00	3.01E-02	0.00E+00	2.07E-01	4.53E-01	1.02E+00	9.07E-01
BMS-SML-034-8 (14-16 FT)	2.44E+01	0.00E+00	0.00E+00	0.00E+00	9.16E-02	0.00E+00	4.11E-01	6.04E-01	2.23E+00	1.35E+00
BMS-SML-034-9 (16-18 FT)	2.26E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.75E-01	5.68E-01	1.09E+00	1.21E+00
BMS-SML-035-3 (4-6 FT)	1.93E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.03E-02	2.45E-01	3.35E-01	1.10E+00	7.92E-01
BMS-SML-035-5 (8-10 FT)	1.91E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E-01	2.82E-01	1.95E+00	5.07E-01
BMS-SML-035-6 (10-12 FT)	1.88E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E-01	3.50E-01	1.48E+00	7.18E-01
BMS-SML-035-7 (12-14 FT)	1.83E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.99E-02	1.18E-01	3.18E-01	0.00E+00	5.91E-01
BMS-SML-035-8 (14-16 FT)	1.79E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E-01	3.23E-01	1.69E+00	9.65E-01
BMS-SML-035-9 (16-18 FT)	1.81E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.00E-02	2.18E-01	5.84E-01	1.03E+00	1.03E+00
BMS-SML-036-1 (0-2 FT)	7.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-01	1.07E+00	4.16E+00	1.29E+00

E0100 Soil Results

SAMPLE ID	K-40	MN-54	CO-57	CO-60	CS-134	CS-137	TL-208	PB-212	BI-212	AC-228
BMS-SML-036-2 (2-4 FT)	5.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-01	2.84E-01	3.97E-01	5.98E-01
BMS-SML-036-3 (4-6 FT)	3.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-01	5.26E-01	2.14E+00	1.02E+00
BMS-SML-036-4 (16-18 FT)	2.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-01	2.05E-01	4.56E-01	1.54E+00	1.09E+00
BMS-SML-036-5 (8-10 FT)	4.25E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-01	3.22E-01	2.01E+00	1.11E+00
BMS-SML-036-6 (10-12 FT)	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-02	1.10E-01	3.60E-01	9.05E-01	7.17E-01
BMS-SML-036-7 (12-14 FT)	3.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E-01	3.12E-01	4.69E-01	5.92E-01
BMS-SML-036-8 (14-16 FT)	2.51E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.86E-01	2.79E-01	2.23E+00	5.93E-01
BMS-SML-036-9 (16-18 FT)	4.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.69E-02	1.41E-01	3.97E-01	1.63E+00	8.74E-01
BMS-SML-037-1 (0-2 FT)	3.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.21E-01	4.28E-01	1.97E+00	1.27E+00
BMS-SML-037-2 (2-4 FT)	4.77E+00	2.34E-02	0.00E+00	0.00E+00	0.00E+00	7.94E-02	2.40E-01	5.00E-01	2.19E+00	6.78E-01
BMS-SML-037-3 (4-6 FT)	4.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.60E-02	2.21E-01	4.95E-01	1.96E+00	1.07E+00
BMS-SML-037-5 (8-10 FT)	3.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E-01	2.91E-01	9.21E-01	6.19E-01
BMS-SML-037-6 (10-12 FT)	4.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-01	5.31E-01	2.37E+00	8.20E-01
BMS-SML-037-7 (12-14 FT)	1.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.69E-01	1.46E+00	1.59E+00	1.80E+00
BMS-SML-037-8 (14-16 FT)	3.08E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.15E-02	5.93E-01	1.65E+00	3.48E+00	1.97E+00
BMS-SML-037-9 (16-18 FT)	3.33E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.23E-01	1.47E+00	0.00E+00	2.93E+00
BMS-SML-038-1 (0-2 FT)	8.22E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E-01	7.13E-01	1.78E+00	9.46E-01
BMS-SML-038-2 (2-4 FT)	8.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.32E-01	9.03E-01	1.44E+00	1.48E+00
BMS-SML-038-3 (4-6 FT)	6.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.58E-01	5.85E-01	2.18E+00	1.11E+00
BMS-SML-038-5 (8-10 FT)	1.02E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-02	3.22E-01	9.58E-01	1.44E+00	1.60E+00
BMS-SML-038-6 (10-12 FT)	4.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-01	3.19E-01	1.51E+00	7.35E-01
BMS-SML-038-7 (12-14 FT)	2.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E-01	2.94E-01	9.48E-01	5.89E-01
BMS-SML-038-8 (14-16 FT)	2.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-01	2.96E-01	1.08E+00	4.39E-01
BMS-SML-038-9 (16-18 FT)	1.19E+01	0.00E+00	0.00E+00	0.00E+00	4.49E-02	0.00E+00	3.01E-01	7.54E-01	1.42E+00	9.63E-01
BMS-SML-040-1	4.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-01	2.50E-01	0.00E+00	8.41E-01
BMS-SML-040-2	5.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.58E-01	4.31E-01	1.52E+00	6.68E-01
BMS-SML-040-3	5.35E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-02	0.00E+00	1.64E-01	4.35E-01	1.76E+00	8.02E-01
BMS-SML-040-4	1.94E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E-02	1.52E-01	3.25E-01	0.00E+00	4.16E-01
Average	**1.11E+01**	**2.10E-03**	**2.80E-02**	**0.00E+00**	**3.26E-03**	**5.46E-02**	**2.87E-01**	**5.97E-01**	**1.46E+00**	**1.06E+00**
Standard Deviation	**6.37E+00**	**1.10E-02**	**1.44E-01**	**0.00E+00**	**1.56E-02**	**7.11E-02**	**1.23E-01**	**3.10E-01**	**9.38E-01**	**4.54E-01**

FSS Package E0100 **Samples 001 to 031**

Average	**1.09E+01**	**2.28E-03**	**4.49E-02**	**0.00E+00**	**5.23E-04**	**9.04E-02**	**3.22E-01**	**6.83E-01**	**1.54E+00**	**1.17E+00**
Standard Deviation	**4.09E+00**	**1.18E-02**	**1.89E-01**	**0.00E+00**	**3.84E-03**	**7.91E-02**	**1.25E-01**	**2.66E-01**	**9.90E-01**	**4.28E-01**

MDA

Average	**6.12E-02**	**5.35E-02**	**5.24E-02**
Standard Deviation	**2.14E-02**	**2.54E-02**	**2.25E-02**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas RKyes **Signature:** [signature] **Date:** 3-26-03

Download Station #: 1 Download File #: 44
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas RKyes **User ID** 1QK7986 **Signature:** [signature] **Date:** 3-26-03

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 120633

Survey Unit Description: Package ~~E0200~~ NRK 4-3-03 E0100
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 6-27-03 Detector Calibration Due Date: 6-27-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR121806	44-2	N/A	N/A		

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

M2350-1 Download GAMMA Report

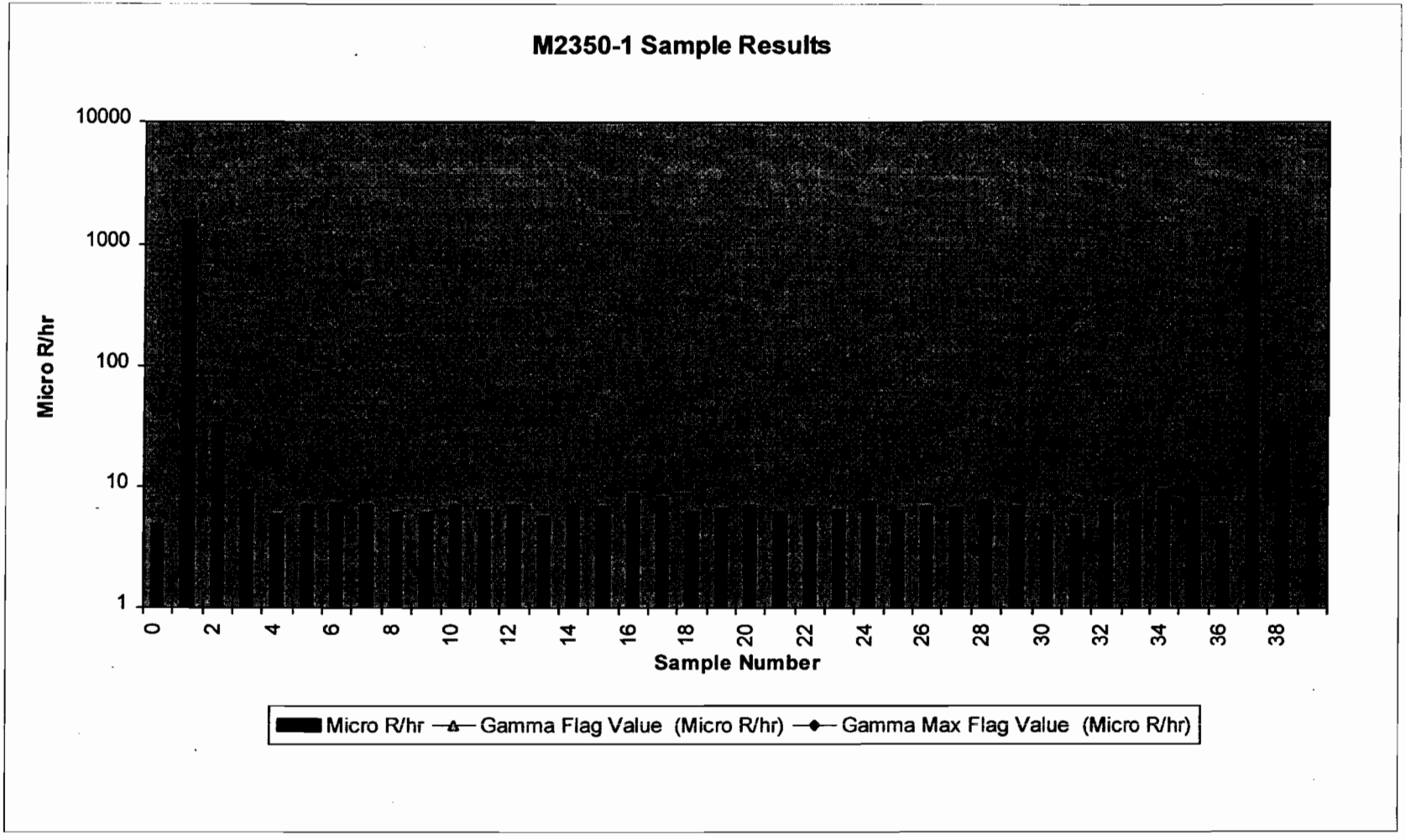
File Name : 00000044	Survey Description :Package E0100 Soil Samples around Bldg.124 & 122	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 120633	Instrument Cal. Due : 6/27/03
Detector Model : LMI 44-2	Detector S/N : 121806	Detector Cal. Due : 6/27/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17338370000		Survey Date : 3/26/03

Print Name	Signature	Date
Doug Kjos	DRK	4/3/03

Comments:

Sign-Off

Print Name	Signature	Date
PAUL C ELY	Paul C Ely	4/30/03


M2350-1 Sample Results
Micro R/hr
10000
1000
100
10
1
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	7,066.0	300	PRGBK	ZZZZZ	ZZZZZ	0		4.89E+00
ZZZZZ	19453	1	469,983.1	60	PRG00	ZZZZZ	ZZZZZ	0		1.63E+03
ZZZZZ	19453	2	9,878.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.42E+01
ZZZZZ	19453	3	2,733.0	60	PRG00	ZZZZZ	ZZZZZ	0		9.46E+00
E0100	01L01	4	434.0	15	FLDCT	B0016	ZZZZZ	400		6.01E+00
E0100	01L01	5	513.0	15	FLDCT	B0016	ZZZZZ	400		7.10E+00
E0100	01L01	6	531.0	15	FLDCT	B0016	ZZZZZ	371		7.35E+00
E0100	01L01	7	517.0	15	FLDCT	B0016	ZZZZZ	371		7.16E+00
E0100	01L01	8	443.0	15	FLDCT	B0016	ZZZZZ	362		6.13E+00
E0100	01L01	9	436.0	15	FLDCT	B0016	ZZZZZ	362		6.04E+00
E0100	01L01	10	520.0	15	FLDCT	B0016	ZZZZZ	281		7.20E+00
E0100	01L01	11	474.0	15	FLDCT	B0016	ZZZZZ	281		6.56E+00
E0100	01L01	12	522.0	15	FLDCT	B0016	ZZZZZ	180		7.23E+00
E0100	01L01	13	416.0	15	FLDCT	B0016	ZZZZZ	180		5.76E+00
E0100	01L01	14	516.0	15	FLDCT	B0016	ZZZZZ	260		7.14E+00
E0100	01L01	15	493.0	15	FLDCT	B0016	ZZZZZ	260		6.82E+00
E0100	01L01	16	635.0	15	FLDCT	B0016	ZZZZZ	693		8.79E+00
E0100	01L01	17	603.0	15	FLDCT	B0016	ZZZZZ	693		8.35E+00
E0100	01L01	18	461.0	15	FLDCT	B0016	ZZZZZ	726		6.38E+00
E0100	01L01	19	480.0	15	FLDCT	B0016	ZZZZZ	726		6.64E+00
E0100	01L01	20	515.0	15	FLDCT	B0016	ZZZZZ	658		7.13E+00
E0100	01L01	21	458.0	15	FLDCT	B0016	ZZZZZ	658		6.34E+00
E0100	01L01	22	506.0	15	FLDCT	B0016	ZZZZZ	21		7.00E+00
E0100	01L01	23	465.0	15	FLDCT	B0016	ZZZZZ	21		6.44E+00
E0100	01L01	24	546.0	15	FLDCT	B0016	ZZZZZ	116		7.56E+00
E0100	01L01	25	453.0	15	FLDCT	B0016	ZZZZZ	116		6.27E+00
E0100	01L01	26	495.0	15	FLDCT	B0016	ZZZZZ	55		6.85E+00
E0100	01L01	27	485.0	15	FLDCT	B0016	ZZZZZ	55		6.71E+00
E0100	01L01	28	560.0	15	FLDCT	B0016	ZZZZZ	129		7.75E+00
E0100	01L01	29	506.0	15	FLDCT	B0016	ZZZZZ	129		7.00E+00
E0100	01L01	30	427.0	15	FLDCT	B0016	ZZZZZ	135		5.91E+00
E0100	01L01	31	415.0	15	FLDCT	B0016	ZZZZZ	135		5.74E+00
E0100	01L01	32	547.0	15	FLDCT	B0016	ZZZZZ	592		7.57E+00

Gamma Flag	-
Gamma Max Flag	

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
E0100	01L01	33	573.0	15	FLDCT	B0016	ZZZZZ	592		7.93E+00
E0100	01L01	34	680.0	15	FLDCT	B0016	ZZZZZ	552		9.41E+00
E0100	01L01	35	778.0	15	FLDCT	B0016	ZZZZZ	552		1.08E+01
ZZZZZ	ZZZZZ	36	7,030.0	300	PTGBK	ZZZZZ	ZZZZZ	0		4.87E+00
ZZZZZ	19453	37	484,782.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.68E+03
ZZZZZ	19453	38	9,949.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.44E+01
ZZZZZ	19453	39	2,766.0	60	PTG00	ZZZZZ	ZZZZZ	0		9.57E+00

Gamma Flag - _____

Gamma Max Flag [redacted]

Bristol-Myers Squibb Production Facility Final Status Survey
New Brunswick New Jersey

Framatome ANP Environmental Laboratory Analysis Results

Samples are for E0100 not E0200 as labeled Paul C Ely 9-17-03

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-E0200-21	Sample Location # 21 S. of B-124	3/26/03	5/7/03	Ac/Th-228	0.959	9.59E-01	0.041	0.170
				Co-60	<MDA	5.30E-03	0.010	0.033
				Cs-137	0.378	3.78E-01	0.018	0.042
				K-40	14.49	1.45E+01	0.340	0.490
BMS-E0200-55	Sample Location # 55 S. of B-124	3/26/03	5/7/03	Ac/Th-228	1.086	1.09E+00	0.041	0.170
				Co-60	<MDA	1.50E-02	0.011	0.036
				Cs-137	0.384	3.84E-01	0.019	0.046
				K-40	15.01	1.50E+01	0.340	0.510
BMS-E0200-116	Sample Location # 116 S. of B-124	3/26/03	5/7/03	Ac/Th-228	1.031	1.03E+00	0.038	0.160
				Co-60	<MDA	-1.00E-02	0.010	0.035
				Cs-137	0.357	3.57E-01	0.017	0.040
				K-40	14.47	1.45E+01	0.310	0.420
BMS-E0200-129	Sample Location # 129 SW of B-124	3/26/03	5/9/03	Ac/Th-228	1.359	1.36E+00	0.038	0.140
				Co-60	<MDA	1.60E-02	0.010	0.033
				Cs-137	0.23	2.30E-01	0.015	0.041
				K-40	17.73	1.77E+01	0.330	0.440
BMS-E0200-135	Sample Location # 135 SW of B-124	3/26/03	5/9/03	Ac/Th-228	0.643	6.43E-01	0.023	0.110
				Co-60	<MDA	3.40E-03	0.007	0.023
				Cs-137	0.2356	2.36E-01	0.011	0.025
				K-40	11.32	1.13E+01	0.210	0.341
BMS-E0200-180	Sample Location # 180 SW of B-124	3/26/03	5/9/03	Ac/Th-228	0.954	9.54E-01	0.025	0.100
				Co-60	<MDA	1.28E-02	0.007	0.024
				Cs-137	0.1994	1.99E-01	0.010	0.027
				K-40	14.08	1.41E+01	0.220	0.340
BMS-E0200-260	Sample Location # 260 SW of B-124	3/26/03	5/16/03	Ac/Th-228	0.969	9.69E-01	0.030	0.120
				Co-60	<MDA	6.10E-03	0.008	0.026
				Cs-137	0.429	4.29E-01	0.014	0.032
				K-40	13.73	1.37E+01	0.250	0.320
BMS-E0200-281	Sample Location # 281 SW of B-124	3/26/03	5/9/03	Ac/Th-228	1.079	1.08E+00	0.034	0.130
				Co-60	<MDA	1.44E-02	0.009	0.030
				Cs-137	0.384	3.84E-01	0.016	0.037
				K-40	15.19	1.52E+01	0.290	0.370
BMS-E0200-362	Sample Location # 362 W. of B-124	3/26/03	5/16/03	Ac/Th-228	0.766	7.66E-01	0.029	0.120
				Co-60	<MDA	5.10E-03	0.008	0.026
				Cs-137	0.187	1.87E-01	0.012	0.031
				K-40	14.34	1.43E+01	0.270	0.360
BMS-E0200-371	Sample Location # 371 W. of B-124	3/26/03	5/16/03	Ac/Th-228	0.884	8.84E-01	0.029	0.110
				Co-60	<MDA	7.60E-03	0.008	0.025
				Cs-137	0.22	2.20E-01	0.012	0.030
				K-40	12.41	1.24E+01	0.250	0.330
BMS-E0200-402	Sample Location # 402 W. of B-124	3/26/03	5/7/03	Ac/Th-228	0.604	6.04E-01	0.030	0.110
				Co-60	<MDA	-6.90E-03	0.009	0.032
				Cs-137	0.049	4.90E-02	0.010	0.032
				K-40	14.94	1.49E+01	0.310	0.380
BMS-E0200-552	Sample Location # 552 E. of B-124	3/26/03	5/9/03	Ac/Th-228	0.537	5.37E-01	0.031	0.130
				Co-60	<MDA	2.90E-03	0.008	0.028
				Cs-137	0.071	7.10E-02	0.011	0.035
				K-40	14.94	1.49E+01	0.290	0.400
BMS-E0200-592	Sample Location # 592 E. of B-124	3/26/03	5/7/03	Ac/Th-228	0.488	4.88E-01	0.031	0.120
				Co-60	<MDA	5.00E-04	0.009	0.031
				Cs-137	<MDA	3.10E-02	0.011	0.036
				K-40	14.75	1.48E+01	0.330	0.390
BMS-E0200-658	Sample Location # 658 S. of B-124	3/26/03	5/16/03	Ac/Th-228	0.533	5.33E-01	0.028	0.130
				Co-60	<MDA	8.10E-03	0.008	0.026
				Cs-137	0.219	2.19E-01	0.009	0.030
				K-40	12.51	1.25E+01	0.280	0.370
BMS-E0200-693	Sample Location # 693 S. of B-124	3/26/03	5/22/03	Ac/Th-228	0.37	3.70E-01	0.027	0.110
				Co-60	<MDA	1.51E-02	0.008	0.026
				Cs-137	0.03	3.00E-02	0.006	0.018
				K-40	17.93	1.79E+01	0.290	0.310
BMS-E0200-726	Sample Location # 726 S. of B-124	3/26/03	5/16/03	Ac/Th-228	0.38	3.80E-01	0.027	0.120
				Co-60	<MDA	-2.20E-03	0.008	0.028
				Cs-137	<MDA	1.92E-02	0.008	0.024
				K-40	19.1	1.91E+01	0.310	0.340

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/12/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5348-01	**Client ID**	BMA-E0200-21 REF-X19570	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/07/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	9.59E-01	+/-	4.1E-02	6.3E-02	1.7E-01		bc
Ag-108m	-5.3E-03	+/-	9.5E-03	9.5E-03	3.2E-02		
Ag-110m	6E-03	+/-	1.6E-02	1.6E-02	5.3E-02		
Ba-140	-8.1E-01	+/-	3.5E-01	3.5E-01	1.2E+00		
Be-7	3.8E-01	+/-	1.5E-01	1.5E-01	4.9E-01		
Ce-141	5E-02	+/-	4.4E-02	4.4E-02	1.4E-01		
Ce-144	-2.2E-02	+/-	5.6E-02	5.6E-02	1.9E-01		
Co-57	2.4E-03	+/-	7.9E-03	7.9E-03	2.7E-02		
Co-58	-3.8E-02	+/-	1.4E-02	1.4E-02	5.1E-02		
Co-60	5.3E-03	+/-	9.8E-03	9.8E-03	3.3E-02	3.8E-02	
Cr-51	-9E-02	+/-	2.1E-01	2.1E-01	7.3E-01		
Cs-134	-1.3E-02	+/-	1.1E-02	1.1E-02	3.8E-02		
Cs-137	3.78E-01	+/-	1.8E-02	2.6E-02	4.2E-02	1.1E+00	bc
Fe-59	-4.3E-02	+/-	3.9E-02	3.9E-02	1.4E-01		
I-131	7E-02	+/-	3.5E-01	3.5E-01	1.2E+00		
K-40	1.449E+01	+/-	3.4E-01	8.0E-01	4.9E-01		bc
La-140	-1E-01	+/-	1.9E-01	1.9E-01	6.5E-01		
Mn-54	2E-03	+/-	1.1E-02	1.1E-02	3.7E-02		
Nb-95	0E+00	+/-	3.7E-02	3.7E-02	1.2E-01		
Ru-103	-1.2E-02	+/-	2.0E-02	2.0E-02	6.9E-02		
Ru-106	3E-02	+/-	1.0E-01	1.0E-01	3.4E-01		
Sb-124	2E-02	+/-	3.1E-02	3.1E-02	1.1E-01		
Sb-125	1E-02	+/-	2.7E-02	2.7E-02	9.1E-02		
Se-75	2.5E-02	+/-	1.5E-02	1.5E-02	5.0E-02		
Zn-65	3.6E-02	+/-	4.9E-02	4.9E-02	1.6E-01		
Zr-95	-1.58E+01	+/-	3.5E+00	3.6E+00	1.1E+01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 5/12/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

MAILED
MAY 13 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/12/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5348-02	**Client ID**	BMA-E0200-55 REF-X19571	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/07/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.086E+00	+/-	4.1E-02	6.8E-02	1.7E-01		bc
Ag-108m	1.2E-03	+/-	8.7E-03	8.7E-03	2.9E-02		
Ag-110m	-1.6E-02	+/-	1.5E-02	1.5E-02	5.1E-02		
Ba-140	3E-02	+/-	3.9E-01	3.9E-01	1.3E+00		
Be-7	-6E-02	+/-	1.4E-01	1.4E-01	4.7E-01		
Ce-141	3E-02	+/-	3.8E-02	3.8E-02	1.3E-01		
Ce-144	1E-01	+/-	5.9E-02	6.0E-02	2.0E-01		
Co-57	6.5E-03	+/-	7.7E-03	7.7E-03	2.6E-02		
Co-58	-1.7E-02	+/-	1.5E-02	1.5E-02	5.2E-02		
Co-60	1.5E-02	+/-	1.1E-02	1.1E-02	3.6E-02	3.8E-02	
Cr-51	-6E-02	+/-	2.2E-01	2.2E-01	7.6E-01		
Cs-134	4.4E-02	+/-	4.0E-02	4.0E-02	1.3E-01		
Cs-137	3.84E-01	+/-	1.9E-02	2.7E-02	4.6E-02	1.1E+00	bc
Fe-59	-5.8E-02	+/-	3.9E-02	3.9E-02	1.4E-01		
I-131	7E-02	+/-	3.7E-01	3.7E-01	1.3E+00		
K-40	1.501E+01	+/-	3.4E-01	8.2E-01	5.1E-01		bc
La-140	-1E-01	+/-	1.8E-01	1.8E-01	6.1E-01		
Mn-54	1.6E-02	+/-	1.5E-02	1.5E-02	5.0E-02		
Nb-95	5E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
Ru-103	-4E-03	+/-	2.1E-02	2.1E-02	7.2E-02		
Ru-106	-1E-01	+/-	1.1E-01	1.1E-01	3.7E-01		
Sb-124	7E-03	+/-	3.1E-02	3.1E-02	1.1E-01		
Sb-125	8E-03	+/-	3.0E-02	3.0E-02	1.0E-01		
Se-75	-2.4E-02	+/-	1.6E-02	1.6E-02	5.4E-02		
Zn-65	4.4E-02	+/-	5.0E-02	5.0E-02	1.7E-01		
Zr-95	5E-02	+/-	1.9E-01	1.9E-01	6.2E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
5/12/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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MAY 13 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/12/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5348-03	**Client ID**	BMA-E0200-116 REF-X19572	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/07/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.031E+00	+/-	3.8E-02	6.4E-02	1.6E-01		bc
Ag-108m	-9.3E-03	+/-	8.6E-03	8.6E-03	2.9E-02		
Ag-110m	3E-03	+/-	1.3E-02	1.3E-02	4.5E-02		
Ba-140	1.8E-01	+/-	3.2E-01	3.2E-01	1.1E+00		
Be-7	-2.1E-01	+/-	1.3E-01	1.3E-01	4.6E-01		
Ce-141	3.9E-02	+/-	3.0E-02	3.0E-02	9.9E-02		
Ce-144	-2.3E-02	+/-	5.8E-02	5.8E-02	1.9E-01		
Co-57	-1.98E-02	+/-	7.2E-03	7.3E-03	2.5E-02		
Co-58	-2.9E-02	+/-	1.3E-02	1.3E-02	4.6E-02		
Co-60	-1E-02	+/-	1.0E-02	1.0E-02	3.5E-02	3.8E-02	
Cr-51	8E-02	+/-	2.1E-01	2.1E-01	7.1E-01		
Cs-134	8.7E-02	+/-	3.7E-02	3.7E-02	1.2E-01		
Cs-137	3.57E-01	+/-	1.7E-02	2.5E-02	4.0E-02	1.1E+00	bc
Fe-59	4.5E-02	+/-	3.7E-02	3.7E-02	1.2E-01		
I-131	2E-01	+/-	3.5E-01	3.5E-01	1.2E+00		
K-40	1.447E+01	+/-	3.1E-01	7.9E-01	4.2E-01		bc
La-140	3E-02	+/-	1.7E-01	1.7E-01	5.6E-01		
Mn-54	-9E-03	+/-	1.0E-02	1.0E-02	3.6E-02		
Nb-95	-3.7E-02	+/-	3.1E-02	3.1E-02	1.1E-01		
Ru-103	1.3E-02	+/-	1.7E-02	1.7E-02	5.8E-02		
Ru-106	-5.6E-02	+/-	9.6E-02	9.6E-02	3.3E-01		
Sb-124	2E-02	+/-	2.9E-02	2.9E-02	9.7E-02		
Sb-125	-3.2E-02	+/-	2.7E-02	2.7E-02	9.4E-02		
Se-75	-2E-02	+/-	1.4E-02	1.4E-02	4.7E-02		
Zn-65	3.6E-02	+/-	4.5E-02	4.5E-02	1.5E-01		
Zr-95	1.2E-01	+/-	1.0E-01	1.0E-01	3.3E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
5/12/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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MAY 13 2003
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ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/16/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5348-04	**Client ID**	BMA-E0200-129 REF-X19573	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/09/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.359E+00	+/-	3.8E-02	7.8E-02	1.4E-01		bc
Ag-108m	2.8E-03	+/-	7.6E-03	7.6E-03	2.5E-02		
Ag-110m	-1.6E-02	+/-	1.4E-02	1.4E-02	4.8E-02		
Ba-140	-5.1E-01	+/-	3.8E-01	3.8E-01	1.3E+00		
Be-7	1.2E-01	+/-	1.2E-01	1.2E-01	4.1E-01		
Ce-141	-1.9E-02	+/-	4.0E-02	4.0E-02	1.4E-01		
Ce-144	-4.3E-02	+/-	5.3E-02	5.3E-02	1.8E-01		
Co-57	1.18E-02	+/-	6.9E-03	6.9E-03	2.3E-02		
Co-58	1.8E-02	+/-	1.3E-02	1.3E-02	4.4E-02		
Co-60	1.6E-02	+/-	1.0E-02	1.0E-02	3.3E-02	3.8E-02	
Cr-51	4.6E-01	+/-	2.1E-01	2.1E-01	6.9E-01		
Cs-134	-2.1E-02	+/-	3.8E-02	3.8E-02	1.3E-01		
Cs-137	2.3E-01	+/-	1.5E-02	1.9E-02	4.1E-02	1.1E+00	bc
Fe-59	4E-03	+/-	3.6E-02	3.6E-02	1.2E-01		
I-131	-3.7E-01	+/-	3.9E-01	3.9E-01	1.3E+00		
K-40	1.773E+01	+/-	3.3E-01	9.5E-01	4.4E-01		bc
La-140	2.2E-01	+/-	1.7E-01	1.7E-01	5.8E-01		
Mn-54	4E-03	+/-	2.0E-02	2.0E-02	6.5E-02		
Nb-95	-6.9E-02	+/-	3.3E-02	3.4E-02	1.2E-01		
Ru-103	0E+00	+/-	1.9E-02	1.9E-02	6.4E-02		
Ru-106	0E+00	+/-	9.5E-02	9.5E-02	3.2E-01		
Sb-124	-8E-03	+/-	2.7E-02	2.7E-02	9.6E-02		
Sb-125	7.4E-02	+/-	2.5E-02	2.5E-02	8.1E-02		
Se-75	-3.3E-02	+/-	1.4E-02	1.4E-02	4.9E-02		
Zn-65	2.6E-02	+/-	4.8E-02	4.8E-02	1.6E-01		
Zr-95	-1.5E-01	+/-	1.7E-01	1.7E-01	5.8E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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MAY 22 2003
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ENVIRONMENTAL LAB

Approved by
5/21/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/16/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5348-05	**Client ID**	BMA-E0200-135 REF-X19574	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/09/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	6.43E-01	+/-	2.3E-02	4.0E-02	1.1E-01		bc
Ag-108m	-4.6E-03	+/-	4.7E-03	4.7E-03	1.6E-02		
Ag-110m	-2.3E-03	+/-	8.9E-03	8.9E-03	3.0E-02		
Ba-140	-1E-02	+/-	2.0E-01	2.0E-01	6.9E-01		
Be-7	2.76E-01	+/-	9.4E-02	9.5E-02	3.0E-01		c
Ce-141	-1.3E-02	+/-	2.1E-02	2.1E-02	7.1E-02		
Ce-144	-1E-03	+/-	3.0E-02	3.0E-02	9.9E-02		
Co-57	3.9E-03	+/-	3.7E-03	3.7E-03	1.2E-02		
Co-58	-5.1E-03	+/-	7.9E-03	7.9E-03	2.7E-02		
Co-60	3.4E-03	+/-	6.7E-03	6.7E-03	2.3E-02	3.8E-02	
Cr-51	-8E-02	+/-	1.3E-01	1.3E-01	4.3E-01		
Cs-134	-2.4E-02	+/-	2.4E-02	2.4E-02	8.0E-02		
Cs-137	3.56E-01	+/-	1.1E-02	2.1E-02	2.5E-02	1.1E+00	bc
Fe-59	3.4E-02	+/-	2.3E-02	2.3E-02	7.6E-02		
I-131	-1.4E-01	+/-	2.4E-01	2.4E-01	8.2E-01		
K-40	1.132E+01	+/-	2.1E-01	6.0E-01	3.4E-01		bc
La-140	2.5E-01	+/-	1.1E-01	1.1E-01	3.5E-01		
Mn-54	9.4E-03	+/-	6.3E-03	6.3E-03	2.1E-02		
Nb-95	-1.8E-02	+/-	2.1E-02	2.1E-02	6.9E-02		
Ru-103	-1.2E-02	+/-	1.1E-02	1.1E-02	3.7E-02		
Ru-106	8E-02	+/-	5.9E-02	5.9E-02	1.9E-01		
Sb-124	-3.1E-02	+/-	1.9E-02	1.9E-02	6.9E-02		
Sb-125	1E-03	+/-	1.5E-02	1.5E-02	5.1E-02		
Se-75	-5.1E-03	+/-	7.1E-03	7.1E-03	2.4E-02		
Zn-65	9E-03	+/-	3.2E-02	3.2E-02	1.1E-01		
Zr-95	-4.3E+00	+/-	1.5E+00	1.5E+00	4.8E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

Approved by
J.M. Raimondi 5/21/03
J.M. Raimondi
Sample Control Manager

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MAY 22 2003
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FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/16/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	**Receipt Date**	04/17/03	

Lab. Sample No.	L5348-06	**Client ID**	BMA-E0200-180 REF-X19575	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/09/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	9.54E-01	+/-	2.5E-02	5.4E-02	1.0E-01		bc
Ag-108m	-7.5E-03	+/-	5.0E-03	5.0E-03	1.7E-02		
Ag-110m	9E-04	+/-	9.4E-03	9.4E-03	3.2E-02		
Ba-140	1.2E-01	+/-	2.5E-01	2.5E-01	8.2E-01		
Be-7	2.4E-02	+/-	8.3E-02	8.3E-02	2.8E-01		
Ce-141	1.7E-02	+/-	2.9E-02	2.9E-02	9.6E-02		
Ce-144	-3.5E-02	+/-	3.4E-02	3.4E-02	1.1E-01		
Co-57	2.4E-03	+/-	4.2E-03	4.2E-03	1.4E-02		
Co-58	5E-03	+/-	1.2E-02	1.2E-02	4.1E-02		
Co-60	1.28E-02	+/-	7.2E-03	7.3E-03	2.4E-02	3.8E-02	
Cr-51	-2.7E-01	+/-	1.4E-01	1.4E-01	4.7E-01		
Cs-134	-4E-04	+/-	6.6E-03	6.6E-03	2.2E-02		
Cs-137	1.994E-01	+/-	9.9E-03	1.4E-02	2.7E-02	1.1E+00	bc
Fe-59	-2.9E-02	+/-	2.4E-02	2.4E-02	8.3E-02		
I-131	-3.3E-01	+/-	2.6E-01	2.6E-01	9.0E-01		
K-40	1.408E+01	+/-	2.2E-01	7.4E-01	3.4E-01		bc
La-140	1.2E-01	+/-	1.2E-01	1.2E-01	3.9E-01		
Mn-54	-3.1E-03	+/-	7.2E-03	7.2E-03	2.4E-02		
Nb-95	1.2E-02	+/-	2.2E-02	2.2E-02	7.2E-02		
Ru-103	-2.1E-02	+/-	1.2E-02	1.2E-02	4.0E-02		
Ru-106	-1.3E-02	+/-	6.4E-02	6.4E-02	2.1E-01		
Sb-124	-6E-03	+/-	2.0E-02	2.0E-02	6.8E-02		
Sb-125	3.5E-02	+/-	1.6E-02	1.6E-02	5.4E-02		
Se-75	-2.65E-02	+/-	9.5E-03	9.6E-03	3.2E-02		
Zn-65	2.2E-02	+/-	3.2E-02	3.2E-02	1.0E-01		
Zr-95	-3E-02	+/-	1.2E-01	1.2E-01	4.0E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
5/21/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer Duratek Inc
Attention Paul Ely

Report Date 05/22/03
Receipt Date 04/17/03

Duratek Inc
c/o Bristol Meyers Squibb
Bldg 115, One Squibb Drive
New Brunswick, NJ 08903

Lab. Sample No. L5348-07 **Client ID** BMA-E0200-260 REF-X19576 **Product** GAMMA SPECTROMETRY
Reference Date 03/26/03 **Analysis Date** 05/16/03 **Matrix** Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	9.69E-01	+/-	3.0E-02	5.7E-02	1.2E-01		bc
Ag-108m	4E-04	+/-	6.6E-03	6.6E-03	2.2E-02		
Ag-110m	-1.1E-02	+/-	1.0E-02	1.0E-02	3.6E-02		
Ba-140	2.7E-01	+/-	4.0E-01	4.0E-01	1.3E+00		
Be-7	-6E-02	+/-	1.1E-01	1.1E-01	3.9E-01		
Ce-141	2.6E-02	+/-	2.9E-02	2.9E-02	9.7E-02		
Ce-144	-3E-02	+/-	4.8E-02	4.8E-02	1.6E-01		
Co-57	-7.6E-03	+/-	6.0E-03	6.0E-03	2.0E-02		
Co-58	8E-03	+/-	1.0E-02	1.0E-02	3.5E-02		
Co-60	6.1E-03	+/-	7.8E-03	7.8E-03	2.6E-02	3.8E-02	
Cr-51	2.4E-01	+/-	2.1E-01	2.1E-01	7.1E-01		
Cs-134	-1.9E-02	+/-	2.8E-02	2.8E-02	9.2E-02		
Cs-137	4.29E-01	+/-	1.4E-02	2.6E-02	3.2E-02	1.1E+00	bc
Fe-59	3.2E-02	+/-	3.2E-02	3.2E-02	1.1E-01		
I-131	-4.7E-01	+/-	6.1E-01	6.1E-01	2.1E+00		
K-40	1.373E+01	+/-	2.5E-01	7.3E-01	3.2E-01		bc
La-140	-2.6E-01	+/-	2.2E-01	2.2E-01	7.5E-01		
Mn-54	3.1E-03	+/-	8.4E-03	8.5E-03	2.8E-02		
Nb-95	5E-03	+/-	2.5E-02	2.5E-02	8.3E-02		
Ru-103	3E-03	+/-	1.5E-02	1.5E-02	5.2E-02		
Ru-106	-2E-02	+/-	7.4E-02	7.4E-02	2.5E-01		
Sb-124	3.2E-02	+/-	2.3E-02	2.4E-02	7.8E-02		
Sb-125	6E-03	+/-	2.1E-02	2.1E-02	7.0E-02		
Se-75	3E-03	+/-	1.1E-02	1.1E-02	3.8E-02		
Zn-65	6.1E-02	+/-	3.6E-02	3.6E-02	1.2E-01		
Zr-95	8E-02	+/-	1.1E-01	1.1E-01	3.6E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
5/27/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/16/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5348-08	**Client ID**	BMA-E0200-281 REF-X19577	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/09/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.079E+00	+/-	3.4E-02	6.4E-02	1.3E-01		bc
Ag-108m	7E-04	+/-	7.8E-03	7.8E-03	2.6E-02		
Ag-110m	-5E-03	+/-	1.2E-02	1.2E-02	4.0E-02		
Ba-140	4.1E-01	+/-	3.2E-01	3.2E-01	1.1E+00		
Be-7	-7E-02	+/-	1.2E-01	1.2E-01	4.1E-01		
Ce-141	6.5E-02	+/-	2.9E-02	2.9E-02	9.4E-02		
Ce-144	-2.3E-02	+/-	5.4E-02	5.4E-02	1.8E-01		
Co-57	1.35E-02	+/-	6.7E-03	6.7E-03	2.2E-02		
Co-58	7E-03	+/-	1.2E-02	1.2E-02	3.9E-02		
Co-60	1.44E-02	+/-	9.1E-03	9.1E-03	3.0E-02	3.8E-02	
Cr-51	-9E-02	+/-	2.1E-01	2.1E-01	7.0E-01		
Cs-134	-5.8E-03	+/-	7.9E-03	7.9E-03	2.7E-02		
Cs-137	3.84E-01	+/-	1.6E-02	2.5E-02	3.7E-02	1.1E+00	bc
Fe-59	-1.3E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
I-131	6.6E-01	+/-	3.8E-01	3.8E-01	1.2E+00		
K-40	1.519E+01	+/-	2.9E-01	8.1E-01	3.7E-01		bc
La-140	-6E-02	+/-	1.7E-01	1.7E-01	5.7E-01		
Mn-54	-1.5E-03	+/-	9.0E-03	9.0E-03	3.1E-02		
Nb-95	3.7E-02	+/-	3.0E-02	3.0E-02	9.9E-02		
Ru-103	1.4E-02	+/-	1.6E-02	1.6E-02	5.2E-02		
Ru-106	-6.2E-02	+/-	8.9E-02	8.9E-02	3.0E-01		
Sb-124	-2.1E-02	+/-	2.8E-02	2.8E-02	1.0E-01		
Sb-125	-4.6E-02	+/-	2.5E-02	2.5E-02	8.6E-02		
Se-75	-2.2E-02	+/-	1.2E-02	1.2E-02	4.2E-02		
Zn-65	-8.7E-02	+/-	4.3E-02	4.3E-02	1.5E-01		
Zr-95	-1.02E+01	+/-	2.8E+00	2.9E+00	9.4E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 5/21/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

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Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/22/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903	

Lab. Sample No.	L5348-09	**Client ID**	BMA-E0200-362 REF-X19578	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/16/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	7.66E-01	+/-	2.9E-02	4.8E-02	1.2E-01		bc
Ag-108m	-1.12E-02	+/-	5.9E-03	5.9E-03	2.1E-02		
Ag-110m	-1.5E-02	+/-	1.1E-02	1.1E-02	3.9E-02		
Ba-140	-1.4E-01	+/-	4.3E-01	4.3E-01	1.5E+00		
Be-7	1.7E-01	+/-	1.0E-01	1.0E-01	3.4E-01		
Ce-141	-1.1E-02	+/-	2.5E-02	2.5E-02	8.4E-02		
Ce-144	-1.22E-01	+/-	4.2E-02	4.2E-02	1.5E-01		
Co-57	4.2E-03	+/-	5.3E-03	5.3E-03	1.8E-02		
Co-58	-2E-03	+/-	1.1E-02	1.1E-02	3.7E-02		
Co-60	5.1E-03	+/-	7.7E-03	7.7E-03	2.6E-02	3.8E-02	
Cr-51	-1.5E-01	+/-	1.9E-01	1.9E-01	6.5E-01		
Cs-134	-5.7E-02	+/-	2.8E-02	2.8E-02	9.4E-02		
Cs-137	1.87E-01	+/-	1.2E-02	1.5E-02	3.1E-02	1.1E+00	bc
Fe-59	-3.4E-02	+/-	3.2E-02	3.2E-02	1.1E-01		
I-131	3.4E-01	+/-	5.4E-01	5.4E-01	1.8E+00		
K-40	1.434E+01	+/-	2.7E-01	7.7E-01	3.6E-01		bc
La-140	3.2E-01	+/-	1.9E-01	1.9E-01	6.3E-01		
Mn-54	4.3E-03	+/-	8.3E-03	8.3E-03	2.8E-02		
Nb-95	3.7E-02	+/-	2.8E-02	2.8E-02	9.3E-02		
Ru-103	1.5E-02	+/-	1.6E-02	1.6E-02	5.5E-02		
Ru-106	4.8E-02	+/-	7.2E-02	7.2E-02	2.4E-01		
Sb-124	2E-02	+/-	2.1E-02	2.1E-02	7.0E-02		
Sb-125	3E-03	+/-	2.0E-02	2.0E-02	6.8E-02		
Se-75	-1.7E-02	+/-	1.1E-02	1.1E-02	3.9E-02		
Zn-65	3.2E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
Zr-95	-4E+00	+/-	2.3E+00	2.3E+00	7.4E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
5/27/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer Duratek Inc
Attention Paul Ely

Report Date 05/22/03
Receipt Date 04/17/03

Duratek Inc
c/o Bristol Meyers Squibb
Bldg 115, One Squibb Drive
New Brunswick, NJ 08903

Lab. Sample No. L5348-10 **Client ID** BMA-E0200-371 REF-X19579 **Product** GAMMA SPECTROMETRY
Reference Date 03/26/03 **Analysis Date** 05/16/03 **Matrix** Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	8.84E-01	+/-	2.9E-02	5.3E-02	1.1E-01		bc
Ag-108m	2.6E-03	+/-	6.0E-03	6.0E-03	2.0E-02		
Ag-110m	1E-03	+/-	1.1E-02	1.1E-02	3.6E-02		
Ba-140	1.6E-01	+/-	3.9E-01	3.9E-01	1.3E+00		
Be-7	1E-01	+/-	1.2E-01	1.2E-01	4.0E-01		
Ce-141	2.1E-02	+/-	2.8E-02	2.8E-02	9.3E-02		
Ce-144	1E-02	+/-	8.5E-02	8.5E-02	2.8E-01		
Co-57	7E-04	+/-	5.9E-03	5.9E-03	2.0E-02		
Co-58	-1.2E-02	+/-	1.1E-02	1.1E-02	3.9E-02		
Co-60	7.6E-03	+/-	7.5E-03	7.5E-03	2.5E-02	3.8E-02	
Cr-51	-1.2E-01	+/-	1.9E-01	1.9E-01	6.5E-01		
Cs-134	4E-03	+/-	2.8E-02	2.8E-02	9.2E-02		
Cs-137	2.2E-01	+/-	1.2E-02	1.6E-02	3.0E-02	1.1E+00	bc
Fe-59	-1.2E-02	+/-	3.1E-02	3.1E-02	1.1E-01		
I-131	1.33E+00	+/-	5.6E-01	5.7E-01	1.8E+00		
K-40	1.241E+01	+/-	2.5E-01	6.7E-01	3.3E-01		bc
La-140	1.9E-01	+/-	2.1E-01	2.1E-01	7.0E-01		
Mn-54	6E-03	+/-	8.0E-03	8.0E-03	2.7E-02		
Nb-95	6.9E-02	+/-	2.6E-02	2.6E-02	8.3E-02		
Ru-103	-2E-03	+/-	1.7E-02	1.7E-02	5.7E-02		
Ru-106	-7.1E-02	+/-	7.1E-02	7.1E-02	2.5E-01		
Sb-124	4.8E-02	+/-	2.5E-02	2.5E-02	8.0E-02		
Sb-125	-6E-03	+/-	1.9E-02	1.9E-02	6.4E-02		
Se-75	-1.8E-02	+/-	1.1E-02	1.1E-02	3.8E-02		
Zn-65	7.9E-02	+/-	3.7E-02	3.7E-02	1.2E-01		
Zr-95	-1.25E+01	+/-	2.7E+00	2.8E+00	9.0E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 5/27/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/12/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5348-11	**Client ID**	BMA-E0200-402 REF-X19580	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/07/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	6.04E-01	+/-	3.0E-02	4.3E-02	1.1E-01		bc
Ag-108m	-5.7E-03	+/-	6.5E-03	6.5E-03	2.2E-02		
Ag-110m	-1E-03	+/-	1.2E-02	1.2E-02	4.1E-02		
Ba-140	2.8E-01	+/-	2.7E-01	2.7E-01	9.0E-01		
Be-7	1.12E-01	+/-	9.6E-02	9.6E-02	3.2E-01		
Ce-141	-5E-02	+/-	2.2E-02	2.2E-02	7.5E-02		
Ce-144	6E-03	+/-	4.2E-02	4.2E-02	1.4E-01		
Co-57	1.6E-03	+/-	5.4E-03	5.4E-03	1.8E-02		
Co-58	-8E-03	+/-	1.0E-02	1.0E-02	3.7E-02		
Co-60	-6.9E-03	+/-	9.0E-03	9.0E-03	3.2E-02	3.8E-02	
Cr-51	1.7E-01	+/-	1.6E-01	1.6E-01	5.3E-01		
Cs-134	3.1E-02	+/-	3.1E-02	3.1E-02	1.0E-01		
Cs-137	4.9E-02	+/-	1.0E-02	1.1E-02	3.2E-02	1.1E+00	bc
Fe-59	-2E-03	+/-	2.9E-02	2.9E-02	1.0E-01		
I-131	4E-02	+/-	2.7E-01	2.7E-01	9.0E-01		
K-40	1.494E+01	+/-	3.1E-01	8.1E-01	3.8E-01		bc
La-140	1.1E-01	+/-	1.3E-01	1.3E-01	4.2E-01		
Mn-54	1.4E-02	+/-	9.3E-03	9.3E-03	3.1E-02		
Nb-95	-1.1E-02	+/-	2.3E-02	2.3E-02	7.8E-02		
Ru-103	-5E-03	+/-	1.4E-02	1.4E-02	4.9E-02		
Ru-106	9.9E-02	+/-	8.0E-02	8.0E-02	2.7E-01		
Sb-124	-1.5E-02	+/-	2.3E-02	2.3E-02	8.5E-02		
Sb-125	2.4E-02	+/-	2.1E-02	2.1E-02	6.9E-02		
Se-75	-2E-03	+/-	1.1E-02	1.1E-02	3.8E-02		
Zn-65	2.3E-02	+/-	4.1E-02	4.1E-02	1.4E-01		
Zr-95	-4.3E+00	+/-	2.2E+00	2.2E+00	7.2E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 5/12/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/16/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	**Receipt Date**	04/17/03	

Lab. Sample No.	L5348-12	**Client ID**	BMA-E0200-552 REF-X19581	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/09/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	5.37E-01	+/-	3.1E-02	4.1E-02	1.3E-01		bc
Ag-108m	-3E-03	+/-	7.6E-03	7.6E-03	2.6E-02		
Ag-110m	8E-03	+/-	1.2E-02	1.2E-02	4.1E-02		
Ba-140	3.3E-01	+/-	3.1E-01	3.1E-01	6.4E-01		
Be-7	2.3E-01	+/-	1.2E-01	1.2E-01	3.8E-01		
Ce-141	5E-03	+/-	2.7E-02	2.7E-02	9.1E-02		
Ce-144	1E-03	+/-	4.4E-02	4.4E-02	1.5E-01		
Co-57	-2.2E-03	+/-	6.4E-03	6.4E-03	2.2E-02		
Co-58	-5E-03	+/-	1.2E-02	1.2E-02	4.0E-02		
Co-60	2.9E-03	+/-	8.2E-03	8.2E-03	2.8E-02	3.8E-02	
Cr-51	-9E-02	+/-	1.8E-01	1.8E-01	6.2E-01		
Cs-134	7.9E-03	+/-	9.0E-03	9.0E-03	3.0E-02		
Cs-137	7.1E-02	+/-	1.1E-02	1.2E-02	3.5E-02	1.1E+00	bc
Fe-59	1.5E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
I-131	-3.5E-01	+/-	3.4E-01	3.4E-01	1.2E+00		
K-40	1.494E+01	+/-	2.9E-01	8.0E-01	4.0E-01		bc
La-140	-1.6E-01	+/-	1.7E-01	1.7E-01	5.7E-01		
Mn-54	1.9E-03	+/-	9.4E-03	9.4E-03	3.2E-02		
Nb-95	3.5E-02	+/-	2.0E-02	2.0E-02	6.5E-02		
Ru-103	8E-03	+/-	1.6E-02	1.6E-02	5.5E-02		
Ru-106	1.8E-02	+/-	8.3E-02	8.3E-02	2.8E-01		
Sb-124	2E-02	+/-	2.4E-02	2.4E-02	8.1E-02		
Sb-125	1.4E-02	+/-	2.1E-02	2.1E-02	7.0E-02		
Se-75	1.6E-02	+/-	1.2E-02	1.2E-02	4.1E-02		
Zn-65	4.7E-02	+/-	3.9E-02	3.9E-02	1.3E-01		
Zr-95	-9.8E-02	+/-	4.2E-02	4.2E-02	1.5E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 5/21/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer Duratek Inc
Attention Paul Ely

Report Date 05/12/03
Receipt Date 04/17/03

Duratek Inc
c/o Bristol Meyers Squibb
Bldg 115, One Squibb Drive
New Brunswick, NJ 08903

Lab. Sample No. L5348-13 **Client ID** BMA-E0200-592 REF-X19582 **Product** GAMMA SPECTROMETRY
Reference Date 03/26/03 **Analysis Date** 05/07/03 **Matrix** Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	4.88E-01	+/-	3.1E-02	3.9E-02	1.2E-01		bc
Ag-108m	-1.01E-02	+/-	6.1E-03	6.2E-03	2.2E-02		
Ag-110m	6E-03	+/-	1.2E-02	1.2E-02	4.1E-02		
Ba-140	-2E-02	+/-	2.2E-01	2.2E-01	7.7E-01		
Be-7	-4E-03	+/-	9.5E-02	9.5E-02	3.2E-01		
Ce-141	-3E-03	+/-	2.1E-02	2.1E-02	7.1E-02		
Ce-144	2.6E-02	+/-	3.9E-02	3.9E-02	1.3E-01		
Co-57	2.1E-03	+/-	5.0E-03	5.0E-03	1.7E-02		
Co-58	-1.9E-02	+/-	1.1E-02	1.1E-02	3.9E-02		
Co-60	5E-04	+/-	9.0E-03	9.0E-03	3.1E-02	3.8E-02	
Cr-51	2.2E-01	+/-	1.5E-01	1.5E-01	5.0E-01		
Cs-134	3.6E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
Cs-137	3.1E-02	+/-	1.1E-02	1.1E-02	3.6E-02	1.1E+00	c
Fe-59	-2.8E-02	+/-	3.4E-02	3.4E-02	1.2E-01		
I-131	1.1E-01	+/-	2.7E-01	2.7E-01	9.1E-01		
K-40	1.475E+01	+/-	3.3E-01	8.1E-01	3.9E-01		bc
La-140	2.5E-01	+/-	1.2E-01	1.2E-01	3.9E-01		
Mn-54	3.4E-03	+/-	8.2E-03	8.2E-03	2.8E-02		
Nb-95	4E-03	+/-	1.8E-02	1.8E-02	6.0E-02		
Ru-103	-1.3E-02	+/-	1.4E-02	1.4E-02	4.8E-02		
Ru-106	-1.99E-01	+/-	8.1E-02	8.2E-02	2.9E-01		
Sb-124	-3.9E-02	+/-	2.5E-02	2.5E-02	9.6E-02		
Sb-125	1.7E-02	+/-	2.0E-02	2.0E-02	6.5E-02		
Se-75	7.8E-03	+/-	9.5E-03	9.5E-03	3.2E-02		
Zn-65	-2.2E-02	+/-	4.3E-02	4.3E-02	1.5E-01		
Zr-95	-2.8E-02	+/-	4.3E-02	4.3E-02	1.5E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

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ENVIRONMENTAL LAB

Approved by
5/12/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/22/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5348-14	**Client ID**	BMA-E0200-658 REF-X19583	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/16/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	5.33E-01	+/-	2.8E-02	3.9E-02	1.3E-01		bc
Ag-108m	-4.2E-03	+/-	5.7E-03	5.7E-03	2.0E-02		
Ag-110m	8E-03	+/-	1.1E-02	1.1E-02	3.8E-02		
Ba-140	2.7E-01	+/-	3.4E-01	3.4E-01	1.1E+00		
Be-7	-1.1E-01	+/-	1.0E-01	1.0E-01	3.5E-01		
Ce-141	8E-03	+/-	2.5E-02	2.5E-02	8.3E-02		
Ce-144	-2.6E-02	+/-	3.7E-02	3.7E-02	1.2E-01		
Co-57	3E-04	+/-	4.6E-03	4.6E-03	1.6E-02		
Co-58	-2.2E-02	+/-	1.0E-02	1.0E-02	3.7E-02		
Co-60	8.1E-03	+/-	7.8E-03	7.8E-03	2.6E-02	3.8E-02	
Cr-51	-2E-02	+/-	1.7E-01	1.7E-01	5.9E-01		
Cs-134	4.8E-02	+/-	3.2E-02	3.2E-02	1.0E-01		
Cs-137	2.19E-02	+/-	9.3E-03	9.4E-03	3.0E-02	1.1E+00	c
Fe-59	-2.3E-02	+/-	3.1E-02	3.1E-02	1.1E-01		
I-131	-6.7E-01	+/-	5.1E-01	5.1E-01	1.8E+00		
K-40	1.251E+01	+/-	2.8E-01	6.9E-01	3.7E-01		bc
La-140	2.1E-01	+/-	1.8E-01	1.8E-01	6.0E-01		
Mn-54	8.3E-03	+/-	7.7E-03	7.7E-03	2.6E-02		
Nb-95	2.3E-02	+/-	1.9E-02	1.9E-02	6.3E-02		
Ru-103	-1.7E-02	+/-	1.5E-02	1.5E-02	5.1E-02		
Ru-106	-1.07E-01	+/-	7.1E-02	7.1E-02	2.5E-01		
Sb-124	-2.4E-02	+/-	2.6E-02	2.6E-02	9.6E-02		
Sb-125	-6E-03	+/-	1.9E-02	1.9E-02	6.4E-02		
Se-75	-1.74E-02	+/-	9.1E-03	9.1E-03	3.2E-02		
Zn-65	4.2E-02	+/-	3.8E-02	3.8E-02	1.3E-01		
Zr-95	-8.6E+00	+/-	2.9E+00	2.9E+00	9.5E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
5/22/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

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Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/27/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5348-15	**Client ID**	BMA-E0200-693 REF-X19584	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/22/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.7E-01	+/-	2.7E-02	3.3E-02	1.1E-01		bc
Ag-108m	0E+00	+/-	5.5E-03	5.5E-03	1.9E-02		
Ag-110m	-1E-03	+/-	1.1E-02	1.1E-02	3.7E-02		
Ba-140	9.4E-01	+/-	5.3E-01	5.3E-01	1.7E+00		
Be-7	-2E-02	+/-	1.0E-01	1.0E-01	3.4E-01		
Ce-141	1.2E-02	+/-	3.0E-02	3.0E-02	9.9E-02		
Ce-144	-4.7E-02	+/-	3.9E-02	3.9E-02	1.3E-01		
Co-57	1.8E-03	+/-	5.0E-03	5.0E-03	1.7E-02		
Co-58	-1.7E-02	+/-	1.1E-02	1.1E-02	4.0E-02		
Co-60	1.51E-02	+/-	8.0E-03	8.0E-03	2.6E-02	3.8E-02	
Cr-51	2.6E-01	+/-	2.0E-01	2.0E-01	6.7E-01		
Cs-134	-5E-03	+/-	2.6E-02	2.6E-02	8.8E-02		
Cs-137	3E-02	+/-	6.1E-03	6.3E-03	1.8E-02	1.1E+00	bc
Fe-59	2.7E-02	+/-	3.5E-02	3.5E-02	1.2E-01		
I-131	-2.6E-01	+/-	8.2E-01	8.2E-01	2.8E+00		
K-40	1.793E+01	+/-	2.9E-01	9.4E-01	3.1E-01		bc
La-140	2.5E-01	+/-	2.3E-01	2.3E-01	7.7E-01		
Mn-54	9.8E-03	+/-	8.0E-03	8.0E-03	2.6E-02		
Nb-95	-2E-03	+/-	2.0E-02	2.0E-02	6.8E-02		
Ru-103	1.6E-02	+/-	1.8E-02	1.8E-02	6.0E-02		
Ru-106	-1E-03	+/-	7.0E-02	7.0E-02	2.4E-01		
Sb-124	1.8E-02	+/-	2.0E-02	2.0E-02	6.9E-02		
Sb-125	-4E-03	+/-	1.8E-02	1.8E-02	6.3E-02		
Se-75	-8E-03	+/-	1.1E-02	1.1E-02	3.7E-02		
Zn-65	-3E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
Zr-95	-5.8E-02	+/-	3.9E-02	3.9E-02	1.4E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
J.M. Raimondi 5/27/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

MAILED
MAY 27 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/22/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	04/17/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5348-16	**Client ID**	BMA-E0200-726 REF-X19585	**Product**	GAMMA SPECTROMETRY
Reference Date	03/26/03	**Analysis Date**	05/16/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	3.8E-01	+/-	2.7E-02	3.3E-02	1.2E-01		bc
Ag-108m	-6.8E-03	+/-	5.5E-03	5.5E-03	1.9E-02		
Ag-110m	-1E-03	+/-	1.2E-02	1.2E-02	3.9E-02		
Ba-140	-5E-02	+/-	3.9E-01	3.9E-01	1.3E+00		
Be-7	1.61E-01	+/-	9.4E-02	9.5E-02	3.1E-01		
Ce-141	7E-03	+/-	1.9E-02	1.9E-02	6.4E-02		
Ce-144	-1.7E-02	+/-	3.6E-02	3.6E-02	1.2E-01		
Co-57	-8E-03	+/-	4.5E-03	4.5E-03	1.6E-02		
Co-58	-1.31E-02	+/-	9.8E-03	9.8E-03	3.5E-02		
Co-60	-2.2E-03	+/-	8.1E-03	8.1E-03	2.8E-02	3.8E-02	
Cr-51	-3E-02	+/-	1.7E-01	1.7E-01	5.8E-01		
Cs-134	-9.4E-03	+/-	7.5E-03	7.5E-03	2.6E-02		
Cs-137	1.92E-02	+/-	7.5E-03	7.6E-03	2.4E-02	1.1E+00	
Fe-59	2.7E-02	+/-	3.2E-02	3.2E-02	1.1E-01		
I-131	1E-01	+/-	5.1E-01	5.1E-01	1.7E+00		
K-40	1.91E+01	+/-	3.1E-01	1.0E+00	3.4E-01		bc
La-140	2.7E-01	+/-	1.9E-01	1.9E-01	6.1E-01		
Mn-54	6.2E-03	+/-	8.1E-03	8.1E-03	2.7E-02		
Nb-95	-2.2E-02	+/-	2.0E-02	2.0E-02	6.9E-02		
Ru-103	-2E-03	+/-	1.4E-02	1.4E-02	4.7E-02		
Ru-106	0E+00	+/-	6.8E-02	6.8E-02	2.3E-01		
Sb-124	3.4E-02	+/-	2.1E-02	2.1E-02	6.8E-02		
Sb-125	6E-03	+/-	1.7E-02	1.7E-02	5.9E-02		
Se-75	-1.7E-02	+/-	1.0E-02	1.1E-02	3.6E-02		
Zn-65	1.8E-02	+/-	3.7E-02	3.7E-02	1.2E-01		
Zr-95	-3.3E-02	+/-	3.7E-02	3.7E-02	1.3E-01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Approved by
5/27/03
J.M. Raimondi
Sample Control Manager

Reporting Level Ratio:

c:

MAILED
MAY 27 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Duratek Inc.
Survey Package Worksheet for Package E0200
Bristol-Myers Squibb Soils Below Building 83 Tanks

Package Identification No.: E0200	Prepared by: Paul C. Ely
Location: Building 83 Buried Wastewater Tank Area	Date prepared: 10/14/2002
Area Classification: Class 3	

Area Description
The survey is for the soils below the Building 83 tanks between Building 83 and Building 115.

Historical Information
There is no history of spills to the soil around the Building 83 buried tank area. The characterization report indicates that the soils up to 20 feet deep around the tank vault were not contaminated.

General Survey Instructions

The COMPASS program was utilized to generate a minimum sample requirement for this area of 13 samples (see attached). Fifteen random sample locations in the tank area were determined and laid out as indicated on the attached survey map.

1. **The tanks and concrete slab under the tanks will be removed prior to obtaining the soil samples. Shoring will be in place to keep the excavation open for sampling.**
2. Mark the location of the sample location with a survey flag in the soil at the locations indicated on the survey map.
3. Obtain 1 exposure rate measurement on contact with the surface and another at 1 meter above the surface at each survey measurement location with M2350-1.
4. Obtain approximately one gallon of soil from each sample location at a depth of 0 to 6-inches.
5. Obtain a 100 ml or larger liquid sample from each location for tritium analysis. The sample locations are below the water table and water for sampling will be readily available.
6. Use only the L1 and L8 codes and sample depth when labeling samples for analysis.

Survey Package Completion.

1. When all measurements, samples or scans are collected, initial and date the "MEASUREMENT TYPE" block on the survey package to indicate the measurements or samples were collected.
2. Note any problems, comments, or other information pertinent to the data or sample collection under the "FIELD NOTES" section.

Use all location codes provided below when taking measurements.

Survey Package: E0200 continued

Special Instructions
Use the sodium iodide detector model number 44-2 for gamma survey measurements.

Survey performance (Initial and date as each survey is complete)

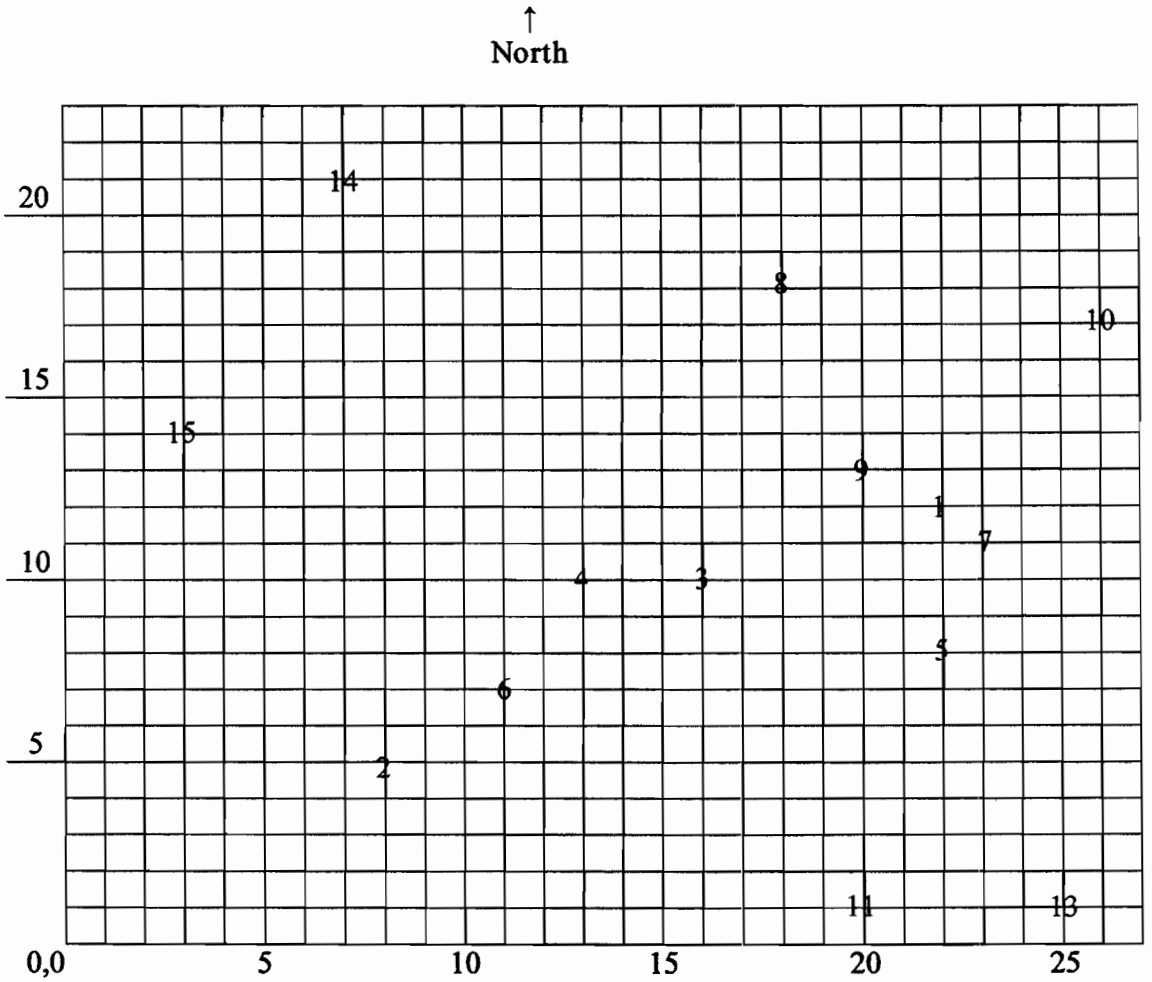
Location Code					General Description	Beta Scan	Direct Beta	Contact Gamma	1 meter Gamma	Smear Gross	LS Water Sampler	Media Sample
L1	L2	L6	L7	L8								
Bristol Myers Squibb Building 83 Soils Under Tanks												
E0200	NA	NA	NA	1 thru 15	**Soil Under Tanks**	NA	NA	(15)	(15)	NA	(15)	15
								ARK/10-22-02	ARK/10-22-02		*ARK/10-22-02	**ARK/10-22-02

Package Review
Date Package Completed:
Package Reviewed by and Date:

Survey Comments
* Only 4 samples taken (1-4) refusal at other locations.
** Only 3 samples taken (1-3) refusal at other locations.
Data from characterization samples at the surface and from below the tank bottoms
will be used along with results from the 4 final survey soil samples.

SURVEY PACKAGE E0200
B-83 TANKS SOIL SAMPLES

The B-83 tanks sat on a concrete pad that was 22.5' x 27'. The reference point for the grid below is the southwest corner of the pad's former location. Each grid line represents 1 foot.



SURVEY PACKAGE E0200
B-83 TANKS SOIL SAMPLES

N = 15

X is random between 0 & 27, Y is random between 0 & 22. Each value was truncated at the decimal point to make coordinates.

	X	Y
1	22	12
2	8	5
3	16	10
4	13	10
5	22	8
6	11	7
7	23	11
8	18	18
9	20	13
10	26	17
11	20	1
12	7	9
13	25	1
14	7	21
15	3	14

SURVEY PACKAGE E0200
B-83 CONCRETE PAD DIMENSIONS

Conversion Factor: 1 ft^2 = 9.29E-2 m^2

Pad Dimensions:

22.5' x 27'

A = 22.5 * 27 * 9.29E-2

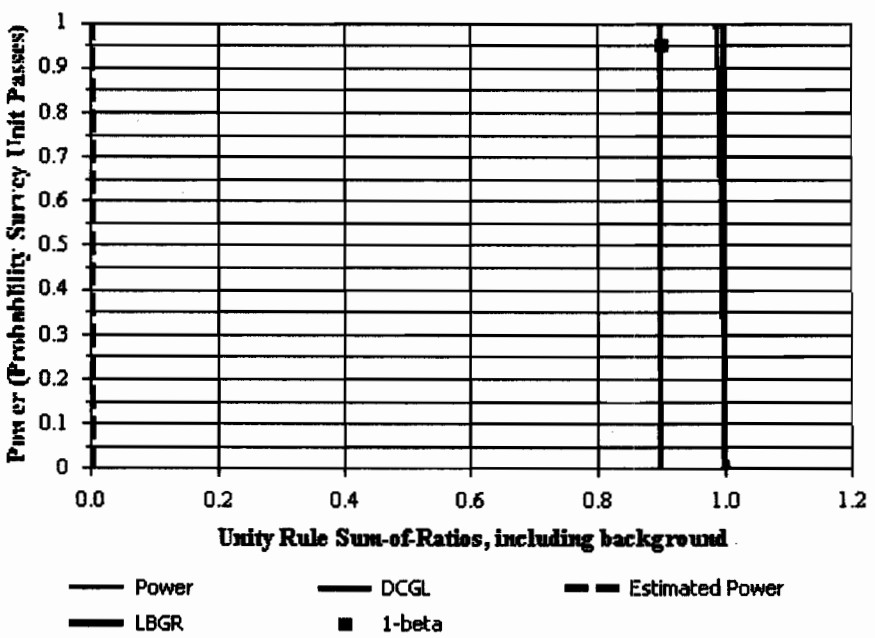
= 56 square meters

Surface Soil Survey Plan

Survey Plan Summary

Site:	Bristol-Meyers Squibb Decommissioning		
Planner(s):	William R. Hoey		
Survey Unit Name:	E0200 Rev. 1		
Comments:	B-83, Soil Under Tanks		
Area (m^2):	56	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.01
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.9	Estimated Conc. (SOR):	0
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Cs-137	11.00	N/A	N/A	N/A	N/A
Mn-54	9.00	N/A	N/A	N/A	N/A

Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Cs-137	0.014 ± 0.028	N/A
Mn-54	0.0234 ± 0.04	N/A

Mn-54 "mean" is the single positive value from 33 soil samples collected during characterization. The sigma value is artificial. Any value for σ lower than 0.4 results in a std. dev. of 0 in COMPASS which causes error due to attempt to calculate relative shift (Δ/σ) by dividing by zero.

Tank 83 Soil Results

SAMPLE ID	K-40	MN-54	CO-57	CO-60	CS-134	CS-137	TL-208	PB-212	BI-212	AC-228
BMS-SML-036-1 (0-2 FT)	7.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-01	1.07E+00	4.16E+00	1.29E+00
BMS-SML-036-2 (2-4 FT)	5.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-01	2.84E-01	3.97E-01	5.98E-01
BMS-SML-036-3 (4-6 FT)	3.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-01	5.26E-01	2.14E+00	1.02E+00
BMS-SML-036-4 (16-18 FT)	2.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**1.14E-01**	2.05E-01	4.56E-01	1.54E+00	1.09E+00
BMS-SML-036-5 (8-10 FT)	4.25E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-01	3.22E-01	2.01E+00	1.11E+00
BMS-SML-036-6 (10-12 FT)	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**5.03E-02**	1.10E-01	3.60E-01	9.05E-01	7.17E-01
BMS-SML-036-7 (12-14 FT)	3.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E-01	3.12E-01	4.69E-01	5.92E-01
BMS-SML-036-8 (14-16 FT)	2.51E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.86E-01	2.79E-01	2.23E+00	5.93E-01
BMS-SML-036-9 (16-18 FT)	4.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**3.69E-02**	1.41E-01	3.97E-01	1.63E+00	8.74E-01
BMS-SML-037-1 (0-2 FT)	3.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.21E-01	4.28E-01	1.97E+00	1.27E+00
BMS-SML-037-2 (2-4 FT)	4.77E+00	**2.34E-02**	0.00E+00	0.00E+00	0.00E+00	**7.94E-02**	2.40E-01	5.00E-01	2.19E+00	6.78E-01
BMS-SML-037-3 (4-6 FT)	4.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**4.60E-02**	2.21E-01	4.95E-01	1.96E+00	1.07E+00
BMS-SML-037-5 (8-10 FT)	3.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E-01	2.91E-01	9.21E-01	6.19E-01
BMS-SML-037-6 (10-12 FT)	4.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-01	5.31E-01	2.37E+00	8.20E-01
BMS-SML-037-7 (12-14 FT)	1.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.69E-01	1.46E+00	1.59E+00	1.80E+00
BMS-SML-037-8 (14-16 FT)	3.08E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**5.15E-02**	5.93E-01	1.65E+00	3.48E+00	1.97E+00
BMS-SML-037-9 (16-18 FT)	3.33E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.23E-01	1.47E+00	0.00E+00	2.93E+00
BMS-SML-038-1 (0-2 FT)	8.22E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E-01	7.13E-01	1.78E+00	9.46E-01
BMS-SML-038-2 (2-4 FT)	8.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.32E-01	9.03E-01	1.44E+00	1.48E+00
BMS-SML-038-3 (4-6 FT)	6.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.58E-01	5.85E-01	2.18E+00	1.11E+00
BMS-SML-038-5 (8-10 FT)	1.02E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**4.66E-02**	3.22E-01	9.58E-01	1.44E+00	1.60E+00
BMS-SML-038-6 (10-12 FT)	4.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-01	3.19E-01	1.51E+00	7.35E-01
BMS-SML-038-7 (12-14 FT)	2.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E-01	2.94E-01	9.48E-01	5.89E-01
BMS-SML-038-8 (14-16 FT)	2.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-01	2.96E-01	1.08E+00	4.39E-01
BMS-SML-038-9 (16-18 FT)	1.19E+01	0.00E+00	0.00E+00	0.00E+00	**4.49E-02**	0.00E+00	3.01E-01	7.54E-01	1.42E+00	9.63E-01
BMS-SML-039-1 (0-2 FT)	1.09E+01	0.00E+00	0.00E+00	0.00E+00	**3.21E-02**	0.00E+00	3.93E-01	9.89E-01	1.33E+00	1.82E+00
BMS-SML-039-2 (2-4 FT)	1.36E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**3.79E-02**	5.15E-01	1.25E+00	2.21E+00	1.81E+00
BMS-SML-039-4 (6-8 FT)	1.45E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.68E-01	1.84E+00	2.54E+00	2.06E+00
BMS-SML-039-5 (8-10 FT)	2.72E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.11E-01	1.66E+00	2.80E+00	2.65E+00
BMS-SML-039-6 (10-12 FT)	2.96E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.99E-01	1.61E+00	3.08E+00	1.99E+00
BMS-SML-039-7 (12-14 FT)	2.56E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.46E-01	1.42E+00	1.82E+00	1.88E+00
BMS-SML-039-8 (14-16 FT)	2.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.43E-01	1.50E+00	2.70E+00	1.82E+00
BMS-SML-039-9 (16-18 FT)	2.84E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.93E-01	1.68E+00	0.00E+00	1.98E+00
Average	**1.10E+01**	**7.10E-04**	**0.00E+00**	**0.00E+00**	**2.33E-03**	**1.40E-02**	**3.46E-01**	**8.36E-01**	**1.76E+00**	**1.30E+00**
Standard Deviation	**9.89E+00**	**4.08E-03**	**0.00E+00**	**0.00E+00**	**9.47E-03**	**2.80E-02**	**1.64E-01**	**5.31E-01**	**9.25E-01**	**6.40E-01**

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: Douglas R Kyle **Signature:** [signature] **Date:** 10-22-02

Download Station #: 1 Download File #: 7
Serial # Verification: Model 2350: ■ Detector: ■ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Douglas R Kyle **User ID** DRK2986 **Signature:** [signature] **Date:** 10-22-02

Print Name: _____ **User ID** _____ **Signature:** _____ **Date:** _____

Instrument Serial #(s): Model 2350: 126197

Survey Unit Description: E0200 Soil Samples
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Calibration Due Date: 2-15-03 Detector Calibration Due Date: 2-12-03

Type Of Survey: ■ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File#	Post File#
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
■ Gamma γ	PR095085	44-2	N/A	N/A		

Local Area Background Measurements MEAN Value in cpm !

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: Soil Samples taken At locations 1,2 & 3; Tritium samples taken At 1,2,3 & 4

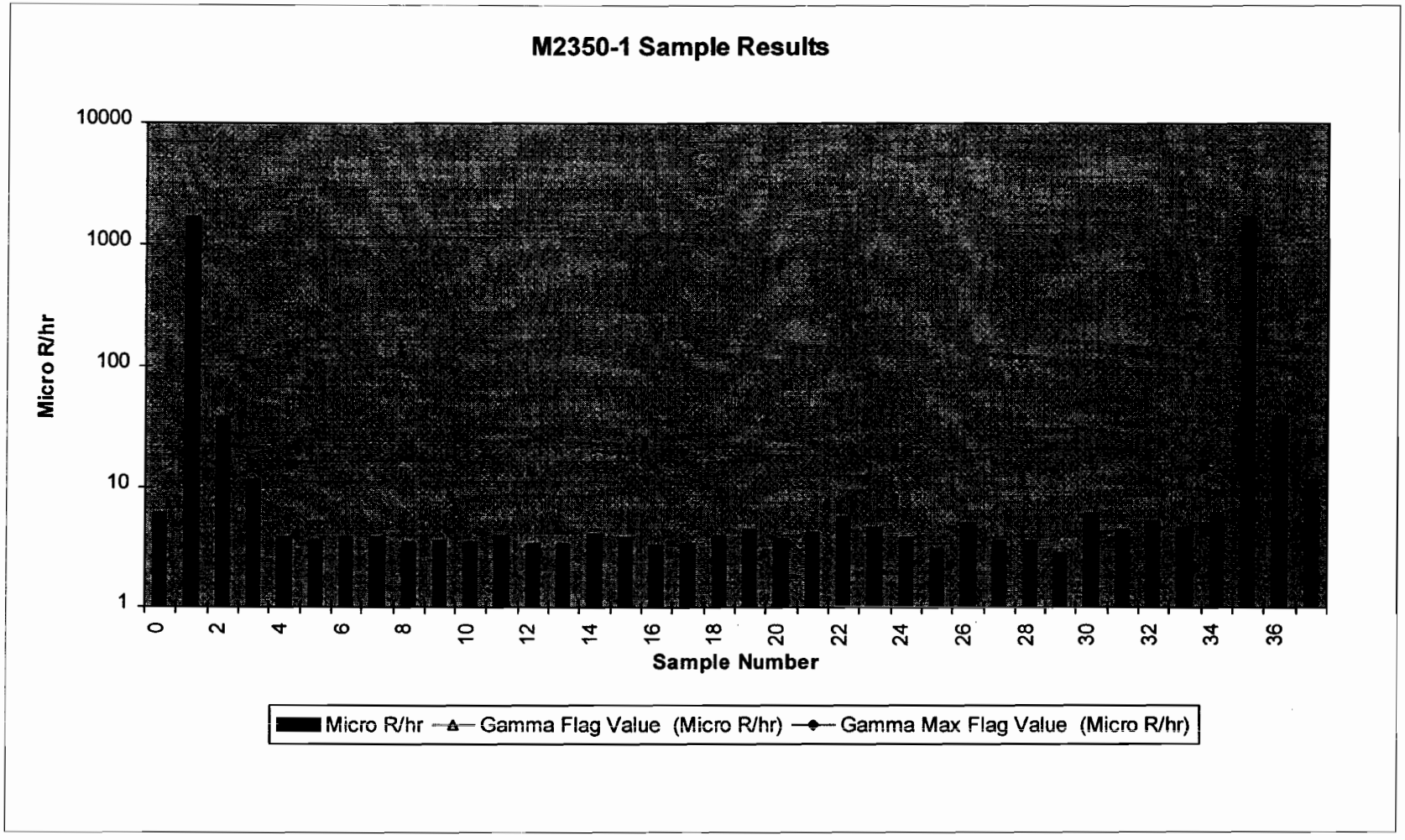
M2350-1 Download GAMMA Report

File Name : 00000007	Survey Description :Package E0200 Soil Samples	
Survey Reason : Termination		
User ID : DRK2986	Technician Name : Doug Kjos	
Instrument Model : 2350-1	Instrument S/N : 126197	Instrument Cal. Due : 2/15/03
Detector Model : LMI 44-2	Detector S/N : 095085	Detector Cal. Due : 2/12/03
Measurement Type : GAMMA	Detector Type : 03100 : Measurement of average dose rate at 1 meter	
Cal. Constant : 17170050000		Survey Date : 10/22/02

Print Name	Signature	Date
Doug Kjos	DRK	10/22/02

Comments:

Sign-Off Paul C Ely (Print Name) Paul C Ely (Signature) 4/26/03 (Date)


M2350-1 Sample Results
Micro R/hr
10000
1000
100
10
1
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
Sample Number
Micro R/hr
Gamma Flag Value (Micro R/hr)
Gamma Max Flag Value (Micro R/hr)

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
ZZZZZ	ZZZZZ	0	8,815.0	300	PRGBK	ZZZZZ	ZZZZZ	0		6.16E+00
ZZZZZ	19453	1	480,831.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.68E+03
ZZZZZ	19453	2	10,998.0	60	PRG00	ZZZZZ	ZZZZZ	0		3.84E+01
ZZZZZ	19453	3	3,318.0	60	PRG00	ZZZZZ	ZZZZZ	0		1.16E+01
E0200	01F01	4	552.0	30	FLDCT	B0016	ZZZZZ	1		3.86E+00
E0200	01F01	5	521.0	30	FLDCT	B0016	ZZZZZ	1		3.64E+00
E0200	01F01	6	554.0	30	FLDCT	B0016	ZZZZZ	2		3.87E+00
E0200	01F01	7	547.0	30	FLDCT	B0016	ZZZZZ	2		3.82E+00
E0200	01F01	8	504.0	30	FLDCT	B0016	ZZZZZ	3		3.52E+00
E0200	01F01	9	527.0	30	FLDCT	B0016	ZZZZZ	3		3.68E+00
E0200	01F01	10	499.0	30	FLDCT	B0016	ZZZZZ	4		3.49E+00
E0200	01F01	11	573.0	30	FLDCT	B0016	ZZZZZ	4		4.00E+00
E0200	01F01	12	486.0	30	FLDCT	B0016	ZZZZZ	5		3.40E+00
E0200	01F01	13	487.0	30	FLDCT	B0016	ZZZZZ	5		3.40E+00
E0200	01F01	14	589.0	30	FLDCT	B0016	ZZZZZ	6		4.12E+00
E0200	01F01	15	552.0	30	FLDCT	B0016	ZZZZZ	6		3.86E+00
E0200	01F01	16	472.0	30	FLDCT	B0016	ZZZZZ	7		3.30E+00
E0200	01F01	17	491.0	30	FLDCT	B0016	ZZZZZ	7		3.43E+00
E0200	01F01	18	573.0	30	FLDCT	B0016	ZZZZZ	8		4.00E+00
E0200	01F01	19	650.0	30	FLDCT	B0016	ZZZZZ	8		4.54E+00
E0200	01F01	20	539.0	30	FLDCT	B0016	ZZZZZ	9		3.77E+00
E0200	01F01	21	601.0	30	FLDCT	B0016	ZZZZZ	9		4.20E+00
E0200	01F01	22	830.0	30	FLDCT	B0016	ZZZZZ	10		5.80E+00
E0200	01F01	23	658.0	30	FLDCT	B0016	ZZZZZ	10		4.60E+00
E0200	01F01	24	548.0	30	FLDCT	B0016	ZZZZZ	11		3.83E+00
E0200	01F01	25	451.0	30	FLDCT	B0016	ZZZZZ	11		3.15E+00
E0200	01F01	26	724.0	30	FLDCT	B0016	ZZZZZ	12		5.06E+00
E0200	01F01	27	526.0	30	FLDCT	B0016	ZZZZZ	12		3.68E+00
E0200	01F01	28	515.0	30	FLDCT	B0016	ZZZZZ	13		3.60E+00
E0200	01F01	29	404.0	30	FLDCT	B0016	ZZZZZ	13		2.82E+00
E0200	01F01	30	883.0	30	FLDCT	B0016	ZZZZZ	14		6.17E+00
E0200	01F01	31	639.0	30	FLDCT	B0016	ZZZZZ	14		4.47E+00
E0200	01F01	32	741.0	30	FLDCT	B0016	ZZZZZ	15		5.18E+00

Gamma Flag - _____

Gamma Max Flag [redacted]

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
E0200	01F01	33	659.0	30	FLDCT	B0016	ZZZZZ	15		4.61E+00
ZZZZZ	ZZZZZ	34	8,863.0	300	PTGBK	ZZZZZ	ZZZZZ	0		6.19E+00
ZZZZZ	19453	35	483,460.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.69E+03
ZZZZZ	19453	36	11,422.0	60	PTG00	ZZZZZ	ZZZZZ	0		3.99E+01
ZZZZZ	19453	37	3,383.0	60	PTG00	ZZZZZ	ZZZZZ	0		1.18E+01

Gamma Flag	-
Gamma Max Flag	[redacted]

Bristol-Myers Squibb Production Facility Final Status Survey
New Brunswick New Jersey

Framatome ANP Environmental Laboratory Analysis Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-E0200-1	Sample Location # 1 Under B-83 Tanks	10/22/02	4/21/03	Ac/Th-228	1.452	1.45E+00	0.039	0.130
				Co-60	<MDA	3.70E-03	0.010	0.033
				Cs-137	<MDA	-2.10E-02	0.010	0.037
				K-40	27.43	2.74E+01	0.410	0.320
BMS-E0200-2	Sample Location # 2 Under B-83 Tanks	10/22/02	4/21/03	Ac/Th-228	1.095	1.10E+00	0.034	0.130
				Co-60	<MDA	-2.70E-03	0.008	0.027
				Cs-137	<MDA	-5.50E-03	0.008	0.028
				K-40	20.62	2.06E+01	0.340	0.290
BMS-E0200-3	Sample Location # 3 Under B-83 Tanks	10/22/02	5/2/03	Ac/Th-228	0.839	8.39E-01	0.041	0.140
				Co-60	<MDA	-8.90E-03	0.009	0.033
				Cs-137	<MDA	-9.10E-03	0.010	0.034
				K-40	18.15	1.82E+01	0.380	0.320

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/23/03	Duratek Inc	
Attention	Paul Ely	**Receipt Date**	02/21/03	c/o Bristol Meyers Squibb	
				Bldg 115, One Squibb Drive	
				New Brunswick, NJ 08903	

Lab. Sample No.	L5188-06	**Client ID**	EO200 #1	**Product**	GAMMA SPECTROMETRY
Reference Date	10/22/02	**Analysis Date**	04/21/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.452E+00	+/-	3.9E-02	8.3E-02	1.3E-01		bc
Ag-108m	6.9E-03	+/-	8.1E-03	8.1E-03	2.7E-02		
Ag-110m	2E-02	+/-	1.9E-02	1.9E-02	6.4E-02		
Ba-140	4E+02	+/-	5.2E+02	5.2E+02	1.7E+03		
Be-7	9.3E-01	+/-	7.3E-01	7.3E-01	2.4E+00		
Ce-141	5.4E-01	+/-	7.0E-01	7.0E-01	2.3E+00		
Ce-144	0E+00	+/-	1.0E-01	1.0E-01	3.4E-01		
Co-57	-2E-02	+/-	1.3E-02	1.3E-02	4.4E-02		
Co-58	-3.9E-02	+/-	4.9E-02	4.9E-02	1.7E-01		
Co-60	3.7E-03	+/-	9.5E-03	9.5E-03	3.3E-02	3.8E-02	
Cr-51	1.69E+01	+/-	7.1E+00	7.1E+00	2.3E+01		
Cs-134	3.7E-02	+/-	3.9E-02	3.9E-02	1.3E-01		
Cs-137	-2.1E-02	+/-	1.0E-02	1.0E-02	3.7E-02	1.1E+00	
Fe-59	-3.9E-01	+/-	3.2E-01	3.2E-01	1.1E+00		
I-131	9E+03	+/-	5.3E+04	5.3E+04	1.8E+05		
K-40	2.743E+01	+/-	4.1E-01	1.4E+00	3.2E-01		bc
La-140	6.8E+02	+/-	3.0E+02	3.0E+02	9.6E+02		
Mn-54	1.9E-02	+/-	1.4E-02	1.4E-02	4.6E-02		
Nb-95	-1.4E-01	+/-	3.4E-01	3.4E-01	1.2E+00		
Ru-103	3.6E-01	+/-	1.9E-01	1.9E-01	6.1E-01		
Ru-106	-3E-01	+/-	1.1E-01	1.1E-01	4.0E-01		
Sb-124	-1.1E-01	+/-	1.0E-01	1.0E-01	3.9E-01		
Sb-125	3.5E-02	+/-	2.9E-02	2.9E-02	9.5E-02		
Se-75	-5.9E-02	+/-	3.2E-02	3.3E-02	1.1E-01		
Zn-65	-7.8E-02	+/-	7.1E-02	7.1E-02	2.4E-01		
Zr-95	0E+00	+/-	1.2E+00	1.2E+00	3.9E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

MAILED
APR 29 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
4/24/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	04/23/03	Duratek Inc c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903
Attention	Paul Ely	**Receipt Date**	02/21/03	

Lab. Sample No.	L5188-07	**Client ID**	EO200 #2	**Product**	GAMMA SPECTROMETRY
Reference Date	10/22/02	**Analysis Date**	04/21/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	1.095E+00	+/-	3.4E-02	6.5E-02	1.3E-01		bc
Ag-108m	-7.7E-03	+/-	7.5E-03	7.5E-03	2.6E-02		
Ag-110m	-2.4E-02	+/-	1.7E-02	1.7E-02	5.9E-02		
Ba-140	-2.2E+02	+/-	4.7E+02	4.7E+02	1.6E+03		
Be-7	3.5E-01	+/-	6.8E-01	6.8E-01	2.3E+00		
Ce-141	2.2E-01	+/-	6.2E-01	6.2E-01	2.1E+00		
Ce-144	-2.9E-01	+/-	1.5E-01	1.5E-01	5.1E-01		
Co-57	-1.4E-02	+/-	1.0E-02	1.0E-02	3.5E-02		
Co-58	1.27E-01	+/-	4.3E-02	4.3E-02	1.4E-01		
Co-60	-2.7E-03	+/-	7.6E-03	7.6E-03	2.7E-02	3.8E-02	
Cr-51	-6.6E+00	+/-	5.7E+00	5.7E+00	2.0E+01		
Cs-134	1E-04	+/-	8.9E-03	8.9E-03	3.0E-02		
Cs-137	-5.5E-03	+/-	7.9E-03	7.9E-03	2.8E-02	1.1E+00	
Fe-59	-3E-02	+/-	2.8E-01	2.8E-01	9.5E-01		
I-131	-2.2E+04	+/-	4.3E+04	4.3E+04	1.5E+05		
K-40	2.062E+01	+/-	3.4E-01	1.1E+00	2.9E-01		bc
La-140	-3E+01	+/-	2.6E+02	2.6E+02	8.8E+02		
Mn-54	0E+00	+/-	1.2E-02	1.2E-02	4.2E-02		
Nb-95	-4.3E-01	+/-	3.0E-01	3.0E-01	1.0E+00		
Ru-103	-2.4E-01	+/-	1.8E-01	1.8E-01	6.3E-01		
Ru-106	-1.48E-01	+/-	9.9E-02	1.0E-01	3.5E-01		
Sb-124	5.2E-02	+/-	8.7E-02	8.7E-02	3.0E-01		
Sb-125	-2.1E-02	+/-	2.3E-02	2.3E-02	7.8E-02		
Se-75	-2.2E-02	+/-	2.9E-02	2.9E-02	9.7E-02		
Zn-65	-9.4E-02	+/-	6.2E-02	6.3E-02	2.1E-01		
Zr-95	2.3E-01	+/-	6.9E-01	6.9E-01	2.3E+00		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty
c Peak was found

Reporting Level Ratio:

c:

MAILED
APR 29 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Approved by
4/24/03
J.M. Raimondi
Sample Control Manager

FRAMATOME ANP

Environmental Laboratory Analysis Report

29 Research Drive
Westboro, MA 01581
508-898-9970

Customer	Duratek Inc	**Report Date**	05/06/03	Duratek Inc
Attention	Paul Ely	**Receipt Date**	02/21/03	c/o Bristol Meyers Squibb Bldg 115, One Squibb Drive New Brunswick, NJ 08903

Lab. Sample No.	L5188-08	**Client ID**	EO200 #3	**Product**	GAMMA SPECTROMETRY
Reference Date	10/22/02	**Analysis Date**	05/02/03	**Matrix**	Soil

Nuclide	Activity Concentration +/- 1 - Sigma (pCi/g)			TPU 1 Sigma (pCi/g)	Measured MDC (pCi/g)	Required MDC (pCi/g)	Flags
AcTh-228	8.39E-01	+/-	4.1E-02	5.9E-02	1.4E-01		bc
Ag-108m	2.3E-03	+/-	8.1E-03	8.1E-03	2.8E-02		
Ag-110m	2.2E-02	+/-	2.0E-02	2.0E-02	6.6E-02		
Ba-140	6.5E+02	+/-	8.8E+02	8.8E+02	3.0E+03		
Be-7	1.5E+00	+/-	8.1E-01	8.1E-01	2.6E+00		
Ce-141	1.14E+00	+/-	8.6E-01	8.6E-01	2.8E+00		
Ce-144	-7E-02	+/-	1.0E-01	1.0E-01	3.5E-01		
Co-57	-1.2E-02	+/-	1.3E-02	1.3E-02	4.4E-02		
Co-58	-6.1E-02	+/-	5.0E-02	5.0E-02	1.8E-01		
Co-60	-8.9E-03	+/-	9.1E-03	9.1E-03	3.3E-02	3.8E-02	
Cr-51	-1.38E+01	+/-	8.7E+00	8.8E+00	3.1E+01		
Cs-134	3.8E-02	+/-	3.7E-02	3.7E-02	1.2E-01		
Cs-137	-9.1E-03	+/-	9.6E-03	9.6E-03	3.4E-02	1.1E+00	
Fe-59	-3E-02	+/-	3.2E-01	3.2E-01	1.1E+00		
I-131	-6E+04	+/-	1.4E+05	1.4E+05	4.7E+05		
K-40	1.815E+01	+/-	3.8E-01	9.8E-01	3.2E-01		bc
La-140	-3.9E+02	+/-	5.3E+02	5.3E+02	1.9E+03		
Mn-54	3.1E-02	+/-	1.3E-02	1.3E-02	4.2E-02		
Nb-95	-1.2E-01	+/-	4.4E-01	4.4E-01	1.5E+00		
Ru-103	2.6E-01	+/-	2.2E-01	2.2E-01	7.3E-01		
Ru-106	-8E-02	+/-	1.1E-01	1.1E-01	4.0E-01		
Sb-124	-1.2E-01	+/-	1.0E-01	1.0E-01	4.1E-01		
Sb-125	1.7E-02	+/-	2.9E-02	2.9E-02	9.9E-02		
Se-75	3.1E-02	+/-	3.3E-02	3.3E-02	1.1E-01		
Zn-65	-3.4E-02	+/-	6.7E-02	6.7E-02	2.3E-01		
Zr-95	-4.3E+01	+/-	1.7E+01	1.7E+01	5.6E+01		

Flags: a The measured MDC is greater than the required MDC
b The activity concentration is greater than three times its one sigma counting uncertainty.
c Peak was found

Reporting Level Ratio:

c:

Approved by
5/12/03
J.M. Raimondi
Sample Control Manager

MAILED
MAY 13 2003
FRAMATOME ANP
ENVIRONMENTAL LAB

Bristol-Myers Squibb Production Facility Characterization Survey
New Brunswick New Jersey

Duratek, Inc. Laboratory Analysis Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-SML-036-1	Soil Sample (0 - 2 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	4.32E-02
				CS-134	<MDA	0.00E+00	0.00E+00	7.74E-02
				CS-137	<MDA	0.00E+00	0.00E+00	1.09E-01
				MN-54	<MDA	0.00E+00	0.00E+00	1.01E-01
BMS-SML-036-2	Soil Sample (2 - 4 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	3.08E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.00E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.26E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.22E-02
BMS-SML-036-3	Soil Sample (4 - 6 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	3.21E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.74E-02
				CS-137	<MDA	0.00E+00	0.00E+00	7.58E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.20E-02
BMS-SML-036-4	Soil Sample (16 - 18 ft Deep)	1/11/01	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	6.08E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.41E-02
				CS-137	0.114	1.14E-01	9.82E-02	5.13E-02
				MN-54	<MDA	0.00E+00	0.00E+00	5.43E-02
BMS-SML-036-5	Soil Sample (8 - 10 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	6.73E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.48E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.76E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.51E-02
BMS-SML-036-6	Soil Sample (10 - 12 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	3.50E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.16E-02
				CS-137	0.050	5.03E-02	4.89E-02	4.84E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.77E-02
BMS-SML-036-7	Soil Sample (12 - 14 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	3.11E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.87E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.57E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.56E-02
BMS-SML-036-8	Soil Sample (14 - 16 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	3.24E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.45E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.90E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.89E-02
BMS-SML-036-9	Soil Sample (16 - 18 ft Deep)	1/11/02	2/15/02	CO-60	<MDA	0.00E+00	0.00E+00	2.68E-02
				CS-134	<MDA	0.00E+00	0.00E+00	2.62E-02
				CS-137	0.037	3.69E-02	2.73E-02	2.58E-02
				MN-54	<MDA	0.00E+00	0.00E+00	3.53E-02
BMS-SML-037-1	Soil Sample (0 - 2 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	3.40E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.65E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.57E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.16E-02
BMS-SML-037-2	Soil Sample (2 - 4 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	2.14E-02
				CS-134	<MDA	0.00E+00	0.00E+00	2.70E-02
				CS-137	0.079	7.94E-02	3.72E-02	3.17E-02
				MN-54	0.023	2.34E-02	1.93E-02	1.65E-02
BMS-SML-037-3	Soil Sample (4 - 6 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	5.48E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.16E-02
				CS-137	0.046	4.60E-02	4.49E-02	4.46E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.80E-02
BMS-SML-037-5	Soil Sample (8 - 10 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	3.89E-02
				CS-134	<MDA	0.00E+00	0.00E+00	6.33E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.61E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.52E-02
BMS-SML-037-6	Soil Sample (10 - 12 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	5.91E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.88E-02
				CS-137	<MDA	0.00E+00	0.00E+00	7.49E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.35E-02
BMS-SML-037-7	Soil Sample (12 - 14 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	4.35E-02
				CS-134	<MDA	0.00E+00	0.00E+00	7.56E-02
				CS-137	<MDA	0.00E+00	0.00E+00	1.03E-01
				MN-54	<MDA	0.00E+00	0.00E+00	9.85E-02
BMS-SML-037-8	Soil Sample (14 - 16 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	1.07E-01
				CS-134	<MDA	0.00E+00	0.00E+00	4.73E-02
				CS-137	0.051	5.15E-02	5.06E-02	5.04E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.84E-02

Bristol-Myers Squibb Production Facility Characterization Survey
New Brunswick New Jersey

Duratek, Inc. Laboratory Analysis Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE DATE	ANALYSIS DATE	NUCLIDE	RESULT (pCi/g)	RESULT (pCi/g)	1 Sigma (± pCi/g)	MDC (pCi/g)
BMS-SML-037-9	Soil Sample (16 - 18 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	6.97E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.65E-02
				CS-137	<MDA	0.00E+00	0.00E+00	1.10E-01
				MN-54	<MDA	0.00E+00	0.00E+00	6.60E-02
BMS-SML-038-1	Soil Sample (0 - 2 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	3.67E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.75E-02
				CS-137	<MDA	0.00E+00	0.00E+00	7.60E-02
				MN-54	<MDA	0.00E+00	0.00E+00	8.59E-02
BMS-SML-038-2	Soil Sample (2 - 4 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	1.85E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.68E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.44E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.33E-02
BMS-SML-038-3	Soil Sample (4 - 6 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	5.73E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.36E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.98E-02
				MN-54	<MDA	0.00E+00	0.00E+00	5.23E-02
BMS-SML-038-5	Soil Sample (8,- 10 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	3.52E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.96E-02
				CS-137	0.047	4.66E-02	4.41E-02	4.37E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.24E-02
BMS-SML-038-6	Soil Sample (10 - 12 ft Deep)	1/11/02	2/13/02	CO-60	<MDA	0.00E+00	0.00E+00	2.93E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.00E-02
				CS-137	<MDA	0.00E+00	0.00E+00	4.50E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.40E-02
BMS-SML-038-7	Soil Sample (12 - 14 ft Deep)	1/11/02	2/16/02	CO-60	<MDA	0.00E+00	0.00E+00	3.39E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.51E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.56E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.55E-02
BMS-SML-038-8	Soil Sample (14 - 16 ft Deep)	1/11/02	2/13/02	CO-60	<MDA	0.00E+00	0.00E+00	9.89E-03
				CS-134	<MDA	0.00E+00	0.00E+00	1.55E-02
				CS-137	<MDA	0.00E+00	0.00E+00	2.59E-02
				MN-54	<MDA	0.00E+00	0.00E+00	2.93E-02
BMS-SML-038-9	Soil Sample (16 - 18 ft Deep)	1/11/02	2/13/02	CO-60	<MDA	0.00E+00	0.00E+00	6.21E-02
				CS-134	0.045	4.49E-02	3.26E-02	2.55E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.60E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.72E-02
BMS-SML-039-1	Soil Sample (0 - 2 ft Deep)	1/11/02	2/19/02	CO-60	<MDA	0.00E+00	0.00E+00	5.57E-02
				CS-134	0.032	3.21E-02	2.75E-02	2.61E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.23E-02
				MN-54	<MDA	0.00E+00	0.00E+00	3.27E-02
BMS-SML-039-2	Soil Sample (2 - 4 ft Deep)	1/11/02	2/20/02	CO-60	<MDA	0.00E+00	0.00E+00	5.23E-02
				CS-134	<MDA	0.00E+00	0.00E+00	1.47E-02
				CS-137	0.038	3.79E-02	2.50E-02	2.42E-02
				MN-54	<MDA	0.00E+00	0.00E+00	2.81E-02
BMS-SML-039-4	Soil Sample (6 - 8 ft Deep)	1/11/02	2/19/02	CO-60	<MDA	0.00E+00	0.00E+00	4.77E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.36E-02
				CS-137	<MDA	0.00E+00	0.00E+00	4.13E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.63E-02
BMS-SML-039-5	Soil Sample (8 - 10 ft Deep)	1/11/02	2/19/02	CO-60	<MDA	0.00E+00	0.00E+00	7.99E-02
				CS-134	<MDA	0.00E+00	0.00E+00	4.93E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.55E-02
				MN-54	<MDA	0.00E+00	0.00E+00	7.24E-02
BMS-SML-039-6	Soil Sample (10 - 12 ft Deep)	1/11/02	2/19/02	CO-60	<MDA	0.00E+00	0.00E+00	9.88E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.10E-02
				CS-137	<MDA	0.00E+00	0.00E+00	6.28E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.12E-02
BMS-SML-039-7	Soil Sample (12 - 14 ft Deep)	1/11/02	2/20/02	CO-60	<MDA	0.00E+00	0.00E+00	3.04E-02
				CS-134	<MDA	0.00E+00	0.00E+00	2.00E-02
				CS-137	<MDA	0.00E+00	0.00E+00	2.39E-02
				MN-54	<MDA	0.00E+00	0.00E+00	2.42E-02
BMS-SML-039-8	Soil Sample (14 - 16 ft Deep)	1/11/02	2/19/02	CO-60	<MDA	0.00E+00	0.00E+00	7.38E-02
				CS-134	<MDA	0.00E+00	0.00E+00	3.98E-02
				CS-137	<MDA	0.00E+00	0.00E+00	4.96E-02
				MN-54	<MDA	0.00E+00	0.00E+00	4.78E-02
BMS-SML-039-9	Soil Sample (16 - 18 ft Deep)	1/11/02	2/19/02	CO-60	<MDA	0.00E+00	0.00E+00	8.24E-02
				CS-134	<MDA	0.00E+00	0.00E+00	5.04E-02
				CS-137	<MDA	0.00E+00	0.00E+00	5.82E-02
				MN-54	<MDA	0.00E+00	0.00E+00	6.53E-02

