APPENDIX C-1

VERIFICATION SURVEYS FOR AREAS 2 AND 3

HILBERT ASSOCIATES INC
RADIOLOGICAL ENGINEERS

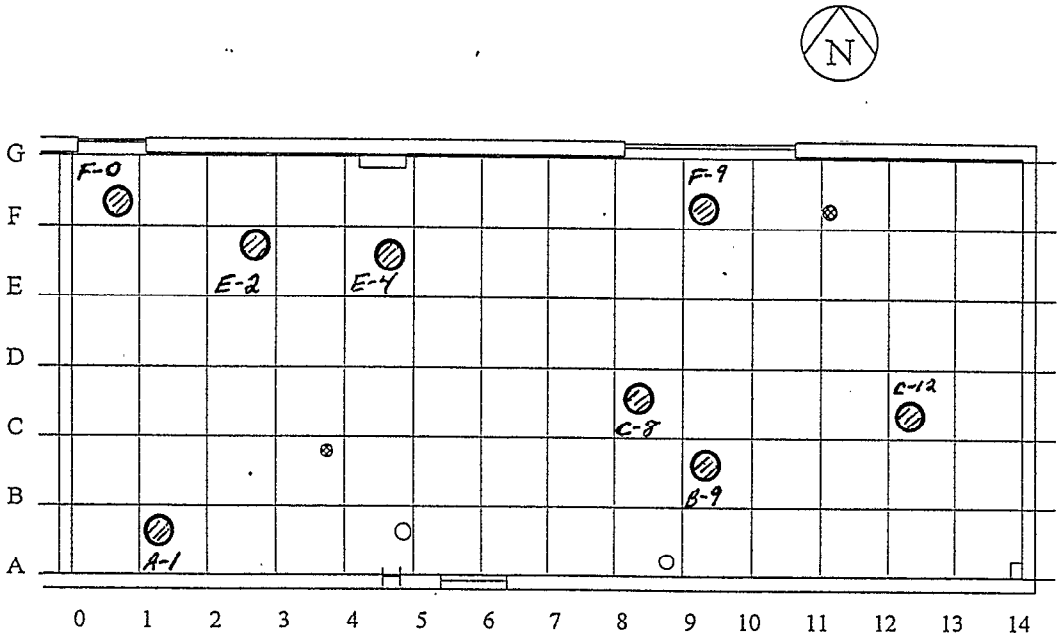
IDM Environmental
Bldg. 14, Praxair Site
Tonawanda, NY 14151

Radiological Survey Form

Hilbert Associates, Inc
Radiological Consultants
640 Maple Ave
Saratoga Springs, NY 12866
Phone: 518-584-0166
Fax: 518-584-8529
Contract # 95012

Date / Time 4-8-97 0900	Tech William W. [illegible]	Instruments / sn L2221 #91935 W/44-9 #091747	
Location / Purpose B-14 AREA 2 & 3 FLOOR CORES		Survey # 237	RWP #
~~SAME~~ INFO.			

Building 14, Areas 2 & 3



Floor Drain

Pipe/Conduit Penetration

= CORE BORING LOCATION

GRID SEE MAP — CORE TOPS

Loc	Type	Description	Gross	A DPM	Gross	Beta DPM/100cm²
A-1	D.P.	CORE FROM WITHIN GRID			308	7980
F-0	↓	↓			91	611
E-2					114	1392
E-4					143	2377
F-9					126	1800
C-8					1306	41868
B-9	↓	↓			94	713

GRID SEE MAP — CORE TOPS

Loc	Type	Description	Gross	A DPM	Gross	Beta DPM
C-12	D.P.	CORE FROM WITHIN GRID	N/A		131	1969

N/A

Comments: D.P. = DIRECT PROBE CPM BY W/44-9, 15.5 cm² DETECTOR #091747

Scaler S/N L2221 #91935	BKD	EFF	MDA
CT = /MIN. Alpha:	N/A	N/A	N/A
Tech W. [illegible] Beta:	73	.19	

Review [illegible]

*NOTE: VERTICAL SIDES OF CORES SURVEYED BY D.P.: ALL < 5K DPM/100cm² BY.

HILBERT ASSOCIATES, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

SURVEY # 675
SAMPLE DATE: 8-26-97
LOCATION: PRAXAIR BLDG 14 AREA 2/3

VERIFICATION SURVEY

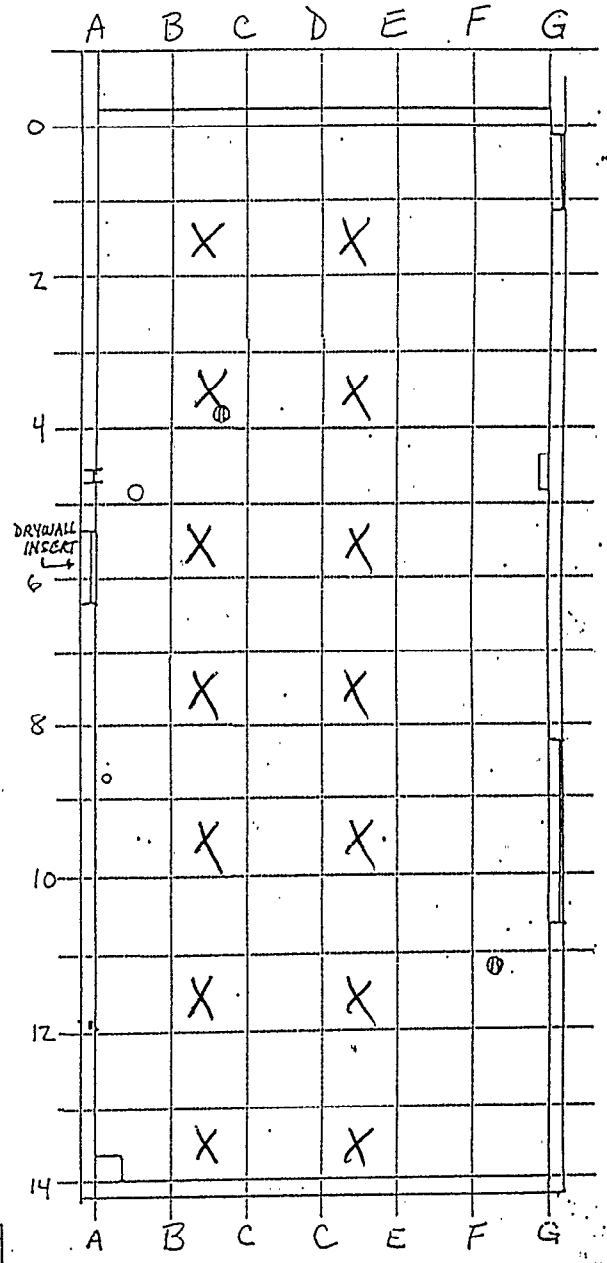
RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

SITE NORTH

	α	βγ
TOTAL BACKGROUND COUNTS	0	946
BACKGROUND COUNT TIME (MIN)	1	1
SAMPLE COUNT TIME (MIN)	1	1

TECHNICIAN: D. PITMAN

SAMPLE #	LOCATION CODE		LOCATION DESCRIPTION	GROSS SAMPLE COUNTS α	GROSS SAMPLE COUNTS βγ
1	B2	A	FLOOR		2861
2	B2	B			1874
3	B4	A			2042
4	B4	B			1983
5	B6	A			2076
6	B6	B			1935
7	B8	A			3010
8	B8	B			2317
9	B8		DUPL.		2890
10	B10	A		5	2012
11	B10	B		3	1891
12	B12	A			1694
13	B12	B			2027
14	B14	A			1870
15	B14	B			2046
16	D2	A			1803
17	D2	B			1716
18	D2		DUPL		1779
19	D4	A			2300
20	D4	B			2139
21	D6	A		9	1715
22	D6	B		7	1608
23	D8	A			2318
24	D8	B			2512
25	D10	A			1514
26	D10	B			2024
27	D10		DUPL		2097
28	D12	A			2090
29	D12	B			1644
30	D14	A			1703
31	D14	B			2813
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					



SURVEY PATTERN:

	α	βγ
Instrument Model & s/n:	ESP-1 F	2221-5
Detector Model & s/n:		
Calibration Date:		
Efficiency	cpm / dpm based on S/Y90	0.20 cpm/dpm
Detector Area	cm2 0.50	425 cm²

Floor monitor

BUILDING 14 AREAS 2&3
⊕ = FLOOR DRAIN
O = PIPE/CONDUIT PENETRATION

ENCL-C2.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/5/97
Location: B-14 AREA 2&3 South WALL
Description: VERIFICATION
Survey #705

	alpha	beta-gamma
Instrument Model & s/n:		2221 'C'
Detector Model & s/n:		44-9/48272
Calibration Date:		12/97
Efficiency [Tc99] [SY90] [Th230]		.20
Detector Area (CM2)		15.5

RP Technician: SMALLRIDGE

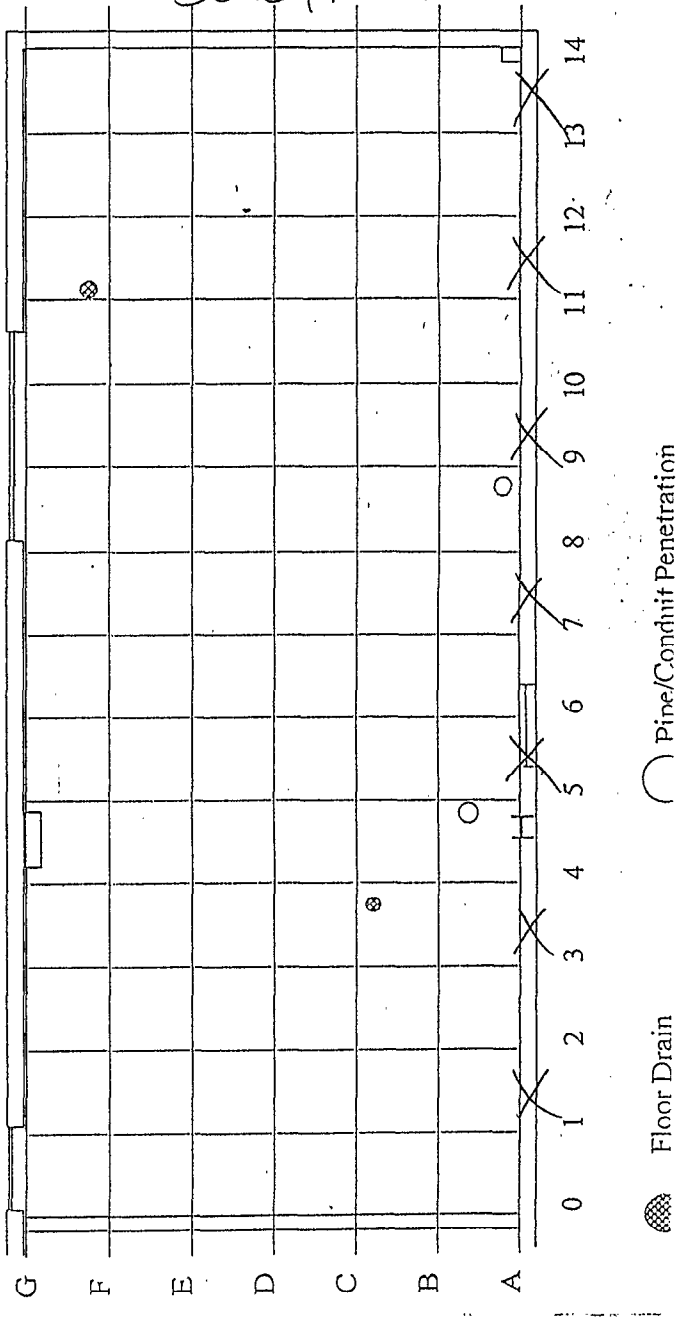
RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

	alpha	beta-gamma
TOTAL BACKGROUND COUNTS		75
BACKGROUND COUNT TIME (MIN)		1 MIN
SAMPLE COUNT TIME (MIN)		1 MIN

GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
A2 BB	VERIFICATION	A		86
	AREA 2&3 South wall	B		91
		C		80
		D		90
		E		76
A4 BB		A	4	89
		B	4	65
		C	3	74
		D	2	122
		E	4	73
A6 BB	DOOR	A		50
	WALL	B		86
	DOOR	C		51
	WALL	D		68
	DOOR	E		48
A8 BB		A		65
		B		88
		C		115
		D		90
		E		99
A8 BB	DUP	A		82
		B		91
		C		88
		D		104
		E		100
A10 BB	VERIFICATION	A		87
	A2&3 South wall	B		94
		C		67
		D		91
		E		84
A12 BB		A		112
		B		93
		C		99
		D		75
		E		80
A14 BB		A		70
		B		97
		C		87
		D		84
		E		100
A14 BB	DUP	A		85
		B		99
		C		91
		D		81
		E		95

Insert area map or sketch below

Building 14, Areas 2 & 3



NOTE: GRID PATTERN A B C D E

SURVEY01.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/5/97
Location: BLDG 14 AREA 2&3 South WALL
Description: VERIFICATION Survey
Survey #7016

	alpha	beta-gamma
Instrument Model & s/n:		2221 'C'
Detector Model & s/n:		44-9/48272
Calibration Date:		12/97
Efficiency [Tc99] [SY90] [Th230]		.20
Detector Area (CM2)		15.5

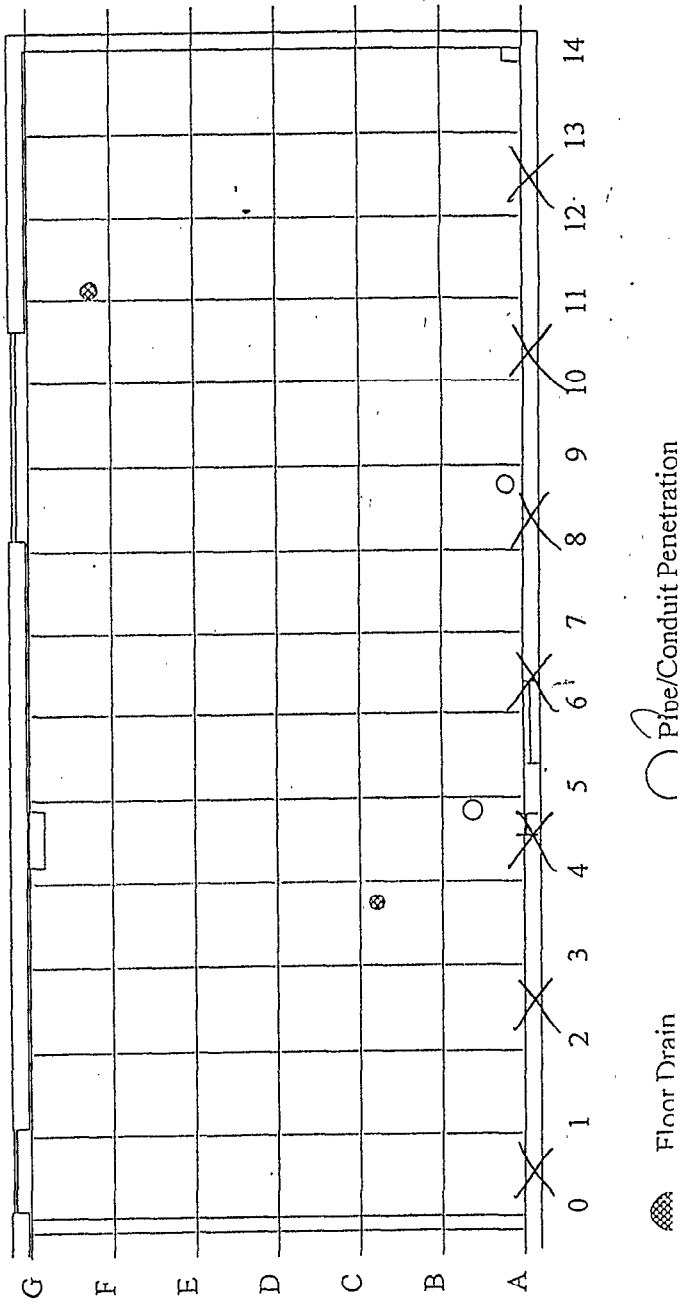
RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

	alpha	beta-gamma
TOTAL BACKGROUND COUNTS		75
BACKGROUND COUNT TIME (MIN)		1 MIN
SAMPLE COUNT TIME (MIN)		1 MIN

RP Technician: SMALLRIDGE

GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
A1 AA	VERIFICATION	A		125
	AREA 2&3 South WALL	B		80
		C		127
		D		98
		E		87
A3 AA		A	6	80
		B	1	91
		C	0	119
		D	5	74
		E	1	79
A5 AA		A		95
		B		60
		C		100
		D		97
		E		72
A7 AA		A		118
		B		49
		C		100
		D		46
		E		99
A7 AA	DUP	A		104
		B		55
		C		107
		D		51
		E		98
A9 AA	VERIFICATION	A		106
	A2&3 South WALL	B		120
		C		98
		D		124
		E		127
A11 AA		A		100
		B		101
		C		107
		D		104
		E		90
A13 AA		A		101
		B		97
		C		112
		D		106
		E		90
A13 AA	DUP	A		100
		B		91
		C		107
		D		109
		E		105

NOTE: GRID PATTERN



SURVEY01.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/5/97
Location: B-14 A2&3 North WALL
Description: VERIFICATION Survey
Survey #707

	alpha	beta-gamma
Instrument Model & s/n:		2221 'C'
Detector Model & s/n:		44-9 / 44272
Calibration Date:		12/97
Efficiency [Tc99] [SY90] [Th200]		.20
Detector Area (CM2)		15.5

RP Technician: SmallRidge

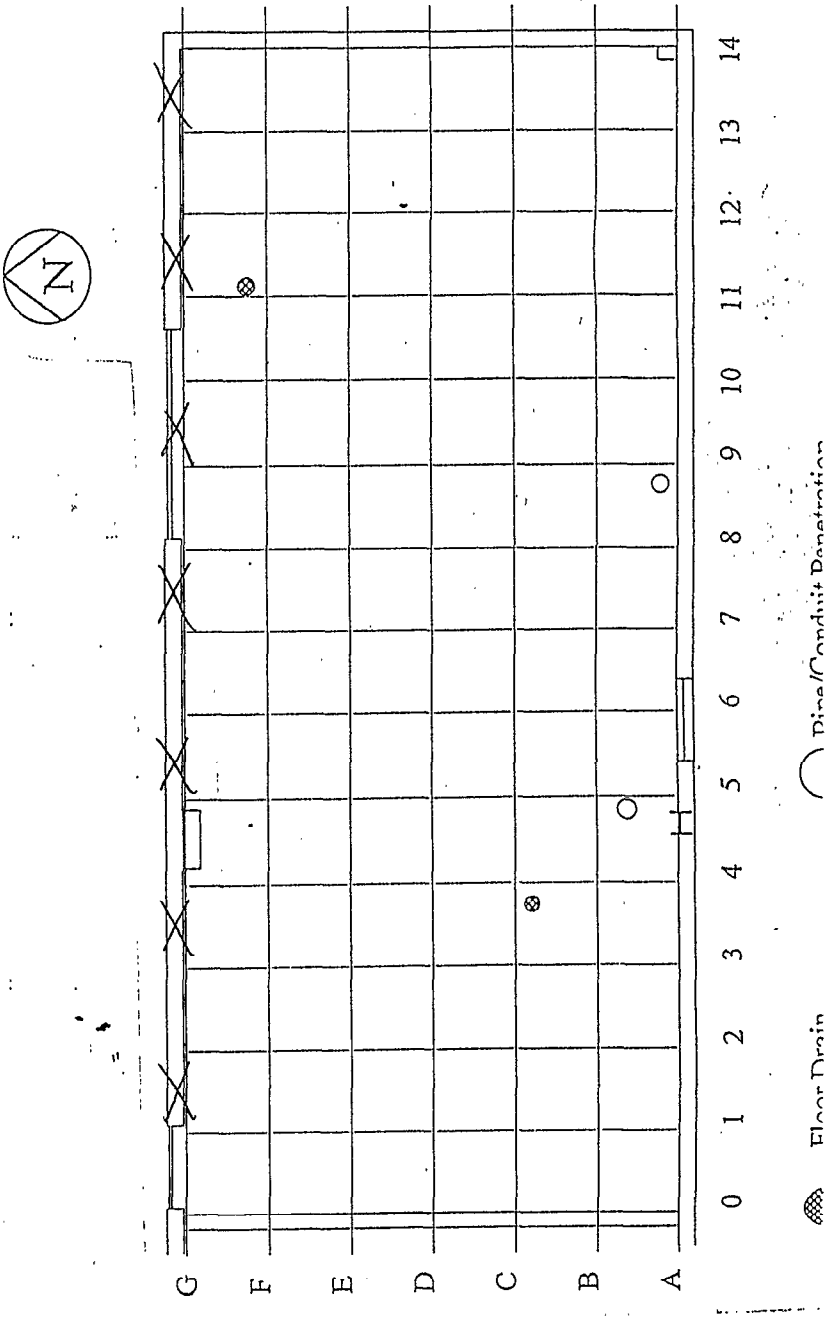
RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

	alpha	beta-gamma
TOTAL BACKGROUND COUNTS		75
BACKGROUND COUNT TIME (MIN)		1 MIN
SAMPLE COUNT TIME (MIN)		1 MIN

GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
F2 BB	VERIFICATION	A	3	100
	B-14 AREA 2&3	B	3	84
	North WALL	C	1	99
		D	5	70
		E	9	56
F4 BB		A		105
		B		119
		C		86
		D		108
		E		88
F6 BB		A		74
		B		58
		C		85
		D		67
		E		65
F8 BB		A		94
		B		76
		C		80
		D		86
		E		85
F8 BB	DUP	A		101
		B		80
		C		89
		D		90
		E		94
F10 BB	VERIFICATION	A		58
	B-14 A2&3	B		55
	DOOR	C		52
		D		60
		E		55
F12 BB	North WALL	A		94
		B		107
		C		105
		D		102
		E		93
F14 BB		A		96
		B		99
		C		100
		D		101
		E		74
F14 BB	DUP	A		99
		B		89
		C		98
		D		110
		E		102

Insert area map or sketch below

Building 14, Areas 2 & 3



Note: GRID PATTERN

A	B
C	D
E	

SURVEY01.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/4/97
Location: BLDG 14 AREA 2&3
Description: verification Survey
Survey #708

	alpha	beta-gamma
Instrument Model & s/n:		2221 'C'
Detector Model & s/n:		44-9 / 48272
Calibration Date:		12/97
Efficiency [Tc99] [SY90] [Th230]		.20
Detector Area (CM2)		15.5

RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

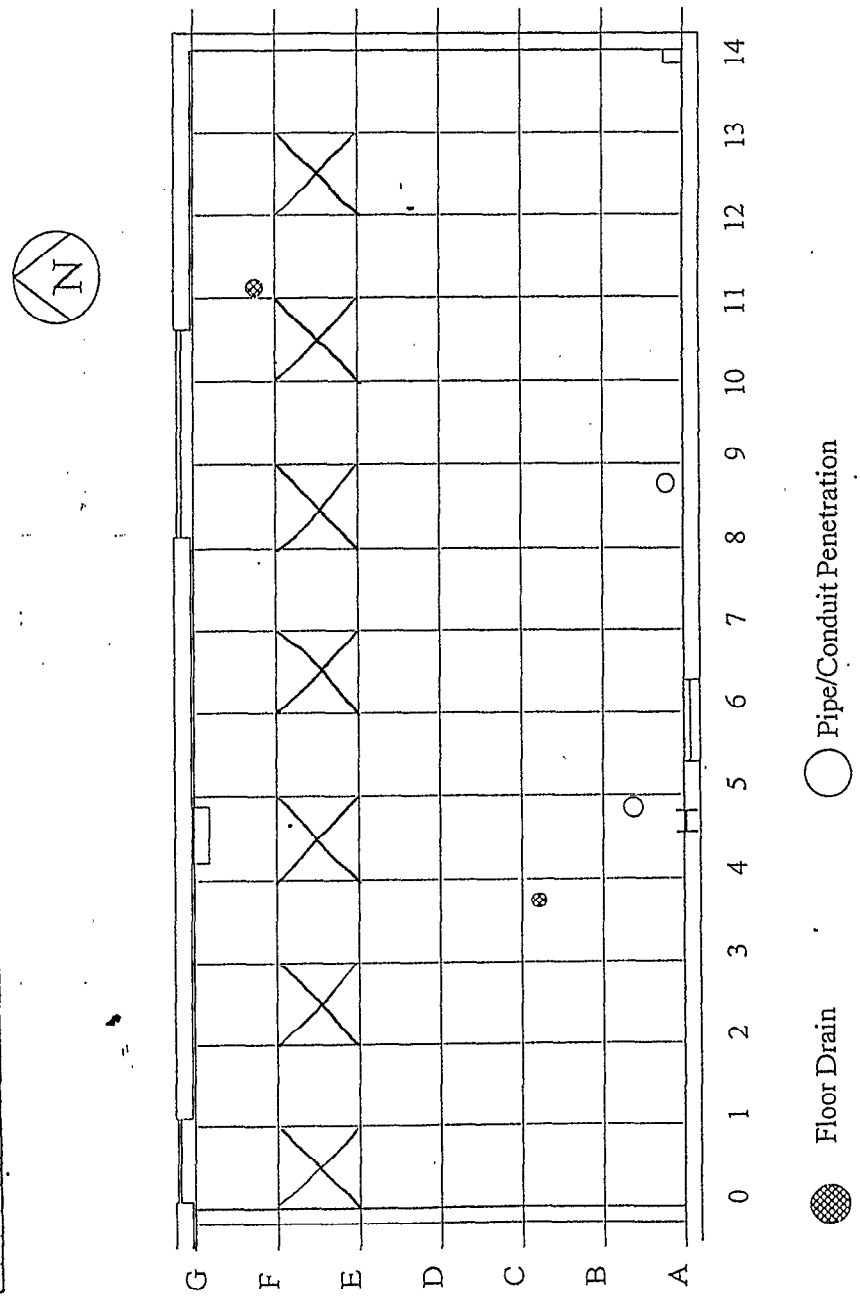
	alpha	beta-gamma
TOTAL BACKGROUND COUNTS		75
BACKGROUND COUNT TIME (MIN)		1 MIN
SAMPLE COUNT TIME (MIN)		1 MIN

RP Technician: SMALLRIDGE

GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
E-1	verification AREA 2&3 FLOOR	A		122
		B		94
		C		106
		D		149
		E		150
E-3		A		74
		B		105
		C		99
		D		106
		E		160
E5		A		77
		B		68
		C		60
		D		165
		E		70
E7		A		118
		B		158
		C		180
		D		189
		E		150
E-7	DUP	A		121
		B		154
		C		187
		D		180
		E		166
E-9	VERIFICATION	A		73
	AREA 2&3 FLOOR	B		133
		C		82
		D		86
		E		85
E-11		A		90
		B		84
		C		80
		D		97
		E		85
E-13		A		83
		B		109
		C		97
		D		82
		E		88
E-13	DUP	A		87
		B		88
		C		104
		D		77
		E		84

Insert area map or sketch below

Building 14, Areas 2 & 3



NOTE: GRID PATTERN

SURVEY01.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/4/97
Location: BLDG 14 AREA 2&3
Description: Verification Survey
Survey #709

	alpha	beta-gamma
Instrument Model & s/n:		2221 'C'
Detector Model,& s/n:		44-9/48272
Calibration Date:		12/97
Efficiency [Tc99] [SY90] [Th230]		.20
Detector Area (CM2)		15.5

RP Technician:

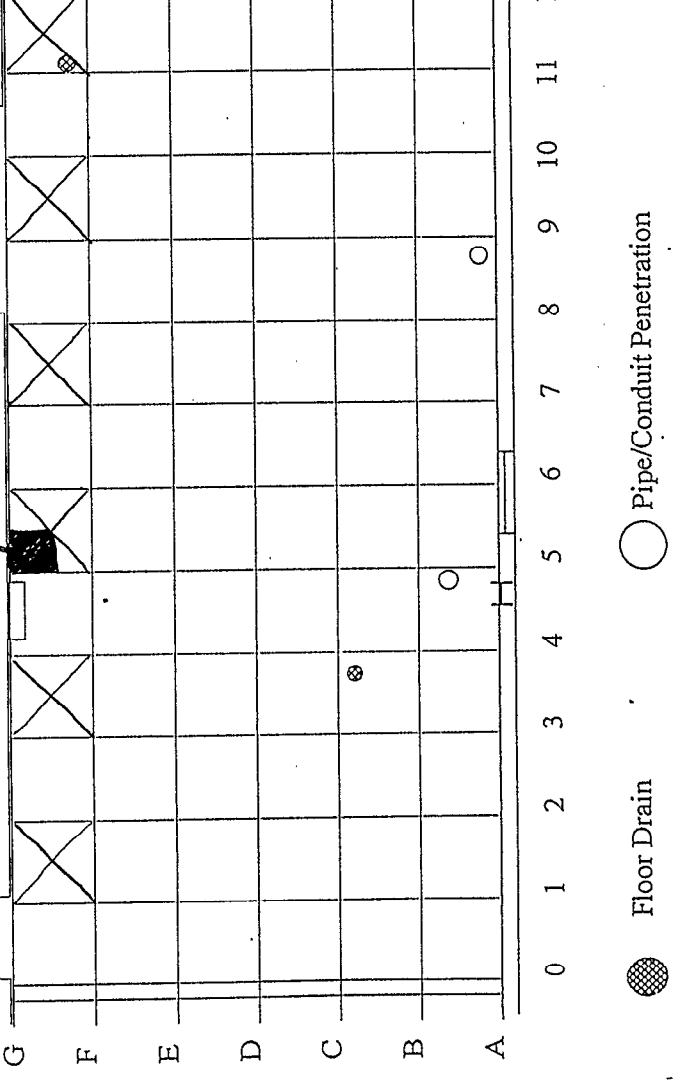
RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

	alpha	beta-gamma
TOTAL BACKGROUND COUNTS		75
BACKGROUND COUNT TIME (MIN)		1 MIN
SAMPLE COUNT TIME (MIN)		1 MIN

Insert area map or sketch below

GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
F-2	Verification	A		114
	Area 2&3 Floor	B		93
		C		109
		D		99
		e		117
F-4		A		80
		B		94
		C		83
		D		82
		e		79
F-6		A		92
		B		Hole in Floor
		C		80
		D		86
		e		Hole in Floor
F-8		A		124
		B		84
		C		87
		D		83
		e		89
F-8	Dup	A		118
		B		91
		C		81
		D		94
		e		88
F-10	Verification	A		89
	Area 2&3 Floor	B		78
		C		70
		D		93
		e		95
F-12		A		85
		B		83
		C		87
		D		78
		e		65
F-14		A		110
		B		91
		C		67
		D		81
		e		83
F-14	Dup	A		92
		B		97
		C		79
		D		84
		e		94

Note: Grid pattern



SURVEY01.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/4/97
Location: BLDG 14 AREA 2&3 west WALL
Description: Verification Survey
Survey #710

	alpha	beta-gamma
Instrument Model & s/n:		2221 (C)
Detector Model & s/n:		44-9 48272
Calibration Date:		12/97
Efficiency [Tc99] [SY90] [Th230]		.20
Detector Area (CM2)		15.5

RP Technician: SMALLRIDGE

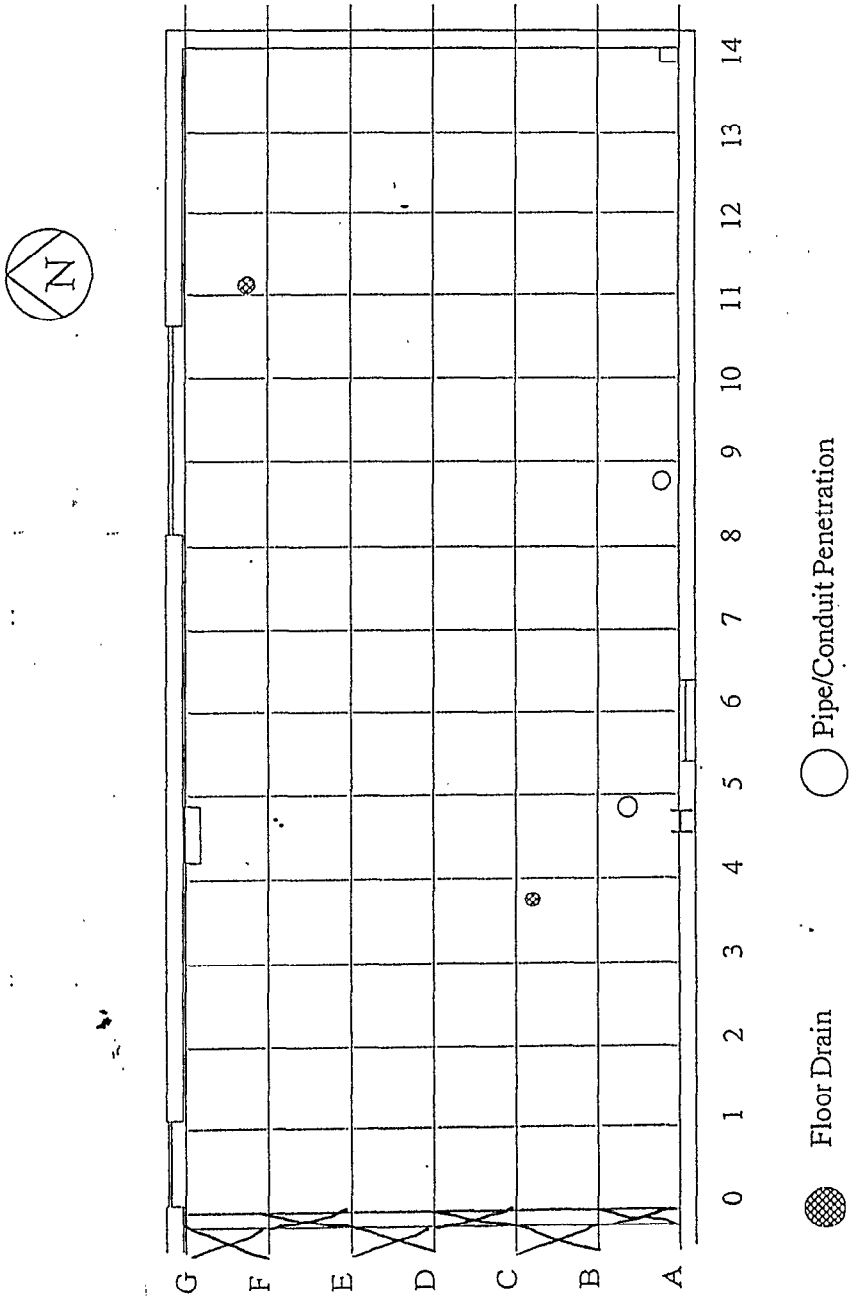
RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

	alpha	beta-gamma
TOTAL BACKGROUND COUNTS		75
BACKGROUND COUNT TIME (MIN)		1 MIN
SAMPLE COUNT TIME (MIN)		1 MIN

GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
A1 AA	Verification	A		95
	2&3 WEST WALL	B		93
		C		107
		D		99
		E		74
C1 AA		A		88
		B		84
		C		89
		D		73
		E		99
E1 AA		A		84
		B		92
		C		89
		D		103
		E		96
E1 AA	DUP	A		87
		B		97
		C		96
		D		99
		E		95
B1 BB	Verification	A	2	100
	2&3 WEST WALL	B	4	87
		C	2	99
		D	2	101
		E	1	100
D1 BB		A		80
		B		84
		C		81
		D		85
		E		99
F1 BB		A		68
		B		78
		C		80
		D		91
		E		70
F1 BB	DUP	A		67
		B		85
		C		96
		D		84
		E		91

Insert area map or sketch below

Building 14, Areas 2 & 3
WEST WALL



Note: Grid pattern

SURVEY01.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/4/97
Location: BLDG 14 AREA 2&3 EAST WALL
Description: VERIFICATION Survey
Survey #711

	alpha	beta-gamma
Instrument Model & s/n:		2221 'C'
Detector Model, & s/n:		44-9 48272
Calibration Date:		12/97
Efficiency [Tc99] [SY90] [Th200]		.20
Detector Area (CM2)		15.5

RP Technician: SMALLRIDGE

RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

	alpha	beta-gamma
TOTAL BACKGROUND COUNTS		75
BACKGROUND COUNT TIME (MIN)		1 MIN
SAMPLE COUNT TIME (MIN)		1 MIN

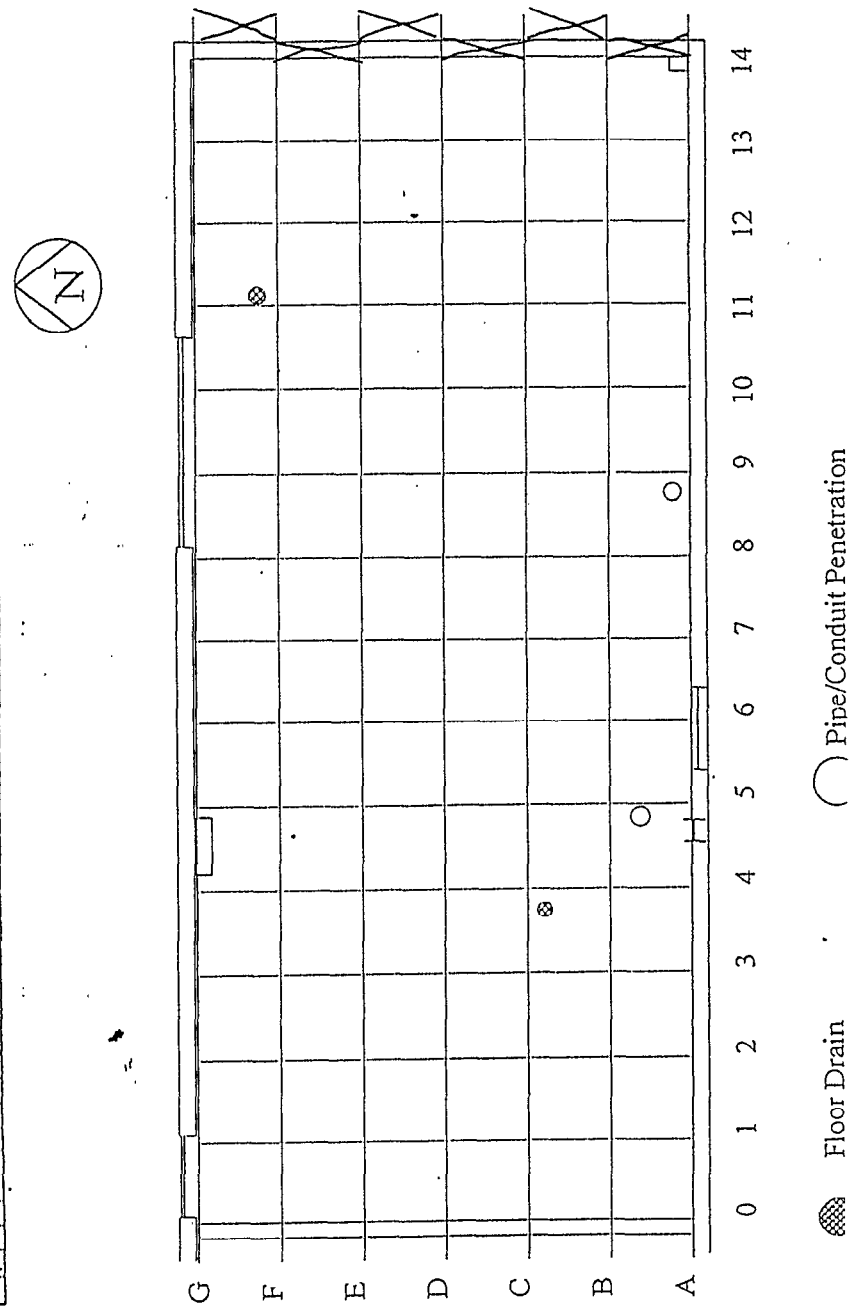
Insert area map or sketch below

GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
A14 AA	VERIFICATION	A		88
	2&3 EAST WALL	B		98
		C		100
		D		91
		E		99
C-14 AA		A		81
		B		76
		C		83
		D		96
		E		116
E14 AA		A	5	101
		B	3	93
		C	2	108
		D	2	104
		E	3	109
E14 AA	DUP	A		99
		B		103
		C		99
		D		100
		E		109
B14 BB	VERIFICATION	A		81
	2&3 EAST WALL	B		89
		C		80
		D		111
		E		67
D14 BB		A		86
		B		78
		C		82
		D		94
		E		93
F14 BB		A		98
		B		101
		C		109
		D		102
		E		111
F14 BB	DUP	A		91
		B		86
		C		91
		D		105
		E		113
			A	

Note: grid pattern

A	B
E	
C	D

Building 14, Areas 2 & 3
EAST WALL



SURVEY01.XLS

ION TECHNOLOGY, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

Survey Date: 9/4/97
Location: BLDG 14 AREA 2&3 North wall
Description: VERIFICATION Survey Survey #712

	alpha	beta-gamma
Instrument Model & s/n:	ESP F	2221 'C'
Detector Model, & s/n:	43-5/F	44-9 48272
Calibration Date:	7-98	12/97
Efficiency [Tc99] [SY90] [Th230]		.20
Detector Area (CM2)		15.5

RP Technician: SMALLRIDGE

RADIATION MEASUREMENT: Alpha & Beta-Gamma
RESULTS REPORTED UNITS: gross cpm per probe area
MEASUREMENT TYPE: direct scaler measurements

	alpha	beta-gamma
TOTAL BACKGROUND COUNTS	0	75
BACKGROUND COUNT TIME (MIN)	1 MIN	1 MIN
SAMPLE COUNT TIME (MIN)	1 MIN	1 MIN

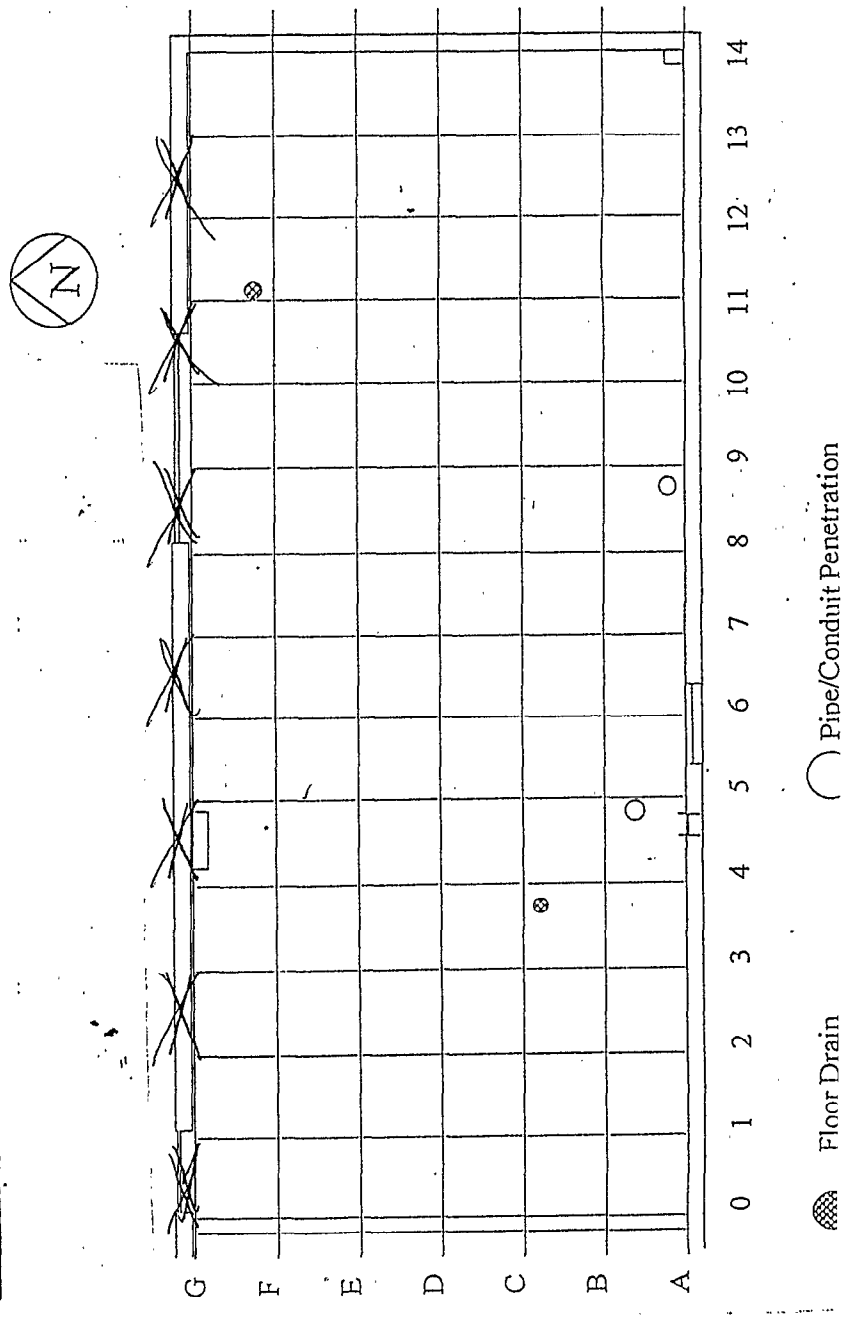
GRID	DESCRIPTION		alpha GROSS COUNTS	beta-gamma GROSS COUNTS
F1 AA	VERIFICATION	A		51
	AREA 2&3 ~~North wall~~	B		63
	DOOR	C		124
		D		109
		E		61
F3 AA	NORTH WALL	A	4	94
		B	3	74
		C	2	82
		D	3	74
		E	0	91
F5 AA		A		66
		B		109
		C		79
		D		99
		E		83
F7 AA		A		64
		B		110
		C		65
		D		91
		E		80
F7-AA	DUP	A		73
		B		103
		C		67
		D		95
		E		75
F9 AA	VERIFICATION	A		53
	A2&3 ~~North wall~~	B		70
	DOOR	C		60
		D		67
		E		65
F11 AA	NORTH WALL	A		101
		B		84
		C		104
		D		105
		E		77
F13 AA		A		110
		B		96
		C		116
		D		89
		E		113
F13 AA	DUP	A		94
		B		76
		C		114
		D		84
		E		95

Note: GRID PATTERN

A	B	
	E	
C	D	

Insert area map or sketch below

Building 14, Areas 2 & 3



SURVEY01.XLS

HILBERT ASSOCIATES, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

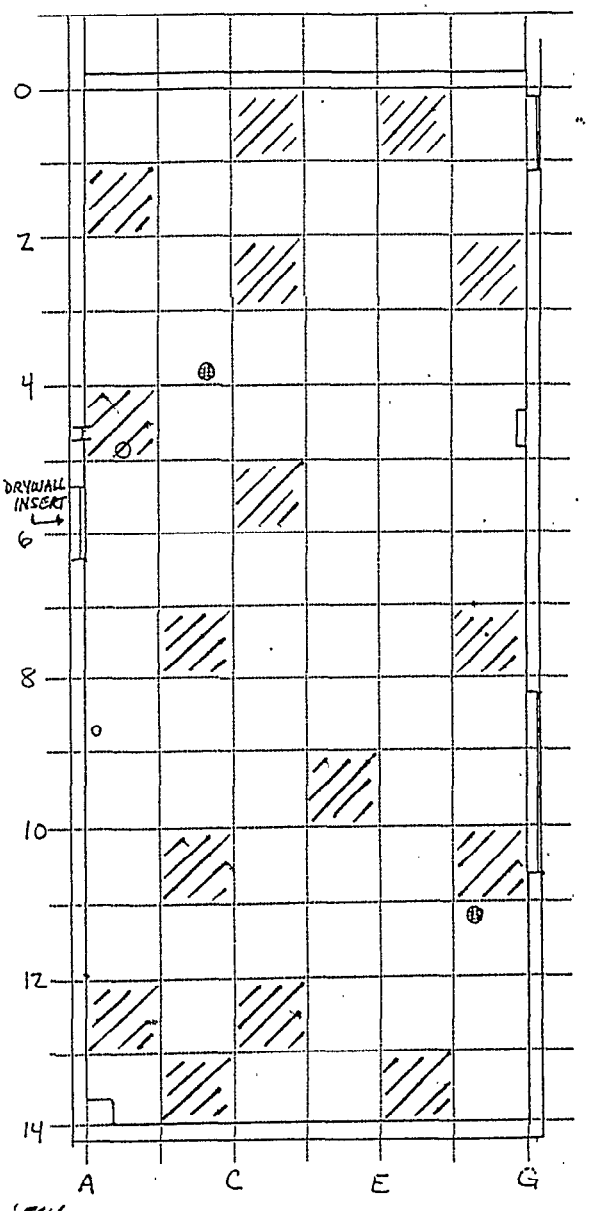
SAMPLE DATE: 7-22-97
LOCATION: PRAXAIR SITE
BLDG. # 14 AREA 2 & 3
OVERHEAD ~~DELINEATION~~ VERIFICATION
SURVEY # 563

RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

SITE NORTH

	α	βγ
TOTAL BACKGROUND COUNTS	1	54
BACKGROUND COUNT TIME (MIN)	1 MIN.	1 MIN.
SAMPLE COUNT TIME (MIN)	1 MIN.	1 MIN.

SAMPLE #	GRID LOCATION CODE		LOCATION DESCRIPTION	GROSS SAMPLE COUNTS	α
				138	α
1	F-7	A	I BEAM	89	1
2		B	CEILING	137	3
3		C	CONDUIT	90	2
4		D	COPPER PIPE	76	2
5		E	CEILING	153	1
6	D-9	A	HEAT EXCHANGER (TOP)	81	
7		B	" " INT.	92	
8		C	HEAT EXCHANGER MOTOR	79	
9		D	I BEAM	113	
10		E	CEILING	148	
11	B-10	A	I BEAM	116	
12		B	CEILING	156	
13		C	VENT. AIR DUCT (TOP)	83	
14		D	PIPE (METAL)	89	
15		E	CROSS BEAM	104	
16	F-10	A	PIPE CHASE	122	
17		B	I BEAM	88	
18		C	VENT. AIR DUCT (TOP)	69	
19		D	PIPE CHASE	76	
20		E	CEILING	145	166 D.U.P.
21	A-12	A	I BEAM	72	
22		B	I BEAM	109	
23		C	PIPE CHASE	87	
24		D	CEILING	140	
25		E	PIPE CHASE	129	
26	C-12	A	CEILING	139	
27		B	PIPE CHASE	103	
28		C	CONDUIT	78	
29		D	CROSS BEAM	111	
30		E	PIPE	84	
31	B-13	A	CROSS BEAM	72	
32		B	I BEAM	89	
33		C	PIPE	93	
34		D	CEILING	122	
35		E	CONDUIT	98	
36	E-13	A	I BEAM	126	
37		B	CEILING	142	
38		C	PIPE CHASE	136	
39		D	PIPE CHASE	107	
40		E	CEILING	157	144 D.U.P.



NOTE: * GRID POINTS ARE AS FOLLOWS; A B C D E N

* = GRID IN OVERHEAD VERIFIED AS PER SURVEYS # 563 & 564

Instrument Model & s/n:	(B) L2221 W/44-9	(E) ESP-1 W/43-5
Detector Model & s/n:		
Calibration Date:		
Efficiency	cpm / dpm based on S/Y90 =	βγ .20 α .13
Detector Area	cm2 =	15.5 βγ 50cm² α

BUILDING 14 AREAS 2 & 3
⊕ = FLOOR DRAIN
O = PIPE/CONDUIT PENETRATION

7-22-97
William W.

ENCL-C2.XLS

(scaler measurement)

SAMPLE DATE: 7-22-97
LOCATION: PRAXAIR SITE
BLDG. #14 AREA 2 & 3
OVERHEAD VERIFICATION
SURVEY # 564

RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

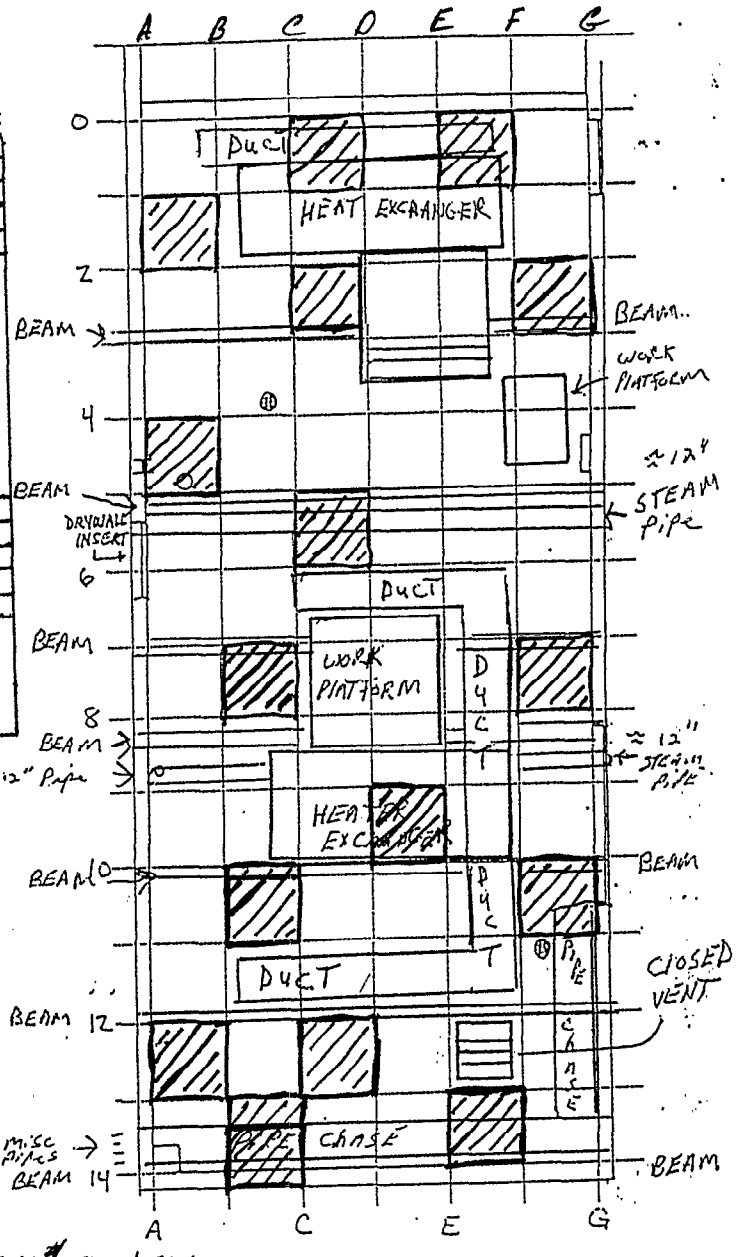
SITE NORTH

	α	βγ
TOTAL BACKGROUND COUNTS	1	54/cpm
BACKGROUND COUNT TIME (MIN)	1 min.	1 min.
SAMPLE COUNT TIME (MIN)	1 min.	1 min.

GRID

SAMPLE #	LOCATION CODE		LOCATION DESCRIPTION	GROSS SAMPLE COUNTS βγ	α
1	C-0	A	I BEAM	114	2
2		B	PIPE (METAL)	84	1
3		C	INSULATED PIPE	107	1
4		D	CEILING	143	3
5		E	AIR DUCT (TOP)	81	1
6	E-0	A	CEILING	157	
7		B	PIPE (METAL)	91	
8		C	I BEAM	73	
9		D	INSULATION PIPE	96	
10		E	I BEAM	102	
11	A-1	A	WIRE CHASE	71	
12		B	HEAT DUCT (INT.)	126	
13		C	(EXT.) HEAT EXCHANGER	98	
14		D	I BEAM	109	
15		E	CEILING	143	
16	C-2	A	I BEAM	86	1
17		B	INSULATED PIPE	124	2
18		C	CEILING	139	2
19		D	(EXT.) HEAT DUCT	118	1
20		E	INSULATE PIPE	D.U.P.91 79	1
21	F-2	A	PIPE FITTING	73	
22		B	I BEAM	92	
23		C	CEILING	135	
24		D	CONDUIT	108	
25		E	ANGLE IRON	97	
26	A-4	A	I BEAM	106	
27		B	CONDUIT	81	
28		C	PIPE (METAL)	88	
29		D	INSULATED PIPE	127	
30		E	CEILING	141	
31	C-5	A	I BEAM	114	
32		B	PVC PIPE	86	
33		C	HEAT DUCT	104	
34		D	CEILING	138	
35		E	INSULATED PIPE	123	
36	B-7	A	(VENT) AIR DUCT (INT.)	112	
37		B	ANGLE IRON	99	
38		C	PIPE (METAL)	81	
39		D	I BEAM	108	
40		E	CEILING	D.U.P.101 149	

NOTE: * GRID POINTS ARE AS FOLLOWS; A B C D E N



* = GRID IN OVERHEAD VERIFIED AS PER SURVEYS # 563 & 564

	βγ	α
Instrument Model & s/n:	(B) L2221 w/44-9	(F) ESP-1 w/43-57
Detector Model & s/n:		
Calibration Date:		
Efficiency	cpm / dpm based on S/Y90 = .20	.13
Detector Area	cm2 = 15.5 βγ	50cm2 α

7-22-97
William W. [signature]

BUILDING 14 AREAS 2 & 3
⊕ = FLOOR DRAIN
O = PIPE/CONDUIT PENETRATION

ENCL-C2.XLS

HILBERT ASSOCIATES, INC. DIRECT SURFACE MEASUREMENT

(scaler measurement)

SURVEY #589
O. HALLAM/[illegible]
SAMPLE DATE: 7-17-97
LOCATION: PRAXAIR BLDG 14 AREA 2&3 OVERHEAD

RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

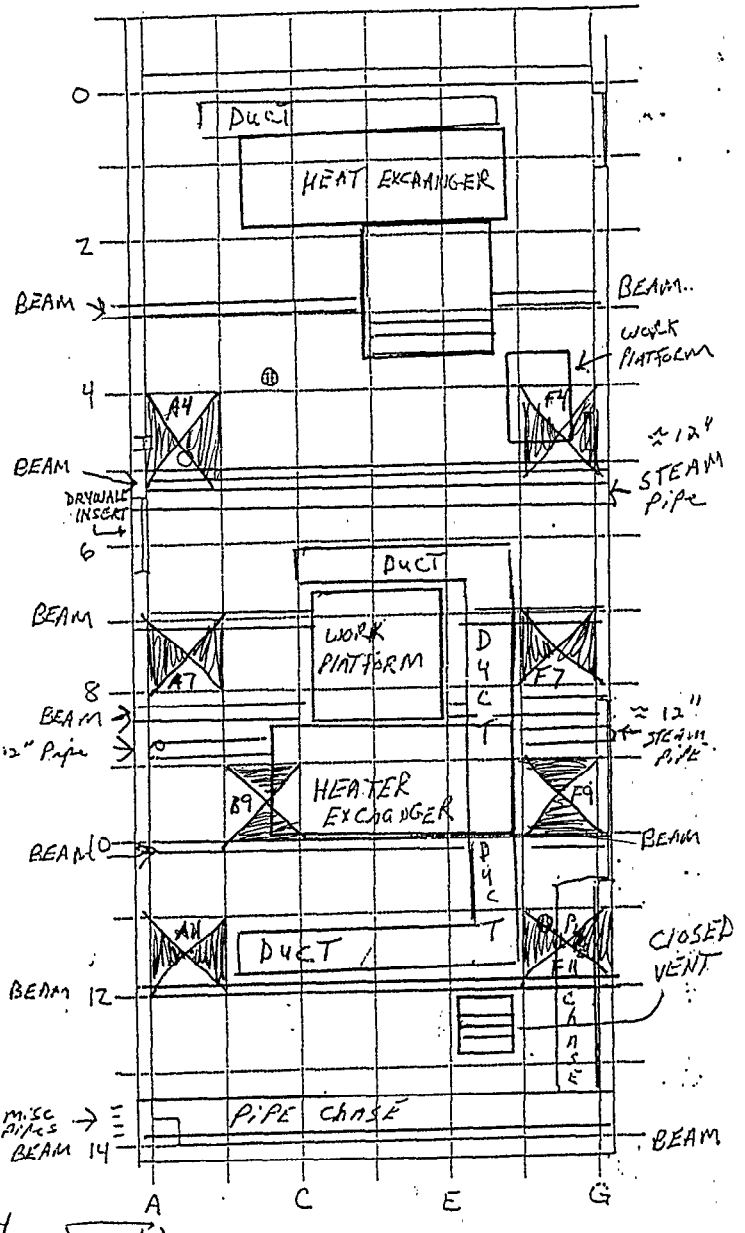
VERIFICATION

SITE NORTH

	α	βγ
TOTAL BACKGROUND COUNTS	1	82
BACKGROUND COUNT TIME (MIN)	1	1
SAMPLE COUNT TIME (MIN)	1	1

SAMPLE #	LOCATION CODE		LOCATION DESCRIPTION	GROSS SAMPLE COUNTS α	GROSS SAMPLE COUNTS βγ
1	F11	a	CEILING JOINT	2	107
2		b	22" I BEAM	0	71
3		c	10" I BEAM	0	96
4		d	22" I BEAM	1	75
5		e	CEILING	5	100
6	F9	a	ANGLE IRON	N/A	70
7		b	22" I BEAM		78
8		c	ANGLE IRON		67
9		d	22" I BEAM		65
10		e	CEILING		132
11	F7	a	10" I BEAM	N/A	79
12		b	22" I BEAM		58
13		c	CEILING		129
14		d	CONDUIT		82
15		e	CEILING		131
16	F4	a	ANGLE IRON	N/A	70
17		b	22" I BEAM		55
18		c	10" I BEAM		64
19		d	10" I BEAM		71
20		e	CEILING		137
21	F4	e	CEILING (* DUPLICATE)	N/A	119
22	A4	a	22" I BEAM	N/A	67
23		b	CEILING		117
24		c	COLUMN		49
25		d	10" I BEAM		64
26		e	CEILING		126
27	A7	a	22" I BEAM	N/A	72
28		b	10" I BEAM		75
29		c	22" I BEAM		51
30		d	CEILING		110
31		e	CEILING		133
32	B9	a	CEILING	N/A	112
33		b	8" I BEAM		62
34		c	CONDUIT		74
35		d	8" I BEAM		71
36		e	CEILING		127
37 A11	~~A7~~ A11	a	22" I BEAM	N/A	70
38		b	C-BEAM		52
39		c	22" I BEAM		61
40		d	10" I BEAM		71
41		e	CEILING		122
42 A11	~~A7~~ A11	e	CEILING (* DUPLICATE)	N/A	108

CA 7-17-97



	α	βγ
Instrument Model & s/n:	ESP-1/F	L2221/B
Detector Model & s/n:		
Calibration Date:		
Efficiency	0.12 cpm / dpm based on S/N 90	0.21 cpm/dpm
Detector Area	50 cm2	15.5 cm2

SURVEY PATTERN: (LOOKING DOWN) → NORTH

a	b
e	
c	d

BUILDING 14 AREAS 2&3

⊕ = FLOOR DRAIN

O = PIPE/CONDUIT PENETRATION

REVIEW [illegible]

ENCL-C2.XLS

HILBERT ASSOCIATES, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS
(scaler measurement)

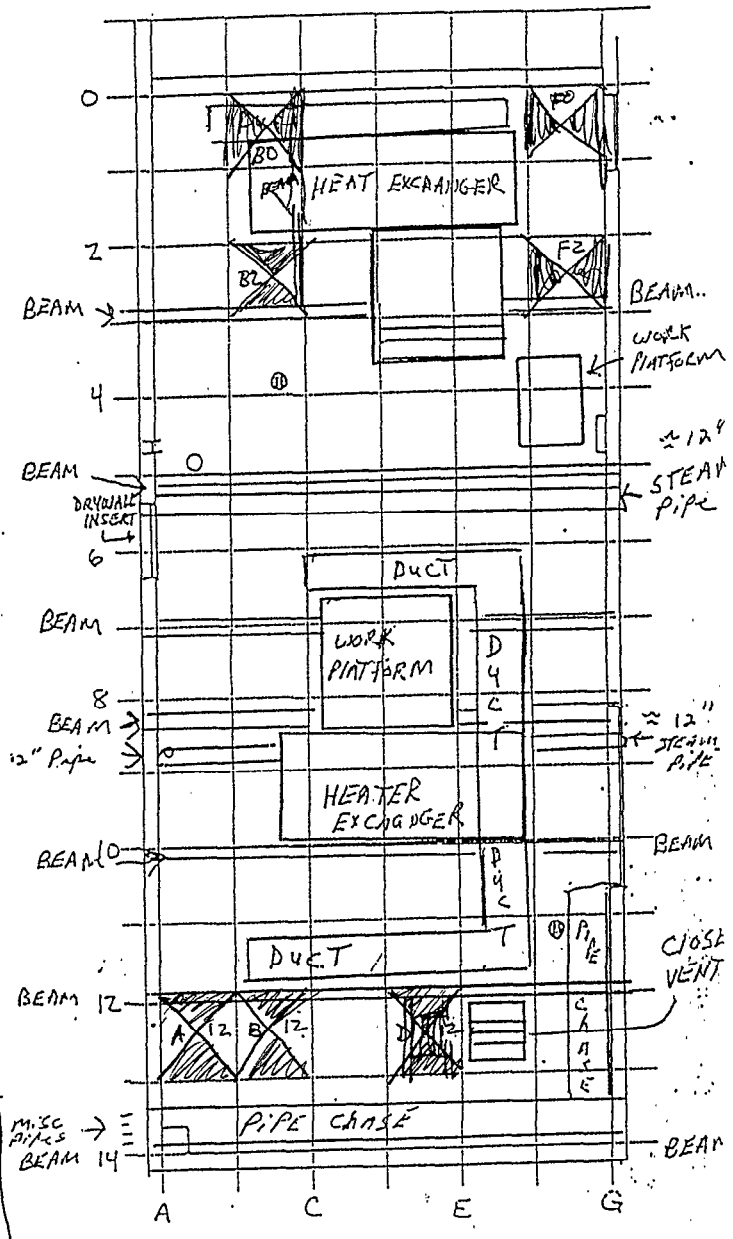
SURVEY # ~~557-94~~ 590
C. HALLAM/[illegible]
SAMPLE DATE: 7-17-97
LOCATION: B14 AREA 2/3 OVERHEAD
VERIFICATION

RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

SITE NORTH

	α	β
TOTAL BACKGROUND COUNTS	1	82
BACKGROUND COUNT TIME (MIN)	1	1
SAMPLE COUNT TIME (MIN)	1	1

SAMPLE #	LOCATION CODE		LOCATION DESCRIPTION	GROSS SAMPLE COUNTS α	GROSS SAMPLE COUNTS β
1	~~D12~~ ~~D13~~ 7-17-97	a	ANGLE IRON	2	69
2		b	10" I-BEAM	0	70
3		c	C-BEAM	1	81
4		d	C-BEAM	0	44
5		e	VENT COVER	3	45
6	B12 ~~B13~~ 7-17-97	a	10" I-BEAM	N/A	44
7		b	ANGLE IRON		71
8		c	CEILING		59
9		d	ANGLE IRON		50
10		e	CONDUIT		61
11	A12 ~~A13~~ 7-17-97	a	22" I-BEAM	N/A	64
12		b	10" I BEAM		51
13		c	22" I BEAM		54
14		d	ANGLE IRON		57
15		e	CEILING		105
16	B2 ~~B3~~ 7-17-97	a	CEILING	N/A	141
17		b	8" I BEAM		64
18		c	VENT DUCT FRAME		77
19		d	8" I BEAM		71
20		e	CEILING		134
21	B2 ~~B3~~ 7-17-97	e	CEILING (* DUPLICATE)	N/A	125
22	BO	a	CEILING	N/A	159
23		b	CEILING		142
24		c	10" I BEAM		106
25		d	10" I BEAM		69
26		e	2" PIPE		70
27	FO	a	CEILING	N/A	128
28		b	CONDUIT		77
29		c	10" I BEAM		116
30		d	22" I BEAM		86
31		e	CEILING		143
32	F2	a	ANGLE IRON	N/A	74
33		b	22" I BEAM		64
34		c	10" I BEAM		75
35		d	CONDUIT		112
36		e	CEILING		130
37	F2	e	CEILING (* DUPLICATE)	N/A	131
38					
39					
40					



SURVEY PATTERN: LOOKING DOWN

a	b
c	d

NORTH

	α	β
Instrument Model & s/n:	ESP-1/F	L2221/B
Detector Model & s/n:		
Calibration Date:		
Efficiency	0.12 cpm / dpm based on S/N90	0.21 cpm/dpm
Detector Area	50 cm2	15.5cm²

BUILDING 14 AREAS 2 & 3
⊕ = FLOOR DRAIN
O = PIPE/CONDUIT PENETRATION

REVIEW [illegible]

ENCL-C2.XLS

ION TECHNOLOGY, INC.
SURVEY #591
C. HALLAM/[illegible]
ANALYSIS DATE: 7-17-97
LOCATION: Praxair, Tonawanda, NY

SMEAR MEASUREMENT ANALYSIS REPORT

: VERIFICATION OF SMEARS
BLDG 14 AREAS 2 & 3 OVERHEAD

RADIATION MEASUREMENT: Alpha and Beta-gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: Removable Contamination

SAMPLE #	LOCATION CODE	LOCATION DESCRIPTION	RADIATION TYPE	GROSS SAMPLE (COUNTS)	COUNT TIME (MIN)	MDCR (CPM)	NET SAMPLE COUNT RATE (CPM)	RADIATION TYPE	RESULTS (DPM/100CM2)	ERROR (95% LEVEL)	MDA (DPM/100CM2)
1	F-12	22" I BEAM	A	0	1 MIN	#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
1	↓	↓	BG	51		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
2	F-10	ANGLE IRON	A	1		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
2	↓	↓	BG	49		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
3	F-8	10" I BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
3	↓	↓	BG	68		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
4	F-5	10" I BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
4	↓	↓	BG	56		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
5	A-5	22" I BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
5	↓	↓	BG	68		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
6	A-8	22" I BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
6	↓	↓	BG	56		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
7	B-10	8" I BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
7	↓	↓	BG	55		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
8	A-12	C BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
8	↓	↓	BG	64		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
9	D-13	ANGLE IRON	A	1		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
9	↓	↓	BG	65		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
10	B-13	CONDUIT	A	1		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
10	↓	↓	BG	62		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
11	A-13	22" I BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
11	↓	↓	BG	70		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
12	B-3	VENT DUCT FRAME	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
12	↓	↓	BG	56		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
13	B-0	10" I BEAM	A	0		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
13	↓	↓	BG	50		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
14	F-0	10" I BEAM	A	1		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
14	↓	↓	BG	59		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
15	F-2	CONDUIT	A	1		#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
15	↓	↓	BG	47		#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
16			A			#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
16			BG			#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
17			A			#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
17			BG			#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
18			A			#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
18			BG			#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
19			A			#DIV/0!	#DIV/0!	A	#DIV/0!	#DIV/0!	#DIV/0!
19			BG			#DIV/0!	#DIV/0!	BG	#DIV/0!	#DIV/0!	#DIV/0!
20											
20											

Instrument Model & s/n:	M.2929 s/n I
Detector Model & s/n:	M.43-10-1 s/n I
Calibration Date:	2-7-97
Efficiency BG (Beta/Gamma):	0.33 cpm / dpm based on S/Y90
Efficiency A (Alpha):	0.29 cpm / dpm based on Th230

Background	Counts	Ct Time (min)	Rb	Date
Alpha	57	180	#DIV/0!	
Beta-Gamma	10921	180	#DIV/0!	

REVIEW [illegible]

SMEARBLK.XLS

HILBERT ASSOCIATES INC
RADIOLOGICAL ENGINEERS

IDM Environmental
Bldg. 14, Praxair Site
Tonawanda, NY 14151

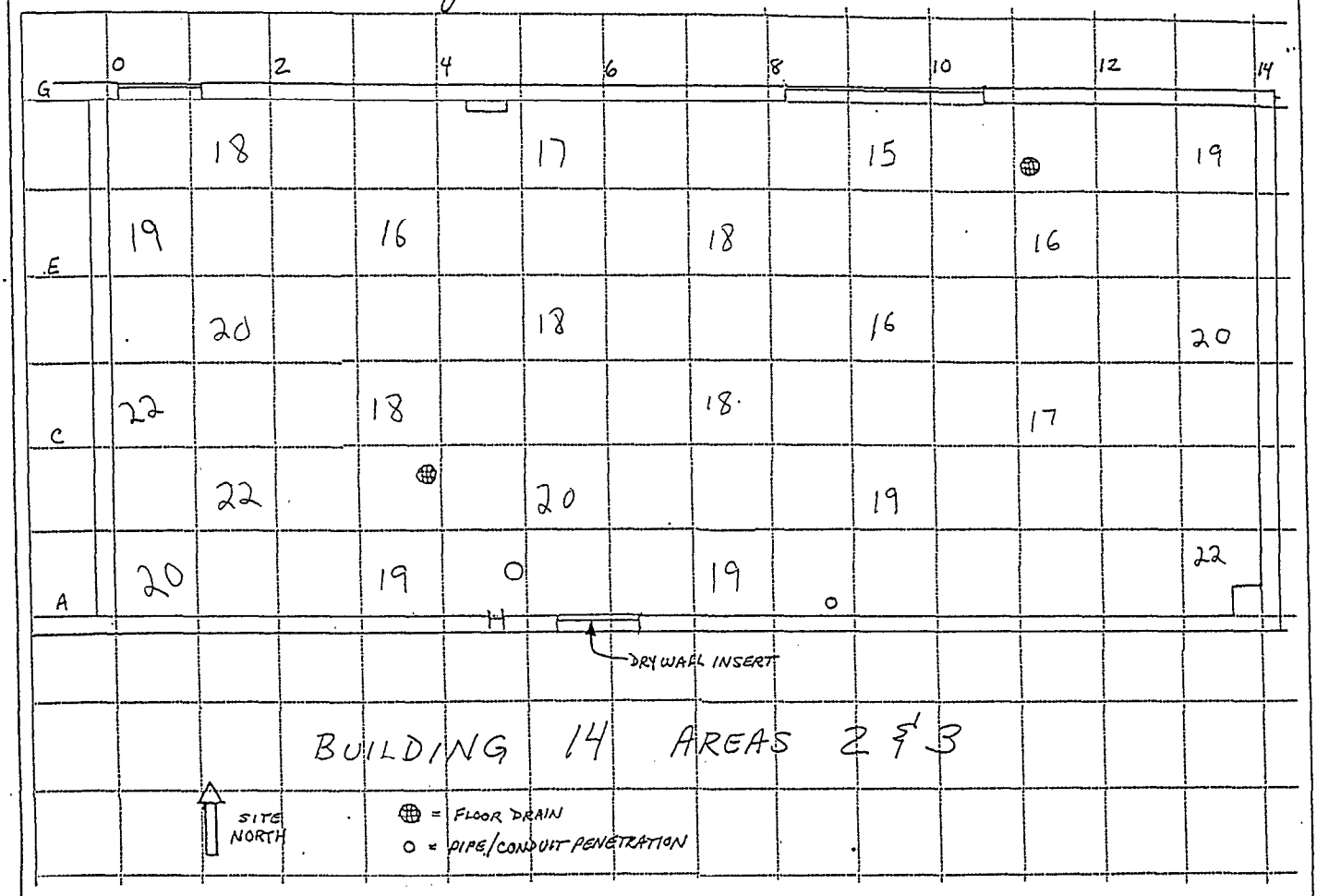
4082

Radiological Survey Form

Hilbert Associates, Inc
Radiological Consultants
640 Maple Ave
Saratoga Springs, NY 12866
Phone: 518-584-0166
Fax: 518-584-8529
Contract # 95012

Date / Time 9-12-97 @ 0300	Tech M. Bigo	Instruments / sn Ludlum M-19 "G"
Location / Purpose Area 2 & 3	Radiation uR Survey.	Survey # / RWP # N/A

All Readings are in uR/HR @ 1 meter.



Loc	Type	Description	Gross	A DPM	Gross	Beta DPM	Loc	Type	Description	Gross	A DPM	Gross	Beta DPM

Comments:	Scaler S/N		BKD	EFF	MDA
	CT #	Alpha:			
	Tech	Beta:			

Review

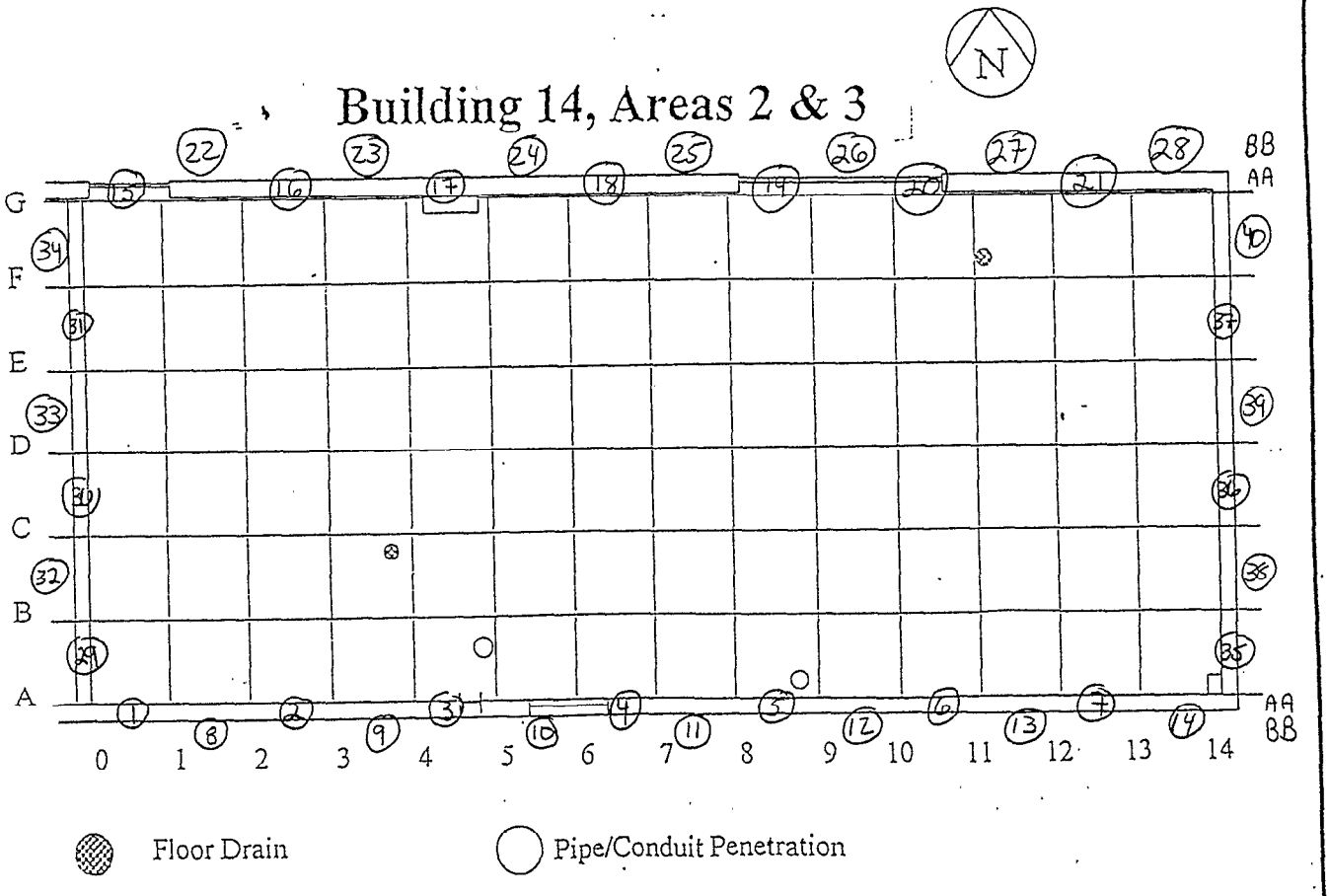
ION TECHNOLOGY, INC.
640 Maple Ave
Saratoga Springs, NY
(518) 584-0166

RADIOLOGICAL SURVEY

Project: PRAX AIR
Area: BLDG 14 AREA 2&3

#4083
p. 1 of 2

Date/Time 9/8/97 /2000	Tech	Instrument / sn 2221	
Location/ Purpose BLDG 14 AREA 2&3 (WALLS)		Survey #	RWP# 02



Loc	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
1	S	South WALL A1/AA	0		60		10	S	South WALL A6/BB	0		52	
2	|	A3/AA	0		63		11	|	A8/BB	1		57	
3	|	A5/AA	1		53		12	|	A10/BB	0		62	
4	|	A7/AA	0		55		13	|	A12/BB	0		49	
5	|	A9/AA	1		57		14	|	A14/BB	0		65	
6	|	A11/AA	0		58		15	|	North WALL F1/AA	1		60	
7	|	A13/AA	0		67		16	|	F3/AA	1		54	
8	|	A2/BB	0		45		17	|	F5/AA	0		58	
9	|	A4/BB	0		57		18	|	F7/AA	3		62	

Type:s = smearable, dp = direct probe

Comments: (#) SMEAR LOCATION

R.W. 9/8/97

	BKD	EFF	MDA
Scalar S/N 91234			
CT= 1 MIN DATE 9/8/97 α:	.18	.32	1.5
Tech β:	61	.28	135

Review: _____

(over)

Encl 3.3 to HSP 210

(over)

ION TECHNOLOGY, INC.
640 Maple Ave
Saratoga Springs, NY
(518) 584-0166

RADIOLOGICAL CONTINUATION SURVEY FORM

Project: PRAXAIR
Area: BLDG 2&3

4083

p. 2 of 2

Date/Time 9/8/97 / 2000	Tech	Instrument / sn 2221	
Location/ Purpose BLDG 14 AREA 2&3 (WALLS)		Survey #	RWP# 02

Loc	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
19	S	Northwall F9/AA	0		65								
20		F11/AA	2		68								
21		F-13/AA	0		66								
22		Northwall F-2/BB	4		73								
23		F-4/BB	0		68								
24		F-6/BB	2		68								
25		F-8/BB	1		49								
26		F-10/BB	0		45								
27		F-12/BB	0		55								
28		F-14/BB	0		55								
29		Westwall A-1/AA	0		61								
30		C-1/AA	0		54								
31		E-1/AA	0		49								
32		B-1/BB	0		57								
33		D-1/BB	1		77								
34		F-1/BB	0		56								
35		Eastwall A-14/AA	0		56								
36		C-14/AA	0		64								
37		E-14/AA	0		35								
38		B-14/BB	1		66								
39		D-14/BB	1		64								
40		F-14/BB	0		57								

Type:s = smearable, dp = direct probe

Comments: (#) SMEAR LOCATION

Scalar S/N 91234		BKD	EFF	MDA
CT= 1 MIN	DATE	α:		
Tech		β:		

Review:

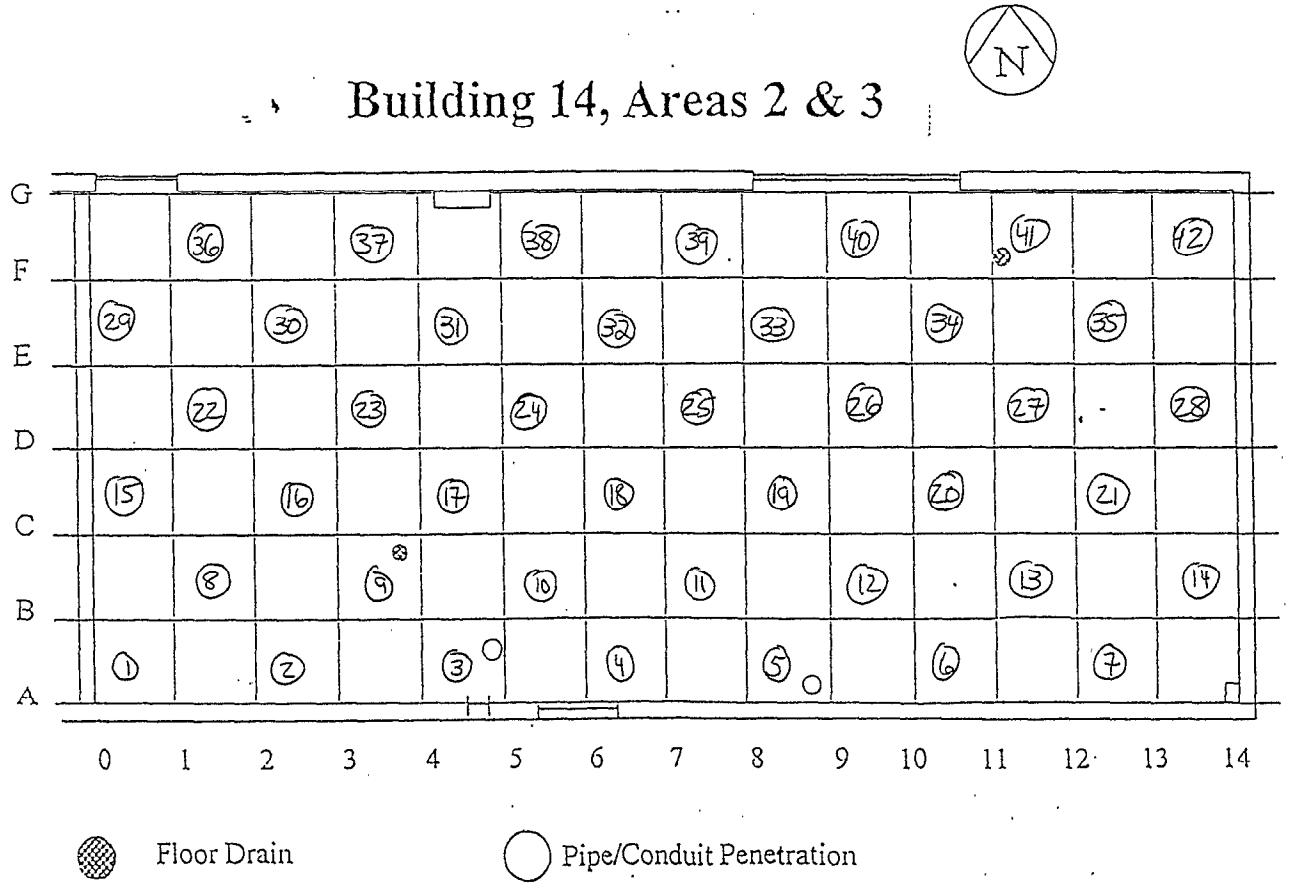
ION TECHNOLOGY, INC.
640 Maple Ave
Saratoga Springs, NY
(518) 584-0166

RADIOLOGICAL SURVEY

Project: PRAXAIR
Area: B-14 A-2&3

4084
P. 1 of 2

Date/Time 9/8/97 /2000	Tech SMALLRIDGE	Instrument / sn 2221
Location/ Purpose B-14 A 2&3 (FLOOR)		Survey # RWP# 02
VERIFICATION SMEAR SURVEY		



Loc	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
① A-1	S	VERIFICATION	0		71		⑩ B-6	S	VERIFICATION	0		67	
② A-3		SMEAR SURVEY	0		39		⑪ B-8		SMEAR SURVEY	0		66	
③ A-5			0		57		⑫ B-10			1		54	
④ A-7			2		68		⑬ B-12			2		70	
⑤ A-9			1		76		⑭ B-14			0		54	
⑥ A-11			0		55		⑮ C-1			0		69	
⑦ A-13			0		64		⑯ C-3			1		60	
⑧ B-2			1		72		⑰ C-5			1		62	
⑨ B-4			2		62		⑱ C-7			0		58	

Type:s = smearable, dp = direct probe

Comments: (#) SMEAR location
Kweight

Scalar S/N 91234	BKD	EFF	MDA
CT= 1m/N DATE 9/8/97 α:	.18	.32	115
Tech β:	61	.29	139

Review: _____

Encl 3.3 to HSP 210

(over)

4084

p. 2 of 2

ION TECHNOLOGY, INC.
640 Maple Ave
Saratoga Springs, NY
(518) 584-0166

RADIOLOGICAL CONTINUATION SURVEY FORM

Project: PRAX AIR
Area: B-14 A-2&3 FLOOR

Date/Time 9/8/97 | Tech SMALLRIDGE | Instrument / sn 2221
Location/ Purpose B-14 A-2&3 (FLOOR) | Survey # | RWP# 02
VERIFICATION SMEAR SURVEY

Loc	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
19 C-9	S	VERIFICATION	0		71								
20 C-11		SMEAR SURVEY	0		75								
21 C-13			0		57								
22 D-2			0		58								
23 D-4			1		67								
24 D-6			2		58								
25 D-8			0		52								
26 D-10			1		60								
27 D-12			2		61								
28 D-14			1		66								
29 E-1			0		74								
30 E-3			0		64								
31 E-5			0		76								
32 E-7			0		42								
33 E-9			0		58								
34 E-11			1		51								
35 E-13			0		64								
36 F-2			0		68								
37 F-4			1		66								
38 F-6			0		70								
39 F-8			2		70								
40 F-10			0		66								
41 F-12			0		62								
42 F-14	↓	↓	0		68								

Type: s = smearable, dp = direct probe

Comments: (#) SMEAR LOCATION

Scalar S/N		BKD	EFF	MDA
CT=	DATE	α:		
Tech		β:		

Review:

HILBERT ASSOCIATES INC
RADIOLOGICAL ENGINEERS

SMEAR MEASUREMENT ANALYSIS REPORT

(# 4085) S2_3_OH2

Survey by: JESKE

SAMPLE DATE: 7-22-97
ANALYSIS DATE: 8-27-97
LOCATION: B-14 A 2&3 (VERIFICATION) Overhead

RADIATION MEASUREMENT: Alpha and Beta-gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: Removable Contamination

SMEAR CT BY: SMALLRIDGE

SAMPLE#	LOCATION CODE	LOCATION DESCRIPTION(1) B-14 AREA 2&3 (VERIFICATION)	RADIATION TYPE	GROSS SAMPLE (COUNTS)	COUNT TIME (MIN)	MDCR (CPM)	NET SAMPLE COUNT RATE (CPM)	RADIATION TYPE	RESULTS (PER 100CM2)	ERROR (95% LEVEL)	MDA (PER 100CM2)
1	C-0	B-14 AREA 2&3	A	0	1						
1	↓	Ceiling & I-BEAMS	BG	44	1						
2	E-0	B-14 AREA 2&3	A	0	1						
2	↓	Ceiling & I-BEAM	BG	52	1						
3	A-1	B-14 AREA 2&3	A	0	1						
3	↓	Wire Chase / HEAT DUCT	BG	71	1						
4	C-2	B-14 AREA 2&3	A	0	1						
4	↓	Ceiling & I-BEAM	BG	51	1						
5	F-2	B-14 AREA 2&3	A	0	1						
5	↓	Ceiling & I-BEAM	BG	63	1						
6	A-4	B-14 AREA 2&3	A	0	1						
6	↓	I-BEAM CONDUIT	BG	53	1						
7	C-5	B-14 AREA 2&3	A	0	1						
7	↓	Ceiling & I-BEAM	BG	65	1						
8	B-7	B-14 AREA 2&3	A	1	1						
8	↓	Ceiling & I-BEAM	BG	64	1						
9	F-7	B-14 AREA 2&3	A	0	1						
9	↓	Ceiling & I-BEAM	BG	68	1						
10	D-9	B-14 AREA 2&3	A	0	1						
10	↓	Ceiling & I-BEAM	BG	64	1						
11	B-10	B-14 AREA 2&3	A	1	1						
11	↓	Ceiling & I-BEAM	BG	56	1						
12	F-10	B-14 AREA 2&3	A	0	1						
12	↓	pipechase & I-BEAM	BG	59	1						
13	A-12	B-14 AREA 2&3	A	0	1						
13	↓	Ceiling & I-BEAM	BG	42	1						
14	C-12	B-14 AREA 2&3	A	0	1						
14	↓	Ceiling & I-BEAM	BG	44	1						
15	B-13	B-14 AREA 2&3	A	0	1						
15	↓	Ceiling & I-BEAM	BG	51	1						
16	E-13	B-14 AREA 2&3	A	0	1						
16	↓	Ceiling & I-BEAM	BG	49	1						
17			A		1						
17			BG		1						
18			A		1						
18			BG		1						
19			A		1						
19			BG		1						
20			A		1						
20			BG		1						

Instrument Model & s/n: 2929 / 91234 M.2929 s/n
Detector Model & s/n: 43-10-1 / 085270 M.43-10-1 s/n
Calibration Date: 2-7-98
Efficiency BG (Beta/Gamma): .28 cpm / dpm based on ?
Efficiency A (Alpha): .33 cpm / dpm based on ?

Background	Counts	Ct Time (min)	Rb	Date
Alpha	134	100		
Beta-Gamma	4358	100		

SMEAR_AB.XLS