APPENDIX C-13

VERIFICATION SURVEYS FOR AREA 20A-WEST

CN TECHNOLOGY, INC.
340 Maple Ave
Saratoga Springs, NY
(518) 584-0166

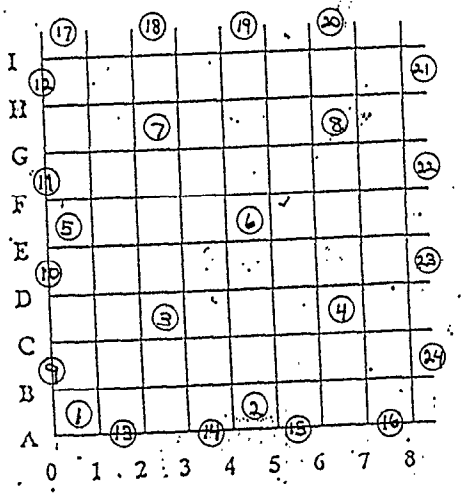
RADIOLOGICAL SURVEY

Project: PRAXAIR
Area: BLDG 14

Date/Time 11-20-97	Tech D. PITMAN	Instrument / sn 2221 / 89648	
Location/ Purpose Area 20 A-WEST VERIFICATION		Survey # 1062	RWP# 02

AREA 20A WEST

N



Loc.	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
1	S	FLOOR; GRID - A/0	0	0	71	38	10	S	W. WALL - GRID BB/0	0	0	60	0
2	S	A/4	1	2	63	10	11	S	AA/F	0	0	53	-24
3	S	C/2	0	0	63	10	12	S	BB/H	0	0	63	10
4	S	C/6	0	0	58	-7	13	S	S. WALL AA/1	1	2	57	-10
5	S	E/0	1	2	67	24	14	S	BB/3	1	2	73	45
6	S	E/4	1	2	51	-31	15	S	AA/5	0	0	63	10
7	S	G/2	1	2	53	-24	16	S	BB/7	0	0	58	-7
8	S	G6	2	6	57	-10	17	S	N. WALL AA/0	1	2	52	-2
9	S	W. WALL AA/B	0	0	68	28	18	S	BB/2	0	0	60	0

Type: s = smearable, dp = direct probe

Comments:

		BKD	EFF	MDA
Scalar S/N 91234				
CT= 1	DATE 11-20-97 α:	183/770 .24	0.32	16
Tech D. PITMAN	β:	46529/770 60	0.29	133

Review:

Encl 3.3 to HSP 210

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

RADIOLOGICAL CONTINUATION SURVEY FORM

Project: PRAXAIR
Area: Bldg 14

Date/Time 11-20-97 | Tech D. PITMAN | Instrument / sn 2221/89648
Location/ Purpose Area 20A-WEST VERIFICATION | Survey # 1062 | RWP# 02

Loc	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
19	S	N.WALL-GRID AA/4	1	2	58	-7							
20	S	↓ BB/6	0	0	52	-28							
21	S	E.WALL AA/H	0	0	60	0							
22	S	BB/F	0	0	78	62							
23	S	AA/D	0	0	51	-31							
24	S	↓ BB/B	1	2	61	3							

Type:s = smearable, dp = direct probe

Comments:

Scalar S/N 91234	BKD	EFF	MDA
CT= 1 DATE 11-20-97 α:	53/70 .24	0.32	16
Tech D. PITMAN β:	46529/70 60	0.29	133

Review:

Encl 3.4 to HSP 210

HILDERT ASSOCIATES, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

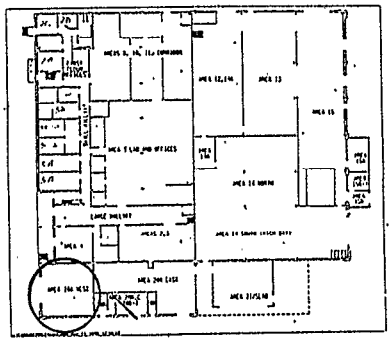
SURVEY # 1063

SAMPLE DATE: 11-20-97
LOCATION: PRAXAIR SITE B14 AREA 20 A WEST SOUTH & WEST WALL VERIFICATION

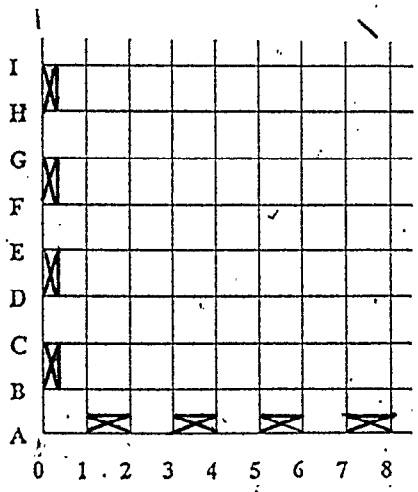
RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

	α	βγ
TOTAL BACKGROUND COUNTS	1 CPM	52 CPM.
BACKGROUND COUNT TIME (MIN)	1 MIN.	1 MIN.
SAMPLE COUNT TIME (MIN)	1 MIN.	1 MIN.

SAMPLE #	LOCATION CODE GRID	GRID POINT	LOCATION DESCRIPTION	GROSS SAMPLE COUNTS βγ	α
1	B-0-AA	A	B14 20 A WEST WEST WALL	54	
2		B		61	
3		C		59	
4		D		67	
5		E		73	N
6	D-0-BB	A		58	A
7		B		73	
8		C		81	
9		D		56	
10		E		56	
11	F-0-AA	A		63	1
12		B		71	1
13		C		84	2
14		D		78	0
15		E		90	3
16	H-0-BB	A		86	
17		B		54	
18		C		67	
19		D		69	
20		E		52	N
21	A-1-AA	A	SOUTH WALL	74	A
22		B		77	
23		C		106	
24		D		69	
25		E		113	
26	A-3-BB	A		92	1
27		B		83	1
28		C		75	1
29		D		66	0
30		E		52	2
31	A-5-AA	A		65	
32		B		56	
33		C		72	
34		D		93	
35		E		79	N
36	A-7-BB	A		96	A
37		B		88	
38		C		82	
39		D		80	
40		E		94	
#(20)	H-0-BB	E	*DUP	61	
#(40)	A-7-BB	E	*DUP	87	



AREA 20 A WEST / SOUTH & WEST WALLS



11-20-97
W. [illegible]

	βγ	α
Instrument Model & S/N:	L2221 # 86308	ESA1 # 03027
Detector Model & S/N:	44-9 # 37623	43-5 # 88097
Calibration Date:		
Efficiency	cpm / dpm based on SR90	βγ = .20 / α = .12
Detector Area	cm2 βγ = 15.5 cm²	/ α = 50. cm²

REVIEW [illegible]

ENCL-C2.XLS

HILBERT ASSOCIATES, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

SURVEY # 1064

SAMPLE DATE: 11-20-97
LOCATION: PRAXAIR SITE B14 AREA 20 A WEST FLOOR VERIFICATION

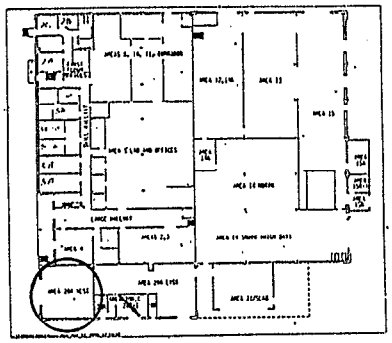
RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

	α	Bγ
TOTAL BACKGROUND COUNTS	1 cpm	52 cpm
BACKGROUND COUNT TIME (MIN)	1 min.	1 min.
SAMPLE COUNT TIME (MIN)	1 min.	1 min.

SAMPLE #	LOCATION CODE GRID	GRID POINT	LOCATION DESCRIPTION	GROSS SAMPLE COUNTS Bγ	α
1	A-0	A	B14 20 A WEST FLOOR	89	
2		B	SEE MAP	86	
3		C		63	
4		D		69	
5		E		88	N
6	A-4	A		73	A
7		B		103	
8		C		60	
9		D		80	
10		E		56	
11	C-2	A		82	1
12		B		64	1
13		C		61	0
14		D		97	2
15		E		68	0
16	C-6	A		70	
17		B		97	
18		C		79	
19		D		81	
20		E		74	
21	E-0	A		63	
22		B		68	N
23		C		114	
24		D		77	A
25		E		91	
26	E-4	A		123	
27		B		88	
28		C		86	
29		D		97	
30		E		73	
31	G-2	A		112	2
32		B		106	1
33		C		62	1
34		D		75	0
35		E		80	1
36	G-6	A		101	
37		B		84	N
38		C		96	
39		D		68	A
40		E		131	
# (20)	C-6	E	* DUP	78	
# (40)	G-6	E	* DUP	124	

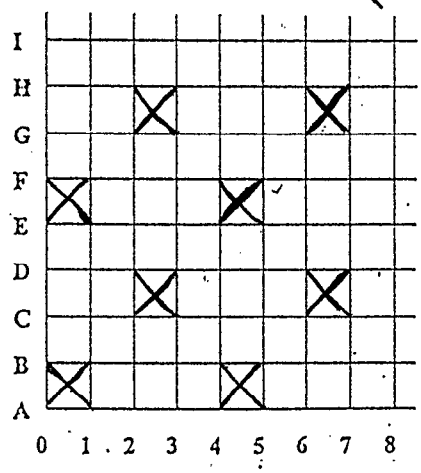
11-20-97

William W.



N

AREA 20 A WEST (FLOOR)



	Bγ	α
Instrument Model & s/n:	L2221 #86308	ESP-1 #03027
Detector Model & s/n:	44-9 #37683	43-5 #88097
Calibration Date:		
Efficiency	cpm / dpm based on Sr/90	Bγ=.20 / α=.12
Detector Area	cm2 Bγ=15.5 cm²	/ α=50 cm²

REVIEW

ENCL-C2.XLS

HILBERT ASSOCIATES, INC.

DIRECT SURFACE MEASUREMENT ANALYSIS REPORT

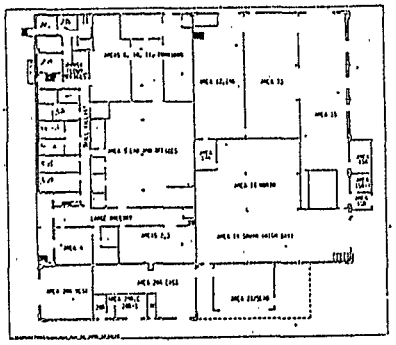
(scaler measurement)

#1065

SAMPLE DATE: 11-20-97
LOCATION: PRAXAIR SITE B14 AREA 20 A WEST
NORTH & EAST WALL VERIFICATION

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

	α	βγ
TOTAL BACKGROUND COUNTS	1 CPM	47
BACKGROUND COUNT TIME (MIN)	1 MIN.	1 MIN.
SAMPLE COUNT TIME (MIN)	1 MIN.	1 MIN.



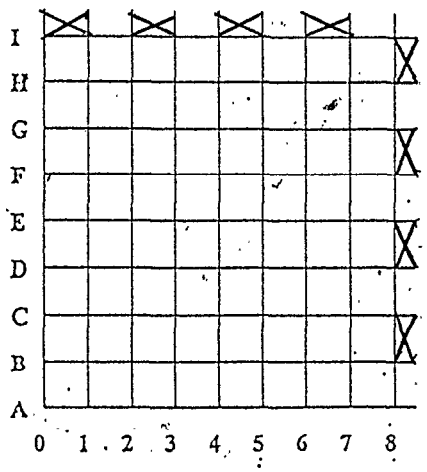
SAMPLE #	LOCATION CODE	LOCATION DESCRIPTION	GROSS SAMPLE COUNTS βγ	α
	GRID			
1	B-8-BB	A B14 20A WEST EAST WALL	47	
2		B SEE MAP	51	
3		C	55	
4		D	52	
5		E	40	
6	D-8-AA	A	32	
7		B	43	
8		C	44	
9		D	64	
10		E	34	
11	F-8-BB	A	52	
12		B	44	
13		C	49	
14		D	45	
15		E	47	
16	H-8-AA	A	47	3
17		B	41	3
18		C	36	2
19		D	32	3
20		E	32	0
21	I-6-BB	A NORTH WALL	51	
22		B	60	
23		C	79	
24		D	56	
25		E	82	
26	I-4-AA	A	31	
27		B	49	
28		C	47	
29		D	40	
30		E	31	
31	I-2-BB	A	63	
32		B	64	
33		C	43	
34		D	64	
35		E	69	
36	I-0-AA	A	36	1
37		B	52	0
38		C	68	1
39		D	52	0
40		E	38	0
			43	1

#(20) H-8-AA E *DUP

64. 1

#(40) I-0-AA E *DUP

AREA 20 A WEST (NORTH & EAST WALL)



11-20-97
W. [signature] / [signature]
βγ α

Instrument Model & s/n:	L2221 #89648	ESP-1 #03027
Detector Model & s/n:	44-9 #48272	43-5 #088097
Calibration Date:	12-27-97	2-10-97
Efficiency		cpm / dpm based on S/100 βγ=.20 / α=.12
Detector Area		cm2 βγ=15.5 / α=50

REVIEW [signature]

ENCL-C2.XLS

HILBERT ASSOCIATES, INC.

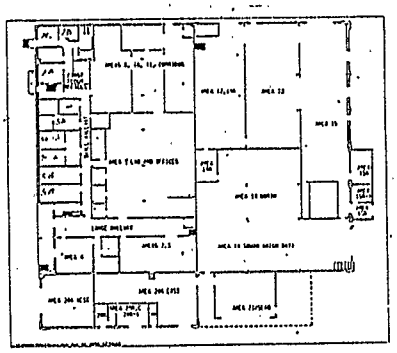
DIRECT SURFACE MEASUREMENT ANALYSIS REPORT
(scaler measurement)

SURVEY # ~~2074~~ ~~2073~~ ~~2073~~ 1073

SAMPLE DATE: 11-25-97
LOCATION: PRAXAIR SITE B14 AREA 20 A WEST OVERHEAD VERIFICATION

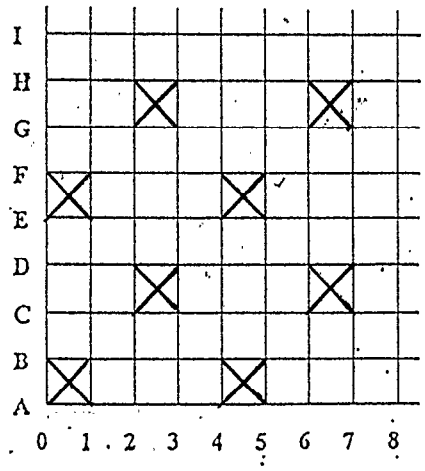
RADIATION MEASUREMENT: Beta-Gamma
RESULTS REPORTED UNITS: dpm per 100cm2
MEASUREMENT TYPE: direct scaler measurements

	α	Bβ
TOTAL BACKGROUND COUNTS	1 cpm	47 cpm
BACKGROUND COUNT TIME (MIN)	1 min.	1 min.
SAMPLE COUNT TIME (MIN)	1 min.	1 min.



SAMPLE #	LOCATION CODE GRID	LOCATION DESCRIPTION	GROSS SAMPLE COUNTS BY	α
1	A-0	A B14 20 A WEST (OVERHEAD)	51	
2		B	68	
3		C	71	
4		D	54	
5		E	69	
6	A-4	A	76	
7		B	88	
8		C	106	N
9		D	113	A
10		E	73	
11	C-2	A	101	
12		B	93	
13		C	109	
14		D	88	
15		E	116	
16	C-6	A	121	1
17		B	59	1
18		C	72	1
19		D	64	2
20		E	83	3
21	E-0	A	102	
22		B	128	
23		C	117	
24		D	86	
25		E	97	
26	E-4	A	85	
27		B	68	
28		C	81	
29		D	81	
30		E	90	
31	G-2	A	113	N
32		B	102	A
33		C	126	
34		D	131	
35		E	107	
36	G-6	A	87	
37		B	94	
38		C	82	
39		D	101	
40		E	112	
*(20)	C-6	E * DUP	91	
*(40)	G-6	E * DUP	120.	

AREA AREA 20 A WEST (OVERHEAD)



11-25-97
William W. [signature] Bβ α

Instrument Model & s/N	L2221 #86308	ESP-1 #03077
Detector Model & s/N	44-9 #37683	43-5 #88097
Calibration Date:	2-7-97	2-10-97
Efficiency	cpm / dpm based on Sr/90	
Detector Area	cm2	Bβ = 15.5 / α 50

ENCL-C2.XLS

APPENDIX C-14

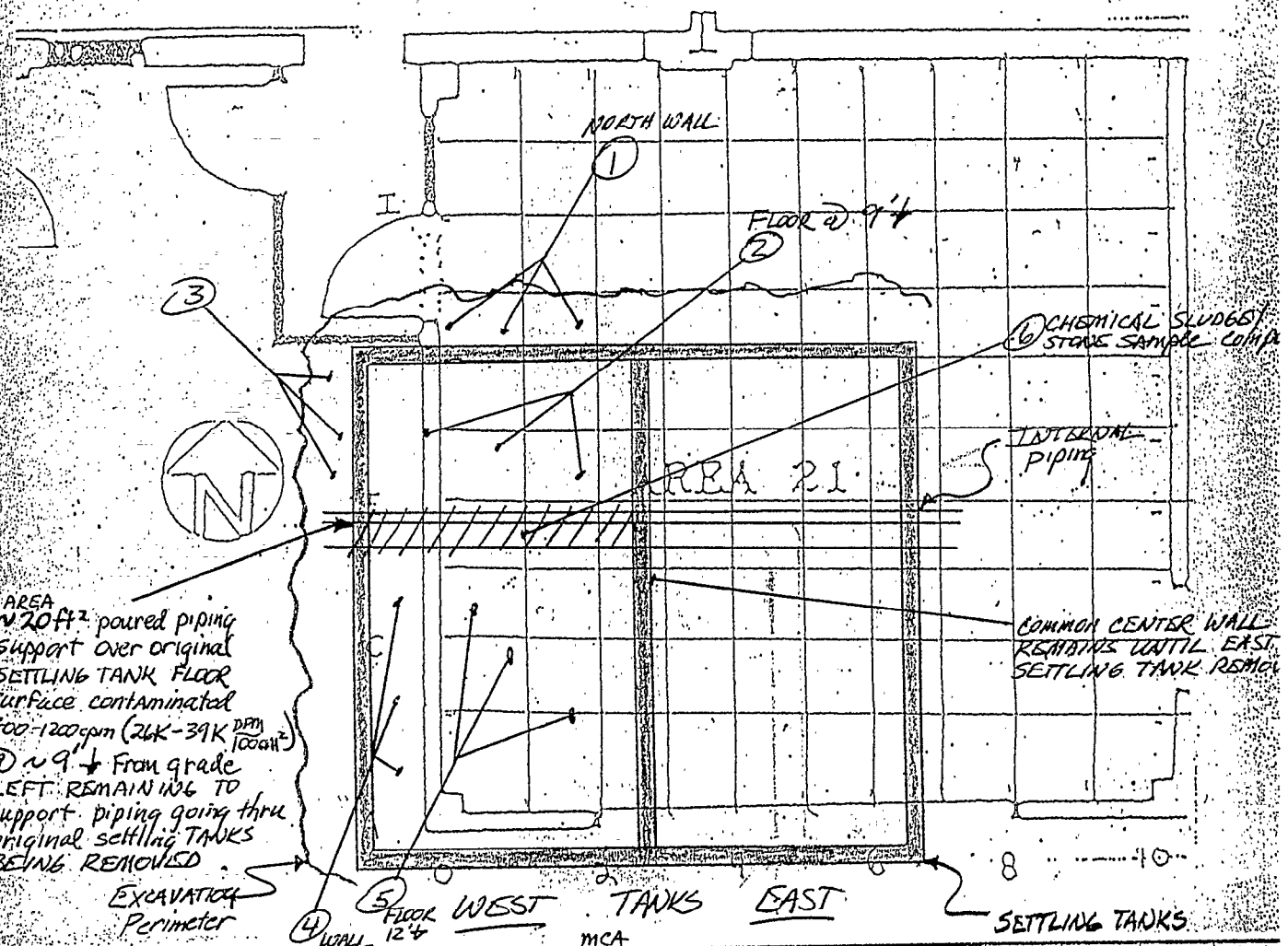
VERIFICATION SURVEYS FOR AREA 21

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

RADIOLOGICAL SURVEY

Project: PRAXAIR - BLD 14
Area: 21 - SETTLING TANKS

Date/Time 1-28-98	Tech Alex / Jake	Instrument / sn L2221 #86313 W 04867	
Location/ Purpose AREA 21 SETTLING TANKS		Survey # 1185	RWP# 08
VERIFICATION Survey			
WEST TANK AFTER REMOVAL			



Loc	Type	Description	Gross α dpm	Gross β dpm	MCA pCi/g	Loc	Type	Description	Gross α dpm	Gross β dpm
1	*VS	MCA: SOIL VERIFICATION COMPOSITE			6.2 pCi/g			TOTAL URANIUM LAB SAMPLE	# 820	
2	VS	AFTER WEST TANK REMOVED			6.2				# 821	
3	VS	NW SOIL WALL COMPOSITE 2-9'+			23.7				# 822	MCA DATA
4	VS	SOUTHWEST SOIL BANK 2-12'+			17.5				# 816	SEE REVISED REPORT #3
5	VS	SOUTHWEST FLOOR SOIL 12'+ DEPTH			4.7				#817	
6	VS	CHEMICAL SLUDGE/STONE/concrete			12.3				#813	REPORT #28

MCA = MULTICHANNEL ANALYZER pCi/g

Type: s = smearable, dp = direct probe

Comments: *VS = VERIFICATION SOIL COMPOSITE

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

Review:

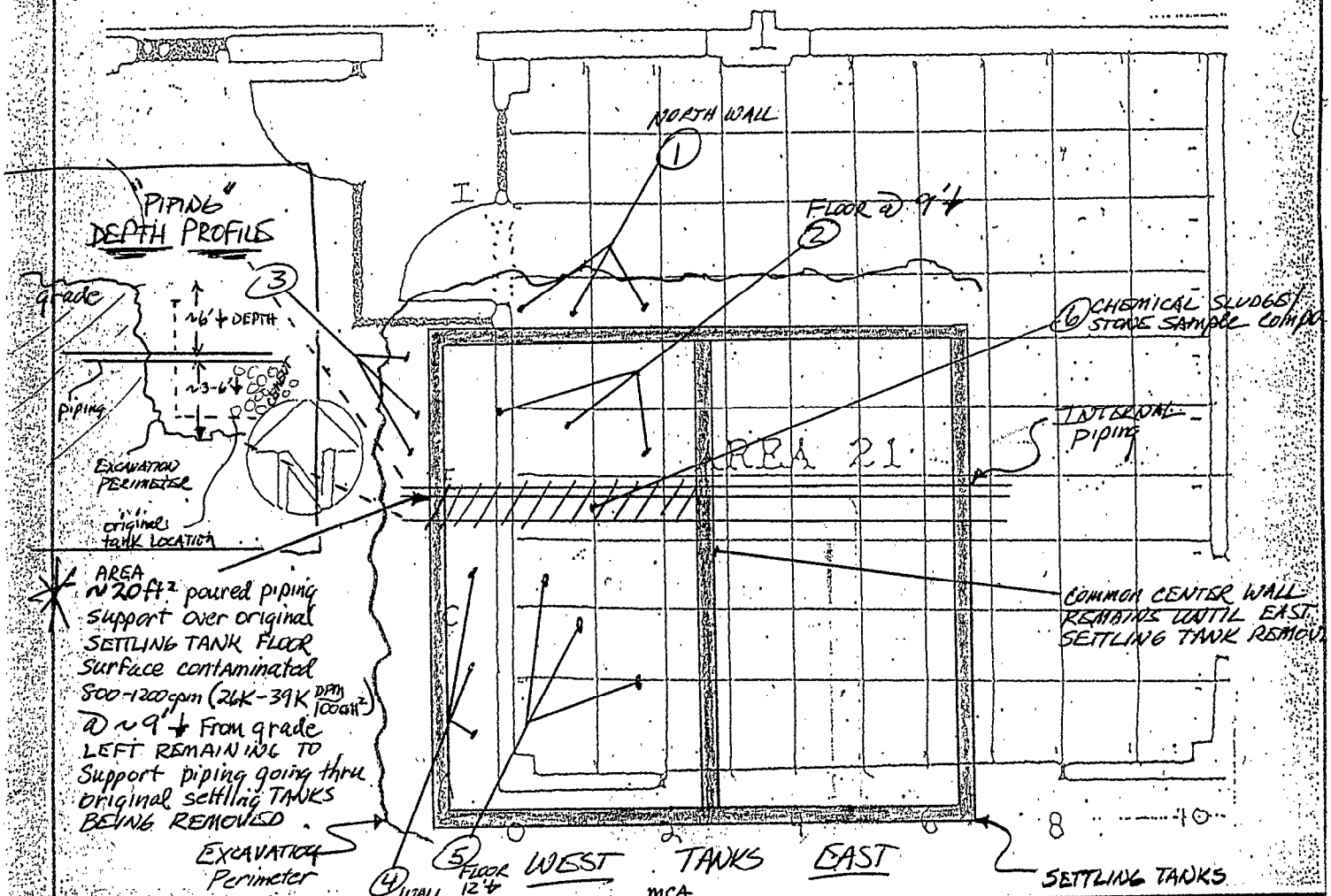
Encl 3.3 to HSP 210

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

RADIOLOGICAL SURVEY

Project: PRAXAIR - BLD 14
Area: 21 - SETTLING TANKS

Date/Time 1-28-98	Tech [illegible] / Jake	Instrument / sn L2221 #86313 W 04867	
Location/ Purpose AREA 21 SETTLING TANKS		Survey # 1185	RWP# 08
VERIFICATION Survey			
WEST TANK AFTER REMOVAL			



Loc.	Type	Description	Gross	α dpm	Gross	MCA ~~β dpm~~	Loc	Type	Description	Gross	α dpm	Gross	β dpm
1	*VS	MCA: SOIL VERIFICATION COMPOSITE				6.2 pCi/g			TOTAL URANIUM LAB SAMPLE	# 820			
2	VS	AFTER WEST TANK REMOVED				6.2				# 821			
3	VS	NW SOIL WALL COMPOSITE 2-9'+				23.7				# 822		MCA DATA	
4	VS	SOUTHWEST SOIL BANK 2-12'+				17.5				# 816		SEE REVERSE REPORT # 29	
5	VS	SOUTHWEST FLOOR SOIL 12'+ DEPTH				4.7				# 817			
6	VS	CHEMICAL SLUDGE/STONE/CONCRETE				12.3				# 813		REPORT # 28	
						↑							
						MCA = MULTICHANNEL ANALYZER pCi/g							

Type: s = smearable, dp = direct probe

Comments: *VS = VERIFICATION SOIL COMPOSITE

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

Review: [signature]

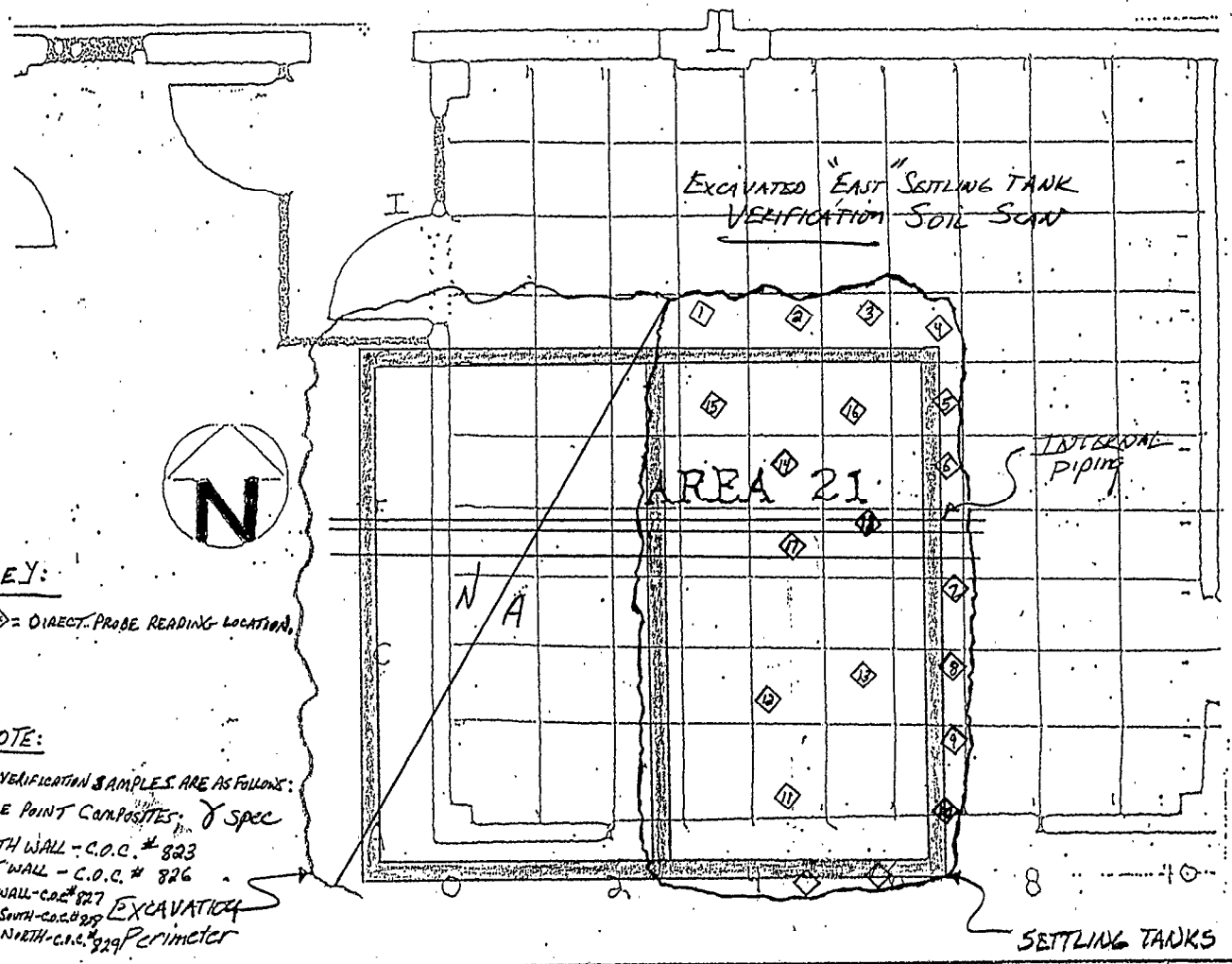
Encl 3.3 to HSP 210

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

RADIOLOGICAL SURVEY

Project: PRAXAIR - BLD 14
Area: 21 - SETTLING TANKS

Date/Time 2-4-98 0200 HRS.	Tech William W. Fuller	Instrument / sn LA221 #86313 W/44-9 #048267 EFF=.20 BKGD.=60cpm ACTIVE AREA=15.5 cm²
Location/ Purpose PRAXAIR SITE B14 AREA 21 PIT EXCAVATION		Survey # 1201 RWP# 08
"VERIFICATION" SURVEY (EAST HALF)		



Loc	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
1	D.P.	NORTH WALL @ DEPTH OF 9'			150	2,900	10	D.P.	EAST WALL @ DEPTH OF 7'			110	1,600
2		6'			140	2,600	11		FLOOR OF EXCAVATION - SOUTHERN HALF			130	2,300
3		11'			120	1,900	12					120	1,900
4		10'			135	2,400	13					120	1,900
5		EAST WALL @ DEPTH OF 5'	N	A	140	2,600	14		FLOOR OF EXCAVATION - NORTHERN HALF	N	A	150	2,900
6		8'			155	3,000	15					90	1,000
7		14'			100	1,300	16					110	1,600
8		6'			130	2,300	17		FLOOR OF EXCAVATION DIRECTLY UNDER PIPES			120	1,900
9		12'			120	1,900	18		SURFACE OF PIPES RUNNING ACROSS EXCAVATION			100	1,300

Type: s = smearable, (dp = direct probe)

Comments: *WEST WALL CONSIST OF ASH FLOW (NEW), RANGING FROM 80-90 CPM (GROSS) β.

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

Review:

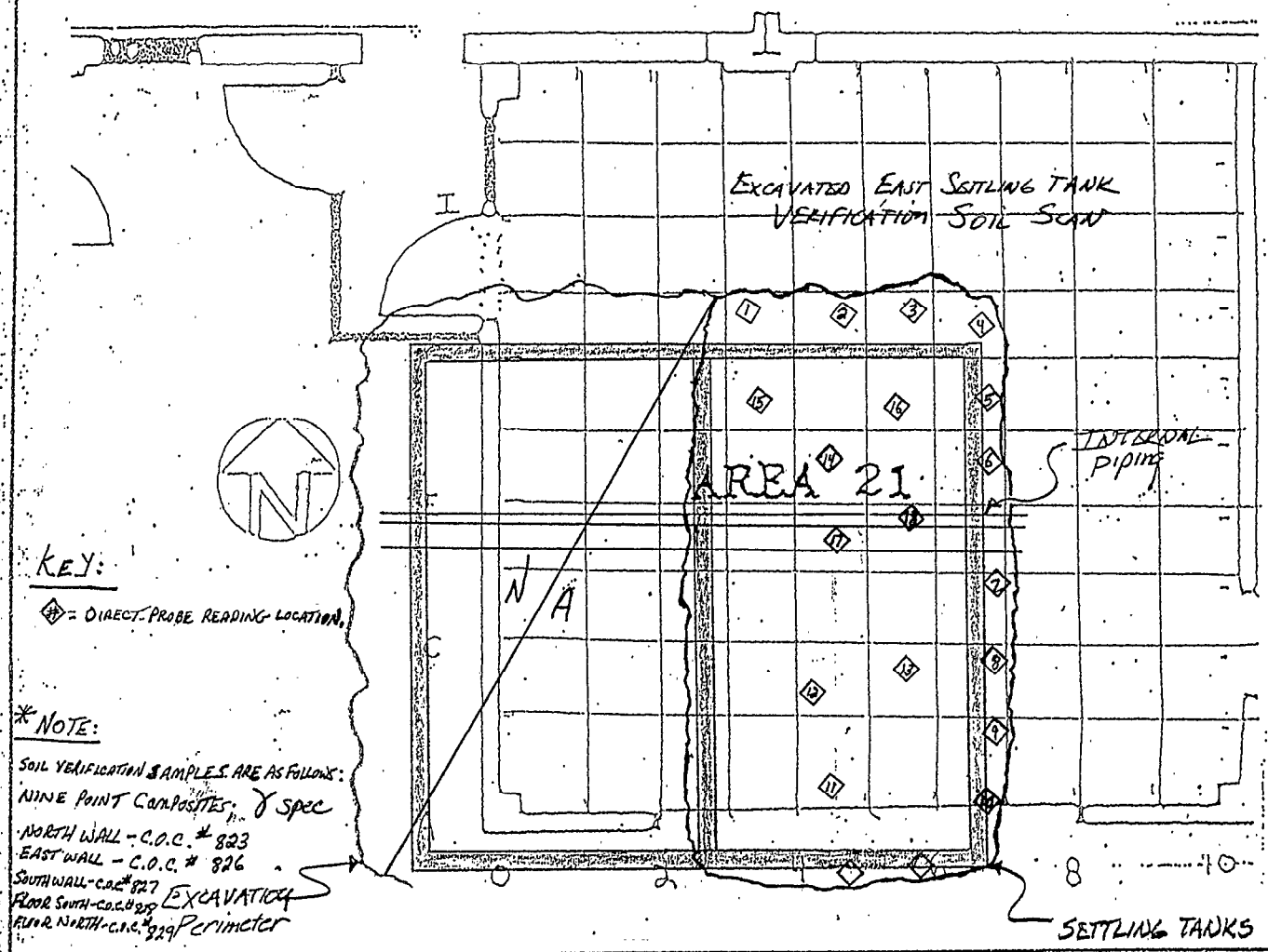
Encl 3.3 to HSP 210

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

RADIOLOGICAL SURVEY

Project: PRAXAIR - BLD 14
Area: 21 - SETTLING TANKS

Date/Time 2-4-98 0200 HRS.	Tech William W. Jacobs	Instrument / sn L2221 #86313 W/44-9 #048267 EFF=.20 BKGD.=60cpm
Location/ Purpose PRAXAIR SITE B14 AREA 21 PIT EXCAVATION		Survey # ~~1201~~ 1218 ACTIVE AREA=15.5cm² (EBS) RWP# 08
VERIFICATION SURVEY (EAST HALF)		



Loc	Type	Description	Gross	α dpm	Gross	β dpm	Loc	Type	Description	Gross	α dpm	Gross	β dpm
1	D.P.	NORTH WALL @ DEPTH OF 9'			150	2,900	10	D.P.	EAST WALL @ DEPTH OF 7'			110	1,600
2		6'			140	2,600	11		FLOOR OF EXCAVATION - SOUTHERN HALF			130	2,300
3		11'			120	1,900	12					120	1,900
4		10'			135	2,400	13					120	1,900
5		EAST WALL @ DEPTH OF 5'	N	A	140	2,600	14		FLOOR OF EXCAVATION - NORTHERN HALF	N	A	150	2,900
6		8'			155	3,000	15					90	1,000
7		14'			100	1,300	16					110	1,600
8		6'			130	2,300	17		FLOOR OF EXCAVATION DIRECTLY UNDER PIPES			120	1,900
9		12'			120	1,900	18		SURFACE OF PIPES RUNNING ACROSS EXCAVATION			100	1,300

Type: s = smearable, dp = direct probe

Comments: *WEST WALL CONSIST OF ASH FLOW (NEW), RANGING FROM 80-90 CPM (GROSS) β8.

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

Review:

Encl 3.3 to HSP 210