Pu-Plant Production Hallway

This hallway runs North from airlock to an intersection, for its east and west legs, and on north to room 127 door. The east-west leg runs from the east wall of building west past room 128 door, lab north door, vault door, thru the intersection, past 124 door, 116 door, 123 door, 121 door and ends at the Pu dock airlock door.

This hallway had a sheetrock ceiling to isolate it from an attic area containing pipe, conduit, and supply and exhaust duct. We removed approximately 60% of the conduit and piping, all of the exhaust, and a small portion of the supply duct from this attic area before starting our release survey. After the sheetrock ceiling and the floor coating were removed, our scan of the walls and floor indicated the need to blast the wall of this hallway north and east from the intersection. We also blasted the entire floor of this hallway.

We used Ludlum 2220 with a Ludlum 43-17 low energy gamma probe to survey all cracks and seams. A Ludlum 2220 with a Ludlum 43-68, 43-4, or 43-27 was used with P-10 gas for all alpha release surveys. All smears were taken on Whatman smear paper and counted in a Hewlett-Packard 5560A (low background) automatic sample counter.

W. O. Rogers

W. A. Rogers

Pu PLANT RELEASE SURVEY PLAN

1. For initial decontamination all surfaces will be scanned with an Eberline PRM-6 with a Radeco alpha scintillation probe. Background will be maintained at less than 100 CPM(200 dpm). All areas greater than twice background will be marked and reading will be taken with a release survey instrument to document contamination levels and random large area smears will be taken.

2. After these initial areas are decontaminated, all floor surfaces and the base of each wall will be completely surveyed with a digital readout release instrument and a Ludlum large area gas proportional alpha detector and random smear samples will be taken. Release instrumentation shall have a minimum detectable level of at least 50 dpm/100 cm^2.

3. All hot spots greater than or equal to 100 dpm/100 cm^2 identified will be decontaminated.

4. A random survey with a release instrument will be taken on the walls and ceiling to try to identify any other problem areas.

5. If no problems are identified, each room will be gridded off into approximately 2 meter on a side square on the walls and floor and five readings will be taken in each grid. Readings shall be taken in the center and at the midpoint from the center to each corner.

6. Each ceiling has closely spaced rafters that will not be easily divided into 2 meter squares. Because of this, we will take readings on the bottom of each rafter at 2 meter intervals and one reading centered on the ceiling between rafters. Readings on each rafter will be staggered one meter.

7. These release readings will be documented on a map that is drawn to approximately scale measurements in meters.

8. Data provided on each map:

    1. Survey block numbers, identifiable on a scale drawings.

        a. room or area name or number.
        b. surface surveyed.
        c. type of measurement and units.

    2. Name of surveyor taking measurements, date of survey, and location.

3. Type, model number, calibration data, sensitivity limit, background, and source response of instruments used in survey.

4. When a block surveyed is below the sensitivity of the instrument, the fact that such a measurement was made should be included as significant data.

9. All release survey smears will be taken on Whatman smear paper and counted in the automatic sample counters. Each smear will cover approximately 100 cm^2.

10. There will be at least 30 survey blocks in each area to be released.

11. Piping and ductwork will be surveyed on all accessable sides at 2 meter intervals. If more than one line is running parallel in a pipe rack, readings shall be staggered at one meter intervals.

12. All readings taken that only cover part of a probe area will be corrected to dpm/100 cm^2.

13. No survey block will measure less than one meter on a side.

14. No survey block will measure more than 3 meters on a side.

15. All portable release survey instruments will be calibrated quarterly and all instruments in use will be source checked daily.

Table I-1. Acceptable surface contamination levels

Nuclides[a]	Average[b,c,f]	Maximum[b,d,f]	Removable[b,e,f]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90 Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm^2	3,000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and other noted above.	5,000 dpm $\beta\gamma$/100 cm^2	15,000 dpm $\beta\gamma$/100 cm^2	1,000 dpm $\beta\gamma$/100 cm^2

[a] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d] The maximum contamination level applies to an area of not more than 100 cm^2.

[e] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

[f] The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

E
N — S
W
1.5cm = 1 Meter

AREA PRODUCTION HALL EAST

Scan

TYPE OF SURVEY α DIRECT & SMEAR

TYPE OF INSTRUMENT LUDLUM 2220 / DET. 43-~~68~~ 27

SERIAL NUMBER 58318

COMPLETION DATE

H.P. SIGNATURE W.A. Rogers

AUTO. SAMPLE COUNTER #:

SURVEY UNITS

F — FLOOR
C — CEILING
N — NORTH WALL
S — SOUTH WALL
E — EAST WALL
W — WEST WALL

D-DIRECT
S-SMEAR

SOURCE #: 1832 VALUE: 342 DPM

INSTRUMENT		
DATE	SOURCE RESPONSE C/M	BKGD C/M

NORTH WALL

D- S-

100-150

EAST WALL

SOUTH WALL

D- S-

FLOOR

D- 110

108
104
107
112

108
168

S- 129

D- 126

CEILING

D- S-

AREA PRODUCTION HALL WEST

Scan

TYPE OF SURVEY α DIRECT & SMEAR

TYPE OF INSTRUMENT Ludlum 2220 / DET. 43-68 (27)

SERIAL NUMBER 58318

COMPLETION DATE

H.P. SIGNATURE W. A. Rogers

AUTO. SAMPLE COUNTER #:

SURVEY UNITS

W / S — N / E

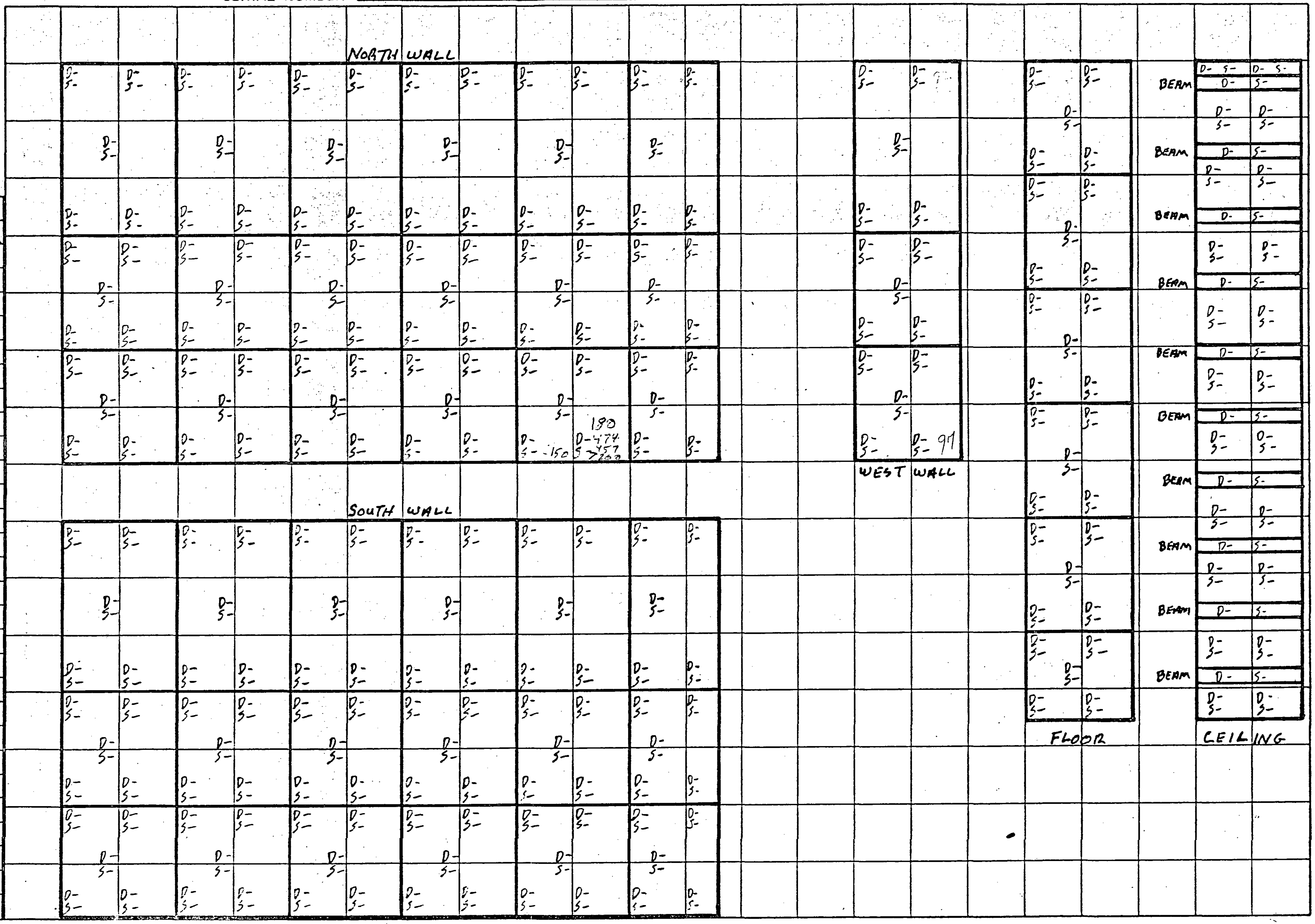
1.5cm = 1 Meter

F – FLOOR
C – CEILING
N – NORTH WALL
S – SOUTH WALL
E – EAST WALL
W – WEST WALL

D - DIRECT
S - SMEAR

SOURCE #: 1832 VALUE: 342 DPM

INSTRUMENT		
DATE	SOURCE RESPONSE c/m	BKGD c/m



AREA PRODUCTION HALL SOUTH

SCAN

TYPE OF SURVEY ∝ DIRECT & SMEAR

TYPE OF INSTRUMENT LUDLUM 2220/DET. 43-27

SERIAL NUMBER 58318

COMPLETION DATE

SURVEY UNITS

H.P. SIGNATURE W. A. Powell

AUTO. SAMPLE COUNTER #:

N
W E
S

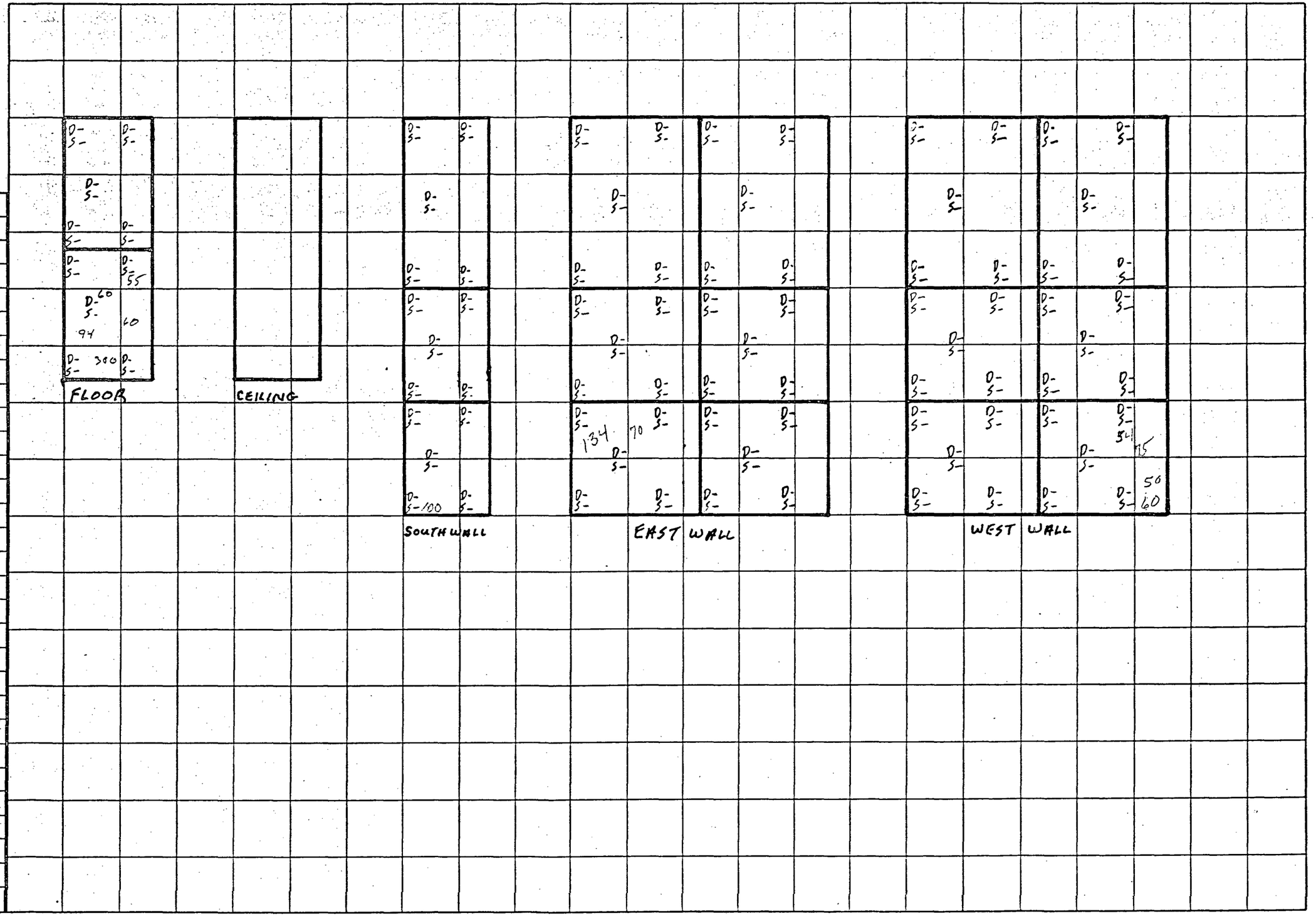
1.5cm = 1 Meter

F – FLOOR
C – CEILING
N – NORTH WALL
S – SOUTH WALL
E – EAST WALL
W – WEST WALL

D - DIRECT
S - SMEAR

SOURCE #: 1832 VALUE: 342 DPM

INSTRUMENT		
DATE	SOURCE RESPONSE	BKGD.



N / W — E / S

1.5cm = 1 Meter

AREA Pu-PLANT-SOUTH AIRLOCK = A/L BETWEEN H.P. & PRODUCTION AREAS

FINAL GRID

TYPE OF SURVEY α DIRECT & SMEAR

TYPE OF INSTRUMENT LUDLUM 2220 / DET. 43-68

SERIAL NUMBER 50069

COMPLETION DATE 5-16-89

H.P. SIGNATURE Claude M. Thompson

AUTO. SAMPLE COUNTER #: #1 83600115

SURVEY UNITS DPM/100 cm²

F – FLOOR
C – CEILING
N – NORTH WALL
S – SOUTH WALL
E – EAST WALL
W – WEST WALL

D- DIRECT
S- SMEAR

MDA 11.09 DPM/100cm² FIXED

SOURCE #: 7272 VALUE: 550 DPM

INSTRUMENT		
DATE	SOURCE RESPONSE c/m	BKGD. c/m
5/16/89	199/214	1
	ASC # 1	
5-17-89	32	.2

NORTH WALL Grid 1
D-56 S-0 | D-8 S-3
D-0 S-0
D-0 S-3 | D-12 S-3

SOUTH WALL Grid 2
D-12 S-3 | D-4 S-0
D-12 S-0
D-4 S-0 | D-8 S-3

EAST WALL Grid 3
D-20 S-3 | D-12 S-0 | D-5 S-0 | D-8 S-3
D-56 S-0 | D-16 S-3
B
D-4 S-3 | D-0 S-3 | D-0 S-0 | D-12 S-6

WEST WALL Grid 4
D-0 S-3 | D-28 S-0 | D-20 S-0 | D-12 S-0
D-20 S-3 | D-0 S-3
B
D-16 S-0 | D-20 S-6 | D-8 S-3 | D-8 S-0

FLOOR Grid 5
D-24 S-0 | D-16 S-0
D-8 S-0
D-8 S-3 | D-12 S-0
D-0 S-0 | D-28 S-3
D-16 S-0 | B
D-4 S-3 | D-4 S-0

CEILING Grid 6
D-0 S-3 | D-0 S-0
D-0 S-3
D-4 S-0 | D-4 S-3
D-0 S-3 | D-12 S-0
D-8 S-3 | B
D-4 S-6 | D-0 S-3

LIGHT FIXTURE

COVER OUTSIDE
D-4 S-3
D-0 S-6

COVER INSIDE
D-4 S-3
D-12 S-0

BALLAST INSIDE
D-20 S-18
D-4 S-3

DIRECT
584 TOTAL DPM
56 READINGS
10.43 DPM/100cm² AVG
56 DPM/100cm² MAX

SMEAR
120 TOTAL DPM
56 SMEARS
2.14 DPM/100cm² AVG
18 DPM/100cm² MAX

AREA PRODUCTION HALL SOUTH
FINAL GRID

TYPE OF SURVEY ∝ DIRECT & SMEAR

TYPE OF INSTRUMENT LUDLUM 2220/DET. 43-68

SERIAL NUMBER 37880

COMPLETION DATE 7-18-89

H.P. SIGNATURE S Kearsley

AUTO. SAMPLE COUNTER #: 83600115

SURVEY UNITS DPM/100cm² WGA

N
W E
S

1.5cm = 1 Meter

F – FLOOR D-DIRECT
C – CEILING S-SMEAR
N – NORTH WALL MDA
S – SOUTH WALL 19.20 dpm/100cm²
E – EAST WALL
W – WEST WALL 890 DPM

SOURCE #: 6478 1112 VALUE: 1113 DPM

INSTRUMENT		
DATE	SOURCE RESPONSE	BKGD.
7-18-89	256-249	1 AM
6-29-89	176-186	3 AM
6-29-89	168-198	3 PM
	ASC #1	
	83600115	
7-5-89	29	.1
7-19-89	34	.3

FLOOR

D-16 S-0	D-4 S-6		
D-8 S-0			
D-16 S-0	D-16 S-3		
D-40 S-0	D-24 S-3		
D-24 S-0			
D-20 S-0	D-28 S-0		

CEILING

N/A

SOUTH WALL

D- S-	D- S-		
D-N/A S-			
D- S-	D- S-		
D-4 S-3	D-28 S-0		
D-0 S-3			
D-4 S-0	D-8 S-0		
D-28 S-0	D-4 S-3		
D-24 S-3			
D-20 S-0	D-28 S-3		

EAST WALL

D- S-	D- S-	D- S-	D- S-
D-N/A S-		D-N/A S-	
D- S-	D- S-	D- S-	D- S-
D-12 S-3	D-32 S-3	D-8 S-0	D-4 S-3
D-12 S-3		D-16 S-3	
D-24 S-0	D-20 S-0	D-8 S-3	D-12 S-0
D-40 S-0	D-8 S-3	D-12 S-0	D-4 S-9
D-20 S-6		D-36 S-3	
D-20 S-6	D-36 S-0	D-24 S-0	D-12 S-0

WEST WALL

D- S-	D- S-	D- S-	D- S-
D-N/A S-		D-N/A S-	
D- S-	D- S-	D- S-	D- S-
D-12 S-0	D-16 S-0	D-20 S-0	D-12 S-3
D-8 S-3		D-24 S-3	
D-4 S-6	D-0 S-0	D-16 S-0	D-12 S-0
D-24 S-0	D-12 S-3	D-16 S-0	D-28 S-0
D-N/A S-		D-N/A S-	
D-20 S-0	D-N/A S-N/A	D-N/A S-N/A	D-10 S-0

	DIRECT	SMEAR
TOTAL DPM	988	84
READINGS	56	56
DPM/100 cm² AVG	17.64	1.50
MAX DPM/100cm²	40	9

AREA HALLWAY TO RM. 127 FINAL GRID

TYPE OF SURVEY ∝ DIRECT & SMEAR

TYPE OF INSTRUMENT Ludlum 2220 / DET. 43-68

SERIAL NUMBER 48395, 50069 / 46172, 46173

COMPLETION DATE 7-18-89

H.P. SIGNATURE W. A. Rogers

AUTO. SAMPLE COUNTER #: #1 83600115, #2 83600108

SURVEY UNITS DPM/100cm²

N / W / E / S

1.5cm = 1 Meter

D - DIRECT
S - SMEAR

F – FLOOR
C – CEILING
N – NORTH WALL MDA
S – SOUTH WALL 19.20 DPM/100cm²
E – EAST WALL
W – WEST WALL

SOURCE #: 7272 VALUE: 850 DPM

INSTRUMENT			
DATE	SOURCE C/M		BKGD C/M
10-3-88	195	48395	0
10-3-88	187	50069	1
10-3-88	193	48395	0
10-3-88	213	50069	1
10-4-88	208	48395	0
10-4-88	211	50069	1
10-4-88	189	50069	1
10-4-88	203	48395	1
7-18-89	188	50069	1
7-18-89	198	50069	3
	ASC #2		
10-5-88	24		.2
	ASC #1		
10-6-88	30		.3
7-19-89	34		.3

FLOOR

D-56 D-24 / S-0 S-3
D-40 / S-0
D-28 D-16 / S-0 S-0
D-8 D-16 / S-6 S-0
D-24 / S-0
D-32 D-28 / S-3 S-3
D-52 D-24 / S-3 S-0
D-8 / S-0
D-32 D-4 / S-3 S-9
D-12 D-24 / S-6 S-3
D-4 / S-0
D-20 D-8 / S-0 S-0
D-16 D-12 / S-0 S-0
D-24 / S-0
D-44 D-36 / S-3 S-9
D-48 D-24 / S-3 S-0
D-32 / S-3
D-36 D-48 / S-3 S-0
D-24 D-16 / S-3 S-0
D-8 / S-0
D-20 D-28 / S-6 S-3

CEILING

D-N/A / S-N/A
D-N/A / S-N/A
D-N/A / S-N/A
D-4 / S-0
D-8 / S-0
D-4 / S-0
D-4 / S-0
D-180 / S-3
D-0 / S-0
D-16 / S-0
D-8 / S-0
D-16 / S-3

NORTH WALL

D-28 D-20 / S-3 S-3
D-32 / S-0
D-4 D-20 / S-6 S-0
D-8 D-24 / S-0 S-6
D-12 / S-0
D-4 D-16 / S-6 S-0
D-0 D-0 / S-0 S-0
D-0 / S-3
D-8 D-4 / S-0 S-6

SOUTH WALL

D-4 D-12 / S-0 S-3
D-12 / S-6
D-16 D-16 / S-0 S-0
D-12 D-32 / S-6 S-0
D-24 / S-0
D-8 D-8 / S-3 S-0

FLOOR HALL JUNCTION

D-24 D-24 / S-0 S-6
D-16 / S-0
D-16 D-24 / S-3 S-3

	DIRECT	SMEAR
TOTAL DPM	1544	135
# READINGS	75	75
AVG DPM/100cm²	20.59	1.80
MAX DPM/100cm²	180	6

AREA HALLWAY To Rm. 127 FINAL GRID

TYPE OF SURVEY D DIRECT & SMEAR

COMPLETION DATE 10-6-88

SURVEY UNITS DPM/100cm²

TYPE OF INSTRUMENT LUDLUM 2220 / DET. 43-68

H.P. SIGNATURE W. G. Rogers

SERIAL NUMBER 48395, 50069 / 46122, 46173

AUTO. SAMPLE COUNTER #: #1 83600115, #2 83600108

N / W / E / S

1.5cm = 1 Meter

D-DIRECT
S-SMEAR

F – FLOOR
C – CEILING
N – NORTH WALL MDA 11.09
S – SOUTH WALL DPM/100cm²
E – EAST WALL FIXED
W – WEST WALL

SOURCE #: 7272 VALUE: 350 DPM

INSTRUMENT		
DATE	SOURCE C/M RESPONSE	BKGD C/M
10-3-88	195 48395	0
10-3-88	187 50069	1
10-3-88	193 48395	0
10-3-88	213 50069	1
10-4-88	208 48395	0
10-4-88	211 50069	1
10-4-88	189 50069	1
10-4-88	203 48395	1
	ASC #1	
10-6-88	30	.3

D-24 S-6	D-24 S-0	D-12 S-9	D-12 S-0	D-16 S-0	D-8 S-6	D-0 S-0	D-24 S-3	D-16 S-0	D-0 S-3	D-12 S-0	D-8 S-0	D-8 S-0	D-0 S-0
D-20 S-9		D-4 S-0		D-12 S-3		D-12 S-3		D-16 S-0		D-12 S-0		D-8 S-0	
D-24 S-0	D-12 S-0	D-8 S-3	D-24 S-0	D-4 S-3	D-16 S-0	D-4 S-3	D-8 S-3	D-48 S-0	D-12 S-0	D-4 S-6	D-28 S-3	D-4 S-3	D-92 S-6
D-16 S-0	D-0 S-0	D-8 S-0	D-8 S-0	D-8 S-3	D-12 S-0	D-8 S-0	D-8 S-0	D-16 S-3	D-8 S-0	D-12 S-9	D-0 S-6	D-4 S-0	D-16 S-3
D-12 S-6		D-28 S-3		D-20 S-0		D-8 S-0		D-24 S-3		D-12 S-0		D-20 S-0	
D-20 S-0	D-8 S-0	D-20 S-0	D-4 S-0	D-20 S-0	D-12 S-0	D-8 S-3	D-4 S-3	D-12 S-3	D-16 S-0	D-4 S-9	D-0 S-0	D-4 S-0	D-4 S-3
D-12 S-0	D-20 S-0	D-8 S-3	D-4 S-6	D-20 S-3	D-16 S-0	D-32 S-3	D-4 S-0	D-12 S-6	D-28 S-3	D-8 S-3	D-8 S-0	D- DOOR WAY S-	D- S-
D-8 S-0		D-8 S-0		D-4 S-0		D-20 S-3		D-12 S-3		D-20 S-0		D- S-	
D-8 S-0	D-20 S-0	D-4 S-0	D-4 S-3	D-8 S-0	D-4 S-0	D-12 S-6	D-20 S-0	D-16 S-0	D-12 S-3	D-20 S-3	D-4 S-0	D- S-	D- S-

WEST WALL

D-8 S-0	D-8 S-0	D-16 S-0	D-8 S-0	D-4 S-3	D-12 S-6	D-8 S-6	D-4 S-0	D-8 S-9	D-12 S-6	D-4 S-3	D-4 S-0	D-4 S-0	D-8 S-0
D-24 S-3		D-0 S-0		D-4 S-0		D-12 S-0		D-4 S-3		D-16 S-3		D-4 S-9	
D-20 S-3	D-12 S-0	D-8 S-3	D-16 S-0	D-8 S-0	D-12 S-0	D-24 S-3	D-4 S-0	D-8 S-0	D-12 S-3	D-4 S-6	D-12 S-0	D-16 S-0	D-16 S-0
D-12 S-0	D-24 S-0	D-16 S-0	D-0 S-0	D-40 S-12	D-20 S-0	D-8 S-6	D-4 S-0	D-0 S-0	D-28 S-3	D-12 S-6	D-0 S-0	D-8 S-0	D-0 S-6
D-12 S-3		D-16 S-0		D-40 S-0		D-12 S-0		D-4 S-0		D-0 S-0		D-0 S-0	
D-20 S-0	D-32 S-3	D-12 S-3	D-16 S-0	D-20 S-3	D-16 S-0	D-4 S-0	D-4 S-3	D-32 S-3	D-0 S-6	D-4 S-9	D-12 S-0	D-0 S-0	D-0 S-0

EAST WALL

TOTAL WALLS

	DIRECT	SMEAR
TOTAL DPM	2068	312
# READINGS	170	170
AVG DPM/100cm²	12.12	1.84
MAX DPM/100cm²	92	12

AREA PRODUCTION HALL EAST — FINAL GRID

TYPE OF SURVEY ∝ DIRECT & SMEAR

TYPE OF INSTRUMENT LUDLUM 2220 / DET. 43-68

SERIAL NUMBER 37800

COMPLETION DATE 5-4-89

H.P. SIGNATURE W.A. Rogers

SURVEY UNITS DPM/100cm²

AUTO. SAMPLE COUNTER #: 1 SN 8360115 & #2 SN 8360108

1.5cm = 1 Meter

F – FLOOR
C – CEILING
N – NORTH WALL
S – SOUTH WALL
E – EAST WALL
W – WEST WALL

D-DIRECT
S-SMEAR

MDA 15.68 DPM/100cm² FIXED

Source #: 6816 VALUE: 1078 DPM

INSTRUMENT		
DATE	SOURCE C/M RESPONSE	BKGD C/M
4-28-89	247-236	1
5-1-89	252-257	2
5-1-89	244-257	1
5-2-89	255-259	2
5-2-89	238-270	1
	ASC #1	
5-2-89	30	.3
5-4-89	33	.3
	ASC #2	
5-2-89	30	.3
	DIRECT	
4428	TOTAL DPM	
301	READINGS	
14.71	DPM/100cm² AVG	
128	Max DPM/100cm²	
	SMEAR	
462	TOTAL DPM	
301	SMEARS	
1.54	DPM/100cm² AVG	
9	Max. DPM/100cm²	

NORTH WALL

D-16 S-0	D-12 S-0	D-4 S-0	D-12 S-3	D-12 S-3	D-0 S-0	D-12 S-0	D-8 S-0	D-16 S-3	D-20 S-0	D-12 S-3	D-20 S-0	D-24 S-0	D-24 S-3
D-8 S-0		D-8 S-0		D-16 S-0		D-12 S-3		D-0 S-3		D-4 S-0		D-0 S-0	
D-88 S-9	D-9 S-6	D-16 S-3	D-8 S-0	D-24 S-0	D-12 S-9	D-12 S-3	D-20 S-0	D-0 S-3	D-12 S-0	D-12 S-3	D-0 S-6	D-0 S-3	D-12 S-6
D-12 S-0	D-120 S-0	D-4 S-0	D-12 S-3	D-4 S-0	D-12 S-6	D-24 S-0	D-0 S-0	D-32 S-0	D-12 S-3	D-8 S-0	D-8 S-0	D-12 S-0	D-8 S-0
D-0 S-9		D-8 S-3		D-0 S-3		D-0 S-0		D-12 S-0		D-8 S-0		D-16 S-9	
D-16 S-3	D-12 S-0	D-0 S-3	D-12 S-0	D-0 S-3	D-0 S-3	D-0 S-3	D-12 S-0	D-24 S-0	D-16 S-3	D-0 S-3	D-12 S-3	D-20 S-0	D-16 S-0
D-8 S-0	D-4 S-0	D-8 S-3	D-20 S-3	D-20 S-0	D-12 S-0	D-12 S-0	D-16 S-3	D-16 S-3	D-8 S-0	D-8 S-3	D-0 S-3	D-8 S-3	D-32 S-0
D-12 S-6		D-0 S-0		D-8 S-3		D-24 S-3		D-8 S-0		D-0 S-0		D-16 S-3	
D-4 S-6	D-4 S-0	D-8 S-0	D-16 S-3	D-4 S-3	D-12 S-3	D-8 S-0	D-16 S-0	D-4 S-0	D-8 S-0	D-4 S-3	D-20 S-3	D-12 S-3	D-16 S-0

SOUTH WALL

D-8 S-0	D-0 S-0	D-4 S-3	D-24 S-0	D-4 S-3	D-12 S-0	D-16 S-0	D-24 S-0	D-12 S-0	D-20 S-3	D-12 S-3	D-12 S-6	D-16 S-9	D-12 S-0
D-12 S-3		D-12 S-0		D-0 S-0		D-12 S-3		D-4 S-0		D-4 S-0		D-16 S-3	
D-8 S-0	D-8 S-3	D-0 S-0	D-0 S-3	D-8 S-0	D-12 S-3	D-8 S-0	D-40 S-0	D-0 S-0	D-0 S-3	D-20 S-0	D-12 S-0	D-40 S-0	D-24 S-0
D-20 S-6	D-4 S-0	D-20 S-0	D-8 S-0	D-12 S-0	D-4 S-9	D-0 S-3	D-16 S-3	D-28 S-0	D-16 S-3	D-4 S-3	D-24 S-3	D-0 S-0	D-0 S-6
D-24 S-0		D-0 S-0		D-8 S-6		D-12 S-3		D-4 S-0		D-16 S-3		D-8 S-0	
D-20 S-0	D-8 S-6	D-8 S-0	D-16 S-0	D-16 S-3	D-20 S-0	D-0 S-0	D-16 S-3	D-4 S-0	D-24 S-0	D-8 S-3	D-0 S-3	D-8 S-3	D-4 S-0
D-32 S-0	D-12 S-6	D-4 S-0	D-8 S-3	D-8 S-0	D-20 S-0	D-16 S-0	D-8 S-0	D-8 S-0	D-16 S-0	D-12 S-0	D-20 S-0	D-28 S-0	D-0 S-3
D-12 S-0		D-20 S-3		D-16 S-3		D-0 S-0		D-8 S-3		D-16 S-3		D-12 S-0	
D-8 S-3	D-4 S-3	D-32 S-0	D-12 S-3	D-40 S-3	D-28 S-0	D-4 S-0	D-8 S-3	D-16 S-0	D-16 S-6	D-16 S-0	D-16 S-3	D-24 S-0	D-12 S-0

EAST WALL

D-8 S-0	D-20 S-0
D-16 S-0	
D-8 S-0	D-12 S-0
D-0 S-0	D-16 S-3
D-16 S-0	
D-8 S-0	D-4 S-0
D-4 S-0	D-8 S-3
D-0 S-3	
D-4 S-0	D-24 S-3

FLOOR

D-16 S-6	D-16 S-0
D-16 S-9	
D-0 S-3	D-24 S-0
D-12 S-0	D-24 S-0
D-52 S-0	
D-44 S-6	D-24 S-0
D-40 S-0	D-128 S-3
D-44 S-0	
D-52 S-0	D-92 S-0
D-44 S-0	D-88 S-3
D-24 S-0	
D-40 S-0	D-52 S-3
D-40 S-0	D-28 S-0
D-20 S-0	
D-4 S-0	D-32 S-6
D-20 S-0	D-16 S-0
D-52 S-0	
D-20 S-0	D-12 S-0
D-12 S-0	D-24 S-0
D-32 S-0	
D-24 S-0	D-0 S-0

CEILING

D-8 S-3	D-8 S-0
D-12 S-0	
D-12 S-3	D-4 S-6
D-4 S-0	
D-8 S-0	D-4 S-0
D-8 S-3	
D-20 S-0	D-16 S-3
D-12 S-0	
D-8 S-0	D-8 S-0
D-0 S-3	
D-16 S-3	D-4 S-0
D-16 S-0	
D-36 S-0	
D-24 S-3	D-12 S-0
D-12 S-3	
D-24 S-0	D-24 S-0
D-16 S-3	
D-16 S-3	D-0 S-3
D-20 S-0	
D-8 S-0	D-16 S-0
D-8 S-3	
D-8 S-0	D-12 S-3
D-24 S-3	
D-8 S-0	D-12 S-3
D-24 S-3	
D-8 S-0	D-8 S-0

AREA PRODUCTION HALL WEST
FINAL GRID

TYPE OF SURVEY D & DIRECT & SMEAR

TYPE OF INSTRUMENT Ludlum 2220 / DET. 43-68

SERIAL NUMBER 37800

COMPLETION DATE 5-10-89

H.P. SIGNATURE W.O. Royer

SURVEY UNITS DPM/100cm²

AUTO. SAMPLE COUNTER #: 183600115

W / S / N / E

1.5cm = 1 Meter

F – FLOOR
C – CEILING
N – NORTH WALL
S – SOUTH WALL
E – EAST WALL
W – WEST WALL

D - DIRECT
S - SMEAR

MDA 1568 DPM/100cm² FIXED

SOURCE #: 6816 VALUE: 1078 DPM

INSTRUMENT		
DATE	SOURCE C/M RESPONSE	BKGD C/M
5-3-89	240-274	2
5-5-89	251-240	1
5-5-89	243-244	1
5-8-89	241-257	1
5-8-89	256-254	1
5-9-89	244-269	2
	ASC#1	
5-10-89	28	.3

NORTH WALL

D-20 S-3	D-20 S-0	D-12 S-0	D-24 S-3	D-24 S-3	D-8 S-0	D-12 S-6	D-4 S-3	D-8 S-3	D-16 S-0	D-8 S-0	D-12 S-0
D-12 S-0		D-32 S-3		D-12 S-3		D-16 S-0		D-8 S-0		D-8 S-0	
D-24 S-3	D-16 S-0	D-16 S-0	D-20 S-0	D-0 S-0	D-24 S-3	D-4 S-3	D-24 S-0	D-12 S-3	D-16 S-3	D-24 S-0	D-20 S-0
D-4 S-0	D-28 S-3	D-16 S-3	D-8 S-6	D-16 S-3	D-4 S-0	D-8 S-6	D-16 S-0	D-12 S-0	D-12 S-0	D-16 S-0	D-16 S-0
D-16 S-0		D-4 S-0		D-4 S-0		D-16 S-0		D-16 S-0		D-4 S-6	
D-16 S-0	D-16 S-0	D-4 S-3	D-40 S-3	D-0 S-0	D-8 S-0	D-8 S-0	D-4 S-0	D-0 S-0	D-12 S-6	D-12 S-9	D-4 S-0
D-0 S-0	D-48 S-0	D-12 S-0	D-8 S-6	D-16 S-6	D-8 S-6.	D-8 S-0	D-16 S-0	D-8 S-0	D-96 S-3	D-20 S-0	D-16 S-0
D-16 S-0		D-8 S-0		D-4 S-3		D-16 S-3		D-32 S-3		D-4 S-0	
D-32 S-0	D-8 S-0	D-4 S-0	D-24 S-0	D-8 S-6	D-16 S-0	D-8 S-0	D-32 S-0	D-48 S-3	D-12 S-0	D-24 S-0	D-52 S-0

SOUTH WALL

D-12 S-0	D-8 S-0	D-8 S-0	D-20 S-0	D-12 S-6	D-16 S-0	D-4 S-0	D-8 S-3	D-20 S-0	D-16 S-0	D-4 S-0	D-12 S-6
D-20 S-0		D-16 S-0		D-12 S-3		D-8 S-0		D-8 S-3		D-8 S-3	
D-52 S-0	D-128 S-3	D-32 S-3	D-16 S-0	D-8 S-0	D-8 S-0	D-16 S-0	D-4 S-0	D-12 S-6	D-8 S-0	D-24 S-0	D-8 S-0
D-32 S-3	D-28 S-6	D-0 S-3	D-12 S-6	D-4 S-0	D-24 S-0	D-8 S-3	D-0 S-0	D-8 S-3	D-8 S-0	D-24 S-0	D-24 S-6
D-8 S-9		D-0 S-3		D-4 S-3		D-16 S-0		D-0 S-0		D-20 S-0	
D-20 S-3	D-24 S-0	D-8 S-0	D-16 S-3	D-8 S-0	D-24 S-3	D-20 S-0	D-8 S-0	D-4 S-0	D-8 S-0	D-24 S-0	D-24 S-3
D-8 S-3	D-32 S-0	D-16 S-3	D-0 S-3	D-4 S-3	D-12 S-6	D-8 S-0	D-28 S-6	D-20 S-0	D-12 S-6	D-8 S-0	D-16 S-3
D-20 S-3		D-12 S-3		D-16 S-0		D-4 S-3		D-52 S-0		D-0 S-6	
D-16 S-6	D-16 S-0	D-20 S-0	D-20 S-0	D-0 S-0	D-4 S-3	D-8 S-0	D-12 S-0	D-16 S-3	D-12 S-0	D-4 S-0	D-20 S-3

WEST WALL

D-12 S-0	D-0 S-3
D-16 S-6	
D-8 S-6	D-4 S-3
D-12 S-3	D-16 S-3
D-20 S-3	
D-0 S-9	D-12 S-0
D-16 S-0	D-12 S-0
D-0 S-6	
D-16 S-0	D-12 S-0
D-0 S-6	D-8 S-0

FLOOR

D-4 S-0	D-20 S-0
D-8 S-3	D-20 S-0
D-24 S-9	D-32 S-6
D-52 S-0	
D-40 S-3	D-32 S-3
D-12 S-3	D-20 S-0
D-48 S-0	
D-36 S-3	D-40 S-0
D-80 S-0	D-64 S-0
D-82 S-0	
D-24 S-0	D-76 S-0
D-12 S-3	D-24 S-3
D-28 S-3	
D-8 S-0	D-16 S-6
D-16 S-3	D-12 S-3
D-4 S-0	
D-28 S-0	D-40 S-3

CEILING

D-0 S-0	D-8 S-9
D-4 S-0	
D-0 S-6	D-16 S-3
D-8 S-0	
D-8 S-0	
D-0 S-0	
D-0 S-3	
D-0 S-3	D-4 S-3
D-24 S-3	
D-12 S-0	D-24 S-3

BEAM

	DIRECT	SMEAR
TOTAL DPM	3891	414
# READINGS	249	249
AVG DPM/100cm²	15.63	1.66
MAX DPM/100cm²	128	9

PLANT Pu AREA Prod. Hall
SURVEYED BY J. Handley
INST. LUDLUM 2220 # 50064 DET. 43-4
SOURCE CK 277/285 BKG. 2
DATE: 8-2-89 SOURCE #: 6816 VALUE: 107800

ASC # 8360015
CTD. BY J. Block
SOURCE CK. AVG. 27
BKG. .3
DATE: 8-2-89

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION			DIRECT CPM	DIRECT DPM	SMEAR
Light Fixtures					
South Light	Ballast top	E	7	42	0
		W	11	66	3
	inside	E	10	60	6
		W	13	78	0
	Cover outside	E	4	24	3
		W	1	6	0
	inside	E	1	6	0
		W	3	18	6
North light	outside	N	2	8	3
		W	6	24	3
		E	0	0	0
		S	6	24	6
	inside	N	0	0	0
		S	2	8	0
		E	4	16	0
		W	2	8	0
West light	inside cover	W	5	30	3
		E	7	42	6
	outside cover	W	3	18	6
		E	2	12	6
	Balast cover	E	0	0	0
		W	3	18	0
	outside Top	E	5	30	3
		W	4	24	0
	Direct	Smear			
Total DPM	562	54			
# Reading	24	24			
Avg. DPM/100 cm^2	23.42	2.25			
Max. DPM/100 cm^2	78	6			
MDA - 23.52 dpm/100 cm^2					

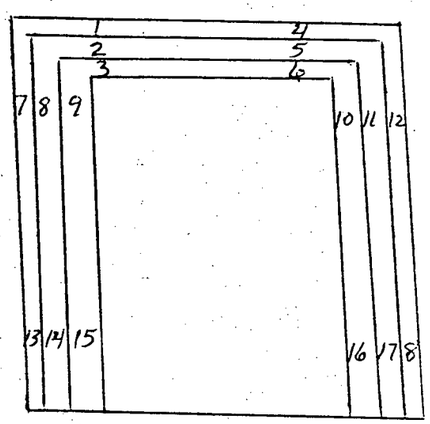
H.P OFFICE AIRLOCK
DOOR #1
(SOUTH DOOR)

LOCATION OF COUNTS

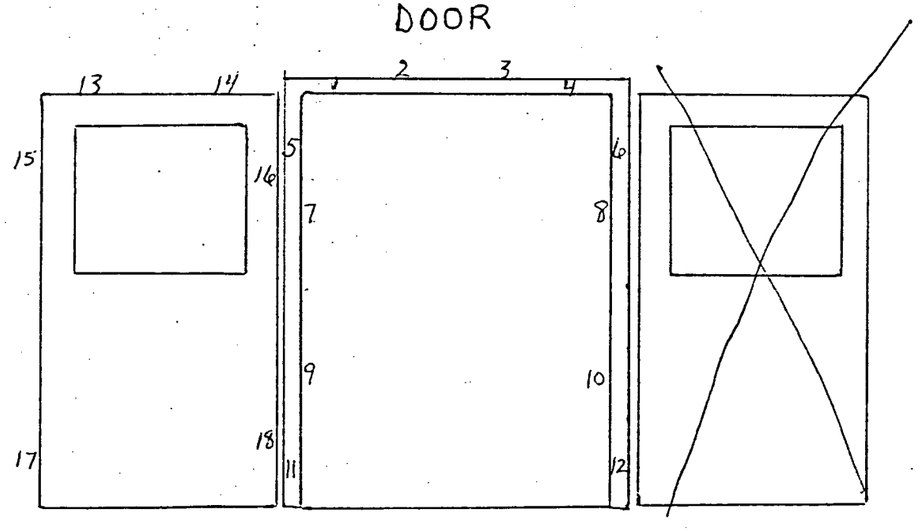
7-28-89

ILP

FRAME



DOOR



PLANT PU AREA HP AIRLOCK
SURVEYED BY ILP
INST. LUDLUM 2220 # 152834 DET. 43-4
SOURCE CK 275-296 BKG. 3(AM)
DATE: 7-28-89 SOURCE #: 1/2 VALUE: 1113 DPM

ASC # 83600115
CTD. BY S. Black
SOURCE CK. AVG. 34
BKG. .1
DATE: 7-31-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
H.P OFFICE AIRLOCK DOOR				
DOOR #1	D-1		42	0
(SOUTH DOOR)	D-2		0	0
	D-3		0	0
	D-4		24	0
	D-5		6	3
	6		6	0
	7		0	0
	8		18	3
	9		6	3
	10		6	3
	11		0	0
	12		12	6
	13		12	0
	14		78	0
	15		0	0
	16		18	0
	17		0	3
	18		0	0

	Direct	Smear
Total DPM	408	57
# Readings	36	36
Avg. DPM/100 cm²	11.33	1.58
Max DPM/100 cm²	78	6

MDA = 28.81 dpm/100 cm²

PLANT PU AREA H.P AIRLOCK

SURVEYED BY ILP

INST. LUDLUM 2220 # 52834 DET. 43-4

SOURCE CK 275-296 BKG. 3(PM)

DATE: 7-28-89 SOURCE #: 112 VALUE: 1113 DPM

ASC # 83600115

CTD. BY S. Black

SOURCE CK. AVG. 34

BKG. .1

DATE: 7-31-89

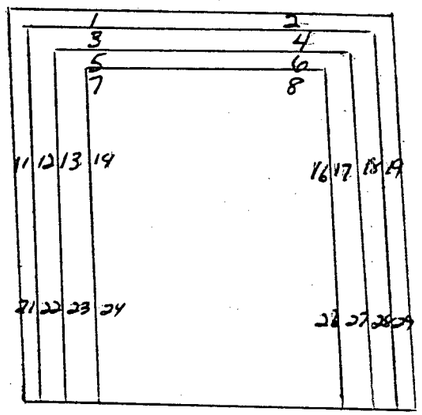
READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
H.P. OFFICE AIRLOCK	FRAME			
DOOR #1	F-1		0	3
(SOUTH DOOR)	F-2		0	0
	F-3		0	3
	F-4		6	6
	F-5		30	3
	6		30	0
	7		6	0
	8		0	0
	9		0	0
	10		0	0
	11		18	3
	12		12	3
	13		18	6
	14		0	0
	15		12	0
	16		24	0
	17		6	6
	18		18	3

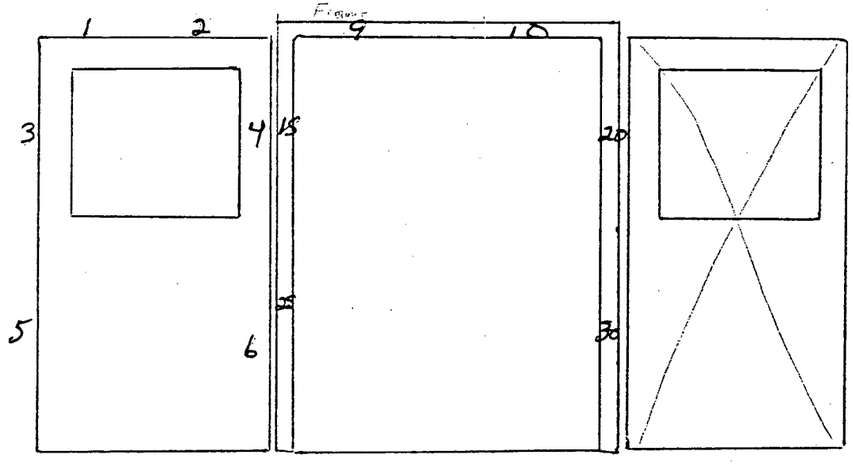
North air Lock Door

#2

FRAME



DOOR



PLANT Pu AREA Prod Hall
SURVEYED BY SV
INST. LUDLUM 2220 # 58318 DET. 43-4
SOURCE CK 296-292 BKG. 1
DATE: 7-28-89 SOURCE #: 6868 VALUE: 1055 DPM

ASC # 83600115
CTD. BY J. Black
SOURCE CK. AVG. 34
BKG. .1
DATE: 7-31-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
North air Lock Door #2	1	18	90	6
	2	17	85	6
	3	3	15	0
	4	3	15	3
	5	5	25	3
	6	1	5	3

	Direct	Smear
Total DPM	925	72
# Readings	36	36
Avg. DPM/100 cm²	25.69	2.0
Max DPM/100 cm²	90	6

MDA = 13.86

PLANT Pu AREA Production Hall
SURVEYED BY SV
INST. LUDLUM 2220 # 58318 DET. 43-4
SOURCE CK 296-292 BKG. 1
DATE: 7-28-89 SOURCE #: 6866 VALUE: 1055 DPM

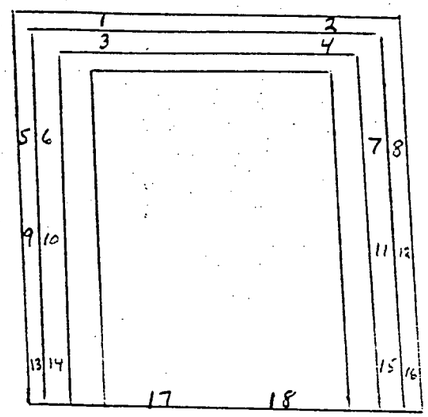
ASC # 83600115
CTD. BY J. Black
SOURCE CK. AVG. 34
BKG. .1
DATE:

READINGS IN DPM/100 cm²

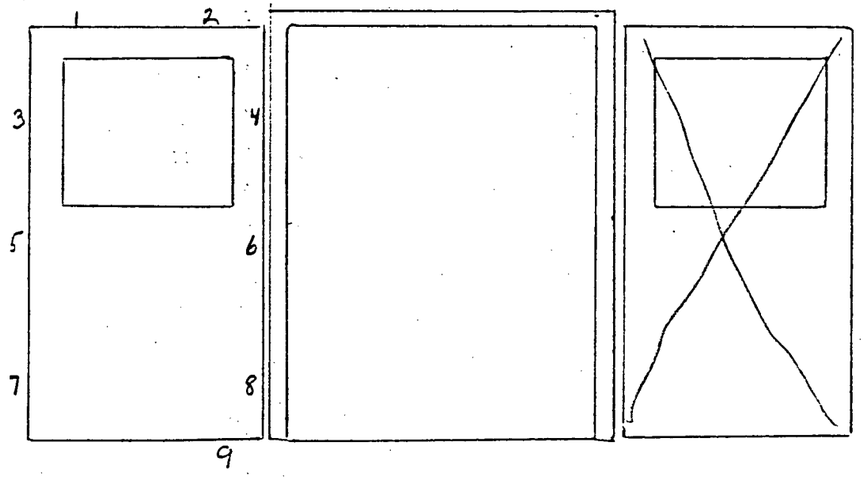
SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
North air Lock Door Frame #2	1	3	15	0
	2	4	20	0
	3	2	10	3
	4	10	50	3
	5	7	35	0
	6	2	10	0
	7	5	25	3
	8	16	80	3
	9	0	0	0
	10	6	30	0
	11	3	15	0
	12	2	10	3
	13	0	0	6
	14	7	35	3
	15	3	15	0
	16	0	0	0
	17	4	20	0
	18	5	25	3
	19	3	15	0
	20	2	10	0
	21	9	45	0
	22	5	25	0
	23	4	20	3
	24	10	50	3
	25	4	20	3
	26	8	40	3
	27	4	20	3
	28	1	5	6
	29	8	40	3
	30	1	5	0

PRODUCTION HALL EAST EM. EXIT
DOOR & FRAME

FRAME



DOOR



PLANT Pu AREA Production Hall
SURVEYED BY S. Veasley
INST. LUDLUM 2220 # 158318 DET. 43-4
SOURCE CK 281/293 BKG. 2
DATE: 7-28-89 SOURCE #: 6858 VALUE: 1050 DPM

ASC # 83600108
CTD. BY S. Black
SOURCE CK. AVG. 30
BKG. 02
DATE: 7-28-89

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
East Exit Door Frame			
1	8	40	0
2	8	40	3
3	5	25	6
4	6	30	0
5	5	25	0
6	5	25	0
7	5	25	0
8	3	15	0
9	2	10	0
10	3	15	0
11	4	20	3
12	8	40	0
13	5	25	3
14	5	25	6
15	8	40	3
16	19	95	3
17	9	45	0
18	6	30	0

	Direct	Smear
Total DPM	870	45
# Readings	27	27
Avg. DPM/100 cm^2	32.22	1.66
Max DPM/100 cm^2	95	6

MDA = 19.6 DPM/100 cm^2

PLANT Pu AREA Production Hall
SURVEYED BY S. Vearley
INST. LUDLUM 2220 #58318 DET. 43-4
SOURCE CK 281/293 BKG. 2
DATE: 7-28-89 Source #6868 Value: 1050 DPM

ASC # 83600108
CTD. BY S. Black
SOURCE CK. AVG. 30
BKG. .2
DATE: 7-28-89

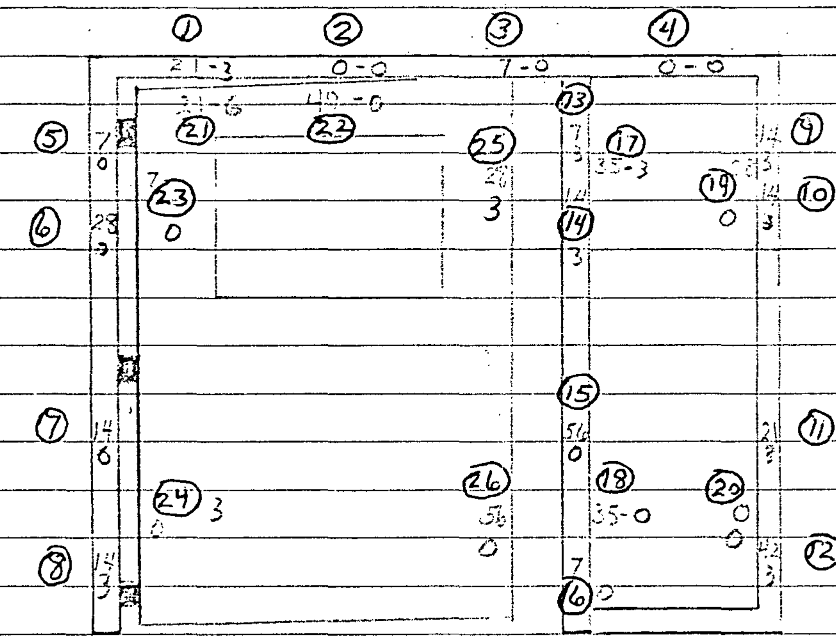
READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
East Emergency Exit Door			
1	3	15	0
2	8	40	3
3	9	45	0
4	6	30	0
5	15	75	0
6	5	25	6
7	3	15	6
8	4	20	0
9	7	35	3

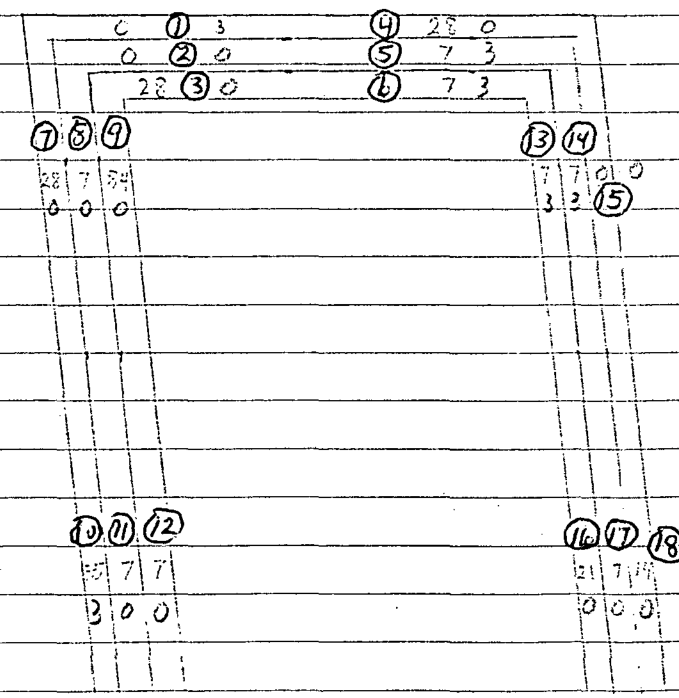
RM 129
WEST DOOR

LUDLUM 2220
#58318, 43-4
SOURCE #6868, 1055 dpm
SOURCE CK:
277-267, BKG-3 (PM)
266-278, BKG-2 (PM)
7-7-89
ILP

DOOR



FRAME



PLANT PA AREA 129
SURVEYED BY I Powell
INST. LUDLUM 2220 * 58318 DET. 43-4
SOURCE CK 266-278 BKG. 2
DATE: 7-7-89 SOURCE #: 6868 VALUE: 1055 DPM

ASC # 2-83600108
CTD. BY C M Black
SOURCE CK. AVG. 25
BKG. 2
DATE: 7-11-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
West Door	1	3	21	3
	2	0	0	0
	3	1	7	0
	4	0	0	0
	5	1	7	0
	6	4	28	0
	7	2	14	0
	8	2	14	3
	9	2	14	3
	10	2	14	3
	11	3	21	3
	12	6	42	3
	13	1	7	3
Direct Smear	14	2	14	3
Total DPM 819 57	15	8	56	0
# Readings 44 44	16	1	7	0
AVG DPM/100cm² 18.61 1.30	17	5	35	3
MAX DPM/100cm² 84 6	18	5	35	0
MDA	19	4	28	0
27.44 DPM/100 cm²	20	0	0	0
	21	3	21	6
	22	7	49	0
	23	1	7	0
	24	0	0	3
	25	4	28	3
	26	8	56	0
Door FRAME	1	0	0	3
	2	0	0	0
	3	4	28	0
	4	4	28	0
	5	1	7	3
	6	1	7	3
	7	4	28	0

PLANT PA AREA 129
SURVEYED BY I Powell
INST. LUDLUM 2220 * 58318 DET. 43-4
SOURCE CK 266-279 BKG. 2
DATE: 7-7-89 SOURCE #: 6868 VALUE: 1055 DPM

ASC # 2-83600108
CTD. BY C M Black
SOURCE CK AVG. 25
BKG. 2
DATE: 7-11-89

READINGS IN DPM/100 cm²

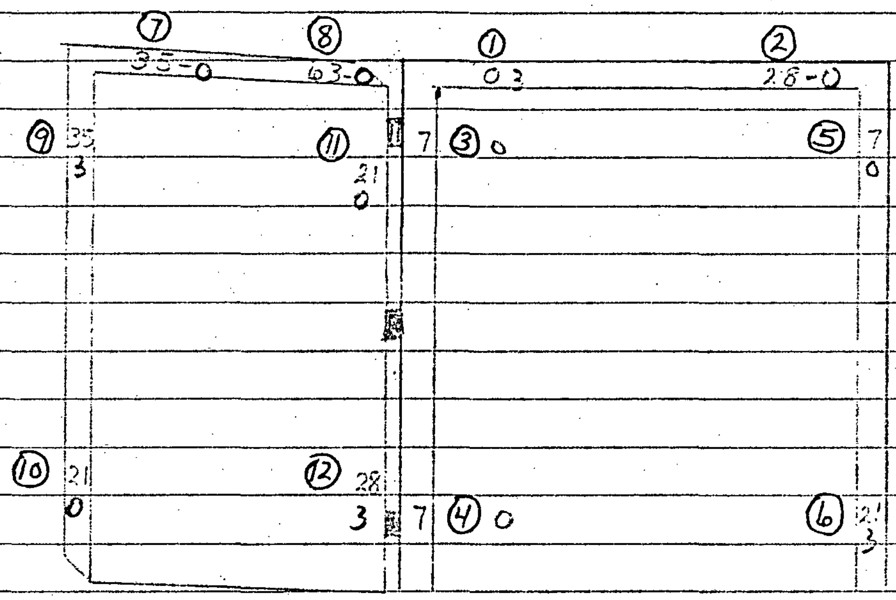
SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
Door Frame	8	1	7	0
	9	12	84	0
	10	5	35	3
	11	1	7	0
	12	1	7	0
	13	1	7	3
	14	1	7	3
	15	0	0	0
	16	3	21	0
	17	1	7	0
	18	2	14	0

RM 129

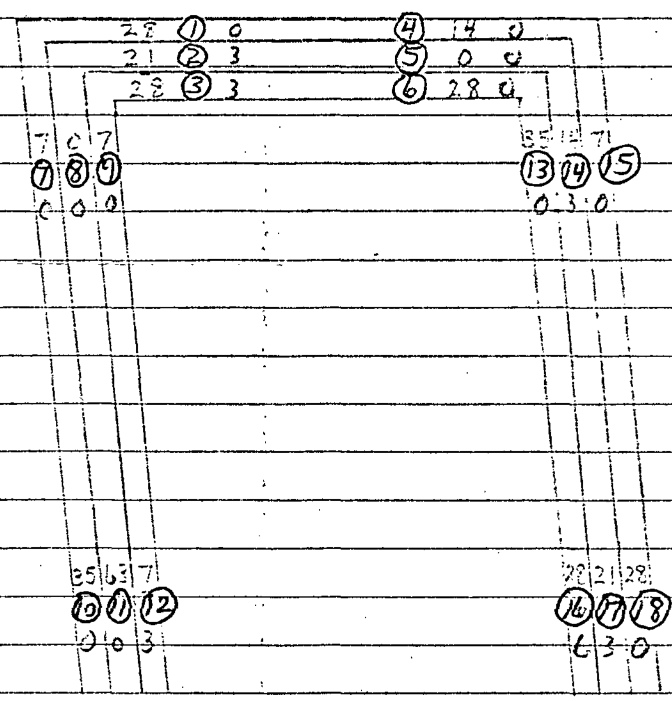
NORTH DOOR

LUDLUM 2220
#58318, 43-4
SOURCE #6868, 1055 dpm
SOURCE CK:
277-267, BKG-3 (PM)
266-278, BKG-2 (PM)
7-7-89
ILP

DOOR



FRAME



PLANT PU AREA 129
SURVEYED BY J POWELL
INST. LUDLUM 2220 #58318 DET. 43-4
SOURCE CK 277-267 BKG. 3
DATE: 7-7-89 SOURCE #: 6866 VALUE: 1055 DPM

ASC # 93600108
CTD. BY J M Black
SOURCE CK. AVG. .25
BKG. .2
DATE: 7-11-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION		DIRECT CPM	DPM	SMEAR
North Door	1	0	0	3
	2	4	28	0
	3	1	7	0
	4	1	7	0
	5	1	7	0
	6	3	21	3
	7	5	35	0
	8	9	63	0
	9	5	35	3
	10	3	21	0
	11	3	21	0
	12	4	28	3
FRAME				
	1	4	28	0
	2	3	21	3
	3	4	28	3
	4	2	14	0
	5	0	0	0
	6	4	28	0
	7	1	7	0
	8	0	0	0
	9	1	7	0
	10	5	35	0
	11	9	63	0
	12	1	7	3
Direct Smear	13	5	35	0
Total DPM 644 33	14	2	14	3
# READINGS 30 30	15	1	7	0
AVG DPM/100 cm² 21.47 1.1	16	4	28	6
MAX DPM/100 cm² 63 6	17	3	21	3
MDA	18	4	28	0
33.61 DPM/100 cm²				
FIXED				

PLANT Pu AREA Pro. Hall
SURVEYED BY ILP
INST. [illegible] # 500168 DET. 43-68
SOURCE CK 252-261 EFF. 1
DATE: 5-12-89 Source F6868 value 1055 c-

ACC # 1 9360115
CTD. BY Dennis Ford
SOURCE CK. AVG. 33
EFF. .1
DATE: 5-12-89

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT				
FROM AIR DOCK to H.P. OFFICE				
0 METERS				
	T	3	12	3
	B	2	8	9
	N	5	20	3
	S	4	16	3
2 METERS				
	T	4	16	0
	B	1	4	0
	N	3	12	0
	S	4	16	0
DIRECT SMEAR 4 METERS				
TOTAL DPM 1,134 243	T	4	16	0
# READINGS 134 134	B	3	12	3
AVG DPM/100cm² 8.45 1.81	N	3	12	6
MAX DPM/100cm² 92 9	S	0	0	0
MDA' 6 METERS				
11.09 DPM/100cm²	T	—	—	—
FIXED	B	5	20	3
	N	0	0	3
	S	1	4	0
8 METERS				
	T	1	4	6
	B	3	12	0
	N	3	12	3
	S	4	16	0
10 METERS				
	T	1	4	0
	B	0	0	3
	N	1	4	3
	S	1	4	0

PLANT Pu AREA Pro Hall
SURVEYED BY ILP
INST. [illegible] # 500168 DET. 43-68
SOURCE CK 252-261 EFF. 1
DATE: 5-12-89 Source F6868 value 1055 c-

ACC # 19360115
CTD. BY Dennis Ford
SOURCE CK. AVG. 33
EFF. .1
DATE: 5-12-89

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION		DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT				
FROM AIR DOCK to H.P. OFFICE				
12 METERS				
	T	2	8	0
	B	1	4	0
	N	2	8	0
	S	5	20	3
13 METERS				
	T	6	24	0
	B	9	36	0
	E	23	92	3
	W	3	12	3

UNIT: Pu AREA: PRODUCTION HALL
SURVEYED BY: ILP
INST. LUDLUM 2000 #50068 DET. 43-68
SOURCE CH: 250-272 BKG. 1
DATE: 5-11-89 Source #6868 value 1055 cpm

ACC #: 1-836CC115
CTD. BY: Dennis [illegible]
SOURCE CH. AVG. 33
BKG. .1
DATE: 5-12-89

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT			
FROM Dock Air Lock TO MAINT.			
0 METERS			
T	0	0	0
B	0	0	0
N	3	12	0
S	2	8	3
2 METERS			
T	2	8	0
B	3	12	0
N	3	12	3
S	2	8	6
4 METERS			
T	—	—	—
B	1	4	0
N	0	0	0
S	1	4	3
6 METERS			
T	—	—	—
E	0	0	0
N	2	8	0
S	3	12	0
8 METERS			
N	2	8	3
S	3	12	0
E	0	0	0
W	1	4	3
10 METERS			
N	0	0	3
B	4	16	0
E	2	8	6
W	3	12	9

UNIT: PU AREA: PRODUCTION HALL
SURVEYED BY: ILP
INST. LUDLUM 2000 #50068 DET. 43-68
SOURCE CH: 265-282 BKG. 1
DATE: 5-12-89 Source #6868 value 1055 cpm

ACC #: 1 836CC115
CTD. BY: [illegible]
SOURCE CH. AVG. 34
BKG. .2
DATE: 5-15-89

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT			
FROM RM. 124 to RM 129			
1 METER			
N	0	0	0
S	—	—	—
B	2	8	3
W	1	4	3
3 METERS			
T	1	4	0
B	3	12	0
N	2	8	6
S	0	0	0
5 METERS			
T	0	0	6
B	3	12	0
N	0	0	6
S	1	4	0
7 METERS			
N	1	4	3
S	2	8	0
E	0	0	0
W	2	8	6
9 METERS			
T	3	12	0
B	0	0	0
E	2	8	6
W	4	16	3
11 METERS			
T			
B	1	4	0
E	1	4	3
W	0	0	0

UNIT PU AREA PRODUCTION HALL

SURVEYED BY ILP

INST. LUDLUM 2220 # 50068 DET. 43-68

SOURCE CK 265-282 BKG. 1

DATE: 5-12-89 Source F-6968 value 1055c-

ACC # 1836001/5

CTD. BY [signature]

SOURCE CK. AVG. 34

BKG. .2

DATE: 5-15-89

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT			
FROM 123 to MAINT			
0 METERS			
N	0	0	0
S	3	12	3
E	2	8	3
W	1	4	3
2 METERS			
N	2	8	0
S	1	4	3
B	1	4	3
W	1	4	0
4 METERS			
T	9	36	0
B	2	8	0
N	0	0	0
S	6	24	3
6 METERS			
T	7	28	3
B	1	4	3
N	0	0	0
S	2	8	6
8 METERS			
T	0	0	0
B	0	0	6
E	1	4	6
W	2	8	3

UNIT PU AREA PRODUCTION HALL

SURVEYED BY ILP

INST. LUDLUM 2220 # 50068 DET. ______

SOURCE CK 260-272 BKG. 2

DATE: 5-15-89 Source F-6868 value 1055c-

ACC # ______

CTD. BY ______

SOURCE CK. AVG. ______

BKG. ______

DATE:

READINGS IN DPM/100 cm^2

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT			
FROM CHEM MAKE-UP TO RM. 129			
0 METERS			
T	7	28	0
B	1	4	0
E	4	16	3
W	1	4	6
2 METERS			
T	0	0	0
B	0	0	3
E	0	0	6
W	0	0	0
3 METERS			
N	0	0	3
S	0	0	3
E	2	8	3
W	3	12	0

UNIT Pu AREA PRODUCTION HALL

SURVEYED BY ILP

INST. [illegible] #50068 DET. ______

SOURCE CK 260-272 BKG. 2

DATE: 5-15-89 Source #6868 value 1055c-

ACC: ______

CTD. BY ______

SOURCE CK. AVG. ______

BKG. ______

DATE:

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT			
FROM VAULT TO RM 129			
0 METERS			
N	—	—	—
S	3	12	0
E	0	0	3
W	2	8	0
2 METERS			
T	6	24	0
B	3	12	3
E	1	4	0
W	8	32	0
3 METER			
T	3	12	0
B	2	8	6
E	0	0	6
W	0	0	0

UNIT Pu AREA PRODUCTION HALL

SURVEYED BY ILP

INST. [illegible] #50068 DET. ______

SOURCE CK 260-272 BKG. 2 (AM)

DATE: 5-15-89 Source #6868 value 1055c-

ACC: ______

CTD. BY ______

SOURCE CK. AVG. ______

BKG. ______

DATE:

5-15-89 SOURCE CK: 270-283
BKG: 2(PM) 50068

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT CPM	DIRECT DPM	SMEAR
PRODUCTION HALL AIR DUCT			
FROM RM 129 TO RM 128			
0 METERS			
N	3	12	0
S	0	0	0
E	0	0	0
W	0	0	3
2 METERS			
T	1	4	3
B	0	0	0
N	0	0	0
S	9	36	0
4 METERS			
T	3	12	0
B	1	4	3
N	1	4	0
S	1	4	3
5 METERS			
T	3	12	0
B	1	4	0
N	0	0	0
S	0	0	0

Kirkegaard

α SURVEY OF CIRCUIT BREAKER CABINETS 2-13-88

Ludlum 2200 S/N 37807 + 50056 Readings in dpm/100cm²

East Production Hallway — ACCESSIBLE FIXED SURVEY WHERE POSSIBLE

PN H-2 277-480V 3 PH 4 WIRE

FIXED READINGS:

	dpm
Back Wall	0-28-28
SIDES	28-28-56
TOP	28
WIRES	28-0-0
Bottom	56-28-56
BREAKERS	28-28-56

α SMEAR COUNTED ON AUTO SAMPLE COUNTE

SMEARABLE		dpm
BREAKERS	①	6
	②	12
	③	3
BOTTOM	①	9
	②	18
	③	3
	④	0
SIDES	①	3
	②	9
	③	6
	④	3
	⑤	3
BACK	①	3
	②	3
	③	3
BREAKERS + WIRES	①	0
	②	9
	③	3
	④	9
TOP	①	0
	②	0
	③	6

CAB. TOP ③ ⑥ ① ④ ② ⑤
BREAKERS + WIRES ① ③ ② BACK ① ⑤ ④ ③ ② SIDES ① ④ ③ ② CAB. BOTTOM ① ② BREAKERS ①