

Pu-Plant Room 122 and 123

Room 122 was used to X-ray the fuel rods after welding, and room 123 was used to load and weld fuel rods. After equipment and glovebox removal, the floor coating was removed and a few contaminated spots on the walls were blasted. We also blasted the entire welding pit area and floor of room 123. After blasting we performed a scan survey and marked eleven spots on the floor from 103 to 618 dpm. These spots were blasted and resurveyed before we started our final release survey.

We used a Ludlum 2220 with a Ludlum 43-17 low energy 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. A. Rogers

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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 cm².
3. All hot spots greater than or equal to 100 dpm/100 cm² 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 cm².
10. There will be at least 30 survey blocks in each area to be released.
11. Piping and ductwork will be surveyed on all accessible 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 cm².
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,d,f}	Maximum ^{b,c,d,f}	Removable ^{b,c,d}
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 βγ/100 cm ²	15,000 dpm βγ/100 cm ²	1,000 dpm βγ/100 cm ²

^aWhere surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

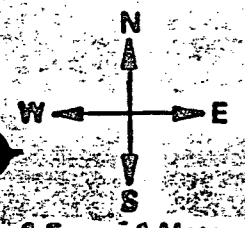
^bAs used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

^cMeasurements 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.

^dThe maximum contamination level applies to an area of not more than 100 cm².

^eThe amount of removable radioactive material per 100 cm² 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.

^fThe 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.



AREA ROOM 122
FINAL GRID

TYPE OF SURVEY α DIRECT & SMEAR
 TYPE OF INSTRUMENT LUOLYM 2220 / DET. 43-68
 SERIAL NUMBER 48395, 50069 / 46172, 46173

COMPLETION DATE 9-22-81 SURVEY UNITS DPM/100cm²
 H.P. SIGNATURE W.O. [Signature]
 AUTO. SAMPLE COUNTER # 83600108

1.5cm = 1 Meter
D - DIRECT
S - SMEAR
F - FLOOR
C - CEILING
N - NORTH WALL
S - SOUTH WALL
E - EAST WALL
W - WEST WALL

MOA = 15.68
 DPM/100cm²

SOURCE # 7272 VALUE: 850 DPM

INSTRUMENT		
DATE	SOURCE C/ RESPONSE/M	BKGD%/M
9-14-88	207 48395	0
9-14-88	195 50069	2
9-14-88	209 48395	0
9-14-88	193 50069	2
ASC #2		
9-21-88	31	.2
9-22-88	32	.1

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

NORTH WALL

SOUTH WALL

EAST WALL

WEST WALL

FLOOR

CEILING

DIRECT

D-16 D-28 S-3 S-6
D-8 S-3
D-12 D-36 S-0 S-0
D-24 D-52 S-0 S-0
D-20 S-3
D-32 D-16 S-3 S-0

1 D-4 S-0
1
2 D-12 S-0
2
3 D-12 S-0
3
4 D-12 S-0
4

C-1	C-2	C-3	C-4
D-4	D-20	D-28	D-0
S-0	S-6	S-0	S-0
B-1	B-2	B-3	
D-28	D-0	D-20	
S-0	S-0	S-3	

1824 TOTAL DPM
 141 READINGS
 12.94 DPM/100cm² AVG
 52 MAX DPM/100cm²
 SMEAR
 177 TOTAL DPM
 141 SMEARS
 1.26 DPM/100cm² AVG.
 9 MAX DPM/100cm²

BEAM CB

PLANT RU AREA Rm 122
 SURVEYED BY JH+SD
 INST. LINLIM 2220 * 50064 DET. 43.4
 SOURCE CK 259-271 BKG. 1
 DATE: 7-28-89 SOURCE # 384 VALUE: 12780pm

ASC # 1 83600115
 CTD. BY J Black
 SOURCE CK. AVG. 27
 BKG. .3
 DATE: 7-28-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		SMEAR
	CPH	DPM	
Conduct in Rm 122			
0-meter N	7	98	6
S	1	14	0
1-meter T	0	0	0
B	5	70	0
Light fixture Rm 122			
		x7	
N. Top	2	14	3
S. Top	4	28	0
Smear, North	9	63	3
South	10	70	0
Completed 7-28-89			
Summary:			
Total DPM	Direct 357	Smear 12	
# Readings	8	8	
Avg. DPM/100 cm ²	44.63	1.5	
Max DPM/100 cm ²	98	6	
MDA - 38.81 dpm/100 cm ²			

RM 122

DOOR # 1

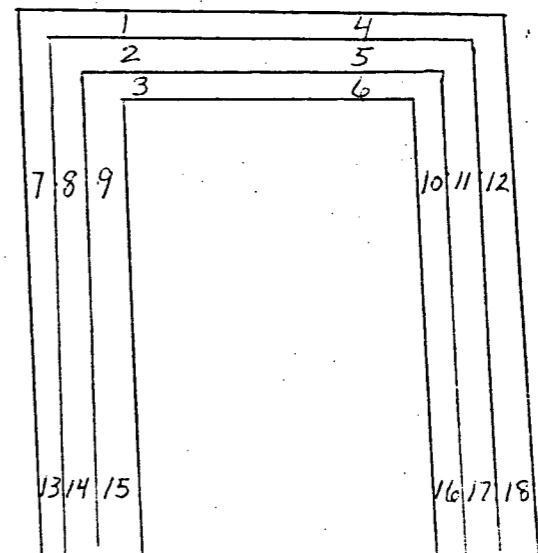
SOUTH DOOR

LOCATION OF COUNTS

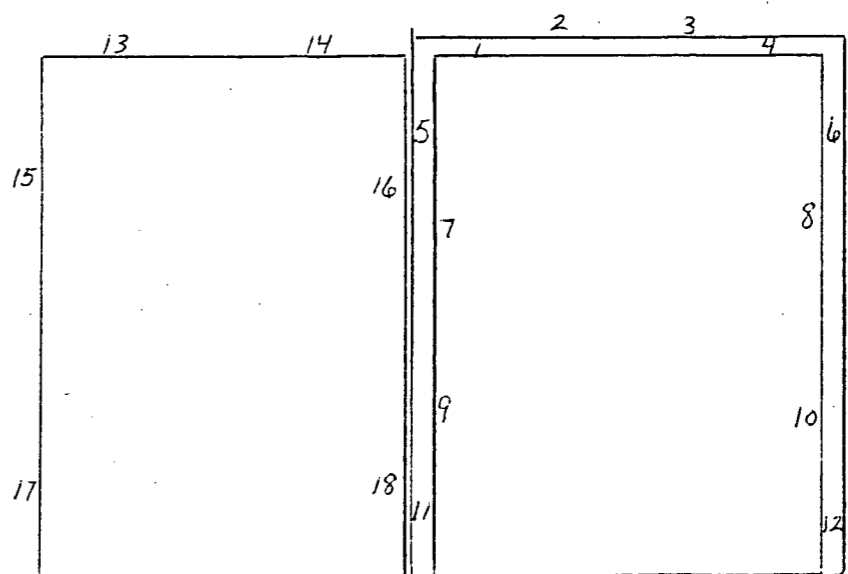
7-20-89

ILP

FRAME



DOOR



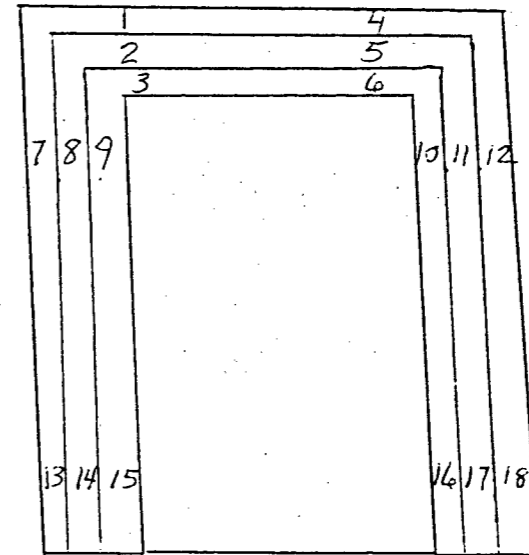
RM 122 DOOR # 2
(NORTH DOOR)

LOCATION OF COUNTS

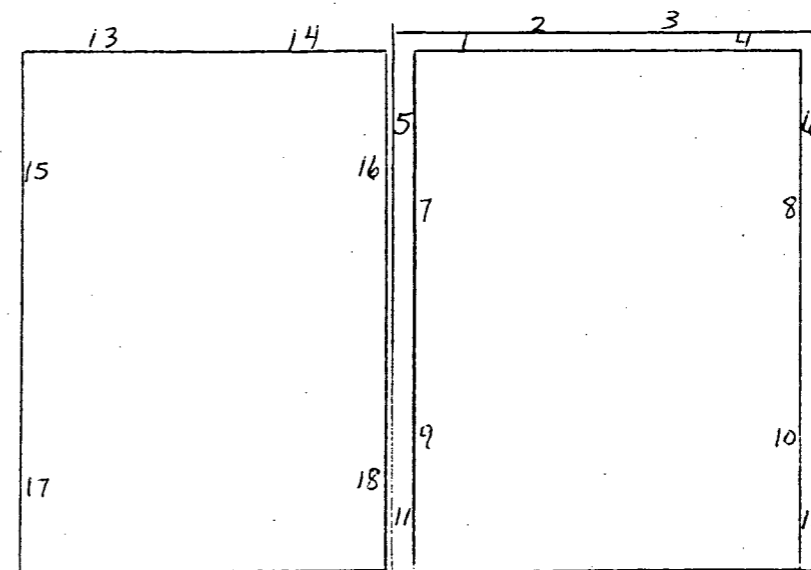
7-21-89

ILP.

FRAME



DOOR



	DIRECT	SMEAR
MOR	438	60
23.52 DPM/100cm ²	36	36
TOTAL DPM	12.17	1.67
# READINGS	42	9
AVG DPM/100cm ²		
MAX DPM/100cm ²		

PLANT PU AREA RM 122
 SURVEYED BY ILP
 INST. INDIUM 2220 *52834 DET. 43-4
 SOURCE CK 268-285 BKG. 2(AM)
 DATE: 7-21-89 SOURCE # 112 VALUE: 1113 DPM

ASC # 83600108
 CTD. BY S. Black
 SOURCE CK. AVG. 33
 BKG. .2
 DATE: 7-24-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		
	CPH	DPH	SHEAR
RM 122 DOOR #2			
(NORTH DOOR)			
D-1	1	6	3
D-2	0	0	3
D-3	1	6	0
D-4	1	6	0
D-5	6	36	3
6	2	12	0
7	1	6	3
8	1	6	0
9	2	12	3
10	1	6	0
11	4	24	3
12	1	6	3
13	1	6	0
14	6	36	0
15	4	24	0
16	1	6	0
17	7	42	0
18	0	0	3

PLANT PU AREA RM 122
 SURVEYED BY ILP
 INST. INDIUM 2220 *52834 DET. 43-4
 SOURCE CK 268-285 BKG. 2(AM)
 DATE: 7-21-89 SOURCE # 112 VALUE: 1113 DPM

ASC # _____
 CTD. BY _____
 SOURCE CK. AVG. _____
 BKG. _____
 DATE: _____

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		
	CPH	DPH	SHEAR
RM 122 DOOR #2			
(NORTH DOOR)			
FRAME			
F-1	3	18	0
F-2	3	18	0
F-3	2	12	3
F-4	5	30	6
F-5	0	0	3
6	1	6	0
7	3	18	3
8	1	6	3
9	5	30	0
10	0	0	3
11	0	0	0
12	0	0	9
13	1	6	0
14	0	0	3
15	1	6	3
16	3	18	0
17	1	6	0
18	4	24	0

AREA ROOM 123
FINAL GRID

TYPE OF SURVEY α DIRECT + SMEAR

COMPLETION DATE 11-2-88

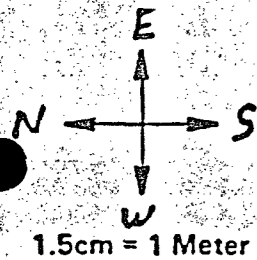
SURVEY UNITS
DPM/100CM²

TYPE OF INSTRUMENT LUOLUM 2220/DET. 43-68

H.P. SIGNATURE W.A. Rogers

SERIAL NUMBER 48395, 50069 / 46172, 46173

AUTO. SAMPLE COUNTER #1 83600115, #2 83600108



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

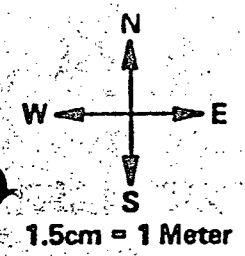
D - DIRECT
S - SMEAR

MDR 15.66
DPM/100CM²
FIXED

SOURCE #1: 7272 VALUE: 850 DPM

INSTRUMENT			
DATE	SOURCE C/ RESPONSE %	BKGD %	
9-15-88	206	48395	0
9-15-88	208	50069	2
9-15-88	209	48395	0
9-15-88	202	50069	0
9-16-88	201	48395	0
9-16-88	188	50069	0
9-16-88	204	48395	0
9-19-88	196	50069	2
9-19-88	195	48395	0
9-19-88	196	50069	1
9-19-88	181	48395	0
9-20-88	199	50069	1
9-20-88	186	48395	0
9-21-88	195	50069	1
9-21-88	199	48395	0
9-21-88	190	50069	1
9-21-88	200	48395	0
11-3-88	246	58308	0
11-3-88	239	37807	1
11-3-88		37807	1
11-4-88		37800	2
	ASC #1		
9-23-88	34		.3
	ASC #2		
9-23-88	27		.2

9-16 S-0	9-20 S-0	9-24 S-0	9-16 S-0	9-12 S-6	9-4 S-0	7-8 S-0	9-20 S-0	9-24 S-0	9-4 S-0	9-12 S-6	9-12 S-0	7-12 S-0	9-8 S-0	9-0 S-3	9-20 S-0	9-12 S-3	9-24 S-6	9-20 S-9	9-16 S-3
9-24 S-3	9-12 S-0	9-20 S-0	9-16 S-6	9-4 S-6	9-12 S-3	9-20 S-0	9-12 S-0	9-20 S-0	9-8 S-3	9-24 S-0	9-12 S-0	7-12 S-0	9-8 S-0	9-20 S-6	9-20 S-0	9-12 S-3	9-24 S-6	9-20 S-9	9-16 S-3
9-36 S-0	9-14 S-0	9-12 S-3	9-36 S-3	9-12 S-0	9-24 S-0	9-8 S-0	9-16 S-0	9-8 S-6	9-32 S-0	9-8 S-3	9-8 S-3	9-12 S-3	PIT				9-20 S-0	9-24 S-9	
9-32 S-0		9-28 S-0		9-40 S-0		9-8 S-3		9-16 S-0		9-24 S-6	9-20 S-9	9-12 S-3	9-4 S-0	9-48 S-3	9-28 S-6	9-8 S-0	9-8 S-3	9-20 S-0	9-40 S-0
9-20 S-0	9-12 S-9	9-28 S-3	9-4 S-0	9-8 S-0	9-28 S-3	9-44 S-0	9-24 S-6	9-28 S-3	9-16 S-3	9-24 S-3		9-24 S-0		9-20 S-3		9-16 S-0		9-28 S-0	
FLOOR																			
Direct										Smear									
Total DPM 2376										312									
* Readings 159										159									
DPM/100cm ² 2415 14.94										1.96									
MAX DPM/100cm ² 144										18									
SUPPORT BEAM																			
9-8 S-3	9-0 S-0	9-0 S-0	9-0 S-6	9-8 S-0	9-0 S-0	9-0 S-6	9-16 S-3	9-16 S-6	9-12 S-0	9-16 S-0									
9-16 S-0	9-8 S-3	9-0 S-0	9-12 S-0	9-32 S-0	9-0 S-3	9-4 S-0	9-0 S-3	9-24 S-3	9-16 S-3	9-0 S-3	9-24 S-3	9-16 S-3	9-0 S-3	9-0 S-3	9-24 S-3	9-16 S-3	9-0 S-3	9-0 S-3	9-0 S-3
9-0 S-0	9-8 S-0	9-0 S-6	9-4 S-0	9-12 S-0	9-4 S-0	9-0 S-3	9-0 S-6	9-0 S-3	9-4 S-0	9-0 S-0	9-4 S-0	9-0 S-0	9-4 S-0	9-0 S-0	9-4 S-0	9-0 S-0	9-4 S-0	9-0 S-0	9-0 S-0
CEILING										SUPPORT BEAM									
Supply Air Duct										Supply Air Duct									
Beam										Beam									
Beam										Beam									



AREA ROOM 123
FINAL GRID

TYPE OF SURVEY α DIRECT + SMEAR
 TYPE OF INSTRUMENT LUOLUM 2220/DET. 43-68
 SERIAL NUMBER 48395, 50069 / 46172, 46173

COMPLETION DATE 11-2-88
 H.P. SIGNATURE W. A. Rogers
 SURVEY UNITS DPM/100cm²
 AUTO. SAMPLE COUNTER # 83600115, 83600108

D-DIRECT
S-SMEAR

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

MAX 15.68
 DPM/100cm²
 FIXED

SOURCE # 7272 VALUE: 850 DPM

INSTRUMENT		
DATE	SOURCE RESPONSE /m	BKGD /m
9-15-88	206 48395	0
9-15-88	208 50069	2
9-15-88	209 48395	0
9-15-88	202 50069	0
9-16-88	201 48395	0
9-16-88	188 50069	0
9-16-88	204 48395	0
9-19-88	196 50069	2
9-19-88	195 48395	0
9-19-88	196 50069	1
9-19-88	181 48395	0
11-2-88	247 58308	1
11-2-88	247 37807	2
11-2-88	234 58308	0
11-2-88	244 37807	1
TOTAL DPM 3,339 405		
ASC #1		
9-23-88	34	.3
ASC #2		
9-22-88	32	.1
9-23-88	27	.2
11-14-88	29	.3

D-8 S-0	D-12 S-3	D-8 S-0	D-0 S-0		D-16 S-3	D-28 S-3		D-0 S-0	D-0 S-0	D-16 S-0	D-4 S-0		D-20 S-0	D-20 S-3	D-32 S-0	D-16 S-0	D-32 S-3	D-12 S-0	D-20 S-3	D-12 S-3
	D-12 S-0	D-8 S-3			D-4 S-0			D-8 S-0		D-12 S-6				D-32 S-3		D-28 S-3		D-20 S-0		D-16 S-6
D-44 S-0	D-16 S-0	D-8 S-0	D-8 S-3		D-16 S-0	D-24 S-3		D-12 S-0	D-12 S-3	D-0 S-3	D-12 S-3		D-28 S-3	D-24 S-0	D-24 S-0	D-40 S-3	D-28 S-0	D-40 S-6	D-32 S-3	D-12 S-0
D-16 S-0	D-12 S-0	D-4 S-3	D-4 S-0		D-12 S-3	D-28 S-0		D-16 S-12	D-20 S-3	D-12 S-3	D-16 S-0		D-0 S-3	D-20 S-6	D-0 S-0	D-0 S-3	D-8 S-0	D-0 S-0	D-8 S-3	D-4 S-0
	D-8 S-0	D-0 S-0			D-20 S-3			D-4 S-3		D-8 S-3			D-0 S-6	D-4 S-0		D-8 S-6		D-8 S-6		D-4 S-0
D-8 S-0	D-24 S-0	D-4 S-9	D-4 S-3		D-12 S-0	D-12 S-0		D-12 S-6	D-20 S-0	D-4 S-3	D-8 S-0		D-12 S-0	D-8 S-0	D-12 S-0	D-8 S-0	D-8 S-6	D-8 S-0	D-100 S-3	D-12 S-0
D-16 S-0	D-4 S-0	D-8 S-6	D-0 S-0		D-12 S-0	D-24 S-6		D-8 S-0	D-8 S-0	D-4 S-3	D-20 S-0		D-0 S-0	D-28 S-3	D-8 S-0	D-16 S-3	D-24 S-3	D-28 S-0	D-4 S-0	D-56 S-0
	D-12 S-3	D-12 S-0			D-4 S-9			D-16 S-3		D-16 S-0			D-8 S-0	D-24 S-3		D-24 S-0		D-24 S-0		D-12 S-6
D-12 S-0	D-12 S-0	D-24 S-0	D-4 S-0		D-4 S-0	D-8 S-12		D-20 S-3	D-16 S-3	D-20 S-0	D-4 S-0		D-28 S-3	D-12 S-0	D-8 S-0	D-12 S-9	D-8 S-0	D-32 S-0	D-12 S-6	D-8 S-3
NORTH WALL NORTH SECTION				NORTH WALL SOUTH SECTION				SOUTH WALL				WEST WALL - SOUTH SECTION								
WEST WALL - NORTH SECTION																SUPPORT BEAM				
																N. SIDE S. SIDE TOP BOTTOM				
																D-0 S-0	D-8 S-0	D-72 S-3	D-0 S-0	
DIRECT SMEAR																D-8 S-0	D-8 S-3	SUPPLY AIR DUCT	D-0 S-6	
TOTAL DPM 3,339 405			READINGS 225 225			D-4 S-0	D-16 S-3	D-16 S-3	D-8 S-3		D-8 S-3		D-8 S-0	D-8 S-3	D-12 S-0	D-20 S-0				
ASC #1			DPM/100 cm ² AVG 13.81 1.81			D-8 S-3	D-28 S-6	D-8 S-0	D-12 S-0	D-48 S-0	D-8 S-3	D-4 S-0	D-4 S-0	D-16 S-0	D-4 S-0					
MAX DPM/100 cm ² 100 12						D-4 S-3	D-0 S-3	D-8 S-3	D-0 S-6	D-12 S-0	D-0 S-0	D-8 S-3	D-4 S-0	D-8 S-3	D-12 S-3					
ASC #2						D-4 S-0	D-12 S-0	D-8 S-3	D-8 S-0		D-16 S-0									
						D-4 S-0	D-0 S-0	D-8 S-0	D-4 S-0	D-0 S-3	D-24 S-0	D-4 S-6	D-12 S-0	D-28 S-3	D-12 S-0					
						D-12 S-0	D-0 S-6	D-8 S-0	D-4 S-3	D-4 S-0	D-0 S-0	D-12 S-6	D-16 S-0	D-12 S-3	D-0 S-0					
						D-8 S-0	D-12 S-3	D-8 S-3	D-0 S-0		D-12 S-0									
						D-16 S-0	D-20 S-9	D-20 S-0	D-36 S-3	D-12 S-3	D-16 S-0	D-20 S-3	D-20 S-6	D-12 S-12	D-52 S-3					

AREA ROOM 123 - PIT
FINAL GRID

TYPE OF SURVEY & DIRECT + SMEAR

COMPLETION DATE 10-27-88

SURVEY UNITS

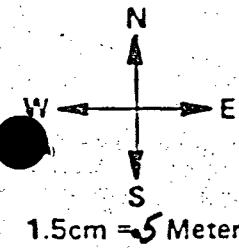
TYPE OF INSTRUMENT Luolum 2220 / DET. 43-68

H.P. SIGNATURE W.G. Royer

DPM/100cm²

SERIAL NUMBER 58308, 37800 / 47957, 45879

AUTO. SAMPLE COUNTER# #1 83600115



D-DIRECT
 S-SMEAR
 F-FLOOR
 C-CEILING
 N-NORTH WALL
 S-SOUTH WALL
 E-EAST WALL
 W-WEST WALL

MDA 15.64
 DPM/100cm²
 FIXED

SOURCE# 6816 VALUE: 1078 DPM

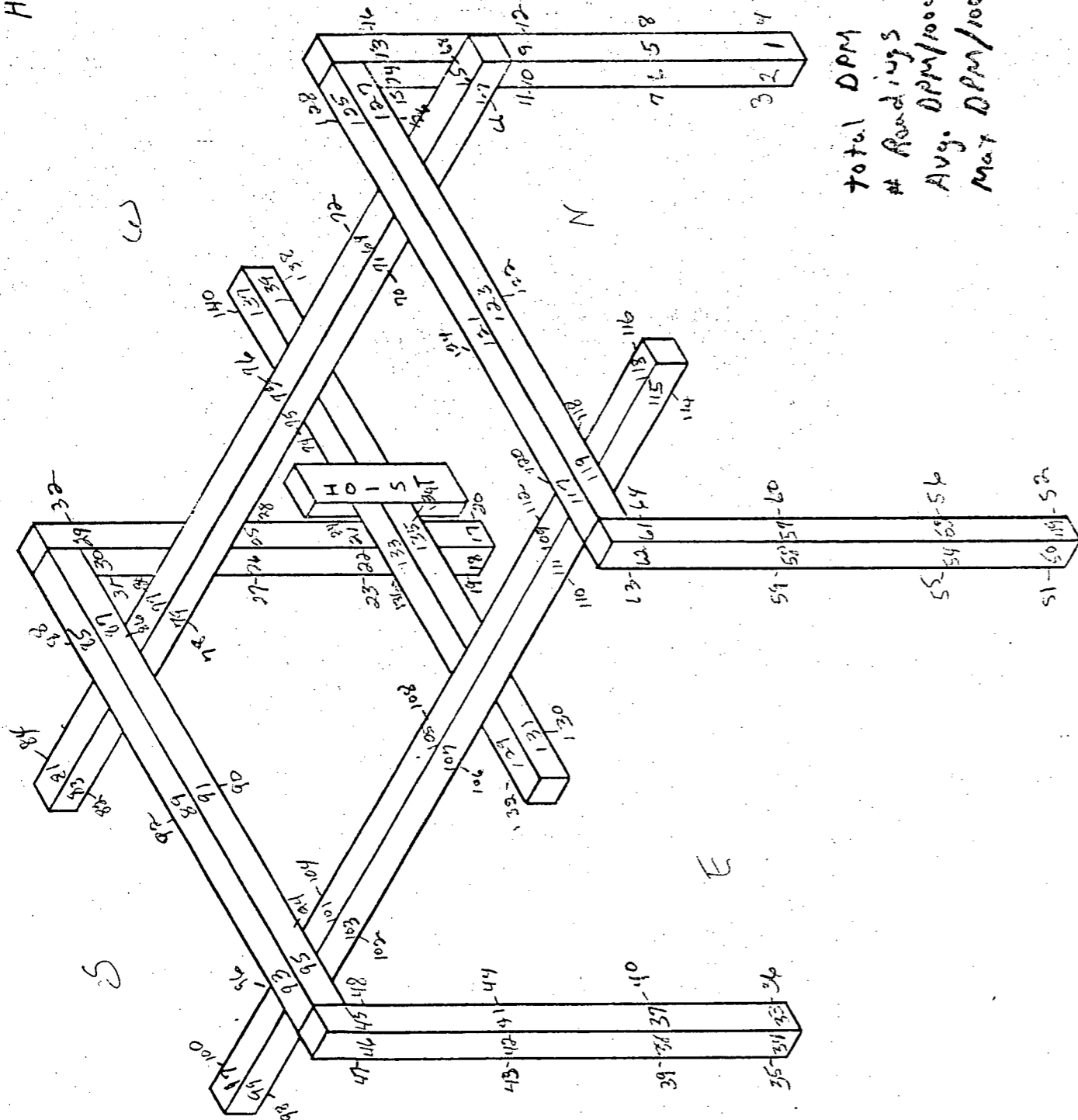
INSTRUMENT		
DATE	SOURCE C RESPONSE /M	BKGD C/M
10-27-88	248 58308	2
10-27-88	271 37800	2
10-27-88	228 58308	1
10-27-88	274 37800	2
10-27-88	247 37800	1
ASC#1		
10-31-88	26	.1

D-8 0-12 S-3 5-0		D-8 S-3	D-8 S-6	D-12 S-18	D-8 S-0	D-16 0-16 S-0 5-3	D-12 0-16 S-0 5-6
		D-4 S-3		P-8 S-0		D-4 S-0	D-8 S-0
D-16 S-0			D-4 S-6	D-12 S-0	D-16 S-0	D-8 0-8 S-0 5-0	D-12 0-8 S-0 5-0
				EAST WALL		NORTH WALL	
							SOUTH WALL
D-20 0-28 S-3 5-0							
D-16 0-12 S-3 5-0							
		D-12 S-0	D-4 S-0	D-4 S-9	D-12 S-0		
D-4 S-0			D-0 S-0		D-16 S-0		
		D-12 S-0	D-4 S-9	D-8 S-3	D-12 S-0		

FLOOR WEST WALL

Direct Lineal	
Total DPM	408 81
Readings	40 40
DPM/100cm ² AVG	10.2 2.02
Max DPM/100cm ²	28 18

ROOM 123
HOIST



Direct 3102
Smear 339
195
1.74
9

Total DPM
Readings
Avg. DPM/100cm²
Max DPM/100cm²

PLANT Du AREA Rm 123
SURVEYED BY J.H.R.D.
INST. LINDLUM 2220 *48395 DET. 43.68
SOURCE CK 222-220 BKG. 0 (X4)
DATE: 7-28-89 SOURCE # 1681 VALUE: 278 DPM

ASC # 83600108
CTD. BY J. Black
SOURCE CK. AVG. 28
BKG. 0.2
DATE: 8-2-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		SMEAR	#
	CPM	DPH x 4		
Hoist and frame in Rm 123				
Start w Leg - #1				
1 0-meter N	2	8	0	1
2 E	3	12	3	2
3 S	2	8	6	3
4 W	2	8	0	4
5 2-meter N-	2	8	6	5
6 E	3	12	6	6
7 S	1	4	0	7
8 W-	1	4	3	8
9 4-meter N-	2	8	0	9
10 E	3	12	3	10
11 S	2	8	0	11
12 W	4	16	0	12
13 6-meter N	2	8	3	13
14 E	1	4	0	14
15 S	2	8	3	15
16 W	5	20	9	16
17 Hoist Leg # 2 0-meter N	0	0	3	17
18 E	0	0	0	18
19 S	11	44	3	19
20 W	7	28	0	20
21 2-meter N	1	4	3	21
22 E	6	24	0	22
23 S	0	0	0	23
24 W	4	16	3	24
25 4-meter N	2	8	3	25
26 E	9	36	0	26
27 S	2	8	6	27
28 W	7	28	3	28
29 6-meter N	1	4	0	29
30 S	1	4	6	30
31 W	0	0	3	31
32 E	0	0	0	32

PLANT Pu AREA Rm 123
 SURVEYED BY QH & JD
 INST. LINDUM 2220 *UR395 DET. 43-68
 SOURCE CK 234-260 BKG. 1
 DATE: 7-28-89 SOURCE #: 6816 VALUE: 1078 DPM
 8-1-89 - SOURCE CK 317-235 BKG. 0 - 2 DPM

ASC # 83600108
 CTD. BY J. Black
 SOURCE CK. AVG. 28
 BKG. 2
 DATE: 8-2-89

READINGS IN DPH/100 cm²

SAMPLE # OR DESCRIPTION DIRECT CPH DPH SHEAR

SAMPLE # OR DESCRIPTION	DIRECT CPH	DPH	SHEAR	#
<u>Horst Leg # 3 - Rm 123</u>				
0 0-meter N	1	4	0	33
E	0	0	0	34
S	0	0	0	35
W	1	4	0	36
2-meter N	1	4	0	37
E	2	8	0	38
S	9	36	3	39
W	1	4	6	40
4-meter N	3	12	0	41
E	2	8	0	42
S	5	20	3	43
W	1	4	0	44
6-meter N	2	8	0	45
E	2	8	6	46
S	2	8	0	47
W	3	12	0	48
<u>Horst Leg # 4</u>				
0 8-meter N	6	24	0	49
E	6	24	0	50
S	2	8	0	51
W	2	8	3	52
2-meter N	0	0	0	53
E	2	8	0	54
S	0	0	0	55
W	6	24	3	56
4-meter N	2	8	3	57
E	4	16	3	58
S	1	4	6	59
W	5	20	0	60
6-meter N	4	16	3	61
E	3	12	0	62
S	6	24	0	63
W	11	44	3	64

PLANT Pu AREA Rm 123
 SURVEYED BY JD & QH
 INST. LINDUM 2220 *UR395 DET. 43-68
 SOURCE CK 234-260 BKG. 1
 DATE: 7-29-89 SOURCE #: 6816 VALUE: 1078 DPM

ASC # 83600108
 CTD. BY J. Black
 SOURCE CK. AVG. 28
 BKG. 2
 DATE: 8-2-89

READINGS IN DPH/100 cm²

SAMPLE # OR DESCRIPTION DIRECT CPH DPH SHEAR

SAMPLE # OR DESCRIPTION	DIRECT CPH	DPH	SHEAR	#
<u>Horst TOB Frame</u>				
<u>Rm 123 - West Arm</u>				
0 2-meter T	2	8	0	65
E	3	12	0	66
W	2	8	3	67
2-meter T	3	12	0	68
E	7	28	0	69
W	2	8	0	70
E	2	8	3	71
W	2	8	3	72
4-meter T	5	20	3	73
E	2	8	0	74
W	3	12	0	75
E	2	8	0	76
6-meter T	4	16	0	77
E	4	16	0	78
W	6	24	0	79
8-meter T	5	20	0	80
E	2	8	0	81
E	1	4	3	82
E	1	4	0	83
W	2	8	6	84
South Arm #1	4	12	3	85
E	0	0	0	86
E	6	24	0	87
S	1	4	0	88
4-meter T	5	20	0	89
E	1	4	3	90
W	1	4	9	91
E	0	0	0	92
6-meter T	8	32	0	93
E	1	4	0	94
W	0	0	0	95
S	0	0	0	96

PLANT pu AREA Riv 12-3
 SURVEYED BY JH-2D
 INST. INDIUM 2220 *48395 DET. 43-68
 SOURCE CK 267-235 BKG. 2
 DATE: 8-1-89 SOURCE # 1.2116 VALUE: 1070 DPM

ASC # 83600108
 CTD. BY S. Black
 SOURCE CK. AVG. 28
 BKG. .2
 DATE: 8-2-89

READINGS IN DPH/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT			#
	CPH	DPH	SHEAR	
<u>strict Corvina Top-East Arm</u>		<u>X4</u>		
97 (start 5.5m) 0-meters T	3	12	3	97
98 R	1	4	0	98
99 E	2	8	0	99
100 W	1	4	3	100
101 2-meters T	2	8	3	101
102 B	4	14	0	102
103 E	1	4	0	103
104 W	0	0	0	104
105 4-meters T	5	20	0	105
106 B	3	12	3	106
107 F	4	16	3	107
108 W	3	12	3	108
109 6-meters T	6	24	0	109
110 B	2	8	0	110
111 E	2	8	0	111
112 W	2	12	3	112
113 8-meters T	11	44	0	113
114 B	3	12	6	114
115 E	4	16	3	115
116 W	4	16	0	116
117 North (down Tow) 0-meters T	3	12	0	117
118 #	5	20	0	118
119 W	6	24	0	119
120 S	6	24	9	120
121 2-meters T	9	36	0	121
122 B	2	8	3	122
123 N	5	20	0	123
124 S	3	12	3	124
125 4-meters T	8	32	3	125
126 B	0	0	0	126
127 W	4	16	6	127
128 S	1	4	9	128

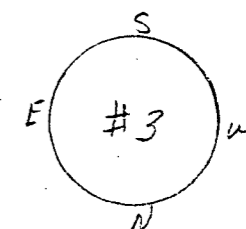
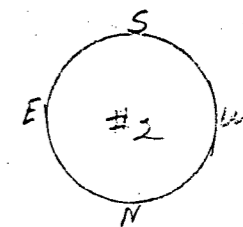
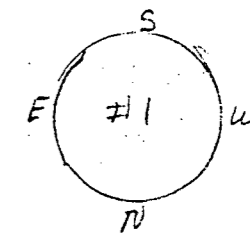
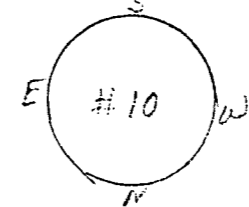
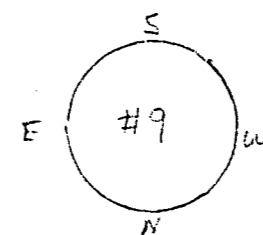
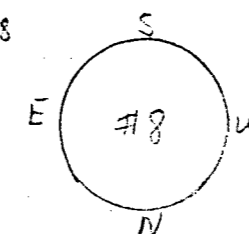
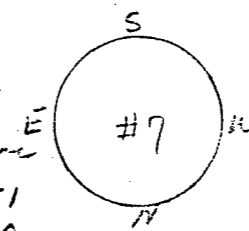
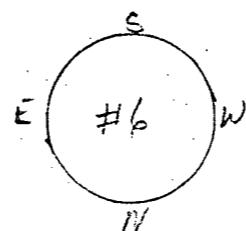
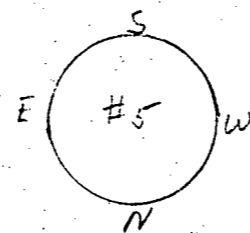
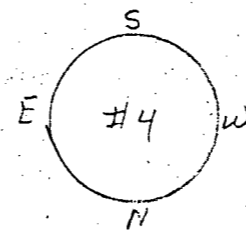
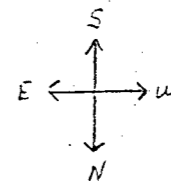
PLANT pu AREA Riv 12-3
 SURVEYED BY JH-2D
 INST. INDIUM 2220 *48395 DET. 43-68
 SOURCE CK 267-235 BKG. 2 X4
 DATE: 8-1-89 SOURCE # 1.2116 VALUE: 1070 DPM

ASC # 83600108
 CTD. BY S. Black
 SOURCE CK. AVG. 28
 BKG. .2
 DATE: 8-2-89

READINGS IN DPH/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT			#
	CPH	DPH	SHEAR	
<u>strict Corvina</u>		<u>X4</u>		
129 0 0-meters Top	18	72	0	129
130 Bottom	2	8	0	130
131 North	8	16	6	131
132 South	12	48	3	132
133 2-meters Top	10	40	3	133
134 B	2	8	0	134
135 W	3	12	0	135
136 S	2	8	0	136
137 4-meters T	9	36	3	137
138 B	3	12	3	138
139 W	3	12	0	139
140 S	5	20	3	140
<u>strict Killer Corvina East</u>		<u>X6</u>	<u>x6</u>	
1	7	42	3	
2	0	0	3	
3	19	102	0	
4	11	66	6	
5	1	6	0	
6	15	90	6	
7	3	18	0	
8	1	6	3	
9	3	18	0	
10	14	84	3	
11	7	42	3	
12	3	18	0	

123 LIGHTS



TOTAL DPM 416
 READINGS 40
 DPM/100cm² AVG 10.4
 MAX DPM/100cm² 24
 MDA 7.84
 DPM/100cm²
 FIXED

Direct Ion
 51
 40
 1.28
 6

11-8-88 AM
 Ludlum 2220
 #50069
 S-7272 850 AM
 S/C 207-209 0
 194 198 0
 48395
 S/C 164-184 136
 198-205 0

PLANT PH AREA 123 LIGHTS
 SURVEYED BY AH + VMC
 INST. 1.INDIUM 2220 * 50069-4833 DET. 43-4
 SOURCE CK 207-209 BKG. 0-0 43-68
164-184
 DATE: 11-8-88 SOURCE # 7272 VALUE: 950 DPM
6816 1078

ASC # 2 83600108
 CTD. BY D. Ford
 SOURCE CK. AVG. 34
 BKG. .1
 DATE: 11-9-88

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION		DIRECT	DIRECT		
			CPH	DPM	SHEAR
<u>123 Lights</u>	#1	S	6	24	0
		W	3	12	0
		N	3	12	3
		E	4	16	0
#2	S	2	8	3	
	W	2	8	0	
	N	3	12	0	
	E	2	8	0	
#3	S	1	4	3	
	W	5	20	0	
	N	5	20	0	
	E	5	20	0	
#4	S	4	16	0	
	W	3	12	0	
	N	2	8	3	
	E	0	0	0	
#5	S	1	4	3	
	W	3	12	6	
	N	2	8	3	
	E	2	8	0	
#6	S	2	8	6	
	W	0	0	0	
	N	3	12	0	
	E	1	4	0	
#7	S	1	4	0	
	W	4	16	0	
	N	3	12	3	
	E	1	4	3	
#8	S	1	4	3	
	W	3	12	0	
	N	1	4	0	
	E	2	8	3	

PLANT PH AREA 123 LIGHTS
 SURVEYED BY AH + VMC
 INST. 1.INDIUM 2220 * 50069-4833 DET. 43-4
 SOURCE CK 207-209 BKG. 0-0 43-68
164-184
 DATE: 11-8-88 SOURCE # VALUE: DPM

ASC # 2-83600108
 CTD. BY D. Ford
 SOURCE CK. AVG. 34
 BKG. .1
 DATE: 11-9-88

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION		DIRECT	DIRECT		
			CPH	DPM	SHEAR
	#9	S	3	12	3
		W	1	4	0
		N	2	8	0
		E	4	16	0
	#10	S	1	4	0
		W	5	20	3
		N	5	20	3
		E	3	12	0

LINE NUMBER 325 DATE 11-4-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR RMH
 SOURCE NUMBER AND VALUE #112 1113 DPM
 SOURCE RESPONSE AND BACKGROUND AM 285/274 BKg/1
 SOURCE RESPONSE AND BACKGROUND PM 290/274 BKg/1

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts in W. wall	Conduit	5"	0 meters N	4	44	6
123 goes straight			" " S	2	22	
up through			2 meters N	5	55	0
a "T" ends in			" " S	8	88	
W. wall 123			3 meters N	5	55	6
			" " S	6	66	
MDA 27.72 DPM/100cm ² FIXED Directs				Linear		
Total DPM				6589	195	
Reading				189	95	
DPM/100cm ² AVG				34.86	2.25	
MAX DPM/100cm ²				99	12	

LINE NUMBER 326 DATE 11-4-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR RMH
 SOURCE NUMBER AND VALUE #112 1113 DPM
 SOURCE RESPONSE AND BACKGROUND AM 285/274 BKg/1
 SOURCE RESPONSE AND BACKGROUND PM 290/274 BKg/1

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts at "T" on	Conduit	5"	0 meters T	5	55	0
line #325 goes			" " B	5	55	
S and around corner			2 meters T	4	44	6
W. wall 123 N. Section			" " B	6	66	
ends in set box			3 meters T	2	22	0
above door to 122			" " B	3	33	

LINE NUMBER 327 DATE 11-4-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR RMH
 SOURCE NUMBER AND VALUE #112 1113 DPM
 SOURCE RESPONSE AND BACKGROUND AM 285/274 Bkg/
 SOURCE RESPONSE AND BACKGROUND PM 290/274 Bkg/

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts at 440	conduit	1 1/2"	0 meters N	0	0	0
plug in W. Wall			" S	2	22	
123 goes up			2 meters T	1	11	3
then S. then			" " B	3	33	
around corner			4 meters T	3	33	0
W. ends in get			" " B	3	33	
box above 122						
Door						

LINE NUMBER 328 DATE 11-4-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR RMH
 SOURCE NUMBER AND VALUE #112 1113 DPM
 SOURCE RESPONSE AND BACKGROUND AM 285/274 Bkg/
 SOURCE RESPONSE AND BACKGROUND PM 290/274 Bkg/

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
starts at 110	Conduit	1"	0 meters N	3	33	3
plug in low			" " E	5	55	
W. Wall 123			2 meters T	0	0	0
goes up, S,			" " B	4	44	
then E.			3 meters T	3	33	9
Ends Jct			" " B	0	0	
Box above						
W. side 122						
door						

LINE NUMBER 329 DATE 11-4-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR R m H
 SOURCE NUMBER AND VALUE # 112 1113 DPM
 SOURCE RESPONSE AND BACKGROUND AM 285/274 BKg 1
 SOURCE RESPONSE AND BACKGROUND PM 290/274 BKg 1

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
starts at 110	conduit	1/2"	0 meters S	3	33	0
plug in box w. wall			" " E	6	66	
123 N. section runs			1/2 meter S	0	0	0
up steps at			" " E	3	33	
plug in box feeds			1 meter S	1	11	3
emergency lights			" " E	6	66	
box 123,						

LINE NUMBER 330 DATE 11-4-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR R m H
 SOURCE NUMBER AND VALUE # 112 1113 DPM
 SOURCE RESPONSE AND BACKGROUND AM 285/274 BKg 1
 SOURCE RESPONSE AND BACKGROUND PM 290/274 BKg 1

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
starts in wall	conduit	1 1/2"	0 meters T	5	55	0
S.W. corner 123			" " E	3	33	
wall pt. ends			2 meters T	5	55	0
in 3rd box			" " E	1	11	
above Rm 129			4 meters T	1	11	0
door			" " E	3	33	
			6 meters T	3	33	3
			" " E	3	33	
			8 meters T	5	55	0
			" " F	2	22	

123

LAB ATTIC PIPE SURVEY

LINE NUMBER 331 DATE 11-4-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50059
 DETECTOR OPERATOR Rmk
 SOURCE NUMBER AND VALUE #112 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 285/274 Bkg 1
 SOURCE RESPONSE AND BACKGROUND PM 290/274 Bkg 1

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts in Wall	Conduit	1 1/4"	0 meters E	3	33	0
S.W. Corner 123			" " B	5	55	
ends in jct			2 meters E	4	11	0
box above 122			" " B	4	44	
door			4 meters E	2	22	0
			" " B	1	11	
			6 meters E	4	44	3
			" " B	0	0	
			4 meters E	3	33	3
			" " B	4	44	

123

LAB ATTIC PIPE SURVEY

LINE NUMBER 332 DATE 11-7-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR QMB
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 281 + 258 Bkg 1
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts on switch	Conduit	1/2"	0 meters T	6	66	0
box on EAST wall			" " N	1	11	
and ends in junction			1 meters T	5	55	3
box on EAST wall			" " N	3	33	

Rm #123

LAB ATTIC PIPE SURVEY

LINE NUMBER 334 DATE 11-7-88
 INSTRUMENT Quadrant 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR JobB
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 281 + 258 - Bldg 1
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable	
				cpm	dpm/100cm ²		dpm/100cm ²
Starts in plug-in box on I-beam	Aluminum	1/2"	0 meters	T	4	44	3
	Conduit		B	4	44		
EAST AND ENDS in plug-in box on EAST WALL			2 meters	T	0	0	0
				B	1	11	
			4 meters	T	3	33	9
				B	3	33	

Rm #123

LAB ATTIC PIPE SURVEY

LINE NUMBER 335 DATE 11-7-88
 INSTRUMENT Quadrant 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR JobB
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 281 + 258 Bldg 1
 SOURCE RESPONSE AND BACKGROUND PM 278 + 294 Bldg 1

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable	
				cpm	dpm/100cm ²		dpm/100cm ²
Starts in junction box on EAST WALL	Aluminum	1"	0 METERS	T	5	55	0
	Conduit		B	4	44		
AND ENDS in junction box on South WALL			2 meters	T	1	11	3
				B	4	44	
			4 meters	T	4	44	0
				B	0	0	
			6 meters	T	20	22	0
				B	1	11	
			8 meters	N	2	22	3
				S	2	22	
			10 meters	N	2	22	3
				S	3	33	
11 meters	N	1	11	3			
	S	6	66				

Rm #123

LAB ATTIC PIPE SURVEY

LINE NUMBER 336 DATE 11-7-88

INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058

DETECTOR 43-4 OPERATOR Jamb

SOURCE NUMBER AND VALUE 112 - 1113 dpm

SOURCE RESPONSE AND BACKGROUND AM

SOURCE RESPONSE AND BACKGROUND PM 278 - 294 Bug 1

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts in plug-in box on EAST WALL and ends in plug-in box on I BEAM	Conduit	1"	0 METERS N	2	22	0
			S	5	55	
			2 METERS N	3	33	3
			S	6	66	
			4 METERS N	3	33	0
			S	5	55	
			6 METERS T	3	33	3
			B	2	22	
			8 METERS N	2	22	3
			S	4	44	
			9 METERS N	6	66	0
			S	5	55	

Rm #123

LAB ATTIC PIPE SURVEY

LINE NUMBER 337 DATE 11-8-88

INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058

DETECTOR 43-4 OPERATOR Jamb + V.Mc

SOURCE NUMBER AND VALUE 112 - 1113 dpm

SOURCE RESPONSE AND BACKGROUND AM 260 + 284 Bug 1

SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts in EAST WALL and ends on WEST WALL.	Conduit	3/4"	0 meters T	10	110	0
			B	9	99	
			2 meters T	2	22	3
			B	2	22	
			4 meters T	0	0	3
			B	0	0	
			6 meters T	6	66	12
			B	2	22	

Rn #123 PIPE SURVEY Resurvey after Decon PAGE 21 OF 34

LINE NUMBER 340 DATE 11-9-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR Job - J.H. - J.M.C.
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 285 + 284 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable dpm/100cm ²
				cpm	dpm/100cm ²	
	Conduit	1"	2 meters T	3	33	0
			4 meters B	1	11	0

Rn #123 LAB ATTIC PIPE SURVEY PAGE 22 OF 34

LINE NUMBER 341 DATE 11-8-88
 INSTRUMENT Ludlum SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR Job + J.M.C.
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 260 + 284 Bkg 1
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable dpm/100cm ²
				cpm	dpm/100cm ²	
Starts in East wall And ends in Junction box on West wall.	Conduit	1"	0 meters T	3	33	0
			B	6	66	

LINE NUMBER 342 DATE 11-8-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR Joub & J. Mc.
 SOURCE NUMBER AND VALUE 112 - 1113 cpm
 SOURCE RESPONSE AND BACKGROUND AM 260 & 284 Bkg 1
 SOURCE RESPONSE AND BACKGROUND PM

LINE NUMBER 342 DATE 11-9-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR Joub - J. Mc.
 SOURCE NUMBER AND VALUE 112 - 1113 cpm
 SOURCE RESPONSE AND BACKGROUND AM 285 + 284 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM 274 + 260 Bkg 0

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable	
				cpm	dpm/100cm ²		
Start in East wall and ends in Junction box on West wall.	Conduit	1"	0 meters	N	5	55	6
				S	3	33	
			2 meters	N	11	121	0
				S	6	66	
			4 meters	T	14	154	3
				B	2	22	
			6 meters	T	2	22	9
				B	0	0	
			8 meters	T	2	22	0
				B	3	33	
			10 meters	S	6	66	0
				B	4	44	

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
	Conduit	1"	2 meters N	1	11	0
			4 meters T	3	33	3

LINE NUMBER 343 DATE 11-8-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR _____
 SOURCE NUMBER AND VALUE 112 - 1113 cpm
 SOURCE RESPONSE AND BACKGROUND AM _____
 SOURCE RESPONSE AND BACKGROUND PM 375 + 304 Bldg 0

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable	
				cpm	dpm/100cm ²		
Starts in electrical conduit on south wall and ends in junction box on south wall.	Conduit	3/4"	0 meters	E	5	55	0
				W	11	121	
			2 meters	E	2	22	3
				W	5	55	
			4 meters	E	5	55	3
				W	7	77	
			5 meters	E	4	44	3
				W	3	33	

LINE NUMBER 343 DATE 11-9-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50064
 DETECTOR 43-4 OPERATOR JMS + JH
 SOURCE NUMBER AND VALUE 112 - 1113 cpm
 SOURCE RESPONSE AND BACKGROUND AM 239 + 235 Bldg 1
 SOURCE RESPONSE AND BACKGROUND PM _____

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable	
				cpm	dpm/100cm ²		
			0 meters	W	3	33	0

LINE NUMBER 344 DATE 11-8-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR JWB & J.M.C.
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM
 SOURCE RESPONSE AND BACKGROUND PM 275 & 304 Bkg 0

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable	
				cpm	dpm/100cm ²		
Starts in four-inch box on south wall	CONDUIT	3/4"	0 meters	E	0	0	6
				W	4	44	
and ends in light fixture on north wall.			2 meters	T	13	143	3
				B	2	22	
			4 meters	T	6	66	3
				B	6	66	
			6 meters	T	2	22	0
				B	2	22	
			8 meters	T	8	88	0
				B	1	11	
			10 meters	T	2	22	3
				B	6	66	
			12 meters	T	2	22	0
				B	1	11	
			14 meters	T	1	11	0
				B	0	0	
			16 meters	T	1	11	12
				B	3	33	
			18 meters	T	4	44	0
				B	82	902	

LINE NUMBER 344 DATE 11-9-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR JWB - J.M.C. - J.M.C.
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 285 & 284 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable	
				cpm	dpm/100cm ²		
	Conduit	3/4"	2 meters	T	2	22	3
				B	0	0	
			18 meters	T	4	44	0
				B	2	22	

LINE NUMBER 347 DATE 11-9-88
 INSTRUMENT Lucium 2220 SERIAL NUMBER 50064
 DETECTOR 43-4 OPERATOR Jon B + J.A.
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 239 + 235 Bkg 1
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts in light fixture on East wall and ends in junction box approximately two feet from East wall.	Conduit	3/4"	0 meters T	4	44	0
			B	27	297	
			2 meters N	4	44	3
			S	3	33	
			4 meters T	11	121	0
			S	3	33	

LINE NUMBER 347 DATE 11-9-88
 INSTRUMENT Lucium 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR Jon B - J.H. - J.M.E.
 SOURCE NUMBER AND VALUE 112 - 1113 cpm
 SOURCE RESPONSE AND BACKGROUND AM 285 + 284 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
	Conduit	3/4"	0 meters			0
			B	3	33	
			4 meters N	2	22	0

LINE NUMBER 348 DATE 11-9-88
 INSTRUMENT Ludlum SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 284 + 285 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM

LINE NUMBER 349 DATE 11-9-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR J. B. & J. H.
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 285 + 284 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts in light	Conduit	3/4"	0 meters N	3	33	0
Fixture approximately two feet from wall and ends in junction box from east wall approximately two feet from wall.			S	3	33	
			2 meters N	4	44	0
			S	5	55	
			4 meters N	2	22	0
			S	0	0	

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION	Direct		Smearable
				cpm	dpm/100cm ²	
Starts in light	Conduit	3/4"	0 meters N	3	33	0
Fixture approximately two feet from east wall and ends in junction box approximately two feet from east wall.			S	3	33	
			2 meters N	5	55	6
			S	3	33	
			4 meters N	9	99	0
			S	2	22	

LINE NUMBER 350 DATE 11-9-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50059
 DETECTOR 43-4 OPERATOR GMB & J.A.
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 285 + 284 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION		Direct		Smearable
					cpm	dpm/100cm ²	
Starts in Junction	Conduit	3/4"	0 meters	T	11	121	0
Box at South Wall				B	5	55	
Ends at I-			2 meters	T	6	66	0
SEAM going North.				B	1	11	
			4 meters	T	8	88	3
				B	2	22	
			6 meters	T	2	22	3
				B	3	33	

LINE NUMBER 350 DATE 11-9-88
 INSTRUMENT Ludlum 2220 SERIAL NUMBER 50058
 DETECTOR 43-4 OPERATOR
 SOURCE NUMBER AND VALUE 112 - 1113 dpm
 SOURCE RESPONSE AND BACKGROUND AM 285 + 284 Bkg 0
 SOURCE RESPONSE AND BACKGROUND PM

START OF SURVEY	TYPE OF LINE	DIA.	READING LOCATION		Direct		Smearable
					cpm	dpm/100cm ²	
			0 meters	T	6	66	0

RM 123

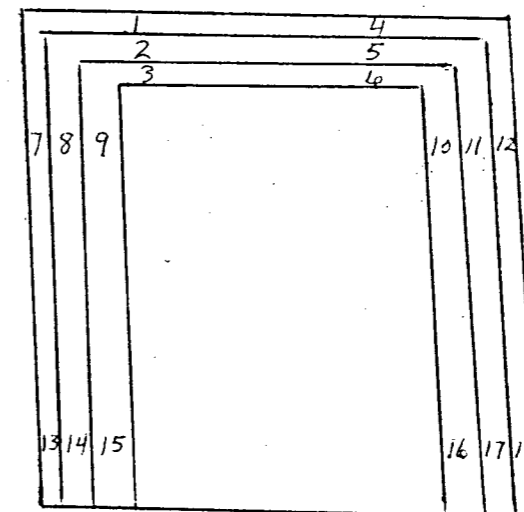
DOOR #1
(SOUTH DOOR)

LOCATION OF COUNTS

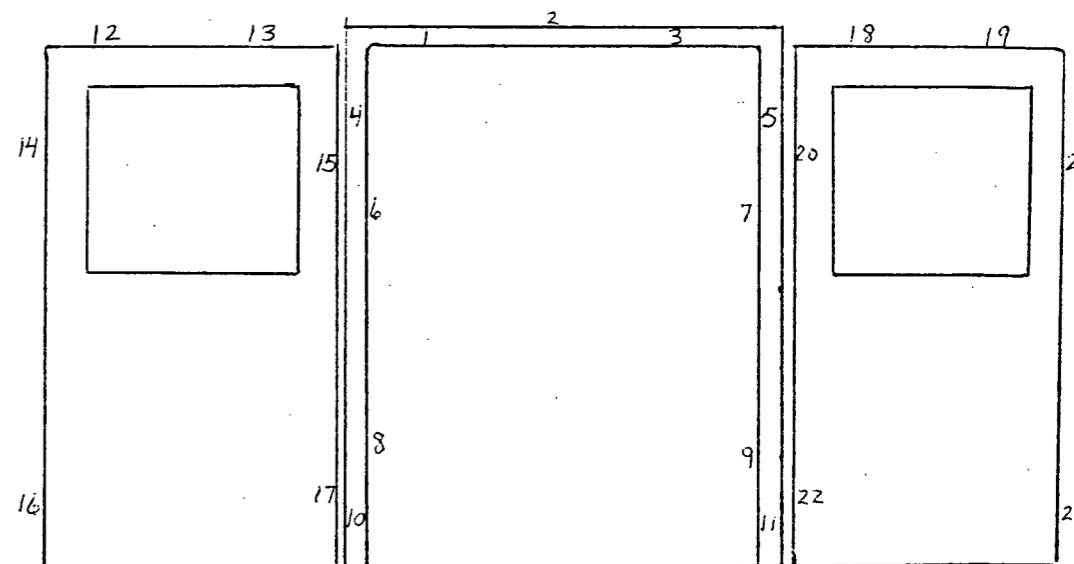
7-20-89

ILP

FRAME



DOOR



PLANT PU AREA 123
 SURVEYED BY ILP
 INST. INDIUM 2220 *# 52834 DET. 43-4
 SOURCE CK 305-279 BKG. 1(AM)
 DATE: 7-20-89 SOURCE # 112 VALUE: 1113 DPM

ASC # 83600115
 CTD. BY A Black
 SOURCE CK. AVG. 35
 BKG. .3
 DATE: 7-21-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		
	CPH	DPH	SHEAR
RM 123 DOOR#1			
(SOUTH DOOR)			
D-1	1	6	6
D-2	1	6	0
D-3	3	18	3
D-4	2	12	3
D-5	1	6	0
6	4	24	3
7	1	6	3
8	6	36	0
9	5	30	9
10	3	18	0
11	3	18	0
12	7	42	3
13	4	24	3
14	5	30	0
15	6	36	0
16	3	18	0
17	4	24	6
18	1	6	0
19	3	18	0
20	3	18	0
21	4	24	6
22	4	24	6
23	3	18	0
	Direct	Shear	
Total DPM	840	81	
# Readings	41	41	
AUG DPM/100cm ²	20.49	1.98	
MAX DPM/100cm ²	42	9	
MDA			
16.63 DPM/100cm ²			

PLANT PU AREA RM 123
 SURVEYED BY ILP
 INST. INDIUM 2220 *# 52834 DET. 43-4
 SOURCE CK 305-279 BKG. 1(AM)
 DATE: 7-20-89 SOURCE # 112 VALUE: 1113 DPM

ASC # 83600115
 CTD. BY A Black
 SOURCE CK. AVG. 35
 BKG. .3
 DATE: 7-21-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		
	CPH	DPH	SHEAR
RM 123 DOOR#1			
(SOUTH DOOR)			
DOOR FRAME			
F-1	7	42	3
F-2	4	24	6
F-3	2	12	0
F-4	2	12	3
F-5	2	12	0
6	1	6	0
7	3	18	3
8	3	18	3
9	7	42	0
10	7	42	0
11	3	18	0
12	4	24	0
13	1	6	6
14	5	30	6
15	3	18	0
16	1	6	0
17	3	18	0
18	5	30	0

RM 123

DOOR #2

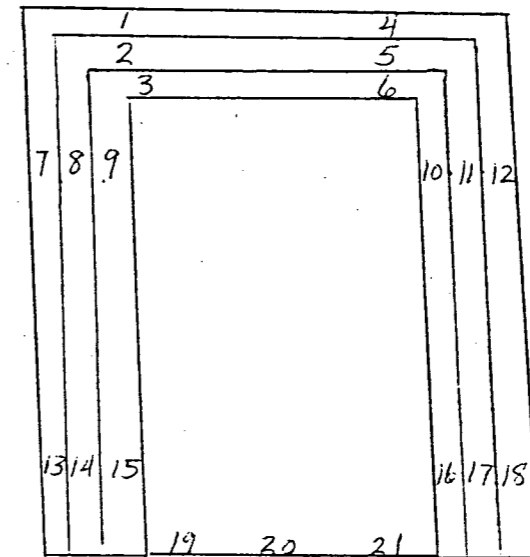
NORTH DOOR

LOCATION OF COUNTS

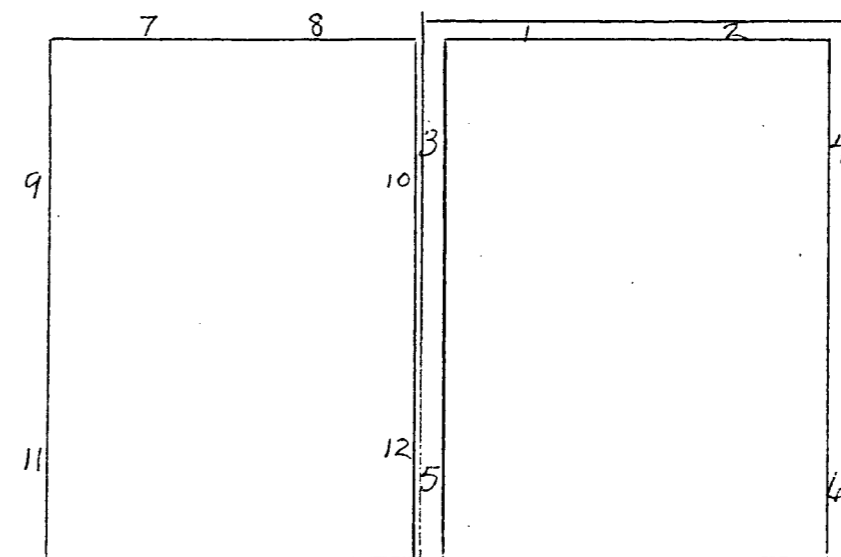
7-20-89

ILP

FRAME



DOOR



PLANT PU AREA RM 123
 SURVEYED BY ILP
 INST. 1.INDIUM 2220 * #52834 DET. 43-4
 SOURCE CK 308-288 BKG. 1(PM)
 DATE: 7-20-89 SOURCE # 112 VALUE: 1113 DPM

ASC # 83600115
 CTD. BY A. Plack
 SOURCE CK. AVG. 35
 BKG. .3
 DATE: 7-21-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		SHEAR
	CPH	DPH	
RM 123 DOOR#2			
(NORTH DOOR)			
D-1	2	12	0
D-2	1	6	0
D-3	1	6	3
D-4	4	24	0
D-5	5	30	3
6	9	54	0
7	7	42	0
8	6	36	3
9	7	42	3
10	5	30	3
11	6	36	6
12	8	48	0
	<i>Direct</i>	<i>Sum</i>	
Total DPM	798	54	
# Readings	33	33	
Avg DPM/100cm ²	24.18	1.73	
Max DPM/100cm ²	54	6	
MDA			
16.63 DPM/100cm ²			

PLANT PU AREA RM 123
 SURVEYED BY ILP
 INST. 1.INDIUM 2220 * #52834 DET. 43-4
 SOURCE CK 308-288 BKG. 1(PM)
 DATE: 7-20-89 SOURCE # 112 VALUE: 1113 DPM

ASC # 83600115
 CTD. BY J.M. Plack
 SOURCE CK. AVG. 35
 BKG. .3
 DATE: 7-21-89

READINGS IN DPM/100 cm²

SAMPLE # OR DESCRIPTION	DIRECT		SHEAR
	CPH	DPH	
RM 123 DOOR#2			
(NORTH DOOR)			
DOOR FRAME			
F-1	5	30	0
F-2	5	30	0
F-3	2	12	0
F-4	4	24	0
F-5	6	36	3
6	1	6	6
7	3	18	0
8	3	18	3
9	1	6	0
10	1	6	0
11	4	24	0
12	6	36	6
13	3	18	0
14	1	6	0
15	4	24	3
16	4	24	0
17	5	30	3
18	4	24	0
19	4	24	6
20	2	12	3
21	4	24	3